

**CLASS II PERMISSIVE CHANGE
TEST REPORT***for***DIRECTV RC65RBX 2009, (IR/UHF WITH XMP2 AND BACKLIGHT)****MODEL: URC-2997BG0-X-R**

Prepared for

UNIVERSAL ELECTRONICS, INC.
6101 GATEWAY DRIVE
CYPRESS, CALIFORNIA 90630-4841Prepared by: *Kyle Fujimoto*

KYLE FUJIMOTO

Approved by: *James Ross*

JAMES ROSS

COMPATIBLE ELECTRONICS INC.
114 OLINDA DRIVE
BREA, CALIFORNIA 92823
(714) 579-0500

DATE: MARCH 19, 2010

	REPORT BODY	APPENDICES						TOTAL
		<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>	
PAGES	16	2	2	2	10	9	2	43

This report shall not be reproduced except in full, without the written approval of Compatible Electronics.

TABLE OF CONTENTS

Section / Title	PAGE
GENERAL REPORT SUMMARY	4
SUMMARY OF TEST RESULTS	4
1. PURPOSE	5
2. ADMINISTRATIVE DATA	6
2.1 Location of Testing	6
2.2 Traceability Statement	6
2.3 Cognizant Personnel	6
2.4 Date Test Sample was Received	6
2.5 Disposition of the Test Sample	6
2.6 Abbreviations and Acronyms	6
3. APPLICABLE DOCUMENTS	7
4. DESCRIPTION OF TEST CONFIGURATION	8
4.1 Description Of Test Configuration - EMI	8
4.1.1 Cable Construction and Termination	9
5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT	10
5.1 EUT and Accessory List	10
5.2 EMI Test Equipment	11
6. TEST SITE DESCRIPTION	12
6.1 Test Facility Description	12
6.2 EUT Mounting, Bonding and Grounding	12
7. TEST PROCEDURES	13
7.1 Radiated Emissions (Spurious and Harmonics) Test	13
7.2 Radiated Emissions (Spurious and Harmonics) Test (continued)	14
7.3 Bandwidth of the Fundamental	15
8. CONCLUSIONS	16

LIST OF APPENDICES

APPENDIX	TITLE
A	Laboratory Recognitions
B	Modifications to the EUT
C	Additional Models Covered Under This Report
D	Diagrams, Charts, and Photos <ul style="list-style-type: none">• Test Setup Diagrams• Radiated Emissions Photos• Antenna and Effective Gain Factors
E	Data Sheets
F	Class II Permissive Change Information

LIST OF FIGURES

FIGURE	TITLE
1	Plot Map And Layout of Radiated Site

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 endorsement by NVLAP, NIST or any other agency of the U.S. Government.

Device Tested: DirecTV RC65RBX 2009, (IR/UHF with XMP2 and backlight)
Model: URC-2997BG0-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.

Manufacturer: Computime Limited
7/F., How Ming Fty. Bldg.,
99 How Ming Street Kwun Tong, Kowloon
Hong Kong

Test Date: March 10, 2010

Test Specifications: EMI requirements
CFR Title 47, Part 15 Subpart B; and Subpart C, Sections 15.205, 15.209 and 15.231

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 – 30 MHz	This test was not performed because the EUT is battery powered only and does not connect to the AC public mains.
2	Radiated RF Emissions, 10 kHz – 4400 MHz	Complies with the Class B limits of CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209, and 15.231. Highest reading in relation to spec limit: 58.505 (Avg) dBuV @ 867.84 MHz (*U = 4.22 dB)

1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the DirecTV RC65RBX 2009, (IR/UHF with XMP2 and backlight), Model: URC-2997BG0-X-R. The EMI 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; and Subpart C, sections 15.205, 15.209, and 15.231.

The EUT was granted under the FCC ID: MG32481. The EUT is a Class II Permissive Change because the highest reading is greater than $\pm 3\text{dB}$ from the data take in the Compatible Electronics, Inc. Test Report: **B90814D1**.

