

**FCC PART 15 SUBPART B and C
TEST REPORT***for***DirecTV RC71B RF4CE w/Backlight 2012****Model: URC-3005BC0-X-R**

Prepared for

UNIVERSAL ELECTRONICS, INC.
201 EAST SANDPOINTE AVENUE, 8TH FLOOR
SANTA ANA, CALIFORNIA 92707

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Approved by: _____

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DATE: FEBRUARY 11, 2013

	REPORT BODY	APPENDICES					TOTAL
		A	B	C	D	E	
PAGES	16	2	2	2	13	24	59

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GENERAL REPORT SUMMARY

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

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

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

Device Tested: DirecTV RC71B RF4CE w/Backlight 2012
Model: URC-3005BC0-X-R
S/N: N/A

Product Description: See Expository Statement

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

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

Manufacturer: Gemstar Technology Company, LTD.
Gemstar Industrial Park,
Shi Guang Road Number 45
Zhongcun Town, Panyu
Guangdong Province, China 511495

Test Date(s): November 29, 2012
February 8, 2013

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

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

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions 150 kHz to 30 MHz	This test was not performed because the EUT operates on battery power.
2	Radiated RF Emissions 10 kHz to 25000 MHz (Transmitter and Digital Portion)	Complies with the Class B limits of CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209, and 15.249.

1. PURPOSE

This document is a qualification test report based on the emissions tests performed on the DirecTV RC71B RF4CE w/Backlight 2012, Model: URC-3005BC0-X-R (EUT). The Emissions measurements were performed according to the measurement procedure described in ANSI C63.4. The tests were performed in order to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT hereafter, are within the Class B specification limits defined by CFR Title 47, Part 15, Subpart B for the digital portion; and the limits defined in Subpart C, sections 15.205, 15.209, and 15.249 for the transmitter portion.

2. ADMINISTRATIVE DATA

2.1 Location of Testing

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

2.2 Traceability Statement

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

2.3 Cognizant Personnel

Universal Electronics, Inc.

Jesse Mendez Senior Electrical Core Engineer

Compatible Electronics Inc.

Alex Benitez Test Technician

Kyle Fujimoto Test Engineer

2.4 Date Test Sample was Received

The test sample was received on the initial test date of November 29, 2012.

2.5 Disposition of the Test Sample

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

2.6 Abbreviations and Acronyms

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

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

3. APPLICABLE DOCUMENTS

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

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

4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description of Test Configuration – Emissions

The DirecTV RC71B RF4CE w/Backlight 2012, Model: URC-3005BC0-X-R (EUT) was tested as a stand alone unit. The EUT had a special test program that allowed the low, middle, or high channels, to be tested while continuously transmitting. The EUT was tested in three orthogonal axis.

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

4.1.1 Cable Construction and Termination

There were no external cables connected to the EUT.

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

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID
DIRECTV RC71B RF4CE W/BACKLIGHT 2012 (EUT)	UNIVERSAL ELECTRONICS, INC.	URC-3005BC0-X-R	N/A	MG33005
LAPTOP**	LENOVO	T61	*P.ID: 7667RWU	N/A
LAPTOP POWER SUPPLY**	IBM	P/N: 92P1113	11592P1113Z1A CW58NOJ2	N/A

*P.ID = Product ID

**Only used to program the EUT. The laptop and its power supply were then removed and the EUT was tested in stand-alone mode.

5.2 Emissions Test Equipment

EQUIPMENT TYPE	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	CALIBRATION DATE	CALIBRATION CYCLE
GENERAL TEST EQUIPMENT USED IN LAB B					
Computer	Compaq	CQ5210F	CNX9360CF9	N/A	N/A
Monitor	Hewlett Packard	HPs2031a	3CQ046N3MD	N/A	N/A
EMI Receiver	Rohde & Schwarz	ESIB40	100194	November 19, 2012	2 Years
GENERAL TEST EQUIPMENT USED IN LAB D					
Computer	Hewlett Packard	p6716f	MXX1030PX0	N/A	N/A
Monitor	Hewlett Packard	HPs2031a	3CQ046N3MG	N/A	N/A
Spectrum Analyzer – Main Section	Hewlett Packard	8568B	2517A01563	May 30, 2012	1 Year
Spectrum Analyzer – Display Section	Hewlett Packard	85662A	2648A15285	May 30, 2012	1 Year
Quasi-Peak Adapter	Hewlett Packard	85650A	2430A00424	May 30, 2012	1 Year
RF RADIATED EMISSIONS TEST EQUIPMENT					
Biconical Antenna	Com Power	AB-900	43028	May 24, 2012	1 Year
Log Periodic Antenna	Com Power	AL-100	16252	May 24, 2012	1 Year
Preamplifier	Com-Power	CPPA-102	1017	December 27, 2012	1 Year
Preamplifier	Com-Power	PA-118	181656	December 28, 2011	1 Year
Preamplifier	Com-Power	PA-840	711013	May 17, 2012	1 Year
Loop Antenna	Com-Power	AL-130	17089	January 29, 2013	2 Years
Horn Antenna	Com-Power	AH-118	071175	February 29, 2012	2 Years
Horn Antenna	Com-Power	AH-826	0071957	N/A	N/A
Antenna Mast	Com Power	AM-100	N/A	N/A	N/A

