GE Infrastructure Security

RCR-01

October 21, 2004

Report No. ILGX0254 Revision 01

Report Prepared By

1-888-EMI-CERT

EMC Test Report

NORTHWEST EMC

22975 NW Evergreen Parkway
Suite 400
Hillsboro, Oregon 97124

Certificate of Test

Issue Date: October 21, 2004
GE Infrastructure Security
Model: RCR-01

Emissions

Description	Pass	Fail
FCC 15.249 Field Strength of Fundamental	☒	☐
FCC 15.249 Field Strength of Spurious Emissions	☒	☐

Modifications made to the product

- See the modifications page of the report

Test Facility

- The measurement facility used to collect the data is located at:
  Northwest EMC, Inc.; 22975 NW Evergreen Parkway, Suite 400; Hillsboro, OR 97124
  Phone: (503) 844-4066 Fax: 844-3826
  This site has been fully described in a report filed with and accepted by the FCC (Federal Communications Commission) and Industry Canada.

Approved By:

Greg Kiemel, Director of Engineering

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

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

Revision Number	Description	Date	Page Number
01	Changed company name from “GE Interlogix” to “GE Infrastructure Security” per client’s request.	10/25/2004	11

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, 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. Accreditation has been granted to Northwest EMC, Inc. under Certificate Numbers: 200629-0, 200630-0, and 200676-0.

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

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

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

Accreditations and Authorizations

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 Nos. - 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

Explanation of Northwest EMC Performance Criteria

How important is it to understand performance criteria?

It is the responsibility of the test laboratory to observe the results of the tests that are performed and to accurately report those results. As the responsible party (manufacturer, importer, etc) it is your responsibility to take those results, compare them against the specifications and standards, then, if appropriate make a declaration of conformity. As the responsible party it makes sense that you are fully aware of the requirements, how your device performs when tested to those requirements, and what information is being used to declare conformity.

To better assist you in making those conformity decisions, Northwest EMC has adopted a very simple, yet very clear performance assessment procedure. The following criteria is used when performing immunity or susceptibility tests:

Performance Criteria 1:

- The EUT exhibited no change in performance when operating as specified by the manufacturer. In this case no changes were observed during the test.
- In most cases this would be equivalent to Performance Criteria A. When operating the equipment in the modes or configurations specified by the responsible party, monitoring the parameters specified, no changes were observed. Basically nothing happened.

Performance Criteria 2:

- The EUT exhibited a change in performance when operating as specified by the manufacturer. In this case the equipment recovered without any operator intervention. The data sheets will detail the exact phenomena observed.
- In most cases this would be equivalent to Performance Criteria B. When operating the equipment in the modes or configurations specified by the responsible party, monitoring the parameters specified, changes were observed. The EUT was able to recover from those changes without any operator intervention.

Performance Criteria 3:

- The EUT exhibited a change in performance when operating as specified by the manufacturer. In this case the equipment required some operator intervention in order to recover. This intervention may be in the form of reducing the test levels, changing parameters, or even resetting the system. The data sheets will detail the exact phenomena observed.
- In most cases this would be equivalent to Performance Criteria C. When operating the equipment in the modes or configurations specified by the responsible party, monitoring the parameters specified, changes were observed. The EUT required some sort of operator intervention to recover. There was no permanent damage and the EUT appeared to function normally after completion test.

Performance Criteria 4:

- The EUT exhibited a change in performance when operating as specified by the manufacturer. In this case the equipment was damaged and would not recover. The data sheets will detail the exact phenomena observed.
- In most cases there is no specific criterion to compare this to, it typically ends the test. When operating the equipment in the modes or configurations specified by the responsible party, monitoring the parameters specified, changes were observed. There was no recovery; the equipment would no longer function as intended.

Each of the standards and specifications has unique performance criteria. In order to make an accurate assessment, one must compare the test results provided with the specific performance criteria. **To ensure that a responsible party is compliant with the specifications, one must read and understand those specifications. Provided below is a sample performance criteria, taken from EN 50082-1.**

EN 50082-1 Performance Criteria

Performance Criteria A: *The apparatus shall continue to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.*

Performance Criteria B: *The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.*

Performance Criteria C: *Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of controls.*

How should a device perform in order for a declaration of conformity to be made?

As already stated, it is the responsible party that must interpret and understand the results in such a way that a declaration of conformity is made. Having said that, we are often asked to render our opinion as to how a device should perform. Our recommendation simply follows the standards, as can be referenced below. Most of the standards and specifications offer the same performance criterion shown below as their requirements.

Test	Performance Criteria typically specified by the Standard	Equivalent Northwest EMC Performance Criteria
ESD	Performance Criteria B	Performance Criteria 1 or 2
Radiated RF	Performance Criteria A	Performance Criteria 1
EFT/Burst	Performance Criteria B	Performance Criteria 1 or 2
Surge	Performance Criteria B	Performance Criteria 1 or 2
Conducted RF	Performance Criteria A	Performance Criteria 1
Magnetic Field	Performance Criteria A	Performance Criteria 1
Voltage Dips and Variations	Performance Criteria B & C	Performance Criteria 1, 2, or 3

What is measurement uncertainty?

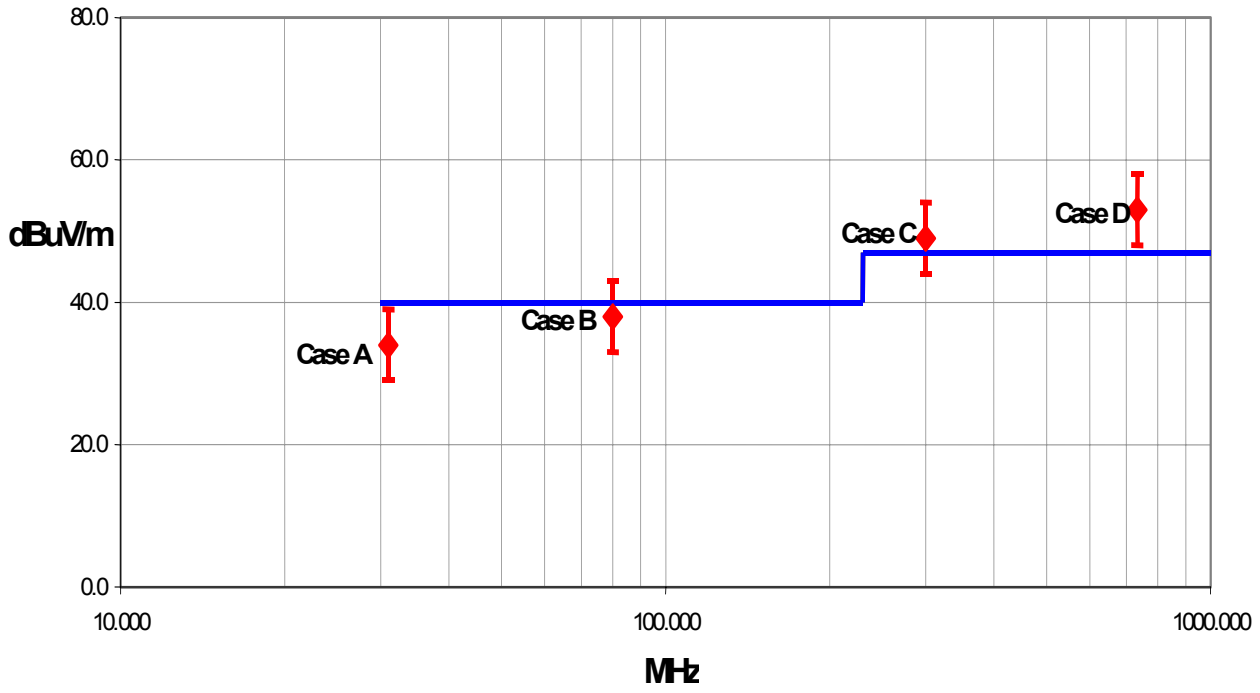
When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. The following 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%.

Northwest EMC

Facilities

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

Washington

Sultan Facility

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

Product Description

Party Requesting the Test	
Company Name:	GE Infrastructure Security
Address:	12345 SW Leveton Drive
City, State, Zip:	Tualatin, OR 97062
Test Requested By:	Fred Eggers
Model:	RCR-01
First Date of Test:	10-18-2004
Last Date of Test:	10-19-2004
Receipt Date of Samples:	10-18-2004
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):

Uses doppler radar with an 8-foot range as a motion detector to detect intrusion in an aircraft wheel well while the aircraft is parked. Does not operate during flight.

