



Testing Tomorrow's Technology

**Nivis, LLC
FCC Part 15, Certification Application
Nivis NRD Module
Model IC-NRD2-01-01**

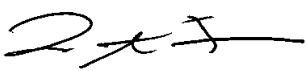
**UST Project: 06-0105
Issue Date: July 6, 2006**

**3505 Francis Circle Alpharetta, GA 30004
PH: 770-740-0717 Fax: 770-740-1508
www.ustech-lab.com**



I certify that I am authorized to sign for the manufacturer and that all of the statements in this report and in the Exhibits attached hereto are true and correct to the best of my knowledge and belief:

UNITED STATES TECHNOLOGIES, INC. (AGENT RESPONSIBLE FOR TEST):

By: 

Name: Louis A. Feudi

Title: VPI Operations & Engineering

Date: August 7, 2006

Nivis. LLC
900 Circle 75 Parkway, Suite 1700
Atlanta, GA 30339

By: _____

Name: _____

Title: _____

Date: _____

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MEASUREMENT/TECHNICAL REPORT

This report concerns (check one): Original grant X
Class II change _____

Equipment type:

Spread-Spectrum Frequency Hopping RF modem that operates in the 902-928 MHz ISM band

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? yes _____ No X

If yes, defer until: _____
date

N.A. agrees to notify the Commission by N.A.
date

of the intended date of announcement of the product so that the grant can be issued on that date.

Report prepared by:

United States Technologies, Inc.
3505 Francis Circle
Alpharetta, GA 30004

Phone Number: (770) 740-0717

Fax Number: (770) 740-1508

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SECTION 1

GENERAL INFORMATION

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GENERAL INFORMATION

1.1 Product Description

The Equipment Under Test (EUT) is the Nivis NRD Module, IC-NRD2-01-01. The EUT is a frequency-hopping wireless module that allows a wireless communication using a standard asynchronous serial data stream. The half-duplex transmission of the modem can sustain a continuous data stream at the specified data rate of 9600 bps. The module is a 902-928 MHz Frequency Hopping Spread Spectrum Transceiver.

1.2 Related Submittal(s)/Grant(s)

The EUT will be used to send/receive data. The transceiver presented in this report will be used with other like transceivers:

The EUT is subject to the following authorizations:

- a) Certification as a transceiver (modular approval)
- b) Verification as a digital device

The information contained in this report is presented for the certification & verification authorization(s) for the EUT. The manufacturer desires to seek a modular approval on this device.

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SECTION 2

TESTS AND MEASUREMENTS

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TEST AND MEASUREMENTS

2.1 Configuration of Tested System

The sample was tested per ANSI C63.4, Methods of Measurement from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (1992). Conducted and radiated emissions data were taken with the test receiver or spectrum analyzer's resolution bandwidth adjusted to 9 kHz and 120 kHz, respectively. All measurements are peak unless stated otherwise. The video filter associated with the spectrum analyzer was off throughout the evaluation process. Interconnecting cables were manipulated as necessary to maximize emissions. Block diagrams of the tested systems are shown in Figures 1a and 16. Test configuration photographs for spurious and fundamental emissions are shown in Figure 2a -g.

The sample used for testing was received by U.S. Technologies on May 9, 2006 in good condition.

2.2 Test Facility

Testing was performed at US Tech's measurement facility at 3505 Francis Circle, Alpharetta, GA. This site has been fully described and submitted to the FCC, and accepted in their letter marked 31040/SIT. Additionally this site has also been fully described and submitted to Industry Canada (IC), and has been approved under file number IC2982.

