

**FCC PART 15 SUBPART B and C
TEST REPORT**

for

COMCAST XR8 RF4CE SERIAL DONGLE 2012

Model: URC-4868BC0-R

Prepared for

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DATE: AUGUST 13, 2013

	REPORT BODY	APPENDICES					TOTAL
		A	B	C	D	E	
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GENERAL REPORT SUMMARY

Compatible Electronics Inc. generates this electromagnetic emission test report, which is an independent testing and consulting firm. The test report is based on testing performed by Compatible Electronics personnel according to the measurement procedures described in the test specifications given below and in the "Test Procedures" section of this report.

The measurement data and conclusions appearing herein relate only to the sample tested and this report may not be reproduced without the written permission of Compatible Electronics, unless done so in full.

This report must not be used to claim product endorsement by NVLAP, NIST or any other agency of the U.S. Government.

Device Tested: Comcast XR8 RF4CE Serial Dongle 2012
Model: URC-4868BC0-R
S/N: N/A

Product Description: See Expository Statement

Modifications: The EUT was not modified in order to meet the specifications.

Customer: Universal Electronics, Inc.
201 East Sandpointe Avenue, 8th Floor
Santa Ana, California 92707

Test Date(s): July 8, 2013 and August 1, 2013

Test Specifications: Emissions requirements
CFR Title 47, Part 15, Subpart B and Subpart C, Sections 15.205, 15.207, 15.209, and 15.249

Test Procedure: ANSI C63.4

Test Deviations: The test procedure was not deviated from during the testing.

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions 150 kHz to 30 MHz	Complies with the Class B limits of CFR Title 47, Part 15, Subpart B; and Subpart C, section 15.207
2	Radiated RF Emissions 10 kHz to 25000 MHz (Transmitter and Digital Portion)	Complies with the Class B limits of CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209, and 15.249.

1. PURPOSE

This document is a qualification test report based on the emissions tests performed on the Comcast XR8 RF4CE Serial Dongle 2012, Model: URC-4868BC0-R (EUT). The emissions measurements were performed according to the measurement procedure described in ANSI C63.4. The tests were performed in order to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT hereafter, are within the Class B specification limits defined by CFR Title 47, Part 15, Subpart B for the digital portion; and the limits defined in Subpart C, sections 15.205, 15.207, 15.209, and 15.249 for the transmitter portion.



2. ADMINISTRATIVE DATA

2.1 Location of Testing

The Emissions tests described herein were performed at the test facility of Compatible Electronics, 114 Olinda Drive, Brea, California.

2.2 Traceability Statement

The calibration certificates of all test equipment used during the test are on file at the location of the test. The calibration is traceable to the National Institute of Standards and Technology (NIST).

2.3 Cognizant Personnel

Universal Electronics, Inc.

Jesse Mendez Senior Electrical Core Engineer

Compatible Electronics Inc.

James Ross Test Engineer

Kyle Fujimoto Test Engineer

2.4 Date Test Sample was Received

The test sample was received on the initial test date of July 8, 2013.

2.5 Disposition of the Test Sample

The test sample has not been returned to Universal Electronics, Inc. as of the date of the test report.

2.6 Abbreviations and Acronyms

The following abbreviations and acronyms may be used in this document.

FCC	Federal Communications Commission
RF	Radio Frequency
EMI	Electromagnetic Interference
EUT	Equipment Under Test
P/N	Part Number
S/N	Serial Number
ITE	Information Technology Equipment
LISN	Line Impedance Stabilization Network
NVLAP	National Voluntary Laboratory Accreditation Program
CFR	Code of Federal Regulations
N/A	Not Applicable
Ltd.	Limited
Inc.	Incorporated
NCR	No Calibration Required
PCB	Printed Circuit Board

3. APPLICABLE DOCUMENTS

The following documents are referenced or used in the preparation of this Emissions Test Report.

SPEC	TITLE
CFR Title 47, Part 15	FCC Rules – Radio frequency devices (including digital devices)
ANSI C63.4: 2009	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description of Test Configuration – Emissions

Radiated Emissions Configuration: The Comcast XR8 RF4CE Serial Dongle 2012, Model: URC-4868BC0-R (EUT) was connected to a DC power supply and programming PCB. The programming PCB was also connected to the laptop via its USB port. The laptop was also connected to a power supply and router via its power and ethernet ports, respectively. The router was also connected to a power adapter via its power port. The EUT was programmed via the laptop that enabled the EUT to be tested at the low, middle, or high channels. The EUT was continuously transmitting and tested in three orthogonal axis.

Conducted Emissions in Laptop Mode: The Comcast XR8 RF4CE Serial Dongle 2012, Model: URC-4868BC0-R (EUT) was connected to an AC to DC travel charger and programming PCB. The programming PCB was also connected to the laptop via its USB port. The laptop was also connected to a power supply and router via its power and ethernet ports, respectively. The router was also connected to a power adapter via its power port. The EUT was continuously transmitting.

Conducted Emissions in Set Top Box Mode: The Comcast XR8 RF4CE Serial Dongle 2012, Model: URC-4868BC0-R (EUT) was directly connected to the set top box. The set top box was connected to the television via its output port. The EUT was continuously transmitting.

It was determined that the emissions were at their highest level when the EUT was operating in the above configuration. The final emissions data was taken in this mode of operation and any cables were maximized. All initial investigations were performed with the measurement receiver in manual mode scanning the frequency range continuously. Photographs of the test setup are in Appendix D of this report.

4.1.1 Cable Construction and Termination

Radiated Emissions Configuration:

- Cable 1** This is a 10-centimeter unshielded cable connecting the EUT to the programming board. The cable has a 12-pin terminal block at the programming board end and is hard wired into the EUT.
- Cable 2** This is a 2-meter unshielded cable connecting the laptop to the power supply. The cable has a 1-pin power connector at the laptop end and is hard wired into the power supply. The cable was bundled to a length of 1-meter. The cable has a molded ferrite at the laptop end.
- Cable 3** This is a 1-meter unshielded cable connecting the laptop to the router. The cable has an RJ-45 connector at each end.
- Cable 4** This is a 2-meter braid and foil shielded cable connecting the programming board to the laptop. The cable has a mini-USB connector at the programming board end and a USB type 'A' connector at the laptop end. The cable was bundled to a length of 1-meter. The shield of the cable was grounded to the chassis via the connectors.
- Cable 5** This is a 2-meter unshielded cable connecting the EUT to the DC power supply. The cable is hard wired at each end. The cable was bundled to a length of 1-meter.
- Cable 6** This is a 2-meter unshielded cable connecting the power adapter to the router. The cable has a 1/8 inch power connector at the router end and is hared wired into the power adapter.

Conducted Emissions in Laptop Mode:

- Cable 1** This is a 10-centimeter unshielded cable connecting the EUT to the programming board. The cable has a 12-pin terminal block at the programming board end and is hard wired into the EUT.
- Cable 2** This is a 2-meter unshielded cable connecting the laptop to the power supply. The cable has a 1-pin power connector at the laptop end and is hard wired into the power supply. The cable was bundled to a length of 1-meter. The cable has a molded ferrite at the laptop end.
- Cable 3** This is a 1-meter unshielded cable connecting the laptop to the router. The cable has an RJ-45 connector at each end.
- Cable 4** This is a 2-meter braid and foil shielded cable connecting the programming board to the laptop. The cable has a mini-USB connector at the programming board end and a USB type 'A' connector at the laptop end. The cable was bundled to a length of 1-meter. The shield of the cable was grounded to the chassis via the connectors.
- Cable 5** This is a 2-meter unshielded cable connecting the EUT to the AC to DC travel charger. The cable is hard wired at each end. The cable was bundled to a length of 1-meter.
- Cable 6** This is a 2-meter unshielded cable connecting the power adapter to the router. The cable has a 1/8 inch power connector at the router end and is hared wired into the power adapter.

4.1.1 Cable Construction and Termination (Continued)

Conducted Emissions in Set Top Box Mode:

Cable 1 This is a 1-meter foil shielded cable connecting the set top box to the television. The cable has an 'F' connector at each end. The shield of the cable was grounded to the chassis via the connectors.



5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

5.1 EUT and Accessory List

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID
COMCAST XR8 RF4CE SERIAL DONGLE 2012 (EUT)	UNIVERSAL ELECTRONICS, INC.	URC-4868BC0-R	N/A	MG3-4868
LAPTOP**	IBM	TYPE: 7664-RWU	L3-G7067 08/04	N/A
AC ADAPTER FOR LAPTOP**	IBM	P/N: 92P1113	11592P1113Z1Z ACW58N0J2	N/A
AC TO DC TRAVEL CHARGER*	ENERCELL	2730437	N/A	N/A
ROUTER**	D-LINK	DI-704	0L00B02399	N/A
PROGRAMMING BOARD**	UNIVERSAL ELECTRONICS, INC.	GR-02620	N/A	N/A
POWER ADAPTER FOR ROUTER**	LINKSYS	AD5V	N/A	N/A
DC POWER SUPPLY****	HQ POWER	PS 603U	N/A	N/A
TELEVISION*****	DAEWOOD	DTQ-13V1FC	GT22CT1324	N/A
SET TOP BOX*****	MOTOROLA	DCX3400/A385/010/ 500	M11001TG6445	N/A

*Only for Conducted Emissions in Laptop Mode

**Only for Radiated Emissions and Conducted Emissions in Laptop Mode.

***Only for Radiated Emissions

****Only for Conducted Emissions in Set Top Box Mode

5.2 Emissions Test Equipment

EQUIPMENT TYPE	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	CALIBRATION DATE	CALIBRATION DUE DATE
GENERAL TEST EQUIPMENT USED IN LAB B					
Computer	Compaq	CQ5210F	CNX9360CF9	N/A	N/A
Monitor	Hewlett Packard	HPs2031a	3CQ046N3MD	N/A	N/A
EMI Receiver	Rohde & Schwarz	ESIB40	100194	November 19, 2012	2 Years
GENERAL TEST EQUIPMENT USED IN LAB D					
Computer	Hewlett Packard	p6716f	MXX1030PX0	N/A	N/A
Monitor	Hewlett Packard	HPs2031a	3CQ046N3MG	N/A	N/A
Spectrum Analyzer – Main Section	Hewlett Packard	8566B	2637A03618	May 6, 2013	1 Year
Spectrum Analyzer – Display Section	Hewlett Packard	85662A	2648A13404	May 6, 2013	1 Year
Quasi-Peak Adapter	Hewlett Packard	85650A	2811A01363	May 29, 2013	1 Year
RF RADIATED EMISSIONS TEST EQUIPMENT					
Combilog Antenna	Com Power	AC-220	61027	May 29, 2013	1 Year
Preamplifier	Com-Power	PA-103	1582	December 28, 2012	1 Year
Preamplifier	Com-Power	PA-118	181656	December 27, 2012	1 Year
Preamplifier	Com-Power	PA-840	711013	May 17, 2012	2 Year
Loop Antenna	Com-Power	AL-130	17089	January 29, 2013	2 Years
Horn Antenna	Com-Power	AH-118	071175	February 29, 2012	2 Years
Horn Antenna	Com-Power	AH-826	0071957	N/A	N/A
Antenna Mast	Com Power	AM-100	N/A	N/A	N/A

5.2 Emissions Test Equipment (Continued)

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CALIBRATION DATE	CALIBRATION CYCLE
CONDCUTED EMISSIONS TEST EQUIPMENT					
Emissions Program	Compatible Electronics	2.3 (SR19)	N/A	N/A	N/A
LISN	Com Power	LI-215	12082	June 17, 2013	1 Year
LISN	Com Power	LI-215	12090	June 17, 2013	1 Year
Transient Limiter	Seward	252A910	K39-0220	November 7, 2012	1 Year

6. TEST SITE DESCRIPTION

6.1 Test Facility Description

Please refer to section 2.1 and 7.1.2 of this report for emissions test location.

6.2 EUT Mounting, Bonding and Grounding

The EUT was mounted on a 1.0 by 1.5 meter non-conductive table 0.8 meters above the ground plane.

The EUT was not grounded.

6.3 Facility Environmental Characteristics

When applicable refer to the data sheets in Appendix E for the relative humidity, air temperature, and barometric pressure.

