

Spectrum Technology

MC75

August 05, 2005

Report No. SPTE0010

Report Prepared By



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

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EMC Test Report



22975 NW Evergreen Parkway
Suite 400
Hillsboro, Oregon 97124

Certificate of Test
Issue Date: August 05, 2005
Spectrum Technology
Model: MC75

Emissions			
Specification	Test Method	Pass	Fail
FCC 15.107 Class B:2005-04 AC Powerline Conducted Emissions	ANSI C63.4:2003	<input checked="" type="checkbox"/>	<input type="checkbox"/>
FCC 15.109(a) Class B:2005-04 Radiated Emissions	ANSI C63.4:2003	<input checked="" type="checkbox"/>	<input type="checkbox"/>
FCC 22.913(a):2004 Effective Radiated Power (ERP)	TIA/EIA 603-B:2001	<input checked="" type="checkbox"/>	<input type="checkbox"/>
FCC 24.232(b):2004 Effective Radiated Power (EIRP)	TIA/EIA 603-B:2001	<input checked="" type="checkbox"/>	<input type="checkbox"/>
FCC 22.917(a):2004 Spurious Radiated Emissions	TIA/EIA 603-B:2001	<input checked="" type="checkbox"/>	<input type="checkbox"/>
FCC 24.238(a):2004 Spurious Radiated Emissions	TIA/EIA 603-B:2001	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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:

Don Facteau, IS Manager

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		

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 recognized 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.



200629-0
200630-0
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 TÜV Product Service Group's Listing of Recognized Laboratories. It qualifies in connection with the TÜV Certification after Recognition of Agent's Testing Program for the product categories and/or standards shown in TÜV's current Listing of CARAT Laboratories, available from TÜV. A certificate was issued to represent that this laboratory continues to meet TÜV'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).



Technology International: Assessed in accordance with ISO Guide 25 defining the general international requirements for the competence of calibration and testing laboratories and with ITI assessment criteria LACO196. Based upon that assessment, Interference Technology International, Ltd., has granted approval for specifications implementing the EU Directive on EMC (89/336/EEC and amendments). The scope of the approval was provided on a Schedule of Assessment supplied with the certificate and is available upon request.



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 and R-1025, Irvine: C-2094 and R-1943, Newberg: C-1877 and R-1760, 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>

What is measurement uncertainty?

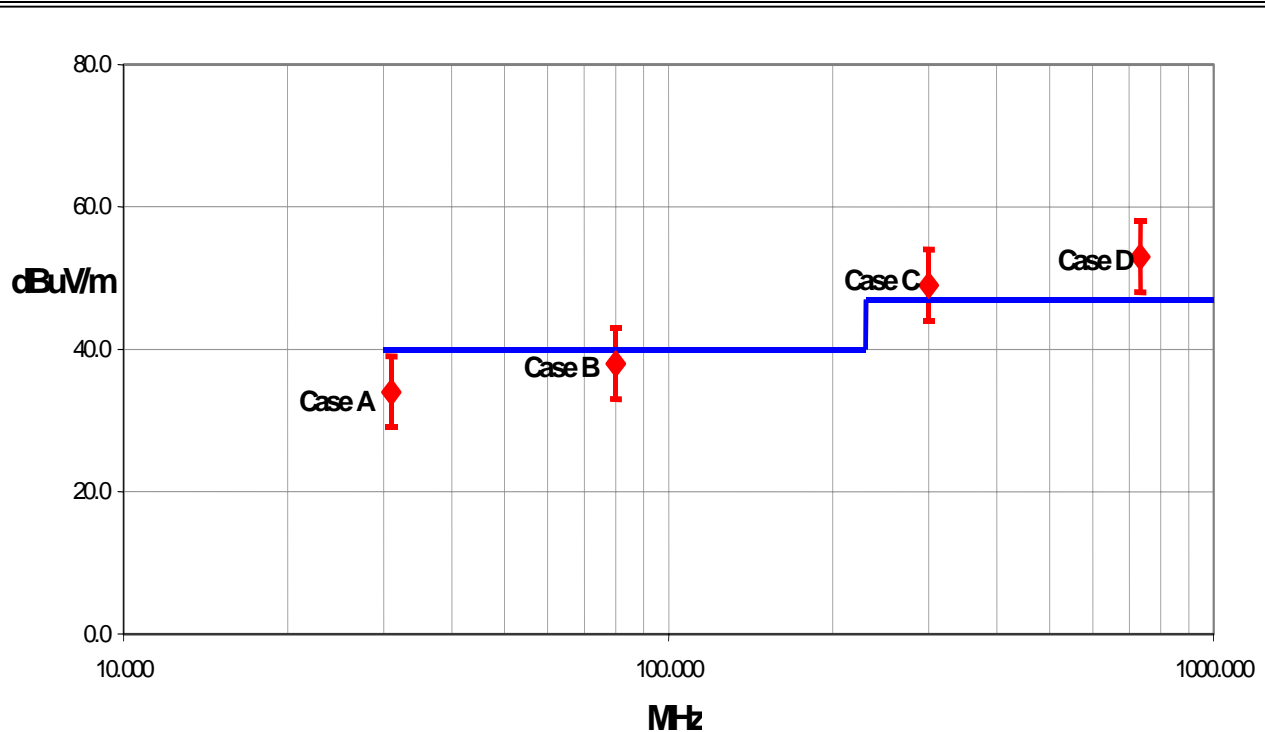
When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. The following statement of measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" value. In the case of transient tests (ESD, EFT, Surge, Voltage Dips and Interruptions), the test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements.

The following documents were the basis for determining the uncertainty levels of our measurements:

- "ISO Guide to the Expression of Uncertainty in Measurements", October 1993
- "NIS81: The Treatment of Uncertainty in EMC Measurements", May 1994
- "IEC CISPR 16-3 A1 f1 Ed.1: Radio-interference measurements and statistical techniques", December 2000

How might measurement uncertainty be applied to test results?

If the diamond marks the measured value for the test and the vertical bars bracket the range of + and - measurement uncertainty, then test results can be interpreted from the diagram below.



Test Result Scenarios:

Case A: Product complies.

Case B: Product conditionally complies. It is not possible to say with 95% confidence that the product complies.

Case C: Product conditionally does not comply. It is not possible to say with 95% confidence that the product does not comply.

Case D: Product does not comply.

Radiated Emissions ≤ 1 GHz

Value (dB)

Test Distance	Probability Distribution	Biconical Antenna		Log Periodic Antenna		Dipole Antenna	
		3m	10m	3m	10m	3m	10m
Combined standard uncertainty $u_c(y)$	normal	+ 1.86	+ 1.82	+ 2.23	+ 1.29	+ 1.31	+ 1.25
		- 1.88	- 1.87	- 1.41	- 1.26	- 1.27	- 1.25
Expanded uncertainty U (level of confidence ≈ 95%)	normal (k=2)	+ 3.72	+ 3.64	+ 4.46	+ 2.59	+ 2.61	+ 2.49
		- 3.77	- 3.73	- 2.81	- 2.52	- 2.55	- 2.49

Radiated Emissions > 1 GHz

Value (dB)

Test Distance	Probability Distribution	Without High Pass Filter		With High Pass Filter	
		3m	10m	3m	10m
Combined standard uncertainty $u_c(y)$	normal	+ 1.29	+ 1.38	- 1.25	- 1.35
		- 1.25	- 1.35	+ 2.57	+ 2.76
Expanded uncertainty U (level of confidence ≈ 95%)	normal (k=2)	+ 2.57	+ 2.76	- 2.51	- 2.70
		- 2.51	- 2.70		

Conducted Emissions

	Probability Distribution	Value (+/- dB)
Combined standard uncertainty $u_c(y)$	normal	1.48
Expanded uncertainty U (level of confidence ≈ 95 %)	normal (k = 2)	2.97

Radiated Immunity

	Probability Distribution	Value (+/- dB)
Combined standard uncertainty $u_c(y)$	normal	1.05
Expanded uncertainty U (level of confidence ≈ 95 %)	normal (k = 2)	2.11

Conducted Immunity

	Probability Distribution	Value (+/- dB)
Combined standard uncertainty $u_c(y)$	normal	1.05
Expanded uncertainty U (level of confidence ≈ 95 %)	normal (k = 2)	2.10

Legend

$u_c(y)$ = square root of the sum of squares of the individual standard uncertainties

U = combined standard uncertainty multiplied by the coverage factor: k . This defines an interval about the measured result that will encompass the true value with a confidence level of approximately 95%. If a higher level of confidence is required, then $k=3$ (CL of 99.7%) can be used. Please note that with a coverage factor of one, $u_c(y)$ yields a confidence level of only 68%.



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 – EV10

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



Oregon

Trails End Facility

Labs TE01 – TE03

30475 NE Trails End Lane
Newberg, OR 97132
(503) 844-4066
FAX (503) 537-0735



Washington

Sultan Facility

Labs SU01 – SU07

14128 339th Ave. SE
Sultan, WA 98294
(888) 364-2378
FAX (360) 793-2536

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:	MC75
First Date of Test:	07-26-2005
Last Date of Test:	07-29-2005
Receipt Date of Samples:	07-26-2005
Equipment Design Stage:	Production
Equipment Condition:	No visual damage.

Information Provided by the Party Requesting the Test

Clocks/Oscillators:	Not provided.
I/O Ports:	Not Provided.

Functional Description of the EUT (Equipment Under Test):

GSM Modem for use in IX600 ruggedized laptop. The MC75 is a Quad band GSM/GPRS/EGPRS module subject to Part 22H and 24E.

Client Justification for EUT Selection:

The product is an engineering sample, representative of the final product.

Client Justification for Test Selection:

These tests satisfy the requirements of FCC part 22H and part 24E.

EUT Photo

IX600 Ruggedized Laptop



MC75 Module



Equipment modifications					
Item	Test	Date	Modification	Note	Disposition of EUT
1	Spurious Radiated Emissions	07/26/2005	No EMI suppression devices were added or modified during this test.	Same configuration as delivered. Testing two different configurations – Vehicular Mount and Laptop only.	EUT remained at Northwest EMC.
2	Spurious Radiated Emissions	07/27/2005	No EMI suppression devices were added or modified during this test.	Same configuration as delivered. Testing two different configurations – Vehicular Mount and Laptop only.	EUT remained at Northwest EMC.
3	Spurious Radiated Emissions	07/28/2005	No EMI suppression devices were added or modified during this test.	Same configuration as delivered. Testing two different configurations – Vehicular Mount and Laptop only.	EUT remained at Northwest EMC.
4	Field Strength of Fundamental	07/28/2005	No EMI suppression devices were added or modified during this test.	Same configuration as delivered. Testing two different configurations – Vehicular Mount and Laptop only. Replaced laptop/radio module. Old radio card was malfunctioning.	EUT remained at Northwest EMC.
5	Radiated Emissions	07/29/2005	No EMI suppression devices were added or modified during this test.	Same configuration as in previous test.	EUT remained at Northwest EMC.
6	Conducted Emissions	07/29/2005	No EMI suppression devices were added or modified during this test.	Same configuration as in previous test.	EUT remained at Northwest EMC.

Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. All of the EUT parameters listed below were investigated. This includes, but may not be limited to, CPU speeds, video resolution settings, operational modes, and input voltages.

Operating Modes Investigated:

Receive mode – Cellular Band

Operating Mode used for Final Test:

Receive mode – Cellular Band

Power Input Settings Investigated:

120 VAC, 60 Hz

Input Power Setting used for Final Test:

120 VAC, 60 Hz

Frequency Range Investigated

Start Frequency	30 MHz	Stop Frequency	5 GHz
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Other Settings Investigated:

Configuration 1	GSM Radio in Laptop
Configuration 2	GSM Radio in Laptop with Laptop Docked in Vehicular Mount using External Radio

Software\Firmware Applied During Test

Exercise software	Microsoft® HyperTerminal	Version	5.1
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Description

The system was tested using hyperterminal software on a remote pc to access the EUT during the testing. A call was originated by the wireless communications test set and answered via hyperterminal on the EUT.

EUT and Peripherals**Configuration 1: Modem in IX600 Laptop.**

Description	Manufacturer	Model/Part Number	Serial Number
EUT-GSM Radio	Itronix, Corp.	MC75	Unknown
Host Laptop	Itronix, Corp.	IX600	8147M0100451300C2BM00
AC Adapter	Lite-On Technology Corporation	PA-1700-02	5300210201
Microphone	Telex	Unknown	Unknown
Headphones	Sony	Unknown	Unknown

EUT and Peripherals**Configuration 2: Modem in IX600 Laptop. Laptop Docked in Vehicular Mount**

Description	Manufacturer	Model/Part Number	Serial Number
EUT-GSM Radio	Itronix, Corp.	MC75	Unknown
Host Laptop	Itronix, Corp.	IX600	8147M0100451300C2BM00
AC Adapter	Lite-On Technology Corporation	PA-1700-02	5300210201
Vehicular Mount	Spectrum Technology	M 050526 Dock	8147M2700152200725M00
Antenna	MaxRad	BMLPUDB800/1900	Unknown
Keyboard	Gateway	2196003-00-001	15410263
Mouse	Microsoft	97599	1408762-40000
Linear Directional Antenna	Xertex Technologies	245L09W	100805
Microphone	Telex	Unknown	Unknown
Headphones	Sony	Unknown	Unknown

Remote Equipment Outside of Test Setup Boundary

Description	Manufacturer	Model/Part Number	Serial Number
GSM/DCS/PCS MS Test Set	Hewlett Packard	8922M	3829U02903
GSM/DCS/PCS RF Interface	Hewlett Packard	83220E	3842U05679
Wireless Communications Test Set	Agilent	E5515C	GB44052580
Equipment isolated from the EUT so as not to contribute to the measurement result is considered to be outside the test setup boundary			

Cables**Configuration 1: Modem in IX600 Laptop.**

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Leads	No	1.5	Yes	Host Laptop	AC Adapter
AC Power	No	1.8	No	AC Adapter	AC Mains
Antenna	Yes	4.0	No	Vehicular Mount	Antenna
Serial	Yes	1.1	No	Unterminated	Host Laptop
Video	Yes	1.1	No	Unterminated	Host Laptop
USB(x2)	Yes	1.2	No	Unterminated	Host Laptop
Audio	No	1.6	No	Microphone	Host Laptop
Audio	No	1.4	No	Headphones	Host Laptop
LAN	No	1.4	No	Unterminated	Host Laptop
Modem	No	1.4	No	Unterminated	Host Laptop

Cables**Configuration 2: Modem in IX600 Laptop. Laptop Docked in Vehicular Mount.**

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Leads	No	1.5	Yes	Host Laptop	AC Adapter
AC Power	No	1.8	No	AC Adapter	AC Mains
Antenna	Yes	4.0	No	Vehicular Mount	Antenna
Mouse	PA	1.6	PA	Mouse	Vehicular Mount
Keyboard	PA	1.6	PA	Keyboard	Vehicular Mount
Serial	Yes	1.0	No	Unterminated	Vehicular Mount
Serial	Yes	1.1	No	Unterminated	Vehicular Mount
Parallel	Yes	1.0	No	Unterminated	Vehicular Mount
Video	Yes	1.1	No	Unterminated	Vehicular Mount
Antenna	Yes	1.2	No	Linear Directional Antenna	Vehicular Mount
USB(x2)	Yes	1.2	No	Unterminated	Vehicular Mount
Audio	No	1.6	No	Microphone	Vehicular Mount
Audio	No	1.4	No	Headphones	Vehicular Mount

Measurement Equipment

Description	Manufacturer	Model	Identifier	Last Cal	Interval
Spectrum Analyzer	Agilent	E4446A	AAQ	04/08/2005	13 mo
Pre-Amplifier	Amplifier Research	LN1000A	APS	03/01/2005	13 mo
Antenna, Biconilog	EMCO	3141	AXE	12/03/2003	24 mo
Pre-Amplifier	Miteq	AMF-4D-005180-24-10P	APJ	05/05/2005	3 mo
Antenna, Horn	EMCO	3115	AHC	09/07/2004	12 mo

Test Description

The final radiated emissions test was performed using the parameters described above as worst case. That final test was conducted at a facility that meets the ANSI C63.4 NSA requirements. The frequency range noted in the data sheets was scanned/tested at that facility. Emissions were maximized as specified, by maximizing table azimuth, antenna height, and cable manipulation.

Using the mode of operation and configuration noted within this report, a final radiated emissions test was performed. The frequency range investigated (scanned), is also noted in this report. Radiated emissions measurements were made at the EUT azimuth and antenna height such that the maximum radiated emissions level will be detected. This requires the use of a turntable and an antenna positioner. The preferred method of a continuous azimuth search is utilized for frequency scans of the EUT field strength with both polarities of the measuring antenna. A calibrated, linearly polarized antenna was positioned at the specified distance from the periphery of the EUT.

Note: The specified distance is the horizontal separation between the closest periphery of the EUT and the center of the axis of the elements of the receiving antenna. However, if the receiving antenna is a log-periodic array, the specified distance shall be the distance between the closest periphery of the EUT and the front-to-back center of the array of elements.

Tests were made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement was varied in height above the conducting ground plane to obtain the maximum signal strength. Though specified in the report, the measurement distance shall be 1 meter, 3 meters, 5 meters, 10 meters, or 30 meters. At any measurement distance, the antenna height was varied from 1 meter to 4 meters. These height scans apply for both horizontal and vertical polarization, except that for vertical polarization the minimum height of the center of the antenna shall be increased so that the lowest point of the bottom of the antenna clears the ground surface by at least 25 cm.

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.