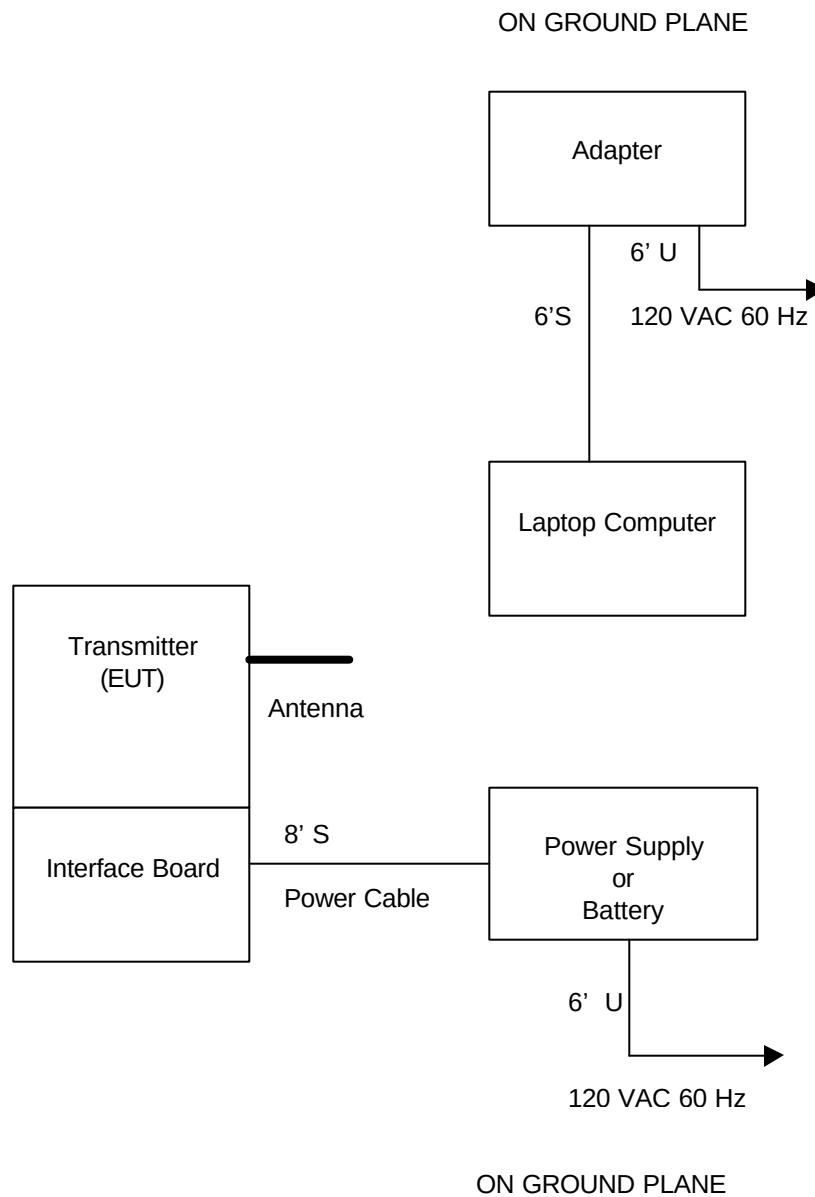
2.3 Test Equipment

Table 2 describes test equipment used to evaluate this product.

2.4 Modifications

No modifications were made by US Tech, to bring the EUT into compliance with FCC Part 15, Class B Limits for the transmitter portion of the EUT or the Class B Digital Device Requirements.

FIGURE 1
TEST CONFIGURATION



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TABLE 1**EUT and Peripherals**

PERIPHERAL MANU.	MODEL NUMBER	SERIAL NUMBER	FCC ID:	CABLES P/D
Transmitter (EUT) Nivis, LLC	NIVIS NRD MODULE MODEL IC- NRD2-01-01	1232	SQB- NIVISP9050103 (Pending)	Board Mount
Interface Board Landis & Gyr, Inc.	ASSY71217	None	None	Plugged Directly into Transmitter 8' S Power Cable
AC Adapter Total Micro Technologies	Notebook AC Adapter F1454A-TM	None	None	6' U 120 VAC/ 60 Hz Power Cord
Laptop Computer Hewlett Packard	Omnibook XE2	TW02210231	None	6' S
Power Supply BK Precision	1627A	D30310639	None	6' U 120 VAC/ 60 Hz Power Cord

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**TABLE 2
TEST INSTRUMENTS**

EQUIPMENT	MODEL NUMBER	MANUFACTURER	SERIAL NUMBER	DATE OF LAST CALIBRATION
SPECTRUM ANALYZER	8558B	HEWLETT-PACKARD	2332A10055	3/21/06
SPECTRUM ANALYZER	8593E	HEWLETT-PACKARD	3205A00124	7/3/06
SIGNAL GENERATOR	8648B	HEWLETT-PACKARD	3642U01679	9/15/05
RF PREAMP	8447D	HEWLETT-PACKARD	2944A06291	5/24/06
BICONICAL ANTENNA	BIA-25	Electro Metrics	9307-1431	5/25/06
LOG PERIODIC	3146	EMCO	3110-3236	9/15/05
LISN (x 2) 8028-50-TS24-BNC	8028	SOLAR ELE.	910494 & 910495	3/29/06
HORN ANTENNA	SAS-571	A. H. SYSTEMS	605	04/5/05 (2 year)
PREAMP	8449B	HEWLETT PACKARD	3008A00480	08/10/06
CALCULATION PROGRAM	N/A	N/A	Ver. 6.0	N/A

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2.6 Antenna Description (Paragraph 15.203)

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The Nivis modem uses a reverse SMA connector for the Dual Band Antenna.

