

Kogeto, LLC.

UPCS Radio Module

Report No. KOG0001

Report Prepared By



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

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EMC Test Report



22975 NW Evergreen Parkway
Suite 400
Hillsboro, Oregon 97124

Certificate of Test
Last Date of Test: September 29, 2010
Kogeto, LLC.
Model: UPCS Radio Module

Emissions			
Test Description	Specification	Test Method	Pass/Fail
Out of Band Emissions	FCC 15D:2010	ANSI C63.4:2003	Pass
Band Edge Compliance	FCC 15D:2010	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 #2834D-2).

Approved By:

Don Fecteau, IS 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		

Barometric Pressure

The recorded barometric pressure has been normalized to sea level.



Accreditations and Authorizations

FCC

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



NVLAP

Northwest EMC, Inc. is accredited under the United States Department of Commerce, National Institute of Standards and Technology, and National Voluntary Laboratory Accreditation Program for satisfactory compliance with the requirements of ISO/IEC 17025 for Testing Laboratories. The NVLAP accreditation encompasses Electromagnetic Compatibility Testing in accordance with the European Union EMC Directive 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
NVLAP LAB CODE 200881-0

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-Gen, Issue 2 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. (*Site Filing Numbers - Hillsboro: 2834D-1, 2834D-2, Sultan: 2834C-1, Irvine: 2834B-1, 2834B-2, Brooklyn Park: 2834E-1*)



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.



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, G-84, C-2687, T-1658, and R-2318, Irvine: R-1943, G-85, C-2766, and T-1659, Sultan: R-871, G-83, C-1784, and T-1511, Brooklyn Park: R-3125, G-86, G-141, C-3464, and T-1634).



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 (US0017). 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



KCC

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



VIETNAM

Vietnam MIC has approved Northwest EMC as an accredited test lab. Per Decision No. 194/QD-QLCL (dated December 15, 2009), Northwest EMC test reports can be used for Vietnam approval submissions.



SCOPE

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

<http://www.nwemc.com/accreditations/>



Northwest EMC Locations



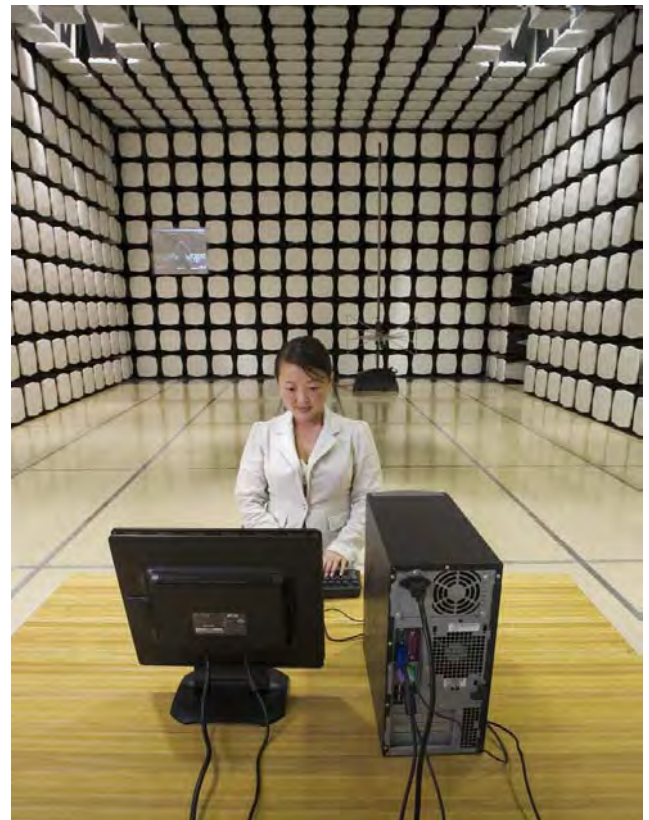
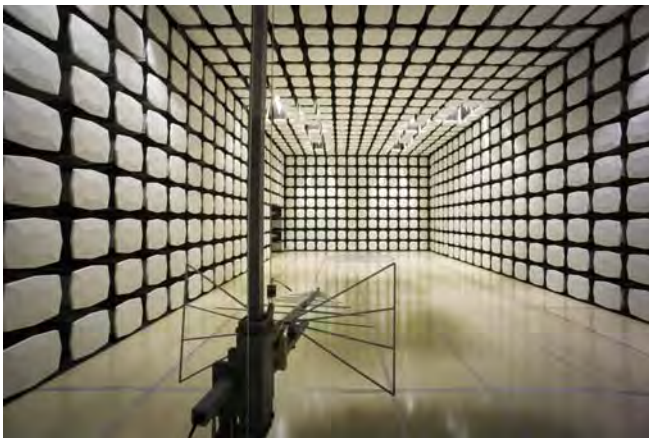
Oregon
Labs EV01-EV12
22975 NW Evergreen Pkwy
Suite 400
Hillsboro, OR 97124
(503) 844-4066