7. TEST PROCEDURES

The following sections describe the test methods and the specifications for the tests. Test results are also included in this section.

7.1 RF Emissions

7.1.1 Conducted Emissions Test

The measurement receiver was used as a measuring meter. The data was collected with the measurement receiver in the peak detect mode with the "Max Hold" feature activated. The quasi-peak was used only where indicated in the data sheets. A transient limiter was used for the protection of the measurement receiver's input stage, and the offset was adjusted accordingly to read the actual data measured. The LISN output was measured using the measurement receiver. The output of the second LISN was terminated by a 50-ohm termination. The effective measurement bandwidth used for this test was 9 kHz.

Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The EUT was powered through the LISN, which was bonded to the ground plane. The LISN power was filtered and the filter was bonded to the ground plane. The EUT was set up with the minimum distances from any conductive surfaces as specified in ANSI C63.4. The excess power cord was wrapped in a figure eight pattern to form a bundle not exceeding 0.4 meters in length.

The conducted emissions from the EUT were maximized for operating mode as well as cable placement. The final data was collected under program control by the Compatible Electronics conducted emissions software in several overlapping sweeps by running the spectrum analyzer at a minimum scan rate of 10 seconds per octave. The final qualification data is located in Appendix E.

Test Results:

The EUT complies with the **Class B** limits of CFR Title 47, Part 15, Subpart B; and the limits of CFR Title 47, Part 15, Subpart C, Section 15.207.

7.1.2 Radiated Emissions (Spurious and Harmonics) Test

The spectrum analyzer, along with the quasi-peak adapter, and EMI Receiver were used as a measuring meter. Amplifiers were used to increase the sensitivity of the instrument. The Com-Power Preamplifier Model: PA-103 was used for frequencies from 30 MHz to 1 GHz, the Com-Power Microwave Preamplifier Model: PA-118 was used for frequencies from 1 GHz to 18 GHz, and the Com-Power Microwave Preamplifier Model: PA-840 were used for frequencies above 18 GHz. The spectrum analyzer and EMI Receiver were used in the peak detect mode with the "Max Hold" feature activated. In this mode, the spectrum analyzer and EMI receiver records the highest measured reading over the sweeps.

The quasi-peak function was used only for those readings which are marked accordingly on the data sheets.

The frequencies above 1 GHz were adjusted by a "duty cycle correction factor", derived from $20 \log$ (dwell time / worst case 100 ms period).

The measurement bandwidths and transducers used for the radiated emissions test were:

FREQUENCY RANGE	EFFECTIVE MEASUREMENT BANDWIDTH	TRANSDUCER
10 kHz to 150 kHz	200 Hz	Active Loop Antenna
150 kHz to 30 MHz	9 kHz	Active Loop Antenna
30 MHz to 300 MHz	120 kHz	Biconical Antenna
300 MHz to 1 GHz	120 kHz	Log Periodic Antenna
1 GHz to 25 GHz	1 MHz	Horn Antennas

The open field test site of Compatible Electronics, Inc. was used for radiated emission testing. This test site is set up according to ANSI C63.4. Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The turntable supporting the EUT is remote controlled using a motor. The turntable permits EUT rotation of 360 degrees in order to maximize emissions. Also, the antenna mast allows height variation of the antenna from 1 meter to 4 meters. Data was collected in the worst case (highest emission) configuration of the EUT by the Radiated Emission Manual Test software. At each reading, the EUT was rotated 360 degrees and the antenna height was varied from 1 to 4 meters (for E field radiated field strength). The gun sight method was used when measuring with the horn antenna in order to ensure accurate results. The loop antenna was also rotated in the vertical axis in order to ensure accurate results.

Radiated Emissions (Spurious and Harmonics) Test (continued)

For frequencies above 1 GHz, RF absorbing material was used to cover the ground screen to meet the requirements of section 5.5 of ANSI C63.4: 2009.

The presence of ambient signals was verified by turning the EUT off. In case an ambient signal was detected, the measurement bandwidth was reduced temporarily and verification was made that an additional adjacent peak did not exist. This ensures that the ambient signal does not hide any emissions from the EUT. The EUT was tested at a 3-meter test distance from 30 MHz to 25 GHz and at a 10-meter distance from 10 kHz to 30 MHz to obtain the final test data.

Test Results:

The EUT complies with the **Class B** limits of CFR Title 47, Part 15, Subpart B; and the limits of CFR Title 47, Part 15, Subpart C, Sections 15.209 and 15.249.

7.1.3 RF Emissions Test Results

Table 1.0 CONDUCTED EMISSION RESULTS
Comcast XR8 RF4CE Serial Dongle 2012, Model: URC-4868BC0-R

Frequency MHz	Emission Level* dBuV	Average Specification Limit dBuV	Delta (Emission – Spec. Limit) dB
8.777 (BL)	47.00	50.00	-3.00
8.685 (BL)	46.31	50.00	-3.69
8.282 (BL)	45.52	50.00	-4.48
9.256 (BL)	45.42	50.00	-4.58
9.160 (BL)	45.16	50.00	-4.84
0.377 (BL)	43.13	48.34	-5.20

Table 2.0 RADIATED EMISSION RESULTS
Comcast XR8 RF4CE Serial Dongle 2012, Model: URC-4868BC0-R

Frequency MHz	Corrected Reading* dBuV	Specification Limit dBuV	Delta (Cor. Reading – Spec. Limit) dB
2450 (V) (Z-Axis)	78.51 (A)	94.00	-15.49
2450 (H) (X-Axis)	78.09 (A)	94.00	-15.91
2425 (V) (Y-Axis)	78.01 (A)	94.00	-15.99
2425 (H) (X-Axis)	77.73 (A)	94.00	-16.27
2450 (V) (Y-Axis)	77.31 (A)	94.00	-16.69
2475 (V) (Y-Axis)	77.31 (A)	94.00	-16.69

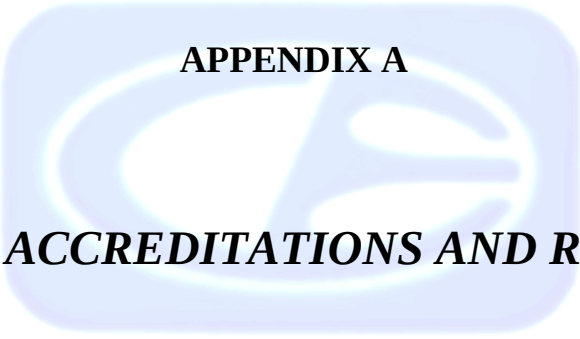
Notes:

- * The complete emissions data is given in Appendix E of this report.
- (BL) BLACK LEAD
- (WL) WHITE LEAD
- (V) VERTICAL
- (H) HORIZONTAL
- (A) AVERAGE

8. CONCLUSIONS

The Comcast XR8 RF4CE Serial Dongle 2012, Model: URC-4868BC0-R (EUT), as tested, meets all of the **Class B** specification limits defined in CFR Title 47, Part 15, Subpart B for the digital portion; and the limits defined in Subpart C, sections 15.205, 15.207, 15.209, and 15.249 for the transmitter portion.





APPENDIX A

LABORATORY ACCREDITATIONS AND RECOGNITIONS

Brea Division
114 Olinda Drive
Brea, CA 92823
(714) 579-0500

Agoura Division
2337 Troutdale Drive
Agoura, CA 91301
(818) 597-0600

Silverado Division
19121 El Toro Road
Silverado, CA 92676
(949) 589-0700

Lake Forest Division
20621 Pascal Way
Lake Forest, CA 92630
(949) 587-0400

LABORATORY ACCREDITATIONS AND RECOGNITIONS

NVLAP LAB CODES 200063-0,
200528-0, 200527-0

For US, Canada, Australia/New Zealand, Japan, Taiwan, Korea, and the European Union, Compatible Electronics is currently accredited by NVLAP to ISO/IEC 17025. Please follow the link to the NIST/NVLAP site for each of our facilities' NVLAP certificate and scope of accreditation

NVLAP listing links

[Agoura Division](#) / [Brea Division](#) / [Silverado/Lake Forest Division](#)

.Quote from ISO-ILAC-IAF Communiqué on 17025:

"A laboratory's fulfillment of the requirements of ISO/IEC 17025:2005 means the laboratory meets both the technical competence requirements and management system requirements that are necessary for it to consistently deliver technically valid test results and calibrations. The management system requirements in ISO/IEC 17025:2005 (Section 4) are written in language relevant to laboratory operations and meet the principles of ISO 9001:2008 Quality Management Systems — Requirements."

ANSI listing [CETCB](#)

Compatible Electronics has been nominated as a Conformity Assessment Body (CAB) for EMC under the US/EU Mutual Recognition Agreement (MRA).

US/EU MRA list [NIST MRA site](#)

Compatible Electronics has been nominated as a Conformity Assessment Body (CAB) for Taiwan/BSMI under the US/APEC (Asia-Pacific Economic Cooperation) Mutual Recognition Agreement (MRA).

APEC MRA list [NIST MRA site](#)

We are also listed for IT products by the following country/agency:

VCCI Support member: Please visit http://www.vcci.jp/vcci_e/

FCC Listing, from FCC OET site

[FCC test lab search](#) <https://fjallfoss.fcc.gov/oetcf/eas/reports/TestFirmSearch.cfm>

Compatible Electronics IC listing can be found at:

<http://www.ic.gc.ca/eic/site/ic1.nsf/eng/home>

APPENDIX B

MODIFICATIONS TO THE EUT

MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC 15.249 and/or FCC **Class B** specifications.

All the rework described below was implemented during the test in a method that could be reproduced in all the units by the manufacturer.

No modifications were made to the EUT during the testing.



APPENDIX C

***ADDITIONAL MODELS COVERED
UNDER THIS REPORT***

ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

Comcast XR8 RF4CE Serial Dongle 2012
Model: URC-4868BC0-R
S/N: N/A

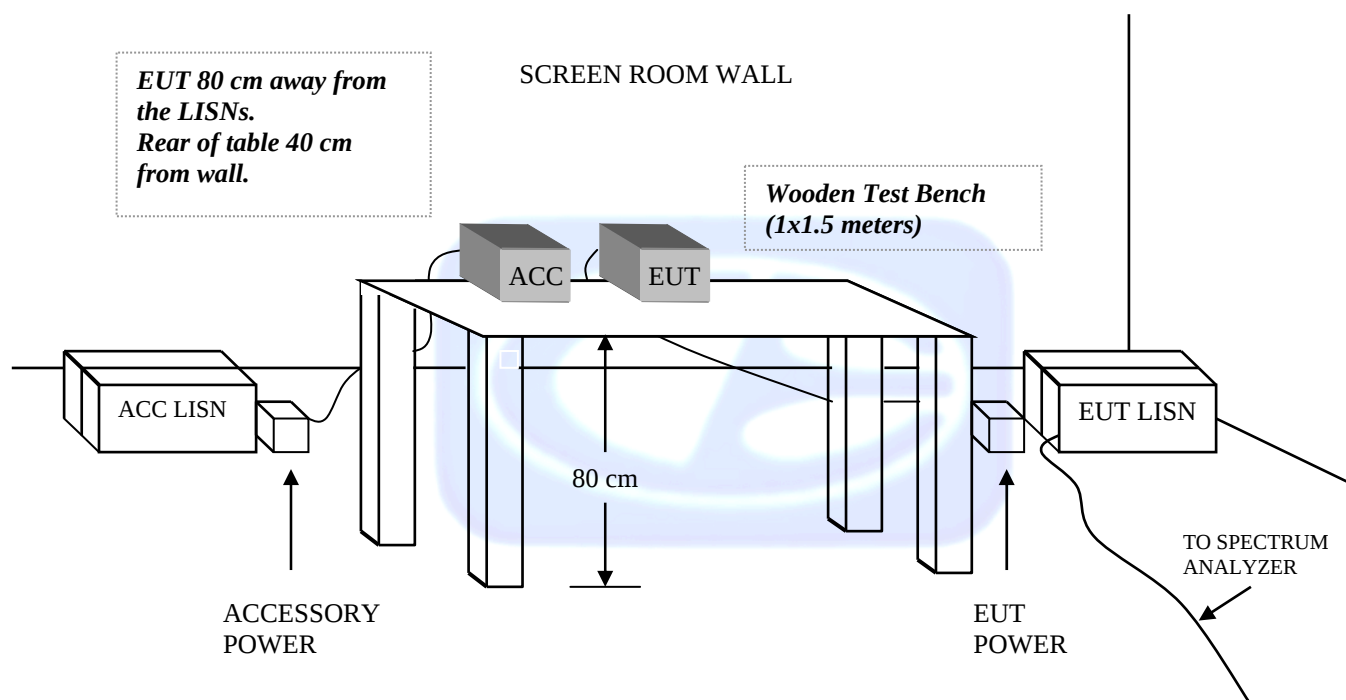
There were no additional models covered under this report.



