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Thank you for purchasing HUAWEI MU509-65 WCDMA Module (hereinafter referred to as the MU509-65)

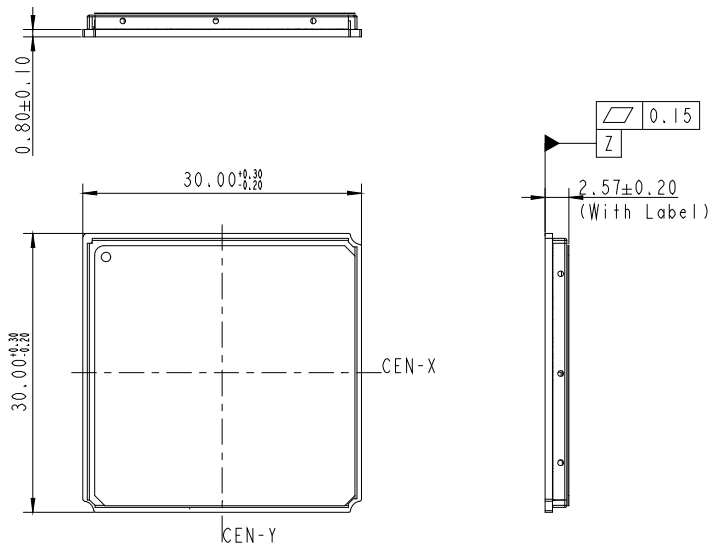
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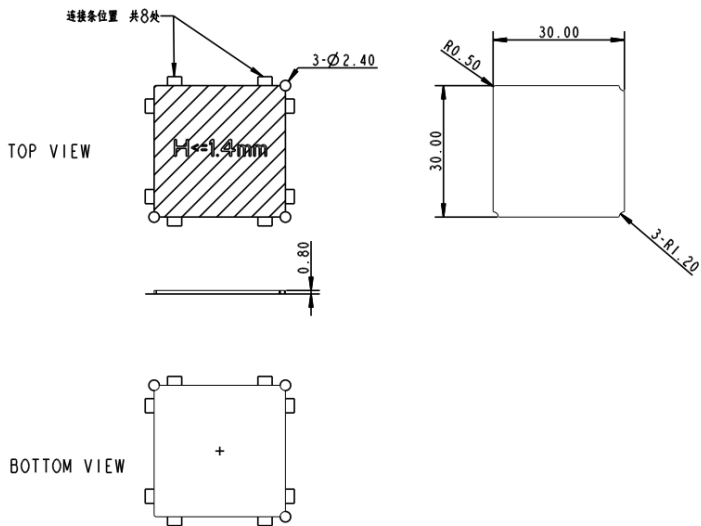
- This manual briefly describes the dimension, the position of RF connectors and Pin definitions.
- You are recommended to read the manual before using the MU509-65.

Getting to Know the MU509-65

Dimension

- The package of the WCDMA module is 145 pin with a dimension of 30 mm × 30 mm × 2.57mm. It is applied to the user interface board, and can be used as a wireless terminal in a network environment.



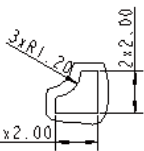
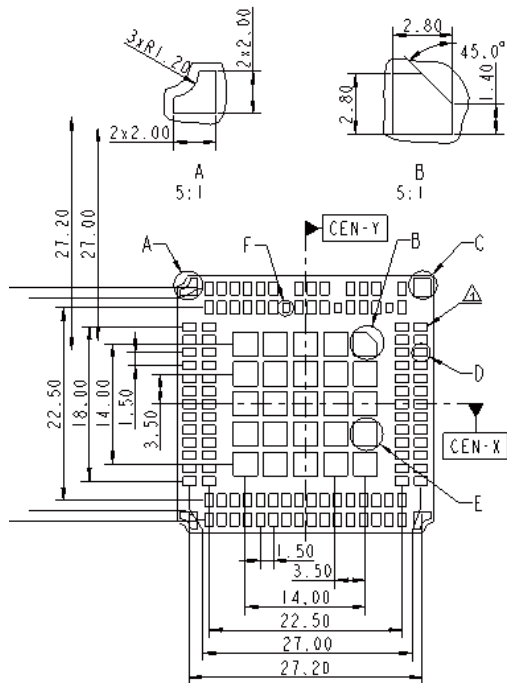


Position of RF Connectors

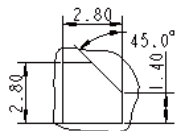
The WCDMA module provided one antenna connector (MAIN_ANT) for connecting the external antenna.

