

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

for

EchoStar Sling TV BLE Remote 2016

MODEL: URC-2004BC0-R

Prepared for

UNIVERSAL ELECTRONICS INC.
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SANTA ANA, CA 92707

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DATE: OCTOBER 3, 2016

REPORT BODY	A	B	C	D	E	APPENDICES	TOTAL
PAGES	16	2	22		13	27	62

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Compatible Electronics.



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TABLE OF CONTENTS

Section / Title	PAGE
GENERAL REPORT SUMMARY	4
SUMMARY OF TEST RESULTS	5
1. PURPOSE	6
2. ADMINISTRATIVE DATA	7
2.1 Location of Testing	7
2.2 Traceability Statement	7
2.3 Cognizant Personnel	7
2.4 Date Test Sample was Received	7
2.5 Disposition of the Test Sample	7
2.6 Abbreviations and Acronyms	7
3. APPLICABLE DOCUMENTS	8
4. DESCRIPTION OF TEST CONFIGURATION	9
4.1 Description of Test Configuration – Emissions	9
4.1.1 Cable Construction and Termination	9
5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT	10
5.1 EUT and Accessory List	10
6. TEST SITE DESCRIPTION	12
6.1 Test Facility Description	12
6.2 EUT Mounting, Bonding and Grounding	12
7. TEST PROCEDURES	13
7.1 RF Emissions	13
7.1.1 Conducted Emissions Test	13
7.1.2 Radiated Emissions Test	14
7.1.3 RF Emissions Test Results	15
8. CONCLUSIONS	16

LIST OF APPENDICES

APPENDIX	TITLE
A	Laboratory Accreditations and Recognitions
B	Modifications to the EUT
C	Additional Models Covered Under This Report
D	Diagrams and Charts <ul style="list-style-type: none"> • Test Setup Diagrams • Antenna and Effective Gain Factors
E	Data Sheets

LIST OF FIGURES

FIGURE	TITLE
1	Conducted Emissions Test Setup
2	Layout of the Semi-Anechoic Test Chamber

GENERAL REPORT SUMMARY

This electromagnetic emission test report is generated by Compatible Electronics Inc., 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 certification, approval or endorsement by NVLAP, NIST or any agency of the federal government.

Device Tested: EchoStar Sling TV BLE Remote 2016
Models: URC-2004BC0-R
S/N: N/A

Product Description: The EUT is a Bluetooth low energy remote controller.

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

Customer: Universal Electronics, Inc.
201 Sandpointe Ave, 8th Floor
Santa Ana, CA 92707

Test Dates: August 24 and 25; September 7 and 8, 2016

Test Specification covered by accreditation:



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

Test Procedure: ANSI C63.4, ANSI C63.10

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

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Spurious Radiated RF Emissions, 10 kHz – 25000 MHz (Transmitter, Receiver, and Digital portion)	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 15.205, 15.209 and 15.249 Highest reading in relation to spec limit: 40.71 dBuV/m @ 2400 MHz (*U = 3.70 dB)



1. PURPOSE

This document is a qualification test report based on the emissions tests performed on the EchoStar Sling TV BLE Remote 2016, Model: URC-2004BC0-R. The emissions measurements were performed according to the measurement procedure described in ANSI C63.4 and ANSI C63.10. 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; and Subpart C, sections 15.205, 15.207, 15.209, and 15.249.



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 92823.

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 Staff Engineer Electrical

Compatible Electronics Inc.

Edgar Valencia	Lab Technician
Kyle Fujimoto	Test Engineer
James Ross	Test Engineer

2.4 Date Test Sample was Received

The test sample was received on August 24, 2016.

2.5 Disposition of the Test Sample

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

2.6 Abbreviations and Acronyms

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

RF	Radio Frequency
EMI	Electromagnetic Interference
EUT	Equipment Under Test
P/N	Part Number
S/N	Serial Number
HP	Hewlett Packard
ITE	Information Technology Equipment
LISN	Line Impedance Stabilization Network
N/A	Not Applicable
Tx	Transmit
Rx	Receive

3. APPLICABLE DOCUMENTS

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

SPEC	TITLE
FCC Title 47, Part 15 Subpart C	FCC Rules – Radio frequency devices (including digital devices) – Intentional Radiators
FCC Title 47, Part 15 Subpart B	FCC Rules – Radio frequency devices (including digital devices) – Unintentional Radiators
EN 50147-2: 1997	Anechoic chambers. Alternative test site suitability with respect to site attenuation
ANSI C63.4 2014	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
ANSI C63.10 2013	American National Standard for Testing Unlicensed Wireless Devices

4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description of Test Configuration – Emissions

The EchoStar Sling TV BLE Remote 2016, Model: URC-2004BC0-R (EUT) was tested as a stand alone device. A fresh set of batteries were inserted in the EUT prior to the testing.

The EUT was continuously transmitting during the testing.

The EUT was tested for emissions at the low, middle, and high channels while in the X, Y and Z axis.

The final radiated data for the EUT was taken in the mode described.

The X orientation is when the EUT is parallel to the ground. The Y orientation is when the EUT is perpendicular to the ground mounted vertically. The Z orientation is when the EUT is perpendicular to the ground mounted horizontally.

4.1.1 Cable Construction and Termination

The EUT has no external cables.

5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT**5.1 EUT and Accessory List**

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID
ECHOSTAR SLING TV BLE REMOTE	UNIVERSAL ELECTRONICS, INC.	URC-2004BC0-R	N/A	MG3-2004



5.2 Emissions Test Equipment

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CALIBRATION DATE	CAL. CYCLE
GENERAL TEST EQUIPMENT USED IN LAB D					
TDK TestLab	TDK RF Solutions, Inc.	9.22	700145	N/A	N/A
Computer	Hewlett Packard	p6716f	MXX1030PX0	N/A	N/A
LCD Monitor	Hewlett Packard	52031a	3CQ046N3MG	N/A	N/A
EMI Receiver, 20 Hz – 26.5 GHz	Agilent Technologies	N9038A	MY51210150	December 29, 2015	1 Year
RF RADIATED EMISSIONS TEST EQUIPMENT					
CombiLog Antenna	Com-Power	AC-220	61060	September 3, 2015	2 Year
Preamplifier	Com-Power	PAM-118A	551024	May 12, 2016	1 Year
Loop Antenna	Com-Power	AL-130	17089	February 6, 2015	2 Year
Horn Antenna	Com-Power	AH-118	071175	February 26, 2016	2 Year
Antenna Mast	Com Power	AM-100	N/A	N/A	N/A
System Controller	Sunol Sciences Corporation	SC110V	112213-1	N/A	N/A
Turntable	Sunol Sciences Corporation	2011VS	N/A	N/A	N/A
Antenna-Mast	Sunol Sciences Corporation	TWR95-4	112213-3	N/A	N/A
Preamplifier	Com-Power	PA-840	711013	May 13, 2016	1 Year
Horn Antenna	Com-Power	AH-826	71957	N/A	N/A

6. TEST SITE DESCRIPTION

6.1 Test Facility Description

Please refer to section 2.1 and 7.1 of this report for emissions test location.

6.2 EUT Mounting, Bonding and Grounding

For frequencies 1 GHz and below: The EUT was mounted on a 1.0 by 1.5 meter non-conductive table 0.8 meters above the ground plane.

For frequencies above 1 GHz : The EUT was mounted on a 1.0 by 1.5 meter non-conductive table 1.5 meters above the ground plane.

The EUT was not grounded.

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 EMI Receiver was used as a measuring meter. A quasi-peak and/or average reading was taken only where indicated in the data sheets. A transient limiter was used for the protection of the EMI Receiver input stage, and the offset was adjusted accordingly to read the actual data measured. The LISN output was measured using the EMI 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 63:4. 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 computer software. The final qualification data is located in Appendix E.

Test Results:

This test was not performed for the EUT is battery powered and does not connect to the AC power mains.

7.1.2 Radiated Emissions Test

The EMI Receiver was used as the measuring meter. A built-in, internal preamplifier was used to increase the sensitivity of the instrument. The EMI Receiver was initially used with the Analyzer mode feature activated. In this mode, the EMI receiver can then record the actual frequency to be measured. This final reading is then taken accurately in the EMI Receiver mode, which takes into account the cable loss, amplifier gain and antenna factors, so that a true reading is compared to the true limit. A quasi-peak reading was taken only for those readings, which are marked accordingly on the data sheets. The effective measurement bandwidth used for the radiated emissions test was according to the frequency measured (200 Hz for 10 kHz to 150 kHz, 9 kHz for 150 kHz to 30 MHz, 120 kHz for 30 MHz to 1 GHz and 1 MHz for 1 GHz to 25 GHz).

