

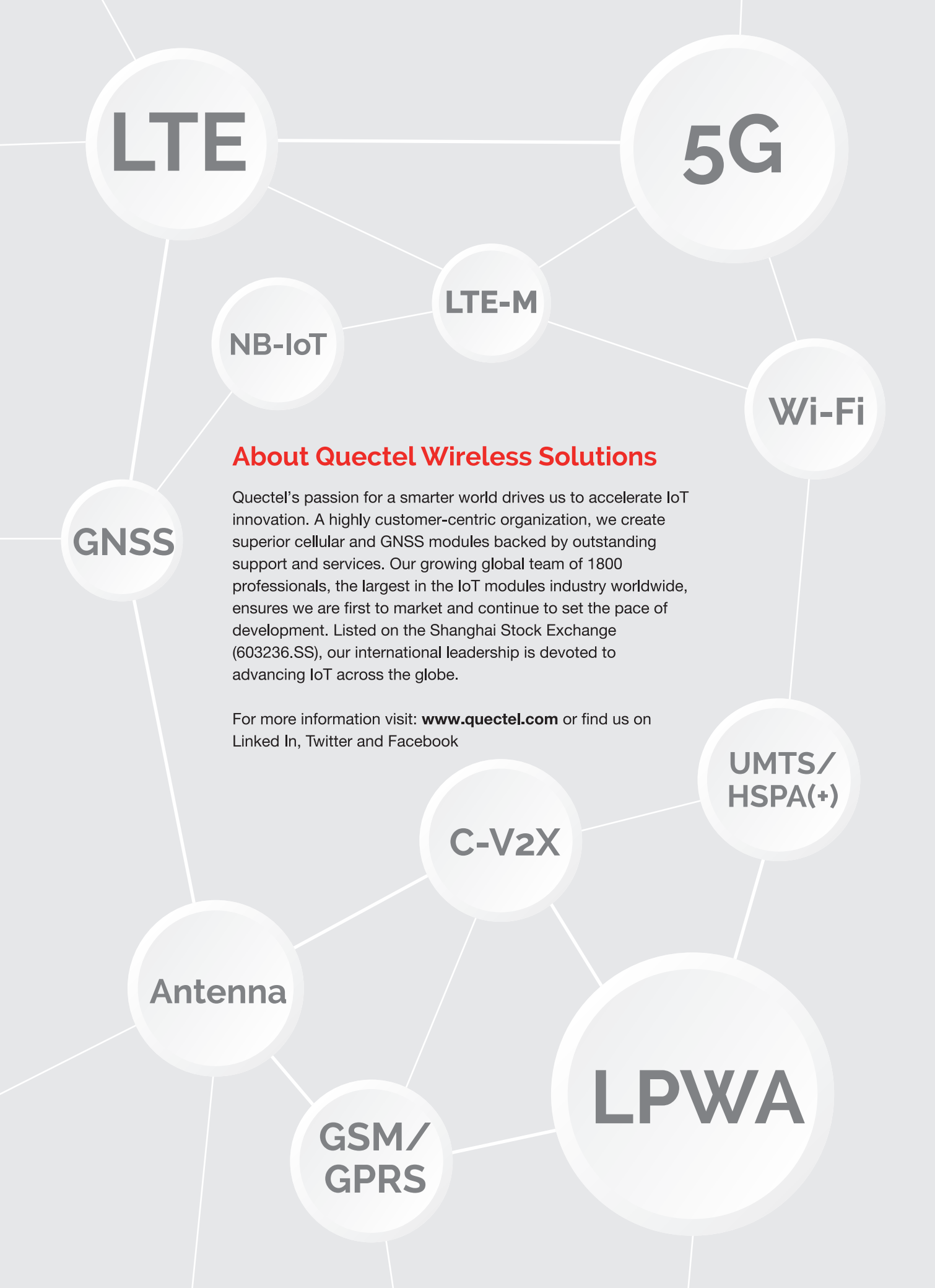
The Leading Global Supplier of

# IoT&M2M Modules

For more information contact us on

**www.quectel.com**   

Quectel is the leading global supplier of cellular and GNSS modules, with a broad product portfolio covering the most recent wireless technologies



**LTE**

**5G**

**LTE-M**

**NB-IoT**

**Wi-Fi**

**GNSS**

### About Quectel Wireless Solutions

Quectel's passion for a smarter world drives us to accelerate IoT innovation. A highly customer-centric organization, we create superior cellular and GNSS modules backed by outstanding support and services. Our growing global team of 1800 professionals, the largest in the IoT modules industry worldwide, ensures we are first to market and continue to set the pace of development. Listed on the Shanghai Stock Exchange (603236.SS), our international leadership is devoted to advancing IoT across the globe.

For more information visit: [www.quectel.com](http://www.quectel.com) or find us on Linked In, Twitter and Facebook

**UMTS/  
HSPA(+)**

**C-V2X**

**Antenna**

**LPWA**

**GSM/  
GPRS**

# IoT Applications



## Telematics and Transport

Automotive OEM  
Vehicle Tracking  
Asset Tracking  
Ship Tracking  
Fleet Management  
OBD  
Vehicle Digital Video Recorders (DVR)  
Special Purpose Vehicles (SPV)  
Usage-Based Insurance (UBI)



## Energy

Electricity Meters  
Gas Meters  
Water Meters  
Heat Meters  
Smart Grids  
Wind Turbines  
Solar Panels  
Charging Piles



## Payment

Wireless POS  
Cash Registers  
ATMs  
Vending Machines  
Top-up Machines



## Safety

Alarms  
Intrusion Detection  
Smoke Detectors  
Gas Detectors  
Motion Sensors  
Asset Protection



## Smart Cities

Street Lighting  
Traffic Lights  
Sharing Economy  
Smart Elevators  
Smart Parking  
Parking Meters  
Toll Collection Systems  
Digital Signage  
Smart Bins  
Outdoor LED Lighting



## Gateways

DTUs  
Consumer Routers  
Industrial Routers  
VOIP  
Wi-Fi Hotspots



## Industry

Industrial PDAs/ Scanners  
Industrial PCs  
Rugged Tablet PCs  
Pipeline Monitoring  
Robots  
Flowmeters  
Unmanned Aerial Vehicles (UAV)  
Industrial Refrigerators  
Indoor Air Monitoring  
Water Valves/ Pump Controls



## Life & Healthcare

Personal Trackers  
Pet Trackers  
Wearables  
Home Automation  
Elderly Monitoring  
Remote Medical Equipment  
Glucometers  
Blood Pressure Monitors  
Recreational Machines  
Patient Monitoring  
Laptops



## Agriculture & Environment

Trail Cameras  
Food Traceability  
Farmland Monitoring  
Farm Machinery Management  
Meteorological Stations  
Wildlife Tracking  
Irrigation  
Environmental Monitoring

# Quectel 5G NR Module Family

| Product                        |                     | RG500Q-EA                                                                                                                                                                                          | RG502Q-EA                                                                                                                                                                                          | RG500Q-NA                                                                                                                                                                                           | RG801H-EA                                                                                                              | RG801H-EA-M.2                                                                                                          |
|--------------------------------|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
|                                |                     |                                                                                                                   |                                                                                                                   |                                                                                                                    |                                     |                                     |
| Form Factor                    |                     | LGA                                                                                                                                                                                                | LGA                                                                                                                                                                                                | LGA                                                                                                                                                                                                 | LGA                                                                                                                    | M.2                                                                                                                    |
| Dimensions (mm)                |                     | 41.0 × 44.0 × 2.75                                                                                                                                                                                 | 41.0 × 44.0 × 2.75                                                                                                                                                                                 | 41.0 × 44.0 × 2.75                                                                                                                                                                                  | 51.5 × 51.0 × 3.05                                                                                                     | 58.5 × 62 × 3.65                                                                                                       |
| 5G                             |                     | Sub-6 GHz                                                                                                                                                                                          | Sub-6 GHz                                                                                                                                                                                          | Sub-6 GHz                                                                                                                                                                                           | Sub-6 GHz                                                                                                              | Sub-6 GHz                                                                                                              |
| Frequency Bands (MHz)          | -NA (North America) | /                                                                                                                                                                                                  | /                                                                                                                                                                                                  | 5G NR Bands: n2/n5/n7/n12/n25/<br>n41/n48/n66/n71/n77/n78<br>LTE bands: LTE-FDD: B2/B4/B5/B7/<br>B12/B13/B17/B14/B25/B26/B29/<br>B30/B66/B71<br>LTE-TDD: B41/B48<br>LAA: B46; WCDMA Bands: B2/B4/B5 | /                                                                                                                      | /                                                                                                                      |
|                                | -EA (EMEA/ APAC)    | 5G NR: n41/n77/n78/n79/n11/n31/<br>n51/n71/n81/n201/n281/n381/n401<br>LTE-FDD: B1/B3/B5/B7/B8/B18/<br>B19/B20/B26/B28/B32<br>LTE-TDD: B34/B38/B39/B40/B41/<br>B42/B43<br>WCDMA: B1/B3/B5/B6/B8/B19 | 5G NR: n41/n77/n78/n79/n11/n31/n51/<br>n71/n81/n201/n281/n381/n401<br>LTE-FDD: B1/B3/B5/B7/B8/B18/B19/<br>B20/B26/B28/B32<br>LTE-TDD: B34/B38/B39/B40/B41/B42/<br>B43<br>WCDMA: B1/B3/B5/B6/B8/B19 | /                                                                                                                                                                                                   | 5G NR: n1/n3/n28/n41/n77/n78/n79<br>LTE-FDD: B1/B3/B5/B7/B8/B20/B28<br>LTE-TDD: B34/B38/B39/B40/B41<br>WCDMA: B1/B5/B8 | 5G NR: n1/n3/n28/n41/n77/n78/n79<br>LTE-FDD: B1/B3/B5/B7/B8/B20/B28<br>LTE-TDD: B34/B38/B39/B40/B41<br>WCDMA: B1/B5/B8 |
| Weight (approx.) g             |                     | 11                                                                                                                                                                                                 | 11                                                                                                                                                                                                 | TBD                                                                                                                                                                                                 | TBD                                                                                                                    | TBD                                                                                                                    |
| Temperature Range              |                     | -30°C ~ +75°C (Operation Temperature)<br>-40°C ~ +85°C (Extended Temperature)                                                                                                                      | -30°C ~ +75°C (Operation Temperature)<br>-40°C ~ +85°C (Extended Temperature)                                                                                                                      | -30°C ~ +75°C (Operation Temperature)<br>-40°C ~ +85°C (Extended Temperature)                                                                                                                       | -30°C ~ +70°C (Operation Temperature)<br>-40°C ~ +85°C (Extended Temperature)                                          | -30°C ~ +70°C (Operation Temperature)<br>-40°C ~ +85°C (Extended Temperature)                                          |
| Control via AT Commands        |                     | 3GPP TS27.007 and Quectel Enhanced AT Commands                                                                                                                                                     | 3GPP TS27.007 and Quectel Enhanced AT Commands                                                                                                                                                     | 3GPP TS27.007 and Quectel Enhanced AT Commands                                                                                                                                                      | •                                                                                                                      | •                                                                                                                      |
| Data Transmission <sup>a</sup> |                     |                                                                                                                                                                                                    |                                                                                                                                                                                                    |                                                                                                                                                                                                     |                                                                                                                        |                                                                                                                        |
| 5G                             |                     | 5G SA Sub-6: Max. 2.1Gbps (DL)/<br>Max. 900Mbps (UL)<br>5G NSA Sub-6: Max. 2.5Gbps (DL)/<br>Max. 650Mbps (UL)                                                                                      | 5G SA Sub-6: Max. 4.2Gbps (DL)/<br>Max. 900Mbps (UL)<br>5G NSA Sub-6: Max. 5.0Gbps (DL)/<br>Max. 650Mbps (UL)                                                                                      | 5G SA Sub-6: Max. 2.1Gbps (DL)/<br>Max. 450Mbps (UL)<br>5G NSA Sub-6: Max. 2.5Gbps (DL)/<br>Max. 650Mbps (UL)                                                                                       | 5G SA Sub-6: Max. 2.1Gbps (DL)/<br>Max. 1200Mbps (UL)<br>5G NSA Sub-6: Max. 2.3Gbps (DL)/<br>Max. 600Mbps (UL)         | 5G SA Sub-6: Max. 2.1Gbps (DL)/<br>Max. 1200Mbps (UL)<br>5G NSA Sub-6: Max. 2.3Gbps (DL)/<br>Max. 600Mbps (UL)         |
| LTE                            |                     | LTE-FDD: Max. 1Gbps (DL)/<br>Max. 200Mbps (UL)                                                                                                                                                     | LTE-FDD: Max. 2Gbps (DL)/<br>Max. 200Mbps (UL)                                                                                                                                                     | LTE-FDD: Max. 1Gbps (DL)/<br>Max. 200Mbps (UL)                                                                                                                                                      | LTE-FDD: Max. 1.6Gbps (DL)/<br>Max. 150Mbps (UL)                                                                       | LTE-FDD: Max. 1.6Gbps (DL)/<br>Max. 150Mbps (UL)                                                                       |
| UMTS                           |                     | WCDMA: Max. 42Mbps (DL)/<br>Max. 5.76Mbps (UL)                                                                                                                                                     | WCDMA: Max. 42Mbps (DL)/<br>Max. 5.76Mbps (UL)                                                                                                                                                     | WCDMA: Max. 42Mbps (DL)/<br>Max. 5.76Mbps (UL)                                                                                                                                                      | WCDMA: Max. 42Mbps (DL)/<br>Max. 5.76Mbps (UL)                                                                         | WCDMA: Max. 42Mbps (DL)/<br>Max. 5.76Mbps (UL)                                                                         |
| SMS                            |                     | •                                                                                                                                                                                                  | •                                                                                                                                                                                                  | •                                                                                                                                                                                                   | •                                                                                                                      | •                                                                                                                      |
| Protocols                      |                     | TCP/UDP/FTP/HTTP/HTTPS /PING/<br>SMS                                                                                                                                                               | TCP/UDP/FTP/HTTP/HTTPS /PING/<br>SMS                                                                                                                                                               | TCP/UDP/FTP/HTTP/HTTPS /PING/<br>SMS                                                                                                                                                                | Protocols*: TCP/UDP/PPP/NTP/<br>NITZ/FTP/HTTP/PING/CMUX/<br>HTTPS/FTPS/SSL/FILE/MQTT/<br>MMS/SMTP/SMTPS/PAP/CHAP       | Protocols*: TCP/UDP/PPP/NTP/<br>NITZ/FTP/HTTP/PING/CMUX/<br>HTTPS/FTPS/SSL/FILE/MQTT/<br>MMS/SMTP/SMTPS/PAP/CHAP       |
| Interfaces                     |                     |                                                                                                                                                                                                    |                                                                                                                                                                                                    |                                                                                                                                                                                                     |                                                                                                                        |                                                                                                                        |
| (U)SIM                         |                     | × 2, 1.8V/ 3.0V                                                                                                                                                                                    | × 2, 1.8V/ 3.0V                                                                                                                                                                                    | × 2, 1.8V/ 3.0V                                                                                                                                                                                     | × 2, 1.8V/ 3.0V                                                                                                        | × 2, 1.8V/ 3.0V                                                                                                        |
| UART                           |                     | × 3                                                                                                                                                                                                | × 3                                                                                                                                                                                                | × 3                                                                                                                                                                                                 | × 2                                                                                                                    | /                                                                                                                      |
| USB                            |                     | 2.0/3.0/3.1                                                                                                                                                                                        | 2.0/3.0/3.1                                                                                                                                                                                        | 2.0/3.0/3.1                                                                                                                                                                                         | 1.1/2.0/3.0/3.1                                                                                                        | 1.1/2.0/3.0/3.1                                                                                                        |
| PCIe                           |                     | PCIe Gen3 × 2 Lane                                                                                                                                                                                 | PCIe Gen3 × 2Lane                                                                                                                                                                                  | PCIe Gen3 × 2 Lane                                                                                                                                                                                  | × 2, PCIe Gen3 × 2 Lane/PCIe Gen3<br>× 1 Lane                                                                          | × 1, PCIe Gen3 × 1 Lane                                                                                                |
| RGMII                          |                     | •                                                                                                                                                                                                  | •                                                                                                                                                                                                  | •                                                                                                                                                                                                   | × 1                                                                                                                    | /                                                                                                                      |
| PCM                            |                     | •                                                                                                                                                                                                  | •                                                                                                                                                                                                  | •                                                                                                                                                                                                   | × 1                                                                                                                    | × 1                                                                                                                    |
| I2C                            |                     | × 1                                                                                                                                                                                                | × 1                                                                                                                                                                                                | × 1                                                                                                                                                                                                 | × 2                                                                                                                    | × 1                                                                                                                    |
| SPI                            |                     | •                                                                                                                                                                                                  | •                                                                                                                                                                                                  | •                                                                                                                                                                                                   | × 1                                                                                                                    | /                                                                                                                      |
| GPIO                           |                     | •                                                                                                                                                                                                  | •                                                                                                                                                                                                  | •                                                                                                                                                                                                   | •                                                                                                                      | •                                                                                                                      |
| ADC                            |                     | × 2                                                                                                                                                                                                | × 2                                                                                                                                                                                                | × 2                                                                                                                                                                                                 | × 2                                                                                                                    | /                                                                                                                      |
| SD Card                        |                     | •                                                                                                                                                                                                  | •                                                                                                                                                                                                  | •                                                                                                                                                                                                   | × 1                                                                                                                    | /                                                                                                                      |
| RESET_N                        |                     | •                                                                                                                                                                                                  | •                                                                                                                                                                                                  | •                                                                                                                                                                                                   | •                                                                                                                      | •                                                                                                                      |
| Antenna                        |                     | Main, Diversity and GNSS                                                                                                                                                                           | Main, Diversity and GNSS                                                                                                                                                                           | Main, Diversity and GNSS                                                                                                                                                                            | Main, Diversity                                                                                                        | Main, Diversity and MIMO                                                                                               |
| Enhanced Features              |                     |                                                                                                                                                                                                    |                                                                                                                                                                                                    |                                                                                                                                                                                                     |                                                                                                                        |                                                                                                                        |
| MIMO                           |                     | 4 × 4 DL                                                                                                                                                                                           | 4 × 4 DL                                                                                                                                                                                           | 4 × 4 DL                                                                                                                                                                                            | 4 × 4 DL                                                                                                               | 4 × 4 DL                                                                                                               |
| Digital Audio                  |                     | •                                                                                                                                                                                                  | •                                                                                                                                                                                                  | •                                                                                                                                                                                                   | Digital Audio*: •                                                                                                      | Digital Audio*: •                                                                                                      |
| VoLTE                          |                     | Optional                                                                                                                                                                                           | Optional                                                                                                                                                                                           | Optional                                                                                                                                                                                            | •                                                                                                                      | •                                                                                                                      |
| DTMF                           |                     | Dual-tone Multi-frequency                                                                                                                                                                          | Dual-tone Multi-frequency                                                                                                                                                                          | Dual-tone Multi-frequency                                                                                                                                                                           | DTMF*: •                                                                                                               | DTMF*: •                                                                                                               |
| DFOTA                          |                     | Delta Firmware over the Air                                                                                                                                                                        | Delta Firmware over the Air                                                                                                                                                                        | Delta Firmware over the Air                                                                                                                                                                         | DFOTA*: •                                                                                                              | DFOTA*: •                                                                                                              |
| GNSS                           |                     | GPS/ GLONASS/ BeiDou/ Galileo                                                                                                                                                                      | GPS/ GLONASS/ BeiDou/ Galileo                                                                                                                                                                      | GPS/ GLONASS/ BeiDou/ Galileo                                                                                                                                                                       | NA                                                                                                                     | NA                                                                                                                     |
| (U)SIM Card Detection          |                     | •                                                                                                                                                                                                  | •                                                                                                                                                                                                  | •                                                                                                                                                                                                   | •                                                                                                                      | •                                                                                                                      |
| Electrical Features            |                     |                                                                                                                                                                                                    |                                                                                                                                                                                                    |                                                                                                                                                                                                     |                                                                                                                        |                                                                                                                        |
| Supply Voltage Range           |                     | 3.3V~4.3V, 3.8V Typ.                                                                                                                                                                               | 3.3V~4.3V, 3.8V Typ.                                                                                                                                                                               | 3.3V~4.3V, 3.8V Typ.                                                                                                                                                                                | 3.3V~4.3V, 3.8V Typ.                                                                                                   | 3.3V~4.3V, 3.8V Typ.                                                                                                   |
| Power Consumption              |                     | TBD @Power off<br>TBD @Sleep, Typ.<br>TBD @Idle                                                                                                                                                    | TBD @Power off/<br>TBD @Sleep, Typ.<br>TBD @Idle                                                                                                                                                   | TBD @Power off<br>TBD @Sleep, Typ.<br>TBD @Idle                                                                                                                                                     | TBD @Power off<br>TBD @Sleep, Typ.<br>TBD @Idle                                                                        | TBD @Power off<br>TBD @Sleep, Typ.<br>TBD @Idle                                                                        |
| Software Features              |                     |                                                                                                                                                                                                    |                                                                                                                                                                                                    |                                                                                                                                                                                                     |                                                                                                                        |                                                                                                                        |
| USB Serial Driver              |                     | Windows 7/8/8.1/10,<br>Linux 2.6~5.4,<br>Android 4.x/5.x/6.x/7.x/8.x/9.x/10                                                                                                                        | Windows 7/8/8.1/10,<br>Linux 2.6~5.4,<br>Android 4.x/5.x/6.x/7.x/8.x/9.x/10                                                                                                                        | Windows 7/8/8.1/10,<br>Linux 2.6~5.4,<br>Android 4.x/5.x/6.x/7.x/8.x/9.x/10                                                                                                                         | •                                                                                                                      | •                                                                                                                      |
| GNSS Driver                    |                     | Android 4.x/5.x/6.x/7.x/8.x/9.x/10                                                                                                                                                                 | Android 4.x/5.x/6.x/7.x/8.x/9.x/10                                                                                                                                                                 | Android 4.x/5.x/6.x/7.x/8.x/9.x/10                                                                                                                                                                  |                                                                                                                        |                                                                                                                        |
| RIL Driver                     |                     | Android 4.x/5.x/6.x/7.x/8.x/9.x/10                                                                                                                                                                 | Android 4.x/5.x/6.x/7.x/8.x/9.x/10                                                                                                                                                                 | Android 4.x/5.x/6.x/7.x/8.x/9.x/10                                                                                                                                                                  |                                                                                                                        |                                                                                                                        |
| RNDIS Driver*                  |                     |                                                                                                                                                                                                    |                                                                                                                                                                                                    |                                                                                                                                                                                                     | •                                                                                                                      | •                                                                                                                      |
| NCM Driver *                   |                     |                                                                                                                                                                                                    |                                                                                                                                                                                                    |                                                                                                                                                                                                     | •                                                                                                                      | •                                                                                                                      |
| NDIS Driver                    |                     | Windows 7/8/8.1/10                                                                                                                                                                                 | Windows 7/8/8.1/10                                                                                                                                                                                 | Windows 7/8/8.1/10                                                                                                                                                                                  |                                                                                                                        |                                                                                                                        |
| ECM Driver*                    |                     |                                                                                                                                                                                                    |                                                                                                                                                                                                    |                                                                                                                                                                                                     | •                                                                                                                      | •                                                                                                                      |
| MBIM Driver                    |                     | Windows 7/8/8.1/10, Linux 3.18~5.4                                                                                                                                                                 | Windows 7/8/8.1/10, Linux 3.18~5.4                                                                                                                                                                 | Windows 7/8/8.1/10, Linux 3.18~5.4                                                                                                                                                                  | MBIM Driver*: •                                                                                                        | MBIM Driver*: •                                                                                                        |
| Gobinet Driver                 |                     | Linux 2.6~5.4                                                                                                                                                                                      | Linux 2.6~5.4                                                                                                                                                                                      | Linux 2.6~5.4                                                                                                                                                                                       |                                                                                                                        |                                                                                                                        |
| QMI_WWAN Driver                |                     | Linux 3.4~5.4                                                                                                                                                                                      | Linux 3.4~5.4                                                                                                                                                                                      | Linux 3.4~5.4                                                                                                                                                                                       |                                                                                                                        |                                                                                                                        |
| PCIe Driver                    |                     | Windows 10, Linux 2.6~5.4,<br>Android 4.x/5.x/6.x/7.x/8.x/9.x/10                                                                                                                                   | Windows 10, Linux 2.6~5.4,<br>Android 4.x/5.x/6.x/7.x/8.x/9.x/10                                                                                                                                   | Windows 10, Linux 2.6~5.4,<br>Android 4.x/5.x/6.x/7.x/8.x/9.x/10                                                                                                                                    | PCIe Driver*: •                                                                                                        | PCIe Driver*: •                                                                                                        |
| Certifications                 |                     | CE/ RoHS/ CCC/ SRRC/ NAL/ KC/<br>JATE/ TELEC                                                                                                                                                       | CE/ RoHS/ CCC/ SRRC/ NAL/ KC/<br>JATE/ TELEC                                                                                                                                                       | FCC/ IC                                                                                                                                                                                             |                                                                                                                        |                                                                                                                        |
| Recommended Applications       |                     | Industrial Router, Industrial PDA, Rugged Tablet PC and Digital Signage                                                                                                                            |                                                                                                                                                                                                    |                                                                                                                                                                                                     |                                                                                                                        |                                                                                                                        |

Note 1: means supported in second stage.

Note 2: means the data transmission is theoretical data rate and depends on network condition.

\* Under development

# Quectel 5G NR Module Family

| Product                  |              | RM500Q-GL                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | RM502Q-GL                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | RM510Q-GL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                          |              |                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Form Factor              |              | M.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | M.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | M.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Dimensions (mm)          |              | 52.0 × 30.0 × 2.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 52.0 × 30.0 × 2.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 52.0 × 30.0 × 2.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 5G                       |              | Sub-6 GHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Sub-6 GHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Sub-6 GHz/ mmWave                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Frequency Bands (MHz)    | -GL (Global) | 5G NR: n1 <sup>1</sup> /n2 <sup>1</sup> /n3 <sup>1</sup> /n5 <sup>1</sup> /n7 <sup>1</sup> /n8 <sup>1</sup> /n12 <sup>1</sup> /n20 <sup>1</sup> /n25 <sup>1</sup> /n28 <sup>1</sup> /n38 <sup>1</sup> /n40 <sup>1</sup> /n41/n48 <sup>1</sup> /n66 <sup>1</sup> /n71 <sup>1</sup> /n77/n78/n79<br>LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B12/B13/B14/B17/B18/B19/B20/B25/B26/B28/B29/B30/B32/B66/B71<br>LTE-TDD: B34/B38/39/B40/B41/B42/B43/B48<br>LAA: B46<br>WCDMA: B1/B2/B3/B4/B5/B6/B8/B19 | 5G NR: n1 <sup>1</sup> /n2 <sup>1</sup> /n3 <sup>1</sup> /n5 <sup>1</sup> /n7 <sup>1</sup> /n8 <sup>1</sup> /n12 <sup>1</sup> /n20 <sup>1</sup> /n25 <sup>1</sup> /n28 <sup>1</sup> /n38 <sup>1</sup> /n40 <sup>1</sup> /n41/n48 <sup>1</sup> /n66 <sup>1</sup> /n71 <sup>1</sup> /n77/n78<br>LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B12/B13/B14/B17/B18/B19/B20/B25/B26/B28/B29/B30/B32/B66/B71<br>LTE-TDD: B34/B38/39/B40/B41/B42/B43/B48<br>LAA: B46<br>WCDMA: B1/B2/B3/B4/B5/B6/B8/B19 | 5G NR: n1 <sup>1</sup> /n2 <sup>1</sup> /n3 <sup>1</sup> /n5 <sup>1</sup> /n7 <sup>1</sup> /n8 <sup>1</sup> /n12 <sup>1</sup> /n20 <sup>1</sup> /n25 <sup>1</sup> /n28 <sup>1</sup> /n38 <sup>1</sup> /n40 <sup>1</sup> /n41/n48 <sup>1</sup> /n66 <sup>1</sup> /n71 <sup>1</sup> /n77/n78/n79/n257/n258/n260/n261<br>LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B12/B13/B14/B17/B18/B19/B20/B25/B26/B28/B29/B30/B32/B66/B71<br>LTE-TDD: B34/B38/39/B40/B41/B42/B43/B48<br>LAA: B46<br>WCDMA: B1/B2/B3/B4/B5/B6/B8/B19 |
| Weight (approx.) g       |              | 8.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 8.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 8.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Temperature Range        |              | -20°C ~ +60°C (Operation Temperature)<br>-40°C ~ +85°C (Extended Temperature)                                                                                                                                                                                                                                                                                                                                                                                                         | -20°C ~ +60°C (Operation Temperature)<br>-40°C ~ +85°C (Extended Temperature)                                                                                                                                                                                                                                                                                                                                                                                                     | -20°C ~ +60°C (Operation Temperature)<br>-40°C ~ +85°C (Extended Temperature)                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Control via AT Commands  |              | 3GPP TS27.007 and Quectel Enhanced AT Commands                                                                                                                                                                                                                                                                                                                                                                                                                                        | 3GPP TS27.007 and Quectel Enhanced AT Commands                                                                                                                                                                                                                                                                                                                                                                                                                                    | 3GPP TS27.007 and Quectel Enhanced AT Commands                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Data Transmission        |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 5G                       |              | 5G SA Sub-6: Max. 2.1Gbps (DL)/ Max. 900Mbps (UL)<br>5G NSA Sub-6: Max. 2.5Gbps (DL)/ Max. 650Mbps (UL)                                                                                                                                                                                                                                                                                                                                                                               | 5G SA Sub-6: Max. 4.2Gbps (DL)/ Max. 900Mbps (UL)<br>5G NSA Sub-6: Max. 5.0Gbps (DL)/ Max. 650Mbps (UL)                                                                                                                                                                                                                                                                                                                                                                           | 5G SA Sub-6: Max. 2.1Gbps (DL)/ Max. 450Mbps (UL)<br>5G NSA Sub-6: Max. 3.3Gbps (DL)/ Max. 650Mbps (UL)<br>5G NSA mmWave: Max. 4.5Gbps (DL)/ Max. 2.9Gbps (UL)                                                                                                                                                                                                                                                                                                                                            |
| LTE                      |              | LTE-FDD: Max. 1Gbps (DL)/ Max. 200Mbps (UL)                                                                                                                                                                                                                                                                                                                                                                                                                                           | LTE-FDD: Max. 2Gbps (DL)/ Max. 200Mbps (UL)                                                                                                                                                                                                                                                                                                                                                                                                                                       | LTE-FDD: Max. 2Gbps (DL)/ Max. 200Mbps (UL)                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| UMTS                     |              | WCDMA: Max. 42Mbps (DL)/ Max. 5.76Mbps (UL)                                                                                                                                                                                                                                                                                                                                                                                                                                           | WCDMA: Max. 42Mbps (DL)/ Max. 5.76Mbps (UL)                                                                                                                                                                                                                                                                                                                                                                                                                                       | WCDMA: Max. 42Mbps (DL)/ Max. 5.76Mbps (UL)                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| SMS                      |              | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Protocols                |              | TCP/UDP/FTP/HTTP/HTTPS /PING/SMS                                                                                                                                                                                                                                                                                                                                                                                                                                                      | TCP/UDP/FTP/HTTP/HTTPS /PING/SMS                                                                                                                                                                                                                                                                                                                                                                                                                                                  | TCP/UDP/FTP/HTTP/HTTPS /PING/SMS                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Interfaces               |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| (U)SIM                   |              | × 2, 1.8V/ 3.0V                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | × 2, 1.8V/ 3.0V                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | × 1, 1.8V/ 3.0V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| USB                      |              | 2.0/3.0/3.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 2.0/3.0/3.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2.0/3.0/3.1(3.0/3.1 from ES2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| PCIe                     |              | PCIe Gen3 × 1 Lane                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | PCIe Gen3 × 1 Lane                                                                                                                                                                                                                                                                                                                                                                                                                                                                | PCIe Gen3 × 2 Lane(1 Lane from ES2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| PCM                      |              | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| GPIO                     |              | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| RESET_N                  |              | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Antenna                  |              | Main, Diversity and GNSS                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Main, Diversity and GNSS                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Main, Diversity and GNSS; mmWave IF *4 pairs                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Enhanced Features        |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| MIMO                     |              | 4 × 4 DL                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 4 × 4 DL                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Sub-6: 4 × 4 DL<br>mmWave: 2 × 2 DL                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Digital Audio            |              | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| VoLTE                    |              | Optional                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Optional                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Optional                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| DTMF                     |              | Dual-tone Multi-frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Dual-tone Multi-frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Dual-tone Multi-frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| DFOTA                    |              | Delta Firmware over the Air                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Delta Firmware over the Air                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Delta Firmware over the Air                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| GNSS                     |              | GPS/ GLONASS/ BeiDou/ Galileo                                                                                                                                                                                                                                                                                                                                                                                                                                                         | GPS/ GLONASS/ BeiDou/ Galileo                                                                                                                                                                                                                                                                                                                                                                                                                                                     | GPS/ GLONASS/ BeiDou/ Galileo                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| (U)SIM Card Detection    |              | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Electrical Features      |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Supply Voltage Range     |              | 3.135~4.4V, 3.7V Typ.                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 3.135~4.4V, 3.7V Typ.                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 3.135~4.4V, 3.7V Typ.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Power Consumption        |              | TBD @Power off<br>TBD @Sleep, Typ.<br>TBD @Idle                                                                                                                                                                                                                                                                                                                                                                                                                                       | TBD @Power off<br>TBD @Sleep, Typ.<br>TBD @Idle                                                                                                                                                                                                                                                                                                                                                                                                                                   | TBD @Power off<br>TBD @Sleep, Typ.<br>TBD @Idle                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Software Features        |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| USB Serial Driver        |              | Windows 7/8/8.1/10,<br>Linux 2.6~5.4,<br>Android 4.x/5.x/6.x/7.x/8.x/9.x/10                                                                                                                                                                                                                                                                                                                                                                                                           | Windows 7/8/8.1/10,<br>Linux 2.6~5.4,<br>Android 4.x/5.x/6.x/7.x/8.x/9.x/10                                                                                                                                                                                                                                                                                                                                                                                                       | Windows 7/8/8.1/10,<br>Linux 2.6~5.4,<br>Android 4.x/5.x/6.x/7.x/8.x/9.x/10                                                                                                                                                                                                                                                                                                                                                                                                                               |
| GNSS Driver              |              | Android 4.x/5.x/6.x/7.x/8.x/9.x/10                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Android 4.x/5.x/6.x/7.x/8.x/9.x/10                                                                                                                                                                                                                                                                                                                                                                                                                                                | Android 4.x/5.x/6.x/7.x/8.x/9.x/10                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| RIL Driver               |              | Android 4.x/5.x/6.x/7.x/8.x/9.x/10                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Android 4.x/5.x/6.x/7.x/8.x/9.x/10                                                                                                                                                                                                                                                                                                                                                                                                                                                | Android 4.x/5.x/6.x/7.x/8.x/9.x/10                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| NDIS Driver              |              | Windows 7/8/8.1/10                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Windows 7/8/8.1/10                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Windows 7/8/8.1/10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| MBIM Driver              |              | Windows 7/8/8.1/10, Linux 3.18~5.4                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Windows 7/8/8.1/10, Linux 3.18~5.4                                                                                                                                                                                                                                                                                                                                                                                                                                                | Windows 7/8/8.1/10, Linux 3.18~5.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Gobinet Driver           |              | Linux 2.6~5.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Linux 2.6~5.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Linux 2.6~5.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| QMI_VWAN Driver          |              | Linux 3.4~5.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Linux 3.4~5.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Linux 3.4~5.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| PCIe Driver              |              | Windows 10,<br>Linux 2.6~5.4,<br>Android 4.x/5.x/6.x/7.x/8.x/9.x/10                                                                                                                                                                                                                                                                                                                                                                                                                   | Windows 10,<br>Linux 2.6~5.4,<br>Android 4.x/5.x/6.x/7.x/8.x/9.x/10                                                                                                                                                                                                                                                                                                                                                                                                               | Windows 10,<br>Linux 2.6~5.4,<br>Android 4.x/5.x/6.x/7.x/8.x/9.x/10                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Certifications           |              | CE/ RCM/ CCC/ SRRC/ NAL/ KC/ JATE/ TELEC/ FCC/ IC/ GCF/ PTCRB                                                                                                                                                                                                                                                                                                                                                                                                                         | CE/ RCM/ CCC/ SRRC/ NAL/ KC/ JATE/ TELEC/ FCC/ IC/ GCF/ PTCRB                                                                                                                                                                                                                                                                                                                                                                                                                     | FCC/ IC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Recommended Applications |              | Industrial Router, Industrial PDA, Rugged Tablet PC and Digital Signage                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

Note 1: means supported in second stage.

