

FCC PART 15, SUBPART B and C  
TEST REPORT

for

DIRECTV RC73 WITH SMT CRYSTAL 2016

MODEL: URC 3009 BC2-X-R

Prepared for

UNIVERSAL ELECTRONICS, INC.  
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DATE: MAY 9, 2017

	REPORT BODY	APPENDICES					TOTAL
		A	B	C	D	E	
PAGES	17	2	2	2	13	40	76

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## 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: DirecTV RC73 with SMT Crystal 2016  
Model: URC 3009 BC2-X-R  
S/N: N/A

Product Description: The EUT is a remote control used with DirecTV systems.

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

Customer: Universal Electronics, Inc.  
201 E. Sandpointe Ave, 8<sup>th</sup> Floor  
Santa Ana, California 92707

Test Date: April 24, 2017

Test Specifications covered by accreditation:

CFR Title 47, Part 15, Subpart B; and Subpart C sections 15.205, 15.209, and 15.249



Test Procedure: ANSI C63.4: 2014, ANSI C63.10: 2013

**SUMMARY OF TEST RESULTS**

<i>TEST</i>	<b>DESCRIPTION</b>	<b>RESULTS</b>
1	Spurious Radiated RF Emissions, 9 kHz – 9300 MHz (Transmitter and Digital portion)	Complies with the <b>Class B</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 <small>Highest reading in relation to spec limit: 39.21 dBuV/m @ 782.50 MHz (*U = 3.70 dB)</small>
2	Conducted RF Emissions, 150 kHz to 30 MHz	This device is battery powered only, thus this test was not performed.

**1. PURPOSE**

This document is a qualification test report based on the emissions tests performed on the DirecTV RC73 with SMT Crystal 2016, Model: URC 3009 BC2-X-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, 15.209, 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 Senior Core Electrical Engineer

Compatible Electronics Inc.

Kyle Fujimoto Test Engineer

James Ross Test Engineer

### 2.4 Date Test Sample was Received

The test sample was received on April 24, 2017.

### 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
ASK	Amplitude Shift Key
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.

<b>SPEC</b>	<b>TITLE</b>
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 of procedure for compliance testing of unlicensed wireless devices



#### **4. DESCRIPTION OF TEST CONFIGURATION**

##### **4.1 Description of Test Configuration – Emissions**

The DirecTV RC73 with SMT Crystal 2016, Model: URC 3009 BC2-X-R (EUT) was setup in a stand-alone configuration. The EUT was investigated in all three orthogonal axis. The EUT was continuously transmitting a data stream during the testing. A fresh set of batteries were used to operate

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.

The EUT was programmed to be able to transmit at the low, middle, or high channels via the Texas Instruments Test Software on the laptop.

The final radiated data for the EUT as was taken in the mode described above. Please see Appendix E for the data sheets.

##### **4.1.1 Cable Construction and Termination**

The EUT had no external cables.

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

<b>EQUIPMENT</b>	<b>MANUFACTURER</b>	<b>MODEL NUMBER</b>	<b>SERIAL NUMBER</b>	<b>FCC ID</b>
DIRECTV RC73 WITH SMT CRYSTAL 2016 (EUT)	UNIVERSAL ELECTRONICS, INC.	URC 3009 BC2-X-R	N/A	N/A
LAPTOP*	HEWLETT PACKARD	HP PROBOOK 450 G2	CND50454JC	PD93160H
AC ADAPTER FOR LAPTOP*	HEWLETT PACKARD	HSTNN-DA40	WDWRT0AAR 8Q66A	N/A
TEST SOFTWARE*	TEXAS INSTRUMENTS	SmartRF Studio 7	2.2.1	N/A

\*Used to program the EUT only and was removed prior to the testing.

## 5.2 Emissions Test Equipment

EQUIPMENT TYPE	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	CALIBRATION DATE	CAL. CYCLE
<b>GENERAL TEST EQUIPMENT USED IN LAB D</b>					
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	Keysight	N9038A	MY51210150	December 29, 2015	2 Year
<b>RF RADIATED EMISSIONS TEST EQUIPMENT</b>					
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-130R	121090	February 9, 2017	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
Standard Gain 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 device is battery powered only, thus this test was not performed.

## 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 9 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 frequencies above 1 GHz, were averaged by using a duty cycle correction factor.

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. 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. 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 1.0.

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

FREQUENCY RANGE	EFFECTIVE MEASUREMENT BANDWIDTH	TRANSDUCER
9 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  
DirecTV RC73 with SMT Crystal 2016  
Model: URC 3009 BC2-X-R

Frequency MHz	EMI Reading (dBuV/m)	Specification Limit (dBuV/m)	Delta (Cor. Reading – Spec. Limit) dB
782.50 (H) (Y-Axis)	39.21 (QP)	46.00	-6.79
780.00 (H) (Y-Axis)	38.92 (QP)	46.00	-7.08
785.00 (V) (Y-Axis)	37.26 (QP)	46.00	-8.74
778.50 (H) (Y-Axis)	35.93 (QP)	46.00	-10.07
775.00 (H) (Y-Axis)	34.98 (QP)	46.00	-11.02
4960.00 (H) (Z -axis)	42.70 (Avg)	53.97	-11.27

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
- (QP) Quasi-Peak

#### 7.1.4 Duty Cycle Calculation

The fundamental and harmonics were measured at a 3-meter test distance. The EMI Receiver was used to obtain the final test data. The final qualification data sheets are located in Appendix E.

Where

$$\delta(\text{dB}) = 20 \log \left[ \frac{\sum (nt_1 + mt_2 + \dots + \xi t_x)}{T} \right]$$

$n$  is the number of pulses of duration  $t_1$

$m$  is the number of pulses of duration  $t_2$

$\xi$  is the number of pulses of duration  $t_x$

$T$  is the period of the pulse train or 100 ms if the pulse train length is greater than 100 ms

**The worst case was advertising mode and is calculated as shown below:**

Duty Cycle Correction Factor = -20.00dB

Pulse = 1 \* 5.2 ms

Total On Time = 5.2 ms

Worst Case Between Pulses was 309 ms, so the maximum 100 ms interval can be used.

5.2 ms / 100 ms = 0.052

20 log (0.052) = -25.67 dB correction factor

**Max Duty Cycle Correction Factor = -20.00dB**

#### **Test Results:**

The EUT complies with Part 15 Subpart C, Section 15.249.



**8. CONCLUSIONS**

The DirecTV RC73 with SMT Crystal 2016, Model: URC 3009 BC2-X-R, as tested, meets all of the **Class B** 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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**Brea Division**  
114 Olinda Drive  
Brea, CA 92823  
(714) 579-0500

**Newbury Park Division**  
1050 Lawrence Drive  
Newbury Park, CA 91320  
(805) 480-4044

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

## LABORATORY ACCREDITATIONS AND RECOGNITIONS



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."



**APPENDIX B**

***MODIFICATIONS TO THE EUT***

## **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.





**APPENDIX C**

***ADDITIONAL MODEL COVERED  
UNDER THIS REPORT***

## **ADDITIONAL MODEL COVERED UNDER THIS REPORT**

USED FOR THE PRIMARY TEST

DirectTV RC73 with SMT Crystal 2016  
Model: URC 3009 BC2-X-R  
S/N: N/A

There are no additional Model covered under this report.



