



*FCC PART 15, SUBPART B and C
TEST REPORT*

for

(HELIX) UEI Z-WAVE 5 DEVICE REMOTE 2007
MODEL: URC-5300BJ0

Prepared for

UNIVERSAL ELECTRONICS, INC.
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DATE: JULY 24, 2007

	REPORT BODY	APPENDICES					TOTAL
		A	B	C	D	E	
PAGES	16	2	2	12	10	44	

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1	Plot Map And Layout of 3 Meter 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: (Helix) UEI Z-wave 5 Device Remote 2007
 Model: URC-5300BJ0
 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

Manufacturer: Jetta House
 19 On Kui Street
 On Lok Tsuen, Fanling,
 Hong Kong

Test Date: June 27, 2007

Test Specifications: EMI 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 – 30 MHz	This test was not performed because the EUT is battery powered and cannot be plugged into the AC public mains.
2	Radiated RF Emissions, 10 kHz – 9300 MHz (Transmitter Portion)	Complies with the limits of CFR Title 47, Part 15, Subpart C, section 15.205, 15.209, and 15.249.
3	Radiated RF Emissions, 10 kHz – 9300 MHz (Digital and Receiver Portion)	Complies with the Class B limits of CFR Title 47, Part 15, Subpart B.

1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the (Helix) UEI Z-wave 5 Device Remote 2007, Model: URC-5300BJ0. 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 and receiver 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 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 Electrical Staff Engineer

Compatible Electronics, Inc.

Kyle Fujimoto Test Engineer
Michael Christensen Lab Manager

2.4 Date Test Sample was Received

The test sample was received on June 27, 2007.

2.5 Disposition of the Test Sample

The sample has not been returned to Universal Electronics, Inc. as of July 24, 2007.

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 (Helix) UEI Z-wave 5 Device Remote 2007, Model: URC-5300BJ0 (EUT) was tested as a stand alone unit and tested in three orthogonal axis. The EUT was placed at the center of the non-conductive table. The EUT was transmitting and receiving on a continuous basis

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**

The EUT has no external cables.



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

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID
(HELIX) UEI Z-WAVE 5 DEVICE REMOTE 2007 (EUT)	COMPUTIME LIMITED	URC-5300BJ0	N/A	N/A



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	3638A08784	June 4, 2007	June 4, 2008
Spectrum Analyzer – Display Section	Hewlett Packard	85662A	3701A22279	June 4, 2007	June 4, 2008
Quasi-Peak Adapter	Hewlett Packard	85650A	2430A00424	June 4, 2007	June 4, 2008
EMI Receiver	Rohde & Schwarz	ESIB40	100149	November 15, 2005	Nov. 15, 2007
Monitor	Hewlett Packard	D5258A	TW74500641	N/A	N/A
RF RADIATED EMISSIONS TEST EQUIPMENT					
Preamplifier	Com Power	PA-102	1017	January 16, 2007	Jan. 16, 2008
Biconical Antenna	Com Power	AB-900	15227	March 8, 2007	March 8, 2008
Log Periodic Antenna	Com Power	AL-100	16060	July 17, 2006	July 17, 2007
Loop Antenna	Com Power	AL-130	17089	September 21, 2005	Sept. 21, 2006
Horn Antenna	Antenna Research	DRG-118/A	1053	March 6, 2006	March 6, 2008
Microwave Preamplifier	Com Power	PA-122	181921	Feb. 27, 2007	Feb. 27, 2008
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 RF Emissions

7.1.1 Conducted Emissions Test

The spectrum analyzer was used as a measuring meter. The data was collected with the spectrum analyzer 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 spectrum analyzer input stage, and the offset was adjusted accordingly to read the actual data measured. The LISN output was measured using the spectrum analyzer. 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 EN 55022. 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 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 is battery powered and cannot be plugged into the AC public mains.

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 or EMI Receiver records the highest measured reading over all the sweeps.

The frequencies above 1 GHz were averaged manually by narrowing the video filter down to 10 Hz and putting the sweep time on AUTO on the EMI Receiver to keep the amplitude reading calibrated.

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 25 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.

7.1.3 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. 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 15.249.

