

**FCC PART 15 SUBPART B and C
TEST REPORT***for***MOTOROLA URC 600 UHF IR REMOTE 2010****UEI P/N: URC-3051BC0-R
STAR CHOICE P/N: URC-3053BC0-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: AUGUST 9, 2010

	REPORT BODY	APPENDICES					TOTAL
		<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	
PAGES	17	2	2	2	11	10	44

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
6.3 Facility Environmental Characteristics	12
7. TEST PROCEDURES	13
7.1 RF Emissions	13
7.1.1 Conducted Emissions Test	13
7.1.2 Radiated Emissions (Spurious and Harmonics) Test	14
7.2 Bandwidth of the Fundamental	16
8. CONCLUSIONS	17

LIST OF APPENDICES

APPENDIX	TITLE
A	Laboratory Recognitions
B	Modifications to the EUT
C	Additional Models Covered Under This Report
D	Diagram, Charts, and Photos <ul style="list-style-type: none">• Test Setup Diagram• Antenna and Amplifier Factors• Radiated Emissions Photos
E	Data Sheets

LIST OF FIGURES

FIGURE	TITLE
1	Conducted Emissions Test Setup
2	Plot Map And Layout of Radiated Test Site – 3 Meters

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: Motorola URC 600 UHF IR Remote 2010
UEI P/N: URC-3051BC0-R
Star Choice P/N: URC-3053BC0-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.
6101 Gateway Drive
Cypress, California 90630-4841

Test Date(s): July 20 and 21; and August 3, 2010

Test Specifications: EMI requirements
CFR Title 47, Part 15, Subpart B

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	The EUT does not directly or indirectly connect to the AC mains, thus this test was not performed.
2	Radiated RF Emissions 10 kHz – 4400 MHz (Transmitter Portion)	Complies with the limits of CFR Title 47, Part 15, Subpart C, sections 15.205, 15.209, and 15.231.
3	Radiated RF Emissions 10 kHz – 4400 MHz (Digital Portion)	Complies with the Class B limits of CFR Title 47, Part 15, Subpart B.

*U = Expanded Uncertainty with a coverage factor of k=2

1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the Motorola URC 600 UHF IR Remote 2010, UEI P/N: URC-3051BC0-R, Star Choice P/N: URC-3053BC0-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 for the digital portion; and the limits defined in Subpart C, sections 15.205, 15.209, and 15.231 for the transmitter portion.



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.

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 prior to the date of testing.

2.5 Disposition of the Test Sample

The test sample has not yet been returned as of the date of this 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
IR	Infrared

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

The Motorola URC 600 UHF IR Remote 2010, UEI P/N: URC-3051BC0-R, Star Choice P/N: URC-3053BC0-R (EUT) was tested as a stand alone unit and tested in three orthogonal axis. The EUT was continuously transmitting.

The EUT's antenna was soldered directly to the PCB.

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 are no external cables connected to the EUT.



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

EQUIPMENT	MANUFACTURER	UEI P/N:	STAR CHOICE P/N:	FCC ID
MOTOROLA URC 600 UHF IR REMOTE 2010 (EUT)	UNIVERSAL ELECTRONICS, INC.	URC-3051BC0-R	URC-3053BC0-R	MG33051

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
EMI Receiver	Rohde & Schwarz	ESIB40	100194	September 17, 2008	Sept. 17, 2010
Spectrum Analyzer – Main Section	Hewlett Packard	8566B	3638A08784	June 10, 2010	June 10, 2011
Spectrum Analyzer – Display Section	Hewlett Packard	85662A	2648A14530	June 10, 2010	June 10, 2011
Quasi-Peak Adapter	Hewlett Packard	85650A	2430A00424	June 10, 2010	June 10, 2011
Monitor	Hewlett Packard	D5258A	TW74500641	N/A	N/A
RF RADIATED EMISSIONS TEST EQUIPMENT					
Biconical Antenna	Com Power	AB-900	15250	February 16, 2010	February 16, 2011
Log Periodic Antenna	Com Power	AL-100	16060	June 9, 2010	June 9, 2011
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	March 18, 2010	March 18, 2012
Microwave Preamplifier	Com-Power	PA-122	181921	March 10, 2010	March 10, 2011
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 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.

