Modular Approval Requirements

FCC ID: YHEMASM-02199; IC: 6384A-MASM02199

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 nickel zinc alloy shield. The shield is 20.8mm x 17.3mm and 1.7mm tall. The module covers all of the circuitry except for the antenna and a few passive RF matching components. The shield is rectangular in shape and is soldered at its four corners. There is a small gap for the antenna trace to exit. The shield is electrically connected to the groundplane.*

All modulation and data input(s) are buffered.

> *The data connections available from an off-module host processor to the module are UART, SPI and USB. These data signals connect to the CSR Bluecore 5 IC (U2) via on-module traces. The data is buffered on the Bluecore 5 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 circuitry. The Bluecore 5 IC (U2) has integrated transistors and control circuitry for a DC-DC buck regulator to generate a 1.8V rail using external inductor and capacitors external to the chip, (but on the module). This rail is used by U2. It also contains internal LDO regulators for generating 1.5V rails to power the digital core, audio and RF circuits inside U2. The RF reference oscillator is contained within U2 as well. The reference oscillator's frequency signal source is a 26 MHz ceramic crystal. This crystal forms a Pierce oscillator circuit with the Bluecore5's internal oscillator circuitry.*

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 ceramic chip monopole antenna. It is part number W3043 from Pulse Electronics. 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 W3043 antenna has an omni-directional radiation pattern and has a maximum gain of +4dBi. Installation instructions for the module explain that only the installed chip antenna may be*

used with the device and that the end user should not be able to access the antenna 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 is contained in the instructions provided with the module (refer to the document "MASM-02199Manual.pdf").

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

The module meets the requirements for a mobile device that may be used at separation distances of more than 20cm from the human body. Refer to the MPE calculation.

Is the modular device for an Industry Canada licensed-exempt service?
The module is for an IC licensed-exempt service.

Modular Approval Letter	Yes	No
(a) The radio elements must have the radio frequency circuitry must be shielded. Physical/discrete and tuning capacitors may be located external to the shield, but must be on the module assembly	X	
(b) The module shall have buffered modulation/data input(s) (fi such inputs are provided) to ensure that the module will comply with the requirements set out in the applicable RSS standard under conditions of excessive data rates or over-modulation.	X	
(c) The module shall have its own power supply regulation on the module. This is to ensure that the module will comply with the requirements set out in the applicable standard regardless of the design of the power supply circuitry in the host device which houses the module.	X	
(d) The module shall comply with the provisions for external power amplifiers and antennas detailed in this standard. The equipment certification submission shall contain a detailed description of the configuration of all antennas that will be used with the module.	X	
(e) The module shall be tested for compliance with the applicable standard in a stand-alone configuration, i.e. the module must not be inside another device during testing.	X	
(f) The module shall comply with the Category I equipment labeling requirements.	X	
(g) The module shall comply with the applicable RSS-102 exposure requirements, which are based on the intended use/configurations.	X	
(h) Is the modular device for an Industry Canada licensed exempt service?	X	