Landis+Gyr

LTE-M Cellular Communication Module

Data Sheet

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Landis+Gyr

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LTE-M Cellular Module Overview

The LTE-M Cellular communication module incorporates a power supply, cellular modem, ZigBee circuitry, and interface connector for integration into Landis+Gyr electric meters. A U.FL connector is provided to attach a cellular antenna and the ZigBee antenna is incorporated into the PCB.

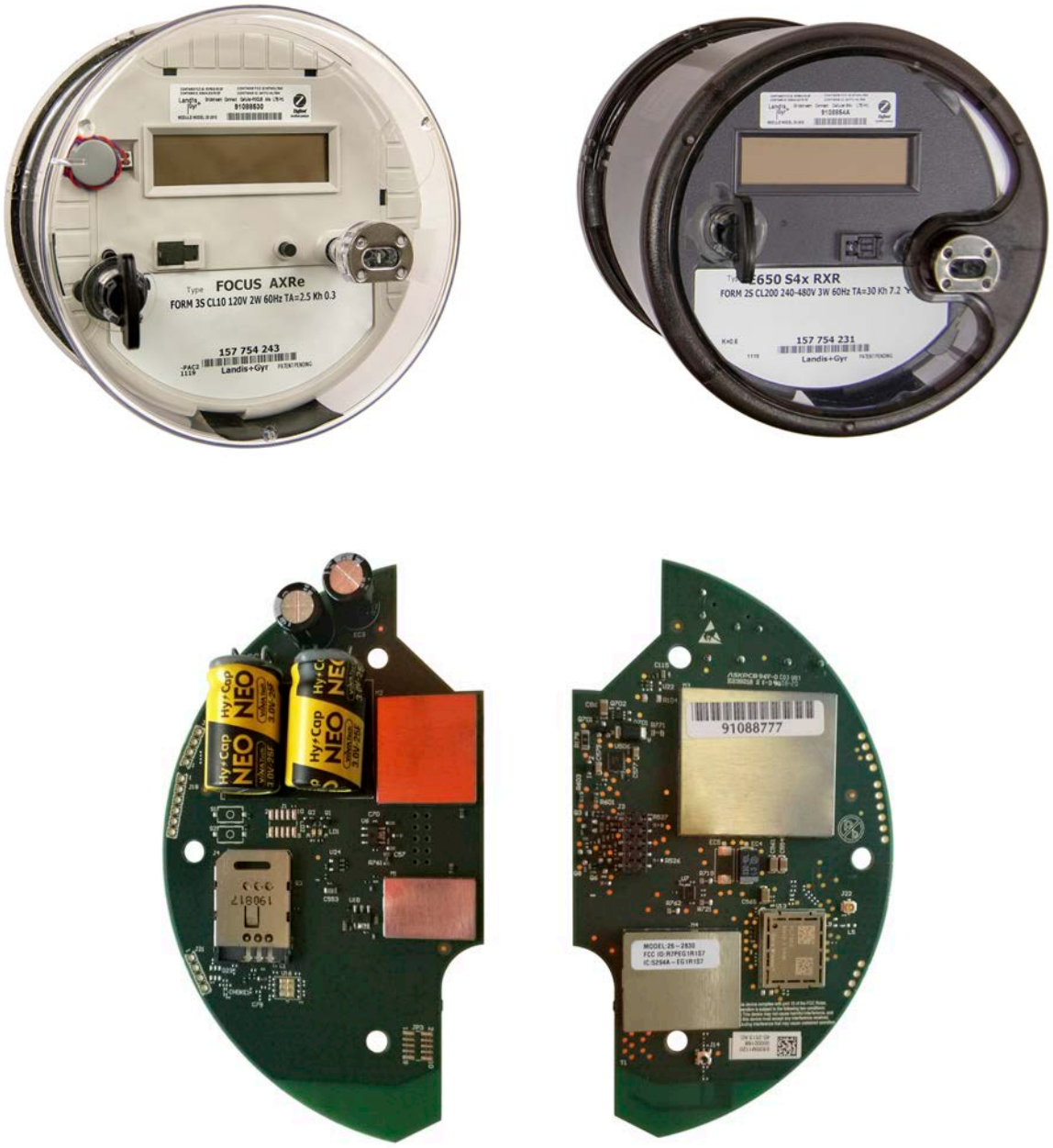

Figure 1. Landis+Gyr FOCUS AXe and S4x

The LTE-M Cellular module is not available as a standalone product.