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:

The EUT does not directly or indirectly connect to the AC mains, thus this test was not performed.

7.1.2 Radiated Emissions (Spurious and Harmonics) Test

The spectrum analyzer and EMI Receiver were used as a measuring meter along with the quasi-peak adapter. 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 above 1 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 records the highest measured reading over all the sweeps.

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

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
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 9.3 GHz	1 MHz	Horn Antenna

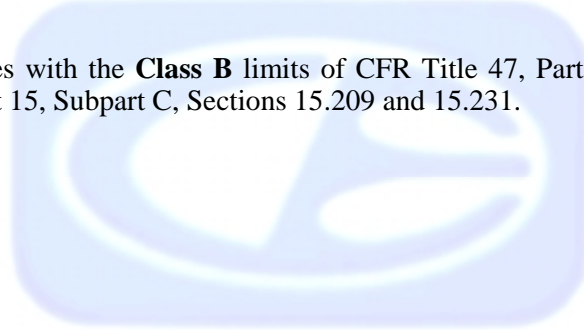
The open field test site of Compatible Electronics, Inc. was used for radiated emission testing. This test site is set up according to ANSI C63.4: 2003. Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The turntable supporting the EUT is remote controlled using a 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 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.

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 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 15.231.



7.2 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. A plot of the -20 dB bandwidth are located in Appendix E.

Test Results:

The EUT complies with the limits of CFR Title 47, Part 15, Subpart C, section 15.231(c).



8. CONCLUSIONS

The Motorola URC 600 UHF IR Remote 2010, UEI P/N: URC-3051BC0-R, Star Choice P/N: URC-3053BC0-R, 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 15.231 for the transmitter portion.



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



APPENDIX B

MODIFICATIONS TO THE EUT

MODIFICATIONS TO THE EUT

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

Motorola URC 600 UHF IR Remote 2010
UEI P/N: URC-3051BC0-R
Star Choice P/N: URC-3053BC0-R

