Cipher Systems, Inc.

URMA-2450

Report No. CIPH0016 Rev 01

Report Prepared By

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

EMC Test Report

NORTHWEST EMC

22975 NW Evergreen Parkway
Suite 400
Hillsboro, Oregon 97124

Certificate of Test

Last Date of Test: February 11, 2009
Cipher Systems, Inc.
Model: URMA-2450

Emissions			
Test Description	**Specification**	**Test Method**	**Pass/Fail**
Spurious Radiated Emissions	FCC 15.247 (DTS):2009	ANSI C63.4:2003 KDB No. 558074	**Pass**
Occupied Bandwidth	FCC 15.247 (DTS):2009	ANSI C63.4:2003 KDB No. 558074	**Pass**
Output Power	FCC 15.247 (DTS):2009	ANSI C63.4:2003 KDB No. 558074	**Pass**
Band Edge Compliance	FCC 15.247 (DTS):2009	ANSI C63.4:2003 KDB No. 558074	**Pass**
Spurious Conducted Emissions	FCC 15.247 (DTS):2009	ANSI C63.4:2003 KDB No. 558074	**Pass**
Power Spectral Density	FCC 15.247 (DTS):2009	ANSI C63.4:2003 KDB No. 558074	**Pass**
AC Powerline Conducted Emissions	FCC 15.207:2009	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:

Dean Ghizzone, President

NVLAP

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
01	Updated to reflect new modules	2/12/09	2, 10
01	Better defined Functional Description	2/12/09	7
01	New modules were done to reflect the new testing	2/12/09	18-45

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-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)*

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, C-2687, T-289, and R-2318, Irvine: R-1943, C-2766, and T-298, Sultan: R-871, C-1784, and T-294).*

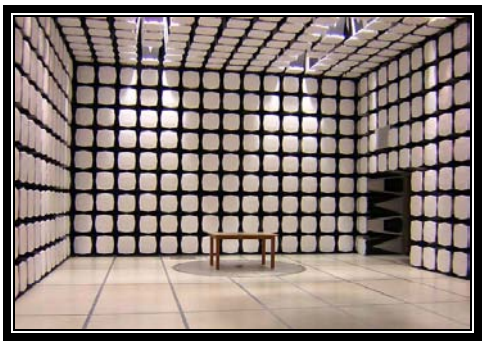
BSMI: Northwest EMC has been designated by NIST and validated by C-Taipei (BSMI) as a CAB to conduct tests as described in the APEC Mutual Recognition Agreement (US0017). License No.SL2-IN-E-1017.

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)*

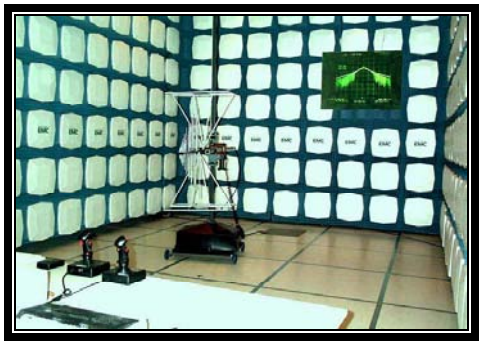
SCOPE

For details on the Scopes of our Accreditations, please visit:
http://www.nwemc.com/accreditations/



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 339th Ave. SE Sultan, WA 98294
(888) 364-2378

Party Requesting the Test

Company Name:	Cipher Systems, Inc.
Address:	1800 NW 169th Place Suite B-100
City, State, Zip:	Beaverton, OR 97006
Test Requested By:	Carl VanWormer
Model:	URMA-2450
First Date of Test:	November 24, 2008
Last Date of Test:	February 11, 2009
Receipt Date of Samples:	November 24, 2008
Equipment Design Stage:	Preproduction
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT (Equipment Under Test):
Digital Transmission System (DTS) radio using a PCB Inverted-F antenna. There is only one data rate of 250kbps.

Testing Objective:
Seeking modular approval under 15.247.

CONFIGURATION 1 CIPH0016

Software/Firmware Running during test	
Description	**Version**
Hyperterminal	5.1

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
EUT - DTS Radio Module	Cipher Systems, Inc.	URMA-2450	1016
EUT - DTS Radio Module	Cipher Systems, Inc.	URMA-2450	1014

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Test Board	Cipher Systems, Inc.	None	None
TTL Converter	B & B Electronics	232LPTTL33	None
Host PC	Dell	Latitude D520	73WN581
AC Adapter	CUI, Inc.	EPS050100-P6P	None

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Serial	Yes	1.0m	No	Host PC	TTL Converter
DC Power	PA	1.8m	PA	Test Board	AC Adapter
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATION 1 CIPH0017

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
EUT - DTS Radio Module	Cipher Systems, Inc.	URMA-2450	1015

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Test Board	Cipher Systems, Inc.	None	None
TTL Converter	B & B Electronics	232LPTTL33	None
AC Adapter	CUI, Inc.	EPS050100	None

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Host PC	Dell	Latitude D520	73WN581

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
DC Power	PA	1.8m	PA	Test Board	AC Adapter
Serial	Yes	5.0m	No	Host PC	TTL Converter
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATION 2 CIPH0017

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
EUT - DTS Radio Module	Cipher Systems, Inc.	URMA-2450	1015

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Test Board	Cipher Systems, Inc.	None	None
TTL Converter	B & B Electronics	232LPTTL33	None
AC Adapter	CUI	DV-51AAT	None

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Host PC	Dell	Latitude D520	73WN581

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
DC Power	PA	1.8m	PA	Test Board	AC Adapter
Serial	Yes	5.0m	No	Host PC	TTL Converter
AC Power	PA	1.8m	PA	AC Adapter	AC Mains
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	1/5/2009	Spurious Radiated Emissions	The operation of the unit was modified to achieve passing data.	The output power settings in software for High channel was lowered to a power level of -12 dBm. Low and mid channel are operating in 'Normal' mode at +3 dBm.	EUT remained at Northwest EMC following the test.
2	1/14/09	AC Powerline Conducted 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.
3	2/11/2009	Band Edge Compliance	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.
4	2/11/2009	Power Spectral Density	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.
5	2/11/2009	Spurious Conducted 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.
6	2/11/2009	Occupied Bandwidth	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.
7	2/11/2009	Output Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was complete.

SPURIOUS RADIATED EMISSIONS

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

MODE USED FOR FINAL DATA

Tx

POWER SETTINGS INVESTIGATED

5 VDC

POWER SETTINGS USED FOR FINAL DATA

5 VDC

FREQUENCY RANGE INVESTIGATED

Start Frequency	30MHz	Stop Frequency	25GHz

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
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVD	6/30/2008	13
Antenna, Horn	ETS	3160-08	AHV	NCR	0
EV01 Cables		Standard Gain Horns Cables	EVF	11/13/2008	13
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVC	6/30/2008	13
Antenna, Horn	ETS	3160-07	AHU	NCR	0
High Pass Filter	Micro-Tronics	HPM50111	HFO	5/21/2008	13
Spectrum Analyzer	Agilent	E4446A	AAT	12/12/2008	13
EV01 Cables		Double Ridge Horn Cables	EVB	5/19/2008	13
Pre-Amplifier	Miteq	AMF-4D-010100-24-10P	APW	5/19/2008	13
Antenna, Horn	EMCO	3115	AHC	8/12/2008	24
EV01 Cables		18-26GHz Standard Gain Horn Cable	EVD	12/2/2008	13
Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	12/2/2008	13
Antenna, Horn	EMCO	3160-09	AHG	NCR	0
Spectrum Analyzer	Agilent	E4446A	AAY	12/11/2008	13
EV12 Cables		Bilog Cables	EVS	6/17/2008	13
Pre-Amplifier	Miteq	AM-1616-1000	AVM	6/17/2008	13
Antenna, Biconilog	EMCO	3141	AXG	11/4/2008	13

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

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

The highest gain of each type of antenna to be used with the EUT was tested. The EUT was configured for low, mid, and high band transmit frequencies. For each configuration, the spectrum was scanned throughout the specified range. In addition, measurements were made in the restricted bands to verify compliance. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and the EUT antenna in three orthogonal axis, and adjusting 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.

NORTHWEST EMC

SPURIOUS RADIATED EMISSIONS DATA SHEET

PSA 2007.07.21
EMI 2008.7.3

EUT:	URMA-2450	Work Order:	CIPH0017
Serial Number:	1015	Date:	12/17/08
Customer:	Cipher Systems, Inc.	Temperature:	19.74
Attendees:	Steve McCoy	Humidity:	18%
Project:	None	Barometric Pres.:	30.05
Tested by:	Jennifer Herrett	Power: 5 VDC	Job Site: EV01

TEST SPECIFICATIONS	Test Method
FCC 15.247 (DTS):2008	ANSI C63.4:2003, KDB No. 558074

TEST PARAMETERS

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

COMMENTS

None

EUT OPERATING MODES

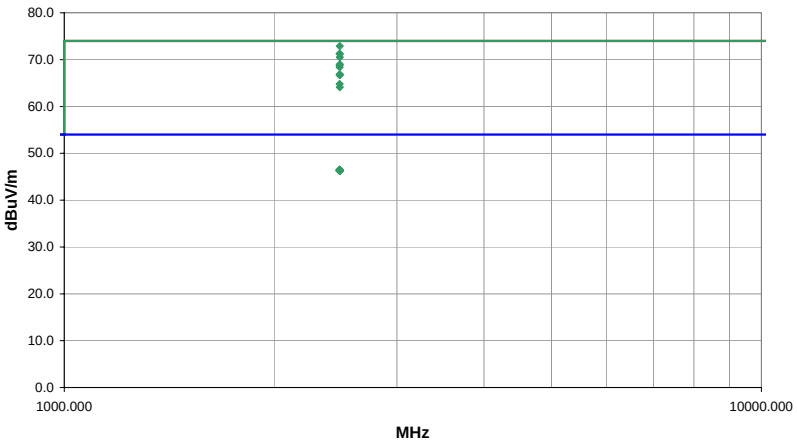
Tx

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	2
Configuration #	1
Results	Pass

Signature: Jennifer Herrett



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
2484.455	50.7	2.2	235.0	1.0	3.0	20.0	V-Horn	PK	0.0	72.9	74.0	-1.1	4dBm, High Ch, EUT bd horizontal, antenna vertical
2483.765	49.1	2.2	166.0	1.4	3.0	20.0	H-Horn	PK	0.0	71.3	74.0	-2.7	100mW, 2nd Highest Ch (ch 25), EUT bd vertical, antenna horizontal
2484.203	49.0	2.2	175.0	1.0	3.0	20.0	V-Horn	PK	0.0	71.2	74.0	-2.8	100mW, 2nd Highest Ch (ch 25), EUT bd horizontal, antenna vertical
2484.480	48.3	2.2	163.0	1.0	3.0	20.0	H-Horn	PK	0.0	70.5	74.0	-3.5	4dBm, High Ch, EUT bd vertical, antenna horizontal
2484.490	46.8	2.2	147.0	1.0	3.0	20.0	H-Horn	PK	0.0	69.0	74.0	-5.0	4dBm, High Ch, EUT bd horizontal, antenna vertical
2483.712	46.6	2.2	39.0	1.4	3.0	20.0	H-Horn	PK	0.0	68.8	74.0	-5.2	100mW, 2nd Highest Ch (ch 25), EUT bd on side, antenna on side
2483.578	46.2	2.2	282.0	1.0	3.0	20.0	V-Horn	PK	0.0	68.4	74.0	-5.6	4dBm, High Ch, EUT bd vertical, antenna horizontal
2483.997	44.7	2.2	185.0	1.0	3.0	20.0	H-Horn	PK	0.0	66.9	74.0	-7.1	4dBm, High Ch, EUT bd on side, antenna on side
2483.513	44.5	2.2	6.0	1.0	3.0	20.0	V-Horn	PK	0.0	66.7	74.0	-7.3	100mW, 2nd Highest Ch (ch 25), EUT bd on side, antenna on side
2483.887	44.5	2.2	268.0	1.0	3.0	20.0	V-Horn	PK	0.0	66.7	74.0	-7.3	100mW, 2nd Highest Ch (ch 25), EUT bd vertical, antenna horizontal
2483.253	24.3	2.2	282.0	1.0	3.0	20.0	V-Horn	AV	0.0	46.5	54.0	-7.5	4dBm, High Ch, EUT bd vertical, antenna horizontal
2483.748	24.3	2.2	163.0	1.0	3.0	20.0	H-Horn	AV	0.0	46.5	54.0	-7.5	4dBm, High Ch, EUT bd vertical, antenna horizontal
2483.797	24.3	2.2	166.0	1.4	3.0	20.0	H-Horn	AV	0.0	46.5	54.0	-7.5	100mW, 2nd Highest Ch (ch 25), EUT bd vertical, antenna horizontal
2483.710	24.2	2.2	39.0	1.4	3.0	20.0	H-Horn	AV	0.0	46.4	54.0	-7.6	100mW, 2nd Highest Ch (ch 25), EUT bd on side, antenna on side
2483.883	24.2	2.2	235.0	1.0	3.0	20.0	V-Horn	AV	0.0	46.4	54.0	-7.6	4dBm, High Ch, EUT bd horizontal, antenna vertical
2483.885	24.2	2.2	268.0	1.0	3.0	20.0	V-Horn	AV	0.0	46.4	54.0	-7.6	100mW, 2nd Highest Ch (ch 25), EUT bd vertical, antenna horizontal
2483.515	24.1	2.2	36.0	1.4	3.0	20.0	H-Horn	AV	0.0	46.3	54.0	-7.7	100mW, 2nd Highest Ch (ch 25), EUT bd horizontal, antenna vertical
2483.743	24.1	2.2	147.0	1.0	3.0	20.0	H-Horn	AV	0.0	46.3	54.0	-7.7	4dBm, High Ch, EUT bd horizontal, antenna vertical
2483.778	24.1	2.2	175.0	1.0	3.0	20.0	V-Horn	AV	0.0	46.3	54.0	-7.7	100mW, 2nd Highest Ch (ch 25), EUT bd horizontal, antenna vertical
2483.990	24.1	2.2	185.0	1.0	3.0	20.0	H-Horn	AV	0.0	46.3	54.0	-7.7	4dBm, High Ch, EUT bd on side, antenna on side
2484.062	24.1	2.2	6.0	1.0	3.0	20.0	V-Horn	AV	0.0	46.3	54.0	-7.7	100mW, 2nd Highest Ch (ch 25), EUT bd on side, antenna on side
2483.962	24.0	2.2	137.0	1.6	3.0	20.0	V-Horn	AV	0.0	46.2	54.0	-7.8	4dBm, High Ch, EUT bd on side, antenna on side
2483.752	42.6	2.2	36.0	1.4	3.0	20.0	H-Horn	PK	0.0	64.8	74.0	-9.2	100mW, 2nd Highest Ch (ch 25), EUT bd horizontal, antenna vertical
2484.057	41.9	2.2	137.0	1.6	3.0	20.0	V-Horn	PK	0.0	64.1	74.0	-9.9	4dBm, High Ch, EUT bd on side, antenna on side

NORTHWEST EMC

SPURIOUS RADIATED EMISSIONS DATA SHEET

PSA 2007.07.21
EMI 2008.7.3

EUT:	URMA-2450	Work Order:	CIPH0017
Serial Number:	1015	Date:	12/17/08
Customer:	Cipher Systems, Inc.	Temperature:	19.74
Attendees:	Steve McCoy	Humidity:	18%
Project:	None	Barometric Pres.:	30.05
Tested by:	Jennifer Herrett	Power: 5 VDC	Job Site: EV01

TEST SPECIFICATIONS	Test Method
FCC 15.247 (DTS):2008	ANSI C63.4:2003, KDB No. 558074

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

COMMENTS

None

EUT OPERATING MODES

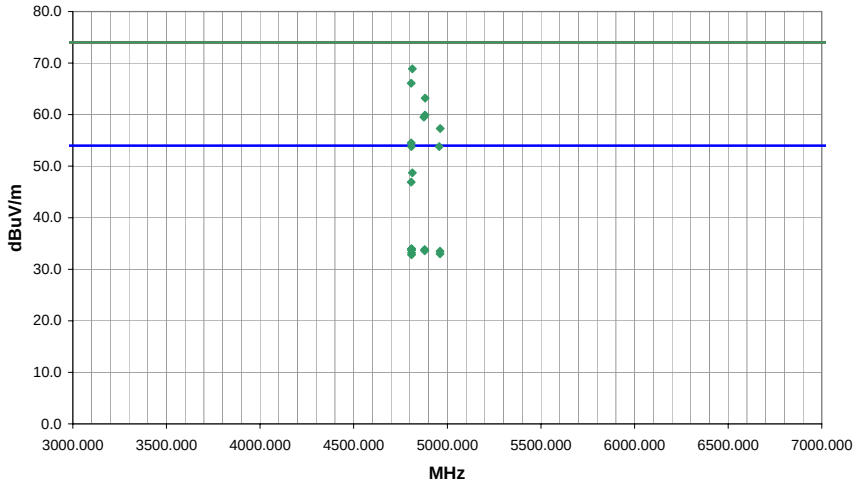
Tx

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	3
Configuration #	1
Results	Pass