8. CONCLUSIONS

The (Helix) UEI Z-wave 5 Device Remote 2007, Model: URC-5300BJ0 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 RECOGNITIONS

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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

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MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC 15.249 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.



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APPENDIX C

ADDITIONAL MODELS COVERED UNDER THIS REPORT

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ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

(*Helix*) **UEI Z-wave 5 Device Remote 2007**
Model: URC-5300BJ0
S/N: N/A

There were no additional models covered under this report.



APPENDIX D

DIAGRAMS, CHARTS, AND PHOTOS

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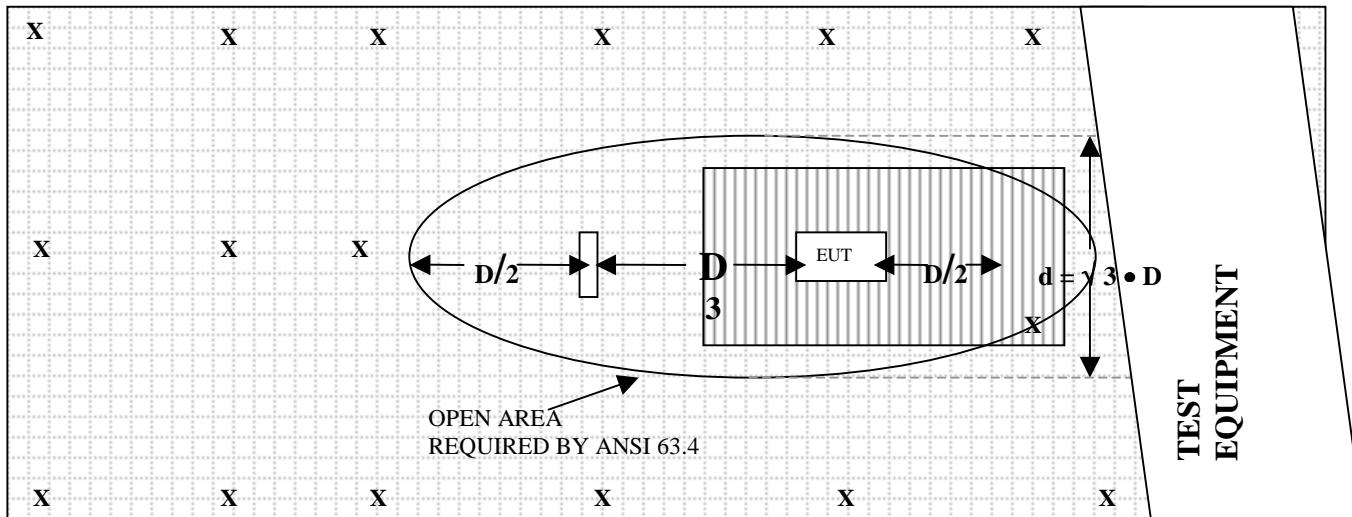
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FIGURE 1: PLOT MAP AND LAYOUT OF 3 METER RADIATED SITE

OPEN LAND > 15 METERS

OPEN LAND > 15 METERS



OPEN LAND > 15 METERS

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

COM-POWER AB-900
BICONICAL ANTENNA
S/N: 15227
CALIBRATION DATE: MARCH 8, 2007

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	12.6	100	12.3
35	10.0	120	14.7
40	9.5	140	13.0
45	9.2	160	13.7
50	9.4	180	16.4
60	7.4	200	17.2
70	6.5	250	14.6
80	7.0	275	19.0
90	8.0	300	22.3

COM-POWER AL-100**LOG PERIODIC ANTENNA****S/N: 16060****CALIBRATION DATE: JULY 17, 2006**

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
300	13.58	700	20.49
400	14.53	800	20.13
500	15.36	900	22.15
600	18.29	1000	22.76

COM-POWER PA-102

PREAMPLIFIER

S/N: 1017

CALIBRATION DATE: JANUARY 16, 2007

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	38.4	300	38.2
40	38.3	350	38.2
50	38.2	400	38.1
60	38.3	450	37.8
70	38.4	500	37.8
80	38.6	550	38.1
90	38.3	600	37.8
100	38.4	650	37.8
125	38.3	700	37.6
150	38.2	750	37.9
175	38.4	800	37.6
200	38.4	850	37.2
225	38.4	900	37.4
250	38.3	950	37.0
275	38.3	1000	37.2