Client Justification for EUT Selection:

Engineering sample with typical load configuration.

Client Justification for Test Selection:

Our customers require these tests. Note that 15.207 conducted emissions measurements are not required because this device is only operated on an aircraft.

Equipment modifications					
Item	Test	Date	Modification	Note	Disposition of EUT
1	Field Strength of Fundamental	10/18/2004	No EMI suppression devices were added or modified during this test.	Same configuration as delivered.	EUT remained at Northwest EMC.
2	Field Strength of Spurious Emissions	10/18/2004	No EMI suppression devices were added or modified during this test.	Same configuration as delivered.	EUT remained at Northwest EMC.

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:
Single

Operating Modes Investigated:
Typical

Data Rates Investigated:
Typical

Output Power Setting(s) Investigated:
Maximum

Power Input Settings Investigated:
12VDC

Software\Firmware Applied During Test			
Exercise software	N/A	**Version**	N/A
Description			
The system was tested using standard operating production firmware to exercise the functions of the device during the testing.			

EUT and Peripherals			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
EUT	GE Security, Inc.	RCR-01	N/A
Tester / Control box	GE Security, Inc.	RCR-01 Tester	N/A
DC Power Supply	Instek	PC-3030D	TPR

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
DC Leads	No	1.2	No	DC Power Supply	Tester / Control box
Power/Control	No	0.5	No	EUT	Tester / Control box
AC Power	No	1.8	No	DC Power Supply	AC Mains

Field Strength of Fundamental

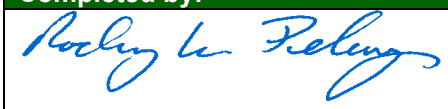
Measurement Equipment					
Description	**Manufacturer**	**Model**	**Identifier**	**Last Cal**	**Interval**
Spectrum Analyzer	Hewlett-Packard	8566B	AAL	12/23/2003	13 mo
Spectrum Analyzer Display	Hewlett-Packard	85662A	AALD	12/23/2003	13 mo
Pre-Amplifier	Miteq	AMF-4D-005180-24-10P	APJ	01/05/2004	13 mo
Antenna, Horn	EMCO	3115	AHC	09/07/2004	12 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 single, integral antenna to be used with the EUT was tested. The EUT was transmitting at its single channel. 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 C63.4:2003).

Completed by:



NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

REV df4.3 09/20/2004

EUT:	RCR-01			Work Order:	ILGX0254
Serial Number:				Date:	10/18/04
Customer:	GE Infrastructure Security			Temperature:	68
Attendees:	None			Humidity:	46%
Cust. Ref. No.:				Barometric Pressure	29.61
Tested by:	Rod Peloquin	Power:	12VDC	Job Site:	EV01

TEST SPECIFICATIONS

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

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

Pulsed RF

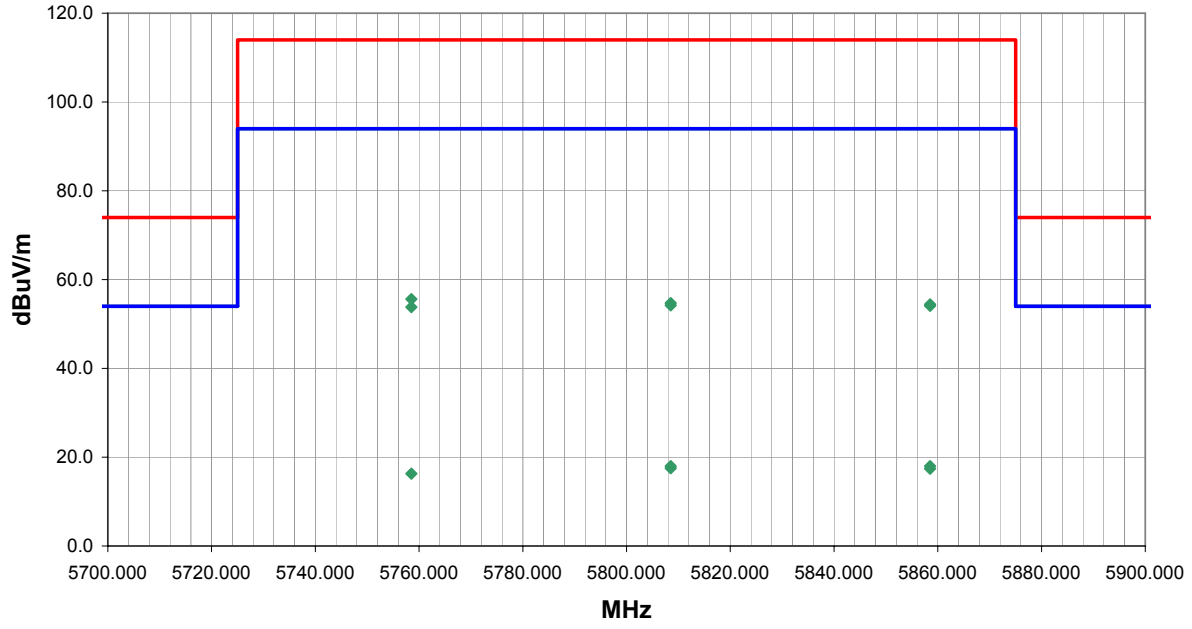
DEVIATIONS FROM TEST STANDARD

No deviations.

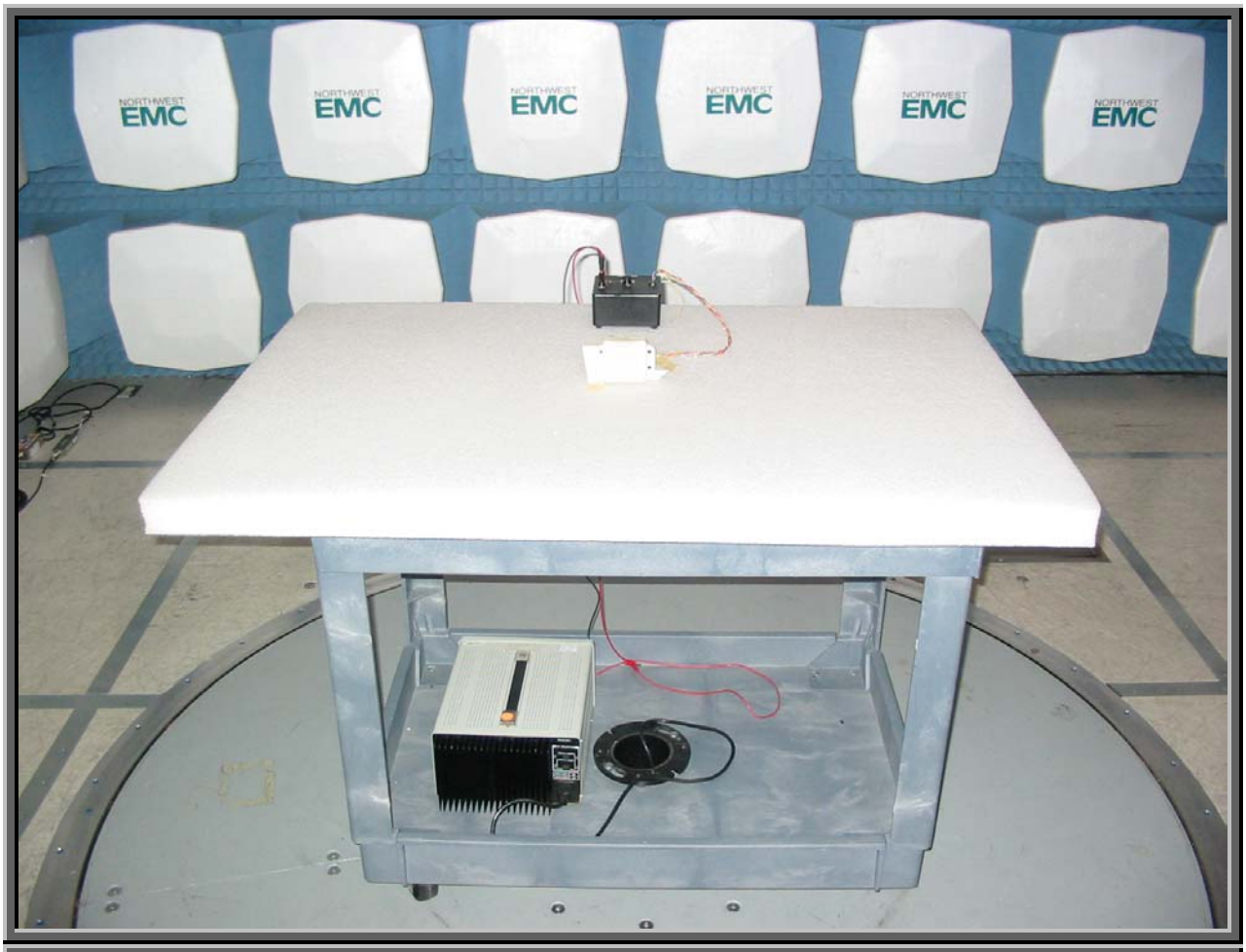
RESULTS	Run #
Pass	1

Other

Tested By:



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Duty Cycle Correction Factor	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
5758.500	49.4	6.2	30.0	1.7	0.0	0.0	V-Horn	PK	0.0	55.6	114.0	-58.4
5808.500	48.4	6.3	29.0	1.1	0.0	0.0	V-Horn	PK	0.0	54.7	114.0	-59.3
5858.500	48.0	6.4	293.0	1.5	0.0	0.0	V-Horn	PK	0.0	54.4	114.0	-59.6
5808.500	47.9	6.3	347.0	1.7	0.0	0.0	H-Horn	PK	0.0	54.2	114.0	-59.8
5858.500	47.7	6.4	340.0	1.5	0.0	0.0	H-Horn	PK	0.0	54.1	114.0	-59.9
5758.500	47.6	6.2	341.0	1.5	0.0	0.0	H-Horn	PK	0.0	53.8	114.0	-60.2
5808.500	31.7	6.3	29.0	1.1	20.0	0.0	V-Horn	AV	0.0	18.0	94.0	-76.0
5858.500	31.6	6.4	340.0	1.5	20.0	0.0	H-Horn	AV	0.0	18.0	94.0	-76.0
5808.500	31.2	6.3	347.0	1.7	20.0	0.0	H-Horn	AV	0.0	17.5	94.0	-76.5
5858.500	31.0	6.4	293.0	1.5	20.0	0.0	V-Horn	AV	0.0	17.4	94.0	-76.6
5758.500	30.1	6.2	341.0	1.5	20.0	0.0	H-Horn	AV	0.0	16.3	94.0	-77.7
5758.500	28.2	6.2	30.0	1.7	20.0	0.0	V-Horn	AV	0.0	14.4	94.0	-79.6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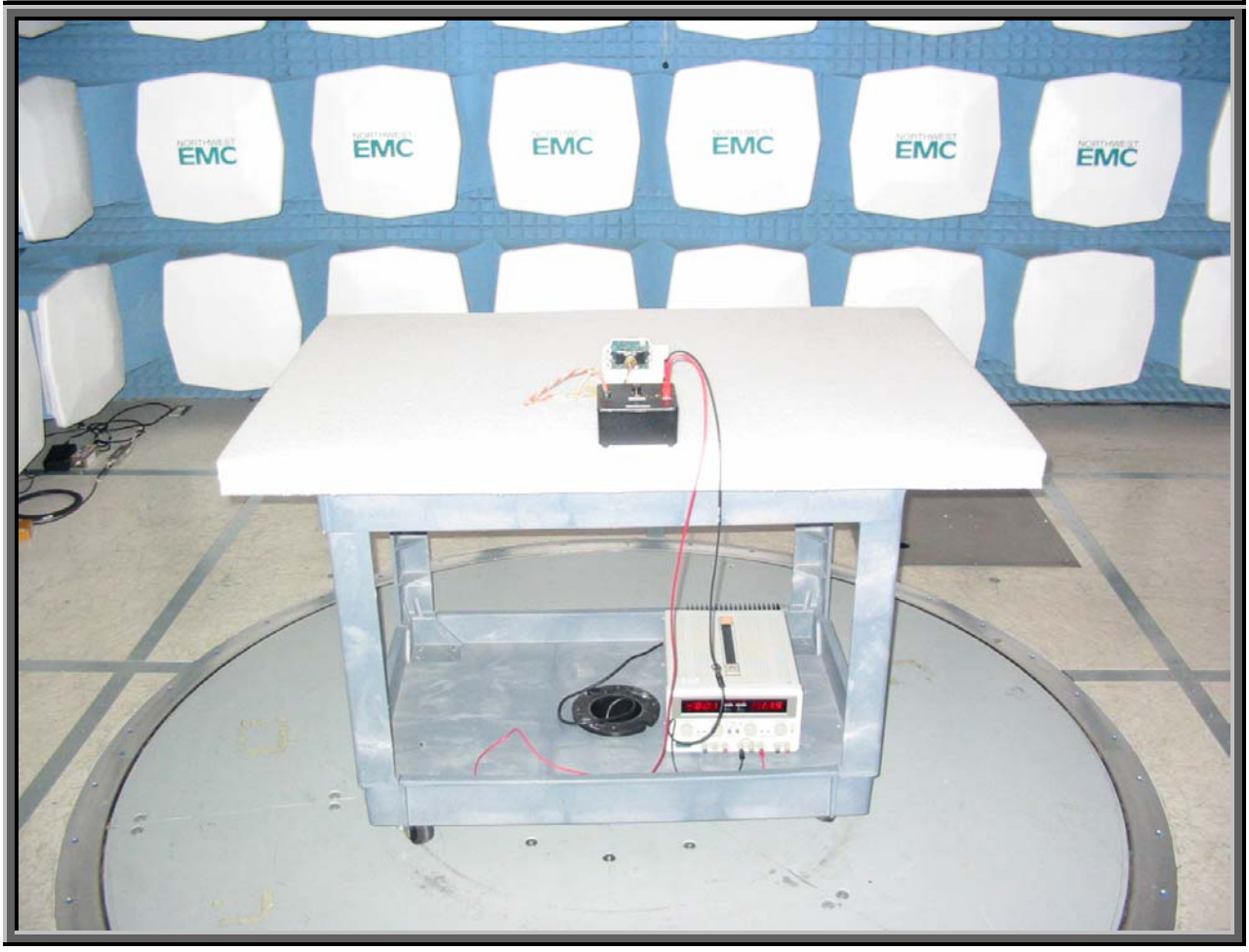
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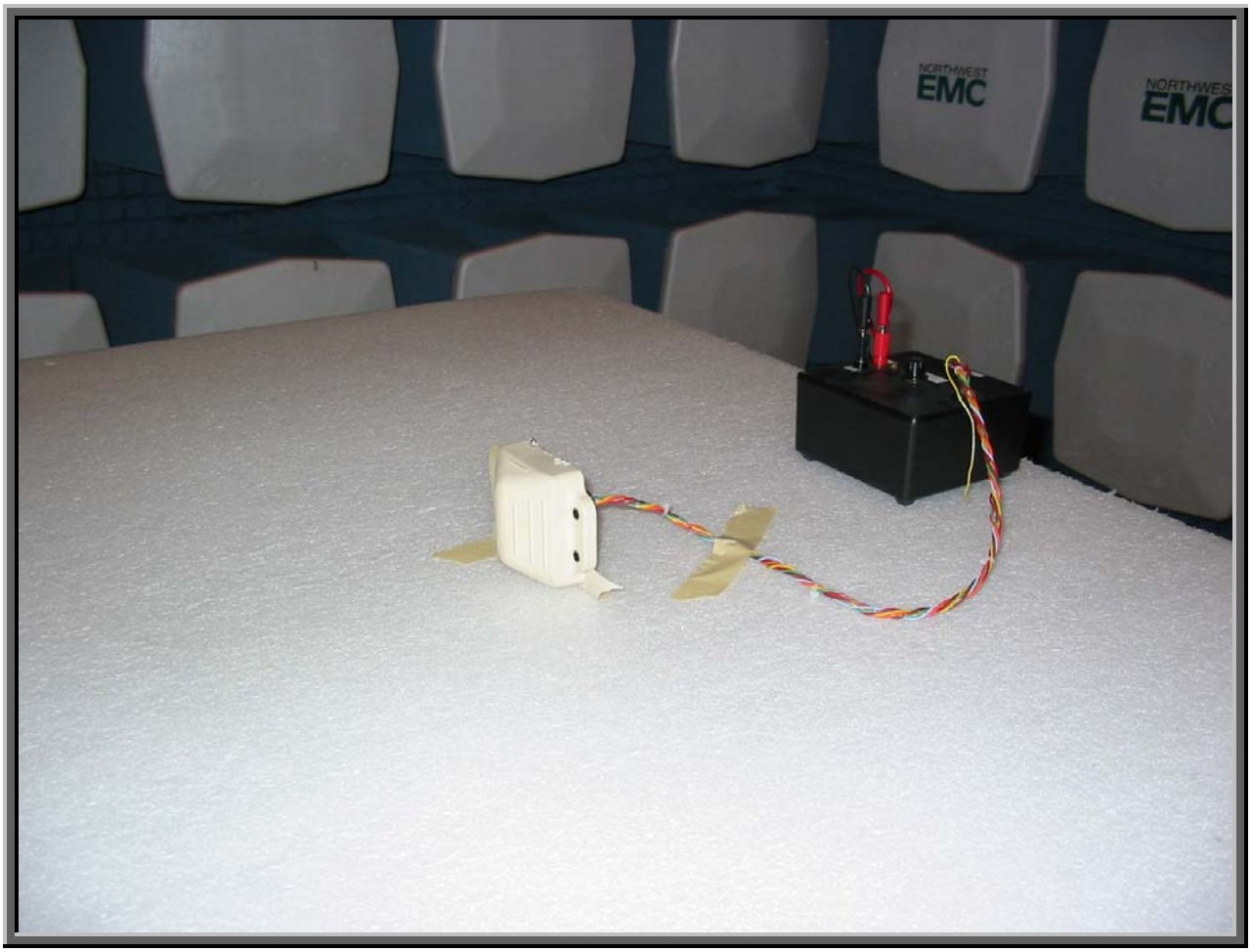
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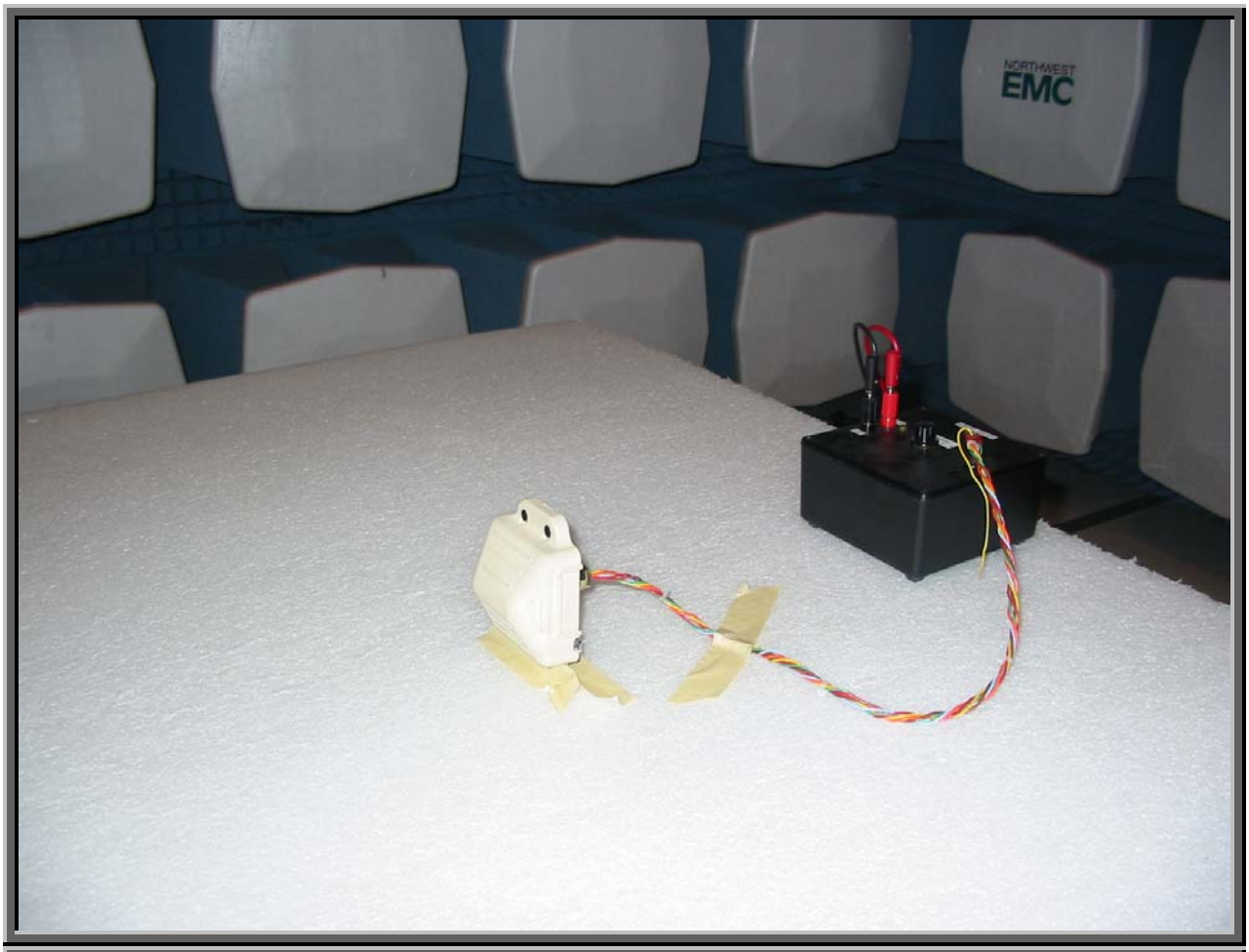
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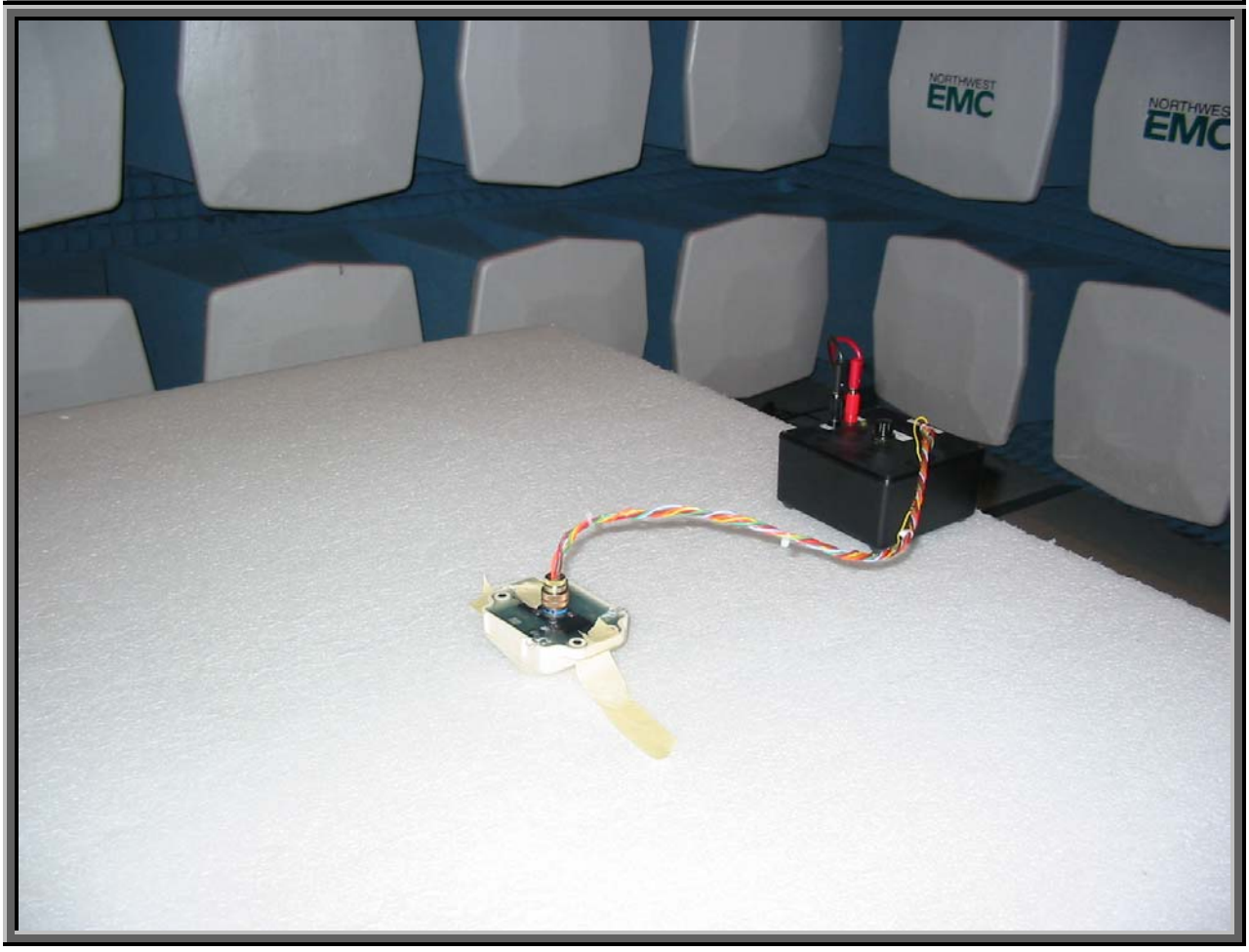
NORTHWEST
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Justification