California
Labs OC01-OC13
41 Tesla
Irvine, CA 92618
(949) 861-8918

Minnesota
Labs MN01-MN08
9349 W Broadway Ave.
Brooklyn Park,
MN 55445
(763) 425-2281

Washington
Labs SU01-SU07
14128 339th Ave. SE
Sultan, WA 98294
(360) 793-8675

New York
Labs WA01-WA04
4939 Jordan Rd.
Elbridge, NY 13060
(315) 685-0796



Party Requesting the Test

Company Name:	Kogeto, LLC.
Address:	154 Grand St.
City, State, Zip:	New York, NY 10013
Test Requested By:	David Sosnow
Model:	UPCS radio module
First Date of Test:	September 28, 2010
Last Date of Test:	September 29, 2010
Receipt Date of Samples:	September 22, 2010
Equipment Design Stage:	Prototype
Equipment Condition:	No Damage

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

UPCS radio module

Testing Objective:

To demonstrate compliance with the spurious radiated emissions requirements of FCC 15D while tested in a stand-alone confirmation. This data along with the previous testing of this same radio under FCC ID: T5V02HDDUALNM will be used for modular approval of the radio.

Customer Provided Information:

The UPCS radio module will be used in Kogeto's, Model Lucy, which is a consumer-oriented panoramic video capturing system that provides an immersive video experience of a recorded environment. The system is designed to interface with a personal computer. It features a secondary HD video camera for a detailed perspective, and twin wireless microphones for high fidelity audio. The UPCS radio module is contained in the base unit of the system.

CONFIGURATION 1 KOGE0001**EUT**

Description	Manufacturer	Model/Part Number	Serial Number
EUT	Revolabs.	UPCS Radio Module	None

Peripherals in test setup boundary

Description	Manufacturer	Model/Part Number	Serial Number
Power Brick	Revolabs	None	None

Cables

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Power leads	No	1.6m	No	Power Brick	EUT
USB	Yes	1.2m	No	EUT	Unterminated
Audio x4	No	1.4m	No	EUT	Unterminated
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Equipment modifications					
Item	Date	Test	Modification	Note	Disposition of EUT
1	9/28/2010	Out of Band Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
2	9/29/2010	Band Edge	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

Tx

POWER SETTINGS INVESTIGATED

120VAC/60Hz

FREQUENCY RANGE INVESTIGATED

Start Frequency	30MHz	Stop Frequency	26000MHz
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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
Antenna, Horn	ETS Lindgren	3160-09	AIV	NCR	0
Cable	ESM Cable Corp.	KMKM-72	EYV	9/15/2010	13
Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AVU	9/15/2010	13
Antenna, Horn	ETS	3160-08	AIA	NCR	0
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVI	7/14/2010	13
Antenna, Horn	ETS	3160.07	AHZ	9/8/2010	24
EV12 Cables	N/A	Standard Gain Horn Cables	EVU	7/14/2010	13
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVH	7/14/2010	13
Antenna, Horn	ETS	3115	AIB	9/8/2010	24
EV12 Cables	N/A	Double Ridge Horn Cables	EVT	10/23/2009	13
Pre-Amplifier	Miteq	AMF-3D00100800-32-13P	AVF	7/14/2010	13
Antenna, Biconilog	EMCO	3141	AXG	2/15/2010	13
EV12 Cables	N/A	Bilog Cables	EVS	7/14/2010	13
Pre-Amplifier	Miteq	AM-1616-1000	AVM	7/14/2010	13
Spectrum Analyzer	Agilent	E4440A	AAX	5/14/2010	12

MEASUREMENT BANDWIDTHS

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

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

MEASUREMENT UNCERTAINTY

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. The measurement uncertainty estimation is available upon request.