Completed by:



EUT:	MC75	Work Order:	SPTE0010
Serial Number:	Unknown	Date:	07/29/05
Customer:	Spectrum Technology	Temperature:	25
Attendees:	None	Humidity:	42%
Project:	None	Barometric Pressure:	30.1
Tested by:	Rod Peloquin	Power:	120VAC/60Hz
		Job Site:	EV01

TEST SPECIFICATIONS		Test Method
FCC 15.109(a) Class B:2005-04		ANSI C63.4:2003

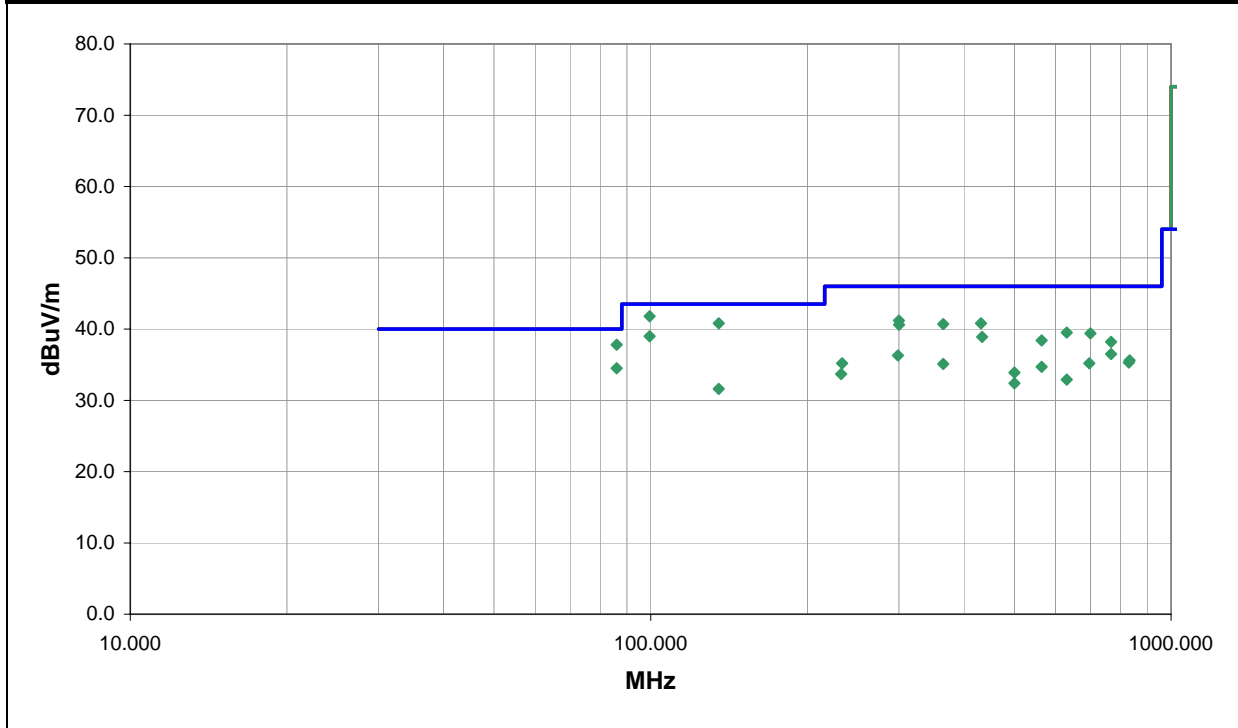
TEST PARAMETERS		
Antenna Height(s) (m)	1 - 4	Test Distance (m)
		3

COMMENTS
Modem in IX600 Laptop Docked in Vehicular Mount: Changed to undamaged vehicular mount

EUT OPERATING MODES
Receive mode - Cellular Band

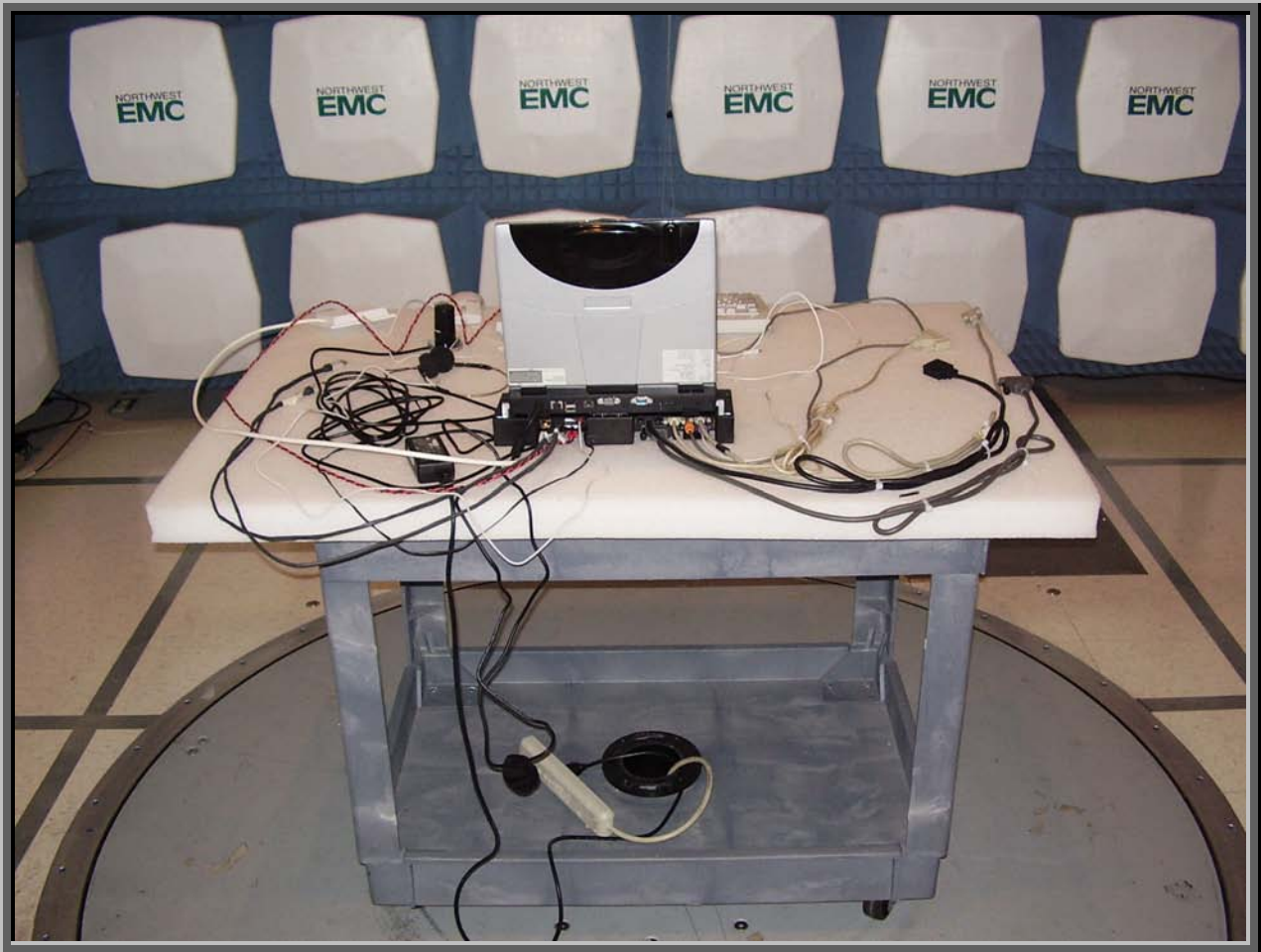
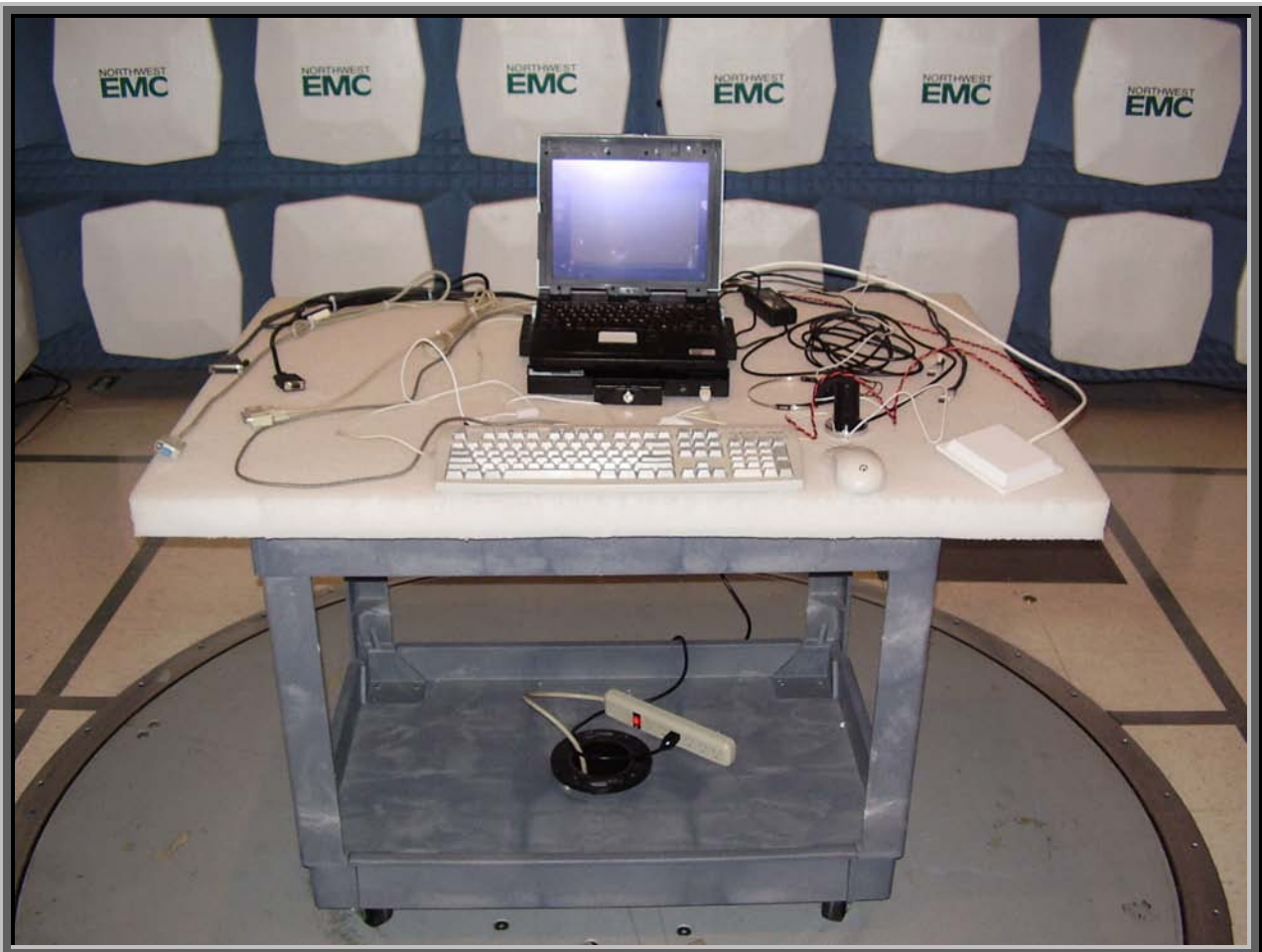
DEVIATIONS FROM TEST STANDARD
No deviations.

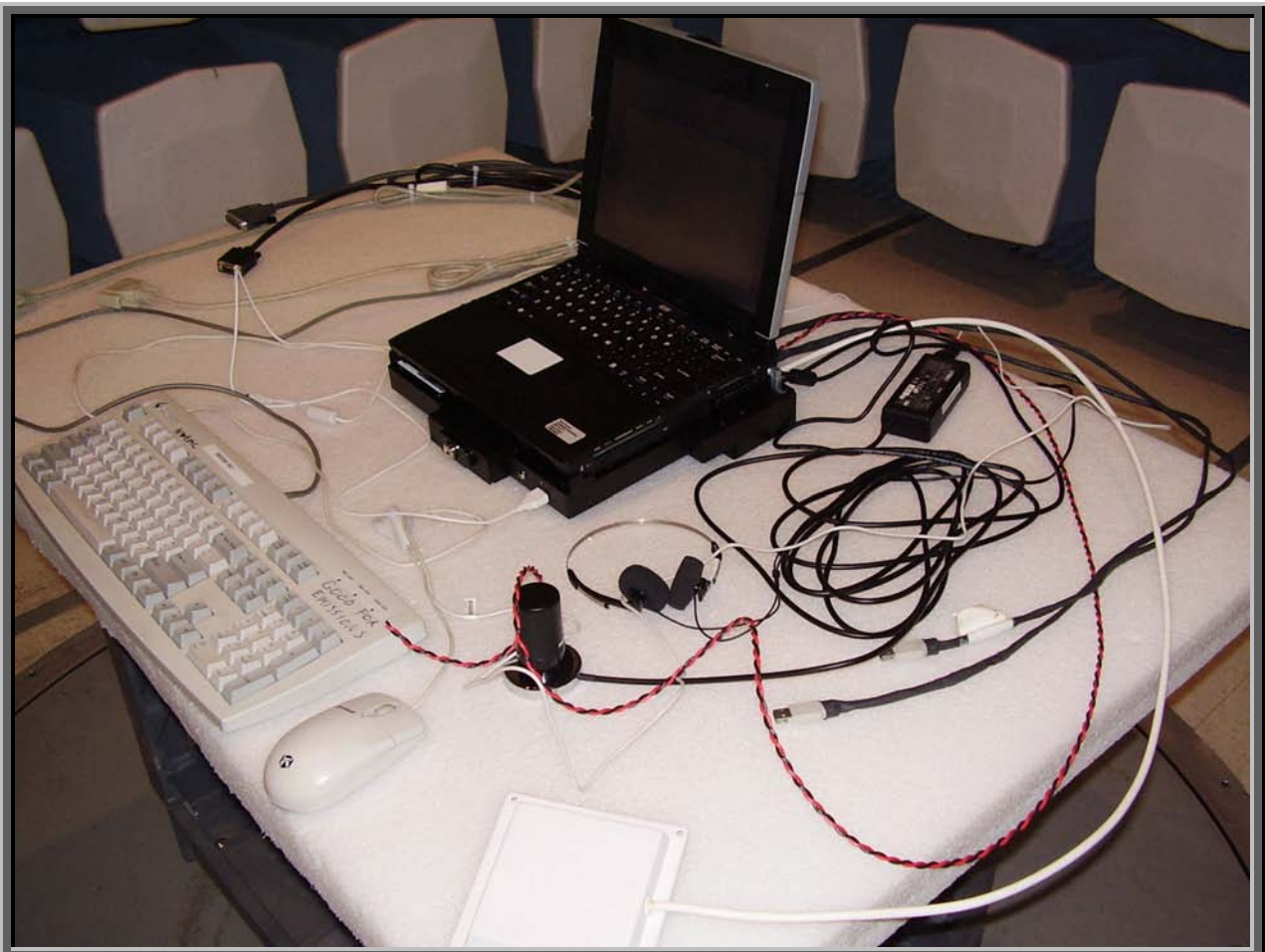
Run #	1	 Signature
Configuration #		
Results	Pass	



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)
99.560	56.0	-14.2	304.0	2.6	3.0	0.0	H-Bilog	QP	0.0	41.8	43.5	-1.7
86.030	53.4	-15.6	246.0	1.4	3.0	0.0	V-Bilog	QP	0.0	37.8	40.0	-2.2
135.167	55.9	-15.1	240.0	2.4	3.0	0.0	H-Bilog	QP	0.0	40.8	43.5	-2.7
99.560	53.2	-14.2	233.0	2.4	3.0	0.0	V-Bilog	QP	0.0	39.0	43.5	-4.5
299.941	49.7	-8.5	341.0	1.8	3.0	0.0	V-Bilog	QP	0.0	41.2	46.0	-4.8
431.291	45.7	-4.9	88.0	1.0	3.0	0.0	H-Bilog	QP	0.0	40.8	46.0	-5.2
364.955	47.0	-6.3	-1.0	2.7	3.0	0.0	V-Bilog	QP	0.0	40.7	46.0	-5.3
300.047	49.1	-8.5	324.0	1.8	3.0	0.0	H-Bilog	PK	0.0	40.6	46.0	-5.4
86.032	50.1	-15.6	26.0	2.2	3.0	0.0	H-Bilog	QP	0.0	34.5	40.0	-5.5
630.297	40.8	-1.3	360.0	2.6	3.0	0.0	V-Bilog	QP	0.0	39.5	46.0	-6.5
700.013	40.1	-0.7	171.0	1.6	3.0	0.0	V-Bilog	QP	0.0	39.4	46.0	-6.6
433.258	43.8	-4.9	305.0	1.4	3.0	0.0	V-Bilog	QP	0.0	38.9	46.0	-7.1
563.951	41.0	-2.6	-1.0	1.8	3.0	0.0	V-Bilog	QP	0.0	38.4	46.0	-7.6
766.679	38.8	-0.6	170.0	1.5	3.0	0.0	V-Bilog	QP	0.0	38.2	46.0	-7.8
766.680	37.1	-0.6	142.0	2.2	3.0	0.0	H-Bilog	QP	0.0	36.5	46.0	-9.5
298.608	44.8	-8.5	324.0	1.8	3.0	0.0	H-Bilog	QP	0.0	36.3	46.0	-9.7
832.369	35.4	0.2	90.0	1.2	3.0	0.0	H-Bilog	PK	0.0	35.6	46.0	-10.4
829.310	35.1	0.2	75.0	1.2	3.0	0.0	V-Bilog	QP	0.0	35.3	46.0	-10.7
233.284	45.5	-10.3	130.0	1.6	3.0	0.0	H-Bilog	QP	0.0	35.2	46.0	-10.8
696.639	36.0	-0.8	127.0	1.9	3.0	0.0	H-Bilog	QP	0.0	35.2	46.0	-10.8
364.949	41.3	-6.2	127.0	1.9	3.0	0.0	H-Bilog	PK	0.0	35.1	46.0	-10.9

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)
563.915	37.3	-2.6	312.0	1.9	3.0	0.0	H-Bilog	PK	0.0	34.7	46.0	-11.3
135.164	46.7	-15.1	305.0	2.3	3.0	0.0	V-Bilog	PK	0.0	31.6	43.5	-11.9
500.006	37.7	-3.8	139.0	1.0	3.0	0.0	V-Bilog	QP	0.0	33.9	46.0	-12.1
232.261	44.1	-10.4	336.0	2.0	3.0	0.0	V-Bilog	QP	0.0	33.7	46.0	-12.3
630.288	34.2	-1.3	320.0	3.0	3.0	0.0	H-Bilog	QP	0.0	32.9	46.0	-13.1
500.000	36.2	-3.8	129.0	1.5	3.0	0.0	H-Bilog	QP	0.0	32.4	46.0	-13.6





Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. All of the EUT parameters listed below were investigated. This includes, but may not be limited to, CPU speeds, video resolution settings, operational modes, and input voltages.

Operating Modes Investigated:

Receive mode – Cellular Band

Power Input Settings Investigated:

120 VAC, 60 Hz

Software\Firmware Applied During Test

Operating system	Windows	Version	XP
Exercise software	Microsoft® HyperTerminal	Version	5.1
Description			
The system was tested using hyperterminal software on a remote pc to access the EUT during the testing. A call was originated by the wireless communications test set and answered via hyperterminal on the EUT.			

EUT and Peripherals in Test Setup Boundary

Description	Manufacturer	Model/Part Number	Serial Number
EUT-GSM Radio	Itronix, Corp.	MC75	Unknown
Host Laptop	Itronix, Corp.	IX600	8147M0100451300C34BM00
AC Adapter	Lite-On Technology Corporation	PA-1700-02	5300210201
Vehicular Mount	Itronix, Corp.	M 050526 Dock	8147M2700152200725M00
GSM Antenna	MaxRad	BMLPUDB800/1900	Unknown
WI-FI Antenna	Vertex	245L09W	100805
Keyboard	Gateway, Corp.	2196003-00-001	15410263
Mouse	Microsoft, Corp.	1.1A PS/2	1408762-40000

Remote Equipment Outside of Test Setup Boundary

Description	Manufacturer	Model/Part Number	Serial Number
GSM/DCS/PCS MS Test Set	Hewlett Packard	8922M	3829U02903
GSM/DCS/PCS RF Interface	Hewlett Packard	83220E	3842U05679

Equipment isolated from the EUT so as not to contribute to the measurement result is considered to be outside the test setup boundary.

