UMD Technology

WABI 006

Test Report

October 10, 2003

Report No. UMDT0004

Report Prepared By:

1-888-EMI-CERT

NORTHWEST EMC

22975 NW Evergreen Parkway
Suite 400
Hillsboro, Oregon 97124

Certificate of Test

Issue Date: October 10, 2003
UMD Technology
Model: WABI 006

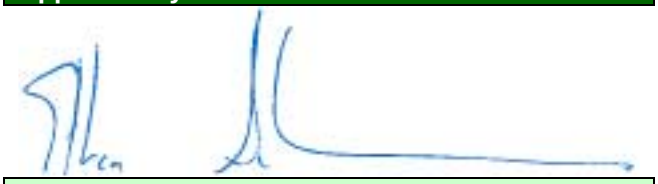
Emissions		
Description	**Pass**	**Fail**
FCC 15.209 Field Strength of Fundamental:2003 Radiated Emissions	☒	☐
FCC 15.209(a):2000 Radiated Emissions	☒	☐
FCC 15.207 AC Powerline Conducted Emissions:2003 Conducted Emissions	☒	☐

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:



Ethan Schoonover, Sultan Lab Manager

Revision Number	Description	Date	Page Number
00	None		

FCC: The Open Area Test Sites, 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.

TCB: 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: Accreditation has been granted to Northwest EMC, Inc. to perform the Electromagnetic Compatibility (EMC) tests described in the Scope of Accreditation. Assessment performed to ISO/IEC 17025. Certificate Number: 200629-0, Certificate Number: 200630-0.

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)

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. USA0302C

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.

Industry Canada: Accredited by Industry Canada for performance of radiated measurements. Our open area test sites comply with RSS 212, Issue 1 (Provisional).

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 Nos. - Evergreen: C-1071 and R-1025, Trails End: C-694 and R-677, Sultan: C-905, R-871 and R-1172, North Sioux City C-1246, R-1185 and R-1217)*

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.

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

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

	NVLAP	FCC	NIST	TUV PS	TUV Rheinland	Nemko	Technology International	Industry Canada	BSMI	VCCI	GOST	NATA
IEC 61000-4-2	✓			✓	✓	✓	✓					
IEC 61000-4-3	✓			✓	✓	✓	✓					
IEC 61000-4-4	✓			✓	✓	✓	✓					
IEC 61000-4-5	✓			✓	✓	✓	✓					
IEC 61000-4-6	✓			✓	✓	✓	✓					
IEC 61000-4-8	✓			✓	✓	✓	✓					
IEC 61000-4-11	✓			✓	✓	✓	✓					
IEC 61000-3-2	✓			✓	✓	✓	✓					
IEC 61000-3-3	✓			✓	✓	✓	✓					
AS/NZS 3548	✓											✓
CNS 13438	✓								✓			
ISO/IEC17025	✓			✓	✓	✓	✓		✓			
Radiated Emissions	✓			✓	✓	✓	✓	✓	✓	✓	✓	
Conducted Emissions	✓			✓	✓	✓	✓	✓	✓	✓	✓	
OATS Sites	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	
Hillsboro 5-Meter Chamber (EV01)	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	
TCB for Licensed Transmitters		✓										
TCB for un-Licensed Transmitters		✓										
Cab for R&TTE			✓									
CAB for EMC			✓									

This chart represents only a partial NVLAP Scope, please reference http://ts.nist.gov/ts/htdocs/210/214/214.htm for the full NVLAP Scope of Accreditation

What is measurement uncertainty?

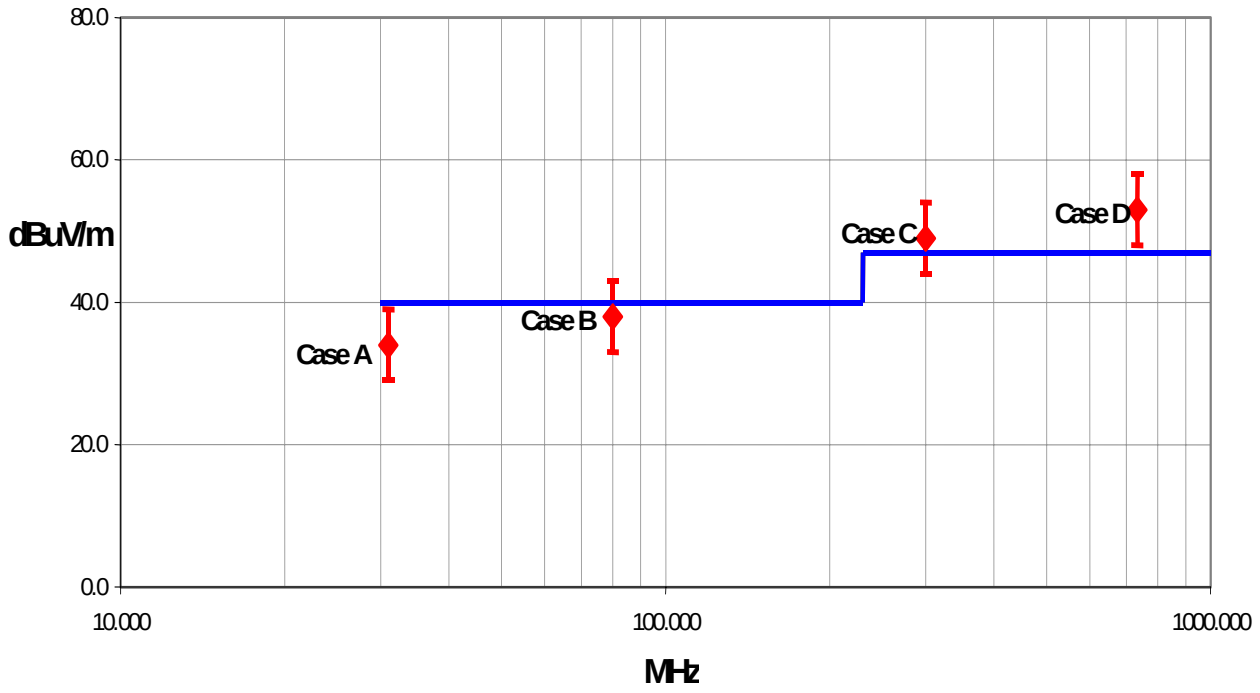
When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. The following 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)					
	Probability Distribution	Biconical Antenna		Log Periodic Antenna		Dipole Antenna	
Test Distance		3m	10m	3m	10m	3m	10m
Combined standard uncertainty $u_c(y)$	normal	+ 1.86 - 1.88	+ 1.82 - 1.87	+ 2.23 - 1.41	+ 1.29 - 1.26	+ 1.31 - 1.27	+ 1.25 - 1.25
Expanded uncertainty ***U*** (level of confidence ≈ 95%)	normal (k=2)	+ 3.72 - 3.77	+ 3.64 - 3.73	+ 4.46 -2.81	+ 2.59 - 2.52	+ 2.61 - 2.55	+ 2.49 - 2.49

Radiated Emissions > 1 GHz	Value (dB)		
	Probability Distribution	Without High Pass Filter	With High Pass Filter
Combined standard uncertainty $u_c(y)$	normal	+ 1.29 - 1.25	+ 1.38 - 1.35
Expanded uncertainty ***U*** (level of confidence ≈ 95%)	normal (k=2)	+ 2.57 - 2.51	+ 2.76 - -2.70

Conducted Emissions		
	Probability Distribution	Value (+/- dB)
Combined standard uncertainty ***uc(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 ***uc(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 ***uc(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, uc(y) yields a confidence level of only 68%.

California

Orange County Facility

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

Oregon

Evergreen Facility

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

Oregon

Trails End Facility

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

South Dakota

North Sioux City Facility

745 N. Derby Lane
P.O. Box 217
North Sioux City, SD 57049
(605) 232-5267
FAX (605) 232-3873

Washington

Sultan Facility

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

Party Requesting the Test

Company Name:	UMD Technology
Address:	14945 SW Sequoia Pkwy, #100
City, State, Zip:	Portland, OR 97224
Test Requested By:	Brian Denheyer
Model:	WABI 006
First Date of Test:	10-01-2003
Last Date of Test:	10-08-2003
Receipt Date of Samples:	09-30-2003
Equipment Design Stage:	Pre-Production
Equipment Condition:	No visual damage.

Information Provided by the Party Requesting the Test

Clocks/Oscillators:	80 kHz, 4 MHz, 12 MHz
I/O Ports:	Serial for Debug / Test only, Telecom (RJ-11) ports, battery charging port

Functional Description of the EUT (Equipment Under Test):

902 - 928 MHz FSK Transceiver

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 for FCC certification.

Equipment modifications				
Item #	Test	Date	Modification	Note
1	Field Strength of Fundamental	10-01-2003	The lowest channel to be used was increased to 903.096 MHz (channel 1) & the highest channel to be used was reduced to 927.106 MHz (channel 37).	Modified from delivered configuration.
2	AC Powerline conducted Emissions	10-02-2003	No EMI suppression devices were added or modified during this test.	Same configuration as in previous test.

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:
High
Mid
Low

Operating Modes Investigated:
Transmit

Data Rates Investigated:
Maximum

Output Power Setting(s) Investigated:	
Maximum	

Power Input Settings Investigated:
120 VAC, 60 Hz.

Software\Firmware Applied During Test			
Exercise software	Tera Term Pro	**Version**	2.3
Description			
The system was tested using special software developed to test all functions of the device during the test.			

EUT and Peripherals			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AC Power Adapter	Unknown	Unknown	Unknown
EUT- Base Station	UMD Technology	Wabi 006	024
Remote	UMD Technology	Wabi 007	011

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
DC Leads	No	1.8	PA	EUT	AC Mains
Recharger Lead	No	1.8	PA	EUT	Handset
Telecom	No	1.0	No	EUT	Unterminated
Telecom	No	1.8	No	EUT	Unterminated
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	Hewlett-Packard	8566B	AAL	01/07/2003	12 mo
Quasi-Peak Adapter	Hewlett-Packard	85650A	AQF	01/07/2003	12 mo
Spectrum Analyzer Display	Hewlett Packard	85662A	AALD	01/07/2003	12 mo
LISN	Solar	9252-50-R-24-BNC	LIN	12/12/2002	12 mo
High Pass Filter	TTE	H97-100k-50-720B	HFC	01/02/2003	12 mo

Test Description

Configuration: The EUT will be powered from a device that could be connected to the AC power line. Therefore, the measurements were made on the device used to power the EUT. The AC power line conducted emissions were measured with the EUT operating at the lowest, the highest, and a middle channel in the operational band. The EUT was transmitting at its maximum data rate. For each mode, the spectrum was scanned from 150 kHz to 30 MHz. The test setup and procedures were in accordance with ANSI C63.4.

