Report Number: **B40921D1**

FCC PART 15, SUBPART B and C TEST REPORT

for

DIRECT TV CUSTOM DEVICE 24K-2004

MODEL NUMBER: URC-2081BG0-X

Prepared for

UNIVERSAL ELECTRONICS, INC. 6101 GATEWAY DRIVE CYPRESS, CALIFORNIA 90630-4841

Prepared by:	
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Approved by:	

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

DATE: SEPTEMBER 23, 2004

	REPORT	APPENDICES			TOTAL		
	BODY	A	В	C	D	E	
PAGES	15	2	2	2	12	13	46

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1	Plot Map And Layout of Radiated Test Site



Report Number: **B40921D1**

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: Direct TV Custom Device 24K-2004

Model Number: URC-2081BG0-X

S/N: N/A

Product Description: See Expository Statement.

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

Manufacturer: Universal Electronics, Inc.

6101 Gateway Drive

Cypress, California 90630-4841

Test Date: September 21, 2004

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 operates on batteries 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.



Report Number: **B40921D1**

1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the Direct TV Custom Device 24K-2004 Model Number: URC-2081BG0-X. 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.



FCC Part 15 Subpart B and FCC Section 15.231 Test Report

Direct TV Custom Device 24K-2004

Nitect IV Custom Device 24K-2004

Model Number: URC-2081BG0-X

Report Number: **B40921D1**

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
Benigno Chavez Test Technician
Michael Christensen Lab Manager

2.4 Date Test Sample was Received

The test sample was received prior to its qualification testing on September 21, 2004.

2.5 Disposition of the Test Sample

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

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

PCB Printed Circuit Board

TX Transmit RX Receive



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Direct TV Custom Device 24K-2004

Model Number: URC-2081BG0-X

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



Report Number: **B40921D1 FCC Part 15 Subpart B** and **FCC Section 15.231** Test Report

Direct TV Custom Device 24K-2004 Model Number: URC-2081BG0-X

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 Direct TV Custom Device 24K-2004 Model: URC-2081BG0-X (EUT) was tested as a stand alone unit in three orthogonal axis. The EUT was continuously transmitting.

The antenna is hard wired to the PCB of the EUT.

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



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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
DIRECT TV CUSTOM DEVICE 24K-2004 (EUT)	UNIVERSAL ELECTRONICS, INC.	URC-2081BG0-X	N/A	MG32081





5.2 EMI Test Equipment

EQUIPMENT TYPE	MANU- FACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. CYCLE
Radiate Emissions Data Capture Program	Compatible Electronics	2.0	N/A	N/A	N/A
Spectrum Analyzer – Main Section	Hewlett Packard	8566B	3638A08768	June 24, 2004	1 Year
Spectrum Analyzer – Display Section	Hewlett Packard	85662A	3701A22262	June 24, 2004	1 Year
Quasi-Peak Adapter	Hewlett Packard	85650A	2811A01363	June 24, 2004	1 Year
EMI Receiver	Rhode & Schwarz	ESIB40	100172	July 22, 2003	2 Year
Preamplifier	Com-Power	PA-102	1017	January 6, 2004	1 Year
Biconical Antenna	Com Power	AB-900	15227	April 21, 2004	1 Year
Log Periodic Antenna	Com Power	AL-100	16203	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	25310	June 4, 2003	2 Year
Horn Antenna	Antenna Research	DRG-118/A	1053	January 16, 2004	1 Year
Microwave Preamplifier	Com-Power	PA-122	25195	August 19, 2004	1 Year



FCC Part 15 Subpart B and FCC Section 15.231 Test Report

Direct TV Custom Device 24K-2004

Model Number: URC-2081BG0-X

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 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-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 and EMI Receiver record the highest measured reading over all the sweeps.

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 4.34 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.

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. Data sheets of the -20 dB bandwidth are located in Appendix E.







8. CONCLUSIONS

The Direct TV Custom Device 24K-2004 Model Number: URC-2081BG0-X 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)



COMPATIBLE ELECTRONICS

Direct TV Custom Device 24K-2004 Model Number: URC-2081BG0-X

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 during the testing.