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:
Single

Operating Modes Investigated:
Typical

Data Rates Investigated:
Typical

Output Power Setting(s) Investigated:
Maximum

Power Input Settings Investigated:
12VDC

Frequency Range Investigated			
Start Frequency	30 MHz	**Stop Frequency**	40 GHz

Software\Firmware Applied During Test			
Exercise software	N/A	**Version**	N/A
Description			
The system was tested using standard operating production firmware to exercise the functions of the device during the testing.			

EUT and Peripherals			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
EUT	GE Infrastructure, Security	RCR-01	N/A
Tester / Control box	GE Infrasructure, Security	RCR-01 Tester	N/A
DC Power Supply	Instek	PC-3030D	TPR

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
DC Leads	No	1.2	No	DC Power Supply	Tester / Control box
Power/Control	No	0.5	No	EUT	Tester / Control box
AC Power	No	1.8	No	DC Power Supply	AC Mains

Measurement Equipment					
Description	**Manufacturer**	**Model**	**Identifier**	**Last Cal**	**Interval**
Spectrum Analyzer	Hewlett-Packard	8566B	AAL	12/23/2003	13 mo
Quasi-Peak Adapter	Hewlett-Packard	85650A	AQF	12/23/2003	13 mo
Pre-Amplifier	Amplifier Research	LN1000A	APS	02/05/2004	13 mo
Antenna, Biconilog	EMCO	3141	AXE	12/03/2003	24 mo
Antenna, Horn	EMCO	3115	AHC	09/07/2004	12 mo
Pre-Amplifier	Miteq	AMF-4D-005180-24-10P	APJ	01/05/2004	13 mo
Antenna, Horn	EMCO	3160-08	AHK	NCR	NA
Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	10/08/2003	15 mo
Antenna, Horn	EMCO	3160-09	AHG	NCR	NA
Pre-Amplifier	Miteq	JS4-26004000-40-8P	APV	10/08/2003	15 mo
Pre-Amplifier	Miteq	JS4-26004000-50-5A	AON	10/08/2004	12 mo
Antenna, Horn	EMCO	3160-10	AHI	NCR	NA
Spectrum Analyzer	Tektronix	2784	AAO	02/26/2003	24 mo

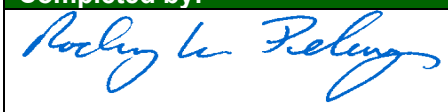
Test Description

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 single, integral antenna to be used with the EUT was tested. The EUT was transmitting and receiving while set at its single channel. 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 C63.4:2003). 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 df4.3 09/20/2004

EUT:	RCR-01			Work Order:	ILGX0254
Serial Number:				Date:	10/18/04
Customer:	GE Infrastructure Security			Temperature:	68
Attendees:	None			Humidity:	46%
Cust. Ref. No.:				Barometric Pressure	29.61
Tested by:	Rod Peloquin	Power:	12VDC	Job Site:	EV01

TEST SPECIFICATIONS

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

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

Pulsed RF

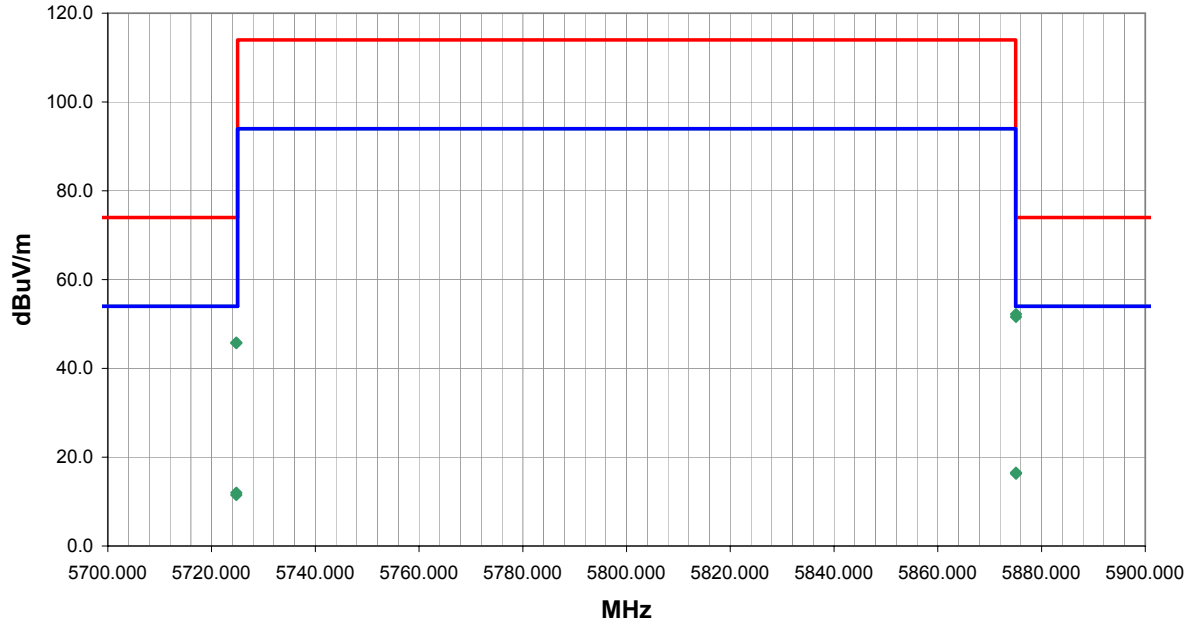
DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS	Run #
Pass	2

Other

Tested By:



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Duty Cycle Correction Factor	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
5875.070	45.7	6.5	354.0	1.5	0.0	0.0	H-Horn	PK	0.0	52.2	74.0	-21.8
5875.070	45.1	6.5	295.0	2.0	0.0	0.0	V-Horn	PK	0.0	51.6	74.0	-22.4
5724.772	39.7	6.1	357.0	1.1	0.0	0.0	H-Horn	PK	0.0	45.8	74.0	-28.2
5724.772	39.6	6.1	39.0	1.5	0.0	0.0	V-Horn	PK	0.0	45.7	74.0	-28.3
5875.070	30.0	6.5	354.0	1.5	20.0	0.0	H-Horn	AV	0.0	16.5	54.0	-37.5
5875.070	29.8	6.5	295.0	2.0	20.0	0.0	V-Horn	AV	0.0	16.3	54.0	-37.7
5724.772	25.9	6.1	39.0	1.5	20.0	0.0	V-Horn	AV	0.0	12.0	54.0	-42.0
5724.772	25.4	6.1	357.0	1.1	20.0	0.0	H-Horn	AV	0.0	11.5	54.0	-42.5

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

REV df4.3 09/20/2004

EUT:	RCR-01			Work Order:	ILGX0254
Serial Number:				Date:	10/18/04
Customer:	GE Infrastructure Security			Temperature:	68
Attendees:	None			Humidity:	46%
Cust. Ref. No.:				Barometric Pressure	29.61
Tested by:	Rod Peloquin	Power:	12VDC	Job Site:	EV01

