FCC PART 15 SUBPART B & C
TEST REPORT

for

CAMERA

Model: EPIC-M

Prepared for

RED.com, Inc.
20291 VALENCIA CIRCLE
LAKE FOREST, CA 92630 USA

Prepared by:_____

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DATE: APRIL 7, 2011

	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 in any form unless done so in full with the written permission of Compatible Electronics.

This report must not be used to claim product endorsement by NVLAP, NIST, or any other agency of the U.S. Government or other governments.

Device Tested:	Camera Model: EPIC-M S/N: 95
Product Description:	The RED EPID Digital Cinema camera provides high performance digital imaging over a wide range of frame rates and optical formats including Super 35mm, 35mm, and Super 16mm.
Modifications:	The EUT was modified in order to comply with specifications. Please see the list of modifications in Appendix B.
Manufacturer:	RED.com, Inc. 20291 Valencia Circle Lake Forest, California 92630
Test Date:	February 25th, 28th and April 18th, 2011
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 C63.10

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions, 150 kHz - 30 MHz.	Complies with the Class B limits of CFR Title 47, Part 15 Subpart C Section 15.207. See section 6.4 for Measurement Uncertainty
2	Radiated RF Emissions, 9 kHz - 25000 MHz.	Complies with the limits of CFR 22 Title 47 Part 15 Subpart B (Class B devices) and Subpart C sections 15.205, 15.209 and 15.249. See section 6.4 for Measurement Uncertainty

SIX HIGHEST RADIATED EMISSIONS READINGS

	Reading Type (PK / QP / AV)	Polarization (Vert / Horz)	Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Delta (dB)	Test Distance
1	QP	V	34.7	39.12	40	-0.88	3-meter
2	QP	V	500	45.11	46	-0.89	3-meter
3	QP	H	500	44.68	46	-1.32	3-meter
4	QP	V	85.7	37.64	40	-2.36	3-meter
5	QP	V	85.1	35.77	40	-4.23	3-meter
6	QP	V	86	34.94	40	-5.06	3-meter

SIX HIGHEST CONDUCTED EMISSIONS READINGS 120 VAC Input, 60 Hz

Freq (MHz)	(AVG) Margin AVL(dB)	(QP) Margin QPL(dB)	(AVG) EMI (dBuV)	(QP) EMI (dBuV)	(PEAK) EMI (dBuV)	(AVG) Limit (dBuV)	(QP) Limit (dBuV)	Transducer(dB)	LINE/NEU
0.19	-13.86	-16.03	39.58	47.40	57.45	53.44	63.44	0.12	N
0.21	-19.64	-16.72	33.17	46.09	56.21	52.81	62.81	0.00	L
0.18	-25.78	-15.06	28.16	48.88	59.01	53.94	63.94	0.00	L
0.16	-28.91	-12.87	25.94	51.98	60.97	54.85	64.85	0.14	N
0.15	-29.38	-12.23	26.07	53.22	61.83	55.46	65.46	0.00	L
0.17	-31.23	-13.92	23.43	50.74	59.73	54.66	64.66	0.00	L

1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on Camera Model: EPIC-M. The EMI measurements were performed according to the measurement procedure described in ANSI C63.10. The tests were performed in order to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT (equipment under test) hereafter, are within the **Class B** specification limits defined by the Code of Federal Regulations Title 47, Part 15 Subpart B and Subpart C sections 15.205, 15.209 and 15.249.

2. ADMINISTRATIVE DATA

2.1 Location of Testing

The EMI tests described herein were performed at the test facility of Compatible Electronics, 20621 Pascal Way Lake Forest, California 92630.

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

RED.com, Inc.

Candy Campbell	Regulatory Compliance

Compatible Electronics Inc.

Josh Hansen	Lab Manager
Matt Harrison	Test Technician
Joey Madlangbayan	Test Engineer
Jeff Klinger	Director of Engineering

2.4 Date Test Sample was Received

The test sample was received on February 25, 2011.

2.5 Disposition of the Test Sample

The test sample was returned to RED.com, Inc.

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
NVLAP	National Voluntary Laboratory Accreditation Program
CFR	Code of Federal Regulations
PCB	Printed Circuit Board
TX	Transmit
RX	Receive

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 C63.10: 2009	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 Camera Model: EPIC-M (EUT) was setup in a tabletop configuration. The EUT was connected to the AC power adapter, Ethernet switch, external video monitor touch screen and a timecode sync device via the power, video and sync ports respectively. The EUT was continuously transmitting a data stream while recording a video image.

The AC mains voltage was varied from a nominal 102 volts to 138 volts AC resulting with no variation of amplitude or frequency.

The antenna consists of a Multilayer Chip Antenna located on the Antenna Board of the EUT

It was determined that the emissions were at their highest level when the EUT was setup in the above configuration. The cables were moved to maximize the emissions. The final conducted as well as radiated data was taken in the above configuration. The cables were routed as shown in the photographs in Appendix D. Please see Appendix E for the test data.

4.1.1 Photograph Test Configuration - EMI

4.1.2 Cable Construction and Termination

Cable 1

This is a 3 meter braid/foil shielded cable connecting the EUT to the Access Point. It has a Lemo and RJ45 connector at the EUT and Access point respectively. The cable was bundled to a length of 1.3 meters. The shield of the cable was grounded at each connector.

Cable 2

This is a 1 meter braid/foil shielded cable connecting the EUT to the Monitor. It has a HDMI and DVI connector at the EUT and Monitor respectively. The cable was not bundled. The shield of the cable was grounded at each connector.

Cable 3-4

This is a 1 meter braid/foil shielded cable connecting the EUT to the Timecode Generator. It has a Lemo connector at both the EUT and Timecode Generator. The cable was not bundled. The shield of the cable was grounded at each connector.

Cable 5

This is a 0.15 meter braid/foil shielded cable connecting the EUT to the 5" Touchscreen. It has a Lemo connector at both the EUT and 5" Touchscreen point respectively. The cable was not bundled. The shield of the cable was grounded at each connector.

Cable 6

This is a 2 meter braid/foil shielded cable connecting the EUT to the Power Supply. It has a Lemo at the EUT and is hard wired at the Power Supply. The cable was bundled to a length of 1.2 meters. The shield of the cable was grounded at each connector.

Cable 7

This is a 2 meter braid/foil shielded cable connecting the Timecode Generator to the Power Supply. It has a Lemo at the EUT and is hard wired at the Power Supply. The cable was bundled to a length of 1.2 meters. The shield of the cable was grounded at each connector.

5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

5.1 EUT and Accessory List

#	EQUIPMENT TYPE	MANU-FACTURER	MODEL	SERIAL NUMBER	FCC ID
1	CAMERA (EUT)	RED.COM, INC.	EPIC-M	95	YGA001
2	POWER SUPPLY (EUT)	ELPAC	FWA150015A	4307-003	N/A
3	TIMECO GENERATOR	Ambient	Locket	N/A	N/A
4	POWER SUPPLY (TIMECOGENERATOR)	ELPAC	FWA150015A	4307-003	N/A
5	LCD MONITOR	DELL	N/A	N/A	N/A
6	WIRELESS ACCESS POINT	LINKSYS	WAP11	M31303108185	N/A
7	SSD READ/WRITER	RED.COM, INC.	Side SSD	N/A	N/A
8	5” TOUCH SCREEN LCD	RED.COM, INC.	RED PRO LCD 5.0	MP5L0417084A	N/A
9	LENS	RED.COM, INC.	18-50mm ½.8	N/A	N/A
10	SSD MEDIA	RED.COM, INC.	REDMAG 1.8" SSD 256GB	N/A	N/A
11	COLOR CHART	RED.COM, INC.	RED CAMBOOK	N/A	N/A

5.2 EMI Test Equipment

EQUIPMENT TYPE	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. DUE DATE
Computer	Compatible Electronics	NONE	NONE	N/A	N/A
EMI Receiver	Rohde & Schwarz	ESIB40	100172	1/13/2011	1/13/2013
Antenna, Loop	Com Power	AL-130	17085	1/26/2011	1/26/2012
Antenna, CombiLog	Com Power	AC-220	003	5/06/2010	5/06/11
Antenna, Horn 1-18GHz	Com Power	AH-118	071250	10/01/2010	10/01/2012
Antenna, Horn 18-26GHz	Com Power	AH-826	81033	11/28/2008	11/28/2011
Pre-Amp, 1-18GHz	Com Power	PA-122	1321	2/1/2010	2/1/2012
Pre-Amp, 1-18GHz	Com Power	PA-118	181653	10/01/2010	10/01/2012
Pre-Amp, 18-40GHz	Com Power	PA-840	181289	2/08/2010	2/08/2012
LISN	Com Power	LI-215	25386	6/15/2010	6/15/2011
LISN	Com Power	LI-215	12086	6/15/2010	6/15/2011
Mast, Antenna Positioner	Sunol Science Corporation	TWR 95-4	020808-3	N/A	N/A
Antenna Mast	Sunol Science Corporation	TWR 95-4	020808-3	N/A	N/A
Turntable	Sunol Science Corporation	FM 2001	N/A	N/A	N/A
Mast and Turntable Controller	Sunol Science Corporation	SC104V	020808-1	N/A	N/A

6. TEST SITE DESCRIPTION

6.1 Test Facility Description

Please refer to section 2.1 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 by 0.8 meter high non-conductive table, which was placed on the ground plane.

The EUT was grounded through the AC power cord.

6.3 Facility Environmental Characteristics

When applicable refer to the data sheets in Appendix E for the relative humidity, air temperature, and barometric pressure.

6.4 Measurement Uncertainty

"Compatible Electronics' U_{lab} value is less than U_{cispr}, thus based on this − compliance is deemed to occur if no measured disturbance exceeds the disturbance limit.

$$u_c(y) = \sqrt{\sum_i c_i^2 \; u^2(x_i)}$$

Measurement		U_{cispr}	$U_{lab} = 2\,uc\,(y)$
Conducted disturbance (mains port)	(150 kHz – 30 MHz)	4,0 dB 3,6 dB	2.88
Radiated disturbance (electric field strength on an open area test site or alternative test site)	(30 MHz – 1 000 MHz)	5,2 dB	3.53

7. CHARACTERISTICS OF THE TRANSMITTER

7.1 Channel Number and Frequencies

There are a total of 16 channels. The low channel is at 2405.0 MHz and the high channel is at 2480.0 MHz. There is a 5 MHz separation between channels.

1 == 2405 MHz
2 == 2410 MHz
3 == 2415 MHz
4 == 2420 MHz
5 == 2425 MHz
6 == 2430 MHz
7 == 2435 MHz
8 == 2440 MHz
9 == 2445 MHz
10 == 2450 MHz
11 == 2455 MHz
12 == 2460 MHz
13 == 2465 MHz
14 == 2470 MHz
15 == 2475 MHz
16 == 2480 MHz

8. TEST PROCEDURES

The following sections describe the test methods and the specifications for the tests. Test results are also included in this section.

8.1 RF Emissions

8.1.1 Conducted Emissions Test

The EMI receiver was used as a measuring meter. A quasi-peak and/or average reading was taken only where indicated in the data sheets. The LISN output was measured using the EMI 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 received its power through the LISN, which was bonded to the ground plane. The EUT was set up with the minimum distances from any conductive surfaces as specified in ANSI 63.4. 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 computer software. The final qualification data is located in Appendix E.