*

Completed by:

NORTHWEST EMC

CONDUCTED EMISSIONS DATA SHEET

REV df4.01 10/02/2003

EUT:	Wabi 006 and Wabi 007			Work Order:	UMDT0004
Serial Number:	024/011			Date:	10/02/03
Customer:	UMD Technology			Temperature:	75
Attendees:	Brian Denheyer			Humidity:	43%
Cust. Ref. No.:				Barometric Pressure	30.06
Tested by:	Holly Ashkannejhad	Power:	120VAC/60Hz	Job Site:	EV01

TEST SPECIFICATIONS

Specification:	FCC 15.107 Class B	Year:	2003
Method:	ANSI C63.4	Year:	1992

SAMPLE CALCULATIONS

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

Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator

COMMENTS

EUT OPERATING MODES

Tx low channel on base station and handset, Handset charging

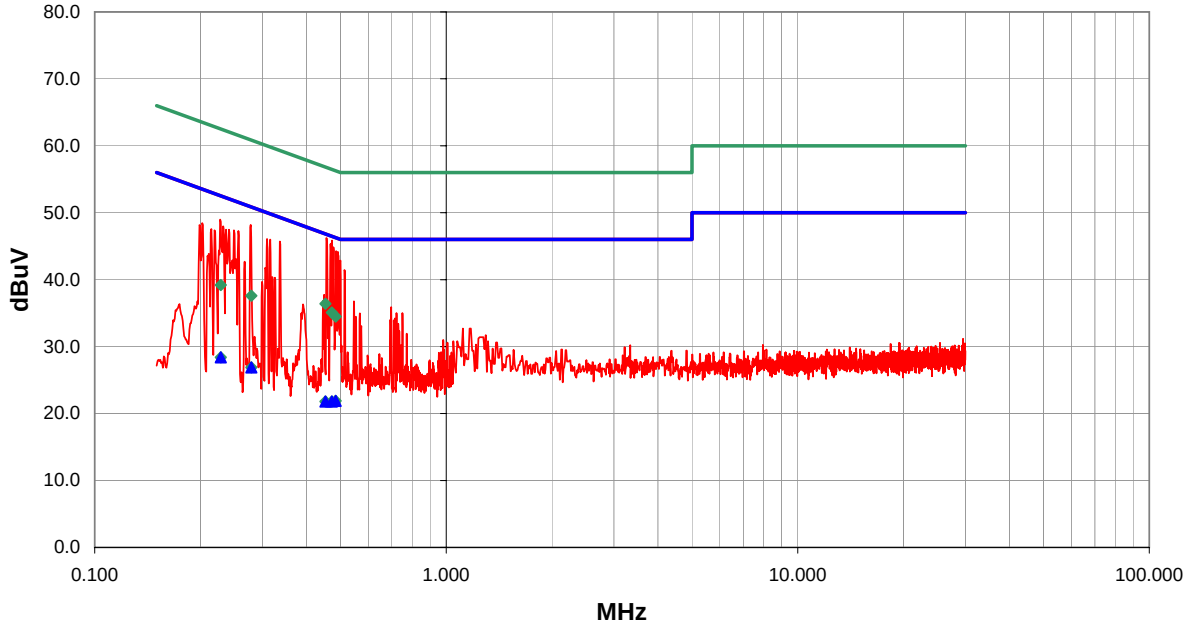
DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS	Line	Run #
Pass	L1	1

Other

Tested By:



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)
0.279	6.9			0.0	0.0	20.0		AV		26.9	50.8	-23.9
0.228	8.4			0.0	0.0	20.0		AV		28.4	52.5	-24.1
0.485	1.9			0.0	0.0	20.0		AV		21.9	46.3	-24.4
0.473	1.8			0.0	0.0	20.0		AV		21.8	46.5	-24.7
0.453	1.8			0.0	0.0	20.0		AV		21.8	46.8	-25.0
0.453	16.4			0.0	0.0	20.0		QP		36.4	56.8	-20.4
0.473	15.1			0.0	0.0	20.0		QP		35.1	56.5	-21.4
0.485	14.5			0.0	0.0	20.0		QP		34.5	56.3	-21.8
0.279	17.6			0.0	0.0	20.0		QP		37.6	60.8	-23.2
0.228	19.2			0.0	0.0	20.0		QP		39.2	62.5	-23.3
0.456	26.0			0.0	0.2	20.0				46.2	46.8	-0.5
0.473	25.6			0.0	0.2	20.0				45.8	46.5	-0.6
0.469	25.1			0.0	0.2	20.0				45.3	46.5	-1.2
0.478	24.6			0.0	0.2	20.0				44.8	46.4	-1.5
0.487	24.0			0.0	0.2	20.0				44.2	46.2	-2.0
0.492	23.9			0.0	0.2	20.0				44.1	46.1	-2.0
0.278	28.0			0.0	0.2	20.0				48.2	50.9	-2.7
0.500	22.6			0.0	0.2	20.0				42.8	46.0	-3.2
0.227	28.8			0.0	0.2	20.0				49.0	52.5	-3.6
0.336	25.5			0.0	0.2	20.0				45.7	49.3	-3.6

NORTHWEST EMC

CONDUCTED EMISSIONS DATA SHEET

REV df4.01 10/02/2003

EUT:	Wabi 006 and Wabi 007			Work Order:	UMDT0004
Serial Number:	024/011			Date:	10/02/03
Customer:	UMD Technology			Temperature:	75
Attendees:	Brian Denheyer			Humidity:	43%
Cust. Ref. No.:				Barometric Pressure	30.06
Tested by:	Holly Ashkannejhad	Power:	120VAC/60Hz	Job Site:	EV01

TEST SPECIFICATIONS

Specification:	FCC 15.107 Class B	Year:	2003
Method:	ANSI C63.4	Year:	1992

SAMPLE CALCULATIONS

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

Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator

COMMENTS

EUT OPERATING MODES

Tx low channel on base station and handset, Handset charging

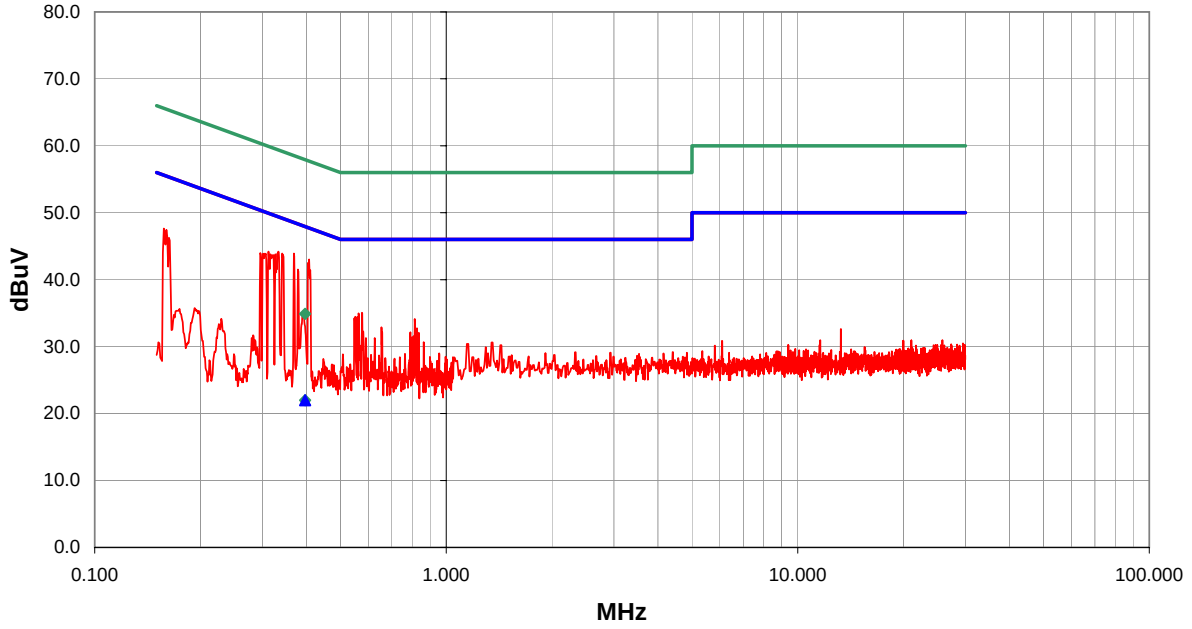
DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS	Line	Run #
Pass	N	2

Other

Tested By: Holly Ashkannejhad



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)
0.397	2.0			0.0	0.0	20.0		AV		22.0	47.9	-25.9
0.397	14.9			0.0	0.0	20.0		QP		34.9	57.9	-23.0
0.369	23.7			0.0	0.2	20.0				43.9	48.5	-4.6
0.407	22.8			0.0	0.2	20.0				43.0	47.7	-4.7
0.333	24.0			0.0	0.2	20.0				44.2	49.4	-5.2
0.342	23.7			0.0	0.2	20.0				43.9	49.2	-5.3
0.312	24.0			0.0	0.2	20.0				44.2	49.9	-5.7
0.326	23.6			0.0	0.2	20.0				43.8	49.5	-5.7
0.317	23.6			0.0	0.2	20.0				43.8	49.8	-6.0
0.307	23.7			0.0	0.2	20.0				43.9	50.1	-6.2
0.296	23.8			0.0	0.2	20.0				44.0	50.4	-6.4
0.379	21.3			0.0	0.2	20.0				41.5	48.3	-6.8
0.157	27.5			0.0	0.1	20.0				47.6	55.6	-8.0
0.160	27.3			0.0	0.1	20.0				47.4	55.5	-8.0
0.163	26.1			0.0	0.1	20.0				46.2	55.3	-9.1
0.576	14.8			0.0	0.3	20.0				35.1	46.0	-10.9
0.563	14.7			0.0	0.3	20.0				35.0	46.0	-11.0
0.559	14.2			0.0	0.3	20.0				34.5	46.0	-11.5
0.551	14.2			0.0	0.3	20.0				34.5	46.0	-11.5
0.548	14.0			0.0	0.3	20.0				34.3	46.0	-11.7