For emissions above 1 GHz, the readings were averaged by “duty cycle correction factor”, derived from $20 \log(\text{dwell time} / 100\text{ms})$. This duty cycle correction factor was then subtracted from the peak reading.

The EMI test chamber of Compatible Electronics, Inc. was used for radiated emissions testing. This test site is in full compliance with ANSI C63.4, EN 50147-2 and CISPR 22. 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 its 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. 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 gunsight method was used when measuring with the horn antenna in order to ensure accurate results.

The EUT was tested at a 3-meter test distance. The six highest emissions are listed in Table 2.0.

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	Loop Antenna
150 kHz to 30 MHz	9 kHz	Loop Antenna
30 MHz to 1 GHz	120 kHz	CombiLog Antenna
1 GHz to 25 GHz	1 MHz	Horn Antenna

Test Results:

The EUT 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 for radiated emissions.

7.1.3 RF Emissions Test Results

Table 1.0 RADIATED EMISSION RESULTS
EchoStar Sling TV BLE Remote 2016
Model: URC-2004BC0-R

Frequency MHz	EMI Reading (dBuV/m)	Specification Limit (dBuV)	Delta (Cor. Reading – Spec. Limit) dB)
2400 (H) (Z-Axis)	40.71 (AVG)	53.97	-13.26
2400 (V) (Y-Axis)	39.60 (AVG)	53.97	-14.37
2442 (H) (Z-Axis)	78.27 (AVG)	93.97	-15.70
2442 (V) (Y-Axis)	77.18 (AVG)	93.97	-16.79
2402 (H) (Z-Axis)	76.89 (AVG)	93.97	-17.08
2402 (V) (Y-Axis)	75.72 (AVG)	93.97	-18.25

Notes:

* The complete emissions data is given in Appendix E of this report.

(BL) Black Lead
(WL) White Lead
(V) Vertical
(H) Horizontal
(QP) Quasi-Peak
(Avg) Average

8. CONCLUSIONS

The EchoStar Sling TV BLE Remote 2016, Models: URC-2004BC0-R, as tested, meets all of the specification limits defined in FCC Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.207, 15.209, and 15.249.



APPENDIX A

LABORATORY ACCREDITATIONS AND RECOGNITIONS

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LABORATORY ACCREDITATIONS AND RECOGNITIONS



NVLAP LAB CODE 200528-0

For US, Canada, Australia/New Zealand, Japan, Taiwan, Korea, and the European Union, Compatible Electronics is currently accredited by NVLAP to ISO/IEC 17025.

For the most up-to-date version of our scopes and certificates please visit
<http://celectronics.com/quality/scope/>

Quote from ISO-ILAC-IAF Communiqué on 17025:

"A laboratory's fulfilment 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) <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>

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APPENDIX B

MODIFICATIONS TO THE EUT

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MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC Subpart B and FCC 15.249 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.



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APPENDIX C

ADDITIONAL MODELS COVERED UNDER THIS REPORT

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ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

EchoStar Sling TV BLE Remote 2016
Model: URC-2004BC0-R
S/N: N/A

There are no additional models covered under this report.



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APPENDIX D

DIAGRAMS AND CHARTS

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(949) 587-0400

FIGURE 1: CONDUCTED EMISSIONS TEST SETUP

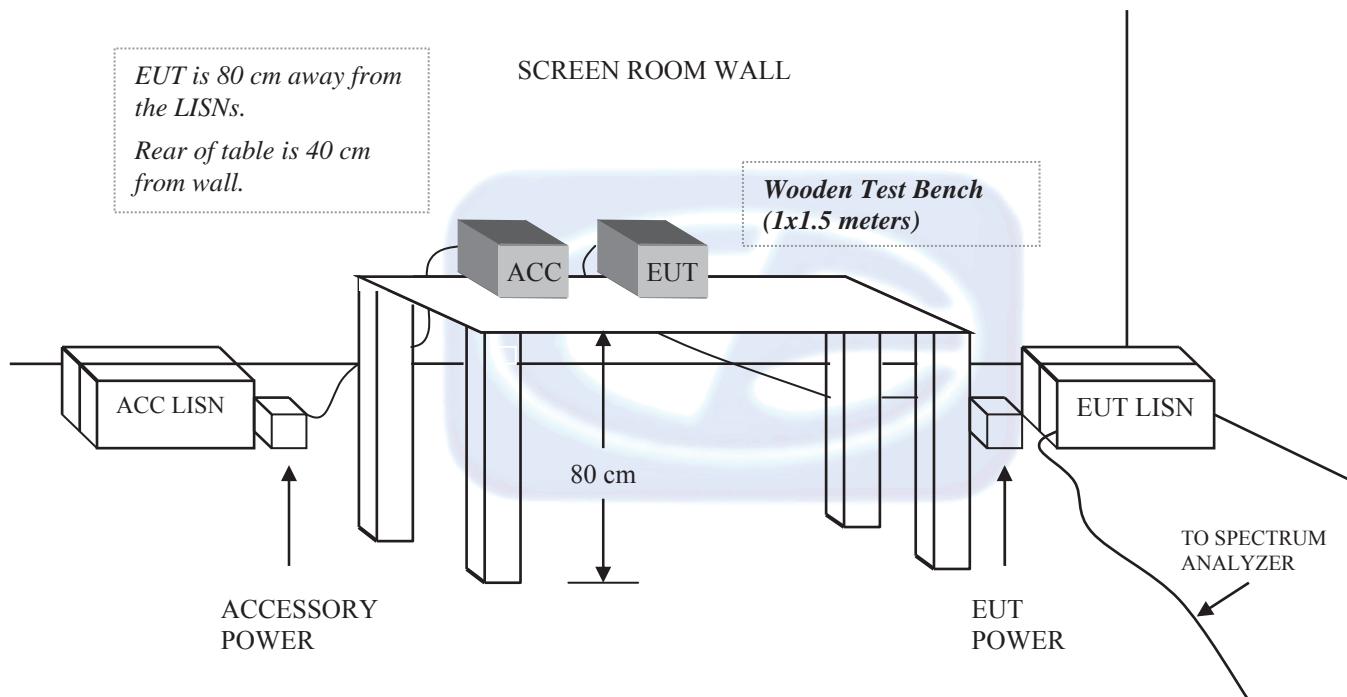
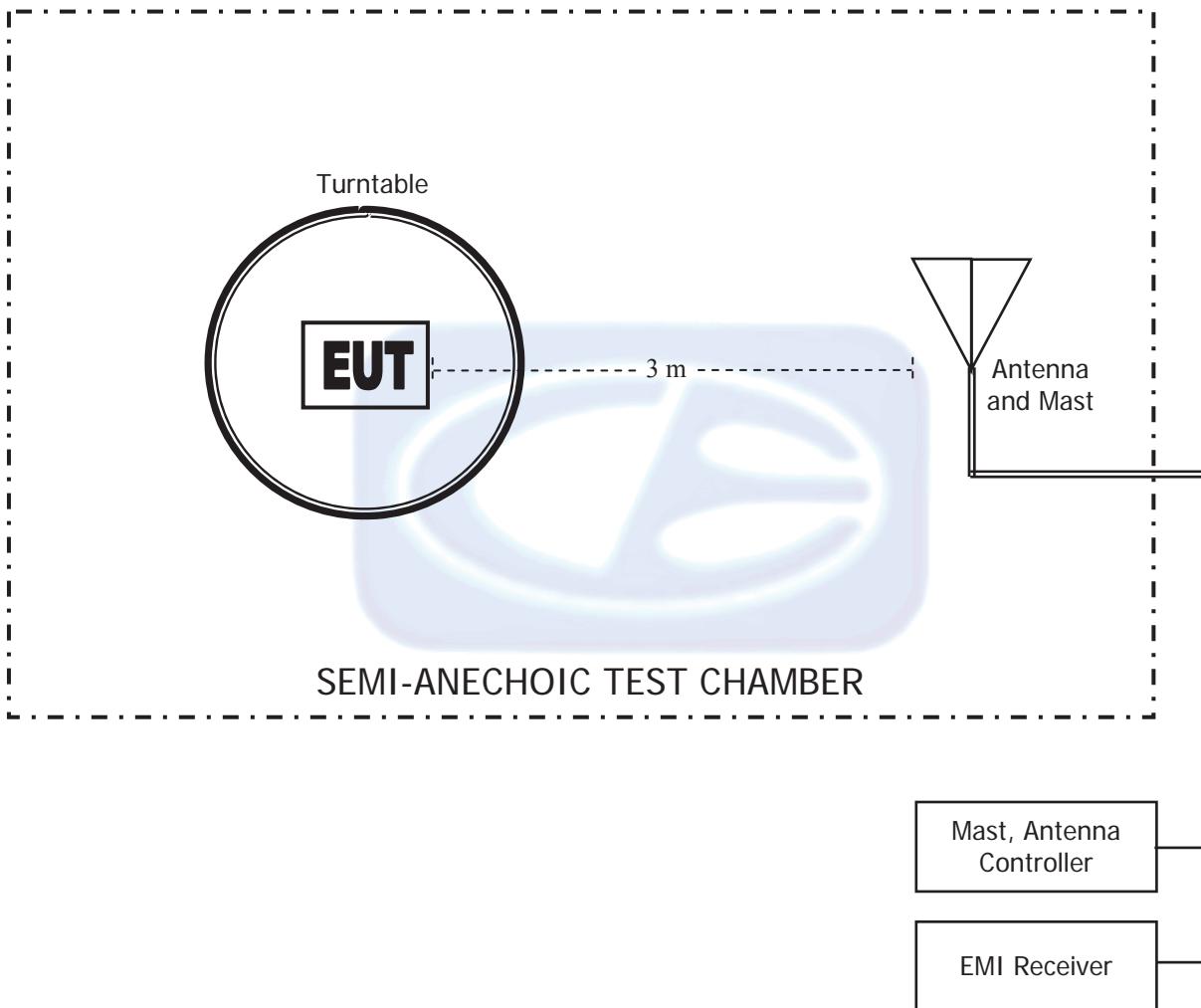