2. ADMINISTRATIVE DATA

2.1 Location of Testing

The EMI 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 Electrical Core 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 March 10, 2010

2.5 Disposition of the Test Sample

The sample has not been returned to Universal Electronics, Inc. as of March 19, 2010.

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

3. APPLICABLE DOCUMENTS

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

SPEC	TITLE
CFR Title 47, Part 15	FCC Rules – Radio frequency devices (including digital devices)
ANSI C63.4 2003	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 - EMI

Setup and operation of the equipment under test.

Specifics of the EUT and Peripherals Tested

The DirecTV RC65RBX 2009, (IR/UHF with XMP2 and backlight), Model: URC-2997BG0-X-R (EUT) was tested as a stand alone unit and continuously transmitting. The EUT's antenna is a PCB style antenna and is on the PCB itself. The EUT was tested in three orthogonal axis.

After the EUT is activated by pressing the button, the transmission will cease operation once the button is released.

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

4.1.1 Cable Construction and Termination

There are 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 RC65RBX 2009, (IR/UHF WITH XMP2 AND BACKLIGHT) (EUT)	COMPUTIME LIMITED	URC-2997BG0-X-R	N/A	MG32481

5.2 EMI Test Equipment

EQUIPMENT TYPE	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	CALIBRATION DATE	CALIBRATION DUE DATE
GENERAL TEST EQUIPMENT USED FOR ALL RF EMISSIONS TESTS					
Computer	Hewlett Packard	4530	US91912319	N/A	N/A
Spectrum Analyzer – Main Section	Hewlett Packard	8566B	3638A08768	September 16, 2009	Sept. 16, 2010
Spectrum Analyzer – Display Section	Hewlett Packard	85662A	3701A22262	September 16, 2009	Sept. 16, 2010
Quasi-Peak Adapter	Hewlett Packard	85650A	2811A01363	September 17, 2009	Sept. 17, 2010
EMI Receiver	Rohde & Schwarz	ESIB40	100194	September 17, 2008	Sept. 17, 2010
Monitor	Hewlett Packard	D5258A	TW74500641	N/A	N/A
RF RADIATED EMISSIONS TEST EQUIPMENT					
Biconical Antenna	Com Power	AB-900	15250	February 16, 2010	Feb. 16, 2011
Log Periodic Antenna	Com Power	AL-100	16060	June 15, 2009	June 15, 2010
Preamplifier	Com-Power	PA-102	1017	January 6, 2010	Jan. 6, 2011
Loop Antenna	Com-Power	AL-130	17089	September 29, 2008	Sept. 29, 2010
Horn Antenna	Com-Power	AH-118	071175	June 27, 2008	June 27, 2010
Microwave Preamplifier	Com Power	PA-122	181921	March 12, 2009	March 12, 2010
Antenna Mast	Com Power	AM-100	N/A	N/A	N/A

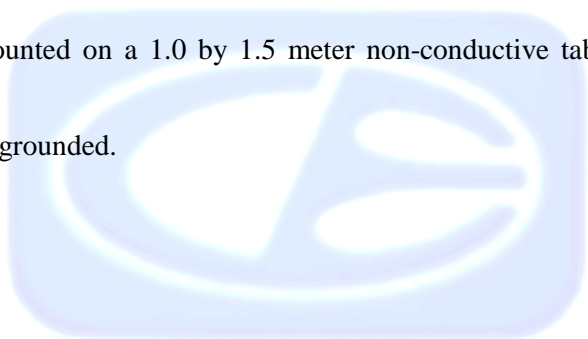
6. TEST SITE DESCRIPTION**6.1 Test Facility Description**

Please refer to section 2.1 and 7.1 of this report for EMI 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.



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 Radiated Emissions (Spurious and Harmonics) Test

The EMI Receiver was used as a measuring meter along with the spectrum analyzer. Amplifiers were used to increase the sensitivity of the instrument. The Com-Power Preamplifier Model: PA-102 was used for frequencies from 30 MHz to 1 GHz, and the Com-Power Microwave Preamplifier Model: PA-122 was used for frequencies from 1 GHz to 4.4 GHz. The EMI Receiver and spectrum analyzer were used in the peak detect mode with the "Max Hold" feature activated. In this mode, the EMI Receiver and spectrum analyzer record the highest measured reading over all the sweeps.

