Spectrum Technology

IX270-MC5720

July 10, 2006

Report No. SPTE0020.1

Report Prepared By

www.nwemc.com
1-888-EMI-CERT

EMC Test Report

NORTHWEST EMC

22975 NW Evergreen Parkway
Suite 400
Hillsboro, Oregon 97124

Certificate of Test

Issue Date: July 10, 2006
Spectrum Technology
Model: IX270-MC5720

Emissions				
Test Description	**Specification**	**Test Method**	**Pass**	**Fail**
AC Powerline Conducted Emissions of the Receiver	FCC 15.107:2006	ANSI C63.4:2003	☒	☐
Effective Radiated Power	FCC 22H:2006	ANSI/TIA/EIA-603-B:2002	☒	☐
Effective Radiated Power	FCC 24E:2006	ANSI/TIA/EIA-603-B:2002	☒	☐
Spurious Radiated Emissions of the Receiver	FCC 15.109:2006	ANSI C63.4:2003	☒	☐
Out of Band Emissions	FCC 22H:2006	ANSI/TIA/EIA-603-B:2002	☒	☐
Out of Band Emissions	FCC 24E:2006	ANSI/TIA/EIA-603-B:2002	☒	☐

Modifications made to the product
See the Modifications section of this report

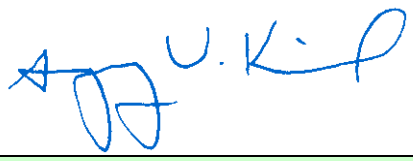
Test Facility

The measurement facility used to collect the data is located at:

Northwest EMC, Inc.
22975 NW Evergreen Parkway, Suite 400; Hillsboro, OR 97124
Phone: (503) 844-4066
Fax: 844-3826

This site has been fully described in a report filed with and accepted by the FCC (Federal Communications Commission) and Industry Canada.

Approved By:



Greg Kiemel, Director of Engineering

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government of the United States of America.

Product compliance is the responsibility of the client, therefore the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. This Report may only be duplicated in its entirety. The results of this test pertain only to the sample(s) tested, the specific description is noted in each of the individual sections of the test report supporting this certificate of test.

Revision Number	Description	Date	Page Number
00	None		

Accreditations and Authorizations

FCC: Accredited by NVLAP for performance of FCC radio, digital, and ISM device testing. Our Open Area Test Sites, certification chambers, and conducted measurement facilities have been fully described in reports filed with the FCC and accepted by the FCC in letters maintained in our files. Northwest EMC has been accredited by ANSI to ISO / IEC Guide 65 as a product certifier. We have been designated by the FCC as a Telecommunications Certification Body (TCB). This allows Northwest EMC to certify transmitters to FCC specifications in accordance with 47 CFR 2.960 and 2.962.

NVLAP: Northwest EMC, Inc. is accredited under the United States Department of Commerce, National Institute of Standards and Technology, and National Voluntary Laboratory Accreditation Program for satisfactory compliance with the requirements of ISO/IEC 17025 for Testing Laboratories. The NVLAP accreditation encompasses Electromagnetic Compatibility Testing in accordance with the European Union EMC Directive 89/336/EEC, ANSI C63.4, MIL-STD 461E, DO-160D and SAE J1113. Additionally, Northwest EMC is accredited by NVLAP to perform radio testing in accordance with the European Union R&TTE Directive 1999/5/EEC, the requirements of FCC, and the RSS radio standards for Industry Canada.

NVLAP LAB CODE 200629-0
NVLAP LAB CODE 200630-0
NVLAP LAB CODE 200676-0

Industry Canada: Accredited by NVLAP for performance of Industry Canada RSS and ICES testing. Our Open Area Test Sites and certification chambers comply with RSS 212, Issue 1 (Provisional) and have been filed with Industry Canada and accepted. Northwest EMC has been accredited by ANSI to ISO / IEC Guide 65 as a product certifier. We have been designated by NIST and recognized by Industry Canada as a Certification Body (CB) per the APEC Mutual Recognition Arrangement (MRA). This allows Northwest EMC to certify transmitters to Industry Canada technical requirements.

CAB: Designated by NIST and validated by the European Commission as a Conformity Assessment Body (CAB) to conduct tests and approve products to the EMC directive and transmitters to the R&TTE directive, as described in the U.S. - EU Mutual Recognition Agreement.

TÜV Product Service: Included in TUV Product Service Group's Listing of Recognized Laboratories. It qualifies in connection with the TUV Certification after Recognition of Agent's Testing Program for the product categories and/or standards shown in TUV's current Listing of CARAT Laboratories, available from TUV. A certificate was issued to represent that this laboratory continues to meet TUV's CARAT Program requirements. Certificate No. USA0401C.

TÜV Rheinland: Authorized to carryout EMC tests by order and under supervision of TÜV Rheinland. This authorization is based on "Conditions for EMC-Subcontractors" of November 1992.

NEMKO: Assessed and accredited by NEMKO (Norwegian testing and certification body) for European emissions and immunity testing. As a result of NEMKO's laboratory assessment, they will accept test results from Northwest EMC, Inc. for product certification (Authorization No. ELA 119).

Australia/New Zealand: The National Association of Testing Authorities (NATA), Australia has been appointed by the ACA as an accreditation body to accredit test laboratories and competent bodies for EMC standards. Accredited test reports or assessments by competent bodies must carry the NATA logo. Test reports made by an overseas laboratory that has been accredited for the relevant standards by an overseas accreditation body that has a Mutual Recognition Agreement (MRA) with NATA are also accepted as technical grounds for product conformity. The report should be endorsed with the respective logo of the accreditation body (NVLAP).

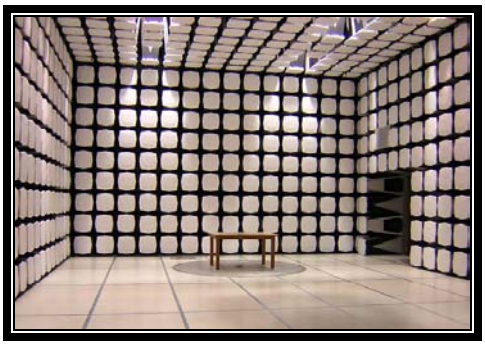
VCCI: Accepted as an Associate Member to the VCCI, Acceptance No. 564. Conducted and radiated measurement facilities have been registered in accordance with Regulations for Voluntary Control Measures, Article 8. *(Registration Numbers. - Hillsboro: C-1071, R-1025, and R-2318, Irvine: C-2094 and R-1943, Sultan: R-871, C-1784 and R-1761).*

BSMI: Northwest EMC has been designated by NIST and validated by C-Taipei (BSMI) as a CAB to conduct tests as described in the APEC Mutual Recognition Agreement. License No.SL2-IN-E-1017.

GOST: Northwest EMC, Inc. has been assessed and accredited by the Russian Certification bodies Certinform VNIINMASH, CERTINFO, SAMTES, and Federal CHEC, to perform EMC and Hygienic testing for Information Technology Products. As a result of their laboratory assessment, they will accept test results from Northwest EMC, Inc. for product certification

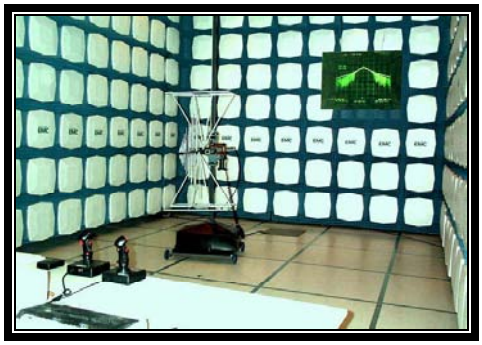
SCOPE

For details on the Scopes of our Accreditations, please visit:
http://www.nwemc.com/scope.asp



California – Orange County Facility
Labs OC01 – OC13

41 Tesla Ave. Irvine, CA 92618
(888) 364-2378 Fax: (503) 844-3826



Oregon – Evergreen Facility
Labs EV01 – EV11

22975 NW Evergreen Pkwy. Suite 400 Hillsboro, OR 97124
(503) 844-4066 Fax: (503) 844-3826

Washington – Sultan Facility
Labs SU01 – SU07

14128 339th Ave. SE Sultan, WA 98294
(888) 364-2378

Party Requesting the Test	
Company Name:	Spectrum Technology
Address:	209 Dayton Street Suite #205
City, State, Zip:	Edmonds, WA 98020
Test Requested By:	Rod Munro
Model:	IX270-MC5720
First Date of Test:	June 26, 2006
Last Date of Test:	June 29, 2006
Receipt Date of Samples:	June 26, 2006
Equipment Design Stage:	Prototype
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT (Equipment Under Test):

GSM/GPRS Radio installed in an Itronix notebook computer.

Testing Objective:

These radiated and AC powerline conducted emissions tests are required to demonstrate compliance of the GSM/GPRS radio module to FCC Parts 22 and 24, as well as the receiver requirement of FCC 15B while installed in the Itronix Model Titan XR1 notebook computer. The GSM/GPRS radio was previously certified. The antenna port conducted emissions are still representative of those contained in the original filing.

CONFIGURATION 1 SPTE0020

Software/Firmware Running during test	
Description	**Version**
Procomm Plus Terminal	**4.8 Build 71**

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
EUT	Itronix, Corp.	IX270-MC5720	Unknown

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Host IX270 Notebook PC	Itronix, Corp.	IX-270	None
AC Adapter	Delta Electronics	ADP-90SB BB	VCW0552024972
Vehicle Mount	Itronix, Corp.	IX270 Vehicle Mount	None
CF Card Reader	Itronix, Corp.	SDDR-91	None
USB Mouse	Logitech	M-BE58	LZE02357693
Keyboard	Microsoft	E06401COMB	51061
Headphones	Unknown	None	None
Antenna Terminator	Unknown	None	None
USB Gamepad	Microsoft	X04-63237	00623744

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC Power	No	1.8m	No	AC Adapter	AC Mains
DC Lead	PA	1.8m	PA	AC Adapter	Host Notebook PC
USB	Yes	1.0m	No	Vehicle Mount	CF Card Reader
USB	Yes	1.0m	No	Vehicle Mount	Unterminated
USB	Yes	1.6m	No	Vehicle Mount	USB Gamepad
Keyboard	PA	1.8m	PA	Vehicle Mount	Keyboard
Mouse	PA	1.8m	PA	Vehicle Mount	Mouse
Audio	Yes	1.0m	No	Vehicle Mount	Unterminated
Serial	Yes	1.0m	No	Vehicle Mount	Unterminated
Serial	Yes	1.0m	No	Vehicle Mount	Unterminated
VGA	Yes	1.0m	No	Vehicle Mount	Unterminated
Microphone	Yes	1.0m	No	Vehicle Mount	Unterminated
Speaker	Yes	1.0m	No	Vehicle Mount	Headphones
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATION 2 SPTE0020

Software/Firmware Running during test	
Description	**Version**
Procomm Plus Terminal	**4.8 Build 71**

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
EUT	Itronix, Corp.	IX270-MC5720	Unknown

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Internal Antenna	unknown	Unknown	Unknown
Host IX270 Notebook PC	Itronix, Corp.	IX-270	None
AC Adapter	Delta Electronics	ADP-90SB BB	VCW0552024972
CF Card Reader	Itronix, Corp.	SDDR-91	None
USB Mouse	Logitech	M-BE58	LZE02357693
Headphones	Unknown	None	None
Antenna Terminator	Unknown	None	None
USB Gamepad	Microsoft	X04-63237	00623744

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC Power	No	1.8m	No	AC Adapter	AC Mains
DC Lead	PA	1.8m	PA	AC Adapter	Host Notebook PC
USB	Yes	1.0m	No	Host IX270 Notebook PC	Unterminated
USB	Yes	1.0m	No	Host IX270 Notebook PC	CF Card Reader
USB	Yes	1.0m	No	Host IX270 Notebook PC	Unterminated
Serial	Yes	1.0m	No	Host IX270 Notebook PC	Unterminated
Ethernet	Yes	1.0m	No	Host IX270 Notebook PC	Unterminated
Modem	Yes	1.0m	No	Host IX270 Notebook PC	Unterminated
Microphone	Yes	1.0m	No	Host IX270 Notebook PC	Unterminated
Speaker	Yes	1.0m	No	Host IX270 Notebook PC	Headphones
VGA	Yes	1.0m	No	Host IX270 Notebook PC	Unterminated
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATION 3 SPTE0020

Software/Firmware Running during test	
Description	**Version**
Procomm Plus Terminal	**4.8 Build 71**

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
EUT	Itronix, Corp.	IX270-MC5720	Unknown

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Host IX270 Notebook PC	Itronix, Corp.	IX-270	None
AC Adapter	Delta Electronics	ADP-90SB BB	VCW0552024972
Vehicle Mount	Itronix, Corp.	IX270 Vehicle Mount	None
CF Card Reader	Itronix, Corp.	SDDR-91	None
USB Mouse	Logitech	M-BE58	LZE02357693
Keyboard	Microsoft	E06401COMB	51061
Headphones	Unknown	None	None
Antenna Terminator	Unknown	None	None
USB Gamepad	Microsoft	X04-63237	00623744