6. TEST SITE DESCRIPTION

6.1 Test Facility Description

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

6.2 EUT Mounting, Bonding and Grounding

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

The EUT was not grounded.

6.3 Facility Environmental Characteristics

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

7. TEST PROCEDURES

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

7.1 RF Emissions

7.1.1 Conducted Emissions Test

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

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

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

Test Results:

This test was not performed because the EUT operates on battery power.

7.1.2 Radiated Emissions (Spurious and Harmonics) Test

The spectrum analyzer, along with the quasi-peak adapter, and EMI Receiver were used as a measuring meter. Amplifiers were used to increase the sensitivity of the instrument. The Com-Power Preamplifier Model: CPPA-102 was used for frequencies from 30 MHz to 1 GHz, the Com-Power Microwave Preamplifier Model: PA-118 was used for frequencies from 1 GHz to 18 GHz, and the Com-Power Microwave Preamplifier Model: PA-840 were used for frequencies above 18 GHz. The spectrum analyzer and EMI Receiver were used in the peak detect mode with the "Max Hold" feature activated. In this mode, the spectrum analyzer and EMI receiver records the highest measured reading over the sweeps.

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

The frequencies above 1 GHz were adjusted by a "duty cycle correction factor", derived from $20 \log(\text{dwell time} / 100 \text{ mS})$.

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

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

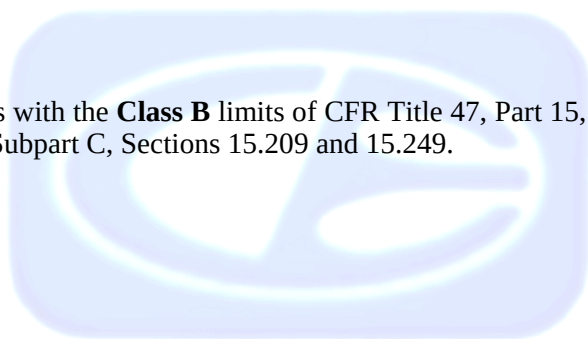
The open field test site of Compatible Electronics, Inc. was used for radiated emission testing. This test site is set up according to ANSI C63.4. Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The turntable supporting the EUT is remote controlled using a motor.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

Radiated Emissions (Spurious and Harmonics) Test (continued)

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

Test Results:

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



7.1.3 RF Emissions Test ResultsTable 1.0 RADIATED EMISSION RESULTS
DirecTV RC71B RF4CE w/Backlight 2012, Model: URC-3005BC0-X-R

Frequency MHz	Corrected Reading* dBuV	Specification Limit dBuV	Delta (Cor. Reading – Spec. Limit) dB
4850 (Average) (V)	45.85 (Y-Axis)	54	-8.15
4900 (Average) (H)	45.45 (Y-Axis)	54	-8.55
4950 (Average) (H)	45.37 (Y-Axis)	54	-8.63
4950 (Average) (V)	45.26 (Y-Axis)	54	-8.74
4900 (Average) (V)	44.91 (Y-Axis)	54	-9.09
4850 (Average) (V)	43.67 (Z-Axis)	54	-10.33

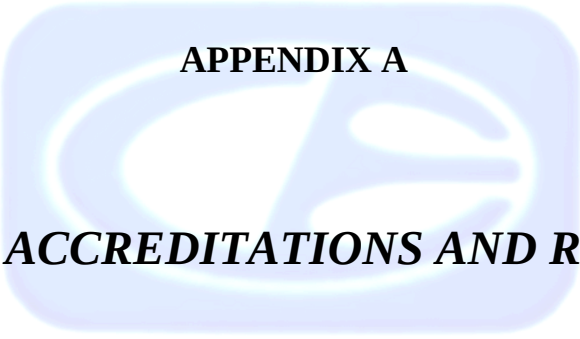
Notes:

- * The complete emissions data is given in Appendix E of this report.
- (H) Horizontal
- (V) Vertical

8. CONCLUSIONS

The DirecTV RC71B RF4CE w/Backlight 2012, Model: URC-3005BC0-X-R (EUT), as tested, meets all of the **Class B** specification limits defined in CFR Title 47, Part 15, Subpart B for the digital portion; and the limits defined in Subpart C, sections 15.205, 15.209, and 15.249 for the transmitter portion.