\* Under development

# Quectel LTE-A Module Family

| Product                  |                               | EP06                                                                                                                                                                                                                               | EG06                                                                                                                                                                                                                                                                   |
|--------------------------|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                          |                               |                                                                                                                                                   |                                                                                                                                                                                     |
| Form Factor              |                               | Mini PCIe                                                                                                                                                                                                                          | LGA                                                                                                                                                                                                                                                                    |
| Dimensions (mm)          |                               | 51.0 × 30.0 × 4.0                                                                                                                                                                                                                  | 37.0 × 39.5 × 2.8                                                                                                                                                                                                                                                      |
| 4G                       |                               | LTE Cat 6                                                                                                                                                                                                                          | LTE Cat 6                                                                                                                                                                                                                                                              |
| Frequency Bands (MHz)    | -E (EMEA/ Australia/ Brazil)  | LTE-FDD: B1/B3/B5/B7/B8/B20/B28/B32 <sup>1</sup> ;<br>LTE-TDD: B38/B40/B41<br>Up to 2 × CA: B1+B1/B5/B8/B20/B28; B3+B3/B5/B7/B8/B20/B28; B7+B5/B7/B8/B20/B28;<br>B20+B32; B38+B38; B40+B40; B41+B41;<br>WCDMA: B1/B3/B5/B8         | LTE-FDD: B1/B3/B5/B7/B8/B20/B28/B32 <sup>1</sup> ;<br>LTE-TDD: B38/B40/B41<br>Up to 2 × CA: B1+B1/B5/B8/B20/B28; B3+B3/B5/B7/B8/B20/B28; B7+B5/B7/B8/B20/B28;<br>B20+B32; B38+B38; B40+B40; B41+B41;<br>WCDMA: B1/B3/B5/B8                                             |
|                          | -EA (EMEA/ Australia/ Brazil) |                                                                                                                                                                                                                                    | LTE-FDD: B1/B3/B5/B7/B8/B20/B28/B32 <sup>1</sup><br>LTE-TDD: B38/B40/B41<br>Up to 2 × CA: B1+B1/B3/B5/B7/B8/B20/B28; B3+B3/B5/B7/B8/B20/B28;<br>B7+B5/B7/B8/B20/B28;<br>B20+B32 <sup>1</sup> ; B38+B38; B40+B40; B41+B41<br>WCDMA: B1/B3/B5/B8<br>GSM: 900MHz, 1800MHz |
|                          | -A (North America)            | LTE-FDD: B2/B4/B5/B7/B12/B13/B25/B26/B29 <sup>2</sup> /B30/B66; Up to 2 × CA: B2+B2/B5/B12/<br>B13/B29; B4+B4/B5/B12/B13/B29; B7+B5/B7/B12/B26; B25+B5/B12/B25/B26; B30+B5/<br>B12/B29; B66+B5/B12/B13/B29/B66;<br>WCDMA: B2/B4/B5 | LTE-FDD: B2/B4/B5/B7/B12/B13/B25/B26/B29 <sup>2</sup> /B30/B66; Up to 2 × CA: B2+B2/B5/B12/<br>B13/B29; B4+B4/B5/B12/B13/B29; B7+B5/B7/B12/B26; B25+B5/B12/B25/B26; B30+B5/<br>B12/B29; B66+B5/B12/B13/B29/B66;<br>WCDMA: B2/B4/B5                                     |
|                          | -AUTL (Australia)             |                                                                                                                                                                                                                                    | LTE-FDD: B3/B7/B28; Up to 2×CA: B3+B3/B7/B28; B7+B7/B28                                                                                                                                                                                                                |
| Weight (approx.) g       |                               | 6.0                                                                                                                                                                                                                                | 6.7                                                                                                                                                                                                                                                                    |
| Temperature Range        |                               | -40°C ~ +85°C                                                                                                                                                                                                                      | -40°C ~ +85°C                                                                                                                                                                                                                                                          |
| Control via AT Commands  |                               | 3GPP TS27.007 and Quectel Enhanced AT Commands                                                                                                                                                                                     | 3GPP TS27.007 and Quectel Enhanced AT Commands                                                                                                                                                                                                                         |
| Data Transmission        |                               |                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                        |
| LTE                      |                               | LTE-FDD: Max. 300Mbps (DL)/ Max. 50Mbps (UL)<br>LTE-TDD: Max. 226Mbps (DL)/ Max. 28Mbps (UL)                                                                                                                                       | LTE-FDD: Max. 300Mbps (DL)/ Max. 50Mbps (UL)<br>LTE-TDD: Max. 226Mbps (DL)/ Max. 28Mbps (UL)                                                                                                                                                                           |
| UMTS                     |                               | DC-HSDPA: Max. 42Mbps (DL)/ HSUPA: Max. 5.76Mbps (UL)<br>WCDMA: Max. 384Kbps (DL)/ Max. 384Kbps (UL)                                                                                                                               | DC-HSDPA: Max. 42Mbps (DL)/ HSUPA: Max. 5.76Mbps (UL)<br>WCDMA: Max. 384Kbps (DL)/ Max. 384Kbps (UL)                                                                                                                                                                   |
| SMS                      |                               | •                                                                                                                                                                                                                                  | •                                                                                                                                                                                                                                                                      |
| Protocols                |                               | TCP/UDP/FTP/HTTP/HTTPS /PING/SMS                                                                                                                                                                                                   | TCP/UDP/FTP/HTTP/HTTPS /PING/SMS                                                                                                                                                                                                                                       |
| Interfaces               |                               |                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                        |
| USB                      |                               | 2.0/3.0, Slave Mode                                                                                                                                                                                                                | 2.0/3.0, Supports Master* and Slave Modes                                                                                                                                                                                                                              |
| PCM                      |                               | •                                                                                                                                                                                                                                  | •                                                                                                                                                                                                                                                                      |
| I2C                      |                               | × 1                                                                                                                                                                                                                                | × 1                                                                                                                                                                                                                                                                    |
| (U)SIM                   |                               | × 2, 1.8V/ 3.0V                                                                                                                                                                                                                    | 1.8V/ 3.0V                                                                                                                                                                                                                                                             |
| GPIO                     |                               | × 4                                                                                                                                                                                                                                | × 2                                                                                                                                                                                                                                                                    |
| UART                     |                               |                                                                                                                                                                                                                                    | × 3                                                                                                                                                                                                                                                                    |
| ADC                      |                               |                                                                                                                                                                                                                                    | × 2                                                                                                                                                                                                                                                                    |
| SPI                      |                               |                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                        |
| RESET_N                  |                               | •                                                                                                                                                                                                                                  | •                                                                                                                                                                                                                                                                      |
| PCIe                     |                               |                                                                                                                                                                                                                                    | Optional                                                                                                                                                                                                                                                               |
| Antenna                  |                               | × 3                                                                                                                                                                                                                                | × 3                                                                                                                                                                                                                                                                    |
| Enhanced Features        |                               |                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                        |
| MIMO                     |                               | 2 × 2, 4 × 2, DL                                                                                                                                                                                                                   | 2 × 2, 4 × 2, DL                                                                                                                                                                                                                                                       |
| eCall*                   |                               | Emergency Service                                                                                                                                                                                                                  | Emergency Service                                                                                                                                                                                                                                                      |
| BT4.0                    |                               |                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                        |
| Digital Audio            |                               | •                                                                                                                                                                                                                                  | •                                                                                                                                                                                                                                                                      |
| VoLTE                    |                               | Optional                                                                                                                                                                                                                           | Optional                                                                                                                                                                                                                                                               |
| DTMF                     |                               | Dual-tone Multi-frequency                                                                                                                                                                                                          | Dual-tone Multi-frequency                                                                                                                                                                                                                                              |
| DFOTA                    |                               | Delta Firmware over the Air                                                                                                                                                                                                        | Delta Firmware over the Air                                                                                                                                                                                                                                            |
| GNSS                     |                               | GPS/ GLONASS/ BeiDou/ Galileo/ QZSS                                                                                                                                                                                                | GPS/ GLONASS/ BeiDou/ Galileo/ QZSS                                                                                                                                                                                                                                    |
| (U)SIM Card Detection    |                               | •                                                                                                                                                                                                                                  | •                                                                                                                                                                                                                                                                      |
| Electrical Features      |                               |                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                        |
| Supply Voltage Range     |                               | 3.1~4.4 V, 3.3 V Typ.                                                                                                                                                                                                              | 3.3~4.3 V, 3.8V Typ.                                                                                                                                                                                                                                                   |
| Power Consumption        |                               | 3.3mA@Sleep, Typ.<br>32.1mA @Idle                                                                                                                                                                                                  | 10µA @Power off<br>1.5mA @LTE Sleep(PF=128)<br>1.5mA @LTE Sleep(PF=64)<br>18mA @Idle                                                                                                                                                                                   |
| Software Features        |                               |                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                        |
| USB Serial Driver        |                               | Windows 7/8/8.1/10,<br>Linux 2.6/3.x/4.1~4.15,<br>Android 4.x/5.x/6.x/7.x/8.x/9.x                                                                                                                                                  | Windows 7/8/8.1/10,<br>Linux 2.6/3.x/4.1~4.15,<br>Android 4.x/5.x/6.x/7.x/8.x/9.x                                                                                                                                                                                      |
| RIL Driver               |                               | Android 4.x/5.x/6.x/7.x/8.x/9.x                                                                                                                                                                                                    | Android 4.x/5.x/6.x/7.x/8.x/9.x                                                                                                                                                                                                                                        |
| NDIS Driver              |                               | Windows 7/8/8.1/10                                                                                                                                                                                                                 | Windows 7/8/8.1/10                                                                                                                                                                                                                                                     |
| Gobinet Driver           |                               | Linux 2.6/3.x/4.x/5.x                                                                                                                                                                                                              | Linux 2.6/3.x/4.x/5.x                                                                                                                                                                                                                                                  |
| QMI_WWAN Driver          |                               | Linux 3.x (3.4 or later)/4.x/5.x                                                                                                                                                                                                   | Linux 3.x (3.4 or later)/4.1~4.15                                                                                                                                                                                                                                      |
| Certifications           |                               | Telstra/ Deutsche Telekom/ GCF/ CE/ NCC/ RCM/ FCC/ IC/ CCC/ PTCRB/ AT&T/ Verizon/<br>Telus/ Sprint/ Rogers/ Bell (TBD)                                                                                                             | Deutsche Telekom/ Telstra/ GCF/ CE/ KC/ RCM/ FCC/ CCC/ PTCRB/ IC/ AT&T/ Verizon/<br>USCC/ British Telekom                                                                                                                                                              |
| Recommended Applications |                               | Industrial Router, Industrial PDA, Rugged Tablet PC and Digital Signage                                                                                                                                                            |                                                                                                                                                                                                                                                                        |

Note 1: B32 is only for secondary component carrier.  
Note 2: B29 is only for secondary component carrier.

\* Under development

# Quectel LTE-A Module Family

| Product                  |                               | EG12                                                                                                                                         | EG18                                                                                                                                             |
|--------------------------|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
|                          |                               |                                                             |                                                               |
| Form Factor              |                               | LGA                                                                                                                                          | LGA                                                                                                                                              |
| Dimensions (mm)          |                               | 37.0 × 39.5 × 2.8                                                                                                                            | 37.0 × 39.5 × 2.8                                                                                                                                |
| 4G                       |                               | LTE Cat 12                                                                                                                                   | LTE Cat 18                                                                                                                                       |
| Frequency Bands (MHz)    | -EA (EMEA/ Australia/ Brazil) | LTE-FDD: B1/B3/B5/B7/B8/B20/B28<br>LTE-TDD: B38/B40/B41<br>Up to 3 × CA: Intra-band and Inter-band<br>WCDMA: B1/B3/B5/B8                     | LTE-FDD: B1/B3/B5/B7/B8/B20/B28<br>LTE-TDD: B38/B40/B41<br>Up to 3 × CA: Intra-band and Inter-band<br>WCDMA: B1/B3/B5/B8                         |
|                          | -NA (North America)           | LTE-FDD: B2/B4/B5/B7/B12/B13/B14/B25/B26/B29/B30/B66/B71<br>LTE-TDD: B41<br>Up to 3 × CA: Intra-band and Inter-band<br>WCDMA Bands: B2/B4/B5 | LTE-FDD: B2/B4/B5/B7/B12/B13/B14/B17/B25/B26/B29/B30/B66/B71<br>LTE-TDD: B41<br>Up to 5 × CA: Intra-band and Inter-band<br>WCDMA Bands: B2/B4/B5 |
| Weight (approx.) g       |                               | 9                                                                                                                                            | 9                                                                                                                                                |
| Temperature Range        |                               | -40°C ~ +85°C (Extended Temperature)                                                                                                         | -40°C ~ +85°C (Extended Temperature)                                                                                                             |
| Control via AT Commands  |                               | 3GPP TS27.007 and Quectel Enhanced AT Commands                                                                                               | 3GPP TS27.007 and Quectel Enhanced AT Commands                                                                                                   |
| Data Transmission        |                               |                                                                                                                                              |                                                                                                                                                  |
| LTE                      |                               | LTE-FDD: Max. 600Mbps (DL)/ Max. 150Mbps (UL)<br>LTE-TDD: Max. 430Mbps (DL)/ Max. 90Mbps (UL)                                                | LTE-FDD: Max. 1.2Gbps (DL)/ Max. 150Mbps (UL)<br>LTE-TDD: Max. 573Mbps (DL)/ Max. 90Mbps (UL)                                                    |
| UMTS                     |                               | DC-HSDPA: Max. 42Mbps (DL)/ HSUPA: Max. 11.2Mbps (UL)<br>WCDMA: Max. 384Kbps (DL)/ Max. 384Kbps (UL)                                         | DC-HSDPA: Max. 42Mbps (DL)/ HSUPA: Max. 11.2Mbps (UL)<br>WCDMA: Max. 384Kbps (DL)/ Max. 384Kbps (UL)                                             |
| SMS                      |                               | •                                                                                                                                            | •                                                                                                                                                |
| Protocols                |                               | TCP/UDP/FTP/HTTP/HTTPS /PING/SMS                                                                                                             | TCP/UDP/FTP/HTTP/HTTPS /PING/SMS                                                                                                                 |
| Interfaces               |                               |                                                                                                                                              |                                                                                                                                                  |
| USB                      |                               | 2.0/3.0, Slave Mode                                                                                                                          | 2.0/3.0, Slave Mode                                                                                                                              |
| PCM                      |                               | •                                                                                                                                            | •                                                                                                                                                |
| I2C                      |                               | × 1                                                                                                                                          | × 1                                                                                                                                              |
| (U)SIM                   |                               | × 2, 1.8V/ 3.0V                                                                                                                              | × 2, 1.8V/ 3.0V                                                                                                                                  |
| GPIO                     |                               | × 2                                                                                                                                          | × 2                                                                                                                                              |
| UART                     |                               | × 3                                                                                                                                          | × 3                                                                                                                                              |
| ADC                      |                               | × 2                                                                                                                                          | × 2                                                                                                                                              |
| SPI                      |                               | × 1 (Optional)                                                                                                                               | × 1 (Optional)                                                                                                                                   |
| SD Card                  |                               | •                                                                                                                                            | •                                                                                                                                                |
| RESET_N                  |                               | •                                                                                                                                            | •                                                                                                                                                |
| PCIe                     |                               | Optional                                                                                                                                     | Optional                                                                                                                                         |
| Antenna                  |                               | Main, Diversity and GNSS                                                                                                                     | Main, Diversity and GNSS                                                                                                                         |
| Enhanced Features        |                               |                                                                                                                                              |                                                                                                                                                  |
| MIMO                     |                               | 2 × 2, 4 × 2, 4 × 4, DL                                                                                                                      | 2 × 2, 4 × 2, 4 × 4 DL                                                                                                                           |
| eCall                    |                               | •                                                                                                                                            | •                                                                                                                                                |
| BT4.0                    |                               |                                                                                                                                              |                                                                                                                                                  |
| Digital Audio            |                               | •                                                                                                                                            | •                                                                                                                                                |
| VoLTE                    |                               | Optional                                                                                                                                     | Optional                                                                                                                                         |
| DTMF                     |                               | Dual-tone Multi-frequency                                                                                                                    | Dual-tone Multi-frequency                                                                                                                        |
| DFOTA                    |                               | Delta Firmware over the Air                                                                                                                  | Delta Firmware over the Air                                                                                                                      |
| GNSS                     |                               | GPS/ GLONASS/ BeiDou/ Galileo/ QZSS                                                                                                          | GPS/ GLONASS/ BeiDou/ Galileo/ QZSS                                                                                                              |
| (U)SIM Card Detection    |                               | •                                                                                                                                            | •                                                                                                                                                |
| Electrical Features      |                               |                                                                                                                                              |                                                                                                                                                  |
| Supply Voltage Range     |                               | 3.3~4.3 V, 3.8 V Typ.                                                                                                                        | 3.3~4.3 V, 3.8 V Typ.                                                                                                                            |
| Power Consumption        |                               | 20μA @Power off<br>1.83mA @Sleep, Typ.<br>9.41mA @Idle                                                                                       | 20μA @Power off<br>1.81mA @Sleep, Typ.<br>9.38mA @Idle                                                                                           |
| Software Features        |                               |                                                                                                                                              |                                                                                                                                                  |
| USB Serial Driver        |                               | Windows 7/8/8.1/10,<br>Linux 2.6/3.x/4.x/5.x,<br>Android 4.x/5.x/6.x/7.x/8.x/9.x                                                             | Windows 7/8/8.1/10,<br>Linux 2.6/3.x/4.x/5.x,<br>Android 4.x/5.x/6.x/7.x/8.x/9.x                                                                 |
| RIL Driver               |                               | Android 4.x/5.x/6.x/7.x/8.x/9.x                                                                                                              | Android 4.x/5.x/6.x/7.x/8.x/9.x                                                                                                                  |
| NDIS Driver              |                               | Windows 7/8/8.1/10                                                                                                                           | Windows 7/8/8.1/10                                                                                                                               |
| Gobinet Driver           |                               | Linux 2.6/3.x/4.x/5.x                                                                                                                        | Linux 2.6/3.x/4.x/5.x                                                                                                                            |
| QMI_WWAN Driver          |                               | Linux 3.x (3.4 or later)/4.x/5.x                                                                                                             | Linux 3.x (3.4 or later)/4.x/5.x                                                                                                                 |
| Certifications           |                               | CE/ RCM                                                                                                                                      | CE/ RCM/ FCC/ IC/ GCF/ PTCRB/ AT&T/ Verizon/ Telstra/ T-mobile/ USCC*                                                                            |
| Recommended Applications |                               | Industrial Router, Industrial PDA, Rugged Tablet PC and Digital Signage                                                                      |                                                                                                                                                  |

Note 1: LTE-FDD B17 is supported through MFBI+B12.

\* Under development

# Quectel M.2 Module Family

| Product                  |                                  | EM05                                                                                                              | EM06                                                                                                                                                                                                                                                                                                     |
|--------------------------|----------------------------------|-------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                          |                                  |                                  |                                                                                                                                                                                                                       |
| Form Factor              |                                  | M.2                                                                                                               | M.2                                                                                                                                                                                                                                                                                                      |
| Dimensions (mm)          |                                  | 42.0 × 30.0 × 2.3                                                                                                 | 42.0 × 30.0 × 2.3                                                                                                                                                                                                                                                                                        |
| 4G                       |                                  | LTE Cat 4                                                                                                         | LTE Cat 6                                                                                                                                                                                                                                                                                                |
| Frequency Bands (MHz)    | -A (NA)                          |                                                                                                                   | LTE-FDD: B2/B4/B5/B7/B12/B13/B25/B26/B29 <sup>3</sup> /B30/B66<br>LTE-TDD: B41<br>Up to 2 × CA: B2+B2/B5/B12/B13/B29 <sup>3</sup> ; B4+B4/B5/B12/B13/B29 <sup>3</sup> ; B5+B5/B7/B25/B30/B66; B7+B7/B12/B26; B12+B12/B25/B30/B66; B13+B66; B25+B25/B26; B30+B29; B66+B29/B66; B41+B41<br>WCDMA: B2/B4/B5 |
|                          | -E (EMEA/ Australia/New Zealand) | LTE-FDD: B1/B3/B7/B8/B20/B28; LTE-TDD: B38/ B41 WCDMA: B1/B8                                                      | LTE-FDD: B1/B3/B5/B7/B8/B20/B28/B32 <sup>1</sup><br>LTE-TDD: B38/B40/B41<br>Up to 2 × CA: B1+B1/B5/B8/B20/B28; B3+B3/B5/B7/B8/B20/B28; B7+B5/B7/B8/B20/B28; B20+B32 <sup>2</sup> ; B38+B38; B40+B40; B41+B41<br>WCDMA: B1/B3/B5/B8                                                                       |
|                          | -J (Japan)                       |                                                                                                                   | LTE-FDD: B1/B3/B8/B18/B19/B26/B28<br>LTE-TDD: B41<br>Up to 2 × CA: B1+B1/B8/B18/B19/B26/B28; B3+B3/B8/B18/B19/B26/B28; B41+B41<br>WCDMA: B1/B3/B6/B8/B19                                                                                                                                                 |
|                          | -CE (China/Thailand/ India)      | LTE-FDD: B1/B3/B5/B8; LTE-TDD: B38/B39/B40/B41; WCDMA: B1/B8; EVDO/CDMA: BC0                                      |                                                                                                                                                                                                                                                                                                          |
|                          | -CML (China)                     | LTE-TDD: B38/B39/B40/B41                                                                                          |                                                                                                                                                                                                                                                                                                          |
| Weight (approx.) g       |                                  | 6.0                                                                                                               | 6.0                                                                                                                                                                                                                                                                                                      |
| Temperature Range        |                                  | -30°C ~ +70°C (Operation Temperature)<br>-40°C ~ +85°C (Extended Temperature)                                     | -40°C ~ +85°C                                                                                                                                                                                                                                                                                            |
| Control via AT Commands  |                                  | 3GPP TS 27.005, 3GPP TS 27.007 and Quectel Enhanced AT Commands                                                   | 3GPP TS27.007 and Quectel Enhanced AT Commands                                                                                                                                                                                                                                                           |
| Data Transmission        |                                  |                                                                                                                   |                                                                                                                                                                                                                                                                                                          |
| LTE                      |                                  | LTE-FDD: Max. 150Mbps (DL)/ Max. 50Mbps (UL)<br>LTE-TDD: Max. 130Mbps (DL)/ Max. 30Mbps (UL)                      | LTE-FDD: Max. 300Mbps (DL)/ Max. 50Mbps (UL)<br>LTE-TDD: Max. 226Mbps (DL)/ Max. 28Mbps (UL)                                                                                                                                                                                                             |
| UMTS                     |                                  | DC-HSDPA: Max. 42Mbps (DL)/ HSUPA: Max. 5.76Mbps (UL)<br>WCDMA: Max. 384Kbps (DL)/ Max. 384Kbps (UL)              | DC-HSDPA: Max. 42Mbps (DL)/ HSUPA: Max. 5.76Mbps (UL)<br>WCDMA: Max. 384Kbps (DL)/ Max. 384Kbps (UL)                                                                                                                                                                                                     |
| SMS                      |                                  | •                                                                                                                 | •                                                                                                                                                                                                                                                                                                        |
| CDMA2000                 |                                  | EVDO: Max. 3.1Mbps (DL)/ Max. 1.8Mbps (UL)<br>1X Advanced: Max. 307.2Kbps (DL)/ Max. 307.2Kbps (UL)               |                                                                                                                                                                                                                                                                                                          |
| Protocols                |                                  | TCP/ UDP/ PPP/ FTP/ HTTP/ NTP/ PING/ QMI/ NITZ/ SMTP/ MMS/FTPS/ SMTPS/ SSL/FILE                                   | TCP/UDP/FTP/HTTP/HTTPS /PING/SMS                                                                                                                                                                                                                                                                         |
| Interfaces               |                                  |                                                                                                                   |                                                                                                                                                                                                                                                                                                          |
| USB                      |                                  | 2.0 Hi-Speed                                                                                                      | 2.0/3.0*, Slave Mode                                                                                                                                                                                                                                                                                     |
| PCM                      |                                  | •                                                                                                                 | •                                                                                                                                                                                                                                                                                                        |
| I2C                      |                                  | × 1                                                                                                               | × 1                                                                                                                                                                                                                                                                                                      |
| (U)SIM                   |                                  | 1.8V/ 3.0V                                                                                                        | × 2, 1.8V/ 3.0V                                                                                                                                                                                                                                                                                          |
| GPIO                     |                                  | × 1                                                                                                               | × 11                                                                                                                                                                                                                                                                                                     |
| RESET_N                  |                                  | •                                                                                                                 | •                                                                                                                                                                                                                                                                                                        |
| PCIe                     |                                  |                                                                                                                   | Optional                                                                                                                                                                                                                                                                                                 |
| Antenna                  |                                  | Main, Diversity and GNSS                                                                                          | Main, Diversity and GNSS                                                                                                                                                                                                                                                                                 |
| Enhanced Features        |                                  |                                                                                                                   |                                                                                                                                                                                                                                                                                                          |
| MIMO                     |                                  | DL MIMO, support Rx-diversity Antenna                                                                             | 2 × 2, 4 × 2, DL                                                                                                                                                                                                                                                                                         |
| eCall*                   |                                  |                                                                                                                   | Emergency Service                                                                                                                                                                                                                                                                                        |
| BT4.0                    |                                  |                                                                                                                   |                                                                                                                                                                                                                                                                                                          |
| Digital Audio            |                                  | •                                                                                                                 | •                                                                                                                                                                                                                                                                                                        |
| VoLTE                    |                                  |                                                                                                                   | Optional                                                                                                                                                                                                                                                                                                 |
| DTMF                     |                                  |                                                                                                                   | Dual-tone Multi-frequency                                                                                                                                                                                                                                                                                |
| DFOTA                    |                                  | •                                                                                                                 | Delta Firmware over the Air                                                                                                                                                                                                                                                                              |
| GNSS                     |                                  | Optional                                                                                                          | GPS/ GLONASS/ BeiDou/ Galileo/ QZSS                                                                                                                                                                                                                                                                      |
| (U)SIM Card Detection    |                                  | •                                                                                                                 | •                                                                                                                                                                                                                                                                                                        |
| Electrical Features      |                                  |                                                                                                                   |                                                                                                                                                                                                                                                                                                          |
| Supply Voltage Range     |                                  | 3.135V~4.4V, 3.3V Typ.                                                                                            | 3.135~4.4V, 3.7V Typ.                                                                                                                                                                                                                                                                                    |
| Power Consumption        |                                  | 5μA @Power off/ 3.3mA(PF=128) @LTE Sleep/ 20mA @Idle                                                              | 50μA @Power off<br>4.1mA @Sleep, Typ.<br>22.1mA @Idle                                                                                                                                                                                                                                                    |
| Software Features        |                                  |                                                                                                                   |                                                                                                                                                                                                                                                                                                          |
| USB Serial Driver        |                                  | Windows 7/ 8/ 8.1/ 10, Linux 2.6~5.4, Android 4.x/ 5.x/ 6.x/7.x/9.x                                               | Windows 7/8/8.1/10, Linux 2.6/3.x/4.1~4.15, Android 4.x/5.x/6.x/7.x/8.x/9.x                                                                                                                                                                                                                              |
| GNSS Driver              |                                  | Android 4.x/5.x/6.x/7.x/8.x/9.x                                                                                   |                                                                                                                                                                                                                                                                                                          |
| RIL Driver               |                                  | Android 4.x/5.x/6.x/7.x/8.x/9.x                                                                                   | Android 4.x/5.x/6.x/7.x/8.x/9.x                                                                                                                                                                                                                                                                          |
| MBIM Driver              |                                  | Windows 8/8.1/10, Linux3.18~5.4                                                                                   |                                                                                                                                                                                                                                                                                                          |
| NDIS Driver              |                                  | Windows 7/8/8.1/10                                                                                                | Windows 7/8/8.1/10                                                                                                                                                                                                                                                                                       |
| Gobinet Driver           |                                  | Linux 2.6~5.4                                                                                                     | Linux 2.6/3.x/4.x/5.x                                                                                                                                                                                                                                                                                    |
| QMI_WWAN Driver          |                                  | Linux 3.4~5.4                                                                                                     | Linux 3.x (3.4 or later)/4.x/5.x                                                                                                                                                                                                                                                                         |
| Certifications           |                                  | CCC/ SRRC/ NAL/ CE/ RCM                                                                                           | GCF/ CE/ NCC/ RCM/ ICASA/ FCC/ PTCRB/ IC/ WHQL/ Verizon/ AT&T/ Telstra/ Deutsche Telekom/ KDDI/ JATE/ TELEC/ Sprint/ KC                                                                                                                                                                                  |
| Recommended Applications |                                  | Consumer laptops, Industrial laptops, Industrial routers, Industrial PDAs, rugged tablet PCs and digital signage. |                                                                                                                                                                                                                                                                                                          |

Note 1: B32 is only for secondary component carrier.

Note 2: B29 is only for secondary component carrier.

Note 3: means LTE-FDD B29 and B32 support receiving only, and are only for secondary component carrier in 2×CA.

