TEST RESULT SUMMARY

FCC PART 15 SUBPART C
Section 15.247
Industry Canada RSS-210: Issue 5: 2001
A1: Nov. 2002, A2: Apr. 2003, A3: 2004, A4: 2004
Section 6.2.2(o)

MANUFACTURER'S NAME	Digi International
NAME OF EQUIPMENT	Digi Connect Wi-SP with Dipole antenna or with Desktop antenna and extension cable
TYPE OF EQUIPMENT	802.11B 11 Mbit 2.4 GHz radio transceiver to single serial port converter with 2 antenna options
MODEL NUMBER	**50001312-01 Rev 01**
MANUFACTURER'S ADDRESS	11001 Bren Road East Minnetonka, MN 55343
TEST REPORT NUMBER	WC500423.1 Rev A
TEST DATE	02 & 03 February 2005

According to testing performed at TÜV Product Service Inc, the above-mentioned unit is in compliance with the electromagnetic compatibility requirements defined in FCC Part 15 Subpart C Section 15.247 and RSS-210, section 6.2.2(o).

It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical characteristics. Any modifications necessary for compliance made during testing on the above mentioned date(s) must be implemented in all production units for compliance to be maintained.

TÜV Product Service Inc, as an independent testing laboratory, declares that the equipment tested as specified above conforms to the requirements of FCC Part 15 Subpart C Section 15.247 and RSS-210, section 6.2.2(o).

Date: 22 April 2005

Location: Taylors Falls MN USA

R. M. Johnson
Tested By

T. K. Swanson
Reviewed By

Not Transferable

EMC EMISSION - T E S T R E P O R T

Test Report File No.	:	**WC500423.1 Rev A**	Date of issue:	22 April 2005

Model No.	:	**50001312-01 Rev 01**
Product Name	:	Digi Connect Wi-SP with Dipole antenna or with Desktop antenna and extension cable
Product Type	:	802.11B 11 Mbit 2.4 GHz radio transceiver to single serial port converter with 2 antenna options
Applicant	:	Digi International
Manufacturer	:	Digi International
License holder	:	Digi International
Address	:	11001 Bren Road East
	:	Minnetonka, MN 55343
Test Result	:	■ **Positive** ☐ **Negative**
Test Project Number Reference(s)	:	**WC500423.1 Rev A**
Total pages		50

TÜV Product Service Inc is a subcontractor to TÜV Product Service, GmbH according to the principles outlined in ISO/IEC Guide 25 and EN 45001.

TÜV Product Service Inc reports apply only to the specific samples tested under stated test conditions. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. TÜV Product Service Inc shall have no liability for any deductions, inferences or generalizations drawn by the client or others from TÜV Product Service Inc issued reports.

This report is the confidential property of the client. As a mutual protection to our clients, the public and ourselves, extracts from the test report shall not be reproduced except in full without our written approval. This report shall not be used by the client to claim product endorsement by NVLAP or any agency of the US government.

TÜV Product Service Inc and its professional staff hold government and professional organization certifications and are members of AAMI, ACIL, AEA, ANSI, IEEE, NVLAP, and VCCI

TÜV PRODUCT SERVICE INC 19333 Wild Mountain Road Taylors Falls MN 55084-1758 Tel: 651 638 0297 Fax: 651 638 0298 Rev.No 1.0

REVISION RECORD

REVISION	TOTAL NUMBER OF PAGES	DATE	DESCRIPTION
	49	14 March 2005	Initial Release
A	50	22 April 2005	Revisions include: ▪ Added information on the 2 antenna models on the test result summary page and pages 1 and 9.

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EMISSIONS TEST REGULATIONS :

The emissions tests were performed according to following regulations:

☐ - EN 50081-1 / 1991

☐ - EN 55011 / 1998 w/Amendment A1:1999 ☐ - Group 1 ☐ - Group 2 ☐ - Class A ☐ - Class B

☐ - EN 55013 / 1990

☐ - EN 55014 / 1987 ☐ - Household appliances and similar ☐ - Portable tools ☐ - Semiconductor devices

☐ - EN 55014 / A2: 1990

☐ - EN 55014 / 1993 ☐ - Household appliances and similar ☐ - Portable tools ☐ - Semiconductor devices

☐ - EN 55015 / 1987

☐ - EN 55015 / A1:1990

☐ - EN 55015 / 1993

☐ - EN 55022 / 1987 ☐ - Class A ☐ - Class B

■ - FCC Part 15 Subpart C Section 15.247

☐ - FCC Part 15 Subpart C Section 15.207 Conducted Emission Requirements

■ - RSS-210, Issue 5, 2001 – Section 6.2.2(o)

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Emission Test Results:

Peak Power Out [FCC 15.247 (b)(3)], [RSS-210 6.2.2(o)(b)]

The requirements are ■ - MET ☐ - NOT MET

Maximum peak power output shall be 1 watt.

Remarks: Max peak output power is measured to be 23.63 dBm (230.6 mW).

6 dB Bandwidth [FCC 15.247 (a)(2)], [RSS-210 6.2.2(o) Amd. 1 (IV)]

The requirements are ■ - MET ☐ - NOT MET

The minimum 6 dB bandwidth shall be at least 500 kHz.

Remarks: Bandwidths are shown to be 9.35 to 9.95 MHz.

99% Bandwidth [RSS-210 5.9.1]

The requirements are ■ - MET ☐ - NOT MET

The minimum

Remarks: Bandwidths are shown to be 13.18 to 14.8 MHz.

Power Spectral Density – [FCC 15.247 (e)], [RSS-210 6.2.2(o) Amd. 1 (IV)]

The requirements are ■ - MET ☐ - NOT MET

Peak power spectral density shall not be greater than 8 dBm in any 3 kHz band.

Remarks: Maximum peak power spectral density is -13.34 dBm/3 kHz.

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Emission Test Results Continued:

Conducted Out of Band Emissions [FCC 15.247 (d)], [RSS-210 6.2.2(o)(e1)]

The requirements are ■ - MET ☐ - NOT MET

Remarks: The limit is -20 dBc in any 100 kHz band outside the operating band.

Special attention is paid to ensure band edge compliance.

Spurious radiated emissions (electric field) 30 MHz - 1000 MHz (restricted bands) [FCC 15.247 (d)]

The requirements are ■ - MET ☐ - NOT MET

Minimum margin of compliance >10 dB at _____ MHz

Maximum margin of non-compliance _____ dB at _____ MHz

Remarks: Meets FCC 15.209 limit. No emissions detected above the noise level of the measuring system.

Spurious radiated emissions 1 GHz – 25 GHz (restricted bands) [FCC 15.247 (d)]

The requirements are ■ - MET ☐ - NOT MET

Minimum margin of compliance 8 dB at 18.0 GHz

Maximum margin of non-compliance _____ dB at _____ MHz

Remarks: Meets FCC 15.209 limit. No emissions detected above the noise level of the measuring system.

AC Line Conducted emissions 150 kHz - 30 MHz [FCC 15.207], [RSS-210 (CISPR 22)]

The requirements are ■ - MET ☐ - NOT MET ☐ - N/A

Minimum margin of compliance 8 dB at 298.4 kHz

Maximum margin of non-compliance _____ dB at _____ MHz

Remarks: _____

Receiver Spurious Radiated Emissions [FCC 15.109]

The requirements are ■ - MET ☐ - NOT MET

Minimum margin of compliance >10 dB at _____ MHz

Maximum margin of non-compliance _____ dB at _____ MHz

Remarks: Meets FCC 15.209 limit. No emissions detected above the noise level of the measuring system.

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MEASUREMENT PROTOCOL

GENERAL INFORMATION

Environmental conditions in the lab: TUV America Small Test Site

	Actual
Temperature	: 10 °C
Relative Humidity	: 35 %
Atmospheric pressure	: 98.0 kPa
Power supply system	: 60 Hz - 110 VAC - 1 Phase

Test Methodology

Conducted and radiated emission testing is performed according to the procedures in International Special Committee on Radio Interference (CISPR) Publication 22 (1993), European Standard EN 55022 and Australian Standard AS 3548 (which are based on CISPR 22).

The Japanese standard, "Voluntary Control Council for Interference (VCCI) by Data Processing Equipment and Electronic Office Machines, Technical Requirements" is technically equivalent to CISPR 22 (1993). For official compliance, a conformance report must be sent to and accepted by the VCCI.

In compliance with FCC Docket 92-152, "Harmonization of Rules for Digital Devices Incorporate International Standards", testing for FCC compliance may be done following the ANSI C63.4-2001 procedures and using the CISPR 22 Limits.

Measurement Uncertainty

The test system for conducted emissions is defined as the LISN, tuned receiver or spectrum analyzer, and coaxial cable. The test system for radiated emissions is defined as the antenna, the pre-amplifier, the spectrum analyzer and the coaxial cable. These test systems have a measurement uncertainty of ±4.8 dB. The equipment comprising the test systems are calibrated on an annual basis.

Justification

The Equipment Under Test (EUT) is configured in a typical user arrangement in accordance with the manufacturer's instructions. A cable is connected to each available port and either terminated with a peripheral into it's characteristic impedance or left unterminated. When appropriate, the cables are manually manipulated with respect to each other to obtain maximum emissions from the unit.

CONDUCTED EMISSIONS

The final level, expressed in dBμV, is arrived at by taking the reading directly from the EMI receiver. This level is compared directly to the CISPR limit.

To convert between dBμV and μV, the following conversions apply:

dBμV = 20(log μV)

μV = Inverse log(dBμV/20)

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RADIATED EMISSIONS

The final level, expressed in dBμV/m, is arrived at by taking the reading from the spectrum analyzer (Level dBμV), adding the antenna correction factor and cable loss factor (Factor dB) to it, then subtracting the preamp gain. This result then has the CISPR limit subtracted from it to provide the Delta which gives the tabular data as shown in the data sheets in Attachment A.

Example:

FREQ (MHz)	LEVEL (dBuV)		CABLE/ANT/PREAMP (dB)	(dB/m)	(dB)		FINAL (dBuV/m)		POL/HGT/AZ (m)	(deg)	DELTA1 EN 55022 A
60.80	42.5Qp	+	1.2	+ 10.9	- 25.5	=	29.1	V	1.0	0.0	-10.9

DETAILS OF TEST PROCEDURES

General Standard Information

The test methods used comply with ANSI C63.4-2001 - "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz."

Conducted Emissions

Conducted emissions on the 50 Hz and/or 60 Hz power interface of the EUT are measured in the frequency range of 150 kHz to 30 MHz. The measurements are performed using a receiver, which has CISPR characteristic bandwidth and quasi-peak detection, and a Line Impedance Stabilization Network (LISN), with 50 Ω/50 μH (CISPR 16) characteristics. Table top equipment is placed on a non-conducting table 80 centimeters above the floor and is positioned 40 centimeters from the vertical ground plane (wall) of the screen room. In some cases, a pre-scan using a spectrum analyzer is initially performed on the units comprising the system under test to locate the highest emissions. If the minimum passing margin appears to be less than 20 dB with a peak mode measurement, the emissions are re-measured using a tuned receiver or spectrum analyzer with quasi-peak and average detection and recorded on the data sheets.

Radiated Emissions

Radiated emissions from the EUT are measured in the frequency range of 30 to 25000 MHz using a spectrum analyzer and appropriate broadband linearly polarized antennas. Measurements between 30 MHz and 1000 MHz are made with 120 kHz/6 dB bandwidth and quasi-peak detection and measurements above 1000 MHz are made with a 1 MHz/6 dB bandwidth and peak detection. Table top equipment is placed on a 1.0 X 1.5 meter non-conducting table 80 centimeters above the ground plane. Floor standing equipment is placed directly on the turntable/ground plane. Interface cables that are closer than 40 centimeters to the ground plane are bundled in the center in a serpentine fashion so they are at least 40 centimeters from the ground plane. Cables to simulators/testers (if used in this test) are routed through the center of the table and to a screen room located outside the test area. The antenna is positioned 3, 10 or 30 meters horizontally from the EUT. To locate maximum emissions from the test sample the antenna is varied in height from 1 to 4 meters, measurement scans are made with both horizontal and vertical antenna polarizations and the EUT are rotated 360 degrees. The transmitter is rotated through 3 orthogonal axes in order to determine the maximum emission levels.

DEVIATIONS FROM STANDARD:

None

GENERAL REMARKS:

The Digi Connect Wi-SP is available with 2 antenna options of the same type.

One option is the dipole antenna (Digi part number DC-ANT-24DP). It is connected to the product with a reverse polarity SMA connector (sub-miniature size). The antenna only fits on the product one way to ensure a proper connection. This antenna has a gain of 2 dBi.

Another option is to use the desktop antenna (Digi part number DC-ANT-24DT) along with a 30 cm extension cable (Digi part number DC-ANT-E-24DP). This antenna has a gain of 1.8 dBi and the cable has a loss of 0.5 dB.

Testing was performed on the EUT using the dipole antenna, which has the higher gain.

SUMMARY:

The requirements according to the technical regulations are

■ - met

☐ - **not** met.

The device under test does

■ - fulfill the general approval requirements mentioned on page 3.

☐ - **not** fulfill the general approval requirements mentioned on page 3.

Testing Start Date: 02 February 2005

Testing End Date: 02 February 2005

- TÜV PRODUCT SERVICE INC -

Reviewed By:
T. K. Swanson

Tested By:
R. M. Johnson

TÜV PRODUCT SERVICE INC 19333 Wild Mountain Road Taylors Falls MN 55084-1758 Tel: 651 638 0297 Fax: 651 638 0298 Rev.No 1.0

Constructional Data Form(s)

and/or

Product Information Form(s)

TÜV PRODUCT SERVICE INC 19333 Wild Mountain Road Taylors Falls MN 55084-1758 Tel: 651 638 0297 Fax: 651 638 0298 Rev.No 1.0

EMC TEST - PRODUCT INFORMATION FORM

Company Address: 11001 Bren Road East
Minnetonka, MN 55343
Ph: (952) 912-3444 Fax: (952) 912-4955

Digi Engineering Contact: Bill Kumpf **Phone:** 952-912-3444

Digi Homologation Contact: Bill Kumpf **Phone:** 952-912-3444

Equipment Under Test: Digi Connect Wi-SP 802.11b radio to serial converter module.