The readings were averaged by a "duty cycle correction factor", derived from 20 log (dwell time / one pulse train with blanking interval).

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	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 4.4 GHz	1 MHz	Horn Antenna

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. 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 loop antenna was also rotated in the horizontal and vertical axis in order to ensure accurate results.

7.2 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 to obtain final test data. The final qualification data sheets are located in Appendix E.

Test Results:

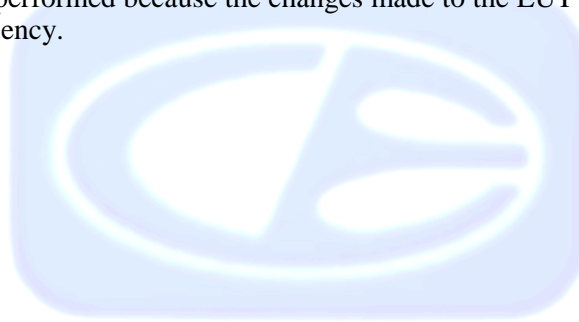
The EUT complies with the **Class B** limits of CFR Title 47, Part 15, Subpart B; and CFR Title 47, Part 15, Subpart C, sections 15.205, 15.209, and 15.231.

7.3 Bandwidth of the Fundamental

The -20 dB bandwidth was checked to see that it was within 0.25% of the fundamental frequency for the EUT. Plots of the -20 dB bandwidth are located in Appendix E.

Test Results:

This test was not performed because the changes made to the EUT do not affect the bandwidth of the fundamental frequency.



8. CONCLUSIONS

The DirecTV RC65RBX 2009, (IR/UHF with XMP2 and backlight), Model: URC-2997BG0-X-R meets all of the **Class B** specification limits defined in CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209, and 15.231.





APPENDIX A

LABORATORY RECOGNITIONS

LABORATORY RECOGNITIONS

Compatible Electronics has the following agency accreditations:

National Voluntary Laboratory Accreditation Program - Lab Code: 200528-0

Voluntary Control Council for Interference - Registration Numbers: R-983, C-1026, R-984 and C-1027

Bureau of Standards and Metrology Inspection - Reference Number: SL2-IN-E-1031

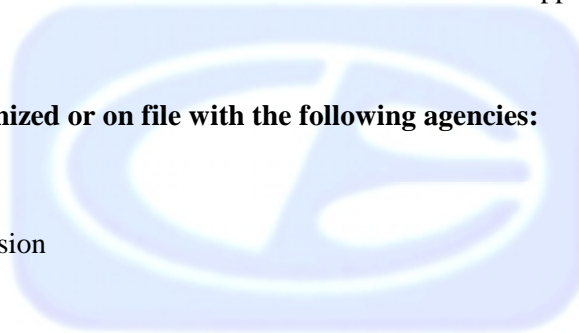
Conformity Assessment Body for the EMC Directive Under the US/EU MRA Appointed by NIST

Compatible Electronics is recognized or on file with the following agencies:

Federal Communications Commission

Industry Canada

Radio-Frequency Technologies (Competent Body)





APPENDIX B

MODIFICATIONS TO THE EUT

MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC 15.231 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.





APPENDIX C

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

ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

DirecTV RC65RBX 2009, (IR/UHF with
XMP2 and backlight)
Model: URC-2997BG0-X-R
S/N: N/A

There were no additional models covered under this report.