APPENDIX C

ADDITIONAL MODELS COVERED UNDER THIS REPORT



ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

Direct TV Custom Device 24K-2004 Model Number: URC-2081BG0-X S/N: N/A

There were no additional models covered under this report.







APPENDIX D

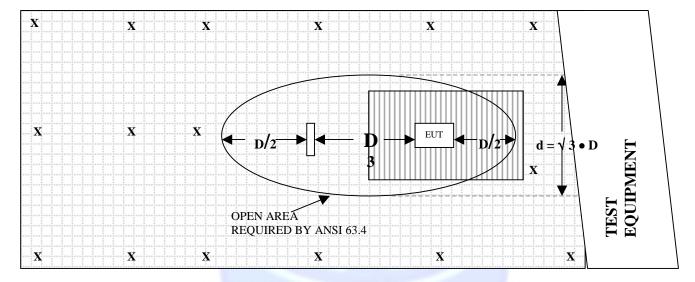
DIAGRAMS, CHARTS, AND PHOTOS





FIGURE 1: PLOT MAP AND LAYOUT OF RADIATED TEST 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: 15227

CALIBRATION DATE: APRIL 21, 2004

I			
FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	11.20	120	12.50
35	10.90	125	12.90
40	11.40	140	12.40
45	8.90	150	12.10
50	11.40	160	12.40
60	10.30	175	15.80
70	8.20	180	15.70
80	6.00	200	17.40
90	7.60	250	14.60
100	10.50	300	19.50





COM-POWER AL-100

LOG PERIODIC ANTENNA

S/N: 16203

CALIBRATION DATE: FEBRUARY 18, 2004

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
300	13.00	700	19.40
400	15.10	800	21.30
500	16.70	900	20.70
600	18.70	1000	22.60





COM-POWER PA-102

PREAMPLIFIER

S/N: 1017

CALIBRATION DATE: JANUARY 6, 2004

FREQUENCY	FACTOR	FREQUENCY	FACTOR
(MHz)	(dB)	(MHz)	(dB)
30	37.8	300	37.6
40	37.5	350	37.5
50	37.7	400	37.5
60	37.5	450	37.0
70	37.5	500	37.1
80	37.5	550	37.3
90	37.5	600	37.1
100	37.5	650	37.4
125	37.8	700	37.1
150	37.5	750	37.1
175	37.5	800	36.8
200	37.6	850	36.2
225	37.6	900	36.7
250	37.5	950	36.2
275	37.6	1000	35.3





COM-POWER PA-122

MICROWAVE PREAMPLIFIER

S/N: 25195

CALIBRATION DATE: AUGUST 19, 2004

	T		
FREQUENCY	FACTOR	FREQUENCY	FACTOR
(GHz)	(dB)	(GHz)	(dB)
1.0	30.50	6.0	30.57
1.1	30.24	6.5	30.39
1.2	30.44	7.0	30.08
1.3	30.38	7.5	29.92
1.4	30.11	8.0	28.88
1.5	29.91	8.5	28.08
1.6	29.74	9.0	28.08
1.7	30.26	9.5	29.11
1.8	30.41	10.0	30.21
1.9	30.19	11.0	29.00
2.0	30.37	12.0	29.10
2.5	30.69	13.0	29.77
3.0	31.63	14.0	28.67
3.5	31.61	15.0	29.72
4.0	31.46	16.0	30.54
4.5	31.45	17.0	30.05
5.0	31.33	18.0	28.47
5.5	31.15		





