

# Spectrum Technology, Inc.

## Sceptar II Paging Receiver

April 08, 2008

Report No. SPTE0082

Report Prepared By



[www.nwemc.com](http://www.nwemc.com)

1-888-EMI-CERT

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**EMC Test Report**

**Certificate of Test**  
**Issue Date: April 08, 2008**  
**Spectrum Technology, Inc.**  
**Model: Sceptar II Paging Receiver**

Emissions			
Test Description	Specification	Test Method	Pass/Fail
Spurious Radiated Emissions of the Receiver	FCC 15.109:2007	ANSI C63.4:2003	Pass

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

### Test Facility

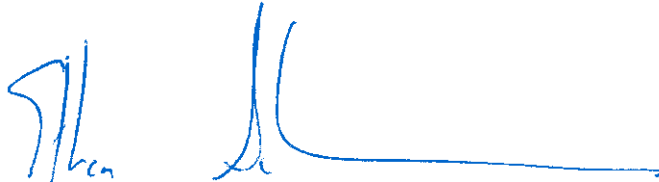
The measurement facility used to collect the data is located at:

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 (Site Filing #3496A).

Approved By:



Ethan Schoonover, Sultan Lab Manager



NVLAP Lab Code: 200630-0

*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 accredited under the United States Department of Commerce, National Institute of Standards and Technology, and National Voluntary Laboratory Accreditation Program for satisfactory compliance with the requirements of ISO/IEC 17025 for Testing Laboratories. The NVLAP accreditation encompasses Electromagnetic Compatibility Testing in accordance with the European Union EMC Directive 2004/108/EC, and ANSI C63.4. Additionally, Northwest EMC is accredited by NVLAP to perform radio testing in accordance with the European Union R&TTE Directive 1999/5/EEC, the requirements of FCC, and the RSS radio standards for Industry Canada.



NVLAP LAB CODE 200629-0  
 NVLAP LAB CODE 200630-0  
 NVLAP LAB CODE 200676-0  
 NVLAP LAB CODE 200761-0

**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. USA0604C.



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



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



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



**VCCI:** Accepted as an Associate Member to the VCCI, Acceptance No. 564. Conducted and radiated measurement facilities have been registered in accordance with Regulations for Voluntary Control Measures, Article 8. (*Registration Numbers. - Hillsboro: C-1071, R-1025, C-2687, T-289, and R-2318, Irvine: R-1943, C-2766, and T-298, Sultan: R-871, C-1784, and T-294.*)



**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



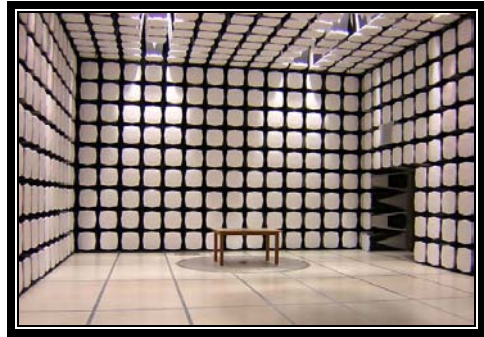
**MIC:** Northwest EMC, Inc is a CAB designated by MRA partners and recognized by Korea. (*Assigned Lab Numbers: Hillsboro: US0017, Irvine: US0158, Sultan: US0157*)



## SCOPE

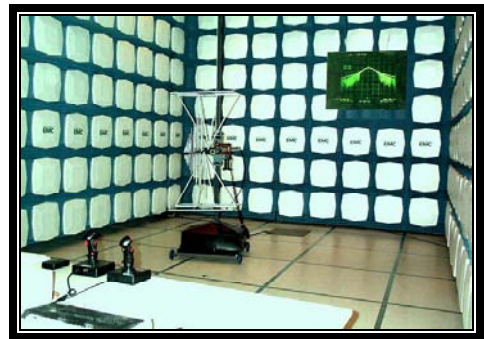
For details on the Scopes of our Accreditations, please visit:

<http://www.nwemc.com/scope.asp>



**California – Orange County Facility  
Labs OC01 – OC13**

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



**Oregon – Evergreen Facility  
Labs EV01 – EV11**

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



**Washington – Sultan Facility  
Labs SU01 – SU07**

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

**Party Requesting the Test**

<b>Company Name:</b>	Spectrum Technology, Inc.
<b>Address:</b>	209 Dayton Street Suite #205
<b>City, State, Zip:</b>	Edmonds, WA 98020
<b>Test Requested By:</b>	Rod Munro
<b>Model:</b>	Sceptar II Paging Receiver
<b>First Date of Test:</b>	April 4, 2008
<b>Last Date of Test:</b>	April 4, 2008
<b>Receipt Date of Samples:</b>	April 4, 2008
<b>Equipment Design Stage:</b>	Production
<b>Equipment Condition:</b>	No Damage

**Information Provided by the Party Requesting the Test****Functional Description of the EUT (Equipment Under Test):**

Scanning UHF receiver operating in the 443-453MHz, 453-463MHz, 463-473MHz bands.

**Testing Objective:**

Certification of Part 15 scanning receiver. UHF portion only. Battery powered.