Test Results:

The EUT complies with the Class B limits of CFR Title 47, Part 15 Subpart C Section 15.207.

8.1.2 Radiated Emissions (Spurious and Harmonics) Test

The measurement bandwidths and transducers used for the radiated emissions test were:

FREQUENCY RANGE (MHz)	TRANSDUCER	EFFECTIVE MEASUREMENT BANDWIDTH
.009 to .150	Active Loop Antenna	200 kHz
.150 to 30	Active Loop Antenna	9 kHz
30 to 1000	Combilog Antenna	120 kHz
1000 to 25000	Horn Antenna	1 MHz

The TDK FACT-3 shielded test chamber of Compatible Electronics, Inc. was used for radiated emissions testing. This test site is in full compliance with ANSI C63.10, EN 50147-2, and CISPR 22. 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 in both vertical and horizontal polarizations (for E field radiated field strength).

Test Results:

The EUT complies with the limits of CFR 22 Title 47 Part 15 Subpart B (Class B devices) and Subpart C sections 15.205, 15.209 and 15.249.

8.1.3 Peak Transmit EMI

The EUT was tested at a 3-meter test distance to obtain the final test data. The low, mid and high channels were measured. The final qualification data sheets are located in Appendix E. This data also shows compliance at the band edges.

Test Results:

The EUT complies with Part 15, Subpart C, Section 15.249(a).

8.1.4 Band Edge

The EUT was tested at a 3-meter test distance to obtain the final test data. The low and high channels were tuned during the low and high band edge tests respectively. The final qualification data sheets are located in Appendix E. This data also shows compliance at the band edges.

Test Results:

The EUT complies with Part 15, Subpart C, Section 15.249(d).

10. TEST PROCEDURE DEVIATIONS

The test procedures were not deviated from throughout all tests.

11. CONCLUSIONS

The Camera Model: EPIC-M meets all of the Class B specification limits defined in the Code of Federal Regulations Title 47, Part 15 Subpart B and Subpart C sections 15.107, 15.205, 15.209 and 15.249.

APPENDIX A

LABORATORY ACCREDITATIONS AND RECOGNITIONS

LABORATORY ACCREDITATIONS AND RECOGNITIONS

NVLAP LAB CODES 200063-0, 200528-0, 200527-0

For US, Canada, Australia/New Zealand, Taiwan and the European Union, Compatible Electronics is currently accredited by NVLAP to ISO/IEC 17025 an ISO 9002 equivalent. Please follow the link to the NIST site for each of our facilities NVLAP certificate and scope of accreditation.

NVLAP listing links
Agoura Division - http://ts.nist.gov/Standards/scopes/2000630.htm
Brea Division - http://ts.nist.gov/Standards/scopes/2005280.htm
Silverado/Lake Forest Division - http://ts.nist.gov/Standards/scopes/2005270.htm

ANSI listing
CETCB
https://www.ansica.org/wwwversion2/outside/ALLdirectoryDetails.asp?menuID=1&prgID=3&orgID=123&status=4

Compatible Electronics has been nominated as a Conformity Assessment Body (CAB) for EMC under the US/EU Mutual Recognition Agreement (MRA).

Compatible Electronics has been nominated as a Conformity Assessment Body (CAB) for Taiwan/BSMI under the US/APEC (Asia-Pacific Economic Cooperation) Mutual Recognition Agreement (MRA).

We are also certified/listed for IT products by the following country/agency:

VCCI Listing, from VCCI site
Enter "Compatible" in search form http://www.vcci.or.jp/vcci_e/activity/registration/setsubi.html

FCC Listing, from FCC OET site
FCC test lab search https://fjallfoss.fcc.gov/oetcf/eas/reports/TestFirmSearch.cfm

Industry Canada Industrie Canada

Compatible Electronics IC listing can be found at:
http://www.ic.gc.ca/eic/site/ic1.nsf/eng/home

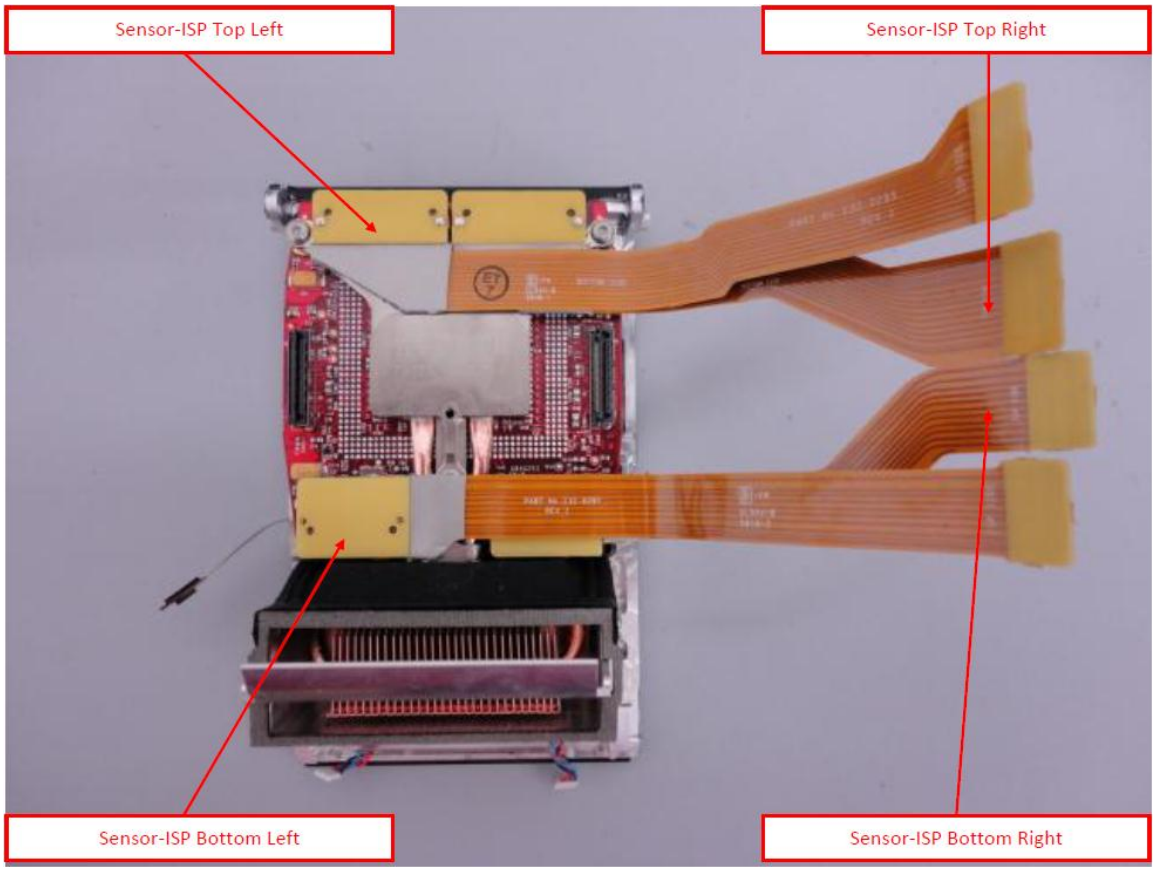
APPENDIX B

MODIFICATIONS TO THE EUT

MODIFICATIONS TO THE EUT

The following modifications were made to the EUT during the test in order to comply with CFR Title 47 Part 15 Subpart C Section 15.209 limits. The modifications were made in such a way that they could be reproduced during manufacture.

1. EMI absorbing material was added to the sensor flex cables at the sensor board.
   MFG: ARC Wave X, PN: ARC WX-A020

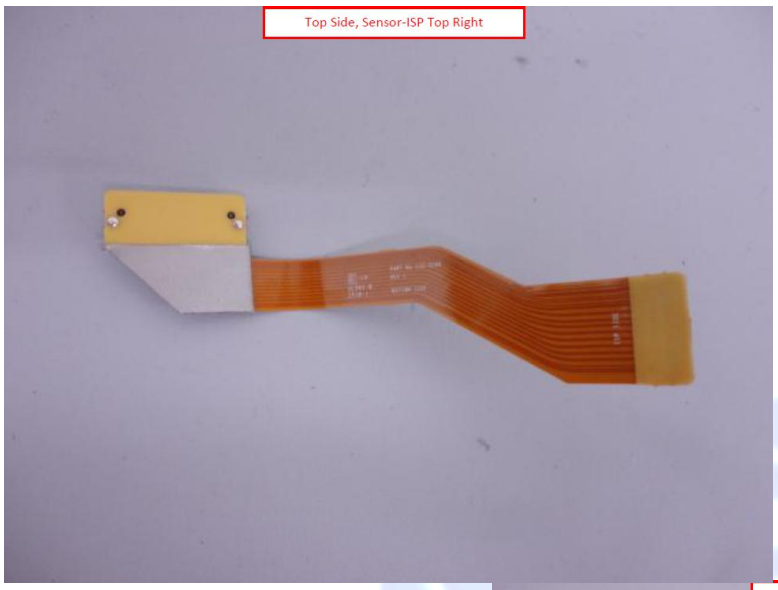


Top Side, Sensor-ISP Top Left

Bottom Side, Sensor-ISP Top Left
S1A105000B1

Top Side, Sensor-ISP Bottom Right

Bottom Side, Sensor-ISP Bottom Right
S1A10510158


Top Side, Sensor-ISP Top Right

Bottom Side, Sensor-ISP Top Right
S1A1051011C

APPENDIX C

ADDITIONAL MODELS COVERED UNDER THIS REPORT

ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST	CAMERA Model: EPIC-M S/N: 95

No additional models were tested.