FIGURE 2: LAYOUT OF THE SEMI-ANECHOIC TEST CHAMBER



COM-POWER AL-130

LOOP ANTENNA

S/N: 17089

CALIBRATION DATE: FEBRUARY 6, 2015

FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)
0.009	-33.18	18.32
0.01	-34.10	17.40
0.02	-38.65	12.85
0.03	-39.28	12.22
0.04	-40.09	11.41
0.05	-40.85	10.65
0.06	-40.88	10.62
0.07	-41.07	10.43
0.08	-41.04	10.46
0.09	-41.19	10.31
0.1	-41.20	10.30
0.2	-41.52	9.98
0.3	-41.53	9.97
0.4	-41.42	10.08
0.5	-41.53	9.97
0.6	-41.53	9.97
0.7	-41.43	10.07
0.8	-41.23	10.27
0.9	-41.13	10.37
1	-41.14	10.36
2	-40.80	10.70
3	-40.66	10.84
4	-40.61	10.89
5	-40.33	11.17
6	-40.53	10.97
7	-40.47	11.03
8	-40.48	11.02
9	-39.93	11.57
10	-39.81	11.69
15	-43.35	8.15
20	-39.16	12.34
25	-40.24	11.26
30	-43.18	8.32

COM-POWER AC-220
COMBILOG ANTENNA
S/N: 61060
CALIBRATION DATE: SEPTEMBER 3, 2015

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	24.00	200	13.00
35	24.30	250	15.30
40	25.40	300	18.20
45	21.50	350	17.90
50	22.50	400	18.60
60	15.40	450	19.80
70	12.70	500	21.60
80	11.10	550	22.40
90	13.40	600	23.70
100	13.80	650	24.30
120	15.40	700	24.00
125	15.40	750	24.50
140	13.10	800	24.30
150	17.20	850	26.30
160	13.20	900	26.90
175	14.20	950	26.00
180	14.30	1000	25.60

COM POWER AH-118

HORN ANTENNA

S/N: 071175

CALIBRATION DATE: FEBRUARY 26, 2016

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	23.93	10.0	39.33
1.5	25.54	10.5	39.64
2.0	28.09	11.0	41.04
2.5	30.21	11.5	44.29
3.0	30.15	12.0	41.22
3.5	30.17	12.5	41.50
4.0	31.90	13.0	41.62
4.5	33.51	13.5	40.63
5.0	33.87	14.0	39.94
5.5	35.08	14.5	41.84
6.0	34.81	15.0	42.69
6.5	34.26	15.5	39.03
7.0	36.33	16.0	39.07
7.5	37.03	16.5	41.40
8.0	37.56	17.0	43.18
8.5	40.07	17.5	47.01
9.0	38.92	18.0	46.48
9.5	38.21		

COM-POWER PA-118

PREAMPLIFIER

S/N: 551024

CALIBRATION DATE: MAY 12, 2016

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	39.84	6.0	39.05
1.1	39.40	6.5	38.94
1.2	39.58	7.0	39.25
1.3	39.68	7.5	39.09
1.4	39.91	8.0	39.01
1.5	39.78	8.5	38.60
1.6	39.50	9.0	38.64
1.7	39.81	9.5	39.67
1.8	39.89	10.0	39.30
1.9	39.94	11.0	39.15
2.0	39.57	12.0	39.24
2.5	40.39	13.0	39.49
3.0	40.63	14.0	39.44
3.5	40.80	15.0	39.94
4.0	40.86	16.0	40.09
4.5	39.94	17.0	40.06
5.0	34.47	18.0	39.76
5.5	39.32		

COM-POWER AH-826

HORN ANTENNA

S/N: 71957

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-840
MICROWAVE PREAMPLIFIER
S/N: 711013
CALIBRATION DATE: MAY 13, 2016

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
18.0	25.19	31.0	25.69
19.0	24.48	31.5	25.74
20.0	24.39	32.0	26.35
21.0	24.73	32.5	26.64
22.0	23.49	33.0	25.98
23.0	24.23	33.5	24.68
24.0	24.59	34.0	24.61
25.0	25.32	34.5	23.78
26.0	25.66	35.0	24.74
26.5	25.99	35.5	24.39
27.0	26.26	36.0	23.46
27.5	25.33	36.5	23.71
28.0	24.49	37.0	26.35
28.5	24.74	37.5	23.49
29.0	25.93	38.0	25.42
29.5	26.28	38.5	24.87
30.0	26.17	39.0	22.60
30.5	26.11	39.5	20.57
		40.0	19.15

**FRONT VIEW**

UNIVERSAL ELECTRONICS, INC
ECHOSTAR SLING TV BLE REMOTE 2016
MODEL: URC-2004BC0-R

FCC SUBPART B AND C – RADIATED EMISSIONS – BELOW 1 GHz

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

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

**REAR VIEW**

UNIVERSAL ELECTRONICS, INC
ECHOSTAR SLING TV BLE REMOTE 2016
MODEL: URC-2004BC0-R
FCC SUBPART B AND C – RADIATED EMISSIONS – BELOW 1 GHz

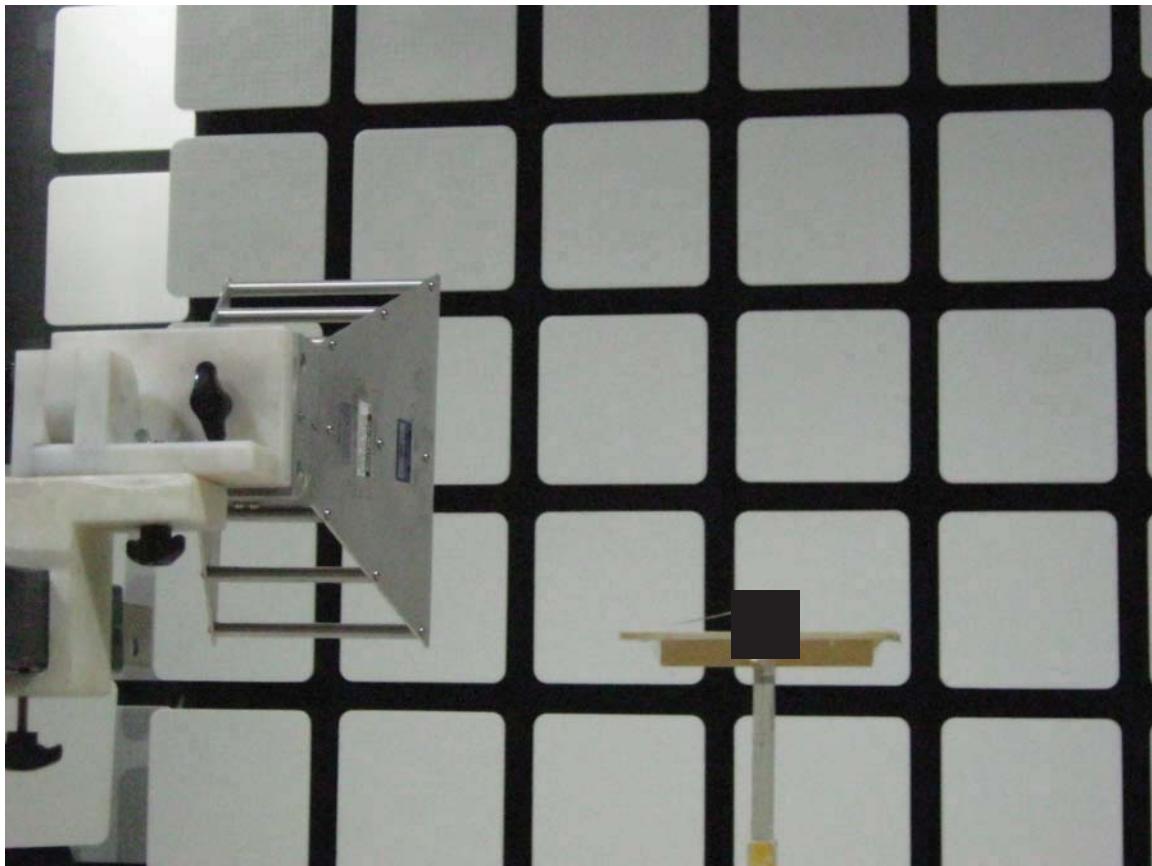
**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