Signature



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
4813.372	59.4	9.5	297.0	2.4	3.0	0.0	V-Horn	PK	0.0	68.9	74.0	-5.1	Low Ch, EUT bd vertical, antenna horizontal
4807.387	56.6	9.5	195.0	1.3	3.0	0.0	H-Horn	PK	0.0	66.1	74.0	-7.9	Low Ch, EUT bd horizontal, antenna vertical
4881.575	53.4	9.8	260.0	1.0	3.0	0.0	V-Horn	PK	0.0	63.2	74.0	-10.8	Mid Ch, EUT bd vertical, antenna horizontal
4880.770	50.1	9.8	341.0	1.0	3.0	0.0	H-Horn	PK	0.0	59.9	74.0	-14.1	Mid Ch, EUT bd vertical, antenna horizontal
4875.200	49.7	9.8	286.0	1.0	3.0	0.0	H-Horn	PK	0.0	59.5	74.0	-14.5	Mid Ch, EUT bd horizontal, antenna vertical
4961.930	47.2	10.1	36.0	1.0	3.0	0.0	V-Horn	PK	0.0	57.3	74.0	-16.7	4dBm, High Ch, EUT bd vertical, antenna horizontal
4807.153	45.0	9.5	128.0	2.3	3.0	0.0	H-Horn	PK	0.0	54.5	74.0	-19.5	Low Ch, EUT bd vertical, antenna horizontal
4809.318	24.5	9.5	297.0	2.4	3.0	0.0	V-Horn	AV	0.0	34.0	54.0	-20.0	Low Ch, EUT bd vertical, antenna horizontal
4809.203	24.4	9.5	195.0	1.3	3.0	0.0	H-Horn	AV	0.0	33.9	54.0	-20.1	Low Ch, EUT bd horizontal, antenna vertical
4809.213	24.3	9.5	16.0	2.3	3.0	0.0	H-Horn	AV	0.0	33.8	54.0	-20.2	Low Ch, EUT bd on side, antenna on side
4808.297	44.3	9.5	359.0	2.4	3.0	0.0	V-Horn	PK	0.0	53.8	74.0	-20.2	Low Ch, EUT bd horizontal, antenna vertical
4957.180	43.7	10.1	347.0	1.0	3.0	0.0	H-Horn	PK	0.0	53.8	74.0	-20.2	4dBm, High Ch, EUT bd horizontal, antenna vertical
4879.323	24.0	9.8	260.0	1.0	3.0	0.0	V-Horn	AV	0.0	33.8	54.0	-20.2	Mid Ch, EUT bd vertical, antenna horizontal
4809.426	24.2	9.5	128.0	2.3	3.0	0.0	H-Horn	AV	0.0	33.7	54.0	-20.3	Low Ch, EUT bd vertical, antenna horizontal
4879.550	23.9	9.8	286.0	1.0	3.0	0.0	H-Horn	AV	0.0	33.7	54.0	-20.3	Mid Ch, EUT bd horizontal, antenna vertical
4879.102	23.8	9.8	341.0	1.0	3.0	0.0	H-Horn	AV	0.0	33.6	54.0	-20.4	Mid Ch, EUT bd vertical, antenna horizontal
4961.050	23.4	10.1	36.0	1.0	3.0	0.0	V-Horn	AV	0.0	33.5	54.0	-20.5	4dBm, High Ch, EUT bd vertical, antenna horizontal
4809.133	23.7	9.5	359.0	2.4	3.0	0.0	V-Horn	AV	0.0	33.2	54.0	-20.8	Low Ch, EUT bd horizontal, antenna vertical
4960.950	22.9	10.1	347.0	1.0	3.0	0.0	H-Horn	AV	0.0	33.0	54.0	-21.0	4dBm, High Ch, EUT bd horizontal, antenna vertical
4808.907	23.3	9.5	289.0	2.4	3.0	0.0	V-Horn	AV	0.0	32.8	54.0	-21.2	Low Ch, EUT bd on side, antenna on side

NORTHWEST EMC

SPURIOUS RADIATED EMISSIONS DATA SHEET

PSA 2007.07.21
EMI 2008.7.3

EUT:	URMA-2450	Work Order:	CIPH0017
Serial Number:	1015	Date:	12/17/08
Customer:	Cipher Systems, Inc.	Temperature:	19.74
Attendees:	Steve McCoy	Humidity:	18%
Project:	None	Barometric Pres.:	30.05
Tested by:	Jennifer Herrett	Power: 5 VDC	Job Site: EV01

TEST SPECIFICATIONS	Test Method
FCC 15.247 (DTS):2008	ANSI C63.4:2003, KDB No. 558074

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

COMMENTS

None

EUT OPERATING MODES

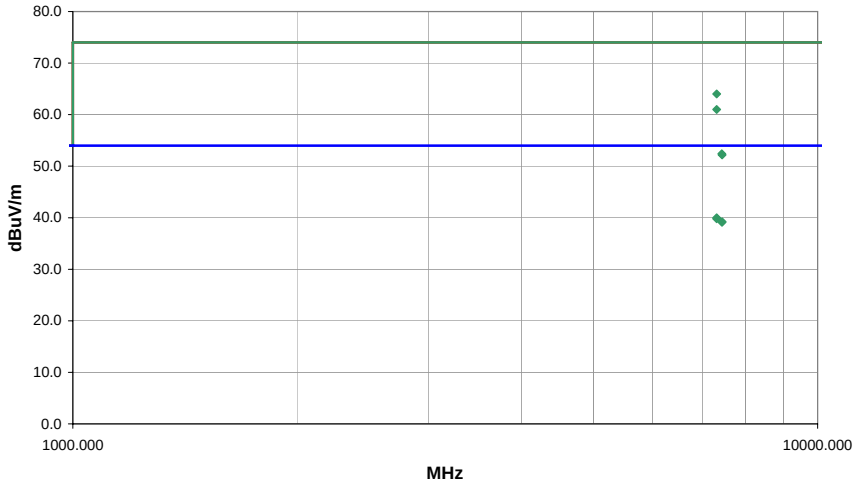
Tx

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	4
Configuration #	1
Results	Pass

Jennifer Herrett
Signature



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
7320.130	48.4	15.6	27.0	1.0	3.0	0.0	V-Horn	PK	0.0	64.0	74.0	-10.0	Mid Ch, EUT bd vertical, antenna horizontal
7319.780	45.4	15.6	87.0	1.0	3.0	0.0	H-Horn	PK	0.0	61.0	74.0	-13.0	Mid Ch, EUT bd horizontal, antenna vertical
7318.830	24.4	15.6	27.0	1.0	3.0	0.0	V-Horn	AV	0.0	40.0	54.0	-14.0	Mid Ch, EUT bd vertical, antenna horizontal
7319.030	24.2	15.6	87.0	1.0	3.0	0.0	H-Horn	AV	0.0	39.8	54.0	-14.2	Mid Ch, EUT bd horizontal, antenna vertical
7443.600	23.4	15.8	110.0	1.0	3.0	0.0	V-Horn	AV	0.0	39.2	54.0	-14.8	4dBm, High Ch, EUT bd vertical, antenna horizontal
7440.030	23.3	15.8	145.0	1.0	3.0	0.0	H-Horn	AV	0.0	39.1	54.0	-14.9	4dBm, High Ch, EUT bd horizontal, antenna vertical
7437.250	36.6	15.8	110.0	1.0	3.0	0.0	V-Horn	PK	0.0	52.4	74.0	-21.6	4dBm, High Ch, EUT bd vertical, antenna horizontal
7442.370	36.4	15.8	145.0	1.0	3.0	0.0	H-Horn	PK	0.0	52.2	74.0	-21.8	4dBm, High Ch, EUT bd horizontal, antenna vertical

NORTHWEST EMC

SPURIOUS RADIATED EMISSIONS DATA SHEET

PSA 2007.07.21
EMI 2008.1.9

EUT:	URMA-2450	Work Order:	CIPH0017
Serial Number:	1015	Date:	01/05/09
Customer:	Cipher Systems, Inc.	Temperature:	20
Attendees:	Steve McCoy	Humidity:	31%
Project:	None	Barometric Pres.:	20.79
Tested by:	Jennifer Herrett	Power: 5 VDC	Job Site: EV12

TEST SPECIFICATIONS	Test Method
FCC 15.247 (DTS):2009	ANSI C63.4:2003, KDB No. 558074

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

COMMENTS

None

EUT OPERATING MODES

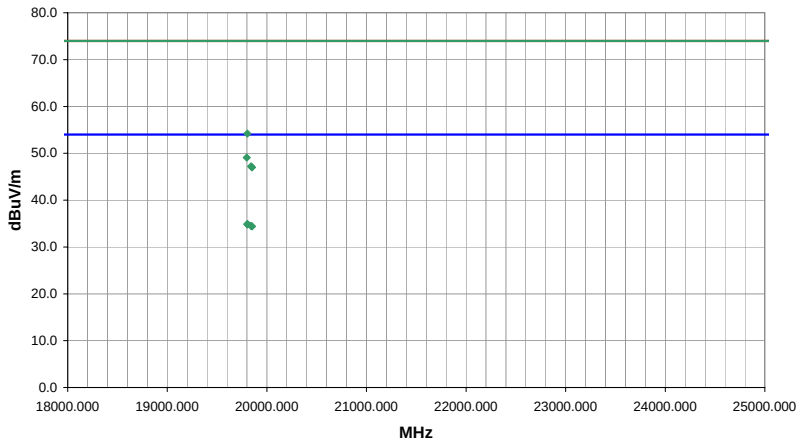
Tx

DEVIATIONS FROM TEST STANDARD

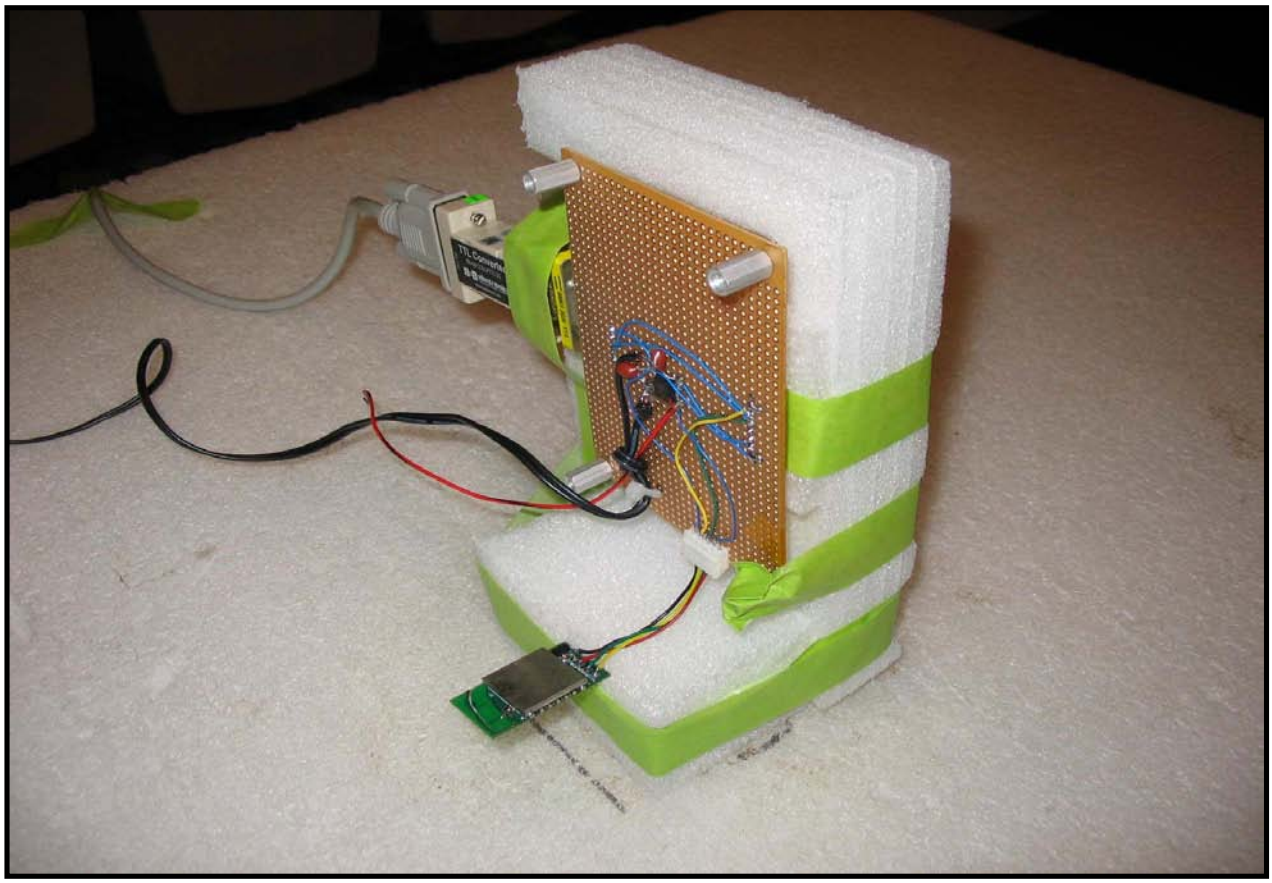
No deviations.

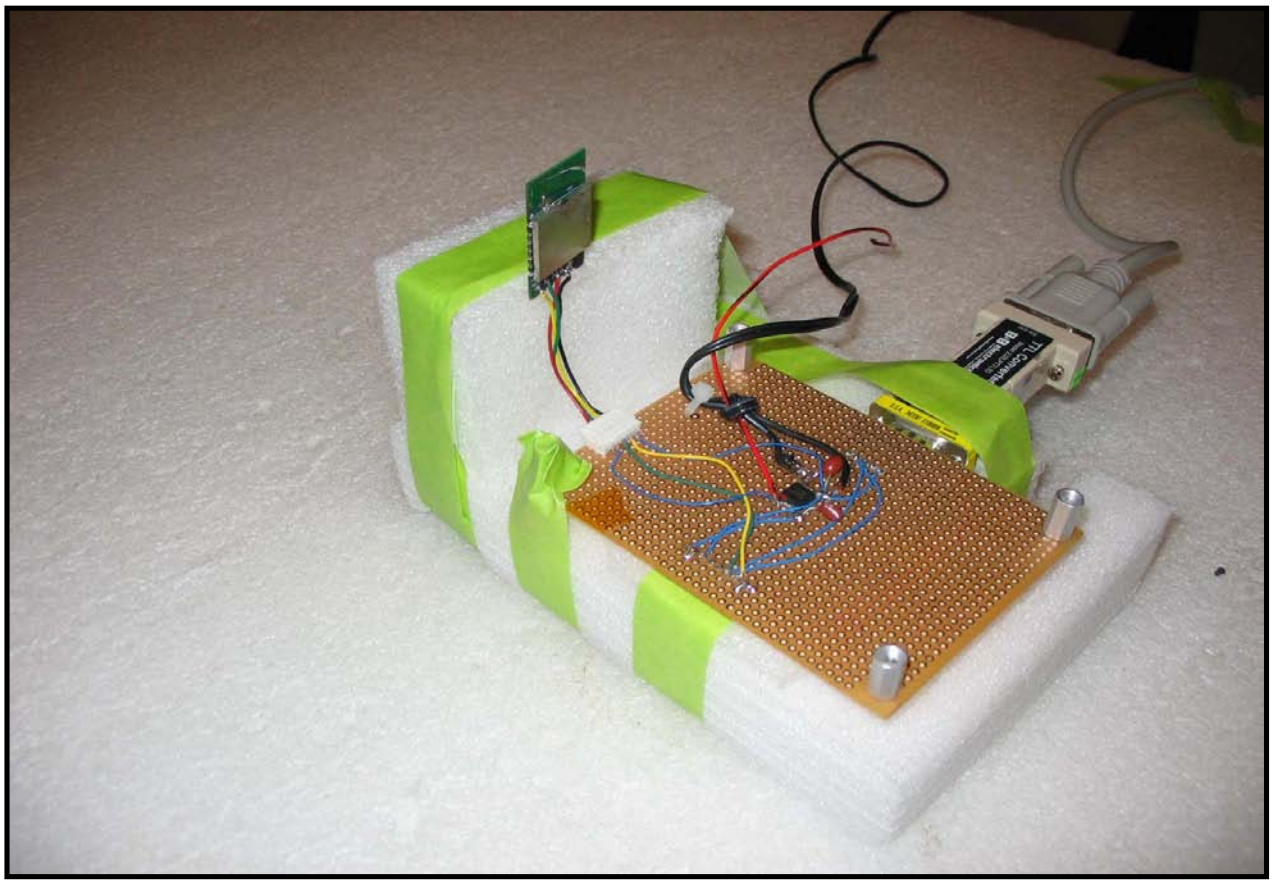
Run #	1
Configuration #	1
Results	Pass

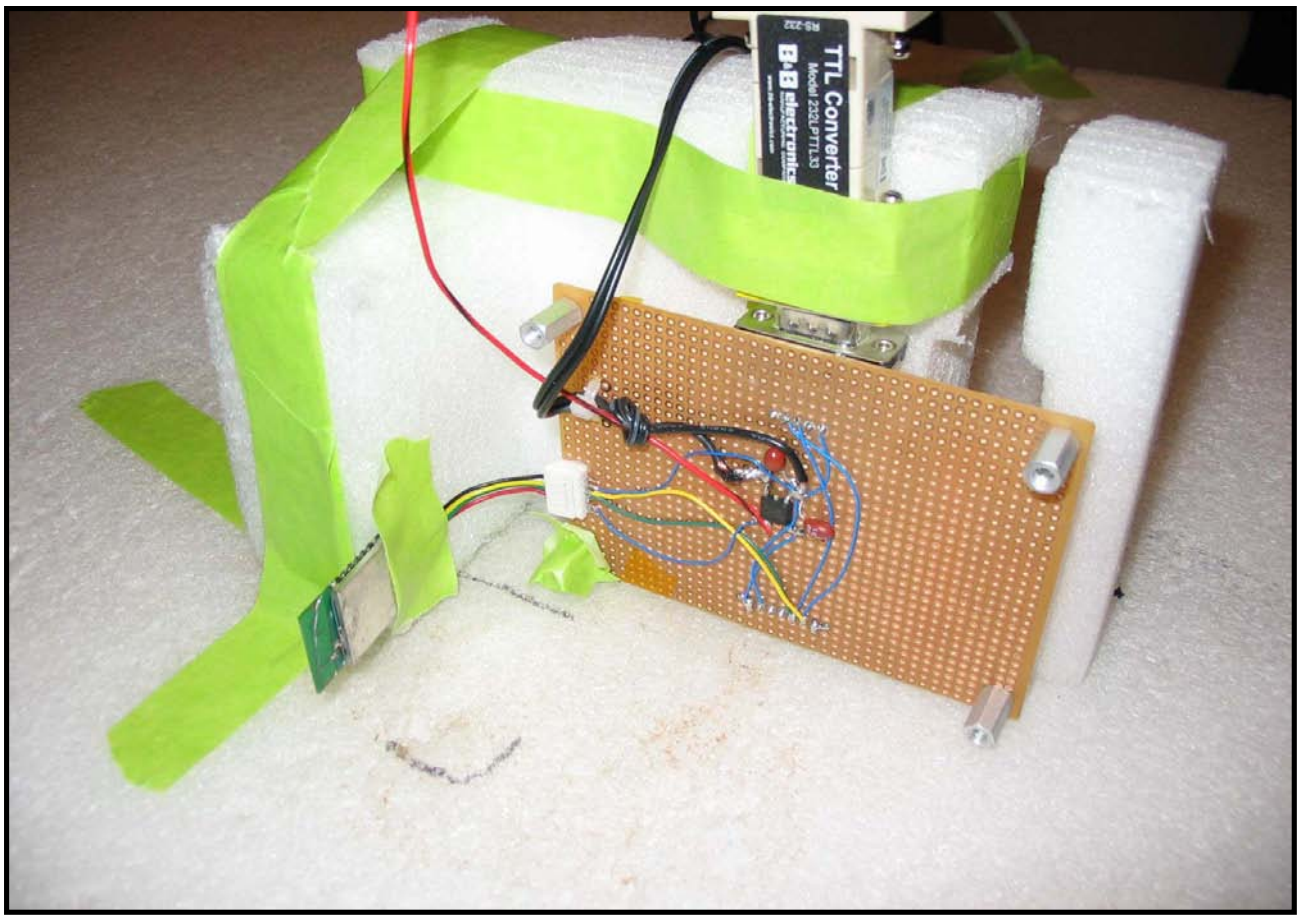
Signature



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
19804.530	28.1	6.8	260.0	1.0	3.0	0.0	-/+High Horr	AV	0.0	34.9	54.0	-19.1	100mW, 2nd Highest Ch, EUT host bd horizontal, EUT antenna vertical
19804.730	28.0	6.8	229.0	1.1	3.0	0.0	-/+High Horr	AV	0.0	34.8	54.0	-19.2	100mW, 2nd Highest Ch, EUT host bd vertical, EUT antenna horizontal
19841.200	27.7	6.8	328.0	1.2	3.0	0.0	-/+High Horr	AV	0.0	34.5	54.0	-19.5	4dBM, High Ch, EUT host bd horizontal, EUT antenna vertical
19850.970	27.6	6.8	38.0	1.2	3.0	0.0	-/+High Horr	AV	0.0	34.4	54.0	-19.6	4dBM, High Ch, EUT host bd vertical, EUT antenna horizontal
19804.530	47.4	6.8	260.0	1.0	3.0	0.0	-/+High Horr	PK	0.0	54.2	74.0	-19.8	100mW, 2nd Highest Ch, EUT host bd horizontal, EUT antenna vertical
19797.030	42.3	6.8	229.0	1.1	3.0	0.0	-/+High Horr	PK	0.0	49.1	74.0	-24.9	100mW, 2nd Highest Ch, EUT host bd vertical, EUT antenna horizontal
19841.200	40.4	6.8	328.0	1.2	3.0	0.0	-/+High Horr	PK	0.0	47.2	74.0	-26.8	4dBM, High Ch, EUT host bd horizontal, EUT antenna vertical
19850.970	40.2	6.8	38.0	1.2	3.0	0.0	-/+High Horr	PK	0.0	47.0	74.0	-27.0	4dBM, High Ch, EUT host bd vertical, EUT antenna horizontal






TTL Converter
Model 232LPTTL3
B+B electronics

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.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4407B	AAU	12/7/2007	13
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	6/27/2008	13

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

The occupied bandwidth was measured with the EUT set to low, medium, and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at its maximum data rate with the typical modulation.

