

*FCC PART 15, SUBPART B and C  
TEST REPORT**for***ONE FOR ALL NORTH AMERICA  
KAMELEON 8 DEVICE RF 2004****MODEL NUMBER: URC-9964BJ0**Prepared for  
**UNIVERSAL ELECTRONICS  
6101 GATEWAY DRIVE  
CYPRESS, CALIFORNIA 90630**

Prepared by: \_\_\_\_\_

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Approved by: \_\_\_\_\_

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114 OLINDA DRIVE  
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DATE: APRIL 30, 2004

	REPORT BODY	APPENDICES					TOTAL
		A	B	C	D	E	
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## GENERAL REPORT SUMMARY

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

The measurement data and conclusions appearing herein relate only to the sample tested and this report may not be reproduced 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: One For All North America Kameleon 8 Device RF 2004  
Model Number: URC-9964BJ0  
S/N: N/A

Product Description: See Expository Statement.

Modifications: The EUT was modified in order to meet the specifications. Please see the list located in Appendix B.

Manufacturer: Jetta Company Limited  
19 On Kui Street, On Lok Tsuen, Fanling  
Hong Kong, China

Test Dates: April 2, 5 and 6, 2003

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: 2001

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 operates on DC power only and cannot be plugged into the AC public mains.
2	Radiated RF Emissions, 10 kHz - 4340 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.



## 1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the One For All North America Kameleon 8 Device RF 2004 Model Number: URC-9964BJ0. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4: 2001. 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.



## 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                      Staff Electrical Engineer

Compatible Electronics, Inc.

Kyle Fujimoto                      Test Engineer  
Michael Christensen              Sr. Test Engineer

### 2.4 Date Test Sample was Received

The test sample was received on April 2, 2004.

### 2.5 Disposition of the Test Sample

The sample has not been returned to Universal Electronics, Inc. as of April 30, 2004.

### 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 2001	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 One For All North America Kameleon 8 Device RF 2004 Model Number: URC-9964BJ0 (EUT) was tested as a stand alone device. The EUT was tested in 3 orthogonal axis. The EUT was continuously transmitting. The antenna is a helical antenna that is soldered onto the PCB. During normal operation, the EUT will turn off within 5 seconds of releasing the button.

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**

<b>EQUIPMENT</b>	<b>MANUFACTURER</b>	<b>MODEL NUMBER</b>	<b>SERIALNUMBER</b>	<b>FCC ID</b>
ONE FOR ALL NORTH AMERICA KAMELEON 8 DEVICE RF 2004 (EUT)	UNIVERSAL ELECTRONICS, INC.	URC-9964BJ0	N/A	MG3UR9964



## 5.2 EMI Test Equipment

EQUIPMENT TYPE	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. DUE DATE
Radiate Emissions Data Capture Program	Compatible Electronics	2.0	N/A	N/A	N/A
Spectrum Analyzer – Main Section	Hewlett Packard	8566B	3638A08784	June 20, 2003	1 Year
Spectrum Analyzer – Display Section	Hewlett Packard	85662A	3701A22279	June 20, 2003	1 Year
Quasi-Peak Adapter	Hewlett Packard	85650A	2430A00424	June 20, 2003	1 Year
Preamplifier	Com Power	PA-103	1582	March 11, 2004	1 Year
Biconical Antenna	Com Power	AB-900	15226	April 21, 2003	1 Year
Log Periodic Antenna	Com Power	AL-100	16202	February 18, 2004	1 Year
Antenna Mast	Com Power	AM-100	N/A	N/A	N/A
Turntable	Com Power	TT-100	N/A	N/A	N/A
Computer	Hewlett Packard	4530	US91912319	N/A	N/A
Monitor	Hewlett Packard	D5258A	TW74500641	N/A	N/A
Loop Antenna	Com-Power	AL-130	17070	July 8, 2003	1 Year
Horn Antenna	Com-Power	AH-118	10085	January 8, 2004	1 Year
Microwave Preamplifier	Com-Power	PA-122	25196	March 4, 2004	1 Year



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**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 spectrum analyzer was 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-103 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 was 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 measurement bandwidths and transducers used for the radiated emissions test were:

<b>FREQUENCY RANGE</b>	<b>EFFECTIVE MEASUREMENT BANDWIDTH</b>	<b>TRANSDUCER</b>
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 3.50 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: 2001. 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.