APPENDIX D

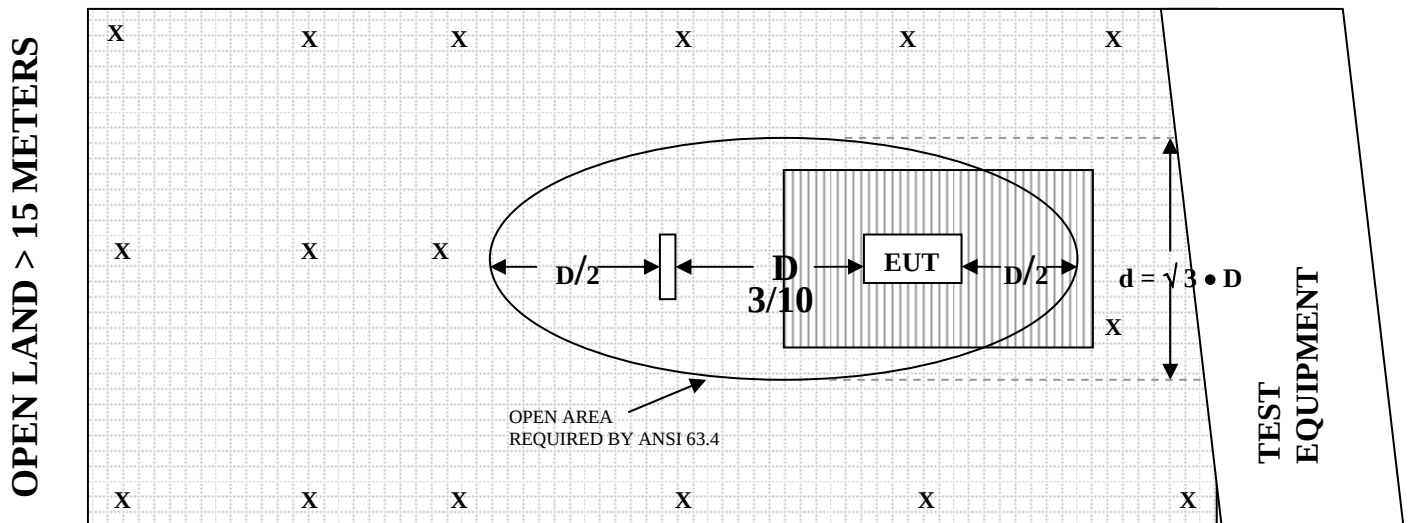
DIAGRAMS, CHARTS, AND PHOTOS

FIGURE 1: CONDUCTED EMISSIONS TEST SETUP



**FIGURE 2: PLOT MAP AND LAYOUT OF
THE RADIATED TEST SITE**

OPEN LAND > 15 METERS



OPEN LAND > 15 METERS

X	= GROUND RODS		= GROUND SCREEN
D	= TEST DISTANCE (meters)		= WOOD COVER

COM-POWER AL-130**LOOP ANTENNA**

S/N: 17089

CALIBRATION DATE: JANUARY 29, 2013

FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)
0.009	-42.5	9
0.01	-42.3	9.2
0.02	-42.1	9.4
0.03	-41.4	10.1
0.04	-41.8	9.7
0.05	-42.4	9.1
0.06	-42.3	9.2
0.07	-42.5	9
0.08	-42.4	9.1
0.09	-42.5	9
0.1	-42.5	9
0.2	-42.7	8.8
0.3	-42.6	8.9
0.4	-42.5	9
0.5	-42.7	8.8
0.6	-42.7	8.8
0.7	-42.5	9
0.8	-42.3	9.2
0.9	-42.2	9.3
1	-42.2	9.3
2	-41.8	9.7
3	-41.7	9.8
4	-41.7	9.8
5	-41.5	10
6	-41.6	9.9
7	-41.4	10.1
8	-41	10.5
9	-40.8	10.7
10	-41.3	10.2
15	-41.4	10.1
20	-41.2	10.3
25	-42.6	8.9
30	-41.7	9.8

COM-POWER AC-220

COMBILOG ANTENNA

S/N: 61027

CALIBRATION DATE: MAY 29, 2013

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
300	12.30	700	20.40
350	14.40	750	21.60
400	18.70	800	21.70
450	17.30	850	21.80
500	17.80	900	22.30
550	16.50	950	22.40
600	18.20	1000	23.10
650	19.30		

COM POWER AH-118**HORN ANTENNA**

S/N: 071175

CALIBRATION DATE: FEBRUARY 29, 2012

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	23.6	10.0	37.7
1.5	22.0	10.5	38.4
2.0	28.7	11.0	38.0
2.5	29.3	11.5	38.2
3.0	30.6	12.0	39.0
3.5	30.4	12.5	42.4
4.0	31.1	13.0	40.8
4.5	33.4	13.5	40.0
5.0	35.3	14.0	39.7
5.5	35.1	14.5	43.5
6.0	36.9	15.0	42.7
6.5	37.4	15.5	39.7
7.0	37.6	16.0	39.2
7.5	36.2	16.5	39.7
8.0	38.4	17.0	42.2
8.5	39.3	17.5	47.6
9.0	37.4	18.0	51.2
9.5	38.0		

COM-POWER AH-826**HORN ANTENNA****S/N: 0071957**

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
18.0	33.5	22.5	35.5
18.5	33.5	23.0	35.9
19.0	34.0	23.5	35.7
19.5	34.0	24.0	35.6
20.0	34.3	24.5	36.0
20.5	34.9	25.0	36.2
21.0	34.7	25.5	36.1
21.5	35.0	26.0	36.2
22.0	35.0	26.5	35.7

COM-POWER PA-103**PREAMPLIFIER****S/N: 1582****CALIBRATION DATE: DECEMBER 28, 2012**

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	32.80	300	32.26
40	33.10	350	32.23
50	33.10	400	32.17
60	33.10	450	32.16
70	33.00	500	32.11
80	33.00	550	32.07
90	33.10	600	32.02
100	33.00	650	31.97
125	33.00	700	31.87
150	33.00	750	31.81
175	32.90	800	31.73
200	32.80	850	31.57
225	32.34	900	31.43
250	32.32	950	31.29
275	32.28	1000	31.14

COM-POWER PA-118**PREAMPLIFIER****S/N: 181656****CALIBRATION DATE: DECEMBER 27, 2012**

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	24.68	6.0	25.75
1.1	25.08	6.5	25.28
1.2	25.70	7.0	24.83
1.3	25.98	7.5	24.49
1.4	26.11	8.0	24.38
1.5	26.23	8.5	25.06
1.6	26.34	9.0	25.55
1.7	26.39	9.5	25.32
1.8	26.44	10.0	25.25
1.9	26.45	11.0	24.99
2.0	26.48	12.0	25.08
2.5	26.59	13.0	24.44
3.0	26.67	14.0	25.02
3.5	26.66	15.0	26.12
4.0	26.82	16.0	25.67
4.5	26.46	17.0	24.33
5.0	26.22	18.0	26.75
5.5	25.98		

COM-POWER PA-840**MICROWAVE PREAMPLIFIER**

S/N: 711013

CALIBRATION DATE: MAY 17, 2012

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
18.0	25.81	31.0	25.77
19.0	24.57	31.5	25.36
20.0	23.46	32.0	25.15
21.0	22.51	32.5	25.13
22.0	23.85	33.0	25.52
23.0	23.31	33.5	25.24
24.0	24.44	34.0	25.08
25.0	25.42	34.5	25.27
26.0	25.71	35.0	23.99
26.5	25.66	35.5	24.67
27.0	25.84	36.5	24.80
27.5	25.29	37.0	26.27
28.0	25.46	37.5	24.86
28.5	25.58	38.0	24.64
29.0	26.16	38.5	23.46
29.5	26.14	39.0	21.29
30.0	26.01	39.5	20.83
30.5	25.67	40.0	19.96



FRONT VIEW

UNIVERSAL ELECTRONICS, INC.
COMCAST XR8 RF4CE SERIAL DONGLE 2012
MODEL: URC-4868BC0-R
FCC SUBPART B AND C – RADIATED EMISSIONS – ABOVE 30 MHz

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



REAR VIEW

UNIVERSAL ELECTRONICS, INC.
COMCAST XR8 RF4CE SERIAL DONGLE 2012
MODEL: URC-4868BC0-R
FCC SUBPART B AND C – RADIATED EMISSIONS – ABOVE 30 MHz

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



FRONT VIEW

UNIVERSAL ELECTRONICS, INC.
COMCAST XR8 RF4CE SERIAL DONGLE 2012
MODEL: URC-4868BC0-R
FCC SUBPART C – RADIATED EMISSIONS – BELOW 30 MHz

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



REAR VIEW

UNIVERSAL ELECTRONICS, INC.
COMCAST XR8 RF4CE SERIAL DONGLE 2012
MODEL: URC-4868BC0-R
FCC SUBPART C – RADIATED EMISSIONS – BELOW 30 MHz

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



FRONT VIEW

UNIVERSAL ELECTRONICS, INC.
COMCAST XR8 RF4CE SERIAL DONGLE 2012
MODEL: URC-4868BC0-R
FCC SUBPART B AND C – CONDUCTED EMISSIONS – LAPTOP MODE

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



REAR VIEW

UNIVERSAL ELECTRONICS, INC.
COMCAST XR8 RF4CE SERIAL DONGLE 2012
MODEL: URC-4868BC0-R
FCC SUBPART B AND C – CONDUCTED EMISSIONS – LAPTOP MODE

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



FRONT VIEW

UNIVERSAL ELECTRONICS, INC.
COMCAST XR8 RF4CE SERIAL DONGLE 2012
MODEL: URC-4868BC0-R
FCC SUBPART C – RADIATED EMISSIONS – SET TOP BOX MODE

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



REAR VIEW

UNIVERSAL ELECTRONICS, INC.
COMCAST XR8 RF4CE SERIAL DONGLE 2012
MODEL: URC-4868BC0-R
FCC SUBPART C – RADIATED EMISSIONS – SET TOP BOX MODE

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

APPENDIX E

DATA SHEETS

RADIATED EMISSIONS

DATA SHEETS

FCC 15.249

Universal Electronics, Inc.
Comcast XR8 RF4CE Serial Dongle 2012
Model: URC-4868BC0-R

Date: 07/08/2013
Lab: B
Tested By: Kyle Fujimoto

**Low Channel
Transmit Mode - X-Axis**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4850	45.87	V	74	-28.13	Peak	1.25	155	
4850	25.87	V	54	-28.13	Avg	1.25	155	
7275	49.04	V	74	-24.96	Peak	1.35	165	
7275	29.04	V	54	-24.96	Avg	1.35	165	
9700								No Emissions Detected
12125								No Emissions Detected
14550								No Emissions Detected
16975								No Emissions Detected
19400								No Emissions Detected
21825								No Emissions Detected
24250								No Emissions Detected

FCC 15.249

Universal Electronics, Inc.
Comcast XR8 RF4CE Serial Dongle 2012
Model: URC-4868BC0-R

Date: 07/08/2013
Lab: B
Tested By: Kyle Fujimoto

Low Channel

Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4850	48.1	V	74	-25.9	Peak	1	225	
4850	28.10	V	54	-25.9	Avg	1	225	
7275	51.16	V	74	-22.84	Peak	1.25	155	
7275	31.16	V	54	-22.84	Avg	1.25	155	
9700								No Emissions
9700								Detected
12125								No Emissions
12125								Detected
14550								No Emissions
14550								Detected
16975								No Emissions
16975								Detected
19400								No Emissions
19400								Detected
21825								No Emissions
21825								Detected
24250								No Emissions
24250								Detected