Model Number: 50001312-01 (50001312-xx) **Rev:** 01

(do not use 30m p/n)
Serial Number: 00001

Test Laboratory: TUV Wild river **Test Date:** Jan 7, Feb 2nd,3rd,4th, 10th 2005

Type of Test:

☐ Development	EN55022:1998/FCC Class B Emissions
X Initial Design Verification	☒ EN55022:1998/FCC Class A Emissions
☐ Design Change	☐ Korea No. 1996-18 (based on CISPR 22)
☐ Production Sample (Audit Test)	☐ Taiwan CNS 13438:1997
☐ Other	☐ EN55024:1998 IT & Telecom Immunity
	☐ EN61000-3-2,3 Supply Harmonics/Flicker
	☒ ETS 301 489-3
EMC – Wireless (Intentional)	**EMC – Wireless (Unintentional)**
x ETS 300 328 (Europe)	ETS 300 826 (Europe)
X FCC Part 15.247, 15.249 / RSS 139, 210	X FCC Part 15, Class B / ICES 003, Class B
☐ ARIB T66 (RCR STD-33) - Japan	☒ VCCI, Class B - Japan

Documentation Requested:

X EN55022:1998 Test Report (FCC Style)	☐ Austel EMC Report
☐ International EMC Report	FCC Test Report
☒ VCCI Test Report	☐ EN55024: 1998 Test Report
☐ Taiwan CNS 13438:1997 Test Report	☐ Korea No. 1996-18 Report
☐ EN61000-3-2, 3:1995	☐ Test Results Summary
☒ ETS 300 328 (Europe)	☐ ETS 301 489-3 Immunity
X FCC Part 15.247, 15.249/RSS 139, 210	

Equipment Description: 802.11B 11 Mbit 2.4 GHz radio transceiver to single serial port converter

Design Changes Made (if applicable)**:**

Oscillator Frequencies: 18.432 MHz, 44Mhz, 2.4GHz pll

Power Interface	AC Power Cable	DC Power Cable
	☐ Hardwired ☐ Flexible ☐ Shielded ☐ Unshielded ☐ Attached ☐ Removable	☐ Hardwired ☐ Flexible ☐ Shielded ☐ Unshielded ☐ Attached ☐ Removable
Frequency: _____ Hz Voltage: _____ V Current _____ A # of Phases:	Gauge ____ AWG Length ____ Ft.	Gauge ____ AWG Length ____ Ft.

Power Line Filter: **Manufacturer:** **Model Number:**

Power Supply:

Description: 12V dc supplied by external brick or wall mounted supply

Manufacturer: N/A

Model Number: N/A

Switching Frequency: N/A

If a Ferrite Bead is used on the AC line cord, give location on cable:

N/A

If a Ferrite Bead is used on the DC line cord, give location on cable:

N/A

Housing or Cabinet Type: Plastic **x** Metallized ☐ Metal Other ☐
Host Board Only, Housed in PC ☐

Cabinet Shielding Provision : N/A

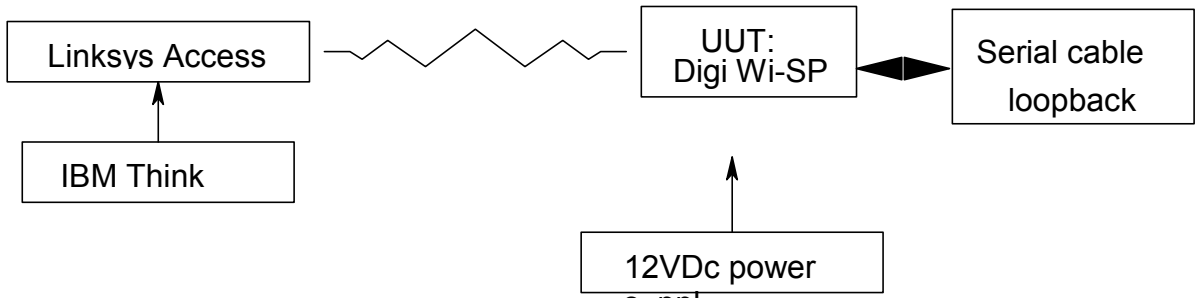
Interfacing Equipment or Simulators

Description	Model Number	Serial Number	FCC ID#
Linksys access point	WAP11	G3110304780	07JGL2411AP
IBM Think Pad PC	Type 2611	AA-DVBCD	7K85E145483 3872B567

I/O Cables

Function	Length	Quantity	Location	Type	Shield Termination
SERIAL CABLE	1M	1	Connected to UUT	SHIELDED	CONNECTOR SHELL

Block Diagram:



Software and/or Operating Modes: **FCC software -- "H"'s out of serial port and across radio link.**

Further Notes:

Constructional Data Form for EMC-certificate testing

TÜV Product Service Inc
1775 Old Highway 8
New Brighton MN 55112-1891

Telephone 612 631 2487
Telefax 612 631 3515

General equipment description *for EMC-certificate testing*

Applicant: Digi International
Address: 11001 Bren Road East
Minnetonka MN 55343

Type of equipment	802.11B 11 Mbit 2.4 GHz radio transceiver to single serial port converter	Rated voltage	12VDc
Type No./model	Wi-SP 50001312-01	Rated input power	3W Max
		Protection class	na

Check the appropriate:

Kind of interference:
☐ Broadband interference x Narrowband interference ☐ Click interference

Repetition frequency:
☐ <10 kHz x >10 kHz

Sources of interference
(e.g. motor, switch mode power supply, quartz oscillator)
Quartz oscillator
[1]) Internal frequencies 18.432 MHz, 44Mhz, 2.4GHz pll
(e.g. clock frequency, deflection frequency, switching frequency)

[1]) Devices used for RFI suppression (include manufacturer and model no.) na

[1]) Measures for electromagnetic shielding (include type, manufacturer and model no.) na

[1]) External interfaces and connections (include manufacturer and model no.) na

[1]) Description of modes or operation during test FCC software -- "H"'s on serial port and across radio link

[1]) Please include detailed information and if applicable, refer to the appropriate Product Information Form or attachment

date _____ date _____
TÜV Product Service Inc Seal and signature of applicant

Test Data

TÜV PRODUCT SERVICE INC 19333 Wild Mountain Road Taylors Falls MN 55084-1758 Tel: 651 638 0297 Fax: 651 638 0298 Rev.No 1.0

Maximum Power Output

Specifications:
FCC Specification: Paragraph: 15.247 (b)(3)
IC Specification: RSS-210, 6.2.2(o)(b)

The *MAXIMUM POWER OUTPUT* measurements were performed at the following test location:

☐ **- Test not applicable**

☐ - Wild River Lab Large Test Site (Open Area Test Site)
■ - Wild River Lab Small Test Site (Open Area Test Site)
☐ - Oakwood Lab (Open Area Test Site)
☐ - Wild River Lab Screen Room

Test equipment used :

TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
3334	8542C	Giga-tronics	Peak Power Meter	1831096	02-Apr-05
3336	80350A	Giga-tronics	Peak Power Sensor	1822765	27-May-05

Cal Code B = Calibration verification performed internally. Cal Code Y = Calibration not required when used with other calibrated equipment.

All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST) and is calibrated annually.

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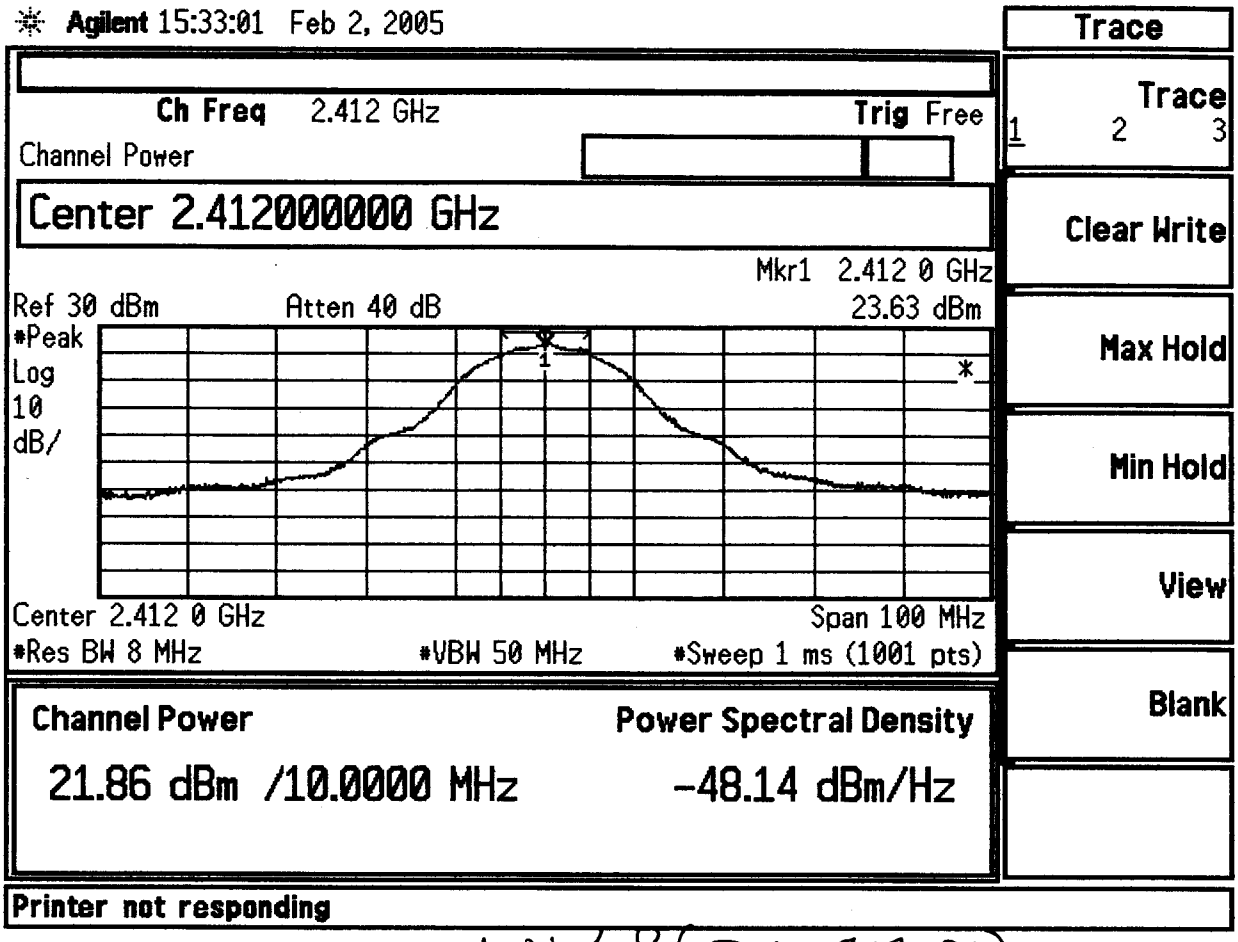


W15P (5060132-01)

CH-1 MAX PEAK OUTPUT POWER

PWR SETTING - 15

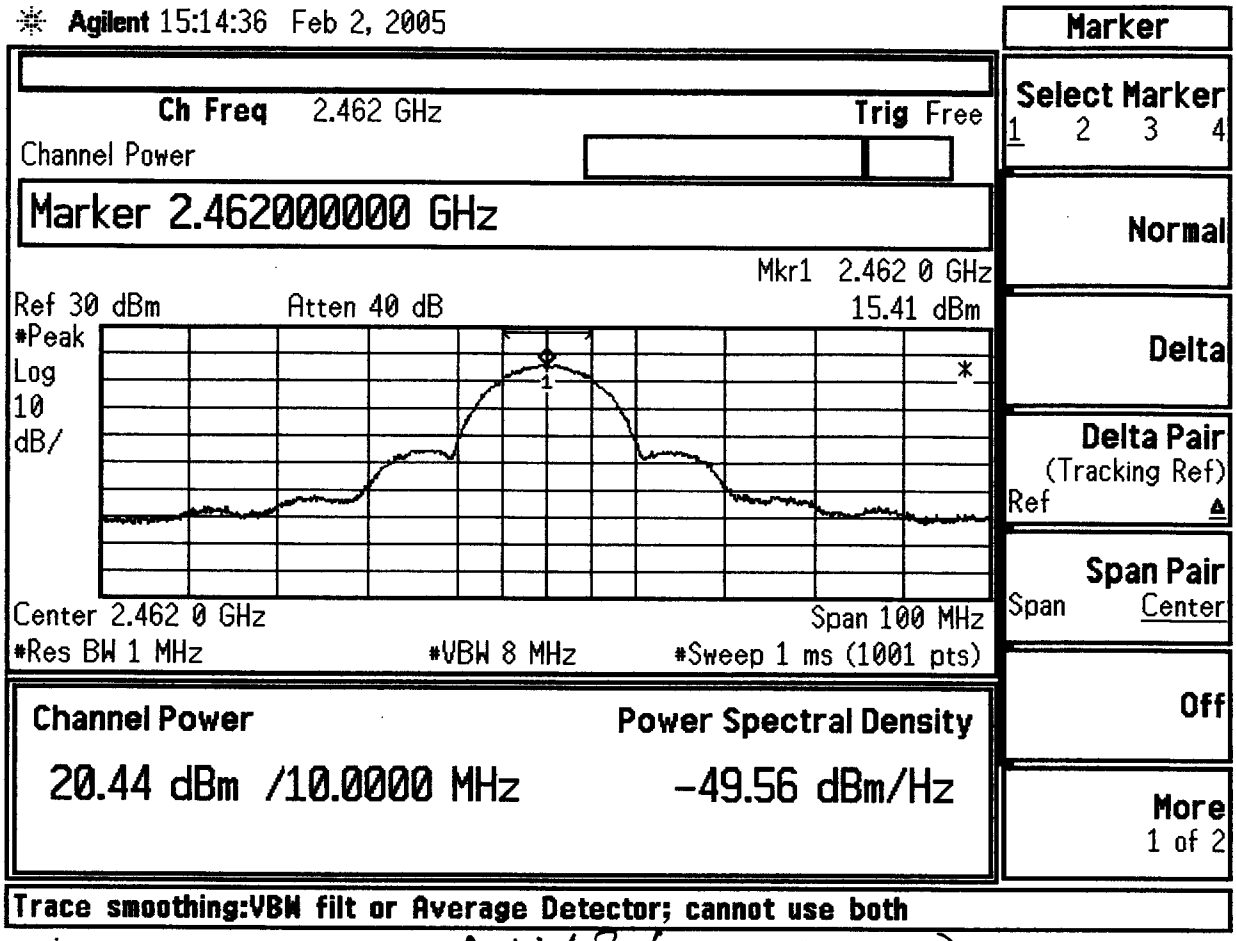
FCC

PEAK POWER SPECTRAL DENSITY

-48.14 dBm/Hz

+34.8

-13.34 dBm/3KHZ vs. limit of +8dBm



WiSP (50001312-01)