TEST SPECIFICATIONS

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

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

Pulsed RF

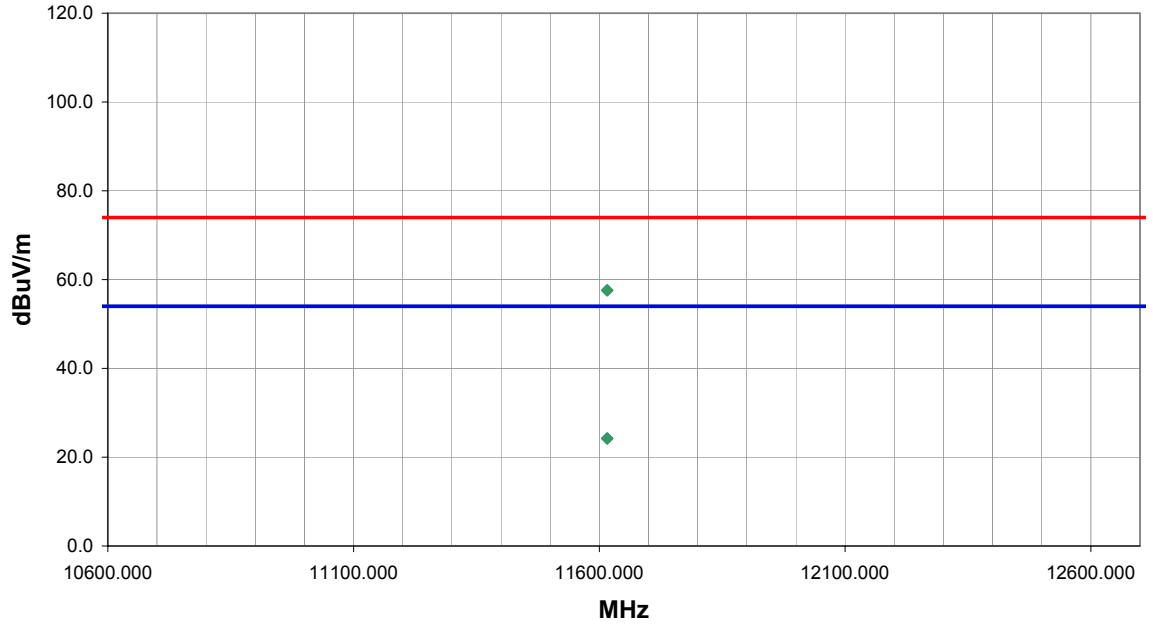
DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS	Run #
Pass	3

Other

Tested By:



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Duty Cycle Correction Factor	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
11616.000	38.1	19.5	106.0	1.3	0.0	0.0	H-Horn	PK	0.0	57.6	74.0	-16.4
11616.000	38.1	19.5	209.0	1.2	0.0	0.0	V-Horn	PK	0.0	57.6	74.0	-16.4
11616.000	24.7	19.5	106.0	1.3	20.0	0.0	H-Horn	AV	0.0	24.2	54.0	-29.8
11616.000	24.7	19.5	209.0	1.2	20.0	0.0	V-Horn	AV	0.0	24.2	54.0	-29.8

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

REV df4.3 09/20/2004

EUT:	RCR-01			Work Order:	ILGX0254
Serial Number:				Date:	10/18/04
Customer:	GE Infrastructure Security			Temperature:	68
Attendees:	None			Humidity:	46%
Cust. Ref. No.:				Barometric Pressure	29.61
Tested by:	Rod Peloquin	Power:	12VDC	Job Site:	EV01

TEST SPECIFICATIONS

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

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

Pulsed RF

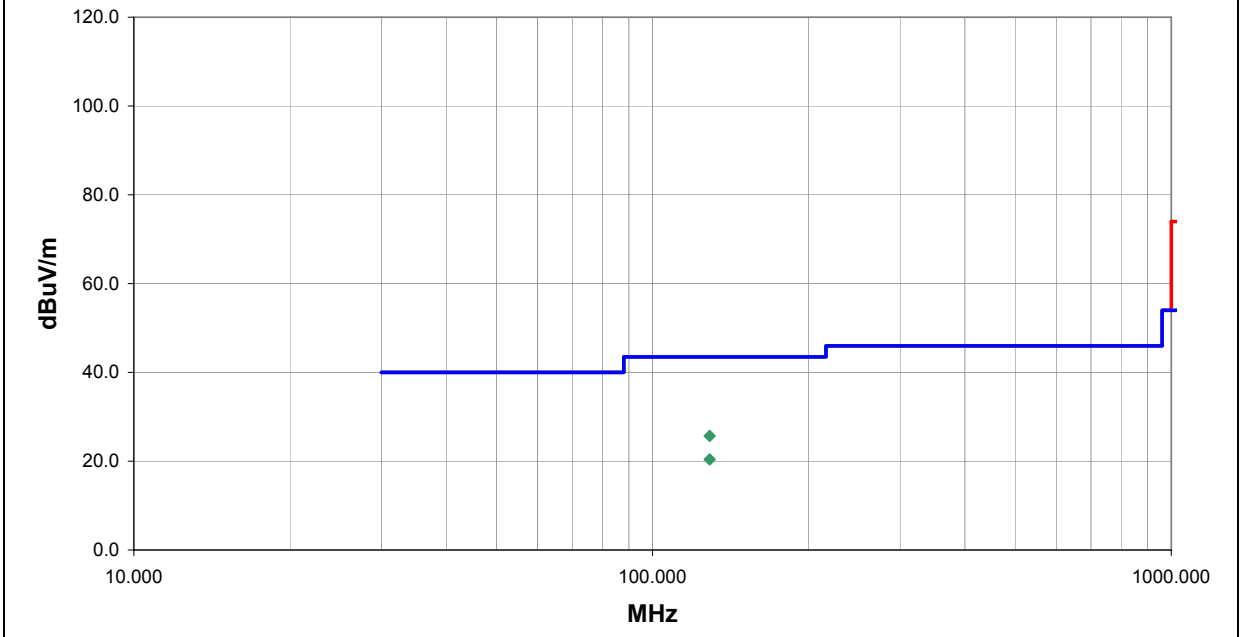
DEVIATIONS FROM TEST STANDARD

No deviations.

