Landis+Gyr

Gridstream RF, Series 5, I210+c

Project FCC and IC Compliance Manual

Rev AA

Landis+Gyr

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Gridstream RF, Series 5, I210+c Integration Manual

Introduction

Gridstream RF, Series 5, I210+c is the model name for the Landisgyr+Gyr communication module designed for the Aclara I-210+c meter. The module will be referred to as I210+c module in this document for short.

The I210+c module contains two radios, a Zigbee radio and a Sub-GHz radio. The Zigbee radio on the I210+c module 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-MCM0 is compatible with Landis+Gyr Gridstream RF, Series 5 radios, operating in the unlicensed sub-GHz frequency range of 902 – 928 MHz. The S5-MCM0 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.

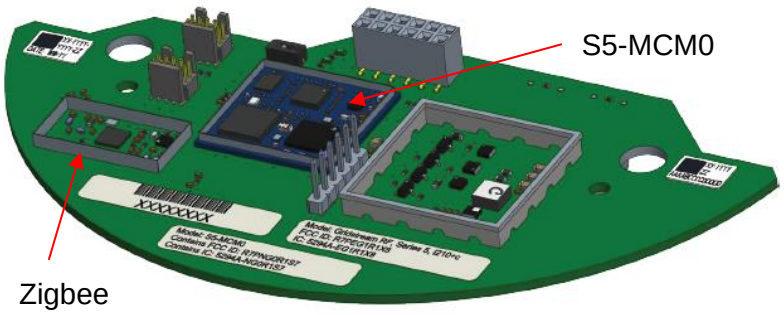

Figure 1. I210+c module, top side with shield lids removed

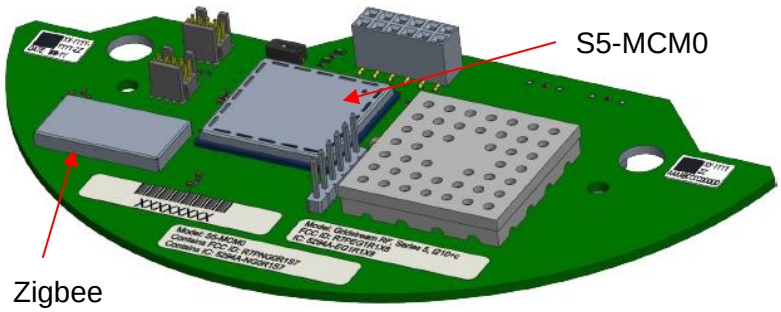

Figure 2. I210+c module, top side with shield lids installed

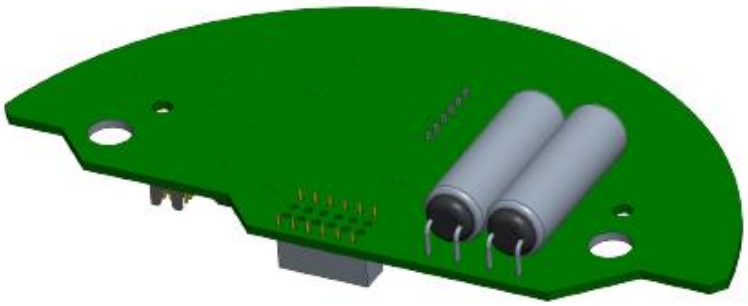

Figure 3. I210+c module, backside

PCB F trace antenna is designed as part of the I210+c host board for the Zigbee and SM-MCM0 radios, see the picture below. Refer to the 24-2468 PCB design file for the specific dimensional details. Each transmitter is certified with the intended trace antenna on the host board.