**EUT Photo**

**CONFIGURATION 1 SPTE0082**

<b>EUT</b>			
<b>Description</b>	<b>Manufacturer</b>	<b>Model/Part Number</b>	<b>Serial Number</b>
UHF - M	SCA	Sceptar II Paging Receiver	UHF-M1
UHF - M	SCA	Sceptar II Paging Receiver	UHF-M2

**CONFIGURATION 2 SPTE0082**

<b>EUT</b>			
<b>Description</b>	<b>Manufacturer</b>	<b>Model/Part Number</b>	<b>Serial Number</b>
UHF - H	SCA	Sceptar II Paging Receiver	UHF-H1
UHF - H	SCA	Sceptar II Paging Receiver	UHF-H2

**CONFIGURATION 3 SPTE0082**

<b>EUT</b>			
<b>Description</b>	<b>Manufacturer</b>	<b>Model/Part Number</b>	<b>Serial Number</b>
UHF-HH	SCA	Sceptar II Paging Receiver	UHF-HH Sample 1
UHF-HH	SCA	Sceptar II Paging Receiver	UHF-HH Sample 2



**Equipment modifications**

Item	Date	Test	Modification	Note	Disposition of EUT
1	4/4/2008	Spurious Radiated Emissions of the Receiver	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

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

#### MODES OF OPERATION

UHF-HH Sample 1 receiving Ch 1, 464MHz. UHF-HH Sample 2 receiving Ch2, 472MHz.  
 UHF-H1 receiving Channel 1, 454MHz. UHF-H2 receiving Channel 2, 462MHz.  
 UHF-M1 receiving Channel 1, 443MHz. UHF-M2 receiving Channel 2, 452MHz.

#### POWER SETTINGS INVESTIGATED

Battery

#### FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	6 GHz
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#### SAMPLE CALCULATIONS

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

#### TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4446A	AAT	12/7/2007	13
Pre-Amplifier	Miteq	AMF-4D-010100-24-10P	APW	1/3/2008	13
Antenna, Horn	EMCO	3115	AHC	8/24/2006	24
EV01 Cables		Double Ridge Horn Cables	EVB	1/3/2008	13
EV01 Cables		Bilog Cables	EVA	10/23/2007	13
Pre-Amplifier	Miteq	AM-1616-1000	AOL	12/29/2006	16
Antenna, Biconilog	EMCO	3141	AXE	1/15/2008	24

#### MEASUREMENT BANDWIDTHS

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

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

#### MEASUREMENT UNCERTAINTY

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

#### TEST DESCRIPTION

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.

Tests were made with the antenna positioned in both the horizontal and vertical planes of polarization. The antenna 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 3 meters or 10 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.

EUT:	Sceptar II Paging Receiver	Work Order:	SPTE0082
Serial Number:	UHF-M1, UHF-M2	Date:	04/04/08
Customer:	Spectrum Technology, Inc.	Temperature:	21
Attendees:	None	Humidity:	26%
Project:	None	Barometric Pres.:	1015.5
Tested by:	Holly Ashkannejhad	Power:	Battery
		Job Site:	EV01

TEST SPECIFICATIONS		Test Method
FCC 15.109:2007		ANSI C63.4:2003

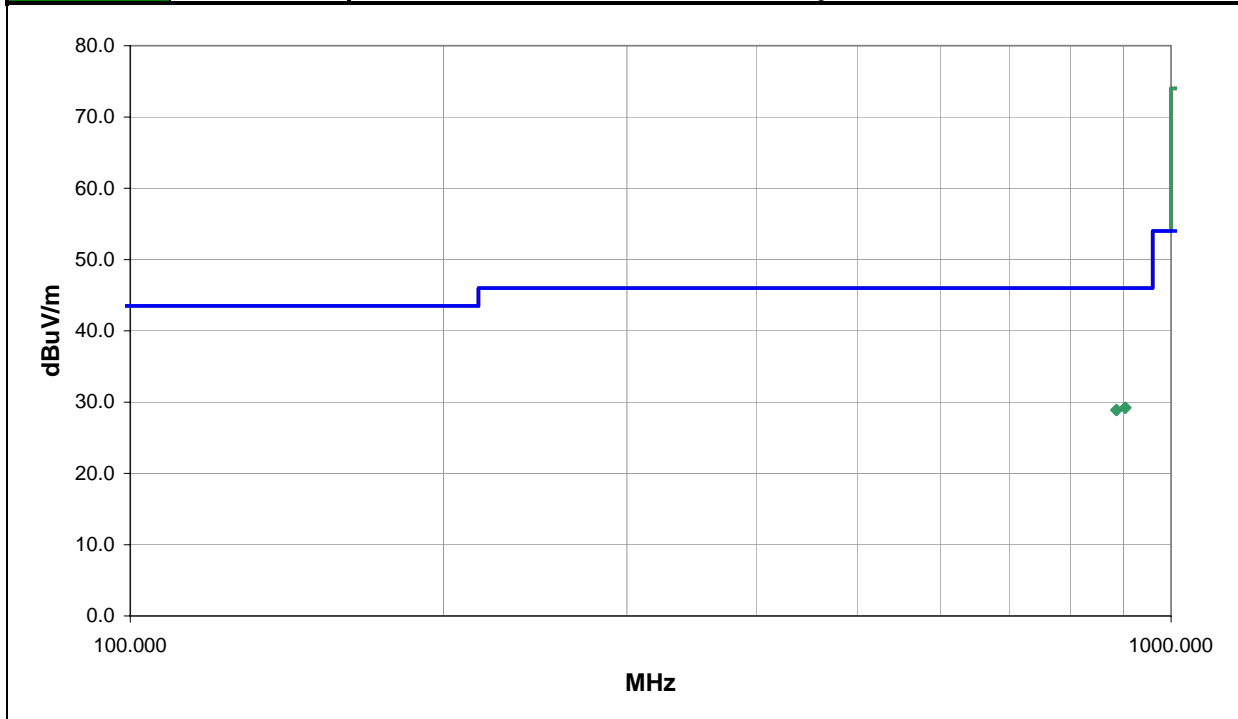
TEST PARAMETERS			
Antenna Height(s) (m)	1 - 4	Test Distance (m)	3

**COMMENTS**  
443-453MHz band. Two scanning UHF receivers on table. One set to low channel; one set to high channel. Earphone ports not populated (not a standard audio jack).