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Power	No	1.5	Yes	Host Laptop	AC Adapter
AC Power	No	1.8	No	AC Adapter	AC Mains
GSM Antenna	Yes	4.0	No	Vehicular Mount	GSM Antenna
WI-FI Antenna	Yes	1.0	No	Vehicular Mount	WI-Fi Antenna
Serial	Yes	1.0	No	Vehicular Mount	Unterminated
Parallel	Yes	1.0	No	Vehicular Mount	Unterminated
Video	Yes	1.0	No	Vehicular Mount	Unterminated
USB	Yes	1.0	No	Vehicular Mount	Unterminated
USB	Yes	1.0	No	Vehicular Mount	Unterminated
USB	Yes	0.3	No	Vehicular Mount	Unterminated
DC Leads	No	2.0	No	Vehicular Mount	Unterminated
Mouse	Yes	1.8	No	Vehicular Mount	Mouse
Keyboard	Yes	1.8	No	Vehicular Mount	Keyboard
Audio	No	1.8	No	Vehicular Mount	Headphones
Audio	No	1.8	No	Vehicular Mount	Microphone

PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.

Measurement Equipment					
Description	Manufacturer	Model	Identifier	Last Cal	Interval
Spectrum Analyzer	Agilent	E4446A	AAQ	04/08/2005	13 mo
LISN	Solar	9252-50-R-24-BNC	LIN	12/29/2004	13 mo
High Pass Filter	TTE	H97-100k-50-720B	HFC	12/29/2004	13 mo

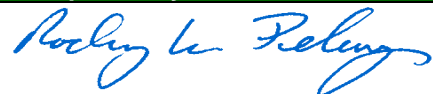
Test Description

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 50 Ω .

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.

Completed by:



EUT:	MC75	Work Order:	SPTE0010
Serial Number:	Unknown	Date:	07/29/05
Customer:	Spectrum Technology	Temperature:	23
Attendees:	Rod Munro	Humidity:	38%
Project:	None	Barometric Pressure:	30.15
Tested by:	Rod Peloquin	Power:	120VAC/60Hz
		Job Site:	EV01

TEST SPECIFICATIONS	Test Method
FCC 15.107 Class B:2005-04	ANSI C63.4:2003

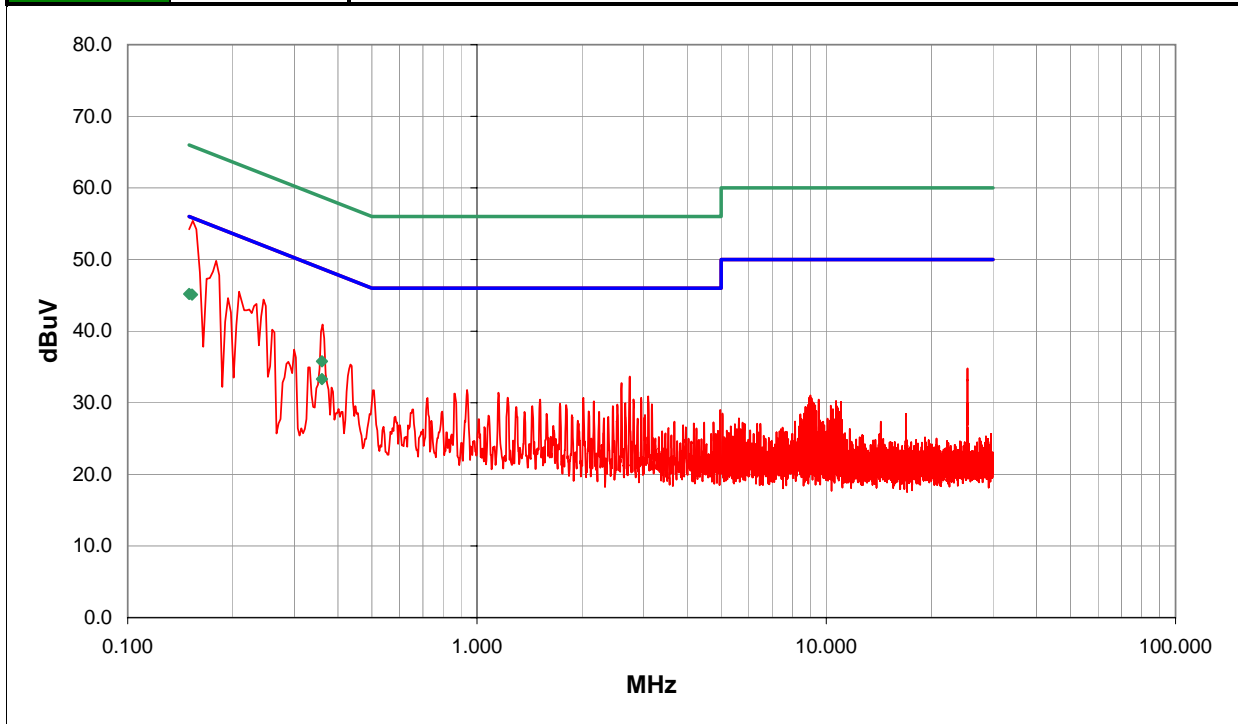
TEST PARAMETERS
Cable or Line Tested: L1

COMMENTS
Modem in IX600 Laptop

EUT OPERATING MODES
Receiving - cellular band

DEVIATIONS FROM TEST STANDARD
No deviations.

Run #	1	<i>Rodney Le Peloquin</i> Signature
Configuration #		
Results	Pass	



Freq (MHz)	Amplitude (dBuV)	Transducer (dB)	Cable (dB)	External Attenuation (dB)	Detector (blank equal peaks [PK] from scan)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.153	25.1	0.0	0.0	20.0	AV	45.1	55.8	-10.7
0.360	13.3	0.0	0.0	20.0	AV	33.3	48.7	-15.4
0.150	25.2	0.0	0.0	20.0	QP	45.2	66.0	-20.8
0.360	15.8	0.0	0.0	20.0	QP	35.8	58.7	-22.9
0.154	35.2	0.0	0.2	20.0		55.4	55.8	-0.4
0.179	29.6	0.0	0.2	20.0		49.8	54.5	-4.7
0.245	24.2	0.0	0.2	20.0		44.4	51.9	-7.5
0.208	25.3	0.0	0.2	20.0		45.5	53.3	-7.8
0.361	20.7	0.0	0.2	20.0		40.9	48.7	-7.8
0.194	24.4	0.0	0.2	20.0		44.6	53.9	-9.3
0.259	20.0	0.0	0.2	20.0		40.2	51.5	-11.2
0.434	15.1	0.0	0.2	20.0		35.3	47.2	-11.8
2.737	13.2	0.0	0.5	20.0		33.7	46.0	-12.3
0.299	17.2	0.0	0.2	20.0		37.4	50.3	-12.8
2.595	12.3	0.0	0.5	20.0		32.8	46.0	-13.2
0.937	11.5	0.0	0.3	20.0		31.8	46.0	-14.2
0.507	11.5	0.0	0.2	20.0		31.7	46.0	-14.3
0.332	14.7	0.0	0.2	20.0		34.9	49.4	-14.5
1.152	11.1	0.0	0.3	20.0		31.4	46.0	-14.6

EUT: MC75	Work Order: SPTE0010
Serial Number: Unknown	Date: 07/29/05
Customer: Spectrum Technology	Temperature: 23
Attendees: Rod Munro	Humidity: 38%
Project: None	Barometric Pressure: 30.15
Tested by: Rod Peloquin	Power: 120VAC/60Hz
	Job Site: EV01

TEST SPECIFICATIONS	Test Method
FCC 15.107 Class B:2005-04	ANSI C63.4:2003

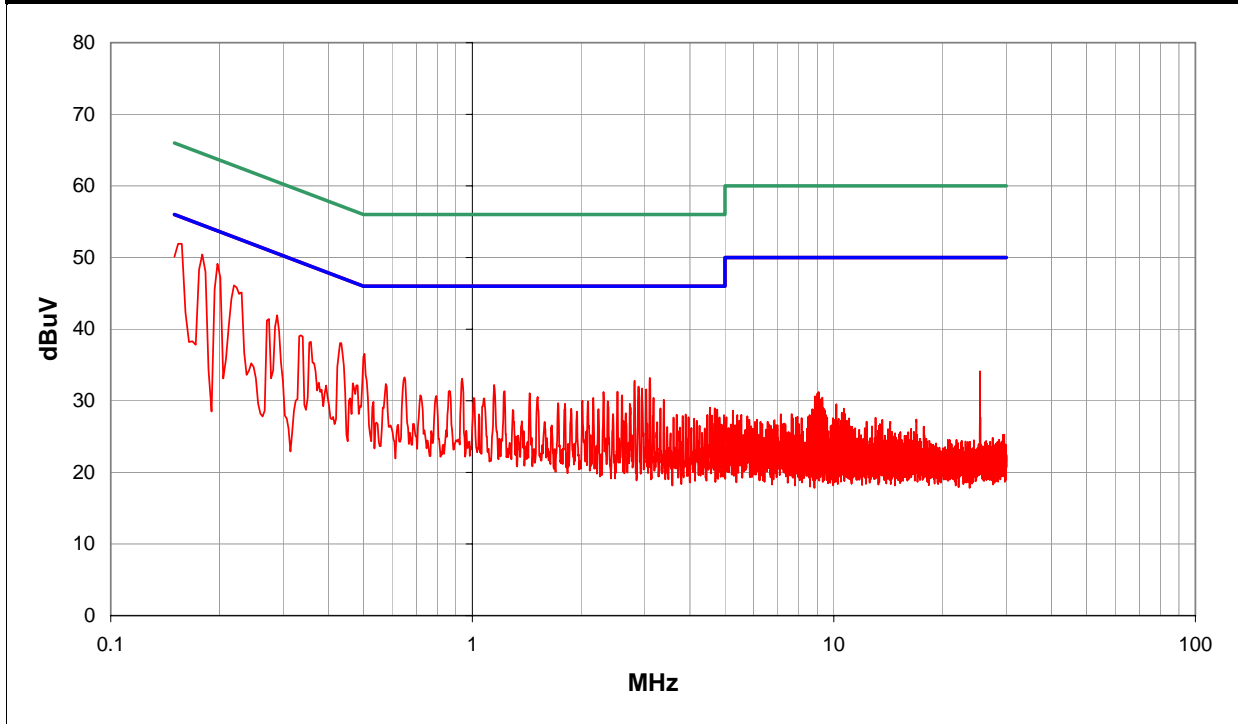
TEST PARAMETERS
Cable or Line Tested: N

COMMENTS
Modem in IX600 Laptop

EUT OPERATING MODES
Receiving - cellular band

DEVIATIONS FROM TEST STANDARD
No deviations.

Run #	2	 Signature
Configuration #		
Results	Pass	



Freq (MHz)	Amplitude (dBuV)	Transducer (dB)	Cable (dB)	External Attenuation (dB)	Detector (blank equal peaks [PK] from scan)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.157	31.7	0.0	0.2	20.0		51.9	55.6	-3.7
0.179	30.2	0.0	0.2	20.0		50.4	54.5	-4.1
0.197	28.9	0.0	0.2	20.0		49.1	53.7	-4.6
0.219	25.9	0.0	0.2	20.0		46.1	52.8	-6.7
0.288	21.7	0.0	0.2	20.0		41.9	50.6	-8.6
0.434	17.8	0.0	0.2	20.0		38.0	47.2	-9.1
0.503	16.3	0.0	0.2	20.0		36.5	46.0	-9.5
0.274	21.2	0.0	0.2	20.0		41.4	51.0	-9.6
0.336	18.9	0.0	0.2	20.0		39.1	49.3	-10.2
0.358	18.0	0.0	0.2	20.0		38.2	48.8	-10.5
0.649	13.0	0.0	0.3	20.0		33.3	46.0	-12.7
3.098	12.7	0.0	0.5	20.0		33.2	46.0	-12.8
0.937	12.8	0.0	0.3	20.0		33.1	46.0	-12.9
2.810	12.3	0.0	0.5	20.0		32.8	46.0	-13.2
0.576	12.1	0.0	0.3	20.0		32.4	46.0	-13.6
1.149	11.9	0.0	0.3	20.0		32.2	46.0	-13.8
2.883	11.5	0.0	0.5	20.0		32.0	46.0	-14.0
0.467	12.2	0.0	0.2	20.0		32.4	46.6	-14.1
2.949	11.2	0.0	0.5	20.0		31.7	46.0	-14.3





Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. While scanning the radiated emissions, all of the EUT parameters listed below were investigated. This includes, but may not be limited to, antennas, tuned transmit frequency ranges, operating modes, and data rates.

Channels in Specified Band Investigated:

GSM PCS Low Ch. 512 = 1850.2 MHz
GSM PCS Mid Ch. 661 = 1880 MHz
GSM PCS High Ch. 810 = 1909.8 MHz
GSM Cellular Low Ch. 128 = 824.2 MHz
GSM Cellular Mid Ch. 190 = 836.6 MHz
GSM Cellular High Ch. 251 = 848.8 MHz

Operating Modes Investigated:

Typical

Data Rates Investigated:

Maximum

Power Input Settings Investigated:

120 VAC, 60 Hz.

Other Settings Investigated:

Configuration 1	GSM Radio in Laptop
Configuration 2	GSM Radio in Laptop with Laptop Docked in Vehicular Mount using External Radio. EUT measured in typical installation polarity.

Software\Firmware Applied During Test

Exercise software	Microsoft® HyperTerminal	Version	5.1
Description			
The system was tested using hyperterminal software on a remote pc to access the EUT during the testing. A call was originated by the wireless communications test set and answered via hyperterminal on the EUT.			

EUT and Peripherals**Configuration 1: Modem in IX600 Laptop.**

Description	Manufacturer	Model/Part Number	Serial Number
EUT-GSM Radio	Itronix, Corp.	MC75	Unknown
Host Laptop	Itronix, Corp.	IX600	8147M0100451300C34M000
AC Adapter	Lite-On Technology Corporation	PA-1700-02	5300210201
Microphone	Telex	Unknown	Unknown
Headphones	Sony	Unknown	Unknown

EUT and Peripherals**Configuration 2: Modem in IX600 Laptop. Laptop Docked in Vehicular Mount**

Description	Manufacturer	Model/Part Number	Serial Number
EUT-GSM Radio	Itronix, Corp.	MC75	Unknown
Host Laptop	Itronix, Corp.	IX600	8147M0100451300C34M000
AC Adapter	Lite-On Technology Corporation	PA-1700-02	5300210201
Vehicular Mount	Spectrum Technology	M 050526 Dock	8147M2700152200725M00
Antenna	MaxRad	BMLPUDB800/1900	Unknown
Keyboard	Gateway	2196003-00-001	15410263
Mouse	Microsoft	97599	1408762-40000
Linear Directional Antenna	Xertex Technologies	245L09W	100805
Microphone	Telex	Unknown	Unknown
Headphones	Sony	Unknown	Unknown

Remote Equipment Outside of Test Setup Boundary

Description	Manufacturer	Model/Part Number	Serial Number
GSM/DCS/PCS MS Test Set	Hewlett Packard	8922M	3829U02903
GSM/DCS/PCS RF Interface	Hewlett Packard	83220E	3842U05679
Wireless Communications Test Set	Agilent	E5515C	GB44052580

Equipment isolated from the EUT so as not to contribute to the measurement result is considered to be outside the test setup boundary

Cables**Configuration 1: Modem in IX600 Laptop.**

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Leads	No	1.5	Yes	Host Laptop	AC Adapter
AC Power	No	1.8	No	AC Adapter	AC Mains
Antenna	Yes	4.0	No	Vehicular Mount	Antenna
Serial	Yes	1.1	No	Unterminated	Host Laptop
Video	Yes	1.1	No	Unterminated	Host Laptop
USB(x2)	Yes	1.2	No	Unterminated	Host Laptop
Audio	No	1.6	No	Microphone	Host Laptop
Audio	No	1.4	No	Headphones	Host Laptop
LAN	No	1.4	No	Unterminated	Host Laptop
Modem	No	1.4	No	Unterminated	Host Laptop

Cables**Configuration 2: Modem in IX600 Laptop. Laptop Docked in Vehicular Mount.**

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Leads	No	1.5	Yes	Host Laptop	AC Adapter
AC Power	No	1.8	No	AC Adapter	AC Mains
Antenna	Yes	4.0	No	Vehicular Mount	Antenna
Mouse	PA	1.6	PA	Mouse	Vehicular Mount
Keyboard	PA	1.6	PA	Keyboard	Vehicular Mount
Serial	Yes	1.0	No	Unterminated	Vehicular Mount
Serial	Yes	1.1	No	Unterminated	Vehicular Mount
Parallel	Yes	1.0	No	Unterminated	Vehicular Mount
Video	Yes	1.1	No	Unterminated	Vehicular Mount
Antenna	Yes	1.2	No	Linear Directional Antenna	Vehicular Mount
USB(x2)	Yes	1.2	No	Unterminated	Vehicular Mount
Audio	No	1.6	No	Microphone	Vehicular Mount
Audio	No	1.4	No	Headphones	Vehicular Mount

Measurement Equipment

Description	Manufacturer	Model	Identifier	Last Cal	Interval
Antenna, Biconilog	EMCO	3141	AXE	12/03/2003	24 mo
Antenna, Horn	EMCO	3115	AHC	09/07/2004	12 mo
Attenuator	Coaxicom	66702 5910-10	RBI	02/25/2005	13 mo
Spectrum Analyzer	Agilent	E4446A	AAQ	04/08/2005	13 mo
Antenna, Horn	EMCO	3115	AHF	03/18/2004	24 mo
Signal Generator	Hewlett Packard	8341B	TGN	02/07/2005	13 mo
Antenna, Dipole (ADAA included)	Roberts	Roberts	ADA	01/06/2005	24 mo
Attenuator	Coaxicom	66702 5910-20	RBJ	02/25/2005	13 mo

Test Description

Requirement: The applicable limits are 22.913(a) for the cellular band, and 24.238(a) for the PCS band.

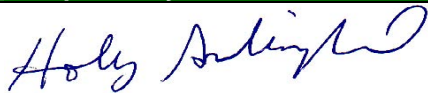
Per 22.913(a), the power for mobile and auxiliary transmitters must be less than 7 Watts ERP.

Per 24.232(b), the power for mobile and portable transmitters must be less than 2 Watts EIRP.

Configuration: 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 band transmit frequencies. For each configuration, the fundamental emission from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis, and adjusting the measurement antenna height and polarization.

Test Methodology: For licensed transmitters, the FCC references ANSI/TIA-603-B as the measurement procedure standard. ANSI/TIA-603-B Section 2.2.12 describes a method for measuring radiated emissions that utilizes an antenna substitution method:

At an approved test site, the transmitter is placed on a remotely controlled turntable, and the measurement antenna is placed 3 meters from the transmitter. The turntable azimuth is varied to maximize the level of emissions. The height of the measurement antenna is also varied from 1 to 4 meters. The amplitude and frequency of the highest emissions are noted. The transmitter is then replaced with a $\frac{1}{2}$ wave dipole that is successively tuned to each of the highest emissions. A signal generator is connected to the dipole (horn antenna for frequencies above 1 GHz), and its output is adjusted to match the level previously noted for each frequency. The output of the signal generator is recorded, and by factoring in the cable loss to the dipole antenna and its gain; the power (ERP or e.i.r.p) is determined for each radiated emission.

