Certification Exhibit

FCC ID: R7PNG1R1S1
IC: 5294A-NG1R1S1

FCC Rule Part: 15.247
ISED Canada Radio Standards Specification: RSS-247

Project Number: 72127440

Manufacturer: Landis+Gyr Technology, Inc.
Model: NIC AM

Manual

**Landis+Gyr
Network Bridge
N2200/N2250
Data Sheet**

Publication: 98-1822 Rev AA

Landis+
Gyr+

Limitation on Warranties and Liability

Landis+Gyr Network Bridge N2200/N2250 Data Sheet			
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Revision History			
Modification Date	**Revision**	**Description**	**Author**
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Network Bridge
N2200 (RF Mesh)/N2250 (RF Mesh IP)
Data Sheet

LANDIS+Gyr+

Product Overview

The Landis+Gyr Network Bridge provides the basis for a powerful RF wireless mesh network for remote data collection and end device monitoring and control. The Network Bridge supports full two-way peer-to-peer communication to all devices within the network. The product offers advanced functionality, such as individual message prioritization, additional memory for localized intelligence, and it is based on the Linux operating system. The N2200 (RF Mesh)/N2250 (RF Mesh IP) provides interface and control to distribution equipment and critical devices that require low latency.

Figure 1 - 1. N2200/N2250 Network Bridge

In addition to the standard RF Mesh and RF Mesh IP radios, the N2200/N2250 has one internal slot that can be fitted with LTE wireless or other future WAN technologies. The N2200/N2250 comes equipped with two serial, two Ethernet ports and WiFi for configuration. Landis+Gyr's Network Bridge/Network Gateway Platform offers a family of Field Area

Network Devices that can be configured and deployed to build a robust communication network infrastructure enabling communication to edge devices in the field.
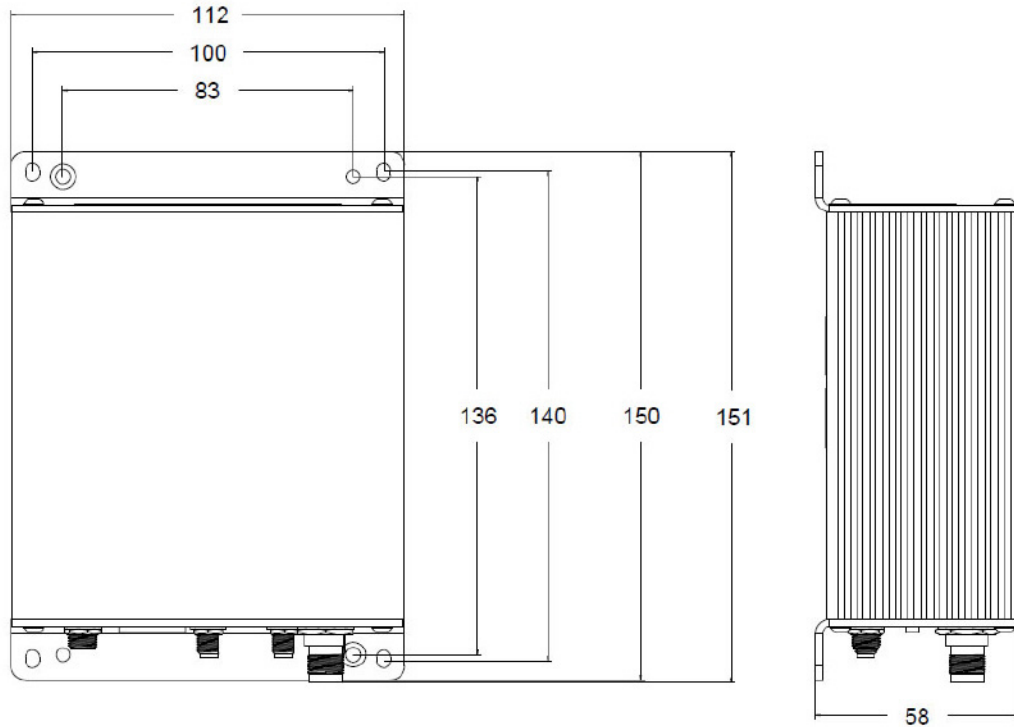
Dimensions

Figure 1 - 2. Network Bridge Physical Dimensions

Review Draft 5/2/2018

N2200/N2250 Specifications

Product Specifications

Table 1 lists the general product specifications for the N2200 (RF Mesh)/N2250 (RF Mesh IP) Network Bridge Series.