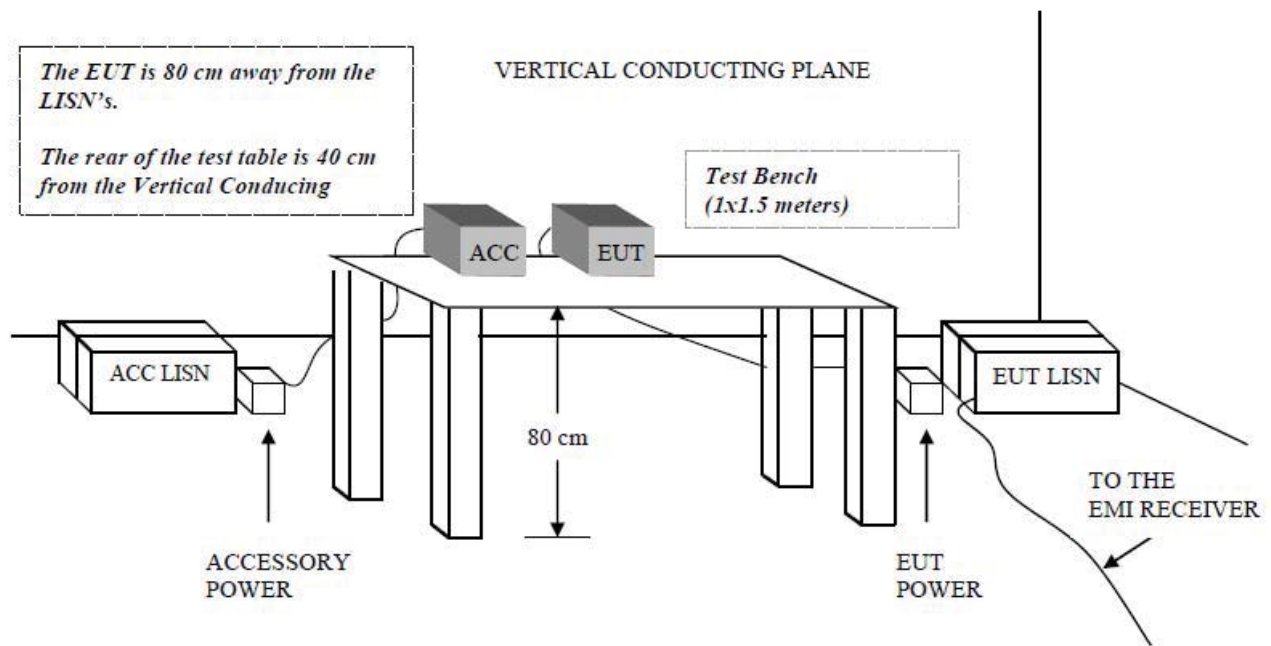


**APPENDIX D**

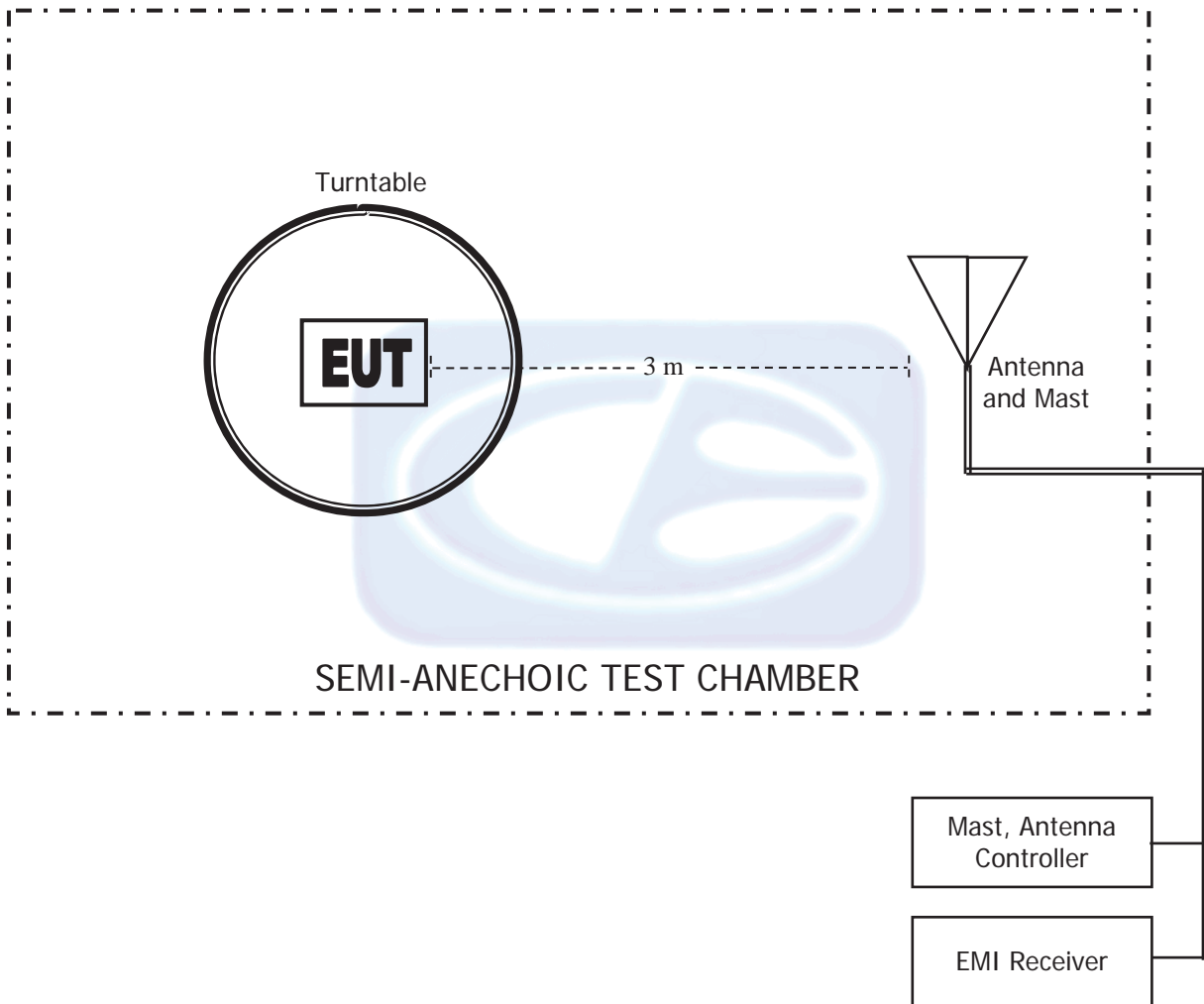
***DIAGRAMS AND CHARTS***



**FIGURE 1: CONDUCTED EMISSIONS TEST SETUP**



**FIGURE 2: LAYOUT OF THE SEMI -ANECHOIC TEST CHAMBER**



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

S/N: 121090

CALIBRATION DATE: FEBRUARY 9, 2017

<b>FREQUENCY (MHz)</b>	<b>MAGNETIC (dB/m)</b>	<b>ELECTRIC (dB/m)</b>
0.009	-36.17	15.33
0.01	-35.86	15.64
0.02	-37.30	14.20
0.03	-36.58	14.92
0.04	-36.99	14.51
0.05	-37.66	13.84
0.06	-37.53	13.97
0.07	-37.64	13.86
0.08	-37.52	13.98
0.09	-37.62	13.88
0.1	-37.59	13.91
0.2	-37.79	13.71
0.3	-37.80	13.70
0.4	-37.70	13.80
0.5	-37.79	13.71
0.6	-37.79	13.71
0.7	-37.69	13.81
0.8	-37.49	14.01
0.9	-37.39	14.11
1	-37.39	14.11
2	-37.09	14.41
3	-37.09	14.41
4	-37.19	14.31
5	-36.98	14.52
6	-37.17	14.33
7	-37.05	14.45
8	-36.85	14.65
9	-36.84	14.66
10	-36.75	14.75
15	-37.16	14.34
20	-36.44	15.06
25	-37.88	13.62
30	-39.14	12.36

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

<b>FREQUENCY (MHz)</b>	<b>FACTOR (dB)</b>	<b>FREQUENCY (MHz)</b>	<b>FACTOR (dB)</b>
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

<b>FREQUENCY (GHz)</b>	<b>FACTOR (dB)</b>	<b>FREQUENCY (GHz)</b>	<b>FACTOR (dB)</b>
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 PAM-118A****PREAMPLIFIER**

S/N: 551024

CALIBRATION DATE: MAY 12, 2016

<b>FREQUENCY (GHz)</b>	<b>FACTOR (dB)</b>	<b>FREQUENCY (GHz)</b>	<b>FACTOR (dB)</b>
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****STANDARD GAIN  
HORN ANTENNA**

S/N: 71957

<b>FREQUENCY (GHz)</b>	<b>FACTOR (dB)</b>	<b>FREQUENCY (GHz)</b>	<b>FACTOR (dB)</b>
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

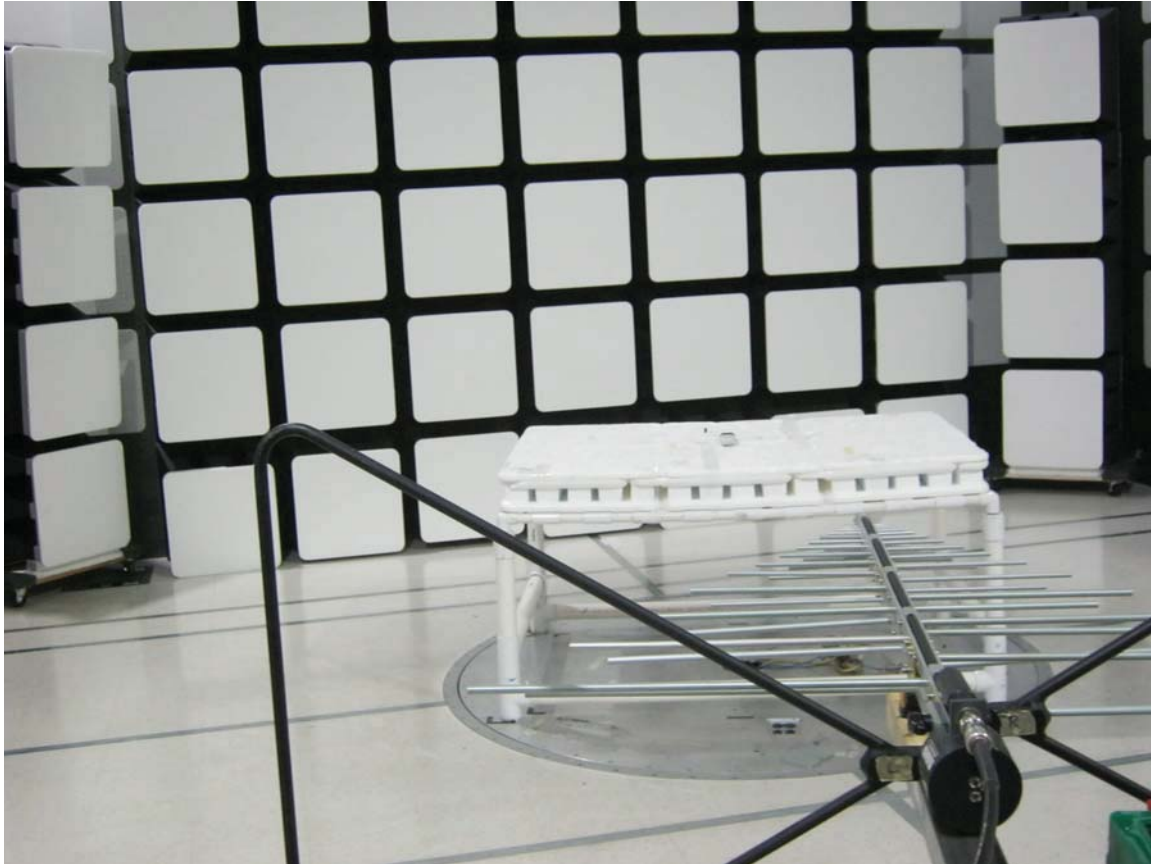
**COM-POWER PA-840****MICROWAVE PREAMPLIFIER**

S/N: 711013

CALIBRATION DATE: MAY 13, 2016

<b>FREQUENCY (GHz)</b>	<b>FACTOR (dB)</b>	<b>FREQUENCY (GHz)</b>	<b>FACTOR (dB)</b>
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

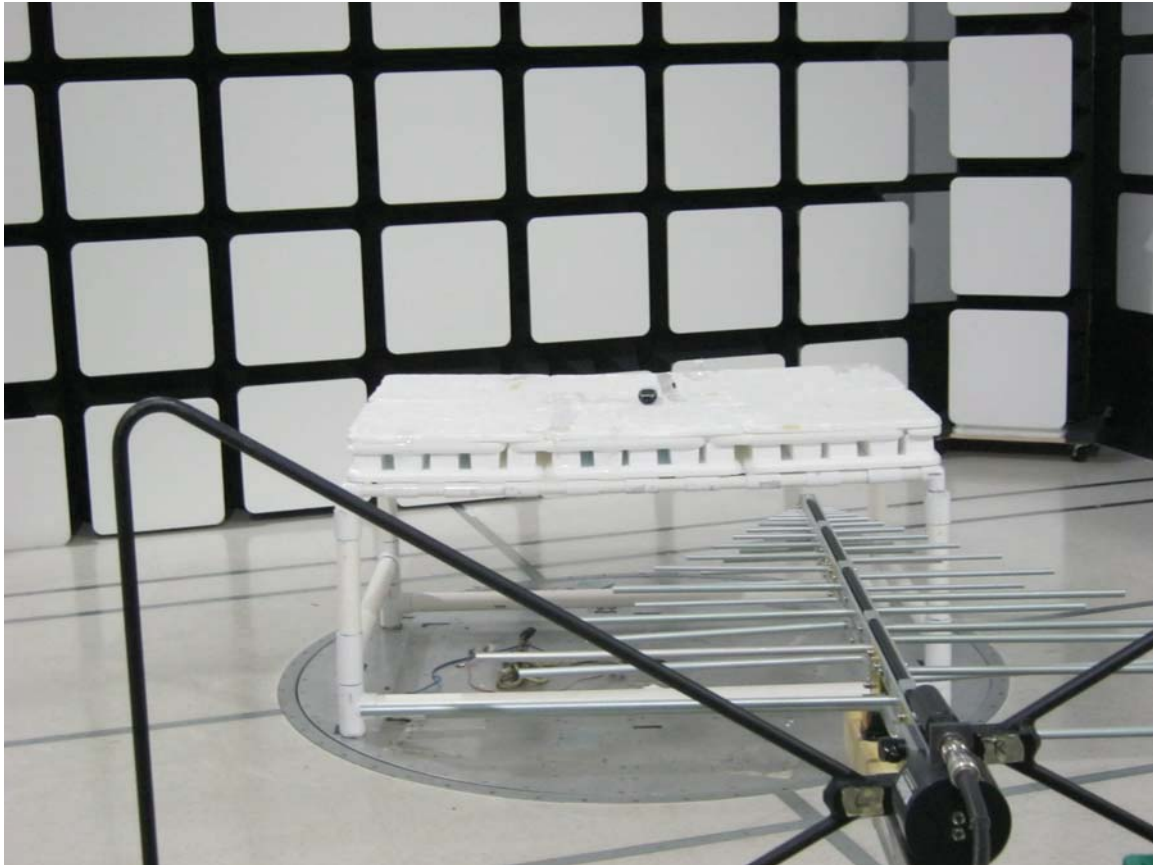




**FRONT VIEW**

UNIVERSAL ELECTRONICS, INC.  
DIRECTV RC73 WITH SMT CRYSTAL 2016  
MODEL: URC 3009 BC2-X-R  
FCC SUBPART B AND C – RADIATED EMISSIONS – BELOW 1 GHz