NORTHWEST EMC

OCCUPIED BANDWIDTH

XMit 2007.06.13

EUT:	URMA-2450			**Work Order:**	CIPH0016
Serial Number:	1016 (low and mid), 1014 (high)			**Date:**	02/11/09
Customer:	Cipher Systems, Inc.			**Temperature:**	21°C
Attendees:	Steve McCoy, Carl Van Wormer			**Humidity:**	32%
Project:	None			**Barometric Pres.:**	30.14 in
Tested by:	Rod Peloquin	**Power:**	5 VDC	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247 (DTS):2009	ANSI C63.4:2003 KDB No. 558074

COMMENTS

Operating in a typical mode with a duty cycle of one .748 ms pulse on a period of 25.54 ms. 0.5 dB compensation for adapter cable. Low and mid channel are operating in 'Normal' mode at +3 dBm. High channel setting was operating the software in 'Normal' mode and power level set to -12 dBm.

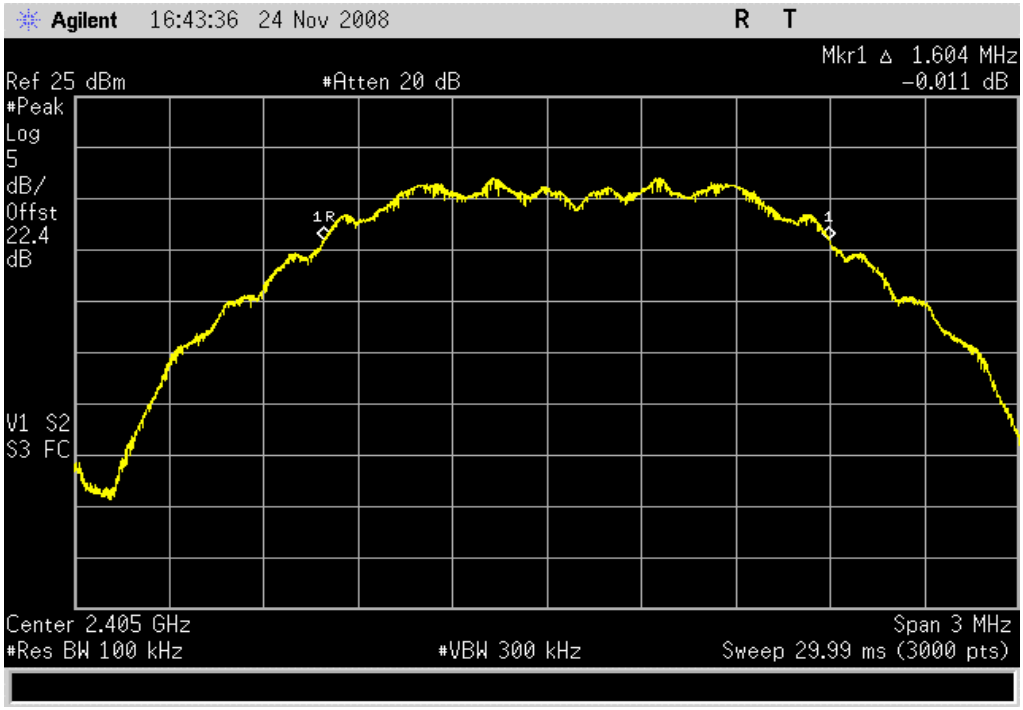
DEVIATIONS FROM TEST STANDARD

No Deviations

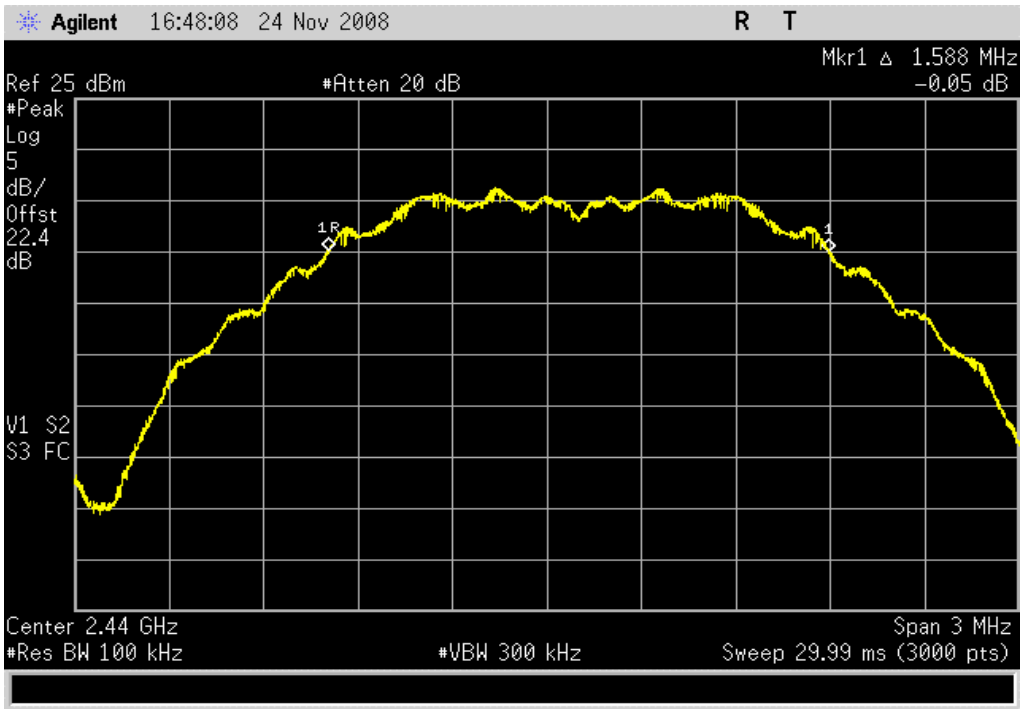
Configuration #	1	Signature

	Value	Limit	Results
Low Channel, 11, 2405 MHz	1.604 MHz	> 500 kHz	Pass
Mid Channel, 18, 2440 MHz	1.588 MHz	> 500 kHz	Pass
High Channel, 26, 2480 MHz	1.558 MHz	> 500 kHz	Pass

Low Channel					
Result:	Pass	**Value:**	1.604 MHz	**Limit:**	> 500 kHz

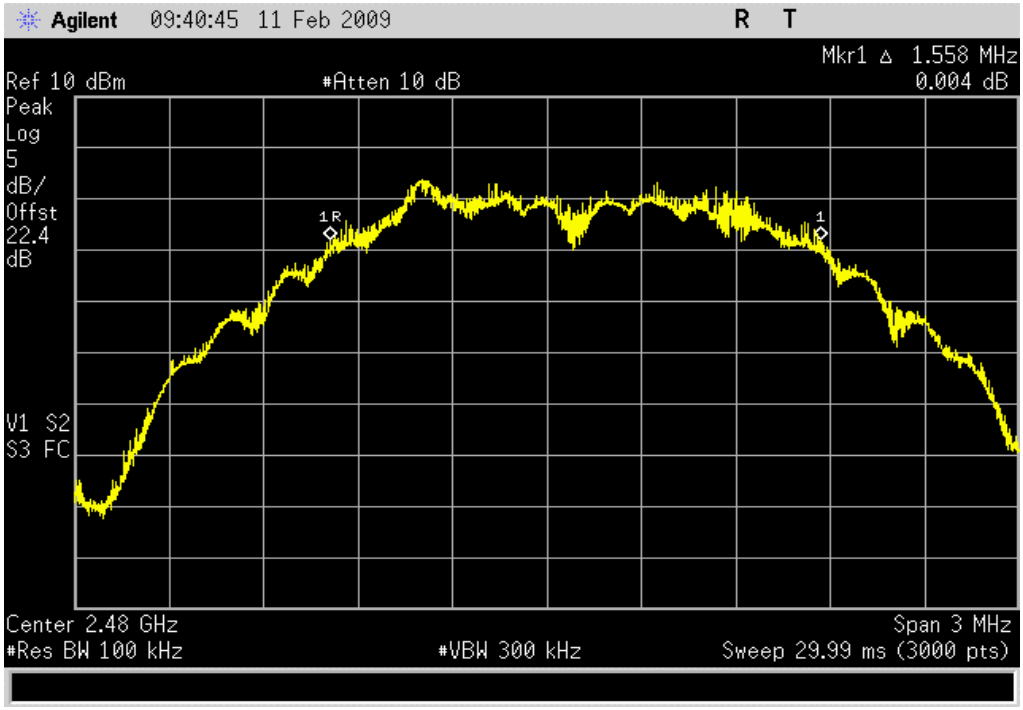


Mid Channel					
Result:	Pass	**Value:**	1.588 MHz	**Limit:**	> 500 kHz

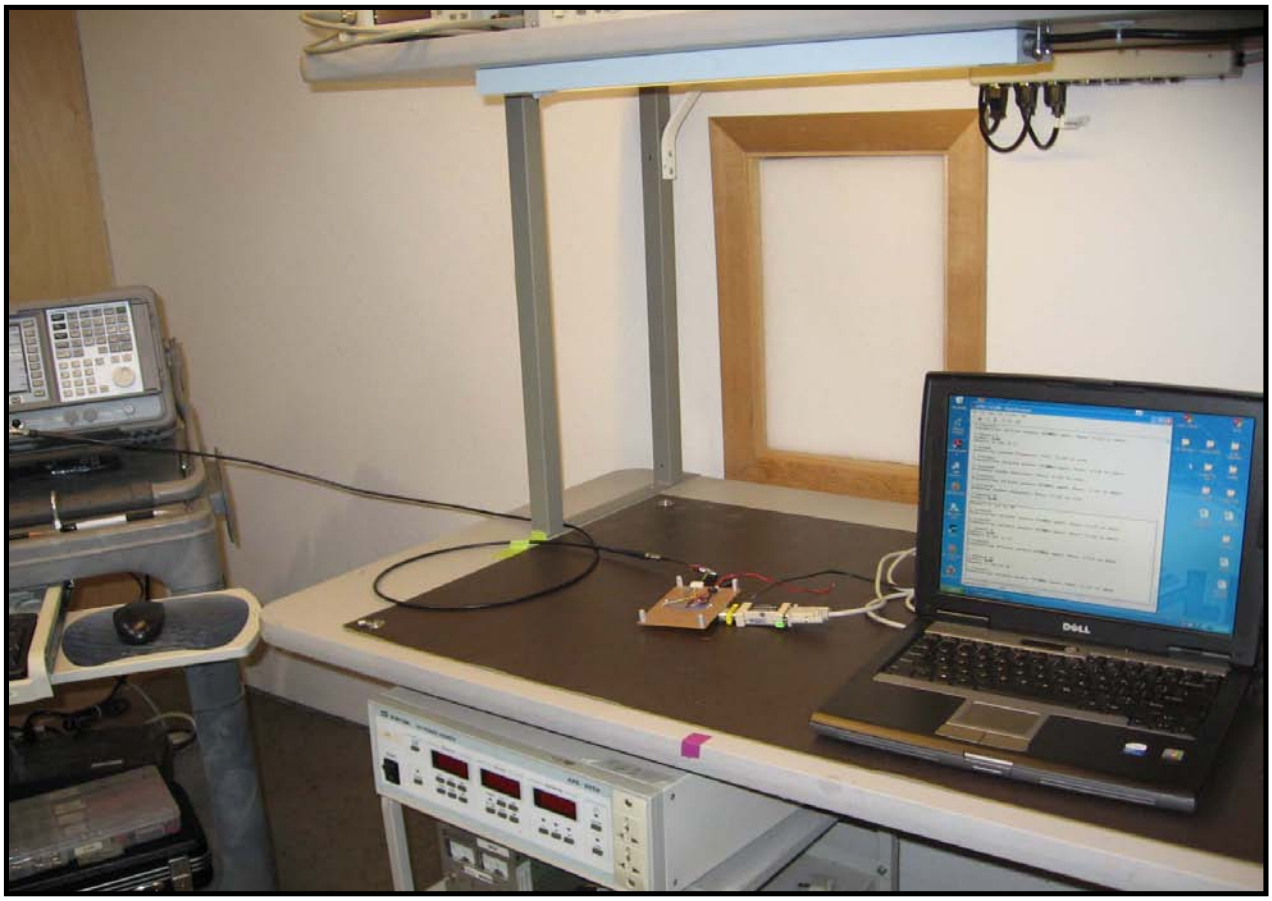


OCCUPIED BANDWIDTH

High Channel					
Result:	Pass	**Value:**	1.558 MHz	**Limit:**	> 500 kHz



OCCUPIED BANDWIDTH



OUTPUT POWER

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.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4407B	AAU	12/7/2007	13
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	6/27/2008	13
e-Amplifier (FOR REFERENCE ONL	Hewlett-Packard	83017A	APL	NCR	0
Signal Generator	Hewlett-Packard	8648D	TGC	12/7/2007	13

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

The peak output power was measured with the EUT set to low, medium, and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The EUT was transmitting at its maximum data rate in a no hop mode.

De Facto EIRP Limit: Per 47 CFR 15.247 (b)(1-3), the EUT meets the de facto EIRP limit of +36dBm.

NORTHWEST EMC

OUTPUT POWER

XMit 2007.06.13

EUT:	URMA-2450			**Work Order:**	CIPH0016
Serial Number:	1016 (low and mid), 1014 (high)			**Date:**	02/11/09
Customer:	Cipher Systems, Inc.			**Temperature:**	21°C
Attendees:	Steve McCoy, Carl Van Wormer			**Humidity:**	32%
Project:	None			**Barometric Pres.:**	30.14 in
Tested by:	Rod Peloquin	**Power:**	5 VDC	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247 (DTS):2009	ANSI C63.4:2003 KDB No. 558074

COMMENTS

Operating in a typical mode with a duty cycle of one .748 ms pulse on a period of 25.54 ms. 0.5 dB compensation for adapter cable. Low and mid channel are operating in 'Normal' mode at +3 dBm. High channel setting was operating the software in 'Normal' mode and power level set to -12 dBm.

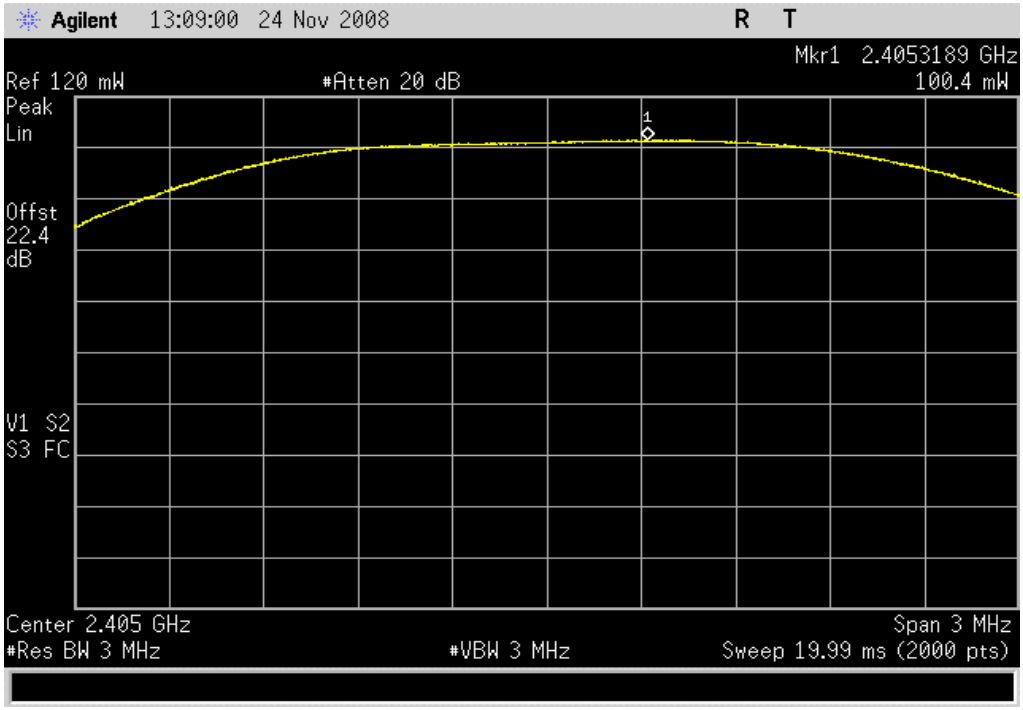
DEVIATIONS FROM TEST STANDARD

No Deviations

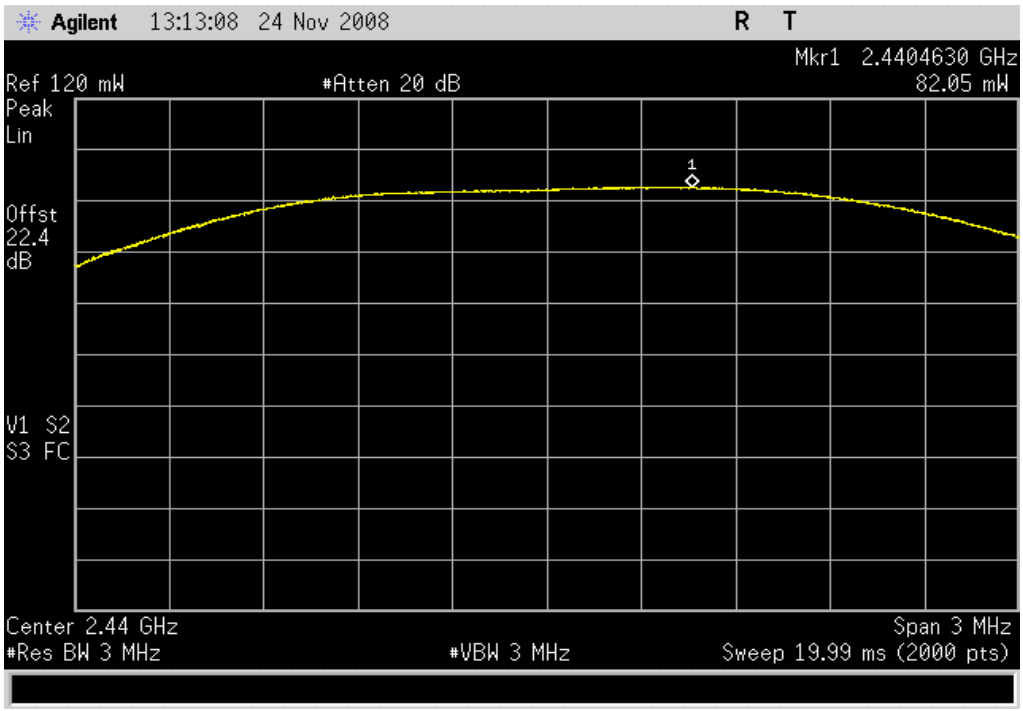
Configuration #	1	Signature

	Value	Limit	Results
Low Channel, 11, 2405 MHz	100.4 mW	1 W	Pass
Mid Channel, 18, 2440 MHz	82.1 mW	1 W	Pass
High Channel, 26, 2480 MHz	3.06 mW	1 W	Pass