APPENDIX A

LABORATORY ACCREDITATIONS AND RECOGNITIONS

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

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

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

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

LABORATORY ACCREDITATIONS AND RECOGNITIONS

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

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

NVLAP listing links

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

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

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



ANSI listing [CETCB](#)



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

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



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

APEC MRA list [NIST MRA site](#)

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



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



FCC Listing, from FCC OET site

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



Compatible Electronics IC listing can be found at:

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

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

APPENDIX B

MODIFICATIONS TO THE EUT

MODIFICATIONS TO THE EUT

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

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

No modifications were made to the EUT during the testing.



APPENDIX C

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

ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

DirecTV RC71B RF4CE w/Backlight 2012
Model: URC-3005BC0-X-R
S/N: N/A

ALSO APPROVED UNDER THIS REPORT:

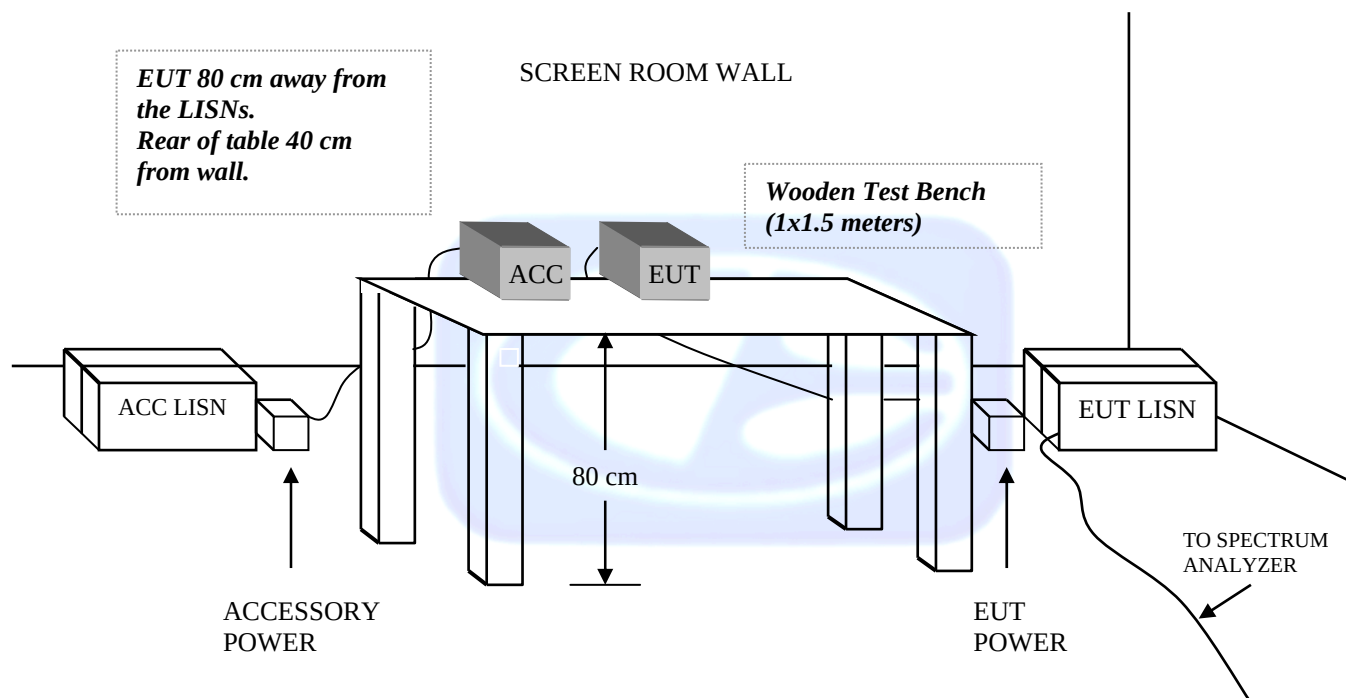
There were no additional models covered under this report.



