

Landis+Gyr



AXei

FCC and IC Compliance Manual

Rev AB

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Gridstream RF, Series 5, AXei FCC and IC Compliance Manual



Introduction

The AXei PCB contains two radios, a Zigbee radio and a Sub-GHz radio. The Zigbee radio on the AXei PCB is certified for modular approval.

The Sub-GHz radio is the S5-MCMO module. This radio complies with modular approval by itself and has its own FCC and IC IDs. The S5-MCMO is compatible with Landis+Gyr Gridstream RF, Series 5 radios, operating in the unlicensed sub-GHz frequency range of 902 – 928 MHz. The S5-MCMO module comes as a component on reel, conforming the LGA surface mount package, and is intended to be placed on a host board using pick-n-place technologies.

Both the Zigbee and the Sub-GHz radios are RF shielded metal shields as shown in the pictures below.



ZigBee

S5 MCM0

Figure 1. AXei PCBA

PCB F trace antenna is designed as part of the AXei host board for the Zigbee and SM-MCM0 radios, see the picture below. Refer to the D1432 PCB design file for the specific dimensional details. Each transmitter is certified with the intended trace antenna on the host board.

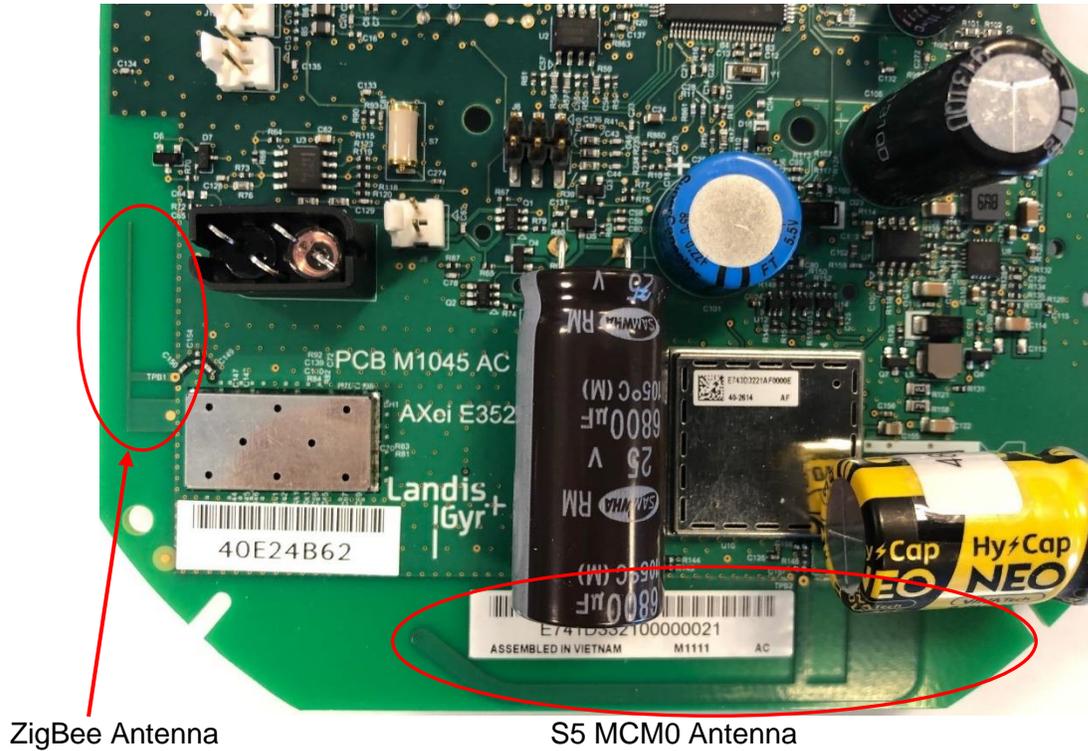


Figure 1. Antennas

The AXei PCB is designed to be mounted inside of the AXei meter forms specified in the table below, as final host. The PCB is mounted inside of the meter as shown in the picture below.