NORTHWEST EMC

CONDUCTED EMISSIONS DATA SHEET

REV df4.01 10/02/2003

EUT:	Wabi 006 and Wabi 007			Work Order:	UMDT0004
Serial Number:	024/011			Date:	10/02/03
Customer:	UMD Technology			Temperature:	75
Attendees:	Brian Denheyer			Humidity:	43%
Cust. Ref. No.:				Barometric Pressure	30.06
Tested by:	Holly Ashkannejhad	Power:	120VAC/60Hz	Job Site:	EV01

TEST SPECIFICATIONS

Specification:	FCC 15.107 Class B	Year:	2003
Method:	ANSI C63.4	Year:	1992

SAMPLE CALCULATIONS

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

Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator

COMMENTS

EUT OPERATING MODES

Tx mid channel on base station and handset, Handset charging

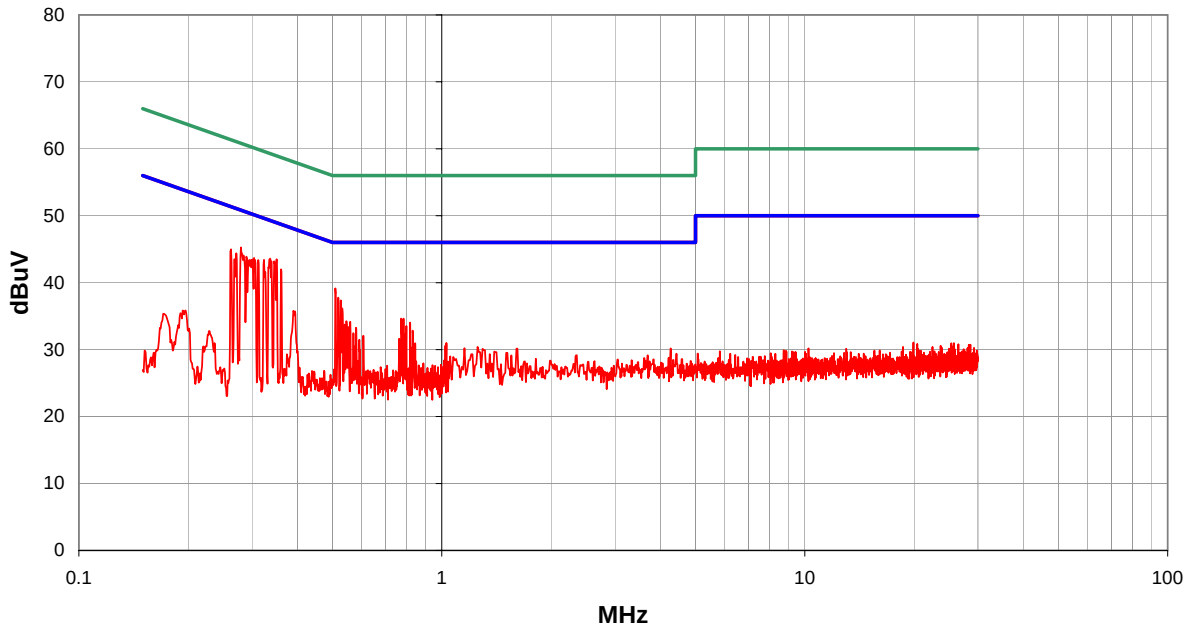
DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS	Line	Run #
Pass	N	3

Other

Tested By:



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)
0.351	23.3			0.0	0.2	20.0				43.5	48.9	-5.4
0.280	25.1			0.0	0.2	20.0				45.3	50.8	-5.5
0.336	23.4			0.0	0.2	20.0				43.6	49.3	-5.7
0.345	23.0			0.0	0.2	20.0				43.2	49.1	-5.9
0.339	23.0			0.0	0.2	20.0				43.2	49.2	-6.0
0.324	23.2			0.0	0.2	20.0				43.4	49.6	-6.2
0.263	24.8			0.0	0.2	20.0				45.0	51.4	-6.4
0.304	23.5			0.0	0.2	20.0				43.7	50.1	-6.4
0.312	23.2			0.0	0.2	20.0				43.4	49.9	-6.5
0.290	23.7			0.0	0.2	20.0				43.9	50.5	-6.7
0.272	24.2			0.0	0.2	20.0				44.4	51.1	-6.7
0.361	21.8			0.0	0.2	20.0				42.0	48.7	-6.7
0.301	23.3			0.0	0.2	20.0				43.5	50.2	-6.7
0.509	18.9			0.0	0.3	20.0				39.2	46.0	-6.8
0.269	23.3			0.0	0.2	20.0				43.5	51.2	-7.7
0.518	17.5			0.0	0.3	20.0				37.8	46.0	-8.2
0.527	17.1			0.0	0.3	20.0				37.4	46.0	-8.6
0.532	15.9			0.0	0.3	20.0				36.2	46.0	-9.8
0.784	14.3			0.0	0.3	20.0				34.6	46.0	-11.4
0.773	14.3			0.0	0.3	20.0				34.6	46.0	-11.4

NORTHWEST EMC

CONDUCTED EMISSIONS DATA SHEET

REV df4.01 10/02/2003

EUT:	Wabi 006 and Wabi 007			Work Order:	UMDT0004
Serial Number:	024/011			Date:	10/02/03
Customer:	UMD Technology			Temperature:	75
Attendees:	Brian Denheyer			Humidity:	43%
Cust. Ref. No.:				Barometric Pressure	30.06
Tested by:	Holly Ashkannejhad	Power:	120VAC/60Hz	Job Site:	EV01

TEST SPECIFICATIONS

Specification:	FCC 15.107 Class B	Year:	2003
Method:	ANSI C63.4	Year:	1992

SAMPLE CALCULATIONS

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

Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator

COMMENTS

EUT OPERATING MODES

Tx mid channel on base station and handset, Handset charging

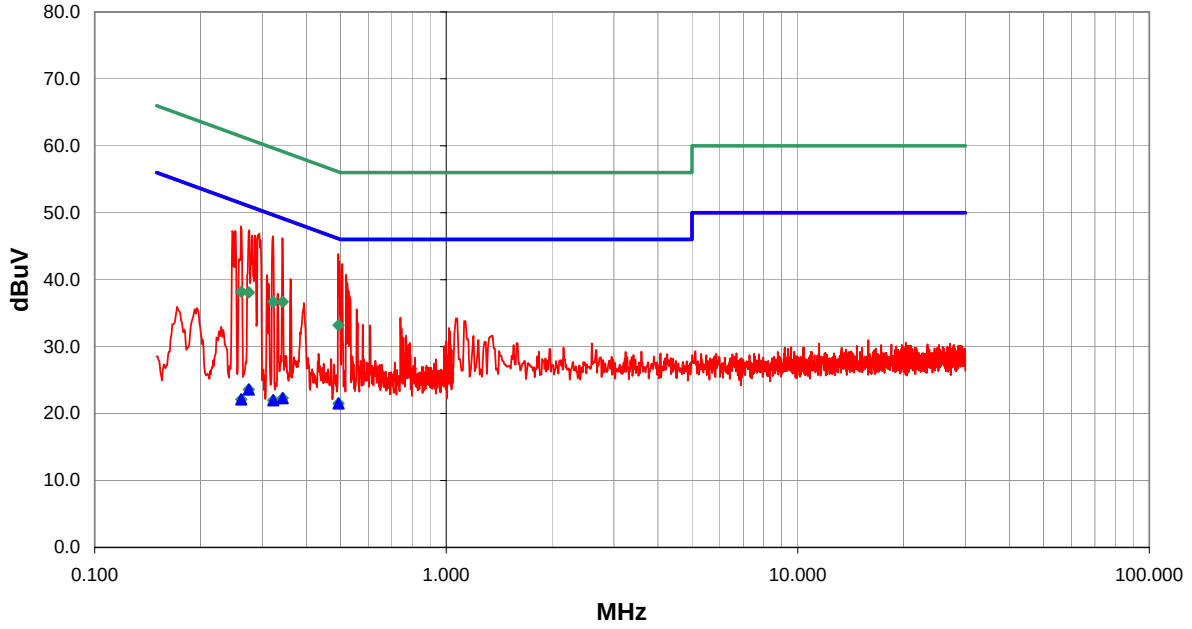
DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS	Line	Run #
Pass	L1	4

Other

Tested By:



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)
0.494	1.5			0.0	0.0	20.0		AV		21.5	46.1	-24.6
0.343	2.3			0.0	0.0	20.0		AV		22.3	49.1	-26.8
0.274	3.6			0.0	0.0	20.0		AV		23.6	51.0	-27.4
0.322	2.0			0.0	0.0	20.0		AV		22.0	49.7	-27.7
0.261	2.1			0.0	0.0	20.0		AV		22.1	51.4	-29.3
0.343	16.7			0.0	0.0	20.0		QP		36.7	59.1	-22.4
0.274	18.1			0.0	0.0	20.0		QP		38.1	61.0	-22.9
0.494	13.2			0.0	0.0	20.0		QP		33.2	56.1	-22.9
0.322	16.7			0.0	0.0	20.0		QP		36.7	59.7	-23.0
0.261	18.2			0.0	0.0	20.0		QP		38.2	61.4	-23.2
0.493	23.6			0.0	0.2	20.0				43.8	46.1	-2.3
0.342	26.0			0.0	0.2	20.0				46.2	49.2	-3.0
0.321	26.3			0.0	0.2	20.0				46.5	49.7	-3.2
0.497	22.4			0.0	0.2	20.0				42.6	46.1	-3.4
0.261	27.8			0.0	0.2	20.0				48.0	51.4	-3.4
0.294	26.7			0.0	0.2	20.0				46.9	50.4	-3.5
0.275	27.2			0.0	0.2	20.0				47.4	51.0	-3.6
0.506	22.1			0.0	0.3	20.0				42.4	46.0	-3.6
0.286	26.4			0.0	0.2	20.0				46.6	50.6	-4.1
0.281	26.4			0.0	0.2	20.0				46.6	50.8	-4.2