**EUT OPERATING MODES**  
UHF-M1 receiving Channel 1, 443MHz. UHF-M2 receiving Channel 2, 452MHz.

**DEVIATIONS FROM TEST STANDARD**  
No deviations.

Run #	1	Signature <i>Holly Ashkannejhad</i>
Configuration #	1	
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)
903.607	16.8	12.4	22.0	1.0	3.0	0.0	H-Bilog	QP	0.0	29.2	46.0	-16.8
903.853	16.8	12.4	198.0	1.0	3.0	0.0	V-Bilog	QP	0.0	29.2	46.0	-16.8
886.056	16.7	12.2	289.0	1.0	3.0	0.0	H-Bilog	QP	0.0	28.9	46.0	-17.1
886.324	16.7	12.2	354.0	1.0	3.0	0.0	V-Bilog	QP	0.0	28.9	46.0	-17.1

EUT:	Sceptar II Paging Receiver	Work Order:	SPTE0082
Serial Number:	UHF-M1, UHF-M2	Date:	04/04/08
Customer:	Spectrum Technology, Inc.	Temperature:	21
Attendees:	None	Humidity:	26%
Project:	None	Barometric Pres.:	1015.5
Tested by:	Holly Ashkannejhad	Power:	Battery
		Job Site:	EV01

<b>TEST SPECIFICATIONS</b>		Test Method
FCC 15.109:2007		ANSI C63.4:2003

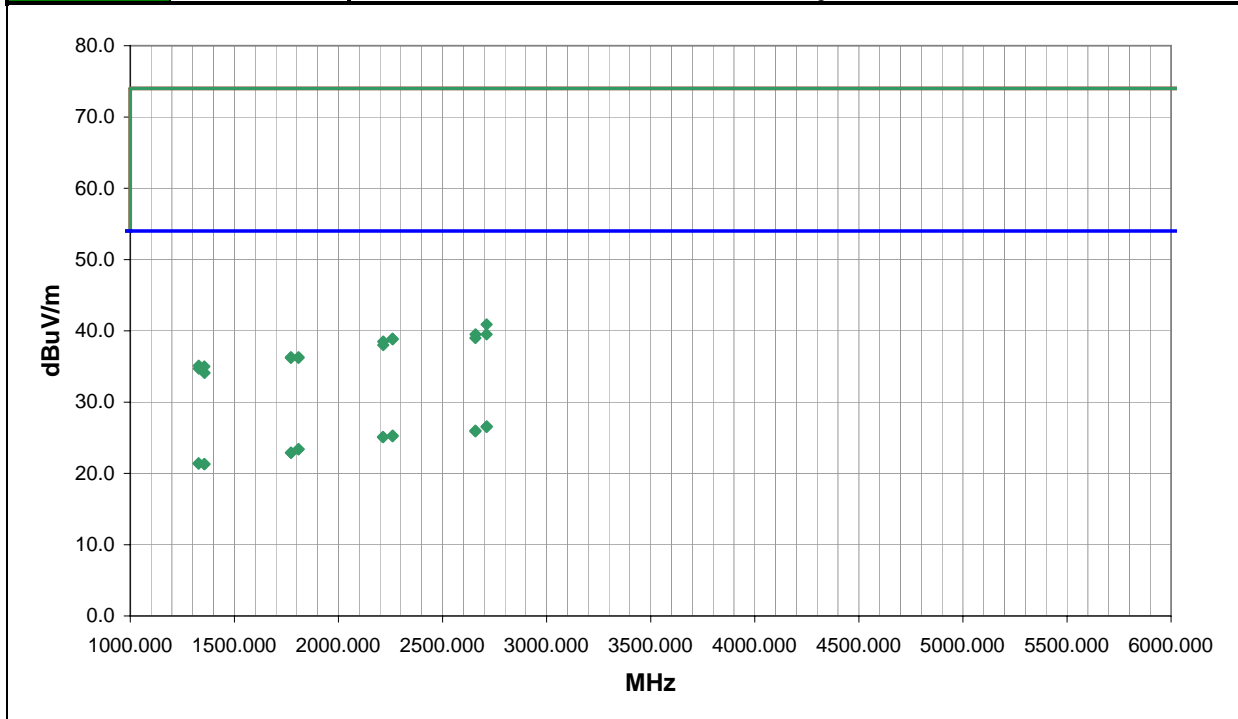
<b>TEST PARAMETERS</b>			
Antenna Height(s) (m)	1 - 4	Test Distance (m)	3

**COMMENTS**  
443-453MHz band. Two scanning UHF receivers on table. One set to low channel; one set to high channel. Earphone ports not populated (not a standard audio jack).