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC Power	No	1.8m	No	AC Adapter	AC Mains
DC Lead	PA	1.8m	PA	AC Adapter	Host Notebook PC
USB	Yes	1.0m	No	Vehicle Mount	CF Card Reader
USB	Yes	1.0m	No	Vehicle Mount	Unterminated
USB	Yes	1.6m	No	Vehicle Mount	USB Gamepad
Keyboard	PA	1.8m	PA	Vehicle Mount	Keyboard
Mouse	PA	1.8m	PA	Vehicle Mount	Mouse
External antenna	Yes	1.0m	No	Vehicle Mount	Antenna Terminator
Audio	Yes	1.0m	No	Vehicle Mount	Unterminated
Serial	Yes	1.0m	No	Vehicle Mount	Unterminated
Serial	Yes	1.0m	No	Vehicle Mount	Unterminated
VGA	Yes	1.0m	No	Vehicle Mount	Unterminated
Microphone	Yes	1.0m	No	Vehicle Mount	Unterminated
Speaker	Yes	1.0m	No	Vehicle Mount	Headphones
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Equipment modifications					
Item	Date	Test	Modification	Note	Disposition of EUT
1	6/26/2006	ERP/EIRP of Fundamental (Substitution Method)	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
2	6/27/2006	AC Powerline Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
3	6/28/2006	Spurious Emissions of the Receiver	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
4	6/29/2006	Out of Band Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

Spurious Radiated Emissions of the Receiver

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

MODES OF OPERATION
Receive cellular band low channel
Receive cellular band high channel
Receive cellular band mid channel

POWER SETTINGS INVESTIGATED
120VAC/60Hz

FREQUENCY RANGE INVESTIGATED			
Start Frequency	30 MHz	Stop Frequency	5 GHz

SAMPLE CALCULATIONS
Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
EV01 cables g,h,j			EVB	3/30/2006	13
EV01 cables c,g, h			EVA	3/30/2006	13
Spectrum Analyzer	Agilent	E4446A	AAT	4/4/2006	12
Pre-Amplifier	Miteq	AMF-4D-010100-24-10P	APW	8/2/2005	13
Pre-Amplifier	Miteq	AM-1616-1000	AOL	1/4/2006	13
Antenna, Horn	EMCO	3115	AHC	8/30/2005	12
Antenna, Biconilog	EMCO	3141	AXE	12/28/2005	24

MEASUREMENT BANDWIDTHS

	Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
	0.01 - 0.15	1.0	0.2	0.2
	0.15 - 30.0	10.0	9.0	9.0
	30.0 - 1000	100.0	120.0	120.0
	Above 1000	1000.0	N/A	1000.0
Measurements were made using the bandwidths and detectors specified. No video filter was used.				

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

The highest gain of each type of antenna to be used with the EUT was tested. The EUT was configured for low, mid, and high channel receive frequencies. For this configuration, the spectrum was scanned throughout the specified range. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and the EUT antenna in three orthogonal axis, and adjusting measurement antenna height and polarization, and manipulating the EUT antenna in 3 orthogonal planes. A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

NORTHWEST EMC

Spurious Radiated Emissions of the Receiver

PSA 2006.05.30
EMI 2006.6.15

EUT:	IX270-MC5720			Work Order:	SPTE0020
Serial Number:	Unknown			Date:	06/28/06
Customer:	Spectrum Technology			Temperature:	24
Attendees:	None			Humidity:	40%
Project:	None			Barometric Pres.:	30.28
Tested by:	Holly Ashkannejhad	Power:	120VAC/60Hz	Job Site:	EV01

TEST SPECIFICATIONS	Test Method
FCC 15.109(a):2006	ANSI C63.4:2003

TEST PARAMETERS			
Antenna Height(s) (m)	1 - 4	Test Distance (m)	3

COMMENTS

Internal antenna, standalone notebook

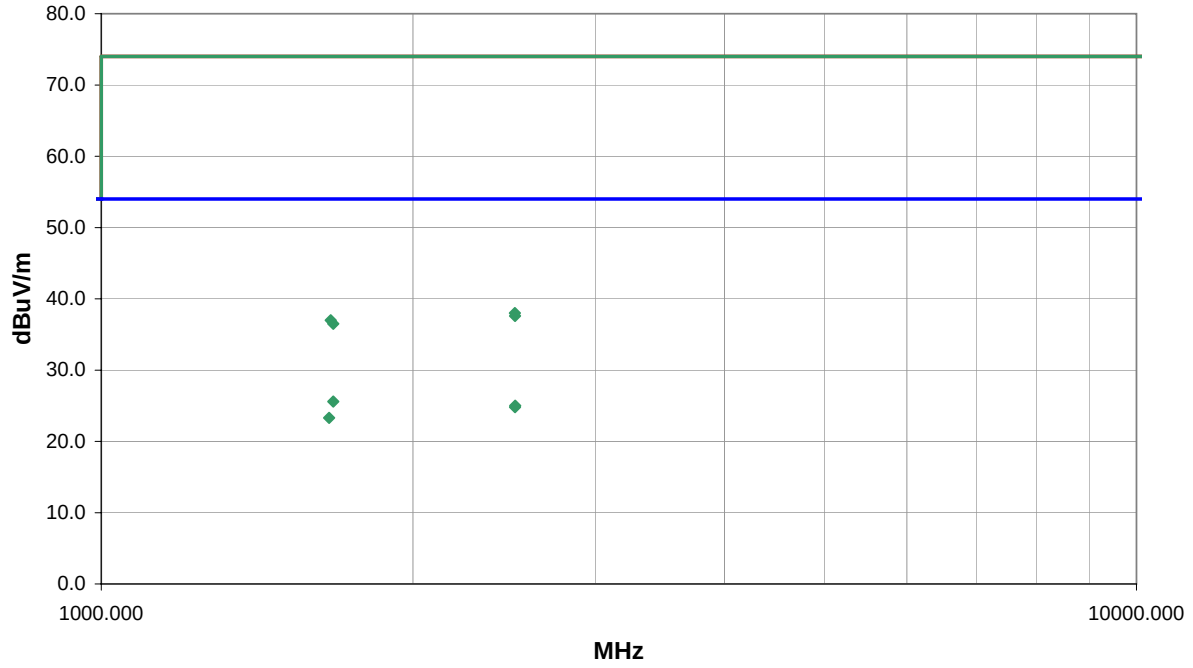
EUT OPERATING MODES

Receive cellular band mid channel

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	8		
Configuration #	2		
Results	Pass	NVLAP Lab Code 200630-0	*Signature* Holly Ashkannejhad



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
1675.410	28.1	-2.5	183.0	1.0	3.0	0.0	H-Horn	AV	0.0	25.6	54.0	-28.4
2511.417	24.4	0.6	18.0	1.3	3.0	0.0	V-Horn	AV	0.0	25.0	54.0	-29.0
2510.280	24.2	0.6	349.0	1.0	3.0	0.0	H-Horn	AV	0.0	24.8	54.0	-29.2
1660.170	25.8	-2.5	344.0	1.0	3.0	0.0	V-Horn	AV	0.0	23.3	54.0	-30.7
2509.090	37.4	0.6	18.0	1.3	3.0	0.0	V-Horn	PK	0.0	38.0	74.0	-36.0
2510.267	37.0	0.6	349.0	1.0	3.0	0.0	H-Horn	PK	0.0	37.6	74.0	-36.4
1665.810	39.5	-2.5	344.0	1.0	3.0	0.0	V-Horn	PK	0.0	37.0	74.0	-37.0
1675.310	39.0	-2.5	183.0	1.0	3.0	0.0	H-Horn	PK	0.0	36.5	74.0	-37.5

NORTHWEST EMC

Spurious Radiated Emissions of the Receiver

PSA 2006.05.30
EMI 2006.6.15

EUT:	IX270-MC5720			Work Order:	SPTE0020
Serial Number:	Unknown			Date:	06/28/06
Customer:	Spectrum Technology			Temperature:	24
Attendees:	None			Humidity:	40%
Project:	None			Barometric Pres.:	30.28
Tested by:	Holly Ashkannejhad	Power:	120VAC/60Hz	Job Site:	EV01

TEST SPECIFICATIONS	Test Method
FCC 15.109(a):2006	ANSI C63.4:2003

TEST PARAMETERS			
Antenna Height(s) (m)	1 - 4	Test Distance (m)	3

COMMENTS

Internal antenna, standalone notebook

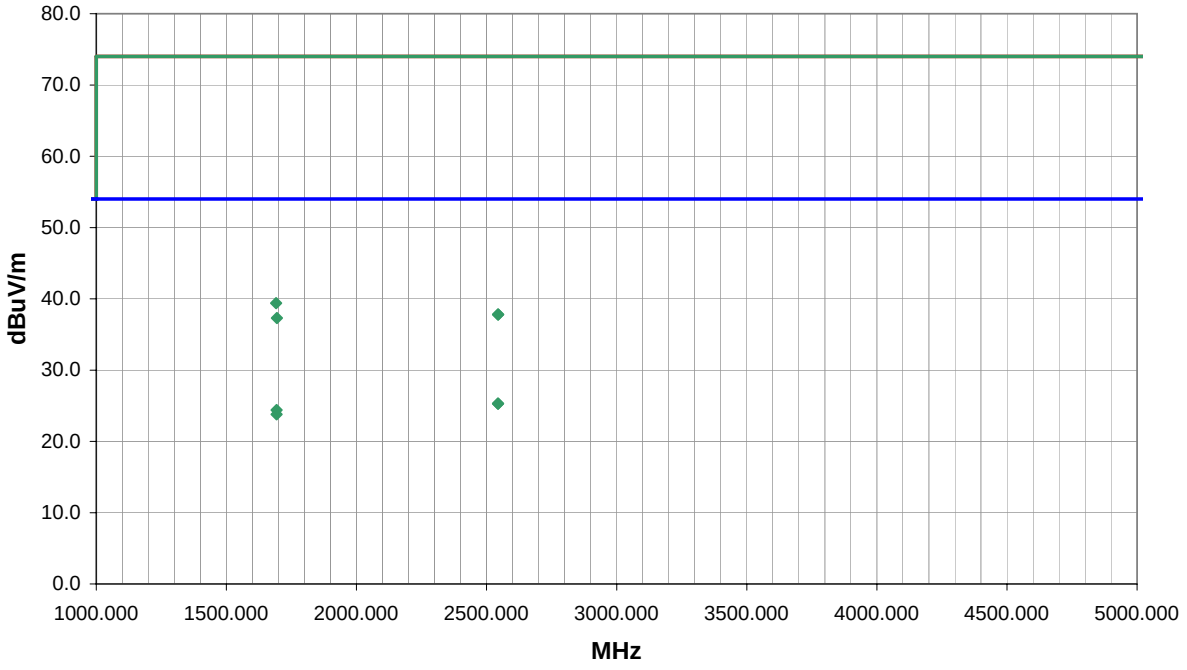
EUT OPERATING MODES

Receive cellular band high channel

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	9		
Configuration #	2		
Results	Pass	NVLAP Lab Code 200630-0	*Signature* Holly Ashkannejhad



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
2543.760	24.5	0.8	269.0	2.6	3.0	0.0	V-Horn	AV	0.0	25.3	54.0	-28.7
2544.332	24.5	0.8	52.0	1.0	3.0	0.0	H-Horn	AV	0.0	25.3	54.0	-28.7
1692.790	26.7	-2.3	348.0	1.0	3.0	0.0	V-Horn	AV	0.0	24.4	54.0	-29.6
1692.880	26.1	-2.3	258.0	1.3	3.0	0.0	H-Horn	AV	0.0	23.8	54.0	-30.2
1691.370	41.7	-2.3	348.0	1.0	3.0	0.0	V-Horn	PK	0.0	39.4	74.0	-34.6
2544.337	37.0	0.8	52.0	1.0	3.0	0.0	H-Horn	PK	0.0	37.8	74.0	-36.2
2544.927	37.0	0.8	269.0	2.6	3.0	0.0	V-Horn	PK	0.0	37.8	74.0	-36.2
1694.200	39.6	-2.3	258.0	1.3	3.0	0.0	H-Horn	PK	0.0	37.3	74.0	-36.7

NORTHWEST EMC

Spurious Radiated Emissions of the Receiver

PSA 2006.05.30
EMI 2006.6.15

EUT:	IX270-MC5720			Work Order:	SPTE0020
Serial Number:	Unknown			Date:	06/28/06
Customer:	Spectrum Technology			Temperature:	24
Attendees:	None			Humidity:	40%
Project:	None			Barometric Pres.:	30.28
Tested by:	Holly Ashkannejhad	Power:	120VAC/60Hz	Job Site:	EV01

TEST SPECIFICATIONS	Test Method
FCC 15.109(a):2006	ANSI C63.4:2003

TEST PARAMETERS			
Antenna Height(s) (m)	1 - 4	Test Distance (m)	3

COMMENTS

Internal antenna, standalone notebook

EUT OPERATING MODES

Receive cellular band low channel

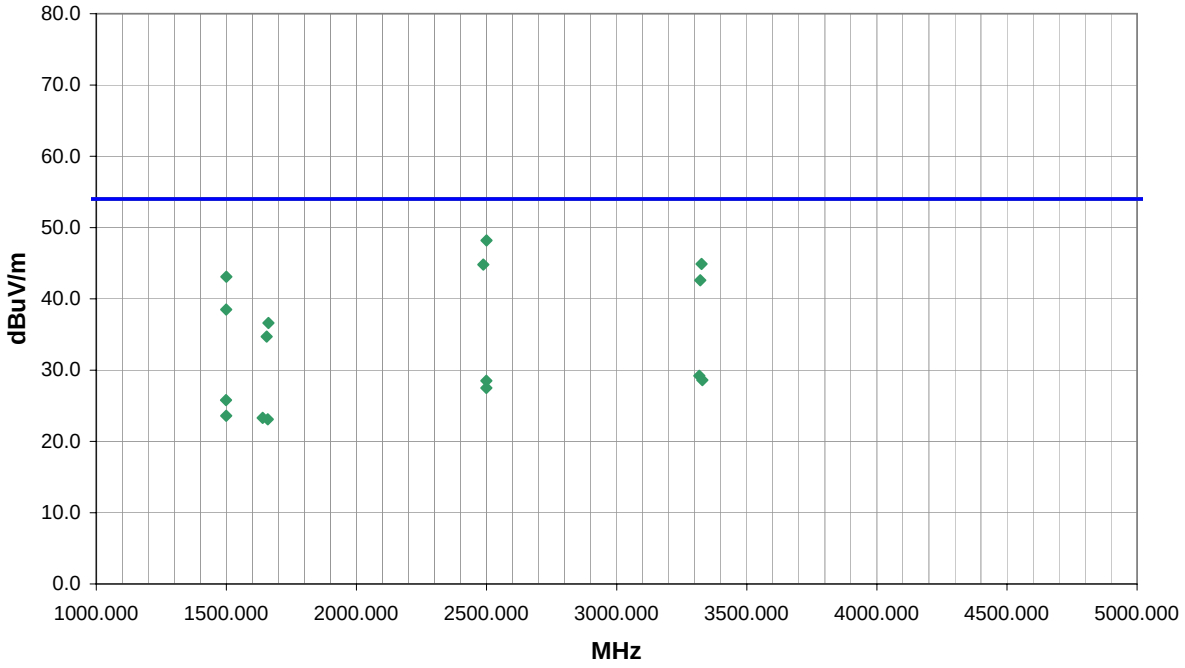
DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	10
Configuration #	2
Results	Pass