NORTHWEST EMC

CONDUCTED EMISSIONS DATA SHEET

REV df4.01 10/02/2003

EUT:	Wabi 006 and Wabi 007			Work Order:	UMDT0004
Serial Number:	024/011			Date:	10/02/03
Customer:	UMD Technology			Temperature:	75
Attendees:	Brian Denheyer			Humidity:	43%
Cust. Ref. No.:				Barometric Pressure	30.06
Tested by:	Holly Ashkannejhad	Power:	120VAC/60Hz	Job Site:	EV01

TEST SPECIFICATIONS

Specification:	FCC 15.107 Class B	Year:	2003
Method:	ANSI C63.4	Year:	1992

SAMPLE CALCULATIONS

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

Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator

COMMENTS

EUT OPERATING MODES

Tx high channel on base station and handset, Handset charging

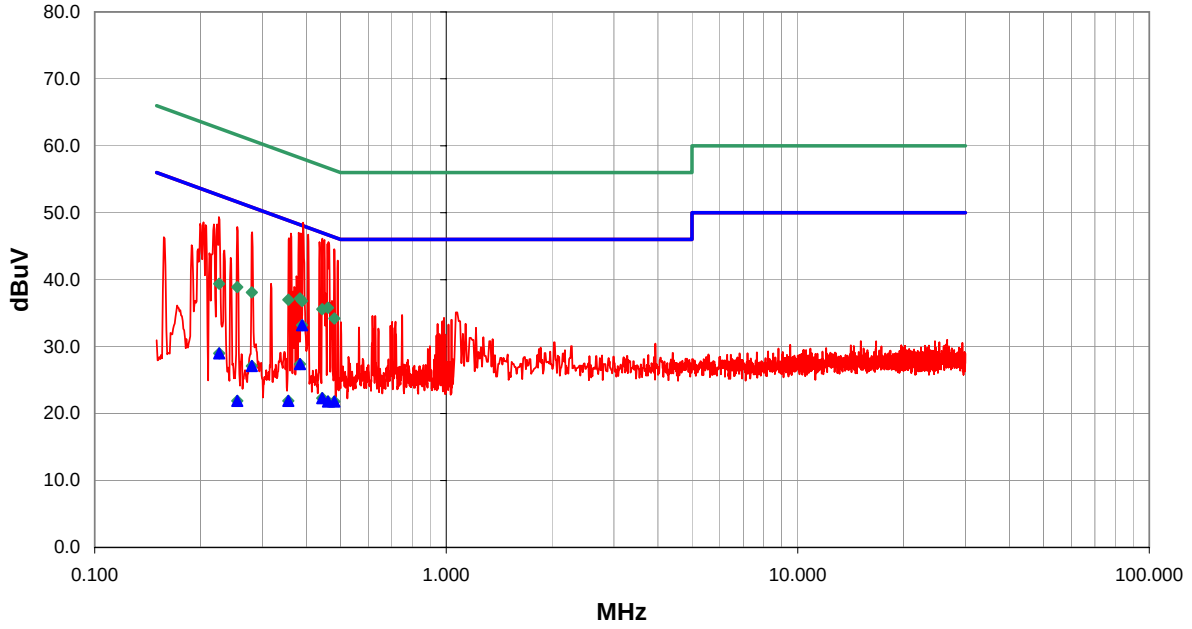
DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS	Line	Run #
Pass	L1	5

Other

Tested By: Holly Ashkannejhad



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)
0.389	13.2			0.0	0.0	20.0		AV		33.2	48.1	-14.9
0.384	7.4			0.0	0.0	20.0		AV		27.4	48.2	-20.8
0.226	9.0			0.0	0.0	20.0		AV		29.0	52.6	-23.6
0.280	7.1			0.0	0.0	20.0		AV		27.1	50.8	-23.7
0.480	1.8			0.0	0.0	20.0		AV		21.8	46.3	-24.5
0.444	2.3			0.0	0.0	20.0		AV		22.3	47.0	-24.7
0.461	1.8			0.0	0.0	20.0		AV		21.8	46.7	-24.9
0.356	1.9			0.0	0.0	20.0		AV		21.9	48.8	-26.9
0.254	1.9			0.0	0.0	20.0		AV		21.9	51.6	-29.7
0.461	15.8			0.0	0.0	20.0		QP		35.8	56.7	-20.9
0.384	17.2			0.0	0.0	20.0		QP		37.2	58.2	-21.0
0.389	16.8			0.0	0.0	20.0		QP		36.8	58.1	-21.3
0.444	15.6			0.0	0.0	20.0		QP		35.6	57.0	-21.4
0.356	17.0			0.0	0.0	20.0		QP		37.0	58.8	-21.8
0.480	14.2			0.0	0.0	20.0		QP		34.2	56.3	-22.1
0.254	18.9			0.0	0.0	20.0		QP		38.9	61.6	-22.7
0.280	18.1			0.0	0.0	20.0		QP		38.1	60.8	-22.7
0.226	19.4			0.0	0.0	20.0		QP		39.4	62.6	-23.2
0.444	25.9			0.0	0.2	20.0				46.1	47.0	-0.8
0.451	25.7			0.0	0.2	20.0				45.9	46.9	-0.9

NORTHWEST EMC

CONDUCTED EMISSIONS DATA SHEET

REV df4.01 10/02/2003

EUT:	Wabi 006 and Wabi 007			Work Order:	UMDT0004
Serial Number:	024/011			Date:	10/02/03
Customer:	UMD Technology			Temperature:	75
Attendees:	Brian Denheyer			Humidity:	43%
Cust. Ref. No.:				Barometric Pressure	30.06
Tested by:	Holly Ashkannejhad	Power:	120VAC/60Hz	Job Site:	EV01

TEST SPECIFICATIONS

Specification:	FCC 15.107 Class B	Year:	2003
Method:	ANSI C63.4	Year:	1992

SAMPLE CALCULATIONS

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

Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator

COMMENTS

EUT OPERATING MODES

Tx high channel on base station and handset, Handset charging

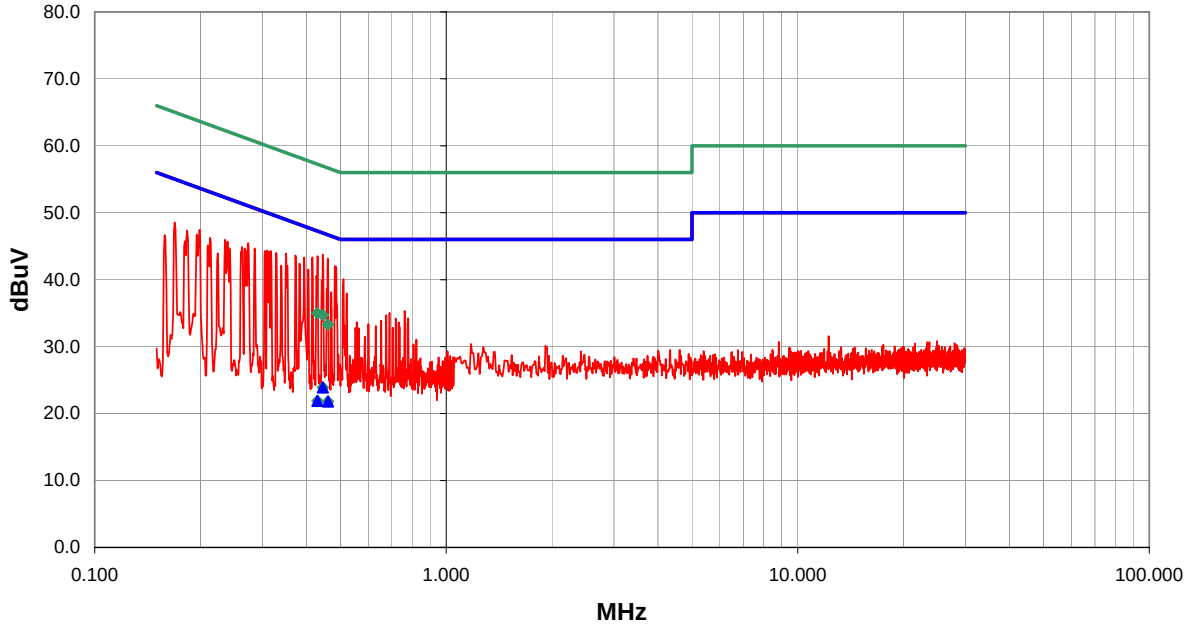
DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS	Line	Run #
Pass	N	6

Other

Tested By:



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)
0.446	3.9			0.0	0.0	20.0		AV		23.9	47.0	-23.1
0.461	1.8			0.0	0.0	20.0		AV		21.8	46.7	-24.9
0.430	1.9			0.0	0.0	20.0		AV		21.9	47.3	-25.4
0.446	14.7			0.0	0.0	20.0		QP		34.7	57.0	-22.3
0.430	15.0			0.0	0.0	20.0		QP		35.0	57.3	-22.3
0.461	13.3			0.0	0.0	20.0		QP		33.3	56.7	-23.4
0.446	23.5			0.0	0.2	20.0				43.7	46.9	-3.2
0.461	22.9			0.0	0.2	20.0				43.1	46.7	-3.5
0.430	23.3			0.0	0.2	20.0				43.5	47.3	-3.7
0.416	23.1			0.0	0.2	20.0				43.3	47.5	-4.2
0.482	21.8			0.0	0.2	20.0				42.0	46.3	-4.3
0.486	21.7			0.0	0.2	20.0				41.9	46.2	-4.3
0.395	23.1			0.0	0.2	20.0				43.3	48.0	-4.6
0.372	23.4			0.0	0.2	20.0				43.6	48.4	-4.8
0.350	23.7			0.0	0.2	20.0				43.9	49.0	-5.1
0.317	24.1			0.0	0.2	20.0				44.3	49.8	-5.5
0.328	23.8			0.0	0.2	20.0				44.0	49.5	-5.5
0.273	25.3			0.0	0.2	20.0				45.5	51.0	-5.5
0.309	24.2			0.0	0.2	20.0				44.4	50.0	-5.6
0.313	24.0			0.0	0.2	20.0				44.2	49.9	-5.7

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:
Low
Mid
High

Operating Modes Investigated:
Typical

Antennas Investigated:
Integral

Data Rates Investigated:
Maximum

Output Power Setting(s) Investigated:
Maximum

Power Input Settings Investigated:
Battery

Software\Firmware Applied During Test			
Exercise software	Special Test Software	Version	Base5_0916_ReleaseToShasta
Description			
The system was tested using special software developed to test all functions of the device during the test.			