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

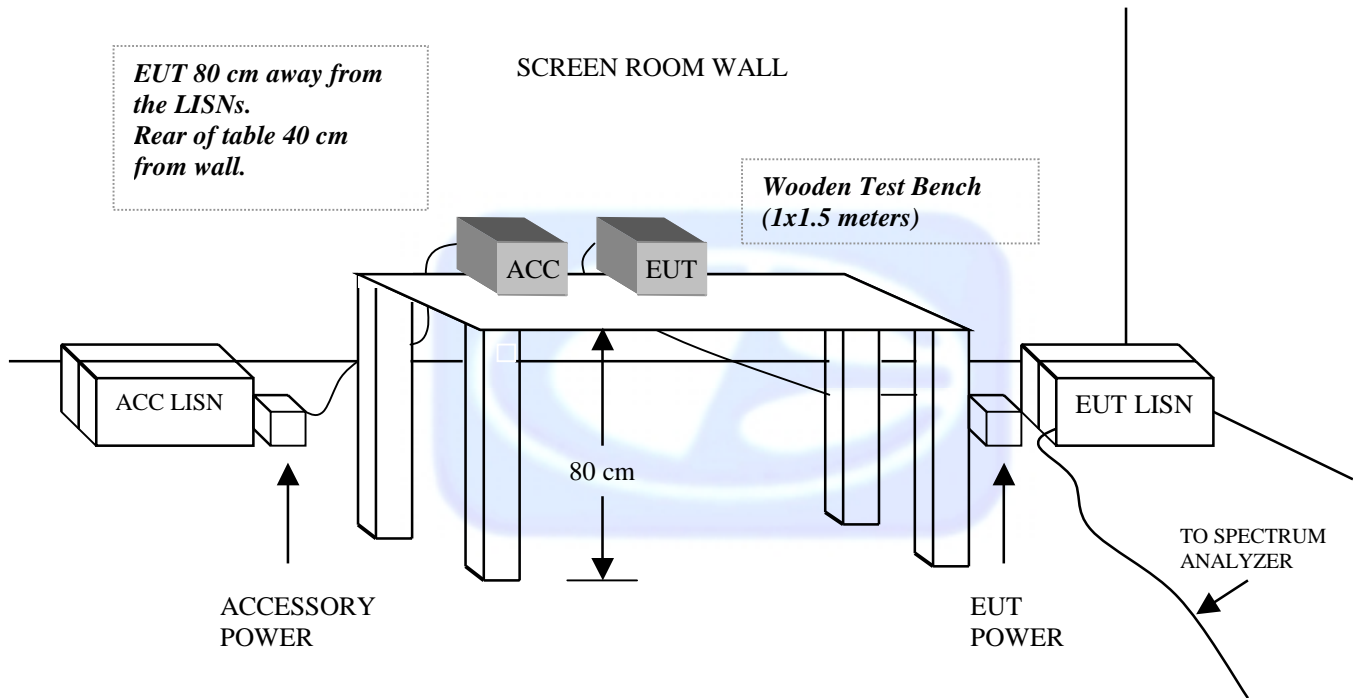
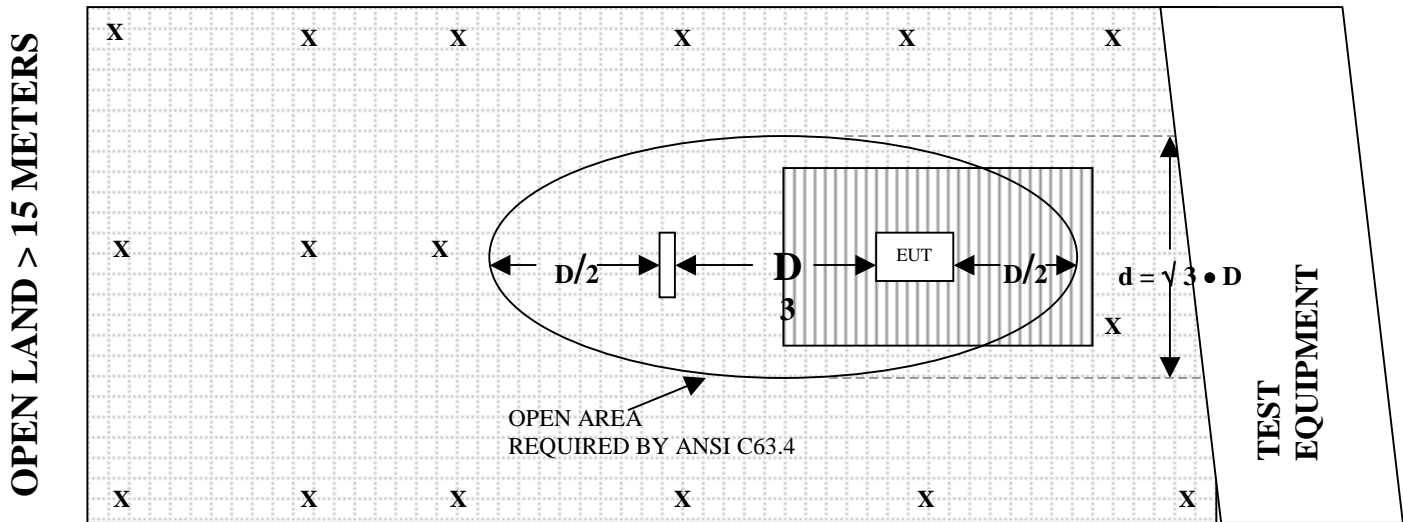


FIGURE 2: PLOT MAP AND LAYOUT OF RADIATED SITE – 3 METERS

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 9, 2010

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
300	15.5	700	20.4
400	17.9	800	21.5
500	18.5	900	21.7
600	20.3	1000	23.0

COM POWER AH-118**HORN ANTENNA**

S/N: 071175

CALIBRATION DATE: MARCH 18, 2010

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	22.2	10.0	39.8
1.5	24.2	10.5	40.2
2.0	27.2	11.0	39.7
2.5	27.8	11.5	39.9
3.0	30.5	12.0	41.7
3.5	30.9	12.5	42.7
4.0	31.9	13.0	42.3
4.5	33.2	13.5	40.3
5.0	33.6	14.0	42.6
5.5	36.2	14.5	43.4
6.0	35.8	15.0	41.9
6.5	36.1	15.5	40.8
7.0	37.9	16.0	41.0
7.5	37.4	16.5	41.5
8.0	38.0	17.0	44.5
8.5	38.8	17.5	47.6
9.0	38.0	18.0	50.8
9.5	39.2		