COM-POWER PA-122

PREAMPLIFIER

S/N: 181921

CALIBRATION DATE: FEBRUARY 27, 2007

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	36.2	10.0	35.1
1.5	35.4	10.5	34.8
2.0	34.7	11.0	33.5
2.5	34.8	11.5	33.9
3.0	34.8	12.0	34.0
3.5	34.6	12.5	34.4
4.0	34.2	13.0	34.4
4.5	34.1	13.5	34.7
5.0	34.1	14.0	36.0
5.5	34.7	14.5	35.7
6.0	35.6	15.0	36.1
6.5	36.8	15.5	35.6
7.0	36.7	16.0	35.4
7.5	34.9	16.5	35.3
8.0	33.3	17.0	34.9
8.5	33.6	17.5	33.7
9.0	34.6	18.0	33.3
9.5	35.9		

ANTENNA RESEARCH DRG-118/A

HORN ANTENNA

S/N: 1053

CALIBRATION DATE: MARCH 6, 2006

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	24.46	10.0	39.55
1.5	25.05	10.5	39.86
2.0	28.42	11.0	38.49
2.5	29.91	11.5	40.71
3.0	31.46	12.0	40.59
3.5	31.91	12.5	40.17
4.0	31.55	13.0	39.70
4.5	31.94	13.5	40.84
5.0	32.90	14.0	41.58
5.5	34.07	14.5	45.14
6.0	35.69	15.0	42.20
6.5	33.11	15.5	39.42
7.0	36.51	16.0	38.80
7.5	37.27	16.5	41.08
8.0	37.21	17.0	44.11
8.5	37.16	17.5	46.29
9.0	38.27	18.0	41.61
9.5	39.73		

