EMC Job No. T50915

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Request for Modular Approval for FCC ID: Q47-MCROEM

The device we are looking for modular approval for are two smart card readers. Details of the device are provided in Technical User Manual in Appendix I of the EMC report. The unit complies with notice DA00-1407 for Part 15 Unlicensed Modular Transmitter Approval in the following ways:

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.

Answer 1

The unit was tested stand alone. The only external device is a ferrite core, which is provided with the device in the cable harness. Details of the ferrite and installation are provided in Appendix K of the EMC Report. The unit has been designed with screening in mind as the multi layed PCB have been used to limit both emissions from the unit and its susceptibility from other devices. Metal screens are provided on the Antenna and Control boards.

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.*

Answer 2

The transmitter/Receiver is buffered in the assembly. The only data connection is and RS 232 or RS 485 interface. No direct connection is provided to the Tx/Rx.

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.*

Answer 3

The unit has its own supply regulation details of the power supply are provided in Appendix G section 2.5 and on the circuit diagram Appendix E page 9.

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*

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authorization or through a Class II permissive change. The "professional installation" provision of Section 15.203 may not be applied to modules.

Answer 4

The antenna is part of the unit in the form of a PCB, which is connected to the Tx/Rx via a cable.

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 3 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)).*

Answer 5

The unit was tested stand-alone. The cable proved with Ferrite was representative and will be provided with the unit. The unit was tested with a switch mode PSU to represent the typical final installation. The data cable and the supply were greater than 10cm in length.

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.*

Answer 6

ERG in there Installation Manual have provided details of the installation of the unit and the labelling required.

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.*

Answer 7

The transmitter will operate under the rule section 15.225 and no special instructions are needed to comply with the rule.

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.*

Answer 8

Under the rule part that this transmitter module will operate there are no specific RF exposure requirements.

I hope the provided information will allow the granting of the modular approval for the MCR/OEM. Should you require any additional information please do not hesitate to contact me.

Yours faithfully

Christian Kai
Facility Manager – Sydney
EMC Technologies Pty Ltd