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 10, 2010

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	35.53	10.0	34.78
1.5	34.92	10.5	34.36
2.0	34.63	11.0	33.14
2.5	34.42	11.5	34.42
3.0	34.40	12.0	34.24
3.5	34.36	12.5	34.95
4.0	34.11	13.0	34.62
4.5	33.61	13.5	35.24
5.0	33.83	14.0	35.40
5.5	34.53	14.5	36.66
6.0	35.09	15.0	35.98
6.5	35.58	15.5	35.94
7.0	36.50	16.0	35.80
7.5	34.83	16.5	34.98
8.0	34.08	17.0	35.00
8.5	33.57	17.5	34.25
9.0	34.68	18.0	33.51
9.5	35.84	18.5	32.88

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.
MOTOROLA URC 600 UHF IR REMOTE 2010
UEI P/N: URC-3051BC0-R, STAR CHOICE P/N: URC-3053BC0-R
FCC SUBPART B AND C – RADIATED EMISSIONS

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



REAR VIEW

UNIVERSAL ELECTRONICS, INC.
MOTOROLA URC 600 UHF IR REMOTE 2010
UEI P/N: URC-3051BC0-R, STAR CHOICE P/N: URC-3053BC0-R
FCC SUBPART B AND C – RADIATED EMISSIONS

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

APPENDIX E

DATA SHEETS

FCC 15.231

Universal Electronics, Inc.
 Motorola URC 600 UHF IR Remote 2010
 UEI P/N: URC-3051BC0-R
 Star Choice P/N: URC-3053BC0-R

Date: 07/20/10
 Labs: B and D
 Tested By: Kyle Fujimoto

X-Axis

Duty Cycle: 22.49%

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
433.92	77.98	V	100.8	-22.82	Peak	1.25	225	
433.92	65.02	V	80.8	-15.78	Avg	1.25	225	
867.84	39.57	V	80.8	-41.23	Peak	1	0	
867.84	26.61	V	60.8	-34.19	Avg	1	0	
1301.76	37.75	V	74	-36.25	Peak	1.25	135	
1301.76	24.79	V	54	-29.21	Avg	1.25	135	
1735.68	36.64	V	80.8	-44.16	Peak	1.35	225	
1735.68	23.68	V	60.8	-37.12	Avg	1.35	225	
2169.6	39.79	V	80.8	-41.01	Peak	1.25	135	
2169.6	26.83	V	60.8	-33.97	Avg	1.25	135	
2603.5	56.74	V	80.8	-24.06	Peak	1.35	155	
2603.5	43.78	V	60.8	-17.02	Avg	1.35	155	
3037.4	62.52	V	80.8	-18.28	Peak	1.85	45	
3037.4	49.56	V	60.8	-11.24	Avg	1.85	45	
3471.3	57.55	V	80.8	-23.25	Peak	1.35	155	
3471.3	44.59	V	60.8	-16.21	Avg	1.35	155	
3905.3	57.72	V	74	-16.28	Peak	1.25	45	
3905.3	44.76	V	54	-9.24	Avg	1.25	45	
4339.2	45.61	V	74	-28.39	Peak	1.35	155	
4339.2	32.65	V	54	-21.35	Avg	1.35	155	

FCC 15.231

Universal Electronics, Inc.
 Motorola URC 600 UHF IR Remote 2010
 UEI P/N: URC-3051BC0-R
 Star Choice P/N: URC-3053BC0-R