APPENDIX D

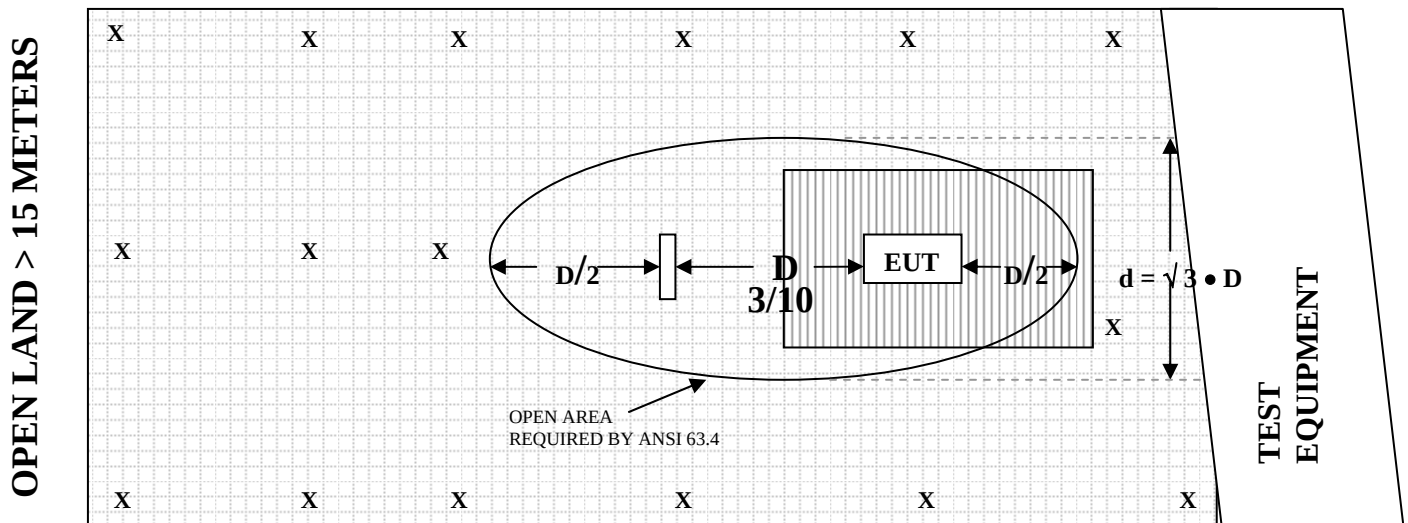
DIAGRAMS, CHARTS, AND PHOTOS

FIGURE 1: CONDUCTED EMISSIONS TEST SETUP



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

OPEN LAND > 15 METERS



OPEN LAND > 15 METERS

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

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

S/N: 17089

CALIBRATION DATE: JANUARY 29, 2013

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

COM-POWER AB-900

BICONICAL ANTENNA

S/N: 43028

CALIBRATION DATE: MAY 24, 2012

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	11.80	120	13.20
35	11.20	125	13.30
40	11.90	140	11.60
45	10.70	150	11.80
50	11.40	160	12.70
60	10.30	175	14.80
70	7.60	180	15.70
80	5.70	200	15.80
90	7.90	250	14.80
100	10.70	300	19.80

COM-POWER AL-100

LOG PERIODIC ANTENNA

S/N: 16252

CALIBRATION DATE: MAY 24, 2012

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
300	13.00	700	20.30
350	13.20	750	20.80
400	14.50	800	21.00
450	15.40	850	23.30
500	15.80	900	21.70
550	16.60	950	24.20
600	18.90	1000	24.30
650	19.10		

COM POWER AH-118**HORN ANTENNA**

S/N: 071175

CALIBRATION DATE: FEBRUARY 29, 2012

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

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

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

COM-POWER CPPA-102**PREAMPLIFIER**

S/N: 1017

CALIBRATION DATE: DECEMEBER 27, 2012

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
1	36.9	225	38.14
3	38.1	250	38.15
5	38.1	275	38.14
8	38.2	300	38.18
10	38.3	350	38.22
20	38.2	400	38.26
30	38.3	450	37.53
40	38.2	500	38.24
50	38.5	550	38.53
60	38.5	600	38.69
70	38.4	650	38.66
80	38.4	700	38.58
90	38.5	750	38.37
100	38.4	800	38.23
125	38.6	850	37.68
150	38.4	900	37.38
175	38.5	950	36.82
200	38.5	1000	36.14