NVLAP Lab Code 200630-0

Signature Holly Ashkannejhad



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
2499.840	47.7	0.5	298.0	1.0	3.0	0.0	V-Horn	PK	0.0	48.2	54.0	-5.8
3326.240	41.5	3.4	10.0	1.0	3.0	0.0	V-Horn	PK	0.0	44.9	54.0	-9.1
2487.550	44.3	0.5	90.0	1.0	3.0	0.0	H-Horn	PK	0.0	44.8	54.0	-9.2
1499.900	46.5	-3.4	257.0	1.0	3.0	0.0	V-Horn	PK	0.0	43.1	54.0	-10.9
3321.000	39.2	3.4	284.0	1.0	3.0	0.0	H-Horn	PK	0.0	42.6	54.0	-11.4
1499.450	41.9	-3.4	-1.0	1.3	3.0	0.0	H-Horn	PK	0.0	38.5	54.0	-15.5
1661.610	39.2	-2.6	354.0	1.0	3.0	0.0	V-Horn	PK	0.0	36.6	54.0	-17.4
1654.720	37.3	-2.6	93.0	1.0	3.0	0.0	H-Horn	PK	0.0	34.7	54.0	-19.3
3317.560	25.8	3.4	10.0	1.0	3.0	0.0	V-Horn	AV	0.0	29.2	54.0	-24.8
3329.590	25.2	3.4	284.0	1.0	3.0	0.0	H-Horn	AV	0.0	28.6	54.0	-25.4
2498.970	28.0	0.5	298.0	1.0	3.0	0.0	V-Horn	AV	0.0	28.5	54.0	-25.5
2499.090	27.0	0.5	90.0	1.0	3.0	0.0	H-Horn	AV	0.0	27.5	54.0	-26.5
1498.930	29.2	-3.4	257.0	1.0	3.0	0.0	V-Horn	AV	0.0	25.8	54.0	-28.2
1499.230	27.0	-3.4	-1.0	1.3	3.0	0.0	H-Horn	AV	0.0	23.6	54.0	-30.4
1639.400	25.9	-2.6	93.0	1.0	3.0	0.0	H-Horn	AV	0.0	23.3	54.0	-30.7
1659.430	25.6	-2.5	354.0	1.0	3.0	0.0	V-Horn	AV	0.0	23.1	54.0	-30.9

NORTHWEST EMC

Spurious Radiated Emissions of the Receiver

PSA 2006.05.30
EMI 2006.6.15

EUT:	IX270-MC5720			Work Order:	SPTE0020
Serial Number:	Unknown			Date:	06/28/06
Customer:	Spectrum Technology			Temperature:	24
Attendees:	None			Humidity:	40%
Project:	None			Barometric Pres.:	30.28
Tested by:	Holly Ashkannejhad	Power:	120VAC/60Hz	Job Site:	EV01

TEST SPECIFICATIONS	Test Method
FCC 15.109(a):2006	ANSI C63.4:2003

TEST PARAMETERS			
Antenna Height(s) (m)	1 - 4	Test Distance (m)	3

COMMENTS

Internal antenna, standalone notebook

EUT OPERATING MODES

Receive cellular band low channel

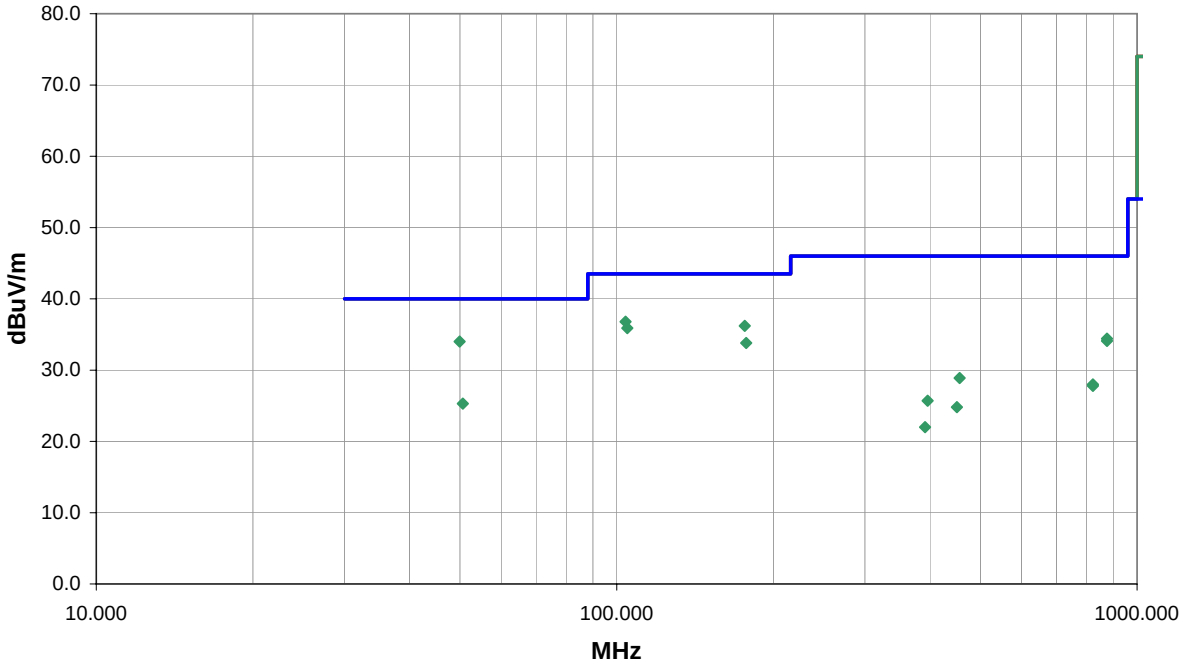
DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	11
Configuration #	2
Results	Pass

NVLAP Lab Code 200630-0

Signature Holly Ashkannejhad



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
49.931	38.7	-4.7	307.0	1.0	3.0	0.0	V-Bilog	QP	0.0	34.0	40.0	-6.0
104.036	42.8	-6.0	0.0	2.1	3.0	0.0	H-Bilog	QP	0.0	36.8	43.5	-6.7
176.257	41.1	-4.9	177.0	1.0	3.0	0.0	V-Bilog	QP	0.0	36.2	43.5	-7.3
104.840	41.9	-6.0	260.0	1.0	3.0	0.0	V-Bilog	QP	0.0	35.9	43.5	-7.6
177.348	38.7	-4.9	174.0	1.7	3.0	0.0	H-Bilog	QP	0.0	33.8	43.5	-9.7
875.225	24.0	10.4	328.0	1.0	3.0	0.0	H-Bilog	QP	0.0	34.4	46.0	-11.6
875.218	23.7	10.4	359.0	2.3	3.0	0.0	V-Bilog	QP	0.0	34.1	46.0	-11.9
50.616	30.1	-4.8	209.0	3.6	3.0	0.0	H-Bilog	QP	0.0	25.3	40.0	-14.7
456.016	24.7	4.2	185.0	1.0	3.0	0.0	V-Bilog	QP	0.0	28.9	46.0	-17.1
822.660	17.9	10.1	77.0	1.0	3.0	0.0	V-Bilog	QP	0.0	28.0	46.0	-18.0
822.240	17.8	10.0	203.0	1.0	3.0	0.0	H-Bilog	QP	0.0	27.8	46.0	-18.2
395.750	22.6	3.1	8.0	1.0	3.0	0.0	V-Bilog	QP	0.0	25.7	46.0	-20.3
450.464	20.9	3.9	96.0	1.0	3.0	0.0	H-Bilog	QP	0.0	24.8	46.0	-21.2
391.373	19.0	3.0	63.0	3.4	3.0	0.0	H-Bilog	QP	0.0	22.0	46.0	-24.0


NORTHWEST EMC
NORTHWEST EMC
NORTHWEST EMC

Out of Band Emissions

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

MODES OF OPERATION
Transmit PCS band low channel
Transmit PCS band mid channel
Transmit PCS band high channel
Transmit Cell band low channel
Transmit Cell band mid channel
Transmit Cell band high channel

CHANNELS INVESTIGATED
Low channel
Mid channel
High channel

POWER SETTINGS INVESTIGATED
120VAC/60Hz

FREQUENCY RANGE INVESTIGATED			
Start Frequency	30 MHz	Stop Frequency	26 GHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Antenna, Dipole (part of ADA)	ETS	3121C-DB4	ADAA	1/6/2005	24
Antenna, Dipole (ADAA included)	Roberts	Roberts	ADA	1/6/2005	24
Signal Generator	Hewlett Packard	8341B	TGN	1/26/2006	13
Antenna, Horn	EMCO	3115	AHJ	5/20/2005	24
EV01 Cable D			EVD	3/30/2006	13
Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	3/23/2006	13
Antenna, Horn	EMCO	3160-09	AHG	NCR	0
EV01 cables g,h,I			EVF	4/17/2006	13
Pre-Amplifier	Miteq	AMF-4D-005180-24-10P	APC	5/12/2006	13
Antenna, Horn	EMCO	3160-08	AHK	NCR	0
EV01 cables g,h,j			EVB	3/30/2006	13
EV01 cables c,g, h			EVA	3/30/2006	13
Low Pass Filter 0-1000 MHz	Micro-Tronics	LPM50004	LFD	9/28/2005	13
High Pass Filter 1.2 - 18 GHz	Micro-Tronics	HPM50108	HFV	9/28/2005	13
High Pass Filter	Micro-Tronics	HPM50111	HFO	4/4/2006	13
Pre-Amplifier	Miteq	AMF-4D-010100-24-10P	APW	8/2/2005	13
Pre-Amplifier	Miteq	AM-1616-1000	AOL	1/4/2006	13
Antenna, Horn	EMCO	3115	AHC	8/30/2005	12
Antenna, Biconilog	EMCO	3141	AXE	12/28/2005	24
Spectrum Analyzer	Agilent	E4446A	AAT	4/4/2006	12

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

Measurements were made using the bandwidths and detectors specified. No video filter was used.

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

The antennas to be used with the EUT were tested. The EUT was transmitting while set at the lowest channel, a middle channel, and the highest channel available of each band and each modulation type. While scanning, emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height and polarization, and manipulating the EUT antenna in 3 orthogonal planes.

The amplitude and frequency of the highest emissions were noted. The EUT was then replaced with a horn antenna. A signal generator was connected to the horn antenna and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded, and by factoring in the cable loss to the dipole antenna and its gain (dBi); the effective radiated power for each radiated spurious emission was determined.