CH-11 MAX PEAK OUTPUT POWER

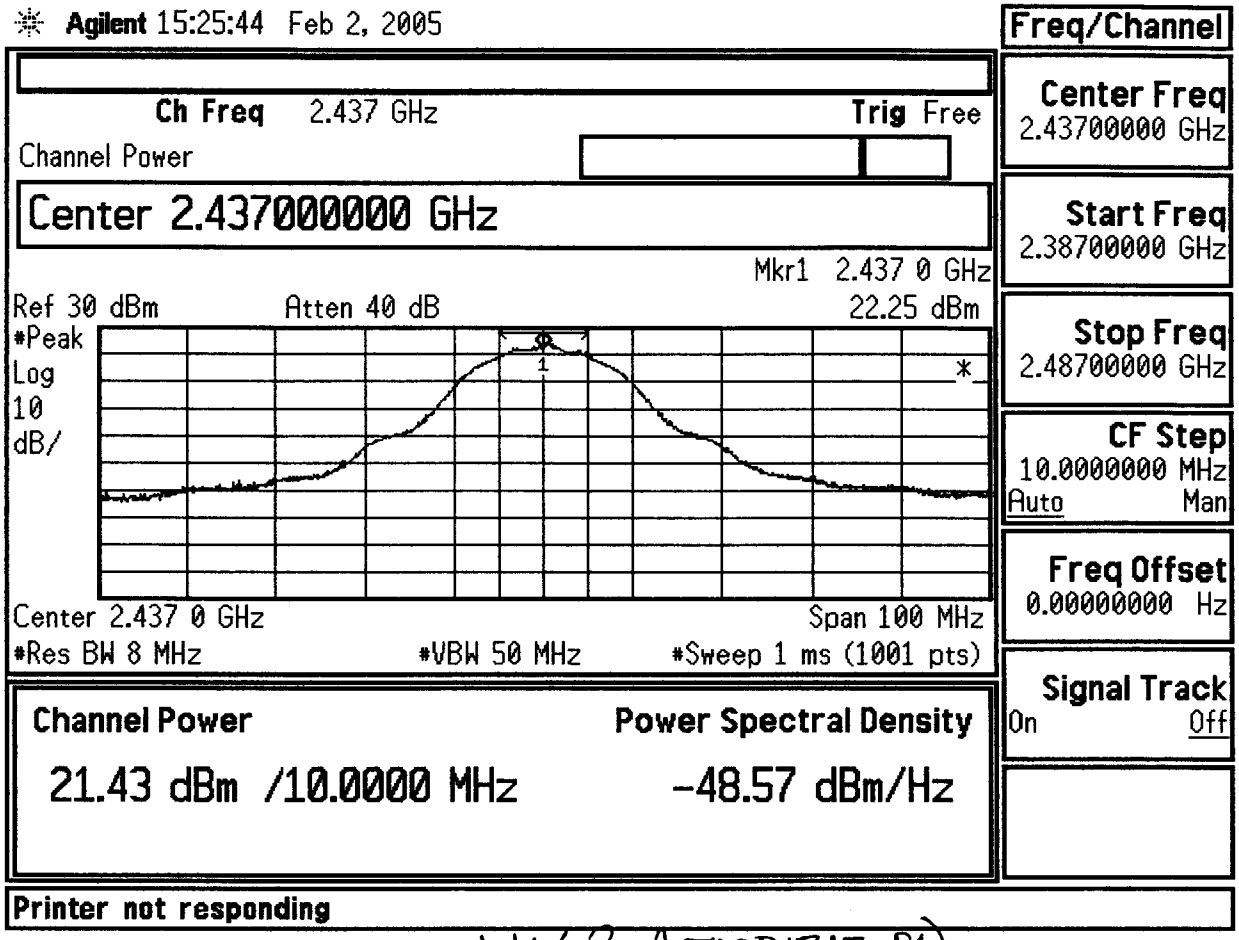
FCC PWR SETTING - 15

PEAK POWER SPECTRAL DENSITY

-49.56 dBm/Hz

+ 34.8

-14.76 dBm/3KHz



WiSR (5000131Z-01)

CH-6 MAX PEAK OUTPUT POWER

PWR SETTING ~ 15

FCC

PEAK POWER SPECTRAL DENSITY

-48.57 dBm/Hz

+ 34.8

-13.77 dBm/3KHz

6 dB Bandwidth

Specifications:
FCC Specification: Paragraph: 15.247 (a)(2)
IC Specification: RSS-210, 6.2.2(o) Amd. 1 (IV)

The *6 dB Bandwidth* measurements were performed at the following test location:

☐ **- Test not applicable**

☐ - Wild River Lab Large Test Site (Open Area Test Site)
■ - Wild River Lab Small Test Site (Open Area Test Site)
☐ - Oakwood Lab (Open Area Test Site)
☐ - Wild River Lab Screen Room

Test equipment used :

TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
3367	E4440A	Agilent	Spectrum Analyzer	MY43362222	25-Aug-05

Cal Code B = Calibration verification performed internally. Cal Code Y = Calibration not required when used with other calibrated equipment.

All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST) and is calibrated annually.

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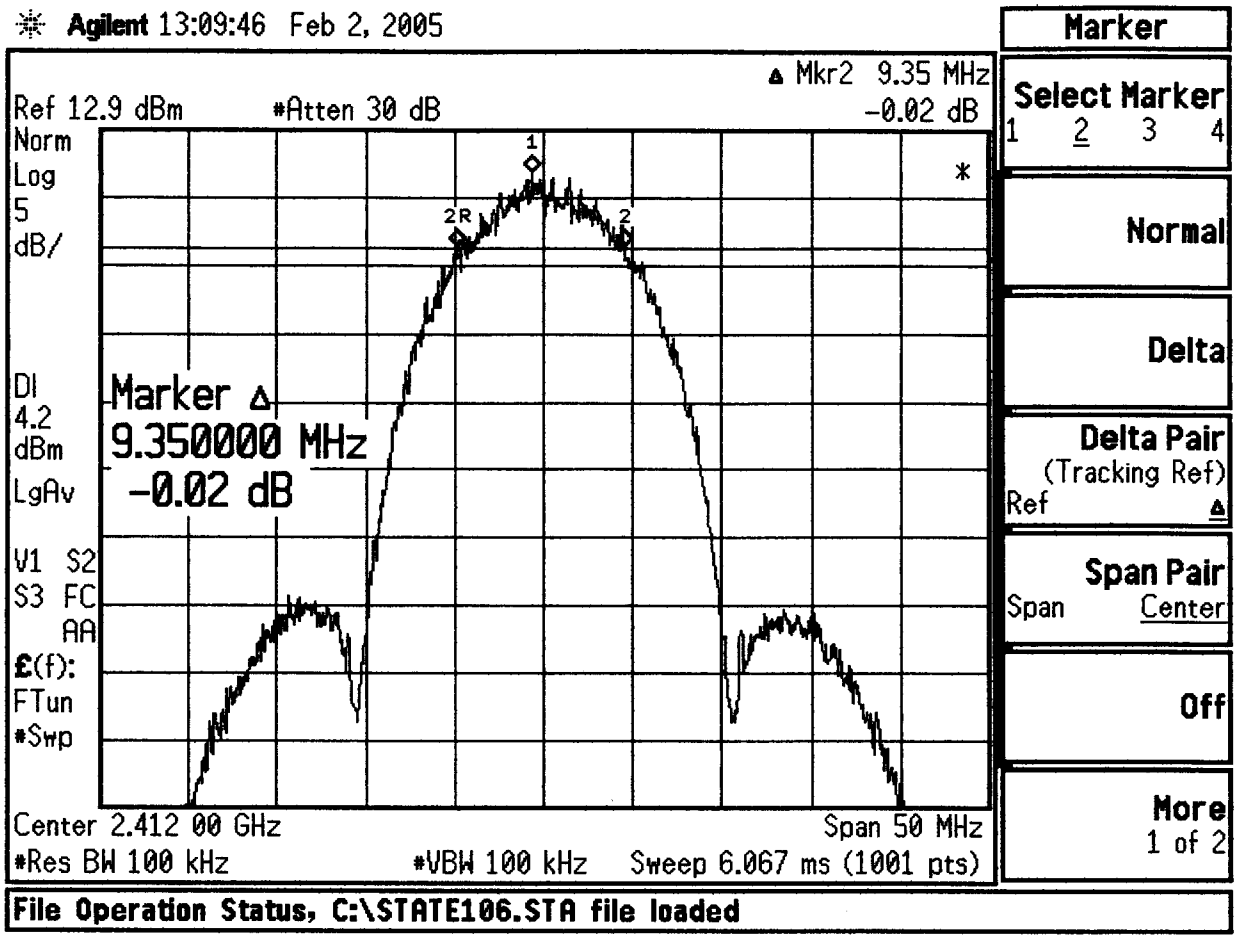
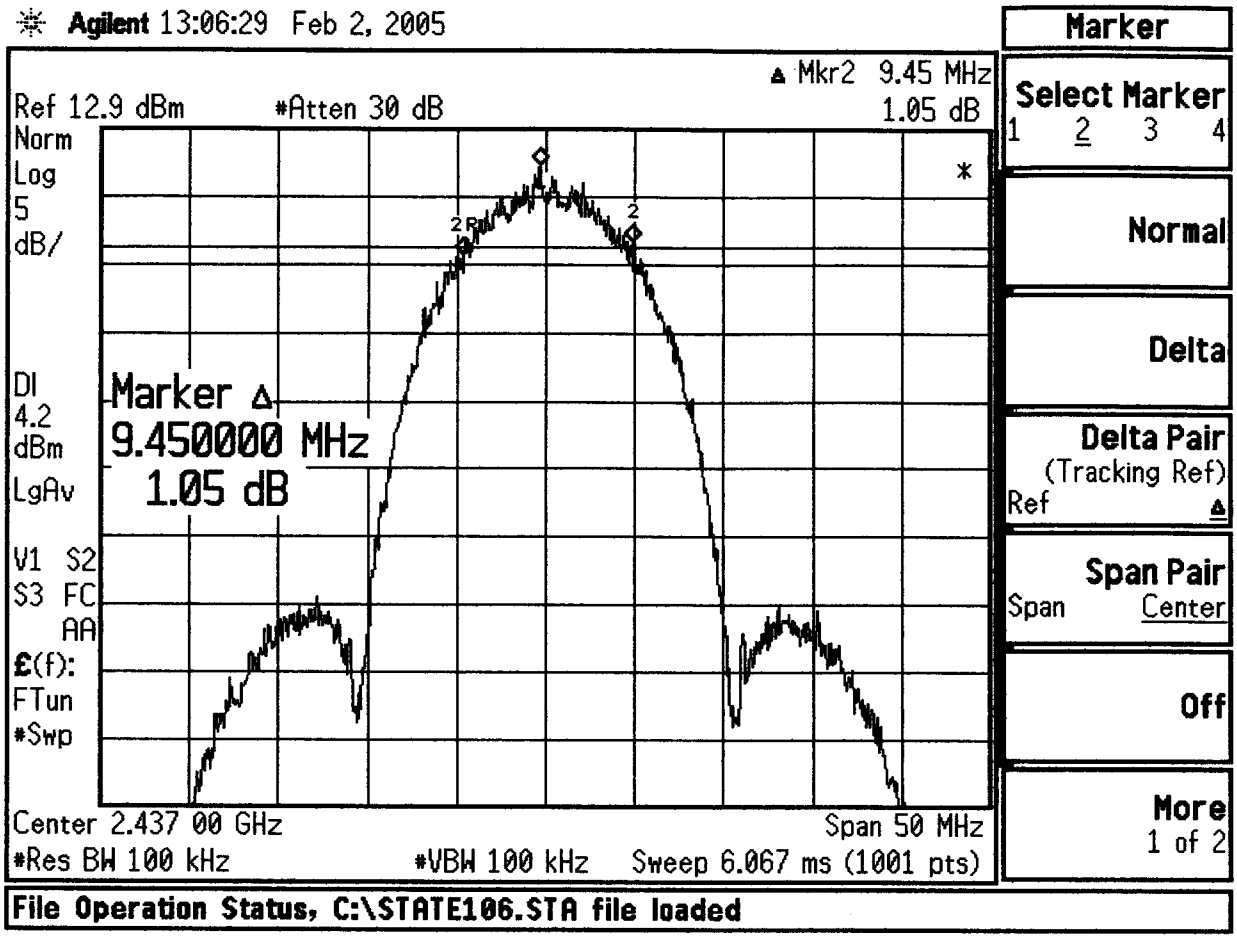


