

EXHIBIT 10: 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 shield covering the RF transceiver, its reference oscillator (X1), balun, and associated circuitry. The shield is made of 0.008" tin-plated brass, and is permanently soldered to the module at the top level trace (shown in a picture below)

All modulation and data input(s) are buffered.

Data to the modulation circuit is buffered on the module via microcontroller (TI MSP430F1611, part U0 in the schematic. See page 7 of the datasheet.

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

The module contains its own power supply regulation and the rf reference oscillator is contained within the module. Power supply regulation is provided via internal 1.8V regulator in CC2420 (cf. CC2420 Datasheet, pp. 50-51). The local reference oscillator X1 runs at 16MHz.

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 connects to directly its antenna. The external antenna connector is not available (connector footprint is disconnected in production version of the device). The antenna is built into the PCB. It is a PIFA-type antenna, with omni directional pattern and a peak gain of -5dBi (cf. CC2420DBK Demonstration Board Kit User Manual, rev. 1.3 p. 6-7)

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.

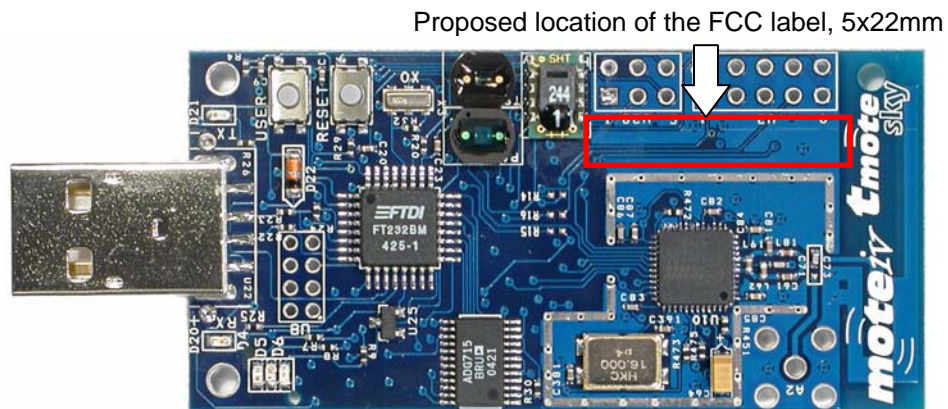
The device meets the labeling requirements.

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. The device cannot be powered from an AC line.

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: TOQTMOTESKY” or “Contains FCC ID: TOQTMOTESKY.”

The module is appropriately labeled. The picture below shows the proposed location for the FCC label. Information to the integrator of this system regarding the labeling requirements for the host system are contained in the instructions provided with the module (refer to the document “Tmote sky datasheet”). The FCC label will be initially a sticker, later to be silkscreened onto the PCB.



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_{GHz} mW (25mW for a 2.4GHz

device).