Hetronic International, Inc.
3905 NW 36th Street
Oklahoma City, OK 73112-USA
Phone: +1 405 749 1270
Fax: +1 405 749 1429
www.hetronic.com

Subject: Request for limited modular approval for Hetronic CS2400TR modular transceiver.

Dear Application Examiner,

Hetronic International is requesting your authorization for Module Approval for the CS2400TR (FCC ID: LW9-CS2400TR, IC: 2119B-CS2400TR).
The requirements for Public Notice DA00-1407 have been met and shown on the following statements:

Please see below for a list of the requirements for modular approval and how this module meets the requirements.

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 module is fully shielded. Please see external photos for details.

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 EUT utilizes an on-board microprocessor, which is responsible for providing data to the RFIC. The RFIC is also buffered, and is modulated internally according to IEEE 802.15.4 standard.

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 EUT includes a voltage regulator at the power supply inputs. Additionally, the RFIC contains internal voltage regulation.

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

Hetronic shall require professional installation of this module by trained personnel only. The module's antenna connector shall always be enclosed, and not directly accessible by the end-user.

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 module was tested while powered by a battery and with no auxiliary connections.

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.

The FCC ID is on the module shield.

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 module meets all of the requirements of FCC Part 15.209 and 15.247. Please refer to the test report for details.

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 module complies with all RF exposure requirements. Please see the RF exposure exhibit for details.

Modular Approval Checklist

Modular Approval Requirement	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) (if 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 supplying 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 applicable RSS-102 exposure requirements, which are based on	X	

the intended use/configurations.		
(h) Is the modular device for an Industry Canada licensed exempt service?	X	

* Provide a detailed explanation if the answer is "No".

Sincerely,

Compliance Director

David M. Cameron
(Print name)