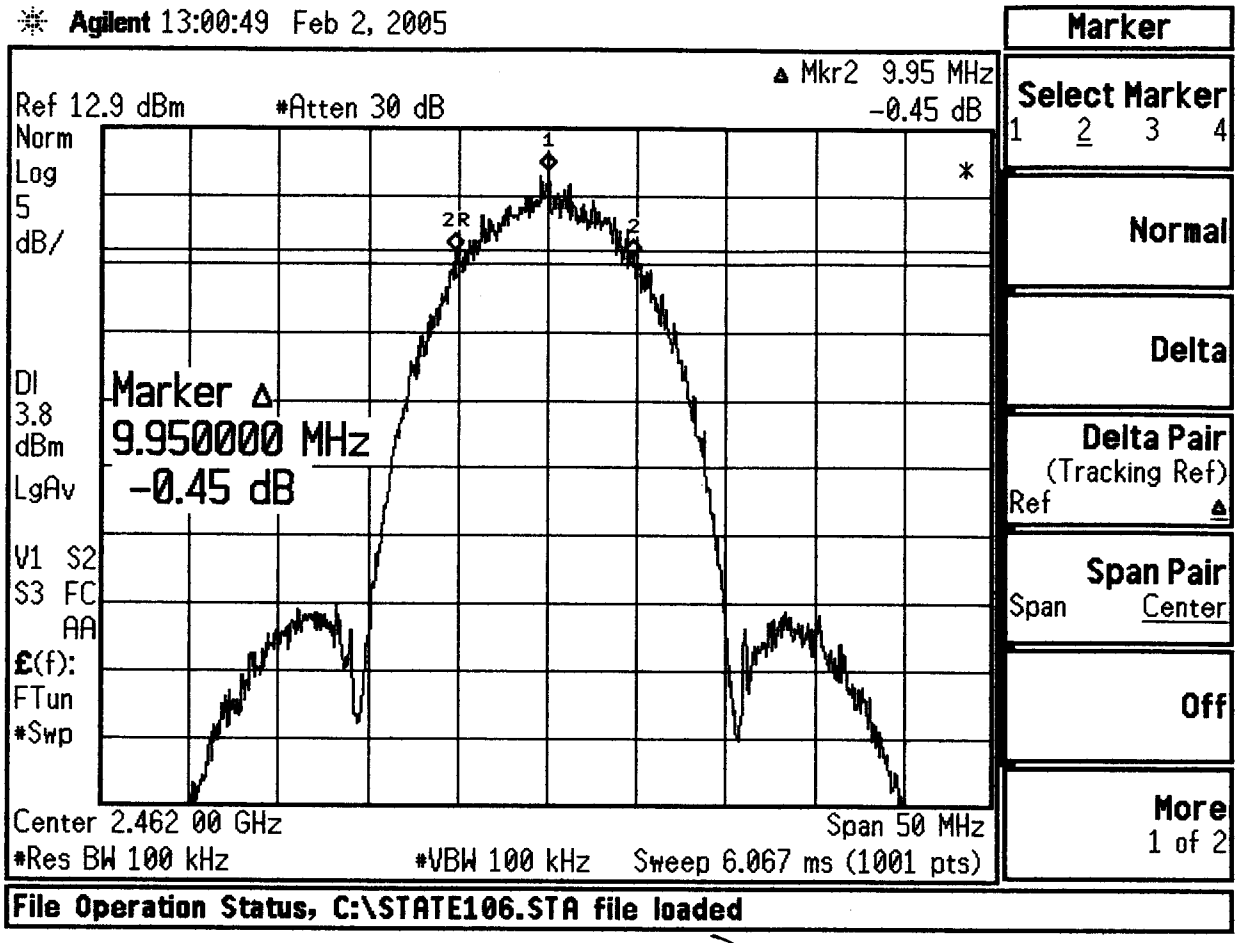
Ch-1 WiSP (50001312-01)

FCC -6dB BW = 9.35 MHz



CH-6 WiSP (50001312-01)

FCC -6dB BW = 9.35 MHz



CH-11 WiSP (50001312-01)

FCC -6dB BW = 9.95 MHz

20dB Bandwidth

Specifications:
FCC Specification: N/A
IC Specification: RSS-210, 5.9.1

The *20 dB Bandwidth* measurements were performed at the following test location:

☐ **- Test not applicable**

☐ - Wild River Lab Large Test Site (Open Area Test Site)
■ - Wild River Lab Small Test Site (Open Area Test Site)
☐ - Oakwood Lab (Open Area Test Site)
☐ - Wild River Lab Screen Room

Test equipment used :

TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
3367	E4440A	Agilent	Spectrum Analyzer	MY43362222	25-Aug-05

Cal Code B = Calibration verification performed internally. Cal Code Y = Calibration not required when used with other calibrated equipment.

All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST) and is calibrated annually.

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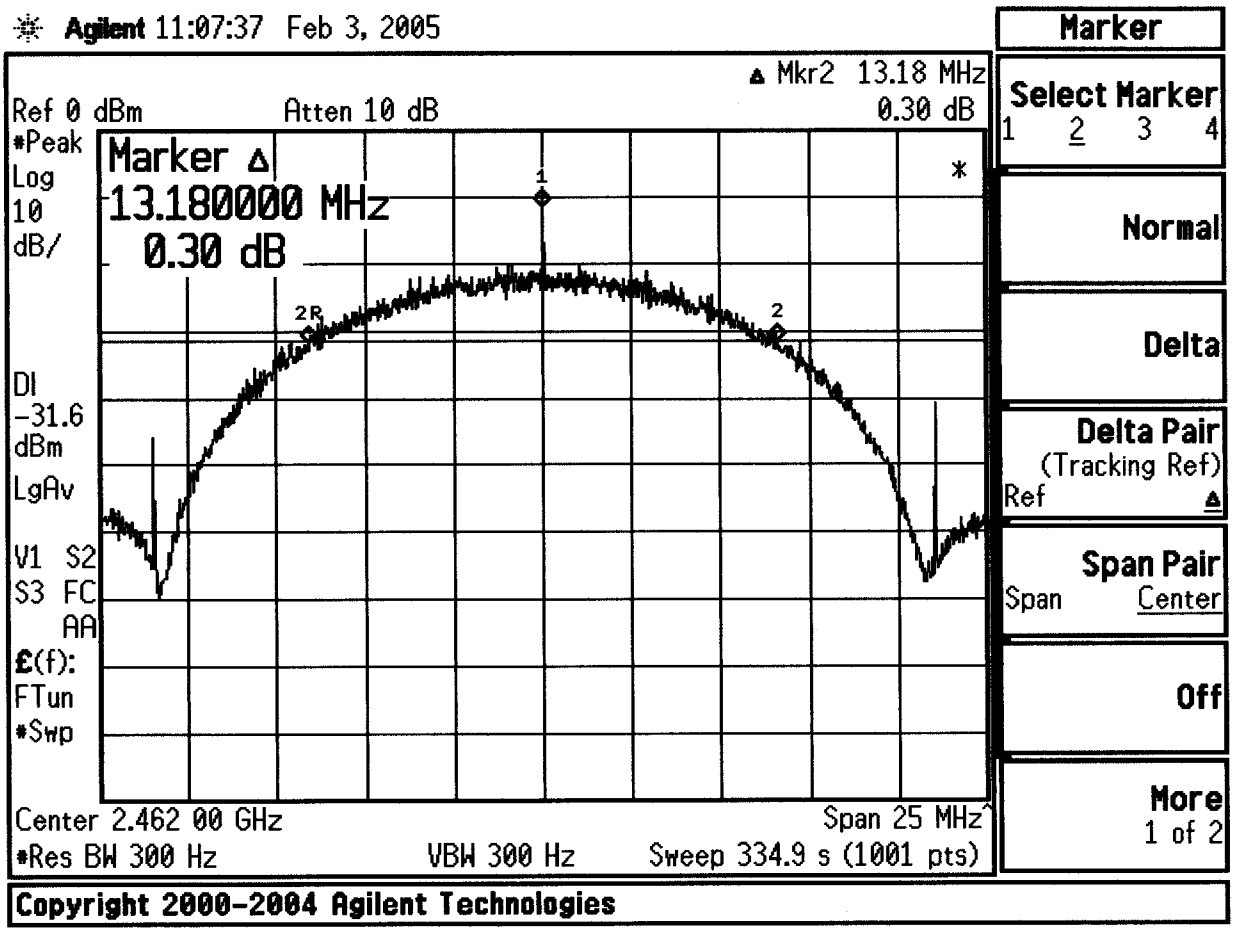
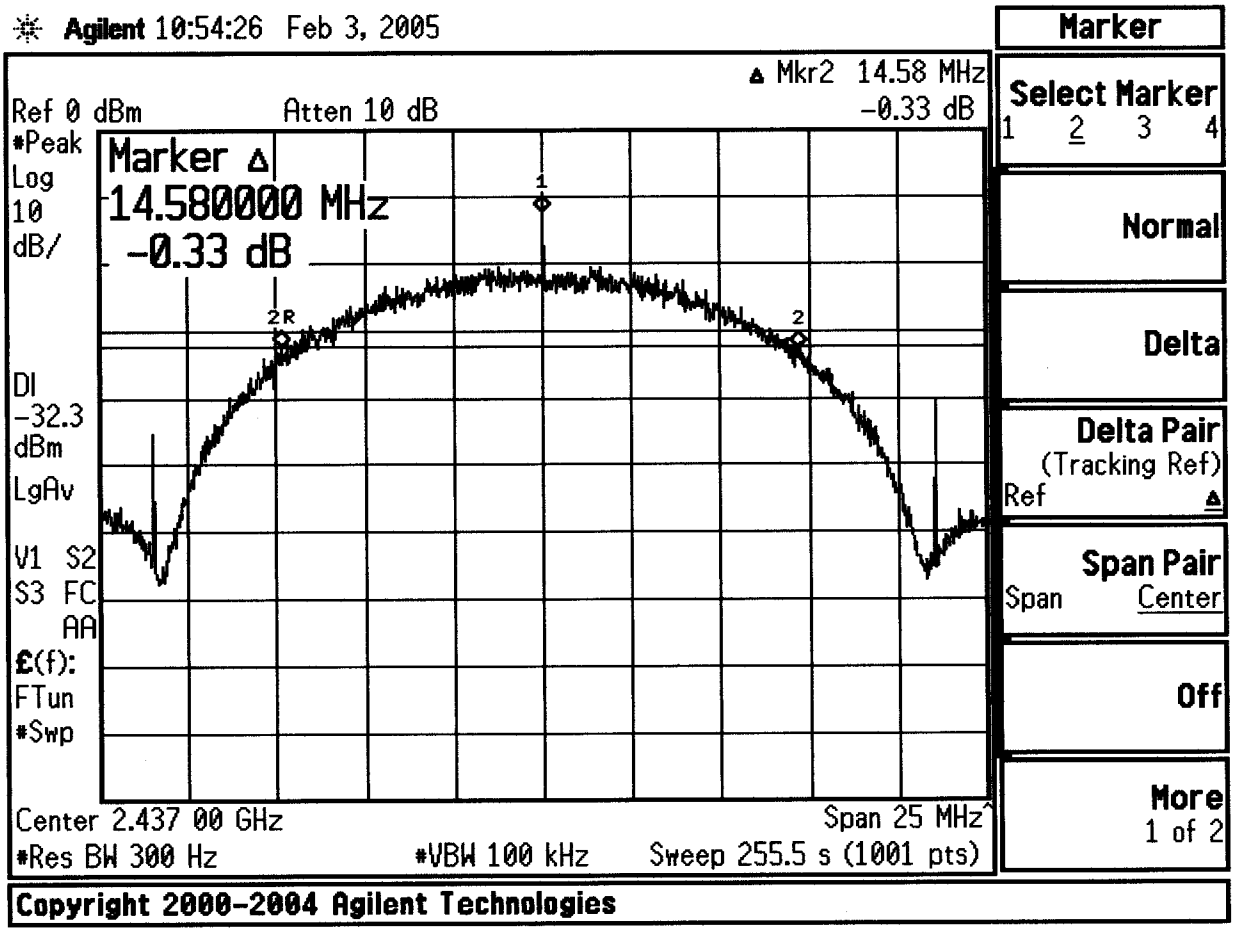
CH-11 -20dB BW PLOT



CH-11 -20dB BW = 13.18MHz

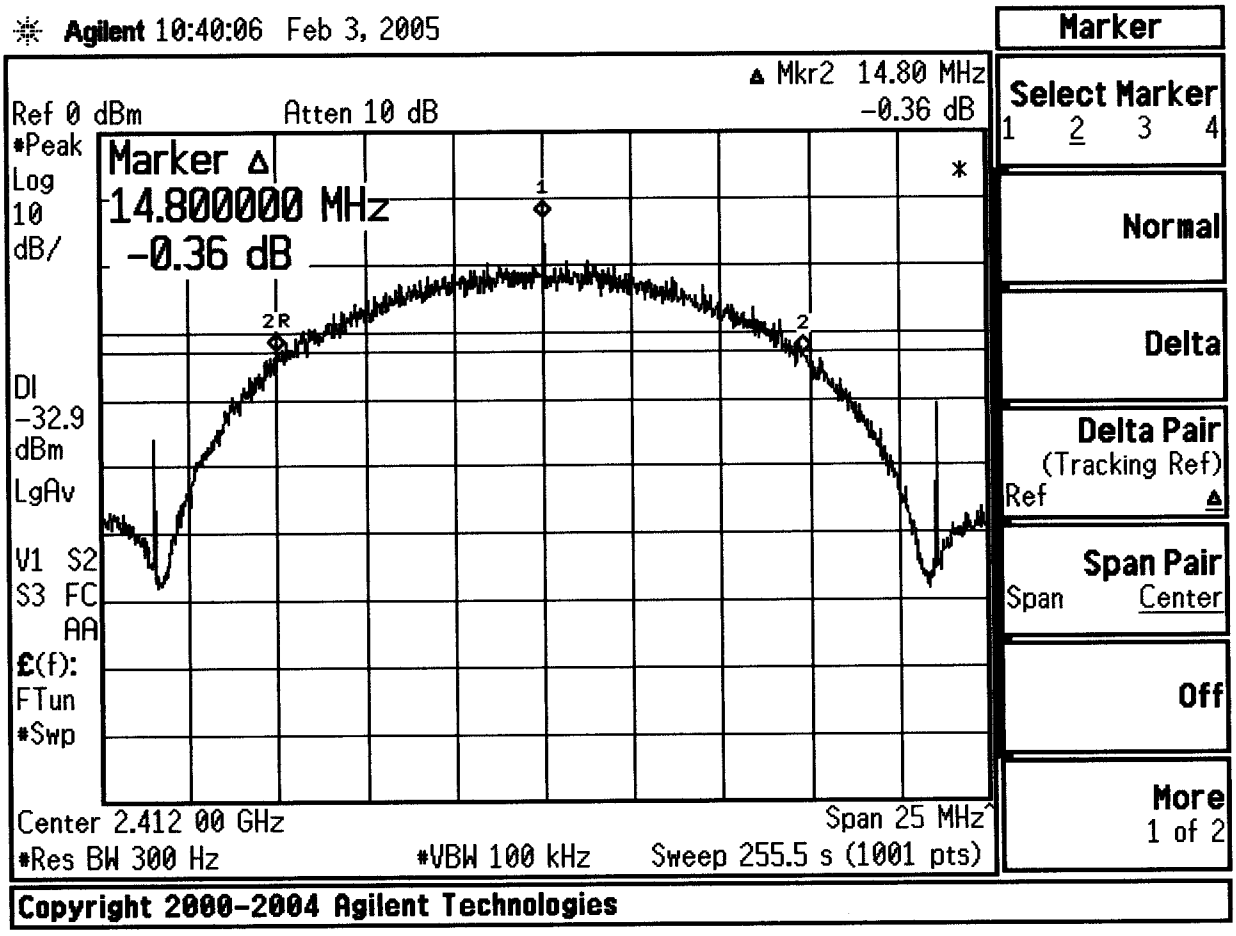
CANADA

CH-6 -20dB BW PLOT



CANADA CH-6 -20dB BW = 14.58 MHz

CH-1 -20dB BANDWIDTH PLOT



CANADA CH-1 -20dB BW = 14.8 MHz

Power Spectral Density

Specifications:
FCC Specification: Paragraph: 15.247 (e)
IC Specification: RSS-210, 6.2.2(o) Amd. 1 (IV)

The *Power Spectral Density* measurements were performed at the following test location:

☐ **- Test not applicable**

☐ - Wild River Lab Large Test Site (Open Area Test Site)
■ - Wild River Lab Small Test Site (Open Area Test Site)
☐ - Oakwood Lab (Open Area Test Site)
☐ - Wild River Lab Screen Room

Test equipment used :

TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
3367	E4440A	Agilent	Spectrum Analyzer	MY43362222	25-Aug-05

Cal Code B = Calibration verification performed internally. Cal Code Y = Calibration not required when used with other calibrated equipment.