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Agoura Division
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Silverado Division
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(949) 589-0700

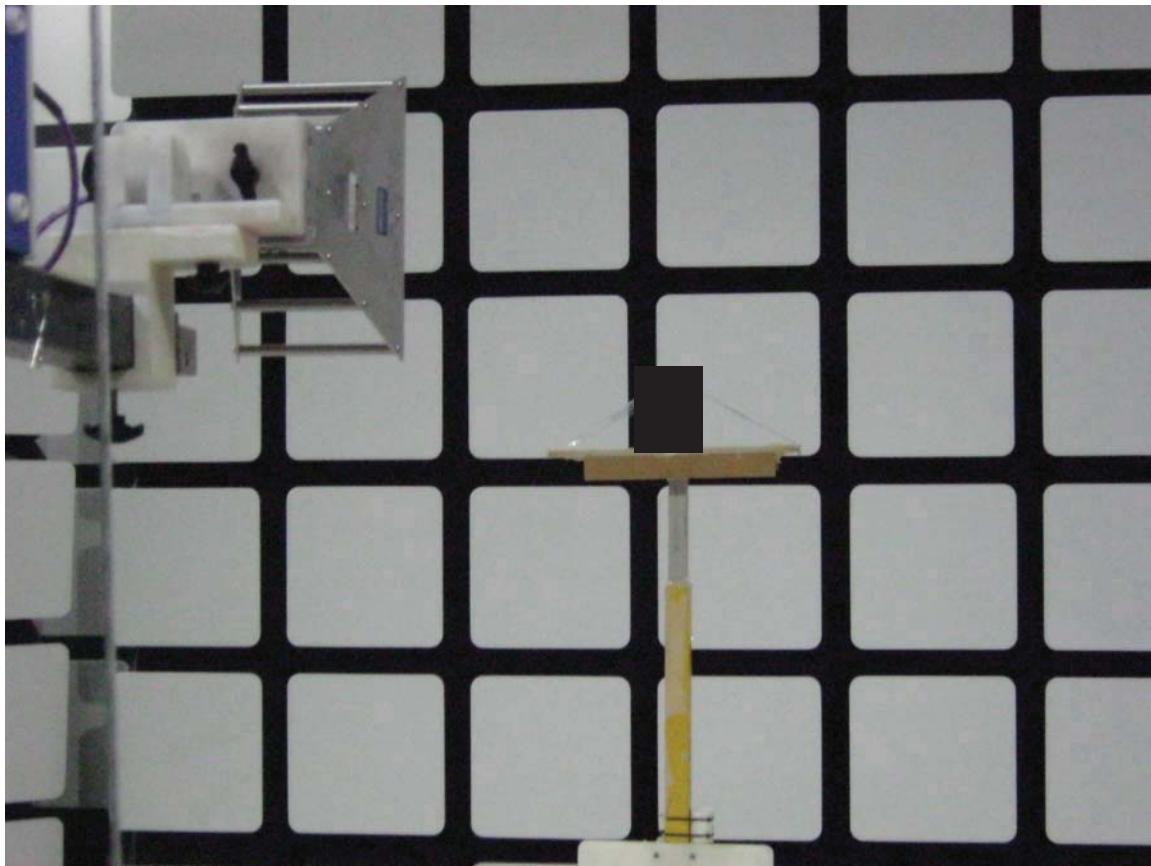
Lake Forest Division
20621 Pascal Way
Lake Forest, CA 92630
(949) 587-0400

**FRONT VIEW**

UNIVERSAL ELECTRONICS, INC
ECHOSTAR SLING TV BLE REMOTE 2016
MODEL: URC-2004BC0-R

FCC SUBPART B AND C – RADIATED EMISSIONS – ABOVE 1 GHz

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

**REAR VIEW**

UNIVERSAL ELECTRONICS, INC
ECHOSTAR SLING TV BLE REMOTE 2016
MODEL: URC-2004BC0-R

FCC SUBPART B AND C – RADIATED EMISSIONS – ABOVE 1 GHz

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

APPENDIX E

DATA SHEETS

Brea Division
114 Olinda Drive
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(714) 579-0500

Agoura Division
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***RADIATED EMISSIONS
DATA SHEETS***

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FCC 15.249

Universal Electronics, Inc.
EchoStar Sling TV BLE Remote
Model: URC-2004BC0-R

Date: 08/24/2016

Lab: D

Tested By: Kyle Fujimoto

**Low Channel
Z-Axis**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2402	90.44	V	113.97	-23.53	Peak	186.25	249.47	
2402	70.44	V	93.97	-23.53	Avg	186.25	249.47	
4804	45.33	V	73.97	-28.64	Peak	63.00	142.47	
4804	25.33	V	53.97	-28.64	Avg	63.00	142.47	
7206	44.62	V	73.97	-29.35	Peak	110.50	223.61	
7206	24.62	V	53.97	-29.35	Avg	110.50	223.61	
9608								No Emission Detected
9608								
12010								No Emission Detected
12010								
14412								No Emission Detected
14412								
16814								No Emission Detected
16814								
19216								No Emission Detected
19216								
21618								No Emission Detected
21618								
24020								No Emission Detected
24020								



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Universal Electronics, Inc.
EchoStar Sling TV BLE Remote
Model: URC-2004BC0-R

Date: 08/24/2016

Lab: D

Tested By: Kyle Fujimoto

Low Channel

Z-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2402	96.89	H	113.97	-17.08	Peak	79.75	127.43	
2402	76.89	H	93.97	-17.08	Avg	79.75	127.43	
4804	45.42	H	73.97	-28.55	Peak	177.50	126.65	
4804	25.42	H	53.97	-28.55	Avg	177.50	126.65	
7206	45.91	H	73.97	-28.06	Peak	174.25	191.07	
7206	25.91	H	53.97	-28.06	Avg	174.25	191.07	
9608								No Emission Detected
9608								No Emission Detected
12010								No Emission Detected
12010								No Emission Detected
14412								No Emission Detected
14412								No Emission Detected
16814								No Emission Detected
16814								No Emission Detected
19216								No Emission Detected
19216								No Emission Detected
21618								No Emission Detected
21618								No Emission Detected
24020								No Emission Detected
24020								No Emission Detected

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Universal Electronics, Inc.
EchoStar Sling TV BLE Remote
Model: URC-2004BC0-R

Date: 08/24/2016

Lab: D

Tested By: Kyle Fujimoto

**Low Channel
Y-Axis**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2402	95.72	V	113.97	-18.25	Peak	61.25	127.31	
2402	75.72	V	93.97	-18.25	Avg	61.25	127.31	
4804	44.09	V	73.97	-29.88	Peak	83.50	249.95	
4804	24.09	V	53.97	-29.88	Avg	83.50	249.95	
7206	45.01	V	73.97	-28.96	Peak	330.00	142.83	
7206	25.01	V	53.97	-28.96	Avg	330.00	142.83	
9608								No Emission Detected
9608								
12010								No Emission Detected
12010								
14412								No Emission Detected
14412								
16814								No Emission Detected
16814								
19216								No Emission Detected
19216								
21618								No Emission Detected
21618								
24020								No Emission Detected
24020								



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Universal Electronics, Inc.
EchoStar Sling TV BLE Remote
Model: URC-2004BC0-R