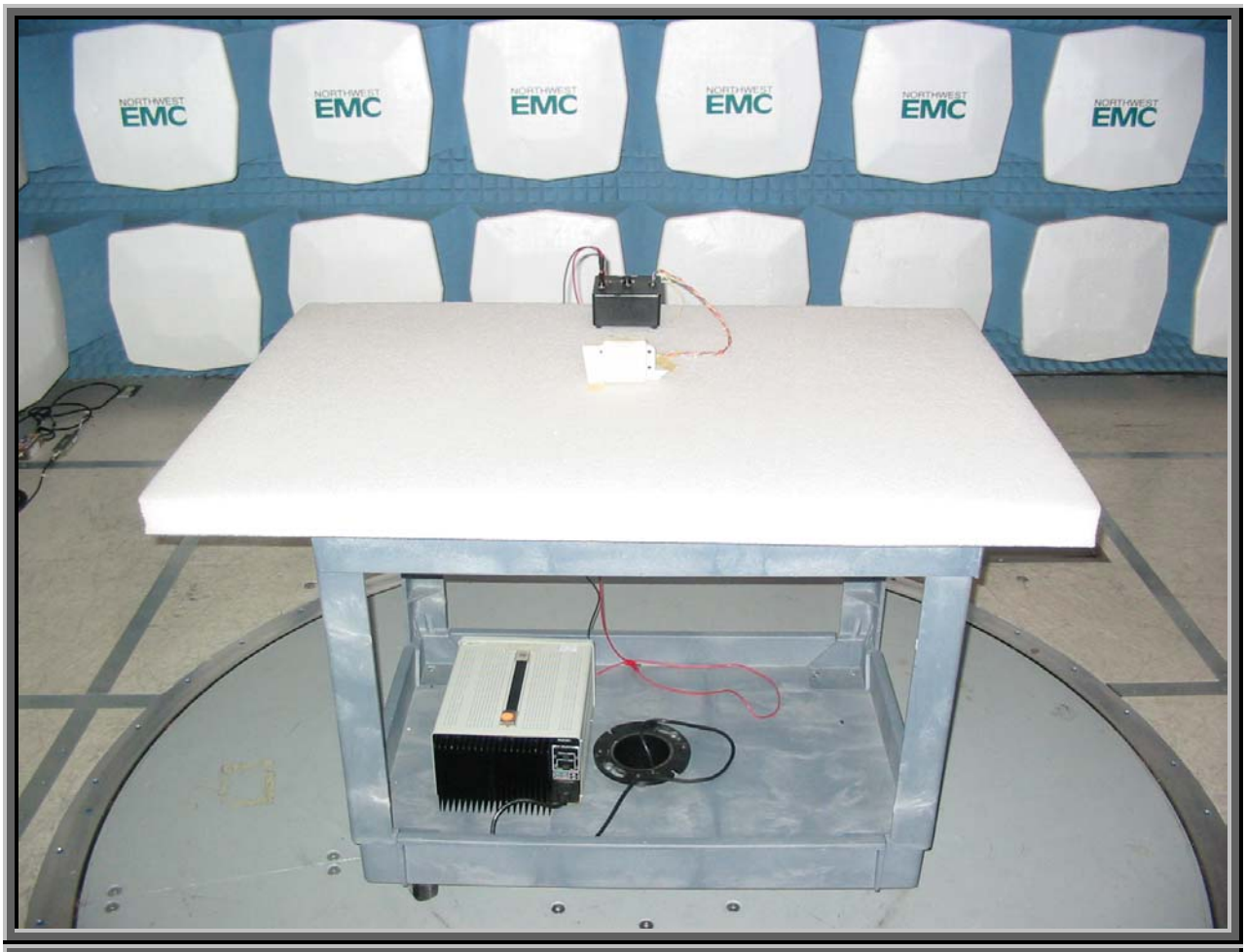
RESULTS	Run #
Pass	4

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)
128.872	40.9	-15.2	65.0	1.0	3.0	0.0	V-Bilog	PK	0.0	25.7	43.5	-17.8
128.872	35.6	-15.2	358.0	2.4	3.0	0.0	H-Bilog	PK	0.0	20.4	43.5	-23.1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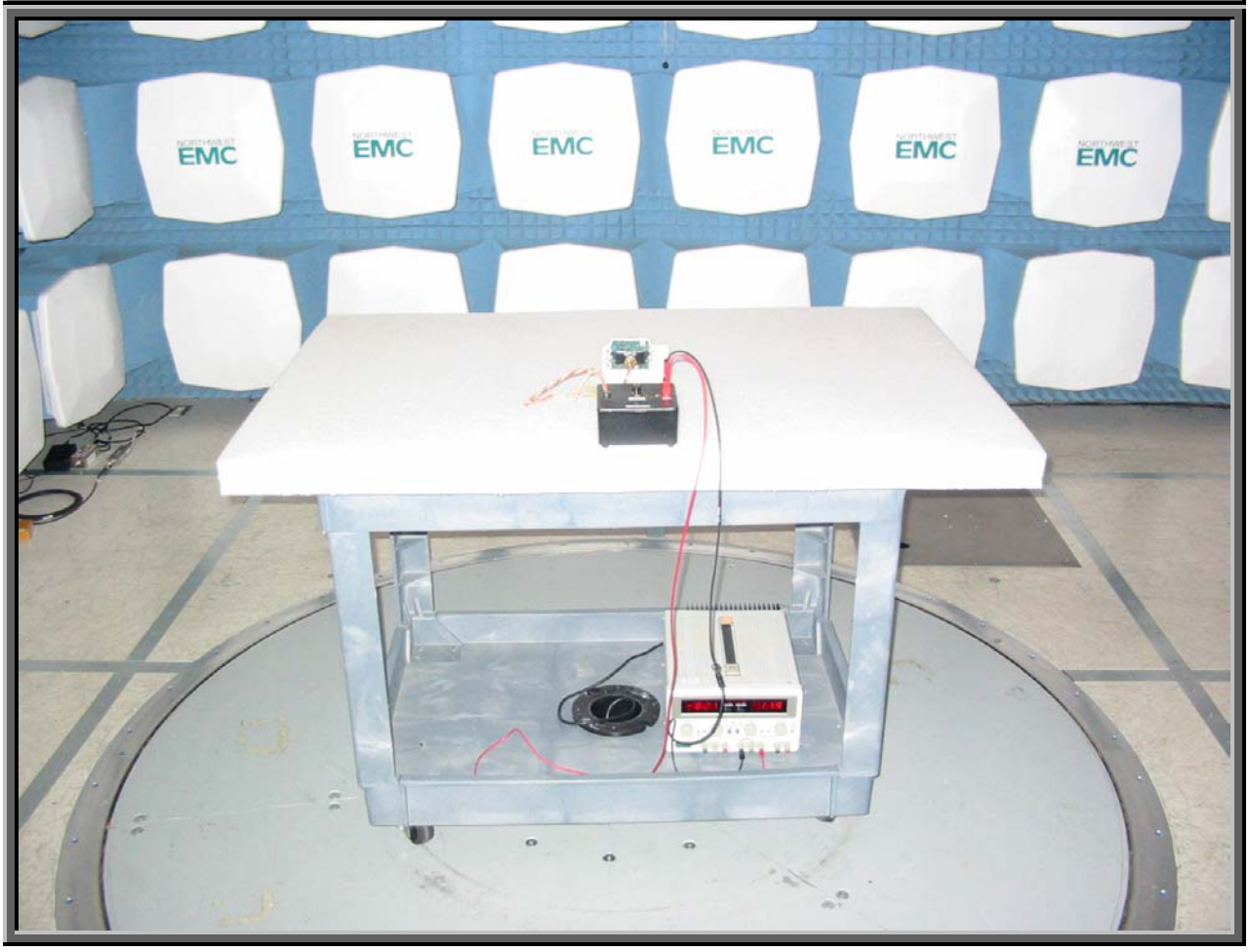