\* Under development

# Quectel M.2 Module Family

| Product                  |             | EM12                                                                                                                                                                                                                                                                   | EM160R-GL                                                                                                                                                                                                                          |
|--------------------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                          |             |                                                                                                                                                                                       |                                                                                                                                                 |
| Form Factor              |             | M.2                                                                                                                                                                                                                                                                    | M.2                                                                                                                                                                                                                                |
| Dimensions (mm)          |             | 42.0 × 30.0 × 2.3                                                                                                                                                                                                                                                      | 42.0 × 30.0 × 2.3                                                                                                                                                                                                                  |
| 4G                       |             | LTE Cat 12                                                                                                                                                                                                                                                             | LTE Cat 16                                                                                                                                                                                                                         |
| Frequency Bands (MHz)    | -G (Global) | LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B9/B12/B13/B14/B17/B18/B19/B20/B21/B25/B26/B28/B29/B30/B32/B66;<br>LTE-TDD: B38/B39/B40/B41<br>Up to 3 × CA : Intra-band and Inter-band, B1+3+5/7/8/19/20/28, B2+4+5, B2+4+13, B2+5+30, B2+12+30, etc<br>WCDMA: B1/B2/B3/B4/B5/B8/B9/B19 | LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B12/B13/B14/B17/B18/B19/B20/B25/B26/B28/B29/B30/B32/B66;<br>LTE-TDD: B38/B39/B40/B41/B42/B43/B46 <sup>*</sup> /B48(CBRS);<br>Up to 5 × CA: Intra-band and Inter-band<br>WCDMA: B1/B2/B3/B5/B6/B8/B19 |
| Weight (approx.) g       |             | 6.0                                                                                                                                                                                                                                                                    | 6.0                                                                                                                                                                                                                                |
| Temperature Range        |             | -40°C ~ +85°C (Extended Temperature)                                                                                                                                                                                                                                   | -40°C ~ +85°C                                                                                                                                                                                                                      |
| Control via AT Commands  |             | 3GPP TS27.007 and Quectel Enhanced AT Commands                                                                                                                                                                                                                         | 3GPP TS27.007 and Quectel Enhanced AT Commands                                                                                                                                                                                     |
| Data Transmission        |             |                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                    |
| LTE                      |             | LTE-FDD: Max. 600Mbps (DL)/ Max. 150Mbps (UL)<br>LTE-TDD: Max. 408Mbps (DL)/ Max. 90Mbps (UL)                                                                                                                                                                          | LTE-FDD: Max. 1.0Gbps (DL)/ Max. 150Mbps (UL)<br>LTE-TDD: Max. 880Mbps (DL)/ Max. 90Mbps (UL)                                                                                                                                      |
| UMTS                     |             | DC-HSDPA: Max. 42Mbps (DL)/ HSUPA: Max. 11.2Mbps (UL)<br>WCDMA: Max. 384Kbps (DL)/ Max. 384Kbps (UL)                                                                                                                                                                   | DC-HSDPA: Max. 42Mbps (DL)/ HSUPA: Max. 11.2Mbps (UL)<br>WCDMA: Max. 384Kbps (DL)/ Max. 384Kbps (UL)                                                                                                                               |
| SMS                      |             | •                                                                                                                                                                                                                                                                      | •                                                                                                                                                                                                                                  |
| Protocols                |             | TCP/UDP/FTP/HTTP/HTTPS /PING/SMS                                                                                                                                                                                                                                       | TCP/UDP/FTP/HTTP/HTTPS /PING/SMS                                                                                                                                                                                                   |
| Interfaces               |             |                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                    |
| USB                      |             | 2.0/3.0, Slave Mode                                                                                                                                                                                                                                                    | 2.0/3.0, Slave Mode                                                                                                                                                                                                                |
| PCM                      |             | •                                                                                                                                                                                                                                                                      | •                                                                                                                                                                                                                                  |
| I2C                      |             | × 1                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                    |
| (U)SIM                   |             | × 2, 1.8V/ 3.0V                                                                                                                                                                                                                                                        | × 2, 1.8V/ 3.0V                                                                                                                                                                                                                    |
| GPIO                     |             | × 11                                                                                                                                                                                                                                                                   | MIPI interface                                                                                                                                                                                                                     |
| RESET_N                  |             | •                                                                                                                                                                                                                                                                      | •                                                                                                                                                                                                                                  |
| PCIe                     |             | Optional                                                                                                                                                                                                                                                               | PCIe Gen2                                                                                                                                                                                                                          |
| Antenna                  |             | Main, Diversity and GNSS                                                                                                                                                                                                                                               | Main, Diversity and GNSS, MIMO × 2                                                                                                                                                                                                 |
| Enhanced Features        |             |                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                    |
| MIMO                     |             | 4 × 2, 2 × 2, DL                                                                                                                                                                                                                                                       | 2 × 2, 4 × 2, 4 × 4 DL                                                                                                                                                                                                             |
| eCall*                   |             | Emergency Service                                                                                                                                                                                                                                                      | Emergency Service                                                                                                                                                                                                                  |
| Digital Audio            |             | •                                                                                                                                                                                                                                                                      | •                                                                                                                                                                                                                                  |
| VoLTE                    |             | Optional                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                    |
| DTMF                     |             | Dual-tone Multi-frequency                                                                                                                                                                                                                                              | Dual-tone Multi-frequency                                                                                                                                                                                                          |
| DFOTA                    |             | Delta Firmware over the Air                                                                                                                                                                                                                                            | Delta Firmware over the Air                                                                                                                                                                                                        |
| GNSS                     |             | GPS/ GLONASS/ BeiDou/ Galileo/ QZSS                                                                                                                                                                                                                                    | GPS/ GLONASS/ BeiDou/ Galileo/ QZSS                                                                                                                                                                                                |
| (U)SIM Card Detection    |             | •                                                                                                                                                                                                                                                                      | •                                                                                                                                                                                                                                  |
| Electrical Features      |             |                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                    |
| Supply Voltage Range     |             | 3.135~4.4V, 3.7V Typ.                                                                                                                                                                                                                                                  | 3.135~4.4V, 3.7V Typ.                                                                                                                                                                                                              |
| Power Consumption        |             | 56µA @Power off<br>3.7mA @Sleep, Typ.<br>10.3mA @Idle                                                                                                                                                                                                                  | TBD @Power off<br>TBD @Sleep, Typ.<br>TBD @Idle                                                                                                                                                                                    |
| Software Features        |             |                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                    |
| USB Serial Driver        |             | Windows 7/8/8.1/10,<br>Linux 2.6/3.x/4.1~4.15,<br>Android 4.x/5.x/6.x/7.x/8.x/9.x                                                                                                                                                                                      | Windows 7/8/8.1/10,<br>Linux 2.6/3.x/4.x/5.x,<br>Android 4.x/5.x/6.x/7.x/8.x/9.x                                                                                                                                                   |
| RIL Driver               |             | Android 4.x/5.x/6.x/7.x/8.x/9.x                                                                                                                                                                                                                                        | Android 4.x/5.x/6.x/7.x/8.x/9.x                                                                                                                                                                                                    |
| NDIS Driver              |             | Windows 7/8/8.1/10                                                                                                                                                                                                                                                     | Windows 7/8/8.1/10                                                                                                                                                                                                                 |
| Gobinet Driver           |             | Linux 2.6/3.x/4.x/5.x                                                                                                                                                                                                                                                  | Linux 2.6/3.x/4.x/5.x                                                                                                                                                                                                              |
| QMI_WWAN Driver          |             | Linux 3.x (3.4 or later)/4.x/5.x                                                                                                                                                                                                                                       | Linux 3.x (3.4 or later)/4.x/5.x                                                                                                                                                                                                   |
| PCIe Driver              |             |                                                                                                                                                                                                                                                                        | Linux 3.x/4.x/5.x                                                                                                                                                                                                                  |
| Certifications           |             | CE/ FCC/ IC/ NCC/ RCM/ ICASA/ WHQL/JETE/ TELECOM/ GCF/ PTCRB/ Telstra/ AT&T/ Verizon/ Telefonica*                                                                                                                                                                      | CE/ FCC/ IC/ WHQL/ JETE/ TELECOM/ GCF/ PTCRB/ Telstra/ AT&T/ Verizon/ Telefonica*                                                                                                                                                  |
| Recommended Applications |             | Consumer laptops, Industrial laptops, Industrial routers, Industrial PDAs, rugged tablet PCs and digital signage.                                                                                                                                                      |                                                                                                                                                                                                                                    |

Note 1: B32 is only for secondary component carrier.  
Note 2: B29 is only for secondary component carrier.  
Note 3: B46 is only for secondary component carrier.

\* Under development

# Quectel LTE Module Family

| Product                        |                   | EC20 R2.1                                                                                                                                                              | EC20 R2.1 Mini PCIe                                                                                                       |
|--------------------------------|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
|                                |                   |                                                                                       |                                        |
| Form Factor                    |                   | LCC                                                                                                                                                                    | Mini PCIe                                                                                                                 |
| Dimensions (mm)                |                   | 32.0 × 29.0 × 2.4                                                                                                                                                      | 51.0 × 30.0 × 4.9                                                                                                         |
| LTE Category                   |                   | LTE Cat 4                                                                                                                                                              | LTE Cat 4                                                                                                                 |
| Frequency Bands (MHz)          | -CE (China/India) | LTE-FDD: B1/B3/B5/B8<br>LTE-TDD: B34/B38/B39/B40/B41<br>WCDMA: B1/B8<br>TD-SCDMA: B34/B39<br>EVDO/CDMA: BC0<br>GSM: B3/B8                                              | LTE-FDD: B1/B3/B5/B8<br>LTE-TDD: B34/B38/B39/B40/B41<br>WCDMA: B1/B8<br>TD-SCDMA: B34/B39<br>EVDO/CDMA: BC0<br>GSM: B3/B8 |
| Weight (approx.) g             |                   | 5.3                                                                                                                                                                    | 10.6                                                                                                                      |
| Working Temperature Range      |                   | -35°C ~ +75°C                                                                                                                                                          | -35°C ~ +75°C                                                                                                             |
| Extended Temperature Range     |                   | -40°C ~ +85°C                                                                                                                                                          | -40°C ~ +80°C                                                                                                             |
| Data Transmission              |                   |                                                                                                                                                                        |                                                                                                                           |
| LTE data rate (Mbps)           |                   | LTE-FDD: Max. 150 (DL)/ Max. 50 (UL)<br>LTE-TDD: Max. 130 (DL)/ Max. 30 (UL)                                                                                           | LTE-FDD: Max. 150 (DL)/ Max. 50 (UL)<br>LTE-TDD: Max. 130 (DL)/ Max. 30 (UL)                                              |
| DC-HSPA+ data rate (Mbps)      |                   | Max. 42 (DL)/ Max. 5.76 (UL)                                                                                                                                           | Max. 42 (DL)/ Max. 5.76 (UL)                                                                                              |
| WCDMA data rate (Kbps)         |                   | Max. 384 (DL)/ Max. 384 (UL)                                                                                                                                           | Max. 384 (DL)/ Max. 384 (UL)                                                                                              |
| TD-SCDMA data rate (Mbps)      |                   | Max. 4.2 (DL)/ Max. 2.2 (UL)                                                                                                                                           | Max. 4.2 (DL)/ Max. 2.2 (UL)                                                                                              |
| EVDO data rate (Mbps)          |                   | Max. 3.1 (DL)/ Max. 1.8 (UL)                                                                                                                                           | Max. 3.1 (DL)/ Max. 1.8 (UL)                                                                                              |
| CDMA2000 data rate (Kbps)      |                   | Max. 307.2 (DL)/ Max. 307.2(UL)                                                                                                                                        | Max. 307.2 (DL)/ Max. 307.2(UL)                                                                                           |
| EDGE data rate (Kbps)          |                   | Max. 296 (DL)/ Max. 236.8 (UL)                                                                                                                                         | Max. 296 (DL)/ Max. 236.8 (UL)                                                                                            |
| GPRS data rate (Kbps)          |                   | Max. 107 (DL)/ Max. 85.6 (UL)                                                                                                                                          | Max. 107 (DL)/ Max. 85.6 (UL)                                                                                             |
| SMS                            |                   | •                                                                                                                                                                      | •                                                                                                                         |
| CSD                            |                   | •                                                                                                                                                                      | •                                                                                                                         |
| Protocols                      |                   | TCP/ UDP/ PPP/ FTP/ HTTP/ NTP/ PING/ QMI/ NITZ/ CMUX/ HTTPS/ SMTP/ MMS/ FTPS/ SMTPS/ SSL/ FILE                                                                         | TCP/ UDP/ PPP/ FTP/ HTTP/ NTP/ PING/ QMI/ NITZ/ CMUX/ HTTPS/ SMTP/ MMS/ FTPS/ SMTPS/ SSL/ FILE                            |
| Interfaces                     |                   |                                                                                                                                                                        |                                                                                                                           |
| (U)SIM                         |                   | 1.8V/ 3.0V                                                                                                                                                             | 1.8V/ 3.0V                                                                                                                |
| UART                           |                   | 2                                                                                                                                                                      | 1                                                                                                                         |
| USB                            |                   | USB 2.0 (Hi-Speed)                                                                                                                                                     | USB 2.0 (Hi-Speed)                                                                                                        |
| IIC                            |                   | •                                                                                                                                                                      | Optional                                                                                                                  |
| Audio Digital (PCM)            |                   | •                                                                                                                                                                      | Optional                                                                                                                  |
| SD                             |                   | •                                                                                                                                                                      |                                                                                                                           |
| SGMII                          |                   | •                                                                                                                                                                      |                                                                                                                           |
| ADC                            |                   | × 2, 15bits                                                                                                                                                            |                                                                                                                           |
| Antenna                        |                   | Pads for Primary, Rx-diversity and GNSS                                                                                                                                | Pads for Primary, Rx-diversity and GNSS                                                                                   |
| Enhanced Features              |                   |                                                                                                                                                                        |                                                                                                                           |
| DTMF                           |                   | •                                                                                                                                                                      | •                                                                                                                         |
| DFOTA                          |                   | •                                                                                                                                                                      | •                                                                                                                         |
| QMI/ RmNet                     |                   | •                                                                                                                                                                      | •                                                                                                                         |
| Audio Playback/Audio Recording |                   | Optional                                                                                                                                                               | Optional                                                                                                                  |
| QuecFile                       |                   | •                                                                                                                                                                      |                                                                                                                           |
| USB Serial Driver              |                   | Windows 7/ 8/ 8.1/ 10, Linux 2.6~5.4, Android 4.x/ 5.x/ 6.x/ 7.x/ 9.x                                                                                                  | Windows 7/ 8/ 8.1/ 10, Linux 2.6~5.4, Android 4.x/ 5.x/ 6.x/ 7.x/ 9.x                                                     |
| GNSS Driver                    |                   | Android 4.x/ 5.x/ 6.x/ 7.x/ 8.x/ 9.x                                                                                                                                   | Android 4.x/ 5.x/ 6.x/ 7.x/ 8.x/ 9.x                                                                                      |
| RIL Driver                     |                   | Android 4.x/ 5.x/ 6.x/ 7.x/ 8.x/ 9.x                                                                                                                                   | Android 4.x/ 5.x/ 6.x/ 7.x/ 8.x/ 9.x                                                                                      |
| NDIS Driver                    |                   | Windows 7/ 8/ 8.1/ 10                                                                                                                                                  | Windows 7/ 8/ 8.1/ 10                                                                                                     |
| MBIM Driver                    |                   | Windows 8/ 8.1/ 10, Linux 3.8~5.4                                                                                                                                      | Windows 8/ 8.1/ 10, Linux 3.8~5.4                                                                                         |
| GobiNet Driver                 |                   | Linux 2.6~5.4                                                                                                                                                          | Linux 2.6~5.4                                                                                                             |
| QMI_VWAN Driver                |                   | Linux 3.4~5.4                                                                                                                                                          | Linux 3.4~5.4                                                                                                             |
| (U)SIM Card Detection          |                   | •                                                                                                                                                                      | •                                                                                                                         |
| GNSS                           |                   | Optional                                                                                                                                                               | Optional                                                                                                                  |
| Firmware Update                |                   | Via USB/DFOTA                                                                                                                                                          | Via USB/DFOTA                                                                                                             |
| Electrical Features            |                   |                                                                                                                                                                        |                                                                                                                           |
| Supply Voltage Range           |                   | 3.3V~4.3 V, 3.8V Typ.                                                                                                                                                  | 3.0V~3.6 V, 3.3V Typ.                                                                                                     |
| Power Consumption              |                   | 11µA @Power off/ 1.5mA @Sleep (PF=256), Typ. / 20mA @Idle                                                                                                              | 4mA @Sleep (PF=128), 3.7mA@Sleep (PF=256), Typ. / 30mA @Idle                                                              |
| Certifications                 |                   | Regulatory Certification: NAL/ SRRC/ CCC (China)                                                                                                                       | Regulatory Certification: NAL/ SRRC/ CCC (China)                                                                          |
| Recommended Applications       |                   | Telematics, Smart Metering, Mobile POS Terminal, Gateway, Safety, Tracking and Tracing, Remote Maintenance and Control, Networking, Mobile Computing, Healthcare, etc. |                                                                                                                           |

\* Under development

# Quectel LTE Module Family

| Product                        |                                | EC21/EC21 Mini PCIe                                                                                                                                                                                                                                                                   | EC25/EC25 Mini PCIe                                                                                                                                                                                                                                                                                                                     |
|--------------------------------|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                |                                |                                                                                                                                                                                                      |                                                                                                                                                                                                                                                      |
| Form Factor                    |                                | LCC (EC21), Mini PCIe (EC21 Mini PCIe)                                                                                                                                                                                                                                                | LCC (EC25), Mini PCIe (EC25 Mini PCIe)                                                                                                                                                                                                                                                                                                  |
| Dimensions (mm)                |                                | 32.0 × 29.0 × 2.4 (EC21)<br>51.0 × 30.0 × 4.9 (EC21 Mini PCIe)                                                                                                                                                                                                                        | 32.0 × 29.0 × 2.4 (EC25)<br>51.0 × 30.0 × 4.9 (EC25 Mini PCIe)                                                                                                                                                                                                                                                                          |
| LTE Category                   |                                | LTE Cat 1                                                                                                                                                                                                                                                                             | LTE Cat 4                                                                                                                                                                                                                                                                                                                               |
| Frequency Bands(MHz)           | -E (EMEA/Korea/Thailand/India) | -E (EMEA/Thailand/India)<br>LTE-FDD: B1/B3/B5/B7/B8/B20;<br>WCDMA: B1/B5/B8; GSM: B3/B8                                                                                                                                                                                               | -E (EMEA/Korea/Thailand/India)<br>LTE-FDD: B1/B3/B5/B7/B8/B20; LTE-TDD: B38/B40/B41;<br>WCDMA: B1/B5/B8; GSM: B3/B8                                                                                                                                                                                                                     |
|                                | -EU (EMEA/Thailand)            | LTE-FDD: B1/B3/B7/B8/B20/B28A;<br>WCDMA: B1/B8; GSM: B3/B8                                                                                                                                                                                                                            | LTE-FDD: B1/B3/B7/B8/B20/B28A;<br>LTE-TDD: B38/B40/B41; WCDMA: B1/B8 ; GSM: B3/B8                                                                                                                                                                                                                                                       |
|                                | -EUX (EMEA/Thailand)           | LTE-FDD: B1/B3/B7/B8/B20/B28A;<br>WCDMA: B1/B8; GSM: B3/B8                                                                                                                                                                                                                            | LTE-FDD: B1/B3/B7/B8/B20/B28A;<br>LTE-TDD: B38/B40/B41; WCDMA: B1/B8 ; GSM: B3/B8                                                                                                                                                                                                                                                       |
|                                | -V (Verizon)                   | LTE-FDD: B4/B13                                                                                                                                                                                                                                                                       | LTE-FDD: B4/B13                                                                                                                                                                                                                                                                                                                         |
|                                | -A (AT&T/T-Mobile/Canada)      | LTE-FDD: B2/B4/B12; WCDMA: B2/B4/B5                                                                                                                                                                                                                                                   | LTE-FDD: B2/B4/B12; WCDMA: B2/B4/B5                                                                                                                                                                                                                                                                                                     |
|                                | -AF (AT&T/ Verizon/T-mobile)   |                                                                                                                                                                                                                                                                                       | LTE-FDD: B2/B4/B5/B12/B13/B14/B66/B71; WCDMA: B2/B4/B5                                                                                                                                                                                                                                                                                  |
|                                | -AFX (AT&T/ Verizon/T-mobile)  |                                                                                                                                                                                                                                                                                       | LTE-FDD: B2/B4/B5/B12/B13/B14/B66/B71; WCDMA: B2/B4/B5                                                                                                                                                                                                                                                                                  |
|                                | -MX (Mexico)                   |                                                                                                                                                                                                                                                                                       | LTE-FDD: B2/B4/B5/B7/B28/B66; WCDMA: B2/B4/B5                                                                                                                                                                                                                                                                                           |
|                                | -AU (Latin America/ANZ)        | LTE-FDD: B1/B2 <sup>2</sup> /B3/B4/B5/B7/B8/B28; LTE-FDD: B40;<br>WCDMA: B1/B2/B5/B8; GSM: B2/B3/B5/B8                                                                                                                                                                                | LTE-FDD: B1/B2 <sup>2</sup> /B3/B4/B5/B7/B8/B28; LTE-TDD: B40;<br>WCDMA: B1/B2/B5/B8; GSM: B2/B3/B5/B8                                                                                                                                                                                                                                  |
|                                | -AUX (Latin America/ANZ)       | LTE-FDD: B1/B2 <sup>2</sup> /B3/B4/B5/B7/B8/B28; LTE-TDD: B40;<br>WCDMA: B1/B2/B4/B5/B8; GSM: B2/B3/B5/B8                                                                                                                                                                             | LTE-FDD: B1/B2 <sup>2</sup> /B3/B4/B5/B7/B8/B28; LTE-TDD: B40;<br>WCDMA: B1/B2/B4/B5/B8 ; GSM: B2/B3/B5/B8                                                                                                                                                                                                                              |
|                                | -AUT (Australia) <sup>1</sup>  | LTE-FDD: B1/B3/B5/B7/B28; WCDMA: B1/B5                                                                                                                                                                                                                                                | LTE-FDD: B1/B3/B5/B7/B28; WCDMA: B1/B5                                                                                                                                                                                                                                                                                                  |
|                                | -AUTL (Australia) <sup>1</sup> |                                                                                                                                                                                                                                                                                       | LTE-FDD: B3/B7/B28                                                                                                                                                                                                                                                                                                                      |
| Weight (approx.) g             |                                | 4.9 (EC21)<br>9.8 (EC21 Mini PCIe)                                                                                                                                                                                                                                                    | 4.9 (EC25)<br>9.8 (EC25 Mini PCIe)                                                                                                                                                                                                                                                                                                      |
| Working Temperature Range      |                                | -35°C ~ +75°C                                                                                                                                                                                                                                                                         | -35°C ~ +75°C                                                                                                                                                                                                                                                                                                                           |
| Extended Temperature Range     |                                | -40°C ~ +85°C (EC21)<br>-40°C ~ +80°C (EC21 Mini PCIe)                                                                                                                                                                                                                                | -40°C ~ +85°C (EC25)<br>-40°C ~ +80°C (EC25 Mini PCIe)                                                                                                                                                                                                                                                                                  |
| Data Transmission              |                                |                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                         |
| LTE data rate (Mbps)           |                                | LTE-FDD: Max. 10 (DL) / Max. 5 (UL); LTE-TDD: Max. 8.96 (DL) / Max. 3.1 (UL)                                                                                                                                                                                                          | LTE-FDD: Max. 150 (DL) / Max. 50 (UL); LTE-TDD: Max. 130 (DL) / Max. 30 (UL)                                                                                                                                                                                                                                                            |
| DC-HSPA+ data rate (Mbps)      |                                | Max. 42 (DL)/ Max. 5.76 (UL)                                                                                                                                                                                                                                                          | Max. 42 (DL)/ Max. 5.76 (UL)                                                                                                                                                                                                                                                                                                            |
| WCDMA data rate (Kbps)         |                                | Max. 384 (DL)/ Max. 384 (UL)                                                                                                                                                                                                                                                          | Max. 384 (DL)/ Max. 384 (UL)                                                                                                                                                                                                                                                                                                            |
| EDGE data rate (Kbps)          |                                | Max. 296 (DL)/ Max. 236.8 (UL)                                                                                                                                                                                                                                                        | Max. 296 (DL)/ Max. 236.8 (UL)                                                                                                                                                                                                                                                                                                          |
| GPRS data rate (Kbps)          |                                | Max. 107 (DL)/ Max. 85.6 (UL)                                                                                                                                                                                                                                                         | Max. 107 (DL)/ Max. 85.6 (UL)                                                                                                                                                                                                                                                                                                           |
| SMS                            |                                | •                                                                                                                                                                                                                                                                                     | •                                                                                                                                                                                                                                                                                                                                       |
| CSD                            |                                | •                                                                                                                                                                                                                                                                                     | •                                                                                                                                                                                                                                                                                                                                       |
| Protocols                      |                                | TCP/ UDP/ PPP/ FTP/ HTTP/ NTP/ PING/ QMI/ HTTPS/ SMTP/ MMS'/ FTPS'/ SMTPS/ SSL                                                                                                                                                                                                        | TCP/ UDP/ PPP/ FTP/ HTTP/ NTP/ PING/ QMI/ HTTPS/ SMTP/ MMS'/ FTPS'/ SMTPS/ SSL                                                                                                                                                                                                                                                          |
| Interfaces                     |                                |                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                         |
| (U)SIM                         |                                | 1.8V/ 3.0V                                                                                                                                                                                                                                                                            | 1.8V/ 3.0V                                                                                                                                                                                                                                                                                                                              |
| UART                           |                                | 2 (EC21)<br>1 (EC21 Mini PCIe)                                                                                                                                                                                                                                                        | 2 (EC25)<br>1 (EC25 Mini PCIe)                                                                                                                                                                                                                                                                                                          |
| USB                            |                                | USB 2.0 (Hi-Speed)                                                                                                                                                                                                                                                                    | USB 2.0 (Hi-Speed)                                                                                                                                                                                                                                                                                                                      |
| IIC                            |                                | •                                                                                                                                                                                                                                                                                     | •                                                                                                                                                                                                                                                                                                                                       |
| Audio Digital (PCM)            |                                | Optional                                                                                                                                                                                                                                                                              | Optional                                                                                                                                                                                                                                                                                                                                |
| SD                             |                                | • (EC21)                                                                                                                                                                                                                                                                              | • (EC25)                                                                                                                                                                                                                                                                                                                                |
| ADC                            |                                | × 2, 15bits (EC21)                                                                                                                                                                                                                                                                    | × 2, 15bits (EC25)                                                                                                                                                                                                                                                                                                                      |
| SGMII                          |                                | • (EC21)                                                                                                                                                                                                                                                                              | • (EC25)                                                                                                                                                                                                                                                                                                                                |
| GPIO                           |                                | • (Only Supported on QuecOpen <sup>®</sup> )                                                                                                                                                                                                                                          | • (Only Supported on QuecOpen <sup>®</sup> )                                                                                                                                                                                                                                                                                            |
| Antenna                        |                                | Pads for Primary, Rx-diversity and GNSS                                                                                                                                                                                                                                               | Pads for Primary, Rx-diversity and GNSS                                                                                                                                                                                                                                                                                                 |
| Enhanced Features              |                                |                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                         |
| eCall <sup>*</sup>             |                                | •                                                                                                                                                                                                                                                                                     | •                                                                                                                                                                                                                                                                                                                                       |
| DTMF                           |                                | •                                                                                                                                                                                                                                                                                     | •                                                                                                                                                                                                                                                                                                                                       |
| DFOTA                          |                                | •                                                                                                                                                                                                                                                                                     | •                                                                                                                                                                                                                                                                                                                                       |
| QM/RmNet                       |                                | •                                                                                                                                                                                                                                                                                     | •                                                                                                                                                                                                                                                                                                                                       |
| Audio Playback/Audio Recording |                                | Optional                                                                                                                                                                                                                                                                              | Optional                                                                                                                                                                                                                                                                                                                                |
| QuecFile                       |                                | •                                                                                                                                                                                                                                                                                     | •                                                                                                                                                                                                                                                                                                                                       |
| USB Serial Driver              |                                | Windows 7/ 8/ 8.1/ 10, Linux 2.6~5.4, Android 4.x/ 5.x/ 6.x/7.x/9.x                                                                                                                                                                                                                   | Windows 7/ 8/ 8.1/ 10, Linux 2.6~5.4, Android 4.x/ 5.x/ 6.x/7.x/9.x                                                                                                                                                                                                                                                                     |
| GNSS Driver                    |                                | Android 4.x/ 5.x/ 6.x/ 7.x/8.x/9.x                                                                                                                                                                                                                                                    | Android 4.x/ 5.x/ 6.x/ 7.x/8.x/9.x                                                                                                                                                                                                                                                                                                      |
| RIL Driver                     |                                | Android 4.x/ 5.x/ 6.x/ 7.x/8.x/9.x                                                                                                                                                                                                                                                    | Android 4.x/ 5.x/ 6.x/ 7.x/8.x/9.x                                                                                                                                                                                                                                                                                                      |
| NDIS Driver                    |                                | Windows 7/ 8/ 8.1/ 10                                                                                                                                                                                                                                                                 | Windows 7/ 8/ 8.1/ 10                                                                                                                                                                                                                                                                                                                   |
| MBIM Driver                    |                                | Windows 8/ 8.1/ 10, Linux 3.8~5.4                                                                                                                                                                                                                                                     | Windows 8/ 8.1/ 10, Linux 3.8~5.4                                                                                                                                                                                                                                                                                                       |
| GobiNet Driver                 |                                | Linux 2.6~5.4                                                                                                                                                                                                                                                                         | Linux 2.6~5.4                                                                                                                                                                                                                                                                                                                           |
| QMI_WWAN Driver                |                                | Linux 3.4~5.4                                                                                                                                                                                                                                                                         | Linux 3.4~5.4                                                                                                                                                                                                                                                                                                                           |
| (U)SIM Card Detection          |                                | •                                                                                                                                                                                                                                                                                     | •                                                                                                                                                                                                                                                                                                                                       |
| GNSS                           |                                | Optional                                                                                                                                                                                                                                                                              | Optional                                                                                                                                                                                                                                                                                                                                |
| Firmware Update                |                                | Via USB/DFOTA                                                                                                                                                                                                                                                                         | Via USB/DFOTA                                                                                                                                                                                                                                                                                                                           |
| Electrical Features            |                                |                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                         |
| Supply Voltage Range           |                                | 3.3V~4.3V, 3.8V Typ. (EC21); 3.0V~3.6V, 3.3V Typ. (EC21 Mini PCIe)                                                                                                                                                                                                                    | 3.3V~4.3V, 3.8V Typ. (EC25); 3.0V~3.6V, 3.3V Typ. (EC25 Mini PCIe)                                                                                                                                                                                                                                                                      |
| Power Consumption              |                                | 20µA @Power off/ 3mA @Sleep, Typ. / 22mA @Idle (EC21)<br>3.5mA @Sleep, Typ. / 34mA @Idle (EC21 Mini PCIe)                                                                                                                                                                             | 20µA @Power off/ 3mA @Sleep, Typ. / 22mA @Idle (EC25)<br>3.6mA @Sleep, Typ. / 35mA @Idle (EC25 Mini PCIe)                                                                                                                                                                                                                               |
| Certifications                 |                                | Carrier Certification: Vodafone/ Deutsche Telekom/ British Telecom/ Telefónica/Verizon/ AT&T/ T-Mobile/ U.S. Cellular/ Rogers/ SKT/ KT/ NTT DOCOMO/ SoftBank/ KDDI/ Telstra<br>Regulatory Certification: GCF/ CE/ FCC/ PTCRB/ IC/ Anatel/ KC/ NCC/ JATE/ TELEC/ RCM/ FAC Others: WHQL | Carrier Certification: Vodafone/ Deutsche Telekom/ British Telecom/ Telefónica/ Verizon/ AT&T/ T-Mobile/ U.S. Cellular/ Rogers/ Telus/ NTT DOCOMO/ SoftBank/ KDDI/ Bell/ SKT/ LGU+/ Telstra <sup>*</sup><br>Regulatory Certification: GCF/ CE/ FCC/ PTCRB/ IC/ Anatel/ KC/ NCC/ JATE/ TELEC/ RCM/ FAC/ NBTC/ ICASA/ IFETEL Others: WHQL |
| Recommended Applications       |                                | Telematics, Smart Metering, Mobile POS Terminal, Gateway, Safety, Tracking and Tracing, Remote Maintenance and Control, Networking, Mobile Computing, Healthcare, etc.                                                                                                                |                                                                                                                                                                                                                                                                                                                                         |

Note 1: Inapplicable to Mini PCIe.

Note 2: Rx-diversity not supported.  
GNSS antenna not supported on EC25-MX/EC21-KL.