FCC 15.249

Universal Electronics, Inc.
Comcast XR8 RF4CE Serial Dongle 2012
Model: URC-4868BC0-R

Date: 07/08/2013
Lab: B
Tested By: Kyle Fujimoto

**Low Channel
Transmit Mode - Z-Axis**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4850	48.92	V	74	-25.08	Peak	1.25	155	
4850	28.92	V	54	-25.08	Avg	1.25	155	
7275	50.11	V	74	-23.89	Peak	1.25	155	
7275	30.11	V	54	-23.89	Avg	1.25	155	
9700								No Emissions
9700								Detected
12125								No Emissions
12125								Detected
14550								No Emissions
14550								Detected
16975								No Emissions
16975								Detected
19400								No Emissions
19400								Detected
21825								No Emissions
21825								Detected
24250								No Emissions
24250								Detected

FCC 15.249

Universal Electronics, Inc.
Comcast XR8 RF4CE Serial Dongle 2012
Model: URC-4868BC0-R

Date: 07/08/2013

Lab: B

Tested By: Kyle Fujimoto

Low Channel

Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4850	50.77	H	74	-23.23	Peak	1.25	155	
4850	30.77	H	54	-23.23	Avg	1.25	155	
7275	54.03	H	74	-19.97	Peak	1.55	165	
7275	34.03	H	54	-19.97	Avg	1.55	165	
9700								No Emissions
9700								Detected
12125								No Emissions
12125								Detected
14550								No Emissions
14550								Detected
16975								No Emissions
16975								Detected
19400								No Emissions
19400								Detected
21825								No Emissions
21825								Detected
24250								No Emissions
24250								Detected

FCC 15.249

Universal Electronics, Inc.
Comcast XR8 RF4CE Serial Dongle 2012
Model: URC-4868BC0-R

Date: 07/08/2013
Lab: B
Tested By: Kyle Fujimoto

**Low Channel
Transmit Mode - Y-Axis**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4850	52.19	H	74	-21.81	Peak	1.25	155	
4850	32.19	H	54	-21.81	Avg	1.25	155	
7275	54.33	H	74	-19.67	Peak	1.35	155	
7275	34.33	H	54	-19.67	Avg	1.35	155	
9700								No Emissions Detected
9700								
12125								No Emissions Detected
12125								
14550								No Emissions Detected
14550								
16975								No Emissions Detected
16975								
19400								No Emissions Detected
19400								
21825								No Emissions Detected
21825								
24250								No Emissions Detected
24250								

FCC 15.249

Universal Electronics, Inc.
Comcast XR8 RF4CE Serial Dongle 2012
Model: URC-4868BC0-R

Date: 07/08/2013
Lab: B
Tested By: Kyle Fujimoto

Low Channel

Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4850	46.28	H	74	-27.72	Peak	1.25	155	
4850	26.28	H	54	-27.72	Avg	1.25	155	
7275	53.15	H	74	-20.85	Peak	1.35	165	
7275	33.15	H	54	-20.85	Avg	1.35	165	
9700								No Emissions
9700								Detected
12125								No Emissions
12125								Detected
14550								No Emissions
14550								Detected
16975								No Emissions
16975								Detected
19400								No Emissions
19400								Detected
21825								No Emissions
21825								Detected
24250								No Emissions
24250								Detected

FCC 15.249

Universal Electronics, Inc.
Comcast XR8 RF4CE Serial Dongle 2012
Model: URC-4868BC0-R

Date: 07/08/2013
Lab: B
Tested By: Kyle Fujimoto

Middle Channel

Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4900	47.21	V	74	-26.79	Peak	1.25	155	
4900	27.21	V	54	-26.79	Avg	1.25	155	
7350	46.79	V	74	-27.21	Peak	1.35	225	
7350	26.79	V	54	-27.21	Avg	1.35	225	
9800								No Emissions
9800								Detected
12250								No Emissions
12250								Detected
14700								No Emissions
14700								Detected
17150								No Emissions
17150								Detected
19600								No Emissions
19600								Detected
22050								No Emissions
22050								Detected
24500								No Emissions
24500								Detected

FCC 15.249

Universal Electronics, Inc.
Comcast XR8 RF4CE Serial Dongle 2012
Model: URC-4868BC0-R

Date: 07/08/2013
Lab: B
Tested By: Kyle Fujimoto

Middle Channel

Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4900	52.61	V	74	-21.39	Peak	1.25	155	
4900	32.61	V	54	-21.39	Avg	1.25	155	
7350	52.86	V	74	-21.14	Peak	1.35	165	
7350	32.86	V	54	-21.14	Avg	1.35	165	
9800								No Emissions
9800								Detected
12250								No Emissions
12250								Detected
14700								No Emissions
14700								Detected
17150								No Emissions
17150								Detected
19600								No Emissions
19600								Detected
22050								No Emissions
22050								Detected
24500								No Emissions
24500								Detected

FCC 15.249

Universal Electronics, Inc.
Comcast XR8 RF4CE Serial Dongle 2012
Model: URC-4868BC0-R

Date: 07/08/2013
Lab: B
Tested By: Kyle Fujimoto

Middle Channel

Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4900	52.51	V	74	-21.49	Peak	1.25	45	
4900	32.51	V	54	-21.49	Avg	1.25	45	
7350	54.52	V	74	-19.48	Peak	1.25	165	
7350	34.52	V	54	-19.48	Avg	1.25	165	
9800								No Emissions
9800								Detected
12250								No Emissions
12250								Detected
14700								No Emissions
14700								Detected
17150								No Emissions
17150								Detected
19600								No Emissions
19600								Detected
22050								No Emissions
22050								Detected
24500								No Emissions
24500								Detected

FCC 15.249

Universal Electronics, Inc.
Comcast XR8 RF4CE Serial Dongle 2012
Model: URC-4868BC0-R

Date: 07/08/2013
Lab: B
Tested By: Kyle Fujimoto

Middle Channel

Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4900	48.48	H	74	-25.52	Peak	1.25	225	
4900	28.48	H	54	-25.52	Avg	1.25	225	
7350	51.24	H	74	-22.76	Peak	1.35	180	
7350	31.24	H	54	-22.76	Avg	1.35	180	
9800								No Emissions
9800								Detected
12250								No Emissions
12250								Detected
14700								No Emissions
14700								Detected
17150								No Emissions
17150								Detected
19600								No Emissions
19600								Detected
22050								No Emissions
22050								Detected
24500								No Emissions
24500								Detected

FCC 15.249

Universal Electronics, Inc.
Comcast XR8 RF4CE Serial Dongle 2012
Model: URC-4868BC0-R

Date: 07/08/2013
Lab: B
Tested By: Kyle Fujimoto

**Middle Channel
Transmit Mode - Y-Axis**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4900	52.45	H	74	-21.55	Peak	1.25	225	
4900	32.45	H	54	-21.55	Avg	1.25	225	
7350	50.11	H	74	-23.89	Peak	1.35	155	
7350	30.11	H	54	-23.89	Avg	1.35	155	
9800								No Emissions Detected
12250								No Emissions Detected
14700								No Emissions Detected
17150								No Emissions Detected
19600								No Emissions Detected
22050								No Emissions Detected
24500								No Emissions Detected

FCC 15.249

Universal Electronics, Inc.
Comcast XR8 RF4CE Serial Dongle 2012
Model: URC-4868BC0-R

Date: 07/08/2013
Lab: B
Tested By: Kyle Fujimoto

**Middle Channel
Transmit Mode - Z-Axis**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4900	49.14	H	74	-24.86	Peak	1.25	155	
4900	29.14	H	54	-24.86	Avg	1.25	155	
7350	52.44	H	74	-21.56	Peak	1.35	165	
7350	32.44	H	54	-21.56	Avg	1.35	165	
9800								No Emissions Detected
12250								No Emissions Detected
14700								No Emissions Detected
17150								No Emissions Detected
19600								No Emissions Detected
22050								No Emissions Detected
24500								No Emissions Detected

FCC 15.249

Universal Electronics, Inc.
Comcast XR8 RF4CE Serial Dongle 2012
Model: URC-4868BC0-R

Date: 07/08/2013
Lab: B
Tested By: Kyle Fujimoto

**High Channel
Transmit Mode - X-Axis**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4950	47.78	V	74	-26.22	Peak	1.25	135	
4950	27.78	V	54	-26.22	Avg	1.25	135	
7425	50.79	V	74	-23.21	Peak	1.35	225	
7425	30.79	V	54	-23.21	Avg	1.35	225	
9900								No Emissions
9900								Detected
12375								No Emissions
12375								Detected
14850								No Emissions
14850								Detected
17325								No Emissions
17325								Detected
19800								No Emissions
19800								Detected
22275								No Emissions
22275								Detected
24750								No Emissions
24750								Detected

FCC 15.249

Universal Electronics, Inc.
Comcast XR8 RF4CE Serial Dongle 2012
Model: URC-4868BC0-R

Date: 07/08/2013
Lab: B
Tested By: Kyle Fujimoto

**High Channel
Transmit Mode - Y-Axis**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4950	50.98	V	74	-23.02	Peak	1.25	225	
4950	30.98	V	54	-23.02	Avg	1.25	225	
7425	54.63	V	74	-19.37	Peak	1.25	155	
7425	34.63	V	54	-19.37	Avg	1.25	155	
9900								No Emissions
9900								Detected
12375								No Emissions
12375								Detected
14850								No Emissions
14850								Detected
17325								No Emissions
17325								Detected
19800								No Emissions
19800								Detected
22275								No Emissions
22275								Detected
24750								No Emissions
24750								Detected

FCC 15.249

Universal Electronics, Inc.
Comcast XR8 RF4CE Serial Dongle 2012
Model: URC-4868BC0-R

Date: 07/08/2013
Lab: B
Tested By: Kyle Fujimoto

**High Channel
Transmit Mode - Z-Axis**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4950	54.68	V	74	-19.32	Peak	1.25	155	
4950	34.68	V	54	-19.32	Avg	1.25	155	
7425	53.59	V	74	-20.41	Peak	1.25	165	
7425	33.59	V	54	-20.41	Avg	1.25	165	
9900								No Emissions Detected
12375								No Emissions Detected
14850								No Emissions Detected
17325								No Emissions Detected
19800								No Emissions Detected
22275								No Emissions Detected
24750								No Emissions Detected

FCC 15.249

Universal Electronics, Inc.
Comcast XR8 RF4CE Serial Dongle 2012
Model: URC-4868BC0-R

Date: 07/08/2013
Lab: B
Tested By: Kyle Fujimoto

**High Channel
Transmit Mode - X-Axis**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4950	50.94	H	74	-23.06	Peak	1.25	155	
4950	30.94	H	54	-23.06	Avg	1.25	155	
7425	50.13	H	74	-23.87	Peak	1.25	155	
7425	30.13	H	54	-23.87	Avg	1.25	155	
9900								No Emissions
9900								Detected
12375								No Emissions
12375								Detected
14850								No Emissions
14850								Detected
17325								No Emissions
17325								Detected
19800								No Emissions
19800								Detected
22275								No Emissions
22275								Detected
24750								No Emissions
24750								Detected

FCC 15.249

Universal Electronics, Inc.
Comcast XR8 RF4CE Serial Dongle 2012
Model: URC-4868BC0-R

Date: 07/08/2013
Lab: B
Tested By: Kyle Fujimoto

High Channel

Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4950	51.11	H	74	-22.89	Peak	1.25	155	
4950	31.11	H	54	-22.89	Avg	1.25	155	
7425	50.79	H	74	-23.21	Peak	1.25	180	
7425	30.79	H	54	-23.21	Avg	1.25	180	
9900								No Emissions
9900								Detected
12375								No Emissions
12375								Detected
14850								No Emissions
14850								Detected
17325								No Emissions
17325								Detected
19800								No Emissions
19800								Detected
22275								No Emissions
22275								Detected
24750								No Emissions
24750								Detected

