



MICROAP 5 METER LABELING PRODUCT REQUIREMENTS

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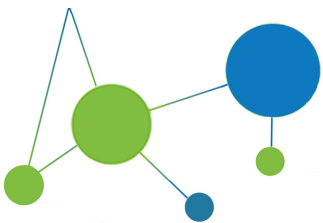
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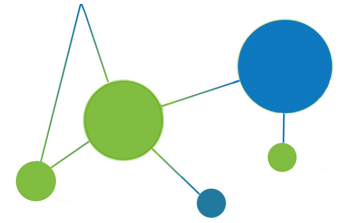
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Contents

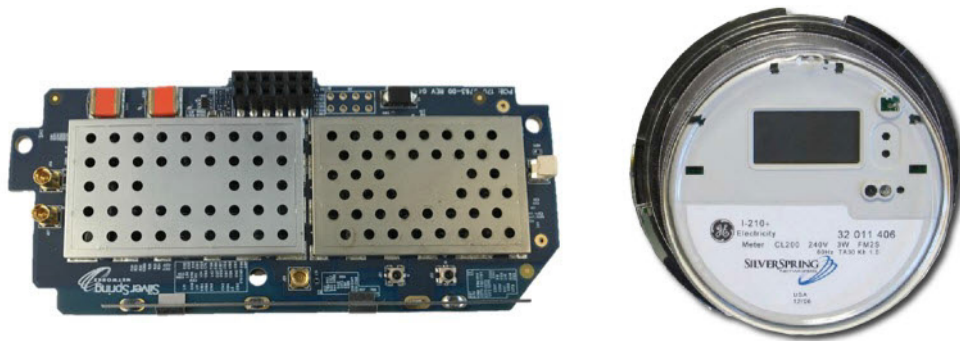
- 1. About MicroAP 5 2**
 - References 2
 - Specifications 3
 - Meter Labeling 4
 - Meter Nameplate 4
 - Meter Auxiliary Label or NIC Address Label 4
 - NIC Labeling 5
- 2. FCC and Government Guidelines 7**
 - Requirements 7
 - FCC Guidelines for Devices Containing a Transmitter Module 8
 - Industry Canada Guidelines for Devices Containing a Transmitter Module 9
 - MicroAP 5 9
 - Safety Information 10
 - General Electrical Safety 10



1 About MicroAP 5

MicroAP 5 is a WAN-enabled Network Interface Card (NIC) enabling Micromesh™ technology. MicroAP 5 complies with FCC Part 15.247 and RSS-GEN of Industry Canada rules. It enables machine-to-machine communication over 900 MHz and 2.4 GHz and transmits data over LTE Cat.1 cellular backhaul to the utility or network provider. MicroAP also incorporates an 802.15.4-compliant ZigBee® radio for Home Area Networking (HAN).

Figure 1. MicroAP 5



References

Guidelines for 64-bit Global Identifier (EUI-64™) Registration Authority, IEEE Standards Association.

Specifications

The hardware specifications for MicroAP 5 are listed in [Table 1](#).

Table 1. MicroAP 5 specifications

Feature	Description
900-MHz NAN Transceiver:	
Frequency range	902-928 MHz North America
Data rate	Up to 2.4 Mbps
Spread Spectrum technology	Frequency Hopping
Transmitter output	Up to 1W
Receiver sensitivity	-98 dBm for 10% PER @ 100 kbps
2.4-GHz Communications:	
Frequency range	2.4 GHz, ISM Band
Data rate	Up to 2.4 Mbps
Spreading technique	FHSS
Transmitter output	Up to 500mW
Receiver sensitivity	-94 dBm @ 10% PER
2.4-GHz HAN Transceiver:	
Frequency range	2.4 GHz, ISM Band
Data rate	250 kbps
Spreading technique	Direct Sequence
MAC/Channels	802.15.4/ 16
Transmitter output	Up to 200mW
Receiver sensitivity	-94 dBm @ 10% PER
NAN Network:	
Addressing	8 byte MAC Address
Protocol	UDP/IPv6
Confidentiality	AES-256 Encryption
Authentication	ECDSA & RSA Signatures
HAN Network:	
Protocols	ZigBee Pro
Device Types	Network Coordinator/End Device
Profile	SmartEnergy Profile 1.1
WAN Transceiver (NA1):	
Frequency Ranges	4G Bands: B12/B17 (700), B5(850), B4(aws1700), B2 (1900) 3G Bands: B2 (1900), B5 (850)
Transmitter Output	Up to 250 mW (per specification)
WAN Transceiver (SV1 Version):	