APPENDIX D

DIAGRAMS, CHARTS, AND PHOTOS

FIGURE 1: CONDUCTED EMISSIONS TEST SETUP

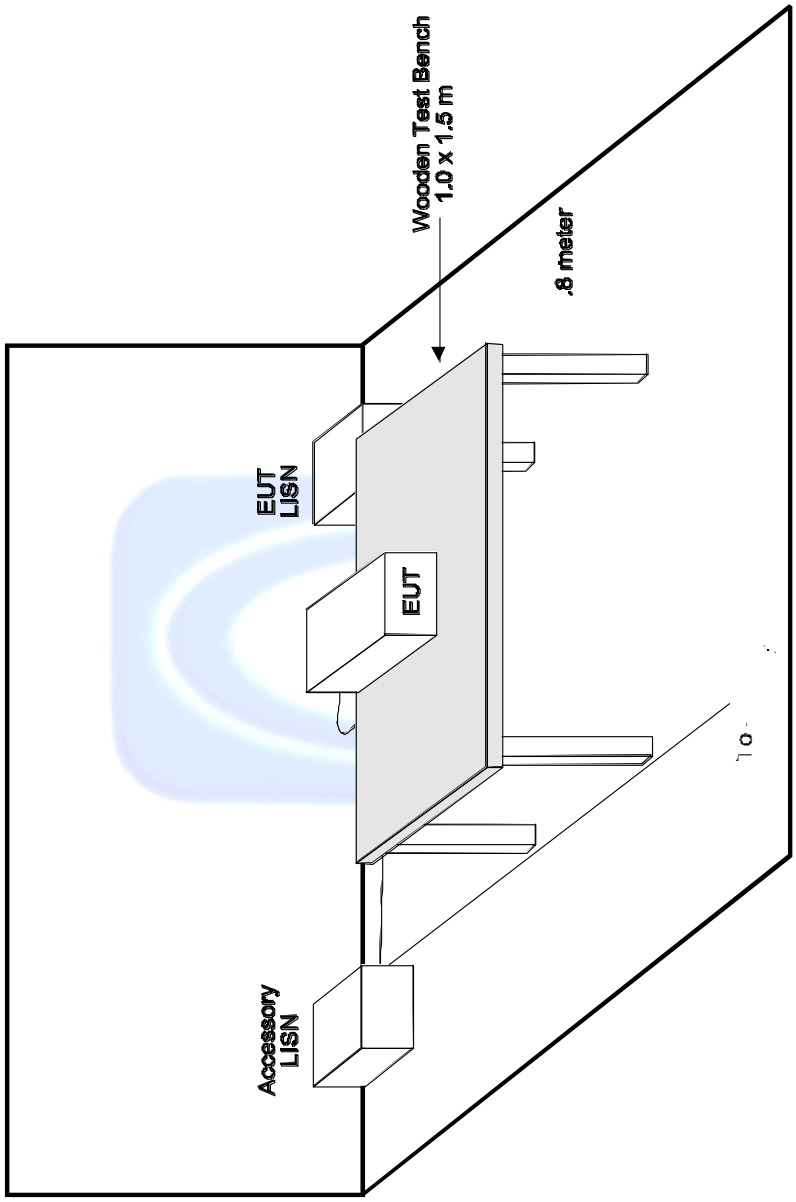


*FIGURE 2: RADIATED EMISSIONS 3-METER SEMI-*ANECHOIC *TEST CHAMBER BELOW 1GHz*

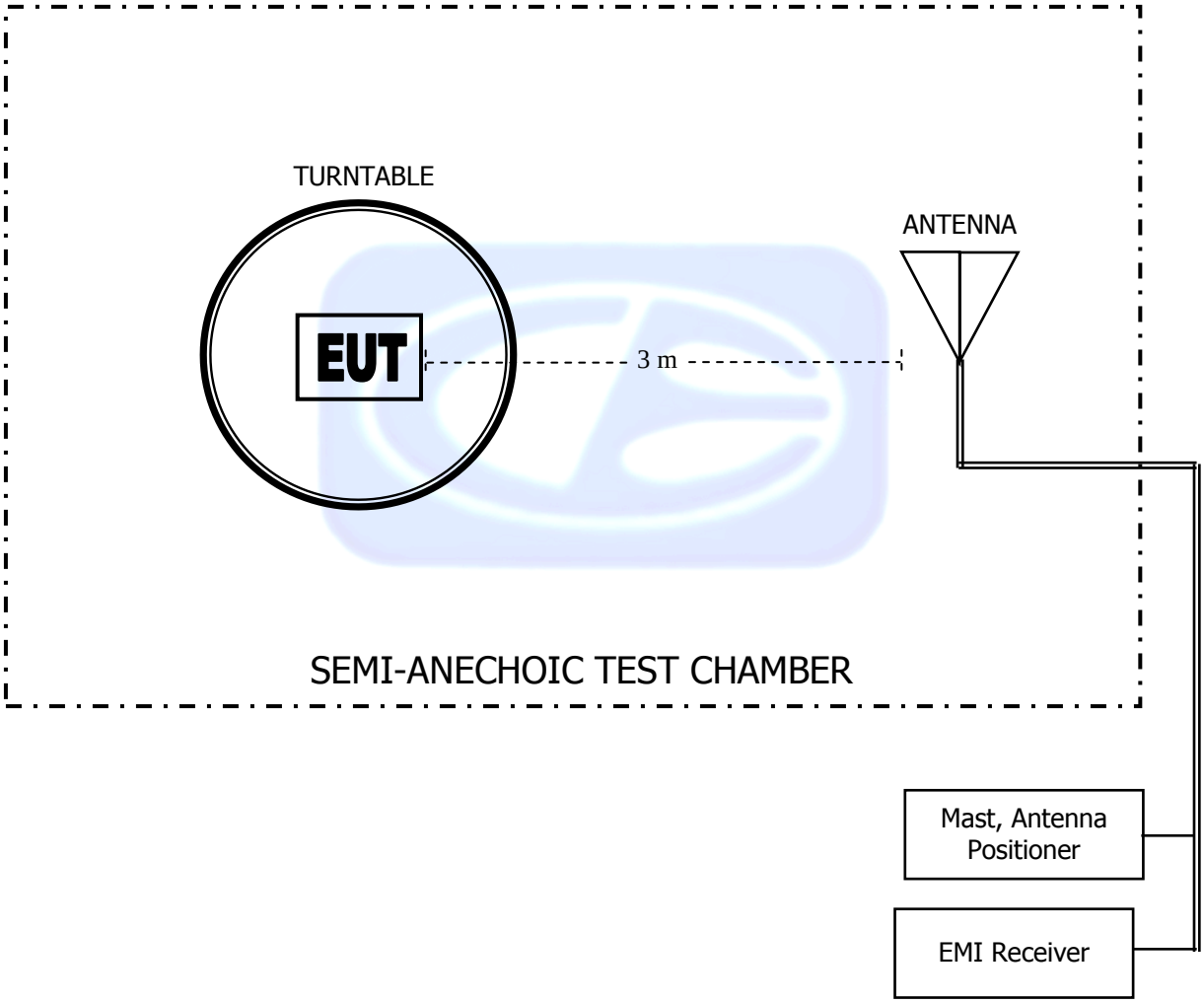
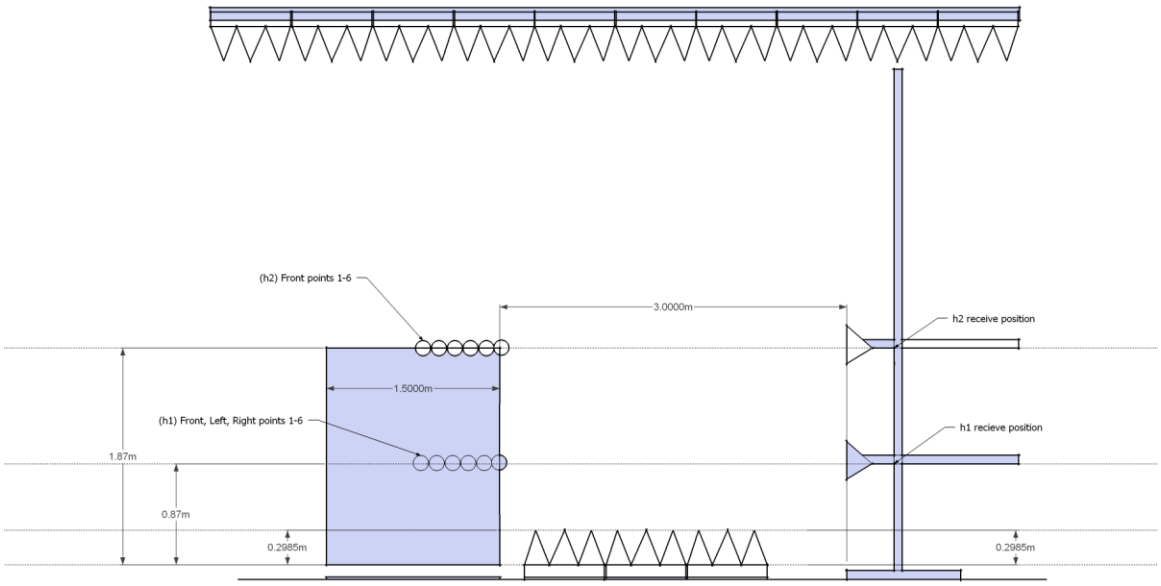


*FIGURE 3: RADIATED EMISSIONS 3-METER SEMI-*ANECHOIC *TEST CHAMBER ABOVE 1 GHz*



COM-POWER AC-220

LAB P - COMBYLOG ANTENNA

S/N: 003

CALIBRATION DUE: MAY 06, 2011

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30.0	20.6	200.0	10.4
35.0	20.4	250.0	13.1
40.0	19.3	275.0	13.2
45.0	17.8	300.0	14.3
50.0	16.5	400.0	16.0
60.0	15.1	500.0	18.3
70.0	7.4	600.0	19.2
80.0	8.0	700.0	20.5
90.0	9.3	800.0	21.5
100.0	9.8	900.0	23.4
120.0	10.6	1000.0	23.4
125.0	11.5	1200.0	23.3
140.0	10.3	1400.0	23.8
150.0	12.6	1600.0	24.5
160.0	10.2	1800.0	26.9
175.0	9.7	2000.0	28.0
180.0	9.8		

COM-POWER AH-118

HORN ANTENNA

S/N: 071250

CALIBRATION DUE: OCTOBER 01, 2012

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
1000	24.0	9500	35.9
1500	23.9	10000	40.4
2000	27.9	10500	41.7
2500	29.6	11000	38.9
3000	30.7	11500	40.3
3500	30.3	12000	38.1
4000	28.6	12500	42.8
4500	30.7	13000	38.8
5000	33.0	13500	36.9
5500	32.9	14000	43.7
6000	34.1	14500	42.0
6500	37.2	15000	42.0
7000	37.9	15500	37.9
7500	38.3	16000	38.5
8000	38.5	16500	38.2
8500	36.9	17000	39.2
9000	40.2	17500	42.8
		18000	43.2

COM-POWER PA-122

1-18GHz - PREAMPLIFIER

S/N: 1321

CALIBRATION DUE: FEBRUARY 1, 2012

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
1.0	31.5	9.5	28.5
1.5	31.2	10.0	31.7
2.0	31.0	10.5	29.9
2.5	30.7	11.0	29.6
3.0	30.4	11.5	30.1
3.5	29.9	12.0	29.9
4.0	29.3	12.5	30.6
4.5	28.6	13.0	31.4
5.0	28.2	13.5	31.2
5.5	28.1	14.0	30.6
6.0	28.4	14.5	31.3
6.5	28.3	15.0	31.2
7.0	28.2	15.5	31.5
7.5	28.7	16.0	31.0
8.0	29.2	16.5	30.2
8.5	29.1	17.0	30.0
9.0	28.7	17.5	29.7
		18.0	29.7

COM-POWER PA-118

1-18GHz - PREAMPLIFIER

S/N: 181653

CALIBRATION DUE: OCTOBER 1, 2012

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
1.0	25.6	9.5	25.8
1.5	26.8	10.0	25.7
2.0	26.6	10.5	25.1
2.5	26.5	11.0	24.4
3.0	26.3	11.5	24.0
3.5	26.0	12.0	24.0
4.0	26.0	12.5	24.2
4.5	25.5	13.0	24.4
5.0	25.4	13.5	24.4
5.5	28.2	14.0	24.4
6.0	25.3	14.5	24.7
6.5	25.0	15.0	25.3
7.0	24.7	15.5	25.9
7.5	24.5	16.0	26.3
8.0	24.7	16.5	25.9
8.5	25.1	17.0	25.3
9.0	25.5	17.5	25.1
		18.0	26.1

