FCC PART 15 SUBPART B & SUBPART C SECTION 15.249

TEST REPORT

for

DIRECTV RC80HB CLEANABLE HOSPITALITY REMOTE 2015
Model: URC-3018BC0-X-R

Prepared for

UNIVERSAL ELECTRONICS
201 E. SANDPOINTE AVE, 8TH FLOOR
SANTA ANA, CA 92707

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DATE: SEPTEMBER 19th, 2016

	REPORT BODY	APPENDICES					TOTAL
		A	*B*	*C*	*D*	*E*	
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NVLAP® TESTING NVLAP LAB CODE 200527-0

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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 in any form unless done so in full with the written permission of Compatible Electronics.

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 RC80HB Cleanable Hospitality Remote 2015 Model: URC-3018BC0-X-R S/N: None
Product Description:	The EUT is a custom two device universal remote control.
Modifications:	The EUT was not modified in order to comply with specifications.
Manufacturer:	Universal Electronics 201 E. Sandpointe Ave, 8th Floor Santa Ana, CA 92707
Test Date:	August 22nd, 2016 September 19th, 2016

Test Specifications covered by accreditation:

NVLAP®
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NVLAP LAB CODE 200527-0

Test Specifications:	EMI requirements CFR Title 47, Part 15 Subpart B Sections 15.107, 15.109, Subpart C Sections 15.205, 15.207, 15.209, and 15.249
Test Procedure:	ANSI C63.4 & C63.10

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions, 150 kHz - 30 MHz.	The EUT is battery powered; therefore this test was not performed.
2	Radiated RF Emissions & Harmonics, 9 kHz – 25,000 MHz.	Complies with the limits of CFR Title 47 Part 15 Subpart B Section 15.109 & Subpart C Sections 15.205, 15.209, & 15.249
3	Fundamental Field Strength	Complies with the limits of CFR Title 47 Part 15 Subpart C Section 15.249
4	Emissions Radiated Outside of the Fundamental Frequency Band	Complies with the limits of CFR Title 47 Part 15 Subpart B Section 15.109 & Subpart C Sections 15.205, 15.209, & 15.249

TABLE 1:
SIX HIGHEST RADIATED EMISSIONS READINGS

	Reading Type (PK / QP / AV)	Polarization (Vert / Horz)	Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Delta (dB)	Test Distance
1	AV	H	7350.00	51.32	53.98	-2.66	3-Meter
2	AV	H	7425.00	49.51	53.98	-4.47	3-Meter
3	AV	V	7350.00	49.30	53.98	-4.68	3-Meter
4	AV	V	7275.00	48.07	53.98	-5.91	3-Meter
5	AV	V	7425.00	47.87	53.98	-6.11	3-Meter
6	AV	V	7275.00	47.81	53.98	-6.17	3-Meter

1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the DirecTV RC80HB Cleanable Hospitality Remote 2015 Model: URC-3018BC0-X-R. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4 & C63.10. The tests were performed in order to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT (equipment under test) hereafter, are within the specification limits defined by the Code of Federal Regulations Title 47, Part 15 Subpart B sections 15.109, & Part 15 Subpart C sections 15.205, 15.209, & 15.249.

2. ADMINISTRATIVE DATA

2.1 Location of Testing

The tests described herein were performed at the test facility of Compatible Electronics, 20621 Pascal Way Lake Forest, California 92630.

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

Jesse Mendez	Senior Electronics Engineer

Compatible Electronics, Inc.

Torey Oliver	Test Engineer
Matt Harrison	Lab Manager

2.4 Date Test Sample was Received

The test sample was received on **August** 22nd, 2016.

2.5 Disposition of the Test Sample

The test sample remains at Compatible 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
CML	Corrected Meter Limit
LISN	Line Impedance Stabilization Network
NVLAP	National Voluntary Laboratory Accreditation Program
CFR	Code of Federal Regulations
PCB	Printed Circuit Board
TX	Transmit
RX	Receive

3. APPLICABLE DOCUMENTS

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

SPEC	TITLE
CFR Title 47, Part 15	FCC Rules – Radio frequency devices (including digital devices)
ANSI C63.4 2014	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

The DirecTV RC80HB Cleanable Hospitality Remote 2015 Model: URC-3018BC0-X-R (EUT) was setup in a tabletop configuration. The EUT was tested in all 3 axis. The worst case was found to be the X-Axis. The EUT was continuously transmitting a data stream during testing.

The tests were performed using new batteries.

It was determined that the emissions were at their highest level when the EUT was transmitting in the configuration described above for Radiated Emissions. The final radiated data was taken in the above configuration. Please see Appendix E for the test data.

4.1.1 Photograph Test Configuration (X-Axis)

4.1.2 Cable Construction and Termination

There were no interconnecting cables.

5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

5.1 EUT and Accessory List

#	EQUIPMENT TYPE	MANU-FACTURER	MODEL	SERIAL NUMBER
1	DIRECTV RC80HB CLEANABLE HOSPITALITY REMOTE 2015 (EUT)	UNIVERSAL ELECTRONICS	URC-3018BC0-X-R	NONE
2	BATTERIES (4)	RAYOVAC	AA	NONE

5.2 EMI Test Equipment

EQUIPMENT TYPE	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. DUE DATE
Computer	Compatible Electronics	NONE	NONE	N/A	N/A
EMI Receiver	Rohde & Schwarz	ESIB40	100219	09/03/2016	09/03/2017
Antenna, Loop	Com Power	AL-130	121049	12/06/2014	12/06/2016
Antenna, CombiLog	Com Power	AC-220	25857	05/19/2016	05/19/2017
Antenna, Horn 1-18GHz	Com Power	AH-118	071250	05/17/2016	05/17/2017
Antenna, Horn 18-26GHz	Com-Power	AH-826	081033	07/06/2015	07/06/2017
Pre-Amp, 1-18GHz	Com Power	PAM-118A	443013	4/18/2016	4/18/2017
Pre-Amp, 18-40GHz	Com-Power	PA-840	181289	6/16/2015	6/16/2017
High Pass Filter	AMTI Microwave Circuits	H3G020G4	481230	3/16/2016	3/16/2017
Mast, Antenna Positioner	Sunol Science Corporation	TWR 95-4	020808-3	N/A	N/A
Antenna Mast	Sunol Science Corporation	TWR 95-4	020808-3	N/A	N/A
Turntable	Sunol Science Corporation	FM 2001	N/A	N/A	N/A
Mast and Turntable Controller	Sunol Science Corporation	SC104V	020808-1	N/A	N/A

6. TEST SITE DESCRIPTION

6.1 Test Facility Description

Please refer to section 2.1 and the figures in Appendix D of this report for test location.

6.2 EUT Mounting, Bonding and Grounding

The EUT was mounted on a 1.0 by 1.5 by 0.8 meter high non-conductive table, which was placed on the ground plane.

For above 1GHz testing the EUT was placed 1.5 meters above high, 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. CHARACTERISTICS OF THE TRANSMITTER

7.1 Channel Number and Frequencies

There are a total of 3 channels. The low channel is at 2425.0 MHz and the high channel is at 2475.0 MHz. There is approximately 25 MHz separation between channels and the EUT uses O-QPSK modulation.

7.2 Antenna

The antenna is made up of a trace on the PCB.

8. TEST PROCEDURES

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

8.1 RF Emissions

8.1.1 Conducted Emissions Test

Test Results: The EUT is battery powered; therefore this test was not performed.

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. 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 received its power through the LISN, which 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 different configurations were investigated to find the worst case as well the worst case channel. The final data was collected under program control by the computer software. The final qualification data is located in Appendix E.

8.1.2 Radiated Emissions (Spurious and Harmonics) Test

The EMI receiver was used as a measuring meter. The receiver was used in the peak detect mode with the "Max Hold" feature activated. In this mode, the receiver records the highest measured reading over all the sweeps. Amplifiers were used to increase the sensitivity of the instrument. There was one Microwave Preamplifier used for frequencies above 1 GHz.