FCC 15.249

Universal Electronics, Inc.
Comcast XR8 RF4CE Serial Dongle 2012
Model: URC-4868BC0-R

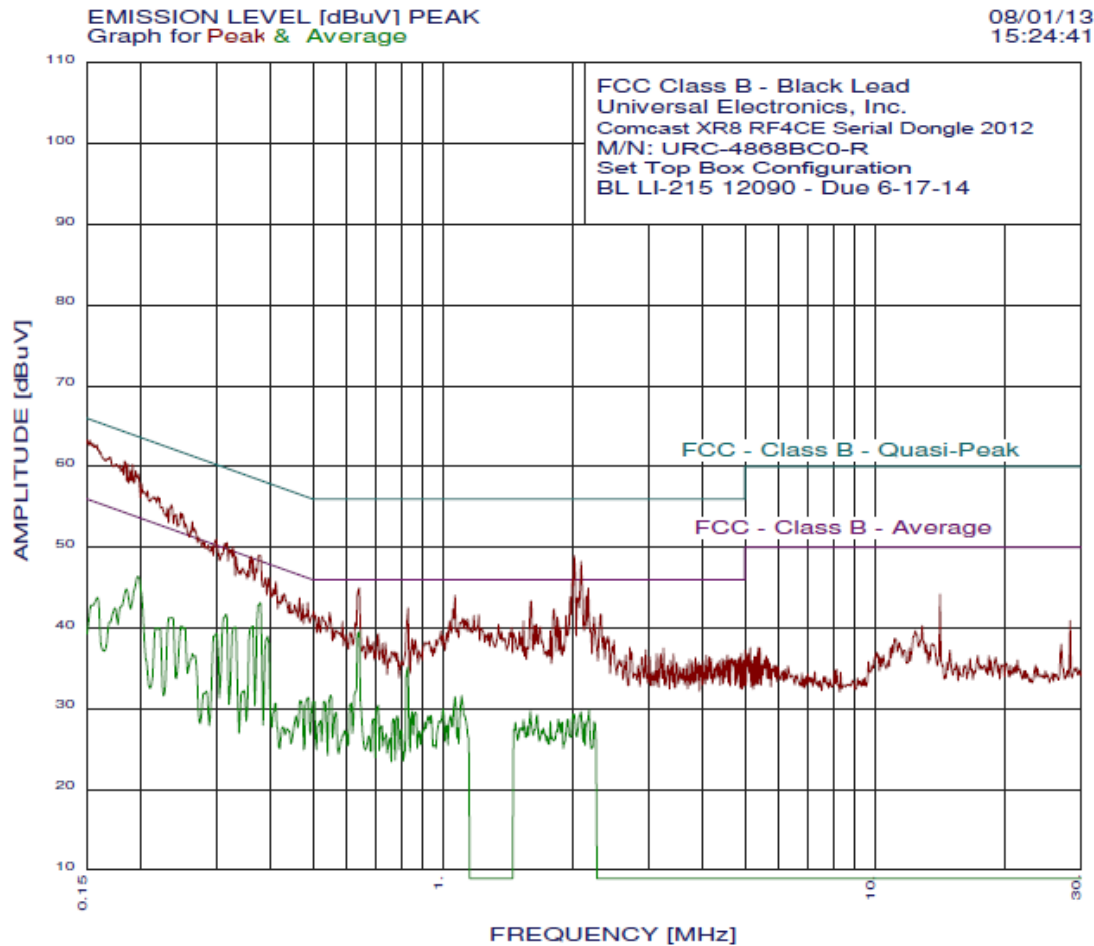
Date: 07/08/2013
Lab: B
Tested By: Kyle Fujimoto

**High Channel
Transmit Mode - Z-Axis**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4950	50.29	H	74	-23.71	Peak	1.25	180	
4950	30.29	H	54	-23.71	Avg	1.25	180	
7425	51.97	H	74	-22.03	Peak	1.25	155	
7425	31.97	H	54	-22.03	Avg	1.25	155	
9900								No Emissions Detected
9900								
12375								No Emissions Detected
12375								
14850								No Emissions Detected
14850								
17325								No Emissions Detected
17325								
19800								No Emissions Detected
19800								
22275								No Emissions Detected
22275								
24750								No Emissions Detected
24750								

CONDUCTED EMISSIONS

DATA SHEETS



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08/01/13 15:24:41

FCC Class B - Black Lead
Universal Electronics, Inc.
Comcast XR8 RF4CE Serial Dongle 2012
M/N: URC-4868BC0-R
Set Top Box Configuration
BL LI-215 12090 - Due 6-17-14
Test Engineer : Alex Benitez

30 highest peaks above -50.00 dB of FCC - Class B - Average limit line

Peak criteria : 1.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.183	60.68	54.33	6.35**
2	0.192	60.28	53.97	6.31**
3	0.186	60.38	54.19	6.19**
4	0.195	59.48	53.84	5.64**
5	0.189	59.58	54.06	5.52**
6	0.201	57.88	53.58	4.30**
7	0.235	55.27	52.25	3.02**
8	2.013	48.95	46.00	2.95**
9	0.230	54.87	52.43	2.44**
10	0.247	54.27	51.86	2.41**
11	2.089	48.25	46.00	2.25**
12	0.240	54.07	52.08	1.99**
13	0.263	53.17	51.33	1.84**
14	0.317	50.58	49.79	0.79**
15	0.299	50.98	50.28	0.70**
16	0.375	49.00	48.38	0.62**
17	0.327	49.98	49.53	0.46**
18	0.360	48.90	48.73	0.17**
19	0.363	48.50	48.65	-0.15**
20	0.332	48.89	49.39	-0.51**
21	0.641	45.00	46.00	-1.00**
22	2.168	44.95	46.00	-1.05**
23	0.396	46.21	47.95	-1.74**
24	0.389	46.20	48.08	-1.87**
25	0.411	45.71	47.63	-1.92**
26	1.066	44.03	46.00	-1.97**
27	2.145	43.95	46.00	-2.05**
28	1.971	43.85	46.00	-2.15**
29	2.044	43.75	46.00	-2.25**
30	1.603	43.34	46.00	-2.66**

**Please See the Average Readings on the Next Page and on the Plot

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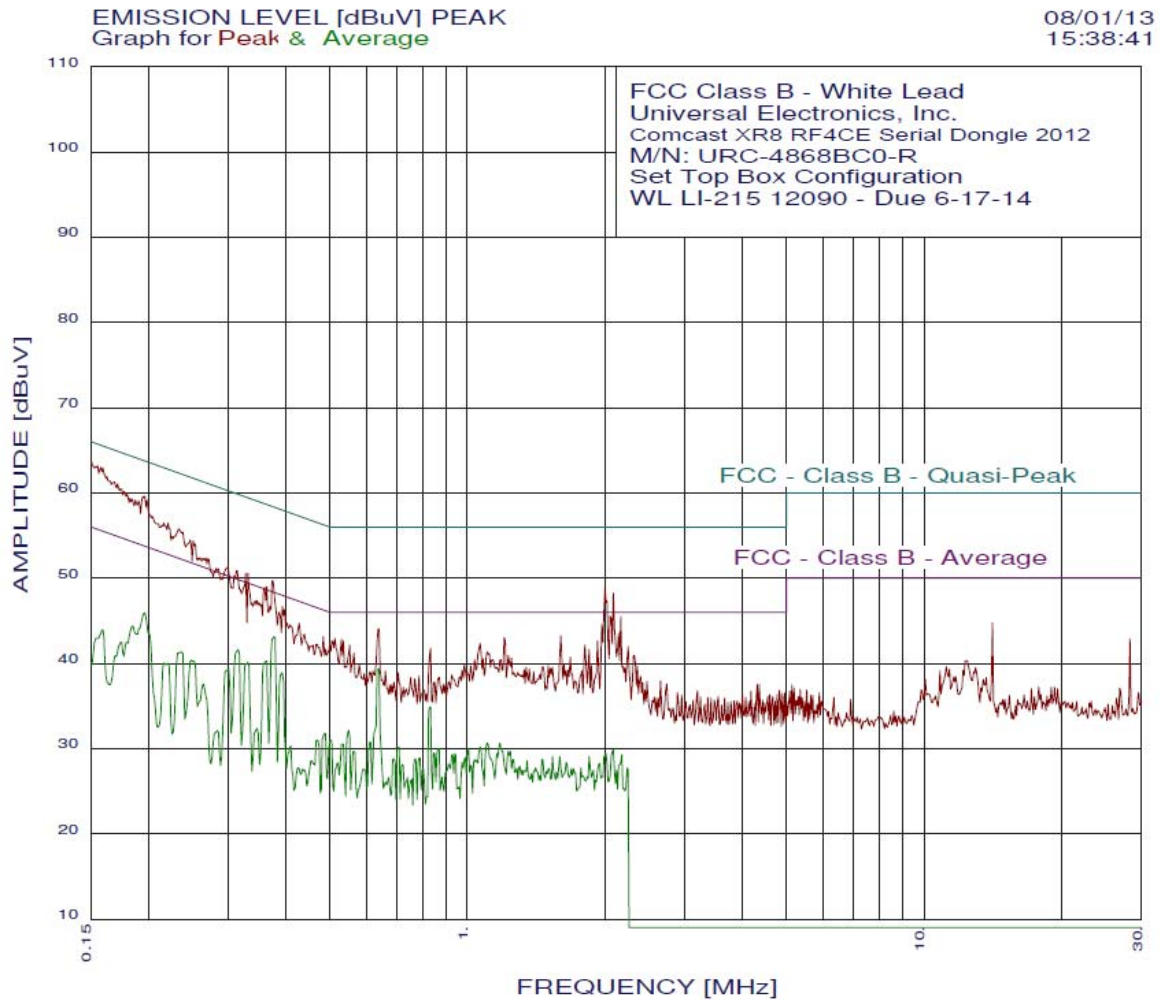
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FCC Class B - Black Lead
Universal Electronics, Inc.
Comcast XR8 RF4CE Serial Dongle 2012
M/N: URC-4868BC0-R
Set Top Box Configuration
BL LI-215 12090 - Due 6-17-14
Test Engineer : Alex Benitez

30 highest peaks above -50.00 dB of FCC - Class B - Average limit line

Peak criteria : 1.00 dB, Curve : Average

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.377	43.13	48.34	-5.20
2	0.641	39.54	46.00	-6.46
3	0.197	46.40	53.75	-7.35
4	0.315	41.71	49.84	-8.13
5	0.363	40.25	48.65	-8.40
6	0.393	39.00	47.99	-9.00
7	0.331	40.15	49.44	-9.29
8	0.185	44.81	54.24	-9.43
9	0.831	35.19	46.00	-10.81
10	0.237	41.31	52.21	-10.90
11	0.299	39.30	50.28	-10.98
12	0.248	40.24	51.82	-11.58
13	0.158	43.74	55.56	-11.82
14	0.174	42.48	54.77	-12.29
15	0.216	39.99	52.96	-12.97
16	0.550	31.70	46.00	-14.30
17	1.106	31.59	46.00	-14.41
18	1.066	31.50	46.00	-14.50
19	0.263	36.81	51.33	-14.52
20	0.489	31.38	46.18	-14.81
21	0.532	30.93	46.00	-15.07
22	0.502	30.88	46.00	-15.12
23	0.614	30.69	46.00	-15.31
24	0.469	30.99	46.53	-15.54
25	0.709	30.42	46.00	-15.58
26	1.000	29.93	46.00	-16.07
27	2.179	29.81	46.00	-16.19
28	1.594	29.70	46.00	-16.30
29	0.849	29.62	46.00	-16.38
30	2.089	29.60	46.00	-16.40



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08/01/13 15:38:41

FCC Class B - White Lead
Universal Electronics, Inc.
Comcast XR8 RF4CE Serial Dongle 2012
M/N: URC-4868BC0-R
Set Top Box Configuration
WL LI-215 12090 - Due 6-17-14
Test Engineer : Alex Benitez