ANTENNA RESEARCH DRG-118/A

HORN ANTENNA

S/N: 1053

CALIBRATION DATE: JANUARY 16, 2004

FREQUENCY	FACTOR	FREQUENCY	FACTOR
(GHz)	(dB)	(GHz)	(dB)
1.0	24.4	10.0	38.7
1.5	25.2	10.5	39.0
2.0	28.2	11.0	38.9
2.5	28.5	11.5	41.3
3.0	30.1	12.0	40.5
3.5	31.0	12.5	40.0
4.0	31.2	13.0	40.2
4.5	31.9	13.5	40.5
5.0	33.2	14.0	41.6
5.5	33.7	14.5	44.8
6.0	34.3	15.0	41.4
6.5	35.0	15.5	39.2
7.0	36.7	16.0	39.4
7.5	37.3	16.5	40.9
8.0	37.1	17.0	42.6
8.5	37.3	17.5	45.1
9.0	37.7	18.0	41.7
9.5	38.6		





COM-POWER AL-130

LOOP ANTENNA

S/N: 25310

CALIBRATION DATE: JUNE 4, 2003

FREQUENCY	MAGNETIC	ELECTRIC
(MHz)	(dB/m)	(dB/m)
0.009	-41.2	10.3
0.01	-41.3	10.2
0.02	-42.3	9.2
0.05	-42.5	9.0
0.07	-42.3	9.2
0.1	-42.5	9.0
0.2	-44.6	6.9
0.3	-42.1	9.4
0.5	-42.4	9.1
0.7	-42.1	9.4
1	-41.5	10.0
2	-41.0	10.5
3	-41.3	10.2
4	-41.3	10.2
5	-40.9	10.6
10	-41.6	9.9
15	-42.1	9.4
20	-42.2	9.3
25	-42.7	8.8
30	-44.3	7.2





FRONT VIEW

UNIVERSAL ELECTRONICS, INC.
DIRECT TV CUSTOM DEVICE 24K-2004
MODEL NUMBER: URC-2081BG0-X
FCC SUBPART B AND C – LAB B – RADIATED EMISSIONS – 09-21-04



REAR VIEW

UNIVERSAL ELECTRONICS, INC.
DIRECT TV CUSTOM DEVICE 24K-2004
MODEL NUMBER: URC-2081BG0-X
FCC SUBPART B AND C – LAB B – RADIATED EMISSIONS – 09-21-04

Report Number: **B40921D1**



FRONT VIEW

UNIVERSAL ELECTRONICS, INC.
DIRECT TV CUSTOM DEVICE 24K-2004
MODEL NUMBER: URC-2081BG0-X
FCC SUBPART B AND C – LAB D – RADIATED EMISSIONS – 09-21-04



REAR VIEW

UNIVERSAL ELECTRONICS, INC.
DIRECT TV CUSTOM DEVICE 24K-2004
MODEL NUMBER: URC-2081BG0-X
FCC SUBPART B AND C – LAB D – RADIATED EMISSIONS – 09-21-04

Report Number: **B40921D1 FCC Part 15 Subpart B** and **FCC Section 15.231** Test Report

Direct TV Custom Device 24K-2004 Model Number: URC-2081BG0-X

APPENDIX E

DATA SHEETS



Model Number: URC-2081BG0-X



RADIATED EMISSIONS

DATA SHEETS



RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

COMPANY	Universal Electronics	DATE	9/21/04	
EUT	Direct TV Custom 4 Device 24K-2004	DUTY CYCLE	36.4478801	%
MODEL	URC-2081BG0-X	PEAK TO AVG	-8.76655453	dB
S/N	N/A	TEST DIST.	3	Meters
TEST ENGINEER	Kyle Fujimoto	LAB	D	

Frequency	Peak	Average (A	·)	Antenna		EUT	EUT	Antenna	Cable	Amplifier		Mixer	*Corrected	Delta **	Spec	
MHz	Reading (dBuV)	or Quasi- Peak (QP			Azimuth (degrees)	Axis (X,Y,Z)	Tx Channel	Factor (dB)	Loss (dB)	Gain (dB)	Factor (dB)	Factor (dB)	Reading (dBuV/m)	(dB)	Limit (dBuV/m)	Comments
433.9200	60.4	51.6 A		1.0	315	X	LOW	15.6	2.1	0.0	0.0	0.0	69.4	-11.4	80.8	
433.9200	48.3	39.5 A	Н	1.0	270	Y	LOW	15.6	2.1	0.0	0.0	0.0	57.3	-23.5	80.8	
433.9200	50.9	42.1 A	Н	1.0	270	Z	LOW	15.6	2.1	0.0	0.0	0.0	59.9	-20.9	80.8	
433.9200	43.7	34.9 A	V	1.5	315	X	LOW	15.6	2.1	0.0	0.0	0.0	52.7	-28.1	80.8	
433.9200	60.4	51.6 A	\ V	1.5	90	Y	LOW	15.6	2.1	0.0	0.0	0.0	69.4	-11.4	80.8	
433.9200	59.4	50.6 A	\ V	1.0	315	Z	LOW	15.6	2.1	0.0	0.0	0.0	68.4	-12.4	80.8	