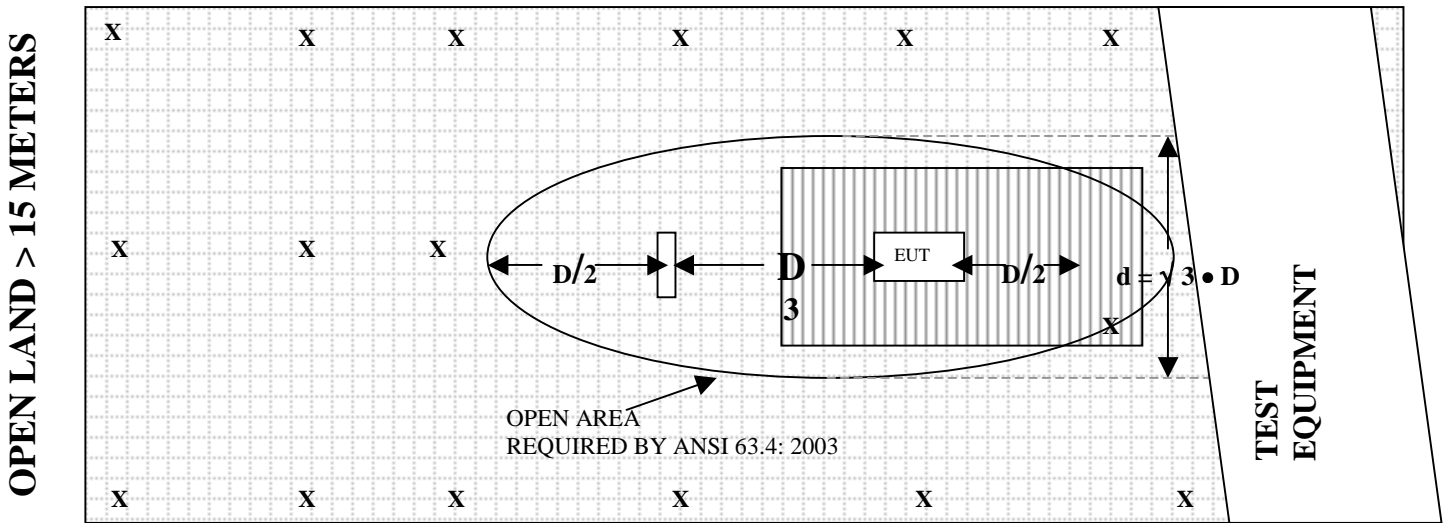


APPENDIX D

DIAGRAMS, CHARTS, AND PHOTOS

FIGURE 1: PLOT MAP AND LAYOUT OF RADIATED SITE

OPEN LAND > 15 METERS



OPEN LAND > 15 METERS

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

COM-POWER AB-900**BICONICAL ANTENNA**

S/N: 15250

CALIBRATION DATE: FEBRUARY 16, 2010

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	13.5	100	11.1
35	10.4	120	13.1
40	10.3	140	12.2
45	9.8	160	13.6
50	10.6	180	15.9
60	9.5	200	16.4
70	8.4	250	15.1
80	5.5	275	17.7
90	7.3	300	19.5

COM-POWER AL-100**LOG PERIODIC ANTENNA**

S/N: 16060

CALIBRATION DATE: JUNE 15, 2009

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
300	14.2	700	20.1
400	15.9	800	21.2
500	17.1	900	21.3
600	18.8	1000	22.3

COM POWER AH-118**HORN ANTENNA**

S/N: 071175

CALIBRATION DATE: JUNE 27, 2008

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	24.5	10.0	39.4
1.5	25.4	10.5	39.7
2.0	28.3	11.0	39.0
2.5	28.9	11.5	40.0
3.0	29.7	12.0	39.7
3.5	30.8	12.5	41.7
4.0	31.4	13.0	42.7
4.5	32.6	13.5	41.2
5.0	33.7	14.0	41.6
5.5	34.4	14.5	43.2
6.0	34.7	15.0	42.3
6.5	35.4	15.5	39.3
7.0	37.0	16.0	41.7
7.5	37.4	16.5	39.6
8.0	37.6	17.0	43.0
8.5	37.6	17.5	47.1
9.0	38.5	18.0	46.2
9.5	38.6		