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

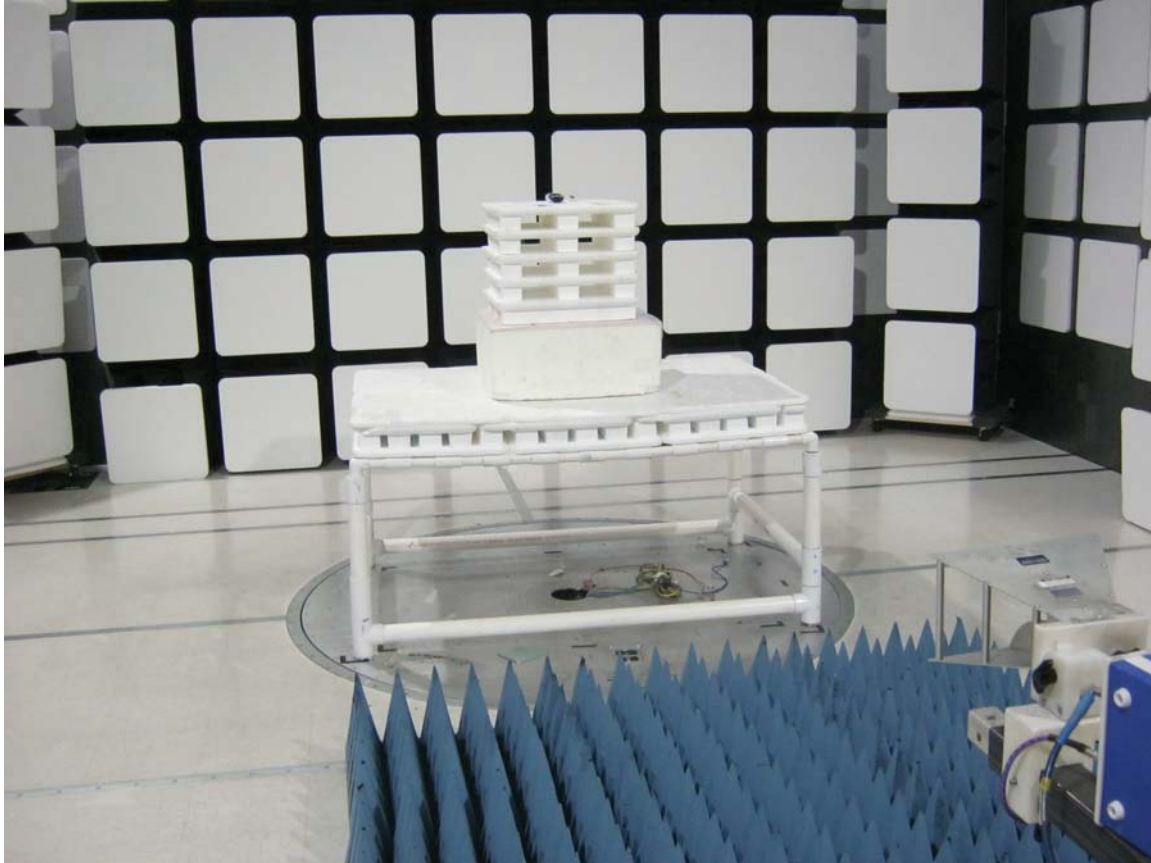


**REAR VIEW**

UNIVERSAL ELECTRONICS, INC.  
DIRECTV RC73 WITH SMT CRYSTAL 2016  
MODEL: URC 3009 BC2-X-R

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

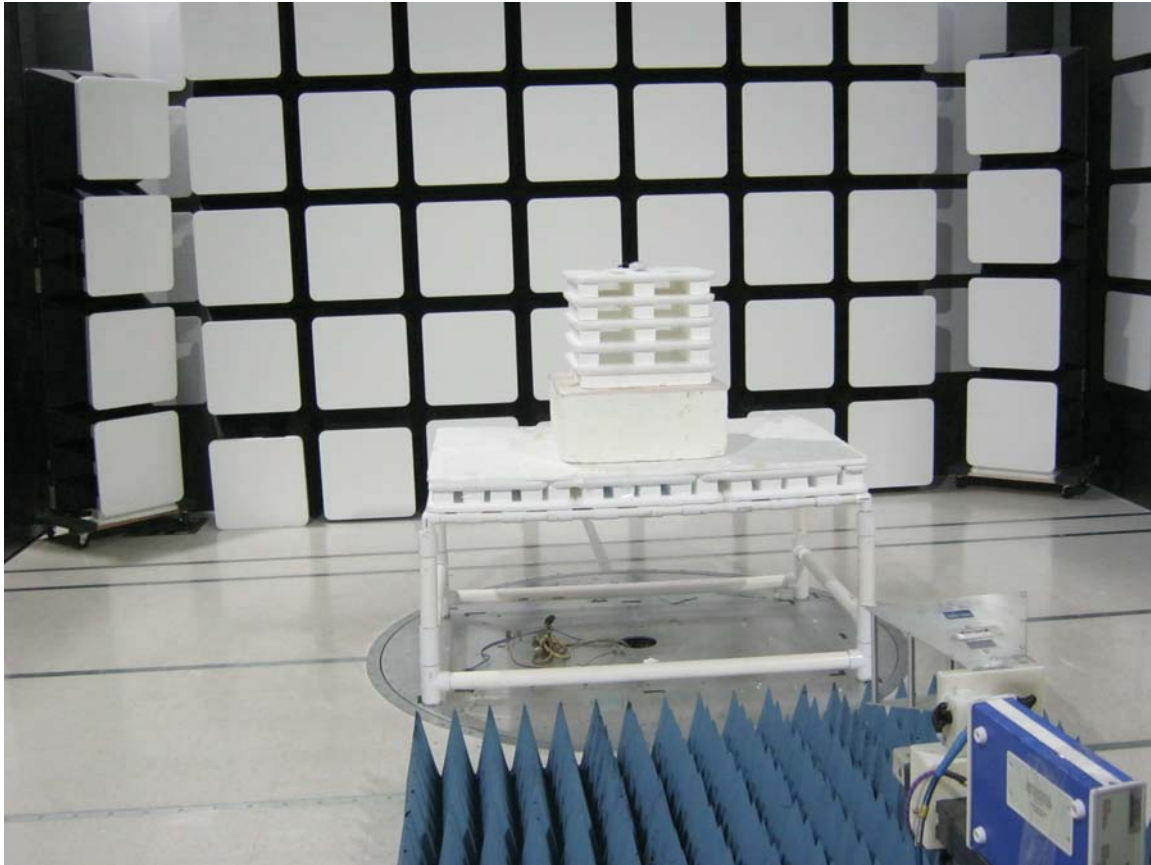
**PHOTOGRAPH SHOWING THE EUT CONFIGURATION  
FOR MAXIMUM EMISSIONS**



**FRONT VIEW**

UNIVERSAL ELECTRONICS, INC.  
DIRECTV RC73 WITH SMT CRYSTAL 2016  
MODEL: URC 3009 BC2-X-R  
FCC SUBPART B AND C – RADIATED EMISSIONS – ABOVE 1 GHz

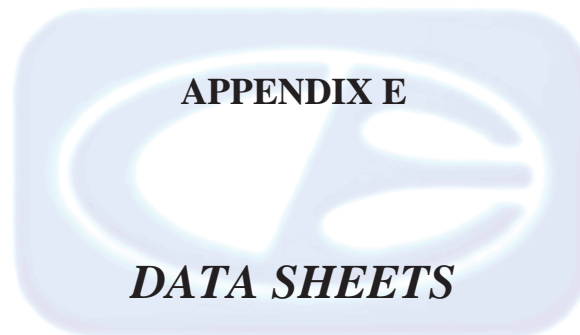
**PHOTOGRAPH SHOWING THE EUT CONFIGURATION  
FOR MAXIMUM EMISSIONS**



**REAR VIEW**

UNIVERSAL ELECTRONICS, INC.  
DIRECTV RC73 WITH SMT CRYSTAL 2016  
MODEL: URC 3009 BC2-X-R  
FCC SUBPART B AND C – RADIATED EMISSIONS – ABOVE 1 GHz