30 highest peaks above -50.00 dB of FCC - Class B - Average limit line

Peak criteria : 1.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.195	59.56	53.84	5.72**
2	0.233	55.77	52.34	3.43**
3	2.002	48.84	46.00	2.84**
4	0.251	54.38	51.73	2.65**
5	2.089	48.24	46.00	2.24**
6	0.375	49.69	48.38	1.31**
7	0.331	50.58	49.44	1.14**
8	0.327	50.58	49.53	1.05**
9	0.313	50.88	49.88	1.00**
10	0.299	51.27	50.28	0.99**
11	0.363	48.99	48.65	0.34**
12	0.360	48.88	48.73	0.15**
13	2.055	45.54	46.00	-0.46**
14	2.168	45.45	46.00	-0.55**
15	0.393	46.70	47.99	-1.29**
16	1.971	44.54	46.00	-1.46**
17	0.637	44.00	46.00	-2.00**
18	0.387	46.00	48.12	-2.12**
19	2.145	43.54	46.00	-2.46**
20	0.428	44.72	47.28	-2.57**
21	1.603	43.23	46.00	-2.77**
22	1.204	43.03	46.00	-2.97**
23	0.513	42.93	46.00	-3.07**
24	0.484	43.13	46.27	-3.14**
25	0.530	42.83	46.00	-3.17**
26	1.929	42.64	46.00	-3.36**
27	0.535	42.63	46.00	-3.37**
28	0.440	43.42	47.06	-3.64**
29	1.066	42.33	46.00	-3.67**
30	1.810	42.13	46.00	-3.87**

**Please See the Average Readings on the Next Page and on the Plot

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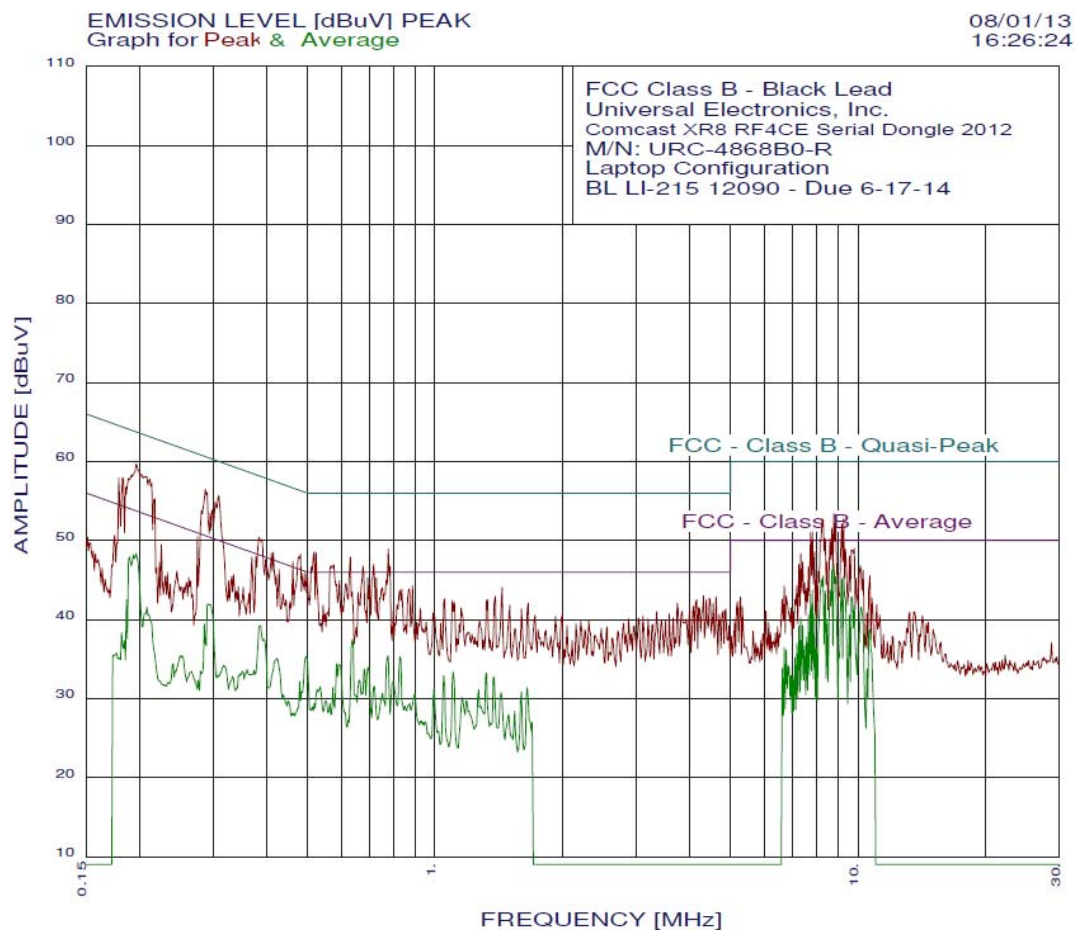
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FCC Class B - White Lead
Universal Electronics, Inc.
Comcast XR8 RF4CE Serial Dongle 2012
M/N: URC-4868BC0-R
Set Top Box Configuration
WL LI-215 12090 - Due 6-17-14
Test Engineer : Alex Benitez

30 highest peaks above -50.00 dB of FCC - Class B - Average limit line

Peak criteria : 1.00 dB, Curve : Average

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.377	43.13	48.34	-5.20
2	0.641	39.36	46.00	-6.64
3	0.197	45.92	53.75	-7.83
4	0.315	41.60	49.84	-8.24
5	0.362	40.28	48.69	-8.42
6	0.393	38.90	47.99	-9.09
7	0.331	40.14	49.44	-9.30
8	0.237	41.33	52.21	-10.88
9	0.300	39.33	50.23	-10.90
10	0.831	34.88	46.00	-11.12
11	0.248	40.37	51.82	-11.45
12	0.159	43.91	55.51	-11.60
13	0.174	42.48	54.77	-12.28
14	0.216	40.05	52.96	-12.91
15	0.265	37.54	51.29	-13.75
16	0.550	32.16	46.00	-13.84
17	0.486	31.78	46.23	-14.45
18	0.502	31.00	46.00	-15.00
19	0.611	30.78	46.00	-15.22
20	1.106	30.70	46.00	-15.30
21	1.178	30.67	46.00	-15.33
22	0.532	30.52	46.00	-15.48
23	0.469	30.96	46.53	-15.57
24	1.066	30.19	46.00	-15.81
25	0.709	30.16	46.00	-15.84
26	0.862	29.96	46.00	-16.04
27	1.006	29.93	46.00	-16.07
28	2.089	29.87	46.00	-16.13
29	1.230	29.69	46.00	-16.31
30	0.564	29.67	46.00	-16.33



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FCC Class B - Black Lead
Universal Electronics, Inc.
Comcast XR8 RF4CE Serial Dongle 2012
M/N: URC-4868B0-R
Laptop Setup
BL LI-215 12090 - Due 6-17-14
Test Engineer : Alex Benitez

30 highest peaks above -50.00 dB of FCC - Class B - Average limit line

Peak criteria : 1.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.197	59.68	53.75	5.93**
2	0.286	56.48	50.63	5.85**
3	0.309	55.68	50.01	5.67**
4	0.183	57.98	54.37	3.61**
5	0.297	53.88	50.32	3.56**
6	8.777	53.40	50.00	3.40**
7	0.179	57.88	54.54	3.34**
8	0.294	53.48	50.41	3.07**
9	0.775	48.88	46.00	2.88**
10	9.256	52.80	50.00	2.80**
11	8.238	52.69	50.00	2.69**
12	0.518	48.53	46.00	2.53**
13	0.524	48.43	46.00	2.43**
14	0.217	55.28	52.91	2.36**
15	0.383	50.40	48.21	2.20**
16	9.160	52.10	50.00	2.10**
17	0.481	48.24	46.32	1.92**
18	0.631	47.90	46.00	1.90**
19	8.873	51.80	50.00	1.80**
20	8.685	51.60	50.00	1.60**
21	7.815	51.09	50.00	1.09**
22	0.716	46.99	46.00	0.99**
23	7.731	50.98	50.00	0.98**
24	0.415	48.52	47.55	0.97**
25	0.577	46.91	46.00	0.91**
26	0.676	46.79	46.00	0.79**
27	0.411	48.41	47.63	0.78**
28	0.783	46.68	46.00	0.68**
29	0.461	47.33	46.67	0.67**
30	8.372	50.30	50.00	0.30**

**Please See the Average Readings on the Next Page on the Plot

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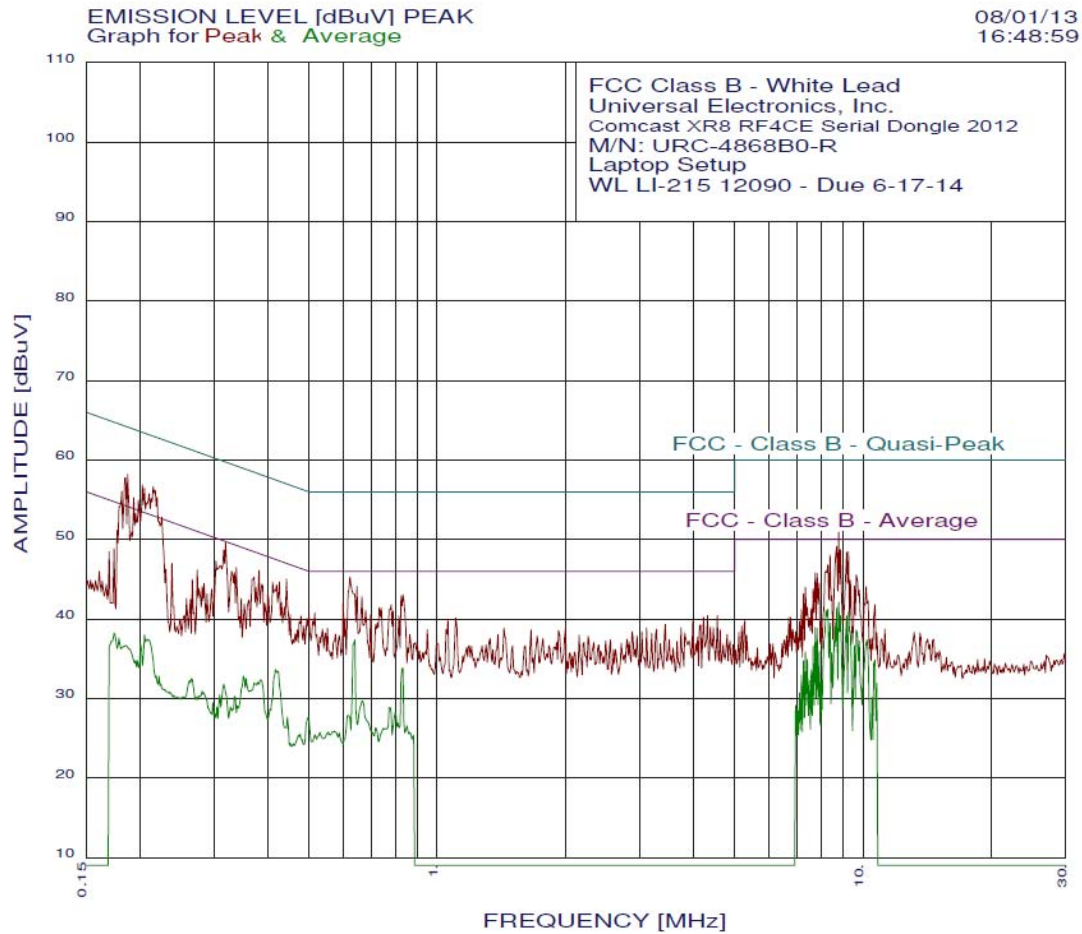
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FCC Class B - Black Lead
Universal Electronics, Inc.
Comcast XR8 RF4CE Serial Dongle 2012
M/N: URC-4868BC0-R
Laptop Setup
BL LI-215 12090 - Due 6-17-14
Test Engineer : Alex Benitez