**EUT OPERATING MODES**  
UHF-M1 receiving Channel 1, 443MHz. UHF-M2 receiving Channel 2, 452MHz.

**DEVIATIONS FROM TEST STANDARD**  
No deviations.

Run #	3	Signature <i>Holly Ashkannejhad</i>
Configuration #	1	
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	Spec. (dB)	Compared to Spec. (dB)
2712.439	23.8	2.8	259.0	1.0	3.0	0.0	H-Horn	AV	0.0	26.6	54.0	-27.4	
2711.921	23.7	2.8	52.0	2.9	3.0	0.0	V-Horn	AV	0.0	26.5	54.0	-27.5	
2657.944	23.3	2.7	147.0	1.0	3.0	0.0	H-Horn	AV	0.0	26.0	54.0	-28.0	
2657.766	23.2	2.7	136.0	1.3	3.0	0.0	V-Horn	AV	0.0	25.9	54.0	-28.1	
2260.583	24.2	1.1	360.0	2.4	3.0	0.0	V-Horn	AV	0.0	25.3	54.0	-28.7	
2260.139	24.1	1.1	222.0	1.0	3.0	0.0	H-Horn	AV	0.0	25.2	54.0	-28.8	
2214.040	24.2	0.9	125.0	1.0	3.0	0.0	V-Horn	AV	0.0	25.1	54.0	-28.9	
2214.784	24.2	0.9	201.0	2.6	3.0	0.0	H-Horn	AV	0.0	25.1	54.0	-28.9	
1807.586	24.2	-0.8	147.0	1.0	3.0	0.0	H-Horn	AV	0.0	23.4	54.0	-30.6	
1808.791	24.2	-0.8	360.0	1.0	3.0	0.0	V-Horn	AV	0.0	23.4	54.0	-30.6	
1771.399	24.0	-1.1	242.0	2.2	3.0	0.0	H-Horn	AV	0.0	22.9	54.0	-31.1	
1772.259	24.0	-1.1	360.0	2.2	3.0	0.0	V-Horn	AV	0.0	22.9	54.0	-31.1	
1328.426	24.6	-3.2	130.0	1.9	3.0	0.0	H-Horn	AV	0.0	21.4	54.0	-32.6	
1328.429	24.6	-3.2	154.0	1.0	3.0	0.0	V-Horn	AV	0.0	21.4	54.0	-32.6	
1355.636	24.5	-3.2	10.0	1.0	3.0	0.0	H-Horn	AV	0.0	21.3	54.0	-32.7	
1355.882	24.5	-3.2	195.0	1.0	3.0	0.0	V-Horn	AV	0.0	21.3	54.0	-32.7	
2712.120	38.1	2.8	259.0	1.0	3.0	0.0	H-Horn	PK	0.0	40.9	74.0	-33.1	
2711.530	36.7	2.8	52.0	2.9	3.0	0.0	V-Horn	PK	0.0	39.5	74.0	-34.5	
2658.347	36.8	2.7	147.0	1.0	3.0	0.0	H-Horn	PK	0.0	39.5	74.0	-34.5	
2657.918	36.3	2.7	136.0	1.3	3.0	0.0	V-Horn	PK	0.0	39.0	74.0	-35.0	
2260.130	37.8	1.1	360.0	2.4	3.0	0.0	V-Horn	PK	0.0	38.9	74.0	-35.1	

<b>Freq (MHz)</b>	<b>Amplitude (dBuV)</b>	<b>Factor (dB)</b>	<b>Azimuth (degrees)</b>	<b>Height (meters)</b>	<b>Distance (meters)</b>	<b>External Attenuation (dB)</b>	<b>Polarity</b>	<b>Detector</b>	<b>Distance Adjustment (dB)</b>	<b>Adjusted dBuV/m</b>	<b>Spec. Limit dBuV/m</b>	<b>Compared to Spec. (dB)</b>
2260.257	37.7	1.1	222.0	1.0	3.0	0.0	H-Horn	PK	0.0	38.8	74.0	-35.2
2214.998	37.6	0.9	125.0	1.0	3.0	0.0	V-Horn	PK	0.0	38.5	74.0	-35.5
2215.062	37.1	0.9	201.0	2.6	3.0	0.0	H-Horn	PK	0.0	38.0	74.0	-36.0
1771.842	37.4	-1.1	242.0	2.2	3.0	0.0	H-Horn	PK	0.0	36.3	74.0	-37.7
1808.448	37.1	-0.8	147.0	1.0	3.0	0.0	H-Horn	PK	0.0	36.3	74.0	-37.7
1771.585	37.3	-1.1	360.0	2.2	3.0	0.0	V-Horn	PK	0.0	36.2	74.0	-37.8
1807.612	37.0	-0.8	360.0	1.0	3.0	0.0	V-Horn	PK	0.0	36.2	74.0	-37.8
1329.227	38.3	-3.2	154.0	1.0	3.0	0.0	V-Horn	PK	0.0	35.1	74.0	-38.9
1355.560	38.2	-3.2	10.0	1.0	3.0	0.0	H-Horn	PK	0.0	35.0	74.0	-39.0
1329.092	37.9	-3.2	130.0	1.9	3.0	0.0	H-Horn	PK	0.0	34.7	74.0	-39.3
1356.362	37.3	-3.2	195.0	1.0	3.0	0.0	V-Horn	PK	0.0	34.1	74.0	-39.9

EUT:	Sceptar II Paging Receiver	Work Order:	SPTE0082
Serial Number:	UHF-H1, UHF-H2	Date:	04/04/08
Customer:	Spectrum Technology, Inc.	Temperature:	21
Attendees:	None	Humidity:	26%
Project:	None	Barometric Pres.:	1015.5
Tested by:	Holly Ashkannejhad	Power:	Battery
		Job Site:	EV01

<b>TEST SPECIFICATIONS</b>		Test Method
FCC 15.109:2007		ANSI C63.4:2003

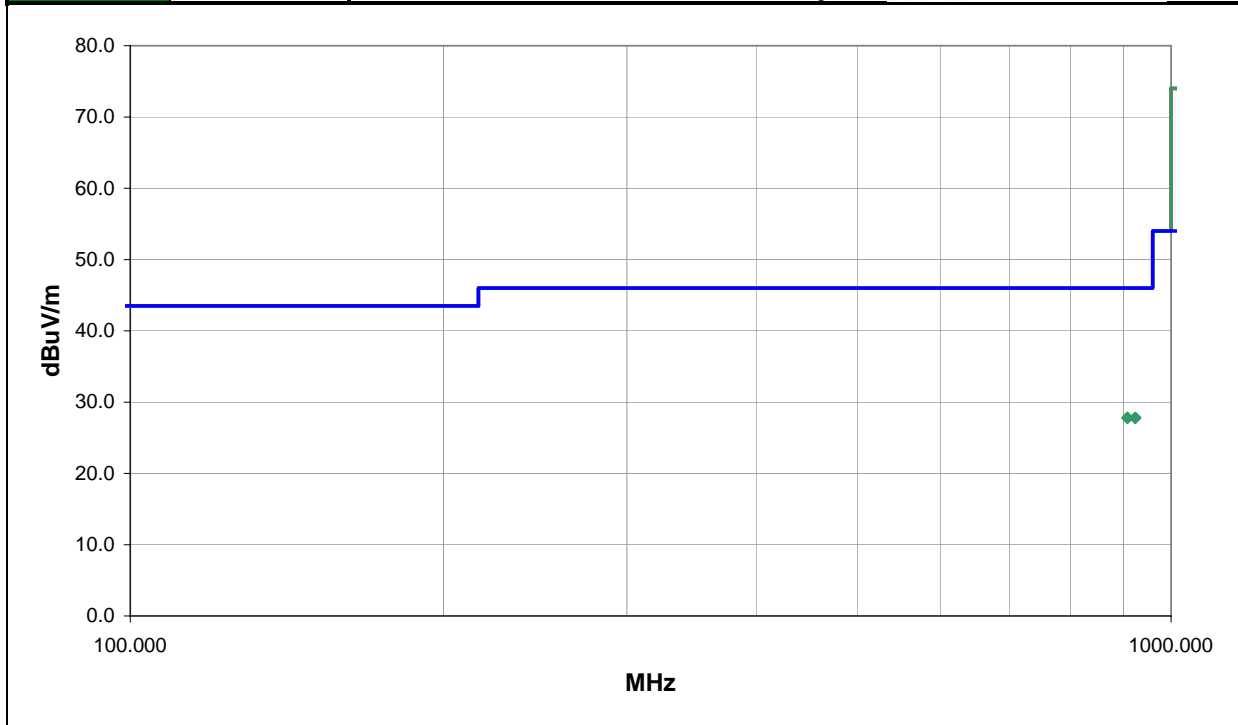
<b>TEST PARAMETERS</b>			
Antenna Height(s) (m)	1 - 4	Test Distance (m)	3