For spurious emissions the quasi-peak detector was used for frequencies below 1GHz and the average detector was used for frequencies above 1 GHz.

For the harmonic and fundamental emissions a duty cycle average was used. For the non-intentional emissions a linear average was used.

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

FREQUENCY RANGE (MHz)	TRANSDUCER	EFFECTIVE MEASUREMENT BANDWIDTH
.009 to .150	Active Loop Antenna	200 Hz
.150 to 30	Active Loop Antenna	9 kHz
30 to 1000	Combilog Antenna	100 kHz (120 kHz for QP Measurements)
1000 to 25000	Horn Antenna	1 MHz

The TDK FAC-3 shielded test chamber of Compatible Electronics, Inc. was used for radiated emissions testing. This test site is in full compliance with ANSI C63.4 & ANSI C63.10. 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 in both vertical and horizontal polarizations (for E field radiated field strength).

Test Results:

The EUT complies with the limits of CFR Title 47 Part 15 Subpart B section 15.109, & Part 15 Subpart C sections 15.205, 15.209, & 15.249. The six highest emissions are listed in table 1.

8.1.3 Fundamental Field Strength (Duty Cycle Calculations)

The Peak Transmit Radiated Field Strength was 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

$$\delta(\mathrm{dB}) = 20\log\left[\sum\left(nt_1 + mt_2 + \ldots + \xi t_x\right)/T\right]$$

n is the number of pulses of duration *t*1
m is the number of pulses of duration *t*2
ξ is the number of pulses of duration *tx*
T is the period of the pulse train or 100 ms if the pulse train length is greater than 100 ms

Duty Cycle Correction Factor = -20.00dB

Pulse = 2 * 949.8998 uS

Total On Time = 1.8998 mS

1.8998 mS / 100 mS = 0.0190

20 log (0.0190) = -34.426 dB correction factor

Max Duty Cycle Correction Factor = -20.00dB

Test Results:

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

8.1.4 Emissions Radiated Outside of the Fundamental Frequency Band

The Band Edge measurement was measured using the EMI Receiver at a 3-meter test distance to obtain the final test data. The lower and upper channels were tuned during the low and high band edge tests. The final qualification data sheets are located in Appendix E.

Test Results:

The EUT complies with Part 15 Subpart C, Section 15.205 & 15.249.

9. TEST PROCEDURE DEVIATIONS

The test procedures were not deviated from throughout all tests.

10. CONCLUSIONS

The DirecTV RC80HB Cleanable Hospitality Remote 2015 Model: URC-3018BC0-X-R meets all of the relevant specification requirements defined in the Code of Federal Regulations Title 47, Part 15 Subpart B section 15.109, & Subpart C sections 15.205, 15.209, & 15.249.

APPENDIX A

LABORATORY ACCREDITATIONS AND RECOGNITIONS

LABORATORY ACCREDITATIONS AND RECOGNITIONS

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

For US, Canada, Australia/New Zealand, Taiwan and the European Union, Compatible Electronics is currently accredited by NVLAP to ISO/IEC 17025 an ISO 9002 equivalent. Please follow the link to the NIST site for each of our facilities NVLAP certificate and scope of accreditation.

NVLAP listing links
Agoura Division - http://ts.nist.gov/Standards/scopes/2000630.htm
Brea Division - http://ts.nist.gov/Standards/scopes/2005280.htm
Silverado/Lake Forest Division - http://ts.nist.gov/Standards/scopes/2005270.htm

ANSI listing
CETCB
https://www.ansica.org/wwwversion2/outside/ALLdirectoryDetails.asp?menuID=1&prgID=3&orgID=123&status=4

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

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).

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

VCCI Listing, from VCCI site
Enter "Compatible" in search form http://www.vcci.or.jp/vcci_e/activity/registration/setsubi.html

FCC Listing, from FCC OET site
FCC test lab search https://fjallfoss.fcc.gov/oetcf/eas/reports/TestFirmSearch.cfm

Industry Canada Industrie Canada
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

There were no modifications were made during testing.

APPENDIX C

ADDITIONAL MODELS COVERED UNDER THIS REPORT

ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST	DIRECTV RC80HB CLEANABLE HOSPITALITY REMOTE 2015 Model: URC-3018BC0-X-R S/N: NONE

No additional models were tested.

APPENDIX D

DIAGRAMS, CHARTS, AND PHOTOS

FIGURE 1: PLOT MAP AND LAYOUT OF TEST SITE BELOW 1GHZ

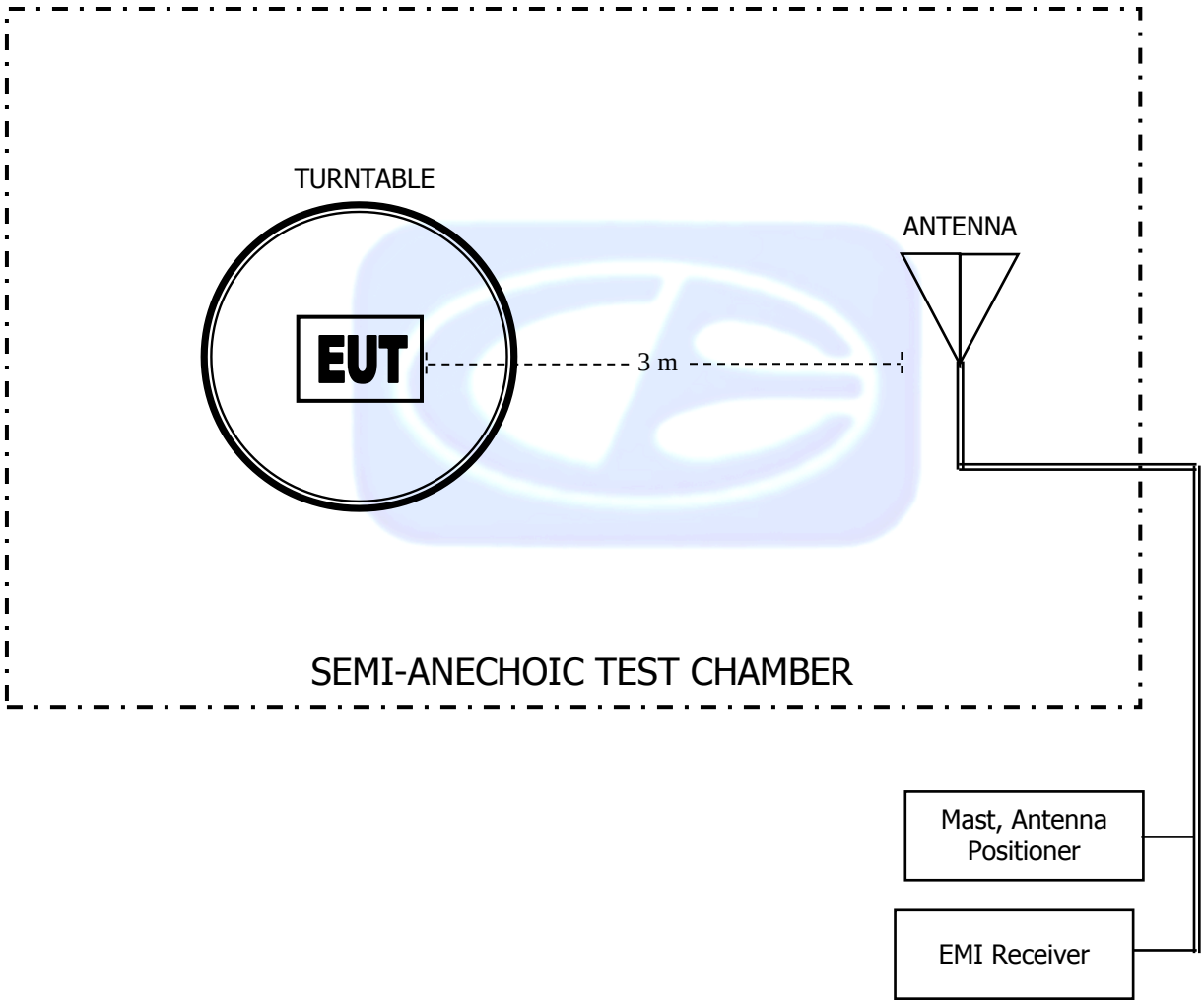
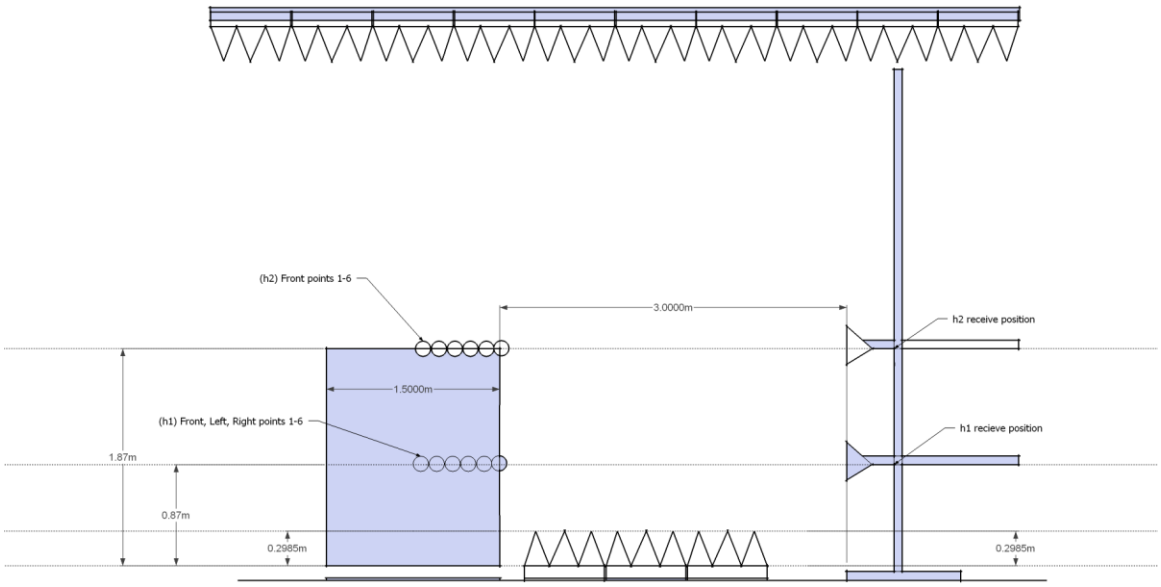