### **Radiated Emissions (Spurious and Harmonics) Test (con't)**

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.



## 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. Photos of the -20 dB bandwidth are located in Appendix E.



## 8. CONCLUSIONS

The One For All North America Kameleon 8 Device RF 2004 Model Number: URC-9964BJ0 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***



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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***



## 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.

- 1) Changed C2 to 12 pF



**APPENDIX C**

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



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

USED FOR THE PRIMARY TEST

One For All North America Kameleon 8 Device RF 2004  
Model Number: URC-9964BJ0  
S/N: N/A

There were no additional models covered under this report.



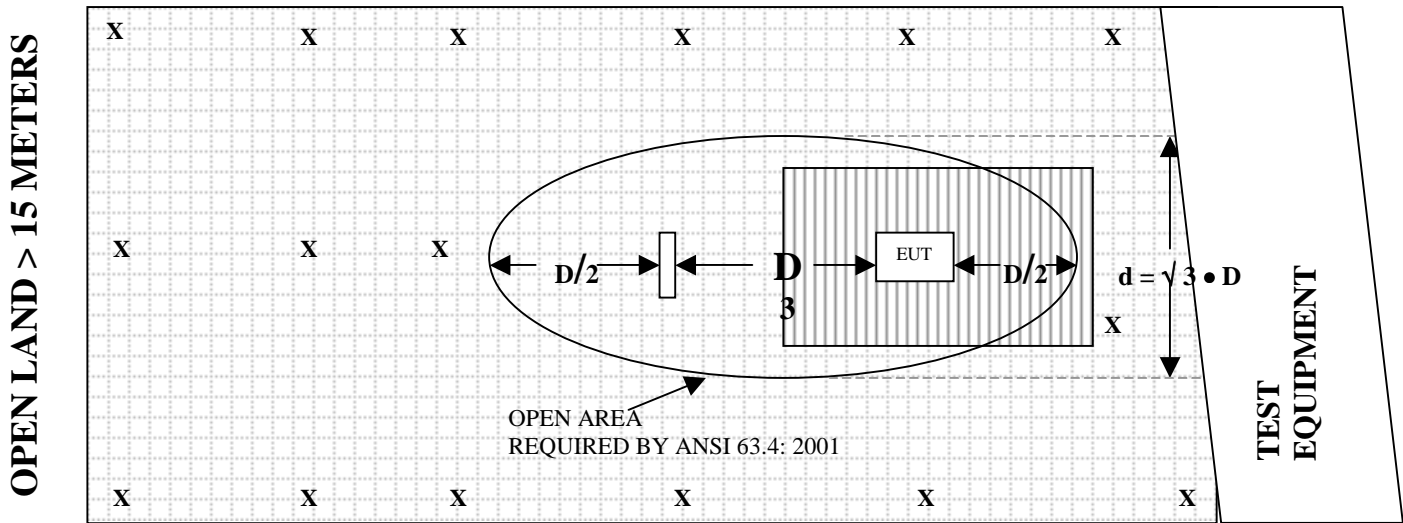
**APPENDIX D**

***DIAGRAMS, CHARTS, AND PHOTOS***



**FIGURE 1: PLOT MAP AND LAYOUT OF RADIATED SITE**

**OPEN LAND > 15 METERS**



**OPEN LAND > 15 METERS**

- |          |                          |  |                 |
|----------|--------------------------|--|-----------------|
| <b>X</b> | = GROUND RODS            |  | = GROUND SCREEN |
| <b>D</b> | = TEST DISTANCE (meters) |  | = WOOD COVER    |





COM-POWER AB-900

BICONICAL ANTENNA

S/N: 15226

CALIBRATION DATE: APRIL 21, 2003

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	11.20	120	13.80
35	10.40	125	12.50
40	10.20	140	12.50
45	11.00	150	10.90
50	11.30	160	11.50
60	9.60	175	14.90
70	7.40	180	15.50
80	6.10	200	16.90
90	7.70	250	15.50
100	10.50	300	23.80



