



**MMB Research Inc.**

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Dear FCC/TCB representative,

We request “**Modular Approval**” for our proprietary Z357PA20 module, which will be installed in products that need Zigbee wireless communication functionality.

This device is a complete RF transmitter, i.e., it has its own reference oscillator (e.g., VCO), antenna, etc. The only connectors to the module are power supply and modulation/data inputs. Compliance with FCC RF Exposure requirements is passing and is calculated in accordance with the test report, with sufficient margin. We are aware that the end device into which an authorized module is installed is not required to obtain a new authorization for the module, however this does not preclude the possibility that some other form of authorization or testing may be required for the device (e.g., a WLAN into which an authorized module is installed must still be authorized as a PC peripheral, subject to the appropriate equipment authorization).

The modular transmitter does have its own RF shielding and was tested without an enclosure with only power and data inputs connected (using an evaluation board).

The modular transmitter has 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. 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 modular transmitter complies with the antenna requirements of Section 15.203 and 15.204(c).

The antenna type used in the product is a ceramic chip antenna. Test data from this antenna is included with the test report. Any modification to the antennas will result in a Class II permissive change.

The modular transmitter was tested in a stand-alone configuration, i.e., the module was not inside another device during testing. This shows that the module is capable of complying with Part 15 emission limits regardless of the device into which it is eventually installed.

The modular transmitter will be labelled 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 will also display a label referring to the enclosed module. This exterior label of such products will use wording such as the following: “Contains Transmitter Module FCC ID: XFFZ357PA20”.

The modular transmitter complies with all the specific rules or operating requirements applicable to this transmitter and we attest that we will provide adequate instructions along with the module to explain the manufacturer’s installation procedure.

The modular transmitter complies with any applicable RF exposure requirements, as per the test report. The end device manual will provide specific installation and operating instructions for users, installers and other interested parties to ensure compliance, such as that ‘a minimum distance of 20cm between the antenna and any person is to maintained during operation’.

Please find below a table outlining the modular approval requirements and indication that we meet them:

	FCC Modular Approval Checklist	YES	NO
i	The radio elements must have the radio frequency circuitry shielded. Physical components and tuning capacitor(s) may be located external to the shield, but must be on the module assembly;	X	
ii	The module must have buffered modulation/data inputs to ensure that the device will comply with Part 15 requirements with any type of input signal;	X	
iii	The module must contain power supply regulation on the module;	X	
iv	The module must contain a permanently attached antenna, or contain a unique antenna connector, and be marketed and operated only with specific antenna(s), per Sections 15.203, 15.204(b), 15.204(c), 15.212(a), 2.929(b);	X	
v	The module must demonstrate compliance in a stand-alone configuration;	X	

vi	The module must be labelled with its permanently affixed FCC ID label, or use an electronic display (See KDB Publication 784748 about labelling requirements);	X	
vii	The module must comply with all specific rules applicable to the transmitter including all the conditions provided in the integration instructions by the grantee;	X	
Viii	The module must comply with RF exposure requirements (see discussions below).	X	

As all the requirements have been satisfied, we request a modular approval for our Z357PA20 product

I the undersigned attest that I am an authorized representative of MMB Research Inc. and attest to the above.

Mark Borins, CTO



June 28, 2013