# User Guide
# WS-BRD-LR112X

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# Description

**Worldsensing LoRa Module LR112X**

LoRa module with optimized temperature stability for communicating in sub GHz and 2.4 GHz bands.

# General Specs

Power supply range: 3.6 to 5VdC

Maximum consumption: 500mA

Dimensions: 24 x 36 x 4 mm

# RF Specs

SubGHz

| | |
|---|---|
| Frequency Band | 902-928MHz ISM Band |
| Modulation | LoRa (lower subset of the first 64 channels) |
| Channel spacing | 200 kHz |
| Number of channels: | 128 selectable on groups of 8, starting in 902.3MHz |
| Channel bandwidth: | 125 kHz |

2.4 GHz

| | |
|---|---|
| Frequency Band | 2400 MHz - 2480MHz |
| Modulation | LoRa |
| Channel spacing | 1 MHz |
| Channel bandwidth: | 812 kHz |

# FCC/ISED regulatory notices

FCC/ISED regulatory notices cover modification and interference statements, wireless and FCC Class B digital device notices, permitted antennas and labeling requirements.

**Modification statement**

Worldsensing has not approved any changes or modifications to this device by the user. Any changes or modifications could void the user's authority to operate the equipment.

*Worldsensing n'approuve aucune modification apportée à l'appareil par l'utilisateur, quelle qu'en soit la nature. Tout changement ou modification peuvent annuler le droit d'utilisation de l'appareil par l'utilisateur.*

**Interference statement**

This device complies with Part 15 of the FCC Rules and Industry Canada's licence-exempt RSS standards.

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.*

**Wireless notice**

This equipment complies with FCC and ISED radiation exposure limits set forth for an uncontrolled environment. The antenna should be installed and operated with minimum distance of 20 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 appareil est conforme aux limites d'exposition aux rayonnements de l'ISDE pour un environnement non contrôlé. L'antenne doit être installée de façon à garder une distance minimale de 20 centimètres entre la source de rayonnements et votre corps. L'émetteur ne doit pas être colocalisé ni fonctionner conjointement avec à autre antenne ou autre émetteur.*

**Permitted antenna**

This radio transmitter has been approved by FCC and ISED to operate with the antenna types listed below with the maximum permissible gain 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.

*Le présent émetteur radio a été approuvé par ISDE pour fonctionner avec les types d'antenne énumérés ci dessous et ayant un gain admissible maximal. Les types d'antenne non inclus dans cette liste, et dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.*

Antenna connection: Through 50ohms u.f.l connector.

2.4GHz:

- Maximum RF Output Power (Conducted/EIRP): FCC = 13dBm
- Type of antenna
  - internal = FPC antenna
  - external = dipole
- Antenna gain
  - internal = 3.9dBi

SubGHz:

- Maximum RF Output Power (Conducted/EIRP): FCC =22dBm
- Type of antenna
  - internal = FPC antenna
  - external = dipole
- Antenna gain
  - internal = -2.9dBi
  - external = -0.9dB

**Labeling requirements for the host device**

The host device shall be properly labelled to identify the modules within the host device. The certification label of the module shall be clearly visible at all times when installed in the host device, otherwise the host device must be labelled to display the FCC ID and IC of the module, preceded by the words "Contains transmitter module", or the word "Contains", or similar wording expressing the same meaning.

Contains FCC ID: 2AHN4-WSBRDLR112X

Contains IC: 21260-WSBRDLR112X

*L'équipement hôte doit être correctement étiqueté pour identifier les modules dans l'équipement.*

*L'étiquette de certification du module doit être clairement visible en tout temps lorsqu'il est installé dans l'hôte, l'équipement hôte doit être étiqueté pour afficher le FCC ID et IC du module, précédé des mots "Contient le module émetteur", ou le mot "Contient", ou un libellé similaire exprimant la même signification.*

Contains FCC ID: 2AHN4-WSBRDLR112X

Contains IC: 21260-WSBRDLR112X

**Supported FCC/ISED rules**
The WS-BRD-LR112X module has been certified to comply with FCC and ISED rules.

The WS-BRD-LR112X module has been certified to comply with the following FCC rules.

- FCC Part 15.247
- FCC Part 15.209

The WS-BRD-LR112X module has been certified to comply with the following ISED rules.

- RSS-247 Issue 3
- RSS-Gen Issue 5 amendment 2

If the grantee markets their product as being Part 15 Subpart B compliant (when it also contains unintentional-radiator digital circuitry), then the grantee shall provide a notice stating that the final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed

# RF exposure considerations

The WS-BRD-LR112X has been tested and certified as a mobile device for use of a minimum of 20 cm distance from the human body with no colocation with other transmitters. If the device is to be used closer than 20cm from the human body and/or with other transmiters simultaneously, the host product manufacturer is required to perform additional evaluation, testing, or testing and Class 2 permissive change. It is required to take responsibility of the module through a change in the FCC ID (new application). The host product manufacturer must also inform the end user about RF Exposure conditions.