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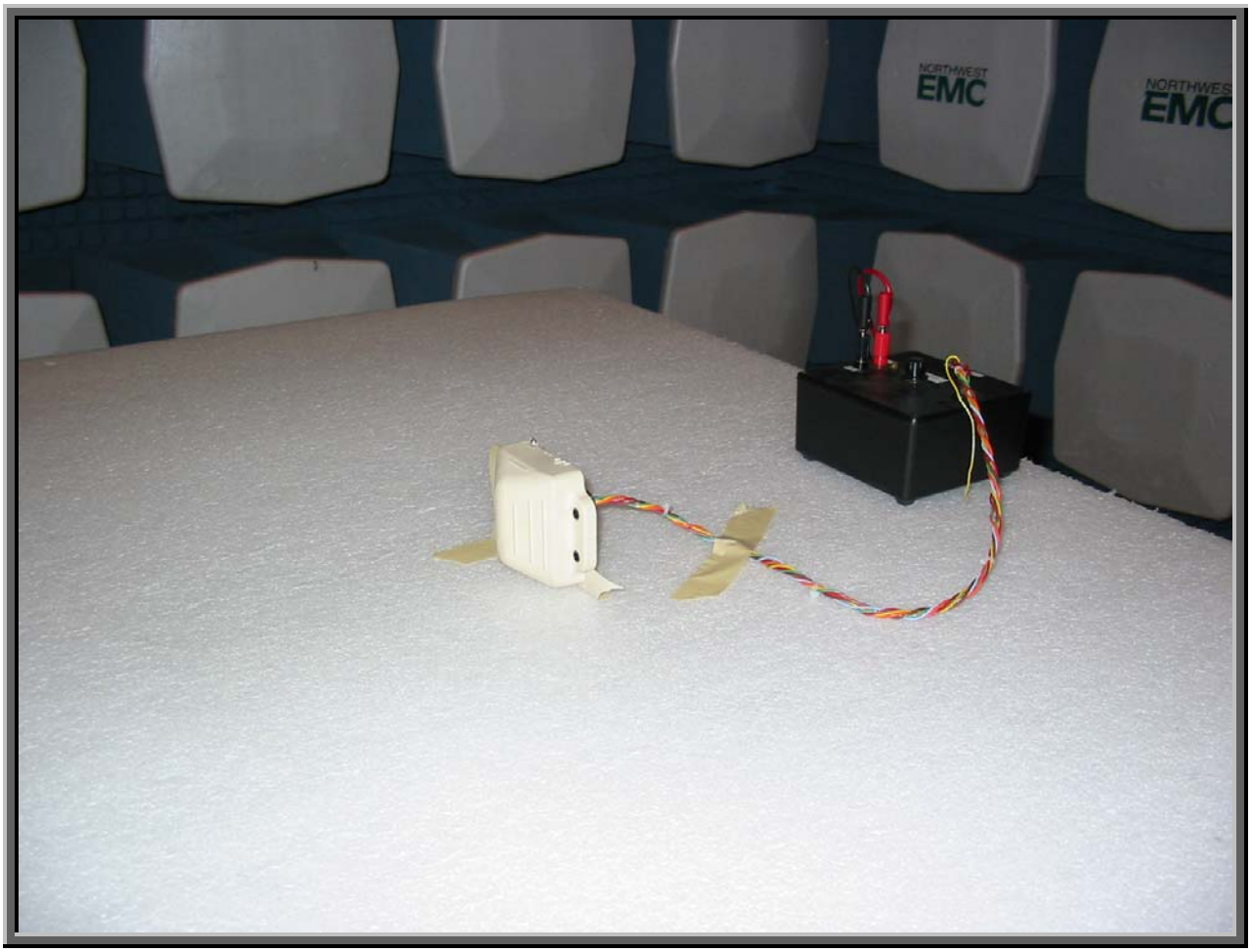
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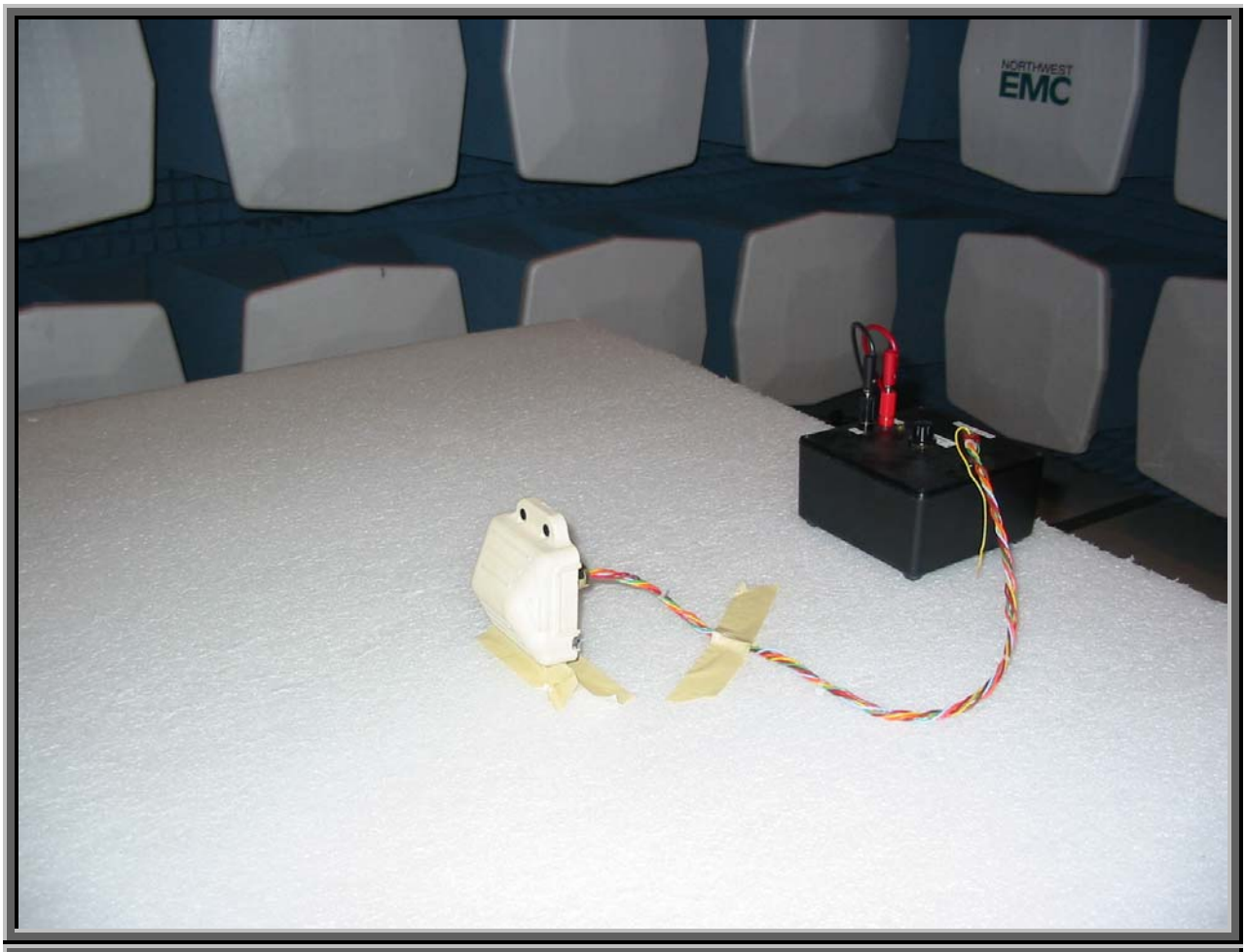
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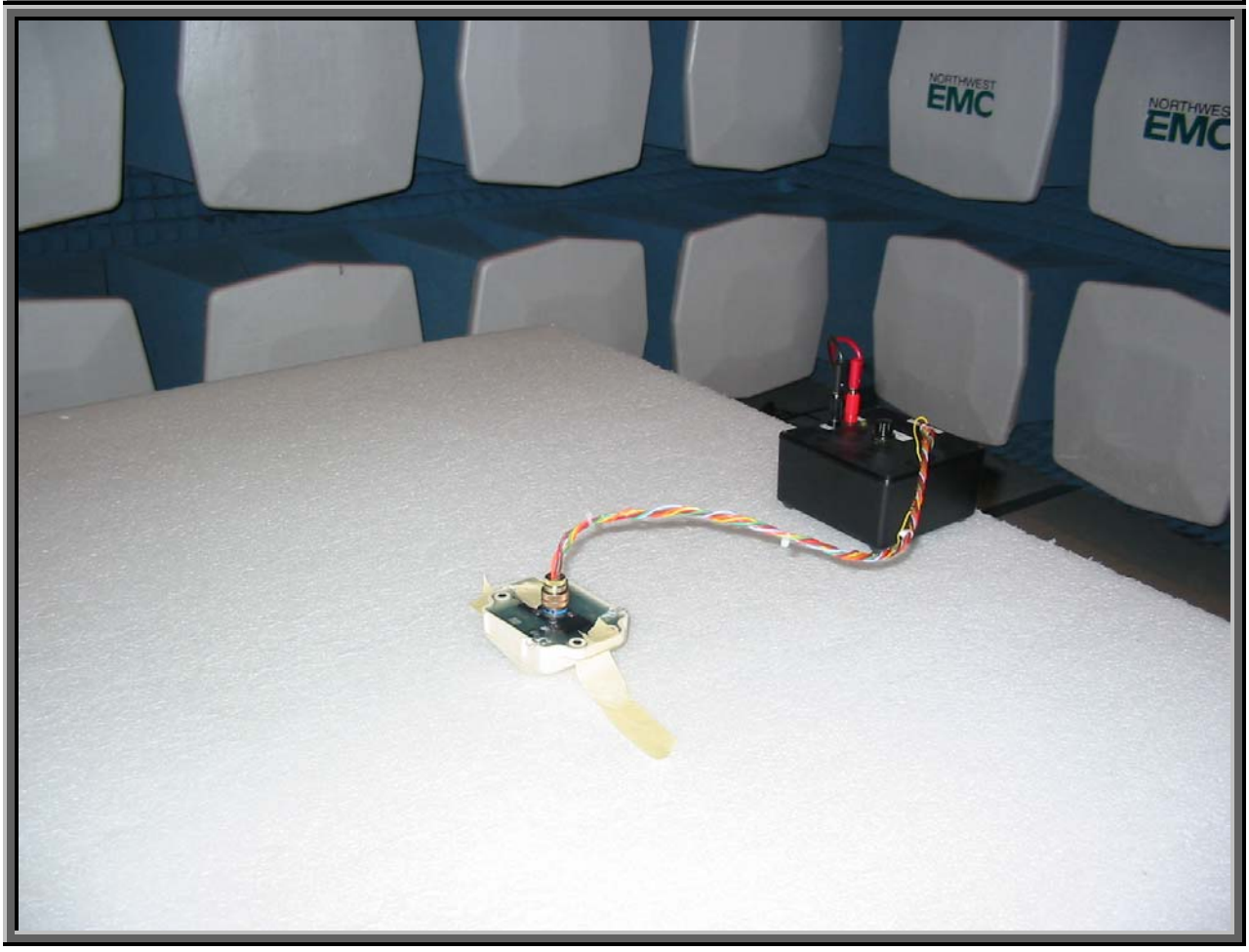
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