FIGURE 2: PLOT MAP AND LAYOUT OF TEST SITE ABOVE 1GHZ



COM-POWER AL-130

LOOP ANTENNA

S/N: 121049

CALIBRATION DUE: DECEMBER 6, 2016

FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)	FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)
0.009	-34.64	16.86	**0.8**	-36.32	15.18
0.01	-34.78	16.72	**0.9**	-36.22	15.28
0.02	-35.91	15.59	**1.0**	-36.22	15.28
0.03	-35.48	16.02	**2.0**	-35.91	15.59
0.04	-35.82	15.68	**3.0**	-35.91	15.59
0.05	-36.49	15.01	**4.0**	-36.01	15.49
0.06	-36.30	15.20	**5.0**	-35.80	15.70
0.07	-36.43	15.07	**6.0**	-36.00	15.50
0.08	-36.30	15.20	**7.0**	-35.90	15.60
0.09	-36.39	15.11	**8.0**	-35.70	15.80
0.1	-36.41	15.09	**9.0**	-35.70	15.80
0.2	-36.61	14.89	**10.0**	-35.60	15.90
0.3	-36.63	14.87	**15.0**	-36.52	14.98
0.4	-36.52	14.99	**20.0**	-35.75	15.75
0.5	-36.63	14.87	**25.0**	-37.78	13.72
0.6	-36.62	14.88	**30.0**	-38.62	12.88
0.7	-36.53	14.97			

COM-POWER AC-220

LAB R - COMBILOG ANTENNA

S/N: 25857

CALIBRATION DUE: MAY 19, 2017

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	22.5	**160**	13.3
35	22.5	**180**	15.0
40	23.0	**200**	14.6
45	21.5	**250**	16.5
50	21.3	**300**	18.1
60	18.2	**400**	19.4
70	13.2	**500**	20.6
80	11.6	**600**	21.6
90	11.9	**700**	23.7
100	12.6	**800**	26.0
120	15.1	**900**	26.6
140	15.2	**1000**	28.5

COM-POWER AH-118

HORN ANTENNA

S/N: 071250

CALIBRATION DUE: MAY 17, 2017

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
1000	24.40	**9500**	39.11
1500	25.61	**10000**	39.38
2000	28.71	**10500**	39.55
2500	29.09	**11000**	39.66
3000	30.24	**11500**	40.28
3500	30.94	**12000**	40.26
4000	31.77	**12500**	40.64
4500	32.29	**13000**	41.33
5000	33.70	**13500**	41.74
5500	34.28	**14000**	41.52
6000	34.83	**14500**	41.80
6500	35.07	**15000**	43.51
7000	36.79	**15500**	41.03
7500	37.45	**16000**	40.88
8000	37.67	**16500**	40.18
8500	37.75	**17000**	42.59
9000	38.15	**17500**	44.49
		18000	45.27

COM-POWER PAM-118

1-18GHz - PREAMPLIFIER

S/N: 443013

CALIBRATION DUE: APRIL 18, 2017

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
500	39.74	**5500**	35.03
1000	40.74	**6000**	38.02
1100	38.40	**6500**	37.15
1200	40.64	**7000**	35.31
1300	39.71	**7500**	35.90
1400	39.39	**8000**	34.08
1500	41.05	**8500**	34.37
1600	38.74	**9000**	34.45
1700	39.95	**9500**	34.23
1800	39.88	**10000**	35.23
1900	39.32	**11000**	33.36
2000	40.83	**12000**	33.27
2500	41.14	**13000**	34.84
3000	39.42	**14000**	33.19
3500	40.22	**15000**	36.25
4000	40.94	**16000**	32.33
4500	38.59	**17000**	34.10
5000	38.13	**18000**	36.00

FRONT VIEW

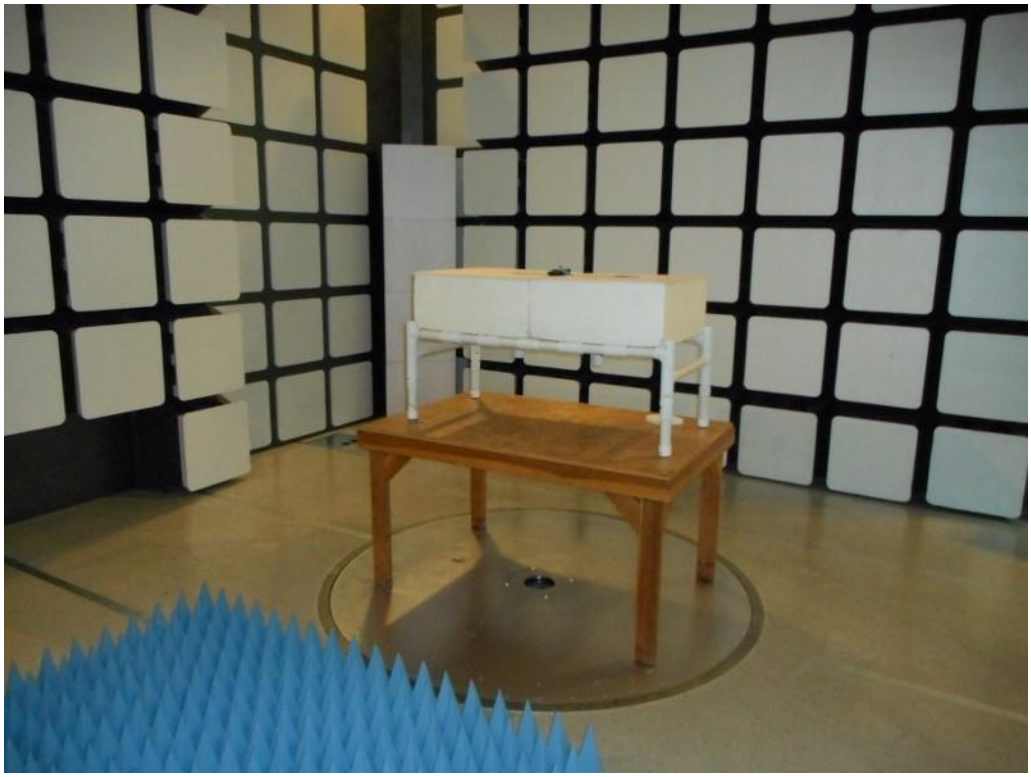
UNIVERSAL ELECTRONICS
DIRECTV RC80HB CLEANABLE HOSPITALITY REMOTE 2015
Model: URC-3018BC0-X-R
FCC SUBPART B & C - RADIATED EMISSIONS < 1GHz