The module assembly contains:

- LTE-M Cellular module
- External Flex antenna

LTE-M Cellular Module Specifications

Table 1. Compatible Meters

Category	Specification	Value or Range			
		Form	**Class**	**Voltage**	**Units**
Compatible Meters	Landis+Gyr E331/E351 FOCUS AXe/AXRe/RXRe Supported Meter Forms	1S	CL100/CL200	120-240	VAC
		2S	CL200	240	VAC
		2SE	CL320	240	VAC
		2K	CL480	240	VAC
		3S	CL10/CL20	120-240	VAC
		3SC	CL 2-20	120-240	VAC
		4S	CL10/CL20	240	VAC
		12S	CL100/CL200	120	VAC
	Landis+Gyr E650 S4x Supported Meter Forms	1S	CL2-200	120-480	VAC
		2S	CL2-200	240-480	VAC
		2SE	CL3-320	240-480	VAC
		3S	CL20	120-480	VAC
		3SC	CL .2-20	120-480	VAC
		4S	CL .2-20	120-480	VAC
		45S (5S)	CL .2-20	120-480	VAC
		36S (6S)	CL .2-20	120-480	VAC
		9S/8S	CL .2-20	120-480	VAC
		12S	CL2-200	120-480	VAC
		12SE	CL3-320	120-480	VAC
		25S	CL2-200	120-480	VAC
		25SE	CL320	120-480	VAC
		16/15/14S	CL2-200	120-480	VAC
		16/15/14SE	CL3-320	120-480	VAC
		29S	CL20	120-480	VAC
		10A/8A	CL .2-20	120-480	VAC
		45A (5A)	CL20	120-480	VAC

Table 2. Electrical, Mechanical and Environmental

Category	Specification	Details
Electrical	Voltage	11 to 28 VDC
	Power	5W peak; .8W continuous
Mechanical	Size	5.06 x 2.87 x .94
Environmental	Storage Temperature	-40 to +85 Degrees Celsius
	Operating Temperature	-40 to +75 Degrees Celsius
	Relative Humidity	0 to 95% Relative Humidity non-condensing

Table 3. Cellular Modem

Specification	Details
Supported Bands	2, 4, 12, 13, 25

Table 4. ZigBee Radio General

Specification	Details
RF Frequency Range	2.405 GHz - 2.475 GHz
RF Baud Rate	250 kbps
Output Power	19 dBm (Typical)
Receive Sensitivity	-104 dBm (Typical)
Antenna Type	Inverted-F PCB Trace
Max Antenna Gain	-3.07 dBi

Table 5. Standards Compliance

Specification	Details
FCC Title 47 CFR Part 15	Radiated and Conducted Emissions
IEC 61000-4-2, 3, 4, 5, 12, 18	Electromagnetic Compatibility
ANSI C12.20	National Standard for Electricity Meters - 0.2 and 0.5 Accuracy Classes
ANSI C12.1	Code for Electricity Metering
ANSI C37.90.1 (2002)	Standard Surge Withstand Capability (SWC) Tests

LTE-M Cellular Outline

The PCB outline is shown below.