COM-POWER PA-102**PREAMPLIFIER**

S/N: 1017

CALIBRATION DATE: JANUARY 6, 2010

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
20	38.0	300	38.2
30	38.3	350	38.1
40	38.4	400	38.5
50	38.2	450	38.0
60	38.2	500	37.9
70	38.3	550	38.2
80	38.1	600	38.2
90	38.2	650	37.7
100	38.3	700	38.3
125	38.2	750	38.3
150	38.3	800	37.4
175	38.3	850	37.5
200	38.1	900	37.6
225	38.2	950	37.4
250	38.3	1000	37.3
275	38.2		

COM-POWER PA-122**PREAMPLIFIER**

S/N: 181921

CALIBRATION DATE: MARCH 12, 2009

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	36.46	10.0	35.06
1.5	35.36	10.5	34.82
2.0	34.76	11.0	33.12
2.5	34.94	11.5	34.33
3.0	34.59	12.0	34.75
3.5	34.55	12.5	33.94
4.0	34.25	13.0	35.50
4.5	33.89	13.5	34.89
5.0	34.22	14.0	36.56
5.5	34.81	14.5	36.06
6.0	35.74	15.0	36.67
6.5	36.51	15.5	36.84
7.0	36.66	16.0	34.31
7.5	35.72	16.5	35.11
8.0	33.28	17.0	35.35
8.5	33.11	17.5	34.11
9.0	34.71	18.0	33.88
9.5	35.50	18.5	32.20

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

S/N: 17089

CALIBRATION DATE: SEPTEMBER 29, 2008

FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)
0.009	-41.57	9.93
0.01	-42.06	9.44
0.02	-42.43	9.07
0.05	-42.50	9.00
0.07	-42.10	9.40
0.1	-42.03	9.47
0.2	-44.50	7.00
0.3	-41.93	9.57
0.5	-41.90	9.60
0.7	-41.73	9.77
1	-41.23	10.27
2	-40.90	10.60
3	-41.20	10.30
4	-41.30	10.20
5	-40.70	10.80
10	-41.10	10.40
15	-42.17	9.33
20	-42.00	9.50
25	-42.20	9.30
30	-43.10	8.40



FRONT VIEW

UNIVERSAL ELECTRONICS, INC.
DIRECTV RC65RBX 2009, (IR/UHF WITH XMP2 AND BACKLIGHT)
MODEL: URC-2997BG0-X-R
FCC SUBPART B AND FCC SUBPART C – RADIATED EMISSIONS – 03/10/10

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

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

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

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

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



REAR VIEW

UNIVERSAL ELECTRONICS, INC.
DIRECTV RC65RBX 2009, (IR/UHF WITH XMP2 AND BACKLIGHT)
MODEL: URC-2997BG0-X-R
FCC SUBPART B AND FCC SUBPART C – RADIATED EMISSIONS – 03/10/10

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

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

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

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

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

APPENDIX E

DATA SHEETS

RADIATED EMISSIONS

DATA SHEETS

FCC 15.231

Universal Electronics, Inc.
 DirecTV RC65RBX 2009,
 (IR/UHF with XMP2 and backlight)
 Model: URC-2997BG0-X-R

Date: 03/10/10

Labs: B and D

Tested By: Kyle Fujimoto

X-Axis

Duty Cycle: 37.5611894%

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
433.92	67.92	V	100.8	-32.88	Peak	1	270	
433.92	59.415	V	80.8	-21.385	Avg	1	270	
867.84	60.61	V	80.8	-20.19	Peak	1.35	235	
867.84	52.105	V	60.8	-8.695	Avg	1.35	235	
1301.76	44.49	V	74	-29.51	Peak	1.25	135	
1301.76	35.985	V	54	-18.015	Avg	1.25	135	
1735.68	54.34	V	80.8	-26.46	Peak	1.25	155	
1735.68	45.835	V	60.8	-14.965	Avg	1.25	155	
2169.6	47.81	V	80.8	-32.99	Peak	1.25	135	
2169.6	39.305	V	60.8	-21.495	Avg	1.25	135	
2603.5	50.23	V	80.8	-30.57	Peak	1.25	155	
2603.5	41.725	V	60.8	-19.075	Avg	1.25	155	
3037.4	48.59	V	80.8	-32.21	Peak	1.25	90	
3037.4	40.085	V	60.8	-20.715	Avg	1.25	90	
3471.3	44.24	V	80.8	-36.56	Peak	1.35	135	
3471.3	35.735	V	60.8	-25.065	Avg	1.35	135	
3905.3	51.07	V	74	-22.93	Peak	1.25	155	
3905.3	42.565	V	54	-11.435	Avg	1.25	155	
4339.2	43.69	V	74	-30.31	Peak	1.35	155	
4339.2	35.185	V	54	-18.815	Avg	1.35	155	