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

REAR VIEW

UNIVERSAL ELECTRONICS
DIRECTV RC80HB CLEANABLE HOSPITALITY REMOTE 2015
Model: URC-3018BC0-X-R
FCC SUBPART B & C - RADIATED EMISSIONS < 1GHz

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



FRONT VIEW

UNIVERSAL ELECTRONICS
DIRECTV RC80HB CLEANABLE HOSPITALITY REMOTE 2015
Model: URC-3018BC0-X-R
FCC SUBPART B & C - RADIATED EMISSIONS > 1GHz

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

REAR VIEW

UNIVERSAL ELECTRONICS
DIRECTV RC80HB CLEANABLE HOSPITALITY REMOTE 2015
Model: URC-3018BC0-X-R
FCC SUBPART B & C - RADIATED EMISSIONS > 1GHz

PHOTOGRAPH SHOWING THE EUT CONFIGURATION

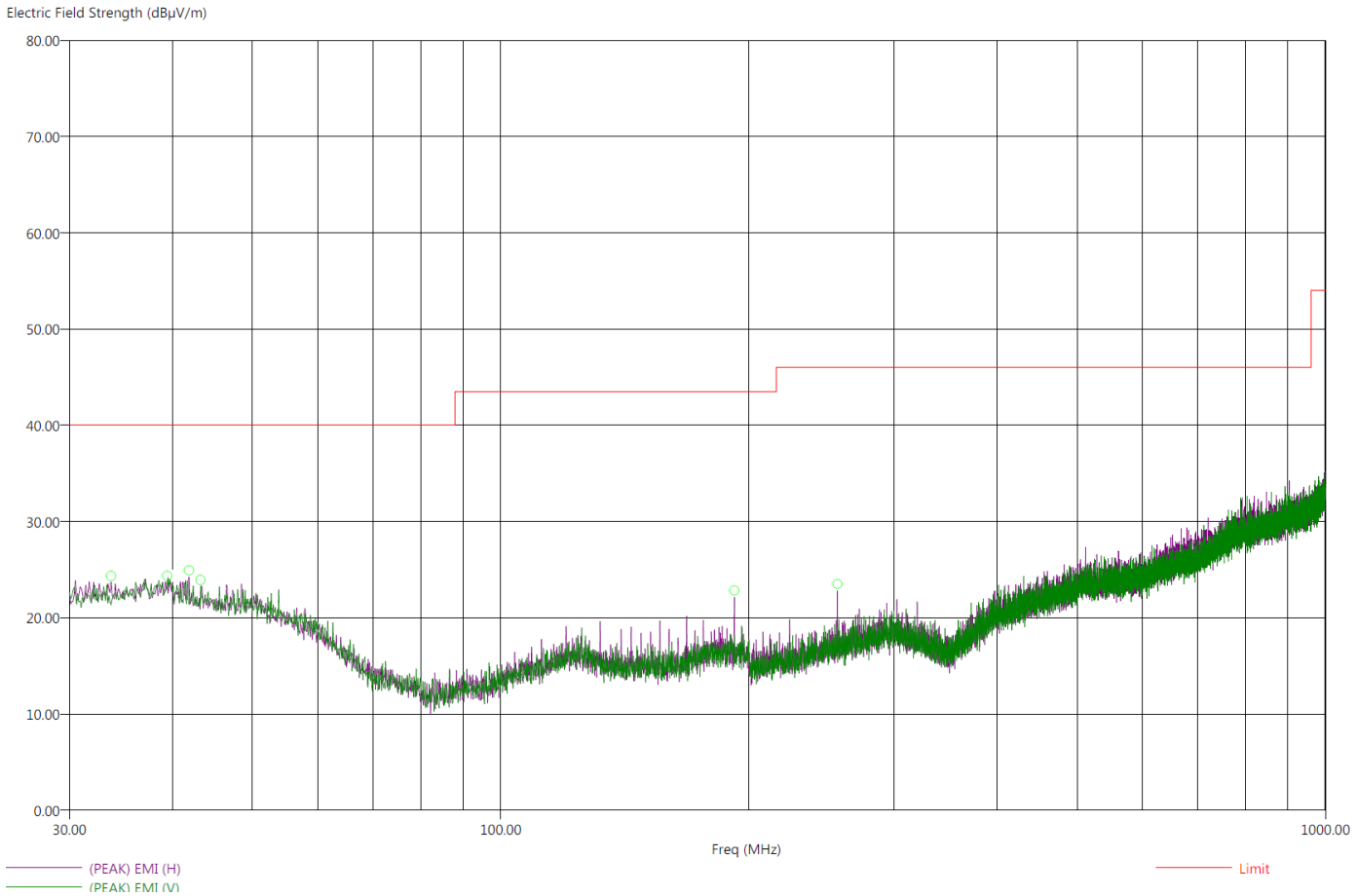
FOR MAXIMUM EMISSIONS

APPENDIX E

RADIATED EMISSIONS DATA SHEETS

Title: FCC 15.209 9/21/2016 8:26:38 AM
File: Radiated Pre-Scan 30-1000Mhz.set Sequence: Preliminary Scan
Operator: Matt Harrison
EUT Type: DirecTV RC80HB Cleanable Hospitality Remote 2015 Model: URC3018BC0-X-R.
EUT Condition: Transmitting 802.15.4 @ 2425MHz.
Comments: X-Axis.
Temp: 73f
Hum: 49%
Battery Operated

Compatible Electronics, Inc. FAC-3 (Lab R)



There were no radiated emissions other than harmonics found below 30 MHz or above 1GHz.
This is the worst case channel and mode.