\* Under development

# Quectel LTE Module Family

| Product                        | EG91                                                                                                                                                                                           | EG95                                                                                                                                                                      | EG25-G/ EG25-G Mini PCIe                                                                                                                                                                                                                                          | EG21-G/EG21-G Mini PCIe                                                                                                                                                                                                  |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                |                                                                                                               |                                                                                          |                                                                                                                                                                                 |                                                                                                                                       |
| Form Factor                    | LGA                                                                                                                                                                                            | LGA                                                                                                                                                                       | LGA (EG25-G)<br>Mini PCIe (EG25-G Mini PCIe)                                                                                                                                                                                                                      | LGA (EG21-G)<br>Mini PCIe (EG21-G Mini PCIe)                                                                                                                                                                             |
| Dimensions (mm)                | 25.0 × 29.0 × 2.25                                                                                                                                                                             | 25.0 × 29.0 × 2.25                                                                                                                                                        | 32.0 × 29.0 × 2.4 (EG25-G)<br>51.0 × 30.0 × 4.9 (EG25-G Mini PCIe)                                                                                                                                                                                                | 32.0 × 29.0 × 2.4 (EG21-G)<br>51.0 × 30.0 × 4.9 (EG21-G Mini PCIe)                                                                                                                                                       |
| LTE Category                   | LTE Cat 1                                                                                                                                                                                      | LTE Cat 4                                                                                                                                                                 | LTE Cat 4                                                                                                                                                                                                                                                         | LTE Cat 1                                                                                                                                                                                                                |
| Frequency Bands (MHz)          | -E (Europe)                                                                                                                                                                                    | LTE-FDD: B1/B3/B7/B8/B20/B28A; WCDMA: B1/B8; GSM: B3/B8                                                                                                                   | LTE-FDD: B1/B3/B7/B8/B20/B28A; WCDMA: B1/B8; GSM: B3/B8                                                                                                                                                                                                           |                                                                                                                                                                                                                          |
|                                | -EX (Europe)                                                                                                                                                                                   | LTE-FDD: B1/B3/B7/B8/B20/B28; WCDMA: B1/B8; GSM: B3/B8                                                                                                                    | LTE-FDD: B1/B3/B7/B8/B20/B28; WCDMA: B1/B8; GSM: B3/B8                                                                                                                                                                                                            |                                                                                                                                                                                                                          |
|                                | -NAXD* (North America)                                                                                                                                                                         | LTE-FDD: B2/B4/B5/B12/B13/B25/B26; WCDMA: B2/B4/B5                                                                                                                        | LTE-FDD: B2/B4/B5/B12/B13/B25/B26; WCDMA: B2/B4/B5                                                                                                                                                                                                                |                                                                                                                                                                                                                          |
|                                | -NAX (North America)                                                                                                                                                                           | LTE-FDD: B2/B4/B5/B12/B13/B25/B26; WCDMA: B2/B4/B5                                                                                                                        | LTE-FDD: B2/B4/B5/B12/B13/B25/B26; WCDMA: B2/B4/B5                                                                                                                                                                                                                |                                                                                                                                                                                                                          |
|                                | -NA (North America)                                                                                                                                                                            | LTE-FDD: B2/B4/B5/B12/B13; WCDMA: B2/B4/B5                                                                                                                                | LTE-FDD: B2/B4/B5/B12/B13; WCDMA: B2/B4/B5                                                                                                                                                                                                                        |                                                                                                                                                                                                                          |
|                                | -NS (North America)                                                                                                                                                                            | LTE-FDD: B2/B4/B5/B12/B13/B25/B26; WCDMA: B2/B4/B5                                                                                                                        |                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                          |
|                                | -VX (Verizon)                                                                                                                                                                                  | LTE-FDD: B4/B13                                                                                                                                                           |                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                          |
|                                | -AUX* (Latin America/ ANZ)                                                                                                                                                                     | LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B28/B66; WCDMA: B1/B2/B5/B8; GSM: B2/B3/B5/B8                                                                                               | LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B28/B66; WCDMA: B1/B2/B5/B8; GSM: B2/B3/B5/B8                                                                                                                                                                                       |                                                                                                                                                                                                                          |
|                                | -G (Global)                                                                                                                                                                                    |                                                                                                                                                                           | LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B12/B13/B18/B19/B20/B25/B26/B28 ;<br>LTE-TDD: B38/B39/B40/B41;<br>WCDMA: B1/B2/B4/B5/B6/B8/B19;<br>GSM: B2/B3/B5/B8                                                                                                                 | LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B12/B13/B18/B19/B20/B25/B26/B28;<br>LTE-TDD: B38/B39/B40/B41;<br>WCDMA: B1/B2/B4/B5/B6/B8/B19;<br>GSM: B2/B3/B5/B8                                                                         |
| Weight (approx.) g             | 3.8                                                                                                                                                                                            | 3.8                                                                                                                                                                       | 4.9 (EG25-G), 9.8 (EG25-G Mini PCIe)                                                                                                                                                                                                                              | 4.9 (EG21-G), 9.8 (EG21-G Mini PCIe)                                                                                                                                                                                     |
| Working Temperature Range      | -35°C ~ +75°C                                                                                                                                                                                  | -35°C ~ +75°C                                                                                                                                                             | -35°C ~ +75°C                                                                                                                                                                                                                                                     | -35°C ~ +75°C                                                                                                                                                                                                            |
| Extended Temperature Range     | -40°C ~ +85°C                                                                                                                                                                                  | -40°C ~ +85°C                                                                                                                                                             | -40°C ~ +85°C (EG25-G)<br>-40°C ~ +80°C (EG25-G Mini PCIe)                                                                                                                                                                                                        | -40°C ~ +85°C (EG21-G)<br>-40°C ~ +80°C (EG21-G Mini PCIe)                                                                                                                                                               |
| <b>Data Transmission</b>       |                                                                                                                                                                                                |                                                                                                                                                                           |                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                          |
| LTE data rate (Mbps)           | Max. 10 (DL)/ Max. 5 (UL)                                                                                                                                                                      | Max. 150 (DL)/ Max. 50 (UL)                                                                                                                                               | LTE-FDD: Max. 150 (DL)/ Max. 50 (UL)<br>LTE-TDD: Max. 130 (DL)/ Max. 30(UL)                                                                                                                                                                                       | LTE-FDD: Max. 10Mbps (DL)/Max. 5Mbps (UL)<br>LTE-TDD: Max. 8.96Mbps (DL)/Max. 3.1Mbps (UL)                                                                                                                               |
| DC-HSPA+ data rate (Mbps)      | Max. 42 (DL)/Max. 5.76 (UL)                                                                                                                                                                    | Max. 42 (DL)/ Max. 5.76 (UL)                                                                                                                                              | Max. 42 (DL)/ Max. 5.76 (UL)                                                                                                                                                                                                                                      | Max. 42 (DL)/ Max. 5.76 (UL)                                                                                                                                                                                             |
| WCDMA data rate (Kbps)         | Max. 384 (DL)/Max. 384 (UL)                                                                                                                                                                    | Max. 384 (DL)/ Max. 384 (UL)                                                                                                                                              | Max. 384 (DL)/ Max. 384 (UL)                                                                                                                                                                                                                                      | Max. 384 (DL)/ Max. 384 (UL)                                                                                                                                                                                             |
| EDGE data rate (Kbps)          | Max. 296 (DL)/Max. 236.8 (UL)                                                                                                                                                                  | Max. 296 (DL)/Max. 236.8 (UL)                                                                                                                                             | Max. 296 (DL)/Max. 236.8 (UL)                                                                                                                                                                                                                                     | Max. 296 (DL)/Max. 236.8 (UL)                                                                                                                                                                                            |
| GPRS data rate (Kbps)          | Max. 107(DL)/Max. 85.6 (UL)                                                                                                                                                                    | Max. 107 (DL)/ Max. 85.6 (UL)                                                                                                                                             | Max. 107 (DL)/ Max. 85.6 (UL)                                                                                                                                                                                                                                     | Max. 107 (DL)/ Max. 85.6 (UL)                                                                                                                                                                                            |
| SMS                            | •                                                                                                                                                                                              | •                                                                                                                                                                         | •                                                                                                                                                                                                                                                                 | •                                                                                                                                                                                                                        |
| Protocols                      | TCP/ UDP/ PPP/ FTP/ HTTP/ NTP/ PING/ QMI/ CMUX/ HTTPS/ SMTP/ MMS*/ FTPS*/ SMTPS/ SSL/ FILE                                                                                                     | TCP/ UDP/ PPP/ FTP/ HTTP/ NTP/ PING/ QMI/ CMUX/ HTTPS/ SMTP/ MMS*/ FTPS*/ SMTPS/ SSL/ FILE                                                                                | TCP/ UDP/ PPP/ FTP/ HTTP/ NTP/ PING/ QMI/NITZ/ CMUX/ HTTPS/ SMTP/ MMS*/ FTPS*/ SMTPS/ SSL/ FILE                                                                                                                                                                   | TCP/ UDP/ PPP/ FTP/ HTTP/ NTP/ PING/ QMI/NITZ/ CMUX/ HTTPS/ SMTP/ MMS*/ FTPS*/ SMTPS/ SSL/ FILE                                                                                                                          |
| <b>Interfaces</b>              |                                                                                                                                                                                                |                                                                                                                                                                           |                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                          |
| (U)SIM                         | 1.8V/ 3.0V                                                                                                                                                                                     | 1.8V/ 3.0V                                                                                                                                                                | 1.8V/ 3.0V                                                                                                                                                                                                                                                        | 1.8V/ 3.0V                                                                                                                                                                                                               |
| UART                           | 2                                                                                                                                                                                              | 2                                                                                                                                                                         | 2 (EG25-G), 1 (EG25-G Mini PCIe)                                                                                                                                                                                                                                  | 2 (EG21-G), 1 (EG21-G Mini PCIe)                                                                                                                                                                                         |
| USB                            | USB 2.0 (Hi-Speed)                                                                                                                                                                             | USB 2.0 (Hi-Speed)                                                                                                                                                        | USB 2.0 (Hi-Speed)                                                                                                                                                                                                                                                | USB 2.0 (Hi-Speed)                                                                                                                                                                                                       |
| IIC                            | •                                                                                                                                                                                              | •                                                                                                                                                                         | •                                                                                                                                                                                                                                                                 | •                                                                                                                                                                                                                        |
| Audio Digital (PCM)            | Optional                                                                                                                                                                                       | Optional                                                                                                                                                                  | Optional                                                                                                                                                                                                                                                          | Optional                                                                                                                                                                                                                 |
| SPI                            | •                                                                                                                                                                                              | •                                                                                                                                                                         |                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                          |
| SD                             |                                                                                                                                                                                                |                                                                                                                                                                           | •(EG25-G)                                                                                                                                                                                                                                                         | •(EG21-G)                                                                                                                                                                                                                |
| ADC                            |                                                                                                                                                                                                |                                                                                                                                                                           | × 2, 15bits (EG25-G)                                                                                                                                                                                                                                              | × 2, 15bits (EG21-G)                                                                                                                                                                                                     |
| GPIO                           | • (Only Supported on QuecOpen®)                                                                                                                                                                | • (Only Supported on QuecOpen®)                                                                                                                                           | • (Only Supported on QuecOpen®)                                                                                                                                                                                                                                   | • (Only Supported on QuecOpen®)                                                                                                                                                                                          |
| Antenna                        | Pads for Primary, Rx-diversity and GNSS <sup>1</sup>                                                                                                                                           | Pads for Primary, Rx-diversity and GNSS <sup>1</sup>                                                                                                                      | Pads for Primary, Rx-diversity and GNSS                                                                                                                                                                                                                           | Pads for Primary, Rx-diversity and GNSS                                                                                                                                                                                  |
| <b>Enhanced Features</b>       |                                                                                                                                                                                                |                                                                                                                                                                           |                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                          |
| eCall* (for Europe)            | •                                                                                                                                                                                              | •                                                                                                                                                                         |                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                          |
| E911 (for North America)       | •                                                                                                                                                                                              | •                                                                                                                                                                         |                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                          |
| DTMF                           | •                                                                                                                                                                                              | •                                                                                                                                                                         | •                                                                                                                                                                                                                                                                 | •                                                                                                                                                                                                                        |
| DFOTA                          | •                                                                                                                                                                                              | •                                                                                                                                                                         | •                                                                                                                                                                                                                                                                 | •                                                                                                                                                                                                                        |
| QMI/ RmNet                     | •                                                                                                                                                                                              | •                                                                                                                                                                         | •                                                                                                                                                                                                                                                                 | •                                                                                                                                                                                                                        |
| Audio Playback/Audio Recording | Optional                                                                                                                                                                                       | Optional                                                                                                                                                                  | Optional                                                                                                                                                                                                                                                          | Optional                                                                                                                                                                                                                 |
| QuecFile                       | •                                                                                                                                                                                              | •                                                                                                                                                                         |                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                          |
| USB Serial Driver              | Windows 7/ 8/ 8.1/ 10, Linux 2.6~5.4, Android 4.x/ 5.x/ 6.x/7.x/9.x                                                                                                                            | Windows 7/ 8/ 8.1/ 10, Linux 2.6~5.4, Android 4.x/ 5.x/ 6.x/7.x/9.x                                                                                                       | Windows 7/ 8/ 8.1/ 10, Linux 2.6~5.4, Android 4.x/ 5.x/ 6.x/7.x/9.x                                                                                                                                                                                               | Windows 7/ 8/ 8.1/ 10, Linux 2.6~5.4, Android 4.x/ 5.x/ 6.x/7.x/9.x                                                                                                                                                      |
| GNSS Driver                    | Android 4.x/ 5.x/ 6.x/ 7.x/8.x/9.x                                                                                                                                                             | Android 4.x/ 5.x/ 6.x/ 7.x/8.x/9.x                                                                                                                                        | Android 4.x/ 5.x/ 6.x/ 7.x/8.x/9.x                                                                                                                                                                                                                                | Android 4.x/ 5.x/ 6.x/ 7.x/8.x/9.x                                                                                                                                                                                       |
| RIL Driver                     | Android 4.x/ 5.x/ 6.x/ 7.x/8.x/9.x                                                                                                                                                             | Android 4.x/ 5.x/ 6.x/ 7.x/8.x/9.x                                                                                                                                        | Android 4.x/ 5.x/ 6.x/ 7.x/8.x/9.x                                                                                                                                                                                                                                | Android 4.x/ 5.x/ 6.x/ 7.x/8.x/9.x                                                                                                                                                                                       |
| NDIS Driver                    | Windows 7/ 8/ 8.1/ 10                                                                                                                                                                          | Windows 7/ 8/ 8.1/ 10                                                                                                                                                     | Windows 7/ 8/ 8.1/ 10                                                                                                                                                                                                                                             | Windows 7/ 8/ 8.1/ 10                                                                                                                                                                                                    |
| MBIM Driver                    | Windows 8/ 8.1/ 10, Linux 3.8~5.4                                                                                                                                                              | Windows 8/ 8.1/ 10, Linux 3.8~5.4                                                                                                                                         | Windows 8/ 8.1/ 10, Linux 3.8~5.4                                                                                                                                                                                                                                 | Windows 8/ 8.1/ 10, Linux 3.8~5.4                                                                                                                                                                                        |
| GobiNet Driver                 | Linux 2.6~5.4                                                                                                                                                                                  | Linux 2.6~5.4                                                                                                                                                             | Linux 2.6~5.4                                                                                                                                                                                                                                                     | Linux 2.6~5.4                                                                                                                                                                                                            |
| QMI_WWAN Driver                | Linux 3.4~5.4                                                                                                                                                                                  | Linux 3.4~5.4                                                                                                                                                             | Linux 3.4~5.4                                                                                                                                                                                                                                                     | Linux 3.4~5.4                                                                                                                                                                                                            |
| (U)SIM Card Detection          | •                                                                                                                                                                                              | •                                                                                                                                                                         | •                                                                                                                                                                                                                                                                 | •                                                                                                                                                                                                                        |
| (U)SIM Card Connector          |                                                                                                                                                                                                |                                                                                                                                                                           | Optional (EG25-G Mini PCIe)                                                                                                                                                                                                                                       | Optional (EG21-G Mini PCIe)                                                                                                                                                                                              |
| GNSS <sup>1</sup>              | Optional                                                                                                                                                                                       | Optional                                                                                                                                                                  | Optional                                                                                                                                                                                                                                                          | Optional                                                                                                                                                                                                                 |
| Firmware Update                | Via USB/DFOTA                                                                                                                                                                                  | Via USB/DFOTA                                                                                                                                                             | Via USB/DFOTA                                                                                                                                                                                                                                                     | Via USB/DFOTA                                                                                                                                                                                                            |
| <b>Electrical Features</b>     |                                                                                                                                                                                                |                                                                                                                                                                           |                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                          |
| Supply Voltage Range           | 3.3V~4.3 V, 3.8V Typ.                                                                                                                                                                          | 3.3V~4.3 V, 3.8V Typ.                                                                                                                                                     | 3.3V~4.3 V, 3.8V Typ. (EG25-G)<br>3.0V~3.6 V, 3.3V Typ. (EG25-G Mini PCIe)                                                                                                                                                                                        | 3.3V~4.3 V, 3.8V Typ. (EG21-G)<br>3.0V~3.6 V, 3.3V Typ. (EG21-G Mini PCIe)                                                                                                                                               |
| Power Consumption              | 15µA@Power off, 2.6mA@Sleep, Typ. , 21mA@Idle                                                                                                                                                  | 15µA@Power off, 2.6mA@Sleep, Typ. , 21mA@Idle                                                                                                                             | 13µA@Power off, 1.7mA@Sleep, Typ. , 22mA@Idle (EG25-G)<br>2.7mA @Sleep, Typ. / 25mA @Idle (EG25-G Mini PCIe)                                                                                                                                                      | 13µA@Power off, 1.7mA@Sleep, Typ. , 22mA@Idle (EG21-G)                                                                                                                                                                   |
| Certifications                 | Carrier Certification: Deutsche Telekom/ Verizon/ AT&T/ U.S. Cellular/ T-Mobile/ Sprint/ Rogers/ Telus<br>Regulatory Certification: GCF/ CE/ FCC/ PTCRB/ IC/ Anatel/ FAC/ NCC*<br>Others: WHQL | Carrier Certification: Deutsche Telekom/ Verizon/ AT&T/ U.S. Cellular/ T-Mobile*/ Rogers/ Telus<br>Regulatory Certification: GCF/ CE/ FCC/ PTCRB/ IC/ FAC<br>Others: WHQL | Carrier Certification: Deutsche Telekom/ Verizon/ AT&T/ Sprint/ U.S. Cellular/ Telus/ T-Mobile*/ Rogers*<br>Regulatory Certification: SRRC/ NAL/ CCC/ GCF/ CE/ FCC/ PTCRB/ IC/ Anatel/ IFETEL/ KC/ NCC/ JATE/ TELEC/ RCM/ NBTC/ ICASA/ IMDA/ FAC*<br>Others: WHQL | Carrier Certification: Verizon*/ AT&T*/ T-Mobile*/ Deutsche Telekom/ Sprint/U.S.Cellular*/ Telus*<br>Regulatory Certification: CE/ FCC/ IC/ RCM/ PTCRB/ GCF/ Anatel/ JATE/ TELEC/ NCC/ ICASA/ IFETEL/ KC<br>Others: WHQL |
| Recommended Applications       | Telematics, Smart Metering, Mobile POS Terminal, Gateway, Safety, Tracking and Tracing, Remote Maintenance and Control, Networking, Mobile Computing, Healthcare, etc.                         |                                                                                                                                                                           |                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                          |

Note1: GNSS antenna not supported on EG91-E/EG95-E.  
EG91-AUX does not support Rx-diversity.  
EG91-NAXD, EG95-NAXD only support data service.

\* Under development

# Quectel Smart Module Family

| Product                     |                                                                    | SC20                                                                                                                                                  | SC20 Linux                                                                                                                                            | SC200R                                                                                                                                                                                                                                    |
|-----------------------------|--------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                             |                                                                    |                                                                      |                                                                      |                                                                                                                                                        |
| Form Factor                 |                                                                    | LCC+LGA                                                                                                                                               | LCC+LGA                                                                                                                                               | LCC+LGA                                                                                                                                                                                                                                   |
| Dimensions (mm)             |                                                                    | 40.5 × 40.5 × 2.8                                                                                                                                     | 40.5 × 40.5 × 2.8                                                                                                                                     | 40.5 × 40.5 × 2.8                                                                                                                                                                                                                         |
| LTE Feature                 |                                                                    | LTE Cat 4<br>3GPP E-UTRA Release 10 Compliant,<br>Support DL MIMO 2 × 2                                                                               | LTE Cat 4<br>3GPP E-UTRA Release 10 Compliant,<br>Support DL MIMO 2 × 2                                                                               | LTE Cat 4<br>3GPP E-UTRA Release 10 Compliant,<br>Support DL MIMO 2 × 2                                                                                                                                                                   |
| Frequency Bands<br>(MHz)    | -CE (China)                                                        | LTE-FDD: B1/B3/B5/B8; LTE-TDD: B38/B39/B40/B41;<br>WCDMA: B1/B8; TD-SCDMA: B34/B39; CDMA: BC0;<br>GSM: 900/1800MHz                                    | -CEL (China)<br>LTE-FDD: B1/B3/B5/B8; LTE-TDD: B38/B39/B40/B41<br>WCDMA: B1/B8; TD-SCDMA: B34/B39; CDMA: BC0;<br>GSM: 900/1800MHz                     | LTE-FDD: B1/B3/B5/B8; LTE-TDD: B34/B38/B39/B40/B41;<br>WCDMA: B1/B8; CDMA: BC0; GSM: 900/1800MHz                                                                                                                                          |
|                             | -E/EM (EMEA/Africa/<br>Southeast Asia/Australia/<br>South America) | -E (EMEA/Korea/Thailand/India)<br>LTE-FDD: B1/B3/B5/B7/B8/B20; LTE-TDD: B38/B40/B41;<br>WCDMA: B1/B5/B8; GSM: 850/900/1800/1900MHz                    | -EL (EMEA/Korea/Thailand/India)<br>LTE-FDD: B1/B3/B5/B7/B8/B20; LTE-TDD: B38/B40<br>WCDMA: B1/B5/B8; GSM: 850/900/1800/1900MHz                        | -EM (EMEA/Africa/Southeast Asia/Australia/South America)<br>LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B20/B28;<br>LTE-TDD: B38/B40/B41; WCDMA: B1/B2/B4/B5/B8<br>GSM: 850/900/1800/1900MHz                                                            |
|                             | -A /NA* (North America)                                            | -A (North America)<br>LTE-FDD: B2/B4/B5/B7/B12/B13/B25/B26;<br>WCDMA: B1/B2/B4/B5/B8; GSM: 850/1900MHz                                                | -AL (North America)<br>LTE-FDD: B2/B4/B5/B7/B12/B13/B25/B26;<br>WCDMA: B1/B2/B4/B5/B8; GSM: 850/1900MHz                                               | -NA* (North America)<br>LTE-FDD: B2/B4/B5/B7/B12/B13/B14/B17/B25/B26/B66/<br>B71<br>LTE-TDD: B41; WCDMA: B2/B4/B5                                                                                                                         |
|                             | -AU (ANZ/Brazil)                                                   | LTE-FDD: B1/B3/B5/B7/B8/B28; LTE-TDD: B40<br>WCDMA: B1/B2/B5/B8; GSM: 850/900/1800/1900MHz                                                            | -AUL (ANZ/Brazil)<br>LTE-FDD: B1/B3/B5/B7/B8/B28; LTE-TDD: B40<br>WCDMA: B1/B2/B5/B8; GSM: 850/900/1800/1900MHz                                       |                                                                                                                                                                                                                                           |
|                             | -J/JP* (Japan)                                                     | -J (Japan)<br>LTE-FDD: B1/B3/B8/B18/B19/B26; LTE-TDD: B41;<br>WCDMA: B1/B6/B8/B19                                                                     | -JL (Japan)<br>LTE-FDD: B1/B3/B8/B18/B19/B26; LTE-TDD: B41<br>WCDMA: B1/B6/B8/B19                                                                     | -JP* (Japan)<br>LTE-FDD: B1/B3/B5/B8/B11/B18/B19/B21/B26/B28;<br>LTE-TDD: B41; WCDMA: B1/B6/B8/B19                                                                                                                                        |
|                             | -W/WF* (Global)                                                    | -W (Wi-Fi) Only Wi-Fi & BT                                                                                                                            | -WL (Wi-Fi) Only Wi-Fi & BT                                                                                                                           | -WF* (Global) Only Wi-Fi & BT                                                                                                                                                                                                             |
| CPU                         |                                                                    | MSM8909, ARM Cortex-A7 microprocessor cores<br>(quad-core) up to 1.1GHz                                                                               | MSM8909, ARM Cortex-A7 microprocessor cores<br>(quad-core) up to 1.1GHz                                                                               | QCM2150, Quad-core ARM Cortex-A53 64-bit CPU @1.3GHz                                                                                                                                                                                      |
| GPU                         |                                                                    | Adreno™ 304                                                                                                                                           | Adreno™ 304                                                                                                                                           | Qualcomm™ Adreno™ 308 graphics processing unit (GPU)<br>with 64-bit addressing                                                                                                                                                            |
| Memory                      |                                                                    | 8GB eMMC+1GB LPDDR3; 16GB eMMC+2GB LPDDR3                                                                                                             | 8GB eMMC+1GB LPDDR3                                                                                                                                   | 8GB eMMC+1GB LPDDR3; 16GB eMMC+2GB LPDDR3                                                                                                                                                                                                 |
| Operating System            |                                                                    | Android 7.1/8.1                                                                                                                                       | Yocto Linux OS(Kernel 3.18)                                                                                                                           | Android 10.0                                                                                                                                                                                                                              |
| Supply Voltage Range        |                                                                    | 3.5V ~ 4.2V, 3.8V Typ.                                                                                                                                | 3.5V ~ 4.2V, 3.8V Typ.                                                                                                                                | 3.55V ~ 4.2V, 3.8V Typ.                                                                                                                                                                                                                   |
| Weight (approx.) g          |                                                                    | 9.8                                                                                                                                                   | 9.8                                                                                                                                                   | 10.2                                                                                                                                                                                                                                      |
| Operating temperature range |                                                                    | -35 °C ~ +75 °C                                                                                                                                       | -35 °C ~ +75 °C                                                                                                                                       | -35 °C ~ +75 °C                                                                                                                                                                                                                           |
| Data Transmission           |                                                                    |                                                                                                                                                       |                                                                                                                                                       |                                                                                                                                                                                                                                           |
| LTE (Mbps)                  |                                                                    | LTE-FDD: Max. 150Mbps (DL)/ Max. 50Mbps (UL)<br>LTE-TDD: Max. 130Mbps (DL)/ Max. 30Mbps (UL)                                                          | LTE-FDD: Max. 150Mbps (DL)/ Max. 50Mbps (UL)<br>LTE-TDD: Max. 130Mbps (DL)/ Max. 30Mbps (UL)                                                          | LTE-FDD: Max. 150Mbps (DL)/ Max. 50Mbps (UL)<br>LTE-TDD: Max. 130Mbps (DL)/ Max. 30Mbps (UL)                                                                                                                                              |
| UMTS                        |                                                                    | DC-HSDPA: Max. 42Mbps (DL)<br>HSUPA: Max. 5.76Mbps (UL)<br>WCDMA: Max. 384Kbps (DL/UL)                                                                | DC-HSDPA: Max. 42Mbps (DL)<br>HSUPA: Max. 5.76Mbps (UL)<br>WCDMA: Max. 384Kbps (DL/UL)                                                                | DC-HSDPA: Max. 42Mbps (DL)<br>HSUPA: Max. 5.76Mbps (UL)<br>WCDMA: Max. 384Kbps (DL/UL)                                                                                                                                                    |
| TD-SCDMA                    |                                                                    | Max. 4.2Mbps (DL)/ Max. 2.2Mbps (UL)                                                                                                                  | Max. 4.2Mbps (DL)/ Max. 2.2Mbps (UL)                                                                                                                  | /                                                                                                                                                                                                                                         |
| CDMA2000                    |                                                                    | EVDO: Max. 3.1Mbps (DL)/ Max. 1.8Mbps (UL) ,<br>1X Advanced: Max. 307.2Kbps (DL/UL)                                                                   | EVDO: Max. 3.1Mbps (DL)/ Max. 1.8Mbps (UL) ,<br>1X Advanced: Max. 307.2Kbps (DL/UL)                                                                   | EVDO: Max. 3.1Mbps (DL)/ Max. 1.8Mbps (UL) ,<br>1X Advanced: Max. 307.2Kbps (DL/UL)                                                                                                                                                       |
| GSM                         |                                                                    | EDGE: Max. 296Kbps (DL)/ 236.8Kbps (UL) ,<br>GPRS: Max. 107Kbps (DL)/ 85.6Kbps (UL)                                                                   | EDGE: Max. 296Kbps (DL)/ 236.8Kbps (UL) ,<br>GPRS: Max. 107Kbps (DL)/ 85.6Kbps (UL)                                                                   | EDGE: Max. 296Kbps (DL)/ 236.8Kbps (UL) ,<br>GPRS: Max. 107Kbps (DL)/ 85.6Kbps (UL)                                                                                                                                                       |
| Interfaces                  |                                                                    |                                                                                                                                                       |                                                                                                                                                       |                                                                                                                                                                                                                                           |
| LCM                         |                                                                    | 4-lane MIPI_DSI, up to 1.5Gbps/lane HD (720P) @60fps                                                                                                  | 4-lane MIPI_DSI, up to 1.5Gbps/lane HD (720P) @60fps                                                                                                  | 4-lane MIPI_DS, HD+ (1440*720) @60fps;<br>Wi-Fi display: 1080P 30fps (UBWC)                                                                                                                                                               |
| Camera                      |                                                                    | Use MIPI_CSI, up to 1.5Gbps/lane<br>Support two Cameras:<br>2-lane MIPI_CSI for Rear Camera, up to 8MP<br>1-lane MIPI_CSI for Front Camera, up to 2MP | Use MIPI_CSI, up to 1.5Gbps/lane<br>Support two Cameras:<br>2-lane MIPI_CSI for Rear Camera, up to 8MP<br>1-lane MIPI_CSI for Front Camera, up to 2MP | 2 groups of 4-lane MIPI_CSI, up to 2.1Gbps per lane;<br>Up to 13MP with dual ISP                                                                                                                                                          |
| Touch Panel                 |                                                                    | Capacitive Touch Panel                                                                                                                                | Capacitive Touch Panel                                                                                                                                | Capacitive Touch Panel                                                                                                                                                                                                                    |
| Audio                       |                                                                    | 2 analog audio inputs and 3 analog audio outputs                                                                                                      | 2 analog audio inputs and 3 analog audio outputs                                                                                                      | Speaker, Earpiece, Headphone, and 3 MICs for Analog Audio<br>Support One Noise-canceling MIC                                                                                                                                              |
| Video                       |                                                                    | Encode: 30fps 720P (H.264), 30fps WVGA (MPEG-4/VP8)<br>Decode: 30fps 1080P (H.264/MPEG-4/ VP8/H.265<br>DivX4/5/6), 30fps WVGA (H.263)                 | Encode: 30fps 720P (H.264), 30fps WVGA (MPEG-4/VP8)<br>Decode: 30fps 1080P (H.264/MPEG-4/ VP8/H.265<br>DivX4/5/6), 30fps WVGA (H.263)                 | Video encoding: 1080p @30fps(H.264)<br>Video decoding: 1080p @30fps(H.264, HEVC, and VP8)<br>Video encoding and decoding: 1080p @30fps +<br>720p@30fps For HEVC playback, concurrency is 720p at 30<br>fps decode + 720p at 30 fps encode |
| USB                         |                                                                    | × 1 USB 2.0 Compliant, Support USB OTG                                                                                                                | × 1 USB 2.0 Compliant, Support USB OTG                                                                                                                | × 1 Compliant with USB 2.0, Support USB OTG,<br>USB OTG + Charge, etc                                                                                                                                                                     |
| I2C                         |                                                                    | × 3                                                                                                                                                   | × 3                                                                                                                                                   | × 4                                                                                                                                                                                                                                       |
| (U)SIM                      |                                                                    | × 2 (1.8V/2.95V)                                                                                                                                      | × 2 (1.8V/2.95V)                                                                                                                                      | × 2 support 1.8/2.95V (U)SIM cards, with (U)SIM card detec-<br>tion function; DSDS supported                                                                                                                                              |
| UART                        |                                                                    | × 2 Support 4Mbps with Hardware Flow Control                                                                                                          | × 2 Support 4Mbps with Hardware Flow Control                                                                                                          | × 3 Support 4Mbps, One of them supports Hardware Flow<br>Control                                                                                                                                                                          |
| SD Card                     |                                                                    | × 1 (3.0, 4-bit SDIO)                                                                                                                                 | × 1 (3.0, 4-bit SDIO)                                                                                                                                 | × 1 (3.0, 4-bit SDIO)                                                                                                                                                                                                                     |
| PWRKEY                      |                                                                    | 1.8V, Pulled-up Internally                                                                                                                            | 1.8V, Pulled-up Internally                                                                                                                            | 1.8V, Pulled-up Internally                                                                                                                                                                                                                |
| SPI                         |                                                                    | × 1                                                                                                                                                   | × 1                                                                                                                                                   | × 3 Can be multiplexed into UART/I2S/GPIO respectively                                                                                                                                                                                    |
| ADC                         |                                                                    | × 1 General purpose ADC interfaces                                                                                                                    | × 1 General purpose ADC interfaces                                                                                                                    | × 1 General purpose ADC interfaces                                                                                                                                                                                                        |
| GPIO                        |                                                                    | × 25                                                                                                                                                  | × 25                                                                                                                                                  | × 35                                                                                                                                                                                                                                      |
| PWM                         |                                                                    | × 1                                                                                                                                                   | × 1                                                                                                                                                   | × 1                                                                                                                                                                                                                                       |
| Motor Drive                 |                                                                    | × 1                                                                                                                                                   | × 1                                                                                                                                                   | × 1                                                                                                                                                                                                                                       |
| Flash Driver                |                                                                    | /                                                                                                                                                     | /                                                                                                                                                     | /                                                                                                                                                                                                                                         |
| WLED Sink                   |                                                                    | /                                                                                                                                                     | /                                                                                                                                                     | /                                                                                                                                                                                                                                         |
| Antenna                     |                                                                    | 4 Solder Pads for Main/Rx-diversity/ GNSS/Wi-Fi&BT<br>Antenna, Respectively                                                                           | 4 Solder Pads for Main/Rx-diversity/ GNSS/Wi-Fi&BT<br>Antenna, Respectively                                                                           | 4 Solder Pads for Main/Rx-diversity/ GNSS/Wi-Fi&BT<br>Antenna, Respectively                                                                                                                                                               |
| Enhanced Features           |                                                                    |                                                                                                                                                       |                                                                                                                                                       |                                                                                                                                                                                                                                           |
| BT                          |                                                                    | BT2.1+EDR/3.0/4.1LE (BT4.2 on Android 7.1)                                                                                                            | BT2.1+EDR/3.0/4.1LE (BT4.2 on Android 7.1)                                                                                                            | BT 2.1 + EDR/3.0/4.1 LE /BT4.2, Support a maximum of 10<br>ACL/BEL/SCO links                                                                                                                                                              |
| WLAN                        |                                                                    | 2.4G/5G, 802.11 a/b/g/n                                                                                                                               | 2.4G/5G, 802.11 a/b/g/n                                                                                                                               | 2.4G/5G, 802.11 a/b/g/n 150Mbps, STA/AP/P2P                                                                                                                                                                                               |
| GNSS                        |                                                                    | GPS/ GLONASS/ BeiDou or GPS/ Galileo/ BeiDou                                                                                                          | GPS/ GLONASS/ BeiDou or GPS/ Galileo/ BeiDou                                                                                                          | GPS/ GLONASS/ BeiDou or GPS/ Galileo/ BeiDou                                                                                                                                                                                              |
| Charge Function             |                                                                    | Build-in Charge IC                                                                                                                                    | Build-in Charge IC                                                                                                                                    | Build-in Charge IC                                                                                                                                                                                                                        |
| Dual LCD                    |                                                                    | Only support single LCD Display                                                                                                                       | Only support single LCD Display                                                                                                                       | Only support single LCD Display                                                                                                                                                                                                           |
| DSDS                        |                                                                    | Support Dual SIM Dual Standby                                                                                                                         | Support Dual SIM Dual Standby                                                                                                                         | Support Dual SIM Dual Standby                                                                                                                                                                                                             |
| Firmware Upgrade            |                                                                    | Firmware Upgrade via USB                                                                                                                              | Firmware Upgrade via USB                                                                                                                              | Firmware Upgrade via USB                                                                                                                                                                                                                  |
| Certifications              |                                                                    | CE/ GCF/ RCM/ FCC/ IC/ PTCRB/ AT&T/ Verizon/ Telstra/<br>T-Mobile/ Telus/ JATE/ TELEC/ CCC/ SRRC/ NAL/ NCC/ KC                                        | CE/ GCF/ RCM/ FCC/ IC/ PTCRB/ AT&T/ Verizon/ Telstra/<br>T-Mobile/ Telus/ JATE/ TELEC/ CCC/ SRRC/ NAL/ NCC/ KC*                                       | GCF/ CE/ RCM/ FCC/ PTCRB/ AT&T/ Verizon/<br>Telstra/ IC/ JATE/ TELEC/ CCC*                                                                                                                                                                |
| Recommended Applications    |                                                                    | Telematics, Mobile POS Terminal, Gateway, Safety, Networking, Mobile Computing, etc.                                                                  |                                                                                                                                                       |                                                                                                                                                                                                                                           |

SC20-E LTE-TDD B41 does not support full-frequency and the bandwidth of it is 2555-2655MHz.

