



## User's Manual

### LNG1 Radio Module

Model: LNG1

Description: Radio Module, 915MHz ISM Band, FHSS Mesh Network

Sentient Part Number: 132-0004-01

Revision: 1

Date: May 7, 2014

#### **Introduction**

This document summarizes the requirements for properly incorporating the model LNG1 radio module into Sentient products intended for marketing in the USA and Canada. The following legally mandated requirements are specified:

1. Antenna type and use
2. RF exposure guidelines
3. End product labeling
4. End product User's Manual required text

#### **Antenna Requirements - USA**

The module has been certified for use with an Inverted F type antenna with a max gain of 3dBi. The module may be used with any similar Inverted F type antenna whose max gain is 3dBi or less. An antenna is considered similar (as used here) if it has a similar radiation pattern.

#### **Antenna Requirements - Canada**

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 IC: 9908A-LNG1 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.

- 1) Inverted F type -- maximum gain 3dBi -- impedance 50 ohms

### **RF Exposure - USA**

To comply with FCC's RF radiation exposure requirements, the antenna(s) used for this transmitter must be installed such that a minimum separation distance of 20 cm is maintained between the radiating element (antenna) and any user or bystander at all times and must not be co-located or operating in conjunction with any other antenna or transmitter.

This module is evaluated for stand-alone use only. Finished products incorporating multiple transmitters must comply with colocation and RF exposure requirements in accordance with FCC multi-transmitter product procedures.

### **RF Exposure - Canada**

The antenna(s) used for this transmitter must be installed such that a minimum separation distance of 20 cm is maintained between the radiating element (antenna) and any user or bystander at all times and must not be co-located or operating in conjunction with any other antenna or transmitter.

This module is evaluated for stand-alone use only. Finished products incorporating multiple transmitters must comply with colocation and RF exposure requirements in accordance with multi-transmitter product procedures.

### **End Product Labeling**

A statement must be included on the exterior of the final product which indicates the product includes a certified module.

*The product contains FCC ID: Z2E-LNG1 and IC: 9908A-LNG1*

**OR**

*Contains FCC ID: Z2E-LNG1*

*Contains IC: 9908A-LNG1*

The OEM must include the following statements on the exterior of the finished product unless the product is too small (e.g. less than 4 x 4 inches):

*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 any interference that may cause undesired operation.*

**End Product User's Manual - USA**

The finished product manual must contain the following statement (or similar statement which conveys the same meaning):

*WARNING: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment*

In the case where an OEM seeks class B (residential) limits for the host product, the finished product manual must contain the following statement:

*Note: 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.*
- *Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.*
- *Consult the dealer or an experienced radio/TV technician for help.*

In the case where an OEM seeks the lesser category of a Class A digital device for their finished product, the following statement must be included in the User's Manual of the finished product:

*Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his expense.*

**End Product User's Manual - Canada**

The OEM must include the following regulatory statements (shown in italics) in both English and French on the exterior of the finished product and/or in the product's User's Guide:

*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.*