COM-POWER PA-118**PREAMPLIFIER****S/N: 181656****CALIBRATION DATE: DECEMBER 28, 2011**

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	23.22	10.0	24.66
1.5	26.31	10.5	25.22
2.0	27.40	11.0	25.17
2.5	26.52	11.5	24.47
3.0	27.35	12.0	25.29
3.5	29.02	12.5	26.03
4.0	28.51	13.0	24.11
4.5	26.62	13.5	24.28
5.0	27.13	14.0	25.81
5.5	27.29	14.5	25.45
6.0	26.72	15.0	25.36
6.5	25.62	15.5	26.76
7.0	25.25	16.0	28.09
7.5	24.23	16.5	23.23
8.0	23.72	17.0	26.58
8.5	24.91	17.5	27.45
9.0	25.73	18.0	27.53
9.5	24.79		

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

S/N: 711013

CALIBRATION DATE: MAY 17, 2012

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



FRONT VIEW

UNIVERSAL ELECTRONICS, INC.
DIRECTV RC71B RF4CE W/BACKLIGHT 2012
MODEL: URC-3005BC0-X-R
FCC SUBPART B AND C – RADIATED EMISSIONS

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



REAR VIEW

UNIVERSAL ELECTRONICS, INC.
DIRECTV RC71B RF4CE W/BACKLIGHT 2012
MODEL: URC-3005BC0-X-R
FCC SUBPART B AND C – RADIATED EMISSIONS

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

APPENDIX E

DATA SHEETS

RADIATED EMISSIONS

DATA SHEETS

FCC 15.249

Universal Electronics, Inc.
DirecTV RC71B RF4CE w/Backlight 2012
Model: URC-3005BC0-X-R

Date: 11/29/2012
Lab: B
Tested By: Kyle Fujimoto

Low Channel Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4850	60.89	V	74	-13.11	Peak	1.25	0	
4850	40.89	V	54	-13.11	Avg	1.25	0	
7275	54.54	V	74	-19.46	Peak	1.5	135	
7275	34.54	V	54	-19.46	Avg	1.5	135	
9700	53.71	V	74	-20.29	Peak	1.25	135	
9700	33.71	V	54	-20.29	Avg	1.25	135	
12125								No Emissions Detected
12125								
14550								No Emissions Detected
14550								
16975								No Emissions Detected
16975								
19400								No Emissions Detected
19400								
21825								No Emissions Detected
21825								
24250								No Emissions Detected
24250								

FCC 15.249

Universal Electronics, Inc.
DirecTV RC71B RF4CE w/Backlight 2012
Model: URC-3005BC0-X-R

Date: 11/29/2012
Lab: B
Tested By: Kyle Fujimoto

Low Channel Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4850	65.85	V	74	-8.15	Peak	2.25	315	
4850	45.85	V	54	-8.15	Avg	2.25	315	
7275	60.01	V	74	-13.99	Peak	2.25	135	
7275	40.01	V	54	-13.99	Avg	2.25	135	
9700	55.77	V	74	-18.23	Peak	1.25	155	
9700	35.77	V	54	-18.23	Avg	1.25	155	
12125								No Emissions Detected
12125								
14550								No Emissions Detected
14550								
16975								No Emissions Detected
16975								
19400								No Emissions Detected
19400								
21825								No Emissions Detected
21825								
24250								No Emissions Detected
24250								

FCC 15.249

Universal Electronics, Inc.
DirecTV RC71B RF4CE w/Backlight 2012
Model: URC-3005BC0-X-R

Date: 11/29/2012
Lab: B
Tested By: Kyle Fujimoto

Low Channel Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4850	63.67	V	74	-10.33	Peak	1.25	0	
4850	43.67	V	54	-10.33	Avg	1.25	0	
7275	58.56	V	74	-15.44	Peak	1.35	125	
7275	38.56	V	54	-15.44	Avg	1.35	125	
9700	53.53	V	74	-20.47	Peak	1.35	155	
9700	33.53	V	54	-20.47	Avg	1.35	155	
12125								No Emissions
12125								Detected
14550								No Emissions
14550								Detected
16975								No Emissions
16975								Detected
19400								No Emissions
19400								Detected
21825								No Emissions
21825								Detected
24250								No Emissions
24250								Detected

FCC 15.249

Universal Electronics, Inc.
DirecTV RC71B RF4CE w/Backlight 2012
Model: URC-3005BC0-X-R

Date: 11/29/2012
Lab: B
Tested By: Kyle Fujimoto

Low Channel Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4850	61.11	H	74	-12.89	Peak	1.25	155	
4850	41.11	H	54	-12.89	Avg	1.25	155	
7275	59.28	H	74	-14.72	Peak	1.35	155	
7275	39.28	H	54	-14.72	Avg	1.35	155	
9700	53.91	H	74	-20.09	Peak	1.25	165	
9700	33.91	H	54	-20.09	Avg	1.25	165	
12125								No Emissions Detected
14550								No Emissions Detected
16975								No Emissions Detected
19400								No Emissions Detected
21825								No Emissions Detected
24250								No Emissions Detected