NORTHWEST **EMC**

Out of Band Emissions

PSA 2006.05.30
EMI 2006.6.15

EUT:	IX270-MC5720	**Work Order:**	SPTE0020
Serial Number:	Unknown	**Date:**	06/26/06
Customer:	Spectrum Technology	**Temperature:**	24
Attendees:	None	**Humidity:**	40%
Project:	None	**Barometric Pres.:**	30.28
Tested by:	Holly Ashkannejhad	**Power:** 120VAC/60Hz	**Job Site:** EV01

TEST SPECIFICATIONS	Test Method
FCC 22H:2006	ANSI/TIA/EIA-603-B:2002

TEST PARAMETERS

Antenna Height(s) (m)	1 - 4	**Test Distance (m)**	3

COMMENTS

Internal antenna, standalone notebook

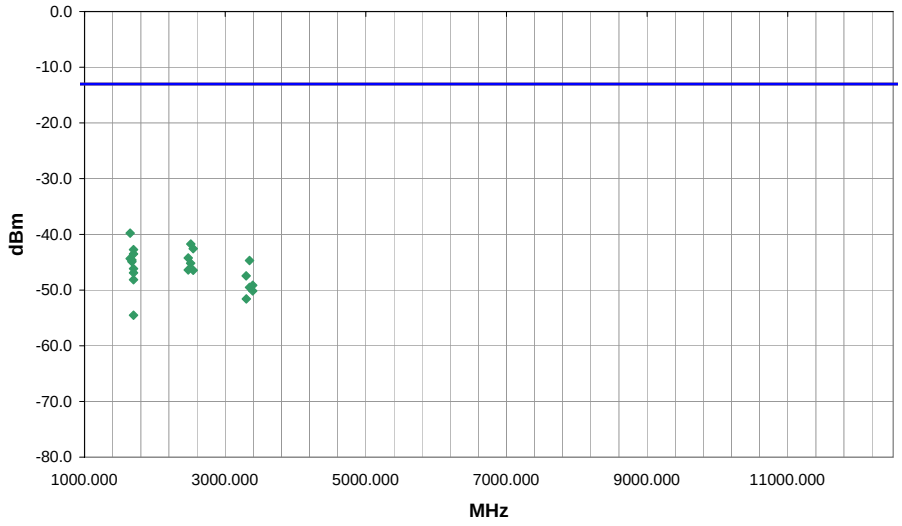
EUT OPERATING MODES

Transmit cellular band

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	6		
Configuration #	2		
Results	Pass	NVLAP Lab Code 200630-0	*Signature* Holly Ashkannejhad



Freq (MHz)			Azimuth (degrees)	Height (meters)			Polarity	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
1649.596			190.0	1.1			V-Horn	PK	1.05E-07	-39.8	-13.0	-26.8	Low channel, EUT typical position
2509.928			176.0	1.2			H-Horn	PK	6.72E-08	-41.7	-13.0	-28.7	Mid channel, EUT on side
2545.608			168.0	1.2			H-Horn	PK	5.55E-08	-42.6	-13.0	-29.6	High channel, EUT on side
1697.042			327.0	1.1			V-Horn	PK	5.30E-08	-42.8	-13.0	-29.8	High channel, EUT typical position
1696.233			101.0	1.3			H-Horn	PK	4.46E-08	-43.5	-13.0	-30.5	High channel, EUT on side
2474.658			179.0	1.2			V-Horn	PK	3.76E-08	-44.3	-13.0	-31.3	Low channel, EUT typical position
1649.286			100.0	1.2			H-Horn	PK	3.66E-08	-44.4	-13.0	-31.4	Low channel, EUT on side
1672.633			360.0	1.9			V-Horn	PK	3.46E-08	-44.6	-13.0	-31.6	Mid channel, EUT typical position
3345.942			193.0	1.2			V-Horn	PK	3.39E-08	-44.7	-13.0	-31.7	Mid channel, EUT typical position
1672.699			30.0	1.2			H-Horn	PK	3.25E-08	-44.9	-13.0	-31.9	Mid channel, EUT on side
2509.319			153.0	1.2			V-Horn	PK	3.02E-08	-45.2	-13.0	-32.2	Mid channel, EUT typical position
1697.125			197.0	1.3			V-Horn	PK	2.42E-08	-46.2	-13.0	-33.2	High channel, EUT on side
2474.933			175.0	1.2			H-Horn	PK	2.30E-08	-46.4	-13.0	-33.4	Low channel, EUT on side
2544.650			155.0	1.2			V-Horn	PK	2.27E-08	-46.4	-13.0	-33.4	High channel, EUT typical position
1696.825			217.0	1.2			H-Horn	PK	2.04E-08	-46.9	-13.0	-33.9	High channel, EUT typical position
3298.768			182.0	1.8			V-Horn	PK	1.80E-08	-47.4	-13.0	-34.4	Low channel, EUT typical position
1697.075			133.0	1.4			V-Horn	PK	1.53E-08	-48.2	-13.0	-35.2	High channel, EUT screen horizontal
3392.083			276.0	1.2			H-Horn	PK	1.21E-08	-49.2	-13.0	-36.2	High channel, EUT on side
3345.242			300.0	1.2			H-Horn	PK	1.12E-08	-49.5	-13.0	-36.5	Mid channel, EUT on side
3392.567			203.0	1.2			V-Horn	PK	9.67E-09	-50.1	-13.0	-37.1	High channel, EUT typical position

NORTHWEST EMC

Out of Band Emissions

PSA 2006.05.30
EMI 2006.6.15

EUT:	IX270-MC5720	Work Order:	SPTE0020
Serial Number:	Unknown	Date:	06/26/06
Customer:	Spectrum Technology	Temperature:	24
Attendees:	None	Humidity:	40%
Project:	None	Barometric Pres.:	30.28
Tested by:	Holly Ashkannejhad	Power: 120VAC/60Hz	Job Site: EV01

TEST SPECIFICATIONS	Test Method
FCC 24E:2006	ANSI/TIA/EIA-603-B:2002

TEST PARAMETERS			
Antenna Height(s) (m)	1 - 4	Test Distance (m)	3

COMMENTS

Internal antenna, standalone notebook

EUT OPERATING MODES

Transmit PCS band

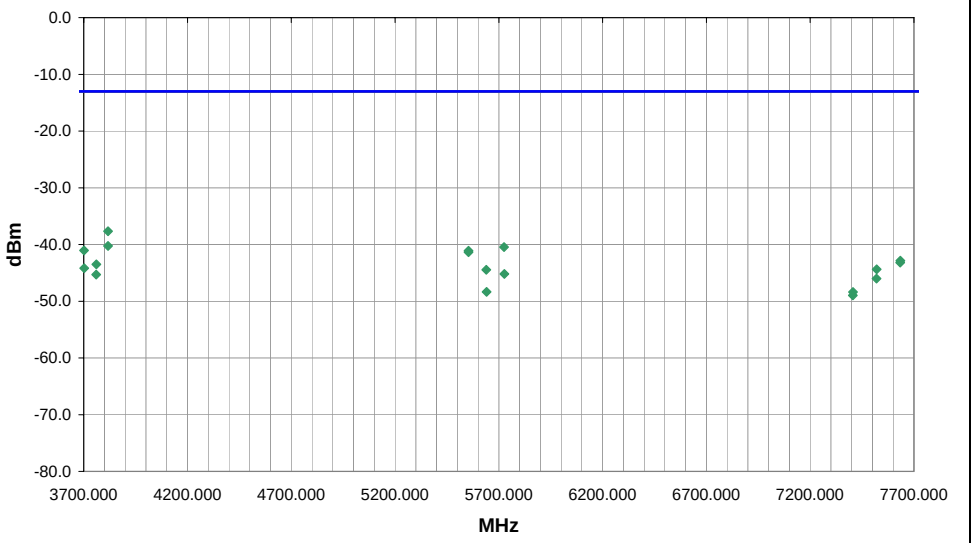
DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	7
Configuration #	2
Results	Pass

NVLAP Lab Code 200630-0

Signature Holly Ashkannejhad



Freq (MHz)			Azimuth (degrees)	Height (meters)			Polarity	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
3817.192			342.0	1.0			H-Horn	PK	1.72E-07	-37.6	-13.0	-24.6	High channel, EUT on side
3817.108			176.0	1.0			V-Horn	PK	9.42E-08	-40.3	-13.0	-27.3	High channel, EUT typical position
5725.275			328.0	1.0			V-Horn	PK	9.01E-08	-40.5	-13.0	-27.5	High channel, EUT typical position
3701.792			193.0	1.0			V-Horn	PK	7.85E-08	-41.1	-13.0	-28.1	Low channel, EUT typical position
5554.033			226.0	1.3			H-Horn	PK	7.75E-08	-41.1	-13.0	-28.1	Low channel, EUT on side
5553.567			319.0	1.0			V-Horn	PK	7.30E-08	-41.4	-13.0	-28.4	Low channel, EUT typical position
7634.717			225.0	1.0			H-Horn	PK	5.20E-08	-42.8	-13.0	-29.8	High channel, EUT on side
7634.075			343.0	1.0			V-Horn	PK	4.80E-08	-43.2	-13.0	-30.2	High channel, EUT typical position
3760.525			198.0	1.3			V-Horn	PK	4.46E-08	-43.5	-13.0	-30.5	Mid channel, EUT typical position
3702.292			354.0	1.0			H-Horn	PK	3.83E-08	-44.2	-13.0	-31.2	Low channel, EUT on side
7520.467			254.0	1.0			V-Horn	PK	3.65E-08	-44.4	-13.0	-31.4	Mid channel, EUT typical position
5639.550			313.0	1.0			V-Horn	PK	3.58E-08	-44.5	-13.0	-31.5	Mid channel, EUT typical position
5726.567			223.0	1.4			H-Horn	PK	3.03E-08	-45.2	-13.0	-32.2	High channel, EUT on side
3760.100			12.0	1.0			H-Horn	PK	2.94E-08	-45.3	-13.0	-32.3	Mid channel, EUT on side
7519.342			203.0	1.3			H-Horn	PK	2.50E-08	-46.0	-13.0	-33.0	Mid channel, EUT on side
5640.858			0.0	1.8			H-Horn	PK	1.46E-08	-48.3	-13.0	-35.3	Mid channel, EUT on side
7406.267			199.0	1.0			H-Horn	PK	1.45E-08	-48.4	-13.0	-35.4	Low channel, EUT on side
7405.583			175.0	1.4			V-Horn	PK	1.27E-08	-49.0	-13.0	-36.0	Low channel, EUT typical position

NORTHWEST EMC

Out of Band Emissions

PSA 2006.05.30
EMI 2006.6.15

EUT:	IX270-MC5720			Work Order:	SPTE0020
Serial Number:	Unknown			Date:	06/29/06
Customer:	Spectrum Technology			Temperature:	24
Attendees:	None			Humidity:	40%
Project:	None			Barometric Pres.:	30.28
Tested by:	Rod Peloquin	Power:	120VAC/60Hz	Job Site:	EV01

TEST SPECIFICATIONS	Test Method
FCC 22H:2006	ANSI/TIA/EIA-603-B:2002

TEST PARAMETERS			
Antenna Height(s) (m)	1 - 4	Test Distance (m)	3

COMMENTS

External antenna terminated, vehicle mount configuration

EUT OPERATING MODES

Transmit cellular band

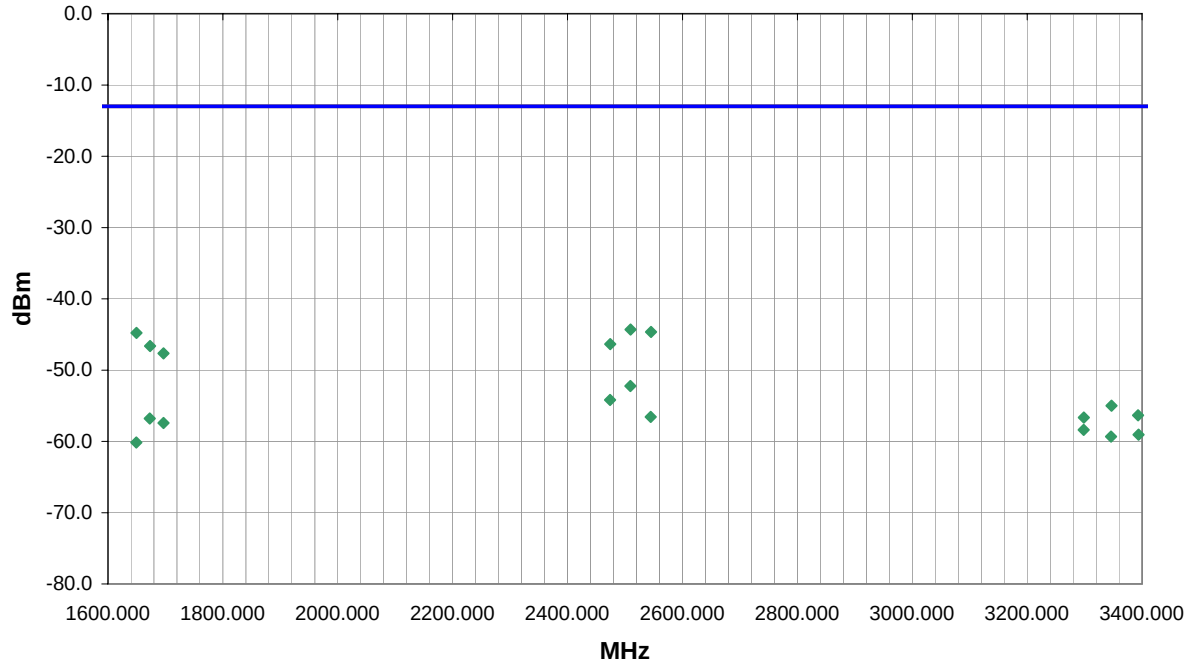
DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	8
Configuration #	3
Results	Pass

NVLAP Lab Code 200630-0

Signature



Freq (MHz)			Azimuth (degrees)	Height (meters)			Polarity	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)
2509.611			313.0	1.2			V-Horn	PK	3.72E-08	-44.3	-13.0	-31.3
2545.168			313.0	1.2			V-Horn	PK	3.43E-08	-44.6	-13.0	-31.6
1649.642			360.0	1.2			V-Horn	PK	3.33E-08	-44.8	-13.0	-31.8
2474.264			280.0	1.2			V-Horn	PK	2.32E-08	-46.3	-13.0	-33.3
1673.198			12.0	1.1			V-Horn	PK	2.18E-08	-46.6	-13.0	-33.6
1696.655			299.0	1.1			V-Horn	PK	1.72E-08	-47.7	-13.0	-34.7
2509.302			345.0	1.2			H-Horn	PK	5.99E-09	-52.2	-13.0	-39.2
2473.936			0.0	2.3			H-Horn	PK	3.81E-09	-54.2	-13.0	-41.2
3346.789			-1.0	1.2			V-Horn	PK	3.16E-09	-55.0	-13.0	-42.0
3393.168			5.0	1.2			V-Horn	PK	2.32E-09	-56.3	-13.0	-43.3
2544.696			332.0	1.2			H-Horn	PK	2.21E-09	-56.6	-13.0	-43.6
3298.696			-1.0	1.2			V-Horn	PK	2.16E-09	-56.6	-13.0	-43.6
1672.586			30.0	1.2			H-Horn	PK	2.10E-09	-56.8	-13.0	-43.8
1696.669			229.0	1.2			H-Horn	PK	1.82E-09	-57.4	-13.0	-44.4
3298.265			89.0	3.2			H-Horn	PK	1.45E-09	-58.4	-13.0	-45.4
3393.995			23.0	1.2			H-Horn	PK	1.24E-09	-59.1	-13.0	-46.1
3345.833			29.0	1.2			H-Horn	PK	1.17E-09	-59.3	-13.0	-46.3
1649.183			247.0	1.6			H-Horn	PK	9.63E-10	-60.2	-13.0	-47.2