**Table 1. Network Bridge N2200 (RF Mesh)/N2250 (RF Mesh IP)
Product Specifications**

Element	Description
Electrical (General)	
Input Voltage Range	12-24 VDC +/- 20% (9.6-28.8 VDC)
Current	1.39A-0.45A
Processing Unit	
CPU	Cortex A5
Clock Speed	536 MHz
RAM Memory	512 Mbytes DDR2 RAM
FLASH Memory	2 GB NAND
Bridge Radio Processing Unit	
CPU	Dual-core Cortex M4, AMTEL SAM4C32A
Clock Speed	120 MHz
RAM Memory	304 Kbytes
FLASH Memory	2 MB + 4MB External
ROM Memory	8 Kbytes
LAN Packet Port	
Serial Interface	RS-232C/RS-485; RJ45; 1200 to 115,200 bps
Protocol	Gridstream LAN Packet Protocol
Parity	None
Data Bits	8
Stop Bits	1
Duplex	Full
Transparent Port	
Serial Interface	RS-232C/RS-485; RJ45; 1200 to 115,200 bps
Protocol	Any Asynchronous Byte-Oriented Protocol
Parity	None
Data Bits	7 or 8
Stop Bits	1 or 2
Duplex	Full

**Table 1. Network Bridge N2200 (RF Mesh)/N2250 (RF Mesh IP)
Product Specifications (Continued)**

Element	Description
Ethernet	
ETH 0	10/100/1000 Ethernet
ETH 1	10/100 Ethernet
WIFI	
Manufacturer	Redpine Signals
Model	RS9113 n-Link™
Manufacturer Part Number	RS9113-NBZ-D3N
LTE Cat6 (US Only-ATT and Verizon)	
Manufacturer	Sierra Wireless
Model	MC Series
Manufacturer Part Number	MC7455
Mechanical	
Enclosure	Black Anodized Aluminum, IP41
Dimensions	55.20mm W X 120.00mm D X 112.10mm H
Weight	1.10 lbs
Operating Temperature Range	-40°C to 60°C
Storage Temperature Range	-40°C to 85° C
Limited Lifetime	
Life	20 years

Radio Specifications Americas

Table 2 lists the radio specifications for the N2200 (RF Mesh)/N2250 (RF Mesh IP) Network Bridge Series for Americas.

**Table 2. Network Bridge N2200 (RF Mesh)/N2250 (RF Mesh IP)
Radio Specifications Americas**

Element	Description
Radio (General)	
Radio Model	Model: NIC AM
Communication Protocol (PHY)	IEEE 802.15.4-2015 - SUN FSK PHY
RF Frequency Range	**North America**: 902-928 MHz
	Brazil: 902-907.5, 915-928 MHz
Channel Spacing	**N2250 (RF Mesh IP):** 200, 400 KHz
	N2200 (RF Mesh): 100, 300 KHz
RF Data Rate	**N2250 (RF Mesh IP):** 50, 150, 200 Kbps
	N2200 (RF Mesh): 9.6, 19.2, 38.4, 115.2 Kbps
Receiver	
Sensitivity (at 10% packet error rate)	-106 dBm(50 Kbps)
	-101 dBm(150 Kbps)
	-98 dBm(200 Kbps)
Adjacent Channel Rejection	35 dB Typical
Alternate Channel Rejection	50 dB Typical
Transmitter	
Output Power (at Antenna Connector)	50 mW to 1W
Modulation Type	2FSK
Out-of-band Spurious Emissions	<-70 dBc
Antenna Requirements	
Type	Vertically polarized, omnidirectional
Gain	< 5.5 dBi
Connector	N Connector, Female

Radio Specifications India

Table 3 lists the radio specifications for the N2200 (RF Mesh)/N2250 (RF Mesh IP) Network Bridge Series for India.

Table 3. Network Bridge N2200 (RF Mesh)/N2250 (RF Mesh IP) Radio Specifications India

Element	Description
Radio (General)	
Radio Model	Model: NIC IN
Communication Protocol (PHY)	IEEE 802.15.4-2015 - SUN FSK PHY
RF Frequency Range	865-867 MHz
Channel Spacing	**N2250 (RF Mesh IP):** 200 KHz
	N2200 (RF Mesh): 100 KHz
RF Data Rate	**N2250 (RF Mesh IP):** 50, 100, 150 Kbps
	N2200 (RF Mesh): 9.6, 19.2, 38.4 Kbps
Receiver	
Sensitivity (at 10% packet error rate)	-106 dBm (50 Kbps)
	-101 dBm (150 Kbps)
	-98 dBm (200 Kbps)
Adjacent Channel Rejection	35 dB Typical (50 Kbps)
Alternate Channel Rejection	50 dB Typical (50 Kbps)
Transmitter	
Output Power (at Antenna Connector)	50 mW to 1W
Modulation Type	2FSK
Out-of-band Spurious Emissions	>70 dBc
Antenna Requirements	
Type	Vertically polarized, omnidirectional
Gain	< 5.5 dBi
Connector	N Connector, Female

Regulatory Compliance

FCC 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 and ISED radiation exposure limits. This equipment should be installed and operated with a minimum distance of 28 cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Cet équipement est conforme aux limites FCC/IC d'exposition aux radiations définies pour un environnement non contrôlé.