FCC 15.231

Universal Electronics, Inc.
 DirecTV RC65RBX 2009,
 (IR/UHF with XMP2 and backlight)
 Model: URC-2997BG0-X-R

Date: 03/10/10

Labs: B and D

Tested By: Kyle Fujimoto

X-Axis

Duty Cycle: 37.5611894%

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
433.92	70.32	H	100.8	-30.48	Peak	1	90	
433.92	61.815	H	80.8	-18.985	Avg	1	90	
867.84	67.01	H	80.8	-13.79	Peak	1.25	180	
867.84	58.505	H	60.8	-2.295	Avg	1.25	180	
1301.76	40.57	H	74	-33.43	Peak	1.35	195	
1301.76	32.065	H	54	-21.935	Avg	1.35	195	
1735.68	57.04	H	80.8	-23.76	Peak	1.25	165	
1735.68	48.535	H	60.8	-12.265	Avg	1.25	165	
2169.6	47.98	H	80.8	-32.82	Peak	1.35	175	
2169.6	39.475	H	60.8	-21.325	Avg	1.35	175	
2603.5	49.48	H	80.8	-31.32	Peak	1.25	185	
2603.5	40.975	H	60.8	-19.825	Avg	1.25	185	
3037.4	45.17	H	80.8	-35.63	Peak	1.35	205	
3037.4	36.665	H	60.8	-24.135	Avg	1.35	205	
3471.3	42.94	H	80.8	-37.86	Peak	1.25	155	
3471.3	34.435	H	60.8	-26.365	Avg	1.25	155	
3905.3	53.24	H	74	-20.76	Peak	1.25	135	
3905.3	44.735	H	54	-9.265	Avg	1.25	135	
4339.2	46.56	H	74	-27.44	Peak	1.35	165	
4339.2	38.055	H	54	-15.945	Avg	1.35	165	

FCC 15.231

Universal Electronics, Inc.
 DirecTV RC65RBX 2009,
 (IR/UHF with XMP2 and backlight)
 Model: URC-2997BG0-X-R

Date: 03/10/10

Labs: B and D

Tested By: Kyle Fujimoto

Y-Axis

Duty Cycle: 37.5611894%

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
433.92	82.62	V	100.8	-18.18	Peak	1.25	150	
433.92	74.115	V	80.8	-6.685	Avg	1.25	150	
867.84	63.21	V	80.8	-17.59	Peak	1.25	135	
867.84	54.705	V	60.8	-6.095	Avg	1.25	135	
1301.76	58.52	V	74	-15.48	Peak	1.25	135	
1301.76	50.015	V	54	-3.985	Avg	1.25	135	
1735.68	60.51	V	80.8	-20.29	Peak	1.25	155	
1735.68	52.005	V	60.8	-8.795	Avg	1.25	155	
2169.6	50.82	V	80.8	-29.98	Peak	1.35	175	
2169.6	42.315	V	60.8	-18.485	Avg	1.35	175	
2603.5	55.56	V	80.8	-25.24	Peak	1.25	165	
2603.5	47.055	V	60.8	-13.745	Avg	1.25	165	
3037.4	50.62	V	80.8	-30.18	Peak	1.25	180	
3037.4	42.115	V	60.8	-18.685	Avg	1.25	180	
3471.3	47.26	V	80.8	-33.54	Peak	1.25	135	
3471.3	38.755	V	60.8	-22.045	Avg	1.25	135	
3905.3	55.58	V	74	-18.42	Peak	1.25	135	
3905.3	47.075	V	54	-6.925	Avg	1.25	135	
4339.2	48.96	V	74	-25.04	Peak	1.35	175	
4339.2	40.455	V	54	-13.545	Avg	1.35	175	