**COMMENTS**  
453-463MHz band. Two scanning UHF receivers on table. One set to low channel; set to high channel.

**EUT OPERATING MODES**  
UHF-H1 receiving Channel 1, 454MHz. UHF-H2 receiving Channel 2, 462MHz.

**DEVIATIONS FROM TEST STANDARD**  
No deviations.

Run #	4	Signature <i>Holly Ashkannejhad</i>
Configuration #	2	
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)
907.881	15.3	12.5	302.0	1.0	3.0	0.0	H-Bilog	QP	0.0	27.8	46.0	-18.2
908.042	15.3	12.5	84.0	1.0	3.0	0.0	V-Bilog	QP	0.0	27.8	46.0	-18.2
923.832	15.2	12.6	175.0	1.0	3.0	0.0	H-Bilog	QP	0.0	27.8	46.0	-18.2
923.868	15.2	12.6	257.0	1.0	3.0	0.0	V-Bilog	QP	0.0	27.8	46.0	-18.2

EUT:	Sceptar II Paging Receiver	Work Order:	SPTE0082
Serial Number:	UHF-H1, UHF-H2	Date:	04/04/08
Customer:	Spectrum Technology, Inc.	Temperature:	21
Attendees:	None	Humidity:	26%
Project:	None	Barometric Pres.:	1015.5
Tested by:	Holly Ashkannejhad	Power:	Battery
		Job Site:	EV01

TEST SPECIFICATIONS		Test Method
FCC 15.109:2007		ANSI C63.4:2003

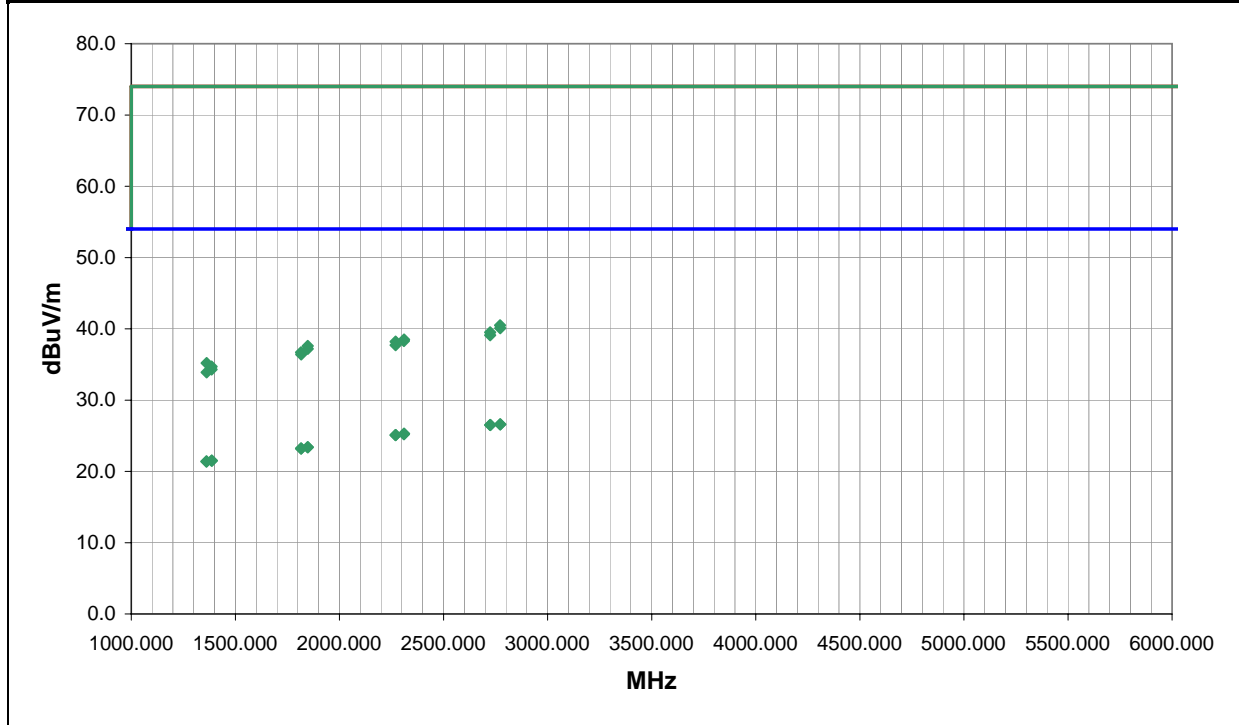
TEST PARAMETERS		
Antenna Height(s) (m)	1 - 4	Test Distance (m)
		3