\* Under development

# Quectel Smart Module Family

| Product                     |                                                                                    | SC600Y                                                                                                                                                                                                            | SC600T                                                                                                                                                                                                            |
|-----------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                             |                                                                                    |                                                                                                                                  |                                                                                                                                |
| Form Factor                 |                                                                                    | LCC+LGA                                                                                                                                                                                                           | LCC+LGA                                                                                                                                                                                                           |
| Dimensions (mm)             |                                                                                    | 43.0 × 44 × 2.85                                                                                                                                                                                                  | 43.0 × 44 × 2.85                                                                                                                                                                                                  |
| LTE Feature                 |                                                                                    | LTE Cat 6 3GPP E-UTRA Release 10 Compliant, Support DL MIMO 2 × 2                                                                                                                                                 | LTE Cat 6 3GPP E-UTRA Release 10 Compliant, Support DL MIMO 2 × 2                                                                                                                                                 |
| Frequency Bands(MHz)        | -CE (China)                                                                        |                                                                                                                                                                                                                   |                                                                                                                                                                                                                   |
|                             | -EM ( EMEA/ India/ Korea/ South Asia/ Latin America/ Australia/ ANZ/ South Africa) | LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B20/B28<br>LTE-TDD: B38/B39/B40/B41<br>WCDMA: B1/B2/B4/B5/ B8<br>GSM: 850/900/1800/1900MHz                                                                                          | LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B20/B28<br>LTE-TDD: B38/B39/B40/B41<br>WCDMA: B1/B2/B4/B5/B8<br>GSM: 850/900/1800/1900MHz                                                                                           |
|                             | -NA (North America)                                                                | LTE-FDD: B2/B4/B5/B7/B12/B13/B14/B17/B25/B26/ B66/B71<br>LTE-TDD: B41; WCDMA: B2/B4/B5                                                                                                                            | LTE-FDD: B2/B4/B5/B7/B12/B13/B14/B17/B25/B26/B66/B71<br>LTE-TDD: B41; WCDMA: B2/B4/B5                                                                                                                             |
|                             | -JP (Japan)                                                                        | LTE-FDD: B1/B3/B5/B8/B11/B18/B19/B21/B26/B28<br>LTE-TDD: B41<br>WCDMA: B1/B6/B8/B19                                                                                                                               | LTE-FDD: B1/B3/B5/B8/B11/B18/B19/B21/B26/B28;<br>LTE-TDD: B41;<br>WCDMA: B1/B6/B8/B19                                                                                                                             |
|                             | -WF (Global)                                                                       | Only Wi-Fi & BT                                                                                                                                                                                                   | Only Wi-Fi & BT                                                                                                                                                                                                   |
| CPU                         |                                                                                    | SDM450 , Octa-core ARM Cortex-A53 64-bit CPU @1.8GHz                                                                                                                                                              | MSM8953, Octa-core ARM Cortex-A53 64-bit CPU @2.0GHz                                                                                                                                                              |
| GPU                         |                                                                                    | Adreno™ 506 with 64-bit addressing                                                                                                                                                                                | Adreno™ 506 with 64-bit addressing                                                                                                                                                                                |
| Memory                      |                                                                                    | 16GB eMMC+2GB LPDDR3                                                                                                                                                                                              | 16GB eMMC+2GB LPDDR3                                                                                                                                                                                              |
| Operating System            |                                                                                    | Android 9.0/10.0                                                                                                                                                                                                  | Android 9.0/10.0                                                                                                                                                                                                  |
| Supply Voltage Range        |                                                                                    | 3.5V ~ 4.4V, 3.8V Typ.                                                                                                                                                                                            | 3.55V ~ 4.4V, 3.8V Typ.                                                                                                                                                                                           |
| Weight (approx.) g          |                                                                                    | 13.0                                                                                                                                                                                                              | 13.0                                                                                                                                                                                                              |
| Operating temperature range |                                                                                    | -35 °C ~ +75 °C                                                                                                                                                                                                   | -35 °C ~ +75 °C                                                                                                                                                                                                   |
| Data Transmission           |                                                                                    |                                                                                                                                                                                                                   |                                                                                                                                                                                                                   |
| LTE (Mbps)                  |                                                                                    | Cat 6*:<br>LTE-FDD: Max. 300Mbps (DL)/ Max. 50Mbps (UL)<br>LTE-TDD: Max. 265Mbps (DL)/ Max. 35Mbps (UL)<br>Cat 4:<br>LTE-FDD: Max. 150Mbps (DL)/ Max. 50Mbps (UL)<br>LTE-TDD: Max. 130Mbps (DL)/ Max. 30Mbps (UL) | Cat 6*:<br>LTE-FDD: Max. 300Mbps (DL)/ Max. 50Mbps (UL)<br>LTE-TDD: Max. 265Mbps (DL)/ Max. 35Mbps (UL)<br>Cat 4:<br>LTE-FDD: Max. 150Mbps (DL)/ Max. 50Mbps (UL)<br>LTE-TDD: Max. 130Mbps (DL)/ Max. 30Mbps (UL) |
| UMTS                        |                                                                                    | DC-HSDPA: Max. 42Mbps (DL)<br>DC-HSUPA: Max. 11.2Mbps (UL)<br>WCDMA: Max. 384Kbps (DL/UL)                                                                                                                         | DC-HSDPA: Max. 42Mbps (DL)<br>DC-HSUPA: Max. 11.2Mbps (UL)<br>WCDMA: Max. 384Kbps (DL/UL)                                                                                                                         |
| TD-SCDMA                    |                                                                                    |                                                                                                                                                                                                                   |                                                                                                                                                                                                                   |
| CDMA2000                    |                                                                                    |                                                                                                                                                                                                                   |                                                                                                                                                                                                                   |
| GSM                         |                                                                                    | EDGE: Max. 296Kbps (DL)/ 236.8Kbps (UL)<br>GPRS: Max. 107Kbps (DL)/ 85.6Kbps (UL)                                                                                                                                 | EDGE: Max. 296Kbps (DL)/ 236.8Kbps (UL)<br>GPRS: Max. 107Kbps (DL)/ 85.6Kbps (UL)                                                                                                                                 |
| Interfaces                  |                                                                                    |                                                                                                                                                                                                                   |                                                                                                                                                                                                                   |
| LCM                         |                                                                                    | 4-lane MIPI_DSI0 + 4-lane MIPI_DSI1 WUXGA (1920×1200) @60fps                                                                                                                                                      | 4-lane MIPI_DSI0 + 4-lane MIPI_DSI1 WUXGA (1920×1200) @60fps                                                                                                                                                      |
| Camera                      |                                                                                    | 3 Groups of 4-lane MIPI_CSI, up to 2.1Gbps/lane, Support 3 or 4 Cameras, Up to 21MP with Dual ISPs                                                                                                                | 3 Groups of 4-lane MIPI_CSI, up to 2.1Gbps/lane, Support 3 or 4 Cameras, Up to 24MP with Dual ISPs                                                                                                                |
| Touch Panel                 |                                                                                    | Capacitive Touch Panel                                                                                                                                                                                            | Capacitive Touch Panel                                                                                                                                                                                            |
| Audio                       |                                                                                    | Speaker, Earpiece, Headphone, and 3 MICs for Analog Audio Support One Noise-canceling MIC                                                                                                                         | Speaker, Earpiece, Headphone, and 3 MICs for Analog Audio Support One Noise-canceling MIC                                                                                                                         |
| Video                       |                                                                                    | Video encoding and decoding: 1080P at 60fps<br>Wi-Fi Video encoding and decoding: 1080P at 30fps                                                                                                                  | Video encoding and decoding: Support recording and playback of 4k videos at 30fps<br>Wi-Fi Video encoding and decoding: 1080P at 30fps                                                                            |
| USB                         |                                                                                    | × 1 USB 3.0 and 2.0 Compliant, Support USB OTG                                                                                                                                                                    | × 1 USB 3.0 and 2.0 Compliant, Support USB OTG                                                                                                                                                                    |
| I2C                         |                                                                                    | × 5                                                                                                                                                                                                               | × 5                                                                                                                                                                                                               |
| (U)SIM                      |                                                                                    | × 2 (1.8V/2.95V)                                                                                                                                                                                                  | × 2 (1.8V/2.95V)                                                                                                                                                                                                  |
| UART                        |                                                                                    | × 4 Support 4Mbps with Hardware Flow Control                                                                                                                                                                      | × 4 Support 4Mbps with Hardware Flow Control                                                                                                                                                                      |
| SDIO                        |                                                                                    | × 1 (3.0, 4-bit SDIO)                                                                                                                                                                                             | × 1 (3.0, 4-bit SDIO)                                                                                                                                                                                             |
| PWRKEY                      |                                                                                    | 1.8V, Pulled-up Internally                                                                                                                                                                                        | 1.8V, Pulled-up Internally                                                                                                                                                                                        |
| SPI                         |                                                                                    | × 2 Can be Multiplexed into UART and I2S Respectively, and I2S Supports Both Tx and Rx                                                                                                                            | × 2 Can be Multiplexed into UART and I2S Respectively, and I2S Supports Both Tx and Rx                                                                                                                            |
| ADC                         |                                                                                    | × 2 General purpose ADC interfaces                                                                                                                                                                                | × 2 General purpose ADC interfaces                                                                                                                                                                                |
| GPIO                        |                                                                                    | × 19                                                                                                                                                                                                              | × 19                                                                                                                                                                                                              |
| PMW                         |                                                                                    | × 2                                                                                                                                                                                                               | × 2                                                                                                                                                                                                               |
| Motor Drive                 |                                                                                    | × 1                                                                                                                                                                                                               | × 1                                                                                                                                                                                                               |
| Flashlight Driver           |                                                                                    | × 2                                                                                                                                                                                                               | × 2                                                                                                                                                                                                               |
| WLED Sink                   |                                                                                    | × 4                                                                                                                                                                                                               | × 4                                                                                                                                                                                                               |
| Antenna                     |                                                                                    | 4 Solder Pads for Main/Rx-diversity/ GNSS/Wi-Fi&BT Antenna,Respectively                                                                                                                                           | 4 Solder Pads for Main/Rx-diversity/ GNSS/Wi-Fi&BT Antenna, Respectively                                                                                                                                          |
| Enhanced Features           |                                                                                    |                                                                                                                                                                                                                   |                                                                                                                                                                                                                   |
| BT                          |                                                                                    | BT2.1+EDR/3.0/4.1 LE/4.2 BLE                                                                                                                                                                                      | BT2.1+EDR/3.0/4.1 LE/4.2 BLE                                                                                                                                                                                      |
| WLAN                        |                                                                                    | 2.4G/5G, 802.11 a/b/g/n/ac                                                                                                                                                                                        | 2.4G/5G, 802.11 a/b/g/n/ac                                                                                                                                                                                        |
| GNSS                        |                                                                                    | GPS/ GLONASS/ BeiDou or GPS/ Galileo/ BeiDou                                                                                                                                                                      | GPS/ GLONASS/ BeiDou or GPS/ Galileo/ BeiDou                                                                                                                                                                      |
| Charge Function             |                                                                                    | Build-in Charge IC & Fuel Gauge<br>Qualcomm Quick Charge 3.0 technology                                                                                                                                           | Build-in Charge IC & Fuel Gauge<br>Qualcomm Quick Charge 3.0 technology                                                                                                                                           |
| Dual LCD                    |                                                                                    | Support Dual LCDs for Independent Display                                                                                                                                                                         | Support Dual LCDs for Independent Display                                                                                                                                                                         |
| DSDS                        |                                                                                    | Support Dual SIM Dual Standby                                                                                                                                                                                     | Support Dual SIM Dual Standby                                                                                                                                                                                     |
| Firmware Upgrade            |                                                                                    | Firmware Upgrade via USB                                                                                                                                                                                          | Firmware Upgrade via USB                                                                                                                                                                                          |
| Certifications              |                                                                                    | CE/ RCM/ GCF/ NCC/ Telstra*/ FCC/ IC/ PTCRB/ AT&T/ Verizon*/ T-Mobile / JATE/ TELEC / KDDI* / NTT DOCOMO*                                                                                                         | CE/ RCM/ GCF/ NCC/ Telstra* / FCC/ IC/ PTCRB/ AT&T/ Verizon*/ T-Mobile / JATE/ TELEC/ KDDI* / NTT DOCOMO*                                                                                                         |
| Recommended Applications    |                                                                                    | Telematics, Mobile POS Terminal, Gateway, Safety, Networking, Mobile Computing, etc.                                                                                                                              |                                                                                                                                                                                                                   |

\* Under development

# Quectel Smart Module Family

| Product                     |                                   | SC66                                                                                                                                                                                               |
|-----------------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                             |                                   |                                                                                                                   |
| Form Factor                 |                                   | LCC+LGA                                                                                                                                                                                            |
| Dimensions(mm)              |                                   | 43.0 × 44.0 × 2.85                                                                                                                                                                                 |
| LTE Feature                 |                                   | LTE Cat 6                                                                                                                                                                                          |
| Frequency Bands(MHz)        | -CE (China)                       | LTE-FDD: B1/B3/B5/B8; LTE-TDD: B34/B38/B39/B40/B41; WCDMA: B1/B8; TD-SCDMA: B34/B39; CDMA: BC0; GSM: 900/1800MHz                                                                                   |
|                             | -E (EMEA/ Korea/ Thailand/ India) | LTE-FDD: B1/B2/ B3/ B4/ B5/ B7/ B8/ B20/ B28 (A+B)<br>LTE-TDD: B38/ B39/ B40/ B41 (200M)<br>WCDMA: B1/ B2/ B4/ B5/ B8<br>GSM: 850/900/1800/1900MHz                                                 |
|                             | -A (North America)                | LTE-FDD: B2/B4/B5/B7/B12/B13/B14/B17/B25/B26/B66/B71;<br>LTE-TDD: B41(200M); WCDMA: B2/B4/B5                                                                                                       |
|                             | -J (Japan)                        | LTE-FDD: B1/B3/B5/B8/B11/B18/B19 B21/B26/ B28 (A+B);<br>LTE-TDD: B41(120M); WCDMA: B1/ B6/ B8/ B19                                                                                                 |
|                             | -MW (Global)                      | -MW (Wi-Fi) 2 × 2 Wi-Fi MIMO & BT                                                                                                                                                                  |
|                             | CPU                               | SDM660, Customized 64-bit ARM v8.0-compliant AP (Kryo260 CPU)<br>Kryo Gold Quad high-performance cores targeting 2.2GHz, L2 - 1MB<br>Kryo Silver Quad low-power cores targeting 1.843GHz, L2 - 1MB |
| GPU                         |                                   | Qualcomm® Adreno 512 at 650MHz                                                                                                                                                                     |
| Memory                      |                                   | 32GB eMMC + 3GB LPDDR4X (Default)<br>64GB eMMC + 4GB LPDDR4X (Optional)                                                                                                                            |
| Operating System            |                                   | Android 9.0/10.0                                                                                                                                                                                   |
| Supply Voltage Range        |                                   | 3.55V ~ 4.4V, 4V Typ.                                                                                                                                                                              |
| Weight (approx.) g          |                                   | 12.0                                                                                                                                                                                               |
| Operating temperature range |                                   | -35 °C ~ +75 °C                                                                                                                                                                                    |
| Data Transmission           |                                   |                                                                                                                                                                                                    |
| LTE (Mbps)                  |                                   | Cat 6*:<br>LTE-FDD: Max. 300 (DL)/ Max. 50 (UL)<br>LTE-TDD: Max. 265 (DL)/ Max. 30 (UL)<br>Cat 4:<br>LTE-FDD: Max. 150 (DL)/ Max. 50 (UL)<br>LTE-TDD: Max. 130 (DL)/ Max. 30 (UL)                  |
| UMTS                        |                                   | DC-HSDPA: Max. 42Mbps (DL)<br>DC-HSUPA: Max. 11.2Mbps (UL)<br>WCDMA: Max. 384Kbps (DL/UL)                                                                                                          |
| TD-SCDMA                    |                                   | Max. 4.2Mbps (DL)/2.2Mbps (UL)                                                                                                                                                                     |
| CDMA2000                    |                                   | EVDO: Max. 3.1Mbps (DL)/ 1.8Mbps (UL)<br>1X Advanced: Max. 307.2Kbps (DL/UL)                                                                                                                       |
| GSM                         |                                   | EDGE: Max. 296Kbps (DL)/ 236.8Kbps (UL)<br>GPRS: Max. 107Kbps (DL)/ 85.6Kbps (UL)                                                                                                                  |
| Interfaces                  |                                   |                                                                                                                                                                                                    |
| LCM                         |                                   | 2560×1600 @60fps primary display + 4k@30fps over DP<br>Dual MIPI DSI                                                                                                                               |
| Camera                      |                                   | 4-lane MIPI_CSIx3, up to 2.1Gbps/Lane, Support 3 or 4 Cameras, Up to 24MP with Dual ISPs                                                                                                           |
| Touch Panel                 |                                   | Capacitive Touch Panel                                                                                                                                                                             |
| Audio                       |                                   | Speaker, Earpiece, Headphone, and 3 MICs for Analog Audio Support One Noise-canceling MIC                                                                                                          |
| Video                       |                                   | Encoding: 4K(HEVC/H264/VP8)@30FPS<br>Decoding: 4K(HEVC/H264/VP8/VP9)@30FPS                                                                                                                         |
| USB                         |                                   | × 2, Compliant with USB3.1 and 2.0 specifications, with transmission rates up to 5Gbps on USB3.1 and 480Mbps on USB2.0                                                                             |
| I2C                         |                                   | × 5                                                                                                                                                                                                |
| (U)SIM                      |                                   | × 2 (1.8V/2.95V)                                                                                                                                                                                   |
| UART                        |                                   | × 4, (one group Support 4Mbps with Hardware Flow Control)                                                                                                                                          |
| SDIO                        |                                   | × 1 (3.0, 4-bit SDIO)                                                                                                                                                                              |
| PWRKEY                      |                                   | 1.8V, Pulled-up Internally                                                                                                                                                                         |
| SPI                         |                                   | × 1, only support master mode                                                                                                                                                                      |
| ADC                         |                                   | × 2 General purpose ADC interfaces                                                                                                                                                                 |
| GPIO                        |                                   | × 22                                                                                                                                                                                               |
| PMW                         |                                   | × 1                                                                                                                                                                                                |
| Antenna                     |                                   | Main antenna, Rx-diversity antenna, GNSS antenna, Wi-Fi/BT antenna, FM* antenna and WIFI_MIMO antenna interfaces (SC66-CE and SC66-W do not support MIMO Wi-Fi)                                    |
| Enhanced Features           |                                   |                                                                                                                                                                                                    |
| BT                          |                                   | BT2.1+EDR/3.0/4.1 LE/4.2 BLE/5.0                                                                                                                                                                   |
| WLAN                        |                                   | 2.4G/5G, 802.11a/b/g/n/ac                                                                                                                                                                          |
| GNSS                        |                                   | GPS/ GLONASS/ BeiDou/ Galileo/ QZSS/ SBAS                                                                                                                                                          |
| Charge Function             |                                   | Build-in Charge IC & Fuel Gauge<br>Qualcomm Quick Charge technology                                                                                                                                |
| Dual LCD                    |                                   | Support Dual LCDs for Independent Display                                                                                                                                                          |
| DSDS                        |                                   | Support Dual SIM Dual Standby                                                                                                                                                                      |
| Firmware Upgrade            |                                   | A/B OTA Firmware Upgrade via USB                                                                                                                                                                   |
| Certifications              |                                   | CE/ GCF/ FCC/ PTCRB/ NCC/ AT&T*/ Verizon*/ RCM/ IC/ JATE/ TELEC/ CCC/ SRRC/ NAL                                                                                                                    |
| Recommended Applications    |                                   | Telematics, Mobile POS Terminal, Gateway, Safety, Networking, Mobile Computing, etc.                                                                                                               |

\* Under development

# Quectel LPWA Module Family

| Product                         | BG96                                                                                                                                                                                                                                                      | BG95 Series <sup>1</sup>                                                                                                                                                                                                                                                       |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                 |                                                                                                                                                                          |                                                                                                                                                                                             |
| Form Factor                     | LGA                                                                                                                                                                                                                                                       | LGA                                                                                                                                                                                                                                                                            |
| Dimensions (mm)                 | 26.5 × 22.5 × 2.3                                                                                                                                                                                                                                         | 23.6 × 19.9 × 2.2                                                                                                                                                                                                                                                              |
| RAT                             | LTE Cat M1/ NB1/ EGPRS                                                                                                                                                                                                                                    | LTE Cat M1/Cat NB2/EGPRS                                                                                                                                                                                                                                                       |
| Frequency Bands (MHz)           | LTE-FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B26*/B28<br>LTE-TDD: B39 (Cat M1 Only)<br>EGPRS: 850/900/1800/1900MHz                                                                                                                                      | LTE-FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26(Cat M1 Only)/<br>B27 (Cat M1 Only)/B28/B31*/B66/B71 (Cat NB2 Only)/B72*/B73*/B85<br>EGPRS: 850/900/1800/1900MHz                                                                                                         |
| Weight (approx.) g              | 3.1                                                                                                                                                                                                                                                       | 2.15                                                                                                                                                                                                                                                                           |
| Temperature Range               | -40°C ~ +85°C                                                                                                                                                                                                                                             | -40°C ~ +85°C                                                                                                                                                                                                                                                                  |
| <b>Data Transmission</b>        |                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                |
| LTE Cat M1 data rate (Kbps)     | Max. 375 (DL),<br>Max. 375 (UL)                                                                                                                                                                                                                           | Max. 588 (DL),<br>Max. 1119 (UL)                                                                                                                                                                                                                                               |
| LTE Cat NB1 data rate (Kbps)    | Max. 32 (DL),<br>Max. 70 (UL)                                                                                                                                                                                                                             | Max. 32 (DL),<br>Max. 70 (UL)                                                                                                                                                                                                                                                  |
| LTE Cat NB2 data rate (Kbps)    |                                                                                                                                                                                                                                                           | Max. 127 (DL),<br>Max. 158.5 (UL)                                                                                                                                                                                                                                              |
| EDGE data rate (Kbps)           | Max. 296 (DL),<br>Max. 236.8 (UL)                                                                                                                                                                                                                         | Max. 296 (DL),<br>Max. 236.8 (UL)                                                                                                                                                                                                                                              |
| GPRS data rate (Kbps)           | Max. 107 (DL),<br>Max. 85.6 (UL)                                                                                                                                                                                                                          | Max. 107 (DL),<br>Max. 85.6 (UL)                                                                                                                                                                                                                                               |
| SMS                             | •                                                                                                                                                                                                                                                         | Point-to-point MO and MT; Text and PDU Mode                                                                                                                                                                                                                                    |
| Protocols                       | PPP/ TCP/ UDP/ SSL/ TLS/ FTP(S)/ HTTP(S)/ NITZ/ PING/ MQTT/ LwM2M                                                                                                                                                                                         | PPP/ TCP/UDP/ SSL/ TLS/ FTP (S)/ HTTP (S)/ MQTT/ CoAP/ LwM2M                                                                                                                                                                                                                   |
| <b>Interfaces</b>               |                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                |
| (U)SIM                          | 1.8V/ 3V                                                                                                                                                                                                                                                  | 1.8V                                                                                                                                                                                                                                                                           |
| UART                            | × 3 (MAIN, DEBUG, NMEA)                                                                                                                                                                                                                                   | × 3 (MAIN, DEBUG, NMEA)                                                                                                                                                                                                                                                        |
| USB                             | USB 2.0 × 1                                                                                                                                                                                                                                               | USB 2.0 × 1                                                                                                                                                                                                                                                                    |
| I2C                             | I2C × 1                                                                                                                                                                                                                                                   | I2C* × 1                                                                                                                                                                                                                                                                       |
| ADC                             | ADC × 2                                                                                                                                                                                                                                                   | ADC × 1                                                                                                                                                                                                                                                                        |
| GPIO                            | GPIO × 2 (I2C and NMEA can be re-configured as GPIO)                                                                                                                                                                                                      | GPIO <sup>2</sup> × 9                                                                                                                                                                                                                                                          |
| RESET                           | RESET × 1                                                                                                                                                                                                                                                 | RESET × 1                                                                                                                                                                                                                                                                      |
| PCM                             | •                                                                                                                                                                                                                                                         | PCM* × 1                                                                                                                                                                                                                                                                       |
| Antenna                         | Primary, GNSS                                                                                                                                                                                                                                             | Antenna <sup>3</sup> : 2 (for Main Antenna and GNSS Antenna, respectively)                                                                                                                                                                                                     |
| <b>Enhanced Features</b>        |                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                |
| QuecOpen <sup>®</sup> +         | Simplifies the Development of Embedded Applications                                                                                                                                                                                                       | Simplifies the Development of Embedded Applications                                                                                                                                                                                                                            |
| DFOTA                           | •                                                                                                                                                                                                                                                         | •                                                                                                                                                                                                                                                                              |
| GNSS/RIL Driver                 | Android 4.x/ 5.x/ 6.x/ 7.x                                                                                                                                                                                                                                | GNSS/RIL Driver*: Android 4.x/5.x/6.x/7.x/8.x/9.x                                                                                                                                                                                                                              |
| NDIS                            | Windows 7/ 8/ 8.1/ 10                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                |
| USB Serial Driver               | Windows 7/ 8/ 10<br>Linux 2.6 or later, Android 4.x/ 5.x/ 6.0                                                                                                                                                                                             | USB Serial Driver*: Windows 7/8/8.1/10,<br>Linux 2.6~5.4,<br>Android 4.x/5.x/6.x/7.x/ 8.x/9.x                                                                                                                                                                                  |
| SIM Detection                   | •                                                                                                                                                                                                                                                         | •                                                                                                                                                                                                                                                                              |
| GNSS                            | Optional                                                                                                                                                                                                                                                  | •                                                                                                                                                                                                                                                                              |
| Firmware Update                 | via USB Interface                                                                                                                                                                                                                                         | via USB Interface                                                                                                                                                                                                                                                              |
| <b>Electrical Features</b>      |                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                |
| Supply Voltage Range            | 3.3 ~ 4.3V, 3.8V Typ.                                                                                                                                                                                                                                     | 3.8V Typ. /3.3V Typ. <sup>4</sup>                                                                                                                                                                                                                                              |
| Power Consumption               | 10µA@ PSM                                                                                                                                                                                                                                                 | 3.9µA@PSM                                                                                                                                                                                                                                                                      |
| Max Output Power                | Power Class 3 23dBm @ LTE Bands                                                                                                                                                                                                                           | Power Class5 21dBm @ LTE Bands / Power Class3 23dBm@ LTE Bands <sup>5</sup>                                                                                                                                                                                                    |
| <b>Certifications</b>           | Vodafone / Deutsche Telekom/ Telefónica/ Verizon/ AT&T/ T-Mobile/ Sprint/ Telus/ Rogers/ SKT/LGU+/ NTT DOCOMO/ SoftBank/KDDI/ Telstra/ GCF/ CE/FCC/ PTCRB/ IC/ IFETEL/ CCC/ KC/ NCC/ JATE/ TELEC/ RCM/ NBTC/ IMDA/ ICASA/ U.S._Cellular                   | China Telecom*/ China Mobile*/ China Unicom*/ Vodafone*/ Deutsche Telekom*/ Verizon/ AT&T/ T-Mobile*/ Sprint/SKT*/ NTT DOCOMO*/ SoftBank*/ KDDI*/ Telstra*/ SRRC*/ NAL*/ CCC*/ GCF/ CE/ FCC/ PTCRB/ IC/ Anatel*/ KC*/ NCC*/ JATE*/ TELEC*/ RCM/ NBTC*/ IMDA*/ RoHS/ ATEX*/ PEN |
| <b>Recommended Applications</b> | Gas Detector, Soil PH Tester, Optical Sensor, Machinery Alarm System, Irrigation Controller, Elevator, Asset Tracking Electronics, Person/ Pet Tracking, Water/ Gas Metering, Smart Parking System, Fire Hydrant, Smoke Alarm, Smart Bin, Street Lighting |                                                                                                                                                                                                                                                                                |

Note 1: For different variants, please refer to the BG95 specification.

Note 2: BG95-MF provides 7 GPIO Interfaces, please refer to HD for details.

Note 3: BG95-MF provides 3 antenna interfaces, please refer to HD for details.

Note 4: For the supply Voltage of different Variants, please refer to the BG95 Hardware Design document.

Note 5: Special variant.

\* Under development

# Quectel LPWA Module Family

| Product                         | BG600L-M3                                                                                                                                                                                                                                                 | BG77                                                                                                                                                                                    |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                 |                                                                                                                                                                          |                                                                                                      |
| Form Factor                     | LGA                                                                                                                                                                                                                                                       | LGA                                                                                                                                                                                     |
| Dimensions (mm)                 | 18.7 × 16.0 × 2.1                                                                                                                                                                                                                                         | 14.9 × 12.9 × 1.7                                                                                                                                                                       |
| RAT                             | LTE Cat M1/Cat NB2/EGPRS                                                                                                                                                                                                                                  | LTE Cat M1/Cat NB2                                                                                                                                                                      |
| Frequency Bands (MHz)           | LTE-FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26(Cat M1 Only)/<br>B27 (Cat M1 Only)/B28/B66/B71 (Cat NB2 Only)/B85<br>EGPRS: 850/900/1800/1900MHz                                                                                                   | LTE-FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26(Cat M1 Only)/<br>B27 (Cat M1 Only)/B28/B66/B71 (Cat NB2 Only)/B85*                                                               |
| Weight (approx.) g              | 1.25                                                                                                                                                                                                                                                      | 0.73                                                                                                                                                                                    |
| Temperature Range               | -40°C ~ +85°C                                                                                                                                                                                                                                             | -40°C ~ +85°C                                                                                                                                                                           |
| <b>Data Transmission</b>        |                                                                                                                                                                                                                                                           |                                                                                                                                                                                         |
| LTE Cat M1 data rate (Kbps)     | Max. 588 (DL),<br>Max. 1119 (UL)                                                                                                                                                                                                                          | Max. 588 (DL),<br>Max. 1119 (UL)                                                                                                                                                        |
| LTE Cat NB1 data rate (Kbps)    | Max. 32 (DL),<br>Max. 70 (UL)                                                                                                                                                                                                                             | Max. 32 (DL),<br>Max. 70 (UL)                                                                                                                                                           |
| LTE Cat NB2 data rate (Kbps)    | Max. 127 (DL),<br>Max. 158.5 (UL)                                                                                                                                                                                                                         | Max. 127 (DL),<br>Max. 158.5 (UL)                                                                                                                                                       |
| EDGE data rate (Kbps)           | Max. 296 (DL),<br>Max. 236.8 (UL)                                                                                                                                                                                                                         |                                                                                                                                                                                         |
| GPRS data rate (Kbps)           | Max. 107 (DL),<br>Max. 85.6 (UL)                                                                                                                                                                                                                          |                                                                                                                                                                                         |
| SMS                             | Point-to-point MO and MT; SMS Cell Broadcast; Text and PDU Mode                                                                                                                                                                                           | Point-to-point MO and MT; SMS Cell Broadcast; Text and PDU Mode                                                                                                                         |
| Protocols                       | PPP/TCP/UDP/SSL/TLS/FTP(S)/HTTP(S)/MQTT/CoAP/LwM2M                                                                                                                                                                                                        | PPP/TCP/UDP/SSL/TLS/FTP(S)/HTTP(S)/MQTT/CoAP/LwM2M                                                                                                                                      |
| <b>Interfaces</b>               |                                                                                                                                                                                                                                                           |                                                                                                                                                                                         |
| (U)SIM                          | 1.8V                                                                                                                                                                                                                                                      | 1.8V                                                                                                                                                                                    |
| UART                            | × 3 (MAIN, DEBUG, NMEA)                                                                                                                                                                                                                                   | × 3 (MAIN, DEBUG, NMEA)                                                                                                                                                                 |
| USB                             | USB 2.0 × 1                                                                                                                                                                                                                                               | USB 2.0 × 1                                                                                                                                                                             |
| I2C                             | I2C* × 1                                                                                                                                                                                                                                                  | I2C* × 1                                                                                                                                                                                |
| ADC                             | ADC × 1                                                                                                                                                                                                                                                   | ADC × 2                                                                                                                                                                                 |
| GPIO                            | GPIO × 6                                                                                                                                                                                                                                                  | GPIO × 7                                                                                                                                                                                |
| RESET                           | RESET × 1                                                                                                                                                                                                                                                 | RESET × 1                                                                                                                                                                               |
| PCM                             | PCM* × 1                                                                                                                                                                                                                                                  | PCM* × 1                                                                                                                                                                                |
| Antenna                         | 2 (for Main Antenna and GNSS Antenna, respectively)                                                                                                                                                                                                       | 2 (for Main Antenna and GNSS Antenna, respectively)                                                                                                                                     |
| <b>Enhanced Features</b>        |                                                                                                                                                                                                                                                           |                                                                                                                                                                                         |
| QuecOpen®                       | Simplifies the Development of Embedded Applications                                                                                                                                                                                                       | Simplifies the Development of Embedded Applications                                                                                                                                     |
| DFOTA                           | •                                                                                                                                                                                                                                                         | •                                                                                                                                                                                       |
| GNSS/RIL Driver*                | Android 4.x/5.x/6.x/7.x/8.x/9.x                                                                                                                                                                                                                           | Android 4.x/5.x/6.x/7.x/8.x/9.x                                                                                                                                                         |
| USB Serial Driver               | Windows 7/8/8.1/10,<br>Linux 2.6~5.4,<br>Android 4.x/5.x/6.x/7.x/8.x/9.x                                                                                                                                                                                  | Windows 7/8/8.1/10,<br>Linux 2.6~5.4,<br>Android 4.x/5.x/6.x/7.x/8.x/9.x                                                                                                                |
| SIM Detection                   | •                                                                                                                                                                                                                                                         | •                                                                                                                                                                                       |
| GNSS                            | •                                                                                                                                                                                                                                                         | •                                                                                                                                                                                       |
| Firmware Update                 | via USB Interface                                                                                                                                                                                                                                         | via USB Interface                                                                                                                                                                       |
| <b>Electrical Features</b>      |                                                                                                                                                                                                                                                           |                                                                                                                                                                                         |
| Supply Voltage Range            | 3.3V~4.3V, 3.8V Typ.                                                                                                                                                                                                                                      | 2.6V~4.8V, 3.3V Typ. <sup>1</sup>                                                                                                                                                       |
| Power Consumption               | 3.9µA@PSM                                                                                                                                                                                                                                                 | 3.2µA@PSM                                                                                                                                                                               |
| Max Output Power                | Power Class 5 21dBm @ LTE Bands                                                                                                                                                                                                                           | Power Class 5 21dBm @ LTE Bands                                                                                                                                                         |
| <b>Certifications</b>           | Vodafone*/Deutsche Telekom*/Telefónica*/Verizon*/AT&T*/T-Mobile*/Sprint*/CCC*/GCF/<br>CE/FCC/PTCRB/IC*/RoHS                                                                                                                                               | China Telecom*/China Mobile*/China Unicom*/Vodafone*/Deutsche Telekom*/Verizon/<br>AT&T*/T-Mobile*/Sprint*/SRRC*/NAL*/CCC*/GCF/CE/FCC/PTCRB/IC*/KC*/NCC*/JATE/<br>TELEC*/RCM/NBTC*/RoHS |
| <b>Recommended Applications</b> | Gas Detector, Soil PH Tester, Optical Sensor, Machinery Alarm System, Irrigation Controller, Elevator, Asset Tracking Electronics, Person/ Pet Tracking, Water/ Gas Metering, Smart Parking System, Fire Hydrant, Smoke Alarm, Smart Bin, Street Lighting |                                                                                                                                                                                         |

Note 1: please refer to the hardware design manual for more specific requirements on the minimum power supply voltage.