Title: FCC 15.209 9/21/2016 8:39:39 AM
File: Radiated Final 30-1000Mhz.set Sequence: Final Measurements
Operator: Matt Harrison
EUT Type: DirecTV RC80HB Cleanable Hospitality Remote 2015 Model: URC3018BC0-X-R.
EUT Condition: Transmitting 802.15.4 @ 2425MHz.
Comments: X-Axis.
Temp: 73f
Hum: 49%
Battery Operated

Compatible Electronics, Inc. FAC-3 (Lab R)

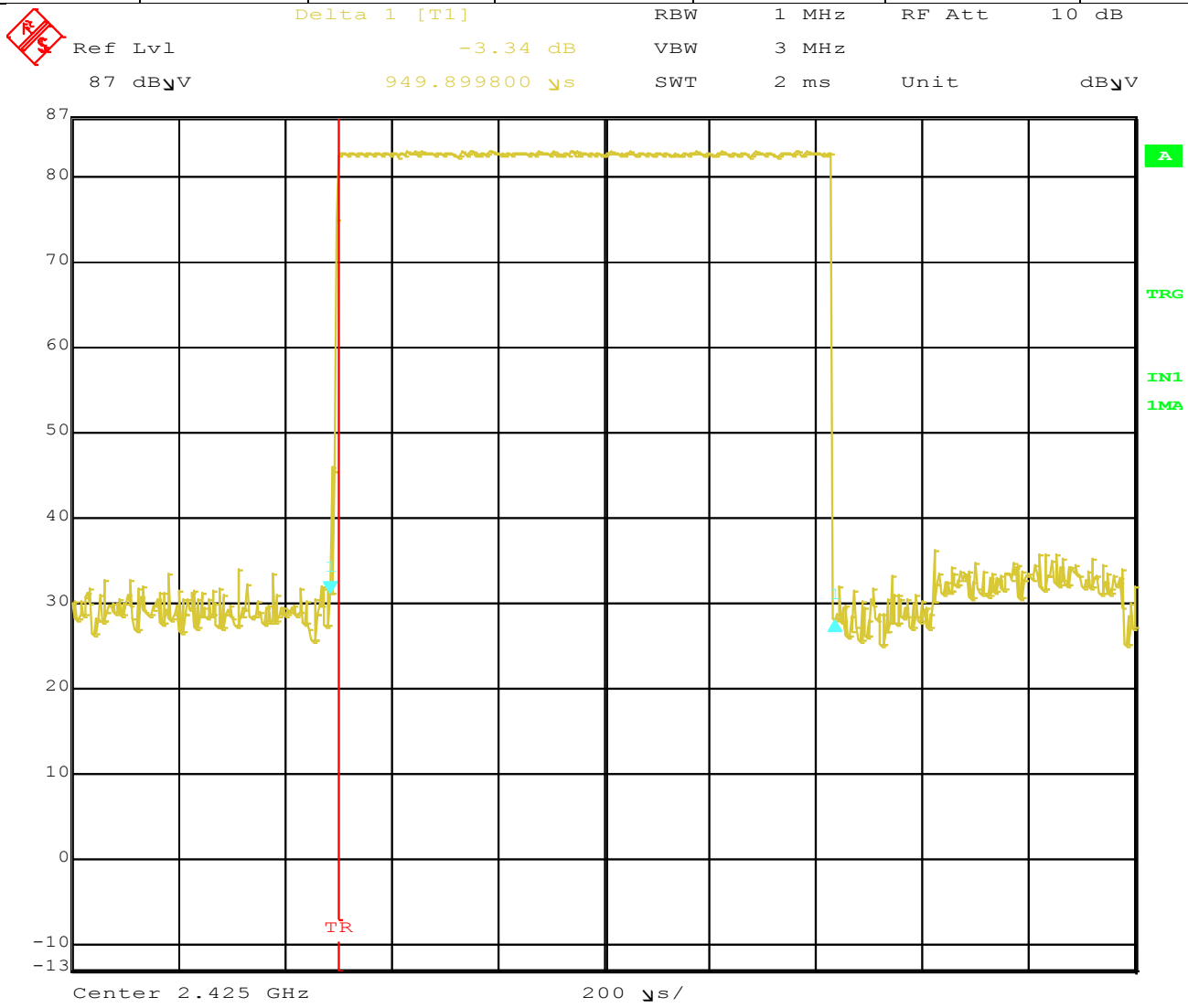
Freq (MHz)	(QP) Margin (dB)	(QP) EMI (dBµV/m)	(PEAK) EMI (dBµV/m)	Limit (dBµV/m)	Pol	Ttbl Agl (deg)	Twr Ht (cm)	Transducer(dB)	Cable (dB)
33.70	-21.44	18.56	24.66	40.00	H	254.25	295.61	22.50	0.33
39.40	-20.68	19.32	25.08	40.00	H	360.00	150.17	22.95	0.42
41.90	-21.16	18.84	24.21	40.00	H	120.00	304.62	22.39	0.44
43.30	-21.42	18.58	24.20	40.00	V	62.75	335.85	21.98	0.44
192.10	-21.52	22.00	24.93	43.52	H	50.25	116.92	14.76	1.19
256.00	-23.18	22.82	25.90	46.00	H	63.25	116.80	16.71	1.33

There were no radiated emissions other than harmonics found below 30 MHz or above 1GHz.
This is the worst case channel and mode.

DUTY CYCLE
DATA SHEETS

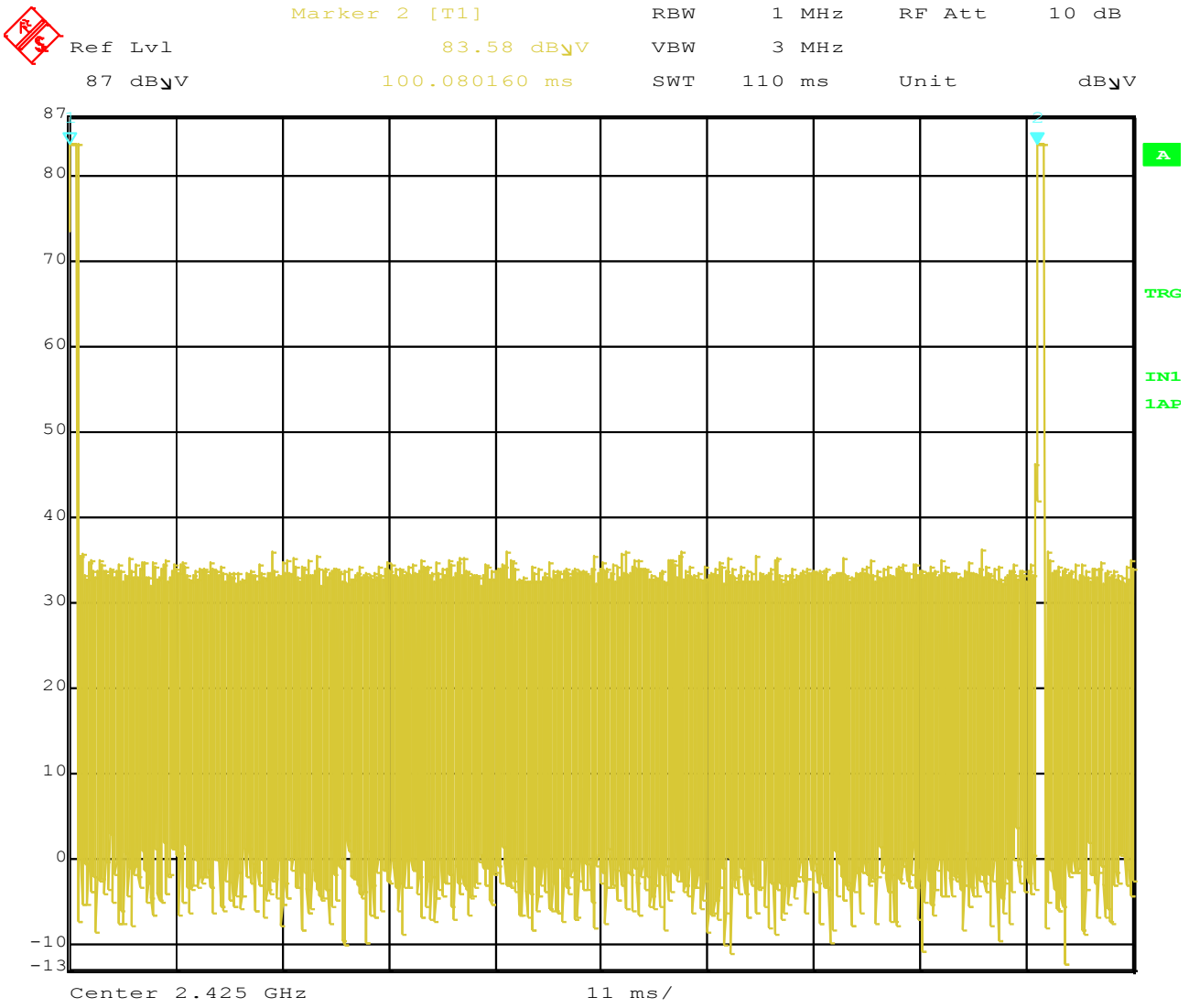
DUTY CYCLE

Pulse Time (ms)	# of Pulses	Total on Time (ms)	period (ms)	Duty Cycle	Correction (db)	Applied Correction (db)
0.9498998	2	1.8997996	100	0.0190	-34.426	-20.00



Title: URC3018BC0-X-R.
Comment A: Duty Cycle Paired.