EUT and Peripherals			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
EUT- Base Station	UMD Technology	Wabi 006	024
AC Power Adapter	Unknown	Unknown	Unknown

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
DC Leads	No	1.8	PA	EUT	AC Mains
Recharger Lead	No	1.8	PA	EUT	Unterminated
Telecom	No	1.0	No	EUT	Unterminated
Telecom	No	1.8	No	EUT	Unterminated
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

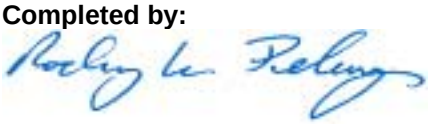
Measurement Equipment					
Description	**Manufacturer**	**Model**	**Identifier**	**Last Cal**	**Interval**
Spectrum Analyzer	Hewlett-Packard	8566B	AAL	01/07/2003	12 mo
Quasi-Peak Adapter	Hewlett-Packard	85650A	AQF	01/07/2003	12 mo
Antenna, Biconilog	EMCO	3141	AXE	12/31/2001	36 mo

Test Description

Requirement: The field strength of the fundamental emission shall comply with the limits, as defined in 47 CFR 15.249. Field strength limits are specified at a distance of 3 meters.

Configuration: 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 (per ANSI C63.4:1992).

Completed by:



NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

REV df4.00 08/12/2003

EUT:	Wabi 006			Work Order:	UMDT0004
Serial Number:	024			Date:	10/01/03
Customer:	UMD Technology			Temperature:	75
Attendees:	Drop off			Humidity:	41%
Cust. Ref. No.:	N/A			Barometric Pressure	30.05
Tested by:	Rod Peloquin	Power:	120VAC/60Hz	Job Site:	EV01

TEST SPECIFICATIONS

Specification:	FCC 15.249	Year:	2003
Method:	ANSI C63.4	Year:	1992

SAMPLE CALCULATIONS

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

Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator

COMMENTS

EUT OPERATING MODES

Modulated PRBS

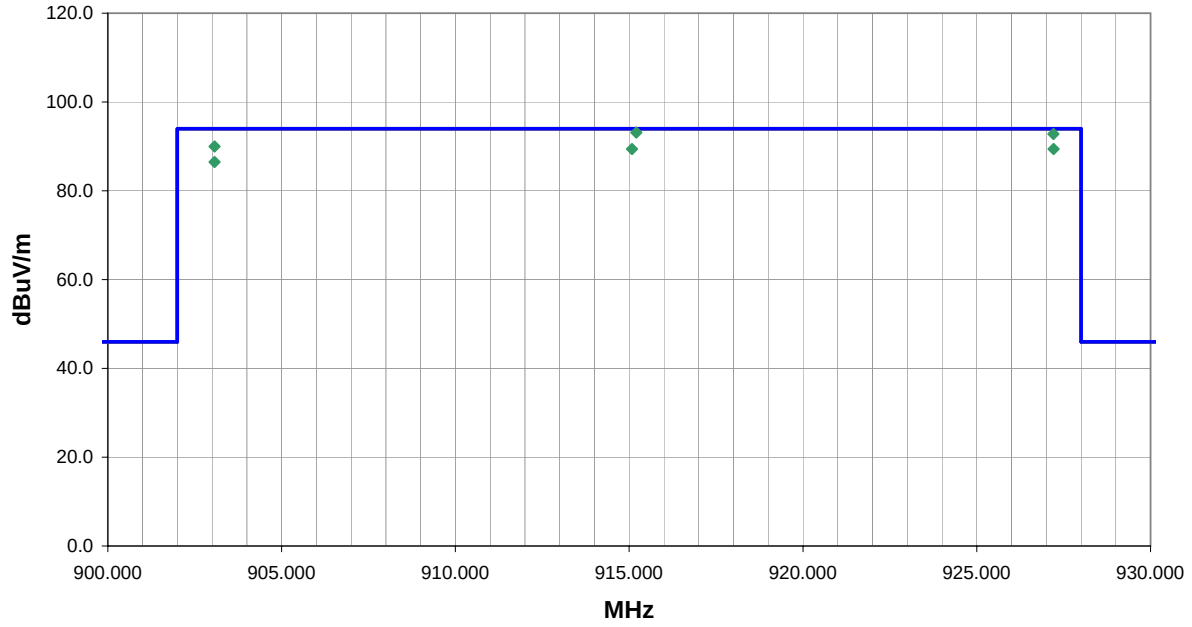
DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS	Run #
Pass	2

Other

Tested By:



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)
915.203	60.6	32.5	276.0	1.0	3.0	0.0	H-Bilog	QP	0.0	93.1	94.0	-0.9
927.208	60.2	32.6	286.0	1.0	3.0	0.0	H-Bilog	QP	0.0	92.8	94.0	-1.2
903.069	57.6	32.4	60.0	1.0	3.0	0.0	H-Bilog	QP	0.0	90.0	94.0	-4.0
915.081	56.9	32.5	172.0	1.7	3.0	0.0	V-Bilog	QP	0.0	89.4	94.0	-4.6
927.210	56.8	32.6	167.0	1.7	3.0	0.0	V-Bilog	QP	0.0	89.4	94.0	-4.6
903.071	54.1	32.4	173.0	1.0	3.0	0.0	V-Bilog	QP	0.0	86.5	94.0	-7.5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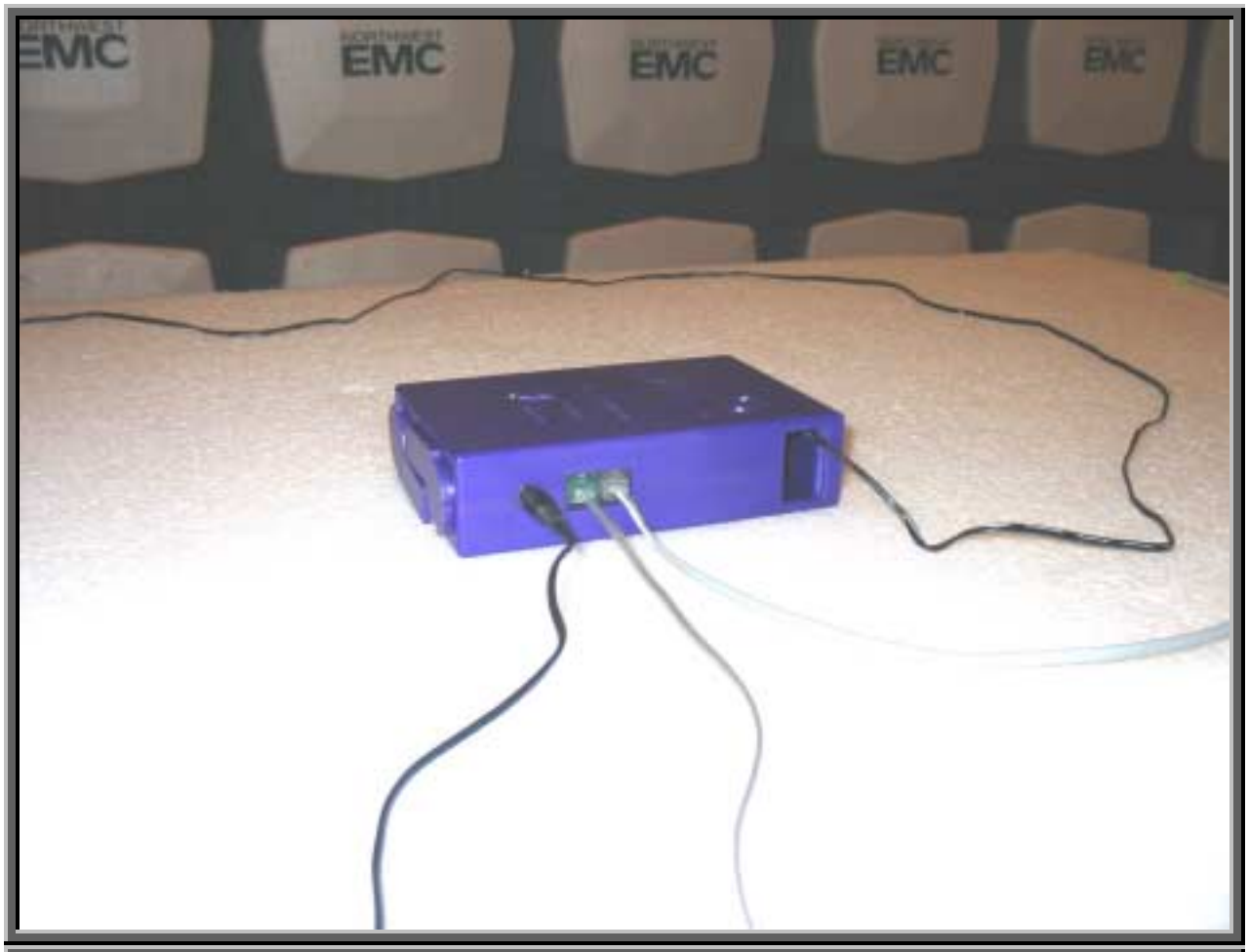
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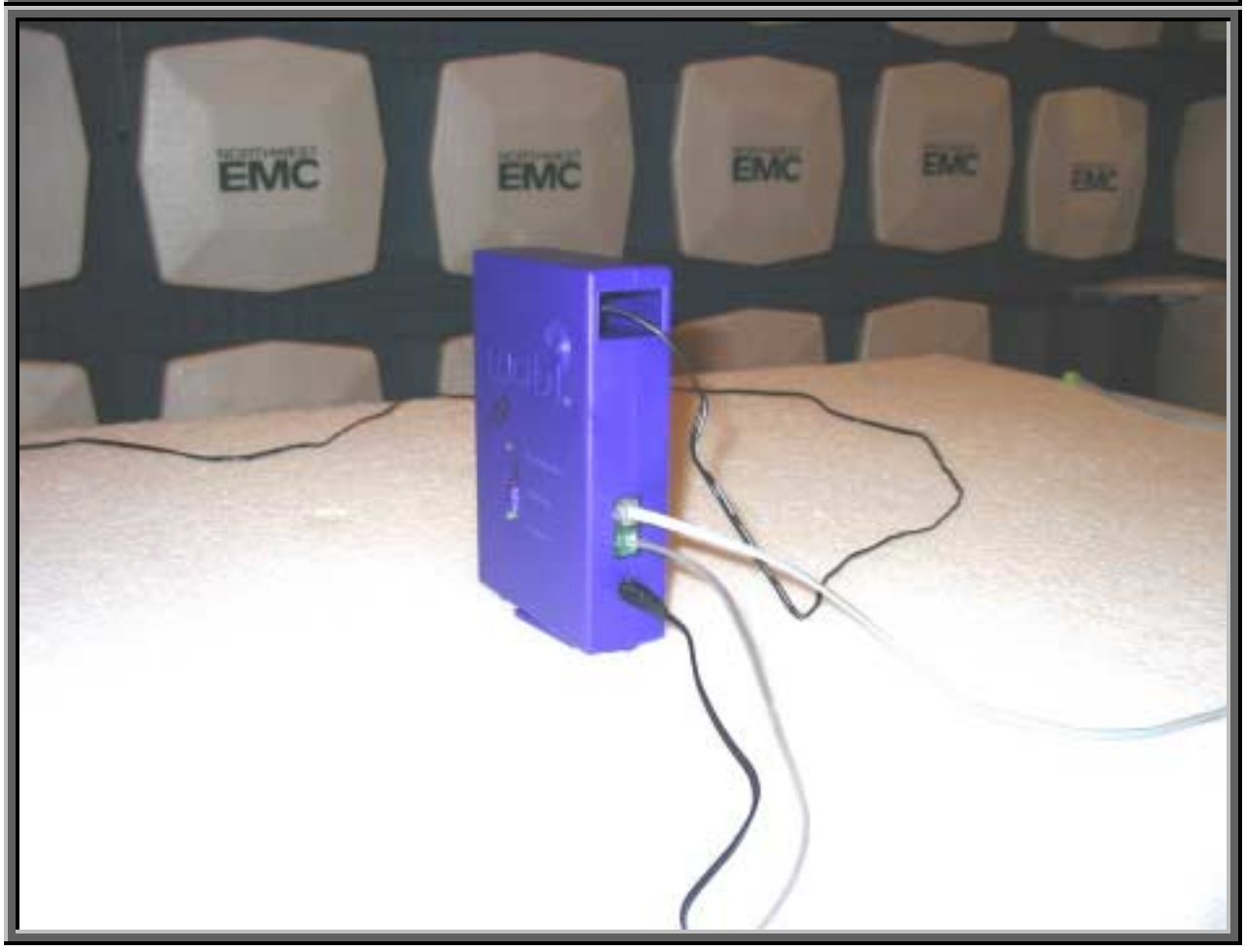
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Justification

