

FCC Part 15.247 Certification **Test Report**

FCC ID: R32-RFM100

FCC Rule Part: 15.247

ACS Report Number: 04-0096-15C

Manufacturer: Onity, Inc.
Equipment Type: Modular Radio
Model: RFM100

Limited Modular Approval Justification



Determination of Modular Radio Approval

The RFM100 modular radio will only be used and offered with a list of host devices referenced in this application, allowing Onity, the Grantee to demonstrate that it will retain control over the final installation of the device, such that compliance of the end product is assured. Further, it is only offered in the configurations actually used during the compliance testing.

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. This is a Limited Modular Approval (LMA), which only allows for use in the specific equipment listed on the grant. The EUT is only provided in the specific enclosure, which it was tested in, the Grantee will retain control over the final installation.

Comment: Our Module does not have a shielding, however, we will maintain control of installation of the final product.

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. There are no data inputs offered to the end user.

Comment: Our radio module uses the CC1000 integrated circuit from Chipcon. The data rate is defined in one of the internal register of this chip (our application use 9.6 Kbits Synchronous Manchester encoded mode). When this register is set, a synchronous clock is generated by the CC1000 so it is impossible to have and excessive data rate. In any case, we maintain control of the final products. In those products, there are no data inputs offered to the end user



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 transmitter has a regulated power supply included in the enclosures that it is offered in, the Grantee will retain control over the final installation.

Comment: Yes, our module has its own power supply 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). 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 antenna cannot be removed or replace, it is an integral part of the equipment.

Comment: Our module utilizes PCB trace antenna that are permanently etched on the host devices, therefore, antennas are not easily accessible to the final user and comply with the requirements of section 15.203 and 15.204(c)

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)). This is a LMA tested in the only configurations offered for sale. It will not be offered for sale or use in any other enclosures. The Grantee will retain control over the final installation.



Comment: This is a LMA tested in the only configurations offered for sale. It will not be offered for sale or use in any other enclosures or host devices that it was certified with. The Grantee will retain control over the final installation.

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 provided as part of the equipment.

Comment: The FCC ID is etched on the PCB of the module. The FCC ID is not visible when normally installed inside the host devices therefore; the FCC ID is displayed on the product label of the host devices.

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. As a LMA it is only offered in a compliant configuration, the Grantee will retain control over the final installation.

Comment: As a LMA it is only offered in a compliant configuration, the Grantee will retain control over the final installation.



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. As a LMA it is only offered in a compliant configuration, the Grantee will retain control over the final installation.

Comment: As a LMA it is only offered in a compliant configuration, the Grantee will retain control over the final installation.