All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST) and is calibrated annually.

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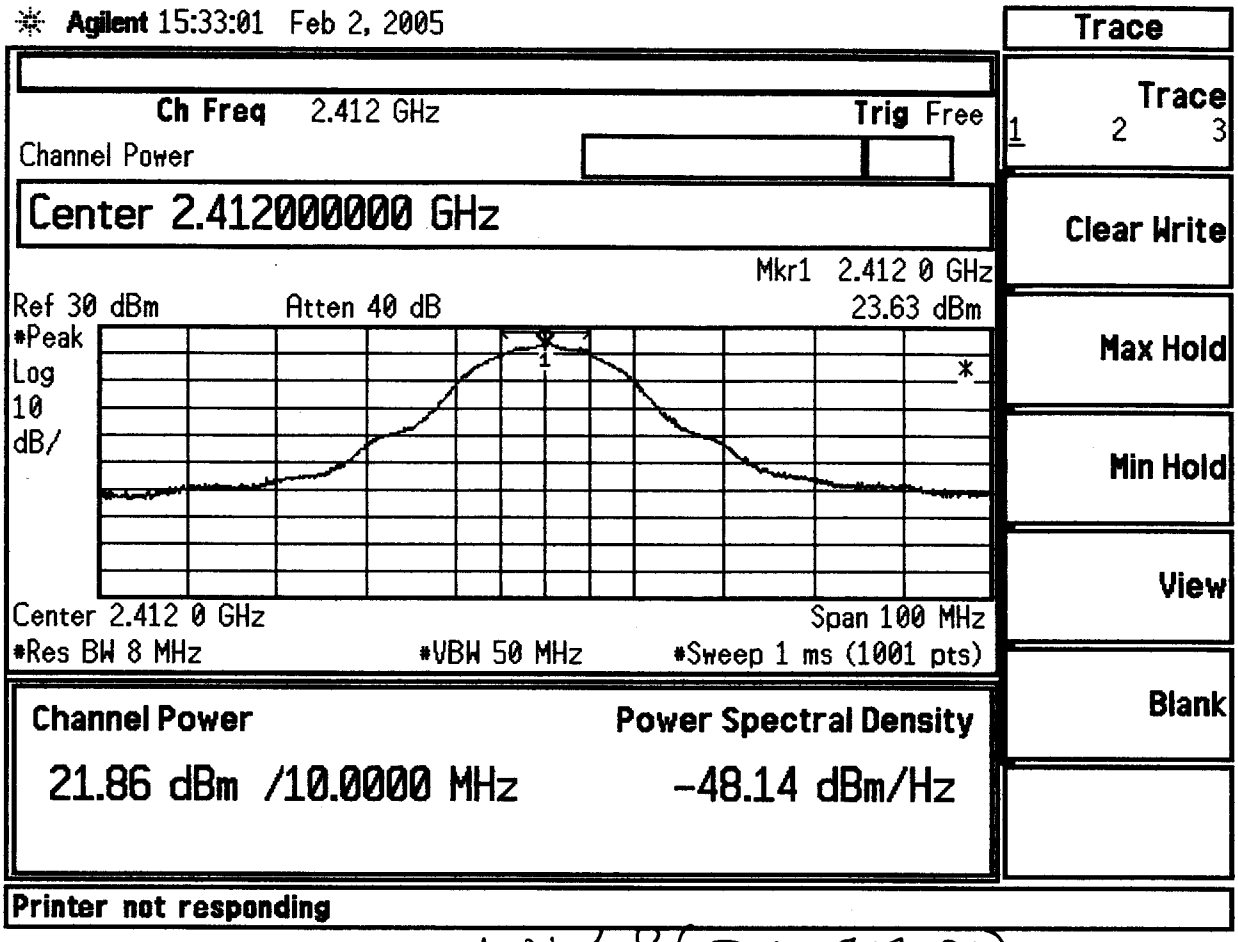


WISP (5060132-01)

CH-1 MAX PEAK OUTPUT POWER

PWR SETTING - 15

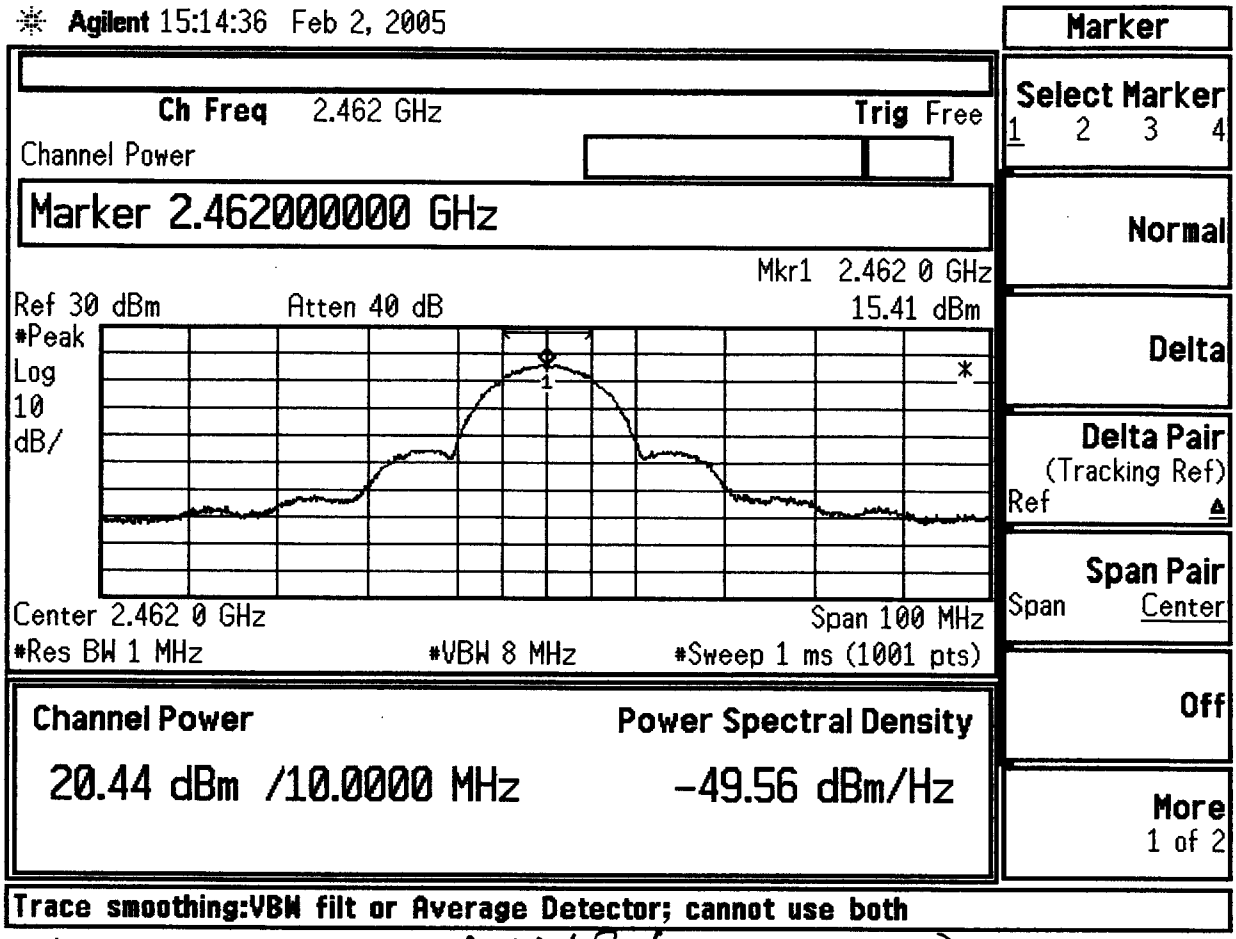
FCC

PEAK POWER SPECTRAL DENSITY

-48.14 dBm/Hz

+34.8

-13.34 dBm/3KHZ vs. limit of +8dBm



WiSP (50001312-01)

CH-11 MAX PEAK OUTPUT POWER

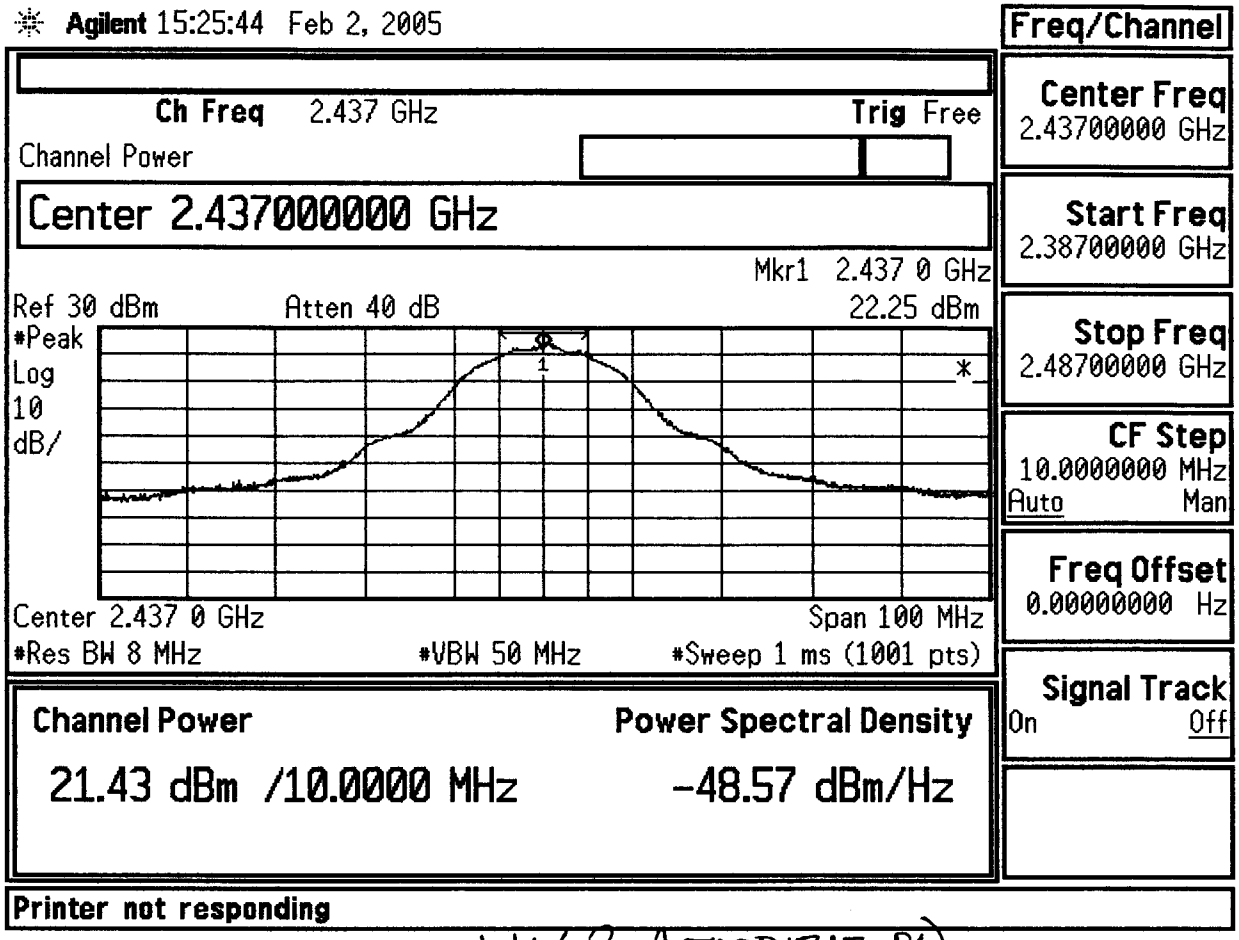
FCC PWR SETTING - 15

PEAK POWER SPECTRAL DENSITY

-49.56 dBm/Hz

+ 34.8

-14.76 dBm/3KHz



WiSR (5000131Z-01)

CH-6 MAX PEAK OUTPUT POWER

PWR SETTING ~ 15

FCC

PEAK POWER SPECTRAL DENSITY

-48.57 dBm/Hz

+ 34.8

-13.77 dBm/3KHz

Conducted Out of Band Emissions

Specifications:
FCC Specification: Paragraph: 15.247 (d)
IC Specification: RSS-210, 6.2.2(o)(e1)

The *Out of Band Emission* measurements were performed at the following test location:

☐ **- Test not applicable**

☐ - Wild River Lab Large Test Site (Open Area Test Site)
■ - Wild River Lab Small Test Site (Open Area Test Site)
☐ - Oakwood Lab (Open Area Test Site)
☐ - Wild River Lab Screen Room

Test equipment used :

TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
3367	E4440A	Agilent	Spectrum Analyzer	MY43362222	25-Aug-05

Cal Code B = Calibration verification performed internally. Cal Code Y = Calibration not required when used with other calibrated equipment.

All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST) and is calibrated annually.

