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Modular Transmitter Approval Request

Federal Communications Commission
Equipment Authorization Division
7435 Oakland Mills Road
Columbia, MD 21046
USA

Company name: Alereon, Inc.
FCC ID: U9YAL5934, U9YAL5930, U9YAL5955

Dear Sir/Madam,

In accordance with 47CFR 15.212 Modular Transmitters and KDB 996369 D01 'Module Equip Auth Guide v02'. FCC ID U9YAL5934, U9YAL5930, U9YAL5955 have been examined against the following requirements.

Requirement per 15.212 and KDB 996369 D01	Explanation from Grantee (do not write yes/no, but explain why product complies/how it is achieved)
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.	All shielding necessary for normal operation is accomplished by the multi-layer construction of the printed wiring board which incorporates multiple ground layers in its construction. As this transmitter is designed to operate stand-alone in its own enclosure, connected to an industry-standard USB 2.0 interface, compact flash interface, or serial interface, no additional shielding is incorporated to minimize coupling such as may occur if the module were incorporated into another unit. In addition, a tamper proof coating will cover a majority of the module, making it impossible to adjust any of the RF parameters. This firmware is locked down with a strict requirement not to allow any changes.
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.	The Alereon modules receive data via the industry-standard USB 2.0 interface, the compact flash interface, or a serial interface. All interfaces are implemented within the AL5350 integrated circuit as may be seen on the schematic diagram included in the filing for FCC

	Equipment Authorization. These interfaces limit the data rate to those defined by their standards
The module must contain power supply regulation on the module.	The Alereon modules receive power from the host system. The +5.0 Volt or 3.3V source from the host system is regulated on the module to power a +3.3V domain and the main +1.2V digital subsystem domain. The +3.3V domain is also regulated on the module to produce two additional power domains required by the module circuitry; +2.4V and +1.2V. The power regulation topology may be seen on the schematic diagram included in the filing for FCC Equipment Authorization.
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 §§ 15.203, 15.204(b), 15.204(c), 15.212(a), 2.929(b).	The antenna of the Alereon UWB is a chip antenna as tested in the report. The antenna can be connected via a 40mm coaxial cable with a type U.FL connector. The antenna is intended to be permanently attached to or within the product housing and the connector is not accessible to the user. The U.FL connector complies with the requirement of FCC 15.203 for a unique coupling.
The module must demonstrate compliance in a stand-alone configuration.	As described in the test report included in the filing for FCC Equipment Authorization, the UWB Modules plus antenna were tested without a housing. For the tests reported the module was attached to an Alereon designed test environment which provided power and a USB interface to the controlling computer.
The module must be labeled with its permanently affixed FCC ID label, or use an electronic display (see KDB Publication 784748).	The Alereon modules are intended to be placed within the host system enclosure unique to the brand I.D. of the host system. The prescribed label with the FCC Identifier will be included in the compliance statement..
The module must comply with all specific rules applicable to the transmitter, including all the conditions provided in the integration instructions by the grantee.	Part 15.519 of the FCC rules and Regulations requires that a UWB transmitter shall transmit only when it is sending information to an

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	associated receiver. That rules part also requires that the UWB intentional radiator shall cease transmission within 10 seconds unless it receives an acknowledgement from the associated receiver that its transmission is being received. An acknowledgment of reception must continue to be received by the UWB intentional radiator at least every 10 seconds or the UWB device must cease transmitting. This requirement is met by design and is implemented by the firmware encoded into the device.
The module must comply with RF exposure requirements	An MPE evaluation has been conducted and the part meets RF exposure requirements.

Name: David Shoemaker

Date: 1/2/19

Title: CEO

Signature of applicant *David Shoemaker*