Date: 08/03/2016
Lab: D
Tested By: Kyle Fujimoto

Low Channel
Y-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2402	79.26	H	113.97	-34.71	Peak	134.50	191.25	
2402	59.26	H	93.97	-34.71	Avg	134.50	191.25	
4804	46.42	H	73.97	-27.55	Peak	199.00	206.95	
4804	26.42	H	53.97	-27.55	Avg	199.00	206.95	
7206	44.25	H	73.97	-29.72	Peak	303.50	127.49	
7206	24.25	H	53.97	-29.72	Avg	303.50	127.49	
9608								No Emission
9608								Detected
12010								No Emission
12010								Detected
14412								No Emission
14412								Detected
16814								No Emission
16814								Detected
19216								No Emission
19216								Detected
21618								No Emission
21618								Detected
24020								No Emission
24020								Detected

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Universal Electronics, Inc.
EchoStar Sling TV BLE Remote
Model: URC-2004BC0-R

Date: 08/24/2016
Lab: D
Tested By: Kyle Fujimoto

Low Channel

X-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2402	94.94	V	113.97	-19.03	Peak	130.50	175.43	
2402	74.94	V	93.97	-19.03	Avg	130.50	175.43	
4804	47.44	V	73.97	-26.53	Peak	258.50	111.31	
4804	27.44	V	53.97	-26.53	Avg	258.50	111.31	
7206	44.66	V	73.97	-29.31	Peak	0.00	221.40	
7206	24.66	V	53.97	-29.31	Avg	0.00	221.40	
9608								No Emission
9608								Detected
12010								No Emission
12010								Detected
14412								No Emission
14412								Detected
16814								No Emission
16814								Detected
19216								No Emission
19216								Detected
21618								No Emission
21618								Detected
24020								No Emission
24020								Detected

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Universal Electronics, Inc.
EchoStar Sling TV BLE Remote
Model: URC-2004BC0-R

Date: 08/24/2016
Lab: D
Tested By: Kyle Fujimoto

Low Channel
X-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2402	95.49	H	113.97	-18.48	Peak	203.00	110.95	
2402	75.49	H	93.97	-18.48	Avg	203.00	110.95	
4804	47.76	H	73.97	-26.21	Peak	108.25	127.43	
4804	27.76	H	53.97	-26.21	Avg	108.25	127.43	
7206	44.70	H	73.97	-29.27	Peak	69.25	126.95	
7206	24.70	H	53.97	-29.27	Avg	69.25	126.95	
9608								No Emission Detected
9608								
12010								No Emission Detected
12010								
14412								No Emission Detected
14412								
16814								No Emission Detected
16814								
19216								No Emission Detected
19216								
21618								No Emission Detected
21618								
24020								No Emission Detected
24020								



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Universal Electronics, Inc.
EchoStar Sling TV BLE Remote
Model: URC-2004BC0-R

Date: 08/24/2016
Lab: D
Tested By: Kyle Fujimoto

Middle Channel
Z-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2442	87.00	V	113.97	-26.97	Peak	20.00	244.92	
2442	67.00	V	93.97	-26.97	Avg	20.00	244.92	
4884	45.86	V	73.97	-28.11	Peak	264.50	150.05	
4884	25.86	V	53.97	-28.11	Avg	264.50	150.05	
7326	47.76	V	73.97	-26.21	Peak	145.00	170.89	
7326	27.76	V	53.97	-26.21	Avg	145.00	170.89	
9768								No Emission
9768								Detected
12210								No Emission
12210								Detected
14652								No Emission
14652								Detected
17094								No Emission
17094								Detected
19536								No Emission
19536								Detected
21978								No Emission
21978								Detected
24420								No Emission
24420								Detected

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Universal Electronics, Inc.
EchoStar Sling TV BLE Remote
Model: URC-2004BC0-R

Date: 08/24/2016
Lab: D
Tested By: Kyle Fujimoto

Middle Channel
Z-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2442	98.27	H	113.97	-15.70	Peak	252.25	102.05	
2442	78.27	H	93.97	-15.70	Avg	252.25	102.05	
4884	51.20	H	73.97	-22.77	Peak	318.25	140.98	
4884	31.20	H	53.97	-22.77	Avg	318.25	140.98	
7326	48.17	H	73.97	-25.80	Peak	150.00	155.07	
7326	28.17	H	53.97	-25.80	Avg	150.00	155.07	
9768								No Emission Detected
9768								No Emission Detected
12210								No Emission Detected
12210								No Emission Detected
14652								No Emission Detected
14652								No Emission Detected
17094								No Emission Detected
17094								No Emission Detected
19536								No Emission Detected
19536								No Emission Detected
21978								No Emission Detected
21978								No Emission Detected
24420								No Emission Detected
24420								No Emission Detected



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Universal Electronics, Inc.
EchoStar Sling TV BLE Remote
Model: URC-2004BC0-R

Date: 08/24/2016
Lab: D
Tested By: Kyle Fujimoto

**Middle Channel
Y-Axis**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2442	97.18	V	113.97	-16.79	Peak	260.75	164.68	
2442	77.18	V	93.97	-16.79	Avg	260.75	164.68	
4884	43.37	V	73.97	-30.60	Peak	88.50	110.89	
4884	23.37	V	53.97	-30.60	Avg	88.50	110.89	
7326	44.05	V	73.97	-29.92	Peak	158.25	173.16	
7326	24.05	V	53.97	-29.92	Avg	158.25	173.16	
9768								No Emission Detected
9768								
12210								No Emission Detected
12210								
14652								No Emission Detected
14652								
17094								No Emission Detected
17094								
19536								No Emission Detected
19536								
21978								No Emission Detected
21978								
24420								No Emission Detected
24420								

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Universal Electronics, Inc.
EchoStar Sling TV BLE Remote
Model: URC-2004BC0-R

Date: 08/24/2016
Lab: D
Tested By: Kyle Fujimoto

**Middle Channel
Y-Axis**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Alt. Height (cm)	Comments
2442	88.21	H	113.97	-25.76	Peak	149.00	172.98	
2442	68.21	H	93.97	-25.76	Avg	149.00	172.98	
4884	50.89	H	73.97	-23.08	Peak	147.75	142.95	
4884	30.89	H	53.97	-23.08	Avg	147.75	142.95	
7326	43.73	H	73.97	-30.24	Peak	201.50	207.49	
7326	23.73	H	53.97	-30.24	Avg	201.50	207.49	
9768								No Emission Detected
9768								
12210								No Emission Detected
12210								
14652								No Emission Detected
14652								
17094								No Emission Detected
17094								
19536								No Emission Detected
19536								
21978								No Emission Detected
21978								
24420								No Emission Detected
24420								

FCC 15.249

Universal Electronics, Inc.
EchoStar Sling TV BLE Remote
Model: URC-2004BC0-R

Date: 08/24/2016
Lab: D
Tested By: Kyle Fujimoto

**Middle Channel
X-Axis**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2442	93.04	V	113.97	-20.93	Peak	324.75	174.89	
2442	73.04	V	93.97	-20.93	Avg	324.75	174.89	
4884	50.60	V	73.97	-23.37	Peak	235.00	127.37	
4884	30.60	V	53.97	-23.37	Avg	235.00	127.37	
7326	44.81	V	73.97	-29.16	Peak	0.25	249.95	
7326	24.81	V	53.97	-29.16	Avg	0.25	249.95	
9768								No Emission Detected
9768								
12210								No Emission Detected
12210								
14652								No Emission Detected
14652								
17094								No Emission Detected
17094								
19536								No Emission Detected
19536								
21978								No Emission Detected
21978								
24420								No Emission Detected
24420								

FCC 15.249

Universal Electronics, Inc.
EchoStar Sling TV BLE Remote
Model: URC-2004BC0-R

Date: 08/24/2016
Lab: D
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**Middle Channel
X-Axis**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2442	93.97	H	113.97	-20.00	Peak	28.00	111.37	
2442	73.97	H	93.97	-20.00	Avg	28.00	111.37	
4884	50.65	H	73.97	-23.32	Peak	85.25	127.43	
4884	30.65	H	53.97	-23.32	Avg	85.25	127.43	
7326	45.01	H	73.97	-28.96	Peak	241.00	191.37	
7326	25.01	H	53.97	-28.96	Avg	241.00	191.37	
9768								No Emission
9768								Detected
12210								No Emission
12210								Detected
14652								No Emission
14652								Detected
17094								No Emission
17094								Detected
19536								No Emission
19536								Detected
21978								No Emission
21978								Detected
24420								No Emission
24420								Detected