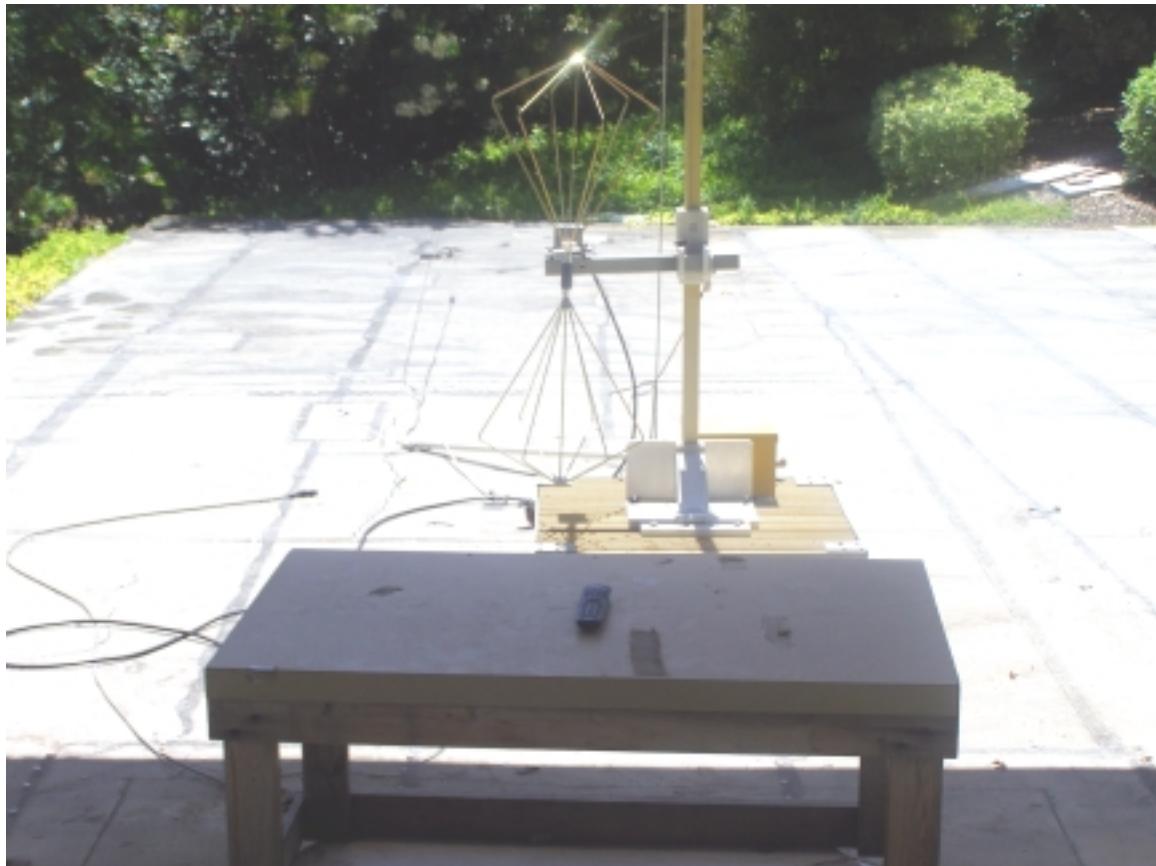
COM-POWER AL-130

LOOP ANTENNA

S/N: 17089

CALIBRATION DATE: SEPTEMBER 21, 2005

FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)
0.009	-42.84	8.66
0.01	-41.93	9.57
0.02	-41.29	10.21
0.05	-42.37	9.13
0.07	-41.8	9.7
0.1	-41.83	9.67
0.2	-44.13	7.37
0.3	-41.73	9.77
0.5	-41.8	9.7
0.7	-41.53	9.97
1	-41.46	10.04
2	-41.14	10.36
3	-41.26	10.24
4	-41.46	10.04
5	-41.10	10.40
10	-40.83	10.67
15	-41.47	10.03
20	-35.44	16.06
25	-42.37	9.13
30	-42.94	8.56

**FRONT VIEW**

UNIVERSAL ELECTRONICS, INC.
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MODEL: URC-5300BJ0
FCC SUBPART B AND C – RADIATED EMISSIONS – LAB D

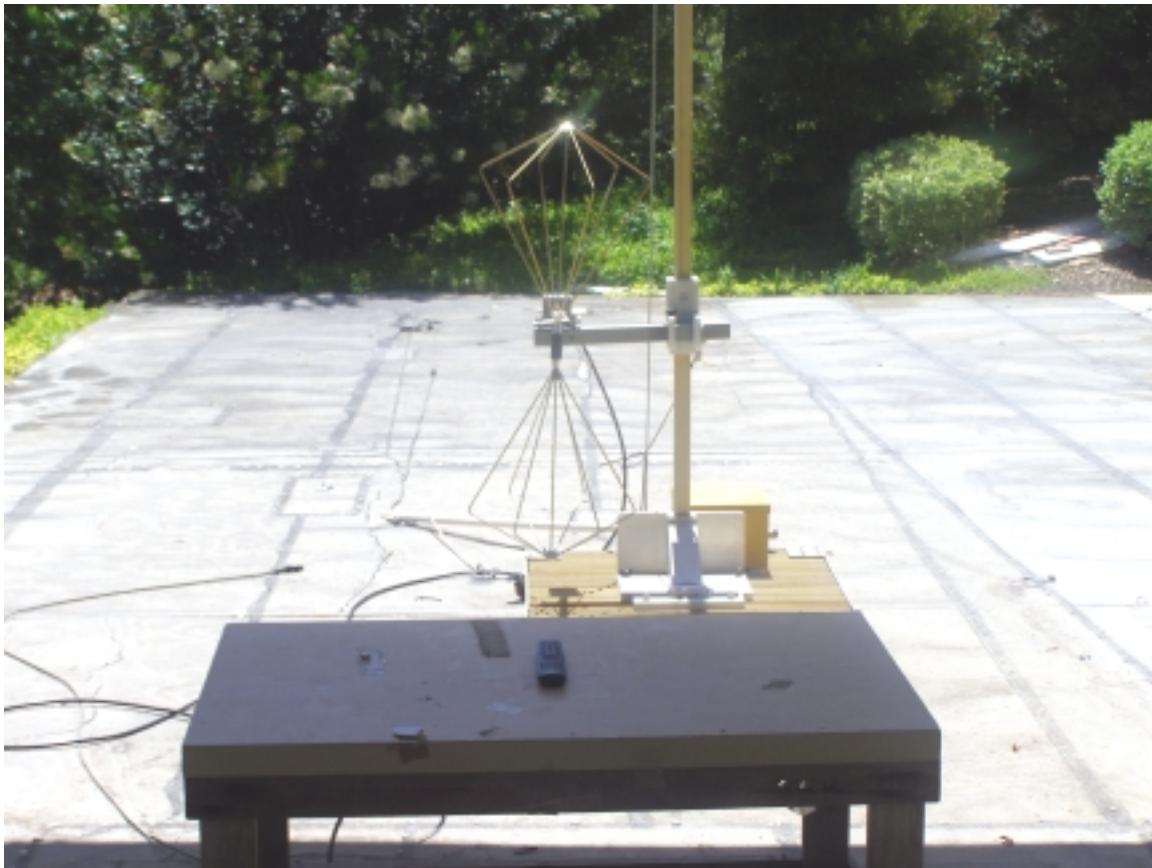
**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