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

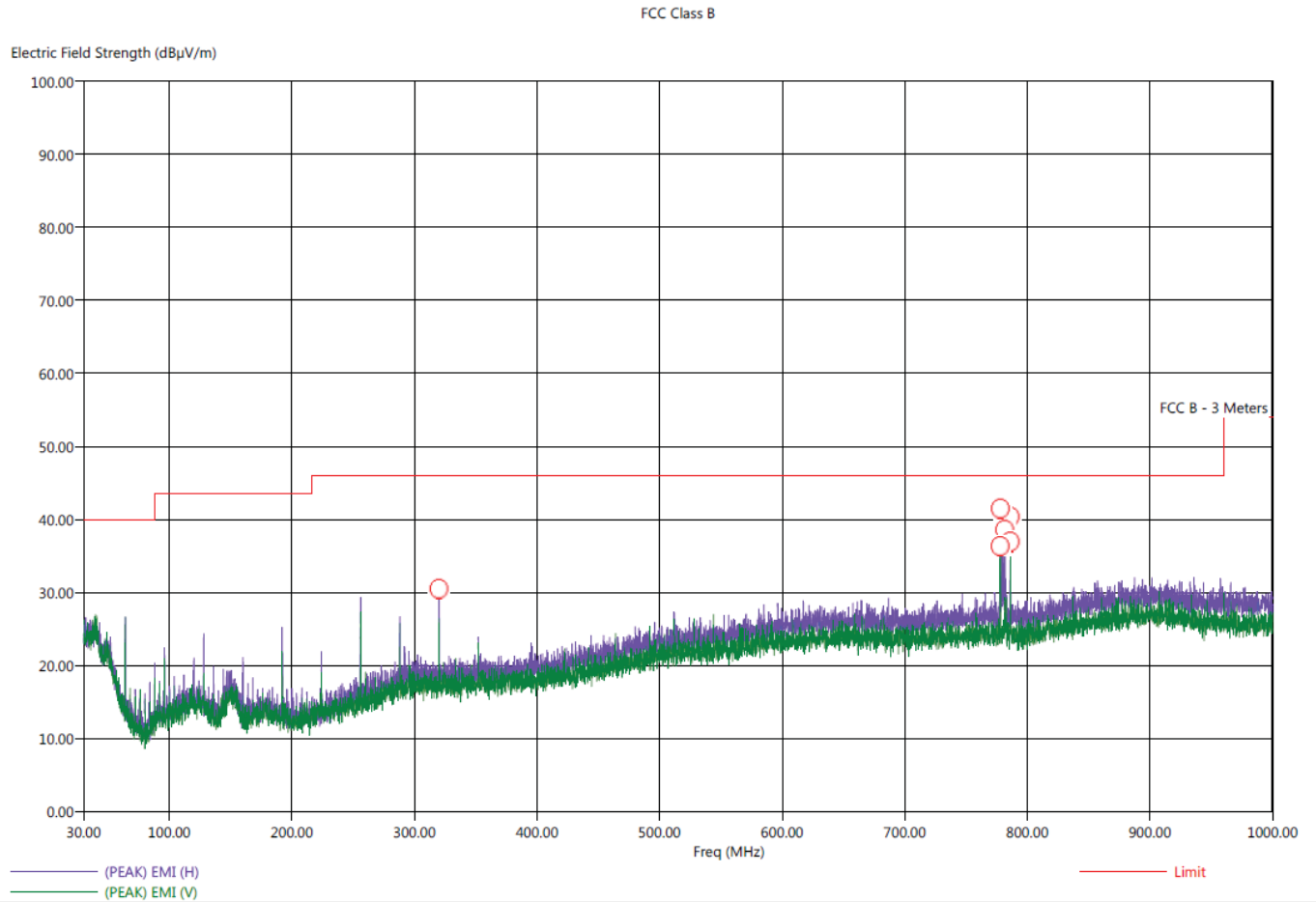




***RADIATED EMISSIONS  
DATA SHEETS***

Title: Pre-Scan - FCC Class B  
 File: 2 - RE - Pre-Scan - FCC Class B - Y-Axis Worst Case - 04-24-2017.set  
 Operator: Kyle Fujimoto  
 EUT Type: DirectTV RC73 with SMT Crystal 2016  
 EUT Condition: The EUT is continuously transmitting at the low channel  
 Comments: Customer: Universal Electronics, Inc.  
 Model: URC-3009BC1-X-R  
 Y-Axis

4/24/2017 9:31:34 AM  
 Sequence: Preliminary Scan



Title: Radiated Final - FCC Class B  
 File: 2 - RE - Final Scan - FCC Class B - Y-Axis Worst Case - 04-24-2017.set  
 Operator: Kyle Fujimoto  
 EUT Type: DirecTV RC73 with SMT Crystal 2016  
 EUT Condition: The EUT is continuously transmitting at the low channel  
 Comments: Company: Universal Electronics, Inc.  
 Model: URC-3009BC1-X-R  
 Y-Axis - Worst Case

4/24/2017 9:50:24 AM  
 Sequence: Final Measurements

FCC Class B										
Freq (MHz)	Pol	(PEAK) EMI (dBµV/m)	(QP) EMI (dBµV/m)	(PEAK) Margin (dB)	(QP) Margin (dB)	Limit (dBµV/m)	Transducer (dB)	Cable (dB)	Ttbl Agl (deg)	Twr Ht (cm)
325.00	H	31.00	28.52	-15.00	-17.48	46.00	19.25	2.45	151.00	287.88
775.00	H	37.52	34.98	-8.48	-11.02	46.00	25.40	3.80	47.50	191.16
778.50	H	38.21	35.93	-7.79	-10.07	46.00	25.35	3.79	273.00	143.40
780.00	H	40.25	38.92	-5.75	-7.08	46.00	25.32	3.78	317.25	223.52
782.50	H	41.23	39.21	-4.77	-6.79	46.00	25.28	3.77	35.75	384.47
785.00	V	40.25	37.26	-5.75	-8.74	46.00	25.24	3.76	163.50	143.34





**FCC 15.249**

Universal Electronics, Inc.  
 DirecTV RC73 with SMT Crystal 2016  
 Model: URC 3009 BC2-X-R

Date: 04/24/2017  
 Lab: D  
 Tested By: Kyle Fujimoto

**Fundamental  
 Low Channel**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2425	81.02	V	113.97	-32.95	Peak	216.00	110.98	X-Axis
2425	61.02	V	93.97	-32.95	Avg	216.00	110.98	Vertical Polarization
2425	96.52	V	113.97	-17.45	Peak	249.50	127.58	Y-Axis
2425	76.52	V	93.97	-17.45	Avg	249.50	127.58	Vertical Polarization
2425	95.02	V	113.97	-18.95	Peak	273.00	126.80	Z-Axis
2425	75.02	V	93.97	-18.95	Avg	273.00	126.80	Vertical Polarization
2425	95.32	H	113.97	-18.65	Peak	273.00	158.80	X-Axis
2425	75.32	H	93.97	-18.65	Avg	273.00	158.80	Vertical Polarization
2425	88.03	H	113.97	-25.94	Peak	114.00	127.34	Y-Axis
2425	68.03	H	93.97	-25.94	Avg	114.00	127.34	Vertical Polarization
2425	95.16	H	113.97	-18.81	Peak	76.00	174.92	Z-Axis
2425	75.16	H	93.97	-18.81	Avg	76.00	174.92	Vertical Polarization





**FCC 15.249**

Universal Electronics, Inc.  
 DirecTV RC73 with SMT Crystal 2016  
 Model: URC 3009 BC2-X-R

Date: 04/24/2017  
 Lab: D  
 Tested By: Kyle Fujimoto

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

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4850.00	54.55	V	73.97	-19.42	Peak	297.25	143.04	
4850.00	34.55	V	53.97	-19.42	Avg	297.25	143.04	
7275.00	55.28	V	73.97	-18.69	Peak	315.50	127.40	
7275.00	35.28	V	53.97	-18.69	Avg	315.50	127.40	
9700.00	48.46	V	73.97	-25.51	Peak	331.25	249.91	
9700.00	28.46	V	53.97	-25.51	Avg	331.25	249.91	
12125.00								No Emission Detected
14550.00								No Emission Detected
16975.00								No Emission Detected
19400.00								No Emission Detected
21825.00								No Emission Detected
24250.00								No Emission Detected

**FCC 15.249**

Universal Electronics, Inc.  
 DirecTV RC73 with SMT Crystal 2016  
 Model: URC 3009 BC2-X-R

Date: 04/24/2017  
 Lab: D  
 Tested By: Kyle Fujimoto

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

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4850.00	59.99	V	73.97	-13.98	Peak	25.25	143.04	
4850.00	39.99	V	53.97	-13.98	Avg	25.25	143.04	
7275.00	57.33	V	73.97	-16.64	Peak	37.75	111.46	
7275.00	37.33	V	53.97	-16.64	Avg	37.75	111.46	
9700.00	53.70	V	73.97	-20.27	Peak	42.00	111.22	
9700.00	33.70	V	53.97	-20.27	Avg	42.00	111.22	
12125.00								No Emission Detected
14550.00								No Emission Detected
16975.00								No Emission Detected
19400.00								No Emission Detected
21825.00								No Emission Detected
24250.00								No Emission Detected

**FCC 15.249**

Universal Electronics, Inc.  
 DirecTV RC73 with SMT Crystal 2016  
 Model: URC 3009 BC2-X-R

Date: 04/24/2017  
 Lab: D  
 Tested By: Kyle Fujimoto

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

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4850.00	60.17	V	73.97	-13.80	Peak	262.75	111.52	
4850.00	40.17	V	53.97	-13.80	Avg	262.75	111.52	
7275.00	57.96	V	73.97	-16.01	Peak	263.25	111.16	
7275.00	37.96	V	53.97	-16.01	Avg	263.25	111.16	
9700.00	47.66	V	73.97	-26.31	Peak	188.00	127.40	
9700.00	27.66	V	53.97	-26.31	Avg	188.00	127.40	
12125.00								No Emission Detected
14550.00								No Emission Detected
16975.00								No Emission Detected
19400.00								No Emission Detected
21825.00								No Emission Detected
24250.00								No Emission Detected

**FCC 15.249**

Universal Electronics, Inc.  
 DirecTV RC73 with SMT Crystal 2016  
 Model: URC 3009 BC2-X-R

Date: 04/24/2017  
 Lab: D  
 Tested By: Kyle Fujimoto

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

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4850.00	60.15	H	73.97	-13.82	Peak	332.25	111.40	
4850.00	40.15	H	53.97	-13.82	Avg	332.25	111.40	
7275.00	62.01	H	73.97	-11.96	Peak	0.00	127.28	
7275.00	42.01	H	53.97	-11.96	Avg	0.00	127.28	
9700.00	52.88	H	73.97	-21.09	Peak	49.50	223.46	
9700.00	32.88	H	53.97	-21.09	Avg	49.50	223.46	
12125.00								No Emission Detected
14550.00								No Emission Detected
16975.00								No Emission Detected
19400.00								No Emission Detected
21825.00								No Emission Detected
24250.00								No Emission Detected

**FCC 15.249**

Universal Electronics, Inc.  
 DirecTV RC73 with SMT Crystal 2016  
 Model: URC 3009 BC2-X-R

Date: 04/24/2017  
 Lab: D  
 Tested By: Kyle Fujimoto

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

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4850.00	60.30	H	73.97	-13.67	Peak	152.50	111.34	
4850.00	40.30	H	53.97	-13.67	Avg	152.50	111.34	
7275.00	57.66	H	73.97	-16.31	Peak	120.25	127.52	
7275.00	37.66	H	53.97	-16.31	Avg	120.25	127.52	
9700.00	51.45	H	73.97	-22.52	Peak	151.75	111.16	
9700.00	31.45	H	53.97	-22.52	Avg	151.75	111.16	
12125.00								No Emission
12125.00								Detected
14550.00								No Emission
14550.00								Detected
16975.00								No Emission
16975.00								Detected
19400.00								No Emission
19400.00								Detected
21825.00								No Emission
21825.00								Detected
24250.00								No Emission
24250.00								Detected



**FCC 15.249**

Universal Electronics, Inc.  
 DirecTV RC73 with SMT Crystal 2016  
 Model: URC 3009 BC2-X-R

Date: 04/24/2017  
 Lab: D  
 Tested By: Kyle Fujimoto

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

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4850.00	52.56	H	73.97	-21.41	Peak	302.75	111.34	
4850.00	32.56	H	53.97	-21.41	Avg	302.75	111.34	
7275.00	59.06	H	73.97	-14.91	Peak	168.75	159.28	
7275.00	39.06	H	53.97	-14.91	Avg	168.75	159.28	
9700.00	49.35	H	73.97	-24.62	Peak	309.00	127.16	
9700.00	29.35	H	53.97	-24.62	Avg	309.00	127.16	
12125.00								No Emission
12125.00								Detected
14550.00								No Emission
14550.00								Detected
16975.00								No Emission
16975.00								Detected
19400.00								No Emission
19400.00								Detected
21825.00								No Emission
21825.00								Detected
24250.00								No Emission
24250.00								Detected

**FCC 15.249**

Universal Electronics, Inc.  
 DirecTV RC73 with SMT Crystal 2016  
 Model: URC 3009 BC2-X-R