FCC 15.249

Universal Electronics, Inc.
EchoStar Sling TV BLE Remote
Model: URC-2004BC0-R

Date: 08/24/2016
Lab: D
Tested By: Kyle Fujimoto

High Channel
Z-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Alt. (cm)	Comments
2480	79.26	V	113.97	-34.71	Peak	115.50	175.31	
2480	59.26	V	93.97	-34.71	Avg	115.50	175.31	
4960	52.53	V	73.97	-21.44	Peak	149.00	191.25	
4960	32.53	V	53.97	-21.44	Avg	149.00	191.25	
7440	44.30	V	73.97	-29.67	Peak	116.00	143.07	
7440	24.30	V	53.97	-29.67	Avg	116.00	143.07	
9920								No Emission Detected
9920								
12400								No Emission Detected
12400								
14880								No Emission Detected
14880								
17360								No Emission Detected
17360								
19840								No Emission Detected
19840								
22320								No Emission Detected
22320								
24800								No Emission Detected
24800								

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**High Channel
Z-Axis**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2480	94.08	H	113.97	-19.89	Peak	75.25	191.49	
2480	74.08	H	93.97	-19.89	Avg	75.25	191.49	
4960	55.18	H	73.97	-18.79	Peak	156.25	127.31	
4960	35.18	H	53.97	-18.79	Avg	156.25	127.31	
7440	45.01	H	73.97	-28.96	Peak	332.00	223.43	
7440	25.01	H	53.97	-28.96	Avg	332.00	223.43	
9920								No Emission
9920								Detected
12400								No Emission
12400								Detected
14880								No Emission
14880								Detected
17360								No Emission
17360								Detected
19840								No Emission
19840								Detected
22320								No Emission
22320								Detected
24800								No Emission
24800								Detected



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Date: 08/24/2016
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**High Channel
Y-Axis**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2480	94.40	V	113.97	-19.57	Peak	104.00	126.83	
2480	74.40	V	93.97	-19.57	Avg	104.00	126.83	
4960	53.26	V	73.97	-20.71	Peak	181.00	175.25	
4960	33.26	V	53.97	-20.71	Avg	181.00	175.25	
7440	44.41	V	73.97	-29.56	Peak	162.25	239.55	
7440	24.41	V	53.97	-29.56	Avg	162.25	239.55	
9920								No Emission
9920								Detected
12400								No Emission
12400								Detected
14880								No Emission
14880								Detected
17360								No Emission
17360								Detected
19840								No Emission
19840								Detected
22320								No Emission
22320								Detected
24800								No Emission
24800								Detected

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Lake Forest Division
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(949) 587-0400



FCC 15.249

Universal Electronics, Inc.
EchoStar Sling TV BLE Remote
Model: URC-2004BC0-R

Date: 08/24/2016
Lab: D
Tested By: Kyle Fujimoto

**High Channel
Y-Axis**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2480	80.92	H	113.97	-33.05	Peak	133.00	206.83	
2480	60.92	H	93.97	-33.05	Avg	133.00	206.83	
4960	52.55	H	73.97	-21.42	Peak	344.75	175.01	
4960	32.55	H	53.97	-21.42	Avg	344.75	175.01	
7440	44.26	H	73.97	-29.71	Peak	110.25	110.53	
7440	24.26	H	53.97	-29.71	Avg	110.25	110.53	
9920								No Emission Detected
9920								
12400								No Emission Detected
12400								
14880								No Emission Detected
14880								
17360								No Emission Detected
17360								
19840								No Emission Detected
19840								
22320								No Emission Detected
22320								
24800								No Emission Detected
24800								

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Universal Electronics, Inc.
EchoStar Sling TV BLE Remote
Model: URC-2004BC0-R

Date: 08/24/2016
Lab: D
Tested By: Kyle Fujimoto

High Channel
X-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2480	90.02	V	113.97	-23.95	Peak	305.25	174.71	
2480	70.02	V	93.97	-23.95	Avg	305.25	174.71	
4960	55.18	V	73.97	-18.79	Peak	137.75	159.79	
4960	35.18	V	53.97	-18.79	Avg	137.75	159.79	
7440	44.12	V	73.97	-29.85	Peak	333.00	251.67	
7440	24.12	V	53.97	-29.85	Avg	333.00	251.67	
9920								No Emission Detected
9920								No Emission Detected
12400								No Emission Detected
12400								No Emission Detected
14880								No Emission Detected
14880								No Emission Detected
17360								No Emission Detected
17360								No Emission Detected
19840								No Emission Detected
19840								No Emission Detected
22320								No Emission Detected
22320								No Emission Detected
24800								No Emission Detected
24800								No Emission Detected

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EchoStar Sling TV BLE Remote
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High Channel
X-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2480	92.47	H	113.97	-21.50	Peak	211.25	126.89	
2480	72.47	H	93.97	-21.50	Avg	211.25	126.89	
4960	53.15	H	73.97	-20.82	Peak	255.25	143.31	
4960	33.15	H	53.97	-20.82	Avg	255.25	143.31	
7440	44.66	H	73.97	-29.31	Peak	173.25	111.07	
7440	24.66	H	53.97	-29.31	Avg	173.25	111.07	
9920								No Emission
9920								Detected
12400								No Emission
12400								Detected
14880								No Emission
14880								Detected
17360								No Emission
17360								Detected
19840								No Emission
19840								Detected
22320								No Emission
22320								Detected
24800								No Emission
24800								Detected

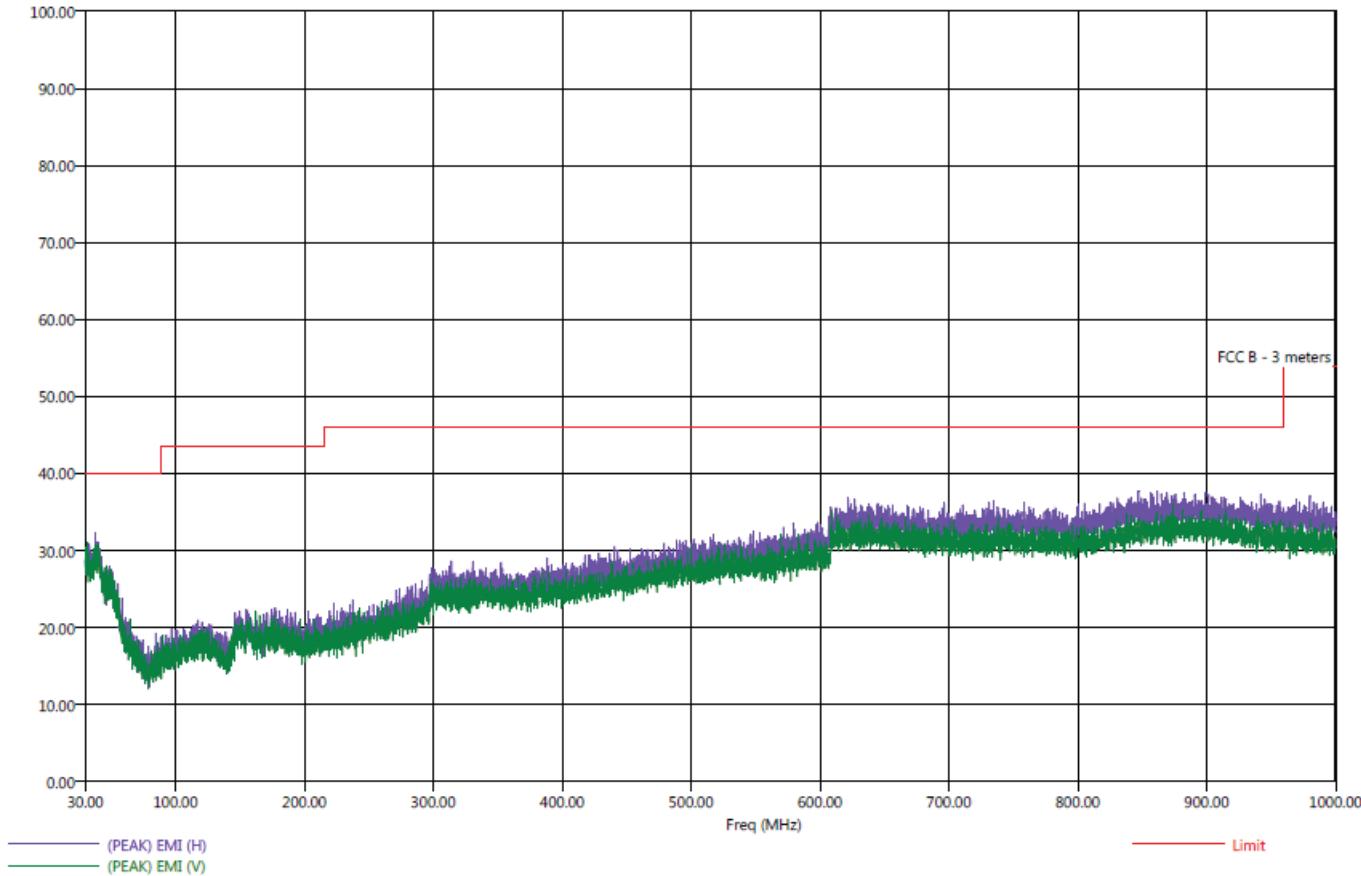


Title: Pre-Scan - FCC Class B
File: Agilent - Pre-Scan - FCC Class B - 30 MHz to 1000 MHz - X-Axis.set
Operator: James Ross
EUT Type: EchoStar Sling TV BLE Remote
EUT Condition: The EUT is continuously transmitting at the low channel - X-axis (EchoStar's X-axis)
Comments: Company: Universal Electronics, Inc.
Model: URC-2004BC0-R
The X-axis (EchoStar's X-axis) was the worst case