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

S/N: 16202

CALIBRATION DATE: FEBRUARY 18, 2004

<b>FREQUENCY (MHz)</b>	<b>FACTOR (dB)</b>	<b>FREQUENCY (MHz)</b>	<b>FACTOR (dB)</b>
300	12.90	700	19.60
400	14.40	800	21.80
500	17.40	900	20.50
600	18.90	1000	22.70



**COM-POWER PA-103****PREAMPLIFIER**

S/N: 1582

CALIBRATION DATE: MARCH 11, 2004

<b>FREQUENCY (MHz)</b>	<b>FACTOR (dB)</b>	<b>FREQUENCY (MHz)</b>	<b>FACTOR (dB)</b>
30	32.4	300	32.3
40	32.4	350	32.2
50	32.4	400	32.2
60	32.5	450	32.0
70	32.4	500	32.0
80	32.3	550	31.8
90	32.3	600	31.7
100	32.3	650	31.7
125	32.4	700	31.7
150	32.2	750	31.9
175	32.4	800	31.4
200	32.4	850	31.4
225	32.5	900	31.0
250	32.3	950	31.4
275	32.1	1000	31.4



**COM-POWER PA-122****MICROWAVE PREAMPLIFIER**

S/N: 25196

CALIBRATION DATE: MARCH 4, 2004

<b>FREQUENCY (GHz)</b>	<b>FACTOR (dB)</b>	<b>FREQUENCY (GHz)</b>	<b>FACTOR (dB)</b>
1.0	32.1	6.0	28.9
1.1	32.0	6.5	29.3
1.2	31.8	7.0	29.7
1.3	31.6	7.5	29.8
1.4	31.5	8.0	29.9
1.5	31.4	8.5	30.2
1.6	31.2	9.0	30.3
1.7	31.0	9.5	29.9
1.8	30.8	10.0	29.3
1.9	30.7	11.0	28.5
2.0	30.5	12.0	30.5
2.5	30.0	13.0	31.1
3.0	29.7	14.0	29.9
3.5	29.2	15.0	29.8
4.0	28.6	16.0	29.1
4.5	28.4	17.0	28.0
5.0	28.3	18.0	26.0
5.5	28.5		



**COM-POWER AH-118****HORN ANTENNA**

S/N: 10085

CALIBRATION DATE: JANUARY 8, 2004

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	24.5	10.0	38.7
1.5	26.7	10.5	39.2
2.0	30.8	11.0	39.2
2.5	30.3	11.5	40.3
3.0	30.3	12.0	41.2
3.5	30.7	12.5	41.7
4.0	31.3	13.0	41.5
4.5	32.6	13.5	41.7
5.0	33.9	14.0	41.6
5.5	34.3	14.5	44.2
6.0	34.3	15.0	47.6
6.5	39.4	15.5	42.5
7.0	37.1	16.0	42.3
7.5	38.6	16.5	41.7
8.0	39.4	17.0	43.9
8.5	39.3	17.5	48.7
9.0	38.7	18.0	52.4
9.5	38.7		