DUTY CYCLE



Title: URC3018BC0-X-R.
Comment A: Duty Cycle Paired.

This is the worst case duty cycle.

FUNDAMENTAL & HARMONICS

DATA SHEETS

FUNDAMENTAL FIELD STRENGTH

FCC 15.249

Company: UEI
EUT: DirecTV RC80HB Cleanable Hospitality Remote 2015
Model: URC-3018BC0-X-R
Duty Cycle Correction Factor: -20.00

Date: 8/22/2016
Lab: R
Tested By: Matt H.

Compatible Electronics, Inc. FAC-3

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table	Tower	Comments
2425.00	99.70	H	113.97	-14.27	Peak	277.00	1.40	X Axis
2425.00	79.70	H	93.97	-14.27	Avg	277.00	1.40	X Axis
2425.00	85.18	V	113.97	-28.79	Peak	330.00	1.00	X Axis
2425.00	65.18	V	93.97	-28.79	Avg	330.00	1.00	X Axis
2450.00	99.65	H	113.97	-14.32	Peak	280.00	1.07	X Axis
2450.00	79.65	H	93.97	-14.32	Avg	280.00	1.07	X Axis
2450.00	87.39	V	113.97	-26.58	Peak	189.00	1.10	X Axis
2450.00	67.39	V	93.97	-26.58	Avg	189.00	1.10	X Axis
2475.00	99.70	H	113.97	-14.27	Peak	276.00	1.00	X Axis
2475.00	79.70	H	93.97	-14.27	Avg	276.00	1.00	X Axis
2475.00	87.39	V	113.97	-26.58	Peak	195.00	1.00	X Axis
2475.00	67.39	V	93.97	-26.58	Avg	195.00	1.00	X Axis

Test distance
3 meter

HARMONICS LOW CHANNEL HORIZONTAL

FCC 15.249

Company: UEI
EUT: DirecTV RC80HB Cleanable Hospitality Remote 2015
Model: URC-3018BC0-X-R
Duty Cycle Correction Factor: -20.00

Date: 8/22/2016
Lab: R
Tested By: Matt H.

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4850.0	64.48	H	73.98	-9.50	Peak	1.44	238	X-Axis
4850.0	44.48	H	53.98	-9.50	Avg	1.44	238	X-Axis
4850.0	65.10	H	73.98	-8.88	Peak	1.01	235	Z-Axis
4850.0	45.10	H	53.98	-8.88	Avg	1.01	235	Z-Axis
4850.0	62.26	H	73.98	-11.72	Peak	1.07	38	Y-Axis
4850.0	42.26	H	53.98	-11.72	Avg	1.07	38	Y-Axis
7275.0	62.08	H	73.98	-11.90	Peak	1.51	360	X-Axis
7275.0	42.08	H	53.98	-11.90	Avg	1.51	360	X-Axis
7275.0	68.07	H	73.98	-5.91	Peak	1.01	270	Z-Axis
7275.0	48.07	H	53.98	-5.91	Avg	1.01	270	Z-Axis
7275.0	61.16	H	73.98	-12.82	Peak	1.32	318	Y-Axis
7275.0	41.16	H	53.98	-12.82	Avg	1.32	318	Y-Axis
9700.0	--	H	73.98	--	Peak	--	--	No Emission Found
9700.0	--	H	53.98	--	Avg	--	--	
12125.0	63.67	H	73.98	-10.31	Peak	1.07	322	X-Axis
12125.0	43.67	H	53.98	-10.31	Avg	1.07	322	X-Axis
12125.0	56.32	H	73.98	-17.66	Peak	1.01	0	Z-Axis
12125.0	36.32	H	53.98	-17.66	Avg	1.01	0	Z-Axis
12125.0	58.20	H	73.98	-15.78	Peak	1.05	178	Y-Axis
12125.0	38.20	H	53.98	-15.78	Avg	1.05	178	Y-Axis
14550.0	--	H	73.98	--	Peak	--	--	No Emission Found
14550.0	--	H	53.98	--	Avg	--	--	
16975.0	--	H	73.98	--	Peak	--	--	No Emission Found
16975.0	--	H	53.98	--	Avg	--	--	
19400.0	--	H	73.98	--	Peak	--	--	No Emission Found
19400.0	--	H	53.98	--	Avg	--	--	
21825.0	--	H	73.98	--	Peak	--	--	No Emission Found
21825.0	--	H	53.98	--	Avg	--	--	
24250.0	--	H	73.98	--	Peak	--	--	No Emission Found
24250.0	--	H	53.98	--	Avg	--	--	

HARMONICS LOW CHANNEL VERTICAL

FCC 15.249

Company: UEI Date: 8/22/2016
EUT: DirecTV RC80HB Cleanable Hospitality Remote 2015 Lab: R
Model: URC-3018BC0-X-R Tested By: Matt H.
Duty Cycle Correction Factor: -20

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4850.0	55.07	V	73.98	-18.91	Peak	1.04	360	X-Axis
4850.0	35.07	V	53.98	-18.91	Avg	1.04	360	X-Axis
4850.0	60.12	V	73.98	-13.86	Peak	1.14	285	Z-Axis
4850.0	40.12	V	53.98	-13.86	Avg	1.14	285	Z-Axis
4850.0	63.41	V	73.98	-10.57	Peak	1.13	269	Y-Axis
4850.0	43.41	V	53.98	-10.57	Avg	1.13	269	Y-Axis
7275.0	63.03	V	73.98	-10.95	Peak	1.01	180	X-Axis
7275.0	43.03	V	53.98	-10.95	Avg	1.01	180	X-Axis
7275.0	64.51	V	73.98	-9.47	Peak	1.01	183	Z-Axis
7275.0	44.51	V	53.98	-9.47	Avg	1.01	183	Z-Axis
7275.0	67.81	V	73.98	-6.17	Peak	2.31	276	Y-Axis
7275.0	47.81	V	53.98	-6.17	Avg	2.31	276	Y-Axis
9700.0	--	V	73.98	--	Peak	--	--	No Emission Found
9700.0	--	V	53.98	--	Avg	--	--	
12125.0	59.69	V	73.98	-14.29	Peak	1.01	36	X-Axis
12125.0	39.69	V	53.98	-14.29	Avg	1.01	36	X-Axis
12125.0	62.66	V	73.98	-11.32	Peak	1.01	68	Z-Axis
12125.0	42.66	V	53.98	-11.32	Avg	1.01	68	Z-Axis
12125.0	59.17	V	73.98	-14.81	Peak	1.15	0	Y-Axis
12125.0	39.17	V	53.98	-14.81	Avg	1.15	0	Y-Axis
14550.0	--	V	73.98	--	Peak	--	--	No Emission Found
14550.0	--	V	53.98	--	Avg	--	--	
16975.0	--	V	73.98	--	Peak	--	--	No Emission Found
16975.0	--	V	53.98	--	Avg	--	--	
19400.0	--	V	73.98	--	Peak	--	--	No Emission Found
19400.0	--	V	53.98	--	Avg	--	--	
21825.0	--	V	73.98	--	Peak	--	--	No Emission Found
21825.0	--	V	53.98	--	Avg	--	--	
24250.0	--	V	73.98	--	Peak	--	--	No Emission Found
24250.0	--	V	53.98	--	Avg	--	--	

