NIVIS

FCC PUBLIC NOTICE
PART 15 UNLICENSED MODULAR TRANSMITTER APPROVAL

Date: 11/30/05 **Time:** 15:00

To: Federal Communications Commission
445 Twelfth St., S.W.
Washington, D.C. 20554

From: LA Bay
1000 Circle 75 Parkway
Suite 300
Atlanta, GA 30339

Phone: 678-202-6858
Fax: 678-202-6820

Applicant: Nivis, LLC
FRN: 0012192977

E-mail: LA.Bay@Nivis.com

Subject: Justification for Limited Module Approval

This Public Notice sets forth the requirements and policies for the authorization of unlicensed, low power "transmitter modules" for operation under Part 15 of the Commission's Rules.

Over the years, the Office of Engineering and Technology (OET) has, on a limited number of occasions, granted approval of modular transmitter circuitry that could be used in a variety of Part 15 devices without requiring those devices to obtain subsequent and separate FCC approvals. Such approvals have been granted in an effort to afford relief to equipment manufacturers by eliminating the requirement that a new equipment authorization be obtained for the same transmitter when it is installed in a new device. More recently, a number of manufacturers have requested information about the conditions under which such modular approvals might be granted. This Public Notice sets forth the requirements for approval of modular transmitter equipment designs. These requirements are in addition to what is normally required for an application for an intentional radiator.

Several factors should be considered when seeking an equipment authorization for modular transmitters:

(a) In order to be considered a transmitter module, the device must be a complete RF transmitter, i.e., it must have its own reference oscillator (e.g., VCO), antenna, etc. The only connectors to the module, if any, may be power supply and modulation/data inputs.

The Nivis RF Module 6.0 is a 4 layer printed circuit board that acts a standalone RF module. The radio section utilizes a 14.7546MHz crystal as the reference oscillator. The RF Module 6.0 plugs into a baseboard that acts as the power supply.

(b) Compliance with FCC RF Exposure requirements may, in some instances, limit the output power of a module and/or the final applications in which the approved module may be employed.

The RF power output for the Nivis RF Module 6.0 has a typical output power of 400mW.

(c) While the applicant for a device into which an authorized module is installed is not required to obtain a new authorization for the module, 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 Nivis RF Module 6.0 is designed to be mounted on a baseboard and put inside various enclosures. No variation in radio circuitry occurs.

(d) In the case of a modular transceiver, the modular approval policy only applies to the transmitter portion of such devices. Pursuant to Section 15.101(b), the receiver portion will either be subject to Verification, or it will not be subject to any authorization requirements (unless it is a Scanning Receiver, in which case it is also subject to Certification, pursuant to Section 15.101(a)).

(e) The holder of the grant of equipment authorization (Grantee) of the module is responsible for the compliance of the module in its final configuration, provided that the OEM, integrator, and/or end user has complied with all of the instructions provided by the Grantee which indicate installation and/or operating conditions necessary for compliance.

The Nivis RF Module 6.0 is designed to be mounted on a baseboard and put inside various enclosures. No variation in radio circuitry occurs.

In order to obtain a modular transmitter approval, a cover letter requesting modular approval must be submitted and the numbered requirements identified below must be addressed in the application for equipment authorization.

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 Part 15 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 Nivis RF Module 6.0 is a completely self contained radio which has its own RF shielding. No other RF shielding is required or implemented.

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

The Nivis RF Module 6.0 is a completely self contained radio which modulates its own RF transmitter. It controls the data flow to the transmitter section compliant with Part 15 requirements.

3) 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 power supply regulation for the RF Module 6.0 is handled through the baseboard that powers the RF Module. The input voltage to the modem is controlled on this baseboard through circuitry which is fixed.

4) The modular transmitter must comply with the antenna requirements of Section 15.203 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). 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 Section 15.203 may not be applied to modules.

The Nivis RF Module 6.0 employs a reverse polarity SMA antennae.

NIVIS

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 Part 15 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 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 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 Section 15.31(i)).

The Nivis RF Module 6.0 was tested as a standalone unit with a standard 9m cable.

6) The modular transmitter must be labeled 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 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.

The Nivis RF Module 6.0 consists of a printed circuit board which is labeled with the FCC identification number. This PCB can be mounted in a host of devices and each device that this PCB utilizes will have the FCC ID number visible to the consumer.

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

The Nivis RF Module 6.0 comes equipped with embedded firmware that controls these parameters.

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 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.

The Nivis RF Module 6.0 complies with RF exposure requirements for Mobile Equipment.

Sincerely

LA Bay
VP of Operations
Nivis, LLC