NORTHWEST EMC

Out of Band Emissions

PSA 2006.05.30
EMI 2006.6.15

EUT:	IX270-MC5720			Work Order:	SPTE0020
Serial Number:	Unknown			Date:	06/29/06
Customer:	Spectrum Technology			Temperature:	24
Attendees:	None			Humidity:	40%
Project:	None			Barometric Pres.:	30.28
Tested by:	Rod Peloquin	Power:	120VAC/60Hz	Job Site:	EV01

TEST SPECIFICATIONS	Test Method
FCC 24E:2006	ANSI/TIA/EIA-603-B:2002

TEST PARAMETERS			
Antenna Height(s) (m)	1 - 4	Test Distance (m)	3

COMMENTS

External antenna terminated, vehicle mount configuration

EUT OPERATING MODES

Transmit PCS band

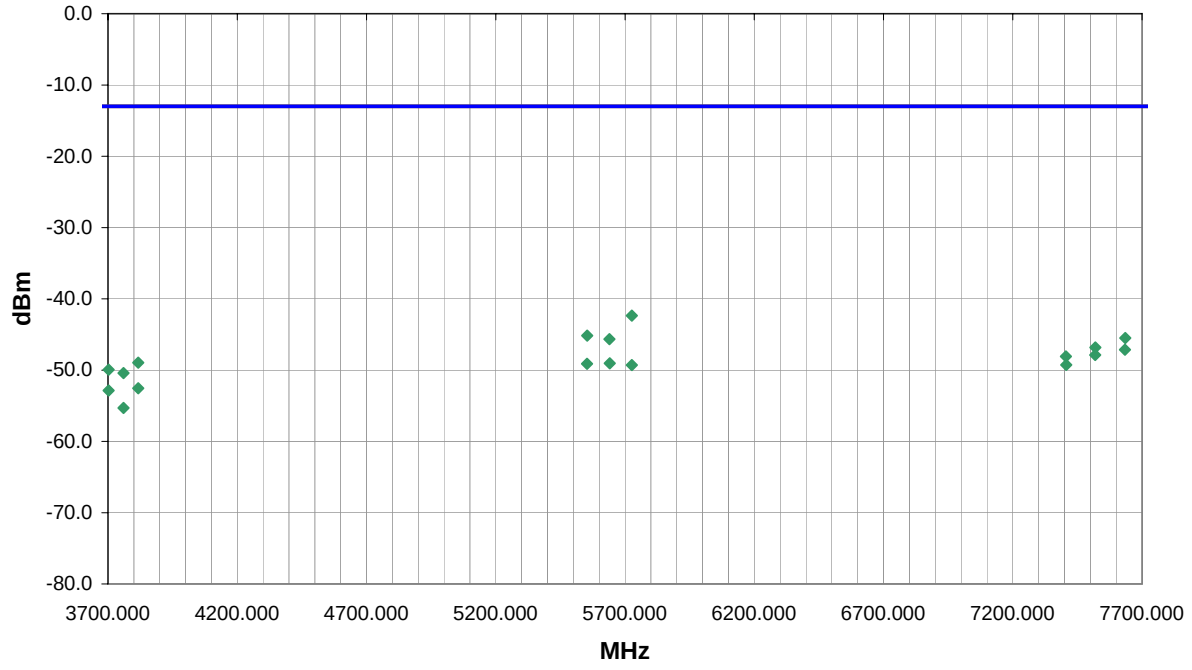
DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	9
Configuration #	3
Results	Pass

NVLAP Lab Code 200630-0

Signature



Freq (MHz)			Azimuth (degrees)	Height (meters)			Polarity	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)
5726.132			348.0	1.0			V-Horn	PK	5.82E-08	-42.4	-13.0	-29.4
5553.425			319.0	1.0			V-Horn	PK	3.04E-08	-45.2	-13.0	-32.2
7635.149			343.0	1.0			V-Horn	PK	2.83E-08	-45.5	-13.0	-32.5
5639.836			337.0	1.0			V-Horn	PK	2.72E-08	-45.7	-13.0	-32.7
7519.021			360.0	1.5			H-Horn	PK	2.08E-08	-46.8	-13.0	-33.8
7633.532			168.0	1.0			H-Horn	PK	1.93E-08	-47.1	-13.0	-34.1
7518.565			201.0	1.0			V-Horn	PK	1.63E-08	-47.9	-13.0	-34.9
7405.274			228.0	1.0			H-Horn	PK	1.55E-08	-48.1	-13.0	-35.1
3817.252			333.0	1.0			V-Horn	PK	1.27E-08	-49.0	-13.0	-36.0
5641.024			213.0	1.0			H-Horn	PK	1.25E-08	-49.0	-13.0	-36.0
5553.297			343.0	1.0			H-Horn	PK	1.23E-08	-49.1	-13.0	-36.1
7406.500			146.0	1.0			V-Horn	PK	1.18E-08	-49.3	-13.0	-36.3
5726.074			340.0	1.0			H-Horn	PK	1.18E-08	-49.3	-13.0	-36.3
3702.503			235.0	1.0			V-Horn	PK	1.01E-08	-50.0	-13.0	-37.0
3759.761			332.0	1.0			V-Horn	PK	9.11E-09	-50.4	-13.0	-37.4
3817.238			160.0	1.0			H-Horn	PK	5.56E-09	-52.5	-13.0	-39.5
3702.686			123.0	1.0			H-Horn	PK	5.16E-09	-52.9	-13.0	-39.9
3760.137			66.0	1.0			H-Horn	PK	2.94E-09	-55.3	-13.0	-42.3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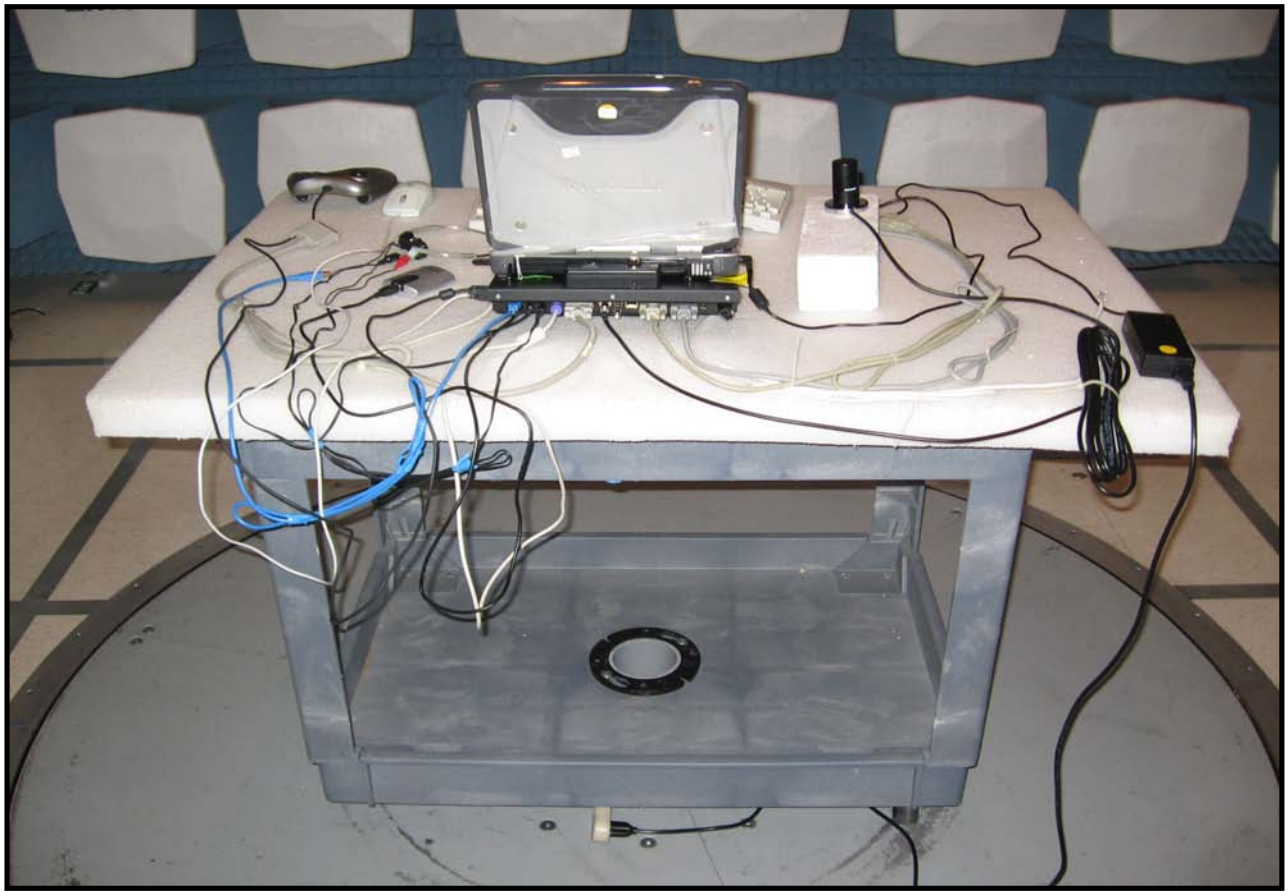


Effective Radiated Power of the Fundamental

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

MODES OF OPERATION
Transmit PCS band low, mid, and high channels
Transmit cell band low, mid, and high channels

POWER SETTINGS INVESTIGATED
120VAC/60Hz

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4446A	AAT	4/4/2006	12
Antenna, Biconilog	EMCO	3141	AXE	12/28/2005	24
Antenna, Horn	EMCO	3115	AHC	8/30/2005	12
Signal Generator	Hewlett Packard	8341B	TGN	1/26/2006	13
Antenna, Horn	EMCO	3115	AHJ	5/20/2005	24
Antenna, Dipole (ADAA included)	Roberts	Roberts	ADA	1/6/2005	24
EV01 cables c,g, h			EVA	3/30/2006	13
EV01 cables g,h,j			EVB	3/30/2006	13

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

The antennas to be used with the EUT were tested. The EUT was transmitting and/or receiving while set at the lowest channel, a middle channel, and the highest channel available. While scanning, emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height and polarization, and manipulating the EUT antenna in 3 orthogonal planes

The amplitude and frequency of the highest emissions were noted. The EUT was then replaced with a horn antenna. A signal generator was connected to the horn antenna and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded, and by factoring in the cable loss to the dipole antenna and its gain (dBi); the effective radiated power for each radiated spurious emission was determined.

NORTHWEST EMC

Effective Radiated Power (ERP)

PSA 2006.05.30
EMI 2006.6.15

EUT:	IX270-MC5720			Work Order:	SPTE0020
Serial Number:	Unknown			Date:	06/26/06
Customer:	Spectrum Technology			Temperature:	24
Attendees:	None			Humidity:	40%
Project:	None			Barometric Pres.:	30.28
Tested by:	Rod Peloquin	Power:	120VAC/60Hz	Job Site:	EV01

TEST SPECIFICATIONS	Test Method
FCC 22H:2006	ANSI/TIA/EIA-603-B:2002

TEST PARAMETERS			
Antenna Height(s) (m)	1 - 4	Test Distance (m)	0

COMMENTS

External antenna, vehicle mount

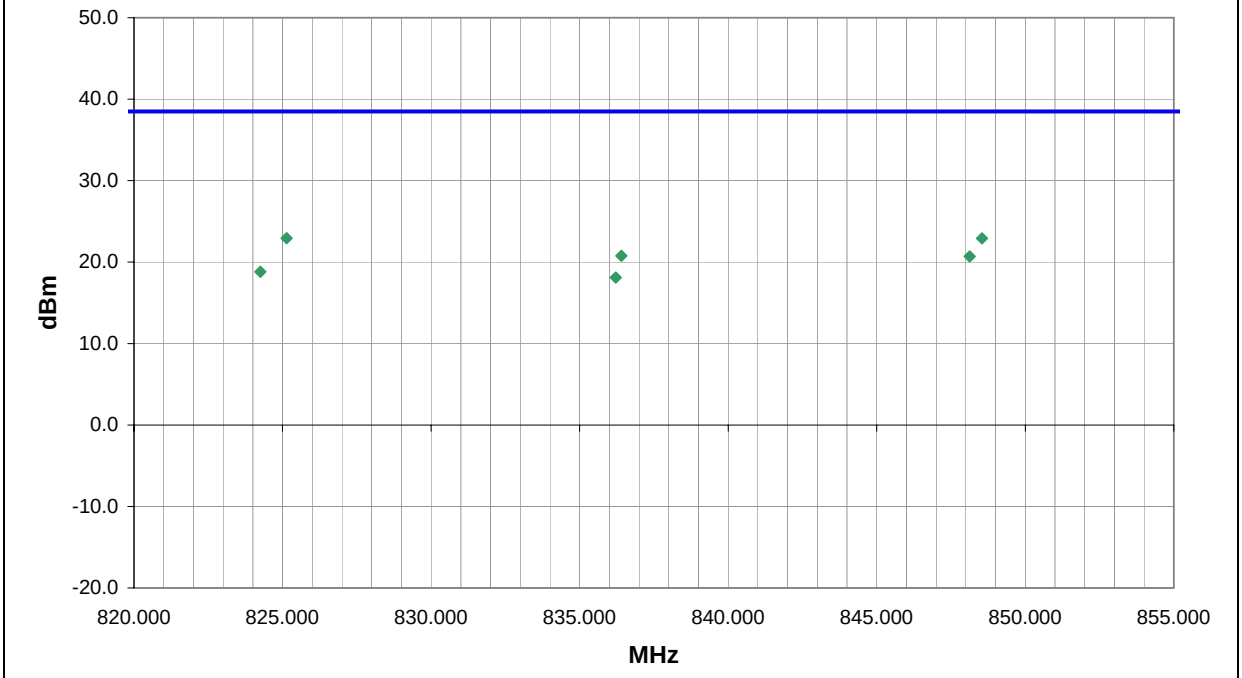
EUT OPERATING MODES

Transmit cell band

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	1		
Configuration #	1		
Results	Pass	NVLAP Lab Code 200630-0	*Signature*