Low Channel					
Result:	Pass	**Value:**	100.4 mW	**Limit:**	1 W

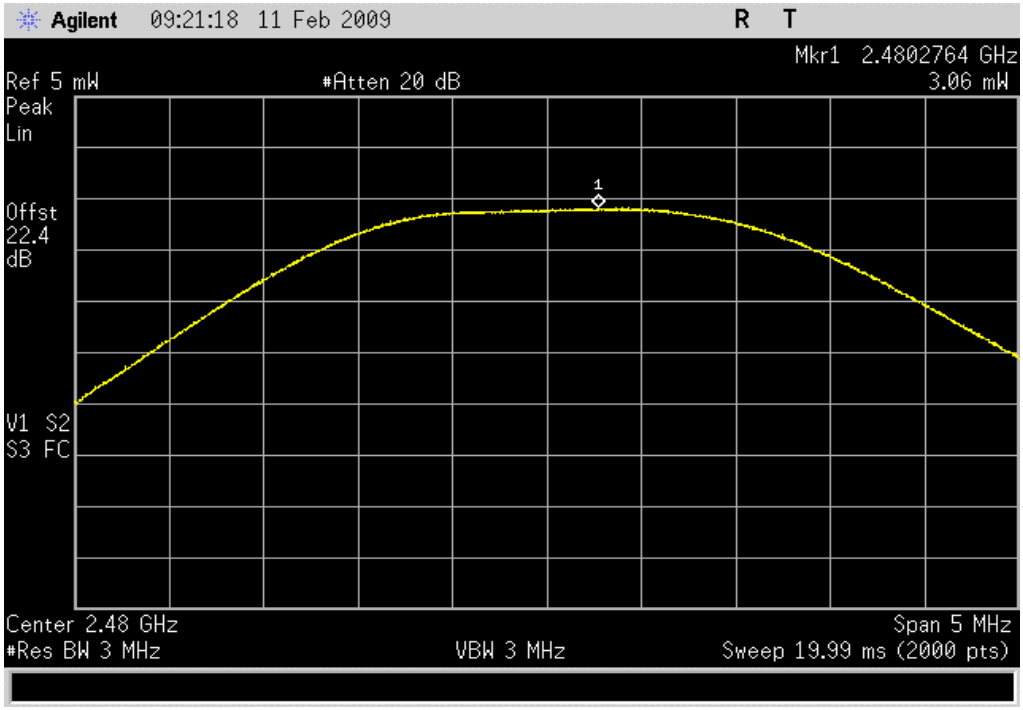


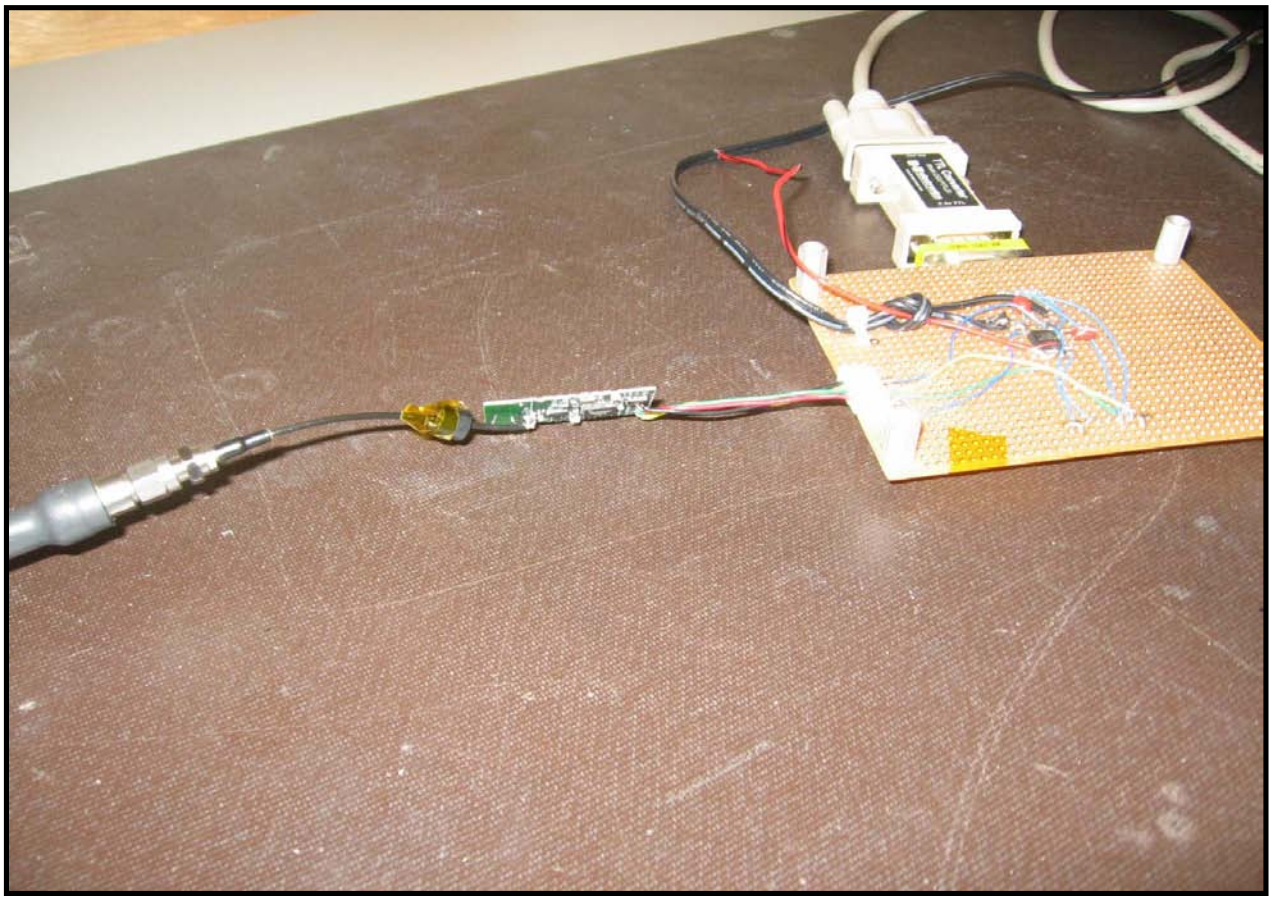
Mid Channel					
Result:	Pass	**Value:**	82.1 mW	**Limit:**	1 W



OUTPUT POWER

High Channel					
Result:	Pass	**Value:**	3.06 mW	**Limit:**	1 W





BAND EDGE COMPLIANCE

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.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4407B	AAU	12/7/2007	13
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	6/27/2008	13

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

The requirements of FCC 15.247(d) for emissions at least 20dB below the carrier in any 100kHz bandwidth outside the allowable band was measured with the EUT set to low and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at its maximum data rate using direct sequence modulation. The channels closest to the band edges were selected. The spectrum was scanned across each band edge from 10 MHz below the band edge to 10 MHz above the band edge.

NORTHWEST EMC

BAND EDGE COMPLIANCE

XMit 2007.06.13

EUT:	URMA-2450			**Work Order:**	CIPH0016
Serial Number:	1016 (low and mid), 1014 (high)			**Date:**	02/11/09
Customer:	Cipher Systems, Inc.			**Temperature:**	21°C
Attendees:	Steve McCoy, Carl Van Wormer			**Humidity:**	32%
Project:	None			**Barometric Pres.:**	30.14 in
Tested by:	Rod Peloquin	**Power:**	5 VDC	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247 (DTS):2009	ANSI C63.4:2003 KDB No. 558074

COMMENTS

Operating in a typical mode with a duty cycle of one .748 ms pulse on a period of 25.54 ms. 0.5 dB compensation for adapter cable. Low and mid channel are operating in 'Normal' mode at +3 dBm. High channel setting was operating the software in 'Normal' mode and power level set to -12 dBm.

DEVIATIONS FROM TEST STANDARD

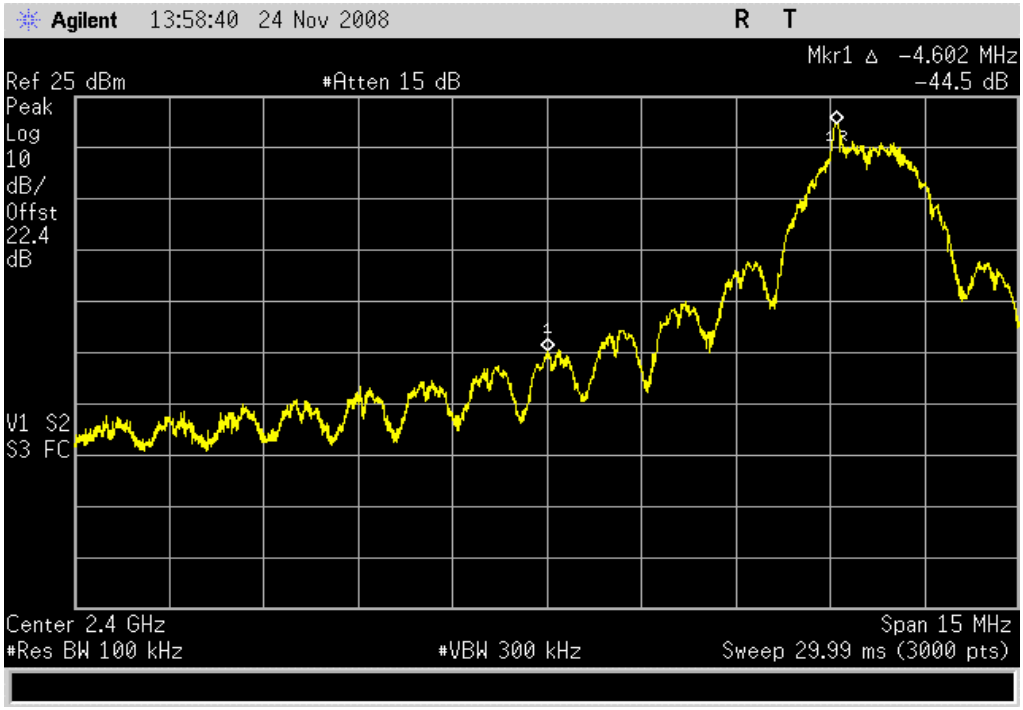
No Deviations

Configuration #	1	Signature

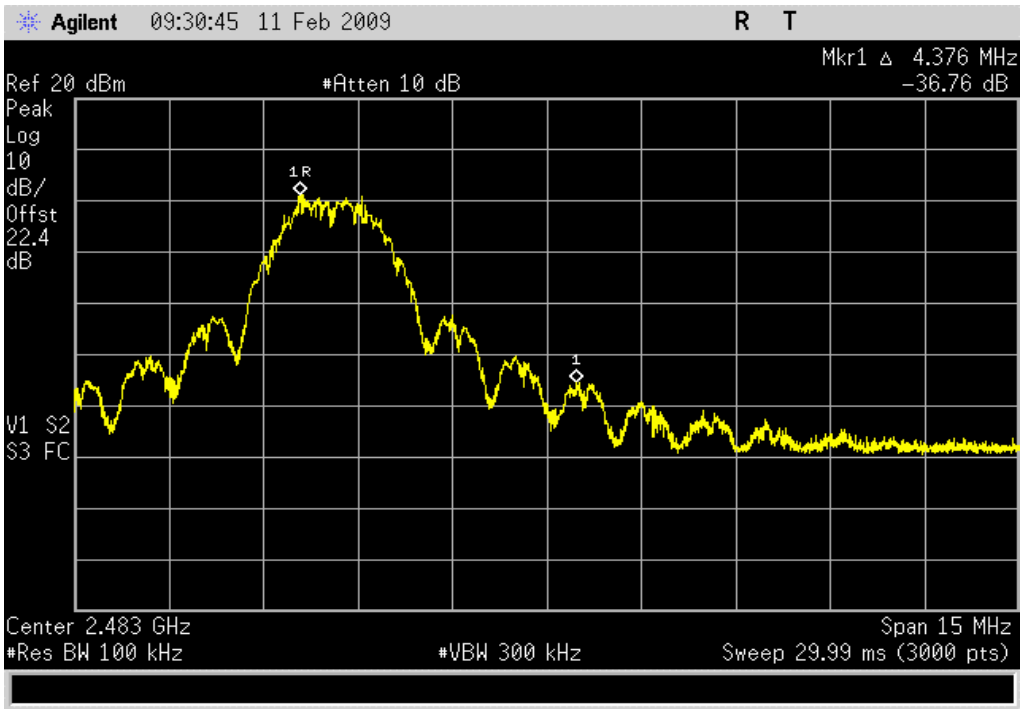
	Value	Limit	Results
Low Channel	-44.5 dBc	≤ -20 dBc	Pass
High Channel	-36.8 dBc	≤ -20 dBc	Pass

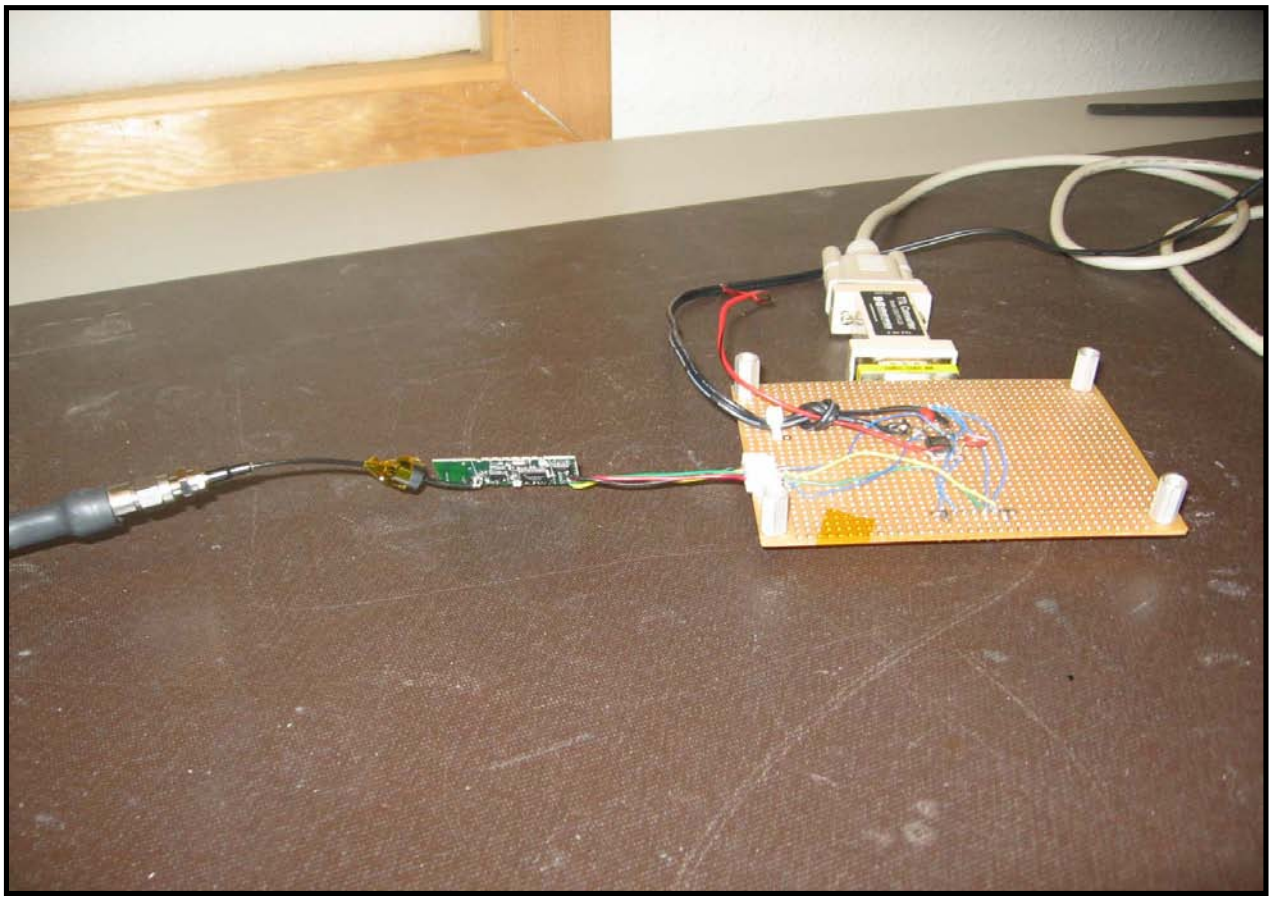
BAND EDGE COMPLIANCE

Low Channel					
Result:	Pass	**Value:**	-44.5 dBc	**Limit:**	≤ -20 dBc



High Channel					
Result:	Pass	**Value:**	-36.8 dBc	**Limit:**	≤ -20 dBc





SPURIOUS CONDUCTED EMISSIONS

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.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4407B	AAU	12/7/2007	13
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	6/27/2008	13

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

The spurious RF conducted emissions were measured with the EUT set to low, medium, and high transmit frequencies. The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at its maximum data rate using direct sequence modulation. For each transmit frequency, the spectrum was scanned throughout the specified frequency range.