**COMMENTS**  
453-463MHz band. Two scanning UHF receivers on table. One set to low channel; set to high channel.

**EUT OPERATING MODES**  
UHF-H1 receiving Channel 1, 454MHz. UHF-H2 receiving Channel 2, 462MHz.

**DEVIATIONS FROM TEST STANDARD**  
No deviations.

Run #	5	Signature <i>Holly Ashkannejhad</i>
Configuration #	2	
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)
2772.142	23.6	3.0	75.0	1.0	3.0	0.0	H-Horn	AV	0.0	26.6	54.0	-27.4
2772.523	23.6	3.0	279.0	2.7	3.0	0.0	V-Horn	AV	0.0	26.6	54.0	-27.4
2723.689	23.7	2.8	115.0	3.5	3.0	0.0	H-Horn	AV	0.0	26.5	54.0	-27.5
2724.779	23.7	2.8	107.0	1.0	3.0	0.0	V-Horn	AV	0.0	26.5	54.0	-27.5
2310.321	24.0	1.3	297.0	1.0	3.0	0.0	H-Horn	AV	0.0	25.3	54.0	-28.7
2309.387	23.9	1.3	37.0	2.5	3.0	0.0	V-Horn	AV	0.0	25.2	54.0	-28.8
2269.444	24.0	1.1	360.0	3.4	3.0	0.0	H-Horn	AV	0.0	25.1	54.0	-28.9
2270.104	24.0	1.1	196.0	1.7	3.0	0.0	V-Horn	AV	0.0	25.1	54.0	-28.9
1847.766	24.0	-0.6	213.0	1.0	3.0	0.0	V-Horn	AV	0.0	23.4	54.0	-30.6
1848.000	24.0	-0.6	149.0	1.0	3.0	0.0	H-Horn	AV	0.0	23.4	54.0	-30.6
1815.623	24.0	-0.8	84.0	1.5	3.0	0.0	V-Horn	AV	0.0	23.2	54.0	-30.8
1816.072	24.0	-0.8	349.0	2.8	3.0	0.0	H-Horn	AV	0.0	23.2	54.0	-30.8
1386.263	24.4	-2.9	200.0	2.9	3.0	0.0	V-Horn	AV	0.0	21.5	54.0	-32.5
1386.896	24.4	-2.9	111.0	1.0	3.0	0.0	H-Horn	AV	0.0	21.5	54.0	-32.5
1361.280	24.5	-3.1	145.0	1.0	3.0	0.0	H-Horn	AV	0.0	21.4	54.0	-32.6
1361.402	24.5	-3.1	328.0	1.4	3.0	0.0	V-Horn	AV	0.0	21.4	54.0	-32.6
2771.575	37.5	3.0	279.0	2.7	3.0	0.0	V-Horn	PK	0.0	40.5	74.0	-33.5
2772.333	37.1	3.0	75.0	1.0	3.0	0.0	H-Horn	PK	0.0	40.1	74.0	-33.9
2723.885	36.7	2.8	115.0	3.5	3.0	0.0	H-Horn	PK	0.0	39.5	74.0	-34.5
2724.382	36.3	2.8	107.0	1.0	3.0	0.0	V-Horn	PK	0.0	39.1	74.0	-34.9
2310.428	37.2	1.3	37.0	2.5	3.0	0.0	V-Horn	PK	0.0	38.5	74.0	-35.5

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)
2310.017	37.0	1.3	297.0	1.0	3.0	0.0	H-Horn	PK	0.0	38.3	74.0	-35.7
2269.902	37.1	1.1	196.0	1.7	3.0	0.0	V-Horn	PK	0.0	38.2	74.0	-35.8
2270.155	36.6	1.1	360.0	3.4	3.0	0.0	H-Horn	PK	0.0	37.7	74.0	-36.3
1848.042	38.2	-0.6	149.0	1.0	3.0	0.0	H-Horn	PK	0.0	37.6	74.0	-36.4
1848.183	37.8	-0.6	213.0	1.0	3.0	0.0	V-Horn	PK	0.0	37.2	74.0	-36.8
1815.837	37.5	-0.8	349.0	2.8	3.0	0.0	H-Horn	PK	0.0	36.7	74.0	-37.3
1816.005	37.2	-0.8	84.0	1.5	3.0	0.0	V-Horn	PK	0.0	36.4	74.0	-37.6
1362.188	38.3	-3.1	328.0	1.4	3.0	0.0	V-Horn	PK	0.0	35.2	74.0	-38.8
1385.692	37.6	-2.9	111.0	1.0	3.0	0.0	H-Horn	PK	0.0	34.7	74.0	-39.3
1385.525	37.2	-2.9	200.0	2.9	3.0	0.0	V-Horn	PK	0.0	34.3	74.0	-39.7
1361.768	37.0	-3.1	145.0	1.0	3.0	0.0	H-Horn	PK	0.0	33.9	74.0	-40.1



EUT:	Sceptar II Paging Receiver	Work Order:	SPTE0082
Serial Number:	UHF-HH sample 1, UHF-HH sample 2	Date:	04/04/08
Customer:	Spectrum Technology, Inc.	Temperature:	21
Attendees:	None	Humidity:	26%
Project:	None	Barometric Pres.:	1015.5
Tested by:	Holly Ashkannejhad	Power:	Battery
		Job Site:	EV01