Date: 07/20/10
 Labs: B and D
 Tested By: Kyle Fujimoto

X-Axis

Duty Cycle: 22.49%

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
433.92	84.08	H	100.8	-16.72	Peak	1.25	135	
433.92	71.12	H	80.8	-9.68	Avg	1.25	135	
867.84	45.67	H	80.8	-35.13	Peak	1.25	135	
867.84	32.71	H	60.8	-28.09	Avg	1.25	135	
1301.76	45.53	H	74	-28.47	Peak	1.35	155	
1301.76	32.57	H	54	-21.43	Avg	1.35	155	
1735.68	42.23	H	80.8	-38.57	Peak	1.25	165	
1735.68	29.27	H	60.8	-31.53	Avg	1.25	165	
2169.6	40.07	H	80.8	-40.73	Peak	1.35	155	
2169.6	27.11	H	60.8	-33.69	Avg	1.35	155	
2603.5	52.81	H	80.8	-27.99	Peak	1.25	175	
2603.5	39.85	H	60.8	-20.95	Avg	1.25	175	
3037.4	58.36	H	80.8	-22.44	Peak	1.35	185	
3037.4	45.4	H	60.8	-15.4	Avg	1.35	185	
3471.3	52.97	H	80.8	-27.83	Peak	1.25	155	
3471.3	40.01	H	60.8	-20.79	Avg	1.25	155	
3905.3	51.51	H	74	-22.49	Peak	1.35	165	
3905.3	38.55	H	54	-15.45	Avg	1.35	165	
4339.2	46.28	H	74	-27.72	Peak	1.25	135	
4339.2	33.32	H	54	-20.68	Avg	1.25	135	

FCC 15.231

Universal Electronics, Inc.
 Motorola URC 600 UHF IR Remote 2010
 UEI P/N: URC-3051BC0-R
 Star Choice P/N: URC-3053BC0-R

Date: 07/20/10
 Labs: B and D
 Tested By: Kyle Fujimoto

Y-Axis

Duty Cycle: 22.49%

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
433.92	82.98	V	100.8	-17.82	Peak	1.25	135	
433.92	70.02	V	80.8	-10.78	Avg	1.25	135	
867.84	46.37	V	80.8	-34.43	Peak	1.25	155	
867.84	33.41	V	60.8	-27.39	Avg	1.25	155	
1301.76	41.98	V	74	-32.02	Peak	1.25	165	
1301.76	29.02	V	54	-24.98	Avg	1.25	165	
1735.68	38.94	V	80.8	-41.86	Peak	1.25	175	
1735.68	25.98	V	60.8	-34.82	Avg	1.25	175	
2169.6	47.05	V	80.8	-33.75	Peak	1.25	185	
2169.6	34.09	V	60.8	-26.71	Avg	1.25	185	
2603.5	61.75	V	80.8	-19.05	Peak	1.25	195	
2603.5	48.79	V	60.8	-12.01	Avg	1.25	195	
3037.4	62.73	V	80.8	-18.07	Peak	1.25	155	
3037.4	49.77	V	60.8	-11.03	Avg	1.25	155	
3471.3	51.59	V	80.8	-29.21	Peak	1.35	165	
3471.3	38.63	V	60.8	-22.17	Avg	1.35	165	
3905.3	51.42	V	74	-22.58	Peak	1.25	175	
3905.3	38.46	V	54	-15.54	Avg	1.25	175	
4339.2	50.67	V	74	-23.33	Peak	1.25	185	
4339.2	37.71	V	54	-16.29	Avg	1.25	185	

FCC 15.231

Universal Electronics, Inc.
 Motorola URC 600 UHF IR Remote 2010
 UEI P/N: URC-3051BC0-R
 Star Choice P/N: URC-3053BC0-R

Date: 07/20/10
 Labs: B and D
 Tested By: Kyle Fujimoto

Y-Axis

Duty Cycle: 22.49%

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
433.92	74.48	H	100.8	-26.32	Peak	2	225	
433.92	61.52	H	80.8	-19.28	Avg	2	225	
867.84	43.57	H	80.8	-37.23	Peak	1.25	135	
867.84	30.61	H	60.8	-30.19	Avg	1.25	135	
1301.76	40.94	H	74	-33.06	Peak	1.35	125	
1301.76	27.98	H	54	-26.02	Avg	1.35	125	
1735.68	43.08	H	80.8	-37.72	Peak	1.25	155	
1735.68	30.12	H	60.8	-30.68	Avg	1.25	155	
2169.6	44.11	H	80.8	-36.69	Peak	1.35	125	
2169.6	31.15	H	60.8	-29.65	Avg	1.35	125	
2603.5	60.59	H	80.8	-20.21	Peak	1.25	135	
2603.5	47.63	H	60.8	-13.17	Avg	1.25	135	
3037.4	65	H	80.8	-15.8	Peak	1.55	175	
3037.4	52.04	H	60.8	-8.76	Avg	1.55	175	
3471.3	59.14	H	80.8	-21.66	Peak	1.35	185	
3471.3	46.18	H	60.8	-14.62	Avg	1.35	185	
3905.3	60.64	H	74	-13.36	Peak	1.25	180	
3905.3	47.68	H	54	-6.32	Avg	1.25	180	
4339.2	53.99	H	74	-20.01	Peak	1.35	225	
4339.2	41.03	H	54	-12.97	Avg	1.35	225	