NORTHWEST EMC

SPURIOUS CONDUCTED EMISSIONS

XMit 2007.06.13

EUT:	URMA-2450			**Work Order:**	CIPH0016
Serial Number:	1016 (low and mid), 1014 (high)			**Date:**	02/11/09
Customer:	Cipher Systems, Inc.			**Temperature:**	21°C
Attendees:	Steve McCoy, Carl Van Wormer			**Humidity:**	32%
Project:	None			**Barometric Pres.:**	30.14 in
Tested by:	Rod Peloquin	**Power:**	5 VDC	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247 (DTS):2009	ANSI C63.4:2003 KDB No. 558074

COMMENTS

Operating in a typical mode with a duty cycle of one .748 ms pulse on a period of 25.54 ms. 0.5 dB compensation for adapter cable. Low and mid channel are operating in 'Normal' mode at +3 dBm. High channel setting was operating the software in 'Normal' mode and power level set to -12 dBm.

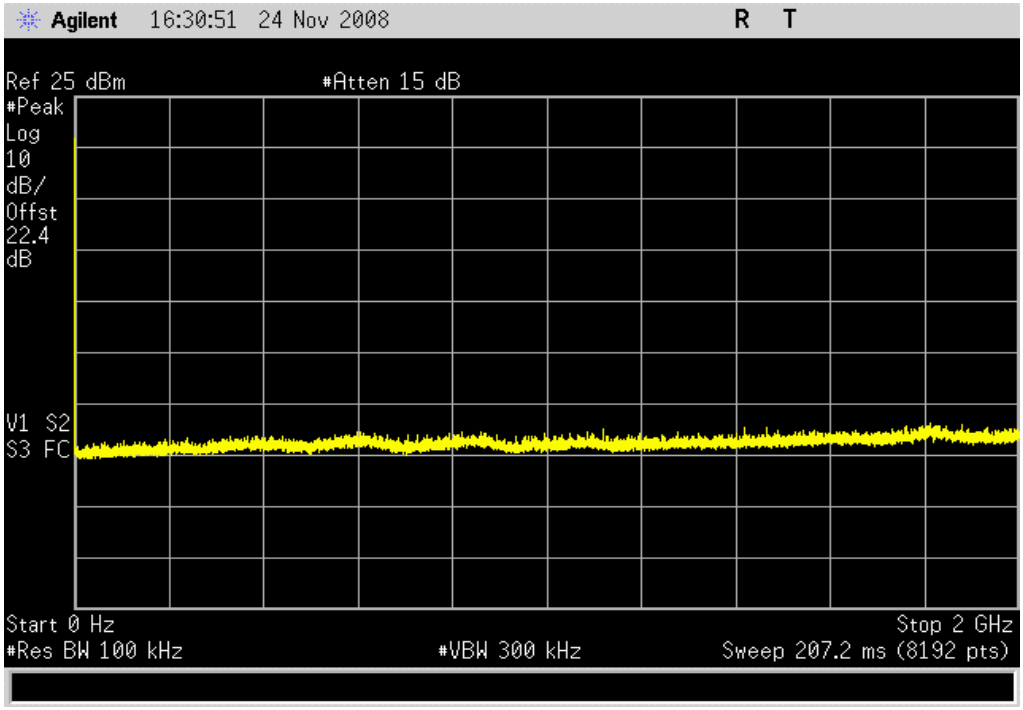
DEVIATIONS FROM TEST STANDARD

No Deviations

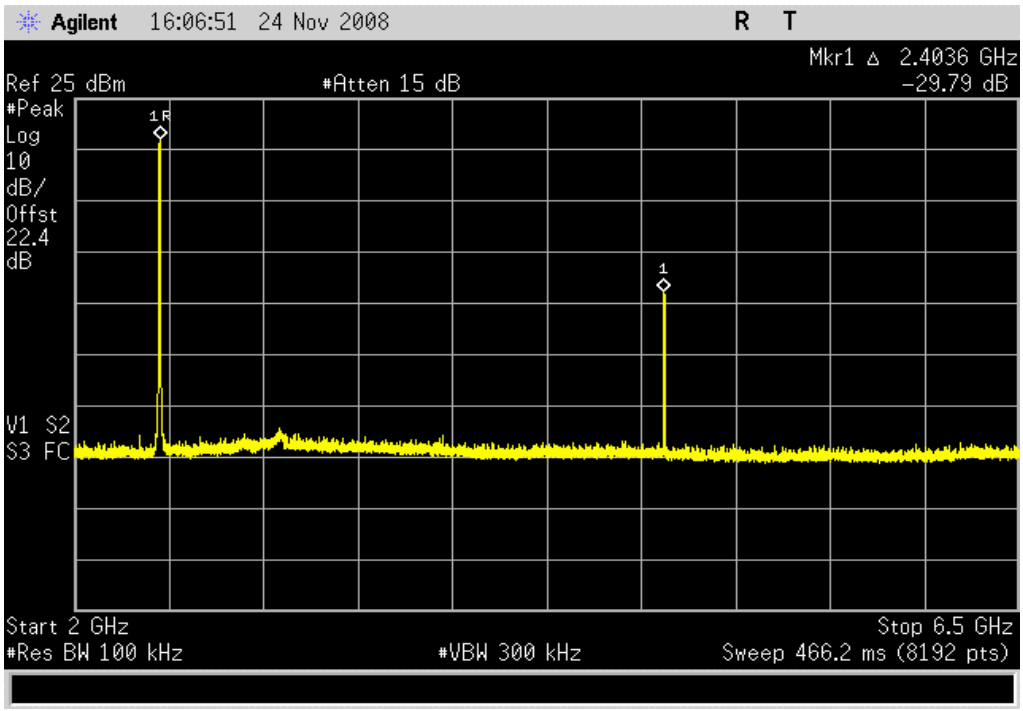
Configuration #	1	Signature

		Value	Limit	Results
Low Channel				
	0 MHz - 2 GHz	< - 40 dBc	≤ -20 dBc	Pass
	2 GHz - 6.5 GHz	-29.8 dBc	≤ -20 dBc	Pass
	6.5 GHz - 12.5 GHz	< -40 dBc	≤ -20 dBc	Pass
	12.5 GHz - 25 GHz	< -40 dBc	≤ -20 dBc	Pass
Mid Channel				
	0 MHz - 2 GHz	< -40 dBC	≤ -20 dBc	Pass
	2 GHz - 6.5 GHz	- 30 dBc	≤ -20 dBc	Pass
	6.5 GHz - 12.5 GHz	< -40 dBc	≤ -20 dBc	Pass
	12.5 GHz - 25 GHz	< -40 dBc	≤ -20 dBc	Pass
High Channel				
	0 MHz - 2 GHz	< - 40 dBc	≤ -20 dBc	Pass
	2 GHz - 6.5 GHz	< - 40 dBc	≤ -20 dBc	Pass
	6.5 GHz - 12.5 GHz	< -40 dBc	≤ -20 dBc	Pass
	12.5 GHz - 25 GHz	< - 40 dBc	≤ -20 dBc	Pass

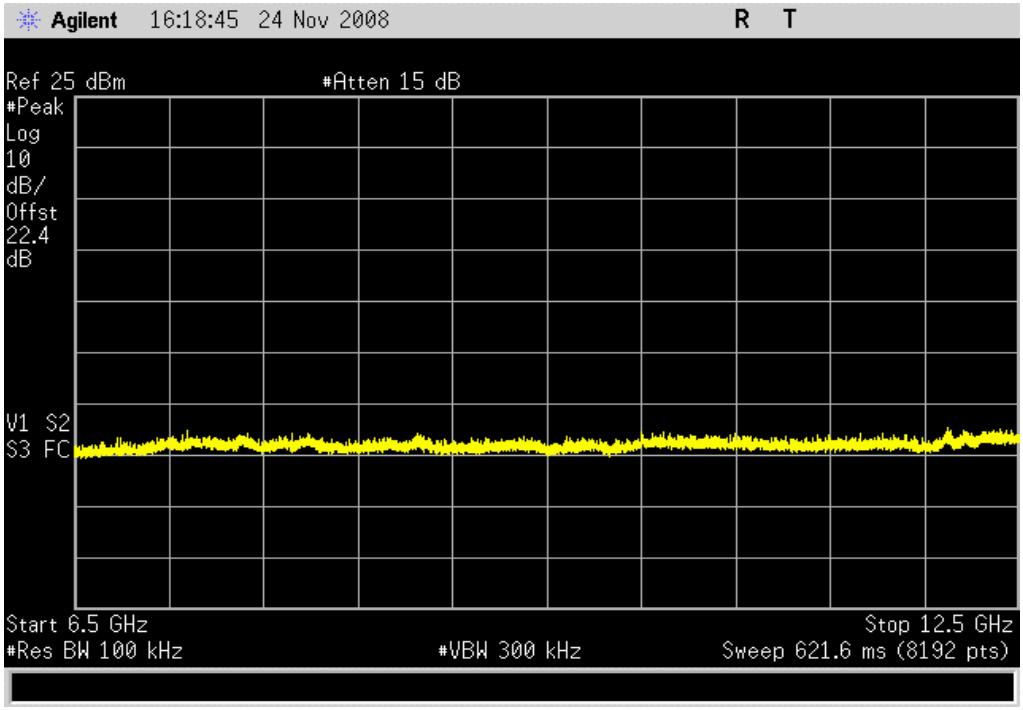
Low Channel, 0 MHz - 2 GHz					
Result:	Pass	**Value:**	< - 40 dBc	**Limit:**	≤ -20 dBc



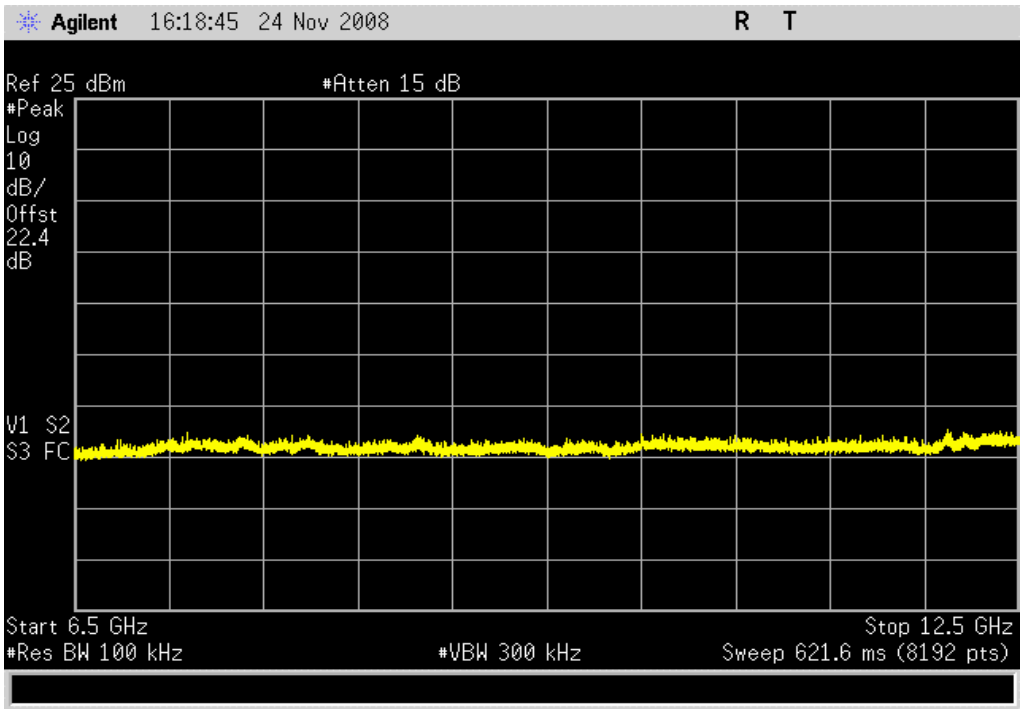
Low Channel, 2 GHz - 6.5 GHz					
Result:	Pass	**Value:**	-29.8 dBc	**Limit:**	≤ -20 dBc



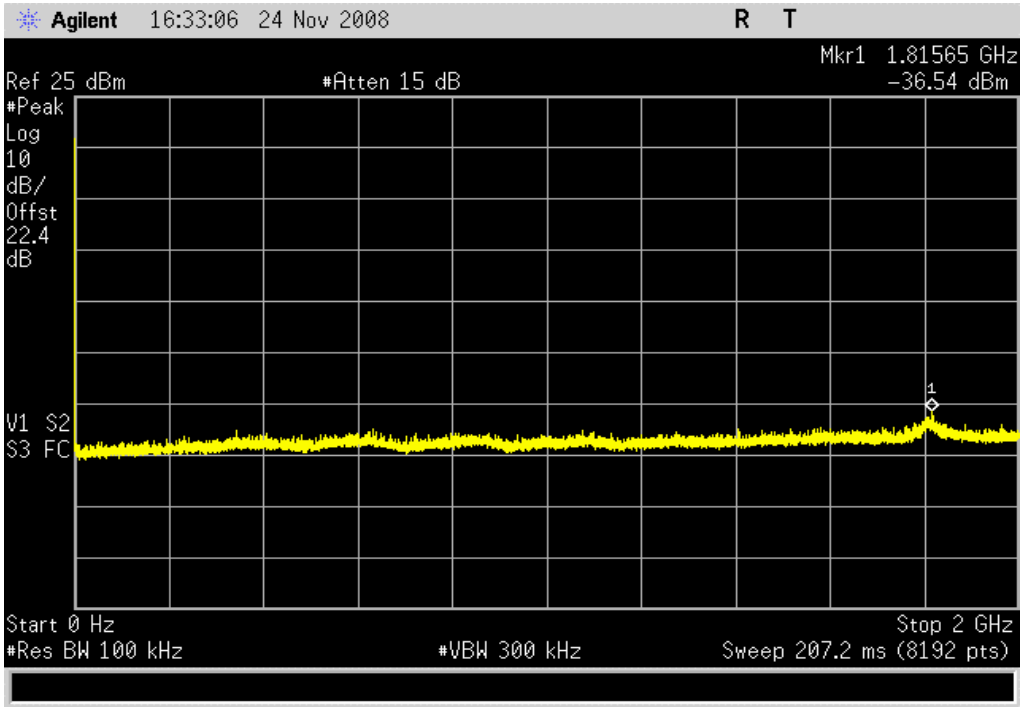
Low Channel, 6.5 GHz - 12.5 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



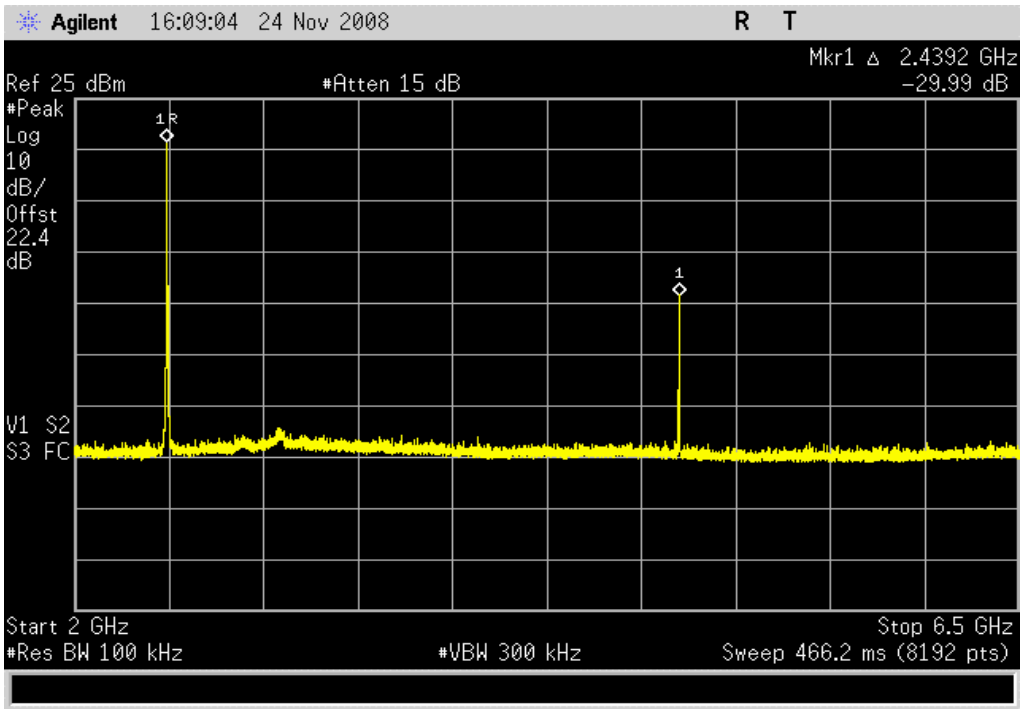
Low Channel, 12.5 GHz - 25 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



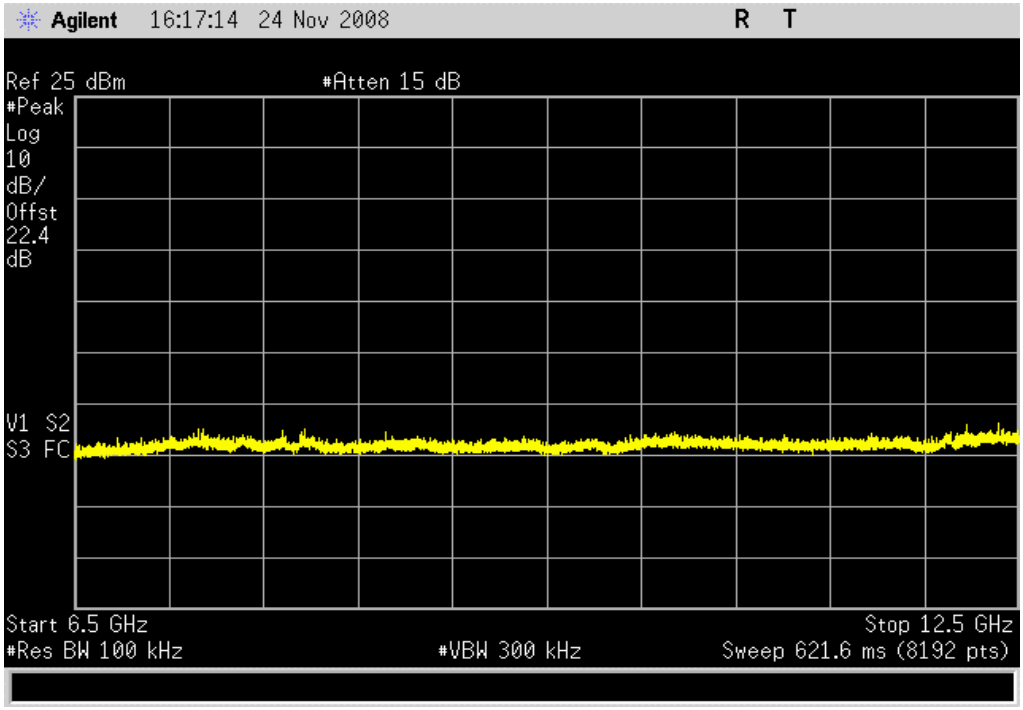
Mid Channel, 0 MHz - 2 GHz					
Result:	Pass	**Value:**	< -40 dBC	**Limit:**	≤ -20 dBc