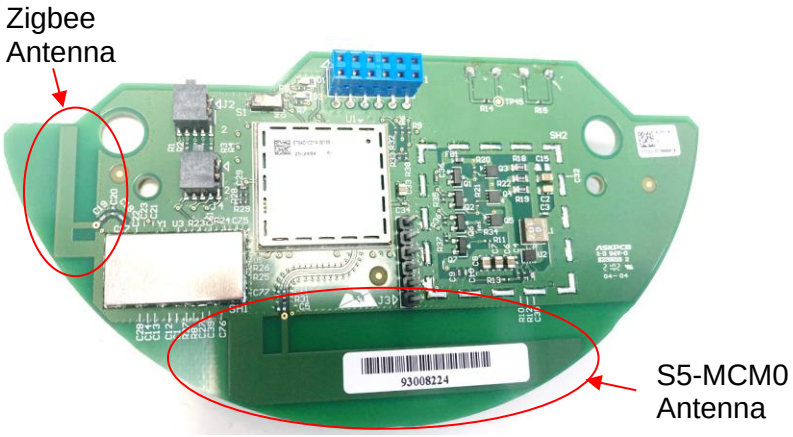

Figure 4. Antennas

The I210+c module is designed to be mounted inside of the Aclara I-210+c meter forms specified in the table below, as final host. The module is mount inside of the meter as shown in the picture below. See Aclara 119379-INS document for interface specifications.

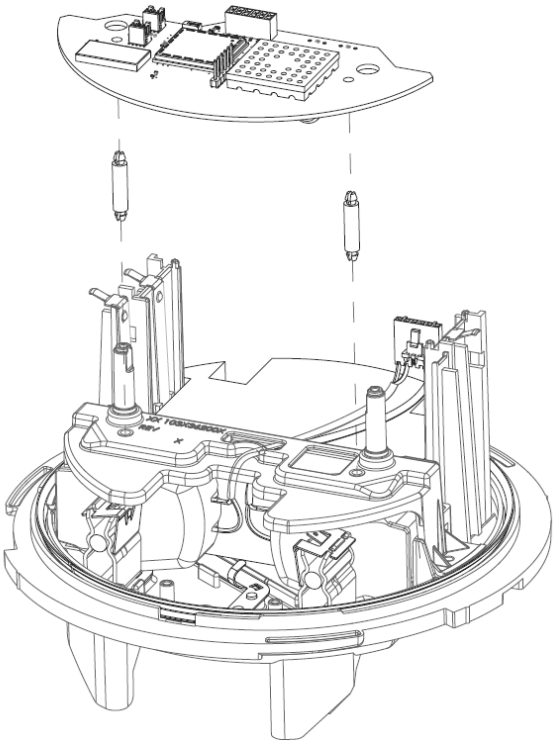

Figure 5. I210+c module installation view

Figure 6. I-210+c meter, final host for the communication module

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 ±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 maycause 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+Gyrcould 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 e 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

Label Requirement for the I210+c Module (host board)

There are two transmitters on the I210+c module, the on-board Zigbee radio and the S5-MCM0 module. Both are modular certified. The label requirement is as follow.

A label placed on the I210+c module with the following information is required for the S5-MCMO. This is required because the S5-MCM0 does not come with a FCC/IC label of its own. See location LBL5 in the figure below. The model name is not required.

> Contains FCC ID: R7PNG0R1S7
> Contains IC: 5294A-NG0R1S7

A label with the following information is required for the Zigbee radio. See location LBL4 in the figure below.