FCC 15.231

Universal Electronics, Inc.
 DirecTV RC65RBX 2009,
 (IR/UHF with XMP2 and backlight)
 Model: URC-2997BG0-X-R

Date: 03/10/10

Labs: B and D

Tested By: Kyle Fujimoto

Y-Axis

Duty Cycle: 37.5611894%

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
433.92	74.32	H	100.8	-26.48	Peak	1.55	270	
433.92	65.815	H	80.8	-14.985	Avg	1.55	270	
867.84	57.81	H	80.8	-22.99	Peak	1.68	135	
867.84	49.305	H	60.8	-11.495	Avg	1.68	135	
1301.76	43.18	H	74	-30.82	Peak	1.25	135	
1301.76	34.675	H	54	-19.325	Avg	1.25	135	
1735.68	47.11	H	80.8	-33.69	Peak	1.25	45	
1735.68	38.605	H	60.8	-22.195	Avg	1.25	45	
2169.6	54.64	H	80.8	-26.16	Peak	1.35	155	
2169.6	46.135	H	60.8	-14.665	Avg	1.35	155	
2603.5	54.59	H	80.8	-26.21	Peak	1.25	175	
2603.5	46.085	H	60.8	-14.715	Avg	1.25	175	
3037.4	51.31	H	80.8	-29.49	Peak	1.35	185	
3037.4	42.805	H	60.8	-17.995	Avg	1.35	185	
3471.3	45.62	H	80.8	-35.18	Peak	1.25	155	
3471.3	37.115	H	60.8	-23.685	Avg	1.25	155	
3905.3	54.85	H	74	-19.15	Peak	1.35	165	
3905.3	46.345	H	54	-7.655	Avg	1.35	165	
4339.2	46.06	H	74	-27.94	Peak	1.58	175	
4339.2	37.555	H	54	-16.445	Avg	1.58	175	

FCC 15.231

Universal Electronics, Inc.
 DirecTV RC65RBX 2009,
 (IR/UHF with XMP2 and backlight)
 Model: URC-2997BG0-X-R

Date: 03/10/10

Labs: B and D

Tested By: Kyle Fujimoto

Z-Axis

Duty Cycle: 37.5611894%

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
433.92	80.72	V	100.8	-20.08	Peak	1.5	45	
433.92	72.215	V	80.8	-8.585	Avg	1.5	45	
867.84	60.61	V	80.8	-20.19	Peak	1.25	90	
867.84	52.105	V	60.8	-8.695	Avg	1.25	90	
1301.76	52.25	V	74	-21.75	Peak	1.25	135	
1301.76	43.745	V	54	-10.255	Avg	1.25	135	
1735.68	52.23	V	80.8	-28.57	Peak	1.25	90	
1735.68	43.725	V	60.8	-17.075	Avg	1.25	90	
2169.6	50.47	V	80.8	-30.33	Peak	1.35	135	
2169.6	41.965	V	60.8	-18.835	Avg	1.35	135	
2603.5	56.86	V	80.8	-23.94	Peak	1.25	135	
2603.5	48.355	V	60.8	-12.445	Avg	1.25	135	
3037.4	48.77	V	80.8	-32.03	Peak	1.25	155	
3037.4	40.265	V	60.8	-20.535	Avg	1.25	155	
3471.3	44.77	V	80.8	-36.03	Peak	1.35	165	
3471.3	36.265	V	60.8	-24.535	Avg	1.35	165	
3905.3	50.337	V	74	-23.663	Peak	1.25	180	
3905.3	41.832	V	54	-12.168	Avg	1.25	180	
4339.2	46.87	V	74	-27.13	Peak	1.35	155	
4339.2	38.365	V	54	-15.635	Avg	1.35	155	

FCC 15.231

Universal Electronics, Inc.
 DirecTV RC65RBX 2009,
 (IR/UHF with XMP2 and backlight)
 Model: URC-2997BG0-X-R