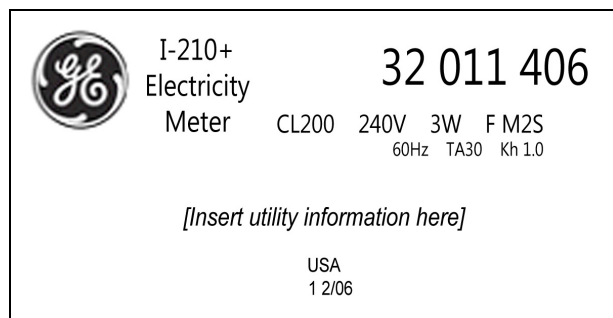
Table 1. MicroAP 5 specifications (*Continued*)

Feature	Description
Frequency Ranges	4G LTE Bands: B2 (1900), B4 (AWS1700), B13 (700)
Transmitter Output	Transmitter Output: Up to 200 mW
Environmental	
Operating Temperature (the ambient temperature at the NIC)	-40°C to +85°C
Humidity	95%, non-condensing
Interfaces:	
Meter	ANSI
LVTTL Levels	DLMS/COSEM
Physical:	
Size	110 x 62 x 22.8 (mm)
Weight	39 grams

Meter Labeling

Meter Nameplate

The meter nameplate shall not contain information pertaining to the Silver Spring Networks radio.

Figure 2. Example of meter nameplate label

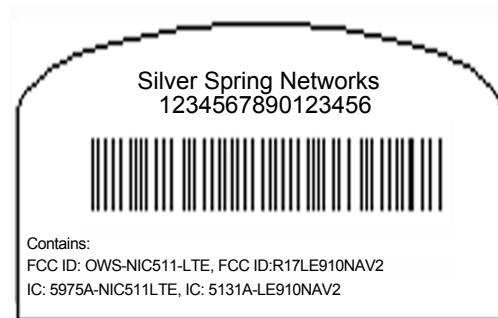
Meter Auxiliary Label or NIC Address Label

For radio identification, the meter shall have an auxiliary label containing the Silver Spring Networks NIC address presented in text (16 alphanumeric digits) and bar code formats.

- Bar Code Type = Code 3 of 9
- Bar Code Font Size = unknown
- Font Type = unknown
- Font Size = unknown
- Bar Code Label Dimensions = 1.50" x 0.25"
- Bar Code Material Type = Static Dissipative Polyimide