\* Under development

# Quectel LPWA Module Family

| Product                      | BC95-G                                                                                                                                                                                                                                                   | BC68                                                                                                                                                  | BC66                                                                                                                                                                                                                            | BC66-NA                                                                                                                                                                                    | BC65                                                                                    | BC92                                                                                    |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|                              |                                                                                                                                                                         |                                                                      |                                                                                                                                                |                                                                                                          |      |      |
| Form Factor                  | LCC                                                                                                                                                                                                                                                      | LCC                                                                                                                                                   | LCC                                                                                                                                                                                                                             | LCC                                                                                                                                                                                        | LCC                                                                                     | LCC                                                                                     |
| Dimensions (mm)              | 19.9 × 23.6 × 2.2                                                                                                                                                                                                                                        | 15.8 × 17.7 × 2.0                                                                                                                                     | 15.8 × 17.7 × 2.0                                                                                                                                                                                                               | 15.8 × 17.7 × 2.0                                                                                                                                                                          | 17.7 × 15.8 × 2.2                                                                       | 23.6 × 19.9 × 2.2                                                                       |
| RAT                          | LTE Cat NB2                                                                                                                                                                                                                                              | LTE Cat NB2                                                                                                                                           | LTE Cat NB1                                                                                                                                                                                                                     | LTE Cat NB2                                                                                                                                                                                | LTE Cat NB2                                                                             | LTE Cat NB2/GSM                                                                         |
| Frequency Bands (MHz)        | B1 @H-FDD: 2100MHz ;<br>B3 @H-FDD: 1800MHz ;<br>B5 @H-FDD: 850MHz ;<br>B8 @H-FDD: 900MHz ;<br>B20 @H-FDD: 800MHz ;<br>B28 @H-FDD: 700MHz ;                                                                                                               | B1 @H-FDD: 2100MHz ;<br>B3 @H-FDD: 1800MHz ;<br>B5 @H-FDD: 850MHz ;<br>B8 @H-FDD: 900MHz ;<br>B20 @H-FDD: 800MHz ;<br>B28 @H-FDD: 700MHz ;            | LTE Cat NB1:<br>B1/ B2/ B3/ B4/ B5/ B8/B12/<br>B13/ B17/ B18/ B19/ B20/<br>B25/ B28/ B66/ B26*                                                                                                                                  | LTE Cat NB2:<br>B1/B2/B3/B4/B5/B8/B12/B13/<br>B17/B18/B19/B20/B25/B28/<br>B66/B71/B85/B26*                                                                                                 | LTE Cat NB2:<br>B1*/ B3/ B5/ B8/ B20/B28                                                | LTE Cat NB2:<br>B3/ B5/ B8/ B20/ B28<br>GSM:<br>850/900/1800/1900MHz                    |
| Weight (approx.) g           | 1.8±0.2                                                                                                                                                                                                                                                  | 1.1±0.2                                                                                                                                               | 1.2±0.2                                                                                                                                                                                                                         | 1.2±0.2                                                                                                                                                                                    | 1.2±0.2                                                                                 | 1.8±0.1                                                                                 |
| Temperature Range            | -40 °C ~ +85 °C                                                                                                                                                                                                                                          | -40°C ~ +85°C                                                                                                                                         | -40 °C ~ +85 °C                                                                                                                                                                                                                 | -40 °C ~ +85 °C                                                                                                                                                                            | -25 °C ~ +75 °C                                                                         | -25 °C ~ +75 °C                                                                         |
| <b>Data Transmission</b>     |                                                                                                                                                                                                                                                          |                                                                                                                                                       |                                                                                                                                                                                                                                 |                                                                                                                                                                                            |                                                                                         |                                                                                         |
| LTE Cat NB1 data rate (Kbps) | Single Tone:<br>25.2 (DL) / 15.625 (UL)<br>Multi Tone:<br>25.2 (DL) / 54 (UL)                                                                                                                                                                            | Single Tone:<br>25.2 (DL) / 15.625 (UL)<br>Multi Tone:<br>25.2 (DL) / 54 (UL)                                                                         | Single Tone:<br>25.5 (DL) / 16.7 (UL)<br>Multi Tone:<br>25.5 (DL) / 62.5 (UL)                                                                                                                                                   | Single Tone:<br>25.5 (DL) / 16.7 (UL)<br>Multi Tone:<br>25.5 (DL) / 62.5 (UL)                                                                                                              | Single-Tone:<br>Max. 25.5 (DL) / 16.7 (UL)<br>Multi-Tone:<br>Max. 25.5 (DL) / 62.5 (UL) | Single-Tone:<br>Max. 25.5 (DL) / 16.7 (UL)<br>Multi-Tone:<br>Max. 25.5 (DL) / 62.5 (UL) |
| LTE Cat NB2 data rate (Kbps) | Extended TBS/2 HARQ :<br>125 (DL) / 150 (UL)                                                                                                                                                                                                             | Extended TBS/2 HARQ :<br>125 (DL) / 150 (UL)                                                                                                          |                                                                                                                                                                                                                                 | Max. 127 (DL) / 158.5 (UL)                                                                                                                                                                 | Max. 127 (DL) / 158.5 (UL)                                                              | Max. 127 (DL) / 158.5 (UL)                                                              |
| GPRS data rate (Kbps)        |                                                                                                                                                                                                                                                          |                                                                                                                                                       |                                                                                                                                                                                                                                 |                                                                                                                                                                                            |                                                                                         | GPRS Class 12:<br>Max. 85.6 (DL) / 85.6 (UL)                                            |
| SMS                          | •                                                                                                                                                                                                                                                        | •                                                                                                                                                     | •                                                                                                                                                                                                                               | •                                                                                                                                                                                          | •                                                                                       | •                                                                                       |
| Protocols                    | IPv4/ IPv6/ UDP/ CoAP/<br>LwM2M/ Non-IP/ DTLS / TCP/<br>MQTT                                                                                                                                                                                             | IPv4/ IPv6/ UDP/ CoAP/<br>LwM2M/ Non-IP/ DTLS / TCP/<br>MQTT                                                                                          | UDP/ TCP/ LwM2M/ MQTT/<br>SNTP/ PPP/ CoAP/ TLS/<br>DTLS/ HTTP/ HTTPS*                                                                                                                                                           | UDP/ TCP/ LwM2M/ MQTT/<br>SNTP/ PPP/ CoAP/ TLS/<br>DTLS/ HTTP/ HTTPS*                                                                                                                      | UDP/TCP/LwM2M*/SNTP/<br>FTP*/MQTT/CoAP*/PPP/TLS*/<br>DTLS*/HTTP*                        | UDP/TCP/LwM2M/SNTP/PPP/<br>MQTT/CoAP*/HTTP*/HTTPS*/<br>FTP*                             |
| <b>Interfaces</b>            |                                                                                                                                                                                                                                                          |                                                                                                                                                       |                                                                                                                                                                                                                                 |                                                                                                                                                                                            |                                                                                         |                                                                                         |
| (U)SIM                       | × 1 Supports 1.8V/ 3.0V USIM Card                                                                                                                                                                                                                        | × 1 Supports 1.8V/ 3.0V USIM Card                                                                                                                     | 1.8V                                                                                                                                                                                                                            | 1.8V                                                                                                                                                                                       | 1.8V/3V                                                                                 | 1.8V/3V                                                                                 |
| UART                         | × 2                                                                                                                                                                                                                                                      | × 2                                                                                                                                                   | × 3 (MAIN, DEBUG, AUX)                                                                                                                                                                                                          | × 3 (MAIN, DEBUG, AUX)                                                                                                                                                                     | × 3 (MAIN, DEBUG, AUX)                                                                  | × 2 (MAIN, DEBUG)                                                                       |
| I2C                          | × 2 (QuecOpen Version Only)                                                                                                                                                                                                                              | × 1 (QuecOpen Version Only)                                                                                                                           | × 1 (QuecOpen Version Only)                                                                                                                                                                                                     | × 1 (QuecOpen Version Only)                                                                                                                                                                | × 2 (QuecOpen Version Only)                                                             |                                                                                         |
| ADC                          | × 1, 10bits (QuecOpen Version Only)                                                                                                                                                                                                                      | × 1, 10bits (QuecOpen Version Only)                                                                                                                   | × 1                                                                                                                                                                                                                             | × 1                                                                                                                                                                                        | × 1                                                                                     | × 1                                                                                     |
| GPIO                         | Config (QuecOpen Version Only)                                                                                                                                                                                                                           | Config (QuecOpen Version Only)                                                                                                                        | Config (QuecOpen Version Only)                                                                                                                                                                                                  | Config (QuecOpen Version Only)                                                                                                                                                             | × 1 (QuecOpen Version Only)                                                             |                                                                                         |
| RESET                        | × 1                                                                                                                                                                                                                                                      | × 1                                                                                                                                                   | × 1                                                                                                                                                                                                                             | × 1                                                                                                                                                                                        | × 1                                                                                     | × 1                                                                                     |
| SPI                          | × 2 (QuecOpen Version Only)                                                                                                                                                                                                                              | × 1 (QuecOpen Version Only)                                                                                                                           | × 1 (QuecOpen Version Only)                                                                                                                                                                                                     | × 1 (QuecOpen Version Only)                                                                                                                                                                | × 1 (QuecOpen Version Only)                                                             |                                                                                         |
| PSM_EINT                     | Config (QuecOpen Version Only)                                                                                                                                                                                                                           | Config (QuecOpen Version Only)                                                                                                                        | × 1                                                                                                                                                                                                                             | × 1                                                                                                                                                                                        | × 1                                                                                     | × 1                                                                                     |
| I2S                          |                                                                                                                                                                                                                                                          |                                                                                                                                                       | × 1 (QuecOpen Version Only)                                                                                                                                                                                                     | × 1 (QuecOpen Version Only)                                                                                                                                                                |                                                                                         |                                                                                         |
| Antenna                      | Pads for Primary                                                                                                                                                                                                                                         | Pads for Primary                                                                                                                                      | Primary                                                                                                                                                                                                                         | Primary                                                                                                                                                                                    | Primary                                                                                 | Primary                                                                                 |
| <b>Enhanced Features</b>     |                                                                                                                                                                                                                                                          |                                                                                                                                                       |                                                                                                                                                                                                                                 |                                                                                                                                                                                            |                                                                                         |                                                                                         |
| QuecOpen®                    | •                                                                                                                                                                                                                                                        | •                                                                                                                                                     | •                                                                                                                                                                                                                               | •                                                                                                                                                                                          | •                                                                                       | •                                                                                       |
| DFOTA                        | •                                                                                                                                                                                                                                                        | •                                                                                                                                                     | •                                                                                                                                                                                                                               | •                                                                                                                                                                                          | •                                                                                       | •                                                                                       |
| Firmware Update              | via UART/ DFOTA                                                                                                                                                                                                                                          | via UART/ DFOTA                                                                                                                                       | via UART/ DFOTA                                                                                                                                                                                                                 | via UART/ DFOTA                                                                                                                                                                            | via UART/ DFOTA                                                                         | via UART/ DFOTA                                                                         |
| RAI                          | •                                                                                                                                                                                                                                                        | •                                                                                                                                                     | •                                                                                                                                                                                                                               | •                                                                                                                                                                                          | •                                                                                       | •                                                                                       |
| Location Based Service       | ECID, OTDOA                                                                                                                                                                                                                                              | ECID, OTDOA                                                                                                                                           |                                                                                                                                                                                                                                 | ECID* , OTDOA*                                                                                                                                                                             | ECID, OTDOA                                                                             | ECID, OTDOA                                                                             |
| eSIM*                        | O                                                                                                                                                                                                                                                        |                                                                                                                                                       | O                                                                                                                                                                                                                               | O                                                                                                                                                                                          | O                                                                                       |                                                                                         |
| <b>Electrical Features</b>   |                                                                                                                                                                                                                                                          |                                                                                                                                                       |                                                                                                                                                                                                                                 |                                                                                                                                                                                            |                                                                                         |                                                                                         |
| Supply Voltage Range         | 3.1~4.2V, 3.6V Typ.                                                                                                                                                                                                                                      | 3.1~4.2V, 3.6V Typ.                                                                                                                                   | 2.1V~3.63V, 3.3V Typ.                                                                                                                                                                                                           | 2.1V~3.63V, 3.3V Typ.                                                                                                                                                                      | 3.2V~4.2V, 3.8V Typ.                                                                    | 3.4V~4.2V, 3.8V Typ.                                                                    |
| Power Consumption            | 3µA @PSM<br>0.5mA @Idle Mode,<br>DRX=2.56s, ECL0<br>250mA @Tx, 23dBm (B1/B3)<br>220mA @Tx, 23dBm<br>(B8/B5/B20)<br>280mA @Tx, 23dBm (B28)<br>60mA @Rx                                                                                                    | 3µA @PSM<br>0.5mA @Idle Mode,<br>DRX=2.56s, ECL0<br>250mA @Tx, 23dBm (B1/B3)<br>220mA @Tx, 23dBm<br>(B8/B5/B20)<br>280mA @Tx, 23dBm (B28)<br>60mA @Rx | 3.5µA @ PSM                                                                                                                                                                                                                     | 3.6µA @ PSM                                                                                                                                                                                | 4.5µA @PSM                                                                              | 4µA @PSM                                                                                |
| Certifications               | CE/ GCF/ RCM/ NCC/ JATE/<br>TELEC/ KC/ NBTC/ Vodafone<br>Global / Deutsche Telekom /<br>Telstra / Softbank/ KT/<br>Telefónica/ LGU+ / ATEX*/<br>IMDA/ Anatel                                                                                             | CE/ GCF/ RCM/ NCC/ JATE/<br>TELEC/ IMDA / Deutsche<br>Telekom/ Vodafone/ Telstra /<br>ATEX/ Softbank/ KC/<br>Telefónica/ TIM/ Altice-MEO              | NCC/ IC/ CE/ RCM/ GCF/<br>FCC/ PTCRB/ JATE/ TELEC/<br>KC/ NBTC/ T-Mobile/ Altice/<br>TIM(Telecom Italia)/ Vodafone/<br>ATEX/ IMDA/ AT&T/ LGU+*/<br>Softbank/ Telstra/ Telefonica*/<br>Deutsche Telekom/<br>Altice-MEO/ Verizon* | NCC*/ IC/ CE/ RCM/ GCF/<br>FCC/ PTCRB/ JATE/ TELEC/<br>KC/ NBTC*/ T-Mobile/<br>Vodafone/ ATEX*/ IMDA*/<br>AT&T*/ LGU+*/ Softbank*/<br>Telstra*/ Telefonica*/ Deutsche<br>Telekom/ Verizon* | CE/ RCM                                                                                 | CE/ RCM/ GCF/ Vodafone*/<br>MTN/ ICASA*/ Vodacom                                        |
| Recommended Applications     | Gas Detector, Soil PH Tester, Optical Sensor, Machinery Alarm System, Irrigation Controller, Elevator, Asset Tracking, Electronics, Person/Pet Tracking, Water/Gas Metering, Smart Parking System, Fire Hydrant, Smoke Alarm, Smart Bin, Street Lighting |                                                                                                                                                       |                                                                                                                                                                                                                                 |                                                                                                                                                                                            |                                                                                         |                                                                                         |

O & \* Under development

# Quectel Automotive Module Family

| Product                                                                                                                                   | AG35                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|                                                                                                                                           |         |
| Form Factor                                                                                                                               | LGA                                                                                      |
| Dimensions (mm)                                                                                                                           | 33.0 × 37.5 × 3.0                                                                        |
| 4G                                                                                                                                        | LTE Cat 4                                                                                |
| Frequency Bands (MHz)                                                                                                                     | -E (EMEA/Korea/Australia/India/Southeast Asia)                                           |
|                                                                                                                                           | -CE (China/India)                                                                        |
|                                                                                                                                           | -NA (North America)                                                                      |
|                                                                                                                                           | -J (Japan)                                                                               |
|                                                                                                                                           | -LA (Latin America)                                                                      |
| Weight (approx.) g                                                                                                                        | 8.1                                                                                      |
| Temperature Range                                                                                                                         | -40 °C ~ +85 °C                                                                          |
| <b>Data Transmission</b>                                                                                                                  |                                                                                          |
| LTE(data rate (Mbps)                                                                                                                      | LTE-FDD: Max. 150 (DL)/ Max. 50 (UL)<br>LTE-TDD: Max. 130 (DL)/ Max. 30 (UL)             |
| DC-HSPA+ data rate (Mbps)                                                                                                                 | Max. 42 (DL)/ Max. 5.76 (UL)                                                             |
| WCDMA data rate (Kbps)                                                                                                                    | Max. 384 (DL)/ Max. 384 (UL)                                                             |
| TD-SCDMA data rate (Mbps)                                                                                                                 | Max. 4.2 (DL)/ Max. 2.2 (UL)                                                             |
| EDGE data rate (Kbps)                                                                                                                     | Max. 296 (DL)/ Max. 236.8 (UL)                                                           |
| GPRS data rate (Kbps)                                                                                                                     | Max. 107 (DL)/ Max. 85.6 (UL)                                                            |
| SMS                                                                                                                                       | Point-to-point MO/MT<br>SMS Cell Broadcast<br>Text and PDU Mode                          |
| Protocols                                                                                                                                 | TCP/UDP/PPP/PING/FTP(S)/ HTTP(S)/SMTP/SSL/TLS/ MMS/NTP/ FILE/QMI                         |
| <b>Interfaces</b>                                                                                                                         |                                                                                          |
| (U)SIM                                                                                                                                    | × 1 (Support 1.8V/ 3V USIM/ SIM Cards)                                                   |
| UART                                                                                                                                      | × 3 (for Main UART/ BT/ Debug Functions)                                                 |
| HSIC                                                                                                                                      | × 1                                                                                      |
| USB                                                                                                                                       | USB 2.0 × 1 (with High Speed up to 480Mbps)                                              |
| IIC                                                                                                                                       | × 2 (1 for PCM)                                                                          |
| SGMII                                                                                                                                     | × 1                                                                                      |
| SDIO                                                                                                                                      | × 2 for Wi-Fi and eMMC                                                                   |
| SPI                                                                                                                                       | SPI > 1 (for QuecOpen Version Only)                                                      |
| Audio Digital (PCM)                                                                                                                       | × 1                                                                                      |
| ADC                                                                                                                                       | × 3, 15bits                                                                              |
| GPIO                                                                                                                                      | GPIO >15 (for QuecOpen Version Only)                                                     |
| Antenna                                                                                                                                   | Main, Rx-diversity and GNSS                                                              |
| <b>Enhanced Features</b>                                                                                                                  |                                                                                          |
| QuecOpen® (Open Linux)                                                                                                                    | •                                                                                        |
| eCall                                                                                                                                     | •                                                                                        |
| Era Glonass                                                                                                                               | •                                                                                        |
| Multi-APN                                                                                                                                 | •                                                                                        |
| Temperature Management                                                                                                                    | •                                                                                        |
| DFOTA                                                                                                                                     | •                                                                                        |
| Voice over USB (USB Audio)                                                                                                                | •                                                                                        |
| QDR                                                                                                                                       | Optional                                                                                 |
| PPE (RTK)                                                                                                                                 | Optional (Support only in China)                                                         |
| GNSS                                                                                                                                      | GPS/ GLONASS/ BeiDou/ Galileo/ QZSS                                                      |
| <b>Advanced Security Feature</b>                                                                                                          |                                                                                          |
| TrustZone                                                                                                                                 | •                                                                                        |
| Secure Boot                                                                                                                               | •                                                                                        |
| Code/User Data Backup                                                                                                                     | •                                                                                        |
| <b>Software Features</b>                                                                                                                  |                                                                                          |
| RIL Driver                                                                                                                                | Android 4.x~9.x                                                                          |
| RNDIS Driver                                                                                                                              | Windows 7/ 8/ 8.1/ 10, Linux 2.6~5.4                                                     |
| ECM Driver                                                                                                                                | Linux 2.6~5.4                                                                            |
| Gobinet Driver                                                                                                                            | Linux 2.6~5.4                                                                            |
| QMI_WWAN Driver                                                                                                                           | Linux 3.4~5.4                                                                            |
| USB Serial Driver                                                                                                                         | Windows 7/ 8/ 8.1/10, Linux 2.6~5.4, Android 4.x~9.x                                     |
| GNSS Driver                                                                                                                               | Android 4.x~9.x                                                                          |
| <b>Electrical Features</b>                                                                                                                |                                                                                          |
| Supply Voltage Range                                                                                                                      | 3.3V~4.3V, 3.8V Typ.                                                                     |
| Power Consumption                                                                                                                         | 20µA @Power off/ 1.9mA @LTE Sleep, PF=128/<br>1.6mA @LTE Sleep, PF=256/ 22mA @Idle, Typ. |
| <b>Certifications</b>                                                                                                                     |                                                                                          |
| CCC/ SRRC/ NAL/ GCF/ CE/ FCC/ KC/ RCM/ Anatel/ KT*/ STK*/ LGU+*/ PTCRB/ IC/ AT&T/ Rogers/ T-Mobile*/ Verizon*/ JATE/ TELECOM/ NTT DOCOMO* |                                                                                          |
| <b>Recommended Applications</b>                                                                                                           |                                                                                          |
| Automotive                                                                                                                                |                                                                                          |

| Product                          | AG520R                                                                                                                                      |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
|                                  |                                                          |
| Form Factor                      | LGA                                                                                                                                         |
| Dimensions (mm)                  | 38.0 × 42.0 × 2.85                                                                                                                          |
| 4.5G                             | LTE Cat 16                                                                                                                                  |
| Frequency Bands (MHz)            | -CN (China)                                                                                                                                 |
|                                  | -EU (EMEA/Australia/ Korea/India/ Southeast Asia)                                                                                           |
|                                  | -NA (North America)                                                                                                                         |
|                                  | -JP                                                                                                                                         |
| Weight (approx.) g               | 9.23                                                                                                                                        |
| Temperature Range                | -40 °C ~ +85 °C, eCall +95°C                                                                                                                |
| <b>Data Transmission</b>         |                                                                                                                                             |
| LTE data rate                    | LTE-FDD: Max. 1Gbps (DL)/ 75Mbps (UL),<br>LTE-TDD: Max. 880Mbps (DL)/45Mbps (UL)                                                            |
| DC-HSPA+ Data Rate (Mbps)        | Max. 42 (DL)/ Max. 5.76 (UL)                                                                                                                |
| WCDMA data rate (Kbps)           | Max. 384 (DL)/ Max. 384 (UL)                                                                                                                |
| EDGE data rate (Kbps)            | Max. 296 (DL)/ Max. 236.8 (UL)                                                                                                              |
| GPRS data rate (Kbps)            | Max. 107 (DL)/ Max. 85.6 (UL)                                                                                                               |
| C-V2X data rate (Mbps)           | Max. 30 (Tx)/ Max. 30(Rx)                                                                                                                   |
| SMS                              | Point-to-point MO and MT<br>SMS Cell Broadcast<br>Text and PDU Mode                                                                         |
| Protocols                        | TCP/ UDP/ PPP/ PING/ FTP(S)/ HTTP(S)/SMTP/ SSL/ TLS/ MMS/ NTP/ DTMF*/ FILE/ QMI                                                             |
| <b>Interfaces</b>                |                                                                                                                                             |
| USB                              | × 1                                                                                                                                         |
| UART                             | 3 × UARTs                                                                                                                                   |
| USIM                             | × 1                                                                                                                                         |
| Antenna                          | × 7 or × 5(2 × 2 MIMO for CN)                                                                                                               |
| RESET                            | Yes                                                                                                                                         |
| SDIO                             | × 1(eMMC)                                                                                                                                   |
| SPI                              | × 1                                                                                                                                         |
| I2S/PCM                          | × 1 I2S, × 1 PCM                                                                                                                            |
| I2C                              | × 1                                                                                                                                         |
| RGMII                            | × 1                                                                                                                                         |
| ADC                              | × 2                                                                                                                                         |
| PCIe                             | × 1                                                                                                                                         |
| GPIO                             | × 8 (Only Open)                                                                                                                             |
| JTAG/QDSS                        | Yes                                                                                                                                         |
| <b>Enhanced Features</b>         |                                                                                                                                             |
| QuecOpen® (Open Linux)           | •                                                                                                                                           |
| eCall                            | •                                                                                                                                           |
| DFOTA                            | •                                                                                                                                           |
| eSIM (eUICC)                     | •                                                                                                                                           |
| (U)SIM Detection                 | •                                                                                                                                           |
| Temperature Management           | •                                                                                                                                           |
| GNSS                             | GPS/ GLONASS/ BeiDou/ Galileo                                                                                                               |
| ESD/EMI Protection               | Realized through Internal Specific Circuits and Components                                                                                  |
| Gigabit Ethernet                 | Optional                                                                                                                                    |
| C-V2X                            | Optional                                                                                                                                    |
| DSDA (Dual SIM Dual Activation)  | Optional                                                                                                                                    |
| QDR 3.0 (External IMU Required)  | Optional                                                                                                                                    |
| Multi-Frequency GNSS (L1/L5)     | Optional                                                                                                                                    |
| UART Interface for BT Function   | Optional                                                                                                                                    |
| <b>Advanced Security Feature</b> |                                                                                                                                             |
| TrustZone*/ TPM*                 | •                                                                                                                                           |
| Secure Boot*                     | •                                                                                                                                           |
| SE-Linux                         | •                                                                                                                                           |
| <b>Software Features</b>         |                                                                                                                                             |
| RIL Driver                       | Android 4.x/ 5.x/ 6.x/ 7.x/ 8.x/ 9.x                                                                                                        |
| GNSS Driver                      | Android 4.x/ 5.x/ 6.x/ 7.x/ 8.x/ 9.x                                                                                                        |
| RNDIS                            | Windows 7/8/8.1/10, Linux 2.6~5.4                                                                                                           |
| ECM                              | Linux 2.6~5.0                                                                                                                               |
| Gobinet                          | Linux 2.6~5.0, Android 4.x/ 5.x/ 6.x/ 7.x/ 8.x/ 9.x                                                                                         |
| QMI_WWAN Driver                  | Linux 3.4~5.0, Android 4.x/5.x/6.x/7.x/8.x/9.x                                                                                              |
| USB Serial Driver                | Windows 7/8/8.1/10, Linux 2.6~5.0, Android 4.x/5.x/6.x/7.x/8.x/9.x                                                                          |
| <b>Electrical Features</b>       |                                                                                                                                             |
| Supply Voltage Range             | VBAT_BB/VBAT_RF: 3.3V~4.3V (3.8V Typ.)<br>VBAT_C-V2X: 4.75V~5.25V (5.0V Typ.)                                                               |
| Power Consumption                | 0.021mA @Power off<br>2.87mA @LTE Sleep, PF=128/2.28mA @LTE , PF=256 Sleep,<br>47.89mA @Idle, PF=64/ 68.82mA @Idle, PF=64, USB Active, Typ. |
| <b>Certifications</b>            |                                                                                                                                             |
| TBD                              |                                                                                                                                             |
| <b>Recommended Applications</b>  |                                                                                                                                             |
| Automotive                       |                                                                                                                                             |

\* Under development

# Quectel Automotive Module Family

| Product                          | AG55xQ                                                                                                                                                                               |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                  |                                                                                                     |
| Form Factor                      | LGA                                                                                                                                                                                  |
| Dimensions (mm)                  | 54.5 × 53.0 × 3.35                                                                                                                                                                   |
| 5G                               | Sub-6G                                                                                                                                                                               |
| 4G                               | LTE Cat 19                                                                                                                                                                           |
| Frequency Bands (MHz)            | -CN (China)                                                                                                                                                                          |
|                                  | 5G: N41/N78/N79; LTE: B1/B3/B5/B7/B8/B34/B38/B39/B40/B41; WCDMA: B1/B8; GSM: B3/B8                                                                                                   |
|                                  | -EU (EMEA/Australia, Korea/India/Southeast Asia/Latam America exl. Mexico)                                                                                                           |
|                                  | 5G: N1/N3/N8/N20/N28/N41/N78; LTE: B1/B2/B3/B4/B5/B6/B7/B8/B20/B28/B32rx/B38/B40/B41/B42; WCDMA: B1/B3/B5/B8; GSM: B2/B3/B5/B8                                                       |
| -NA (North America/Mexico)       | 5G: N2/N5/N41/N66/N71/N78; LTE: B2/B4/B5/B7/B12/B13/B14/B17/B25/B26/B28/B29rx/B30rx/B41/B66/B71; WCDMA: B2/B4/B5                                                                     |
|                                  | 5G: N1/N3/N77/N78/N79; LTE: B1/B3/B5/B8/B9/B11/B19/B21/B28/B41; WCDMA: B1/B3/B5/B8/B9/B19;                                                                                           |
| -JP* (Japan)                     |                                                                                                                                                                                      |
| Weight (approx.) g               | 18                                                                                                                                                                                   |
| Temperature Range                | -40 °C ~ +85 °C, eCall +95°C                                                                                                                                                         |
| <b>Data Transmission</b>         |                                                                                                                                                                                      |
| 5G Data Rate                     | Max. 2.12Gbps (DL)/900Mbps & 450Mbps (UL)                                                                                                                                            |
| LTE FDD Data Rate                | Max. 2.02Gbps (DL)/ Max. 75Mbps (UL)                                                                                                                                                 |
| LTE TDD Data Rate                | Max. 1.69Gbps (DL)/ Max. 45Mbps (UL)                                                                                                                                                 |
| DC-HSPA+ Data Rate (Mbps)        | Max. 42 (DL)/ Max. 5.76 (UL)                                                                                                                                                         |
| WCDMA Data Rate (Kbps)           | Max. 384 (DL)/ Max. 384 (UL)                                                                                                                                                         |
| EDGE Data Rate (Kbps)            | Max. 296 (DL)/ Max. 236.8 (UL)                                                                                                                                                       |
| GPRS Data Rate (Kbps)            | Max. 107 (DL)/ Max. 85.6 (UL)                                                                                                                                                        |
| C-V2X Data Rate (Mbps)           | Max. 48 (Tx)/ Max. 48(Rx)                                                                                                                                                            |
| SMS                              | Point-to-point MO and MT; SMS Cell Broadcast; Text and PDU Mode                                                                                                                      |
| Protocols                        | TCP/ UDP/ PPP/ PING/ FTP(S)/ HTTP(S)/SMTP/ SSL/ TLS/ MMS/ NTP/ DTMF*/ FILE/ QMI                                                                                                      |
| <b>Interfaces</b>                |                                                                                                                                                                                      |
| (U)SIM                           | × 1 (Support 1.8V/ 3V USIM/ SIM Cards)                                                                                                                                               |
| eSIM/eUICC                       | × 1                                                                                                                                                                                  |
| UART                             | × 3 (Main/Debug/BT UART)                                                                                                                                                             |
| USB 2.0/3.1                      | × 1                                                                                                                                                                                  |
| PCIe 3.0                         | × 1                                                                                                                                                                                  |
| IIC                              | × 1                                                                                                                                                                                  |
| IIS                              | × 1                                                                                                                                                                                  |
| RGMII                            | × 1                                                                                                                                                                                  |
| SDIO                             | × 1 (for eMMC)                                                                                                                                                                       |
| SPI                              | × 1                                                                                                                                                                                  |
| Audio Digital (PCM)              | × 1                                                                                                                                                                                  |
| ADC                              | × 2 (15-bit)                                                                                                                                                                         |
| GPIO                             | × 15 (For QuecOpen® version only)                                                                                                                                                    |
| RESET_N                          | × 1 (Reset the module)                                                                                                                                                               |
| Antenna                          | Main × 1 (4G/5G TRX)<br>Diversity × 1 (n78/n79 TRX, 4G DRX)<br>MIMO 3 × 1 (n41 TRX, 4G MIMO)<br>MIMO 4 × 1 (4G/5G MIMO)<br>C-V2X × 2 (TRX0/TRX1)<br>GNSS × 1<br>DSDA × 2 (Main/ DIV) |
| <b>Enhanced Features</b>         |                                                                                                                                                                                      |
| QuecOpen® (Open Linux)           | •                                                                                                                                                                                    |
| eCall                            | •                                                                                                                                                                                    |
| DFOTA                            | •                                                                                                                                                                                    |
| eSIM (eUICC)                     | •                                                                                                                                                                                    |
| (U)SIM Detection                 | •                                                                                                                                                                                    |
| Temperature Management           | •                                                                                                                                                                                    |
| GNSS                             | GPS/ GLONASS/ BeiDou/ Galileo /QZSS                                                                                                                                                  |
| ESD/EMI Protection               | Realized through Internal Specific Circuits and Components                                                                                                                           |
| Gigabit Ethernet                 | Optional                                                                                                                                                                             |
| C-V2X TDD B47                    | Optional                                                                                                                                                                             |
| DSDA (Dual SIM Dual Activation)  | Optional                                                                                                                                                                             |
| QDR 3.0 (External IMU Required)  | Optional                                                                                                                                                                             |
| Multi-Frequency GNSS (L1/L2/L5)  | Optional                                                                                                                                                                             |
| UART Interface for BT Function   | Optional                                                                                                                                                                             |
| <b>Advanced Security Feature</b> |                                                                                                                                                                                      |
| TrustZone/ TPM*                  | •                                                                                                                                                                                    |
| Secure Boot                      | •                                                                                                                                                                                    |
| SE-Linux                         | •                                                                                                                                                                                    |
| <b>Software Features</b>         |                                                                                                                                                                                      |
| RIL Driver                       | Android 4.x/ 5.x/ 6.x/ 7.x/ 8.x/ 9.x                                                                                                                                                 |
| GNSS Driver                      | Android 4.x/ 5.x/ 6.x/ 7.x/ 8.x/ 9.x                                                                                                                                                 |
| RNDIS                            | Windows 7/8/8.1/10, Linux 2.6~5.0                                                                                                                                                    |
| ECM                              | Linux 2.6~5.0                                                                                                                                                                        |
| Gobinet                          | Linux 2.6~5.0, Android 4.x/ 5.x/ 6.x/ 7.x/ 8.x/ 9.x                                                                                                                                  |
| QMI_WWAN Driver                  | Linux 3.4~5.0, Android 4.x/5.x/6.x/7.x/8.x/9.x                                                                                                                                       |
| USB Serial Driver                | Windows 7/8/8.1/10, Linux 2.6~5.0, Android 4.x/5.x/6.x/7.x/8.x/9.x                                                                                                                   |
| <b>Electrical Features</b>       |                                                                                                                                                                                      |
| Supply Voltage Range             | VBAT_BB/VBAT_RF: 3.3V~4.3V (3.8V Typ.)<br>VBAT_C-V2X: 4.75V~5.25V (5.0V Typ.)                                                                                                        |
| Power Consumption                | TBD @Power off<br>TBD @Sleep, Typ.<br>TBD @Idle                                                                                                                                      |
| Certifications                   | TBD                                                                                                                                                                                  |
| Recommended Applications         | Automotive                                                                                                                                                                           |

# Quectel C-V2X Module

| Product                                                    | AG15                                                                                |
|------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                                                            |  |
| Form Factor                                                | LGA                                                                                 |
| Dimensions (mm)                                            | 32.0 × 28.0 × 2.85                                                                  |
| C-V2X TDD                                                  | B47 for Global<br>B46D for Japan                                                    |
| Weight (approx.) g                                         | 5.735                                                                               |
| Temperature Range                                          | -40 °C ~ +85 °C                                                                     |
| <b>Data Transmission</b>                                   |                                                                                     |
| LTE data rate (Mbps)                                       | C-V2X TDD: Max. 26 (TX)/Max. 26 (RX)                                                |
| Protocols                                                  | QMI (Qualcomm MSM Interface)                                                        |
| <b>Interfaces</b>                                          |                                                                                     |
| UART                                                       | × 2                                                                                 |
| USB                                                        | USB2.0/3.0×1                                                                        |
| PCIe                                                       | × 2 (1 for PCM)                                                                     |
| SPI                                                        | × 1                                                                                 |
| I2C                                                        | × 2 for Wi-Fi and eMMC                                                              |
| 1PPS                                                       | × 1                                                                                 |
| ADC                                                        | × 2                                                                                 |
| GPIO                                                       | × 4                                                                                 |
| Antenna                                                    | Main, Rx-diversity and GNSS                                                         |
| <b>Enhanced Features</b>                                   |                                                                                     |
| High Security                                              | •                                                                                   |
| Secure Boot*                                               | •                                                                                   |
| SELinux*                                                   | •                                                                                   |
| ESD/EMI Protection                                         | •                                                                                   |
| Realized through Internal Specific Circuits and Components | •                                                                                   |
| <b>Software Features</b>                                   |                                                                                     |
| USB Serial Driver                                          | •                                                                                   |
| Windows 7/8/8.1/10, Windows CE 5.0/6.0/7.0*                | •                                                                                   |
| Linux 2.6/3.x/4.1~4.14                                     | •                                                                                   |
| Android 4.x/5.x/6.x/7.x/8.x                                | •                                                                                   |
| PCIe Driver                                                | •                                                                                   |
| Protocol                                                   | QMI (Qualcomm MSM Interface)                                                        |
| <b>Electrical Features</b>                                 |                                                                                     |
| Output Power                                               | Class 3 (23dBm±2dB) for C-V2X                                                       |
| Supply Voltage                                             | VBAT_BB: 3.3V~4.3V, 3.8V Typ.<br>VBAT_RF: 4.75V~5.25V, 5.0V Typ.                    |
| Power Consumption                                          | 80µA@PowerOff                                                                       |
| Sensitivity                                                | C-V2X TDD B47: -96dBm<br>C-V2X TDD B46D: -96dBm                                     |
| Certifications                                             | TBD                                                                                 |
| Recommended Applications                                   | Automotive                                                                          |