Date: 04/24/2017  
 Lab: D  
 Tested By: Kyle Fujimoto

**Harmonics - Middle Channel  
 Transmit Mode - X-Axis**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4900.00	50.11	V	73.97	-23.86	Peak	300.25	127.46	
4900.00	30.11	V	53.97	-23.86	Avg	300.25	127.46	
7350.00	43.68	V	73.97	-30.29	Peak	0.50	249.98	
7350.00	23.68	V	53.97	-30.29	Avg	0.50	249.98	
9800.00	46.55	V	73.97	-27.42	Peak	43.00	207.76	
9800.00	26.55	V	53.97	-27.42	Avg	43.00	207.76	
12250.00								No Emission Detected
14700.00								No Emission Detected
17150.00								No Emission Detected
19600.00								No Emission Detected
22050.00								No Emission Detected
24500.00								No Emission Detected

**FCC 15.249**

Universal Electronics, Inc.  
 DirecTV RC73 with SMT Crystal 2016  
 Model: URC 3009 BC2-X-R

Date: 04/24/2017  
 Lab: D  
 Tested By: Kyle Fujimoto

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

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4900.00	56.08	V	73.97	-17.89	Peak	31.00	160.83	
4900.00	36.08	V	53.97	-17.89	Avg	31.00	160.83	
7350.00	44.07	V	73.97	-29.90	Peak	313.25	225.01	
7350.00	24.07	V	53.97	-29.90	Avg	313.25	225.01	
9800.00	47.09	V	73.97	-26.88	Peak	6.25	176.77	
9800.00	27.09	V	53.97	-26.88	Avg	6.25	176.77	
12250.00								No Emission Detected
14700.00								No Emission Detected
17150.00								No Emission Detected
19600.00								No Emission Detected
22050.00								No Emission Detected
24500.00								No Emission Detected

**FCC 15.249**

Universal Electronics, Inc.  
 DirecTV RC73 with SMT Crystal 2016  
 Model: URC 3009 BC2-X-R

Date: 04/24/2017  
 Lab: D  
 Tested By: Kyle Fujimoto

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

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4900.00	58.09	V	73.97	-15.88	Peak	103.00	128.71	
4900.00	38.09	V	53.97	-15.88	Avg	103.00	128.71	
7350.00	44.13	V	73.97	-29.84	Peak	235.50	192.95	
7350.00	24.13	V	53.97	-29.84	Avg	235.50	192.95	
9800.00	47.06	V	73.97	-26.91	Peak	267.50	160.77	
9800.00	27.06	V	53.97	-26.91	Avg	267.50	160.77	
12250.00								No Emission Detected
14700.00								No Emission Detected
17150.00								No Emission Detected
19600.00								No Emission Detected
22050.00								No Emission Detected
24500.00								No Emission Detected

**FCC 15.249**

Universal Electronics, Inc.  
 DirecTV RC73 with SMT Crystal 2016  
 Model: URC 3009 BC2-X-R

Date: 04/24/2017  
 Lab: D  
 Tested By: Kyle Fujimoto

**Harmonics - Middle Channel**  
**Transmit Mode - X-Axis**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4900.00	53.93	H	73.97	-20.04	Peak	144.50	128.95	
4900.00	33.93	H	53.97	-20.04	Avg	144.50	128.95	
7350.00	44.04	H	73.97	-29.93	Peak	190.00	241.07	
7350.00	24.04	H	53.97	-29.93	Avg	190.00	241.07	
9800.00	45.91	H	73.97	-28.06	Peak	342.50	208.89	
9800.00	25.91	H	53.97	-28.06	Avg	342.50	208.89	
12250.00								No Emission Detected
14700.00								No Emission Detected
17150.00								No Emission Detected
19600.00								No Emission Detected
22050.00								No Emission Detected
24500.00								No Emission Detected

**FCC 15.249**

Universal Electronics, Inc.  
 DirecTV RC73 with SMT Crystal 2016  
 Model: URC 3009 BC2-X-R

Date: 04/24/2017  
 Lab: D  
 Tested By: Kyle Fujimoto

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

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4900.00	54.33	H	73.97	-19.64	Peak	114.75	176.89	
4900.00	34.33	H	53.97	-19.64	Avg	114.75	176.89	
7350.00	44.56	H	73.97	-29.41	Peak	277.25	160.77	
7350.00	24.56	H	53.97	-29.41	Avg	277.25	160.77	
9800.00	46.46	H	73.97	-27.51	Peak	62.00	224.83	
9800.00	26.46	H	53.97	-27.51	Avg	62.00	224.83	
12250.00								No Emission Detected
14700.00								No Emission Detected
17150.00								No Emission Detected
19600.00								No Emission Detected
22050.00								No Emission Detected
24500.00								No Emission Detected

**FCC 15.249**

Universal Electronics, Inc.  
 DirecTV RC73 with SMT Crystal 2016  
 Model: URC 3009 BC2-X-R

Date: 04/24/2017  
 Lab: D  
 Tested By: Kyle Fujimoto

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

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4900.00	50.44	H	73.97	-23.53	Peak	131.50	161.13	
4900.00	30.44	H	53.97	-23.53	Avg	131.50	161.13	
7350.00	54.63	H	73.97	-19.34	Peak	145.50	134.18	
7350.00	34.63	H	53.97	-19.34	Avg	145.50	134.18	
9800.00	43.63	H	73.97	-30.34	Peak	221.25	144.17	
9800.00	23.63	H	53.97	-30.34	Avg	221.25	144.17	
12250.00								No Emission
12250.00								Detected
14700.00								No Emission
14700.00								Detected
17150.00								No Emission
17150.00								Detected
19600.00								No Emission
19600.00								Detected
22050.00								No Emission
22050.00								Detected
24500.00								No Emission
24500.00								Detected

**FCC 15.249**

Universal Electronics, Inc.  
 DirecTV RC73 with SMT Crystal 2016  
 Model: URC 3009 BC2-X-R

Date: 04/24/2017  
 Lab: D  
 Tested By: Kyle Fujimoto

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

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4950.00	55.01	V	73.97	-18.96	Peak	118.75	111.46	
4950.00	35.01	V	53.97	-18.96	Avg	118.75	111.46	
7425.00	58.64	V	73.97	-15.33	Peak	138.00	126.90	
7425.00	38.64	V	53.97	-15.33	Avg	138.00	126.90	
9900.00	47.07	V	73.97	-26.90	Peak	326.75	127.40	
9900.00	27.07	V	53.97	-26.90	Avg	326.75	127.40	
12375.00								No Emission Detected
14850.00								No Emission Detected
17325.00								No Emission Detected
19800.00								No Emission Detected
22275.00								No Emission Detected
24750.00								No Emission Detected



**FCC 15.249**

Universal Electronics, Inc.  
 DirecTV RC73 with SMT Crystal 2016  
 Model: URC 3009 BC2-X-R

Date: 04/24/2017  
 Lab: D  
 Tested By: Kyle Fujimoto

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

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4950.00	62.37	V	73.97	-11.60	Peak	197.50	143.10	
4950.00	42.37	V	53.97	-11.60	Avg	197.50	143.10	
7425.00	60.33	V	73.97	-13.64	Peak	77.50	111.46	
7425.00	40.33	V	53.97	-13.64	Avg	77.50	111.46	
9900.00	55.31	V	73.97	-18.66	Peak	218.50	127.28	
9900.00	35.31	V	53.97	-18.66	Avg	218.50	127.28	
12375.00								No Emission Detected
14850.00								No Emission Detected
17325.00								No Emission Detected
19800.00								No Emission Detected
22275.00								No Emission Detected
24750.00								No Emission Detected

**FCC 15.249**

Universal Electronics, Inc.  
 DirecTV RC73 with SMT Crystal 2016  
 Model: URC 3009 BC2-X-R

Date: 04/24/2017  
 Lab: D  
 Tested By: Kyle Fujimoto

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

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4950.00	63.28	V	73.97	-10.69	Peak	284.00	111.52	
4950.00	43.28	V	53.97	-10.69	Avg	284.00	111.52	
7425.00	60.57	V	73.97	-13.40	Peak	123.25	159.46	
7425.00	40.57	V	53.97	-13.40	Avg	123.25	159.46	
9900.00	53.80	V	73.97	-20.17	Peak	74.25	111.40	
9900.00	33.80	V	53.97	-20.17	Avg	74.25	111.40	
12375.00								No Emission Detected
14850.00								No Emission Detected
17325.00								No Emission Detected
19800.00								No Emission Detected
22275.00								No Emission Detected
24750.00								No Emission Detected

**FCC 15.249**

Universal Electronics, Inc.  
 DirecTV RC73 with SMT Crystal 2016  
 Model: URC 3009 BC2-X-R

Date: 04/24/2017  
 Lab: D  
 Tested By: Kyle Fujimoto

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

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4950.00	61.51	H	73.97	-12.46	Peak	172.50	143.46	
4950.00	41.51	H	53.97	-12.46	Avg	172.50	143.46	
7425.00	64.99	H	73.97	-8.98	Peak	174.50	110.74	
7425.00	44.99	H	53.97	-8.98	Avg	174.50	110.74	
9900.00	52.74	H	73.97	-21.23	Peak	195.25	207.58	
9900.00	32.74	H	53.97	-21.23	Avg	195.25	207.58	
12375.00								No Emission Detected
14850.00								No Emission Detected
17325.00								No Emission Detected
19800.00								No Emission Detected
22275.00								No Emission Detected
24750.00								No Emission Detected

**FCC 15.249**

Universal Electronics, Inc.  
 DirecTV RC73 with SMT Crystal 2016  
 Model: URC 3009 BC2-X-R

Date: 04/24/2017  
 Lab: D  
 Tested By: Kyle Fujimoto

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

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4950.00	61.46	H	73.97	-12.51	Peak	304.75	191.52	
4950.00	41.46	H	53.97	-12.51	Avg	304.75	191.52	
7425.00	59.26	H	73.97	-14.71	Peak	151.25	207.34	
7425.00	39.26	H	53.97	-14.71	Avg	151.25	207.34	
9900.00	52.16	H	73.97	-21.81	Peak	330.50	111.40	
9900.00	32.16	H	53.97	-21.81	Avg	330.50	111.40	
12375.00								No Emission Detected
14850.00								No Emission Detected
17325.00								No Emission Detected
19800.00								No Emission Detected
22275.00								No Emission Detected
24750.00								No Emission Detected

**FCC 15.249**

Universal Electronics, Inc.  
 DirecTV RC73 with SMT Crystal 2016  
 Model: URC 3009 BC2-X-R

Date: 04/24/2017  
 Lab: D  
 Tested By: Kyle Fujimoto

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

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4950.00	58.52	H	73.97	-15.45	Peak	147.50	127.46	
4950.00	38.52	H	53.97	-15.45	Avg	147.50	127.46	
7425.00	61.51	H	73.97	-12.46	Peak	115.75	127.52	
7425.00	41.51	H	53.97	-12.46	Avg	115.75	127.52	
9900.00	53.93	H	73.97	-20.04	Peak	134.25	111.46	
9900.00	33.93	H	53.97	-20.04	Avg	134.25	111.46	
12375.00								No Emission Detected
14850.00								No Emission Detected
17325.00								No Emission Detected
19800.00								No Emission Detected
22275.00								No Emission Detected
24750.00								No Emission Detected

**FCC 15.249**

Universal Electronics, Inc.  
 RC73 DirecTV Voice UE878 Single Sided  
 Model: URC 3009 BC2-X-R