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:
High
Mid
Low

Operating Modes Investigated:
Receive
Transmit

Data Rates Investigated:
Maximum

Output Power Setting(s) Investigated:	
Maximum	

Power Input Settings Investigated:
120 VAC, 60 Hz.

Frequency Range Investigated			
Start Frequency	30 MHz	**Stop Frequency**	10 GHz

Software\Firmware Applied During Test			
Exercise software	Terra Term Pro	**Version**	2.3
Description			
The system was tested using special software developed to test all functions of the device during the test.			

EUT and Peripherals			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AC Power Adapter	Unknown	Unknown	Unknown
EUT- Base Station	UMD Technology	Wabi 006	024
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 Leads	No	1.8	PA	EUT	AC Mains
Recharger Lead	No	1.8	PA	EUT	Unterminated
Telecom	No	1.0	No	EUT	Unterminated
Telecom	No	1.8	No	EUT	Unterminated
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	Hewlett-Packard	8566B	AAL	01/07/2003	12 mo
Quasi-Peak Adapter	Hewlett-Packard	85650A	AQF	01/07/2003	12 mo
Antenna, Biconilog	EMCO	3141	AXE	12/31/2001	36 mo
Pre-Amplifier	Amplifier Research	LN1000A	APS	01/06/2003	12 mo
Antenna, Horn	EMCO	3115	AHC	09/18/2003	12 mo
Pre-Amplifier	Miteq	AMF-4D-005180-24-10P	APJ	01/06/2003	12 mo
High Pass Filter	Hewlett-Packard	84300-80037	HFE	05/01/2003	12 mo

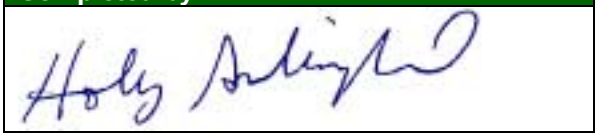
Test Description

Requirement: The field strength of harmonics and spurious radiated emissions shall comply with the limits as defined in 47 CFR 15.249. Field strength limits are specified at a distance of 3 meters. Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Sec. 15.209, whichever is the lesser attenuation. As shown in Sec. 15.35(b), for frequencies above 1000 MHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified in Sec. 15.249 by more than 20 dB under any condition of modulation.

Configuration: The antennas to be used with the EUT were tested. The EUT was transmitting and 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 (per ANSI C63.4:1992). A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

Bandwidths Used for Measurements			
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:



NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

REV df4.01 10/02/2003

EUT:	Wabi 006			Work Order:	UMDT0004
Serial Number:	024			Date:	10/03/03
Customer:	UMD Technology			Temperature:	77
Attendees:	Drop Off			Humidity:	41%
Cust. Ref. No.:				Barometric Pressure	29.83
Tested by:	Holly Ashkannejhad	Power:	120VAC/60Hz	Job Site:	EV01

TEST SPECIFICATIONS

Specification:	FCC 15.249	Year:	2003
Method:	ANSI C63.4	Year:	1992

SAMPLE CALCULATIONS

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

Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator

COMMENTS

EUT OPERATING MODES

Modulated PRBS

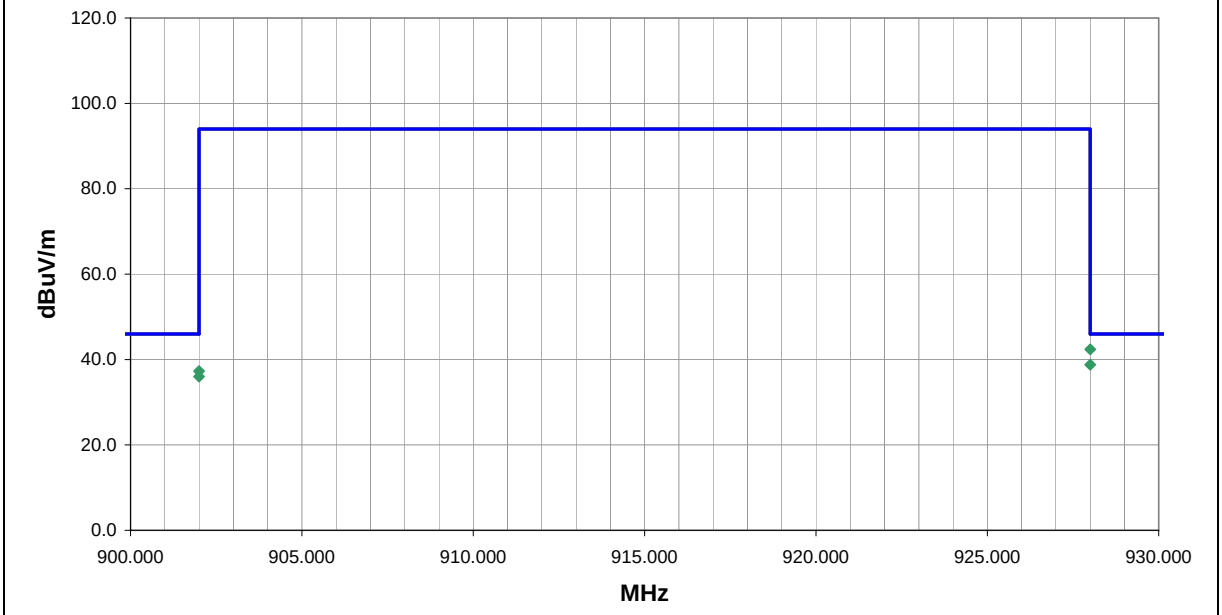
DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS	Run #
Pass	22

Other

Tested By:



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)	Comments
928.001	30.1	2.3	90.0	1.0	3.0	10.0	H-Bilog	QP	0.0	42.4	46.0	-3.6	Transmitting high channel
928.001	26.5	2.3	174.0	1.0	3.0	10.0	V-Bilog	QP	0.0	38.8	46.0	-7.2	Transmitting high channel
901.999	25.4	1.9	91.0	1.0	3.0	10.0	H-Bilog	QP	0.0	37.3	46.0	-8.7	Transmitting Low channel
901.999	24.1	1.9	171.0	1.7	3.0	10.0	V-Bilog	QP	0.0	36.0	46.0	-10.0	Transmitting Low channel

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

REV df4.01 10/02/2003

EUT:	Wabi 006			Work Order:	UMDT0004
Serial Number:	024			Date:	10/08/03
Customer:	UMD Technology			Temperature:	75
Attendees:	Drop Off			Humidity:	41%
Cust. Ref. No.:	N/A			Barometric Pressure	29.9
Tested by:	Holly Ashkannejhad	Power:	120VAC/60Hz	Job Site:	EV01