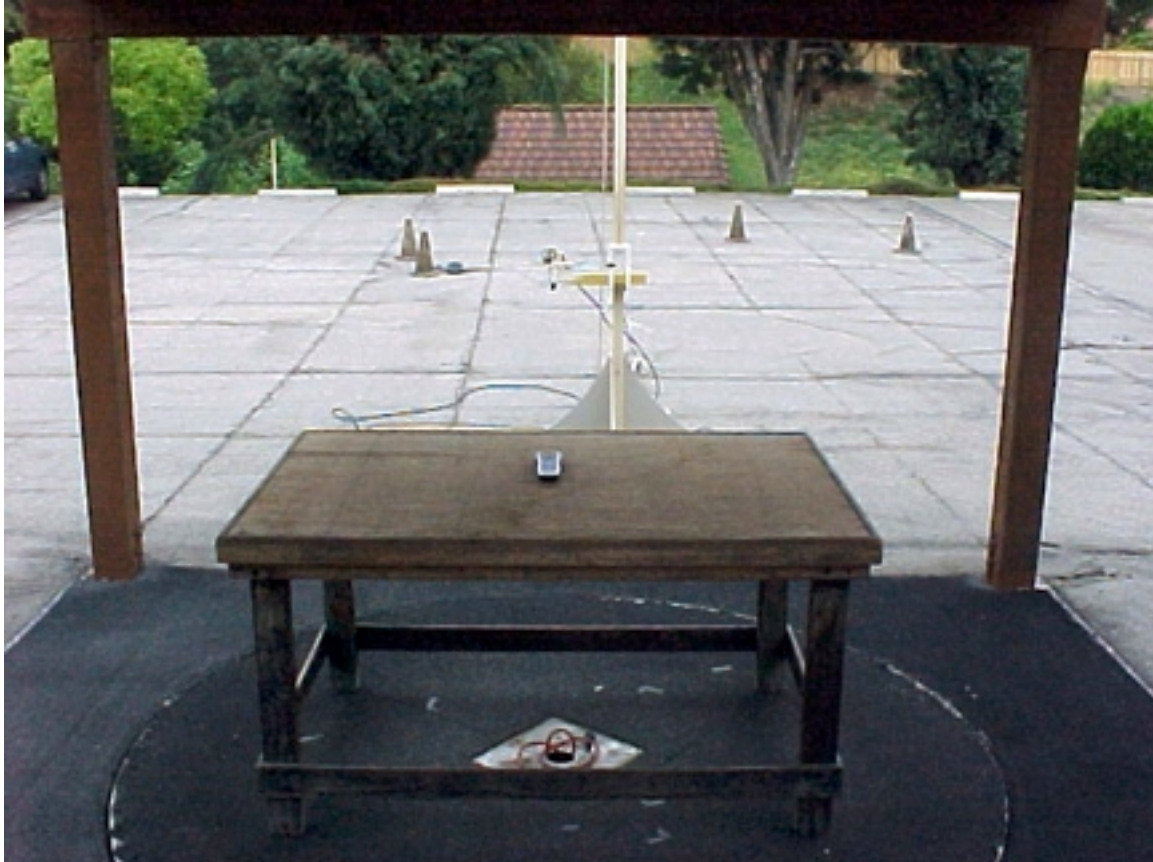
**COM-POWER AL-130****LOOP ANTENNA**

S/N: 17070

CALIBRATION DATE: JULY 8, 2003

<b>FREQUENCY (MHz)</b>	<b>MAGNETIC (dB/m)</b>	<b>ELECTRIC (dB/m)</b>
0.009	-40.0	11.5
0.01	-40.1	11.4
0.02	-41.3	10.2
0.05	-41.7	9.8
0.07	-41.3	10.2
0.1	-41.5	10.0
0.2	-43.8	7.7
0.3	-41.4	10.1
0.5	-41.3	10.2
0.7	-41.2	10.3
1	-40.8	10.7
2	-40.3	11.2
3	-40.6	10.9
4	-40.7	10.8
5	-40.1	11.4
10	-40.5	11.0
15	-41.3	10.2
20	-41.1	10.4
25	-41.7	9.8
30	-43.1	8.4