FCC 15.231

Universal Electronics, Inc.
 Motorola URC 600 UHF IR Remote 2010
 UEI P/N: URC-3051BC0-R
 Star Choice P/N: URC-3053BC0-R

Date: 07/20/10
 Labs: B and D
 Tested By: Kyle Fujimoto

Z-Axis

Duty Cycle: 22.49%

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
433.92	79.48	V	100.8	-21.32	Peak	2.25	135	
433.92	66.52	V	80.8	-14.28	Avg	2.25	135	
867.84	45.27	V	80.8	-35.53	Peak	1.25	135	
867.84	32.31	V	60.8	-28.49	Avg	1.25	135	
1301.76	41.38	V	74	-32.62	Peak	1.25	155	
1301.76	28.42	V	54	-25.58	Avg	1.25	155	
1735.68	44.22	V	80.8	-36.58	Peak	1.25	135	
1735.68	31.26	V	60.8	-29.54	Avg	1.25	135	
2169.6	42.31	V	80.8	-38.49	Peak	1.25	135	
2169.6	29.35	V	60.8	-31.45	Avg	1.25	135	
2603.5	53.14	V	80.8	-27.66	Peak	1.35	155	
2603.5	40.18	V	60.8	-20.62	Avg	1.35	155	
3037.4	62.06	V	80.8	-18.74	Peak	1.25	165	
3037.4	49.1	V	60.8	-11.7	Avg	1.25	165	
3471.3	55.09	V	80.8	-25.71	Peak	1.35	175	
3471.3	42.13	V	60.8	-18.67	Avg	1.35	175	
3905.3	54.07	V	74	-19.93	Peak	1.25	185	
3905.3	41.11	V	54	-12.89	Avg	1.25	185	
4339.2	46.88	V	74	-27.12	Peak	1.35	125	
4339.2	33.92	V	54	-20.08	Avg	1.35	125	

FCC 15.231

Universal Electronics, Inc.
 Motorola URC 600 UHF IR Remote 2010
 UEI P/N: URC-3051BC0-R
 Star Choice P/N: URC-3053BC0-R