Date: 03/28/2017  
 Lab: D  
 Tested By: Kyle Fujimoto

**Harmonics - High Channel**

Y-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4960	59.05	H	73.97	-14.92	Peak	327.50	111.46	
4960	39.05	H	53.97	-14.92	Avg	327.50	111.46	
7440	49.66	H	73.97	-24.31	Peak	187.00	175.46	
7440	29.66	H	53.97	-24.31	Avg	187.00	175.46	
9920	52.94	H	73.97	-21.03	Peak	200.00	127.46	
9920	32.94	H	53.97	-21.03	Avg	200.00	127.46	
12400								No Emissions
12400								Detected
14880								No Emissions
14880								Detected
17360								No Emissions
17360								Detected
19840								No Emissions
19840								Detected
22320								No Emissions
22320								Detected
24800								No Emissions
24800								Detected

**FCC 15.249**

Universal Electronics, Inc.  
 RC73 DirecTV Voice UE878 Single Sided  
 Model: URC 3009 BC2-X-R

Date: 03/28/2017  
 Lab: D  
 Tested By: Kyle Fujimoto

**Harmonics - High Channel  
 Z-Axis**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4960	57.41	V	73.97	-16.56	Peak	127.25	111.58	
4960	37.41	V	53.97	-16.56	Avg	127.25	111.58	
7440	54.12	V	73.97	-19.85	Peak	294.00	110.74	
7440	34.12	V	53.97	-19.85	Avg	294.00	110.74	
9920	50.38	V	73.97	-23.59	Peak	94.25	127.64	
9920	30.38	V	53.97	-23.59	Avg	94.25	127.64	
12400								No Emissions Detected
14880								No Emissions Detected
17360								No Emissions Detected
19840								No Emissions Detected
22320								No Emissions Detected
24800								No Emissions Detected

**FCC 15.249**

Universal Electronics, Inc.  
 RC73 DirecTV Voice UE878 Single Sided  
 Model: URC 3009 BC2-X-R

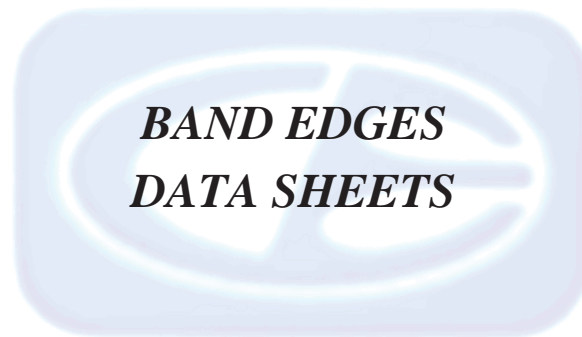
Date: 03/28/2017  
 Lab: D  
 Tested By: Kyle Fujimoto

**Harmonics - High Channel**  
**Z-Axis**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4960	62.70	H	73.97	-11.27	Peak	104.00	127.46	
4960	42.70	H	53.97	-11.27	Avg	104.00	127.46	
7440	58.21	H	73.97	-15.76	Peak	92.75	111.46	
7440	38.21	H	53.97	-15.76	Avg	92.75	111.46	
9920	54.56	H	73.97	-19.41	Peak	86.00	111.58	
9920	34.56	H	53.97	-19.41	Avg	86.00	111.58	
12400								No Emissions Detected
14880								No Emissions Detected
17360								No Emissions Detected
19840								No Emissions Detected
22320								No Emissions Detected
24800								No Emissions Detected







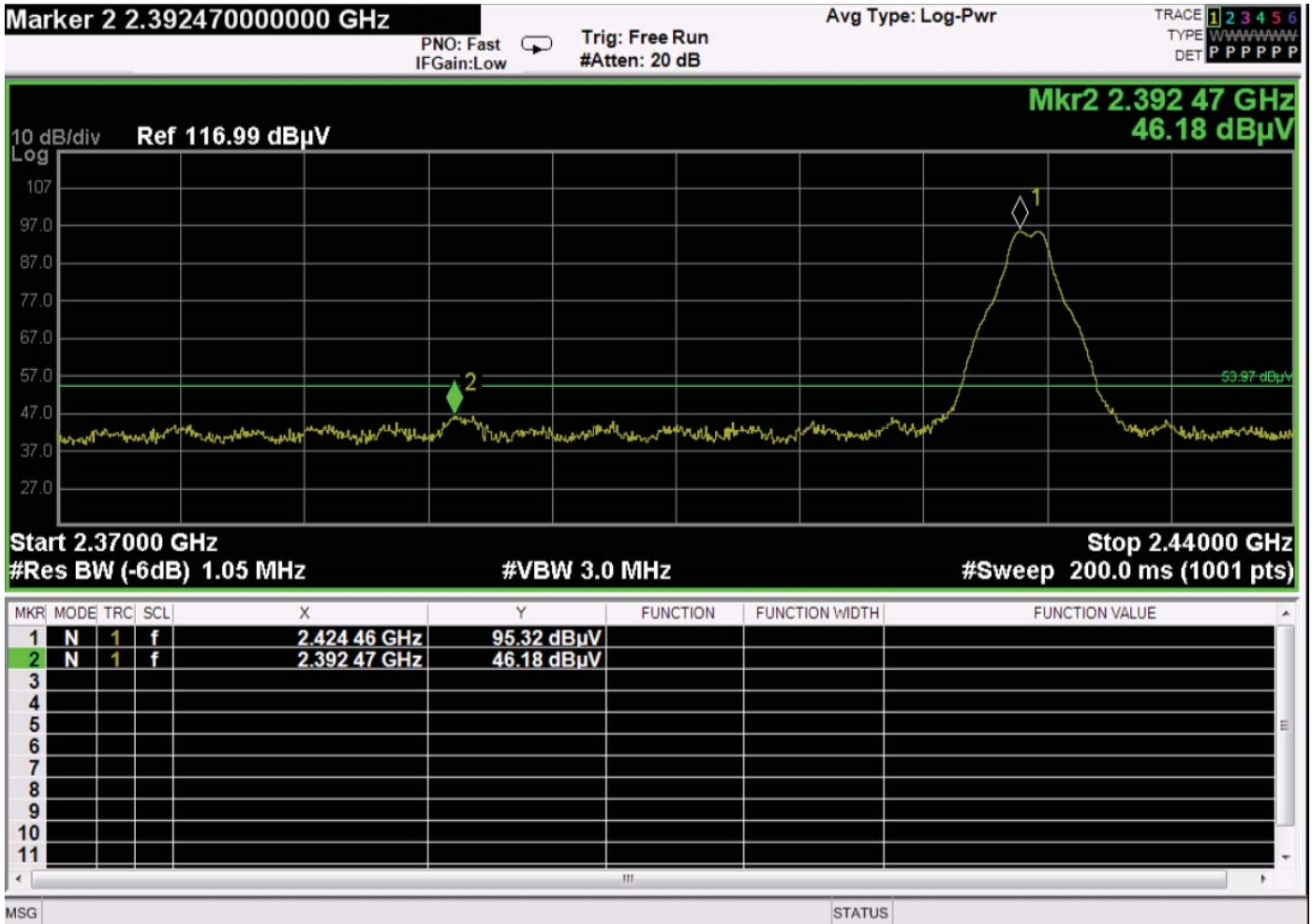
**FCC 15.249**

Universal Electronics, Inc.  
 DirecTV RC73 with SMT Crystal 2016  
 Model: URC 3009 BC2-X-R

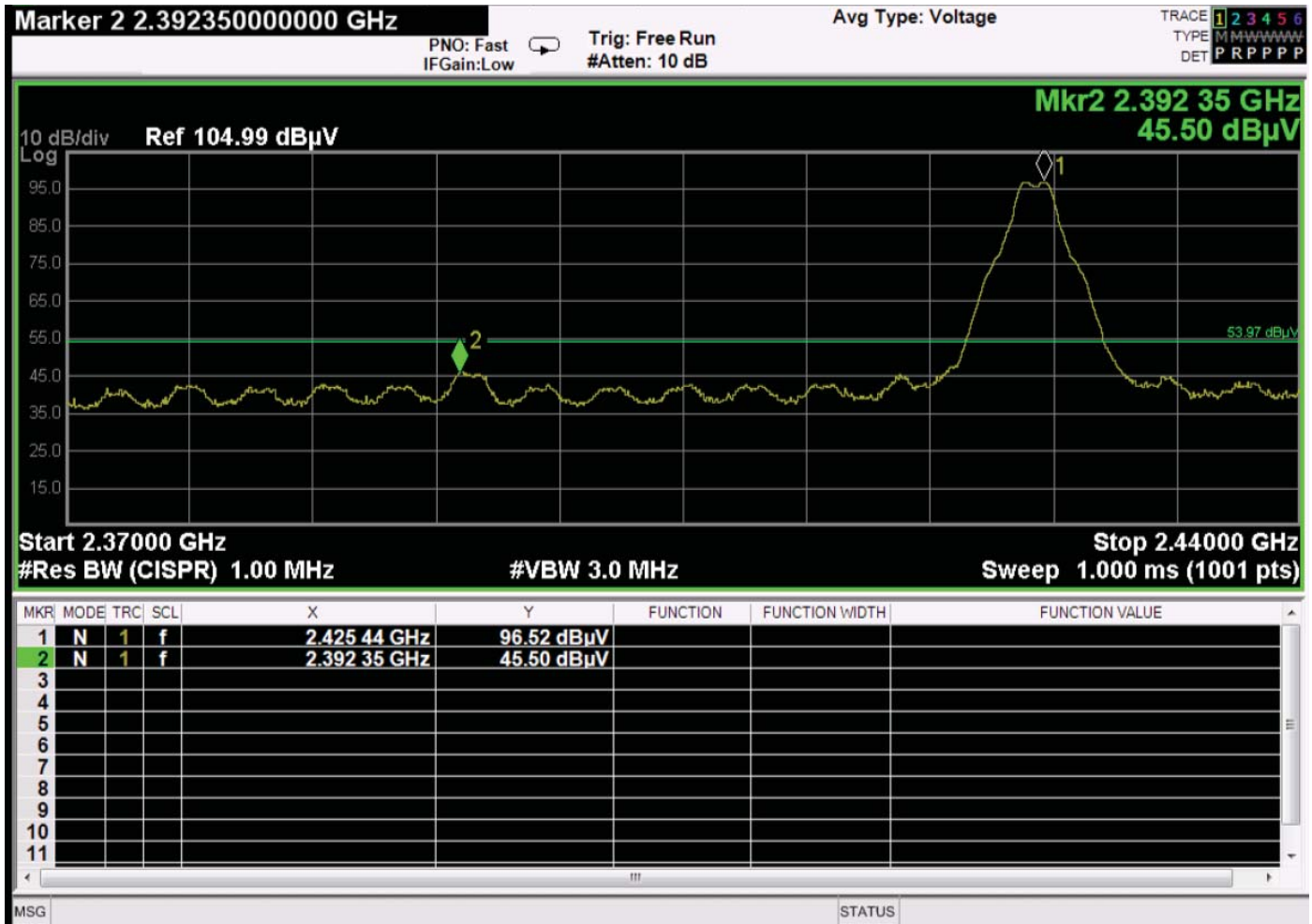
Date: 04/24/2017  
 Lab: D  
 Tested By: Kyle Fujimoto