Freq (MHz)			Azimuth (degrees)	Height (meters)			Polarity	Detector	ERP (Watts)	ERP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)
825.138			222.0	1.5			V-Bilog	PK	1.96E-01	22.9	38.5	-15.6
848.543			301.0	1.2			V-Bilog	PK	1.96E-01	22.9	38.5	-15.6
836.402			302.0	1.2			V-Bilog	PK	1.19E-01	20.8	38.5	-17.7
848.127			191.0	1.8			H-Bilog	PK	1.17E-01	20.7	38.5	-17.8
824.257			147.0	1.2			H-Bilog	PK	7.60E-02	18.8	38.5	-19.7
836.213			216.0	1.0			H-Bilog	PK	6.46E-02	18.1	38.5	-20.4

NORTHWEST EMC

Effective Radiated Power (EIRP)

PSA 2006.05.30
EMI 2006.6.15

EUT:	IX270-MC5720			Work Order:	SPTE0020
Serial Number:	Unknown			Date:	06/26/06
Customer:	Spectrum Technology			Temperature:	24
Attendees:	None			Humidity:	40%
Project:	None			Barometric Pres.:	30.28
Tested by:	Rod Peloquin	Power:	120VAC/60Hz	Job Site:	EV01

TEST SPECIFICATIONS	Test Method
FCC 24E:2006	ANSI/TIA/EIA-603-B:2002

TEST PARAMETERS			
Antenna Height(s) (m)	1 - 4	Test Distance (m)	0

COMMENTS

External antenna, vehicle mount

EUT OPERATING MODES

Transmit PCS band

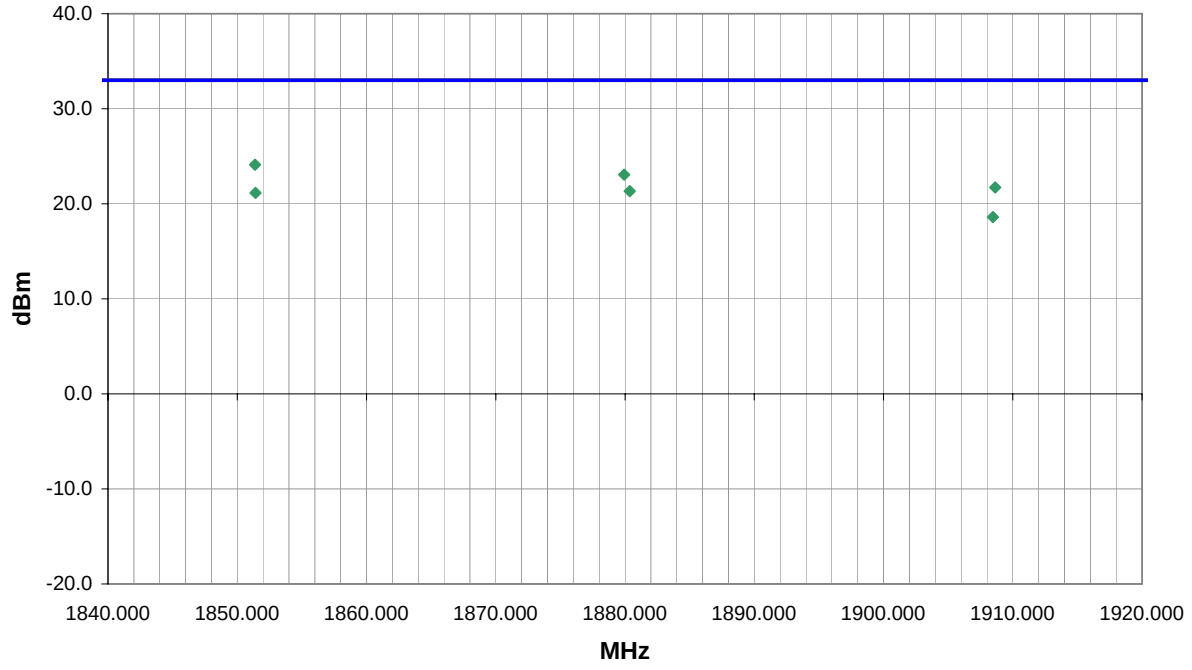
DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	2
Configuration #	1
Results	Pass

NVLAP Lab Code 200630-0

Signature



Freq (MHz)			Azimuth (degrees)	Height (meters)			Polarity	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)
1851.381			191.0	1.4			V-Horn	PK	2.57E-01	24.1	33.0	-8.9
1879.936			191.0	1.0			V-Horn	PK	2.02E-01	23.1	33.0	-9.9
1908.637			199.0	1.3			V-Horn	PK	1.49E-01	21.7	33.0	-11.3
1880.369			272.0	1.3			H-Horn	PK	1.36E-01	21.3	33.0	-11.7
1851.416			290.0	1.7			H-Horn	PK	1.30E-01	21.2	33.0	-11.8
1908.461			284.0	3.0			H-Horn	PK	7.25E-02	18.6	33.0	-14.4

NORTHWEST EMC

Effective Radiated Power (EIRP)

PSA 2006.05.30
EMI 2006.6.15

EUT:	IX270-MC5720			Work Order:	SPTE0020
Serial Number:	Unknown			Date:	06/26/06
Customer:	Spectrum Technology			Temperature:	24
Attendees:	None			Humidity:	40%
Project:	None			Barometric Pres.:	30.28
Tested by:	Rod Peloquin	Power:	120VAC/60Hz	Job Site:	EV01

TEST SPECIFICATIONS	Test Method
FCC 24E:2006	ANSI/TIA/EIA-603-B:2002

TEST PARAMETERS			
Antenna Height(s) (m)	1 - 4	Test Distance (m)	0

COMMENTS

Internal antenna, standalone notebook

EUT OPERATING MODES

Transmit PCS band

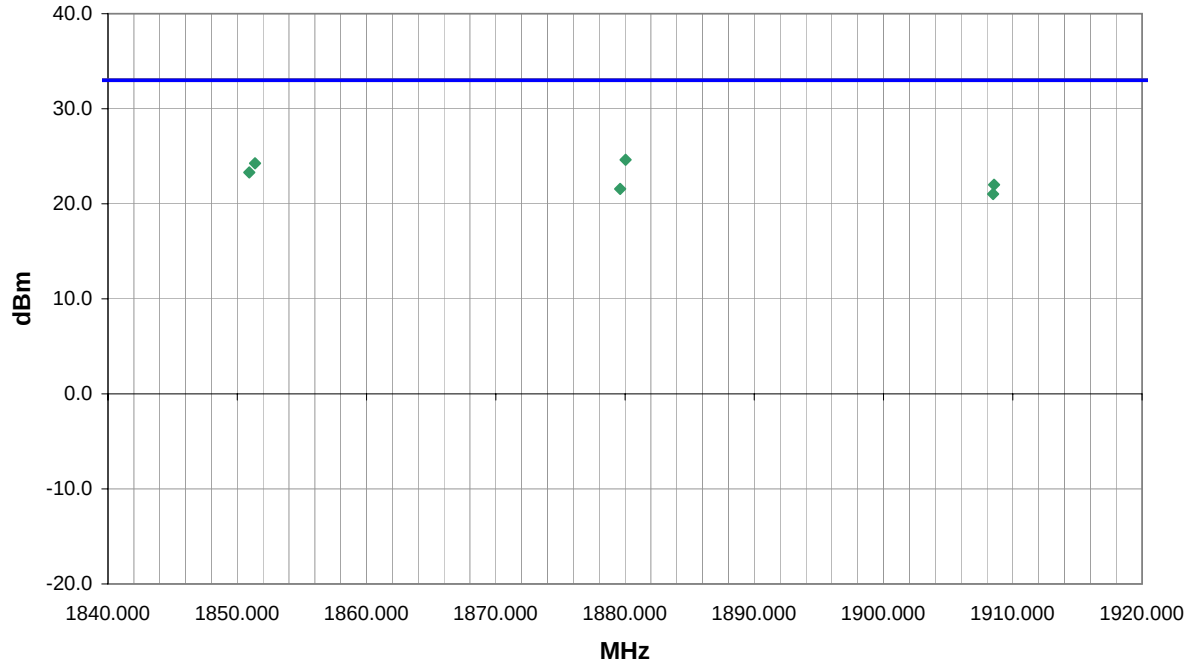
DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	3
Configuration #	2
Results	Pass

NVLAP Lab Code 200630-0

Signature



Freq (MHz)			Azimuth (degrees)	Height (meters)			Polarity	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)
1880.041			26.0	1.0			H-Horn	PK	2.90E-01	24.6	33.0	-8.4
1851.379			36.0	1.0			H-Horn	PK	2.66E-01	24.3	33.0	-8.7
1850.931			347.0	1.1			V-Horn	PK	2.14E-01	23.3	33.0	-9.7
1908.546			352.0	1.0			H-Horn	PK	1.59E-01	22.0	33.0	-11.0
1879.624			336.0	1.0			V-Horn	PK	1.43E-01	21.6	33.0	-11.4
1908.471			343.0	1.0			V-Horn	PK	1.26E-01	21.0	33.0	-12.0

NORTHWEST EMC

Effective Radiated Power (ERP)

PSA 2006.05.30
EMI 2006.6.15

EUT:	IX270-MC5720			Work Order:	SPTE0020
Serial Number:	Unknown			Date:	06/26/06
Customer:	Spectrum Technology			Temperature:	24
Attendees:	None			Humidity:	40%
Project:	None			Barometric Pres.:	30.28
Tested by:	Rod Peloquin	Power:	120VAC/60Hz	Job Site:	EV01