COM-POWER AH-826

18 – 26 GHz HORN ANTENNA

S/N: 81033

CALIBRATION DATE: NOVEMBER 28, 2011

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
18000	32.8	22500	32.7
18500	32.2	23000	32.7
19000	31.9	23500	32.0
19500	31.5	24000	32.9
20000	33.3	24500	33.7
20500	33.2	25000	34.1
21000	32.6	25500	33.6
21500	33.2	26000	35.1
22000	33.0	26500	33.6

COM-POWER PA-840

18 – 40 GHz PREAMPLIFIER

S/N: 181289

CALIBRATION DUE: FEBRUARY 08, 2012

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
18.0	30.8	31.5	29.8
19.0	27.8	32.0	29.2
20.0	28.4	32.5	30.1
21.0	26.7	33.0	31.2
22.0	28.1	33.5	29.2
23.0	26.8	34.0	28.3
24.0	28.7	34.5	27.8
25.0	30.7	35.0	29.9
26.0	32.3	35.5	28.6
26.5	31.2	36.0	27.7
27.0	31.8	36.5	28.0
27.5	32.1	37.0	30.8
28.0	32.3	37.5	25.9
28.5	29.5	38.0	28.1
29.0	30.3	38.5	30.1
29.5	29.3	39.0	31.1
30.0	30.7	39.5	25.7
30.5	29.9	40.0	31.7

FRONT VIEW

RED.COM, INC.
CAMERA
Model: EPIC-M
FCC SUBPART B & C - RADIATED EMISSIONS – 2-28-2011

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

REAR VIEW

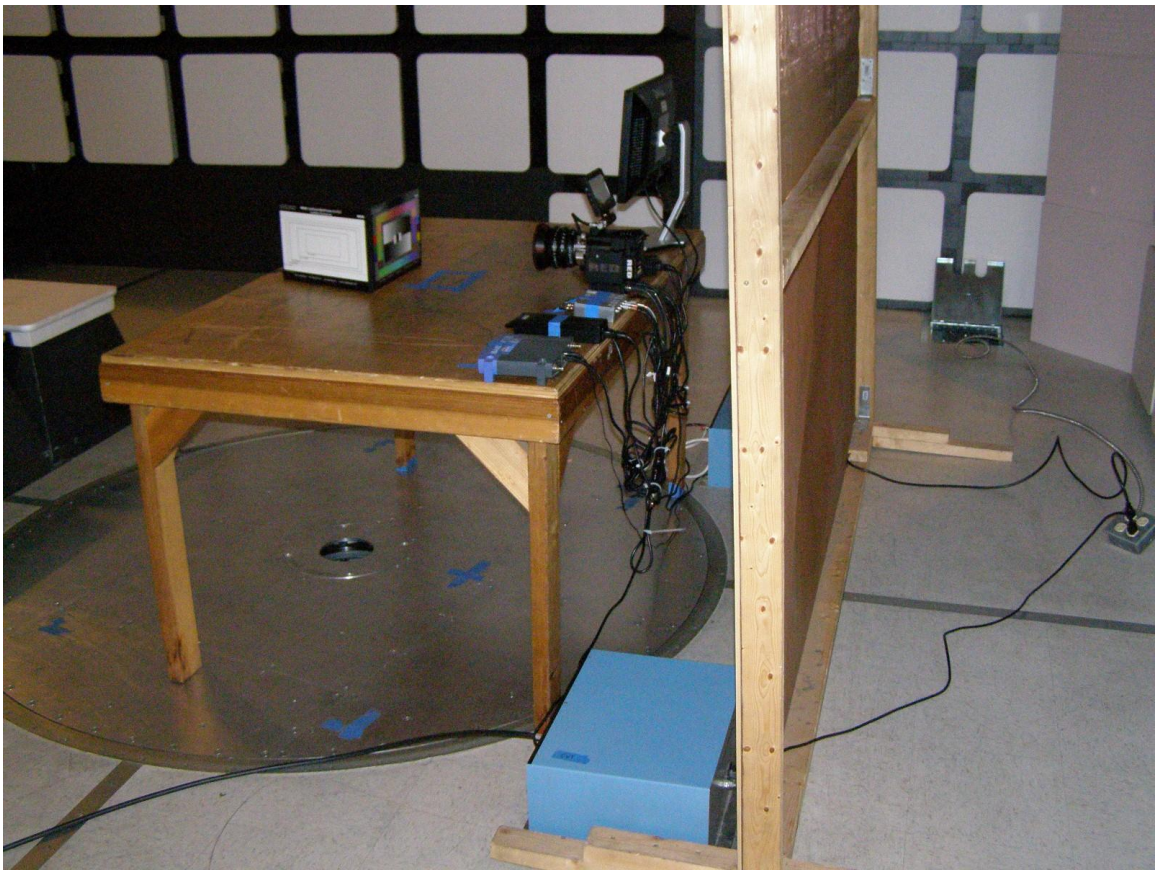
RED.COM, INC.
CAMERA
Model: EPIC-M
FCC SUBPART B & C - RADIATED EMISSIONS – 2-28-11

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

FRONT VIEW

RED.COM, INC.
CAMERA
Model: EPIC-M
FCC SUBPART B & C - CONDUCTED EMISSIONS – 2-28-11

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



REAR VIEW

RED.COM, INC.
CAMERA
Model: EPIC-M
FCC SUBPART B & C - CONDUCTED EMISSIONS – 2-28-11

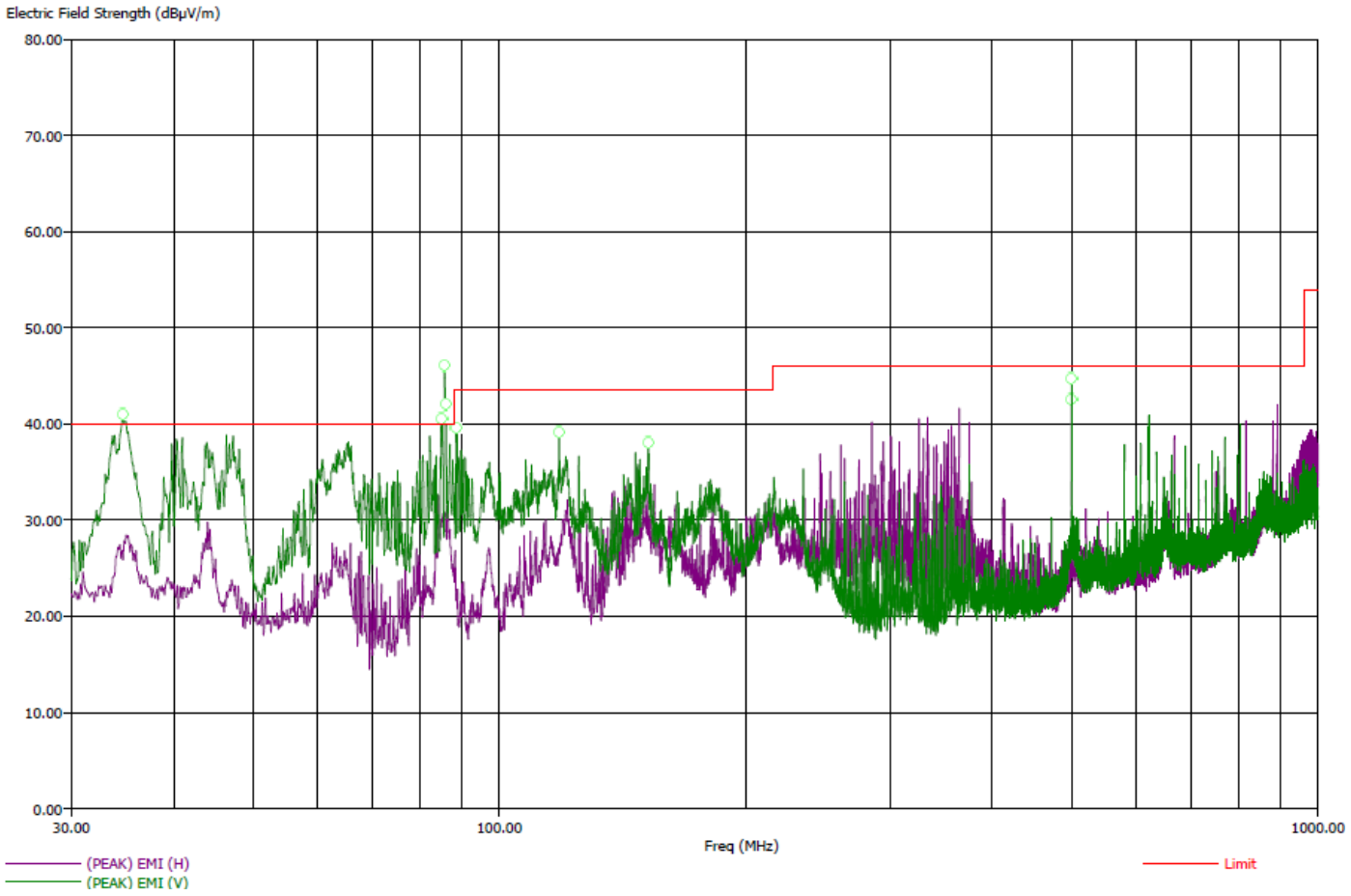
PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

APPENDIX E

RADIATED EMISSIONS DATA SHEETS

Title: FCC 15.209 2/25/2011 9:08:16 PM
File: Radiated Pre-Scan 30-1000Mhz_3.set Sequence: Preliminary Scan
Operator: Matt Harrison
EUT Type: EPIC-M (#95)
EUT Condition: Red 18-50mm Lens, 5" Touchscreen, Side SSD, and REDMAG.
Comments: Recording Red Color Chart
Witness: Candy
Temp: 59f
Hum: 55%
120V 60Hz

Compatible Electronics, Inc. FAC-3



Title: FCC 15.109 2/25/2011 10:01:01 PM
File: Radiated Final 30-1000Mhz_3.set Sequence: Final Measurements
Operator: Matt Harrison
EUT Type: EPIC-M (#95)
EUT Condition: Red 18-50mm Lens, 5" Touch screen, Side SSD, and REDMAG.
Comments: Recording Red Color Chart
Witness: Candy
Temp: 59f
Hum: 55%
120V 60Hz