^{*} CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

PAGE 1 of PAGE 2

^{**} DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

COMPANY	Universal Electronics	DATE	9/21/04	
EUT	Direct TV Custom 4 Device 24K-2004	DUTY CYCLE	36.4478801	%
MODEL	URC-2081BG0-X	PEAK TO AVG	-8.76655453	dB
S/N	N/A	TEST DIST.	3	Meters
TEST ENGINEER	Kyle Fujimoto	LAB	D	

Frequency	Peak	Average (A)		Antenna		EUT	EUT	Antenna	Cable	Amplifier		Mixer	*Corrected		Spec	
MHz	Reading (dBuV)	or Quasi- Peak (QP)		Height (meters)	Azimuth (degrees)	Axis (X,Y,Z)	Tx Channel	Factor (dB)	Loss (dB)	Gain (dB)	Factor (dB)	Factor (dB)	Reading (dBuV/m)	** (dB)	Limit (dBuV/m)	Comments
867.8400	77.2	68.4 A	Н	1.0	225	X	LOW	20.9	3.0	36.4	0.0		55.9	-4.9	60.8	
867.8400	64.4	55.6 A	Н	1.0	90	Y	LOW	20.9	3.0	36.4	0.0		43.1	-17.7	60.8	
867.8400	78.8	70.0 A	Н	1.0	90	Z	LOW	20.9	3.0	36.4	0.0		57.5	-3.3	60.8	
867.8400	54.9	46.1 A	V	1.5	45	X	LOW	20.9	3.0	36.4	0.0		33.6	-27.2	60.8	
867.8400	76.4	67.6 A	V	1.0	45	Y	LOW	20.9	3.0	36.4	0.0		55.1	-5.7	60.8	
867.8400	60.4	51.6 A	V	1.0	45	Z	LOW	20.9	3.0	36.4	0.0		39.1	-21.7	60.8	

^{*} CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

PAGE 2 of PAGE 2

^{**} DELTA = SPEC LIMIT - CORRECTED READING

Universal Electronics, Inc. Direct TV Custom 4 Device 24K-2004

Model: URC-2081BG0-X Configuration: Transmit Mode

Duty Cycle: 36.4478801%

Date: 9/21/04 Lab: B

_					Peak /	Ant.	Table	
Freq.	Level				QP/	Height	Angle	
(MHz)	,	Pol (v/h)		Margin	Avg	(m)	(deg)	Comments
1301.76	44.96	V	74	-29.04	Peak	1.02	180	
1301.76	36.1934	V	54	-17.807	Avg	1.02	180	
1735.7	42.59	V	74	-31.41	Peak	1.36	45	
1735.7	33.8234	V	54	-20.177	Avg	1.36	45	
2169.6	39.79	V	80.8	-41.01	Peak	3.25	180	
2169.6	31.0234	V	60.8	-29.777	Avg	3.25	180	
2603.52	42.35	V	80.8	-38.45	Peak	2.5	225	
2603.52	33.5834	V	60.8	-27.217	Avg	2.5	225	
3037.44	47.49	V	80.8	-33.31	Peak	2.75	225	
3037.44	38.7234	V	60.8	-22.077	Avg	2.75	225	
3471.36	46.57	V	80.8	-34.23	Peak	3.25	0	
3471.36	37.8034	V	60.8	-22.997	Avg	3.25	0	
3905.28	48.43	V	74	-25.57	Peak	2.15	45	
3905.28	39.6634	V	54	-14.337	Avg	2.15	45	
4339.2	46.94	V	74	-27.06	Peak	2.17	135	
4339.2	38.1734	V	54	-15.827	Avg	2.17	135	