Figure 2. AXei PCB installation view

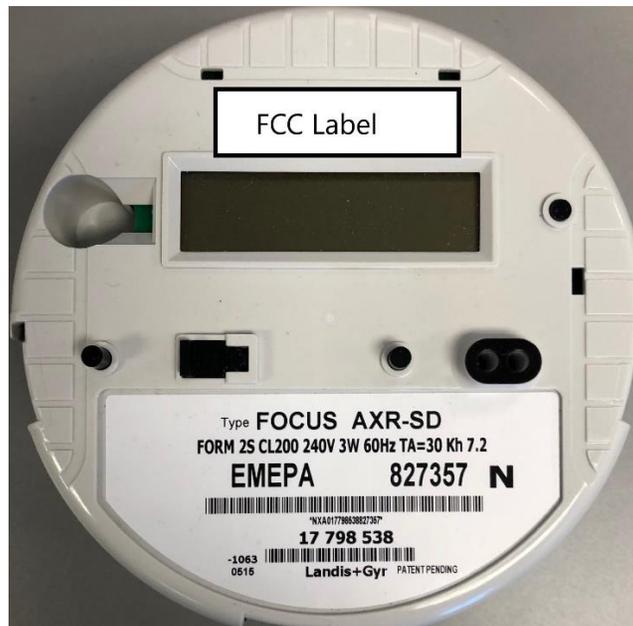


Figure 3. Representative meter

Host and Radio Characteristics

The table below contains information on the final host and the radios.

| Category | Specification | Value or Range | | |
|------------------------------------|--|--|---------|-------|
| Compatible Meters | Supported Meter Forms | Form | Voltage | Class |
| | | 1S | 120V | 100A |
| | | | 240V | |
| | | 2S | 240V | 200A |
| | | | | 320A |
| | | 3S | 120V | 20A |
| | | | 240V | |
| | | 4S | 240V | 20A |
| | | 12S | 120V | 200A |
| | | | 240V | 320A |
| 25S | 120V | 200A | | |
| | 240V | 320A | | |
| Electrical | Voltage | As listed above $\pm 20\%$ | | |
| | Typical Burden (Rx at nominal voltage) | Less than 3.0 VA | | |
| 900 MHz Radio (S5-MCM0) | Output Power | +27 dBm (500 mW) Max | | |
| | Transmit Frequency | 902.2 - 927.8MHz | | |
| | Communication Protocol | Frequency Hopping Spread Spectrum | | |
| | Receive Sensitivity | -103 dBm to - 113 dBm (9.6 kbps to 115.2 kbps) | | |
| | Data Rates | 9.6 - 115.2 kbps | | |
| | Modulation | 2-FSK and 2-GFSK | | |
| RF ZigBee | Output Power | +20 dBm Max | | |
| | Transmit Frequency | 2405-2475 MHz | | |
| | Communication Protocol | ZigBee Protocol | | |
| | Receive Sensitivity | -104 dBm typical | | |
| Environmental | Operating Temperature Range | -40 to +85C (under cover) | | |
| | Humidity | 95% relative humidity, non-condensing | | |

Table 1. Host and radio characteristics

Federal Communications Commission (FCC) Compliance Notice

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.

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

Industry Canada (IC) Compliance Notice

This device complies with Industry Canada license-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.

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.

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 (e.i.r.p.) is not more than that necessary for successful communication.

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 adioélectrique 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.

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 20 cm 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 20cm entre le radiateur et votre corps. Cet émetteur ne doit pas être co-implantés ou exploités en conjonction avec une autre antenne ou émetteur.

FCC and IC Label Requirements

The AXei Zigbee radio is certified as limited modular approval. In the final assembly or host, a label with the following information must be visible on the outside.

CONTAINS FCC ID: R7PNG0R1S7
CONTAINS IC: 5294A-NG0R1S7

CONTAINS FCC ID: R7PEG1R2X6
CONTAINS IC: 5294A-EG1R2X6

The figure below demonstrates a label that complies to the labeling requirement for a host.



Figure 4. AXei meter label