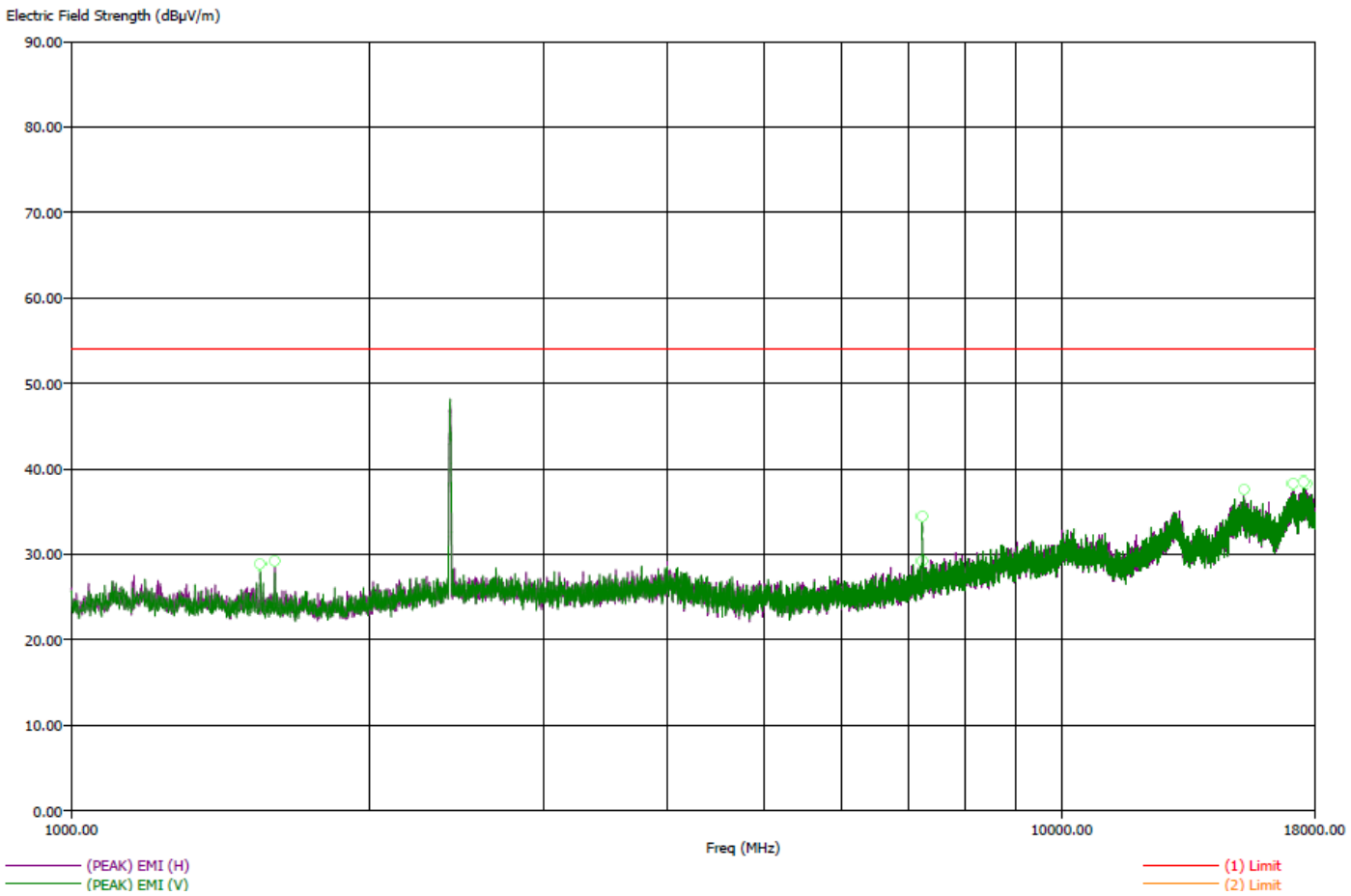
Compatible Electronics, Inc. FAC-3 (Lab P)

Freq (MHz)	(QP) Margin (dB)	(QP) EMI (dBµV/m)	(PEAK) EMI (dBµV/m)	Limit (dBµV/m)	Pol	Ttbl Agl (deg)	Twr Ht (cm)	Transducer (dB)	Cable(dB)
34.70	-0.88	39.12	42.77	40.00	V	226.25	113.94	20.41	0.58
85.10	-4.23	35.77	44.68	40.00	V	225.50	99.05	8.68	0.95
85.70	-2.36	37.64	46.48	40.00	V	142.00	117.88	8.77	0.95
86.00	-5.06	34.94	45.58	40.00	V	59.25	123.23	8.80	0.95
88.50	-10.51	33.01	39.58	43.52	V	186.00	121.17	9.11	0.96
118.30	-12.41	31.11	35.10	43.52	V	360.00	107.47	10.54	1.13
152.00	-10.96	32.56	39.35	43.52	V	80.25	109.47	12.11	1.31
500.00	-1.32	44.68	46.20	46.00	H	30.25	104.70	18.30	2.58
500.00	-0.89	45.11	47.34	46.00	V	193.75	115.94	18.30	2.58

There were no radiated emissions found below 30 MHz

Title: FCC 15.209 2/28/2011 10:35:17 AM
File: Radiated Pre-scan 1-12GHz.set Sequence: Preliminary Scan
Operator: Matt Harrison
EUT Type: EPIC M (#95)
EUT Condition: Red 18-50mm Lens, 5" Touchscreeen, Side SSD, and REDMAG.
Comments: Recording Red Color Chart
Witness: Candy
Temp: 72f
Hum: 84%
120V 60Hz

Compatible Electronics, Inc. FAC-3 (Lab R)



Title: FCC 15.209 2/28/2011 11:49:50 AM
File: Radiated Final 1-12GHz.set Sequence: Final Measurements
Operator: Matt Harrison
EUT Type: EPIC M (#95)
EUT Condition: Red 18-50mm Lens, 5" Touchscreeen, Side SSD, and REDMAG.
Comments: Recording Red Color Chart
Witness: Candy
Temp: 72f
Hum: 84%
120V 60Hz

Compatible Electronics, Inc. FAC-3 (Lab P)

Freq (MHz)	(AVG) Margin (dB)	(AVG) EMI (dBuV/m)	(PEAK) EMI (dBuV/m)	Limit (dBuV/m)	Pol	Ttbl Agl (deg)	Twr Ht (cm)	Transducer (dB)	Preamp (dB)	Cable (dB)
1552.00	-38.99	12.62	25.66	53.98	V	210.00	109.11	24.40	57.99	2.75
1605.00	-35.81	16.27	25.49	53.98	H	143.25	222.00	24.84	57.93	2.72
7232.00	-51.34	15.56	33.85	53.98	H	158.25	135.94	37.53	53.05	5.41
7233.00	-51.40	15.51	33.56	53.98	V	0.00	400.29	37.53	53.05	5.41
15284.00	-47.85	20.14	33.25	53.98	H	183.25	395.05	39.65	54.65	9.28
17130.00	-48.41	20.47	32.96	53.98	H	69.00	112.52	40.15	53.79	10.39
17561.00	-48.97	22.62	35.59	53.98	V	2.00	207.17	42.85	53.43	10.32
17682.00	-18.71	22.11	35.27	53.98	H	138.25	316.35	42.95	53.55	10.28

There were no radiated emissions found above 17,682.00 MHz

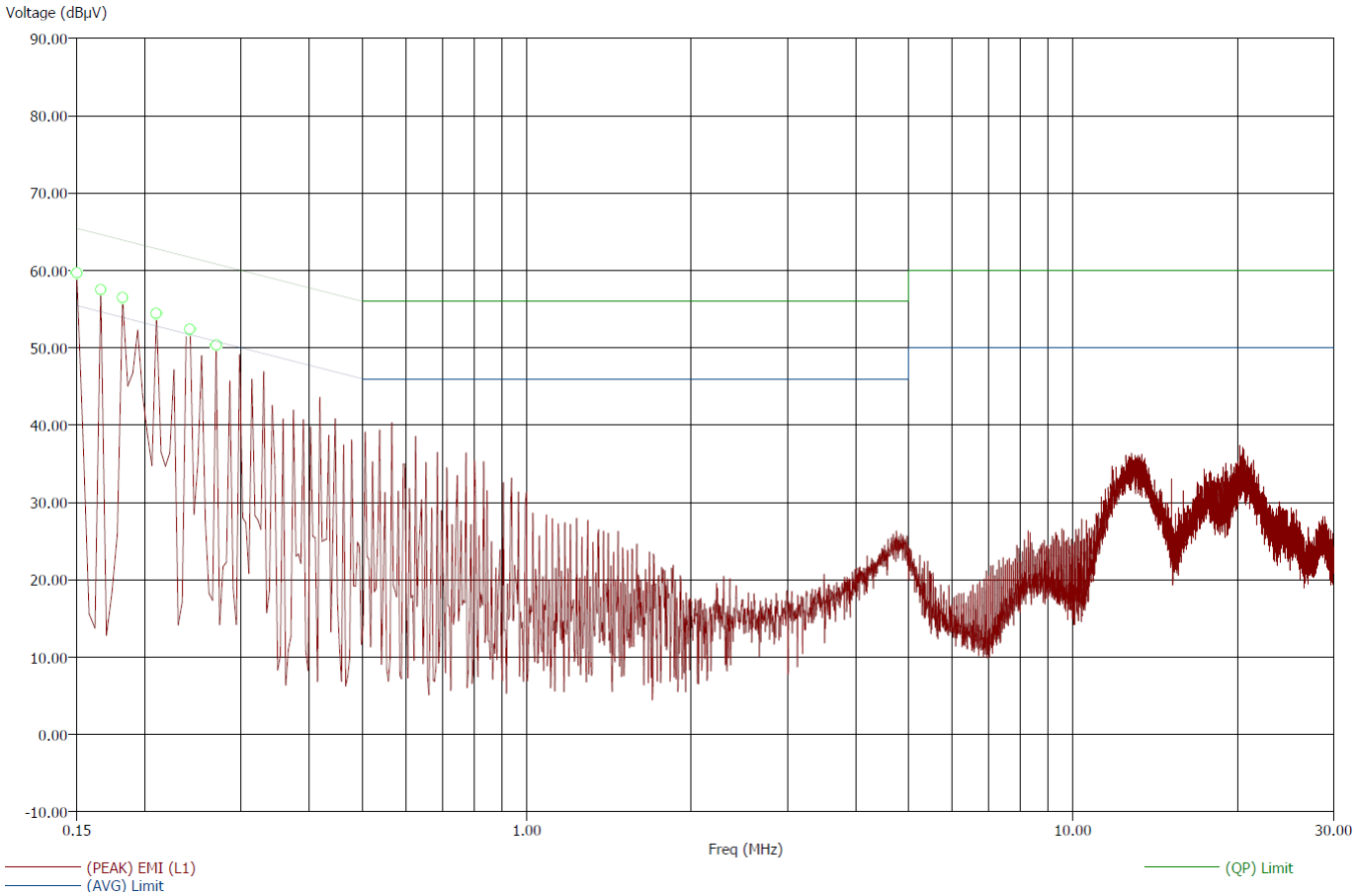
APPENDIX E

CONDUCTED EMISSIONS DATA SHEETS

Title: FCC 15.107 Class B
File: Conducted Pre-Line.set
Operator: Matt Harrison
EUT Type: EPIC-M (#95)
EUT Condition: Red 18-50mm Lens, 5" Touch screen, Side SSD, and REDMAG.
Comments: Recording Red Color Chart
Witness: Candy
Temp: 72f
Hum: 84%
120V 60Hz

2/28/2011 8:01:51 PM
Sequence: Preliminary Scan

Compatible Electronics, Inc. FAC-3 (Lab P)



Title: FCC 15.107 Class B
File: Conducted Final-Line.set
Operator: Matt Harrison
EUT Type: EPIC-M (#95)
EUT Condition: Red 18-50mm Lens, 5" Touch screen, Side SSD, and REDMAG.
Comments: Recording Red Color Chart
Witness: Candy
Temp: 72f
Hum: 84%
120V 60Hz