Comtelco Dual Band Mobile Antenna

Type of antenna: Dual band cellular PCS mobile antenna, ultra-wide band performance covering 806 – 928 and 1710-1970 Mhz.

Model number: A11382B

Part number: 438155

Manufacturer: Comtelco Industries

Antenna gain: 2dBi gain.

Type of connector: SMA connector

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2.7 Peak power within the band 902 – 928 MHz per FCC Section 15.247(b)

Peak power within the band 902 – 928 MHz has been measured with a spectrum analyzer by connecting the spectrum analyzer directly via a short cable to the antenna output terminals or across the antenna leads on the PCB as specified by the manufacturer. The spectrum analyzer was set for a 50 Ω impedance with the VBW $\geq$ RBW 6 dB bandwidth. The results of the measurements are given in Table 3 and Figure 3a1 through Figure 3b3.

Fundamental Frequencies were measured at Low Channel, Mid Channel, High Channel.

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TABLE 3a
PEAK POWER OUTPUT
Dual Band Antenna

Frequency of Fundamental (MHz)	Measurement (dBm)*	Measurement (mW)*	FCC Limit (Watt)
910.450	27.08	510.5	1.0
918.148	27.52	564.9	1.0
927.420	26.58	455.0	1.0

* Measurement includes 0.1 dB for cable loss

Test Date: April 20, 2006

Tested by
Signature: _____



Name: Austin Thompson

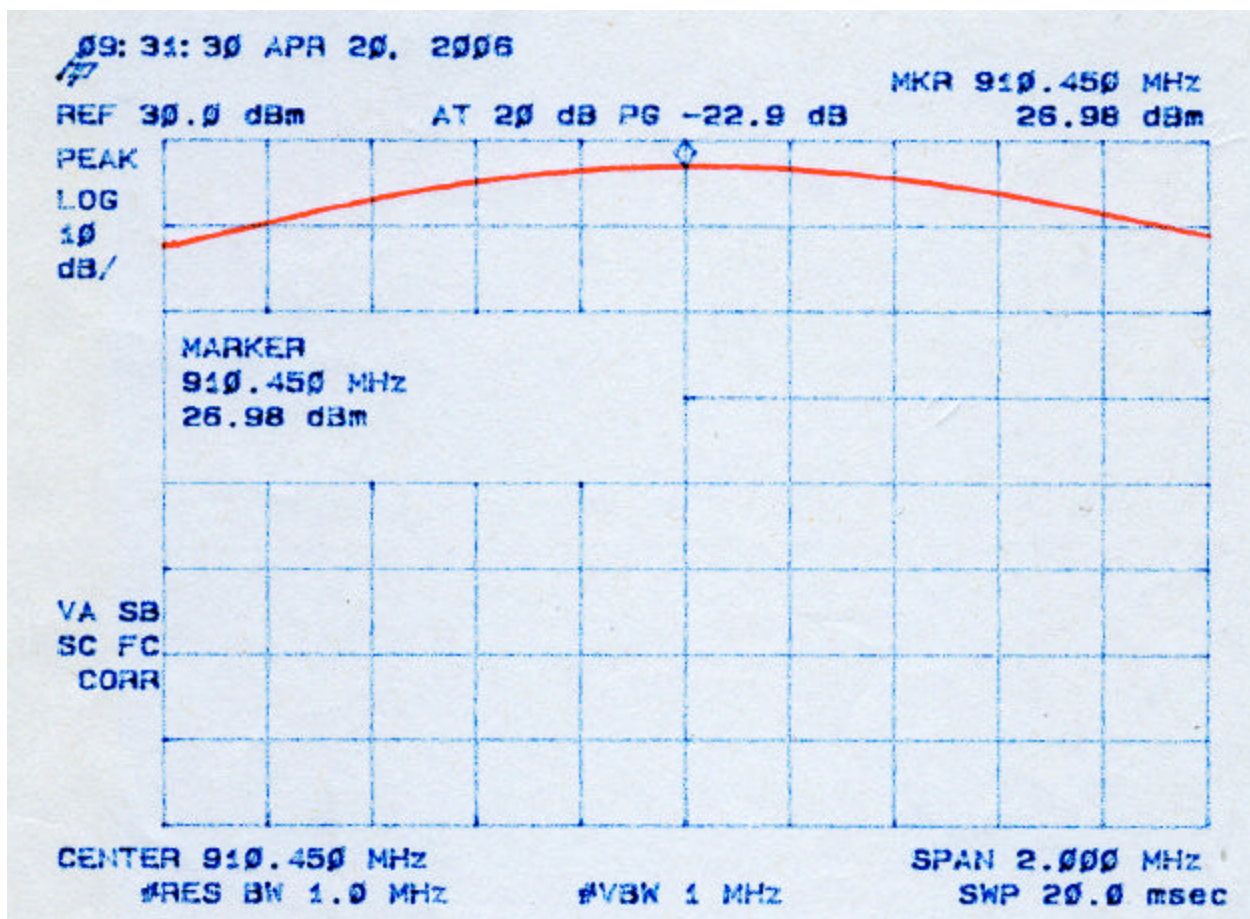
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Figure 3a1.
Peak Power per FCC Section 15.247(b) (Low Channel)