TEST DESCRIPTION

The highest gain antenna to be used with the EUT was tested for final measurements. The EUT was configured for the lowest, and the highest transmit frequency in each operational band. For each configuration, the spectrum was scanned throughout the specified range. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis, and adjusting the measurement antenna height and polarization.

For unlicensed personal communication services (PCS) operating in the 1920-1930 MHz band, the FCC references ANSI C63.17 as the measurement procedure standard. Section 6.1.6.2 describes this method.

EUT: UPCS Radio Module	Work Order: KOGE0001
Serial Number: None	Date: 09/28/10
Customer: Kogeto, LLC.	Temperature: 24.3
Attendees: None	Humidity: 56%
Project: None	Barometric Pres.: 1013
Tested by: Ethan Schoonover	Power: 120VAC/60Hz
	Job Site: EV12

TEST SPECIFICATIONS	Test Method
FCC 15D:2010	ANSI C63.4:2003

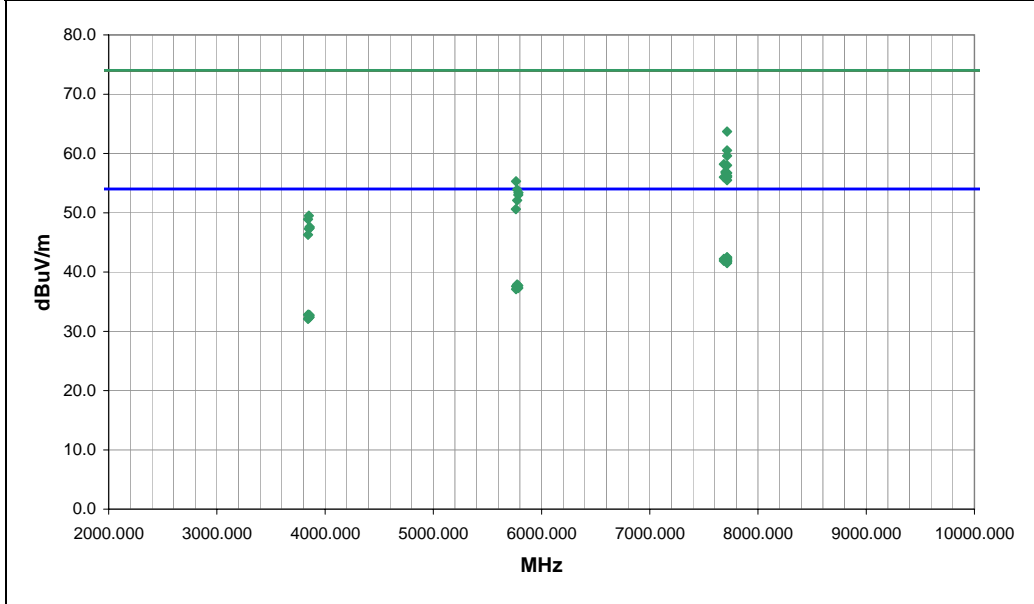
TEST PARAMETERS
Antenna Height(s) (m) 1 - 4 Test Distance (m) 3

COMMENTS
See Below

EUT OPERATING MODES
Tx

DEVIATIONS FROM TEST STANDARD
No deviations.