9/7/2016 9:17:58 AM
Sequence: Preliminary Scan

FCC Class B

Electric Field Strength (dBuV/m)



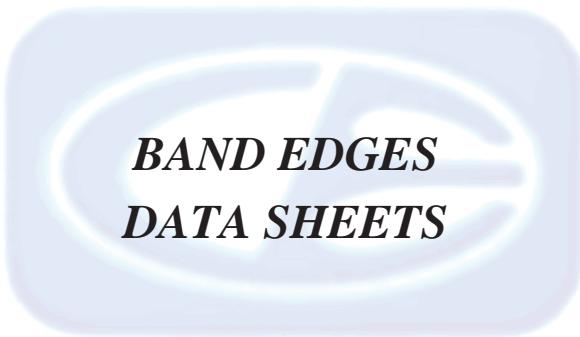
*No emissions were found from 10 kHz to 1 GHz.

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**BAND EDGES
DATA SHEETS**

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COMPATIBLE ELECTRONICS

Report Number: B60907D1
FCC Part 15 Subpart B and FCC Section 15.249 Test Report
EchoStar Sling TV BLE Remote 2016
Model: URC-2004BC0-R

Page E23

FCC 15.249

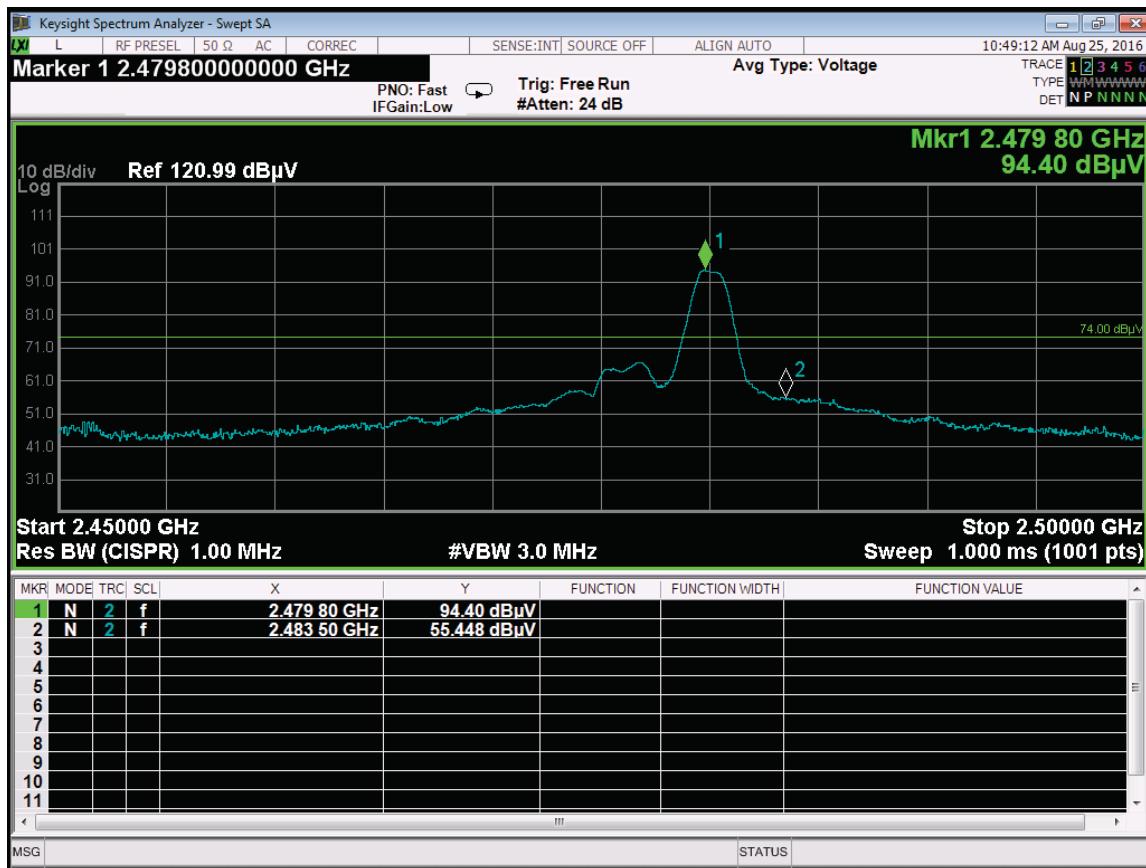
Universal Electronics, Inc.
EchoStar Sling TV BLE Remote
Model: URC-2004BC0-R