TEST SPECIFICATIONS	Test Method
FCC 22H:2006	ANSI/TIA/EIA-603-B:2002

TEST PARAMETERS			
Antenna Height(s) (m)	1 - 4	Test Distance (m)	0

COMMENTS

Internal antenna, standalone notebook

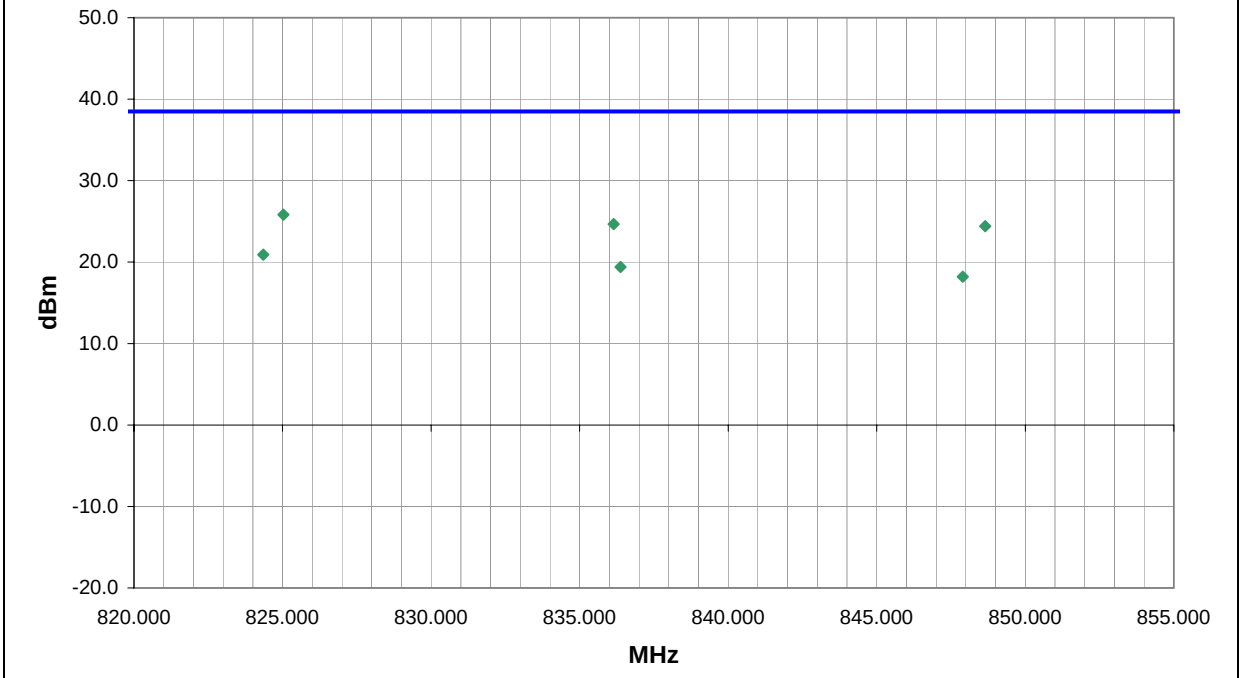
EUT OPERATING MODES

Transmit cell band

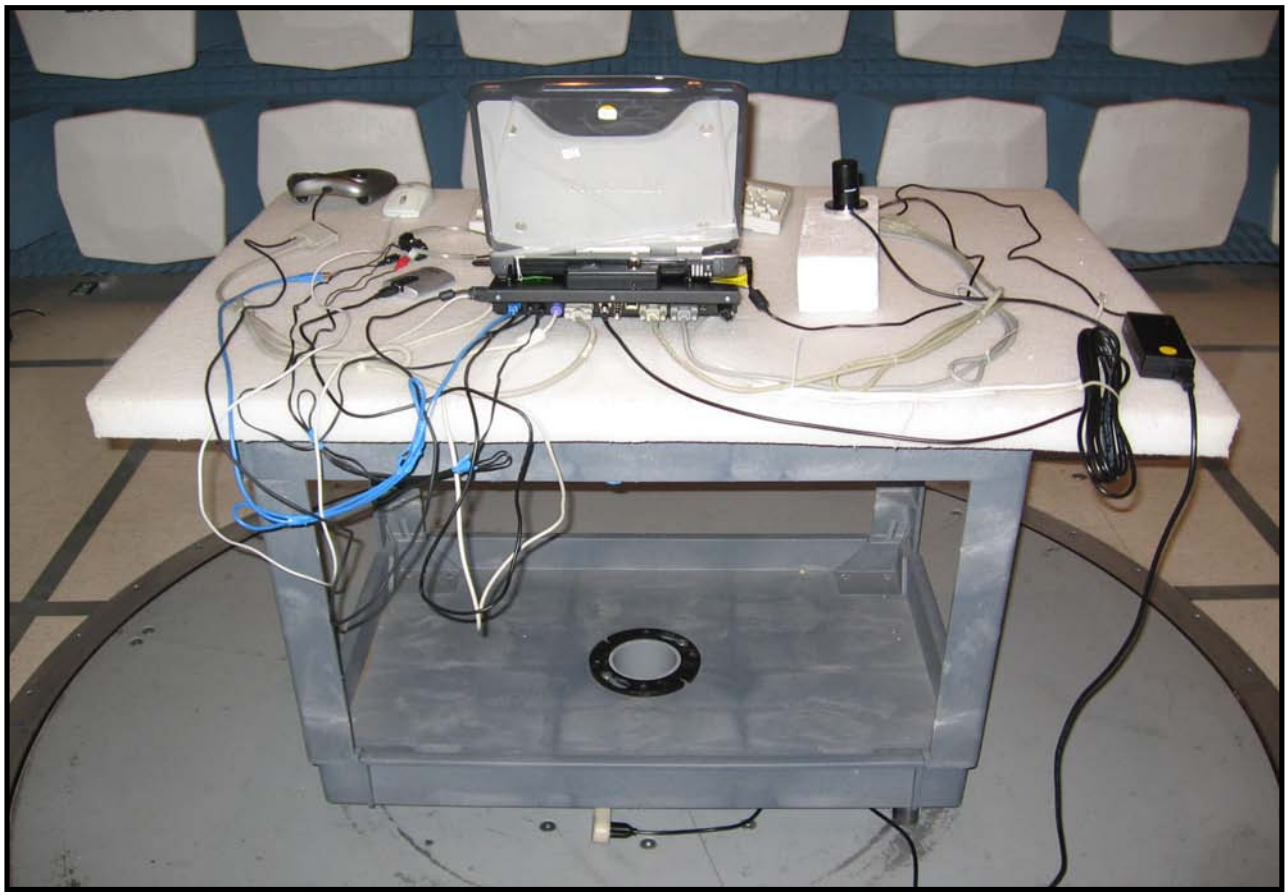
DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	4		
Configuration #	2		
Results	Pass	NVLAP Lab Code 200630-0	*Signature*



Freq (MHz)			Azimuth (degrees)	Height (meters)			Polarity	Detector	ERP (Watts)	ERP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)
825.029			57.0	1.8			V-Bilog	PK	3.83E-01	25.8	38.5	-12.7
836.146			58.0	1.8			V-Bilog	PK	2.93E-01	24.7	38.5	-13.8
848.651			92.0	1.7			V-Bilog	PK	2.76E-01	24.4	38.5	-14.1
824.354			360.0	1.0			H-Bilog	PK	1.23E-01	20.9	38.5	-17.6
836.376			207.0	1.0			H-Bilog	PK	8.71E-02	19.4	38.5	-19.1
847.894			139.0	1.0			H-Bilog	PK	6.59E-02	18.2	38.5	-20.3

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AC POWERLINE CONDUCTED EMISSIONS

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

MODES OF OPERATION

Receive Cell Band Low Channel
Receive Cell Band Mid Channel
Receive Cell Band High Channel

POWER SETTINGS INVESTIGATED

120VAC/60Hz

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Receiver	Rohde & Schwarz	1166.5950.03	100205	6/10/2006	13
LISN	Solar	9252-50-R-24-BNC	LIP	12/13/2005	13
Attenuator	Coaxicom	66702 2910-20	RBR	5/3/2006	13
High Pass Filter	T.T.E.	7766	HFG	12/19/2005	13
EV07 cable d	ESM Cable	N/a	EVG	3/30/2006	13

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, conducted emissions tests were performed. The frequency range investigated (scanned), is also noted in this report. Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 30 MHz to determine the line-to-ground radio-noise voltage that is conducted from the EUT power-input terminals that are directly (or indirectly via separate transformer or power supplies) connected to a public power network. Equipment is tested with power cords that are normally used or that have electrical or shielding characteristics that are the same as those cords normally used. Typically those measurements are made using a LISN (Line Impedance Stabilization Network), the 50 Ω measuring port is terminated by a 50 Ω EMI meter or a 50 Ω resistive load. All 50 Ω measuring ports of the LISN are terminated by 50Ω.

NORTHWEST **EMC** cond

AC POWERLINE CONDUCTED EMISSIONS

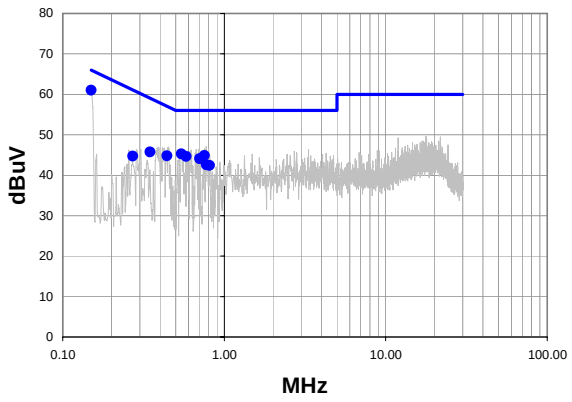
Version 2006.7.1
NEWPSA 06/23/06
NVLAP Lab Code 200630-0

Work Order:	SPTE0020	Date:	06/27/06	
Project:	None	Temperature:	24	
Job Site:	EV07	Humidity:	34%	
Serial Number:	Unknown	Barometric Pres.:	29.98	
EUT Power	120VAC/60Hz			
Configuration	2			Tested by: Rod Peloquin
Customer:	Spectrum Technology			
Attendees:	None			
EUT:	IX270-MC5720			
OPERATING MODES	Receive mode, cell band, low channel			
DEVIATIONS	No deviations.			
COMMENTS	Internal antenna, standalone notebook			

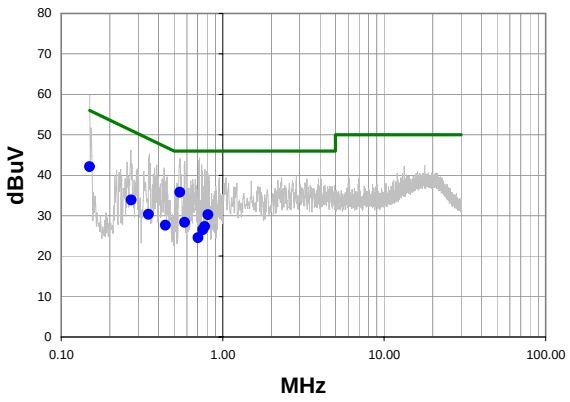
TEST SPECIFICATIONS	Test Method
FCC 15.107	ANSI C63.4

Run #	1	Line:	High Line	Ext. Attenuation:	20	Results	Pass

Quasi-Peak



Average



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.150	41.000	0.000	61.000	66.000	-5.000
0.544	25.300	0.000	45.300	56.000	-10.700
0.754	24.900	0.000	44.900	56.000	-11.100
0.582	24.600	0.000	44.600	56.000	-11.400
0.706	24.100	0.000	44.100	56.000	-11.900
0.442	24.800	0.000	44.800	57.024	-12.224
0.348	25.700	0.000	45.700	59.010	-13.310
0.776	22.600	0.000	42.600	56.000	-13.400
0.812	22.400	0.000	42.400	56.000	-13.600
0.271	24.700	0.000	44.700	61.087	-16.387

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.544	15.800	0.000	35.800	46.000	-10.200
0.150	22.100	0.000	42.100	56.000	-13.900
0.812	10.200	0.000	30.200	46.000	-15.800
0.271	13.900	0.000	33.900	51.087	-17.187
0.582	8.300	0.000	28.300	46.000	-17.700
0.776	7.300	0.000	27.300	46.000	-18.700
0.348	10.300	0.000	30.300	49.010	-18.710
0.442	7.600	0.000	27.600	47.024	-19.424
0.754	6.500	0.000	26.500	46.000	-19.500
0.706	4.500	0.000	24.500	46.000	-21.500

NORTHWEST **EMC** cond

AC POWERLINE CONDUCTED EMISSIONS

Version 2006.7.1
NEWPSA 06/23/06
NVLAP Lab Code 200630-0

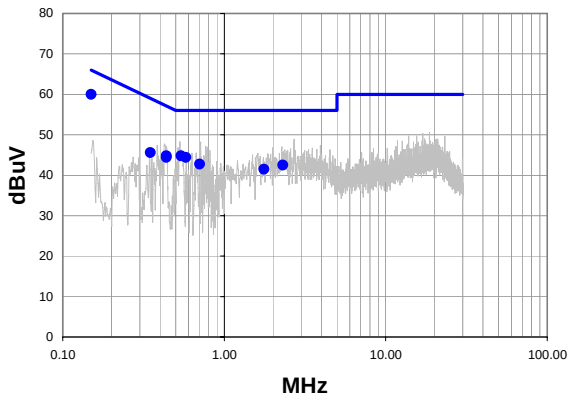
Work Order:	SPTE0020	Date:	06/27/06	
Project:	None	Temperature:	24	
Job Site:	EV07	Humidity:	34%	
Serial Number:	Unknown	Barometric Pres.:	29.98	
EUT Power	120VAC/60Hz			
Configuration	2			Tested by: Rod Peloquin
Customer:	Spectrum Technology			
Attendees:	None			
EUT:	IX270-MC5720			
OPERATING MODES	Receive mode, cell band, low channel			
DEVIATIONS	No deviations.			
COMMENTS	Internal antenna, standalone notebook			

TEST SPECIFICATIONS
FCC 15.107

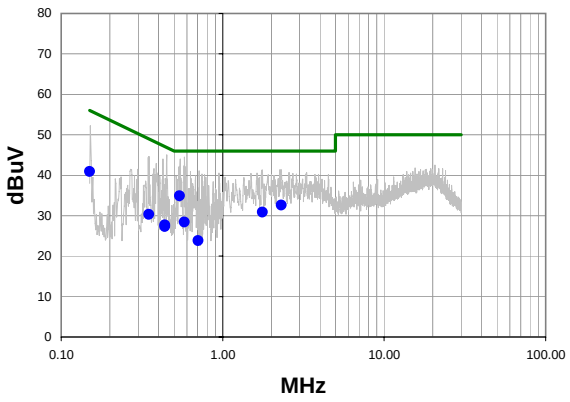
Test Method
ANSI C63.4

Run #	2	Line:	Neutral	Ext. Attenuation:	20	Results	Pass

Quasi-Peak



Average



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.150	40.000	0.000	60.000	66.000	-6.000
0.542	24.800	0.000	44.800	56.000	-11.200
0.580	24.400	0.000	44.400	56.000	-11.600
0.439	24.800	0.000	44.800	57.081	-12.281
0.439	24.400	0.000	44.400	57.081	-12.681
0.704	22.700	0.000	42.700	56.000	-13.300
0.349	25.600	0.000	45.600	58.986	-13.386
2.308	22.500	0.000	42.500	56.000	-13.500
1.764	21.500	0.000	41.500	56.000	-14.500

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.542	14.900	0.000	34.900	46.000	-11.100
2.308	12.600	0.000	32.600	46.000	-13.400
0.150	20.900	0.000	40.900	56.000	-15.100
1.764	10.900	0.000	30.900	46.000	-15.100
0.580	8.400	0.000	28.400	46.000	-17.600
0.349	10.300	0.000	30.300	48.986	-18.686
0.439	7.700	0.000	27.700	47.081	-19.381
0.439	7.300	0.000	27.300	47.081	-19.781
0.704	3.800	0.000	23.800	46.000	-22.200

NORTHWEST **EMC** cond

AC POWERLINE CONDUCTED EMISSIONS

Version 2006.7.1
NEWPSA 06/23/06
NVLAP Lab Code 200630-0

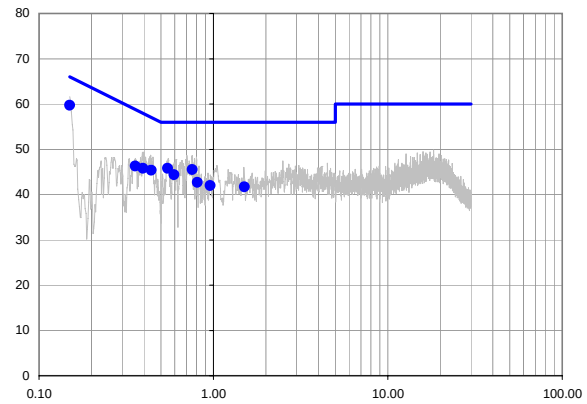
Work Order:	SPTE0020	Date:	06/27/06
Project:		Temperature:	24
Job Site:	EV07	Humidity:	34%
Serial Number:	unknown	Barometric Pres.:	29.98
EUT Power	120VAC/60Hz		
Configuration	Notebook Standalone	Tested by:	Rod Peloquin
Customer:	Spectrum Technology		
Attendees:	none		
EUT:	IX270-MC5720		
OPERATING MODES	Receive mode, cell band, mid channel		
DEVIATIONS	No deviations.		
COMMENTS	Internal antenna, standalone notebook		