Run #	1	Signature 
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)	Comments
7714.000	45.8	17.9	283.0	1.5	3.0	0.0	V-Horn	PK	0.0	63.7	74.0	-10.3	EUT Horz, Ant 0, Chan 0
7714.220	42.6	17.9	285.0	1.7	3.0	0.0	V-Horn	PK	0.0	60.5	74.0	-13.5	EUT Horz, Ant 1, Chan 0
7714.102	41.7	17.9	194.0	1.7	3.0	0.0	V-Horn	PK	0.0	59.6	74.0	-14.4	EUT On Face, Ant 0, Chan 0
7684.495	40.2	18.0	115.0	1.1	3.0	0.0	V-Horn	PK	0.0	58.2	74.0	-15.8	EUT Horz, Ant 1, Chan 4
7713.626	40.1	17.9	97.0	1.3	3.0	0.0	H-Horn	PK	0.0	58.0	74.0	-16.0	EUT On Face, Ant 0, Chan 0
7700.105	38.9	18.0	0.0	1.7	3.0	0.0	V-Horn	PK	0.0	56.9	74.0	-17.1	EUT Horz, Ant 1, Chan 2
7700.242	38.7	18.0	66.0	1.5	3.0	0.0	H-Horn	PK	0.0	56.7	74.0	-17.3	EUT Horz, Ant 1, Chan 2
7713.957	38.8	17.9	177.0	1.8	3.0	0.0	H-Horn	PK	0.0	56.7	74.0	-17.3	EUT Horz, Ant 1, Chan 0
7714.470	38.8	17.9	127.0	1.3	3.0	0.0	H-Horn	PK	0.0	56.7	74.0	-17.3	EUT Horz, Ant 0, Chan 0
7713.722	38.3	17.9	298.0	1.7	3.0	0.0	V-Horn	PK	0.0	56.2	74.0	-17.8	EUT Horz, Ant 0, Chan 0
7713.983	38.3	17.9	241.0	1.3	3.0	0.0	H-Horn	PK	0.0	56.2	74.0	-17.8	EUT On Side, Ant 0, Chan 0
7684.417	38.0	18.0	176.0	1.7	3.0	0.0	H-Horn	PK	0.0	56.0	74.0	-18.0	EUT Horz, Ant 1, Chan 4
7713.993	38.1	17.9	141.0	1.7	3.0	0.0	V-Horn	PK	0.0	56.0	74.0	-18.0	EUT On Side, Ant 0, Chan 0
7713.657	37.6	17.9	252.0	1.6	3.0	0.0	H-Horn	PK	0.0	55.5	74.0	-18.5	EUT Horz, Ant 0, Chan 0
5763.475	42.2	13.1	161.0	1.1	3.0	0.0	V-Horn	PK	0.0	55.3	74.0	-18.7	EUT Horz, Ant 1, Chan 4
5774.692	40.8	13.1	162.0	1.1	3.0	0.0	V-Horn	PK	0.0	53.9	74.0	-20.1	EUT Horz, Ant 1, Chan 2
5785.790	40.3	13.1	359.0	2.1	3.0	0.0	V-Horn	PK	0.0	53.4	74.0	-20.6	EUT Horz, Ant 1, Chan 0
5785.307	39.9	13.1	210.0	1.7	3.0	0.0	H-Horn	PK	0.0	53.0	74.0	-21.0	EUT Horz, Ant 1, Chan 0
5775.218	39.0	13.1	213.0	1.7	3.0	0.0	H-Horn	PK	0.0	52.1	74.0	-21.9	EUT Horz, Ant 1, Chan 2
5762.533	37.5	13.1	275.0	1.1	3.0	0.0	H-Horn	PK	0.0	50.6	74.0	-23.4	EUT Horz, Ant 1, Chan 4

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

Tx Channels 0 and 4

POWER SETTINGS INVESTIGATED

120VAC/60Hz

FREQUENCY RANGE INVESTIGATED

Start Frequency	1910 MHz	Stop Frequency	1940 MHz
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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
Antenna, Horn	ETS	3115	AIB	9/8/2010	24
EV12 Cables	N/A	Double Ridge Horn Cables	EVT	10/23/2009	13
Spectrum Analyzer	Agilent	E4440A	AAX	5/14/2010	12

MEASUREMENT BANDWIDTHS

	Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
	Above 1000	10.0	N/A	N/A
Measurements were made using the bandwidths and detectors specified. No video filter was used.				

MEASUREMENT UNCERTAINTY

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. The measurement uncertainty estimation is available upon request.

TEST DESCRIPTION

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For unlicensed personal communication services (PCS) operating in the 1920-1930 MHz band, the FCC references ANSI C63.17 as the measurement procedure standard. Section 6.1.6.2 describes this method.