\* Under development

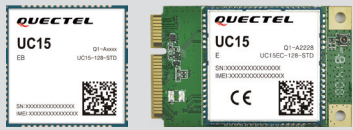
# Quectel Wi-Fi Module Family

| Product                    | AF20                                                                              | AF50T*                                                                                                | FC20/ FC20-N                                                                                                                                                                    | FC21*                                                                             | FC30R/FC31R*                                                                                                                                                                                                          | FG50V*/FG50K*                                                                                                                                                           |
|----------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                            |  |                      |                                                                                                |  |                                                  |   |
| Dimensions (mm)            | 17.2 × 15.2 × 2.2                                                                 | 19.5 × 21.5 × 2.3                                                                                     | 16.6 × 13.0 × 2.1                                                                                                                                                               | 16.6 × 13.0 × 2.1                                                                 | 12.0 × 12.0 × 2.1                                                                                                                                                                                                     | 19.5 × 21.5 × 2.1                                                                                                                                                       |
| Operation Temperature      | -40°C ~ +85°C                                                                     | -40°C ~ +85°C                                                                                         | -40°C ~ +85°C                                                                                                                                                                   | -40°C ~ +85°C                                                                     | -30°C ~ +85°C (FC30R)<br>0°C ~ +70°C (FC31R)                                                                                                                                                                          | -30°C ~ +85°C                                                                                                                                                           |
| Weight (approx.) g         | 1.26                                                                              | 2.1                                                                                                   | 0.81                                                                                                                                                                            | TBD                                                                               | 0.57                                                                                                                                                                                                                  | TBD                                                                                                                                                                     |
| General Features           |                                                                                   |                                                                                                       |                                                                                                                                                                                 |                                                                                   |                                                                                                                                                                                                                       |                                                                                                                                                                         |
| Function                   | Wi-Fi 2.4GHz + 5GHz & BT 4.2                                                      | Wi-Fi 2.4GHz + 5GHz & BT 5.1                                                                          | Wi-Fi 2.4GHz+5GHz & BT 4.2* (FC20)<br>Wi-Fi 2.4GHz & BT 4.2* (FC20-N)                                                                                                           | Wi-Fi 2.4GHz + 5GHz & BT 4.2                                                      | Wi-Fi 2.4GHz                                                                                                                                                                                                          | Wi-Fi 2.4GHz + 5GHz & BT 5.1                                                                                                                                            |
| WLAN Standard              | IEEE 802.11a/b/g/n/ac                                                             | IEEE 802.11a/b/g/n/ac/ax                                                                              | 802.11a/b/g/n/ac (FC20)<br>802.11b/g/n (FC20-N)                                                                                                                                 | IEEE 802.11a/b/g/n/ac                                                             | 802.11b/g/n                                                                                                                                                                                                           | IEEE 802.11a/b/g/n/ac/ax                                                                                                                                                |
| BT Standard                | BT 4.2                                                                            | BT 5.1*                                                                                               | BT 4.2                                                                                                                                                                          | BT 4.2                                                                            | /                                                                                                                                                                                                                     | BT 5.1*                                                                                                                                                                 |
| Modulation Mode            | CCK/ BPSK/ QPSK/ 16QAM/ 64QAM/ 256QAM                                             | BPSK/ QPSK/ CCK/ 16QAM/ 64QAM/ 256QAM/ 1024QAM                                                        | CCK/ BPSK/ QPSK/ 16QAM/ 64QAM/ 256QAM (FC20)<br>CCK/ BPSK/ QPSK/ 16QAM/ 64QAM (FC20-N)                                                                                          | BPSK/ QPSK/ CCK/ 16QAM/ 64QAM/ 256QAM                                             | BPSK/ QPSK/ CCK/ 16QAM/ 64QAM                                                                                                                                                                                         | BPSK/ QPSK/ CCK/ 16QAM/ 64QAM/ 256QAM/ 1024QAM                                                                                                                          |
| Encryption Mode            | WEP/ TKIP/ AES/ WPA-PSK/ WPA2-PSK                                                 | WPA3                                                                                                  | WEP/ TKIP/ AES/ WPA-PSK/ WPA2-PSK                                                                                                                                               | WEP/ TKIP/ AES/ WPA-PSK/ WPA2-PSK                                                 | TKIP/ AES/ WPA-PSK/ WPA2-PSK                                                                                                                                                                                          | WPA3                                                                                                                                                                    |
| AP (Max Access Point)      | 16                                                                                | 32                                                                                                    | 16                                                                                                                                                                              | 16                                                                                | 16                                                                                                                                                                                                                    | 32                                                                                                                                                                      |
| Operator Mode              | AP/ STA                                                                           | AP/ STA                                                                                               | AP/ STA                                                                                                                                                                         | AP/ STA                                                                           | AP/ STA                                                                                                                                                                                                               | AP/ STA                                                                                                                                                                 |
| I/O Interfaces             |                                                                                   |                                                                                                       |                                                                                                                                                                                 |                                                                                   |                                                                                                                                                                                                                       |                                                                                                                                                                         |
| PCIe 3.0                   |                                                                                   | 1                                                                                                     |                                                                                                                                                                                 |                                                                                   |                                                                                                                                                                                                                       | 1                                                                                                                                                                       |
| SDIO                       | 1(SDIO 3.0)                                                                       |                                                                                                       | 1(SDIO 3.0)                                                                                                                                                                     | 1(SDIO 3.0)                                                                       | 1(SDIO 3.0)                                                                                                                                                                                                           |                                                                                                                                                                         |
| UART                       | 1                                                                                 | 1                                                                                                     | 1                                                                                                                                                                               | 1                                                                                 | 0                                                                                                                                                                                                                     | 1                                                                                                                                                                       |
| PCM                        | 1                                                                                 | 1                                                                                                     | 1                                                                                                                                                                               | 1                                                                                 | 0                                                                                                                                                                                                                     | 1                                                                                                                                                                       |
| Antenna                    | 1 (Wi-Fi & BT Antenna)                                                            | 2 × Wi-Fi Ant with shared BT Ant, independant BT ant is optional                                      | 1 (Wi-Fi & BT Antenna)                                                                                                                                                          | 1 (Wi-Fi & BT Antenna)                                                            | 1 (Wi-Fi Antenna)                                                                                                                                                                                                     | 2 × Wi-Fi Ant with shared BT Ant, independant BT ant is optional                                                                                                        |
| Electrical Characteristics |                                                                                   |                                                                                                       |                                                                                                                                                                                 |                                                                                   |                                                                                                                                                                                                                       |                                                                                                                                                                         |
| Supply Voltage Range       | 3.14 ~3.46V, 3.3V Typ.<br>1.71 ~ 1.89V, 1.8V Typ.                                 | Core Supply Voltage : 0.95V, 1.35V, 1.95V;<br>I/O Supply Voltage : 1.8V;<br>RF Supply Voltage : 3.85V | 3.14 ~3.46V, 3.3V Typ.<br>1.71 ~ 1.89V, 1.8V Typ.                                                                                                                               | 3.14 ~3.46V, 3.3V Typ.<br>1.71 ~ 1.89V, 1.8V Typ.                                 | 3.0 ~3.6V, 3.3V Typ.<br>1.71 ~ 1.89V, 1.8V Typ.                                                                                                                                                                       | Core Supply Voltage : 0.95V, 1.35V, 1.95V;<br>I/O Supply Voltage : 1.8V;<br>RF Supply Voltage : 3.85V                                                                   |
| Power Consumption          | TBD                                                                               | TBD                                                                                                   | 0μA @OFF State, 3.3V WLAN Supply Voltage<br>554μA @OFF State, 1.8V I/O Pins Supply Voltage<br>66mA @Idle, 3.3V WLAN Supply Voltage<br>6.5mA @Idle, 1.8V I/O Pins Supply Voltage | TBD                                                                               | 0μA @OFF State, 3.3V WLAN Supply Voltage<br>554μA @OFF State, 1.8V I/O Pins Supply Voltage<br>66mA @On State(no connection), 3.3V WLAN Supply Voltage<br>6.5mA @On State(no connection), 1.8V I/O Pins Supply Voltage | TBD                                                                                                                                                                     |
| Data Transmission          |                                                                                   |                                                                                                       |                                                                                                                                                                                 |                                                                                   |                                                                                                                                                                                                                       |                                                                                                                                                                         |
| 802.11a                    | Max. 54Mbps                                                                       | Max. 54Mbps                                                                                           | Max. 54Mbps                                                                                                                                                                     | Max. 54Mbps                                                                       | /                                                                                                                                                                                                                     | Max. 54Mbps                                                                                                                                                             |
| 802.11b                    | Max. 11Mbps                                                                       | Max. 11Mbps                                                                                           | Max. 11Mbps                                                                                                                                                                     | Max. 11Mbps                                                                       | Max. 11Mbps                                                                                                                                                                                                           | Max. 11Mbps                                                                                                                                                             |
| 802.11g                    | Max. 54Mbps                                                                       | Max. 54Mbps                                                                                           | Max. 54Mbps                                                                                                                                                                     | Max. 54Mbps                                                                       | Max. 54Mbps                                                                                                                                                                                                           | Max. 54Mbps                                                                                                                                                             |
| 802.11n                    | Max. 150Mbps                                                                      | Max. 600Mbps                                                                                          | Max. 150Mbps                                                                                                                                                                    | Max. 150Mbps                                                                      | Max. 150Mbps                                                                                                                                                                                                          | Max. 600Mbps @FG50V;<br>Max. 300Mbps @FG50K;                                                                                                                            |
| 802.11ac                   | Max. 433Mbps                                                                      | Max. 866Mbps                                                                                          | Max. 433Mbps                                                                                                                                                                    | Max. 433Mbps                                                                      | /                                                                                                                                                                                                                     | Max. 866Mbps                                                                                                                                                            |
| 802.11ax                   |                                                                                   | Max. 1774.5Mbps                                                                                       |                                                                                                                                                                                 |                                                                                   |                                                                                                                                                                                                                       | Max. 1774.5Mbps for FG50V<br>Max. 1200Mbps for FG50K                                                                                                                    |
| BLE                        | Max. 1Mbps                                                                        | Max. 2Mbps                                                                                            | Max. 1Mbps                                                                                                                                                                      | Max. 1Mbps                                                                        | /                                                                                                                                                                                                                     | Max. 2Mbps                                                                                                                                                              |
| Recommended Applications   | Automotive                                                                        | Automotive                                                                                            | Telematics, Smart Metering, Mobile POS Terminal, Gateway, Safety, Tracking and Tracing, Remote Maintenance and Control, Networking, Mobile Computing, Healthcare, etc.          |                                                                                   |                                                                                                                                                                                                                       | CPE, MIFI, OTT, Smart TV                                                                                                                                                |

AF20 can work with Quectel AG35 module to provide Wi-Fi/BT function.  
FC20 can work with Quectel EC20 R2.0/EC20 R2.1/EC21/EC25 modules to provide Wi-Fi/BT function.  
FC21\* can work with Quectel EC20 R2.0/EC20 R2.1/EC21/EC25 modules to provide Wi-Fi/BT function.  
FC30R/FC31R\* can work with Quectel EC20 R2.1/EC21/EC25/EC200T module to provide Wi-Fi/BT function.  
AF50T\* can work with Quectel AG520R and AG550Q module to provide Wi-Fi/BT function.  
FG50V\* can work with Quectel RG500Q module to provide Wi-Fi/BT function.

\* Under development

# Quectel UMTS/HSPA(+) Module Family

| Product                         |                            | UC15/ UC15 Mini PCIe                                                                                                                                                   | UG96                                                                                                                                   | UC200T/ UC200T Mini PCIe                                                                |
|---------------------------------|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|                                 |                            |                                                                                       |                                                       |      |
| Form Factor                     |                            | LCC                                                                                                                                                                    | LGA                                                                                                                                    | LCC                                                                                     |
| Dimensions (mm)                 |                            | 29.0 × 29.0 × 2.5 (UC15)<br>51.0 × 30.0 × 4.9 (UC15 Mini PCIe)                                                                                                         | 22.5 × 26.5 × 2.2                                                                                                                      | 32.0 × 29.0 × 2.4 (UC200T)<br>30.0 × 51.0 × 4.9 (UC200T Mini PCIe)                      |
| 3G                              |                            | UMTS/HSDPA                                                                                                                                                             | UMTS/HSPA                                                                                                                              | UMTS/HSPA+                                                                              |
| Frequency Bands (MHz)           | -E (Europe)                | UMTS: 900/2100;<br>GSM: 900/1800                                                                                                                                       |                                                                                                                                        |                                                                                         |
|                                 | -EM (Europe & Middle East) |                                                                                                                                                                        |                                                                                                                                        | UMTS: B1/B8<br>GSM: 900/1800MHz                                                         |
|                                 | -A (America)               | UMTS: 850/1900;<br>GSM: 850/900/1800/1900                                                                                                                              |                                                                                                                                        |                                                                                         |
|                                 | -G (Global)                |                                                                                                                                                                        | UMTS: 800/850/900/1900/2100;<br>GSM: 850/900/1800/1900                                                                                 |                                                                                         |
|                                 | -GL (Global)               |                                                                                                                                                                        |                                                                                                                                        | UMTS: B1/B2/B5/B8<br>GSM: 850/900/1800/1900MHz                                          |
|                                 | -T (Thailand)              | UMTS: 850/2100;<br>GSM: 850/900/1800/1900                                                                                                                              |                                                                                                                                        |                                                                                         |
| Weight (approx.) g              |                            | 4.3 (UC15)                                                                                                                                                             | 3.1                                                                                                                                    | 4.3 (UC200T)                                                                            |
| Temperature Range               |                            | -40 °C ~ +85 °C(UC15)/-40 °C ~ +80 °C (UC15 Mini PCIe)                                                                                                                 | -40 °C ~ +85 °C                                                                                                                        | Working Temperature Range*: -35°C ~ +75°C<br>Extended Temperature Range*: -40°C ~ +85°C |
| Data Transmission               |                            |                                                                                                                                                                        |                                                                                                                                        |                                                                                         |
| HSPA data rate (Mbps)           |                            | 3.6 (DL)                                                                                                                                                               | 7.2 (DL)/ 5.76 (UL)                                                                                                                    | Max. 21 (DL)/ Max. 5.76 (UL)                                                            |
| UMTS data rate (Kbps)           |                            | 384 (DL)/ 384 (UL)                                                                                                                                                     | 384 (DL)/ 384 (UL)                                                                                                                     | Max. 384 (DL/UL)                                                                        |
| GPRS data rate (Kbps)           |                            | 85.6 (DL)/ 85.6 (UL)                                                                                                                                                   | 85.6 (DL)/ 85.6 (UL)                                                                                                                   | Max. 85.6 (DL/UL)                                                                       |
| EDGE data rate (Kbps)           |                            | 236.8 (DL)                                                                                                                                                             | 296 (DL)/ 236.8 (UL)                                                                                                                   | Max. 236.8 (DL/UL)                                                                      |
| SMS                             |                            | •                                                                                                                                                                      | •                                                                                                                                      | •                                                                                       |
| CSD                             |                            | •                                                                                                                                                                      | •                                                                                                                                      | •                                                                                       |
| Protocols                       |                            | TCP/UDP/PPP/MMS/FTP/SMTP/SMTPS/HTTP/HTTPS/<br>PING/SSL                                                                                                                 | TCP/UDP/PPP/MMS/HTTP/HTTPS/SMTP/SMTPS/FTP/<br>NTP/NITZ/PING/SSL                                                                        | TCP/UDP/PPP/NTP/NITZ/FTP/HTTP/PING/CMUX/HTTPS/<br>FTPS/SSL/FILE/MQTT/SMTP*/MMS*/SMTPS*  |
| Interfaces                      |                            |                                                                                                                                                                        |                                                                                                                                        |                                                                                         |
| SIM                             |                            | 1.8V/ 3V                                                                                                                                                               | 1.8V/ 3V                                                                                                                               | 1.8V/ 3V                                                                                |
| UART                            |                            | 1                                                                                                                                                                      | 1                                                                                                                                      | 2                                                                                       |
| USB                             |                            | 2.0 Hi-Speed                                                                                                                                                           | 2.0 Hi-Speed                                                                                                                           | 2.0 Hi-Speed                                                                            |
| Audio Analog                    |                            | Optional <sup>1</sup>                                                                                                                                                  |                                                                                                                                        |                                                                                         |
| Audio Digital (PCM)             |                            | Optional <sup>1</sup>                                                                                                                                                  | Optional <sup>1</sup>                                                                                                                  | •                                                                                       |
| RTC Backup                      |                            |                                                                                                                                                                        | •                                                                                                                                      | •                                                                                       |
| ADC                             |                            | × 2, 12bits                                                                                                                                                            |                                                                                                                                        | × 2, 12bits                                                                             |
| GPIO                            |                            |                                                                                                                                                                        |                                                                                                                                        |                                                                                         |
| Antenna                         |                            | Pads for Primary                                                                                                                                                       | Pads for Primary                                                                                                                       | Pads for Primary                                                                        |
| SIM Card Holder                 |                            |                                                                                                                                                                        |                                                                                                                                        | Optional                                                                                |
| Enhanced Features               |                            |                                                                                                                                                                        |                                                                                                                                        |                                                                                         |
| eCall                           |                            | •                                                                                                                                                                      | O                                                                                                                                      |                                                                                         |
| DTMF                            |                            | •                                                                                                                                                                      | •                                                                                                                                      | O                                                                                       |
| QuecFOTA <sup>®</sup>           |                            | •                                                                                                                                                                      |                                                                                                                                        | •                                                                                       |
| DFOTA                           |                            | •                                                                                                                                                                      | •                                                                                                                                      |                                                                                         |
| Audio Playback/ Audio Recording |                            | •                                                                                                                                                                      | O                                                                                                                                      |                                                                                         |
| QuecFile                        |                            | •                                                                                                                                                                      |                                                                                                                                        |                                                                                         |
| RIL Driver                      |                            | Android 4.x/5.x/6.x/7.x/8.x/9.x                                                                                                                                        | Android 4.x/5.x/6.x/7.x/8.x/9.x                                                                                                        | Android 4.x/5.x/6.0/7.x/8.x/9.x                                                         |
| NDIS                            |                            |                                                                                                                                                                        |                                                                                                                                        | Windows 7/8/8.1/10                                                                      |
| MUX                             |                            | Linux 2.6/3.x/4.1~4.15<br>Android 4.x/5.x/6.x/7.x/8.x/9.x                                                                                                              |                                                                                                                                        |                                                                                         |
| USB Serial Driver               |                            | Windows 7/8/8.1/10<br>Windows CE5.0/6.0/7.0*<br>Linux 2.6/3.x/4.1~4.15<br>Android 4.x/5.x/6.x/7.x/8.x/9.x                                                              | Windows 7/8/8.1/10<br>Windows CE5.0/6.0/7.0*<br>Linux 2.6/3.x/4.1~4.15<br>Android 4.x/5.x/6.x/7.x/8.x/9.x                              | Windows 7/8/8.1/10<br>Linux 2.6/3.x/4.1~4.15<br>Android 4.x/5.x/6.x/7.x/8.x/9.x         |
| SIM Detection                   |                            | •                                                                                                                                                                      | •                                                                                                                                      | •                                                                                       |
| GNSS                            |                            |                                                                                                                                                                        |                                                                                                                                        |                                                                                         |
| Firmware Update                 |                            | via USB/ UART Interface                                                                                                                                                | via USB/ UART Interface                                                                                                                | via USB/ UART Interface                                                                 |
| Electrical Features             |                            |                                                                                                                                                                        |                                                                                                                                        |                                                                                         |
| Supply Voltage Range            |                            | 3.3 ~ 4.3V (UC15)<br>3.0~3.6V, 3.3V Typ. (UC15 Mini PCIe)                                                                                                              | 3.3~4.3V, 3.8V Typ.                                                                                                                    | 3.4V~4.5V, 3.8V Typ. (UC200T)<br>3.0~3.6V, 3.3V Typ. (UC200T Mini PCIe)                 |
| Power Consumption               |                            | 1.8mA@ GSM sleep, DRX=9<br>1.7mA@ UMTS sleep, DRX=9                                                                                                                    | 1.1mA@GSM sleep, DRX=9<br>1.7mA@UMTS sleep, DRX=9                                                                                      | 17µA @Power Off<br>1.8mA @GSM Sleep, DRX=5<br>3.0mA @WCDMA Sleep, PF=128<br>35mA @Idle  |
| Certifications                  |                            | CE/ GCF/ FCC/ PTCRB/ IC/ AT&T/ Rogers/ NCC/ NBTC/<br>OFCA/ RCM/ CCC/ SRRC/ NAL/ DoC <sup>2</sup>                                                                       | CE/ FCC/ GCF/ PTCRB/ Anatel/ RCM/ IFETEL/ Movistar/<br>ICASA/ JATE/ TELEC/ DoC <sup>2</sup> / Telefonica / Deutsche Telekom/<br>IC/RCM | CE/ Anatel/ RCM                                                                         |
| Recommended Applications        |                            | Telematics, Smart Metering, Mobile POS Terminal, Gateway, Safety, Tracking and Tracing, Remote Maintenance and Control, Networking, Mobile Computing, Healthcare, etc. |                                                                                                                                        |                                                                                         |

Note 1: Only Supported in Telematics Version.  
Note 2: Only Support Russia.

O & Under development

# Quectel GSM/GPRS Family

| Product                         | M66                                                                                                                                                        | M66-DS                                                                            | M65                                                                               | M08-R                                                                               | M89                                                                                 |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                                 |                                                                           |  |  |  |  |
| Form Factor                     | LCC                                                                                                                                                        | LCC                                                                               | LCC                                                                               | LCC                                                                                 | LGA                                                                                 |
| Dimensions (mm)                 | 15.8 × 17.7 × 2.3                                                                                                                                          | 15.8 × 17.7 × 2.3                                                                 | 15.8 × 17.7 × 2.3                                                                 | 15.7 × 17.6 × 2.4                                                                   | 18.8 × 27.6 × 2.3                                                                   |
| Frequency Range (MHz)           | 850/ 900/ 1800/ 1900                                                                                                                                       | 850/ 900/ 1800/ 1900                                                              | 850/ 900/ 1800/ 1900                                                              | 850/ 900/ 1800/ 1900                                                                | 850/ 900/ 1800/ 1900                                                                |
| Weight (approx.) g              | 1.3                                                                                                                                                        | 1.3                                                                               | 1.1                                                                               | 1.18                                                                                | 2.15                                                                                |
| Temperature Range               | -40 °C to +85 °C                                                                                                                                           | -40 °C to +85 °C                                                                  | -40°C ~ +85°C                                                                     | -40°C ~ +85°C                                                                       | -40 °C to +85 °C                                                                    |
| <b>Data Transmission</b>        |                                                                                                                                                            |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| GPRS Multi-slot Class           | 12, 1-12 configurable                                                                                                                                      | 12, 1-12 configurable                                                             | 12, 1-12 configurable                                                             | 12, 1-12 configurable                                                               | 12, 1-12 configurable                                                               |
| Data Rate (kbps)                | 85.6 (DL & UL)                                                                                                                                             | 85.6 (DL & UL)                                                                    | 85.6 (DL & UL)                                                                    | 85.6 (DL & UL)                                                                      | 85.6 (DL & UL)                                                                      |
| SMS                             | •                                                                                                                                                          | •                                                                                 | •                                                                                 |                                                                                     | •                                                                                   |
| Protocols                       | TCP/ UDP/ PPP/ HTTP/ FTP/ SMTP/ PING/ NTP/ NITZ/ MMS Sending/ SSL                                                                                          | TCP/ UDP/ PPP/ HTTP/ FTP/ SMTP/ PING/ NTP/ NITZ/ MMS Sending/ SSL                 | TCP/ UDP/ PPP/ HTTP/ FTP/ PING/ NTP/ NITZ/ SSL/ IPV6*                             | TCP/ UDP/ PPP/ HTTP/ NTP/ PING/ TTS/ FTP/ SSL/ MQTT/ HTTPS/ IPV6*                   | TCP/ UDP/ PPP/ HTTP/ FTP/ SMTP/ PING/ NTP/ NITZ/ MMS Sending/ SSL                   |
| <b>Specifications for Voice</b> |                                                                                                                                                            |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| Speech Codec Modes              | HR/ FR/ EFR/ AMR                                                                                                                                           | HR/ FR/ EFR/ AMR                                                                  | HR/ FR/ EFR/ AMR                                                                  | HR/ FR/ EFR/ AMR                                                                    | HR/ FR/ EFR/ AMR                                                                    |
| Echo Arithmetic                 | Echo cancellation Echo suppression Noise reduction                                                                                                         | Echo cancellation Echo suppression Noise reduction                                | Echo cancellation Echo suppression Noise reduction                                | Echo cancellation Echo suppression Noise reduction                                  | Echo cancellation Echo suppression Noise reduction                                  |
| <b>Interfaces</b>               |                                                                                                                                                            |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| SIM                             | 1.8V/ 3V                                                                                                                                                   | 1.8V/ 3V                                                                          | 1.8V/ 3V                                                                          | 1.8V/ 3V                                                                            | 1.8V/ 3V                                                                            |
| Audio Analog                    | 1 input/ 2 outputs                                                                                                                                         | 1 input/ 2 outputs                                                                | 1 input/ 2 outputs                                                                | 1 input/ 1 output                                                                   | 1 input/ 2 outputs                                                                  |
| Audio Digital (PCM)             | •                                                                                                                                                          | •                                                                                 |                                                                                   |                                                                                     |                                                                                     |
| RTC Backup                      | •                                                                                                                                                          | •                                                                                 | •                                                                                 | •                                                                                   | •                                                                                   |
| UART                            | 3                                                                                                                                                          | 3                                                                                 | 3                                                                                 | 3                                                                                   | 2                                                                                   |
| ADC                             | × 1, 10bit                                                                                                                                                 | × 1, 10bit                                                                        | × 1, 10bit                                                                        | × 1, 10bit                                                                          | × 1, 10bit                                                                          |
| SD Card Interface               | •                                                                                                                                                          | •                                                                                 |                                                                                   |                                                                                     |                                                                                     |
| GPIO                            |                                                                                                                                                            |                                                                                   |                                                                                   |                                                                                     | •                                                                                   |
| Temperature Detection           |                                                                                                                                                            | •                                                                                 |                                                                                   |                                                                                     |                                                                                     |
| <b>Enhanced Features</b>        |                                                                                                                                                            |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| eCall                           | •                                                                                                                                                          | •                                                                                 |                                                                                   |                                                                                     | •                                                                                   |
| Jamming Detection               | •                                                                                                                                                          | •                                                                                 |                                                                                   | •                                                                                   | •                                                                                   |
| DTMF                            | •                                                                                                                                                          | •                                                                                 | O                                                                                 |                                                                                     | •                                                                                   |
| Audio Playback/ Audio Recording | •                                                                                                                                                          | •                                                                                 | •                                                                                 | •                                                                                   | •                                                                                   |
| Dual-SIM                        |                                                                                                                                                            | •                                                                                 |                                                                                   |                                                                                     |                                                                                     |
| QuecFOTA®                       | •                                                                                                                                                          | •                                                                                 | DFOTA                                                                             | DFOTA                                                                               | •                                                                                   |
| QuecCell                        | •                                                                                                                                                          | •                                                                                 | •                                                                                 | •                                                                                   | •                                                                                   |
| QuecFile                        | •                                                                                                                                                          | •                                                                                 | •                                                                                 | •                                                                                   | •                                                                                   |
| QuecOpen®                       | •                                                                                                                                                          | •                                                                                 | O                                                                                 | •                                                                                   |                                                                                     |
| RIL for Android                 | •                                                                                                                                                          | •                                                                                 | •                                                                                 | •                                                                                   | •                                                                                   |
| MUX                             | •                                                                                                                                                          | •                                                                                 | •                                                                                 | •                                                                                   | •(Scan Only)                                                                        |
| Bluetooth                       | •                                                                                                                                                          | •                                                                                 |                                                                                   |                                                                                     |                                                                                     |
| Wi-Fi                           |                                                                                                                                                            |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| GNSS                            |                                                                                                                                                            |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| <b>Electrical Features</b>      |                                                                                                                                                            |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| Power Supply                    | 3.3 ~ 4.6V                                                                                                                                                 | 3.3 ~ 4.6V                                                                        | 3.45 ~ 4.25V                                                                      | 3.45 ~ 4.25V                                                                        | 3.3 ~ 4.6V                                                                          |
| Low Power Consumption           | 1.3mA @DRX=5<br>1.2mA @DRX=9                                                                                                                               | 1.3mA @DRX=5<br>1.2mA @DRX=9                                                      | 1.2mA @DRX=5<br>1.1mA @DRX=9                                                      | 1.3mA @DRX=5<br>1.2mA @DRX=9                                                        | 2.8mA @DRX=5<br>2.7mA @DRX=9                                                        |
| <b>Certifications</b>           | CE/ Anatel/ ICASA                                                                                                                                          | CE                                                                                | CE                                                                                | CE                                                                                  | CE/ Anatel                                                                          |
| <b>Recommended Applications</b> | Telematics, Smart Metering, Mobile POS Terminal, Gateway, Safety, Tracking and Tracing, Remote Maintenance and Control, Mobile Computing, Healthcare, etc. |                                                                                   |                                                                                   |                                                                                     |                                                                                     |

O & \* Under development

# Quectel GSM/GPRS Family

| Product                         | M95                                                                                                                                                        | MC60/ MC60E                                                                       | MC90                                                                                |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                                 |                                                                           |  |  |
| Form Factor                     | LCC                                                                                                                                                        | LCC                                                                               | LCC                                                                                 |
| Dimensions (mm)                 | 19.9 × 23.6 × 2.65                                                                                                                                         | 16.0 × 18.7 × 2.1                                                                 | 15.0 × 25.6 × 2.3                                                                   |
| Frequency Range (MHz)           | 850/ 900/ 1800/ 1900                                                                                                                                       | 850/ 900/ 1800/ 1900                                                              | 850/ 900/ 1800/ 1900                                                                |
| Weight (approx.) g              | 3.0                                                                                                                                                        | 1.3                                                                               | 1.4                                                                                 |
| Temperature Range               | -40 °C to +85 °C                                                                                                                                           | -40 °C to +85 °C                                                                  | -40 °C to +85 °C                                                                    |
| <b>Data Transmission</b>        |                                                                                                                                                            |                                                                                   |                                                                                     |
| GPRS Multi-slot Class           | 12, 1-12 configurable                                                                                                                                      | 12, 1-12 configurable                                                             | 12, 1-12 configurable                                                               |
| Data Rate (kbps)                | 85.6 (DL & UL)                                                                                                                                             | 85.6 (DL & UL)                                                                    | 85.6 (DL & UL)                                                                      |
| SMS                             | •                                                                                                                                                          | •                                                                                 | •                                                                                   |
| Protocols                       | TCP/ UDP/ PPP/ MQTT/ HTTP/ FTP/ SMTP/ PING/ NTP/ NITZ/ MMS Sending/ SSL/                                                                                   | TCP/ UDP/ PPP/ HTTP/ FTP/ SSL/ PING/ NTP/ NITZ/ SMS/ MQTT                         | TCP/ UDP/ PPP/ HTTP/ FTP/ SSL/ PING/ NTP/ NITZ/ SMS/ MQTT                           |
| <b>Specifications for Voice</b> |                                                                                                                                                            |                                                                                   |                                                                                     |
| Speech Codec Modes              | HR/ FR/ EFR/ AMR                                                                                                                                           | HR/ FR/ EFR/ AMR                                                                  | HR/ FR/ EFR/ AMR                                                                    |
| Echo Arithmetic                 | Echo cancellation<br>Echo suppression<br>Noise reduction                                                                                                   | Echo cancellation<br>Echo suppression<br>Noise reduction                          | Echo cancellation<br>Echo suppression<br>Noise reduction                            |
| <b>Interfaces</b>               |                                                                                                                                                            |                                                                                   |                                                                                     |
| SIM                             | 1.8V/ 3V                                                                                                                                                   | 1.8V/ 3V                                                                          | 1.8V/ 3V                                                                            |
| Audio Analog                    | 2 inputs/ 2 outputs                                                                                                                                        | 1 input/ 2 outputs                                                                | 1 input/ 2 outputs                                                                  |
| Audio Digital (PCM)             | •                                                                                                                                                          | •                                                                                 | •                                                                                   |
| RTC Backup                      | •                                                                                                                                                          | •                                                                                 | •                                                                                   |
| UART                            | 2                                                                                                                                                          | 4                                                                                 | 4                                                                                   |
| ADC                             |                                                                                                                                                            | × 1, 10bit                                                                        | × 1, 10bit                                                                          |
| SD Card Interface               |                                                                                                                                                            | •                                                                                 |                                                                                     |
| GPIO                            |                                                                                                                                                            | •                                                                                 | •                                                                                   |
| Temperature Detection           | •                                                                                                                                                          | •                                                                                 | •                                                                                   |
| <b>Enhanced Features</b>        |                                                                                                                                                            |                                                                                   |                                                                                     |
| eCall                           | •                                                                                                                                                          | •                                                                                 | •                                                                                   |
| Jamming Detection               | •                                                                                                                                                          | •                                                                                 | •                                                                                   |
| DTMF                            | •                                                                                                                                                          | •                                                                                 | •                                                                                   |
| Audio Playback/ Audio Recording | •                                                                                                                                                          | •                                                                                 | •                                                                                   |
| Dual-SIM                        | •                                                                                                                                                          | •                                                                                 | •                                                                                   |
| QuecFOTA®                       | •                                                                                                                                                          | •                                                                                 | •                                                                                   |
| QuecCell                        | •                                                                                                                                                          | •                                                                                 | •                                                                                   |
| QuecFile                        |                                                                                                                                                            | •/O                                                                               | •                                                                                   |
| QuecOpen®                       |                                                                                                                                                            | •                                                                                 | •                                                                                   |
| RIL for Android                 | •                                                                                                                                                          | •                                                                                 | •                                                                                   |
| MUX                             | •                                                                                                                                                          | •                                                                                 | •                                                                                   |
| Bluetooth                       |                                                                                                                                                            | BT 3.0 (MC60)<br>BT 3.0/ BT4.0 (MC60E)                                            |                                                                                     |
| Wi-Fi                           |                                                                                                                                                            |                                                                                   | • (only Scan)                                                                       |
| GNSS                            |                                                                                                                                                            | BEIDOU/ GPS/ GLONASS/Galileo/ QZSS                                                | BEIDOU/ GPS/ GLONASS/Galileo/ QZSS                                                  |
| <b>Electrical Features</b>      |                                                                                                                                                            |                                                                                   |                                                                                     |
| Power Supply                    | 3.3 ~ 4.6V                                                                                                                                                 | 3.3 ~ 4.6V                                                                        | 3.3 ~ 4.3V                                                                          |
| Low Power Consumption           | 1.3mA @DRX=5<br>1.2mA @DRX=9                                                                                                                               | 1.2mA @DRX=5<br>0.8mA @DRX=9                                                      | 1.2mA @DRX=5<br>0.8mA @DRX=9                                                        |
| <b>Certifications</b>           | CE/ GCF/ Vodafone/ PTCRB/ FCC/ IC/ Anatel/ Rogers/ RCM/ NCC/ TELCEL/ UCRF/ ICASA                                                                           | CE/ FCC/ Anatel/ ICASA/ GCF                                                       | CE*                                                                                 |
| <b>Recommended Applications</b> | Telematics, Smart Metering, Mobile POS Terminal, Gateway, Safety, Tracking and Tracing, Remote Maintenance and Control, Mobile Computing, Healthcare, etc. |                                                                                   |                                                                                     |