30 highest peaks above -50.00 dB of FCC - Class B - Average limit line

Peak criteria : 1.00 dB, Curve : Average

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	8.777	47.00	50.00	-3.00
2	8.685	46.31	50.00	-3.69
3	8.282	45.52	50.00	-4.48
4	9.256	45.42	50.00	-4.58
5	9.160	45.16	50.00	-4.84
6	0.197	48.35	53.75	-5.40
7	0.189	47.90	54.06	-6.16
8	8.595	43.76	50.00	-6.24
9	7.815	43.70	50.00	-6.30
10	8.372	43.65	50.00	-6.35
11	7.731	43.12	50.00	-6.88
12	9.660	42.94	50.00	-7.06
13	9.813	41.80	50.00	-8.20
14	10.183	41.56	50.00	-8.44
15	0.637	37.48	46.00	-8.52
16	0.291	41.97	50.49	-8.53
17	0.387	39.23	48.12	-8.88
18	7.898	40.72	50.00	-9.28
19	7.648	40.61	50.00	-9.39
20	9.557	40.57	50.00	-9.43
21	7.333	40.22	50.00	-9.78
22	8.461	40.05	50.00	-9.95
23	0.775	35.39	46.00	-10.61
24	0.826	35.27	46.00	-10.73
25	0.497	35.32	46.05	-10.73
26	7.411	39.21	50.00	-10.79
27	7.255	39.21	50.00	-10.79
28	0.285	39.40	50.67	-11.27
29	10.678	38.69	50.00	-11.31
30	0.586	34.38	46.00	-11.62



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FCC Class B - White Lead
Universal Electronics, Inc.
Comcast XR8 RF4CE Serial Dongle 2012
M/N: URC-4868B0-R
Laptop Setup
WL LI-215 12090 - Due 6-17-14
Test Engineer : Alex Benitez

30 highest peaks above -50.00 dB of FCC - Class B - Average limit line

Peak criteria : 1.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.187	58.16	54.15	4.01**
2	0.215	56.67	53.00	3.66**
3	0.184	57.76	54.28	3.48**
4	0.203	56.86	53.49	3.37**
5	0.205	56.46	53.40	3.06**
6	0.211	55.76	53.18	2.58**
7	0.220	55.27	52.83	2.44**
8	0.182	56.06	54.41	1.65**
9	0.194	55.26	53.88	1.38**
10	0.199	54.96	53.67	1.29**
11	8.777	50.93	50.00	0.93**
12	0.226	52.77	52.61	0.16**
13	0.318	49.58	49.75	-0.17**
14	0.196	53.26	53.80	-0.54**
15	0.624	45.31	46.00	-0.69**
16	8.685	49.12	50.00	-0.88**
17	0.315	48.68	49.84	-1.16**
18	8.873	48.73	50.00	-1.27**
19	9.256	48.43	50.00	-1.57**
20	9.160	48.43	50.00	-1.57**
21	0.648	44.10	46.00	-1.90**
22	8.372	48.02	50.00	-1.98**
23	0.442	45.02	47.02	-2.00**
24	0.381	46.10	48.25	-2.15**
25	0.426	44.62	47.33	-2.71**
26	0.338	46.48	49.26	-2.78**
27	0.302	47.27	50.19	-2.91**
28	0.831	43.06	46.00	-2.94**
29	0.411	44.61	47.63	-3.02**
30	0.822	42.87	46.00	-3.13**

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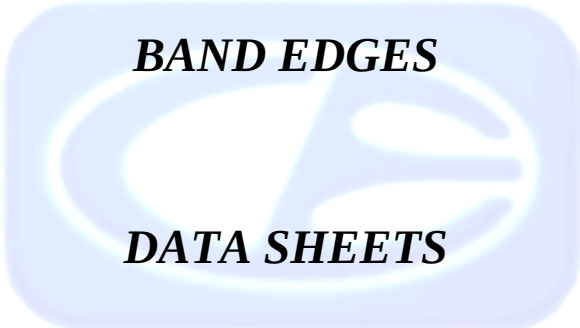
FCC Class B - White Lead
Universal Electronics, Inc.
Comcast XR8 RF4CE Serial Dongle 2012
M/N: URC-4868B0-R
Laptop Setup
WL LI-215 12090 - Due 6-17-14
Test Engineer : Alex Benitez

30 highest peaks above -50.00 dB of FCC - Class B - Average limit line

Peak criteria : 1.00 dB, Curve : Average

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	8.777	42.11	50.00	-7.89
2	8.685	41.46	50.00	-8.54
3	0.641	37.38	46.00	-8.62
4	8.282	41.22	50.00	-8.78
5	9.256	40.89	50.00	-9.11
6	9.160	40.43	50.00	-9.57
7	8.873	40.42	50.00	-9.58
8	8.595	39.57	50.00	-10.43
9	8.372	39.47	50.00	-10.53
10	7.731	38.91	50.00	-11.09
11	7.815	38.81	50.00	-11.19
12	9.660	38.60	50.00	-11.40
13	0.831	33.80	46.00	-12.20
14	10.238	37.37	50.00	-12.63
15	9.813	37.22	50.00	-12.78
16	9.557	36.64	50.00	-13.36
17	7.648	36.61	50.00	-13.39
18	0.417	33.63	47.50	-13.87
19	7.898	36.00	50.00	-14.00
20	7.333	35.88	50.00	-14.12
21	8.461	35.77	50.00	-14.23
22	7.411	34.91	50.00	-15.09
23	10.678	34.81	50.00	-15.19
24	7.255	34.79	50.00	-15.21
25	0.205	38.00	53.40	-15.40
26	0.385	32.30	48.16	-15.86
27	0.350	32.81	48.95	-16.14
28	0.356	32.51	48.82	-16.31
29	0.665	29.69	46.00	-16.31
30	7.567	33.61	50.00	-16.39

**Please See the Average Readings on the Next Page on the Plot



BAND EDGES

DATA SHEETS

FCC 15.249

Universal Electronics, Inc.
Comcast XR8 RF4CE Serial Dongle 2012
Model: URC-4868BC0-R

Date: 07/08/2013
Lab: B
Tested By: Kyle Fujimoto

Band Edges

Low Channel - 2425 MHz

Middle Channel - 2450 MHz

High Channel - 2475 MHz

Y-Axis (Worst Case) - Low Channel

Z-Axis (Worst Case) - Middle Channel

Y-Axis (Worst Case) - High Channel

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2425	98.01	V	114	-15.99	Peak	1.25	155	Fundamental of Low Channel
2425	78.01	V	94	-15.99	Avg	1.25	155	@ 3 meters
2393.49	46.24	V	74	-27.76	Peak	1.25	155	No Marker Delta Method
2393.49	26.24	V	54	-27.76	Peak	1.25	155	Method Used
2450	98.51	V	114	-15.49	Peak	1.25	45	Fundamental of Middle Channel
2450	78.51	V	94	-15.49	Avg	1.25	45	@ 3 meters
2475	97.31	V	114	-16.69	Peak	1.25	225	Fundamental of High Channel
2475	77.31	V	94	-16.69	Avg	1.25	225	@ 3 meters
2483.5	51.32	V	74	-22.68	Peak	1.25	225	No Marker Delta Method
2483.5	31.32	V	54	-22.68	Avg	1.25	225	Method Used

FCC 15.249

Universal Electronics, Inc.
Comcast XR8 RF4CE Serial Dongle 2012
Model: URC-4868BC0-R

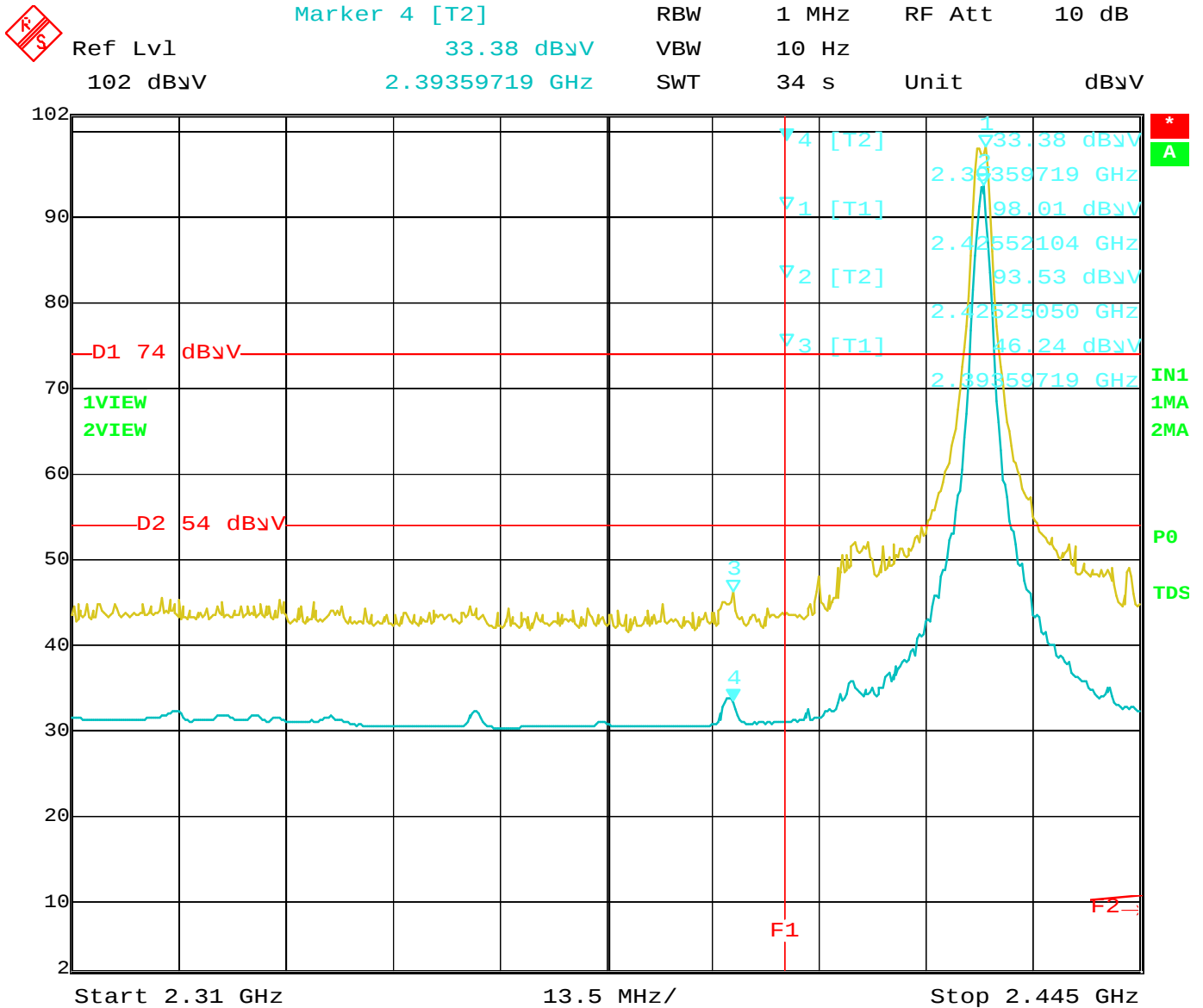
Date: 07/08/2013
Lab: B
Tested By: Kyle Fujimoto