Universal Electronics, Inc. Direct TV Custom 4 Device 24K-2004

Model: URC-2081BG0-X Configuration: Transmit Mode

Duty Cycle: 36.4478801%

Date: 9/21/04

Lab: B

_					Peak /	Ant.	Table	
Freq.	Level			l	QP/	Height	Angle	_
(MHz)	(dBuV)	Pol (v/h)		Margin	Avg	(m)	(deg)	Comments
1301.76	47.63	Н	74	-26.37	Peak	1.64	225	
1301.76	38.8634	Н	54	-15.137	Avg	1.64	225	
1735.7	44.63	Н	74	-29.37	Peak	2.17	45	
1735.7	35.8634	Н	54	-18.137	Avg	2.17	45	
2169.6	38.01	Н	80.8	-42.79	Peak	2	180	
2169.6	29.2434	Н	60.8	-31.557	Avg	2	180	
2603.52	40.94	Н	80.8	-39.86	Peak	2	180	
2603.52	32.1734	Н	60.8	-28.627	Avg	2	180	
3037.44	46.4	Н	80.8	-34.4	Peak	2.75	135	
3037.44	37.6334	Н	60.8	-23.167	Avg	2.75	135	
3471.36	42.84	Н	80.8	-37.96	Peak	2.5	225	
3471.36	34.0734	Н	60.8	-26.727	Avg	2.5	225	
					, and the second			
3905.28	49.48	Н	74	-24.52	Peak	2.57	45	
3905.28	40.7134	Н	54	-13.287	Avg	2.57	45	
4339.2	48.44	Н	74	-25.56	Peak	2.54	0	
4339.2	39.6734	Н	54	-14.327	Avg	2.54	0	

Universal Electronics, Inc. Direct TV Custom 4 Device 24K-2004

Model: URC-2081BG0-X Configuration: Transmit Mode

Duty Cycle: 36.4478801%

Date: 9/21/04 Lab: B

					Peak /	Ant.	Table	
Freq.	Level				QP/	Height	Angle	
(MHz)	(dBuV)	Pol (v/h)	Limit	Margin	Avg	(m)	(deg)	Comments
1301.76	52.04	V	74	-21.96	Peak	2.89	45	
1301.76	43.2734	V	54	-10.727	Avg	2.89	45	
1735.7	46.2	V	74	-27.8	Peak	2.09	45	
1735.7	37.4334	V	54	-16.567	Avg	2.09	45	
2169.6	39.81	V	80.8	-40.99	Peak	1.5	180	
2169.6	31.0434	V	60.8	-29.757	Avg	1.5	180	
2603.52	42.72	V	80.8	-38.08	Peak	2.25	135	
2603.52	33.9534	V	60.8	-26.847	Avg	2.25	135	
3037.44	45.75	V	80.8	-35.05	Peak	1.75	180	
3037.44	36.9834	V	60.8	-23.817	Avg	1.75	180	
						_		
3471.36	45.11	V	80.8	-35.69	Peak	3	180	
3471.36	36.3434	V	60.8	-24.457	Avg	3	180	
000= 00	40.00			05.05	.		005	
3905.28	48.03	V	74	-25.97	Peak	2.37	225	
3905.28	39.2634	V	54	-14.737	Avg	2.37	225	
4000.0	40.0		7.4	04.4	Б.	0.40	005	
4339.2	49.9	V	74	-24.1	Peak	3.12	225	
4339.2	41.1334	V	54	-12.867	Avg	3.12	225	