Completed by:

EUT:	MC75	Work Order:	SPTE0010
Serial Number:	Unknown	Date:	07/28/05
Customer:	Spectrum Technology	Temperature:	23
Attendees:	Rod Munro	Humidity:	38%
Project:	None	Barometric Pressure:	30.15
Tested by:	Rod Peloquin	Power:	120VAC/60Hz
		Job Site:	EV01

TEST SPECIFICATIONS	Test Method
FCC 22.913(a):2004	TIA/EIA 603-B:2001

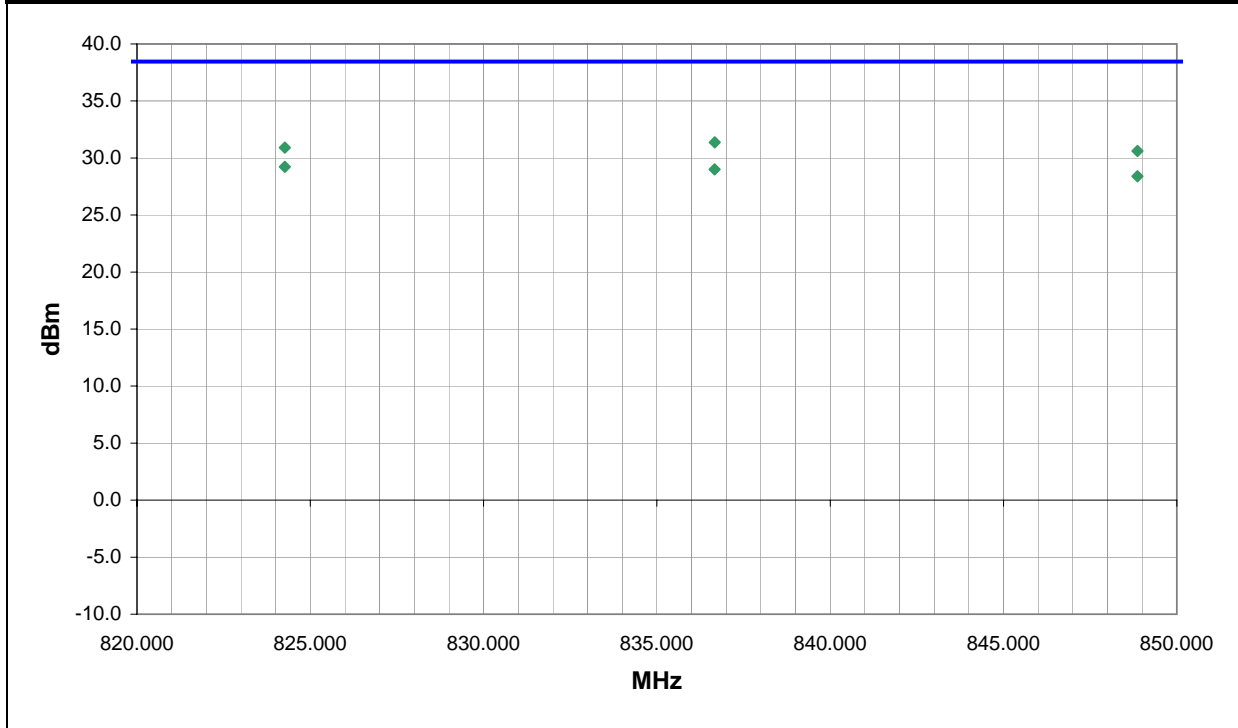
TEST PARAMETERS
Antenna Height(s) (m) 1 - 4 Test Distance (m) 3

COMMENTS
Modem in IX600 Laptop.

EUT OPERATING MODES
Transmitting GSM Cellular Band

DEVIATIONS FROM TEST STANDARD
No deviations.

Run #	17	 Signature
Configuration #		
Results	Pass	



Freq (MHz)	Azimuth (degrees)	Height (meters)	Polarity	Detector	ERP (Watts)	ERP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)
836.667	109.0	1.1	V-Bilog	PK	1.3709	31.4	38.5	-7.1
824.265	235.0	1.0	H-Bilog	PK	1.2329	30.9	38.5	-7.5
848.867	104.0	1.7	V-Bilog	PK	1.1524	30.6	38.5	-7.8
824.266	83.0	2.7	V-Bilog	PK	0.8355	29.2	38.5	-9.2
836.665	240.0	1.0	H-Bilog	PK	0.7943	29.0	38.5	-9.5
848.864	247.0	1.0	H-Bilog	PK	0.6904	28.4	38.5	-10.1

EUT:	MC75	Work Order:	SPTE0010
Serial Number:	Unknown	Date:	07/28/05
Customer:	Spectrum Technology	Temperature:	23
Attendees:	Rod Munro	Humidity:	38%
Project:	None	Barometric Pressure:	30.15
Tested by:	Holly Ashkannejhad	Power:	120VAC/60Hz
		Job Site:	EV01

TEST SPECIFICATIONS	Test Method
FCC 24.232(b):2004	TIA/EIA 603-B:2001

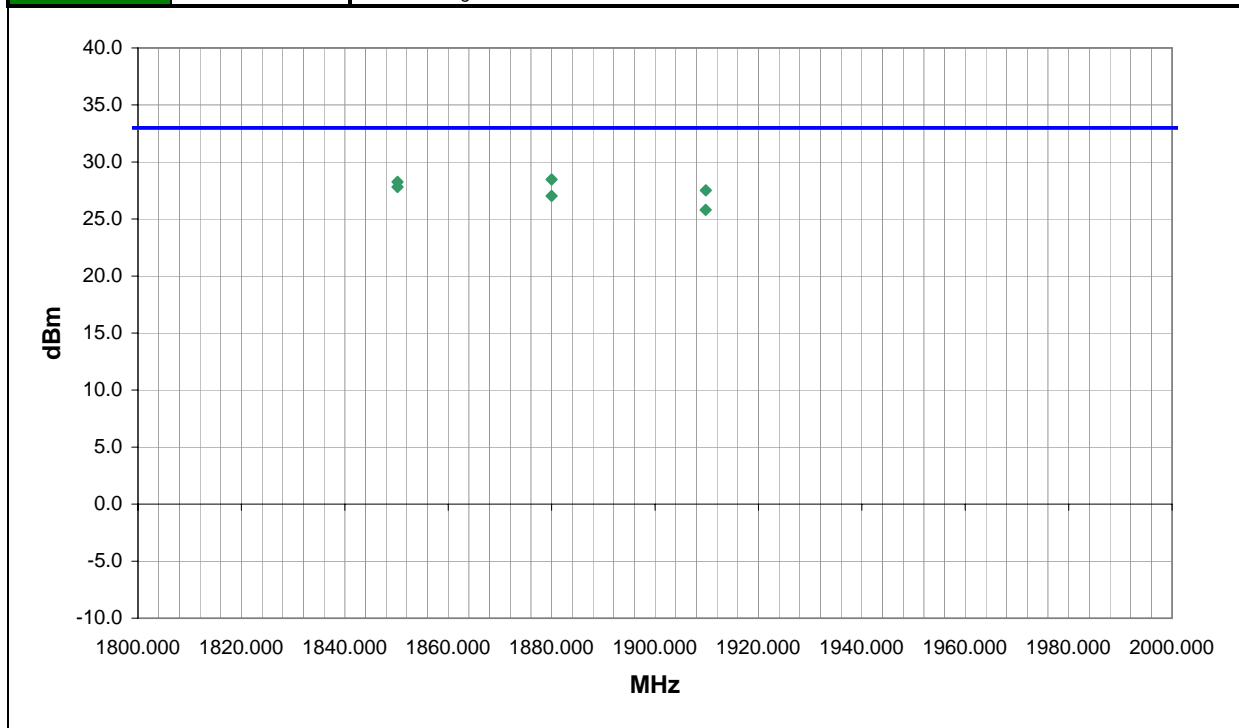
TEST PARAMETERS			
Antenna Height(s) (m)	1 - 4	Test Distance (m)	3

COMMENTS
Modem in IX600 Laptop.

EUT OPERATING MODES
Transmitting PCS Band

DEVIATIONS FROM TEST STANDARD
No deviations.

Run #	18	Signature <i>Holly Ashkannejhad</i>
Configuration #		
Results	Pass	



Freq (MHz)	Azimuth (degrees)	Height (meters)	Polarity	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)
1880.000	360.0	1.2	V-Horn	PK	0.7017	28.5	33.0	-4.5
1850.200	213.0	1.4	H-Horn	PK	0.6689	28.3	33.0	-4.7
1850.200	343.0	1.1	V-Horn	PK	0.6033	27.8	33.0	-5.2
1909.834	336.0	1.4	V-Horn	PK	0.5646	27.5	33.0	-5.5
1880.000	164.0	1.4	H-Horn	PK	0.5045	27.0	33.0	-6.0
1909.800	172.0	1.3	H-Horn	PK	0.3805	25.8	33.0	-7.2

EUT:	MC75	Work Order:	SPTE0010
Serial Number:	Unknown	Date:	07/28/05
Customer:	Spectrum Technology	Temperature:	26
Attendees:	Rod Munro	Humidity:	41%
Project:	None	Barometric Pressure:	30.15
Tested by:	Holly Ashkannejhad	Power:	120VAC/60Hz
		Job Site:	EV01

TEST SPECIFICATIONS Test Method

FCC 24.232(b):2004	TIA/EIA 603-B:2001
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TEST PARAMETERS

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

Modem in IX600 Laptop Docked in Vehicular Mount. EUT was tested in typical installation polarity.

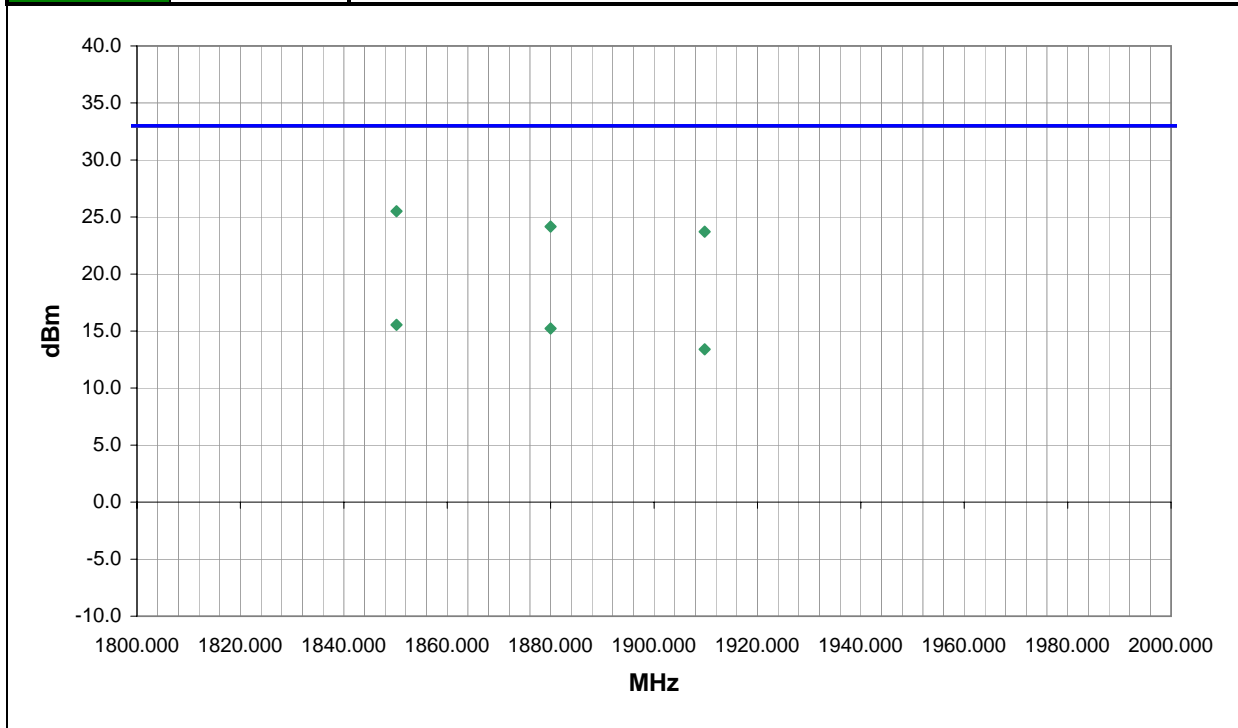
EUT OPERATING MODES

Transmitting PCS Band

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	19	Signature <i>Holly Ashkannejhad</i>
Configuration #		
Results	Pass	



Freq (MHz)	Azimuth (degrees)	Height (meters)	Polarity	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)
1850.200	109.0	1.0	V-Horn	PK	0.3553	25.5	33.0	-7.5
1880.000	283.0	1.0	V-Horn	PK	0.2607	24.2	33.0	-8.8
1909.800	269.0	1.1	V-Horn	PK	0.2354	23.7	33.0	-9.3
1850.200	260.0	1.6	H-Horn	PK	0.0359	15.6	33.0	-17.4
1880.000	253.0	1.6	H-Horn	PK	0.0333	15.2	33.0	-17.8
1909.800	291.0	1.5	H-Horn	PK	0.0219	13.4	33.0	-19.6

EUT:	MC75	Work Order:	SPTE0010
Serial Number:	Unknown	Date:	07/28/05
Customer:	Spectrum Technology	Temperature:	25
Attendees:	Rod Munro	Humidity:	42%
Project:	None	Barometric Pressure:	30.1
Tested by:	Holly Ashkannejhad	Power:	120VAC/60Hz
		Job Site:	EV01

TEST SPECIFICATIONS Test Method

FCC 22.913(a):2004	TIA/EIA 603-B:2001
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TEST PARAMETERS

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

Modem in IX600 Laptop Docked in Vehicular Mount. EUT was tested in typical installation polarity.