HARMONICS MID CHANNEL HORIZONTAL

FCC 15.249

Company: UEI Date: 8/22/2016
EUT: DirecTV RC80HB Cleanable Hospitality Remote 2015 Lab: R
Model: URC-3018BC0-X-R Tested By: Matt H.
Duty Cycle Correction Factor: -20

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4900.0	63.24	H	73.98	-10.74	Peak	1.01	236	X-Axis
4900.0	43.24	H	53.98	-10.74	Avg	1.01	236	X-Axis
4900.0	63.25	H	73.98	-10.73	Peak	1.01	233	Z-Axis
4900.0	43.25	H	53.98	-10.73	Avg	1.01	233	Z-Axis
4900.0	60.22	H	73.98	-13.76	Peak	1.56	37	Y-Axis
4900.0	40.22	H	53.98	-13.76	Avg	1.56	37	Y-Axis
7350.0	64.60	H	73.98	-9.38	Peak	1.01	110	X-Axis
7350.0	44.60	H	53.98	-9.38	Avg	1.01	110	X-Axis
7350.0	71.32	H	73.98	-2.66	Peak	1.02	270	Z-Axis
7350.0	51.32	H	53.98	-2.66	Avg	1.02	270	Z-Axis
7350.0	59.76	H	73.98	-14.22	Peak	1.13	360	Y-Axis
7350.0	39.76	H	53.98	-14.22	Avg	1.13	360	Y-Axis
9800.0	--	H	73.98	--	Peak	--	--	No Emission Found
9800.0	--	H	53.98	--	Avg	--	--	
12250.0	64.86	H	73.98	-9.12	Peak	1.07	320	X-Axis
12250.0	44.86	H	53.98	-9.12	Avg	1.07	320	X-Axis
12250.0	60.49	H	73.98	-13.49	Peak	1.41	27	Z-Axis
12250.0	40.49	H	53.98	-13.49	Avg	1.41	27	Z-Axis
12250.0	58.58	H	73.98	-15.40	Peak	1.16	275	Y-Axis
12250.0	38.58	H	53.98	-15.40	Avg	1.16	275	Y-Axis
14700.0	--	H	73.98	--	Peak	--	--	No Emission Found
14700.0	--	H	53.98	--	Avg	--	--	
17150.0	--	H	73.98	--	Peak	--	--	No Emission Found
17150.0	--	H	53.98	--	Avg	--	--	
19600.0	--	H	73.98	--	Peak	--	--	No Emission Found
19600.0	--	H	53.98	--	Avg	--	--	
22050.0	--	H	73.98	--	Peak	--	--	No Emission Found
22050.0	--	H	53.98	--	Avg	--	--	
24500.0	--	H	73.98	--	Peak	--	--	No Emission Found
24500.0	--	H	53.98	--	Avg	--	--	

HARMONICS MID CHANNEL VERTICAL

FCC 15.249

Company: UEI Date: 8/22/2016
EUT: DirecTV RC80HB Cleanable Hospitality Remote 2015 Lab: R
Model: URC-3018BC0-X-R Tested By: Matt H.
Duty Cycle Correction Factor: -20

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4900.0	59.59	V	73.98	-14.39	Peak	1.01	235	X-Axis
4900.0	39.59	V	53.98	-14.39	Avg	1.01	235	X-Axis
4900.0	61.48	V	73.98	-12.50	Peak	1.01	235	Z-Axis
4900.0	41.48	V	53.98	-12.50	Avg	1.01	235	Z-Axis
4900.0	61.86	V	73.98	-12.12	Peak	1.10	268	Y-Axis
4900.0	41.86	V	53.98	-12.12	Avg	1.10	268	Y-Axis
7350.0	64.60	V	73.98	-9.38	Peak	1.01	110	X-Axis
7350.0	44.60	V	53.98	-9.38	Avg	1.01	110	X-Axis
7350.0	62.98	V	73.98	-11.00	Peak	1.07	181	Z-Axis
7350.0	42.98	V	53.98	-11.00	Avg	1.07	181	Z-Axis
7350.0	69.30	V	73.98	-4.68	Peak	2.09	268	Y-Axis
7350.0	49.30	V	53.98	-4.68	Avg	2.09	268	Y-Axis
9800.0	--	V	73.98	--	Peak	--	--	No Emission Found
9800.0	--	V	53.98	--	Avg	--	--	
12250.0	61.70	V	73.98	-12.28	Peak	1.07	83	X-Axis
12250.0	41.70	V	53.98	-12.28	Avg	1.07	83	X-Axis
12250.0	61.70	V	73.98	-12.28	Peak	1.18	72	Z-Axis
12250.0	41.70	V	53.98	-12.28	Avg	1.18	72	Z-Axis
12250.0	61.94	V	73.98	-12.04	Peak	1.72	0	Y-Axis
12250.0	41.94	V	53.98	-12.04	Avg	1.72	0	Y-Axis
14700.0	--	V	73.98	--	Peak	--	--	No Emission Found
14700.0	--	V	53.98	--	Avg	--	--	
17150.0	--	V	73.98	--	Peak	--	--	No Emission Found
17150.0	--	V	53.98	--	Avg	--	--	
19600.0	--	V	73.98	--	Peak	--	--	No Emission Found
19600.0	--	V	53.98	--	Avg	--	--	
22050.0	--	V	73.98	--	Peak	--	--	No Emission Found
22050.0	--	V	53.98	--	Avg	--	--	
24500.0	--	V	73.98	--	Peak	--	--	No Emission Found
24500.0	--	V	53.98	--	Avg	--	--	

HARMONICS HIGH CHANNEL HORIZONTAL

FCC 15.249

Company: UEI Date: 8/22/2016
EUT: DirecTV RC80HB Cleanable Hospitality Remote 2015 Lab: R
Model: URC-3018BC0-X-R Tested By: Matt H.
Duty Cycle Correction Factor: -20.00

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4950.0	65.78	H	73.98	-8.20	Peak	1.07	235	X-Axis
4950.0	45.78	H	53.98	-8.20	Avg	1.07	235	X-Axis
4950.0	61.71	H	73.98	-12.27	Peak	1.07	233	Z-Axis
4950.0	41.71	H	53.98	-12.27	Avg	1.07	233	Z-Axis
4950.0	63.22	H	73.98	-10.76	Peak	1.16	34	Y-Axis
4950.0	43.22	H	53.98	-10.76	Avg	1.16	34	Y-Axis
7425.0	69.51	H	73.98	-4.47	Peak	1.01	287	X-Axis
7425.0	49.51	H	53.98	-4.47	Avg	1.01	287	X-Axis
7425.0	66.12	H	73.98	-7.86	Peak	1.07	278	Z-Axis
7425.0	46.12	H	53.98	-7.86	Avg	1.07	278	Z-Axis
7425.0	59.18	H	73.98	-14.80	Peak	1.30	320	Y-Axis
7425.0	39.18	H	53.98	-14.80	Avg	1.30	320	Y-Axis
9900.0	--	H	73.98	--	Peak	--	--	No Emission Found
9900.0	--	H	53.98	--	Avg	--	--	
12375.0	59.22	H	73.98	-14.76	Peak	1.02	319	X-Axis
12375.0	39.22	H	53.98	-14.76	Avg	1.02	319	X-Axis
12375.0	52.69	H	73.98	-21.29	Peak	1.02	101	Z-Axis
12375.0	32.69	H	53.98	-21.29	Avg	1.02	101	Z-Axis
12375.0	61.12	H	73.98	-12.86	Peak	1.00	194	Y-Axis
12375.0	41.12	H	53.98	-12.86	Avg	1.00	194	Y-Axis
14850.0	--	H	73.98	--	Peak	--	--	No Emission Found
14850.0	--	H	53.98	--	Avg	--	--	
17325.0	--	H	73.98	--	Peak	--	--	No Emission Found
17325.0	--	H	53.98	--	Avg	--	--	
19800.0	--	H	73.98	--	Peak	--	--	No Emission Found
19800.0	--	H	53.98	--	Avg	--	--	
22275.0	--	H	73.98	--	Peak	--	--	No Emission Found
22275.0	--	H	53.98	--	Avg	--	--	
24750.0	--	H	73.98	--	Peak	--	--	No Emission Found
24750.0	--	H	53.98	--	Avg	--	--	

HARMONICS HIGH CHANNEL VERTICAL

FCC 15.249

Company: UEI
EUT: DirecTV RC80HB Cleanable Hospitality Remote 2015
Model: URC-3018BC0-X-R
Duty Cycle Correction Factor: -20.00

Date: 8/22/2016
Lab: R
Tested By: Matt H.

