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Date 15 December 2008

AmericanTCB  
6731 Whittier Avenue  
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Attn: Director of Certification

RE: FCC ID: MCQ-50M1558 / IC: 1846A-50M1558 submittal as modular device

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 FCC Part 15 and Industry Canada 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.

The WiEM9210 abg module is designed such that all RF components and circuitry are placed on the top surface of the PCB. No RF related circuitry is present on the bottom surface of the PCB. A formed metal shield is soldered onto the top of the PCB and covers all RF components and circuitry.

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 and Industry Canada requirements under conditions of excessive data rates or over-modulation.

The user data enters the WiEM9210 abg module by way of User Serial Data Port. All of the user data that is to be transmitted by the modular transmitter is buffered by the WiEM9210 abg's baseband controller. The user data is packetized and transmitted at data rates that are completely controlled by the baseband controller and its software. The user has no access to either the baseband controller or its software.

3. The modular transmitter must have its own power supply regulation. This is intended to ensure that the module will comply with Part 15 and Industry Canada requirements regardless of the design of the power supplying circuitry in the device into which the module is installed.

All critical RF circuitry of the WiEM9210 modular transmitter is powered by dedicated, low drop out regulators. These regulators allow the module to function within specification with module input voltages ranging from 2.93V ( $V_{in} < 2.93V$  will cause module to enter a reset state) to 4.00V ( $V_{in} > 4.00V$  will cause a catastrophic failure of the processor and the module will cease to function). The optimal Vin voltage range for the WiEM9210 module is 3.3V +/-5%.



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4. The modular transmitter must comply with the antenna requirements of FCC Sections 15.203 and 15.204(c) and Industry Canada requirements. 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 FCC Section 15.203 may not be applied to modules.

The WiEM9210 abg module has two antenna configurations. One configuration uses a single reverse polarity SMA (RP-SMA) antenna connector and the other uses two U.FL antenna connectors. The RP-SMA connector is designed with a male center pin which prevents a standard SMA connector from being mated to the WiEM9210 abg 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. This is intended to demonstrate that the module is capable of complying with FCC Part 15 and Industry Canada 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 FCC 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 FCC 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 FCC Section 15.31(i)).

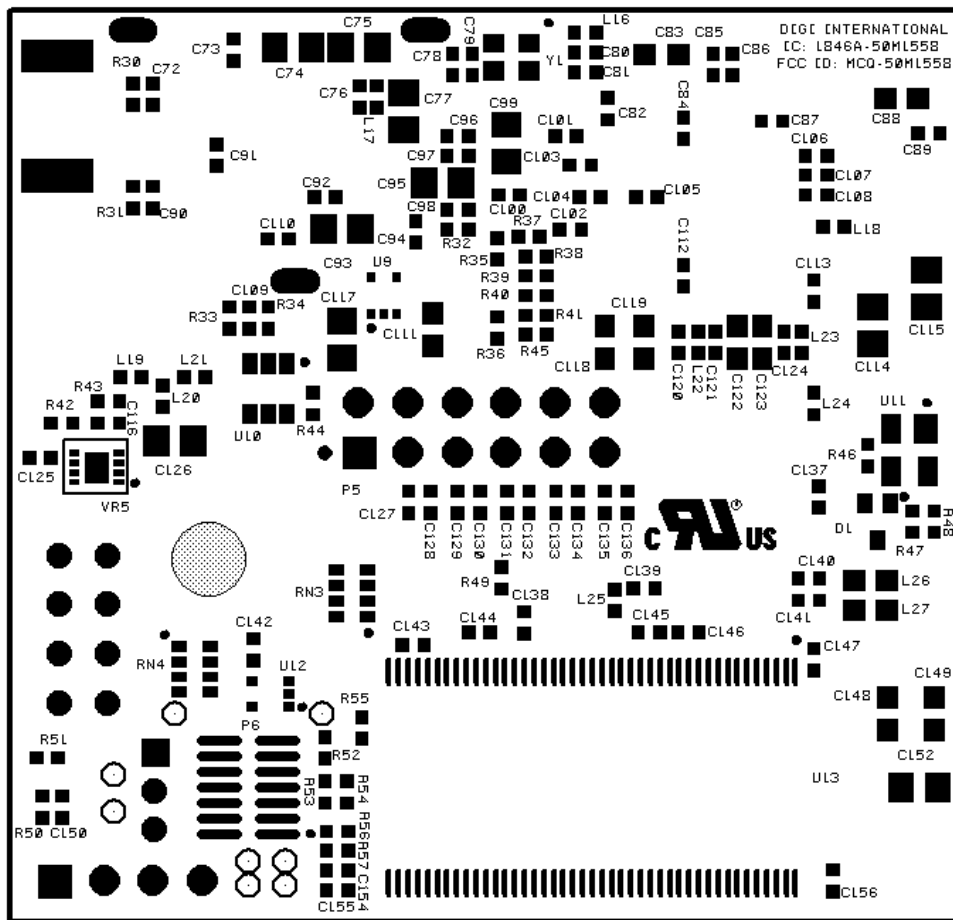
The WiEM9210 abg module is designed to be compliant with all relevant FCC requirements without any additional shielding or filtering of any sort. As tested, the WiEM9210 abg module was mounted on top of a carrier board which provided the +3.3VDC to power the module and which provided an RS232 line transceiver to allow serial data traffic. The carrier board sources the +3.3VDC from an on-board DC-to-DC converter which is, in turn, powered by an external +12VDC power supply which is mains powered. There are no additional filters associated with the module/carrier board. Nor is there any additional shielding associated with this setup – beyond the shield that is soldered to the module.



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- The modular transmitter must be labeled with its own FCC ID / IC number, and, if the FCC ID / IC number 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 / IC: XXX-YYYY" or "Contains FCC ID: XYZMODEL1 / IC: XXX-YYYY." Any similar wording that expresses the same meaning may be used. The Applicant 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 WiEM9210 abg module will have the FCC ID / IC numbers silk-screened in contrasting ink on the bottom of the PCB using 0.025" text. See following silkscreen image of PCB.





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The following text will also appear in the Hardware Reference Manual which ships with the WiEM9210 abg module:

*If the FCC ID / IC number is not visible when the WiEM9210 abg 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 FCC ID / IC number. This exterior label can use wording such as the following:*

*“Contains Transmitter Module FCC ID: MCQ-50M1558 / IC: 1846A-50M1558.”*

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 FCC Section 15.231 and Industry Canada specifications. For instance, data transmission is prohibited, except for operation under FCC Section 15.231(e), in which case there are separate field strength level and timing requirements. Compliance with these requirements must be assured.

Instructions for the operator are included in the WiEM9210 abg Hardware Reference Manual. The WiEM9210 abg module controls all modulation formats, channel selection, transmission data rates, and power levels.

FCC 15.247: Spread Spectrum Transmitters  
FCC 15.407: UNII Devices

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 FCC 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. Refer to Industry Canada RSS-GEN Section 7.1.1 and 7.1.2 for Industry Canada requirements.

The WiEM9210 abg module is exempt from the Routine Evaluation Limits - RF Exposure Limits as specified in Industry Canada RSS-102 Section 2.5.2. The WiEM9210 abg module is to be operated at least 20cm from the user and its maximum power output is less than 5W at an operating frequency of greater than 2.4GHz.