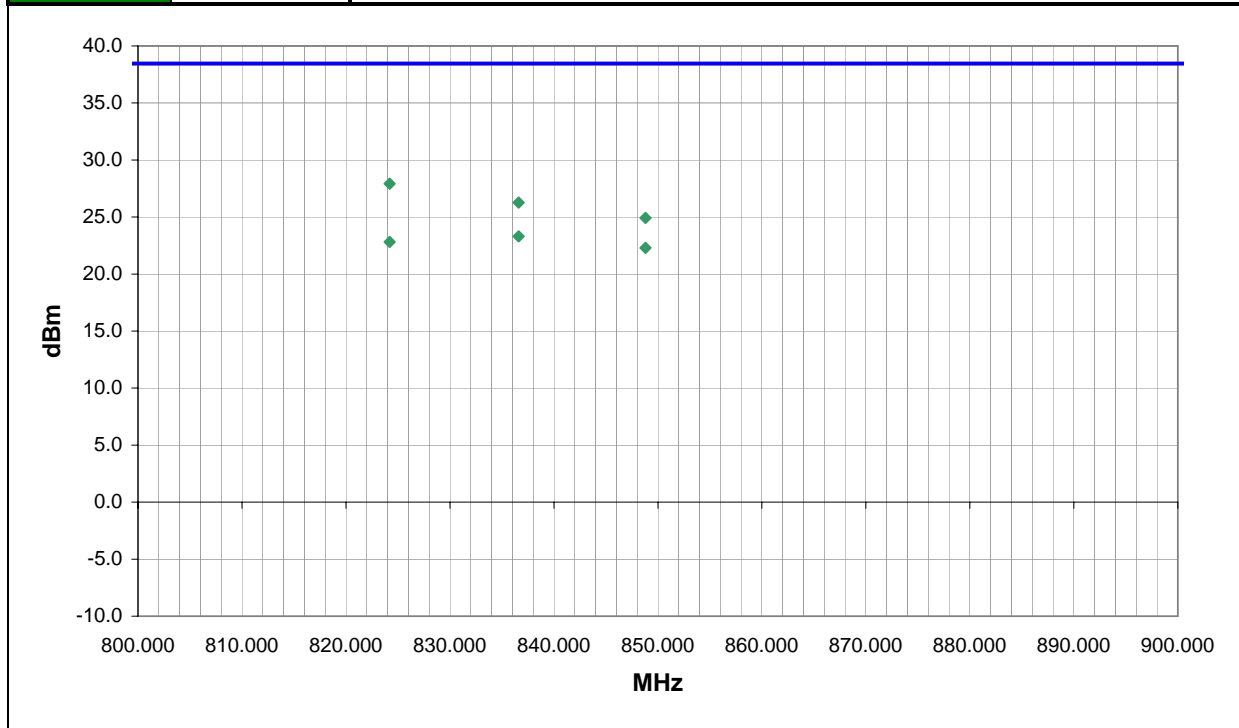
EUT OPERATING MODES

Transmitting GSM Cellular

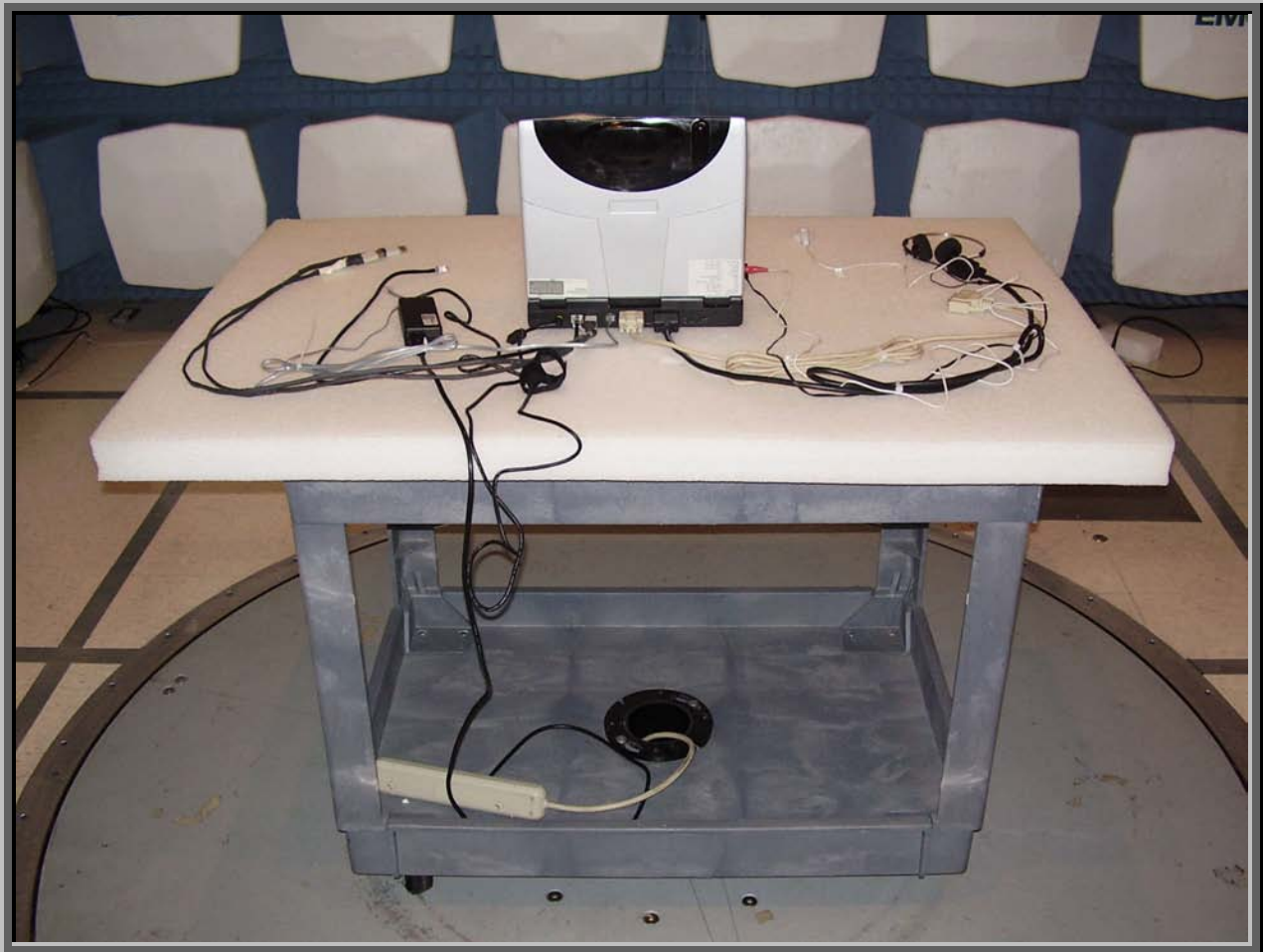
DEVIATIONS FROM TEST STANDARD

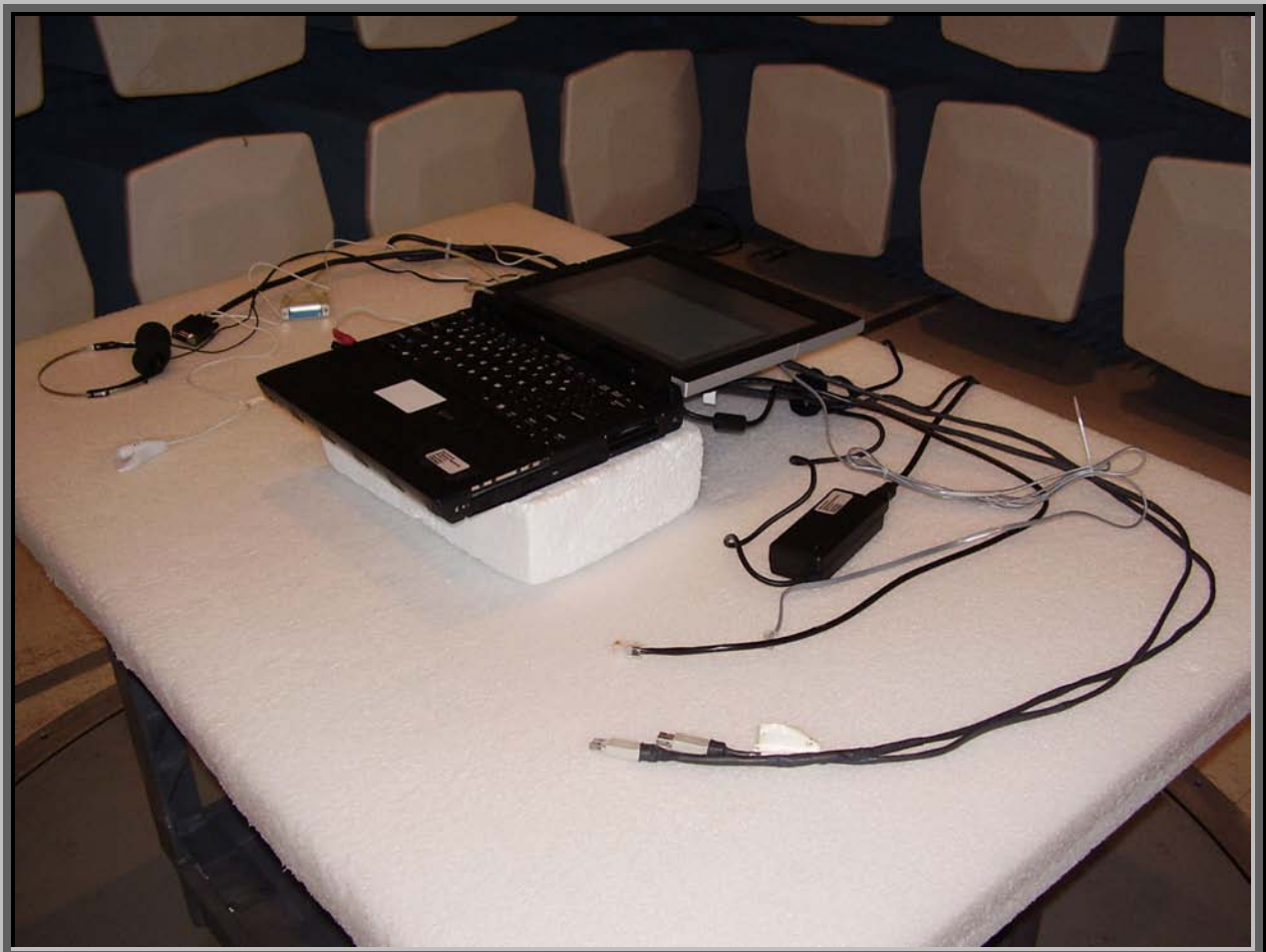
No deviations.

Run #	20	Signature <i>Holly Ashkannejhad</i>
Configuration #		
Results	Pass	



Freq (MHz)	Azimuth (degrees)	Height (meters)	Polarity	Detector	ERP (Watts)	ERP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)
824.200	326.0	1.3	V-Bilog	PK	0.6192	27.9	38.5	-10.5
836.600	328.0	1.2	V-Bilog	PK	0.4236	26.3	38.5	-12.2
848.800	331.0	1.3	V-Bilog	PK	0.3101	24.9	38.5	-13.5
836.600	317.0	2.0	H-Bilog	PK	0.2138	23.3	38.5	-15.1
824.200	304.0	1.8	H-Bilog	PK	0.1910	22.8	38.5	-15.6
848.800	315.0	1.9	H-Bilog	PK	0.1695	22.3	38.5	-16.2









Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. While scanning the radiated emissions, all of the EUT parameters listed below were investigated. This includes, but may not be limited to, antennas, tuned transmit frequency ranges, operating modes, and data rates.

Channels in Specified Band Investigated:

GSM PCS Low Ch. 512 = 1850.2 MHz
GSM PCS Mid Ch. 661 = 1880 MHz
GSM PCS High Ch. 810 = 1909.8 MHz
GSM Cellular Low Ch. 128 = 824.2 MHz
GSM Cellular Mid Ch. 190 = 836.6 MHz
GSM Cellular High Ch. 251 = 848.8 MHz

Operating Modes Investigated:

Typical

Data Rates Investigated:

Maximum

Power Input Settings Investigated:

120 VAC, 60 Hz.

Other Settings Investigated:

Configuration 1	GSM Radio in Laptop
Configuration 2	GSM Radio in Laptop with Laptop Docked in Vehicular Mount using External Radio

Software\Firmware Applied During Test

Exercise software	Microsoft® HyperTerminal	Version	5.1
Description			
The system was tested using hyperterminal software on a remote pc to access the EUT during the testing. A call was originated by the wireless communications test set and answered via hyperterminal on the EUT.			

EUT and Peripherals**Configuration 1: Modem in IX600 Laptop.**

Description	Manufacturer	Model/Part Number	Serial Number
EUT-GSM Radio	Itronix, Corp.	MC75	Unknown
Host Laptop	Itronix, Corp.	IX600	8147M0100451300C2BM00
AC Adapter	Lite-On Technology Corporation	PA-1700-02	5300210201
Microphone	Telex	Unknown	Unknown
Headphones	Sony	Unknown	Unknown

EUT and Peripherals**Configuration 2: Modem in IX600 Laptop. Laptop Docked in Vehicular Mount**

Description	Manufacturer	Model/Part Number	Serial Number
EUT-GSM Radio	Itronix, Corp.	MC75	Unknown
Host Laptop	Itronix, Corp.	IX600	8147M0100451300C2BM00
AC Adapter	Lite-On Technology Corporation	PA-1700-02	5300210201
Vehicular Mount	Spectrum Technology	M 050526 Dock	8147M2700152200725M00
Antenna	MaxRad	BMLPUDB800/1900	Unknown
Keyboard	Gateway	2196003-00-001	15410263
Mouse	Microsoft	97599	1408762-40000
Linear Directional Antenna	Xertex Technologies	245L09W	100805
Microphone	Telex	Unknown	Unknown
Headphones	Sony	Unknown	Unknown

Remote Equipment Outside of Test Setup Boundary

Description	Manufacturer	Model/Part Number	Serial Number
GSM/DCS/PCS MS Test Set	Hewlett Packard	8922M	3829U02903
GSM/DCS/PCS RF Interface	Hewlett Packard	83220E	3842U05679
Wireless Communications Test Set	Agilent	E5515C	GB44052580

Equipment isolated from the EUT so as not to contribute to the measurement result is considered to be outside the test setup boundary

Cables**Configuration 1: Modem in IX600 Laptop.**

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Leads	No	1.5	Yes	Host Laptop	AC Adapter
AC Power	No	1.8	No	AC Adapter	AC Mains
Antenna	Yes	4.0	No	Vehicular Mount	Antenna
Serial	Yes	1.1	No	Unterminated	Host Laptop
Video	Yes	1.1	No	Unterminated	Host Laptop
USB(x2)	Yes	1.2	No	Unterminated	Host Laptop
Audio	No	1.6	No	Microphone	Host Laptop
Audio	No	1.4	No	Headphones	Host Laptop
LAN	No	1.4	No	Unterminated	Host Laptop
Modem	No	1.4	No	Unterminated	Host Laptop

Cables**Configuration 2: Modem in IX600 Laptop. Laptop Docked in Vehicular Mount.**

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Leads	No	1.5	Yes	Host Laptop	AC Adapter
AC Power	No	1.8	No	AC Adapter	AC Mains
Antenna	Yes	4.0	No	Vehicular Mount	Antenna
Mouse	PA	1.6	PA	Mouse	Vehicular Mount
Keyboard	PA	1.6	PA	Keyboard	Vehicular Mount
Serial	Yes	1.0	No	Unterminated	Vehicular Mount
Serial	Yes	1.1	No	Unterminated	Vehicular Mount
Parallel	Yes	1.0	No	Unterminated	Vehicular Mount
Video	Yes	1.1	No	Unterminated	Vehicular Mount
Antenna	Yes	1.2	No	Linear Directional Antenna	Vehicular Mount
USB(x2)	Yes	1.2	No	Unterminated	Vehicular Mount
Audio	No	1.6	No	Microphone	Vehicular Mount
Audio	No	1.4	No	Headphones	Vehicular Mount

Measurement Equipment

Description	Manufacturer	Model	Identifier	Last Cal	Interval
Antenna, Biconilog	EMCO	3141	AXE	12/03/2003	24 mo
Pre-Amplifier	Amplifier Research	LN1000A	APS	03/01/2005	13 mo
Antenna, Horn	EMCO	3115	AHC	09/07/2004	12 mo
Pre-Amplifier	Miteq	AMF-4D-005180-24-10P	APJ	05/05/2005	3 mo
Antenna, Horn	EMCO	3160-08	AHK	NCR	NA
Pre-Amplifier	Miteq	AMF-4D-005180-24-10P	APC	02/17/2005	13 mo
Attenuator	Coaxicom	66702 5910-10	RBI	02/25/2005	13 mo
Antenna, Horn	EMCO	3160-09	AHG	NCR	NA
Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	02/15/2005	13 mo
Spectrum Analyzer	Agilent	E4446A	AAQ	04/08/2005	13 mo
Antenna, Horn	EMCO	3115	AHF	03/18/2004	24 mo
Signal Generator	Hewlett Packard	8341B	TGN	02/07/2005	13 mo
Antenna, Dipole (ADAA included)	Roberts	Roberts	ADA	01/06/2005	24 mo
High Pass Filter	Micro-Tronics	HPM50114	HFN	03/09/2005	13 mo
Attenuator	Coaxicom	66702 5910-20	RBJ	02/25/2005	13 mo

Test Description

Requirement: Per 2.1053, the field strength of spurious radiation was measured in the far-field at an FCC Listed semi-anechoic chamber up to 25 GHZ. The applicable limits are 22.917(a) for the cellular band, and 24.238(a) for the PCS band.

Per 22.917(a), The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB (-13 dBm).

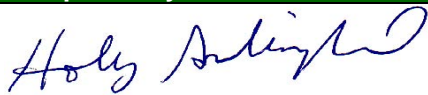
Per 24.238(a), The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB (-13 dBm).

Configuration: 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 band transmit frequencies. For each 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 EUT antenna in three orthogonal axis, and adjusting the measurement antenna height and polarization. A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

Test Methodology: For licensed transmitters, the FCC references ANSI/TIA-603-B as the measurement procedure standard. ANSI/TIA-603-B Section 2.2.12 describes a method for measuring radiated emissions that utilizes an antenna substitution method:

At an approved test site, the transmitter is placed on a remotely controlled turntable, and the measurement antenna is placed 3 meters from the transmitter. The turntable azimuth is varied to maximize the level of emissions. The height of the measurement antenna is also varied from 1 to 4 meters. The amplitude and frequency of the highest emissions are noted. The transmitter is then replaced with a $\frac{1}{2}$ wave dipole that is successively tuned to each of the highest emissions. A signal generator is connected to the dipole (horn antenna for frequencies above 1 GHz), and its output is adjusted to match the level previously noted for each frequency. The output of the signal generator is recorded, and by factoring in the cable loss to the dipole antenna and its gain; the power (ERP or e.i.r.p) is determined for each radiated emission.

Completed by:



EUT: MC75	Work Order: SPTE0010
Serial Number: Unknown	Date: 07/26/05
Customer: Spectrum Technology	Temperature: 24
Attendees: None	Humidity: 40%
Project: None	Barometric Pressure: 30.1
Tested by: Holly Ashkannejhad	Power: 120VAC, 60Hz
	Job Site: EV01

TEST SPECIFICATIONS	Test Method
FCC 24.238:2004	TIA/EIA 603-B:2001

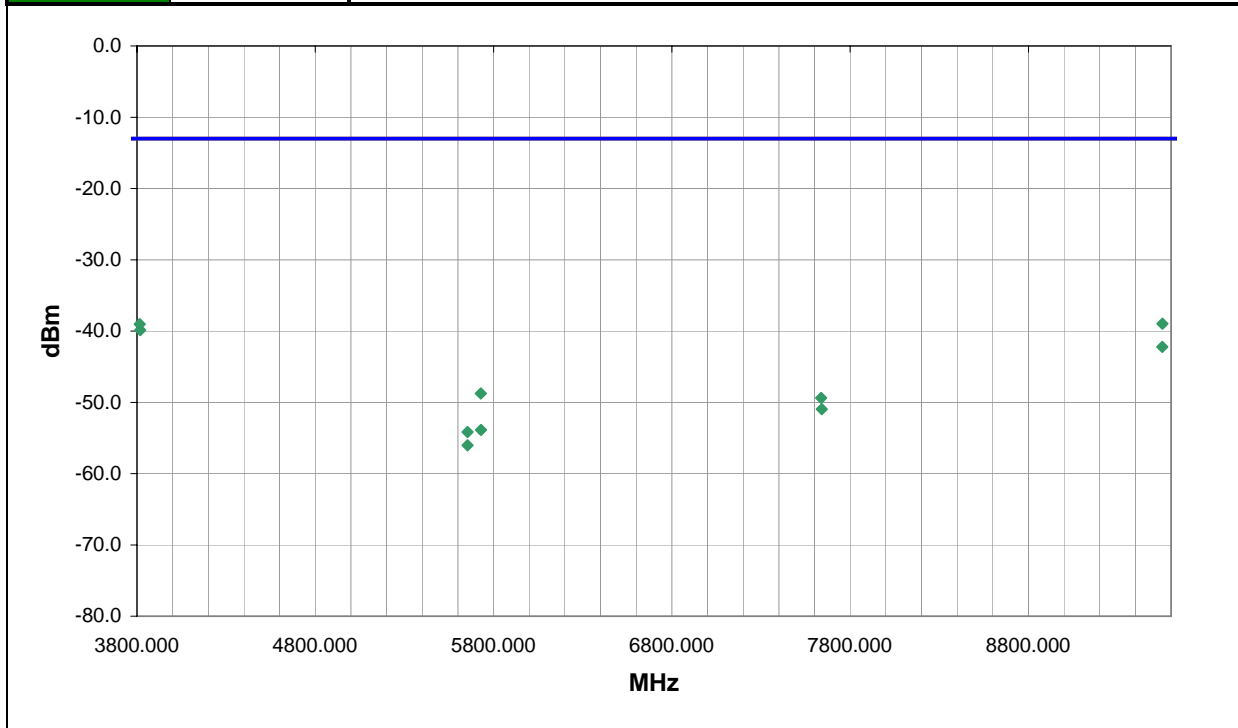
TEST PARAMETERS	
Antenna Height(s) (m) 1 - 4	Test Distance (m) 3

COMMENTS
Modem in Laptop.

EUT OPERATING MODES
Transmitting GSM PCS Band High Channel

DEVIATIONS FROM TEST STANDARD
No deviations.

Run #	1	Signature <i>Holly Ashkannejhad</i>
Configuration #		
Results	Pass	



Freq (MHz)	Azimuth (degrees)	Height (meters)	Polarity	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)
9551.940	32.0	1.0	V-Horn	PK	0.0000	-39.0	-13.0	-26.0
3815.050	350.0	1.9	H-Horn	PK	0.0000	-39.0	-13.0	-26.0
3818.130	192.0	2.1	V-Horn	PK	0.0000	-39.9	-13.0	-26.9
9550.340	318.0	2.4	H-Horn	PK	0.0000	-42.2	-13.0	-29.2
5728.200	28.0	1.0	V-Horn	PK	0.0000	-48.8	-13.0	-35.8
7636.930	349.0	1.0	V-Horn	PK	0.0000	-49.4	-13.0	-36.4
7640.850	237.0	1.0	H-Horn	PK	0.0000	-50.9	-13.0	-37.9
5729.860	205.0	1.1	H-Horn	PK	0.0000	-53.9	-13.0	-40.9
5654.390	10.0	2.4	V-Horn	PK	0.0000	-54.2	-13.0	-41.2
5654.433	10.0	1.0	H-Horn	PK	0.0000	-56.0	-13.0	-43.0

EUT:	MC75	Work Order:	SPTE0010
Serial Number:	Unknown	Date:	07/26/05
Customer:	Spectrum Technology	Temperature:	24
Attendees:	None	Humidity:	40%
Project:	None	Barometric Pressure:	30.1
Tested by:	Holly Ashkannejhad	Power:	120VAC, 60Hz
		Job Site:	EV01

TEST SPECIFICATIONS	Test Method
FCC 24.238:2004	TIA/EIA 603-B:2001

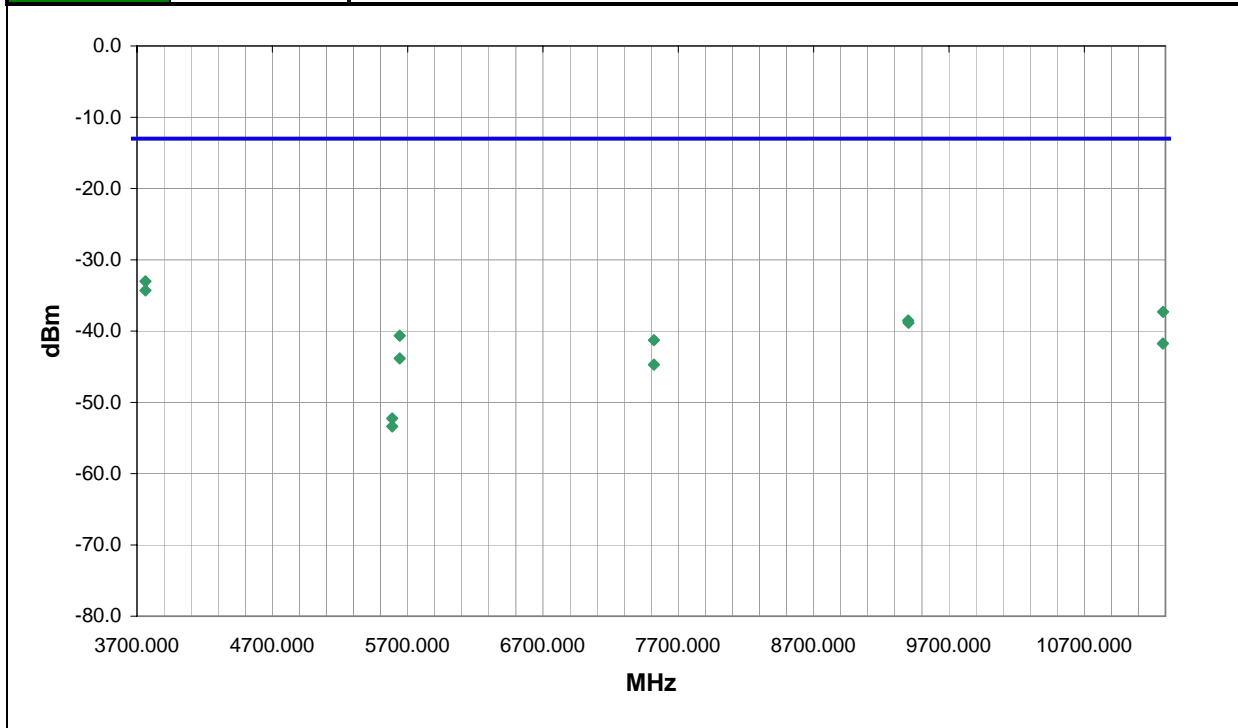
TEST PARAMETERS
Antenna Height(s) (m) 1 - 4 Test Distance (m) 3

COMMENTS
Modem in Laptop.