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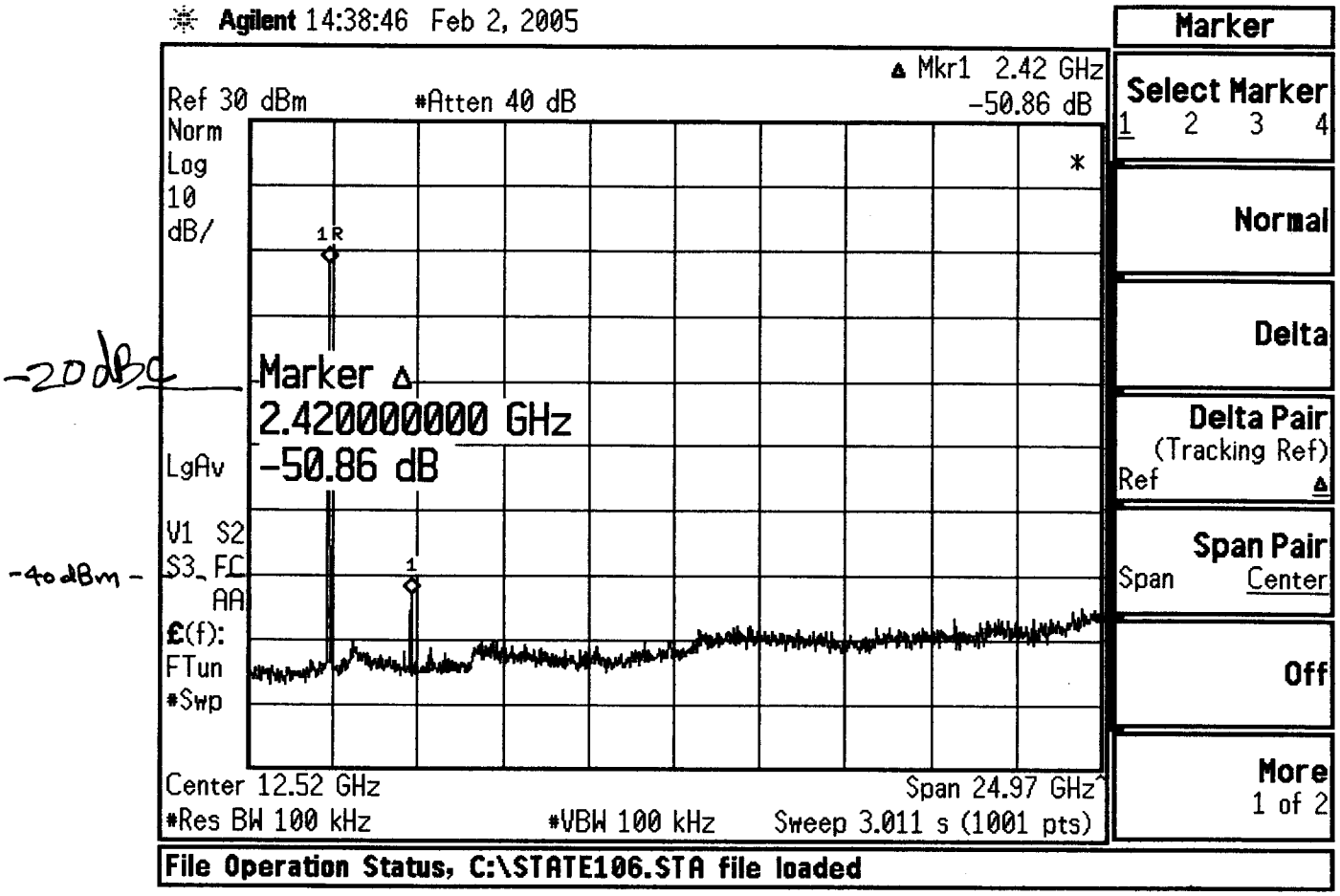
SPURIOUS



-20dBc

-40dBm

SPURIOUS

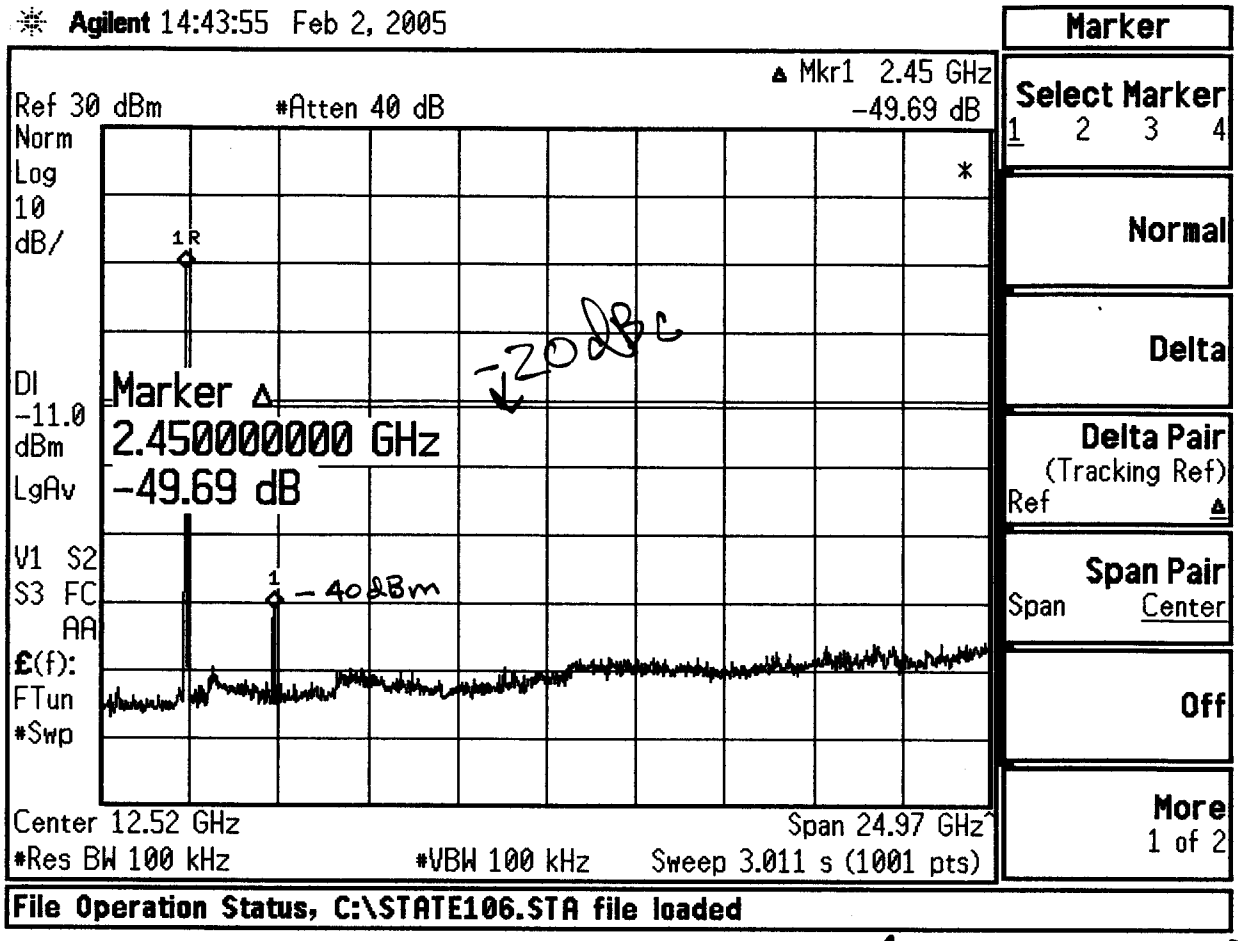
@

CH-1

WiSP (5000131Z-01)

FCC & EUROPE

SPURIOUS

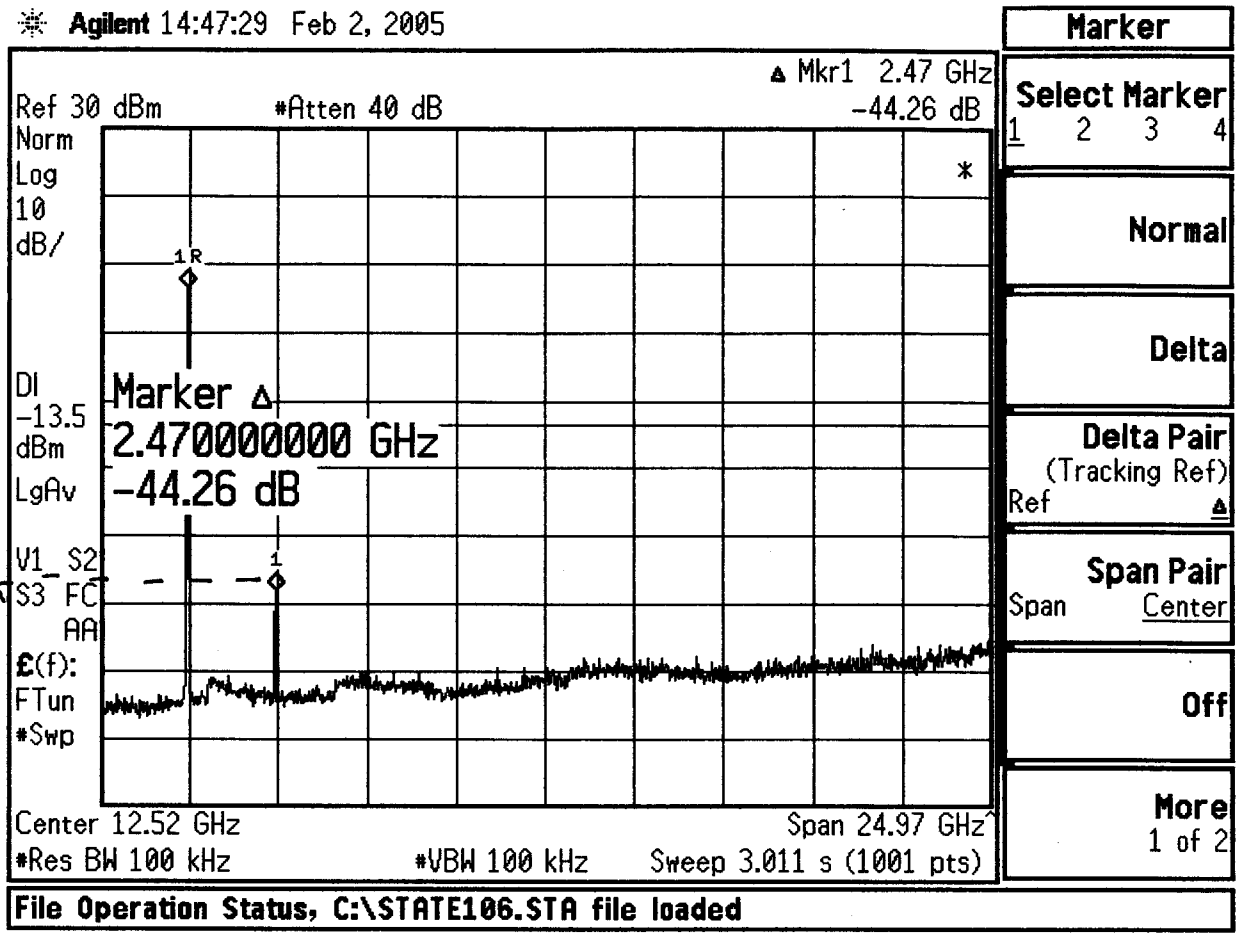


SPURIOUS @ CH-6

WiSP (50003312-01)

FCC + EUROPE

SPURIOUS



-38dBm

SPURIOUS @ CH-11

WiSP (50001312-01)

FCC + EUROPE

Radiated Emissions in Restricted Bands

Specifications:
FCC Specification: Paragraph: 15.247 (d)
IC Specification: N/A

The *Radiated Emissions in Restricted Band* measurements were performed at the following test location:

☐ **- Test not applicable**

☐ - Wild River Lab Large Test Site (Open Area Test Site)
■ - Wild River Lab Small Test Site (Open Area Test Site)
☐ - Oakwood Lab (Open Area Test Site)
☐ - Wild River Lab Screen Room

Test equipment used :

TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
3203	EM-6917B	Electro-Metrics	Biconicalog Periodic	106	30-Mar-05
2680	85650A	Hewlett-Packard	Quasi-Peak Adapter (Unit B)	2043A00343	10-May-05
3809	8566B	Hewlett-Packard	Spectrum Analyzer	3026A19165	20-Mar-05
3810	85662A	Hewlett-Packard	Analyzer Display	3014A06698	20-Mar-05
2665	ZHL-1042J	Mini-Circuits	Preamplifier	32296	Code B 08-Feb-05
3957	SL18B4020	Phase One Microwave	Preamplifier 1 – 18 GHz	0001	Code B 17-Oct-05
2075	3115	Electro-Mechanics (EMCO)	Ridge Guide Ant. 1-18 GHz	9001-3275	24-Nov-05
2478	AWT-18037	Avantek	Preamplifier 8-18 GHz	1001-9226	Code B 24-May-05
2127	11975A	Hewlett Packard	Amplifier 2- 8 GHz	2738A01200	Code B 25-May-05
2662	11970K	Hewlett-Packard	Harm Mixer – 18-26.5 GHz	2332A01170	11-Jul-06
2788	3116	Electro-Mechanics (EMCO)	Ridge Guide Ant 18-40 GHz	2005	27-Sep-05

Cal Code B = Calibration verification performed internally. Cal Code Y = Calibration not required when used with other calibrated equipment.

All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST) and is calibrated annually.

TÜV PRODUCT SERVICE INC 19333 Wild Mountain Road Taylors Falls MN 55084-1758 Tel: 651 638 0297 Fax: 651 638 0298 Rev.No 1.0

RADIATED EMISSIONS

Test Report #:	WC500423 Run 1	Test Area:	STS		
EUT Model #:	WiSP	Date:	2/3/2005		
EUT Serial #:	N/A	EUT Power:	60Hz/110VAC	Temperature:	10.0 °C
Test Method:	FCC 15.247			Air Pressure:	98.0 kPa
Customer:	DIGI INT'L			Rel. Humidity:	35.0 %
EUT Description:	802.11b TO SERIAL CONVERTER MODULE				
Notes:	TRANSMITTER RESTRICTED BAND SCAN. (ANTENNA ON TRANSMITTER)				
Data File Name:	0423.dat			Page:	1 of 1

List of measurements for run #: 1

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC-B <1GHz 3m	DELTA2 FCC B >1GHz 3m
NO SPURIOUS EMISSIONS FOUND V OR H POLARIZATION AT ALL AZIMUTHS 1 - 4 METERS.						
END OF SCAN 30 MHz - 25GHz.						

Tested by: RMJ

Printed

Signature

Reviewed by: TKS

Printed

Signature

RADIATED EMISSIONS

Test Report #:	WC500423 Run 4	Test Area:	STS		
EUT Model #:	WiSP	Date:	2/3/2005		
EUT Serial #:	N/A	EUT Power:	60Hz/110VAC	Temperature:	10.0 °C
Test Method:	EN 55022			Air Pressure:	98.0 kPa
Customer:	DIGI INT'L			Rel. Humidity:	35.0 %
EUT Description:	802.11b TO SERIAL CONVERTER MODULE				
Notes:	TRANSMITTER SPURIOUS CASE RADIATION SCAN (LOW & HIGH CHANNELS INVESTIGATED)				
Data File Name:	0423-2.dat			Page:	1 of 1

List of measurements for run #: 4

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1	DELTA2
NO SPURIOUS EMISSIONS FOUND ON LOW OR HIGH CHANNEL W/ V OR H POLARIZATIONS AT ALL AZIMUTHS 1-4 MTRS.						
END OF SCAN 30 MHz - 12.75GHz.						