<b>TEST SPECIFICATIONS</b>		Test Method
FCC 15.109:2007		ANSI C63.4:2003

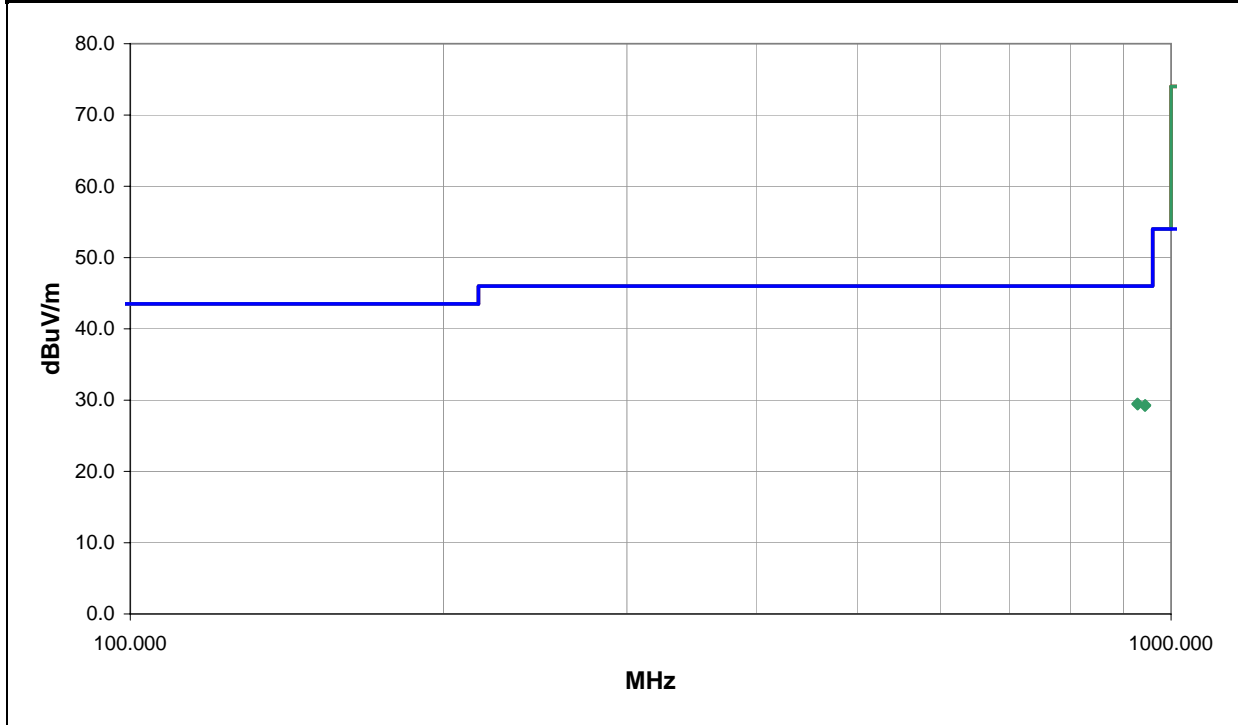
<b>TEST PARAMETERS</b>			
Antenna Height(s) (m)	1 - 4	Test Distance (m)	3

**COMMENTS**  
463-473MHz band. Two scanning UHF receivers on table. One set to low channel; set to high channel.

**EUT OPERATING MODES**  
UHF-HH Sample 1 receiving Ch 1, 464MHz. UHF-HH Sample 2 receiving Ch2, 472MHz.

**DEVIATIONS FROM TEST STANDARD**  
No deviations.

Run #	6	Signature <i>Holly Ashkannejhad</i>
Configuration #	3	
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)
928.431	16.8	12.7	55.0	1.0	3.0	0.0	H-Bilog	QP	0.0	29.5	46.0	-16.5
928.616	16.7	12.7	177.0	1.0	3.0	0.0	V-Bilog	QP	0.0	29.4	46.0	-16.6
944.417	16.8	12.5	359.0	2.1	3.0	0.0	H-Bilog	QP	0.0	29.3	46.0	-16.7
943.829	16.7	12.5	156.0	1.5	3.0	0.0	V-Bilog	QP	0.0	29.2	46.0	-16.8

EUT: Sceptar II Paging Receiver	Work Order: SPTE0082
Serial Number: UHF-HH sample 1, UHF-HH sample 2	Date: 04/04/08
Customer: Spectrum Technology, Inc.	Temperature: 21
Attendees: None	Humidity: 26%
Project: None	Barometric Pres.: 1015.5
Tested by: Holly Ashkannejhad	Power: Battery
	Job Site: EV01

TEST SPECIFICATIONS		Test Method
FCC 15.109:2007		ANSI C63.4:2003

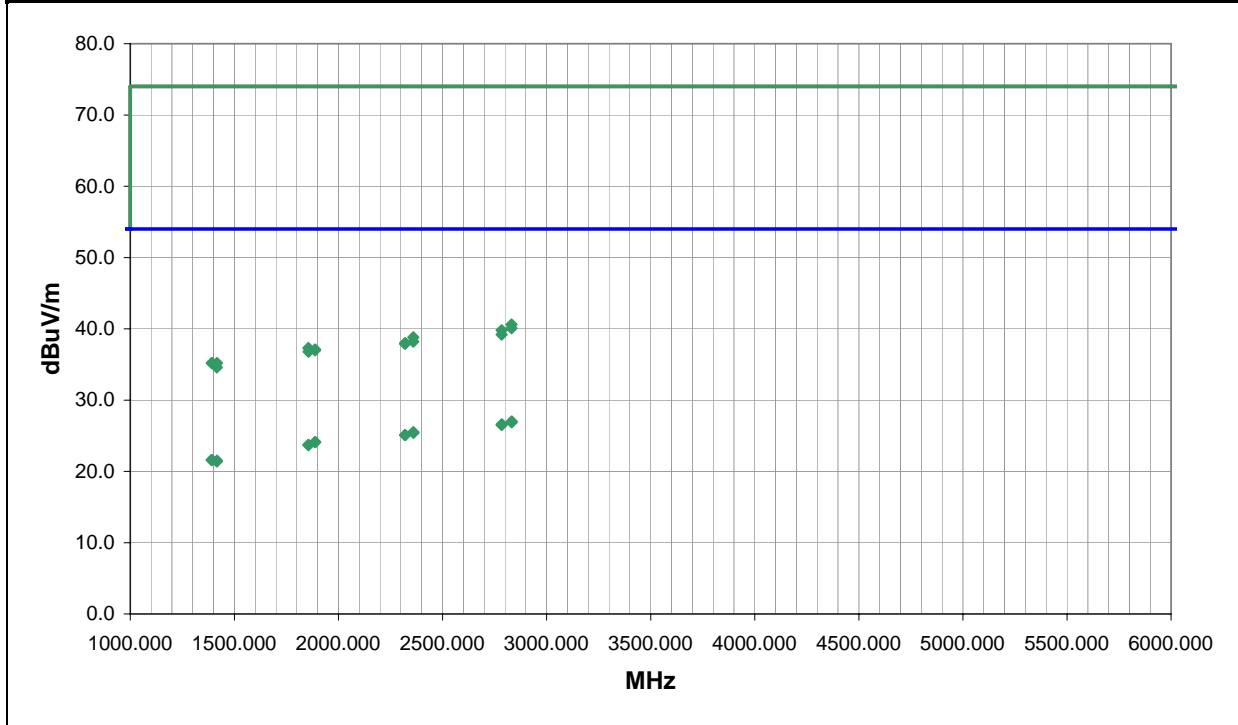
TEST PARAMETERS		
Antenna Height(s) (m)	1 - 4	Test Distance (m)
		3