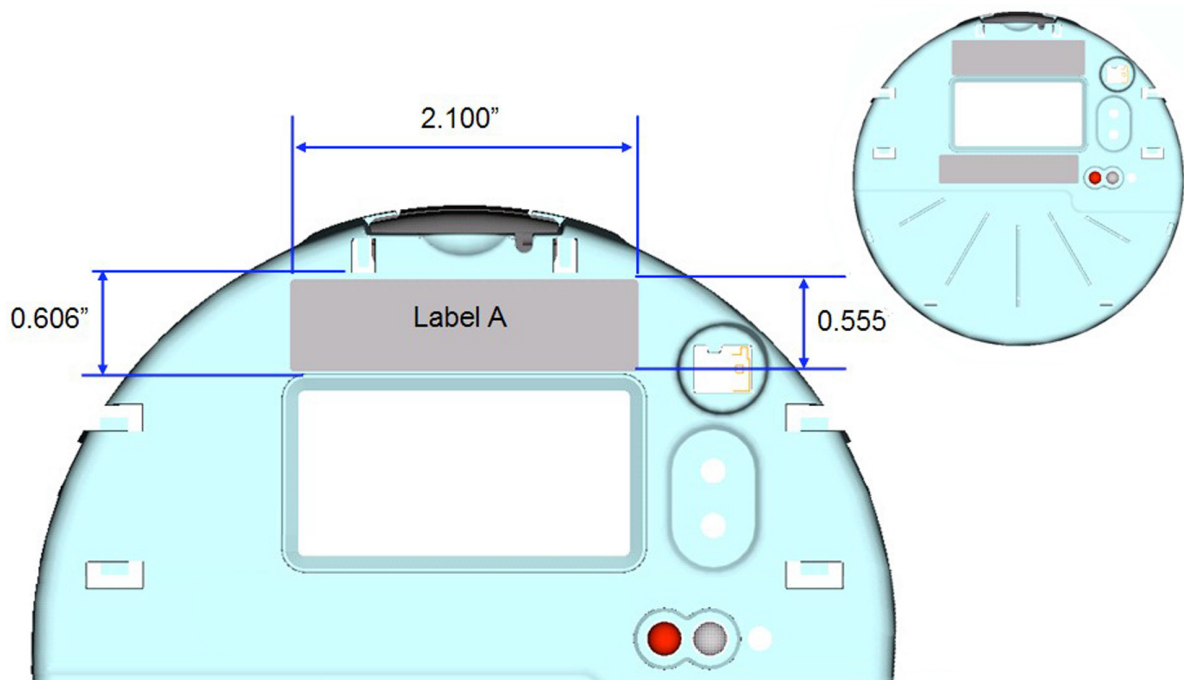
Figure 3 shows an example of the NIC address label, which is consistent with FCC requirements set forth in section 4.1, and contains the Silver Spring Networks corporate name and NIC EUI-64 address.

Figure 3. Example of NIC address label for NIC 511-NA1-0313



The NIC address label shall be placed on the meter nameplate in the location identified by "Label A" in the following figure.

