

Modular Approval Requirements

Modular Approval is being requested for this device. There are eight requirements that the device must meet for full modular approval. The following paragraphs detail these requirements and the manner in which the device meets them.

The module meets all of the technical specifications applicable to the frequency band of operation.

The module has its own RF shielding.

The module contains a copper-plated cold rolled steel shield. The shield is 28.7mm x 16.9mm and covers all of the circuitry except for the antenna, jumper resistors on the SPI and USB interfaces (only used for testing/programming/configuration) and varistors used for ESD protection on the power and signal lines. The shield is soldered along all four edges with a small gap for the antenna trace to exit, and is electrically connected to the groundplane.

All modulation and data input(s) are buffered.

The data connection from an off-module host processor to the module is via a UART interface on header J5. These UART data signals connect up to the CSR Bluecore 4 IC (U1). The data is buffered on the Bluecore 4 and all modulation and data buffering take place inside this IC.

The module has its own power supply regulation and local reference oscillator.

The module contains its own power supply regulation within the Bluecore 4 IC (U1) and the RF reference oscillator is contained within U1 as well. The reference oscillator's frequency signal source is a 26 MHz ceramic crystal. This crystal forms a Pierce oscillator circuit with the Bluecore4's internal oscillator circuitry. Power supply regulation is provided via a 1.8V linear regulator integrated into U1. This regulator provides regulated power for U1's digital core, and all RF circuitry such as local oscillator and power amplifier which are also integrated into U1.

The modular transmitter must comply with the antenna requirements of Section 15.203 and 15.204(c). The certification submission contains a detailed description of the configuration of all antennas that will be used with the module.

*The module contains a PCB-trace type Printed Inverted-F Antenna (PIFA). As it is a PCB trace antenna, this antenna is non-removable. The module is only intended for use with this antenna, and does **not** contain an RF connector of any sort for supporting additional antennas. The on-board PIFA antenna has an omni-directional radiation pattern and has a maximum gain of [] dB. Installation instructions for the module explain that only the integrated PIFA antenna may be*

used with the device and that the end user should not be able to access the antenna port or change antennas.

For Industry Canada, the module meets certification labeling requirements. Host devices that contain separately certified modules do not need to be re-certified, provided that they meet the following conditions:

- The host device, as a stand alone unit without any separately certified modules, complies with all applicable Radio Standards Specifications.
- The host device and all the separately certified modules it contains jointly meet the safety requirements of RSS-102, if applicable.
- The host device complies with the certification labeling requirements of each of the modules it contains.

The module is appropriately labeled (refer to the label and label location drawings contained within this application).

For the FCC, the modular transmitter must be tested in a stand-alone configuration, i.e., the module must not be inside another device during testing. This is intended to demonstrate that the module is capable of complying with Part 15 emission limits regardless of the device into which it is eventually installed. Unless the transmitter module will be battery powered, it must comply with the AC line conducted requirements found in Section 15.207.

Test data contained in this application is for the device tested as a stand-alone device. Radiated spurious emissions data and AC conducted emissions data demonstrating compliance with the requirements of Part 15 of the FCC rules for intentional radiators has been provided.

For the FCC, 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.”

The module is appropriately labeled (refer to the label and label location drawings contained within this application). Information to the integrator of this system regarding the labeling requirements for the host system are contained in the instructions provided with the module.

Per RSS-GEN, host products will be labeled using wording such as “Contains IC ID: XXXXXXXX” or “Contains Transmitter Module IC ID: XXXXXXXX”

The modular transmitter must comply with any applicable RF exposure requirements.

The module meets the requirements for a portable device that may be used at separation distances of less than 2.5cm from the human body because its output power is below the threshold of $60/f_{\text{GHz}}$ mW (25mW for a 2.4GHz device).