EXPERTISE
ENGINEERING

Request for Modular Approval NX01

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To Whom It May Concern: Request for Modular Approval

NX01 Project P/N: 500445-001 FCC ID: USI0000A IC ID: 6835A-0000A
Expertise Engineering requests Modular Approval for the NX01 20dBm RF board. The NX01 is a 20dBm max modular radio board. The sole purpose of the NX01 is to regulate, transmit and receive messages in the 2.4 GHz ISM Band using the IEEE standard bands.
The radio is a Chipcon (TI) CC2420.802.15.4 transmitter with a Maxim 2247 2.4GHz SiGe linear power amplifier. Data to be transmitted is sent to the NX01 from associated boards through the SPI interface. Power is controlled by messages sent via SPI, up to the 20dBm max power. The NX01 request for modular approval is based on meeting the requirements for modular approval of the rf board.

(1) RF Shielding:
The board is completely shielded from RF radiation by the means of a NiAg (nickel-silver) board cover soldered to the ground layer of the pcb. The one component that is not covered by this shield is the MMCX antenna connector. Coupling to other transmission lines is very unlikely in this shielded configuration.

(2) Buffered Modulation / Data Inputs
The Chipcon CC2420 handles the need for buffered modulation on chip in the case of excessive data rates or over-modulation. This versatile chip also handled the power regulation of the board, controlling the output power of the antenna.

(3) Power Supply Regulation
The RF chip has internal voltage regulation.

(4) Antenna Requirement
The radio is connected to the antenna via an MMCX connector. The antenna is either permanently attached to the connector or adapted with a RP-SMA connector to ensure a unique and unalterable connection.

(5) Test Configuration
The NX01 has been tested in its stand alone version. As the NX01 is connected to, powered by and communicates with other devices through an SPI header it should not be susceptible to coupling in any way.

(6) Label
A user manual is to be supplied to any company using the NX01 which clearly states the conditions for operation that must be adhered to for authorization. This manual states that the FCC and IC IDs of the NX01 are to be clearly stated on a permanent, external label.

(7) Compliance Statement
The NX01 conforms to Section 15 of the FCC code and any modification of the NX01 voids the user's authority to operate it. Compliance between different companies and products is also guaranteed through physical and software systems onboard the NX01. The Chipcon CC2420 Zigbee stack controls all modulation and data rates output through the antenna. Any modulation that is not supported will not be transmitted through the software stack on chip. The Maxim 2247 PA supports power levels up to

20dBm maximum through the antenna. The NX01 complies to section 15 at its maximum supported power level of 20dBm so no product or company is able to breach that maximum.

(8) The NX01 complies with 47 CFR 1.1310 radiofrequency radiation exposure limits.

For these reasons stated above, Expertise Engineering requested that modular approval be granted to the NX01 20dBm PA radio board and have "module" or "modular" included in the remarks section of the grant.

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