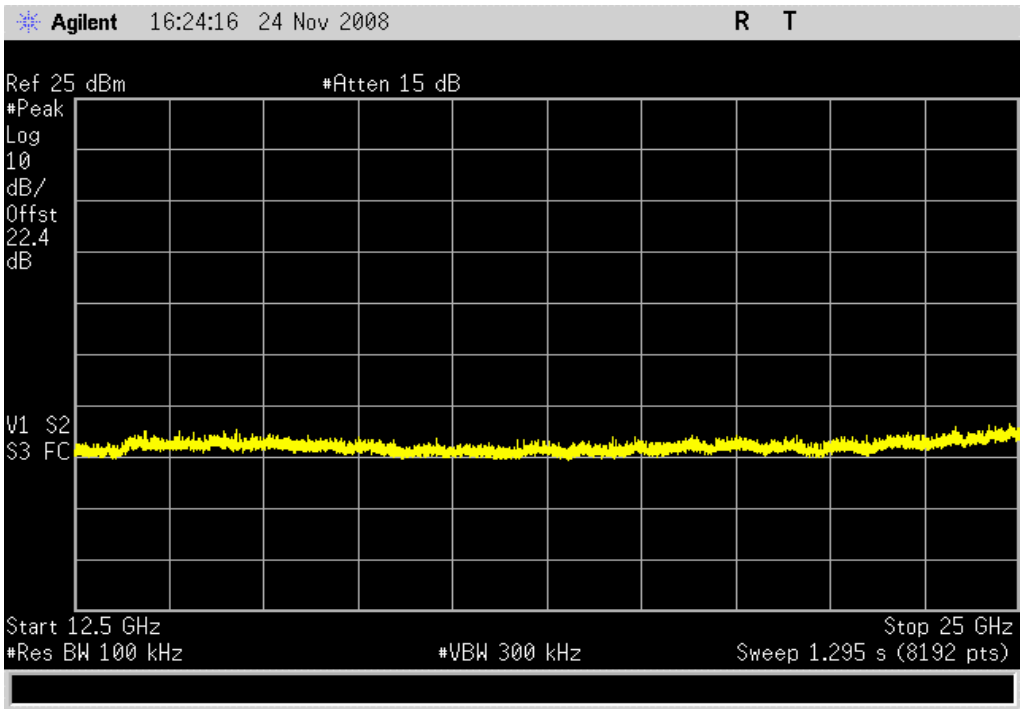
Mid Channel, 2 GHz - 6.5 GHz					
Result:	Pass	**Value:**	- 30 dBc	**Limit:**	≤ -20 dBc



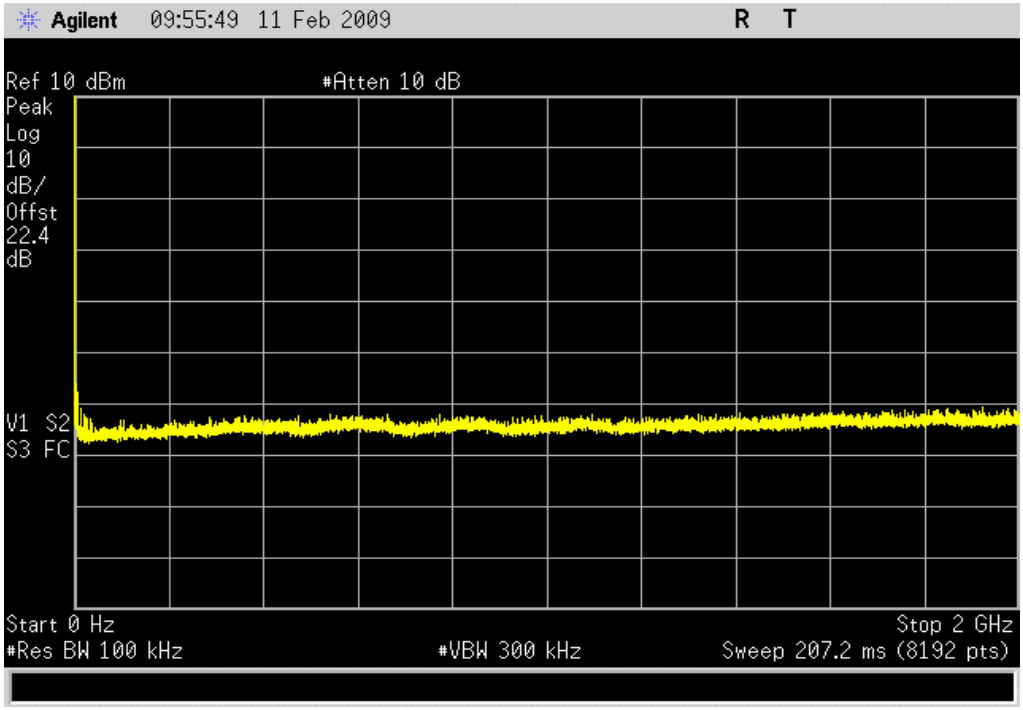
Mid Channel, 6.5 GHz - 12.5 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



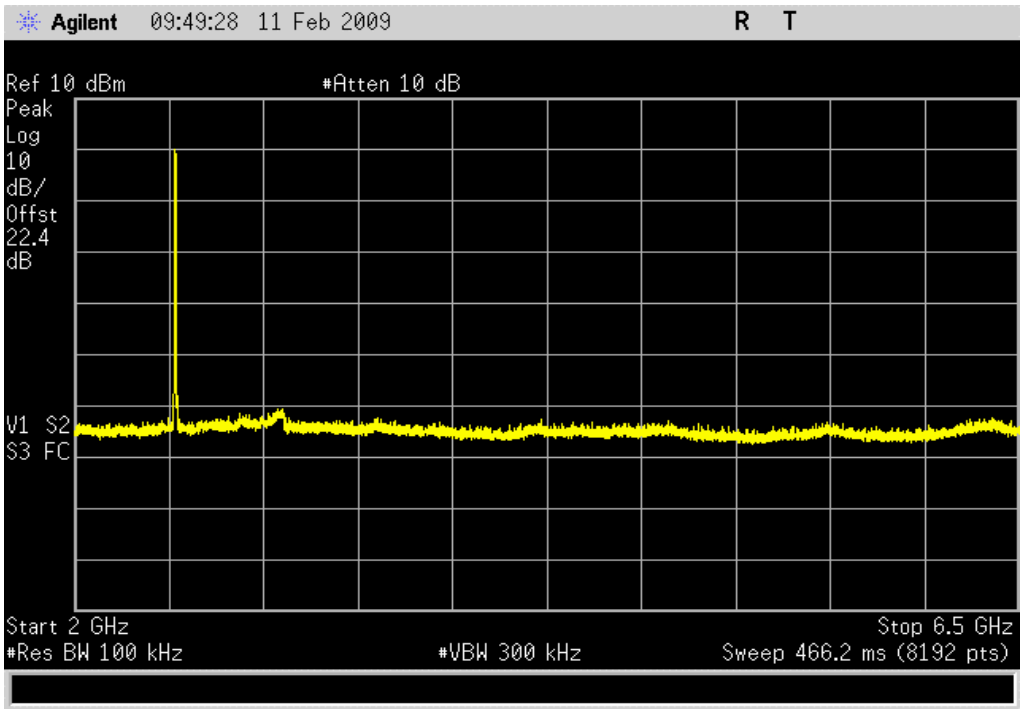
Mid Channel, 12.5 GHz - 25 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



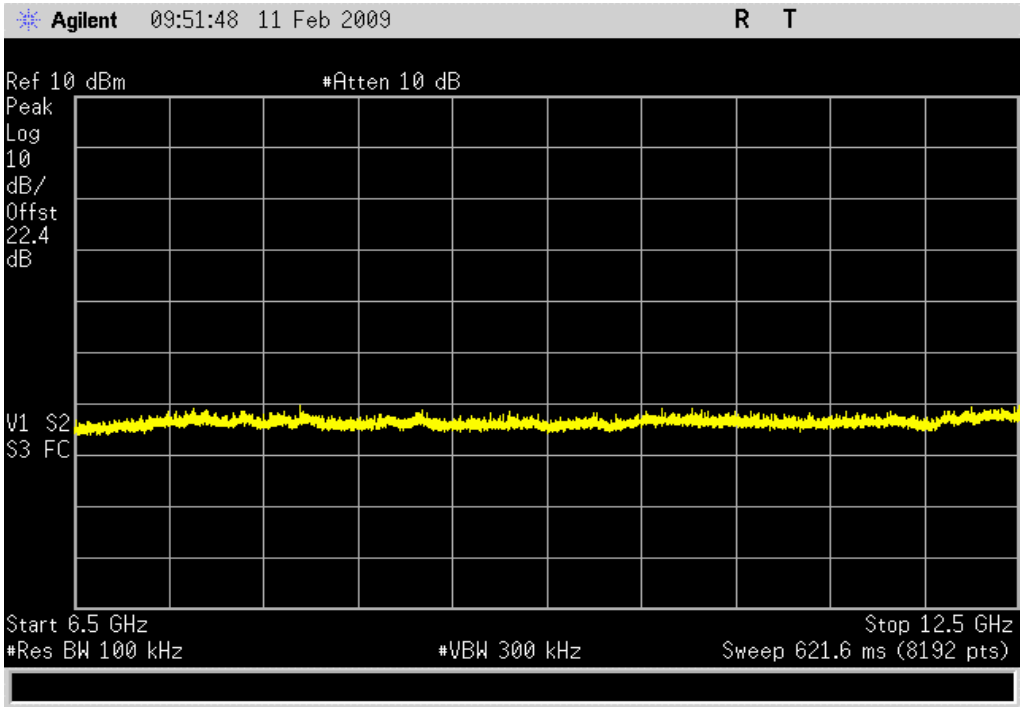
High Channel, 0 MHz - 2 GHz					
Result:	Pass	**Value:**	< - 40 dBc	**Limit:**	≤ -20 dBc



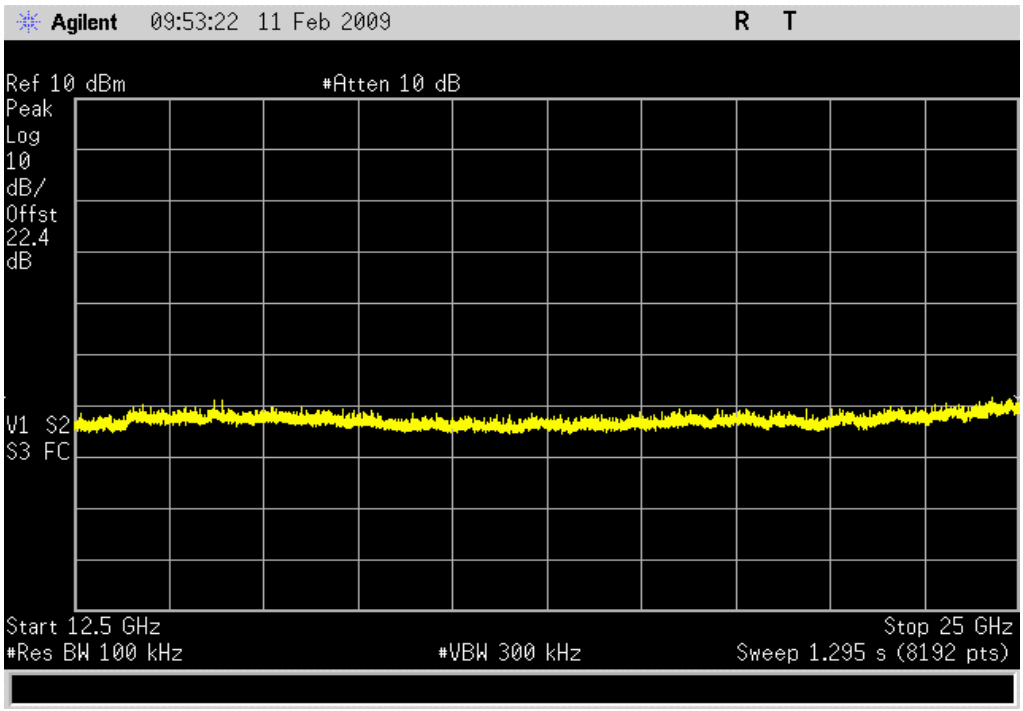
High Channel, 2 GHz - 6.5 GHz					
Result:	Pass	**Value:**	< - 40 dBc	**Limit:**	≤ -20 dBc

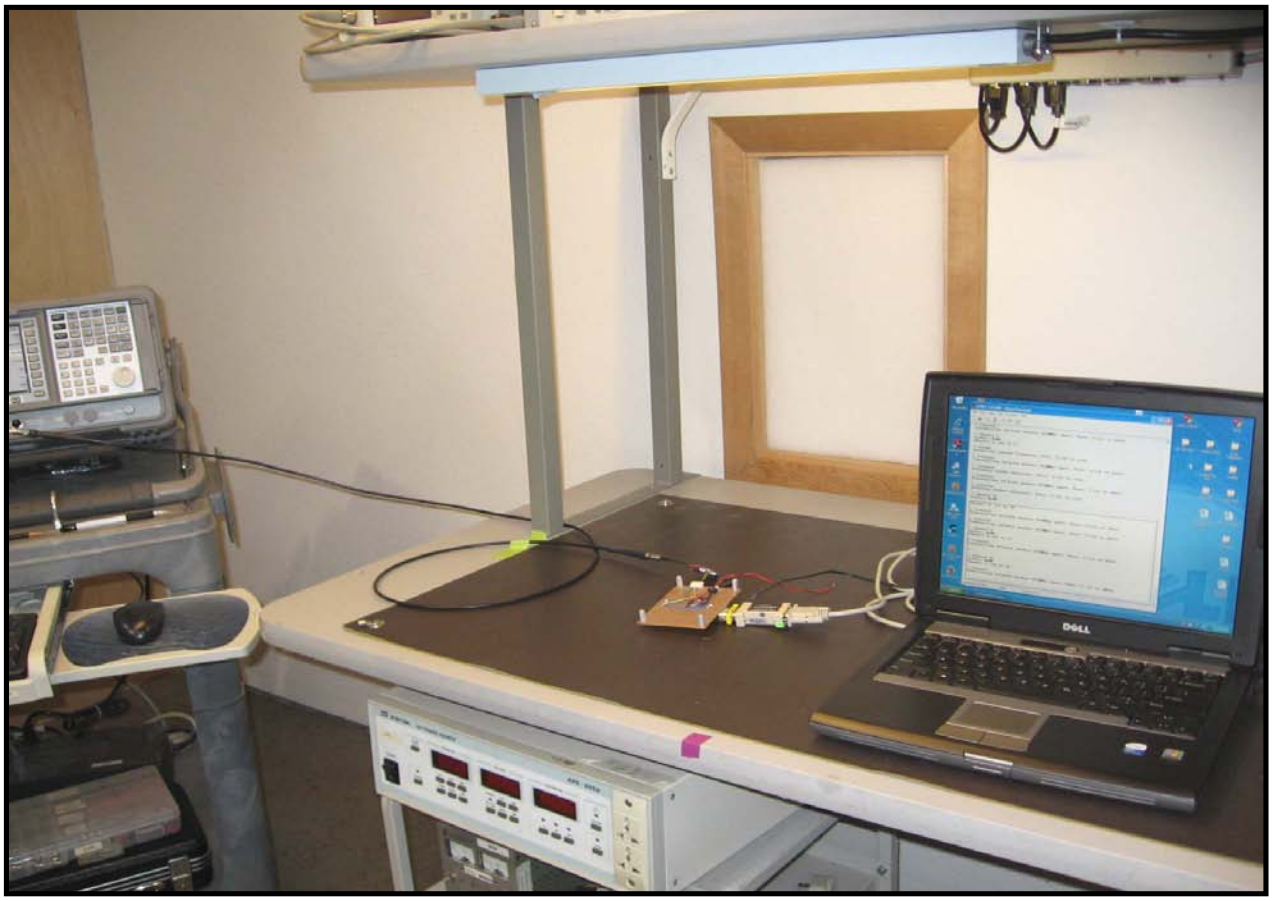


High Channel, 6.5 GHz - 12.5 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



High Channel, 12.5 GHz - 25 GHz					
Result:	Pass	**Value:**	< - 40 dBc	**Limit:**	≤ -20 dBc




DELL

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.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4407B	AAU	12/7/2007	13
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	6/27/2008	13
Pre-Amplifier (FOR REFERENCE ONLY)	Hewlett-Packard	83017A	APL	NCR	0
Signal Generator	Hewlett-Packard	8648D	TGC	12/7/2007	13

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

The peak power spectral density measurements were measured with the EUT set to low, mid, and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at its maximum data rate for each modulation type available. Per the procedure outlined in FCC KDB 558074, March 23, 2005, the spectrum analyzer was used as follows:

> The emission peak(s) were located and zoom in on within the passband. The resolution bandwidth was set to 3 kHz, the video bandwidth was set to greater than or equal to the resolution bandwidth. The sweep speed was set equal to the span divided by 3 kHz (sweep = (SPAN/3 kHz)). For example, given a span of 1.5 MHz, the sweep should be 1.5 x 10^6 ÷ 3 x 10^3 = 500 seconds. External attenuation was used and added to the reading. The following FCC procedure was used for modifying the power spectral density measurements:

"If the spectrum line spacing cannot be resolved on the available spectrum analyzer, the noise density function on most modern conventional spectrum analyzers will directly measure the noise power density normalized to a 1 Hz noise power bandwidth. Add 34.8 dB for correction to 3 kHz."

NORTHWEST EMC

POWER SPECTRAL DENSITY

XMit 2007.06.13

EUT:	URMA-2450			**Work Order:**	CIPH0016
Serial Number:	1016 (low and mid), 1014 (high)			**Date:**	02/11/09
Customer:	Cipher Systems, Inc.			**Temperature:**	21°C
Attendees:	Steve McCoy, Carl Van Wormer			**Humidity:**	32%
Project:	None			**Barometric Pres.:**	30.14 in
Tested by:	Rod Peloquin	**Power:**	5 VDC	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247 (DTS):2008	ANSI C63.4:2003 KDB No. 558074

COMMENTS

Operating with a duty cycle of 100%. 0.5 dB added for adapter cable loss. Low and mid channel are operating in 'Normal' mode at +3 dBm. High channel setting was operating the software in 'Normal' mode and power level set to -12 dBm.

