



SOLVING A WAVE OF EMI COMPLIANCE PROBLEMS

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Federal Communications Commission
Authorization and Evaluation Division

REFERENCE Industry Canada ID: 9453A-MDXRADIO

FCC ID: Y60MDXRADIO-CL2

RE: Request for Limited Single-modular transmitter

APPLICANT: Midtronics.

This module will only be used by Midtronics. It will not be sold as a separate product to individuals or companies. Therefore, Midtronics will fully control the use and installation procedures. It will be used with Cell Guard battery sensors.

The label provided in the exhibit is the final label. This is the only type of enclosure that this module will be used for. It will be fully controlled by Midtronics. Midtronics is placing the module in hosts that are very similar to the one it was tested with. Midtronics is controlling the use of the module and will make sure the Label is placed on the outside of all host systems. The product will always be inside another enclosure during actual use. The end user will not have ready access to the module.

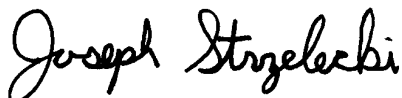
FCC Items are 1 to 8. Canada Requirements are (a) to (h).

Item	Requirement	Meets	Justification
1	The radio elements of the modular transmitter must have their own shielding. The physical crystal and tuning capacitors may be located external to the shielded radio elements.	No	The Base board is multi layered with an inner ground shield. In addition there is a top positioned printed circuit board shield that is connected to circuit ground.
(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.		The module does not depend on any other shield.
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.	Yes	There are no buffered RF components. The radio transceiver is fully integrated and connected to the antenna element through passive components.
(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.		
3	The modular transmitter must have its own power supply regulation.	Yes	An external 3.3V regulated supply is filtered through the module's LC (inductor/capacitor) circuit to further reduce high frequency components from and to the main printed circuit board.
(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.		
4	The modular transmitter must comply with the antenna and transmission system requirements of §§ 15.203, 15.204(b) 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). The "professional installation" provision of § 15.203 is not applicable to modules but can apply to limited modular approvals under paragraph (b) of this section.	Yes	The antenna is soldered on to the printed circuit board and cannot be changed by the end user. No other antennas are used with the module.

Item	Requirement	Meets	Justification
(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.		
5	The modular transmitter must be tested in a stand-alone configuration, i.e. the module must not be inside another device during testing for compliance with part 15 requirements. Unless the transmitter module will be battery powered, it must comply with the AC line conducted requirements found in §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 §15.27(a)). The length of these lines shall be the length typical of actual use or, if that length is unknown, at least 10 cm 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 and commercially available (see §15.31(i)).	Yes	The EUT was tested connected to a battery sensor, as in its normal installation. The installations are controlled by Midtronics. The EUT was tested with an external battery. No Conducted emissions are required since it will always be battery powered. The module was installed on the top of a PCB with no shielding around it. The system has a totally non-conductive plastic housing. The EUT had no additional shielding.
(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.		
6	The modular transmitter must be equipped with either a permanently affixed label or must be capable of electronically displaying its FCC identification number.	Yes	The FCC ID label format is included in the filing. The product will always be inside another enclosure during actual use. The outside of the device in which the module is installed will display a label referring to the enclosed module. Midtronics is controlling the use of the module and will make sure the Label is placed on the outside of all host systems.
(f)	The module shall comply with the Category I equipment labeling requirements.		
7	The modular transmitter must comply with any specific rules or operating requirements that ordinarily apply to a complete 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.	Yes	Module firmware only allows IEEE 802.15.4 valid frequency channels. Customer is unable to modify to invalid carrier frequencies.
8	The modular transmitter must comply with any applicable RF exposure requirements in its final configuration.	Yes	Refer to RF exposure Exhibit. The transmitter meets MPE calculations of 47 CFR 1.1310. The power is less than 10mW Peak.
(g)	The module shall comply with applicable RSS-102 exposure requirements, which are based on the intended use/configurations.		
(h)	Is the modular device for an Industry Canada licensed exempt service?	Yes	It does not need Licensing, only Certification

Radiometrics has been authorized by Midtronics to act as an agent in the preparation of their submittal request for Modular Approval.

Sincerely,



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