Pin Definitions

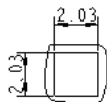
- The sequence of MU509-65 interface is shown below.



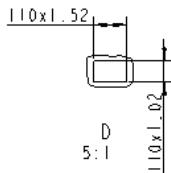
A
5:1



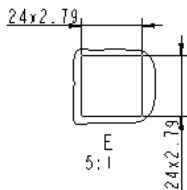
B
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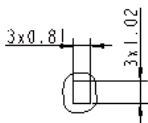
C
5:1



D
5:1



E
5:1



F
5:1

- The Pin definitions of the MU509-65 interface is shown below.

Pin No.	Pin Name	Pad Type	Description	Parameter	Min. (V)	Typ. (V)	Max. (V)
1	NC	-	Not connected	-	-	-	-
2	NC	-	Not connected	-	-	-	-
3	NC	-	Not connected	-	-	-	-
4	NC	-	Not connected	-	-	-	-
5	PCM_SYNC	O	PCM interface sync	VOH	2.15	-	2.6
				VOL	0	-	0.45
6	PCM_DIN	I	PCM I/F data in	VIH	1.69	-	2.9
				VIL	-0.3	-	0.91
7	PCM_DOUT	O	PCM I/F data out	VOH	2.15	-	2.6
				VOL	0	-	0.45
8	PCM_CLK	O	PCM interface clock	VOH	2.15	-	2.6
				VOL	0	-	0.45
9	NC	-	Not connected	-	-	-	-
10	NC	-	Not connected	-	-	-	-
11	WAKEUP_I N	I	Host to set the module into sleep or wake up the module from sleep.	VIH	1.69	-	2.9
				VIL	-0.3	-	0.91
12	VBAT	PI	Power supply input	-	3.3	3.8	4.2
13	VBAT	PI	Power supply input	-	3.3	3.8	4.2
14	PS_HOLD	I	Used for JTAG interface assigning a test point for it.	VIH	1.17	-	2.1
				VIL	-0.3	-	0.63
15	Reserved	-	Reserved, please keep this pin open.	-	-	-	-
16	NC	-	Not connected	-	-	-	-
17	NC	-	Not connected	-	-	-	-
18	NC	-	Not connected	-	-	-	-

Pin No.	Pin Name	Pad Type	Description	Parameter	Min. (V)	Typ. (V)	Max. (V)
19	NC	-	Not connected	-	-	-	-
20	NC	-	Not connected	-	-	-	-
21	NC	-	Not connected	-	-	-	-
22	NC	-	Not connected	-	-	-	-
23	NC	-	Not connected	-	-	-	-
24	NC	-	Not connected	-	-	-	-
25	NC	-	Not connected	-	-	-	-
26	NC	-	Not connected	-	-	-	-
27	NC	-	Not connected	-	-	-	-
28	Reserved	-	Reserved, please keep this pin open.	-	-	-	-
29	Reserved	-	Reserved, please keep this pin open.	-	-	-	-
30	JTAG_TMS	I	JTAG test mode select	VIH	1.17	-	2.1
				VIL	-0.3	-	0.63
31	VCC_EXT2	PO	2.6 V power output	-	2.5	2.6	2.7
32	VCC_EXT1	PO	1.8 V power output	-	1.65	1.8	1.95
33	NC	-	Not connected	-	-	-	-
34	USIM_VCC	PO	Power supply for USIM card	-	1.65	1.8	1.95
				-	2.7	2.85	3.0
35	VCOIN	PI	Coin cell input	-	1.5	3.0	3.25
36	JTAG_TRST_N	I	JTAG reset	VIH	1.17	-	2.1
				VIL	-0.3	-	0.63
37	NC	-	Not connected	-	-	-	-
38	MIC2_P	I	Positive pole of the input of audio interface 2.	-	-	-	-
39	MIC2_N	I	Negative pole of the input of audio interface 2.	-	-	-	-
40	MIC1_P	I	Positive pole of the input of audio interface 1.	-	-	-	-