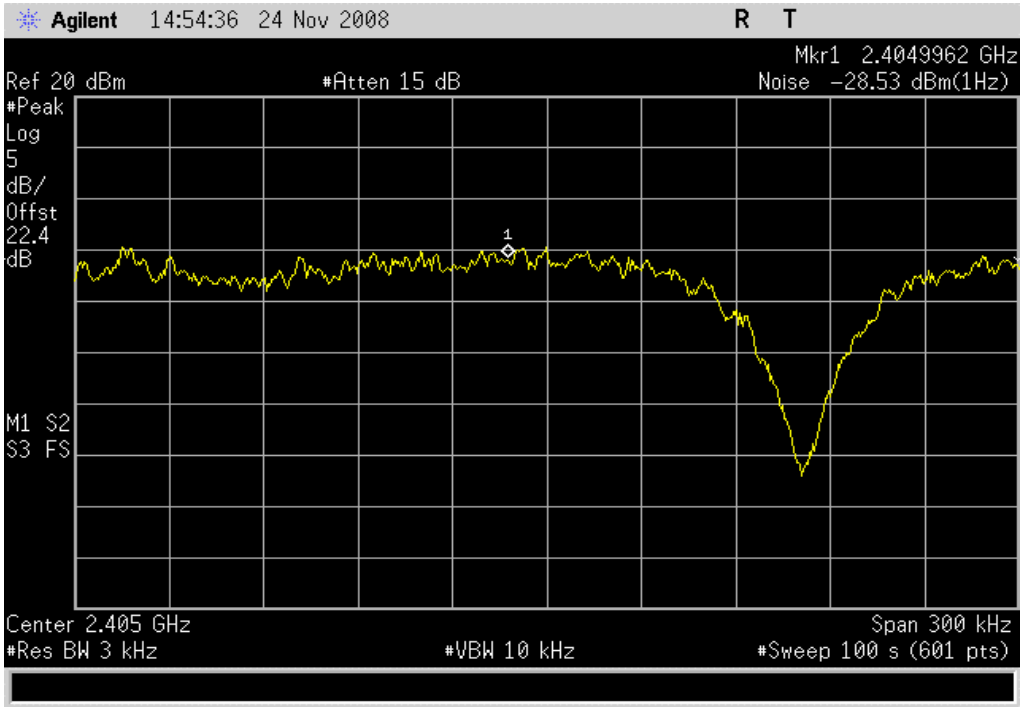
DEVIATIONS FROM TEST STANDARD

No Deviations

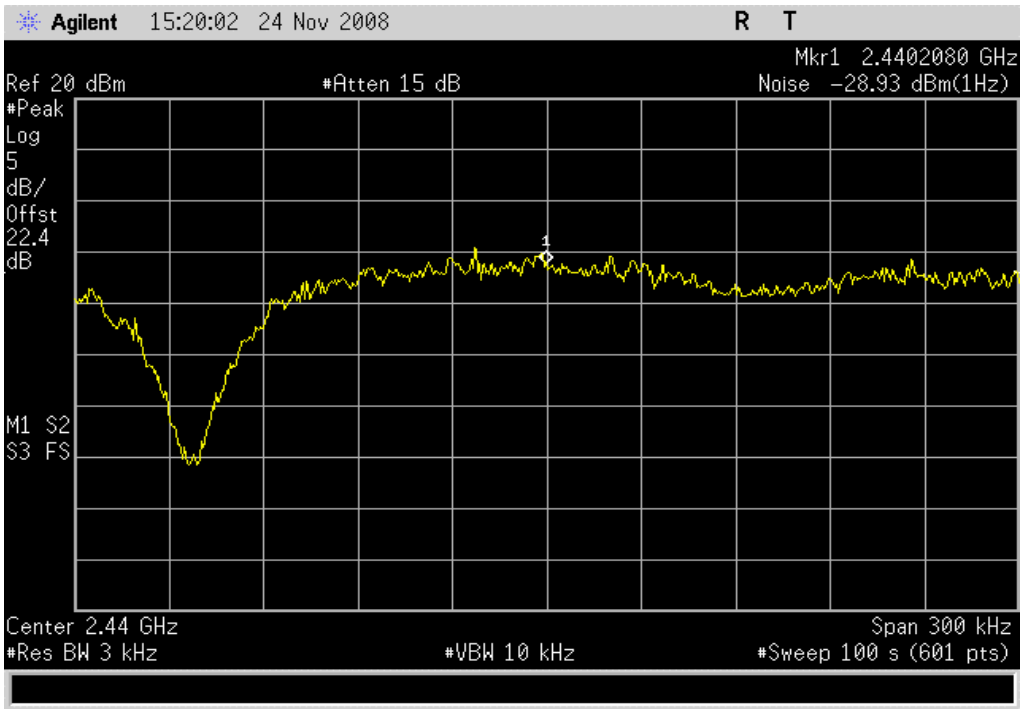
Configuration #	1	Signature

	Value	Limit	Results
Low Channel	6.27 dBm / 3kHz	8 dBm / 3kHz	Pass
Mid Channel	5.87 dBm / 3kHz	8 dBm / 3kHz	Pass
High Channel	-8.79 dBm / 3kHz	8 dBm / 3kHz	Pass

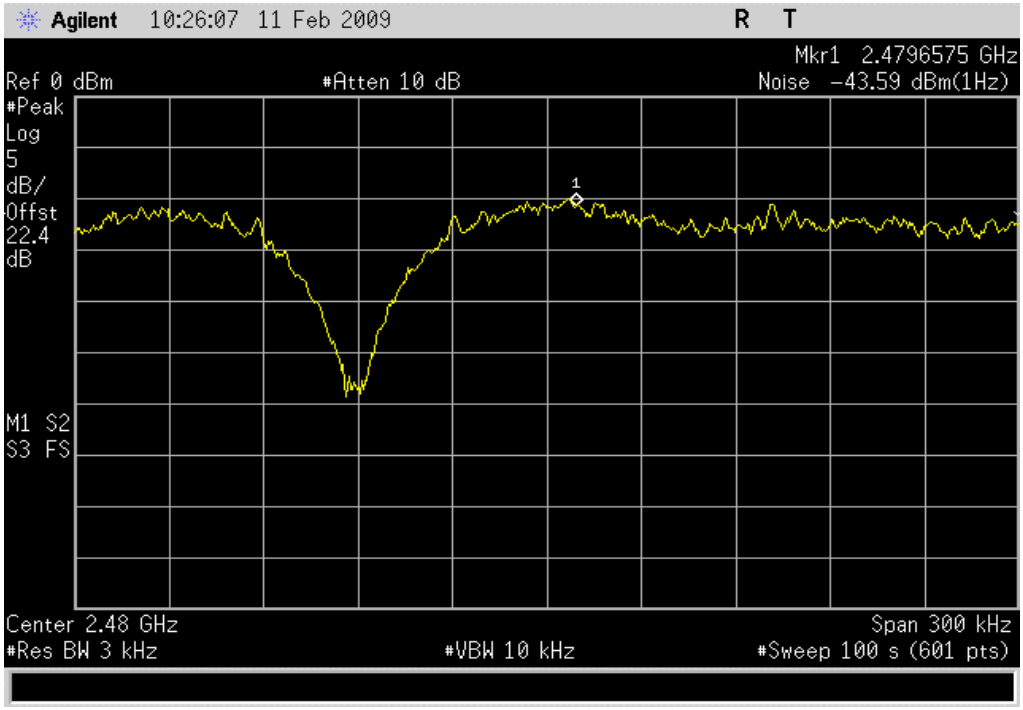
Low Channel					
Result:	Pass	**Value:**	6.27 dBm / 3kHz	**Limit:**	8 dBm / 3kHz



Mid Channel					
Result:	Pass	**Value:**	5.87 dBm / 3kHz	**Limit:**	8 dBm / 3kHz



High Channel					
Result:	Pass	**Value:**	-8.79 dBm / 3kHz	**Limit:**	8 dBm / 3kHz



AC POWERLINE CONDUCTED EMISSIONS

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, High Channel
Tx, Mid Channel
Tx, Low Channel

POWER SETTINGS INVESTIGATED
120V/60Hz

CONFIGURATIONS INVESTIGATED
CIPH0016 - 2

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Receiver	Rohde & Schwarz	ESCI	ARH	8/28/2008	12 mo
EV07 Cables		Conducted Cables	EVG	5/2/2008	13 mo
Attenuator	Coaxicom	66702 2910-20	ATO	6/30/2008	13 mo
High Pass Filter	T.T.E.	7766	HFG	2/5/2008	13 mo
LISN	Solar	9252-50-R-24-BNC	LIR	1/4/2008	13 mo

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

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

The EUT will be powered either directly or indirectly from the AC power line. Therefore, conducted emissions measurements were made on the AC input of the EUT, or on the AC input of 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 C63.4-2003.

NORTHWEST

EMC

AC POWER LINE CONDUCTED EMISSIONS

PSA-ESCI 2008.12.10
Version 2008.3.31

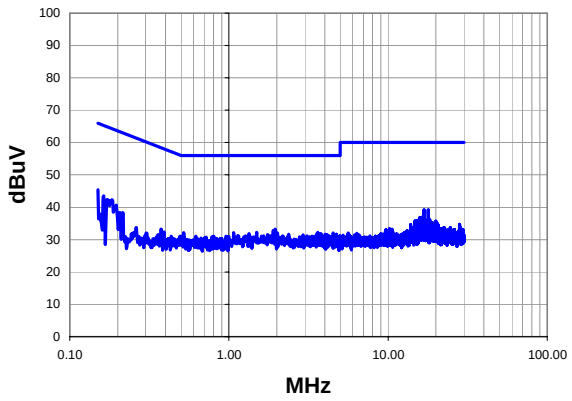
Work Order:	CIPH0017	**Date:**	01/14/09		
Project:	None	**Temperature:**	21		
Job Site:	EV07	**Humidity:**	37		
Serial Number:	1015	**Barometric Pres.:**	1028.6	**Tested by:**	Jennifer Herrett

EUT:	URMA-2450
Configuration:	2 - Conducted Emissions Configuration
Customer:	Cipher Systems, Inc.
Attendees:	Carl VanWormer
EUT Power:	120V/60Hz
Operating Mode:	Tx, Low Channel
Deviations:	No Deviations
Comments:	None

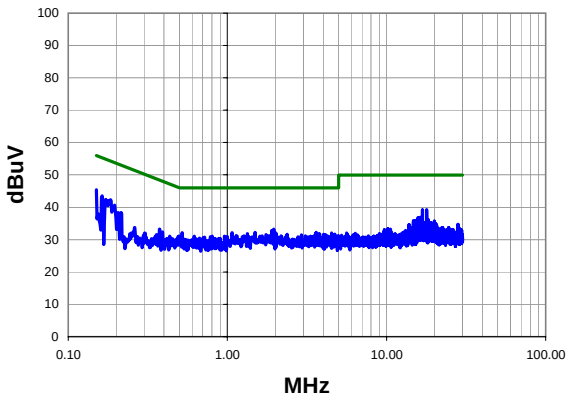
Test Specifications	**Test Method**
FCC 15.207:2009	ANSI C63.4:2003

Run #	2	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.150	23.3	22.1	45.4	66.0	-20.6
17.900	18.5	20.8	39.3	60.0	-20.7
16.850	18.4	20.8	39.2	60.0	-20.8
0.164	21.7	21.8	43.5	65.3	-21.8
0.172	20.8	21.6	42.4	64.9	-22.4
1.952	12.6	20.6	33.2	56.0	-22.8
16.280	16.1	20.8	36.9	60.0	-23.1
1.896	12.2	20.6	32.8	56.0	-23.2
15.780	15.9	20.8	36.7	60.0	-23.3
16.690	15.6	20.8	36.4	60.0	-23.6
1.496	11.7	20.6	32.3	56.0	-23.7
17.830	15.5	20.8	36.3	60.0	-23.7
3.624	11.6	20.6	32.2	56.0	-23.8
1.072	11.6	20.6	32.2	56.0	-23.8
0.519	11.3	20.9	32.2	56.0	-23.8
18.300	15.3	20.8	36.1	60.0	-23.9
4.520	11.4	20.6	32.0	56.0	-24.0
2.016	11.4	20.6	32.0	56.0	-24.0
3.576	11.3	20.6	31.9	56.0	-24.1
1.336	11.3	20.6	31.9	56.0	-24.1

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.150	23.3	22.1	45.4	56.0	-10.6
17.900	18.5	20.8	39.3	50.0	-10.7
16.850	18.4	20.8	39.2	50.0	-10.8
0.164	21.7	21.8	43.5	55.3	-11.8
0.172	20.8	21.6	42.4	54.9	-12.4
1.952	12.6	20.6	33.2	46.0	-12.8
16.280	16.1	20.8	36.9	50.0	-13.1
1.896	12.2	20.6	32.8	46.0	-13.2
15.780	15.9	20.8	36.7	50.0	-13.3
16.690	15.6	20.8	36.4	50.0	-13.6
1.496	11.7	20.6	32.3	46.0	-13.7
17.830	15.5	20.8	36.3	50.0	-13.7
3.624	11.6	20.6	32.2	46.0	-13.8
1.072	11.6	20.6	32.2	46.0	-13.8
0.519	11.3	20.9	32.2	46.0	-13.8
18.300	15.3	20.8	36.1	50.0	-13.9
4.520	11.4	20.6	32.0	46.0	-14.0
2.016	11.4	20.6	32.0	46.0	-14.0
3.576	11.3	20.6	31.9	46.0	-14.1
1.336	11.3	20.6	31.9	46.0	-14.1

NORTHWEST

EMC

AC POWER LINE CONDUCTED EMISSIONS

PSA-ESCI 2008.12.10
Version 2008.3.31

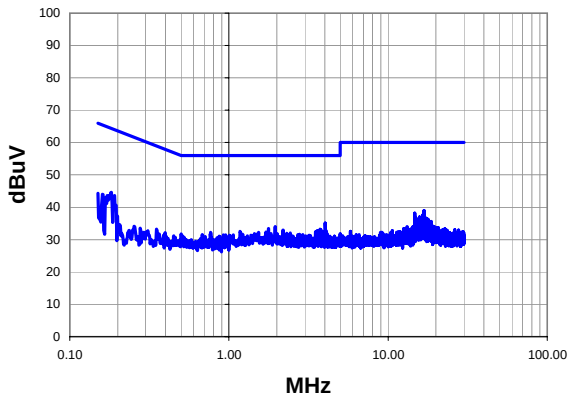
Work Order:	CIPH0017	**Date:**	01/14/09		
Project:	None	**Temperature:**	21		
Job Site:	EV07	**Humidity:**	37		
Serial Number:	1015	**Barometric Pres.:**	1028.6	**Tested by:**	Jennifer Herrett

EUT:	URMA-2450
Configuration:	2 - Conducted Emissions Configuration
Customer:	Cipher Systems, Inc.
Attendees:	Carl VanWormer
EUT Power:	120V/60Hz
Operating Mode:	Tx, Low Channel
Deviations:	No Deviations
Comments:	None

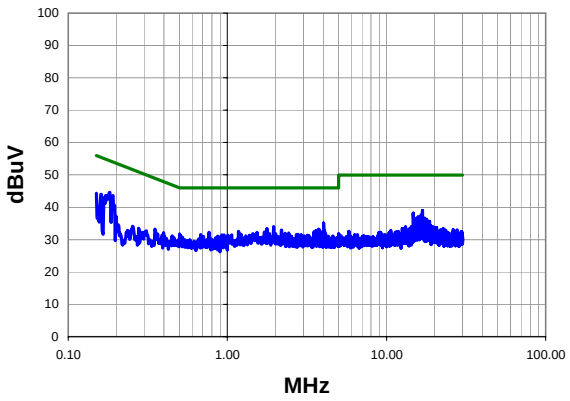
Test Specifications	**Test Method**
FCC 15.207:2009	ANSI C63.4:2003

Run #	3	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.182	23.2	21.4	44.6	64.4	-19.8
0.191	22.4	21.2	43.6	64.0	-20.4
4.024	14.5	20.6	35.1	56.0	-20.9
16.850	18.2	20.8	39.0	60.0	-21.0
0.160	22.2	21.9	44.1	65.5	-21.4
0.150	22.3	22.1	44.4	66.0	-21.6
14.730	17.4	20.8	38.2	60.0	-21.8
1.952	13.4	20.6	34.0	56.0	-22.0
16.490	16.8	20.8	37.6	60.0	-22.4
16.550	16.7	20.8	37.5	60.0	-22.5
1.776	12.8	20.6	33.4	56.0	-22.6
3.728	12.6	20.6	33.2	56.0	-22.8
3.784	12.4	20.6	33.0	56.0	-23.0
15.790	16.2	20.8	37.0	60.0	-23.0
2.184	12.3	20.6	32.9	56.0	-23.1
16.430	16.1	20.8	36.9	60.0	-23.1
16.790	16.0	20.8	36.8	60.0	-23.2
16.610	16.0	20.8	36.8	60.0	-23.2
4.088	12.1	20.6	32.7	56.0	-23.3
3.672	12.1	20.6	32.7	56.0	-23.3

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.182	23.2	21.4	44.6	54.4	-9.8
0.191	22.4	21.2	43.6	54.0	-10.4
4.024	14.5	20.6	35.1	46.0	-10.9
16.850	18.2	20.8	39.0	50.0	-11.0
0.160	22.2	21.9	44.1	55.5	-11.4
0.150	22.3	22.1	44.4	56.0	-11.6
14.730	17.4	20.8	38.2	50.0	-11.8
1.952	13.4	20.6	34.0	46.0	-12.0
16.490	16.8	20.8	37.6	50.0	-12.4
16.550	16.7	20.8	37.5	50.0	-12.5
1.776	12.8	20.6	33.4	46.0	-12.6
3.728	12.6	20.6	33.2	46.0	-12.8
3.784	12.4	20.6	33.0	46.0	-13.0
15.790	16.2	20.8	37.0	50.0	-13.0
2.184	12.3	20.6	32.9	46.0	-13.1
16.430	16.1	20.8	36.9	50.0	-13.1
16.790	16.0	20.8	36.8	50.0	-13.2
16.610	16.0	20.8	36.8	50.0	-13.2
4.088	12.1	20.6	32.7	46.0	-13.3
3.672	12.1	20.6	32.7	46.0	-13.3