Date: 08/25/2016
Lab: D
Tested By: Kyle Fujimoto

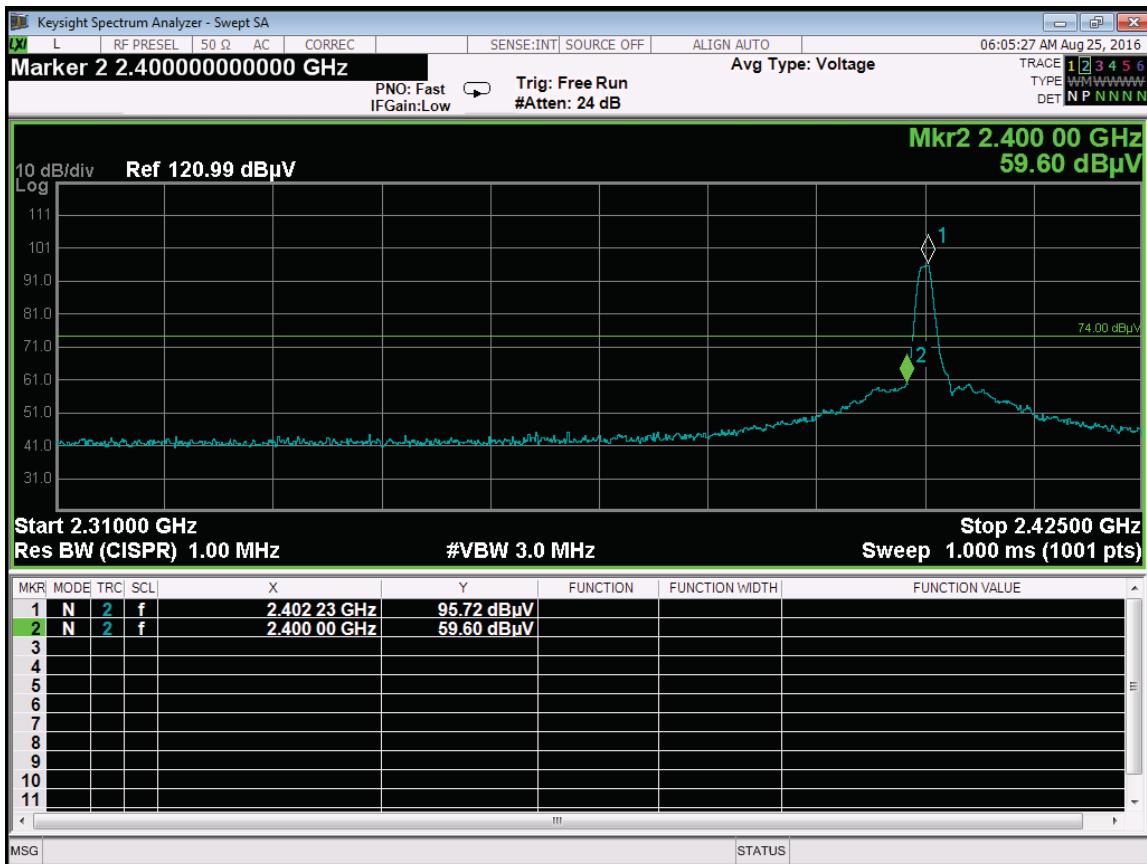
Band Edges

Worst Case Axis

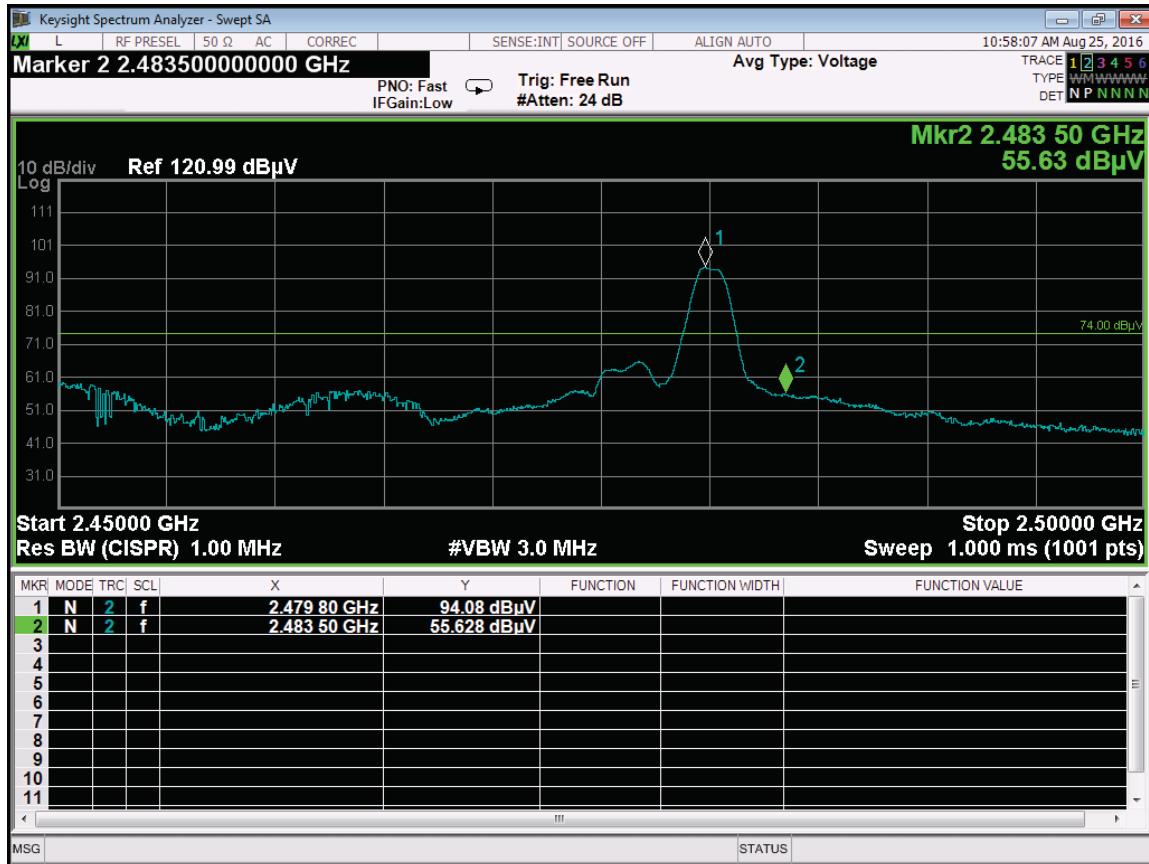
Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2402	96.89	H	113.97	-17.08	Peak	61.25	127.31	Fundamental
2402	76.89	H	93.97	-17.08	Avg	61.25	127.31	Low Channel - Z-Axis
2400	60.71	H	73.97	-13.26	Peak	61.25	127.31	Band Edge
2400	40.71	H	53.97	-13.26	Avg	61.25	127.31	Low Channel - Z-Axis
2402	95.72	V	113.97	-18.25	Peak	61.25	127.31	Fundamental
2402	75.72	V	93.97	-18.25	Avg	61.25	127.31	Low Channel - Y-Axis
2400	59.60	V	73.97	-14.37	Peak	61.25	127.31	Band Edge
2400	39.60	V	53.97	-14.37	Avg	61.25	127.31	Low Channel - Y-Axis
2480	94.40	V	113.97	-19.57	Peak	104.00	126.83	Fundamental
2480	74.40	V	93.97	-19.57	Avg	104.00	126.83	High Channel - Y-Axis
2483.5	55.45	V	113.97	-58.52	Peak	104.00	126.83	Band Edge
2483.5	35.45	V	93.97	-58.52	Avg	104.00	126.83	High Channel - Y-Axis
2480	94.08	H	113.97	-19.89	Peak	75.25	191.49	Fundamental
2480	74.08	H	93.97	-19.89	Avg	75.25	191.49	High Channel - Z-Axis
2483.5	55.63	H	113.97	-58.34	Peak	75.25	191.49	Band Edge
2483.5	35.63	H	93.97	-58.34	Avg	75.25	191.49	High Channel - Z-Axis



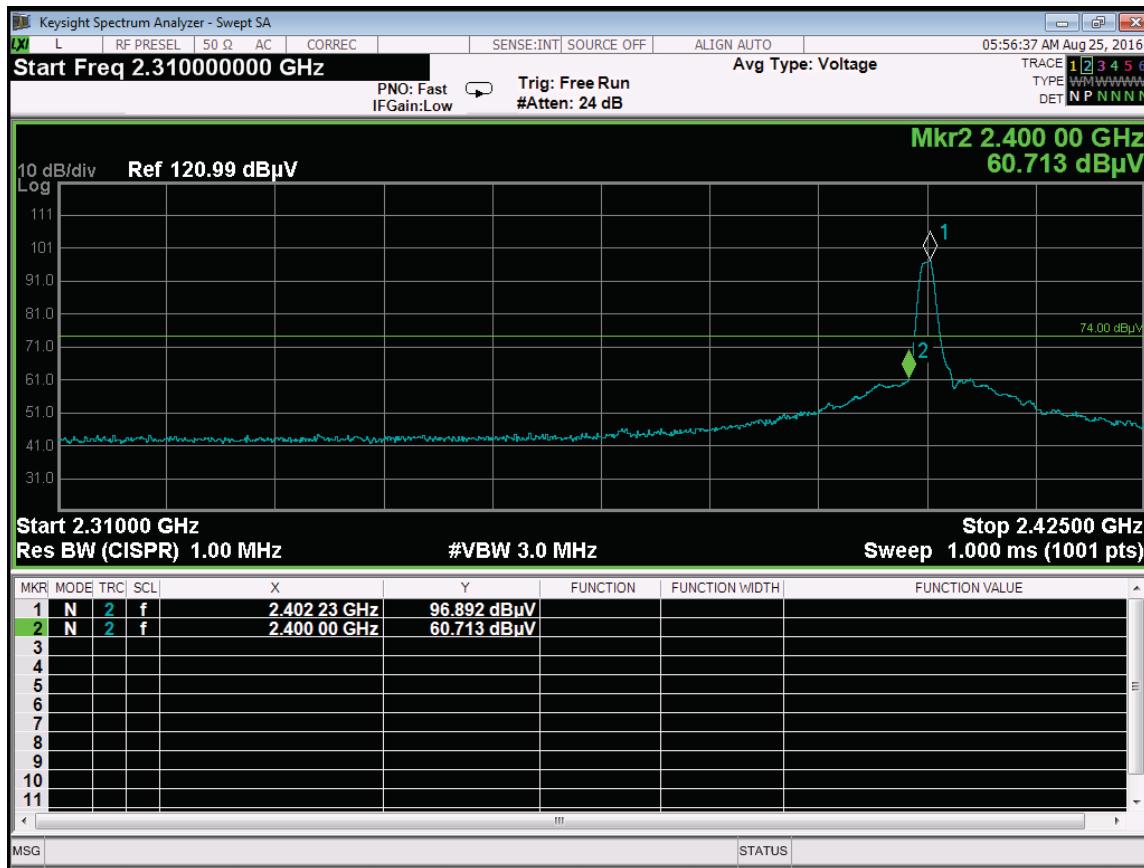
Band Edge – Vertical Polarization – High Channel – Model: URC-2004BC0-R – Y-Axis Worst Case



Band Edge – Vertical Polarization – Low Channel – Model: URC-2004BC0-R – Y-Axis Worst Case



Band Edge – Horizontal Polarization – High Channel – Model: URC-2004BC0-R – Z-Axis Worst Case



Band Edge – Horizontal Polarization – Low Channel – Model: URC-2004BC0-R – Z-Axis Worst Case