EUT OPERATING MODES
Transmitting GSM PCS Band Mid Channel

DEVIATIONS FROM TEST STANDARD
No deviations.

Run #	2	Signature <i>Holly Ashkannejhad</i>
Configuration #		
Results	Pass	



Freq (MHz)	Azimuth (degrees)	Height (meters)	Polarity	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)
3762.274	346.0	1.0	H-Horn	PK	0.0000	-33.0	-13.0	-20.0
3762.365	237.0	1.0	V-Horn	PK	0.0000	-34.3	-13.0	-21.3
11282.190	11.0	1.5	V-Horn	PK	0.0000	-37.3	-13.0	-24.3
9398.511	304.0	1.0	V-Horn	PK	0.0000	-38.5	-13.0	-25.5
9400.867	219.0	1.8	H-Horn	PK	0.0000	-38.8	-13.0	-25.8
5640.876	199.0	1.0	V-Horn	PK	0.0000	-40.7	-13.0	-27.7
7519.735	78.0	1.9	V-Horn	PK	0.0000	-41.3	-13.0	-28.3
11281.500	28.0	1.0	H-Horn	PK	0.0000	-41.8	-13.0	-28.8
5641.299	18.0	1.2	H-Horn	PK	0.0000	-43.8	-13.0	-30.8
7520.340	67.0	1.0	H-Horn	PK	0.0000	-44.7	-13.0	-31.7
5585.733	358.0	1.0	V-Horn	PK	0.0000	-52.3	-13.0	-39.3
5585.276	44.0	1.0	H-Horn	PK	0.0000	-53.4	-13.0	-40.4

EUT:	MC75	Work Order:	SPTE0010
Serial Number:	Unknown	Date:	07/26/05
Customer:	Spectrum Technology	Temperature:	24
Attendees:	None	Humidity:	40%
Project:	None	Barometric Pressure:	30.1
Tested by:	Holly Ashkannejhad	Power:	120VAC, 60Hz
		Job Site:	EV01

TEST SPECIFICATIONS	Test Method
FCC 24.238:2004	TIA/EIA 603-B:2001

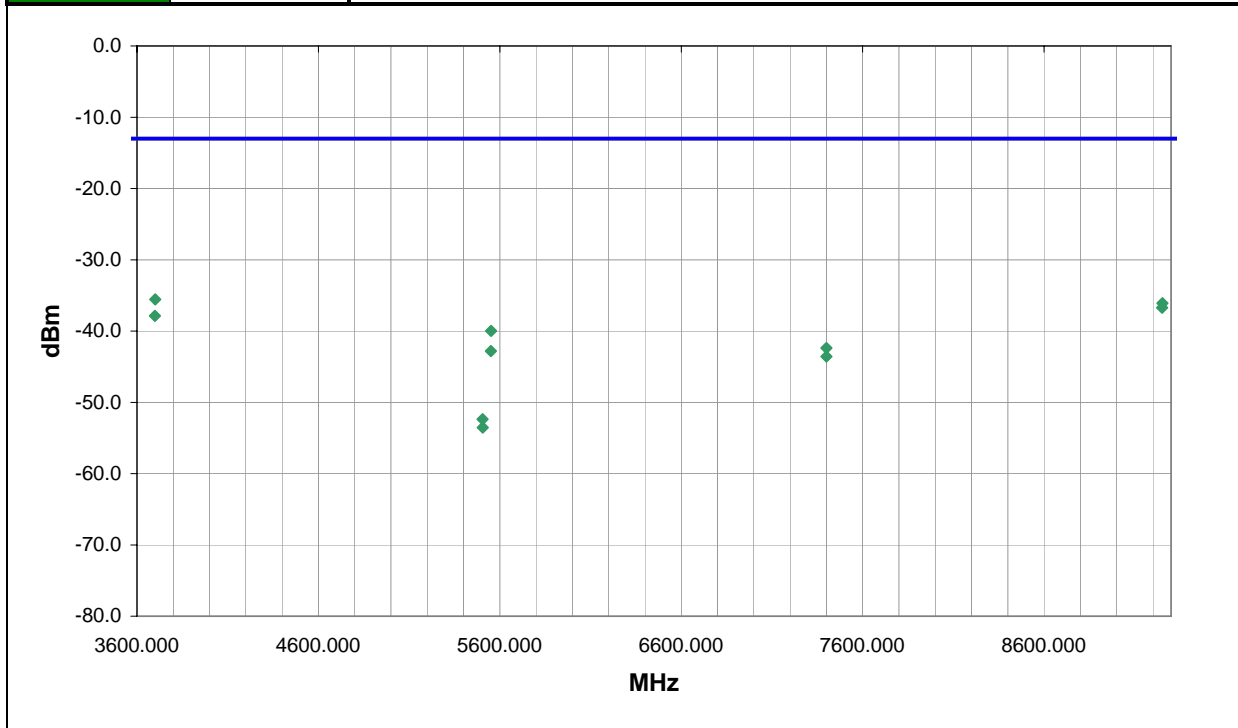
TEST PARAMETERS
Antenna Height(s) (m) 1 - 4 Test Distance (m) 3

COMMENTS
Modem in Laptop.

EUT OPERATING MODES
Transmitting GSM PCS Band Low Channel

DEVIATIONS FROM TEST STANDARD
No deviations.

Run #	3	Signature <i>Holly Ashkannejhad</i>
Configuration #		
Results	Pass	



Freq (MHz)	Azimuth (degrees)	Height (meters)	Polarity	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)
3700.213	185.0	2.0	V-Horn	PK	0.0000	-35.5	-13.0	-22.5
9251.966	176.0	1.0	V-Horn	PK	0.0000	-36.1	-13.0	-23.1
9250.392	83.0	1.0	H-Horn	PK	0.0000	-36.7	-13.0	-23.7
3698.350	356.0	1.0	H-Horn	PK	0.0000	-37.9	-13.0	-24.9
5551.826	219.0	1.0	V-Horn	PK	0.0000	-40.0	-13.0	-27.0
7400.161	49.0	1.0	H-Horn	PK	0.0000	-42.4	-13.0	-29.4
5550.592	11.0	1.0	H-Horn	PK	0.0000	-42.8	-13.0	-29.8
7400.615	338.0	1.0	V-Horn	PK	0.0000	-43.6	-13.0	-30.6
5505.205	5.0	2.1	V-Horn	PK	0.0000	-52.4	-13.0	-39.4
5505.448	328.0	1.0	H-Horn	PK	0.0000	-53.5	-13.0	-40.5

EUT:	MC75	Work Order:	SPTE0010
Serial Number:	Unknown	Date:	07/26/05
Customer:	Spectrum Technology	Temperature:	24
Attendees:	None	Humidity:	40%
Project:	None	Barometric Pressure:	30.1
Tested by:	Holly Ashkannejhad	Power:	120VAC, 60Hz
		Job Site:	EV01

TEST SPECIFICATIONS Test Method

FCC 24.238:2004	TIA/EIA 603-B:2001
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TEST PARAMETERS

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

Modem in Laptop.

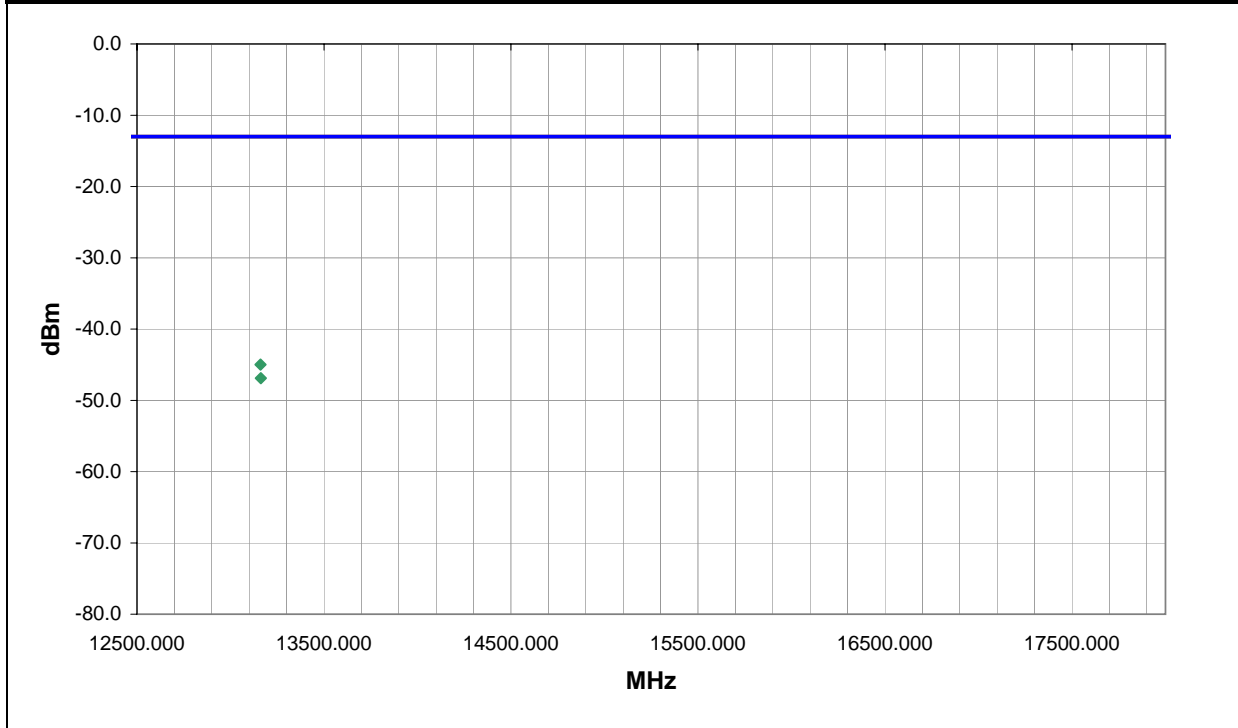
EUT OPERATING MODES

Transmitting GSM PCS Band Mid Channel

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	4	Signature <i>Holly Ashkannejhad</i>
Configuration #		
Results	Pass	



Freq (MHz)	Azimuth (degrees)	Height (meters)	Polarity	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)
13160.300	329.0	1.2	V-Horn	PK	0.0000	-45.0	-13.0	-32.0
13161.910	45.0	1.0	H-Horn	PK	0.0000	-46.9	-13.0	-33.9

EUT:	MC75	Work Order:	SPTE0010
Serial Number:	Unknown	Date:	07/26/05
Customer:	Spectrum Technology	Temperature:	24
Attendees:	None	Humidity:	40%
Project:	None	Barometric Pressure:	30.1
Tested by:	Holly Ashkannejhad	Power:	120VAC, 60Hz
		Job Site:	EV01

TEST SPECIFICATIONS Test Method

FCC 24.238:2004	TIA/EIA 603-B:2001
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TEST PARAMETERS

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

Modem in Laptop.

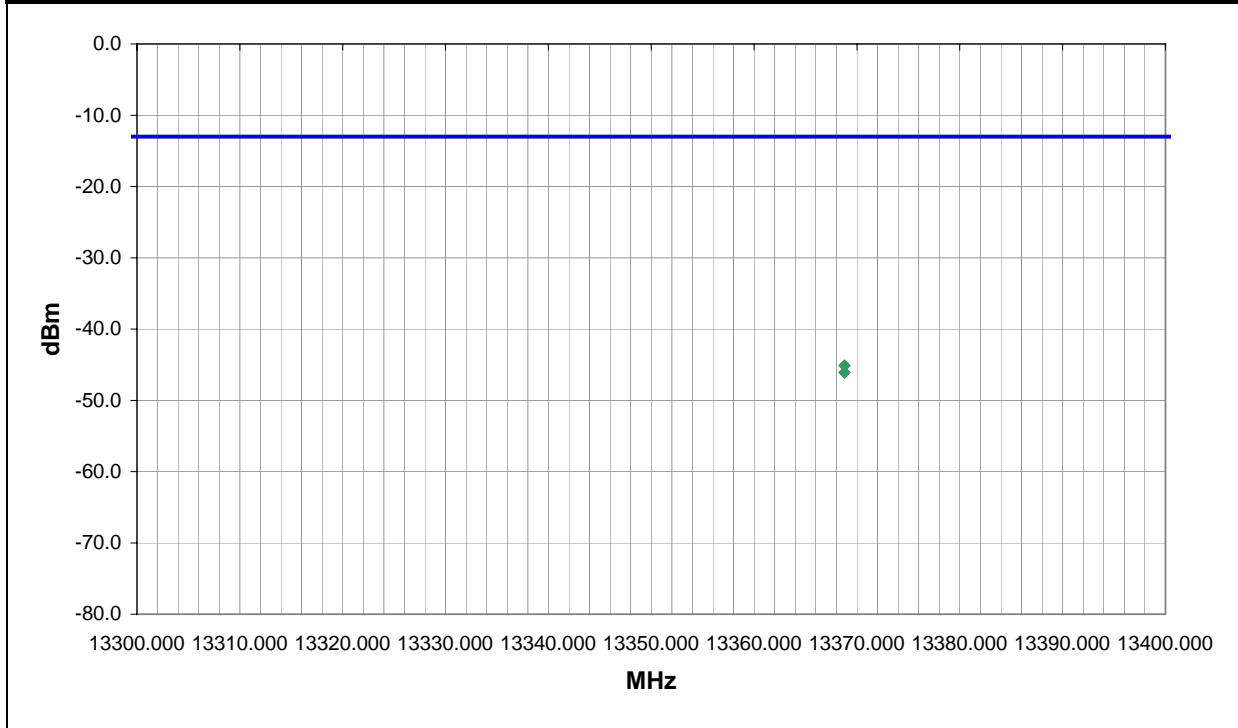
EUT OPERATING MODES

Transmitting GSM PCS Band High Channel

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	5	Signature <i>Holly Ashkannejhad</i>
Configuration #		
Results	Pass	



Freq (MHz)	Azimuth (degrees)	Height (meters)	Polarity	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)
13368.800	-1.0	1.3	H-Horn	PK	0.0000	-45.1	-13.0	-32.1
13368.800	-1.0	1.0	V-Horn	PK	0.0000	-46.1	-13.0	-33.1

EUT:	MC75	Work Order:	SPTE0010
Serial Number:	Unknown	Date:	07/27/05
Customer:	Spectrum Technology	Temperature:	23
Attendees:	Rod Munro	Humidity:	38%
Project:	None	Barometric Pressure:	30.15
Tested by:	Rod Peloquin	Power:	120VAC/60Hz
		Job Site:	EV01

TEST SPECIFICATIONS	Test Method
FCC 24.238:2004	TIA/EIA 603-B:2001

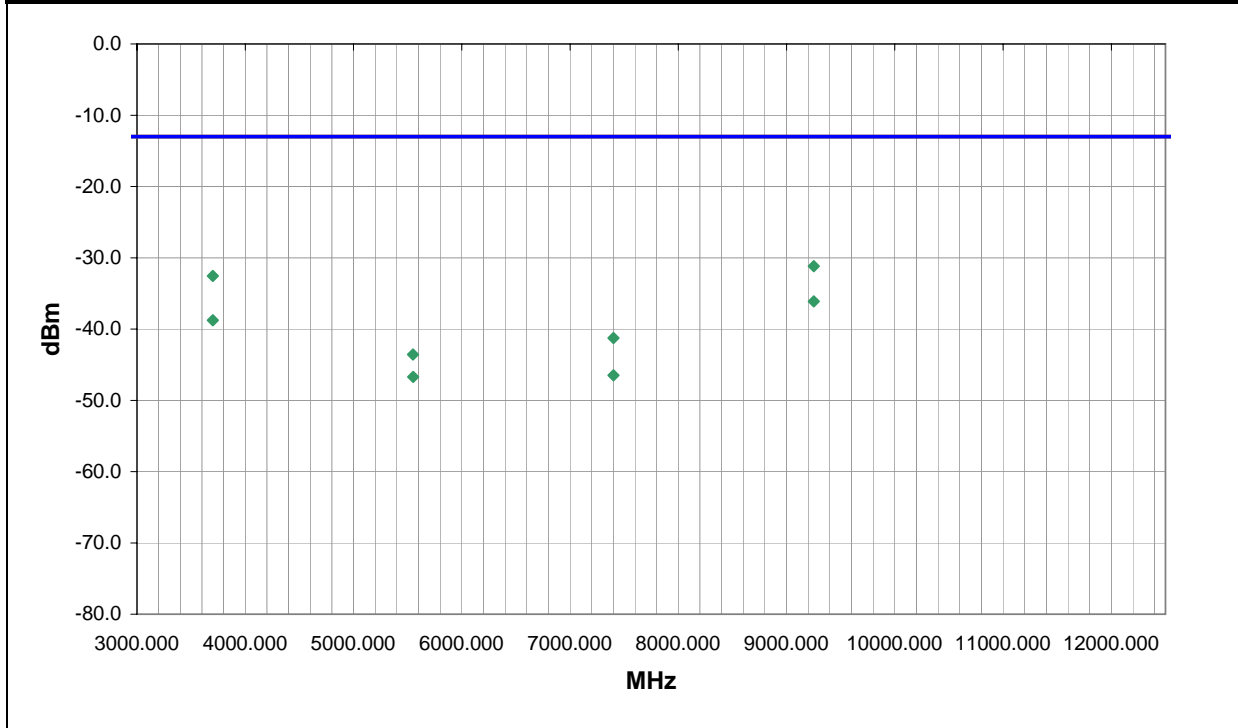
TEST PARAMETERS
Antenna Height(s) (m) 1 - 4 Test Distance (m) 3

COMMENTS
Modem in IX600 Laptop. Laptop Docked in Vehicular Mount

EUT OPERATING MODES
Transmitting GSM PCS Band Low Channel

DEVIATIONS FROM TEST STANDARD
No deviations.