Figure 4. Nameplate NIC address locations



NIC Labeling

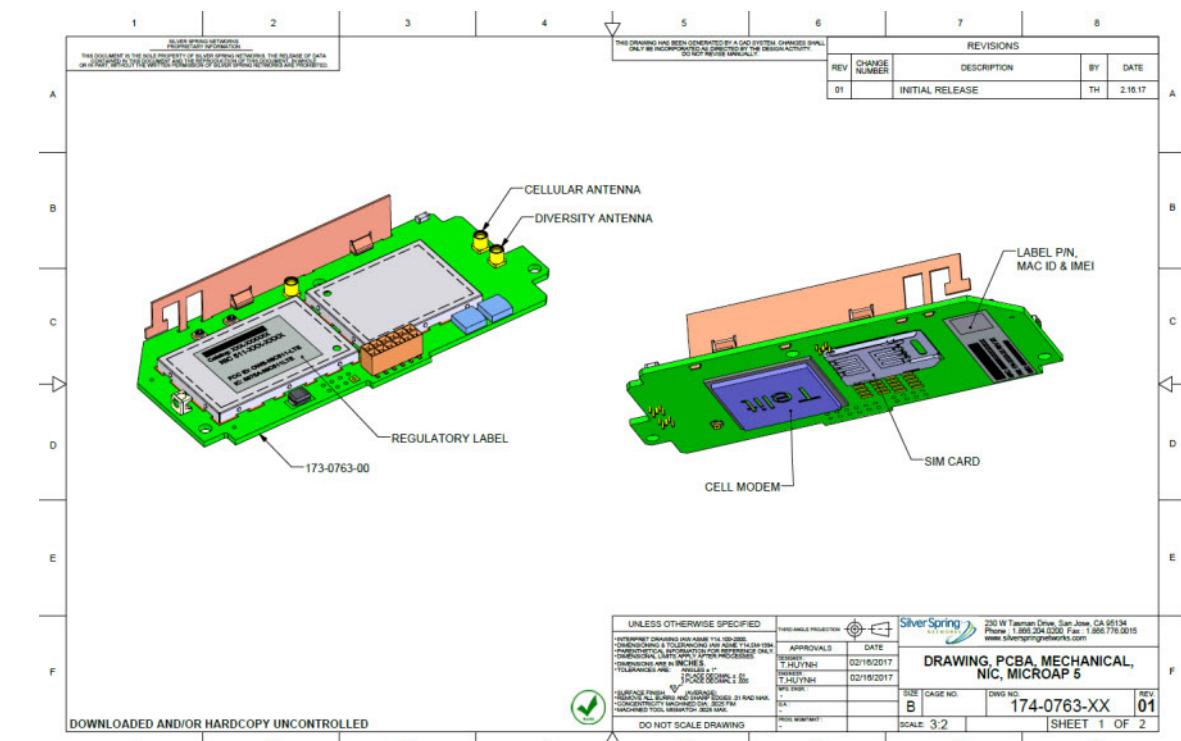
The Silver Spring Networks MicroAP 5 has two labels relevant to meter final assembly and RMA: the Regulatory/Catalog Number and the Silver Spring NIC address label. The Regulatory/Catalog # label is located on the top side of the NIC PCA, the NIC address label is located on the bottom.

Figure 5. Sample FCC ID label for MicroAP NIC 511-NA1-0313

Figure 6. Silver Spring NIC 511-NA1-0313 address label example

Figure 7 shows the placement of the labels. The QR code label contains the same information as the Silver Spring NIC address label.

Figure 7. Label locations on MicroAP 5





2 FCC and Government Guidelines

Table 2. MicroAP 5 NIC Models

NIC Model	902 MHz	2.4 GHz	NAN Int. Ant Option	NAN Ext. Ant Option	Cell Ext. Ant Option	FCC ID	IC
511-NA1-0313	Yes	Yes	Yes	Yes	Yes	OWS-NIC511-LTE RI7LE910NAV2	5975A-NIC511LTE 5131A-LE910NAV2
511-NA1-0312	Yes	Yes	No	Yes	Yes	OWS-NIC511-LTE RI7LE910NAV2	5975A-NIC511LTE 5131A-LE910NAV2
511-SV1-0313	Yes	Yes	Yes	Yes	Yes	OWS-NIC511-LTE RI7LE910SVV2	5975A-NIC511LTE 5131A-LE910SVV2
511-SV1-0312	Yes	Yes	No	Yes	Yes	OWS-NIC511-LTE RI7LE910SVV2	5975A-NIC511LTE 5131A-LE910SVV2

Requirements

The MicroAP 5 is REQUIRED to be professionally installed by a properly trained technician. Improper installation could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules and RSS-Gen of Industry Canada 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.

The antenna of this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

The device should be installed so that people will not come within 20 cm (8 in.) of the antenna.

This equipment has been tested and found to comply with Part 15 of the FCC Rules and RSS-GEN of Industry Canada rules. 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.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is disconnected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Guidelines for Devices Containing a Transmitter Module

The following is an extract from FCC PART 15 UNLICENSED MODULAR TRANSMITTER APPROVAL, DA 00-1407, Released: June 26, 2000, Section 6 describing labeling requirements for devices containing a modular transmitter.

Section 6. The modular transmitter must be labeled with its own FCC ID number, and, if the FCC ID is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: "Contains Transmitter Module FCC ID: XYZMODEL1" or "Contains FCC ID: XYZMODEL1." Any similar wording that expresses the same meaning may be used. The Grantee may either provide such a label, an example of which must be included in the application for equipment authorization, or, must provide adequate instructions along with the module which explain this requirement.