Date: 03/10/10

Labs: B and D

Tested By: Kyle Fujimoto

Z-Axis

Duty Cycle: 37.5611894%

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
433.92	70.32	H	100.8	-30.48	Peak	1.5	45	
433.92	61.815	H	80.8	-18.985	Avg	1.5	45	
867.84	67.01	H	80.8	-13.79	Peak	1.25	90	
867.84	58.505	H	60.8	-2.295	Avg	1.25	90	
1301.76	44.87	H	74	-29.13	Peak	1.35	125	
1301.76	36.365	H	54	-17.635	Avg	1.35	125	
1735.68	54.39	H	80.8	-26.41	Peak	1.35	165	
1735.68	45.885	H	60.8	-14.915	Avg	1.35	165	
2169.6	46.87	H	80.8	-33.93	Peak	1.25	175	
2169.6	38.365	H	60.8	-22.435	Avg	1.25	175	
2603.5	47.84	H	80.8	-32.96	Peak	1.58	185	
2603.5	39.335	H	60.8	-21.465	Avg	1.58	185	
3037.4	47.97	H	80.8	-32.83	Peak	1.35	155	
3037.4	39.465	H	60.8	-21.335	Avg	1.35	155	
3471.3	43.95	H	80.8	-36.85	Peak	1.25	175	
3471.3	35.445	H	60.8	-25.355	Avg	1.25	175	
3905.3	50.21	H	74	-23.79	Peak	1.26	185	
3905.3	41.705	H	54	-12.295	Avg	1.26	185	
4339.2	47.82	H	74	-26.18	Peak	1.28	195	
4339.2	39.315	H	54	-14.685	Avg	1.28	195	

FCC Class B and FCC 15.231

Universal Electronics, Inc.
 DirecTV RC65RBX 2009,
 (IR/UHF with XMP2 and backlight)
 Model: URC-2997BG0-X-R

Date: 03/10/10
 Labs: B and D
 Tested By: Kyle Fujimoto

X-Axis (Worst Case)

**Digital Portion and Non-Harmonic Emissions from the Transmitter
 Vertical and Horizontal Polarizations**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
								No Emissions Detected
								from 10 kHz to 4400 MHz
								for the Digital Portion
								for both the Vertical and
								Horizontal Polarizations.
								No Emissions Detected
								from 10 kHz to 4400 MHz
								for the Non-Harmonic
								Emissions from the Tx for the
								EUT for both the Vertical and
								Horizontal Polarizations.

APPENDIX F

CLASS II PERMISSIVE CHANGE INFORMATION

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

CLASS II PERMISSIVE CHANGE INFORMATION

The following change(s) were made to the EUT for the Class II Permissive Change:

1. The Main PCB now has additional circuitry to support XMP-2, an (Infrared Receiver)

DELTA FROM CLASS II PERMISSIVE CHANGE TO ORIGINAL UNIT

FREQUENCY (MHz)	URC-2990BG0-X-R Worse case Reading from Test Report B90814D1 (dBuV/m)	URC-2997BG0-X-R testing on March 10, 2010 (dBuV/m)	DELTA
433.92	78.745 (Avg)	74.115 (Avg)	-4.63
867.84	52.385 (Avg)	58.505 (Avg)	+6.12
1301.76	45.455 (Avg)	50.015 (Avg)	+4.56
1735.68	59.485 (Avg)	52.005 (Avg)	-7.48
2169.6	48.755 (Avg)	46.135 (Avg)	-2.62
2603.5	46.005 (Avg)	48.355 (Avg)	+2.35
3037.4	44.805 (Avg)	42.805 (Avg)	-2.00
3471.3	44.905 (Avg)	38.755 (Avg)	-6.15
3905.3	48.205 (Avg)	47.075 (Avg)	-1.13
4339.2	42.185 (Avg)	40.455 (Avg)	-1.73

The Frequencies for the new version are greater than ± 3 dB of the original unit, thus the EUT is considered a Class II Permissive Change.