TEST SPECIFICATIONS
FCC 15.107

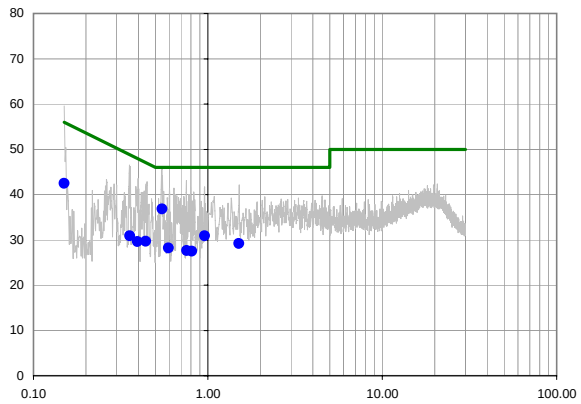
Test Method
ANSI C63.4

Run #	13	Line:	High Line	Ext. Attenuation:	20	Results	Pass

Quasi-Peak



Average



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.150	39.700	0.000	59.700	66.000	-6.300
0.547	25.800	0.000	45.800	56.000	-10.200
0.757	25.500	0.000	45.500	56.000	-10.500
0.594	24.400	0.000	44.400	56.000	-11.600
0.440	25.400	0.000	45.400	57.062	-11.662
0.394	25.800	0.000	45.800	57.979	-12.179
0.356	26.300	0.000	46.300	58.821	-12.521
0.808	22.700	0.000	42.700	56.000	-13.300
0.957	22.000	0.000	42.000	56.000	-14.000
1.504	21.700	0.000	41.700	56.000	-14.300

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.547	16.800	0.000	36.800	46.000	-9.200
0.150	22.500	0.000	42.500	56.000	-13.500
0.957	10.900	0.000	30.900	46.000	-15.100
1.504	9.200	0.000	29.200	46.000	-16.800
0.440	9.700	0.000	29.700	47.062	-17.362
0.594	8.200	0.000	28.200	46.000	-17.800
0.356	10.900	0.000	30.900	48.821	-17.921
0.394	9.600	0.000	29.600	47.979	-18.379
0.757	7.600	0.000	27.600	46.000	-18.400
0.808	7.500	0.000	27.500	46.000	-18.500

NORTHWEST **EMC** cond

AC POWERLINE CONDUCTED EMISSIONS

Version 2006.7.1
NEWPSA 06/23/06
NVLAP Lab Code 200630-0

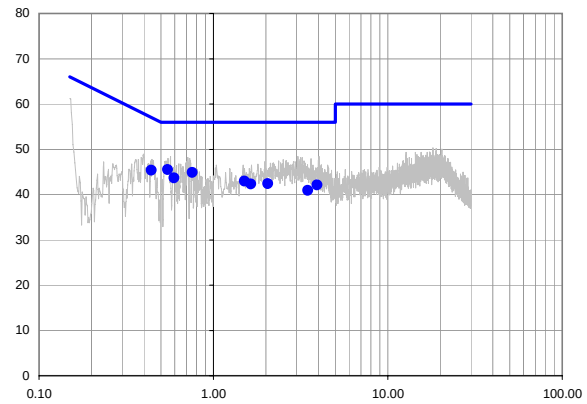
Work Order:	SPTE0020	Date:	06/27/06	
Project:		Temperature:	24	
Job Site:	EV07	Humidity:	34%	
Serial Number:	unknown	Barometric Pres.:	29.98	
EUT Power	120VAC/60Hz			
Configuration	Notebook Standalone			Tested by: Rod Peloquin
Customer:	Spectrum Technology			
Attendees:	none			
EUT:	IX270-MC5720			
OPERATING MODES	Receive mode, cell band, mid channel			
DEVIATIONS	No deviations.			
COMMENTS	Internal antenna, standalone notebook			

TEST SPECIFICATIONS
FCC 15.107

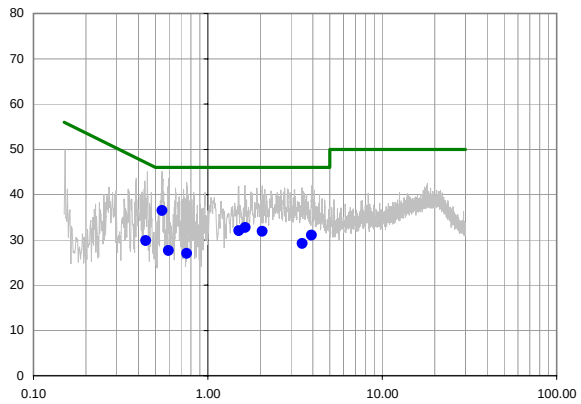
Test Method
ANSI C63.4

Run #	14	Line:	Neutral	Ext. Attenuation:	20	Results	Pass

Quasi-Peak



Average



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.546	25.500	0.000	45.500	56.000	-10.500
0.757	24.900	0.000	44.900	56.000	-11.100
0.441	25.400	0.000	45.400	57.043	-11.643
0.594	23.700	0.000	43.700	56.000	-12.300
1.504	23.000	0.000	43.000	56.000	-13.000
2.048	22.400	0.000	42.400	56.000	-13.600
1.636	22.300	0.000	42.300	56.000	-13.700
3.932	22.100	0.000	42.100	56.000	-13.900
3.476	20.900	0.000	40.900	56.000	-15.100

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.546	16.500	0.000	36.500	46.000	-9.500
1.636	12.700	0.000	32.700	46.000	-13.300
1.504	12.000	0.000	32.000	46.000	-14.000
2.048	11.900	0.000	31.900	46.000	-14.100
3.932	11.000	0.000	31.000	46.000	-15.000
3.476	9.200	0.000	29.200	46.000	-16.800
0.441	9.800	0.000	29.800	47.043	-17.243
0.594	7.600	0.000	27.600	46.000	-18.400
0.757	7.000	0.000	27.000	46.000	-19.000

NORTHWEST **EMC** cond

AC POWERLINE CONDUCTED EMISSIONS

Version 2006.7.1
NEWPSA 06/23/06
NVLAP Lab Code 200630-0

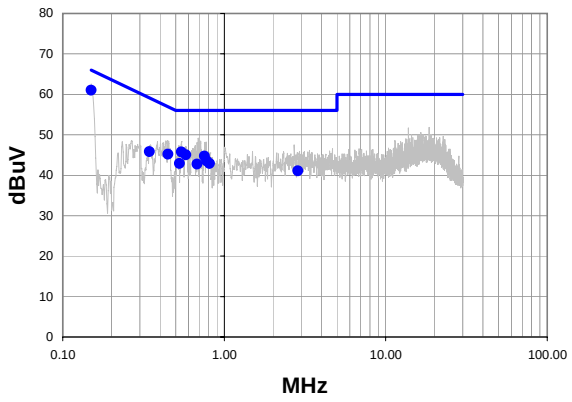
Work Order:	SPTE0020	Date:	06/27/06
Project:	None	Temperature:	24
Job Site:	EV07	Humidity:	34%
Serial Number:	Unknown	Barometric Pres.:	29.98
EUT Power	120VAC/60Hz		
Configuration	2	Tested by:	Rod Peloquin
Customer:	Spectrum Technology		
Attendees:	None		
EUT:	IX270-MC5720		
OPERATING MODES	Receive mode, cell band, high channel		
DEVIATIONS	No deviations.		
COMMENTS	Internal antenna, standalone notebook		

TEST SPECIFICATIONS
FCC 15.107

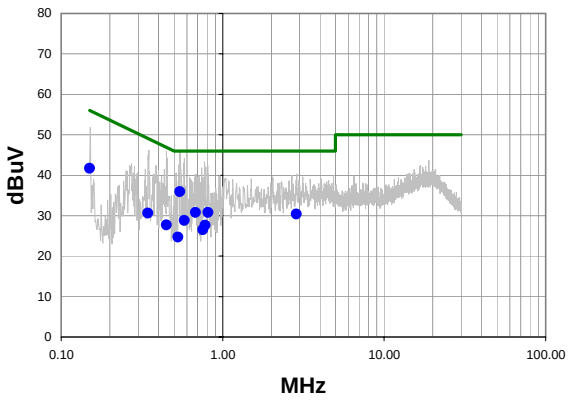
Test Method
ANSI C63.4

Run #	5	Line:	High Line	Ext. Attenuation:	20	Results	Pass

Quasi-Peak



Average



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.150	41.000	0.000	61.000	66.000	-5.000
0.544	25.700	0.000	45.700	56.000	-10.300
0.578	25.000	0.000	45.000	56.000	-11.000
0.754	24.700	0.000	44.700	56.000	-11.300
0.449	25.200	0.000	45.200	56.894	-11.694
0.780	23.500	0.000	43.500	56.000	-12.500
0.812	22.900	0.000	42.900	56.000	-13.100
0.528	22.900	0.000	42.900	56.000	-13.100
0.345	25.800	0.000	45.800	59.082	-13.282
0.680	22.700	0.000	42.700	56.000	-13.300
2.864	21.100	0.000	41.100	56.000	-14.900

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.544	15.900	0.000	35.900	46.000	-10.100
0.150	21.700	0.000	41.700	56.000	-14.300
0.812	10.800	0.000	30.800	46.000	-15.200
0.680	10.800	0.000	30.800	46.000	-15.200
2.864	10.400	0.000	30.400	46.000	-15.600
0.578	8.800	0.000	28.800	46.000	-17.200
0.780	7.600	0.000	27.600	46.000	-18.400
0.345	10.600	0.000	30.600	49.082	-18.482
0.449	7.700	0.000	27.700	46.894	-19.194
0.754	6.500	0.000	26.500	46.000	-19.500
0.528	4.700	0.000	24.700	46.000	-21.300

NORTHWEST **EMC** cond

AC POWERLINE CONDUCTED EMISSIONS

Version 2006.7.1
NEWPSA 06/23/06
NVLAP Lab Code 200630-0

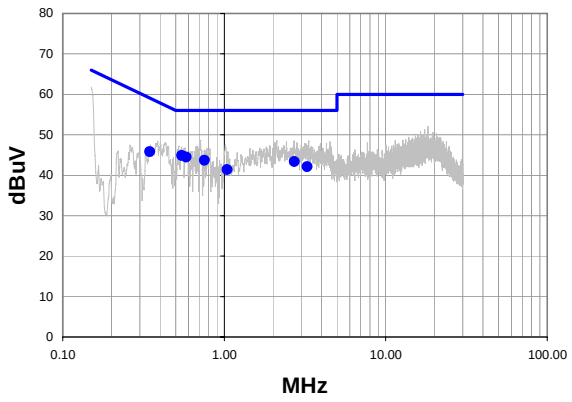
Work Order:	SPTE0020	Date:	06/27/06	
Project:	None	Temperature:	24	
Job Site:	EV07	Humidity:	34%	
Serial Number:	Unknown	Barometric Pres.:	29.98	
EUT Power	120VAC/60Hz			
Configuration	2			Tested by: Rod Peloquin
Customer:	Spectrum Technology			
Attendees:	None			
EUT:	IX270-MC5720			
OPERATING MODES	Receive mode, cell band, high channel			
DEVIATIONS	No deviations.			
COMMENTS	Internal antenna, standalone notebook			

TEST SPECIFICATIONS
FCC 15.107

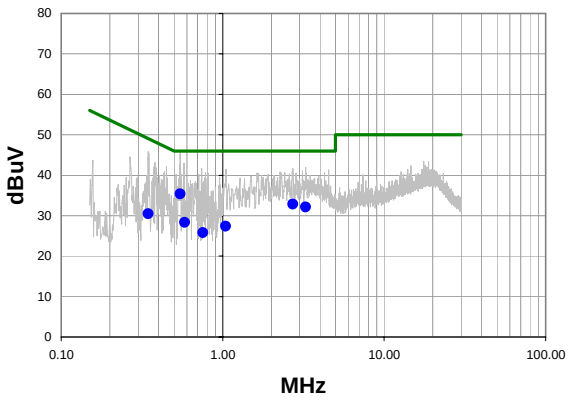
Test Method
ANSI C63.4

Run #	6	Line:	Neutral	Ext. Attenuation:	20	Results	Pass

Quasi-Peak



Average



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.546	24.900	0.000	44.900	56.000	-11.100
0.581	24.500	0.000	44.500	56.000	-11.500
0.754	23.700	0.000	43.700	56.000	-12.300
2.724	23.400	0.000	43.400	56.000	-12.600
0.346	25.800	0.000	45.800	59.058	-13.258
3.264	22.100	0.000	42.100	56.000	-13.900
1.044	21.400	0.000	41.400	56.000	-14.600

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.546	15.400	0.000	35.400	46.000	-10.600
2.724	12.800	0.000	32.800	46.000	-13.200
3.264	12.100	0.000	32.100	46.000	-13.900
0.581	8.300	0.000	28.300	46.000	-17.700
0.346	10.500	0.000	30.500	49.058	-18.558
1.044	7.400	0.000	27.400	46.000	-18.600
0.754	5.800	0.000	25.800	46.000	-20.200