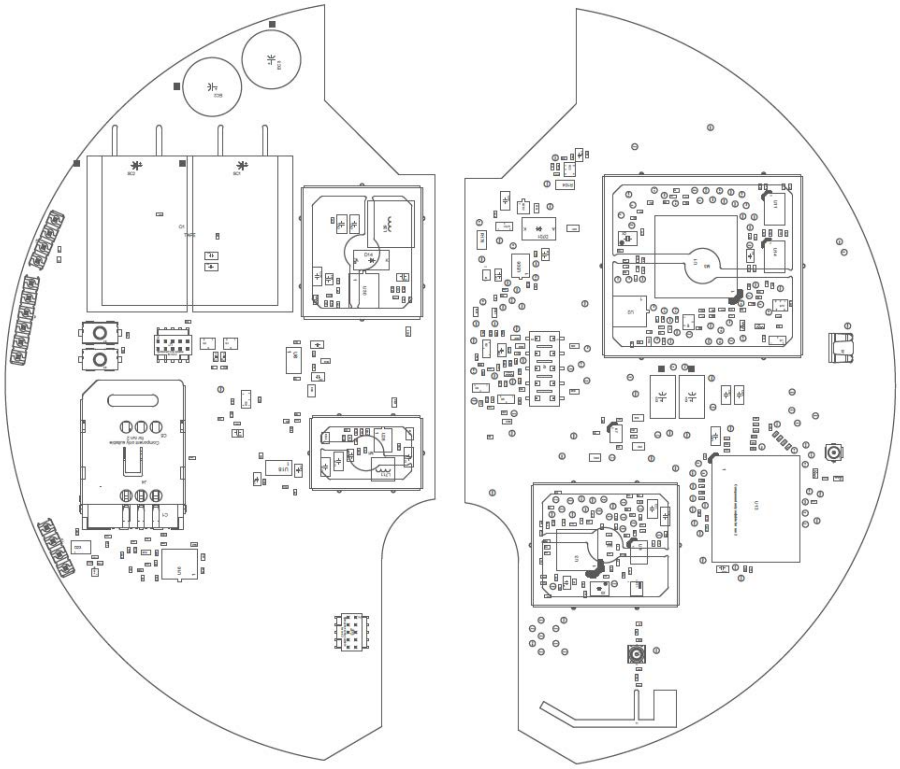

Figure 2. PCB Outline

FCC and Industry Canada Compliance

FCC Class B

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the Instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Consult Landis+Gyr or an experienced radio technician for help

WARNING: Changes or modifications to this device not expressly approved by Landis+Gyr could void the user's authority to operate the equipment.

RF Exposure

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and your body. This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.

Cet équipement est conforme aux limites FCC d'exposition aux radiations définies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé à une distance minimale de 20 cm entre le radiateur et votre corps. Cet émetteur ne doit pas être co-implantés ou exploités en conjonction avec une autre antenne ou émetteur.

Requirement for Modular Certification

The LTE-M Cellular module is approved for use with the inverted-F PCB trace antenna integrated on the board for the ZigBee radio.

The LTE-M Cellular module is not available as a standalone product, it is only approved for use in Landis+Gyr products and is not intended for sale to third-party integrators.

Additional Testing, Part 15 Subpart B Disclaimer

The end product with the LTE-M Cellular module may also need to pass the FCC Part 15 unintentional emission testing requirements and be properly authorized per FCC Part 15 Subpart B.

Industry Canada

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (EIRP) is not more than that necessary for successful communication.

This radio transmitter (5294A-EG1R1S7) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list or having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Approved Antennas: Inverted-F PCB Trace, 2.4 - 2.475 GHz, Max Gain -3.07 dBi.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage

radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

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Host FCC Label Requirements

The host label(s) must be clearly visible after the device is installed, and display the module FCC ID in the following format:

- **Contains FCC ID:** R7PEG1R1S7
- **Contains IC:** 5294A-EG1R1S7
- **Contains FCC ID:** N7NHL78M
- **Contains IC:** 2417C-HL78M

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) this device must accept any interference received, including interference that may cause undesired operation.

Labels

Example external labels for the final meter assembly:

Figure 3. Label Identification

ZigBee radio: FCC ID: R7PEG1R1S7, IC: 5294A-EG1R1S7

Cellular modem: FCC ID: N7NHL78M, IC: 2417C-HL78M