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Federal Communications Commission / Industry Canada / Elliott TCB

Subject: Limited Modular approval
Applicant: GE MDS LLC.
Product: MDS WiYZ Mesh radio
FCC ID: E5MDS-MESH2400
IC Number: 101D-MESH2400

Dear Sir/Madam,

A Limited Modular Approval (LMA) is being requested for this device. There are eight requirements that the device must meet for full modular approval. According to the FCC's definition of Limited Modular Approval:

"If compliance with one or more of the numbered requirements, listed above, cannot be demonstrated, it may be possible to obtain a "Limited Modular Approval" (LMA). This will be issued in those instances where the Grantee can demonstrate that it will retain control over the final installation of the device, such that compliance of the end product is assured. In such a case, an operating condition on the grant of equipment authorization for the module would state that the module is only approved for use when installed in devices produced by a specific manufacturer, typically the Grantee. If LMA is sought, the application for equipment authorization must make this fact clear. It must also specifically state how control of the end product, into which the module will be installed, will be maintained, such that full compliance of the end product is always ensured. "

We are requesting LMA, Limited Modular Approval. The following pages detail how the module meets the requirements for modular approval and the limitations related to the antenna installation that require a limited modular approval, restricting use of the module only to those host systems manufactured by GE MDS.

1. *The module must have its own RF shielding.*
The module has its own RF shielding. The bottom layer of the circuit board is a contiguous ground plane and the top side of the board has a metal shield that connects into the ground plane covering the rf section, with the exception of the rf coaxial connector. The external photographs clearly show the shielding on the top side of the board and ground plane on the bottom side.
2. *All modulation and data input(s) are buffered.*
The Freescale MC1322x Platform in a Package (PiP) performs data buffering – refer to the block diagram for more details.
3. *The module has its own power supply regulation and local reference oscillator.*
The module contains its own power supply regulation and the rf reference oscillator is contained within the module Y101 and U101. Power supply regulation is provided U202 .
4. *The modular transmitter must comply with the antenna requirements of Section 15.203 and 15.204(c). The certification submission contains a detailed description of the configuration of all antennas that will be used with the module.*
Testing was performed to cover three different antenna types by performing radiated measurements with the highest gain antennas of each type. In addition, output power measurements were made for each antenna type as the output power settings are different for each antenna type. Datasheets for the antennas are provided with this application.

The module uses a uFL connector to connect to the antenna. This is a non-standard antenna type. However, we intend to use this module in host systems that could use standard rf connectors and we fully understand the requirements for professional installation of such host systems. For this reason we are requesting a limited modular approval, with approval limited to installation of this module into host systems by the Grantee. GEMDS will perform training for its staff to inform them of the scope of the Limited Modular Approval and list the technical requirements to ensure its staff keeps the installations in compliance.

None of the GEMDS' products that incorporate this module will be for sale to the general public as the complete line of GEMDS products are for Industrial applications only. Examples of such applications include SCADA applications, traffic control, flow rate applications. GEMDS has a trained staff of technical personnel that work with our industrial customers to ensure that professional installation is achieved for all unlicensed products that operate with standard rf connectors and/or utilize different power settings for different antenna installations. In all cases the FCC EIRP limits are maintained and power settings are configured to ensure EMC requirements are met.

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.*

Test data contained in this application is for the device tested as a stand-alone device. Radiated spurious emissions data and AC conducted emissions data demonstrating compliance with the requirements of Part 15 of the FCC rules for intentional radiators has been provided.

6. *[FCC only] 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."*

The module is appropriately labeled (refer to the label and label location drawings contained within this application). GEMDS are limiting the use of this module to installation into their systems and fully understand the requirements for labeling the outside of host systems with the appropriate verbiage to indicate the FCC ID of the module.

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.*

The module fully complies with the requirements of FCC 15.247.

8. *[FCC only] The modular transmitter must comply with any applicable RF exposure requirements.*

The module meets the requirements for a mobile device that may be used at separation distances of more than 20cm from the human body. Refer to the MPE calculation for this device covering all three antenna types. The following statement is to be included in the manuals for all host systems using the module:

The antenna(s) to be used with this limited modular transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

9. *[Industry Canada only] The module meets certification labeling requirements. Host devices that contain separately certified modules do not need to be re-certified, provided that they meet the following conditions:*

- The host device, as a stand alone unit without any separately certified modules, complies with all applicable Radio Standards Specifications.*
- The host device and all the separately certified modules it contains jointly meet the safety requirements of RSS-102, if applicable.*
- The host device complies with the certification labeling requirements of each of the modules it contains.*


The module is appropriately labeled (refer to the label and label location drawings contained within this application). Due to the small size of the module the label located on the shield side of the board will only show the certification number and model number. The brand name is on the reverse side of the board.

GEMDS are limiting the use of this module to installation into their systems and fully understand the requirements for labeling the outside of host systems with the appropriate verbiage to indicate the Canadian certification number (CN+UPN) of the module.

GEMDS understand the requirement to perform an rf exposure evaluation for each host system against the requirements of RSS-102. This application includes an RSS-102 declaration for the module covering its use with all three antenna types.

If you have any queries, please do not hesitate to contact me at 585 242-8440:

Yours truly,

Signed:  Name: Dennis McCarthy

Dennis McCarthy

Agency Compliance Engineer

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