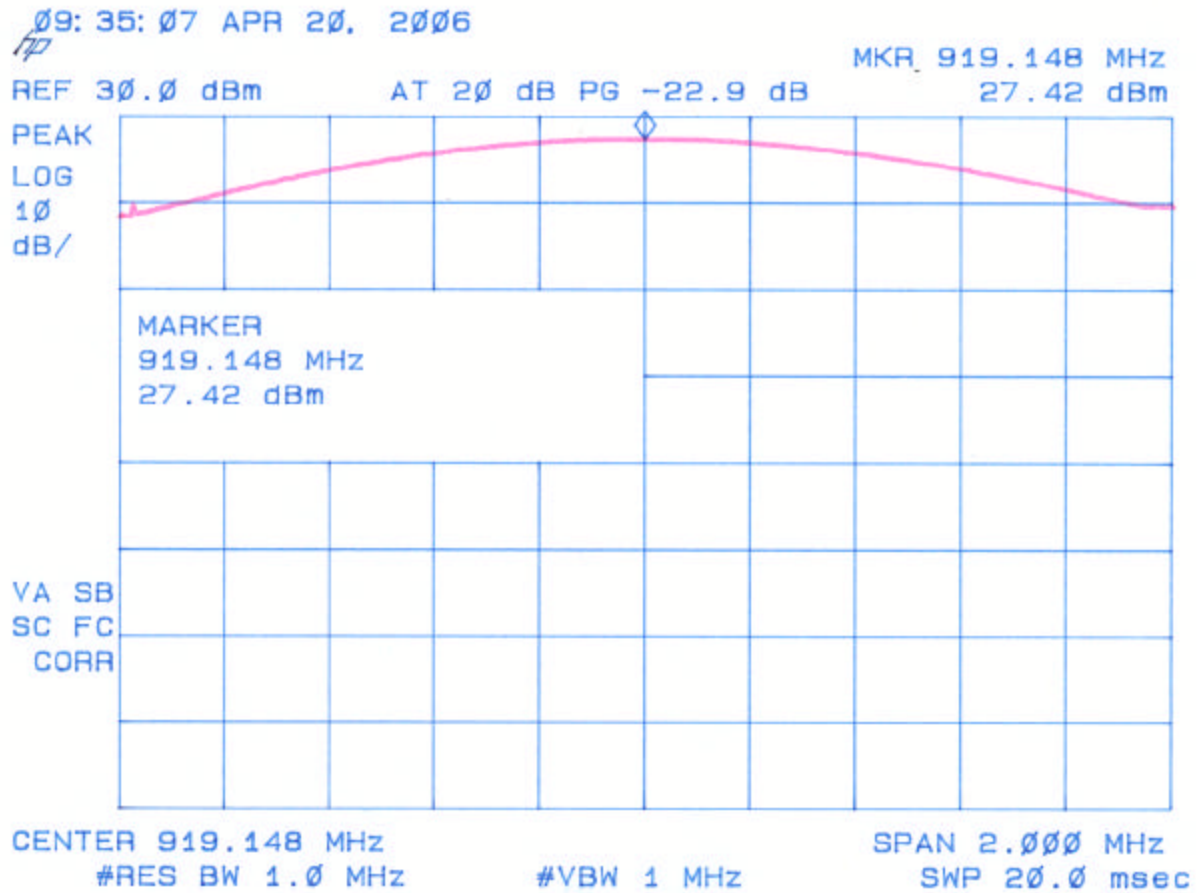
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Figure 3a2.
Peak Power per FCC Section 15.247(b) (Mid Channel)



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Figure 3a3.
Peak Power per FCC Section 15.247(b) (High Channel)