**Band Edges**

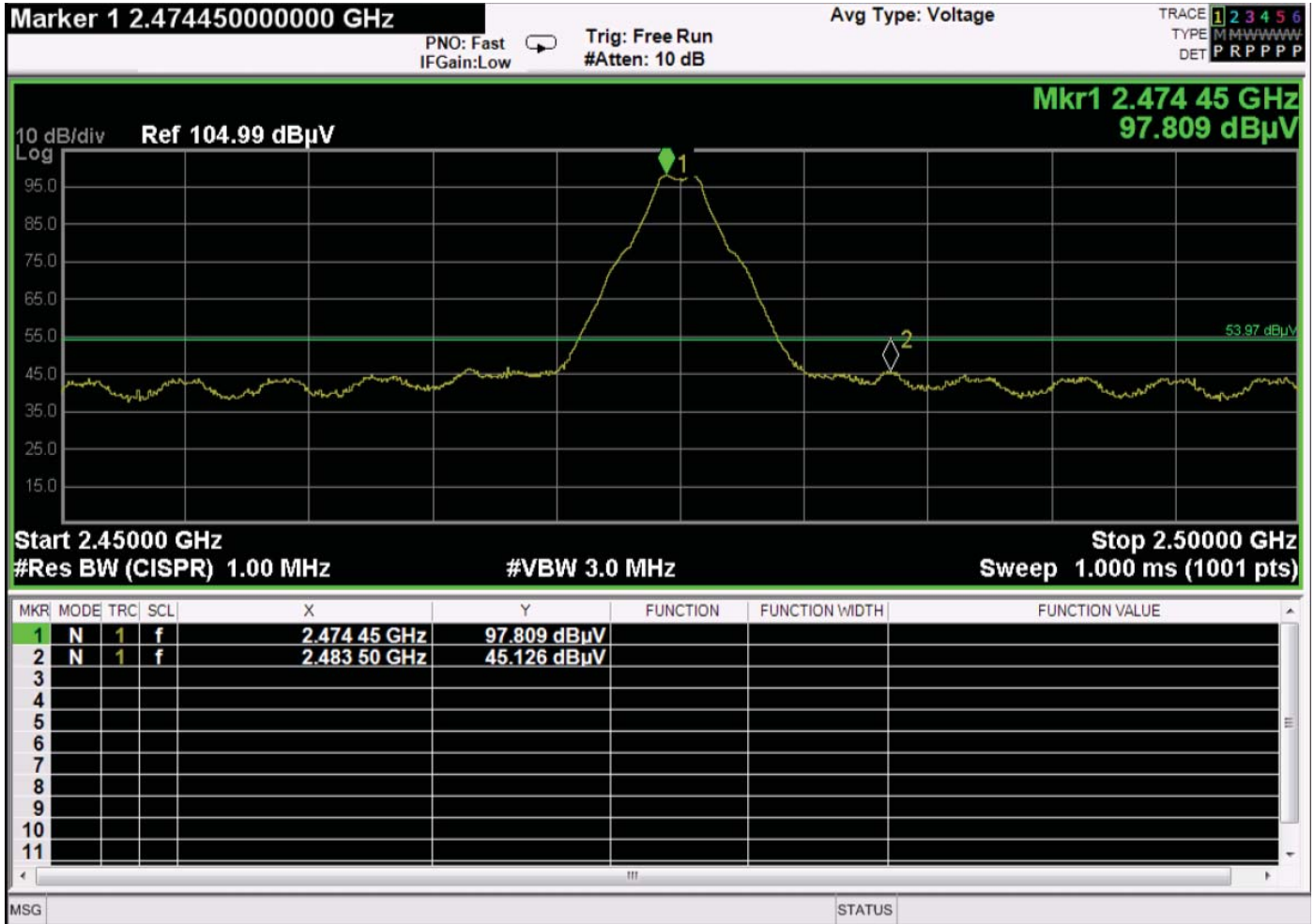
Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height c(m)	Comments
2425.00	95.32	H	113.97	-18.65	Peak	273.00	158.80	Fundamental - Low Ch.
2425.00	75.32	H	93.97	-18.65	Avg	273.00	158.80	X-Axis - Worst Case
2392.47	46.18	H	66.00	-19.82	Peak	273.00	158.80	Band Edge
2392.47	26.18	H	46.00	-19.82	Avg	273.00	158.80	X-Axis - Worst Case
2425.00	96.52	V	113.97	-17.45	Peak	249.50	127.58	Fundamental - Low Ch.
2425.00	76.52	V	93.97	-17.45	Avg	249.50	127.58	Y-Axis - Worst Case
2392.35	45.50	V	66.00	-20.50	Peak	238.25	138.92	Band Edge
2392.35	25.50	V	46.00	-20.50	QP	238.25	138.92	Y-Axis - Worst Case
2475.00	97.81	H	113.97	-16.16	Peak	271.00	126.80	Fundamental - High Ch.
2475.00	77.81	H	93.97	-16.16	Avg	271.00	126.80	X-Axis - Worst Case
2483.50	45.13	H	66.00	-20.87	Peak	271.00	126.80	Band Edge
2483.50	25.13	H	46.00	-20.87	QP	271.00	126.80	X-Axis - Worst Case
2475.00	97.67	V	113.97	-16.30	Peak	241.00	142.86	Fundamental - High Ch.
2475.00	77.67	V	93.97	-16.30	Avg	241.00	142.86	Y-Axis - Worst Case
2483.50	44.73	V	66.00	-21.27	Peak	241.00	142.86	Band Edge
2483.50	24.73	V	46.00	-21.27	QP	241.00	142.86	Y-Axis - Worst Case



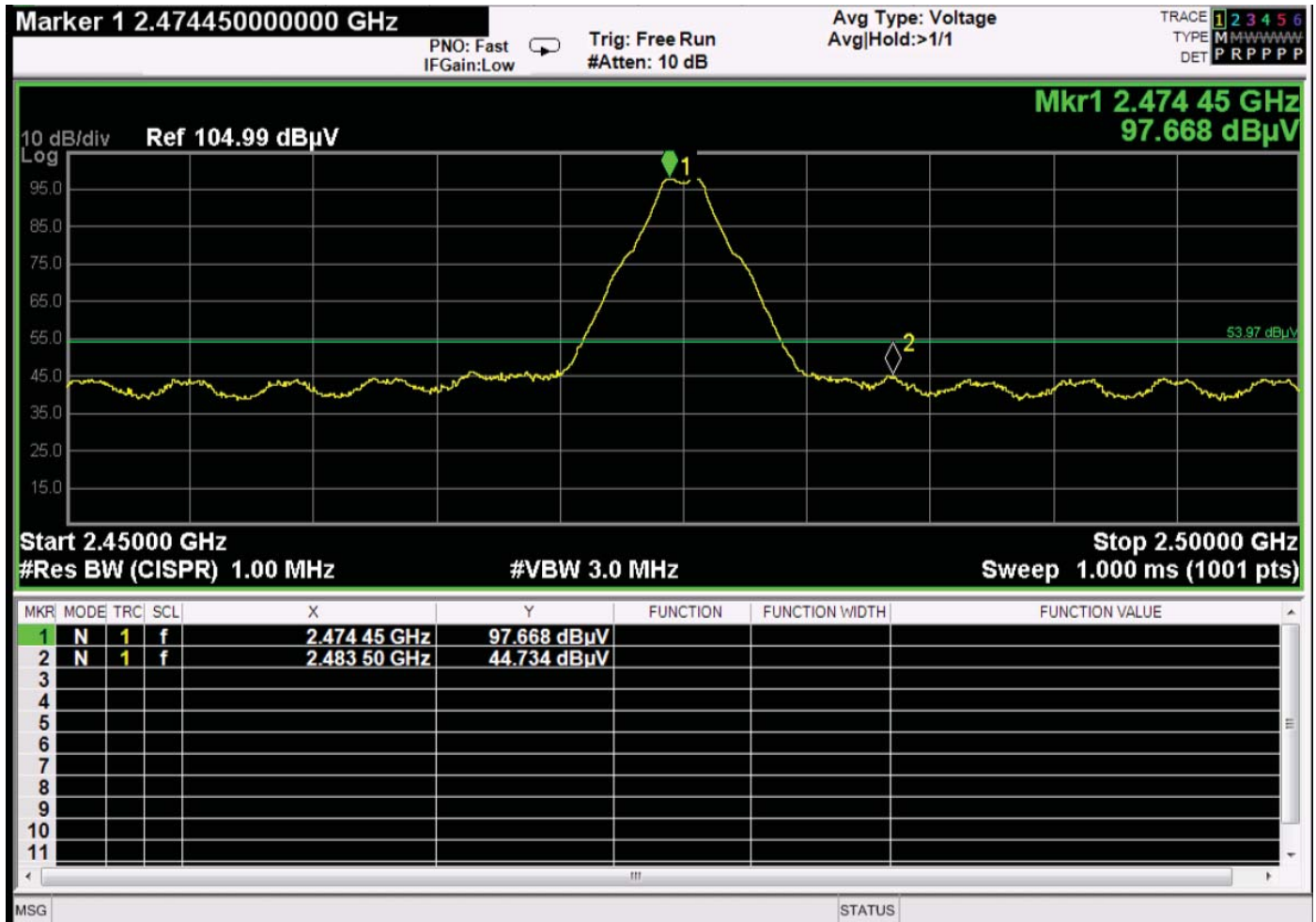
Band Edge – Horizontal Polarization – Low Channel – X-Axis Worst Case



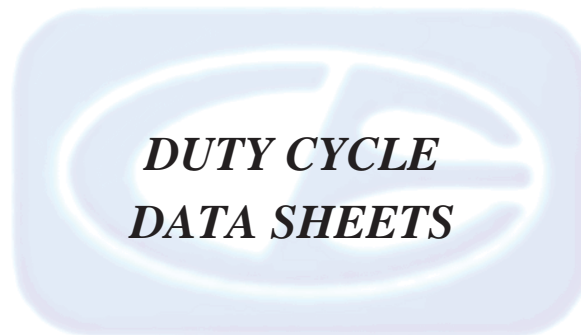
Band Edge – Vertical Polarization – Low Channel – Y-Axis Worst Case