FCC 15.249

Universal Electronics, Inc.
DirecTV RC71B RF4CE w/Backlight 2012
Model: URC-3005BC0-X-R

Date: 11/29/2012
Lab: B
Tested By: Kyle Fujimoto

Low Channel Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4850	63.66	H	74	-10.34	Peak	1.25	0	
4850	43.66	H	54	-10.34	Avg	1.25	0	
7275	57.12	H	74	-16.88	Peak	1.15	125	
7275	37.12	H	54	-16.88	Avg	1.15	125	
9700	53.83	H	74	-20.17	Peak	1.25	165	
9700	33.83	H	54	-20.17	Avg	1.25	165	
12125								No Emissions Detected
14550								No Emissions Detected
16975								No Emissions Detected
19400								No Emissions Detected
21825								No Emissions Detected
24250								No Emissions Detected

FCC 15.249

Universal Electronics, Inc.
DirecTV RC71B RF4CE w/Backlight 2012
Model: URC-3005BC0-X-R

Date: 11/29/2012
Lab: B
Tested By: Kyle Fujimoto

Low Channel Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4850	63.33	H	74	-10.67	Peak	1.25	165	
4850	43.33	H	54	-10.67	Avg	1.25	165	
7275	58.87	H	74	-15.13	Peak	1.25	155	
7275	38.87	H	54	-15.13	Avg	1.25	155	
9700	53.65	H	74	-20.35	Peak	1.35	175	
9700	33.65	H	54	-20.35	Avg	1.35	175	
12125								No Emissions Detected
14550								No Emissions Detected
16975								No Emissions Detected
19400								No Emissions Detected
21825								No Emissions Detected
24250								No Emissions Detected

FCC 15.249

Universal Electronics, Inc.
DirecTV RC71B RF4CE w/Backlight 2012
Model: URC-3005BC0-X-R

Date: 11/29/2012
Lab: B
Tested By: Kyle Fujimoto

Middle Channel

Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4900	60.84	V	74	-13.16	Peak	1.25	155	
4900	40.84	V	54	-13.16	Avg	1.25	155	
7350	53.51	V	74	-20.49	Peak	1.35	145	
7350	33.51	V	54	-20.49	Avg	1.35	145	
9800	54.05	V	74	-19.95	Peak	1.25	155	
9800	34.05	V	54	-19.95	Avg	1.25	155	
12250								No Emissions
12250								Detected
14700								No Emissions
14700								Detected
17150								No Emissions
17150								Detected
19600								No Emissions
19600								Detected
22050								No Emissions
22050								Detected
24500								No Emissions
24500								Detected

FCC 15.249

Universal Electronics, Inc.
DirecTV RC71B RF4CE w/Backlight 2012
Model: URC-3005BC0-X-R

Date: 11/29/2012
Lab: B
Tested By: Kyle Fujimoto

Middle Channel

Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4900	64.91	V	74	-9.09	Peak	1.5	225	
4900	44.91	V	54	-9.09	Avg	1.5	225	
7350	57.22	V	74	-16.78	Peak	1.45	135	
7350	37.22	V	54	-16.78	Avg	1.45	135	
9800	53.61	V	74	-20.39	Peak	1.3	250	
9800	33.61	V	54	-20.39	Avg	1.3	250	
12250								No Emissions
12250								Detected
14700								No Emissions
14700								Detected
17150								No Emissions
17150								Detected
19600								No Emissions
19600								Detected
22050								No Emissions
22050								Detected
24500								No Emissions
24500								Detected

FCC 15.249

Universal Electronics, Inc.
DirecTV RC71B RF4CE w/Backlight 2012
Model: URC-3005BC0-X-R

Date: 11/29/2012
Lab: B
Tested By: Kyle Fujimoto

Middle Channel Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4900	62.64	V	74	-11.36	Peak	1.5	225	
4900	42.64	V	54	-11.36	Avg	1.5	225	
7350	57.41	V	74	-16.59	Peak	1.3	250	
7350	37.41	V	54	-16.59	Avg	1.3	250	
9800	55.05	V	74	-18.95	Peak	1.3	250	
9800	35.05	V	54	-18.95	Avg	1.3	250	
12250								No Emissions Detected
14700								No Emissions Detected
17150								No Emissions Detected
19600								No Emissions Detected
22050								No Emissions Detected
24500								No Emissions Detected