TEST SPECIFICATIONS

Specification:	FCC 15.249	Year:	2003
Method:	ANSI C63.4	Year:	1992

SAMPLE CALCULATIONS

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

Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator

COMMENTS

EUT OPERATING MODES

Low channel, Modulated PRBS

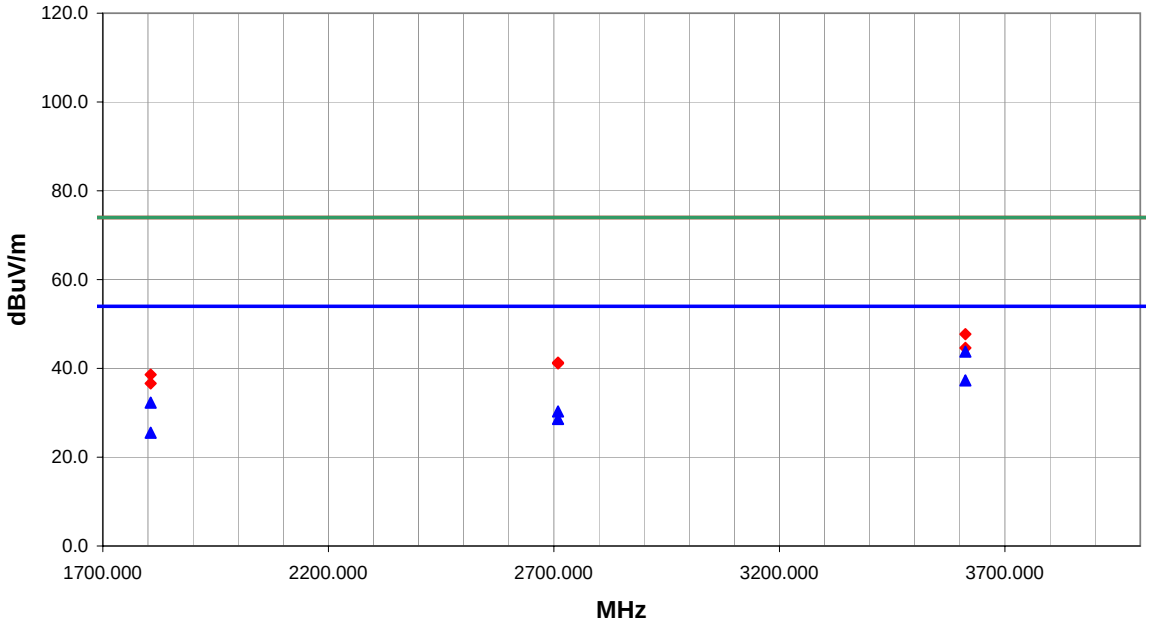
DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS	Run #
Pass	23

Other

Tested By:



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)
3612.384	42.1	1.7	279.0	1.1	3.0	0.0	H-Horn	AV	0.0	43.8	54.0	-10.2
3612.384	35.6	1.7	54.0	1.2	3.0	0.0	V-Horn	AV	0.0	37.3	54.0	-16.7
1806.192	36.7	-4.4	324.0	1.2	3.0	0.0	V-Horn	AV	0.0	32.3	54.0	-21.7
2709.288	30.6	-0.3	217.0	2.5	3.0	0.0	H-Horn	AV	0.0	30.3	54.0	-23.7
2709.288	28.9	-0.3	173.0	1.2	3.0	0.0	V-Horn	AV	0.0	28.6	54.0	-25.4
1806.192	29.9	-4.4	170.0	1.3	3.0	0.0	H-Horn	AV	0.0	25.5	54.0	-28.5
3612.384	46.0	1.7	279.0	1.1	3.0	0.0	H-Horn	PK	0.0	47.7	74.0	-26.3
3612.384	42.9	1.7	54.0	1.2	3.0	0.0	V-Horn	PK	0.0	44.6	74.0	-29.4
2709.288	41.6	-0.3	217.0	2.5	3.0	0.0	H-Horn	PK	0.0	41.3	74.0	-32.7
2709.288	41.4	-0.3	173.0	1.2	3.0	0.0	V-Horn	PK	0.0	41.1	74.0	-32.9
1806.192	43.0	-4.4	324.0	1.2	3.0	0.0	V-Horn	PK	0.0	38.6	74.0	-35.4
1806.192	41.0	-4.4	170.0	1.3	3.0	0.0	H-Horn	PK	0.0	36.6	74.0	-37.4

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

REV df4.01 10/02/2003

EUT:	Wabi 006			Work Order:	UMDT0004
Serial Number:	024			Date:	10/03/03
Customer:	UMD Technology			Temperature:	75
Attendees:	Drop Off			Humidity:	43%
Cust. Ref. No.:	N/A			Barometric Pressure	29.83
Tested by:	Holly Ashkannejhad	Power:	120VAC/60Hz	Job Site:	EV01

TEST SPECIFICATIONS

Specification:	FCC 15.249	Year:	2003
Method:	ANSI C63.4	Year:	1992

SAMPLE CALCULATIONS

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

Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator

COMMENTS

EUT OPERATING MODES

Mid channel, Modulated PRBS

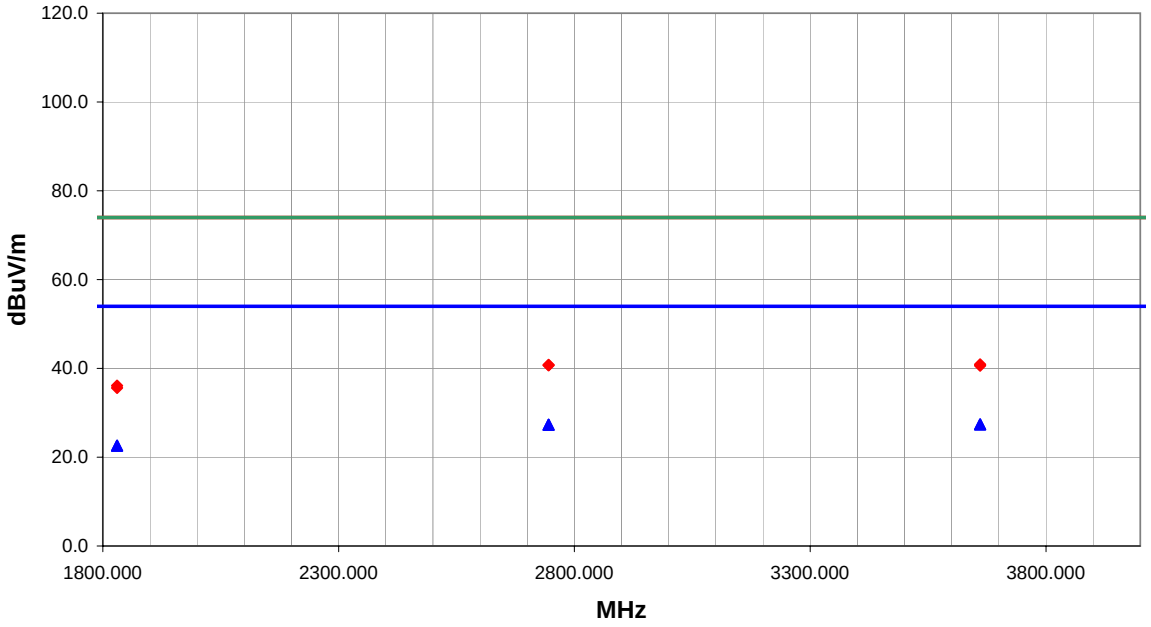
DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS	Run #
Pass	25

Other

Tested By:



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)
3660.456	25.5	1.9	81.0	1.2	3.0	0.0	V-Horn	AV	0.0	27.4	54.0	-26.6
3660.456	25.5	1.9	132.0	1.3	3.0	0.0	H-Horn	AV	0.0	27.4	54.0	-26.6
2745.342	27.5	-0.2	267.0	2.6	3.0	0.0	V-Horn	AV	0.0	27.3	54.0	-26.7
2745.342	27.5	-0.2	83.0	2.0	3.0	0.0	H-Horn	AV	0.0	27.3	54.0	-26.7
1830.228	26.8	-4.2	207.0	1.3	3.0	0.0	H-Horn	AV	0.0	22.6	54.0	-31.4
1830.228	26.8	-4.2	50.0	1.2	3.0	0.0	V-Horn	AV	0.0	22.6	54.0	-31.4
3660.456	39.0	1.9	132.0	1.3	3.0	0.0	H-Horn	PK	0.0	40.9	74.0	-33.1
2745.342	41.0	-0.2	267.0	2.6	3.0	0.0	V-Horn	PK	0.0	40.8	74.0	-33.2
2745.342	40.9	-0.2	83.0	2.0	3.0	0.0	H-Horn	PK	0.0	40.7	74.0	-33.3
3660.456	38.7	1.9	81.0	1.2	3.0	0.0	V-Horn	PK	0.0	40.6	74.0	-33.4
1830.228	40.3	-4.2	50.0	1.2	3.0	0.0	V-Horn	PK	0.0	36.1	74.0	-37.9
1830.228	39.8	-4.2	207.0	1.3	3.0	0.0	H-Horn	PK	0.0	35.6	74.0	-38.4

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

REV df4.01 10/02/2003

EUT:	Wabi 006			Work Order:	UMDT0004
Serial Number:	024			Date:	10/03/03
Customer:	UMD Technology			Temperature:	75
Attendees:	Drop Off			Humidity:	43%
Cust. Ref. No.:	N/A			Barometric Pressure	29.83
Tested by:	Holly Ashkannejhad	Power:	120VAC/60Hz	Job Site:	EV01

TEST SPECIFICATIONS

Specification:	FCC 15.249	Year:	2003
Method:	ANSI C63.4	Year:	1992

SAMPLE CALCULATIONS

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

Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator

COMMENTS

EUT OPERATING MODES

High channel, Modulated PRBS

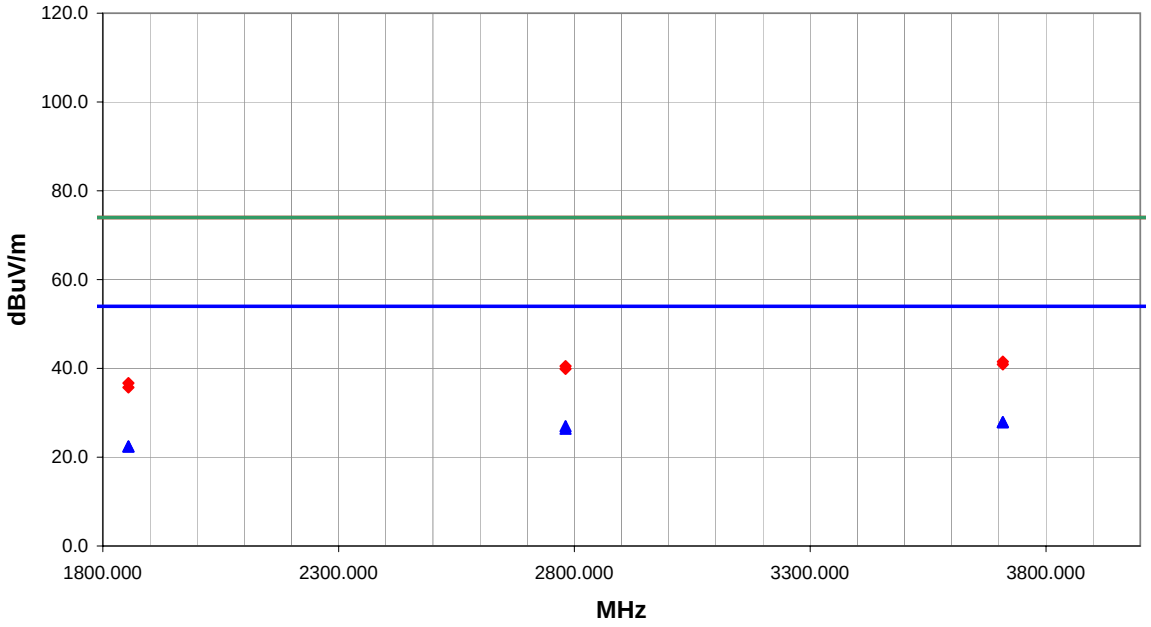
DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS	Run #
Pass	27