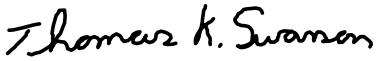
Tested by: RMJ

Printed

Signature

Reviewed by: TKS

Printed



Signature

Radiated Emissions in Restricted Bands (2.4 GHz Band Edges)

Specifications:
FCC Specification: Paragraph: 15.247 (d)
IC Specification: N/A

The *Radiated Emissions in Restricted Band* – Band Edge measurements were performed at the following test location:

☐ **- Test not applicable**

☐ - Wild River Lab Large Test Site (Open Area Test Site)
■ - Wild River Lab Small Test Site (Open Area Test Site)
☐ - Oakwood Lab (Open Area Test Site)
☐ - Wild River Lab Screen Room

Test equipment used :

TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
3367	E4440A	Agilent	Spectrum Analyzer	MY43362222	25-Aug-05

Cal Code B = Calibration verification performed internally. Cal Code Y = Calibration not required when used with other calibrated equipment.

All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST) and is calibrated annually.

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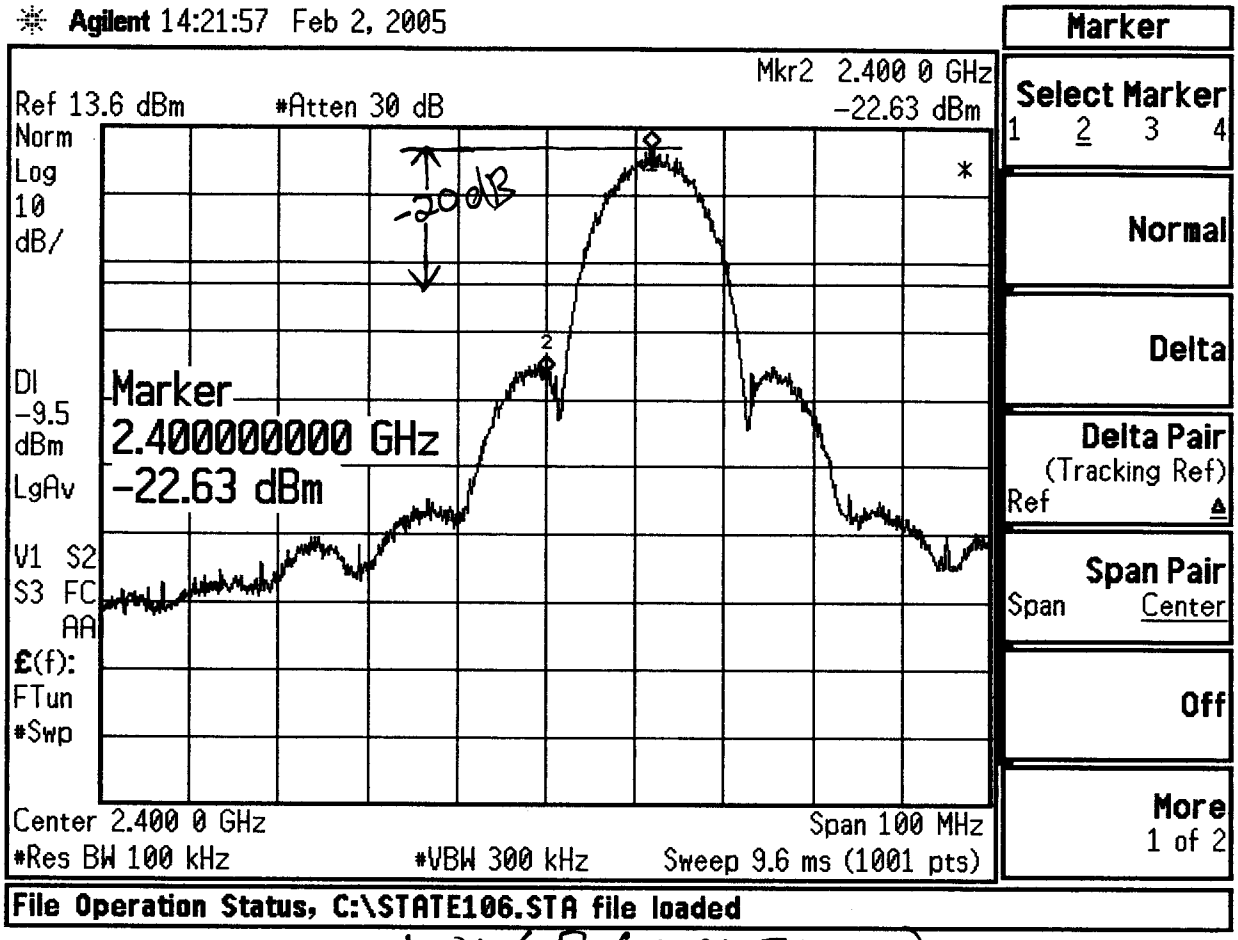
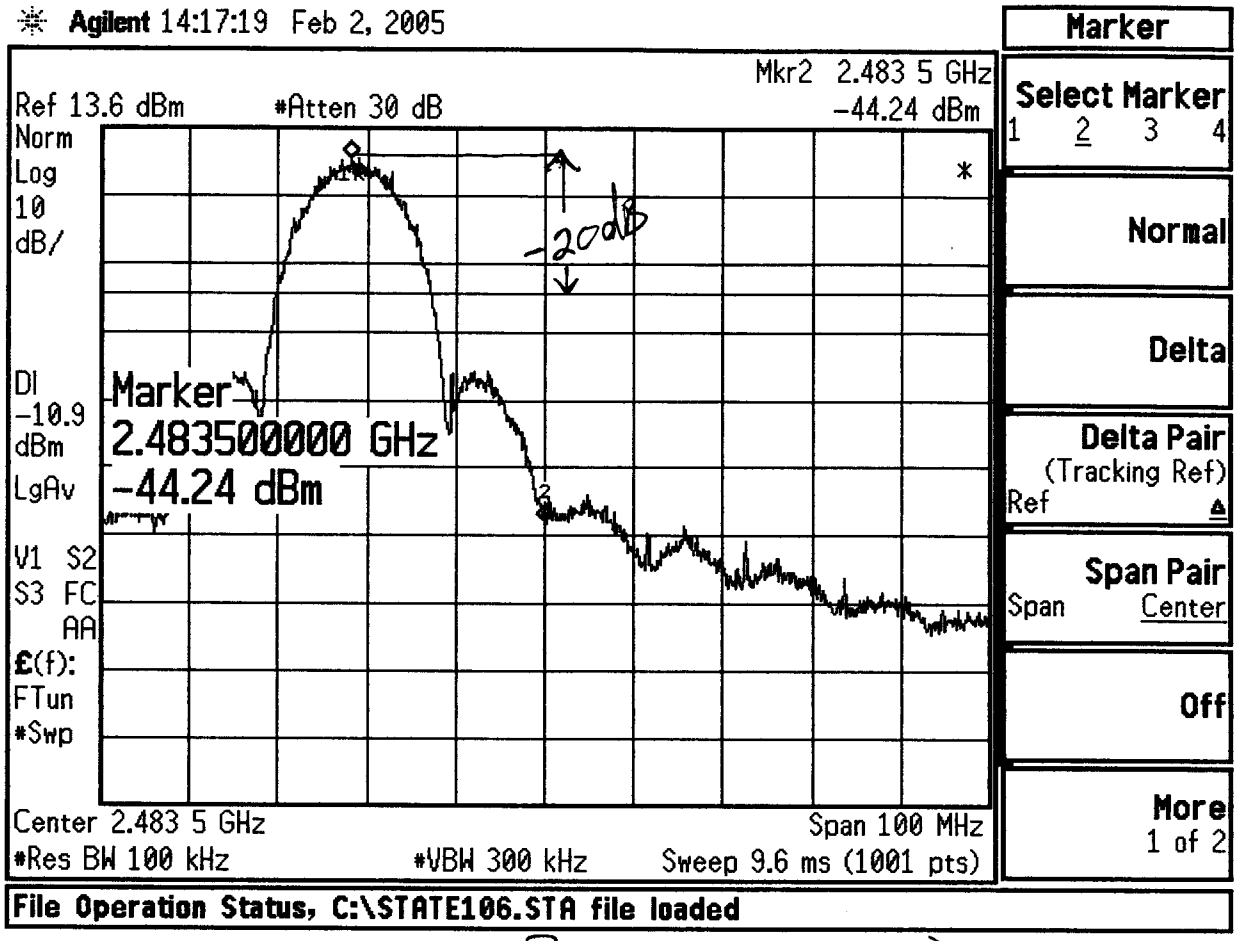


WiSP (50001312-01)

BANDEDGE PLOT @ LOW END - CH-)

FCC



WiSP (50001312-01)

BANDEDGE PLOT @ HIGH END - CH-11

FCC

AC Line Conducted Emissions

Specifications:
CISPR 22

The *AC Line Conducted Emission* measurements were performed at the following test location:

☐ **- Test not applicable**

☐ - Wild River Lab Large Test Site (Open Area Test Site)
■ - Wild River Lab Small Test Site (Open Area Test Site)
☐ - Oakwood Lab (Open Area Test Site)
☐ - Wild River Lab Screen Room

Test equipment used :

TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
3990	3816/2	ETS Lindgren	50 Ω LISN	00035359	Code B 27-May-05
3800	ESCS 30	Rhode & Schwarz	EMI Receiver	100312	18-Jan-06

Cal Code B = Calibration verification performed internally. Cal Code Y = Calibration not required when used with other calibrated equipment.

All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST) and is calibrated annually.

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CONDUCTED EMISSIONS

Test Report #:	WC500423 Run 3	Test Area:	STS		
EUT Model #:	WiSP	Date:	2/3/2005		
EUT Serial #:	N/A	EUT Power:	60/50Hz/110/230VAC	Temperature:	10.0 °C
Test Method:	EN55022 B / FCC B			Air Pressure:	98.0 kPa
Customer:	DIGI INT'L			Rel. Humidity:	35.0 %
EUT Description:	802.11b TO SERIAL CONVERTER MODULE				
Notes:					
Data File Name:	0423.dat			Page:	1 of 6

List of measurements for run #: 3

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	EUT Lead	DELTA1 EN55022 B Qp	DELTA2 EN55022 B Avg
60Hz/110VAC						
228.125 kHz	39.43 Qp	0.0 / 0.04 / 0.0 / 0.0	39.47	L1	-23.05	n/a
267.188 kHz	49.36 Qp	0.0 / 0.04 / 0.0 / 0.0	49.4	L1	-11.8	n/a
294.531 kHz	48.98 Qp	0.0 / 0.04 / 0.0 / 0.0	49.02	L1	-11.38	n/a
3.177 MHz	39.58 Qp	0.1 / 0.07 / 0.0 / 0.0	39.75	L1	-16.25	n/a
3.474 MHz	38.03 Qp	0.1 / 0.07 / 0.0 / 0.0	38.2	L1	-17.8	n/a
3.771 MHz	35.41 Qp	0.1 / 0.08 / 0.0 / 0.0	35.59	L1	-20.41	n/a
228.125 kHz	18.76 Av	0.0 / 0.04 / 0.0 / 0.0	18.8	L1	n/a	-33.72
267.188 kHz	37.42 Av	0.0 / 0.04 / 0.0 / 0.0	37.46	L1	n/a	-13.74
294.531 kHz	37.59 Av	0.0 / 0.04 / 0.0 / 0.0	37.63	L1	n/a	-12.77
3.177 MHz	32.7 Av	0.1 / 0.07 / 0.0 / 0.0	32.87	L1	n/a	-13.13
3.474 MHz	30.54 Av	0.1 / 0.07 / 0.0 / 0.0	30.71	L1	n/a	-15.29
3.771 MHz	29.44 Av	0.1 / 0.08 / 0.0 / 0.0	29.62	L1	n/a	-16.38
228.125 kHz	49.98 Qp	0.0 / 0.04 / 0.0 / 0.0	50.02	N	-12.5	n/a
267.188 kHz	48.29 Qp	0.0 / 0.04 / 0.0 / 0.0	48.33	N	-12.87	n/a
294.531 kHz	46.29 Qp	0.0 / 0.04 / 0.0 / 0.0	46.33	N	-14.07	n/a
3.177 MHz	43.29 Qp	0.1 / 0.07 / 0.0 / 0.0	43.46	N	-12.54	n/a
3.474 MHz	42.76 Qp	0.1 / 0.07 / 0.0 / 0.0	42.93	N	-13.07	n/a
3.771 MHz	41.52 Qp	0.1 / 0.08 / 0.0 / 0.0	41.7	N	-14.3	n/a
228.125 kHz	20.9 Av	0.0 / 0.04 / 0.0 / 0.0	20.94	N	n/a	-31.58
267.188 kHz	40.3 Av	0.0 / 0.04 / 0.0 / 0.0	40.34	N	n/a	-10.86
294.531 kHz	39.96 Av	0.0 / 0.04 / 0.0 / 0.0	40.0	N	n/a	-10.4
3.177 MHz	35.66 Av	0.1 / 0.07 / 0.0 / 0.0	35.83	N	n/a	-10.17

Tested by: RMJ

Printed — Signature

Reviewed by: TKS

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CONDUCTED EMISSIONS

Test Report #:	WC500423 Run 3	Test Area:	STS		
EUT Model #:	WiSP	Date:	2/3/2005		
EUT Serial #:	N/A	EUT Power:	60/50Hz/110/230VAC	Temperature:	10.0 °C
Test Method:	EN55022 B / FCC B			Air Pressure:	98.0 kPa
Customer:	DIGI INT'L			Rel. Humidity:	35.0 %
EUT Description:	802.11b TO SERIAL CONVERTER MODULE				
Notes:					
Data File Name:	0423.dat			Page:	2 of 6