Date: 07/20/10
 Labs: B and D
 Tested By: Kyle Fujimoto

Z-Axis

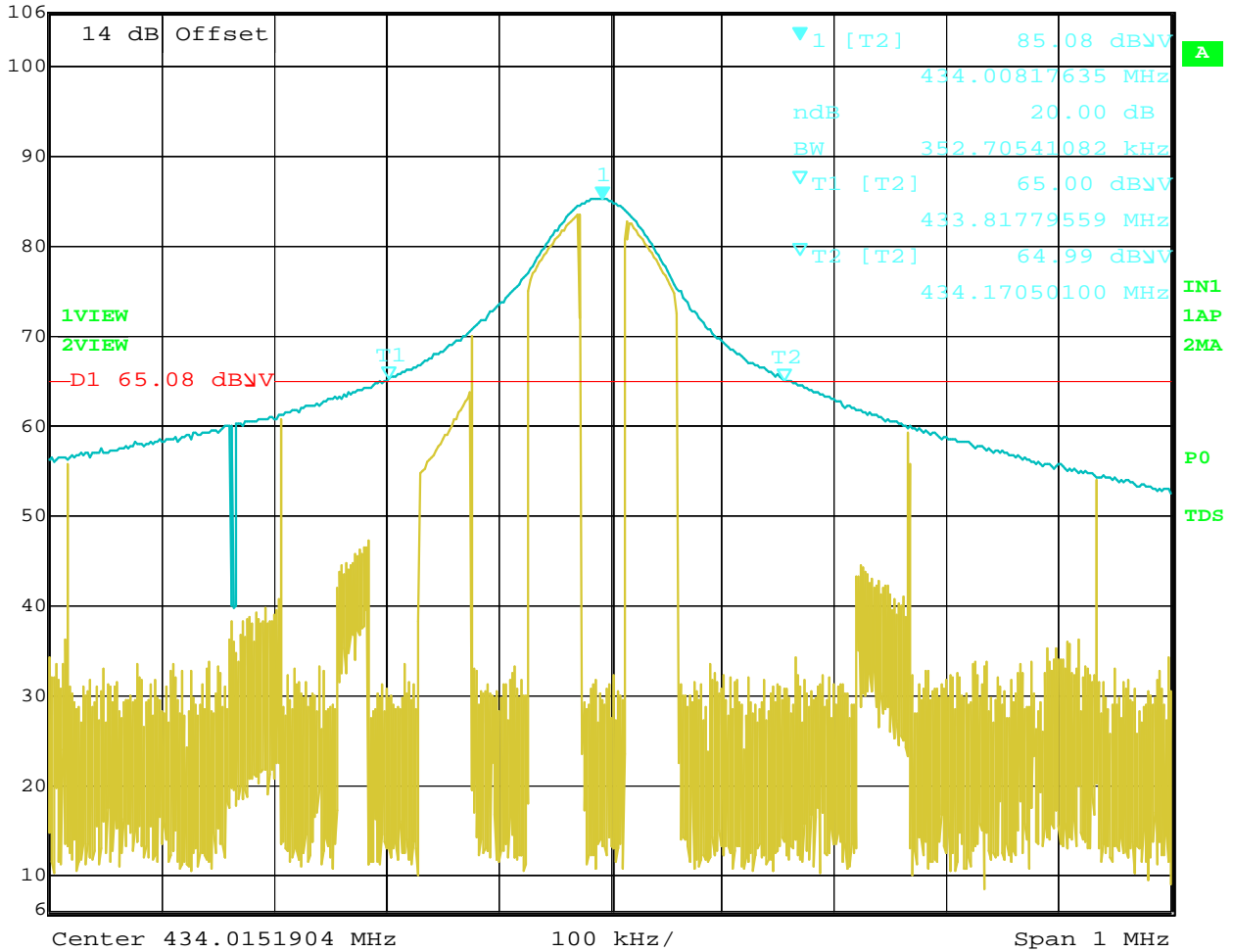
Duty Cycle: 22.49%

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
433.92	84.38	H	100.8	-16.42	Peak	1	180	
433.92	71.42	H	80.8	-9.38	Avg	1	180	
867.84	44.47	H	80.8	-36.33	Peak	1.25	135	
867.84	31.51	H	60.8	-29.29	Avg	1.25	135	
1301.76	38.87	H	74	-35.13	Peak	1.25	135	
1301.76	25.91	H	54	-28.09	Avg	1.25	135	
1735.68	39.43	H	80.8	-41.37	Peak	1.25	155	
1735.68	26.47	H	60.8	-34.33	Avg	1.25	155	
2169.6	40.68	H	80.8	-40.12	Peak	1.35	175	
2169.6	27.72	H	60.8	-33.08	Avg	1.35	175	
2603.5	56.13	H	80.8	-24.67	Peak	1.25	185	
2603.5	43.17	H	60.8	-17.63	Avg	1.25	185	
3037.4	62.47	H	80.8	-18.33	Peak	1.35	195	
3037.4	49.51	H	60.8	-11.29	Avg	1.35	195	
3471.3	59.07	H	80.8	-21.73	Peak	1.25	175	
3471.3	46.11	H	60.8	-14.69	Avg	1.25	175	
3905.3	54.95	H	74	-19.05	Peak	1.35	185	
3905.3	41.99	H	54	-12.01	Avg	1.35	185	
4339.2	42.36	H	74	-31.64	Peak	1.25	195	
4339.2	29.4	H	54	-24.6	Avg	1.25	195	

-20 dB BANDWIDTH

DATA SHEETS

RS
 Marker 1 [T2 ndB] RBW 100 kHz RF Att 10 dB
 Ref Lvl ndB 20.00 dB VBW 300 kHz
 106 dBV BW 352.70541082 kHz SWT 5.5 ms Unit dBV



Date: 3.AUG.2010 09:08:23

-20 dB Bandwidth of the Fundamental