FCC 15.249

Universal Electronics, Inc.
DirecTV RC71B RF4CE w/Backlight 2012
Model: URC-3005BC0-X-R

Date: 11/29/2012
Lab: B
Tested By: Kyle Fujimoto

Middle Channel Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4900	56.61	H	74	-17.39	Peak	1.5	315	
4900	36.61	H	54	-17.39	Avg	1.5	315	
7350	59.37	H	74	-14.63	Peak	1.3	250	
7350	39.37	H	54	-14.63	Avg	1.3	250	
9800	55.44	H	74	-18.56	Peak	1.3	250	
9800	35.44	H	54	-18.56	Avg	1.3	250	
12250								No Emissions Detected
14700								No Emissions Detected
17150								No Emissions Detected
19600								No Emissions Detected
22050								No Emissions Detected
24500								No Emissions Detected

FCC 15.249

Universal Electronics, Inc.
DirecTV RC71B RF4CE w/Backlight 2012
Model: URC-3005BC0-X-R

Date: 11/29/2012
Lab: B
Tested By: Kyle Fujimoto

Middle Channel Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4900	65.45	H	74	-8.55	Peak	1.5	45	
4900	45.45	H	54	-8.55	Avg	1.5	45	
7350	58.16	H	74	-15.84	Peak	1.3	250	
7350	38.16	H	54	-15.84	Avg	1.3	250	
9800	53.05	H	74	-20.95	Peak	1.3	250	
9800	33.05	H	54	-20.95	Avg	1.3	250	
12250								No Emissions Detected
14700								No Emissions Detected
17150								No Emissions Detected
19600								No Emissions Detected
22050								No Emissions Detected
24500								No Emissions Detected

FCC 15.249

Universal Electronics, Inc.
DirecTV RC71B RF4CE w/Backlight 2012
Model: URC-3005BC0-X-R

Date: 11/29/2012
Lab: B
Tested By: Kyle Fujimoto

Middle Channel Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4900	62.51	H	74	-11.49	Peak	1.5	225	
4900	42.51	H	54	-11.49	Avg	1.5	225	
7350	57.87	H	74	-16.13	Peak	1.25	45	
7350	37.87	H	54	-16.13	Avg	1.25	45	
9800	54.09	H	74	-19.91	Peak	1.3	250	
9800	34.09	H	54	-19.91	Avg	1.3	250	
12250								No Emissions Detected
14700								No Emissions Detected
17150								No Emissions Detected
19600								No Emissions Detected
22050								No Emissions Detected
24500								No Emissions Detected

FCC 15.249Universal Electronics, Inc.
DirecTV RC71B RF4CE w/Backlight 2012
Model: URC-3005BC0-X-RDate: 11/29/2012
Lab: B
Tested By: Kyle Fujimoto**High Channel****Transmit Mode - X-Axis**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4950	59.64	V	74	-14.36	Peak	1.25	180	
4950	39.64	V	54	-14.36	Avg	1.25	180	
7425	55.35	V	74	-18.65	Peak	1.3	250	
7425	35.35	V	54	-18.65	Avg	1.3	250	
9900	61.44	V	74	-12.56	Peak	1.3	250	
9900	41.44	V	54	-12.56	Avg	1.3	250	
12375								No Emissions Detected
12375								
14850								No Emissions Detected
14850								
17325								No Emissions Detected
17325								
19800								No Emissions Detected
19800								
22275								No Emissions Detected
22275								
24750								No Emissions Detected
24750								

FCC 15.249

Universal Electronics, Inc.
DirecTV RC71B RF4CE w/Backlight 2012
Model: URC-3005BC0-X-R

Date: 11/29/2012
Lab: B
Tested By: Kyle Fujimoto

High Channel Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4950	65.26	V	74	-8.74	Peak	1.25	180	
4950	45.26	V	54	-8.74	Avg	1.25	180	
7425	59.31	V	74	-14.69	Peak	1.3	250	
7425	39.31	V	54	-14.69	Avg	1.3	250	
9900	53.22	V	74	-20.78	Peak	1.3	250	
9900	33.22	V	54	-20.78	Avg	1.3	250	
12375								No Emissions Detected
12375								
14850								No Emissions Detected
14850								
17325								No Emissions Detected
17325								
19800								No Emissions Detected
19800								
22275								No Emissions Detected
22275								
24750								No Emissions Detected
24750								

FCC 15.249

Universal Electronics, Inc.
DirecTV RC71B RF4CE w/Backlight 2012
Model: URC-3005BC0-X-R