2/28/2011 8:07:14 PM
Sequence: Final Measurements

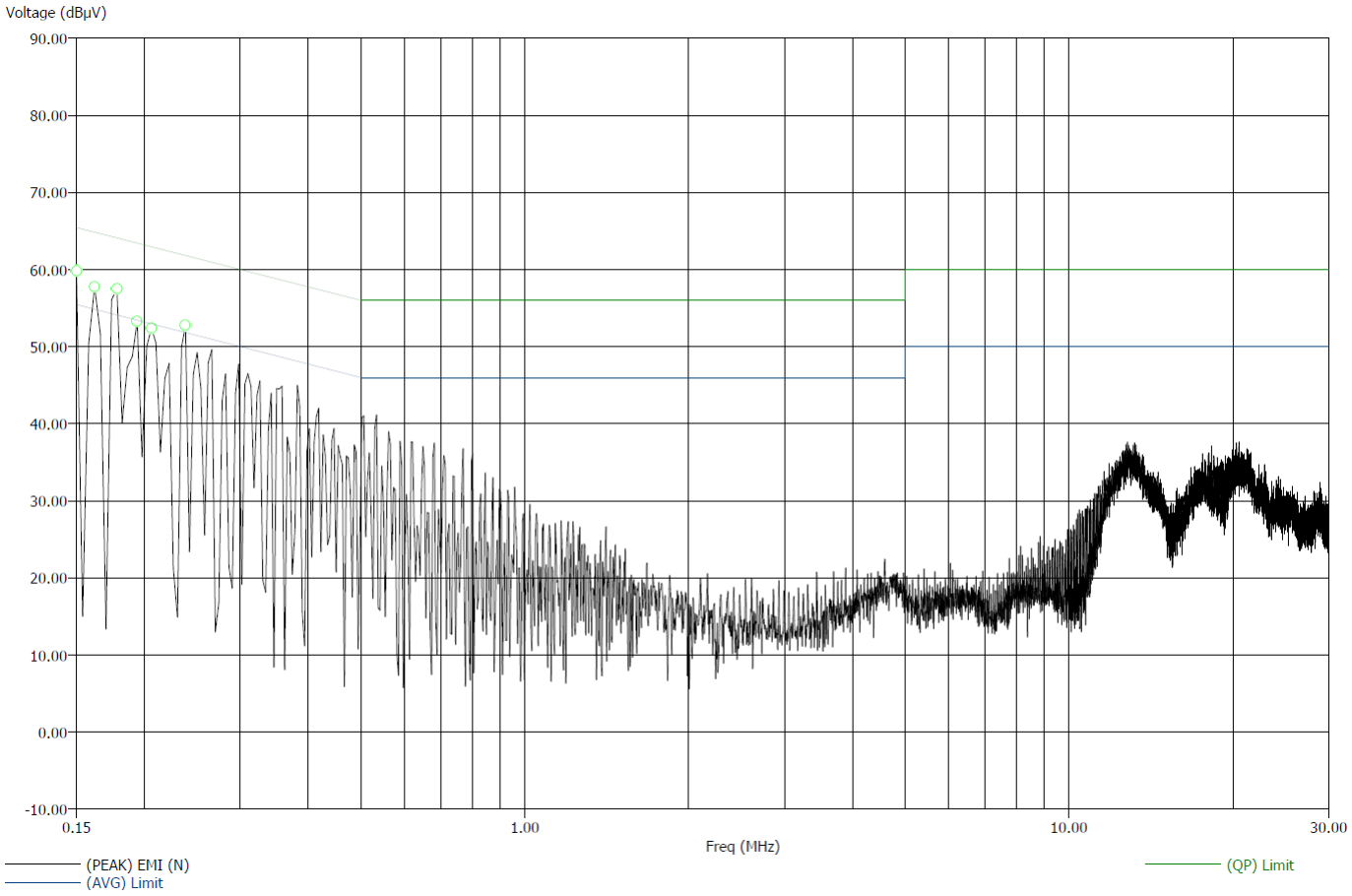
Compatible Electronics, Inc. FAC-3 (Lab P)

Freq (MHz)	(AVG) Margin AVL(dB)	(QP) Margin QPL(dB)	(AVG) EMI (dBuV)	(QP) EMI (dBuV)	(PEAK) EMI (dBuV)	(AVG) Limit (dBuV)	(QP) Limit (dBuV)	Transducer(dB)	Cable (dB)
0.15	-29.38	-12.23	26.07	53.22	61.83	55.46	65.46	0.00	0.03
0.17	-31.23	-13.92	23.43	50.74	59.73	54.66	64.66	0.00	0.04
0.18	-25.78	-15.06	28.16	48.88	59.01	53.94	63.94	0.00	0.05
0.21	-19.64	-16.72	33.17	46.09	56.21	52.81	62.81	0.00	0.05
0.24	-32.62	-18.11	19.08	43.60	53.51	51.70	61.70	0.00	0.06
0.27	-34.54	-18.93	16.30	41.91	51.58	50.84	60.84	0.00	0.06

Title: FCC 15.107 Class B
File: Conducted Pre-Neutral.set
Operator: Matt Harrison
EUT Type: EPIC-M (#95)
EUT Condition: Red 18-50mm Lens, 5" Touch screen, Side SSD, and REDMAG.
Comments: Recording Red Color Chart
Witness: Candy
Temp: 72f
Hum: 84%
120V 60Hz

2/28/2011 8:13:51 PM
Sequence: Preliminary Scan

Compatible Electronics, Inc. FAC-3



Title: FCC 15.107 Class B 2/28/2011 8:16:25 PM
File: Conducted Final-Neutral.set Sequence: Final Measurements
Operator: Matt Harrison
EUT Type: EPIC-M (#95)
EUT Condition: Red 18-50mm Lens, 5" Touch screen, Side SSD, and REDMAG.
Comments: Recording Red Color Chart
Witness: Candy
Temp: 72f
Hum: 84%
120V 60Hz

Compatible Electronics, Inc. FAC-3 (Lab P)

Freq (MHz)	(AVG) Margin AVL(dB)	(QP) Margin QPL(dB)	(AVG) EMI (dBuV)	(QP) EMI (dBuV)	(PEAK) EMI (dBuV)	(AVG) Limit (dBuV)	(QP) Limit (dBuV)	Transducer(dB)	Cable (dB)
0.15	-29.52	-12.19	25.94	53.27	62.19	55.46	65.46	0.15	0.03
0.16	-28.91	-12.87	25.94	51.98	60.97	54.85	64.85	0.14	0.04
0.18	-30.29	-14.41	23.83	49.71	59.39	54.11	64.11	0.13	0.05
0.19	-13.86	-16.03	39.58	47.40	57.45	53.44	63.44	0.12	0.05
0.21	-20.67	-16.38	32.29	46.59	56.54	52.97	62.97	0.12	0.05
0.24	-32.54	-17.91	19.29	43.92	54.09	51.83	61.83	0.11	0.06

LOW CHANNEL
PEAK TRANSMIT EMI & HARMONICS

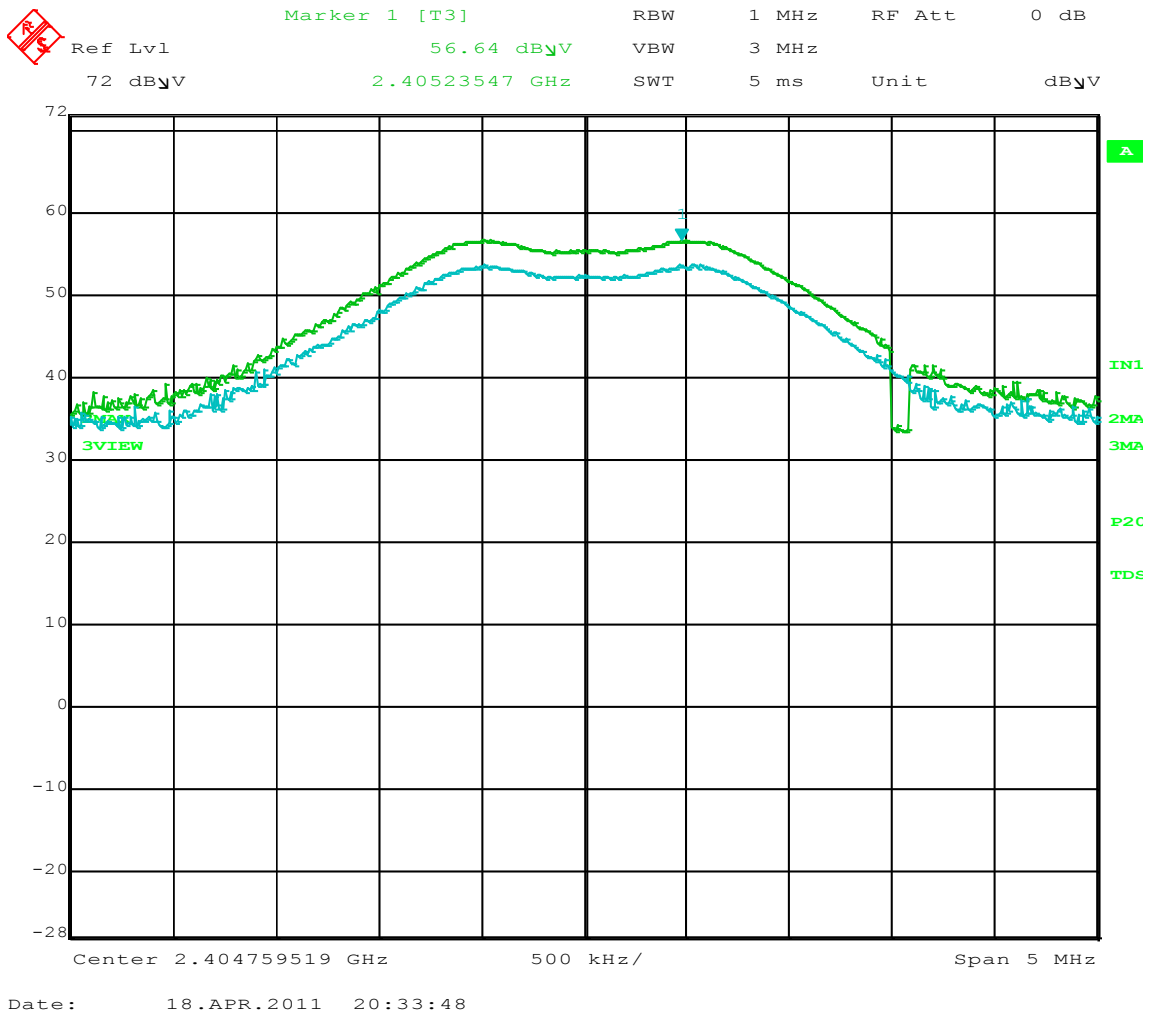
DATA SHEETS

FCC 15.249
Red Digital Cinemas
RedLink Device
Model: Epic-M

Date: 04/18/2011
Lab: P
Tested By: Josh Hansen

Low Channel

Blue Trace: Horizontal
Green Trace: Vertical



Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (cm)	Table Angle (deg)	Comments
2405	56.64	V	93.97	- 37.33	Peak	140	180	Corrected
2405	--	V	93.97	--	Avg	--	--	Peak lower than AVG Limit