Model: Gridstream RF, Series 5, I210+c
FCC ID: R7PEG1R1X8
IC: 5294A-EG1R1X8

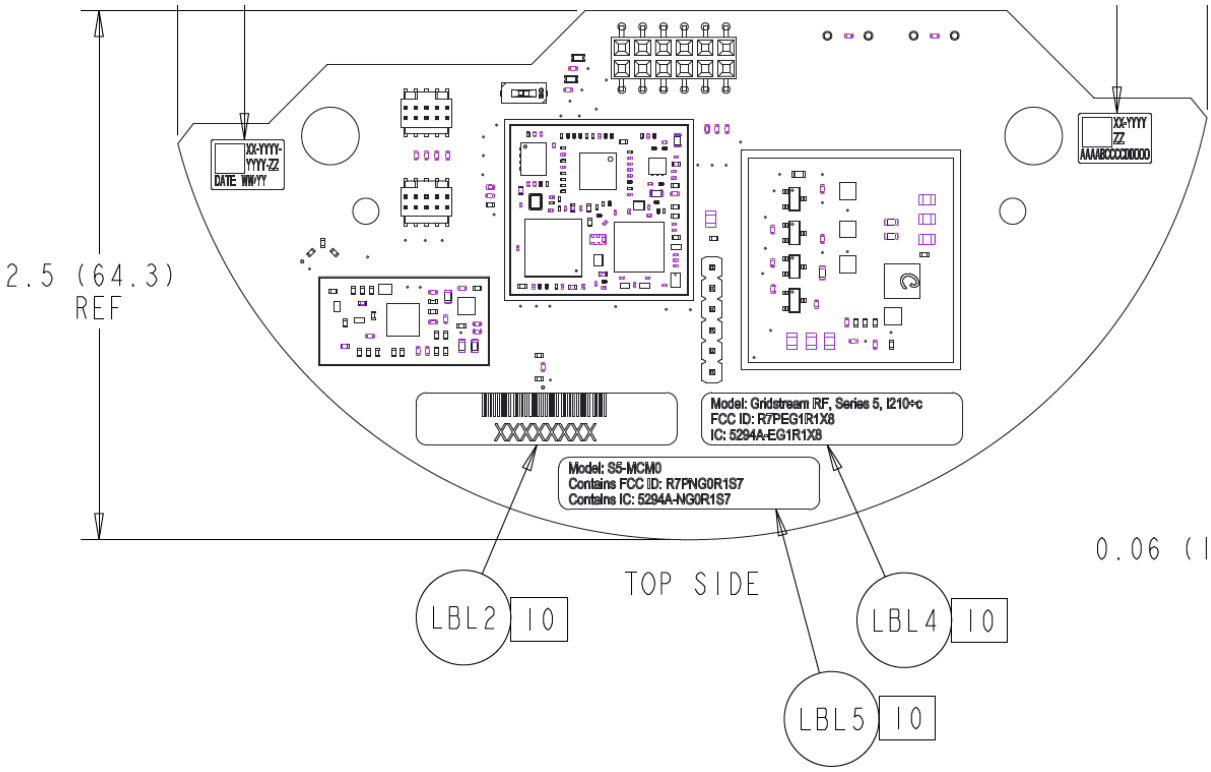

Figure 7. I210+c module FCC/IC labels

Label Requirement for the Final Host

In the final installation, a label with the following information must be visible on the host. The model name/number is not required.

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

CONTAINS FCC ID: R7PEG1R1X8
CONTAINS IC: 5294A-EG1R1X8

In the case of the Aclara I-210+c meter, the label design is as shown in the figure below. This label will be shipped as part of the I210+c module kit. The label should be placed on the outside of the meter where it will be visible and readable.

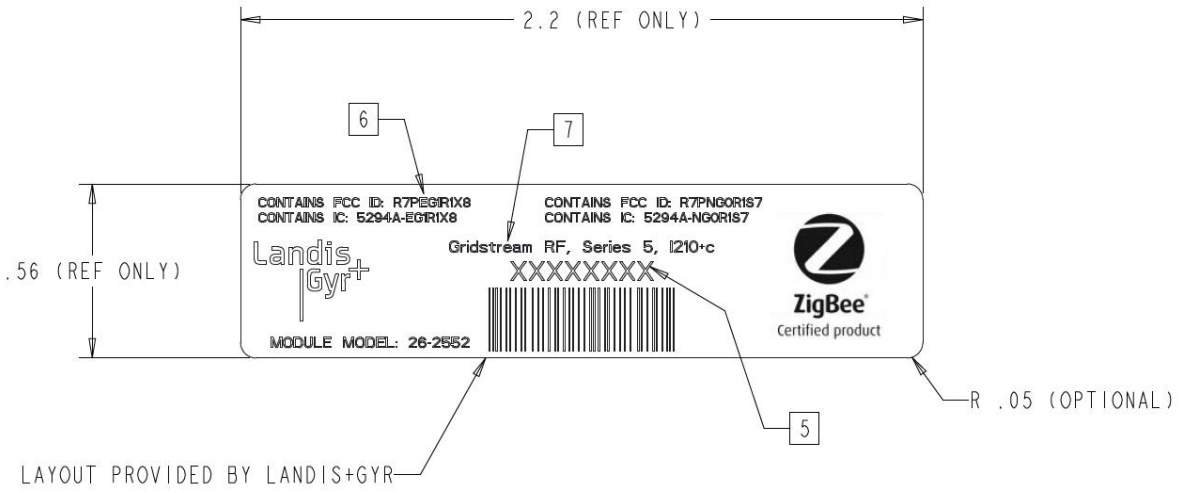

Figure 8. I-210+c meter label