O & \* Under development

# Quectel GNSS Module Family

|                                                   |                        | Standalone Positioning/ Timing Modules                                            |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
|---------------------------------------------------|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Product                                           |                        | L26                                                                               | L26-LB                                                                            | L26-T                                                                              | L26-DR                                                                              | LC98S*                                                                              |
|                                                   |                        | Compatible                                                                        |                                                                                   | Compatible                                                                         |                                                                                     |                                                                                     |
|                                                   |                        |  |  |  |  |  |
| GNSS                                              |                        | GPS/ GLONASS/ Galileo/ BeiDou/ QZSS                                               | GPS/ GLONASS/BeiDou/ QZSS                                                         | GPS/ Galileo/ GLONASS/ BeiDou/ QZSS                                                | GPS/ Galileo/ GLONASS/ BeiDou/ QZSS                                                 | GPS/ BeiDou/ GLONASS/Galileo/ QZSS                                                  |
| Form Factor                                       |                        | LCC                                                                               | LCC                                                                               | LCC                                                                                | LCC                                                                                 | LCC                                                                                 |
| Dimensions (mm)                                   |                        | 16.0 × 12.2 × 2.4                                                                 | 16.0 × 12.2 × 2.3                                                                 | 16.0 × 12.2 × 2.3                                                                  | 16.0 × 12.2 × 2.3                                                                   | 22.4 × 17.0 × 3.1                                                                   |
| Weight (approx.) g                                |                        | 1.0                                                                               | 1.0                                                                               | 0.9                                                                                | 0.9                                                                                 | 1.68                                                                                |
| Temperature Range                                 |                        | -40 °C to +85 °C                                                                  | -40 °C to +85 °C                                                                  | -40 °C to +85 °C                                                                   | -40 °C to +85 °C                                                                    | -40 °C to +85 °C                                                                    |
| General Features                                  |                        |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Chip Solution                                     |                        | MT3333                                                                            | AG3331                                                                            | Teseo III                                                                          | Teseo III                                                                           | Teseo III                                                                           |
| L1 Band Receiver (C/A Code) Channel Number        |                        | 33 Track/ 99 Acq                                                                  | 33 Track/ 99 Acq                                                                  | 48 Track/2 Fast Acq                                                                | 48 Track/2 Fast Acq                                                                 | 48 Track/2 Fast Acq                                                                 |
| L1 Band Receiver (C/A Code) SBAS                  |                        | WAAS/ EGNOS/ MSAS/ GAGAN                                                          | WAAS/ EGNOS/ MSAS/ GAGAN                                                          | WAAS/ EGNOS/ MSAS/ GAGAN                                                           | WAAS/ EGNOS/ MSAS/ GAGAN                                                            | WAAS/ EGNOS/ MSAS/ GAGAN                                                            |
| A-GNSS                                            |                        | Supported                                                                         | Supported                                                                         | Supported                                                                          | Supported                                                                           | Supported                                                                           |
| Sensitivity                                       | Autonomous Acquisition | -148dBm                                                                           | -149dBm                                                                           | -147dBm                                                                            | -145dBm                                                                             | -145 dBm                                                                            |
|                                                   | Reacquisition          | -160dBm                                                                           | -161dBm                                                                           | -154dBm                                                                            | -152dBm                                                                             | -152 dBm                                                                            |
|                                                   | Tracking               | -167dBm                                                                           | -167dBm                                                                           | -162dBm                                                                            | -162dBm                                                                             | -162 dBm                                                                            |
| TTFF (Time To First Fix)                          | Cold Start             | <35s, Autonomous<br><15s, With EASY™                                              | <35s, Autonomous<br><15s, With EASY™                                              | <32s, Autonomous                                                                   | <32s, Autonomous                                                                    | < 31s, Autonomous                                                                   |
|                                                   | Warm Start             | <30s, Autonomous<br><5s, With EASY™                                               | <30s, Autonomous<br><5s, With EASY™                                               | <25s, Autonomous                                                                   | <25s, Autonomous                                                                    | < 24s, Autonomous                                                                   |
|                                                   | Hot Start              | <1s                                                                               | <1s                                                                               | <2s                                                                                | <2s                                                                                 | < 1s                                                                                |
| Position Accuracy(autonomous)                     |                        | <2.5m CEP                                                                         | <2.5m CEP                                                                         | <1.5m CEP                                                                          | <1.5m CEP                                                                           | < 2m CEP                                                                            |
| Velocity Accuracy(without aid)                    |                        | <0.1m/s                                                                           | <0.1m/s                                                                           | <0.1m/s                                                                            | <0.1m/s                                                                             | <0.1m/s                                                                             |
| Maximum Acceleration Accuracy (without aid)       |                        | <0.1m/s²                                                                          | <0.1m/s²                                                                          | <0.1m/s²                                                                           | <0.1m/s²                                                                            | <0.1m/s²                                                                            |
| Timing Accuracy (1σ)                              |                        | <100ns                                                                            | <100ns                                                                            | ≤6.8ns                                                                             | <100ns                                                                              | ≤6.8ns                                                                              |
| Max Update Rate                                   |                        | 10Hz                                                                              | 10Hz                                                                              | 10Hz                                                                               | 10Hz                                                                                | 10Hz                                                                                |
| Baud Rate (default)                               |                        | 9600bps                                                                           | 9600bps                                                                           | 9600bps                                                                            | 115200bps                                                                           | 115200bps                                                                           |
| Geo-fence                                         |                        | •                                                                                 | •                                                                                 | •                                                                                  |                                                                                     |                                                                                     |
| Jamming Detection                                 |                        | •                                                                                 | •                                                                                 | •                                                                                  | •                                                                                   | •                                                                                   |
| Anti-jamming                                      |                        | •                                                                                 | •                                                                                 |                                                                                    |                                                                                     | •                                                                                   |
| Built-in LNA                                      |                        | •                                                                                 | •                                                                                 | •                                                                                  | •                                                                                   | •                                                                                   |
| Electrical Data                                   |                        |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Power Supply                                      |                        | 2.8V to 4.3V                                                                      | 2.8V to 4.3V                                                                      | 3.0V to 3.6V                                                                       | 3.0V to 3.6V                                                                        | 3.0V to 3.6V                                                                        |
| I/O Voltage                                       |                        | 2.7V to 2.9V                                                                      | 2.7V to 2.9V                                                                      | 3.0V to 3.6V                                                                       | 3.0V to 3.6V                                                                        | 3.0V to 3.6V                                                                        |
| Power Consumption (Acquisition)                   |                        | 29mA (GPS+GLONASS)<br>26mA (GPS)                                                  | 29.4mA (GPS+GLONASS)                                                              | 64mA (GPS)<br>71mA (GPS+GLONASS+Galileo)                                           | 72mA (GPS)<br>79mA (GPS+GLONASS+Galileo)                                            | 84 mA (GPS + BeiDou)                                                                |
| Power Consumption (Tracking)                      |                        | 21mA (GPS+GLONASS)<br>18mA (GPS)                                                  | 26.6mA (GPS+GLONASS)                                                              | 51mA (GPS)<br>67mA (GPS+GLONASS+Galileo)                                           | 58mA (GPS)<br>74mA (GPS+GLONASS+Galileo)                                            | 74mA(GPS + BeiDou)                                                                  |
| Power Consumption (Backup/Low Power mode)         |                        | 7μA                                                                               | 7.8μA                                                                             | 9μA                                                                                | 17μA                                                                                | 50 μA                                                                               |
| Interfaces                                        |                        |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| UART                                              |                        | •                                                                                 | •                                                                                 | •                                                                                  | •                                                                                   | •                                                                                   |
| IIC (NMEA)                                        |                        |                                                                                   | •                                                                                 |                                                                                    |                                                                                     | •                                                                                   |
| Reset                                             |                        | •                                                                                 | •                                                                                 | •                                                                                  | •                                                                                   | •                                                                                   |
| Time Pulse                                        |                        | •                                                                                 | •                                                                                 | •                                                                                  | •                                                                                   | •                                                                                   |
| Antenna                                           |                        |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Short-Circuit Protection & Open-Circuit Detection |                        | •                                                                                 | •                                                                                 | •                                                                                  | •                                                                                   | •                                                                                   |
| Antenna Type                                      |                        | Active or passive                                                                 | Active or passive                                                                 | Active or passive                                                                  | Active or passive                                                                   | Active or passive                                                                   |
| Antenna Power                                     |                        | External or internal                                                              | External or internal                                                              | External or internal                                                               | External or internal                                                                | External or internal                                                                |
| Certifications                                    |                        | CE                                                                                | CE                                                                                | CE                                                                                 | CE                                                                                  |                                                                                     |
| Recommended Applications                          |                        | Vehicle Tracker, Asset Tracker, Industrial PDA                                    |                                                                                   | High-precision timing                                                              | Automotive tracking , OBD                                                           | High-precision timing for base stations                                             |

\* Under development

# Quectel GNSS Module Family

|                                                   |                        | Standalone Modules                                                                  |                                                                                                         |                                                                                   | Dual Band Precision Modules                                                       |                                                                                     |                                                                                                  |                                                                                     |
|---------------------------------------------------|------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Product                                           |                        | L70-R/L70-RL                                                                        | L76/L76B/L76-L                                                                                          | L76-LB                                                                            | LC79D                                                                             | LC29D*                                                                              | LG69T(AP)*                                                                                       | LG69T(AA)*                                                                          |
|                                                   |                        | Compatible                                                                          |                                                                                                         |                                                                                   |                                                                                   |                                                                                     | Compatible                                                                                       |                                                                                     |
|                                                   |                        |    |                        |  |  |  |               |  |
| GNSS                                              |                        | GPS/ QZSS                                                                           | GPS/GLONASS/Galileo/ BeiDou/QZSS                                                                        | GPS/BeiDou/QZSS/ GLONASS                                                          | GPS L1 L5/Galileo E1 E5/QZSS L1 L5/IRNSS L5/GLONASS L1/BeiDou B1                  | GPS L1L5/Galileo E1 E5/ QZSS L1 L5/IRNSS L5/ GLONASS L1/BeiDou B1                   | GPS L1 C/A Galileo E1 B/C QZSS L1 C/A GPS L5 Galileo E5a QZSS L5 NAVIC (IRNSS) L5 BeiDou B1/ B2a | GPS L1 C/A GLONASS G1/G2 Galileo E1 B/C QZSS L1/L2 C/A GPS L2C BeiDou B1/ B2I       |
| Form Factor                                       |                        | LCC                                                                                 | LCC                                                                                                     | LCC                                                                               | LCC+LGA                                                                           | LCC                                                                                 | LGA                                                                                              | LGA                                                                                 |
| Dimensions (mm)                                   |                        | 9.7 × 10.1 × 2.5                                                                    | 9.7 × 10.1 × 2.5                                                                                        | 9.7 × 10.1 × 2.5                                                                  | 9.7 × 10.1 × 2.4                                                                  | 16.0 × 12.2 × 2.4                                                                   | 22.0 × 17.0 × 3.15                                                                               | 22.0 × 17.0 × 3.15                                                                  |
| Weight (approx.) g                                |                        | 0.6                                                                                 | 0.6                                                                                                     | 0.6                                                                               | 0.42                                                                              | 0.9                                                                                 | 1.9                                                                                              | 1.9                                                                                 |
| Temperature Range                                 |                        | -40 °C to +85 °C                                                                    | -40 °C to +85 °C                                                                                        | -40 °C to +85 °C                                                                  | -40 °C to +85 °C                                                                  | -40 °C to +85 °C                                                                    | -40 °C to +85 °C                                                                                 | -40 °C to +85 °C                                                                    |
| General Features                                  |                        |                                                                                     |                                                                                                         |                                                                                   |                                                                                   |                                                                                     |                                                                                                  |                                                                                     |
| Chip Solution                                     |                        | MT3337                                                                              | MT3333                                                                                                  | AG3331                                                                            | BCM47755B1                                                                        | BCM47758                                                                            | TESEO V                                                                                          | TESEO V                                                                             |
| L1 Band Receiver (C/A Code) Channel Number        |                        | 22 Track/ 66 Acq.                                                                   | 33 Track/ 99 Acq.                                                                                       | 33 Track/ 99 Acq.                                                                 | 32 channels                                                                       | 32 channels                                                                         | 80 Tracking Channels 4 Fast Acquisition Channels                                                 | 80 Tracking Channels 4 Fast Acquisition Channels                                    |
| L1 Band Receiver (C/A Code) SBAS                  |                        | WAAS/ EGNOS/ MSAS/ GAGAN                                                            | WAAS/ EGNOS/ MSAS/ GAGAN                                                                                | WAAS/ EGNOS/ MSAS/ GAGAN                                                          | Support (Only support GAGAN)*                                                     | -                                                                                   | WAAS/ EGNOS/ MSAS/ GAGAN                                                                         | WAAS/ EGNOS/ MSAS/ GAGAN                                                            |
| A-GNSS                                            |                        | Supported                                                                           | Supported                                                                                               | Supported                                                                         | Supported                                                                         | Supported                                                                           | Supported                                                                                        | /                                                                                   |
| Sensitivity                                       | Autonomous Acquisition | -148dBm (L70-R)<br>-149dBm (L70-RL)                                                 | -148dBm (L76/ L76B)<br>-149dBm (L76-L)                                                                  | -149dBm                                                                           | -147dBm                                                                           | TBD                                                                                 | -147dBm                                                                                          | /                                                                                   |
|                                                   | Reacquisition          | -160dBm (L70-R)<br>-161dBm (L70-RL)                                                 | -160dBm (L76/ L76B)<br>-161dBm (L76-L)                                                                  | -161dBm                                                                           | -158dBm                                                                           | TBD                                                                                 | -158dBm                                                                                          | /                                                                                   |
|                                                   | Tracking               | -165dBm (L70-R)<br>-167dBm (L70-RL)                                                 | -165dBm (L76/ L76B)<br>-167dBm (L76-L)                                                                  | -167dBm                                                                           | -163dBm                                                                           | TBD                                                                                 | -163dBm                                                                                          | /                                                                                   |
| TTFF (Time To First Fix)                          | Cold Start             | <35s, Autonomous<br><15s, With EASY™                                                | <35s, Autonomous<br><15s, With EASY™                                                                    | <35s, Autonomous<br><15s, With EASY™                                              | <34s, Autonomous                                                                  | <32s, Autonomous                                                                    | <35s, Autonomous                                                                                 | /                                                                                   |
|                                                   | Warm Start             | <30s, Autonomous<br><5s, With EASY™                                                 | <30s, Autonomous<br><5s, With EASY™                                                                     | <30s, Autonomous<br><5s, With EASY™                                               | <30s, Autonomous                                                                  | <25s, Autonomous                                                                    | <30s, Autonomous                                                                                 | /                                                                                   |
|                                                   | Hot Start              | <1s                                                                                 | <1s                                                                                                     | <1s                                                                               | <2s                                                                               | <2s                                                                                 | <1.5s                                                                                            | /                                                                                   |
| Position Accuracy (autonomous)                    |                        | <2.5m CEP                                                                           | <2.5m CEP                                                                                               | <2.5m CEP                                                                         | <1.2m CEP                                                                         | <1m CEP                                                                             | <1.2m CEP                                                                                        | /                                                                                   |
| Position Accuracy (RTK)                           |                        |                                                                                     |                                                                                                         |                                                                                   |                                                                                   | /                                                                                   | <0.15mCEP                                                                                        | /                                                                                   |
| Velocity Accuracy (without aid)                   |                        | <0.1m/s                                                                             | <0.1m/s                                                                                                 | <0.1m/s                                                                           | <0.1m/s                                                                           | <0.1m/s                                                                             | <0.1m/s                                                                                          | /                                                                                   |
| Velocity Accuracy (RTK)                           |                        |                                                                                     |                                                                                                         |                                                                                   |                                                                                   |                                                                                     | <0.05m/s                                                                                         | /                                                                                   |
| Convergence Time (RTK)                            |                        |                                                                                     |                                                                                                         |                                                                                   |                                                                                   |                                                                                     | <10s                                                                                             | /                                                                                   |
| Maximum Acceleration Accuracy (without aid)       |                        | <0.1m/s²                                                                            | <0.1m/s²                                                                                                | <0.1m/s²                                                                          | <0.1m/s²                                                                          | <0.1m/s²                                                                            | <0.1m/s²                                                                                         | /                                                                                   |
| Timing Accuracy (1σ)                              |                        | <100ns                                                                              | <100ns                                                                                                  | <100ns                                                                            | <34.9ns                                                                           | TBD                                                                                 | <20ns                                                                                            | /                                                                                   |
| Max Update Rate                                   |                        | 5Hz (L70-R/ L70-RL)                                                                 | 10Hz                                                                                                    | 10Hz                                                                              | 1Hz                                                                               | 50Hz                                                                                | RAW: 10Hz; PVT: 10Hz<br>RTK: 50Hz; IMU: 100Hz                                                    | RAW: 1Hz; IMU: 50Hz                                                                 |
| Baud Rate(default)                                |                        | 9600bps                                                                             | 9600bps                                                                                                 | 9600bps                                                                           | 115200bps                                                                         | 115200bps                                                                           | 460800bps                                                                                        | 460800bps                                                                           |
| Geo-fence                                         |                        |                                                                                     | •                                                                                                       | •                                                                                 | •                                                                                 | •                                                                                   | •                                                                                                |                                                                                     |
| Jamming Detection                                 |                        | •                                                                                   | •                                                                                                       | •                                                                                 |                                                                                   |                                                                                     | •                                                                                                |                                                                                     |
| Anti-jamming                                      |                        | •                                                                                   | •                                                                                                       | •                                                                                 |                                                                                   |                                                                                     | •                                                                                                |                                                                                     |
| Built-in LNA                                      |                        | Supported by L70-RL                                                                 | Supported by L76-L                                                                                      |                                                                                   | •                                                                                 | •                                                                                   | •                                                                                                | •                                                                                   |
| Electrical Data                                   |                        |                                                                                     |                                                                                                         |                                                                                   |                                                                                   |                                                                                     |                                                                                                  |                                                                                     |
| Power Supply                                      |                        | 2.8V to 4.3V                                                                        | 2.8V to 4.3V                                                                                            | 2.8V to 4.3V                                                                      | 1.7V to 1.9V                                                                      | 2.7V to 3.6V                                                                        | 3.0V to 3.6V                                                                                     | 3.0V to 3.6V                                                                        |
| I/O Voltage                                       |                        | 2.7V to 2.9V                                                                        | 2.7V to 2.9V                                                                                            | 2.7V to 2.9V                                                                      | 1.7V to 1.9V                                                                      | 2.7V to 3.6V                                                                        | 3.0V to 3.6V                                                                                     | 3.0V to 3.6V                                                                        |
| Power Consumption (Acquisition)                   |                        | 16mA (L70-R)<br>21mA (L70-RL)                                                       | 25mA (GPS+GLONASS)/<br>21mA (GPS)(L76)<br>23mA (GPS+BeiDou)<br>(L76B)<br>29mA (GPS+GLONASS)<br>(L76-L)  | 25.5mA<br>(GPS+GLONASS)                                                           | 47mA (GPS+BeiDou+<br>GLONASS+Galileo+<br>QZSS+ IRNSS)                             | TBD                                                                                 | TBD                                                                                              | TBD                                                                                 |
| Power Consumption (Tracking)                      |                        | 13mA (L70-R)<br>18mA (L70-RL)                                                       | 18mA (GPS+GLONASS)/<br>15mA (GPS) (L76)<br>18mA (GPS+BeiDou)<br>(L76B)<br>22mA (GPS+GLONASS)<br>(L76-L) | 23.1mA<br>(GPS+GLONASS)                                                           | 43mA (GPS+BeiDou+<br>GLONASS+Galileo+<br>QZSS+ IRNSS)                             | TBD                                                                                 | TBD                                                                                              | TBD                                                                                 |
| Power Consumption (Backup/Low power mode)         |                        | 8µA<br>(L70-R/ L70-RL)                                                              | 7µA                                                                                                     | 7.7µA                                                                             | 200µA@Sleep Mode<br>17µA@Standby Mode                                             | TBD                                                                                 | TBD                                                                                              | TBD                                                                                 |
| Interfaces                                        |                        |                                                                                     |                                                                                                         |                                                                                   |                                                                                   |                                                                                     |                                                                                                  |                                                                                     |
| UART                                              |                        | •                                                                                   | •                                                                                                       | •                                                                                 | •                                                                                 | •                                                                                   | •                                                                                                | •                                                                                   |
| IIC (NMEA)                                        |                        |                                                                                     | Supported by L76-L                                                                                      | •                                                                                 | •                                                                                 | •                                                                                   | •                                                                                                | •                                                                                   |
| CAN                                               |                        |                                                                                     |                                                                                                         |                                                                                   |                                                                                   |                                                                                     | •                                                                                                |                                                                                     |
| Reset                                             |                        | •                                                                                   | •                                                                                                       | •                                                                                 | •                                                                                 | •                                                                                   | •                                                                                                | •                                                                                   |
| Time Pulse                                        |                        | •                                                                                   | •                                                                                                       | •                                                                                 | •                                                                                 | •                                                                                   | •                                                                                                | •                                                                                   |
| Antenna                                           |                        |                                                                                     |                                                                                                         |                                                                                   |                                                                                   |                                                                                     |                                                                                                  |                                                                                     |
| Short-Circuit Protection & Open-Circuit Detection |                        |                                                                                     |                                                                                                         |                                                                                   |                                                                                   |                                                                                     | •                                                                                                | •                                                                                   |
| Antenna Type                                      |                        | Active or passive                                                                   | Active or passive                                                                                       | Active or passive                                                                 | Active or passive                                                                 | Active or passive                                                                   | Active                                                                                           | Active                                                                              |
| Antenna Power                                     |                        | External or internal                                                                | External or internal                                                                                    | External or internal                                                              | External or internal                                                              | External or internal                                                                | External or internal                                                                             | External or internal                                                                |
| Certifications                                    |                        | CE                                                                                  | CE                                                                                                      | CE                                                                                | CE                                                                                | CE*                                                                                 | CE*                                                                                              | CE*                                                                                 |
| Recommended Applications                          |                        | Vehicle Tracker, Asset Tracker, Safety, Industrial PDA or PND, Digital Camera, etc. |                                                                                                         |                                                                                   | Shared mobility , delivery robots , GIS                                           |                                                                                     | Automotive , High precession navigation , Delivery robots                                        |                                                                                     |

LG69T(AA)\* only supports output RAW DATA.

\* Under development

# Quectel GNSS Module Family

|                                                   |                        | Antenna Modules                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|---------------------------------------------------|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Product                                           |                        | L80/ L80-R                                                                        | LC86L*                                                                            | L86                                                                               | L89                                                                                 | L96                                                                                 |
|                                                   |                        | Compatible                                                                        |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                                                   |                        |  |  |  |  |  |
| GNSS                                              |                        | GPS/QZSS                                                                          | GLONASS/GPS/ BeiDou/QZSS                                                          | GPS/ GLONASS/BeiDou/Galileo/ QZSS                                                 | GPS/ GLONASS/BeiDou/Galileo/ IRNSS/QZSS                                             | GPS/ GLONASS/BeiDou/Galileo/ QZSS                                                   |
| Form Factor                                       |                        | LCC                                                                               | LCC                                                                               | LCC                                                                               | LCC+LGA                                                                             | LCC                                                                                 |
| Dimensions (mm)                                   |                        | 16.0 × 16.0 × 6.45                                                                | 16.0 × 16.0 × 6.95                                                                | 18.4 × 18.4 × 6.45                                                                | 16.0 × 26.4 × 6.8                                                                   | 9.6 × 14.0 × 2.0                                                                    |
| Weight (approx.) g                                |                        | 6.0                                                                               | 6.0                                                                               | 7.6                                                                               | 8.2                                                                                 | 0.6                                                                                 |
| Temperature Range                                 |                        | -40 °C to +85 °C                                                                  | -40 °C to +85 °C                                                                  | -40 °C to +85 °C                                                                  | -40 °C to +85 °C                                                                    | -40 °C to +85 °C                                                                    |
| General Features                                  |                        |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| Chip Solution                                     |                        | MT3339 (L80) MT3337 (L80-R)                                                       | AG3331                                                                            | MT3333                                                                            | Teseo III                                                                           | MT3333                                                                              |
| L1 Band Receiver (C/A Code) Channel Number        |                        | 22 Track/ 66 Acq                                                                  | 33 Track/ 99 Acq                                                                  | 33 Track/ 99 Acq                                                                  | 48 Track/2 Fast Acq                                                                 | 33 Track/ 99 Acq.                                                                   |
| L1 Band Receiver (C/A Code) SBAS                  |                        | WAAS/ EGNOS/ MSAS/ GAGAN                                                          | WAAS/ EGNOS/ MSAS/ GAGAN                                                          | WAAS/ EGNOS/ MSAS/ GAGAN                                                          | WAAS/ EGNOS/ MSAS/ GAGAN                                                            | WAAS/ EGNOS/ MSAS/ GAGAN                                                            |
| A-GNSS                                            |                        | Supported                                                                         | Supported                                                                         | Supported                                                                         | Supported                                                                           | Supported                                                                           |
| Sensitivity                                       | Autonomous Acquisition | -148dBm                                                                           | -148dBm                                                                           | -149dBm                                                                           | -147dBm                                                                             | -148dBm                                                                             |
|                                                   | Reacquisition          | -160dBm                                                                           | -159dBm                                                                           | -161dBm                                                                           | -156dBm                                                                             | -160dBm                                                                             |
|                                                   | Tracking               | -165dBm                                                                           | -165dBm                                                                           | -167dBm                                                                           | -162dBm                                                                             | -165dBm                                                                             |
| TTFF (Time To First Fix)                          | Cold Start             | <35s, Autonomous<br><15s, With EASY™                                              | <35s, Autonomous<br><15s, With EASY™                                              | <35s, Autonomous<br><15s, With EASY™                                              | <35s, Autonomous                                                                    | <35s, Autonomous<br><15s, With EASY™                                                |
|                                                   | Warm Start             | <30s, Autonomous<br><5s, With EASY™                                               | <30s, Autonomous<br><5s, With EASY™                                               | <30s, Autonomous<br><5s, With EASY™                                               | <25s, Autonomous                                                                    | <30s, Autonomous<br><5s, With EASY™                                                 |
|                                                   | Hot Start              | <1s                                                                               | <1s                                                                               | <1s                                                                               | <1.5s                                                                               | <1s                                                                                 |
| Position Accuracy(autonomous)                     |                        | <2.5m CEP                                                                         | <2.5m CEP                                                                         | <2.5m CEP                                                                         | <1.8m CEP                                                                           | <2.5m CEP                                                                           |
| Velocity Accuracy(without aid)                    |                        | <0.1m/s                                                                           | <0.1m/s                                                                           | <0.1m/s                                                                           | <0.1m/s                                                                             | <0.1m/s                                                                             |
| Maximum Acceleration Accuracy (without aid)       |                        | <0.1m/s²                                                                          | <0.1m/s²                                                                          | <0.1m/s²                                                                          | <0.1m/s²                                                                            | <0.1m/s²                                                                            |
| Timing Accuracy (1σ)                              |                        | <100ns                                                                            | <100ns                                                                            | <100ns                                                                            | 3.9ns                                                                               | <100ns                                                                              |
| Max Update Rate                                   |                        | 10Hz (L80)<br>5Hz (L80-R)                                                         | 10Hz                                                                              | 10Hz                                                                              | 10Hz                                                                                | 10Hz                                                                                |
| Baud Rate(default)                                |                        | 9600bps                                                                           | 9600bps                                                                           | 9600bps                                                                           | 9600bps                                                                             | 9600bps                                                                             |
| Geo-fence                                         |                        | •(Supported by L80)                                                               | •                                                                                 | •                                                                                 | •                                                                                   | •                                                                                   |
| Jamming Detection                                 |                        | •                                                                                 | •                                                                                 | •                                                                                 | •                                                                                   | •                                                                                   |
| Anti-jamming                                      |                        | •                                                                                 | •                                                                                 | •                                                                                 | •                                                                                   | •                                                                                   |
| Built-in LNA                                      |                        | •                                                                                 | •                                                                                 | •                                                                                 | •                                                                                   | •                                                                                   |
| Electrical Data                                   |                        |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| Power Supply                                      |                        | 3.0V to 4.3V                                                                      | 2.8V to 4.3V                                                                      | 3.0V to 4.3V                                                                      | 3.1V to 4.3V                                                                        | 2.8V to 4.3V                                                                        |
| I/O Voltage                                       |                        | 2.7V to 2.9V                                                                      | 2.7V to 2.9V                                                                      | 2.7V to 2.9V                                                                      | 3.0 V                                                                               | 2.7V to 2.9V                                                                        |
| Power Consumption (Acquisition)                   |                        | 25mA                                                                              | 31.8mA (GPS+GLONASS)                                                              | 30mA (GPS+GLONASS)                                                                | 99mA (GPS+GALILLEO+IRNSS)                                                           | 25mA (GPS+GLONASS) 22mA (GPS)                                                       |
| Power Consumption (Tracking)                      |                        | 20mA                                                                              | 31.5mA (GPS+GLONASS)                                                              | 26mA (GPS+GLONASS)                                                                | 95mA (GPS+GALILLEO+IRNSS)                                                           | 20mA (GPS+GLONASS)/ 20mA (GPS)                                                      |
| Power Consumption (Backup)                        |                        | 7μA                                                                               | 1.4mA@Standby Mode;<br>6μA@Backup Mode                                            | 7μA                                                                               | 7μA                                                                                 | 7μA                                                                                 |
| Interfaces                                        |                        |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| UART                                              |                        | •                                                                                 | •                                                                                 | •                                                                                 | •                                                                                   | •                                                                                   |
| IIC (NMEA)                                        |                        |                                                                                   |                                                                                   |                                                                                   | •                                                                                   | •                                                                                   |
| Reset                                             |                        | •                                                                                 | •                                                                                 | •                                                                                 | •                                                                                   | •                                                                                   |
| Time Pulse                                        |                        | •                                                                                 | •                                                                                 | •                                                                                 | •                                                                                   | •                                                                                   |
| Antenna                                           |                        |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| Short-Circuit Protection & Open-Circuit Detection |                        | Supported by L80                                                                  | •                                                                                 | •                                                                                 | •                                                                                   |                                                                                     |
| Antenna Automatic Switch                          |                        | Supported by L80                                                                  | •                                                                                 | •                                                                                 | •                                                                                   |                                                                                     |
| Antenna Type                                      |                        | Embedded patch antenna or external active antenna                                 | Embedded patch antenna or external active antenna                                 | Embedded patch antenna or external active antenna                                 | Embedded patch antenna and chip antenna, external active antenna                    | Embedded chip antenna or external active antenna                                    |
| Antenna Power                                     |                        | Internal                                                                          | Internal                                                                          | Internal                                                                          | Internal                                                                            | External                                                                            |
| Certifications                                    |                        | CE                                                                                | CE                                                                                | CE                                                                                |                                                                                     | CE                                                                                  |
| Recommended Applications                          |                        | Vehicle or Asset Tracker, DVR, Connected PND & PDA, Safety, Digital Camera, etc.  |                                                                                   |                                                                                   | (Dedicated for India market) standard tracking                                      | Asset tracking, digital cameras                                                     |

\* Under development

## Europe

**Czech Republic:** Prague  
**Denmark:** Copenhagen  
**France:** Sophia Antipolis/Paris/Nice/Toulouse  
**Germany:** Berlin/Munich/Stuttgart/Tripstadt  
**Italy:** Milan/Turriaco  
**Poland:** Gdynia/Wroclaw/Nedza/Warsaw  
**Romania:** Timisoara

**Russia:** Moscow/St. Petersburg  
**Slovenia:** Ljubljana/Sencur  
**Spain:** Barcelona/Granada  
**Sweden:** Stockholm/Sollentuna  
**The Netherlands:** Eindhoven  
**Turkey:** Istanbul  
**UK:** London/Birmingham/Oxford

## North America

**Canada:**  
Toronto/Mississauga, ON  
Vancouver, B.C

**United States:**  
Alpharetta, GA  
Chicago, IL  
Houston/San Marcos/Round Rock, TX  
Orange County/San Diego/Silicon Valley/Scotts Valley/Irvine, CA  
Point Roberts, WA



## Greater China

### Shanghai Headquarters

|           |          |           |
|-----------|----------|-----------|
| Beijing   | Hefei    | Shenzhen  |
| Changsha  | Huizhou  | Suzhou    |
| Chengdu   | Ji'nan   | Taipei    |
| Chongqing | Kunming  | Urumqi    |
| Foshan    | Nanjing  | Wuhan     |
| Fuzhou    | Ningbo   | Xi'an     |
| Guangzhou | Qingdao  | Zhengzhou |
| Hangzhou  | Shenyang | Zhongshan |

## Israel / Africa

**Israel:** Tel Aviv  
**South Africa:** Johannesburg/Gauteng

## Asia Pacific

**Australia:** Sydney/Melbourne  
**India:** Mumbai/Bangalore/Delhi/Hyderabad  
**Indonesia:** Jakarta/Bandung  
**Japan:** Tokyo/Yokohama  
**Korea:** Seoul

**Korea:** Seoul  
**Philippines:** Manila/Pasay City  
**Singapore**  
**Thailand:** Bangkok/Samutprakarn  
**Vietnam:** HoChiMinh City/Hanoi

## Latin America

**Argentina:** Buenos Aires  
**Brazil:** Sao Paulo  
**Mexico:** Mexico City/San Nicolas De Los Garza

50+ sales offices, 5 R&D centers globally  
90+ distributors  
Serving 5500+ customers  
Modules are sold to 150+ countries and regions

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