FCC 15.249
Red Digital Cinemas
RedLink Device
Model: Epic-M

Date: 04/18/2011
Lab: P
Tested By: Josh Hansen

Low Channel

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (cm)	Table Angle (deg)	Comments
4810		V	--	--	Peak			No Emission Found
4810		V	--	--	Avg			No Emission Found
7215		V	--	--	Peak			No Emission Found
7215		V	--	--	Avg			No Emission Found
9620		V	--	--	Peak			No Emission Found
9620		V	--	--	Avg			No Emission Found
12025		V	--	--	Peak			No Emission Found
12025		V	--	--	Avg			No Emission Found
14430		V	--	--	Peak			No Emission Found
14430		V	--	--	Avg			No Emission Found
16835		V	--	--	Peak			No Emission Found
16835		V	--	--	Avg			No Emission Found
19240		V	--	--	Peak			No Emission Found
19240		V	--	--	Avg			No Emission Found
21645		V	--	--	Peak			No Emission Found
21645		V	--	--	Avg			No Emission Found
24050		V	--	--	Peak			No Emission Found
24050		V	--	--	Avg			No Emission Found

FCC 15.249
Red Digital Cinemas
RedLink Device
Model: Epic-M

Date: 04/18/2011
Lab: P
Tested By: Josh Hansen

Low Channel

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4810		H	--	--	Peak			No Emission Found
4810		H	--	--	Avg			No Emission Found
7215		H	--	--	Peak			No Emission Found
7215		H	--	--	Avg			No Emission Found
9620		H	--	--	Peak			No Emission Found
9620		H	--	--	Avg			No Emission Found
12025		H	--	--	Peak			No Emission Found
12025		H	--	--	Avg			No Emission Found
14430		H	--	--	Peak			No Emission Found
14430		H	--	--	Avg			No Emission Found
16835		H	--	--	Peak			No Emission Found
16835		H	--	--	Avg			No Emission Found
19240		H	--	--	Peak			No Emission Found
19240		H	--	--	Avg			No Emission Found
21645		H	--	--	Peak			No Emission Found
21645		H	--	--	Avg			No Emission Found
24050		H	--	--	Peak			No Emission Found
24050		H	--	--	Avg			No Emission Found

MIDDLE CHANNEL PEAK TRANSMIT EMI

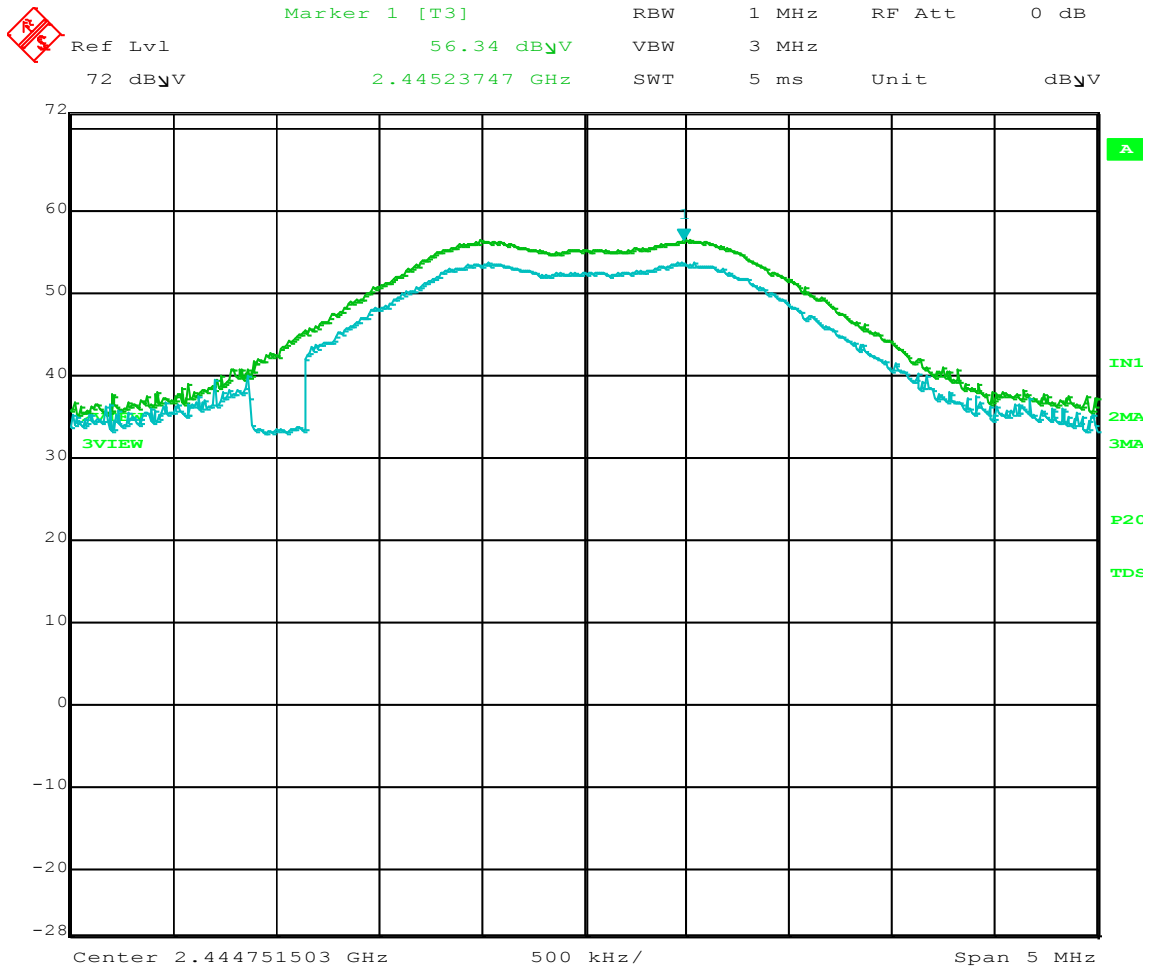
DATA SHEETS

FCC 15.249
Red Digital Cinemas
RedLink Device
Model: Epic-M

Date: 04/18/2011
Lab: P
Tested By: Josh Hansen

Middle Channel

Blue Trace: Horizontal
Green Trace: Vertical



Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (cm)	Table Angle (deg)	Comments
2445	56.34	V	93.97	- 37.63	Peak	145	176	Corrected
2445	--	V	93.97	--	Avg	--	--	Peak lower than AVG Limit

FCC 15.249
Red Digital Cinemas
RedLink Device
Model: Epic-M

Date: 04/18/2011
Lab: P
Tested By: Josh Hansen

Middle Channel

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4890		V	--	--	Peak			No Emission Found
4890		V	--	--	Avg			No Emission Found
7335		V	--	--	Peak			No Emission Found
7335		V	--	--	Avg			No Emission Found
9780		V	--	--	Peak			No Emission Found
9780		V	--	--	Avg			No Emission Found
12225		V	--	--	Peak			No Emission Found
12225		V	--	--	Avg			No Emission Found
14670		V	--	--	Peak			No Emission Found
14670		V	--	--	Avg			No Emission Found
17115		V	--	--	Peak			No Emission Found
17115		V	--	--	Avg			No Emission Found
19560		V	--	--	Peak			No Emission Found
19560		V	--	--	Avg			No Emission Found
22005		V	--	--	Peak			No Emission Found
22005		V	--	--	Avg			No Emission Found
24450		V	--	--	Peak			No Emission Found
24450		V	--	--	Avg			No Emission Found

FCC 15.249
Red Digital Cinemas
RedLink Device
Model: Epic-M

Date: 04/18/2011
Lab: P
Tested By: Josh Hansen

Middle Channel

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4890		H	--	--	Peak			No Emission Found
4890		H	--	--	Avg			No Emission Found
7335		H	--	--	Peak			No Emission Found
7335		H	--	--	Avg			No Emission Found
9780		H	--	--	Peak			No Emission Found
9780		H	--	--	Avg			No Emission Found
12225		H	--	--	Peak			No Emission Found
12225		H	--	--	Avg			No Emission Found
14670		H	--	--	Peak			No Emission Found
14670		H	--	--	Avg			No Emission Found
17115		H	--	--	Peak			No Emission Found
17115		H	--	--	Avg			No Emission Found
19560		H	--	--	Peak			No Emission Found
19560		H	--	--	Avg			No Emission Found
22005		H	--	--	Peak			No Emission Found
22005		H	--	--	Avg			No Emission Found
24450		H	--	--	Peak			No Emission Found
24450		H	--	--	Avg			No Emission Found

HIGH CHANNEL PEAK TRANSMIT EMI

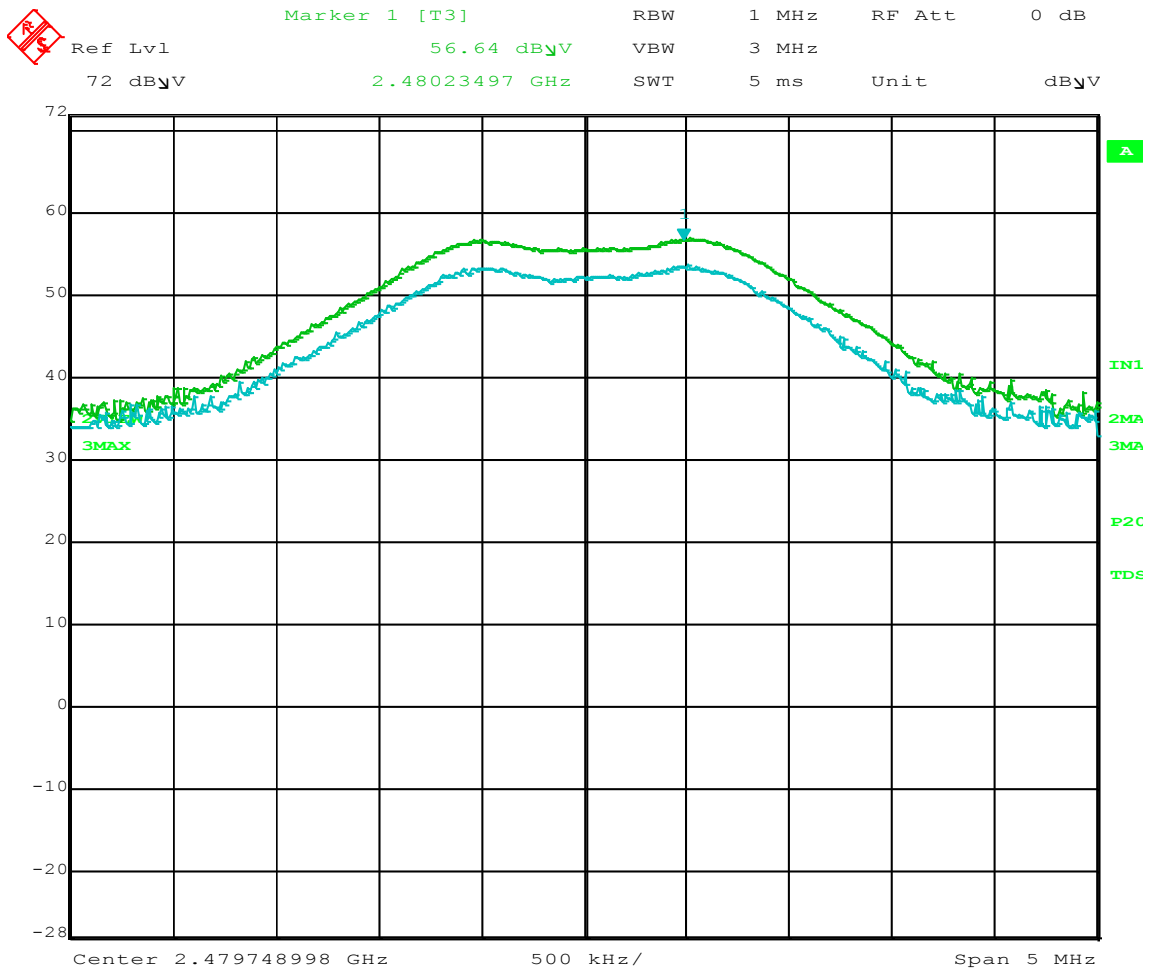
DATA SHEETS

FCC 15.249
Red Digital Cinemas
RedLink Device
Model: Epic-M

Date: 04/18/2011
Lab: P
Tested By: Josh Hansen

High Channel

Blue Trace: Horizontal
Green Trace: Vertical



Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (cm)	Table Angle (deg)	Comments
2480	56.64	V	93.97	-37.33	Peak	140	169	Corrected
2480	--	V	93.97	--	Avg	--	--	Peak lower than AVG Limit