In the latter case, a copy of these instructions must be included in the application for equipment authorization.

Figure 8. Sample FCC ID label for devices containing a MicroAP 5 (Model NIC 511-NA1-0313)



Figure 9. Sample FCC ID label for devices containing a MicroAP 5 (Model NIC 511-SV1-0313)

Industry Canada Guidelines for Devices Containing a Transmitter Module

MicroAP 5

External Antenna Integration

This radio transmitter 5975A-NIC511LTE 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.

- Omnidirectional antennas: 6 dBi at 900 MHz, 4.5 dBi at 2.4 GHz
- Cellular antennas: 6.63 dBi for 700 and 850 MHz; 6.0 dBi for 1700 MHz; 8.51 dBi for 1900 MHz

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.

- Antennes omnidirectionnelles: 6 dBi à 900 MHz, 4,5 dBi à 2,4 GHz
- Antennes cellulaire: 6.63 dBi a 700 & 850 MHz; 6.0 dBi a 1700 MHz; 8.51 dBi a 1900 MHz

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 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.

For Transmitters Not Requiring Licenses

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.

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.

Safety Information



WARNING: Severe shock and explosion hazard! Touching energized parts can result in massive equipment damage, and severe injury or death. Short-circuiting energized parts will result in blinding flash and explosion. Opening and closing electrical circuits can also produce dangerous and explosive arc flashes. Involuntary muscular reactions associated with electrical shock may result in other injuries. Observe the following safety guidelines.

Careful planning of every job is essential. Nothing should be taken for granted. Do not take chances!

- Read and follow all approved policies and procedures provided by your employer associated with the procedures in this manual.
- The procedures in this manual must only be performed by qualified workers in accordance with local utility safety practices, utility requirements, and applicable OSHA and NFPA standards.
- The information contained in this document is intended to aid qualified personnel, and is not a replacement for the proper training required to make a person qualified.
- Silver Spring Networks assumes no liability for the customer's failure to follow these safety guidelines.

General Electrical Safety

- Perform the procedures in this manual in accordance with applicable workplace standards established by the following agencies:
 - Occupational Safety and Health Act (OSHA).
 - The National Electrical Code published by the National Fire Protection Association (NFPA-70).
 - National Electrical Manufacturers Association (NEMA).
 - Electronics Industries Association (EIA).
 - Insulated Power Cable Engineers Association (IPCEA).
- American National Standards Institute (ANSI). Whenever possible, de-energize all circuits or equipment before working on them.

- Maintain a minimum clearance of 10 feet (3 meters) between line potential and all unqualified persons at all times.
- Keep unauthorized people out of the work area. Be especially cautious of children, who tend to be drawn to work activity.
- Determining if a circuit is OFF can be difficult in some instances. Check for circuit voltage with an appropriate voltmeter before working on equipment presumed to have been de-energized. Tiebreakers, double throw disconnect switches, automatic transfer switches and emergency generators can supply power through an alternate circuit or from another source.
- 120V current can be just as lethal as higher voltages because current flow through a body depends upon the body's resistance.
- Do not trust insulation and/or weatherproofing on a wire as protection from shock.
- Use electrically insulated tools. Inspect portable electrical equipment or tools for defects and remove any defective devices from service immediately. All portable electrical equipment must have Ground Fault Circuit Interrupter (GFCI) protection.
- Select the right tool for the job. Use tools properly. Keep tools in good working order.
- Make sure the work area is free of any flammable material. Flammable vapors can be ignited by an arc flash.
- Keep the work area clean and dry. Cluttered work areas cause accidents and injuries.
- Provide good lighting in the work area. You cannot work safely if you cannot see what you are doing.
- Report unsafe conditions or defective equipment to your immediate supervisor.
- Handle material carefully. Lift and carry properly.