Universal Electronics, Inc. Direct TV Custom 4 Device 24K-2004

Model: URC-2081BG0-X Configuration: Transmit Mode

Duty Cycle: 36.4478801%

Date: 9/21/04

Lab: B

Freq.	Level				Peak / QP /	Ant. Height	Table Angle	
(MHz)		Pol (v/h)	Limit	Margin	Avg	(m)	(deg)	Comments
1301.76	,	H	74	-27.86	Peak	1	135	
1301.76	37.3734	Н	54	-16.627	Avg	1	135	
					· ·			
1735.7	39.1	Н	74	-34.9	Peak	1.3	180	
1735.7	30.3334	Н	54	-23.667	Avg	1.3	180	
2169.6	39.21	Н	80.8	-41.59	Peak	3.25	315	
2169.6	30.4434	Н	60.8	-30.357	Avg	3.25	315	
2603.52		Н	80.8	-36.03	Peak	2.75	315	
2603.52	36.0034	Н	60.8	-24.797	Avg	2.75	315	
000= 44	40 =		00.0	20.0	<u> </u>		070	
3037.44		Н	80.8	-32.3	Peak	3	270	
3037.44	39.7334	Н	60.8	-21.067	Avg	3	270	
3471.36	48.18	Н	80.8	-32.62	Peak	2.5	270	
3471.36	39.4134	Н	60.8	-32.62		2.5 2.5	270	
347 1.30	39.4134	П	00.0	-21.301	Avg	2.5	210	
3905.28	48.84	Н	74	-25.16	Peak	2.99	225	
3905.28	40.0734	Н	54	-13.927	Avg	2.99	225	
0000.20	10.0701	• • •	01	10.027	7.179	2.00	220	
4339.2	47.44	Н	74	-26.56	Peak	2.32	0	
4339.2	38.6734	Н	54	-15.327	Avg	2.32	0	

Universal Electronics, Inc. Direct TV Custom 4 Device 24K-2004

Model: URC-2081BG0-X Configuration: Transmit Mode

Duty Cycle: 36.4478801%

Date: 9/21/04 Lab: B

_					Peak /	Ant.	Table	
Freq.	Level				QP/	Height	Angle	
(MHz)	,	Pol (v/h)	Limit	Margin	Avg	(m)	(deg)	Comments
1301.76	46.15	V	74	-27.85	Peak	2.12	180	
1301.76	37.3834	V	54	-16.617	Avg	2.12	180	
1735.7	42.49	V	74	-31.51	Peak	2.99	180	
1735.7	33.7234	V	54	-20.277	Avg	2.99	180	
2169.6	39.08	V	80.8	-41.72	Peak	2.75	225	
2169.6	30.3134	V	60.8	-30.487	Avg	2.75	225	
2603.52	45.6	V	80.8	-35.2	Peak	3	180	
2603.52	36.8334	V	60.8	-23.967	Avg	3	180	
3037.44	49.14	V	80.8	-31.66	Peak	3.5	180	
3037.44	40.3734	V	60.8	-20.427	Avg	3.5	180	
3471.36	49.14	V	80.8	-31.66	Peak	3.25	225	
3471.36	40.3734	V	60.8	-20.427	Avg	3.25	225	
3905.28	47.32	V	74	-26.68	Peak	1.33	270	
3905.28	38.5534	V	54	-15.447	Avg	1.33	270	
4339.2	47	V	74	-27	Peak	2.67	135	
4339.2	38.2334	V	54	-15.767	Avg	2.67	135	
•	•	•		•		•		