Pin No.	Pin Name	Pad Type	Description	Parameter	Min. (V)	Typ. (V)	Max. (V)
41	MIC1_N	I	Negative pole of the input of audio interface 1.	-	-	-	-
42	JTAG_TCK	I	JTAG clock input	VIH	1.17	-	2.1
				VIL	-0.3	-	0.63
43	Reserved	-	Reserved, please keep this pin open.	-	-	-	-
44	GPIO	I/O	General Purpose I/O pin. The function of these pins has not been defined.	VOH	2.15	-	2.6
				VOL	0	-	0.45
				VIH	1.69	-	2.9
				VIL	-0.3	-	0.91
45	GPIO	I/O	General Purpose I/O pin. The function of these pins has not been defined.	VOH	2.15	-	2.6
				VOL	0	-	0.45
				VIH	1.69	-	2.9
				VIL	-0.3	-	0.91
46	GPIO	I/O	General Purpose I/O pin. The function of these pins has not been defined.	VOH	2.15	-	2.6
				VOL	0	-	0.45
				VIH	1.69	-	2.9
				VIL	-0.3	-	0.91
47	NC	-	Not connected	-	-	-	-
48	GND	-	Ground	-	-	-	-
49	GND	-	Ground	-	-	-	-
50	GND	-	Ground	-	-	-	-
51	GPIO	I/O	General Purpose I/O pin. The function of these pins has not been defined.	VOH	2.15	-	2.6
				VOL	0	-	0.45
				VIH	1.69	-	2.9
				VIL	-0.3	-	0.91
52	GND	-	Ground	-	-	-	-
53	GND	-	Ground	-	-	-	-
54	GND	-	Ground	-	-	-	-
55	GPIO	I/O	General Purpose I/O pin. The function of these pins has not been defined.	VOH	2.15	-	2.6
				VOL	0	-	0.45
				VIH	1.69	-	2.9
				VIL	-0.3	-	0.91

Pin No.	Pin Name	Pad Type	Description	Parameter	Min. (V)	Typ. (V)	Max. (V)
56	GND	-	Ground	-	-	-	-
57	GND	-	Ground	-	-	-	-
58	GND	-	Ground	-	-	-	-
59	GND	-	Ground	-	-	-	-
60	NC	-	Not connected	-	-	-	-
61	NC	-	Not connected	-	-	-	-
62	NC	-	Not connected	-	-	-	-
63	NC	-	Not connected	-	-	-	-
64	NC	-	Not connected	-	-	-	-
65	NC	-	Not connected	-	-	-	-
66	NC	-	Not connected	-	-	-	-
67	NC	-	Not connected	-	-	-	-
68	NC	-	Not connected	-	-	-	-
69	NC	-	Not connected	-	-	-	-
70	NC	-	Not connected	-	-	-	-
71	WAKEUP_OUT	O	Module to wake up the host	VOH	2.15	-	2.6
				VOL	0	-	0.45
72	JTAG_TDO	O	JTAG test data output	VOH	1.35	-	1.8
				VOL	0	-	0.45
73	UART_DSR	O	UART Data Set Ready	VOH	2.15	-	2.6
				VOL	0	-	0.45
74	UART_RTS	O	UART Ready for receive	VOH	2.15	-	2.6
				VOL	0	-	0.45
75	UART_DCD	O	UART Data Carrier Detect	VOH	2.15	-	2.6
				VOL	0	-	0.45
76	UART_TX	O	UART transmit output	VOH	2.15	-	2.6
				VOL	0	-	0.45
77	UART_RING	O	UART Ring Indicator	VOH	2.15	-	2.6
				VOL	0	-	0.45
78	UART_RX	I	UART receive data input	VIH	1.69	-	2.9
				VIL	-0.3	-	0.91
79	UART_DTR	I	Data Terminal Ready	VIH	1.69	-	2.9
				VIL	-0.3	-	0.91

Pin No.	Pin Name	Pad Type	Description	Parameter	Min. (V)	Typ. (V)	Max. (V)
80	UART_CTS	I	UART Clear to Send	VIH	1.69		2.9
				VIL	-0.3	-	0.91
81	POWER_ON_OFF	I	System power-on or power-off	VIH	1.17	-	2.1
				VIL	-0.3	-	0.63
82	NC	-	Not connected	-	-	-	-
83	NC	-	Not connected	-	-	-	-
84	NC	-	Not connected	-	-	-	-
85	USB_DM	I/O	Full-speed USB D-	-	-	-	-
86	USB_DP	I/O	Full-speed USB D+	-	-	-	-
87	JTAG_TDI	I	JTAG test data input	VIH	1.17	-	2.1
				VIL	-0.3	-	0.63
88	USIM_RESET	O	USIM reset	VOH	1.65/ 2.7	1.8/ 2.85	1.95/ 3.0
				VOL	0	-	0.36/ 0.57
89	USIM_DATA	I/O	USIM data	VOH	1.65/ 2.7	1.8/ 2.85	1.95/ 3.0
				VOL	0	-	0.36/ 0.57
				VIH	1.65/ 2.7	1.8/ 2.85	1.95/ 3.0
				VIL	0	-	0.36/ 0.57
90	USIM_CLK	O	USIM clock	VOH	1.65/ 2.7	1.8/ 2.85	1.95/ 3.0
				VOL	0	-	0.36/ 0.57
91	LED_STATU S	I	Status indicator Current sink Drive strength: 10 mA	-	-	-	-
92	NC	-	Not connected	-	-	-	-
93	JTAG_RTCK	I	JTAG return clock	VIH	1.17	-	2.1
				VIL	-0.3	-	0.63
94	NC	-	Not connected	-	-	-	-
95	NC	-	Not connected	-	-	-	-