List of measurements for run #: 3

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	EUT Lead	DELTA1 EN55022 B Qp	DELTA2 EN55022 B Avg
3.474 MHz	35.4 Av	0.1 / 0.07 / 0.0 / 0.0	35.57	N	n/a	-10.43
3.771 MHz	34.68 Av	0.1 / 0.08 / 0.0 / 0.0	34.86	N	n/a	-11.14
50Hz/230VAC						
150.0 kHz	53.16 Qp	0.0 / 0.05 / 0.0 / 0.0	53.21	N	-12.79	n/a
173.438 kHz	52.03 Qp	0.0 / 0.05 / 0.0 / 0.0	52.08	N	-12.72	n/a
200.781 kHz	50.55 Qp	0.0 / 0.04 / 0.0 / 0.0	50.59	N	-12.99	n/a
298.438 kHz	47.24 Qp	0.0 / 0.04 / 0.0 / 0.0	47.28	N	-13.01	n/a
3.06 MHz	38.73 Qp	0.1 / 0.07 / 0.0 / 0.0	38.9	N	-17.1	n/a
3.623 MHz	33.46 Qp	0.1 / 0.08 / 0.0 / 0.0	33.64	N	-22.36	n/a
150.0 kHz	38.5 Av	0.0 / 0.05 / 0.0 / 0.0	38.55	N	n/a	-17.45
173.438 kHz	33.67 Av	0.0 / 0.05 / 0.0 / 0.0	33.72	N	n/a	-21.08
200.781 kHz	25.87 Av	0.0 / 0.04 / 0.0 / 0.0	25.91	N	n/a	-27.67
298.438 kHz	41.82 Av	0.0 / 0.04 / 0.0 / 0.0	41.86	N	n/a	-8.43
3.06 MHz	32.17 Av	0.1 / 0.07 / 0.0 / 0.0	32.34	N	n/a	-13.66
3.623 MHz	27.0 Av	0.1 / 0.08 / 0.0 / 0.0	27.18	N	n/a	-18.82
150.0 kHz	53.7 Qp	0.0 / 0.05 / 0.0 / 0.0	53.75	L1	-12.25	n/a
173.438 kHz	52.01 Qp	0.0 / 0.05 / 0.0 / 0.0	52.06	L1	-12.74	n/a
200.781 kHz	50.55 Qp	0.0 / 0.04 / 0.0 / 0.0	50.59	L1	-12.99	n/a
298.438 kHz	46.84 Qp	0.0 / 0.04 / 0.0 / 0.0	46.88	L1	-13.41	n/a
3.06 MHz	37.86 Qp	0.1 / 0.07 / 0.0 / 0.0	38.03	L1	-17.97	n/a
3.623 MHz	30.7 Qp	0.1 / 0.08 / 0.0 / 0.0	30.88	L1	-25.12	n/a
150.0 kHz	38.66 Av	0.0 / 0.05 / 0.0 / 0.0	38.71	L1	n/a	-17.29

Tested by: RMJ

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Reviewed by: TKS

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CONDUCTED EMISSIONS

Test Report #:	WC500423 Run 3	Test Area:	STS		
EUT Model #:	WiSP	Date:	2/3/2005		
EUT Serial #:	N/A	EUT Power:	60/50Hz/110/230VAC	Temperature:	10.0 °C
Test Method:	EN55022 B / FCC B			Air Pressure:	98.0 kPa
Customer:	DIGI INT'L			Rel. Humidity:	35.0 %
EUT Description:	802.11b TO SERIAL CONVERTER MODULE				
Notes:					
Data File Name:	0423.dat			Page:	3 of 6

List of measurements for run #: 3

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	EUT Lead	DELTA1 EN55022 B Qp	DELTA2 EN55022 B Avg
173.438 kHz	33.63 Av	0.0 / 0.05 / 0.0 / 0.0	33.68	L1	n/a	-21.12
200.781 kHz	25.64 Av	0.0 / 0.04 / 0.0 / 0.0	25.68	L1	n/a	-27.9
298.438 kHz	41.97 Av	0.0 / 0.04 / 0.0 / 0.0	42.01	L1	n/a	-8.28
3.06 MHz	30.5 Av	0.1 / 0.07 / 0.0 / 0.0	30.67	L1	n/a	-15.33
3.623 MHz	23.07 Av	0.1 / 0.08 / 0.0 / 0.0	23.25	L1	n/a	-22.75
END OF SCAN.						

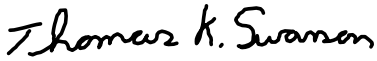
Tested by: RMJ

Printed

Signature

Reviewed by: TKS

Printed



Signature

CONDUCTED EMISSIONS

Test Report #:	WC500423 Run 3	Test Area:	STS		
EUT Model #:	WiSP	Date:	2/3/2005		
EUT Serial #:	N/A	EUT Power:	60/50Hz/110/230VAC	Temperature:	10.0 °C
Test Method:	EN55022 B / FCC B			Air Pressure:	98.0 kPa
Customer:	DIGI INT'L			Rel. Humidity:	35.0 %
EUT Description:	802.11b TO SERIAL CONVERTER MODULE				
Notes:					
Data File Name:	0423.dat			Page:	4 of 6

Measurement summary for limit1: EN55022 B Qp (Qp)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	EUT Lead	DELTA1 EN55022 B Qp
294.531 kHz	48.98 Qp	0.0 / 0.04 / 0.0 / 0.0	49.02	L1	-11.38
267.188 kHz	49.36 Qp	0.0 / 0.04 / 0.0 / 0.0	49.4	L1	-11.8
150.0 kHz	53.7 Qp	0.0 / 0.05 / 0.0 / 0.0	53.75	L1	-12.25
228.125 kHz	49.98 Qp	0.0 / 0.04 / 0.0 / 0.0	50.02	N	-12.5
3.177 MHz	43.29 Qp	0.1 / 0.07 / 0.0 / 0.0	43.46	N	-12.54
173.438 kHz	52.03 Qp	0.0 / 0.05 / 0.0 / 0.0	52.08	N	-12.72
200.781 kHz	50.55 Qp	0.0 / 0.04 / 0.0 / 0.0	50.59	N	-12.99
3.474 MHz	42.76 Qp	0.1 / 0.07 / 0.0 / 0.0	42.93	N	-13.07
3.771 MHz	41.52 Qp	0.1 / 0.08 / 0.0 / 0.0	41.7	N	-14.3
3.06 MHz	38.73 Qp	0.1 / 0.07 / 0.0 / 0.0	38.9	N	-17.1
3.623 MHz	33.46 Qp	0.1 / 0.08 / 0.0 / 0.0	33.64	N	-22.36

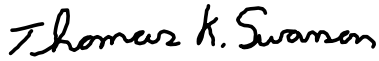
Tested by: RMJ

Printed

Signature

Reviewed by: TKS

Printed



Signature

CONDUCTED EMISSIONS

Test Report #:	WC500423 Run 3	Test Area:	STS		
EUT Model #:	WiSP	Date:	2/3/2005		
EUT Serial #:	N/A	EUT Power:	60/50Hz/110/230VAC	Temperature:	10.0 °C
Test Method:	EN55022 B / FCC B			Air Pressure:	98.0 kPa
Customer:	DIGI INT'L			Rel. Humidity:	35.0 %
EUT Description:	802.11b TO SERIAL CONVERTER MODULE				
Notes:					
Data File Name:	0423.dat			Page:	5 of 6

Measurement summary for limit2: EN55022 B Avg (Av)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	EUT Lead	DELTA2 EN55022 B Avg
298.438 kHz	41.97 Av	0.0 / 0.04 / 0.0 / 0.0	42.01	L1	-8.28
3.177 MHz	35.66 Av	0.1 / 0.07 / 0.0 / 0.0	35.83	N	-10.17
3.474 MHz	35.4 Av	0.1 / 0.07 / 0.0 / 0.0	35.57	N	-10.43
267.188 kHz	40.3 Av	0.0 / 0.04 / 0.0 / 0.0	40.34	N	-10.86
3.771 MHz	34.68 Av	0.1 / 0.08 / 0.0 / 0.0	34.86	N	-11.14
3.06 MHz	32.17 Av	0.1 / 0.07 / 0.0 / 0.0	32.34	N	-13.66
150.0 kHz	38.66 Av	0.0 / 0.05 / 0.0 / 0.0	38.71	L1	-17.29
3.623 MHz	27.0 Av	0.1 / 0.08 / 0.0 / 0.0	27.18	N	-18.82
173.438 kHz	33.67 Av	0.0 / 0.05 / 0.0 / 0.0	33.72	N	-21.08
200.781 kHz	25.87 Av	0.0 / 0.04 / 0.0 / 0.0	25.91	N	-27.67
228.125 kHz	20.9 Av	0.0 / 0.04 / 0.0 / 0.0	20.94	N	-31.58

Tested by: RMJ

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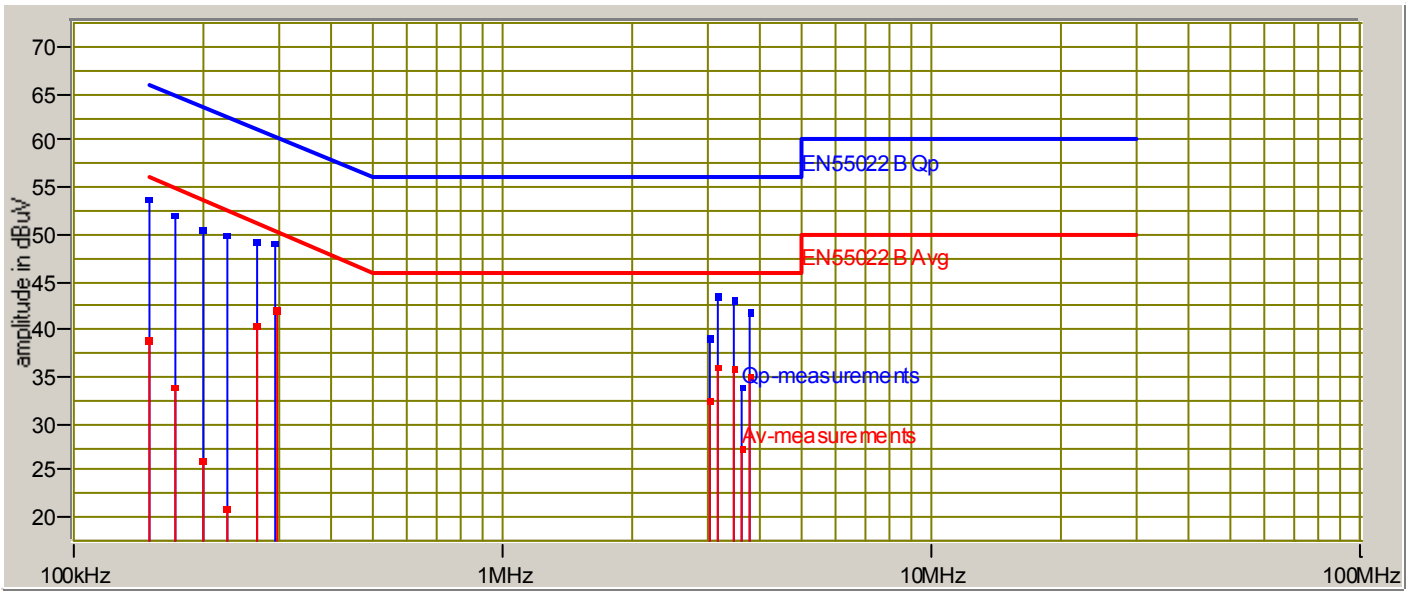
CONDUCTED EMISSIONS

Test Report #:	WC500423 Run 3	Test Area:	STS		
EUT Model #:	WiSP	Date:	2/3/2005		
EUT Serial #:	N/A	EUT Power:	60/50Hz/110/230VAC	Temperature:	10.0 °C
Test Method:	EN55022 B / FCC B			Air Pressure:	98.0 kPa
Customer:	DIGI INT'L			Rel. Humidity:	35.0 %
EUT Description:	802.11b TO SERIAL CONVERTER MODULE				
Notes:					
Data File Name:	0423.dat			Page:	6 of 6

Graph:



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Receiver Spurious Radiated Emissions

Specifications:
FCC Specification: Paragraph: 15.109

The *Receiver Spurious Emission* measurements were performed at the following test location:

☐ **- Test not applicable**

☐ - Wild River Lab Large Test Site (Open Area Test Site)
■ - Wild River Lab Small Test Site (Open Area Test Site)
☐ - Oakwood Lab (Open Area Test Site)
☐ - Wild River Lab Screen Room

Test equipment used :

TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
3203	EM-6917B	Electro-Metrics	Biconicalog Periodic	106	30-Mar-05
2680	85650A	Hewlett-Packard	Quasi-Peak Adapter (Unit B)	2043A00343	10-May-05
3809	8566B	Hewlett-Packard	Spectrum Analyzer	3026A19165	20-Mar-05
3810	85662A	Hewlett-Packard	Analyzer Display	3014A06698	20-Mar-05
2665	ZHL-1042J	Mini-Circuits	Preamplifier	32296	Code B 08-Feb-05
2075	3115	Electro-Mechanics (EMCO)	Ridge Guide Ant. 1-18 GHz	9001-3275	24-Nov-05
2478	AWT-18037	Avantek	Preamplifier 8-18 GHz	1001-9226	Code B 24-May-05
2127	11975A	Hewlett Packard	Amplifier 2- 8 GHz	2738A01200	Code B 25-May-05
2662	11970K	Hewlett-Packard	Harm Mixer – 18-26.5 GHz	2332A01170	11-Jul-06
2788	3116	Electro-Mechanics (EMCO)	Ridge Guide Ant 18-40 GHz	2005	27-Sep-05

Cal Code B = Calibration verification performed internally. Cal Code Y = Calibration not required when used with other calibrated equipment.

All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST) and is calibrated annually.

TÜV PRODUCT SERVICE INC 19333 Wild Mountain Road Taylors Falls MN 55084-1758 Tel: 651 638 0297 Fax: 651 638 0298 Rev.No 1.0

RADIATED EMISSIONS

Test Report #:	WC500423 Run 2	Test Area:	STS		
EUT Model #:	WiSP	Date:	2/3/2005		
EUT Serial #:	N/A	EUT Power:	60Hz/110VAC	Temperature:	10.0 °C
Test Method:	EN 55022			Air Pressure:	98.0 kPa
Customer:	DIGI INT'L			Rel. Humidity:	35.0 %
EUT Description:	802.11b TO SERIAL CONVERTER MODULE				
Notes:	RCVR SPURIOUS SCAN				
Data File Name:	0423-2.dat			Page:	1 of 1

List of measurements for run #: 2

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1	DELTA2
NO SPURIOUS EMISSIONS FOUND ON LOW OR HIGH CHANNEL W/ V OR H POLARIZATIONS AT ALL AZIMUTHS 1-4 MTRS.						
END OF SCAN 30 MHz - 12.75GHz.						

Tested by: RMJ

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Reviewed by: TKS

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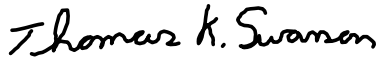

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