May 15, 2009

RE: Request for Limited Modular Approval

FCC ID: SQB-NIVISMOD0003

Regarding Part 15 Unlicensed Modular Transmitter approval, the following requirements are called out in CFR 15.212 Modular Transmitter.

§ 15.212 Modular transmitters.

(a) Single modular transmitters consist of a completely self-contained radiofrequency transmitter device that is typically incorporated into another product, host or device. Split modular transmitters consist of two components: a radio front end with antenna (or radio devices) and a transmitter control element (or specific hardware on which the software that controls the radio operation resides). All single or split modular transmitters are approved with an antenna. All of the following requirements apply, except as provided in paragraph (b) of this section.

(1) Single modular transmitters must meet the following requirements to obtain a modular transmitter approval.

(i) The radio elements of the modular transmitter must have their own shielding. The physical crystal and tuning capacitors may be located external to the shielded radio elements.

The NIVIS 2.4 GHz Mod3 is a completely self contained radio which has its own RF shielding on the RF section. No other RF shielding is required or implemented.

(ii) 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.

The NIVIZ 2.4 GHz Mod3 is a completely self contained radio which modulates its own RF transmitter. It controls the data flow to the transmitter section compliant with the Part 15 requirements.

(iii) The modular transmitter must have its own power supply regulation.

The module itself has no self-contained power regulator, thus the "limited" scope of this request, however, the 2.4 GHz Mod3 is a radio module designed by Nivis and it is intended for use in Nivis products only. Therefore, in all its designs, Nivis will always insure that the radio receives 3.3 VDC to the power input port of the module in order to comply with the scope of this certification.

(iv) The modular transmitter must comply with the antenna and transmission system requirements of §§15.203, 15.204(b) 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). The "professional installation" provision of §15.203 is not applicable to modules but can apply to limited modular approvals under paragraph (b) of this section.

The Nivis 2.4 GHz Mod3 employs a MMCX antenna connector which is considered to be "unique."

(v) The modular transmitter must be tested in a stand-alone configuration, *i.e.,* the module must not be inside another device during testing for compliance with part 15 requirements. Unless the transmitter module will be battery powered, it must comply with the AC line conducted requirements found in §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 §15.27(a)). The length of these lines shall be the 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 and commercially available (see §15.31(i)).

The Nivis 2.4 GHz Mod3 was tested in a stand-alone condition with the module soldered onto the applications board – an actual lead length use condition. Also, the applications board is non conductive and contains no shielding layers. The only possible shielding or radiated signal blockage would have to come from a few bias voltage traces used to convey power to the transmitter module. These traces are so small that they cannot be effective shields; therefore, the EUT was in a stand-alone condition during test.

(vi) The modular transmitter must be equipped with either a permanently affixed label or must be capable of electronically displaying its FCC identification number.

(A) If using a permanently affixed label, the modular transmitter must be labeled with its own FCC identification number, and, if the FCC identification 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" 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.

(B) If the modular transmitter uses an electronic display of the FCC identification number, the information must be readily accessible and visible on the modular transmitter or on the device in which it is installed. If the module is installed inside another device, then the outside of the device into which the module is installed must display a label referring to the enclosed module. This exterior label can use wording such as the following: "Contains FCC certified transmitter module(s)." Any similar wording that expresses the same meaning may be used. The user manual must include instructions on how to access the electronic display. A copy of these instructions must be included in the application for equipment authorization.

The Nivis 2.4 GHz Mod3 consists of a printed circuit board with a metal cover which is labeled with the FCC identification number. The PCB can be mounted into a host of devices and each device that this PCB utilizes will have the FCC ID number on the cover visible to the consumer.

(vii) The modular transmitter must comply with any specific rules or operating requirements that ordinarily apply to a complete 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.

The Nivis 2.4 GHz Mod3 comes equipped with embedded firmware that controls these parameters.

(viii) The modular transmitter must comply with any applicable RF exposure requirements in its final configuration.

The Nivis 2.4 GHz Mod3 complies with RF exposure requirements for Mobile Equipment.

(b) A limited modular approval may be granted for single or split modular transmitters that do not comply with all of the above requirements, *e.g.,* shielding, minimum signaling amplitude, buffered modulation/data inputs, or power supply regulation, if the manufacturer can demonstrate by alternative means in the application for equipment authorization that the modular transmitter meets all the applicable part 15 requirements under the operating conditions in which the transmitter will be used. Limited modular approval also may be granted in those instances where compliance with RF exposure rules is demonstrated only for particular product configurations. The applicant for certification must state how control of the end product into which the module will be installed will be maintained such that full compliance of the end product is always ensured.

The test program in support of this request for limited modularity shows that the Transmitter module passes the same requirement on its own that its host must meet.