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4950.0	60.58	V	73.98	-13.40	Peak	1.07	130	X-Axis
4950.0	40.58	V	53.98	-13.40	Avg	1.07	130	X-Axis
4950.0	62.20	V	73.98	-11.78	Peak	1.02	233	Z-Axis
4950.0	42.20	V	53.98	-11.78	Avg	1.02	233	Z-Axis
4950.0	61.58	V	73.98	-12.40	Peak	1.50	276	Y-Axis
4950.0	41.58	V	53.98	-12.40	Avg	1.50	276	Y-Axis
7425.0	62.13	V	73.98	-11.85	Peak	1.02	113	X-Axis
7425.0	42.13	V	53.98	-11.85	Avg	1.02	113	X-Axis
7425.0	66.49	V	73.98	-7.49	Peak	1.01	172	Z-Axis
7425.0	46.49	V	53.98	-7.49	Avg	1.01	172	Z-Axis
7425.0	67.87	V	73.98	-6.11	Peak	2.23	294	Y-Axis
7425.0	47.87	V	53.98	-6.11	Avg	2.23	294	Y-Axis
9900.0	--	V	73.98	--	Peak	--	--	No Emission Found
9900.0	--	V	53.98	--	Avg	--	--	
12375.0	63.33	V	73.98	-10.65	Peak	1.01	86	X-Axis
12375.0	43.33	V	53.98	-10.65	Avg	1.01	86	X-Axis
12375.0	60.99	V	73.98	-12.99	Peak	1.53	178	Z-Axis
12375.0	40.99	V	53.98	-12.99	Avg	1.53	178	Z-Axis
12375.0	62.56	V	73.98	-11.42	Peak	1.15	3	Y-Axis
12375.0	42.56	V	53.98	-11.42	Avg	1.15	3	Y-Axis
14850.0	--	V	73.98	--	Peak	--	--	No Emission Found
14850.0	--	V	53.98	--	Avg	--	--	
17325.0	--	V	73.98	--	Peak	--	--	No Emission Found
17325.0	--	V	53.98	--	Avg	--	--	
19800.0	--	V	73.98	--	Peak	--	--	No Emission Found
19800.0	--	V	53.98	--	Avg	--	--	
22275.0	--	V	73.98	--	Peak	--	--	No Emission Found
22275.0	--	V	53.98	--	Avg	--	--	
24750.0	--	V	73.98	--	Peak	--	--	No Emission Found
24750.0	--	V	53.98	--	Avg	--	--	

EMISSIONS RADIATED OUTSIDE OF THE FUNDAMENTAL FREQUENCY BAND

DATA SHEETS

BAND EDGES- HORIZONTAL

FCC 15.249

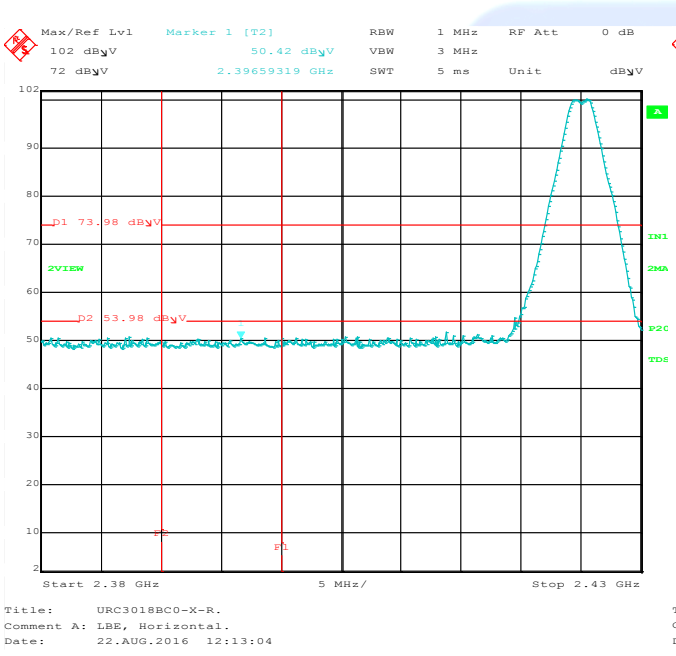
Company: UEI
EUT: DirecTV RC80HB Cleanable Hospitality Remote 2015
Model: URC-3018BC0-X-R
Duty Cycle Correction Factor: -20.00

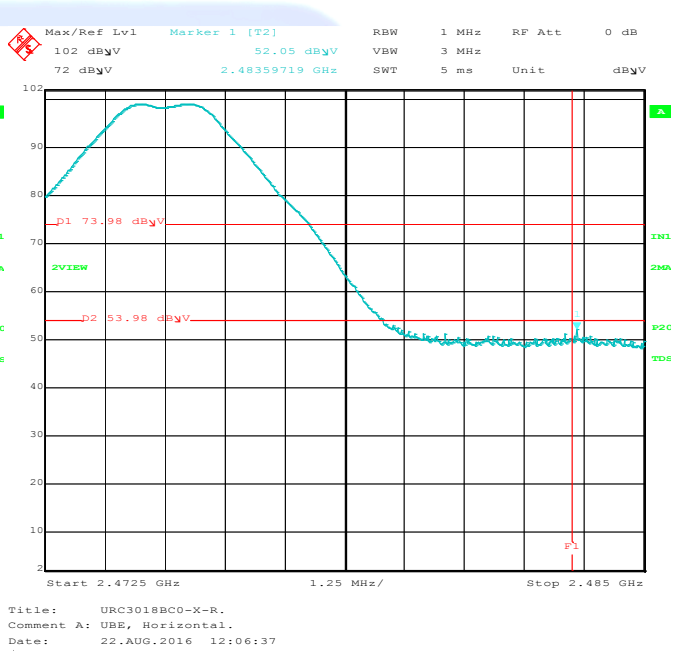
Date: 8/22/2016
Lab: R
Test ENG: Matt H.

Compatible Electronics, Inc. FAC-3 (Lab R)

Freq. (MHz)	Level (dBµV/m)	Pol	Limit (dBµV)	Margin (dB)	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2396.59	50.42	H	53.98	-3.56	Peak	1.4	277	No Marker Delta
2483.59	52.05	H	53.98	-1.93	Peak	1	276	No Marker Delta

Test distance
3 meter





BAND EDGES- VERTICAL

FCC 15.249

Company: UEI
EUT: DirecTV RC80HB Cleanable Hospitality Remote 2015
Model: URC-3018BC0-X-R
Duty Cycle Correction Factor: -20.00

Date: 8/22/2016
Lab: R
Test ENG: Matt H.

Compatible Electronics, Inc. FAC-3 (Lab R)

Freq. (MHz)	Level (dBµV/m)	Pol	Limit (dBµV)	Margin (dB)	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2400.00	50.53	V	53.98	-3.45	Peak	1	330	No Marker Delta
2483.89	49.71	V	53.98	-4.27	Peak	1	195	No Marker Delta

Test distance
3 meter