Cet équipement doit être installé et utilisé à une distance minimale de 28cm entre le radiateur et votre corps.

Cet émetteur ne doit pas être co-implantés ou exploités en conjonction avec une autre antenne ou émetteur.

EIRP Limit

The equipment meets the required FCC specifications with any customer-selectable RF power setting of the radio, using the antennas indicated in this document. FCC testing was conducted using an omnidirectional whip antenna with a gain of 5 dBi. Omnidirectional whip antennas with higher gain may result in EIRP levels in excess of the FCC limit.

Antennas of a type other than omnidirectional whip are not FCC approved for this device.

(i) **NOTE:** If you increase the power from the factory settings, this can cause communication problems for other radios in the network.

FCC ID Labels

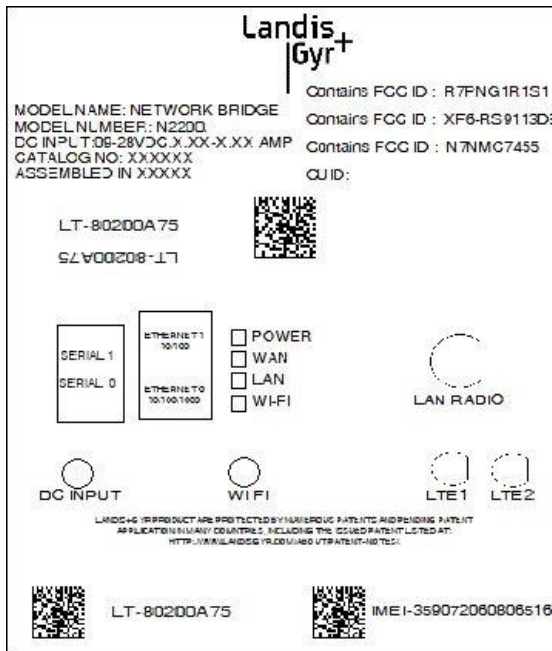FCC ID Label contents are shown in Figure 2 and Figure 3.

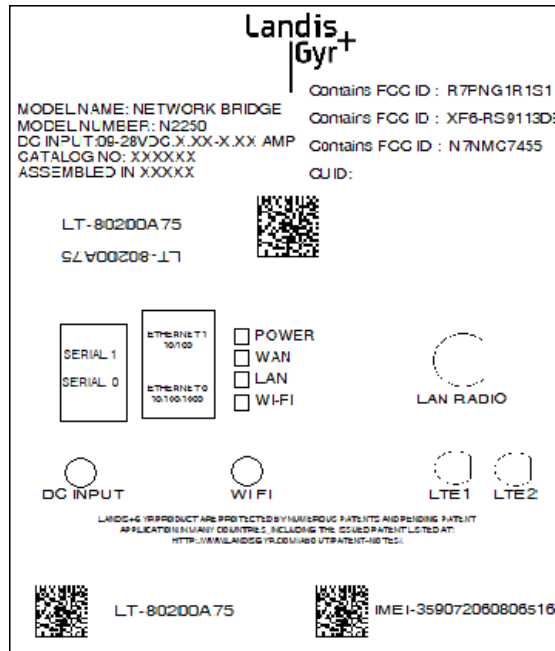***Figure 2. FCC ID Label (RF Mesh)***

Figure 3. FCC ID Label (RF Mesh IP)

Requirement for Hosting Certified Radios

The following radio modules are approved for use in the Bridge.

- NIC
- Cell Modems
- WiFi

Transmitters that are added to the Bridge require testing to be approved.

- If the transmitters are added by the customer, the customer is responsible for this testing.
- If Landis+Gyr adds these modules, the testing will be performed, and they will be added to the list of approved modules.

Industry Canada

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. 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.

This radio transmitter (identify the device by certification number, or model number if Category II) 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, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

This radio transmitter (5294A-NG1R1S1) has been approved by Industry Canada.

Approved Antenna: Omni-directional antenna, 5.5 dBi gain, 902-928 MHz, antenna impedance is 50 ohms.

Le present 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.

Le présent émetteur radio (identifier le dispositif par son numéro de certification ou son numéro de modèle s'il fait partie du matériel de catégorie I) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

Brazil

Anatel

Este equipamento opera em caráter secundário, isto é, não tem direito a proteção contra interferência prejudicial, mesmo de estações do mesmo tipo, e não pode causar interferência a sistemas operando em caráter primário.

Regulatory Compliance India

WPC Guidelines

This device complies with WPC guidelines. 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.

Safety Information

California Hazard Identification

⚠ **WARNING: This product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.**