Band Edges

Low Channel - 2425 MHz
Middle Channel - 2450 MHz
High Channel - 2475 MHz

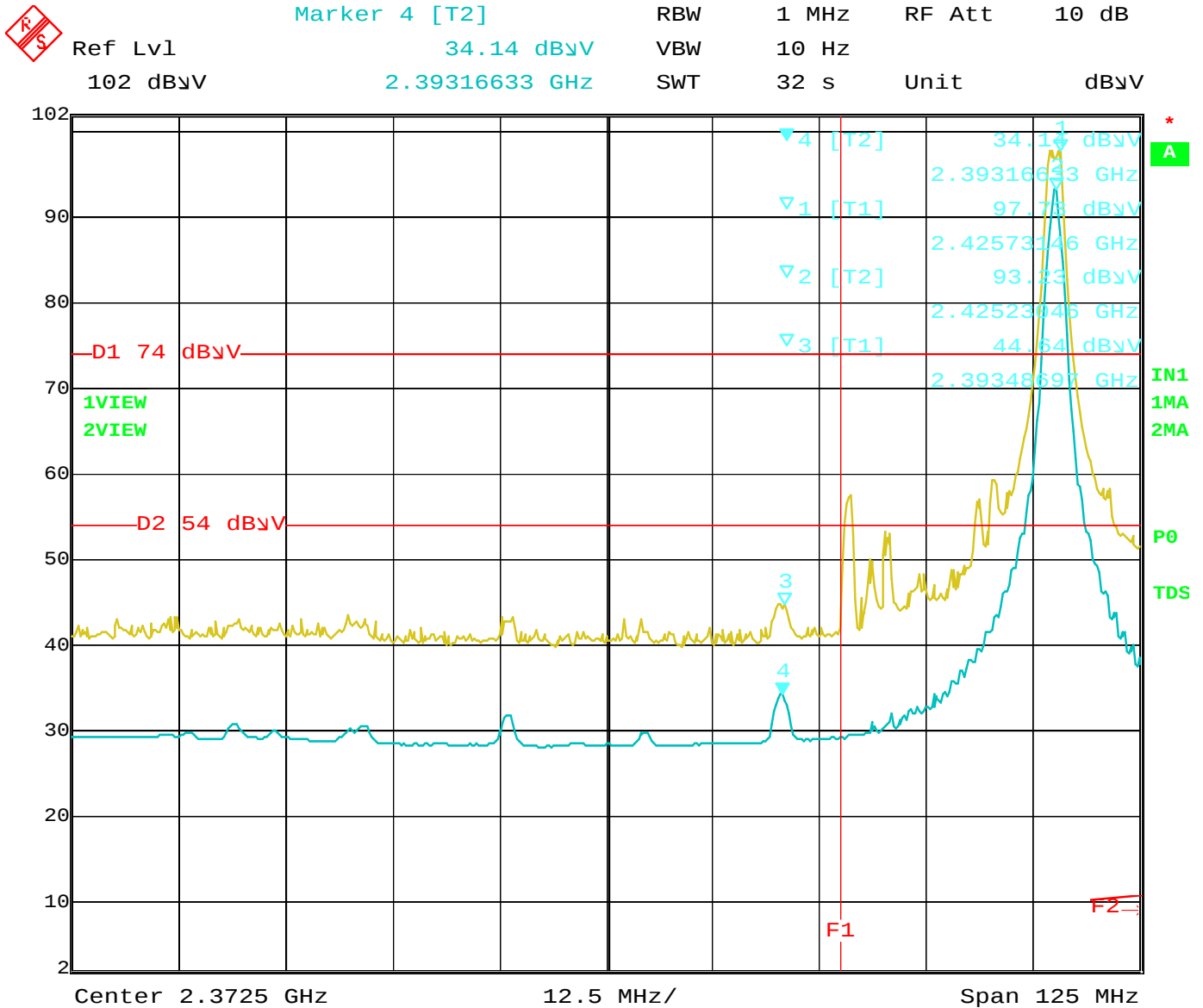
X-Axis (Worst Case) - Low Channel
X-Axis (Worst Case) - Middle Channel
Z-Axis (Worst Case) - High Channel

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2425	97.73	H	114	-16.27	Peak	1.35	155	Fundamental of Low Channel
2425	77.73	H	94	-16.27	Avg	1.35	155	@ 3 meters
2393.61	44.64	H	74	-29.36	Peak	1.35	155	No Marker Delta Method
2393.61	24.64	H	54	-29.36	Peak	1.35	155	Method Used
2450	98.09	H	114	-15.91	Peak	1.25	0	Fundamental of Middle Channel
2450	78.09	H	94	-15.91	Avg	1.25	0	@ 3 meters
2475	96.20	H	114	-17.80	Peak	1.25	180	Fundamental of High Channel
2475	76.20	H	94	-17.8	Avg	1.25	180	@ 3 meters
2483.5	49.70	H	54	-4.3	Peak	1.25	180	No Marker Delta Method
2483.5	29.70	H	54	-24.3	Peak	1.25	180	Method Used



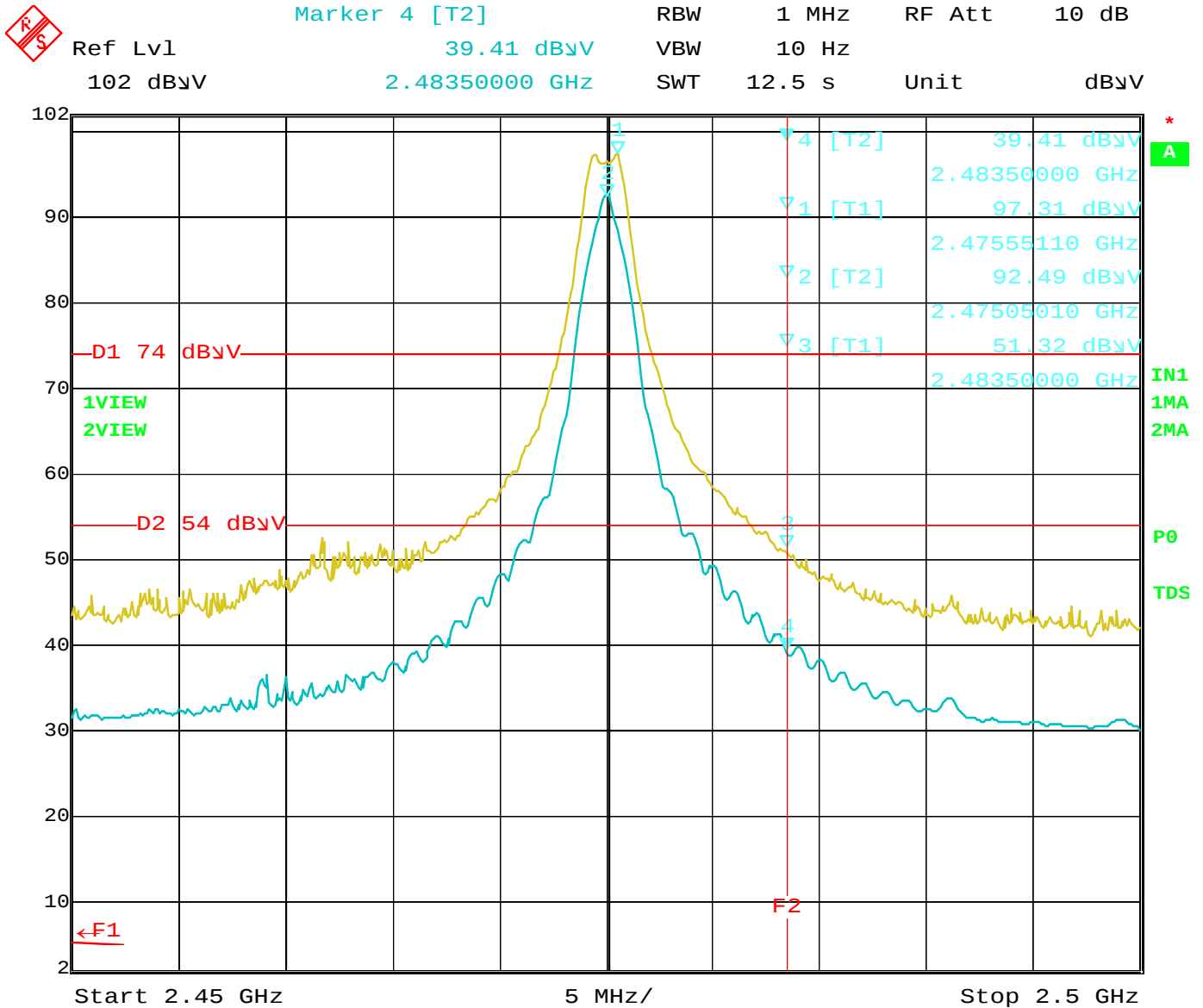
Date: 8.JUL.2013 15:54:37

Band Edge – Low Channel – Vertical Polarization – Y-Axis (Worst Case)
Note: The data sheets will reflect the average using a duty cycle correction factor



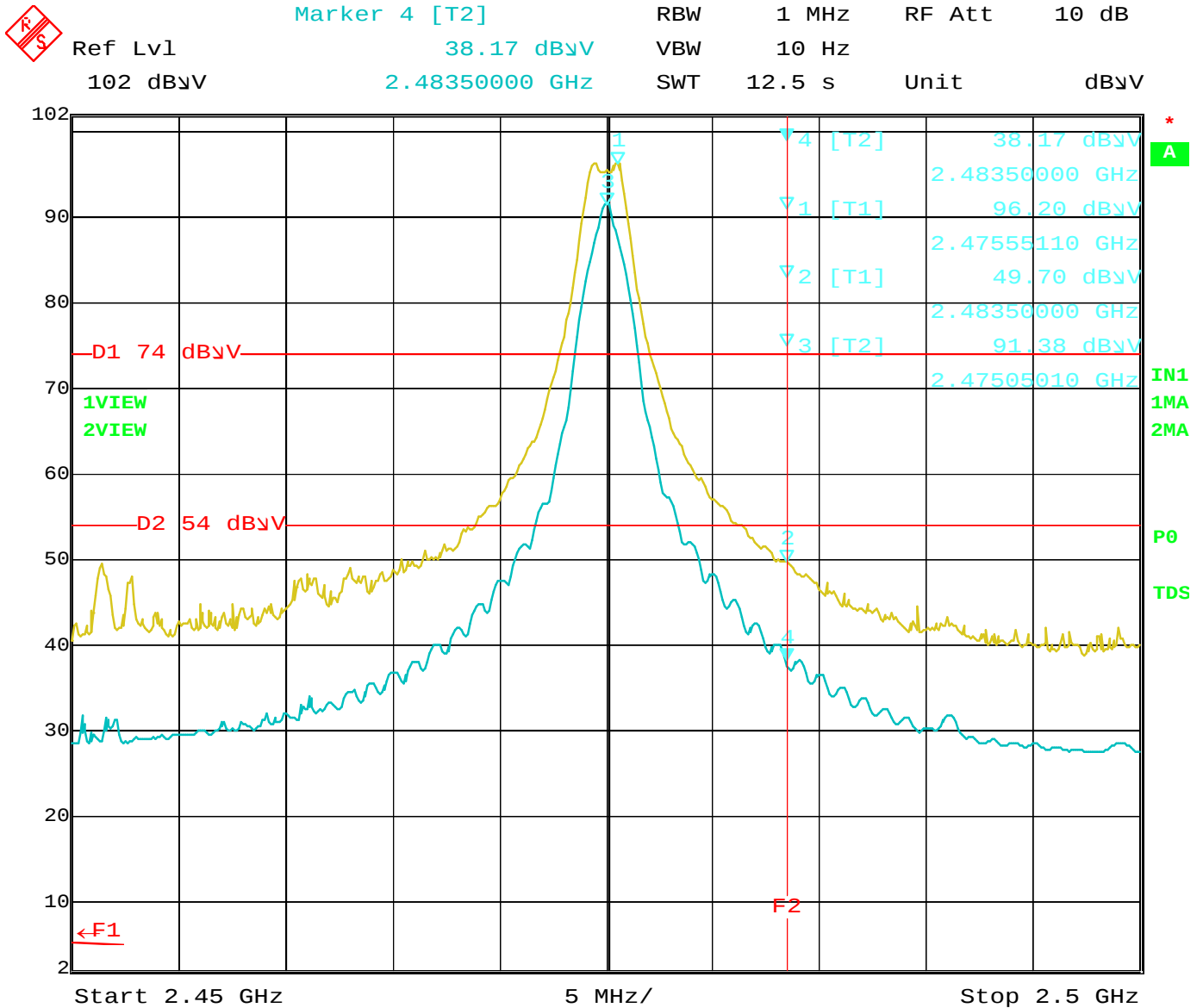
Date: 8.JUL.2013 16:09:08

Band Edge – Low Channel – Horizontal Polarization – Y-Axis (Worst Case)
Note: The data sheets will reflect the average using a duty cycle correction factor



Date: 8.JUL.2013 15:58:47

Band Edge – High Channel – Vertical Polarization – X-Axis (Worst Case)
Note: The data sheets will reflect the average using a duty cycle correction factor



Date: 8.JUL.2013 15:31:04

Band Edge – High Channel – Horizontal Polarization – Z-Axis (Worst Case)
Note: The data sheets will reflect the average using a duty cycle correction factor