EMC

EUT: UPCS Radio Module		Work Order: KOG0001
Serial Number: none		Date: 09/29/10
Customer: Kogeto, LLC.		Temperature: 24.3
Attendees: None		Humidity: 56%
Project: None		Barometric Pres.: 1013
Tested by: Ethan Schoonover	Power: 120VAC/60Hz	Job Site: EV12

TEST SPECIFICATIONS Test Method

FCC 15D:2010	ANSI C63.17:2006
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TEST PARAMETERS

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

EUT Horizontal Antenna 1

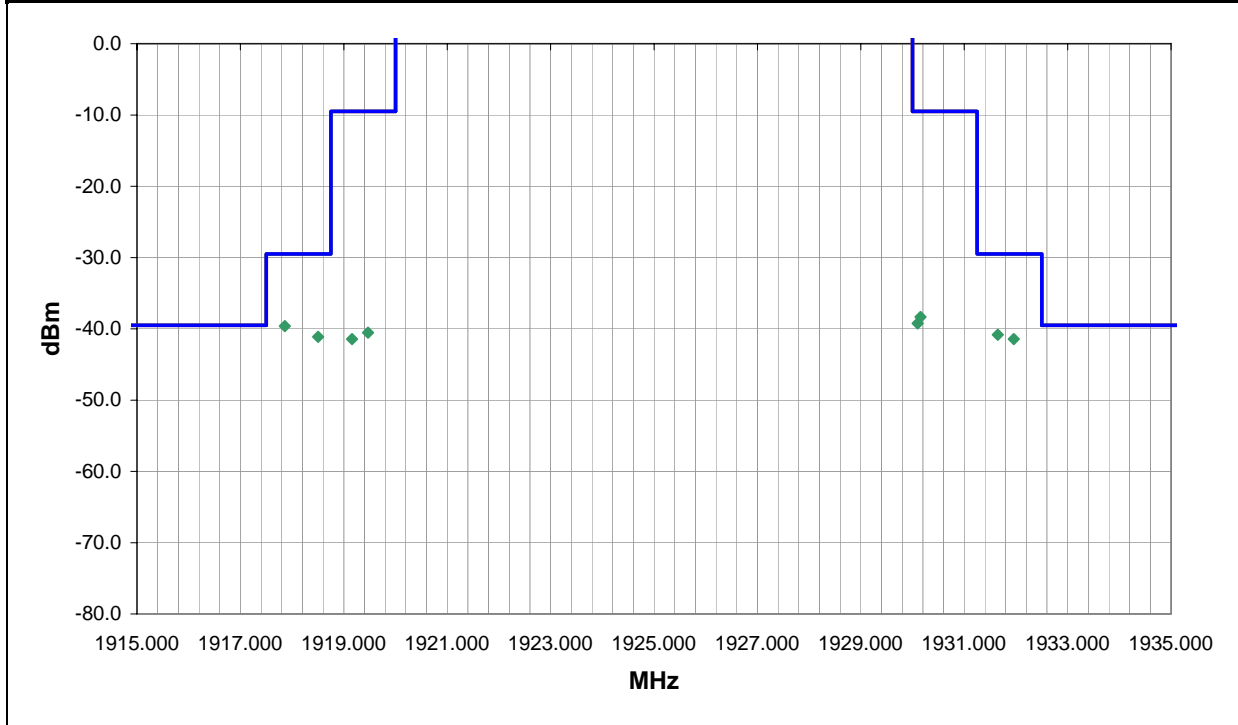
EUT OPERATING MODES

Tx Channels 0 and 4

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	3	<i>Signature</i> 
Configuration #	1	
Results	Pass	



Freq (MHz)	Azimuth (degrees)	Height (meters)	Polarity	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)
1917.858	244.0	1.0	V-Horn	PK	1.09E-07	-39.6	-29.5	-10.1
1931.649	190.0	1.0	H-Horn	PK	8.26E-08	-40.8	-29.5	-11.3
1918.502	16.0	1.0	H-Horn	PK	7.71E-08	-41.1	-29.5	-11.6
1931.958	258.0	1.0	V-Horn	PK	7.20E-08	-41.4	-29.5	-11.9
1930.153	152.0	1.0	H-Horn	PK	1.47E-07	-38.3	-9.5	-28.8
1930.098	333.0	1.0	V-Horn	PK	1.19E-07	-39.2	-9.5	-29.7
1919.468	17.0	1.5	V-Horn	PK	8.85E-08	-40.5	-9.5	-31.0
1919.158	14.0	1.0	H-Horn	PK	7.20E-08	-41.4	-9.5	-31.9