

February 22, 2010

Equipment Authorization Division  
Federal Communications Commission  
7435 Oakland Mills Road  
Columbia, MD, 21046

FCC ID: X4WRF460

## **Request for Limited Modular Approval**

Tracciare respectfully submits this *request for Limited Modular Approval* for consideration regarding FCC ID X4WRF460.

Background Information. The Tracciare RF460 module is a 2 watt RF transceiver with frequency operation within the 450MHz to 470MHz licensed band. The module transmitter is designed for Part 90 emission mask D – 12.5 kHz channel bandwidth equipment. Based upon the installation location and number of channels required, channel license leases are purchased for operation. After license frequencies are identified, these are configured during the manufacturing process prior to field installation.

Tracciare has designed a family of products utilizing the same RF460 radio module for the utility marketplace.

All existing configurations have been submitted for testing verification and approval.

The numbered requirements for equipment authorization are listed and addressed below.

1. The modular transmitter must have its own RF shielding. This is intended to ensure that the module does not have to rely upon the shielding provided by the device into which it is installed in order for all modular transmitter emissions to comply with Part 15 limits. It is also intended to prevent coupling between the RF circuitry of the module and any wires or circuits in the device into which the module is installed. Such coupling may result in non-compliant operation.

The RF460 modular transmitter provides its' own RF shielding.

2. The modular transmitter must have buffered modulation/data inputs (if such inputs are provided) to ensure that the module will comply with Part 15 requirements under conditions of excessive data rates or over-modulation.

The RF460 modular transmitter has buffer modulation/data inputs provided by the RF transceiver integrated circuit that ensures consistent modulation at the designed data rate.

3. The modular transmitter must have its own power supply regulation. This is intended to ensure that the module will comply with Part 15 requirements regardless of the design of the power supplying circuitry in the device into which the module is installed.

The RF460 modular transmitter must be supplied a voltage of 2.7 to 3.6 VDC with a current requirement of up to 3 amperes. In our application, the RF460 modular transmitter mates to an application specific board which supplies the power regulation required for the RF460 modular transmitter. Tracciare has submitted all current configurations and their respective power supplies for FCC testing.

The electric meter configuration utilizes the Texas Instruments LM3S1601 microcontroller and the utility configuration utilizes the Texas Instruments MSP430F2350 microcontroller. It is the intent that the RF460 modular transmitter limited modular approval request be limited to the above two microcontrollers.

4. The modular transmitter must comply with the antenna requirements of Section 15.203 and 15.204(c). The antenna must either be permanently attached or employ a "unique" antenna coupler (at all connections between the module and the antenna, including the cable). Any antenna used with the module must be approved with the module, either at the time of initial authorization or through a Class II permissive change. The "professional installation" provision of Section 15.203 may not be applied to modules.

The RF460 modular transmitter is a Part 90 licensed device. The antenna connection from the RF460 module is a custom 50 ohm impedance trace.

5. 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. AC or DC power lines and data input/output lines connected to the module must not contain ferrites, unless they will be marketed with the module (see Section 15.27(a)). The length of these lines shall be length typical of actual use or, if that length is unknown, at least 10 centimeters to insure that there is no coupling between the case of the module and supporting equipment. Any accessories, peripherals, or support equipment connected to the module during testing shall be unmodified or commercially available (see Section 15.31(i)).

The RF460 modular transmitter has been tested in a stand-alone configuration as well as all existing configurations per the above requirements.

6. 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." Any similar wording that expresses the same meaning may be used. The Grantee may either provide such a label, an example of which must be included in the application for equipment authorization, or, must provide adequate instructions along with the module which explain this requirement. In the latter case, a copy of these instructions must be included in the application for equipment authorization.

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The RF460 modular transmitter will be identified internally either by label on the module shield or etching on the shield cover itself per FCC requirements. The final configuration will display an exterior label per FCC requirements.

7. The modular transmitter must comply with any specific rule or operating requirements applicable to the transmitter and the manufacturer must provide adequate instructions along with the module to explain any such requirements. A copy of these instructions must be included in the application for equipment authorization. For example, there are very strict operational and timing requirements that must be met before a transmitter is authorized for operation under Section 15.231. For instance, data transmission is prohibited, except for operation under Section 15.231(e), in which case there are separate field strength level and timing requirements. Compliance with these requirements must be assured.

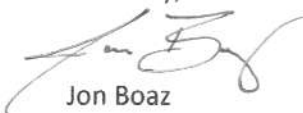
The RF460 modular transmitter instructions will be provided per FCC requirements to explain all operational and timing requirements.

8. The modular transmitter must comply with any applicable RF exposure requirements. For example, FCC Rules in Sections 2.1091, 2.1093 and specific Sections of Part 15, including 15.319(i), 15.407(f), 15.253(f) and 15.255(g), require that Unlicensed PCS, UNII and millimeter wave devices perform routine environmental evaluation for RF Exposure to demonstrate compliance. In addition, spread spectrum transmitters operating under Section 15.247 are required to address RF Exposure compliance in accordance with Section 15.247(b)(4). Modular transmitters approved under other Sections of Part 15, when necessary, may also need to address certain RF Exposure concerns, typically by providing specific installation and operating instructions for users, installers and other interested parties to ensure compliance.

The RF460 modular transmitter complies with the above RF exposure requirements.

For your consideration.

Sincerely,



Jon Boaz  
Tracciare, Inc.