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**REAR VIEW**

UNIVERSAL ELECTRONICS, INC.
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MODEL: URC-5300BJ0
FCC SUBPART B AND C – RADIATED EMISSIONS – LAB D

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

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FRONT VIEW

UNIVERSAL ELECTRONICS, INC.
(HELIX) UEI Z-WAVE 5 DEVICE REMOTE 2007
MODEL: URC-5300BJ0
FCC SUBPART B AND C – RADIATED EMISSIONS – LAB B

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

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**REAR VIEW**

UNIVERSAL ELECTRONICS, INC.
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MODEL: URC-5300BJ0
FCC SUBPART B AND C – RADIATED EMISSIONS – LAB B

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

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APPENDIX E

DATA SHEETS

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

FCC 15.249

Universal Electronics, Inc.
(Helix) UEI Z-wave 5 Device Remote 2007
Model: URC-5300BJ0

Date: 6/26/07
Lab: D
Tested By: Brandon Taylor

X-Axis

Transmit Mode

FCC 15.249

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X-Axis Transmit Mode

FCC 15.249

Universal Electronics, Inc.
(Helix) UEI Z-wave 5 Device Remote 2007
Model: URC-5300BJ0

Date: 6/26/07
Lab: D
Tested By: Brandon Taylor

Y-Axis

Transmit Mode

FCC 15.249

Universal Electronics, Inc.
(Helix) UEI Z-wave 5 Device Remote 2007
Model: URC-5300BJ0

Date: 6/26/07
Lab: D
Tested By: Brandon Taylor

Y-Axis Transmit Mode

FCC 15.249

Universal Electronics, Inc.
(Helix) UEI Z-wave 5 Device Remote 2007
Model: URC-5300BJ0

Date: 6/26/07
Lab: D
Tested By: Brandon Taylor

Z-Axis Transmit Mode

FCC 15.249

Universal Electronics, Inc.
(Helix) UEI Z-wave 5 Device Remote 2007
Model: URC-5300BJ0

Date: 6/26/07
Lab: D
Tested By: Brandon Taylor

Z-Axis Transmit Mode

FCC 15.249

Universal Electronics, Inc.
(Helix) UEI Z-wave 5 Device Remote 2007
Model: URC-5300BJ0

Date: 6/26/07
Lab: D
Tested By: Brandon Taylor

Receive Mode and Digital Portion -- 10 kHz to 9300 MHz

Non-Harmonic Emissions from the Transmitter -- 10 kHz to 9300 MHz

Vertical and Horizontal Polarization



Test Location : Compatible Electronics **Page** : 1/1
Customer : Universal_Electronics,Inc **Date** : 6/27/2007
Manufacturer : Universal_Electronics,Inc **Time** : 11:19:37
Eut name : (Helix) UEI Z-Wave 5 Device Remote 2007 **Lab** : D
Model : URC-5300BJ0 **Test Distance** : 3 Meters
Serial # :
Specification : FCC Class B
Distance correction factor (20 * log(test/spec)) : 0.00
Test Mode :
Vertical and Horizontal - 10 kHz - 1 GHz
Tested By: Brandon_Taylor

Pol	Freq	Rdng	Cable	Ant	Amp	Cor'd	Limit	Delta
	MHz	dBuV	loss	factor	gain	rdg = R	= L	R-L
			dB	dB	dB	dBuV	dBuV/m	dB

No Emissions found in both Transmit and Receive modes