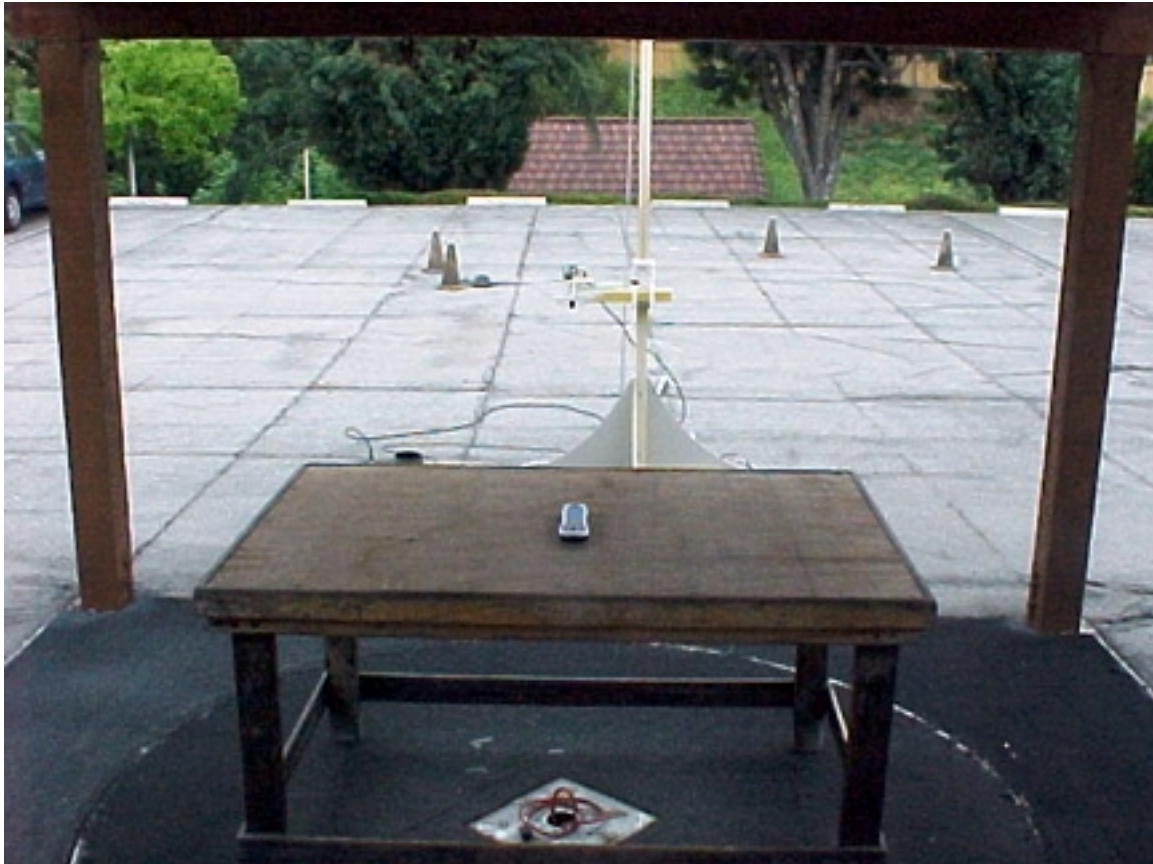


**FRONT VIEW**

UNIVERSAL ELECTRONICS, INC.  
ONE FOR ALL NORTH AMERICA KAMELEON 8 DEVICE RF 2004  
MODEL NUMBER: URC-9964BJ0  
FCC SUBPART B AND C - RADIATED EMISSIONS – 04-02-04, 04-05-04 and 04-06-04

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





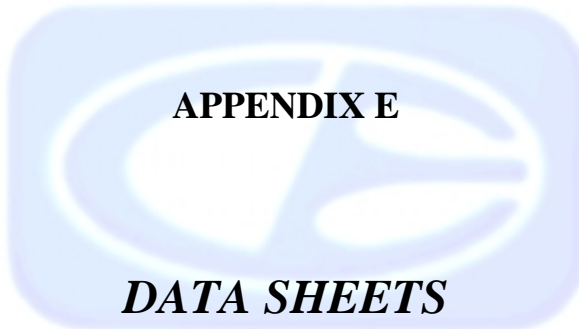
**REAR VIEW**

UNIVERSAL ELECTRONICS, INC.  
ONE FOR ALL NORTH AMERICA KAMELEON 8 DEVICE RF 2004  
MODEL NUMBER: URC-9964BJ0  
FCC SUBPART B AND C - RADIATED EMISSIONS – 04-02-04, 04-05-04 and 04-06-04

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





  
**APPENDIX E**  
***DATA SHEETS***



***RADIATED EMISSIONS***

***DATA SHEETS***

























Test Location : Compatible Electronics Page : 1/1  
Customer : UNIVERSAL ELECTRONICS Date : 4/06/2004  
Manufacturer : UNIVERSAL ELECTRONICS Time : 11:40:30  
Eut name : OFA KAMELEON NA, 8 DEVICE RF 2004 Lab : A  
Model : URC-9964BJ0 COB Test Distance : 3  
Serial # :  
Specification : FCC Class B  
Distance correction factor ( $20 * \log(\text{test}/\text{spec})$ ) : 0.00  
Test Mode : TESTED BY MICHAEL CHRISTENSEN  
NO SPURIOUS EMISSIONS FOUND FROM  
10 KHZ TO 4.34 GHz

Pol	Freq	Rdng	Cable	Ant	Amp	Cor' d	Li mit	Del ta
	MHz	dBuV	loss	factor	gain	rdg = R	= L	R- L
			dB	dB	dB	dBuV	dBuV/m	dB

-----



***-20 dB BANDWIDTH***

***PHOTOS***