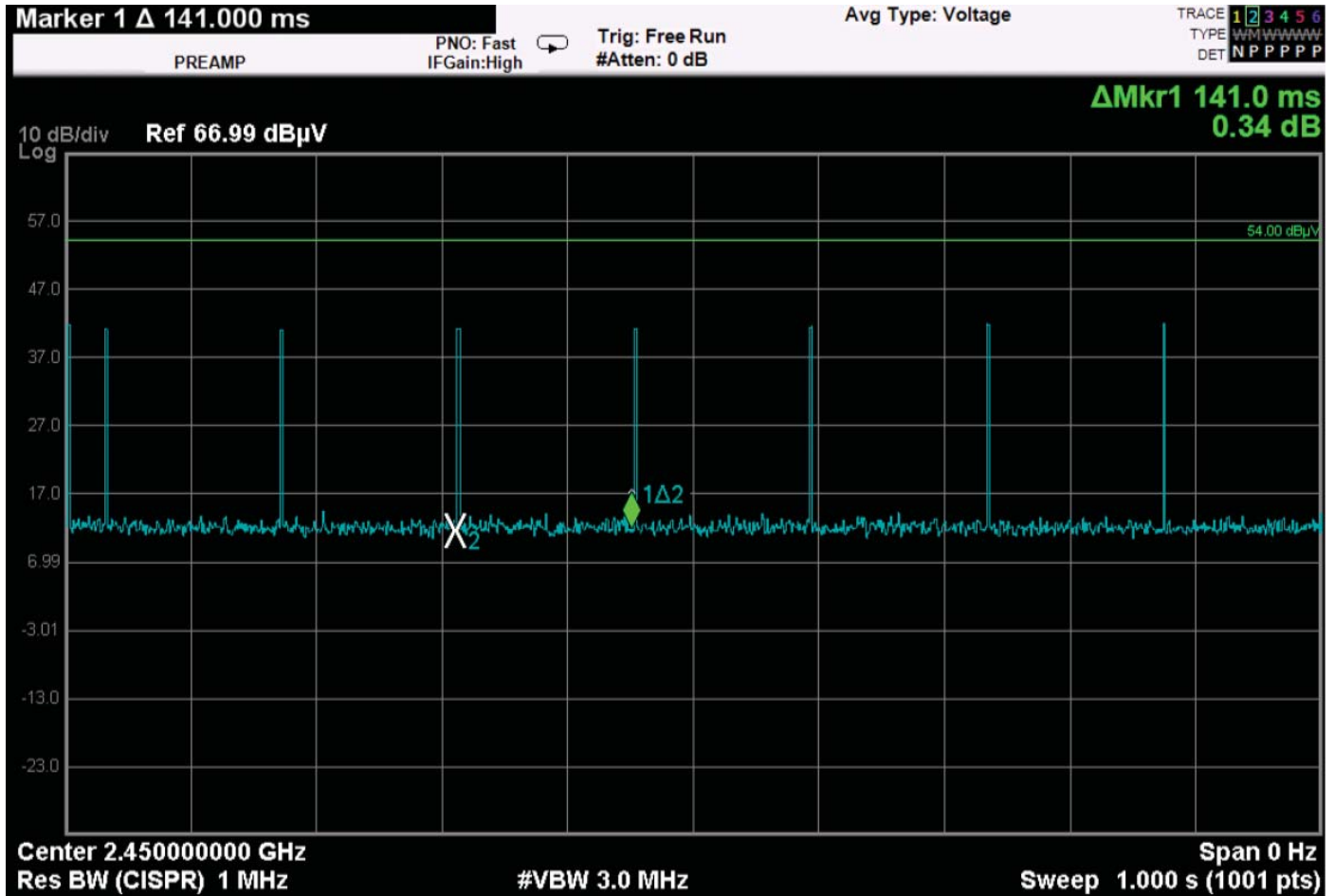
Band Edge – Horizontal Polarization – High Channel – X-Axis Worst Case



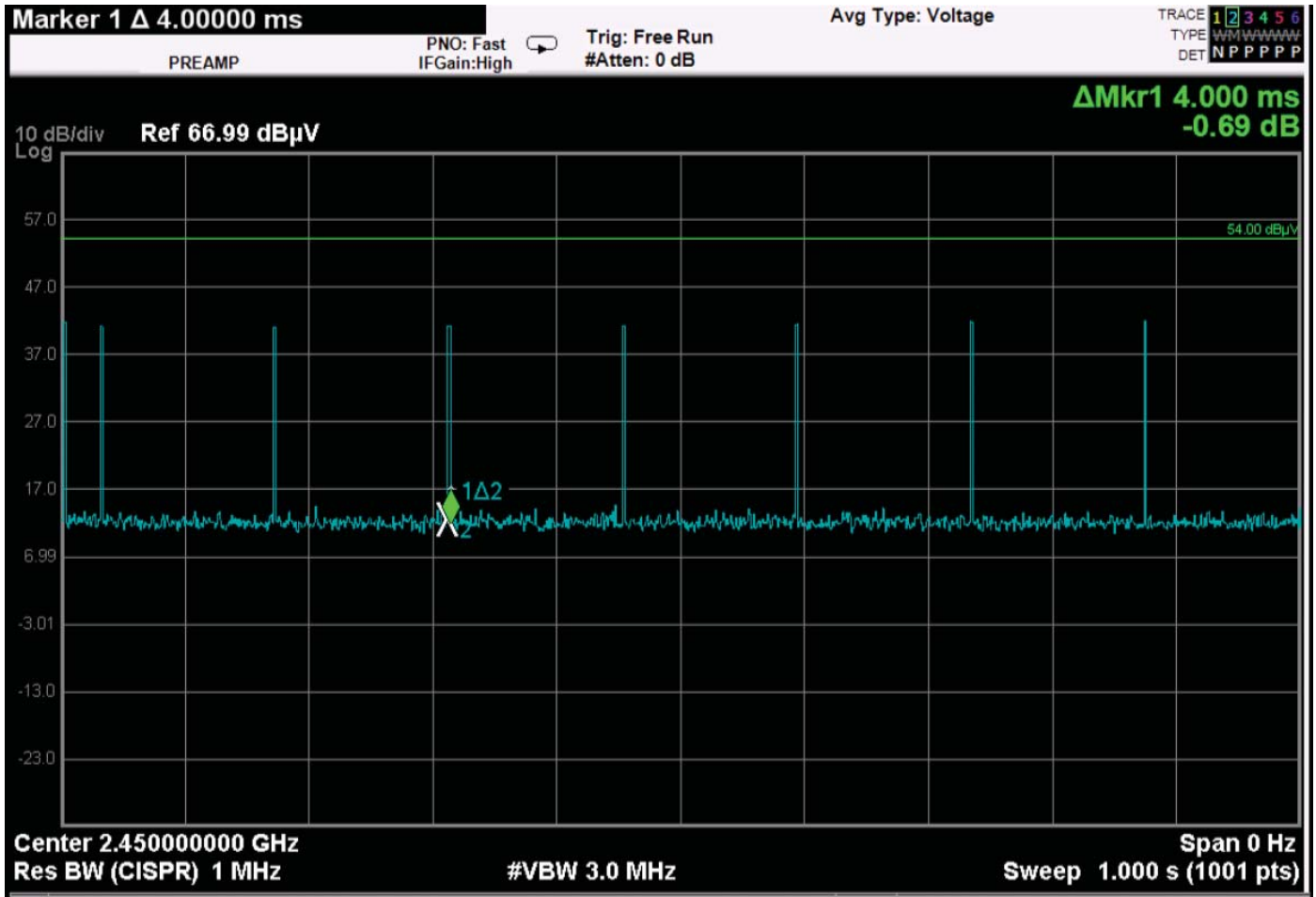
Band Edge – Vertical Polarization -- High Channel – Y-Axis Worst Case







Time Between Pulses is greater than 100 ms – Pairing Mode



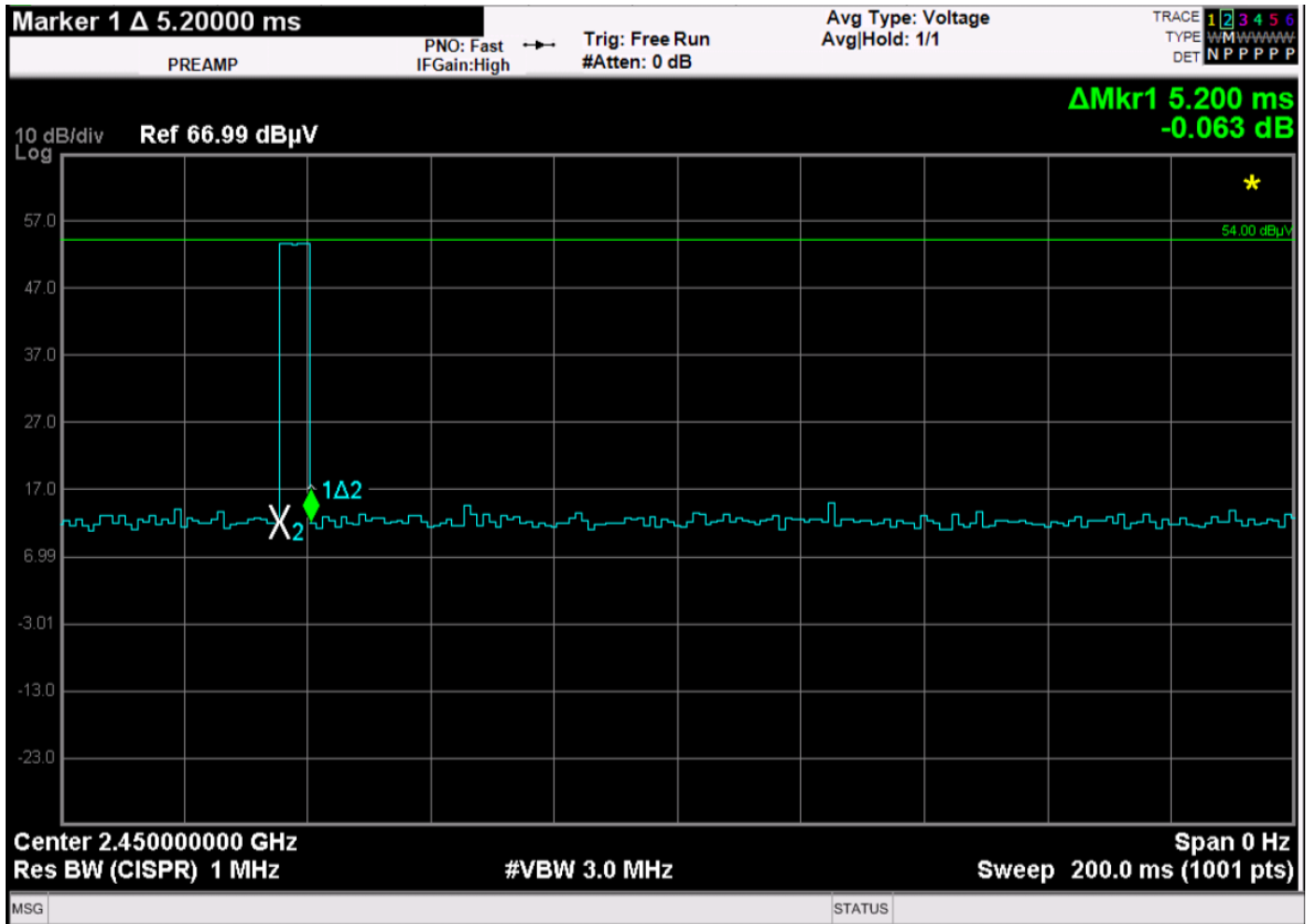
Time of One Pulse = 4 ms – Pairing Mode

Total Duty Cycle = 4.0 ms / 100 ms = 4.00%

The Maximum -20 dB Peak to Average Ratio can be Utilized



Time Between Pulses is greater than 100 ms – Advertising Mode



Time of One Pulse = 5.2 ms – Advertising Mode

Total Duty Cycle = 5.2 ms / 100 ms = 5.20%

The Maximum -20 dB Peak to Average Ratio can be Utilized