Run #	6	 Signature
Configuration #		
Results	Pass	



Freq (MHz)	Azimuth (degrees)	Height (meters)	Polarity	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)
9251.418	109.0	1.4	V-Horn	PK	0.0000	-31.2	-13.0	-18.2
3701.076	327.0	1.0	V-Horn	PK	0.0000	-32.5	-13.0	-19.5
9251.508	83.0	1.1	H-Horn	PK	0.0000	-36.1	-13.0	-23.1
3700.899	107.0	1.0	H-Horn	PK	0.0000	-38.8	-13.0	-25.8
7401.733	98.0	1.0	V-Horn	PK	0.0000	-41.3	-13.0	-28.3
5549.963	252.0	1.8	V-Horn	PK	0.0000	-43.6	-13.0	-30.6
7400.546	143.0	1.0	H-Horn	PK	0.0000	-46.5	-13.0	-33.5
5550.955	113.0	2.2	H-Horn	PK	0.0000	-46.7	-13.0	-33.7

EUT:	MC75	Work Order:	SPTE0010
Serial Number:	Unknown	Date:	07/27/05
Customer:	Spectrum Technology	Temperature:	23
Attendees:	Rod Munro	Humidity:	38%
Project:	None	Barometric Pressure:	30.15
Tested by:	Rod Peloquin	Power:	120VAC/60Hz
		Job Site:	EV01

TEST SPECIFICATIONS	Test Method
FCC 24.238:2004	TIA/EIA 603-B:2001

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

COMMENTS

Modem in IX600 Laptop. Laptop Docked in Vehicular Mount

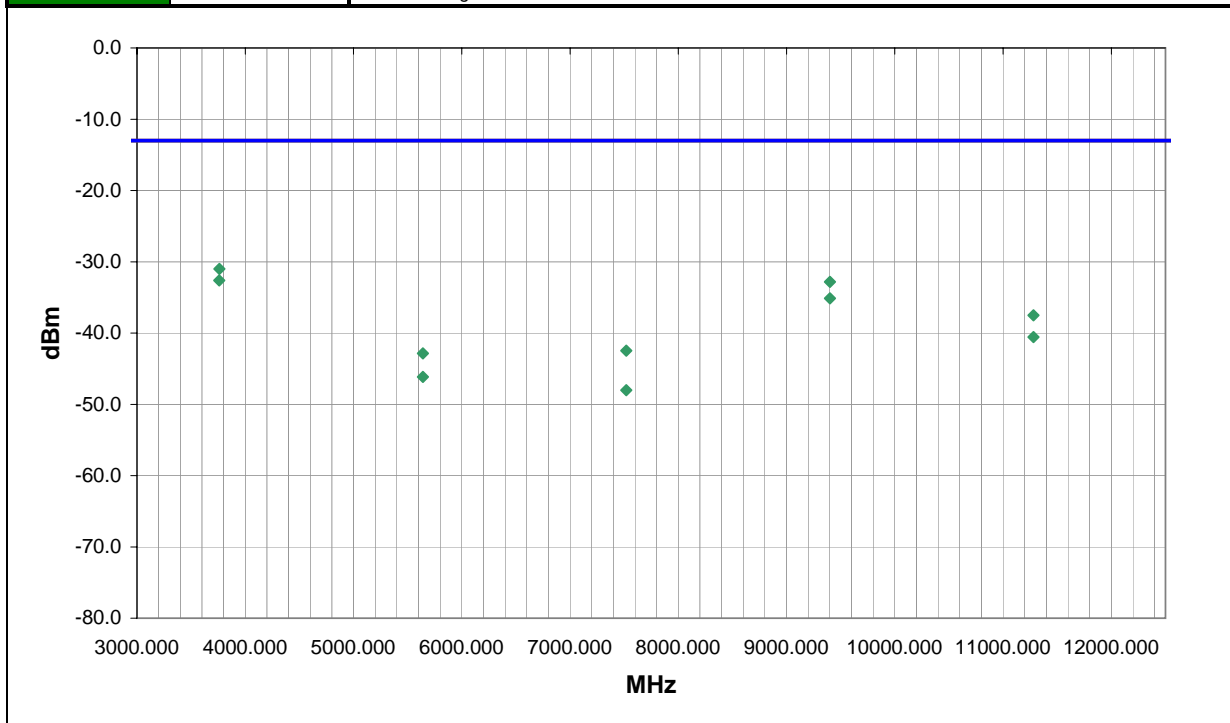
EUT OPERATING MODES

Transmitting GSM PCS Band Mid Channel

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	7	 Signature
Configuration #		
Results	Pass	



Freq (MHz)	Azimuth (degrees)	Height (meters)	Polarity	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)
3760.898	29.0	2.1	V-Horn	PK	0.0000	-31.0	-13.0	-18.0
3759.504	312.0	3.1	H-Horn	PK	0.0000	-32.6	-13.0	-19.6
9400.777	117.0	1.0	V-Horn	PK	0.0000	-32.8	-13.0	-19.8
9400.106	271.0	1.8	H-Horn	PK	0.0000	-35.1	-13.0	-22.1
11280.410	67.0	1.9	V-Horn	PK	0.0000	-37.5	-13.0	-24.5
11280.540	118.0	2.0	H-Horn	PK	0.0000	-40.6	-13.0	-27.6
7519.892	72.0	2.0	V-Horn	PK	0.0000	-42.5	-13.0	-29.5
5640.928	247.0	1.8	V-Horn	PK	0.0000	-42.9	-13.0	-29.9
5640.684	30.0	2.6	H-Horn	PK	0.0000	-46.1	-13.0	-33.1
7519.261	353.0	1.0	H-Horn	PK	0.0000	-48.0	-13.0	-35.0

EUT:	MC75	Work Order:	SPTE0010
Serial Number:	Unknown	Date:	07/27/05
Customer:	Spectrum Technology	Temperature:	23
Attendees:	Rod Munro	Humidity:	38%
Project:	None	Barometric Pressure:	30.15
Tested by:	Rod Peloquin	Power:	120VAC/60Hz
		Job Site:	EV01

TEST SPECIFICATIONS	Test Method
FCC 24.238:2004	TIA/EIA 603-B:2001

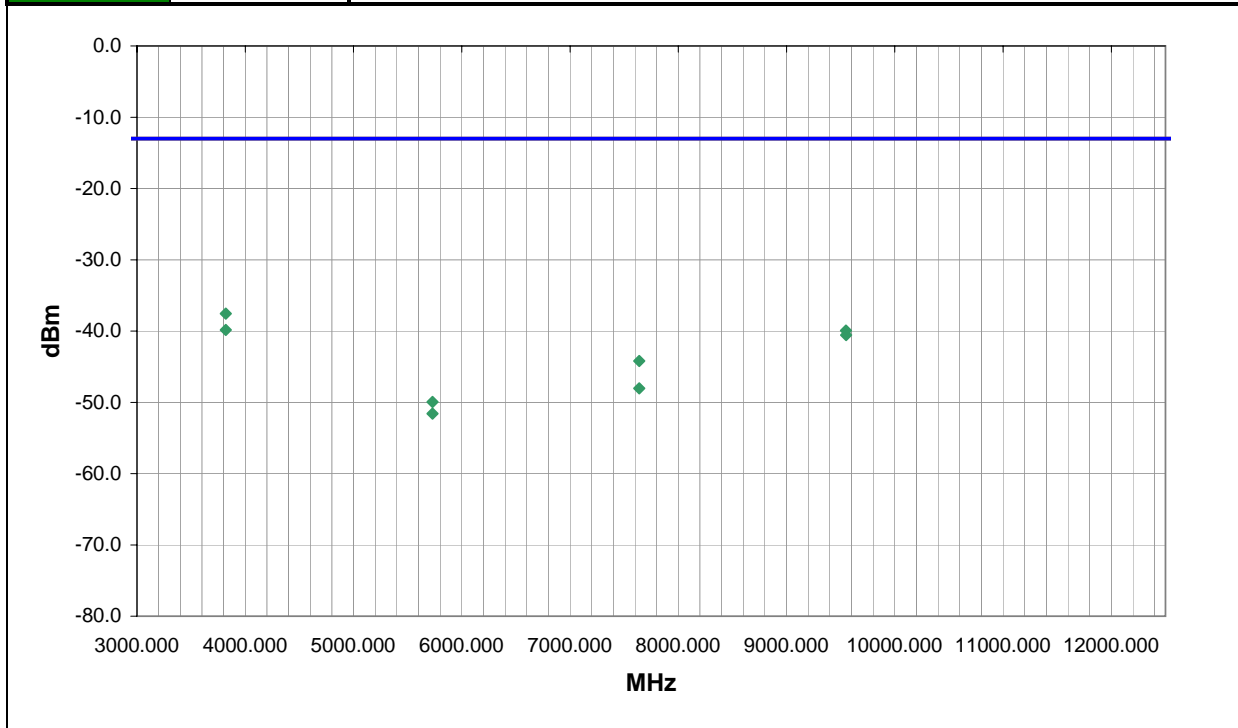
TEST PARAMETERS
Antenna Height(s) (m) 1 - 4 Test Distance (m) 3

COMMENTS
Modem in IX600 Laptop. Laptop Docked in Vehicular Mount

EUT OPERATING MODES
Transmitting GSM PCS Band High Channel

DEVIATIONS FROM TEST STANDARD
No deviations.

Run #	8	 Signature
Configuration #		
Results	Pass	



Freq (MHz)	Azimuth (degrees)	Height (meters)	Polarity	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)
3819.602	134.0	1.0	V-Horn	PK	0.0000	-37.6	-13.0	-24.6
3819.535	123.0	1.0	H-Horn	PK	0.0000	-39.8	-13.0	-26.8
9549.298	13.0	2.2	H-Horn	PK	0.0000	-39.9	-13.0	-26.9
9549.748	91.0	1.9	V-Horn	PK	0.0000	-40.6	-13.0	-27.6
7639.508	68.0	1.8	V-Horn	PK	0.0000	-44.2	-13.0	-31.2
7638.472	114.0	1.9	H-Horn	PK	0.0000	-48.0	-13.0	-35.0
5729.448	251.0	1.0	V-Horn	PK	0.0000	-50.0	-13.0	-37.0
5729.190	152.0	1.0	H-Horn	PK	0.0000	-51.6	-13.0	-38.6

EUT:	MC75	Work Order:	SPTE0010
Serial Number:	Unknown	Date:	07/27/05
Customer:	Spectrum Technology	Temperature:	24
Attendees:	Rod Munro	Humidity:	41%
Project:	None	Barometric Pressure:	29.86
Tested by:	Holly Ashkannejhad	Power:	120VAC/60Hz
		Job Site:	EV01

TEST SPECIFICATIONS Test Method

FCC 22.917(a):2004	TIA/EIA-603:1998
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TEST PARAMETERS

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

Modem in IX600 Laptop. Laptop Docked in Vehicular Mount.

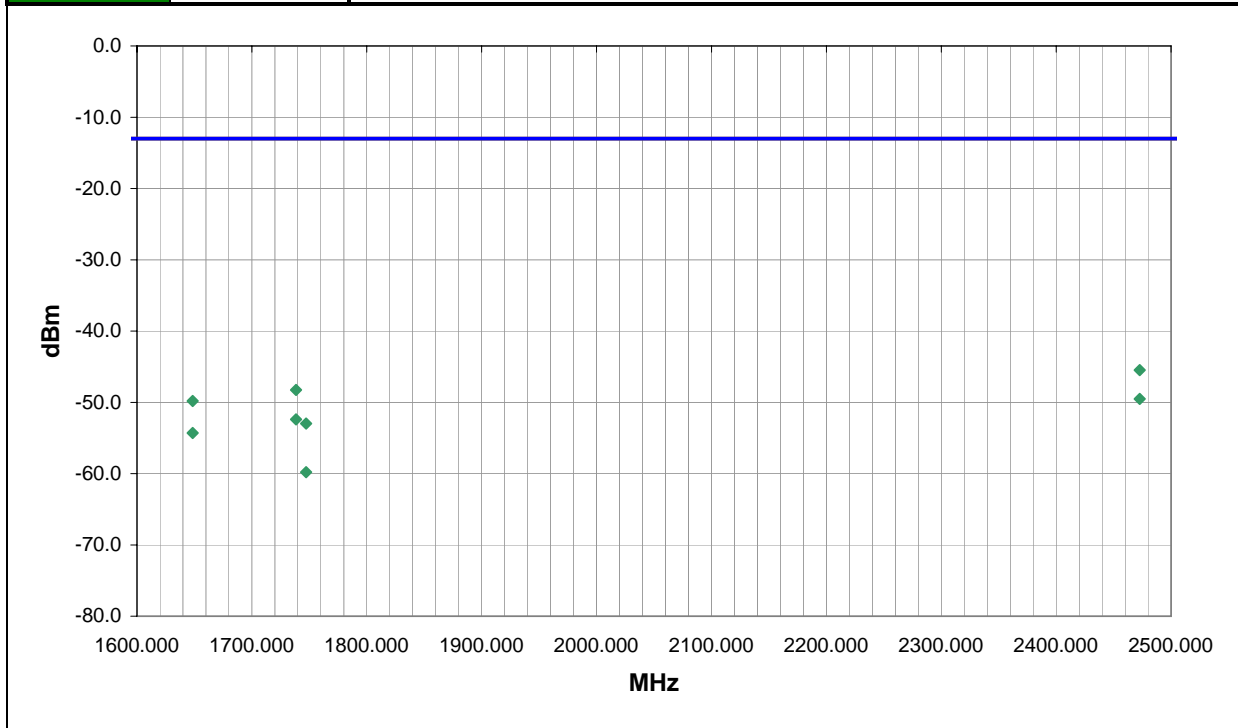
EUT OPERATING MODES

Transmitting GSM Cellular Band Low Channel

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	10	Signature <i>Holly Ashkannejhad</i>
Configuration #		
Results	Pass	



Freq (MHz)	Azimuth (degrees)	Height (meters)	Polarity	Detector	ERP (Watts)	ERP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)
2472.725	146.0	1.0	V-Horn	PK	0.0000	-45.5	-13.0	-32.5
1738.413	137.0	1.0	V-Horn	PK	0.0000	-48.3	-13.0	-35.3
2472.725	280.0	2.9	H-Horn	PK	0.0000	-49.5	-13.0	-36.5
1648.454	289.0	1.0	V-Horn	PK	0.0000	-49.8	-13.0	-36.8
1738.413	59.0	1.3	H-Horn	PK	0.0000	-52.4	-13.0	-39.4
1747.230	142.0	1.2	V-Horn	PK	0.0000	-53.0	-13.0	-40.0
1648.454	57.0	3.6	H-Horn	PK	0.0000	-54.3	-13.0	-41.3
1747.230	60.0	1.2	H-Horn	PK	0.0000	-59.8	-13.0	-46.8

EUT:	MC75	Work Order:	SPTE0010
Serial Number:	Unknown	Date:	07/27/05
Customer:	Spectrum Technology	Temperature:	24
Attendees:	Rod Munro	Humidity:	41%
Project:	None	Barometric Pressure:	29.86
Tested by:	Holly Ashkannejhad	Power:	120VAC/60Hz
		Job Site:	EV01

TEST SPECIFICATIONS	Test Method
FCC 22.917(a):2004	TIA/EIA-603:1998

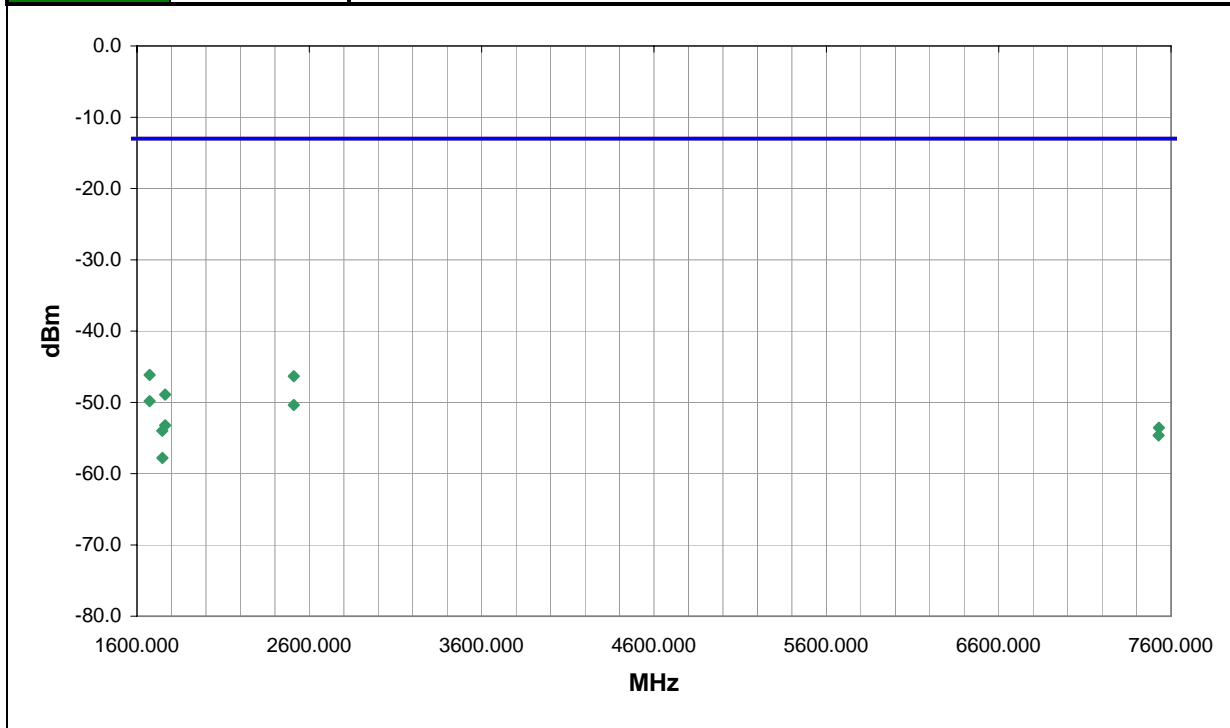
TEST PARAMETERS
Antenna Height(s) (m) 1 - 4 Test Distance (m) 3

COMMENTS
 Modem in IX600 Laptop. Laptop Docked in Vehicular Mount.

EUT OPERATING MODES
 Transmitting GSM Cellular Band Mid Channel

DEVIATIONS FROM TEST STANDARD
 No deviations.