**COMMENTS**  
463-473MHz band. Two scanning UHF receivers on table. One set to low channel; set to high channel.

**EUT OPERATING MODES**  
UHF-HH Sample 1 receiving Ch 1, 464MHz. UHF-HH Sample 2 receiving Ch2, 472MHz.

**DEVIATIONS FROM TEST STANDARD**  
No deviations.

Run #	7	Signature <i>Holly Ashkannejhad</i>
Configuration #	3	
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)
2832.507	23.6	3.4	222.0	2.5	3.0	0.0	V-Horn	AV	0.0	27.0	54.0	-27.0
2832.422	23.5	3.4	9.0	1.0	3.0	0.0	H-Horn	AV	0.0	26.9	54.0	-27.1
2784.781	23.5	3.1	288.0	1.0	3.0	0.0	H-Horn	AV	0.0	26.6	54.0	-27.4
2784.349	23.4	3.1	135.0	1.0	3.0	0.0	V-Horn	AV	0.0	26.5	54.0	-27.5
2359.426	23.9	1.6	33.0	1.0	3.0	0.0	H-Horn	AV	0.0	25.5	54.0	-28.5
2360.182	23.8	1.6	204.0	1.0	3.0	0.0	V-Horn	AV	0.0	25.4	54.0	-28.6
2319.937	23.7	1.4	219.0	1.0	3.0	0.0	H-Horn	AV	0.0	25.1	54.0	-28.9
2320.272	23.7	1.4	-1.0	2.5	3.0	0.0	V-Horn	AV	0.0	25.1	54.0	-28.9
1887.990	24.3	-0.2	333.0	2.3	3.0	0.0	H-Horn	AV	0.0	24.1	54.0	-29.9
1888.548	24.3	-0.2	119.0	2.0	3.0	0.0	V-Horn	AV	0.0	24.1	54.0	-29.9
1855.204	24.2	-0.5	186.0	1.0	3.0	0.0	V-Horn	AV	0.0	23.7	54.0	-30.3
1856.249	24.2	-0.5	215.0	1.0	3.0	0.0	H-Horn	AV	0.0	23.7	54.0	-30.3
1391.276	24.5	-2.9	237.0	3.0	3.0	0.0	H-Horn	AV	0.0	21.6	54.0	-32.4
1391.453	24.5	-2.9	146.0	3.2	3.0	0.0	V-Horn	AV	0.0	21.6	54.0	-32.4
1416.233	24.4	-2.9	286.0	1.0	3.0	0.0	H-Horn	AV	0.0	21.5	54.0	-32.5
1416.186	24.3	-2.9	324.0	2.9	3.0	0.0	V-Horn	AV	0.0	21.4	54.0	-32.6
2831.543	37.2	3.4	222.0	2.5	3.0	0.0	V-Horn	PK	0.0	40.6	74.0	-33.4
2831.623	36.7	3.4	9.0	1.0	3.0	0.0	H-Horn	PK	0.0	40.1	74.0	-33.9
2784.175	36.7	3.1	288.0	1.0	3.0	0.0	H-Horn	PK	0.0	39.8	74.0	-34.2
2783.807	36.1	3.1	135.0	1.0	3.0	0.0	V-Horn	PK	0.0	39.2	74.0	-34.8
2359.997	37.2	1.6	33.0	1.0	3.0	0.0	H-Horn	PK	0.0	38.8	74.0	-35.2

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)
2359.730	36.6	1.6	204.0	1.0	3.0	0.0	V-Horn	PK	0.0	38.2	74.0	-35.8
2320.472	36.6	1.4	219.0	1.0	3.0	0.0	H-Horn	PK	0.0	38.0	74.0	-36.0
2320.118	36.5	1.4	-1.0	2.5	3.0	0.0	V-Horn	PK	0.0	37.9	74.0	-36.1
1855.860	37.8	-0.5	215.0	1.0	3.0	0.0	H-Horn	PK	0.0	37.3	74.0	-36.7
1887.767	37.3	-0.2	333.0	2.3	3.0	0.0	H-Horn	PK	0.0	37.1	74.0	-36.9
1887.992	37.2	-0.2	119.0	2.0	3.0	0.0	V-Horn	PK	0.0	37.0	74.0	-37.0
1856.065	37.3	-0.5	186.0	1.0	3.0	0.0	V-Horn	PK	0.0	36.8	74.0	-37.2
1392.247	38.1	-2.9	146.0	3.2	3.0	0.0	V-Horn	PK	0.0	35.2	74.0	-38.8
1392.373	38.1	-2.9	237.0	3.0	3.0	0.0	H-Horn	PK	0.0	35.2	74.0	-38.8
1416.247	38.1	-2.9	324.0	2.9	3.0	0.0	V-Horn	PK	0.0	35.2	74.0	-38.8
1416.113	37.5	-2.9	286.0	1.0	3.0	0.0	H-Horn	PK	0.0	34.6	74.0	-39.4