FCC 15.249
Red Digital Cinemas
RedLink Device
Model: Epic-M

Date: 04/18/2011
Lab: P
Tested By: Josh Hansen

High Channel

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4960		V	--	--	Peak			No Emission Found
4960		V	--	--	Avg			No Emission Found
7440		V	--	--	Peak			No Emission Found
7440		V	--	--	Avg			No Emission Found
9920		V	--	--	Peak			No Emission Found
9920		V	--	--	Avg			No Emission Found
12400		V	--	--	Peak			No Emission Found
12400		V	--	--	Avg			No Emission Found
14880		V	--	--	Peak			No Emission Found
14880		V	--	--	Avg			No Emission Found
17360		V	--	--	Peak			No Emission Found
17360		V	--	--	Avg			No Emission Found
19840		V	--	--	Peak			No Emission Found
19840		V	--	--	Avg			No Emission Found
22320		V	--	--	Peak			No Emission Found
22320		V	--	--	Avg			No Emission Found
24800		V	--	--	Peak			No Emission Found
24800		V	--	--	Avg			No Emission Found

FCC 15.249
Red Digital Cinemas
RedLink Device
Model: Epic-M

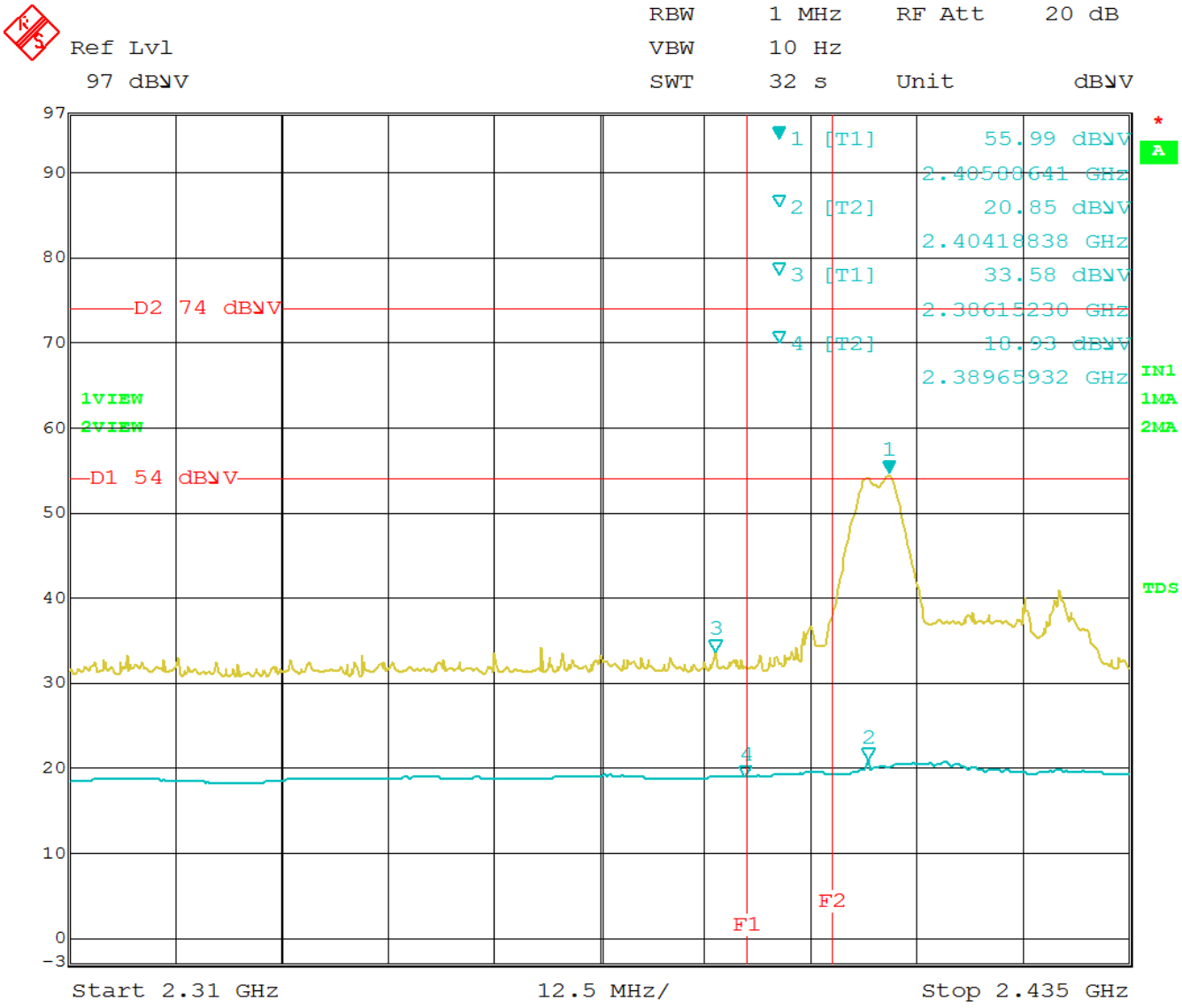
Date: 04/18/2011
Lab: P
Tested By: Josh Hansen

High Channel

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4960		H	--	--	Peak			No Emission Found
4960		H	--	--	Avg			No Emission Found
7440		H	--	--	Peak			No Emission Found
7440		H	--	--	Avg			No Emission Found
9920		H	--	--	Peak			No Emission Found
9920		H	--	--	Avg			No Emission Found
12400		H	--	--	Peak			No Emission Found
12400		H	--	--	Avg			No Emission Found
14880		H	--	--	Peak			No Emission Found
14880		H	--	--	Avg			No Emission Found
17360		H	--	--	Peak			No Emission Found
17360		H	--	--	Avg			No Emission Found
19840		H	--	--	Peak			No Emission Found
19840		H	--	--	Avg			No Emission Found
22320		H	--	--	Peak			No Emission Found
22320		H	--	--	Avg			No Emission Found
24800		H	--	--	Peak			No Emission Found
24800		H	--	--	Avg			No Emission Found

LOWER BAND EDGE

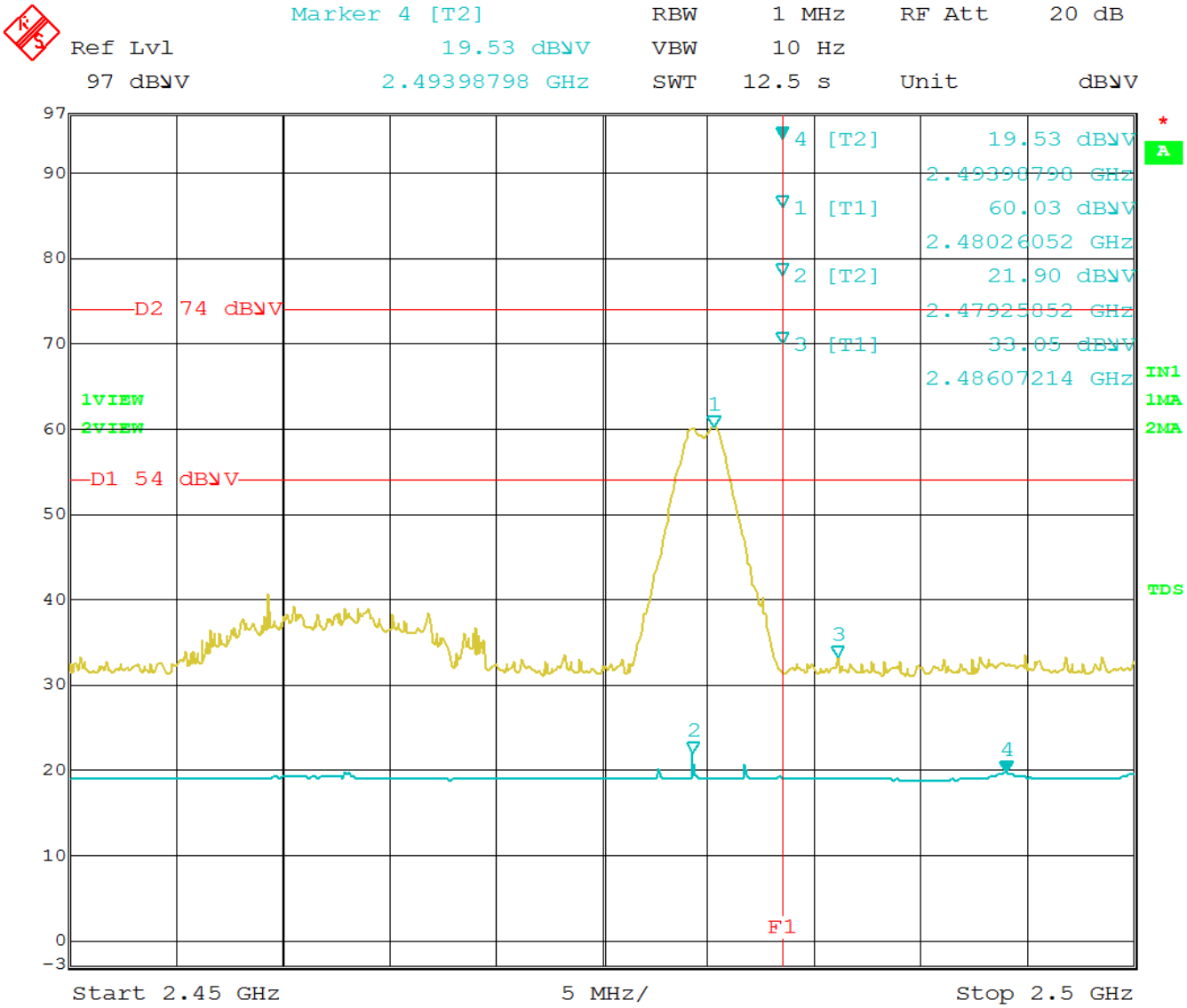
DATA SHEETS



Date: 29.APR.2011 14:12:22

UPPER BAND EDGE

DATA SHEETS



Date: 28.FEB.2011 19:32:59