Run #	11	Signature <i>Holly Ashkannejhad</i>
Configuration #		
Results	Pass	



Freq (MHz)	Azimuth (degrees)	Height (meters)	Polarity	Detector	ERP (Watts)	ERP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)
1673.335	134.0	1.0	V-Horn	PK	0.0000	-46.2	-13.0	-33.2
2509.889	285.0	1.2	V-Horn	PK	0.0000	-46.3	-13.0	-33.3
1763.210	138.0	1.0	V-Horn	PK	0.0000	-48.9	-13.0	-35.9
1673.335	185.0	1.7	H-Horn	PK	0.0000	-49.8	-13.0	-36.8
2509.889	72.0	2.0	H-Horn	PK	0.0000	-50.4	-13.0	-37.4
1763.210	219.0	1.5	H-Horn	PK	0.0000	-53.2	-13.0	-40.2
7529.641	45.0	1.6	H-Horn	PK	0.0000	-53.6	-13.0	-40.6
1746.978	133.0	1.3	V-Horn	PK	0.0000	-54.0	-13.0	-41.0
7527.745	145.0	1.0	V-Horn	PK	0.0000	-54.6	-13.0	-41.6
1747.329	195.0	1.6	H-Horn	PK	0.0000	-57.8	-13.0	-44.8

EUT:	MC75	Work Order:	SPTE0010
Serial Number:	Unknown	Date:	07/27/05
Customer:	Spectrum Technology	Temperature:	24
Attendees:	Rod Munro	Humidity:	41%
Project:	None	Barometric Pressure:	29.86
Tested by:	Holly Ashkannejhad	Power:	120VAC/60Hz
		Job Site:	EV01

TEST SPECIFICATIONS Test Method

FCC 22.917(a):2004	TIA/EIA 603-B:2001
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TEST PARAMETERS

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

Modem in IX600 Laptop. Laptop Docked in Vehicular Mount.

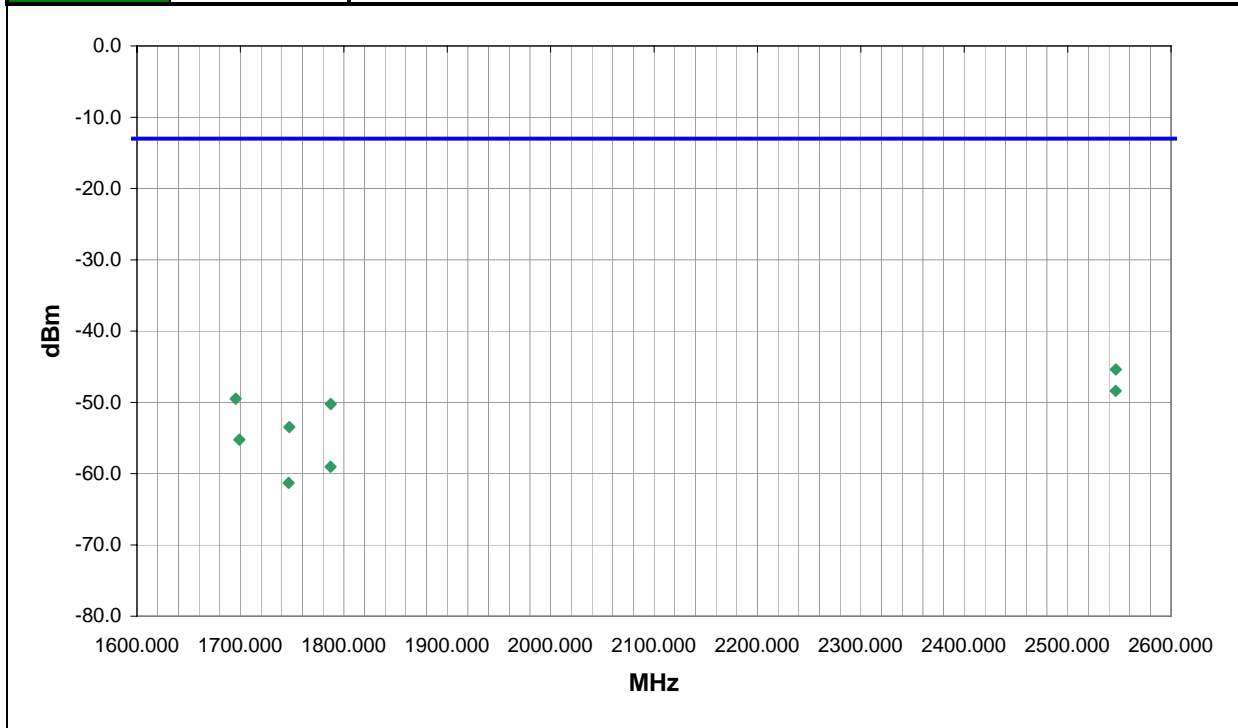
EUT OPERATING MODES

Transmitting GSM Cellular Band High Channel

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	13	<i>Signature Holly Ashkannejhad</i>
Configuration #		
Results	Pass	



Freq (MHz)	Azimuth (degrees)	Height (meters)	Polarity	Detector	ERP (Watts)	ERP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)
2546.661	94.0	1.5	V-Horn	PK	0.0000	-45.4	-13.0	-32.4
2546.501	19.0	2.7	H-Horn	PK	0.0000	-48.4	-13.0	-35.4
1695.509	85.0	1.9	V-Horn	PK	0.0000	-49.5	-13.0	-36.5
1787.449	137.0	1.2	V-Horn	PK	0.0000	-50.2	-13.0	-37.2
1747.353	137.0	1.0	V-Horn	PK	0.0000	-53.5	-13.0	-40.5
1699.046	187.0	1.9	H-Horn	PK	0.0000	-55.3	-13.0	-42.3
1787.272	52.0	1.1	H-Horn	PK	0.0000	-59.0	-13.0	-46.0
1746.623	207.0	1.0	H-Horn	PK	0.0000	-61.3	-13.0	-48.3

EUT:	MC75	Work Order:	SPTE0010
Serial Number:	Unknown	Date:	07/28/05
Customer:	Spectrum Technology	Temperature:	23
Attendees:	Rod Munro	Humidity:	38%
Project:	None	Barometric Pressure:	30.15
Tested by:	Rod Peloquin	Power:	120VAC/60Hz
		Job Site:	EV01

TEST SPECIFICATIONS	Test Method
FCC 22.901(d):2004	TIA/EIA 603-B:2001

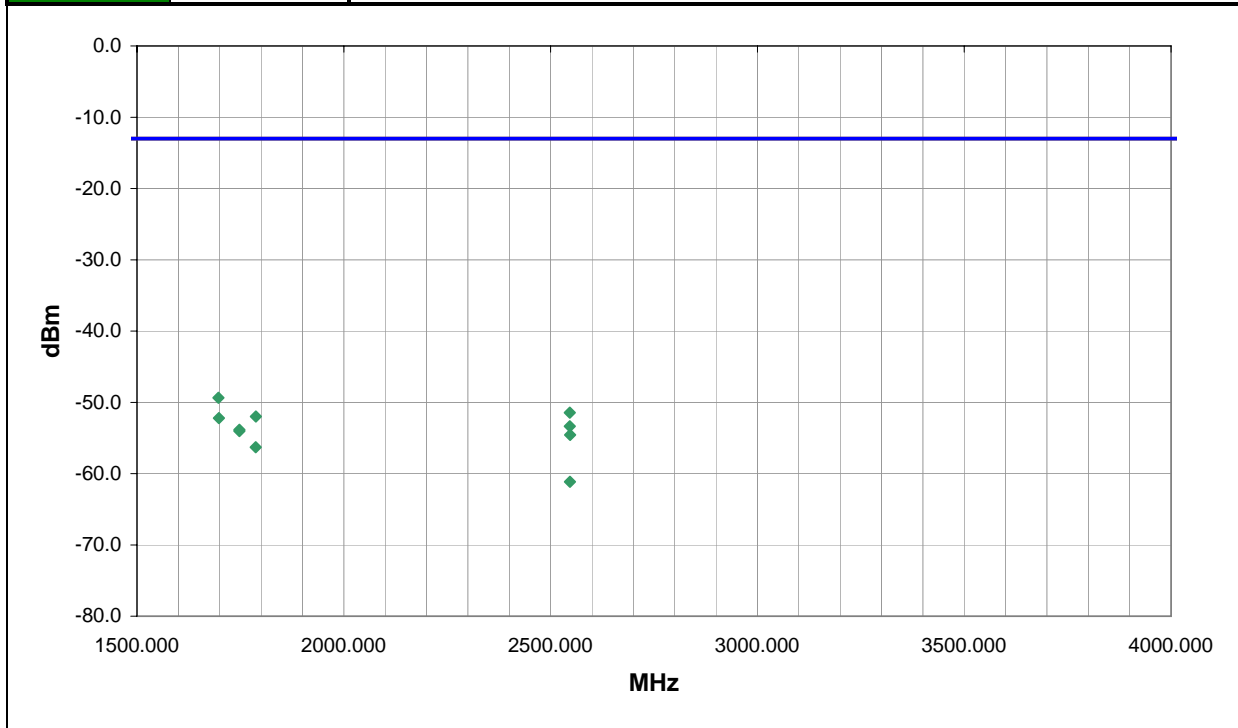
TEST PARAMETERS
Antenna Height(s) (m) 1 - 4 Test Distance (m) 3

COMMENTS
Modem in IX600 Laptop.

EUT OPERATING MODES
Transmitting GSM Cellular Band High Channel

DEVIATIONS FROM TEST STANDARD
No deviations.

Run #	14	 Signature
Configuration #		
Results	Pass	



Freq (MHz)	Azimuth (degrees)	Height (meters)	Polarity	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)
1697.075	93.0	1.2	V-Horn	PK	0.0000	-49.4	-13.0	-36.4
2546.202	245.0	2.3	V-Horn	PK	0.0000	-51.4	-13.0	-38.4
1787.594	15.0	1.2	H-Horn	PK	0.0000	-52.0	-13.0	-39.0
1698.108	121.0	1.4	H-Horn	PK	0.0000	-52.2	-13.0	-39.2
2546.202	80.0	2.4	H-Horn	PK	0.0000	-53.4	-13.0	-40.4
1747.402	2.0	1.3	H-Horn	PK	0.0000	-53.9	-13.0	-40.9
1747.468	132.0	1.2	V-Horn	PK	0.0000	-54.0	-13.0	-41.0
2547.087	104.0	1.3	H-Horn	PK	0.0000	-54.6	-13.0	-41.6
1787.171	256.0	1.2	V-Horn	PK	0.0000	-56.3	-13.0	-43.3
2546.596	-1.0	2.2	V-Horn	PK	0.0000	-61.2	-13.0	-48.2

EUT:	MC75	Work Order:	SPTE0010
Serial Number:	Unknown	Date:	07/28/05
Customer:	Spectrum Technology	Temperature:	23
Attendees:	Rod Munro	Humidity:	38%
Project:	None	Barometric Pressure:	30.15
Tested by:	Rod Peloquin	Power:	120VAC/60Hz
		Job Site:	EV01

TEST SPECIFICATIONS	Test Method
FCC 22.901(d):2004	TIA/EIA 603-B:2001

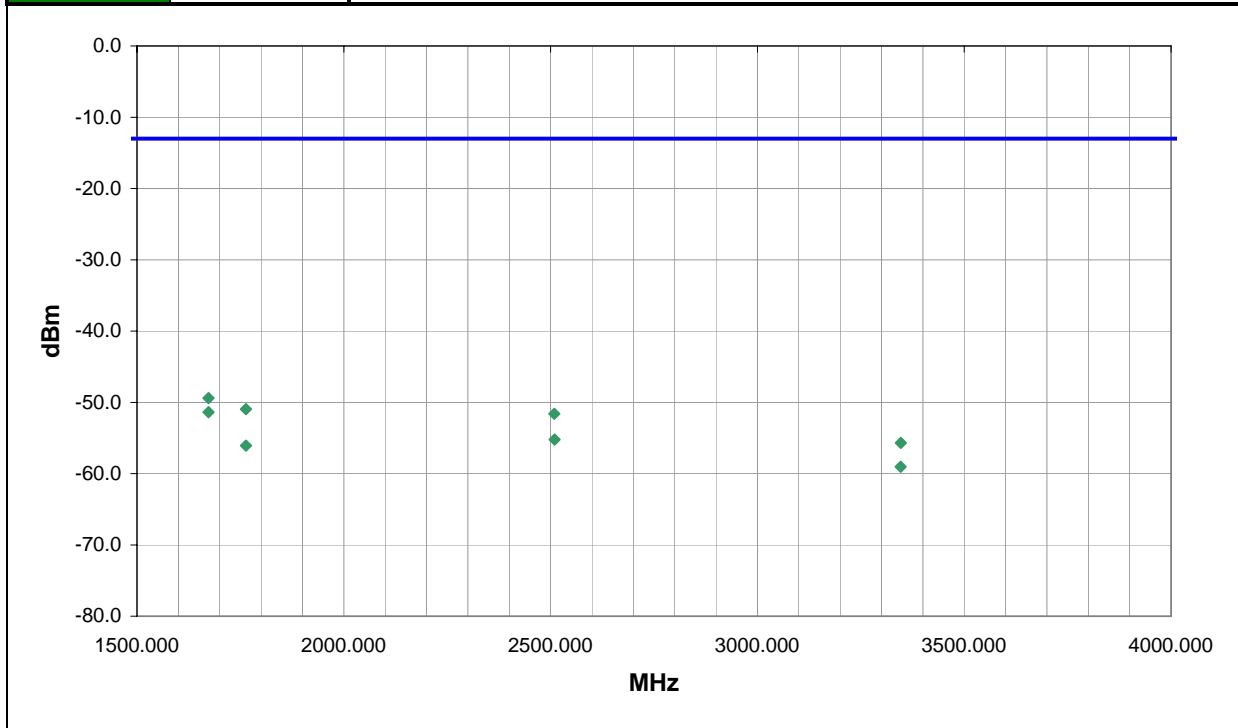
TEST PARAMETERS
Antenna Height(s) (m) 1 - 4 Test Distance (m) 3

COMMENTS
Modem in IX600 Laptop.

EUT OPERATING MODES
Transmitting GSM Cellular Band Mid Channel

DEVIATIONS FROM TEST STANDARD
No deviations.

Run #	15	 Signature
Configuration #		
Results	Pass	



Freq (MHz)	Azimuth (degrees)	Height (meters)	Polarity	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)
1673.002	44.0	1.2	V-Horn	PK	0.0000	-49.4	-13.0	-36.4
1763.338	128.0	1.2	V-Horn	PK	0.0000	-51.0	-13.0	-38.0
1672.819	90.0	1.9	H-Horn	PK	0.0000	-51.4	-13.0	-38.4
2508.998	181.0	1.2	V-Horn	PK	0.0000	-51.6	-13.0	-38.6
2509.696	154.0	1.2	H-Horn	PK	0.0000	-55.2	-13.0	-42.2
3346.650	37.0	1.2	V-Horn	PK	0.0000	-55.7	-13.0	-42.7
1763.236	251.0	1.2	H-Horn	PK	0.0000	-56.1	-13.0	-43.1
3346.384	8.0	1.2	H-Horn	PK	0.0000	-59.0	-13.0	-46.0

EUT:	MC75	Work Order:	SPTE0010
Serial Number:	Unknown	Date:	07/28/05
Customer:	Spectrum Technology	Temperature:	23
Attendees:	Rod Munro	Humidity:	38%
Project:	None	Barometric Pressure:	30.15
Tested by:	Rod Peloquin	Power:	120VAC/60Hz
		Job Site:	EV01

TEST SPECIFICATIONS Test Method

FCC 22.901(d):2004	TIA/EIA 603-B:2001
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TEST PARAMETERS

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

Modem in IX600 Laptop.

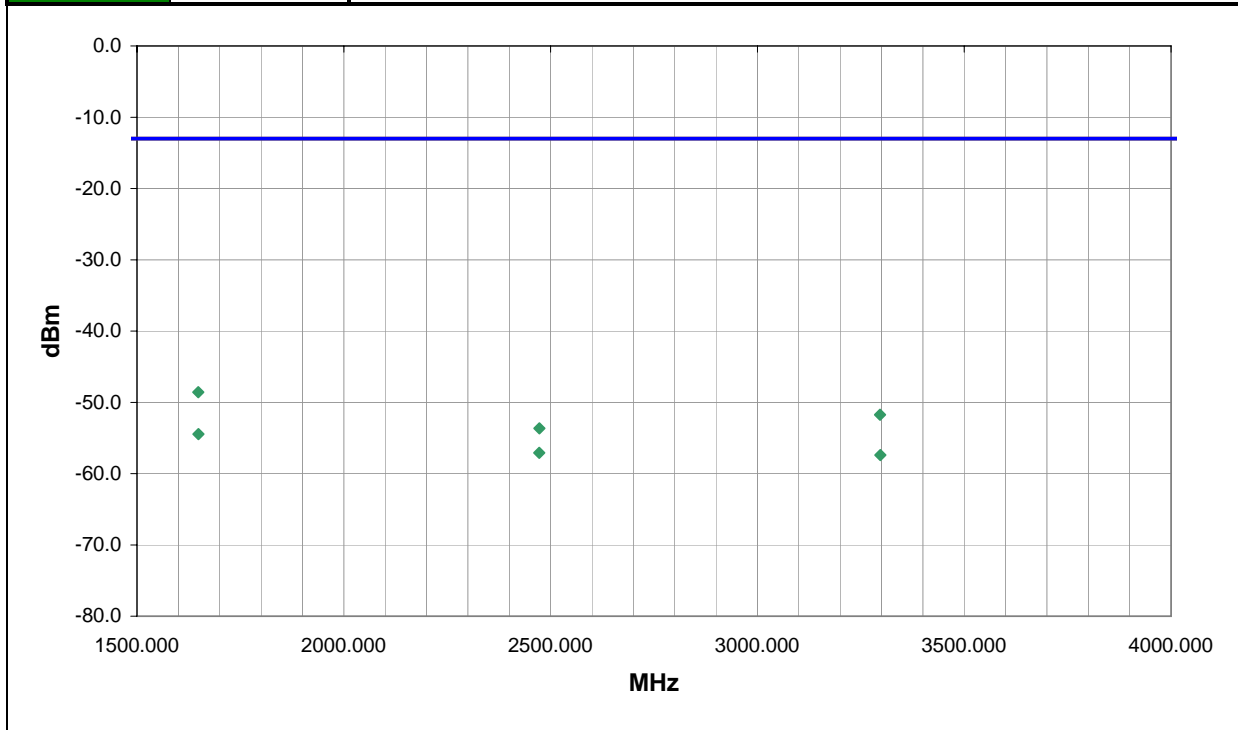
EUT OPERATING MODES

Transmitting GSM Cellular Band Low Channel

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	16	 Signature
Configuration #		
Results	Pass	



Freq (MHz)	Azimuth (degrees)	Height (meters)	Polarity	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)
1648.100	8.0	3.2	V-Horn	PK	0.0000	-48.6	-13.0	-35.6
3296.537	34.0	1.2	V-Horn	PK	0.0000	-51.7	-13.0	-38.7
2472.722	26.0	1.5	V-Horn	PK	0.0000	-53.6	-13.0	-40.6
1648.591	150.0	1.2	H-Horn	PK	0.0000	-54.5	-13.0	-41.5
2472.415	304.0	1.2	H-Horn	PK	0.0000	-57.1	-13.0	-44.1
3297.049	17.0	1.2	H-Horn	PK	0.0000	-57.4	-13.0	-44.4