NORTHWEST

EMC

AC POWER LINE CONDUCTED EMISSIONS

PSA-ESCI 2008.12.10
Version 2008.3.31

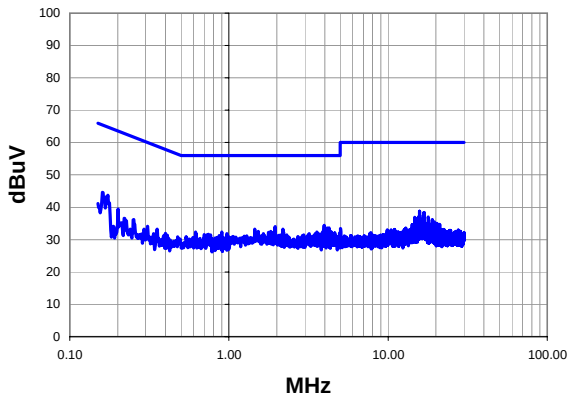
Work Order:	CIPH0017	**Date:**	01/14/09		
Project:	None	**Temperature:**	21		
Job Site:	EV07	**Humidity:**	37		
Serial Number:	1015	**Barometric Pres.:**	1028.6	**Tested by:**	Jennifer Herrett

EUT:	URMA-2450
Configuration:	2 - Conducted Emissions Configuration
Customer:	Cipher Systems, Inc.
Attendees:	Carl VanWormer
EUT Power:	120V/60Hz
Operating Mode:	Tx, Mid Channel
Deviations:	No Deviations
Comments:	None

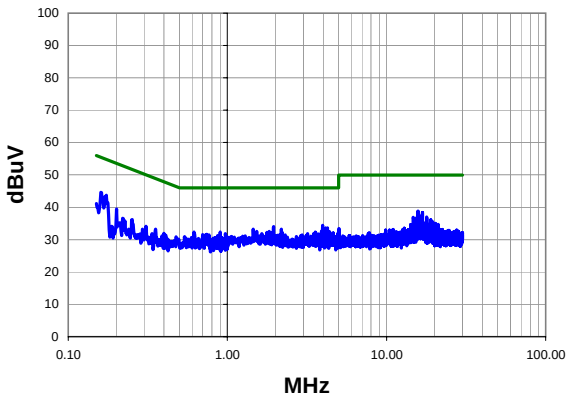
Test Specifications	**Test Method**
FCC 15.207:2009	ANSI C63.4:2003

Run #	4	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.160	22.8	21.9	44.7	65.5	-20.8
0.174	22.1	21.6	43.7	64.8	-21.1
15.790	18.0	20.8	38.8	60.0	-21.2
3.960	13.8	20.6	34.4	56.0	-21.6
16.840	17.6	20.8	38.4	60.0	-21.6
1.952	13.4	20.6	34.0	56.0	-22.0
4.256	13.0	20.6	33.6	56.0	-22.4
16.630	16.8	20.8	37.6	60.0	-22.4
4.136	12.9	20.6	33.5	56.0	-22.5
2.184	12.6	20.6	33.2	56.0	-22.8
1.456	12.6	20.6	33.2	56.0	-22.8
15.630	16.3	20.8	37.1	60.0	-22.9
17.900	16.2	20.8	37.0	60.0	-23.0
14.740	16.1	20.8	36.9	60.0	-23.1
3.904	12.0	20.6	32.6	56.0	-23.4
1.528	12.0	20.6	32.6	56.0	-23.4
1.832	11.9	20.6	32.5	56.0	-23.5
15.040	15.7	20.8	36.5	60.0	-23.5
0.900	11.7	20.6	32.3	56.0	-23.7
4.392	11.7	20.6	32.3	56.0	-23.7

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.160	22.8	21.9	44.7	55.5	-10.8
0.174	22.1	21.6	43.7	54.8	-11.1
15.790	18.0	20.8	38.8	50.0	-11.2
3.960	13.8	20.6	34.4	46.0	-11.6
16.840	17.6	20.8	38.4	50.0	-11.6
1.952	13.4	20.6	34.0	46.0	-12.0
4.256	13.0	20.6	33.6	46.0	-12.4
16.630	16.8	20.8	37.6	50.0	-12.4
4.136	12.9	20.6	33.5	46.0	-12.5
2.184	12.6	20.6	33.2	46.0	-12.8
1.456	12.6	20.6	33.2	46.0	-12.8
15.630	16.3	20.8	37.1	50.0	-12.9
17.900	16.2	20.8	37.0	50.0	-13.0
14.740	16.1	20.8	36.9	50.0	-13.1
3.904	12.0	20.6	32.6	46.0	-13.4
1.528	12.0	20.6	32.6	46.0	-13.4
1.832	11.9	20.6	32.5	46.0	-13.5
15.040	15.7	20.8	36.5	50.0	-13.5
0.900	11.7	20.6	32.3	46.0	-13.7
4.392	11.7	20.6	32.3	46.0	-13.7

NORTHWEST

EMC

AC POWER LINE CONDUCTED EMISSIONS

PSA-ESCI 2008.12.10
Version 2008.3.31

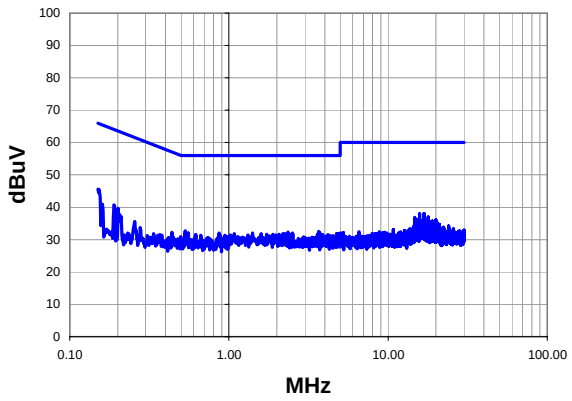
Work Order:	CIPH0017	**Date:**	01/14/09		
Project:	None	**Temperature:**	21		
Job Site:	EV07	**Humidity:**	37		
Serial Number:	1015	**Barometric Pres.:**	1028.6	**Tested by:**	Jennifer Herrett

EUT:	URMA-2450
Configuration:	2 - Conducted Emissions Configuration
Customer:	Cipher Systems, Inc.
Attendees:	Carl VanWormer
EUT Power:	120V/60Hz
Operating Mode:	Tx, Mid Channel
Deviations:	No Deviations
Comments:	None

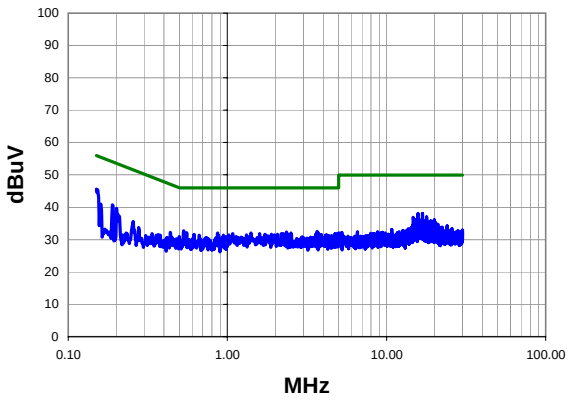
Test Specifications	**Test Method**
FCC 15.207:2009	ANSI C63.4:2003

Run #	5	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.150	23.5	22.1	45.6	66.0	-20.4
16.850	17.3	20.8	38.1	60.0	-21.9
15.780	17.2	20.8	38.0	60.0	-22.0
17.890	16.2	20.8	37.0	60.0	-23.0
14.740	16.1	20.8	36.9	60.0	-23.1
0.531	11.9	20.9	32.8	56.0	-23.2
0.189	19.5	21.3	40.8	64.1	-23.3
3.664	11.9	20.6	32.5	56.0	-23.5
2.352	11.7	20.6	32.3	56.0	-23.7
16.690	15.4	20.8	36.2	60.0	-23.8
15.320	15.4	20.8	36.2	60.0	-23.8
0.555	11.3	20.9	32.2	56.0	-23.8
3.720	11.5	20.6	32.1	56.0	-23.9
19.990	15.3	20.8	36.1	60.0	-23.9
0.201	18.6	21.1	39.7	63.6	-23.9
1.408	11.5	20.6	32.1	56.0	-23.9
16.790	15.3	20.8	36.1	60.0	-23.9
0.867	11.4	20.7	32.1	56.0	-23.9
2.512	11.4	20.6	32.0	56.0	-24.0
4.952	11.3	20.6	31.9	56.0	-24.1

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.150	23.5	22.1	45.6	56.0	-10.4
16.850	17.3	20.8	38.1	50.0	-11.9
15.780	17.2	20.8	38.0	50.0	-12.0
17.890	16.2	20.8	37.0	50.0	-13.0
14.740	16.1	20.8	36.9	50.0	-13.1
0.531	11.9	20.9	32.8	46.0	-13.2
0.189	19.5	21.3	40.8	54.1	-13.3
3.664	11.9	20.6	32.5	46.0	-13.5
2.352	11.7	20.6	32.3	46.0	-13.7
16.690	15.4	20.8	36.2	50.0	-13.8
15.320	15.4	20.8	36.2	50.0	-13.8
0.555	11.3	20.9	32.2	46.0	-13.8
3.720	11.5	20.6	32.1	46.0	-13.9
19.990	15.3	20.8	36.1	50.0	-13.9
0.201	18.6	21.1	39.7	53.6	-13.9
1.408	11.5	20.6	32.1	46.0	-13.9
16.790	15.3	20.8	36.1	50.0	-13.9
0.867	11.4	20.7	32.1	46.0	-13.9
2.512	11.4	20.6	32.0	46.0	-14.0
4.952	11.3	20.6	31.9	46.0	-14.1

NORTHWEST

EMC

AC POWER LINE CONDUCTED EMISSIONS

PSA-ESCI 2008.12.10
Version 2008.3.31

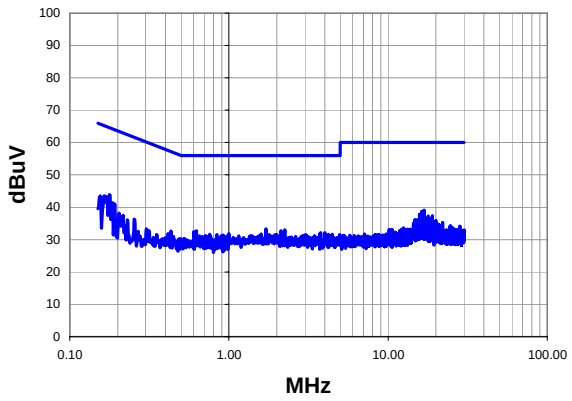
Work Order:	CIPH0017	**Date:**	01/14/09		
Project:	None	**Temperature:**	21		
Job Site:	EV07	**Humidity:**	37		
Serial Number:	1015	**Barometric Pres.:**	1028.6	**Tested by:**	Jennifer Herrett

EUT:	URMA-2450
Configuration:	2 - Conducted Emissions Configuration
Customer:	Cipher Systems, Inc.
Attendees:	Carl VanWormer
EUT Power:	120V/60Hz
Operating Mode:	Tx, High Channel
Deviations:	No Deviations
Comments:	None

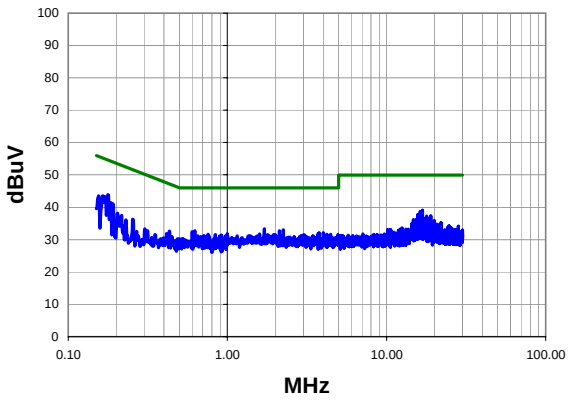
Test Specifications	**Test Method**
FCC 15.207:2009	ANSI C63.4:2003

Run #	6	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.177	22.4	21.5	43.9	64.6	-20.7
16.850	18.3	20.8	39.1	60.0	-20.9
16.310	17.9	20.8	38.7	60.0	-21.3
0.165	21.8	21.8	43.6	65.2	-21.6
0.155	21.6	22.0	43.6	65.7	-22.2
15.790	17.0	20.8	37.8	60.0	-22.2
1.712	12.7	20.6	33.3	56.0	-22.7
18.960	16.5	20.8	37.3	60.0	-22.7
17.900	16.5	20.8	37.3	60.0	-22.7
16.640	16.5	20.8	37.3	60.0	-22.7
0.184	20.1	21.4	41.5	64.3	-22.8
0.191	19.8	21.2	41.0	64.0	-23.0
2.240	12.4	20.6	33.0	56.0	-23.0
0.624	11.9	20.8	32.7	56.0	-23.3
2.120	12.1	20.6	32.7	56.0	-23.3
17.020	15.9	20.8	36.7	60.0	-23.3
0.601	11.6	20.8	32.4	56.0	-23.6
18.430	15.5	20.8	36.3	60.0	-23.7
16.710	15.5	20.8	36.3	60.0	-23.7
14.750	15.4	20.8	36.2	60.0	-23.8

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.177	22.4	21.5	43.9	54.6	-10.7
16.850	18.3	20.8	39.1	50.0	-10.9
16.310	17.9	20.8	38.7	50.0	-11.3
0.165	21.8	21.8	43.6	55.2	-11.6
0.155	21.6	22.0	43.6	55.7	-12.2
15.790	17.0	20.8	37.8	50.0	-12.2
1.712	12.7	20.6	33.3	46.0	-12.7
18.960	16.5	20.8	37.3	50.0	-12.7
17.900	16.5	20.8	37.3	50.0	-12.7
16.640	16.5	20.8	37.3	50.0	-12.7
0.184	20.1	21.4	41.5	54.3	-12.8
0.191	19.8	21.2	41.0	54.0	-13.0
2.240	12.4	20.6	33.0	46.0	-13.0
0.624	11.9	20.8	32.7	46.0	-13.3
2.120	12.1	20.6	32.7	46.0	-13.3
17.020	15.9	20.8	36.7	50.0	-13.3
0.601	11.6	20.8	32.4	46.0	-13.6
18.430	15.5	20.8	36.3	50.0	-13.7
16.710	15.5	20.8	36.3	50.0	-13.7
14.750	15.4	20.8	36.2	50.0	-13.8

NORTHWEST

EMC

AC POWER LINE CONDUCTED EMISSIONS

PSA-ESCI 2008.12.10
Version 2008.3.31

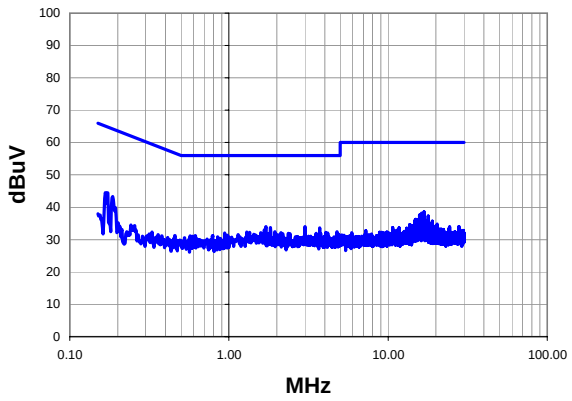
Work Order:	CIPH0017	**Date:**	01/14/09		
Project:	None	**Temperature:**	21		
Job Site:	EV07	**Humidity:**	37		
Serial Number:	1015	**Barometric Pres.:**	1028.6	**Tested by:**	Jennifer Herrett

EUT:	URMA-2450
Configuration:	2 - Conducted Emissions Configuration
Customer:	Cipher Systems, Inc.
Attendees:	Carl VanWormer
EUT Power:	120V/60Hz
Operating Mode:	Tx, High Channel
Deviations:	No Deviations
Comments:	None

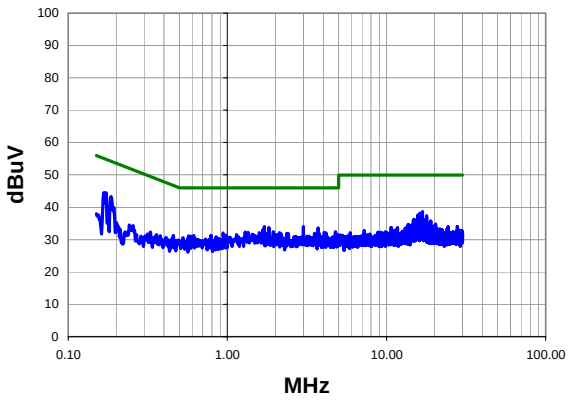
Test Specifications	**Test Method**
FCC 15.207:2009	ANSI C63.4:2003

Run #	7	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.172	22.9	21.6	44.5	64.9	-20.3
0.167	22.8	21.7	44.5	65.1	-20.6
0.186	22.0	21.3	43.3	64.2	-20.9
16.840	17.8	20.8	38.6	60.0	-21.4
16.240	17.4	20.8	38.2	60.0	-21.8
3.000	13.4	20.6	34.0	56.0	-22.0
1.712	13.4	20.6	34.0	56.0	-22.0
16.410	17.0	20.8	37.8	60.0	-22.2
1.824	13.1	20.6	33.7	56.0	-22.3
3.712	13.0	20.6	33.6	56.0	-22.4
15.780	16.8	20.8	37.6	60.0	-22.4
17.890	16.5	20.8	37.3	60.0	-22.7
1.672	12.4	20.6	33.0	56.0	-23.0
16.650	15.8	20.8	36.6	60.0	-23.4
16.000	15.7	20.8	36.5	60.0	-23.5
4.768	11.8	20.6	32.4	56.0	-23.6
1.944	11.8	20.6	32.4	56.0	-23.6
1.296	11.8	20.6	32.4	56.0	-23.6
16.540	15.6	20.8	36.4	60.0	-23.6
1.352	11.7	20.6	32.3	56.0	-23.7

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.172	22.9	21.6	44.5	54.9	-10.3
0.167	22.8	21.7	44.5	55.1	-10.6
0.186	22.0	21.3	43.3	54.2	-10.9
16.840	17.8	20.8	38.6	50.0	-11.4
16.240	17.4	20.8	38.2	50.0	-11.8
3.000	13.4	20.6	34.0	46.0	-12.0
1.712	13.4	20.6	34.0	46.0	-12.0
16.410	17.0	20.8	37.8	50.0	-12.2
1.824	13.1	20.6	33.7	46.0	-12.3
3.712	13.0	20.6	33.6	46.0	-12.4
15.780	16.8	20.8	37.6	50.0	-12.4
17.890	16.5	20.8	37.3	50.0	-12.7
1.672	12.4	20.6	33.0	46.0	-13.0
16.650	15.8	20.8	36.6	50.0	-13.4
16.000	15.7	20.8	36.5	50.0	-13.5
4.768	11.8	20.6	32.4	46.0	-13.6
1.944	11.8	20.6	32.4	46.0	-13.6
1.296	11.8	20.6	32.4	46.0	-13.6
16.540	15.6	20.8	36.4	50.0	-13.6
1.352	11.7	20.6	32.3	46.0	-13.7