Universal Electronics, Inc. Direct TV Custom 4 Device 24K-2004

Model: URC-2081BG0-X Configuration: Transmit Mode

Duty Cycle: 36.4478801%

Date: 9/21/04

Lab: B

Eroa	Level				Peak / QP /	Ant. Height	Table Angle	
Freq. (MHz)		Pol (v/h)	Limit	Margin	Avg	(m)	(deg)	Comments
1301.76		Н	74	-24.74	Peak	2.39	45	
1301.76	40.4934	Н	54	-13.507	Avg	2.39	45	
1735.7	51.59	Н	74	-22.41	Peak	2.1	45	
1735.7	42.8234	Н	54	-11.177	Avg	2.1	45	
2169.6	39.98	Н	80.8	-40.82	Peak	1.75	0	
2169.6	31.2134	Н	60.8	-29.587	Avg	1.75	0	
2603.52	45.45	Н	80.8	-35.35	Peak	1.5	0	
2603.52	36.6834	Н	60.8	-24.117	Avg	1.5	0	
3037.44		Н	80.8	-32.34	Peak	1.25	45	
3037.44	39.6934	Н	60.8	-21.107	Avg	1.25	45	
3471.36		Н	80.8	-34.82	Peak	1	0	
3471.36	37.2134	Н	60.8	-23.587	Avg	1	0	
3905.28		Н	74	-28.63	Peak	1.21	270	
3905.28	36.6034	Н	54	-17.397	Avg	1.21	270	
4339.2	47.44	Н	74	-26.56	Peak	1.94	135	
4339.2	38.6734	Н	54	-15.327	Avg	1.94	135	



Test Location : Compatible Electronics **Page :** 1/1

Customer : Universal Electronics **Date:** 9/21/2004 Time : 21:32:15 Manufacturer : Universal Electronics

Eut name Direct TV Custom 4 Device 24K-2004 Lab : D

Model : URC-2081BG0-X Test Distance : 3.0 Meters

Serial # : N/A

Specification : FCC Class B

Distance correction factor (20 * log(test/spec)) : 0.00

Test Mode

: Scan Type: Qualification Scan Range: 10 kHz to 4340 MHz (Vertical & Horizontal)

Transmit Mode

Test Engineer: Ben Chavez

Pol	Freq MHz	Rdng dBuV	Cable loss dB	Ant factor dB	Amp gain dB	Cor'd rdg = R dBuV	Limit = L dBuV/m	Delta R-L dB
1V	56.198	53.60	0.63	10.69	37.57	27.35	40.00	-12.65
2H	56.264	44.30	0.63	10.69	37.57	18.05	40.00	-21.95
3V	72.242	49.20	0.82	7.68	37.50	20.20	40.00	-19.80
4H	72.274	46.70	0.82	7.67	37.50	17.70	40.00	-22.30
5Н	144.447	43.70	1.18	12.26	37.56	19.58	43.50	-23.92
6V	144.466	41.30	1.18	12.26	37.56	17.18	43.50	-26.32
7н	449.982	41.70	2.10	15.94	37.00	22.74	46.00	-23.26
8V	450.137	37.60	2.10	15.95	37.00	18.65	46.00	-27.35



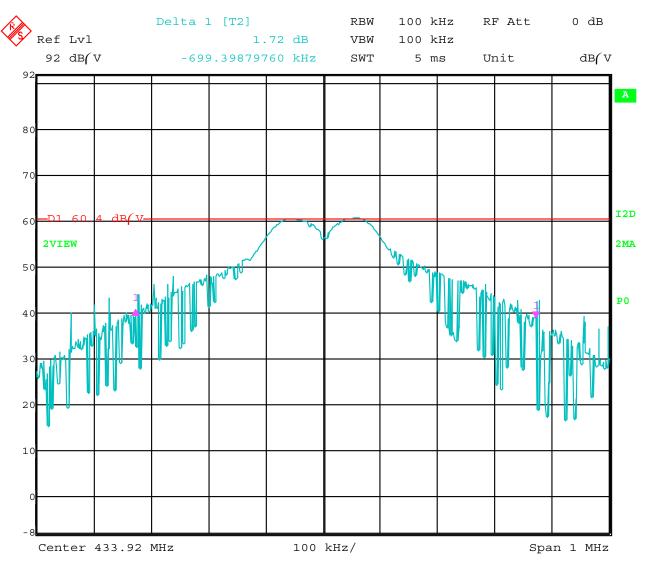
Report Number: **B40921D1**FCC Part 15 Subpart B and FCC Section 15.231 Test Report
Direct TV Custom Device 24K-2004

Model Number: URC-2081BG0-X

-20 dB BANDWIDTH

DATA SHEETS





Date: 22.SEP.2004 08:44:41

-20 dB Bandwidth of the Fundamental