



SOLVING A WAVE OF EMI COMPLIANCE PROBLEMS

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Federal Communications Commission
Authorization and Evaluation Division

REFERENCE:

FCC ID: Y60-MDX-ZIGB-G3

RE: Request for modular transmitter

APPLICANT: Midtronics, Inc.

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 Midtronics 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. The module will be placed in two types of enclosures, a Sensor or a Base Coordinator.

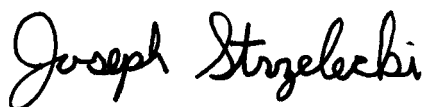
Modular approval Requirements

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.	Yes	<i>Base board is multi layered with an inner ground shield.</i> <i>The RF portions of the module are completely contained within a metal shielding can, which is electrically connected to circuit ground.</i> <i>The module does not depend on any other shielding.</i>
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	<i>There are no modulation inputs provided outside the module. The user has no control on the modulation. The modulation characteristics are permanently programmed in IC to comply with 802.15.4 modulation.</i>
3	The modular transmitter must have its own power supply regulation.	Yes	<i>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.</i>
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	There are two antenna options: <ol style="list-style-type: none">1. Internal chip antenna: The antenna is internal to the EUT and it is not readily available to be modified by the end user.2. ½ wave Dipole Antenna: The antenna uses a non-standard "U.FL" adaptor that is internal to the product.

Item	Requirement	Meets	Justification
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	<p>The EUT was tested 2 ways:</p> <p>1. The EUT was tested connected to a battery sensor, as in its normal installation with an external battery.</p> <p>2. The EUT was tested in a Base Coordinator with an external antenna. It was tested with a typical AC-DC power supply for both radiated and conducted emissions.</p> <p>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.</p> <p>The installations are controlled by Midtronics, and there will be no wires from the module to the host system. These are the only allowed installations.</p>
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	<p><i>The FCC ID label format is included in the filing. The product will always be inside another enclosure during actual use.</i></p> <p><i>The outside of the device in which the module is installed will display a label referring to the enclosed module.</i></p> <p><i>Midtronics is controlling the use of the module and will make sure the Label is placed on the outside of all host systems.</i></p>
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	<p><i>Module firmware only allows IEEE 802.15.4 valid frequency channels.</i></p> <p><i>Customer is unable to modify to invalid carrier frequencies.</i></p>
8	The modular transmitter must comply with any applicable RF exposure requirements in its final configuration.	Yes	<p>Refer to RF exposure Exhibit. The transmitter meets MPE calculations of 47 CFR 1.1310. It is not handheld.</p> <p>The power is less than 10mW Peak.</p>

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

Sincerely,



Joseph Strzelecki, NCE
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Authorized Agent for Midtronics, Inc.
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