Date: 11/29/2012
Lab: B
Tested By: Kyle Fujimoto

High Channel Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4950	62.61	V	74	-11.39	Peak	1.25	315	
4950	42.61	V	54	-11.39	Avg	1.25	315	
7425	56.42	V	74	-17.58	Peak	1.3	250	
7425	36.42	V	54	-17.58	Avg	1.3	250	
9900	52.01	V	74	-21.99	Peak	1.3	250	
9900	32.01	V	54	-21.99	Avg	1.3	250	
12375								No Emissions
12375								Detected
14850								No Emissions
14850								Detected
17325								No Emissions
17325								Detected
19800								No Emissions
19800								Detected
22275								No Emissions
22275								Detected
24750								No Emissions
24750								Detected

FCC 15.249

Universal Electronics, Inc.
DirecTV RC71B RF4CE w/Backlight 2012
Model: URC-3005BC0-X-R

Date: 11/29/2012
Lab: B
Tested By: Kyle Fujimoto

High Channel Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4950	61.25	H	74	-12.75	Peak	1.25	180	
4950	41.25	H	54	-12.75	Avg	1.25	180	
7425	57.15	H	74	-16.85	Peak	1.85	315	
7425	37.15	H	54	-16.85	Avg	1.85	315	
9900	52.41	H	74	-21.59	Peak	1.25	165	
9900	32.41	H	54	-21.59	Avg	1.25	165	
12375								No Emissions Detected
12375								
14850								No Emissions Detected
14850								
17325								No Emissions Detected
17325								
19800								No Emissions Detected
19800								
22275								No Emissions Detected
22275								
24750								No Emissions Detected
24750								

FCC 15.249

Universal Electronics, Inc.
DirecTV RC71B RF4CE w/Backlight 2012
Model: URC-3005BC0-X-R

Date: 11/29/2012
Lab: B
Tested By: Kyle Fujimoto

High Channel Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4950	65.37	H	74	-8.63	Peak	1.25	180	
4950	45.37	H	54	-8.63	Avg	1.25	180	
7425	55.65	H	74	-18.35	Peak	1.3	250	
7425	35.65	H	54	-18.35	Avg	1.3	250	
9900	52.83	H	74	-21.17	Peak	1.3	250	
9900	32.83	H	54	-21.17	Avg	1.3	250	
12375								No Emissions Detected
12375								
14850								No Emissions Detected
14850								
17325								No Emissions Detected
17325								
19800								No Emissions Detected
19800								
22275								No Emissions Detected
22275								
24750								No Emissions Detected
24750								

FCC 15.249

Universal Electronics, Inc.
DirecTV RC71B RF4CE w/Backlight 2012
Model: URC-3005BC0-X-R

Date: 11/29/2012
Lab: B
Tested By: Kyle Fujimoto

High Channel Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4950	59.36	H	74	-14.64	Peak	1.4	90	
4950	39.36	H	54	-14.64	Avg	1.4	90	
7425	53.14	H	74	-20.86	Peak	1.3	250	
7425	33.14	H	54	-20.86	Avg	1.3	250	
9900	53.18	H	74	-20.82	Peak	1.3	250	
9900	33.18	H	54	-20.82	Avg	1.3	250	
12375								No Emissions Detected
12375								
14850								No Emissions Detected
14850								
17325								No Emissions Detected
17325								
19800								No Emissions Detected
19800								
22275								No Emissions Detected
22275								
24750								No Emissions Detected
24750								

FCC 15.249 and FCC Class B

Universal Electronics, Inc.
DirecTV RC71B RF4CE w/Backlight 2012
Model: URC-3005BC0-X-R

Dates: 11/29/2012 and 02/08/2013
Lab: D
Tested By: Kyle Fujimoto and Alex Benitez

Non Harmonic Emissions from the Tx and Digital Portion - 10 kHz to 1 GHz - on 02/08/2013

Non Harmonic Emissions from the Tx and Digital Portion - 1 GHz to 25 GHz - on 11/29/2012

Vertical and Horizontal Polarization

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
								No Emissions Found for the
								Digital Portion
								from 10 kHz to 25 GHz
								for both Vertical and Horizontal
								Polarizations
								No Non Harmonic Emissions Found
								for the Tx Mode
								from 10 kHz to 25 GHz
								for both Vertical and Horizontal
								Polarizations
								Tested in the X-Axis, Y-Axis,
								and Z-Axis
								No Emissions Found at the Band
								Edge at 2400 MHz when the EUT
								was on the Low Channel
								No Emissions Found at the Band
								Edge at 2483.5 MHz when the EUT
								was on the High Channel