Other

Tested By:



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)
3708.424	25.8	2.1	88.0	1.3	3.0	0.0	H-Horn	AV	0.0	27.9	54.0	-26.1
3708.424	25.8	2.1	226.0	1.2	3.0	0.0	V-Horn	AV	0.0	27.9	54.0	-26.1
2781.318	27.0	0.0	225.0	1.2	3.0	0.0	V-Horn	AV	0.0	27.0	54.0	-27.0
2781.318	26.4	0.0	40.0	1.6	3.0	0.0	H-Horn	AV	0.0	26.4	54.0	-27.6
1854.212	26.5	-4.1	13.0	3.0	3.0	0.0	V-Horn	AV	0.0	22.4	54.0	-31.6
1854.212	26.5	-4.1	25.0	1.3	3.0	0.0	H-Horn	AV	0.0	22.4	54.0	-31.6
3708.424	39.4	2.1	226.0	1.2	3.0	0.0	V-Horn	PK	0.0	41.5	74.0	-32.5
3708.424	38.8	2.1	88.0	1.3	3.0	0.0	H-Horn	PK	0.0	40.9	74.0	-33.1
2781.318	40.5	0.0	40.0	1.6	3.0	0.0	H-Horn	PK	0.0	40.5	74.0	-33.5
2781.318	39.9	0.0	225.0	1.2	3.0	0.0	V-Horn	PK	0.0	39.9	74.0	-34.1
1854.212	40.8	-4.1	13.0	3.0	3.0	0.0	V-Horn	PK	0.0	36.7	74.0	-37.3
1854.212	39.8	-4.1	25.0	1.3	3.0	0.0	H-Horn	PK	0.0	35.7	74.0	-38.3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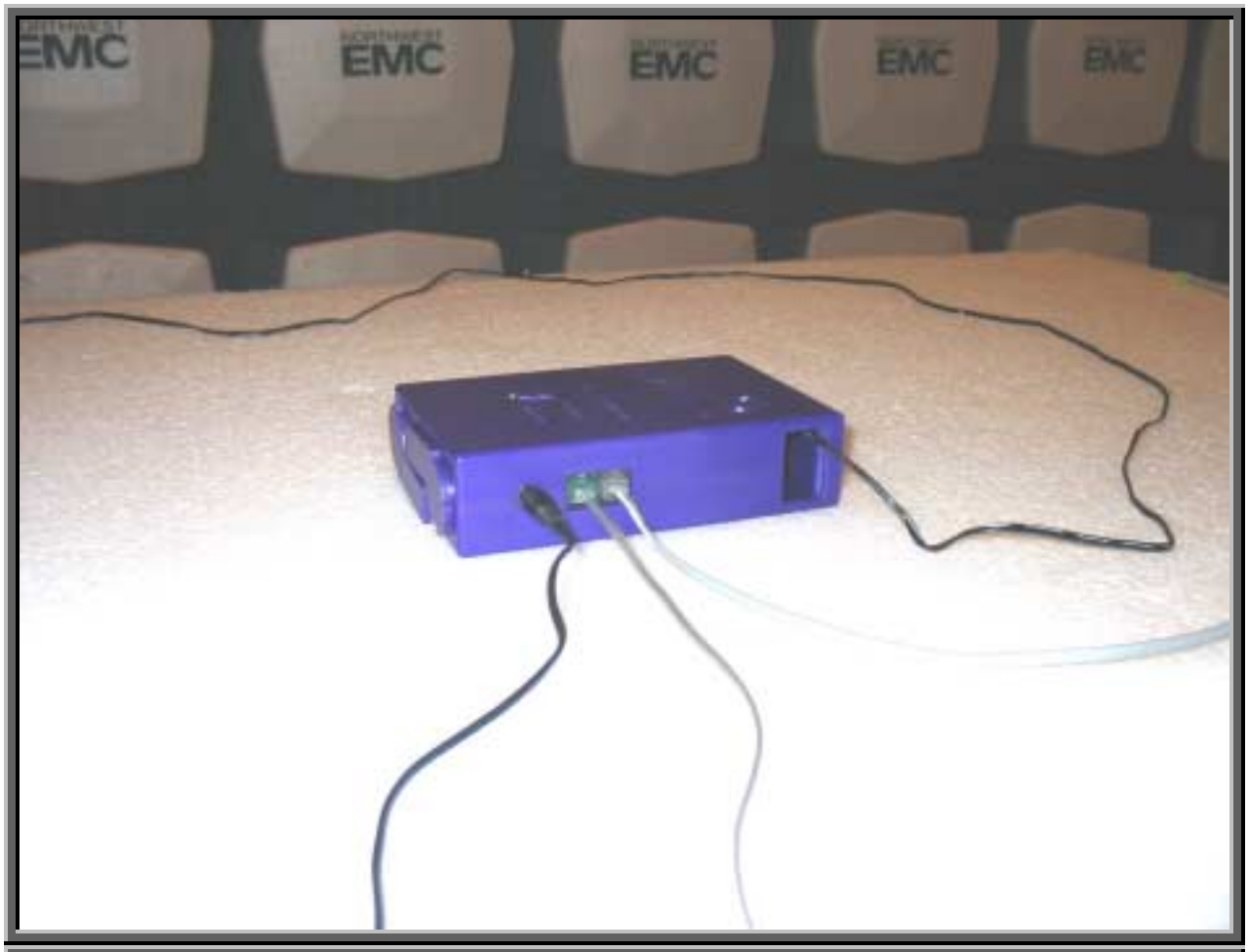
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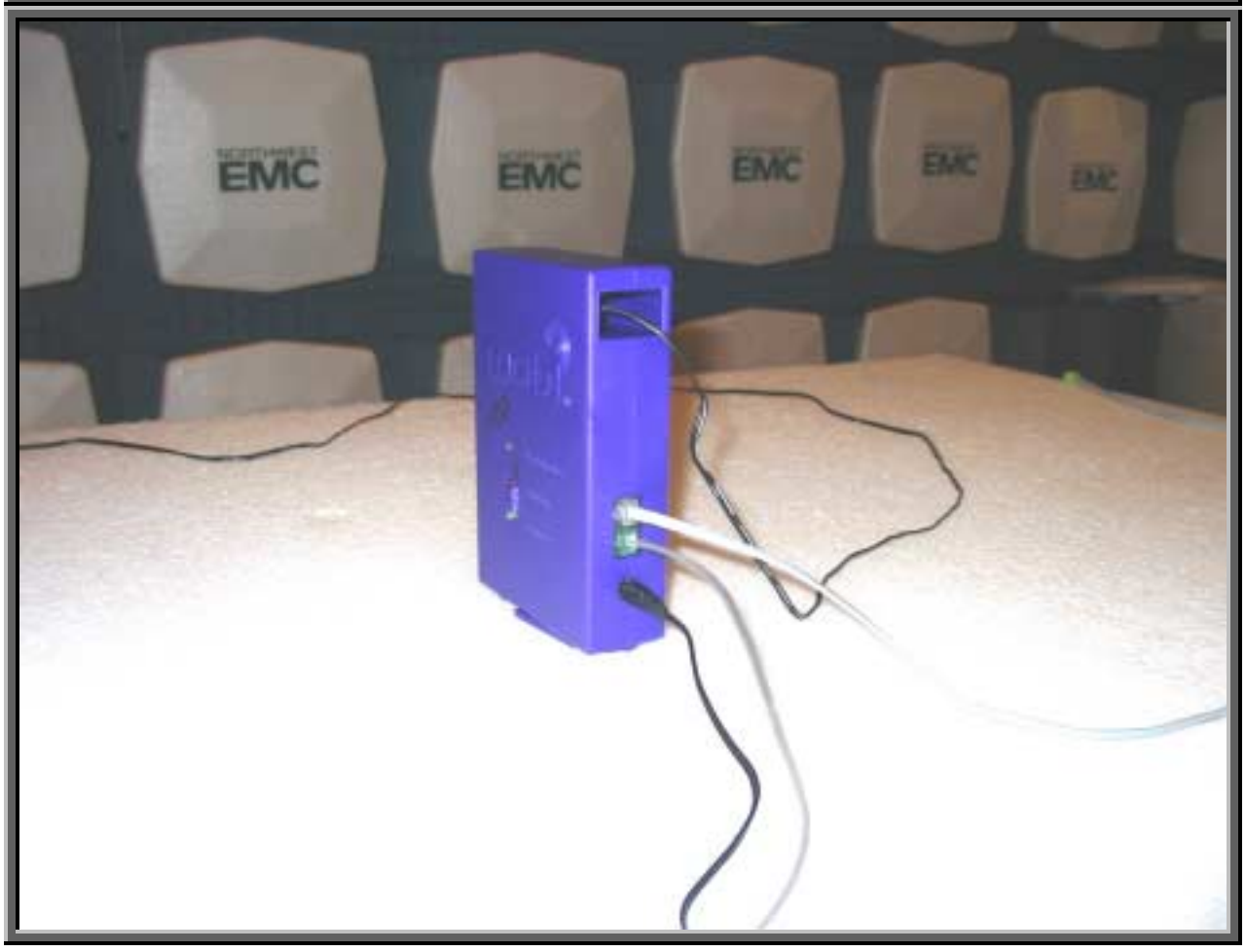
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