Pin No.	Pin Name	Pad Type	Description	Parameter	Min. (V)	Typ. (V)	Max. (V)
96	EAR_OUT_N	O	Negative pole of the output of Earphone interface.	-	-	-	-
97	EAR_OUT_P	O	Positive pole of the output of Earphone interface.	-	-	-	-
98	SPKR_OUT_P	O	Positive pole of the output of speaker interface.	-	-	-	-
99	SPKR_OUT_N	O	Negative pole of the output of speaker interface.	-	-	-	-
100	RESIN_N	I	Reset module.	VIH	1.17	-	2.1
				VIL	-0.3	-	0.63
101	LED_MODE	I	Mode indicator Current sink Drive strength: 10 mA	-	-	-	-
102	NC	-	Not connected	-	-	-	-
103	NC	-	Not connected	-	-	-	-
104	NC	-	Not connected	-	-	-	-
105	GPIO	I/O	General Purpose I/O pin. The function of these pins has not been defined.	VOH	2.15	-	2.6
				VOL	0	-	0.45
				VIH	1.69	-	2.9
				VIL	-0.3	-	0.91
106	GND	-	Ground	-	-	-	-
107	MAIN_ANT	-	RF main antenna pad	-	-	-	-
108	GND	-	Ground	-	-	-	-
109	GPIO	I/O	General Purpose I/O pin. The function of these pins has not been defined.	VOH	2.15	-	2.6
				VOL	0	-	0.45
				VIH	1.69	-	2.9
				VIL	-0.3	-	0.91
110	GND	-	Ground	-	-	-	-
111	NC	-	Not connected	-	-	-	-
112	GND	-	Ground	-	-	-	-
113	GPIO	I/O	General Purpose I/O pin. The function of these pins has not been defined.	VOH	2.15	-	2.6
				VOL	0	-	0.45
				VIH	1.69	-	2.9
				VIL	-0.3	-	0.91
114	GND	-	Ground	-	-	-	-

Pin No.	Pin Name	Pad Type	Description	Parameter	Min. (V)	Typ. (V)	Max. (V)
115	NC	-	Not connected	-	-	-	-
116	GND	-	Ground	-	-	-	-
117	NC	-	Not connected	-	-	-	-
118	NC	-	Not connected	-	-	-	-
119	NC	-	Not connected	-	-	-	-
120	NC	-	Not connected	-	-	-	-
121	GND	-	Thermal Ground Pad	-	-	-	-
122	GND	-	Thermal Ground Pad	-	-	-	-
123	GND	-	Thermal Ground Pad	-	-	-	-
124	GND	-	Thermal Ground Pad	-	-	-	-
125	GND	-	Thermal Ground Pad	-	-	-	-
126	GND	-	Thermal Ground Pad	-	-	-	-
127	GND	-	Thermal Ground Pad	-	-	-	-
128	GND	-	Thermal Ground Pad	-	-	-	-
129	GND	-	Thermal Ground Pad	-	-	-	-
130	GND	-	Thermal Ground Pad	-	-	-	-
131	GND	-	Thermal Ground Pad	-	-	-	-
132	GND	-	Thermal Ground Pad	-	-	-	-
133	GND	-	Thermal Ground Pad	-	-	-	-
134	GND	-	Thermal Ground Pad	-	-	-	-
135	GND	-	Thermal Ground Pad	-	-	-	-
136	GND	-	Thermal Ground Pad	-	-	-	-
137	GND	-	Thermal Ground Pad	-	-	-	-
138	GND	-	Thermal Ground Pad	-	-	-	-
139	GND	-	Thermal Ground Pad	-	-	-	-
140	GND	-	Thermal Ground Pad	-	-	-	-
141	GND	-	Thermal Ground Pad	-	-	-	-
142	GND	-	Thermal Ground Pad	-	-	-	-
143	GND	-	Thermal Ground Pad	-	-	-	-
144	GND	-	Thermal Ground Pad	-	-	-	-
145	GND	-	Thermal Ground Pad	-	-	-	-