FCC PART 15 SUBPART B and C
TEST REPORT

for

WIRELESS RS232 EXTENDER

Part Number: EXT-WRS232R

Prepared for

GEFEN, LLC
20600 NORDHOFF STREET
CHATSWORTH, CALIFORNIA 91311

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JAMES ROSS

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DATE: AUGUST 5, 2010

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

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

The measurement data and conclusions appearing herein relate only to the sample tested and this report may not be reproduced without the written permission of Compatible Electronics, unless done so in full.

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

Device Tested:	Gefen, LLC P/N: EXT-WRS232R S/N: N/A
Product Description:	See Expository Statement
Modifications:	The EUT was not modified in order to meet the specifications.
Customer:	Gefen, LLC 20600 Nordhoff Street Chatsworth, California 91311
Test Date(s):	April 20, 21, and 23, 2010
Test Specifications:	EMI requirements CFR Title 47, Part 15, Subpart B; and Subpart C sections, 15.205, 15.207, 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 to 30 MHz	Complies with the **Class B** limits of CFR Title 47, Part 15, Subpart B; and Subpart C, section 15.207. Highest reading in relation to spec limit: 39.23 dBuV @ 0.637 MHz (*U = 1.68 dB)
2	Radiated RF Emissions 10 kHz – 25000 MHz (Transmitter, Receive, and Digital Portion)	Complies with the **Class B** limits of CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209, and 15.249. Highest reading in relation to spec limit: 44.94 (QP) dBuV @ 602.349 MHz (*U = 5.13 dB)

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

1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the Wireless RS232 Extender, P/N: EXT-WRS232R. 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.

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

Gefen, LLC

Gaston Santiago	Project Manager

Compatible Electronics Inc.

Kyle Fujimoto	Test Engineer
James Ross	Test Engineer

2.4 Date Test Sample was Received

The test sample was received prior to the date of testing.

2.5 Disposition of the Test Sample

The test sample has not yet been returned as of the date of this report.

2.6 Abbreviations and Acronyms

The following abbreviations and acronyms may be used in this document.

FCC	Federal Communications Commission
RF	Radio Frequency
EMI	Electromagnetic Interference
EUT	Equipment Under Test
P/N	Part Number
S/N	Serial Number
ITE	Information Technology Equipment
LISN	Line Impedance Stabilization Network
NVLAP	National Voluntary Laboratory Accreditation Program
CFR	Code of Federal Regulations
N/A	Not Applicable
Ltd.	Limited
Inc.	Incorporated
IR	Infrared

3. APPLICABLE DOCUMENTS

The following documents are referenced or used in the preparation of this EMI Test Report.

SPEC	TITLE
CFR Title 47, Part 15	FCC Rules – Radio frequency devices (including digital devices)
ANSI C63.4: 2003	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description of Test Configuration – EMI

External Power Mode: The Wireless RS232 Extender, P/N: EXT-WRS232R (EUT) was connected to the computer and switching power supply via its serial and power ports, respectively. The computer was also connected to a printer, monitor, keyboard, and mouse via its parallel, video, keyboard, and mouse ports respectively. The monitor was also connected to the power supply. The EUT was being powered by the external switching power supply. The EUT was continuously transmitting at 9600 baud or continuously receiving depending on the test being performed.

The EUT's antenna is a whip antenna.

Note: For the testing a unit with a standard antenna connector was used. For manufacturing purposes, a unit with a reverse polarity antenna connector will be used.

It was determined that the emissions were at their highest level when the EUT was operating in the above configuration. The final emissions data was taken in this mode of operation and any cables were maximized. All initial investigations were performed with the measurement receiver in manual mode scanning the frequency range continuously. Photographs of the test setup are in Appendix D of this report.

4.1.1 Cable Construction and Termination

Cable 1 This is a 2.7-meter braid and foil shielded cable connecting the EUT to the computer. The cable has a D-9 pin metallic connector at each end. The cable was bundled to a length of 1 meter. The shield of the cable was grounded to the chassis via the connectors.

Cable 2 This is a 2-meter unshielded cable connecting the EUT to the switching power supply. The cable has a twist-secure power barrel at the EUT end and is hard wired into the switching power supply. The cable was bundled to a length of 1.2-meters.

Cable 3 This is a 1.5-meter braid and foil shielded cable connecting the computer to the printer. The cable has a D-25 pin metallic connector at the computer end and a Centronics metallic type connector at the printer end. The shield of the cable was grounded to the chassis via the connectors.

Cable 4 This is a 1.5-meter braid and foil shielded cable connecting the monitor to the D-15 to DVI adapter directly connected to the computer. The cable has a high density D-15 pin metallic connector at each end. The cable was bundled to a length of 1-meter. The shield of the cable was grounded to the chassis via the connectors. The cable has a molded ferrite at the monitor end.

Cable 5 This is a 1.7-meter foil shielded cable connecting the computer to the keyboard. The cable has a 6-pin mini DIN connector at the computer end and is hard wired into the keyboard. The shield of the cable was grounded to the chassis via the connector.

Cable 6 This is a 1.7-meter foil shielded cable connecting the computer to the mouse. The cable has a USB type "A" connector at the computer end and is hard wired into the mouse. The shield of the cable was grounded to the chassis via the connector.

Cable 7 This is a 1.8-meter unshielded cable connecting the monitor to the AC Adapter. The cable has a power barrel at the monitor end and is hard wired into the AC Adapter. The cable was bundled to a length of 1-meter. The cable has a molded ferrite at the monitor end.

5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

5.1 EUT and Accessory List

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID
WIRELESS RS232 EXTENDER (EUT)	GEFEN, LLC	P/N: EXT-WRS232R	N/A	UYYEXTWRS232R
LCD MONITOR	PLANAR	997-2282-00	23T234400800	DoC
AC ADAPTER FOR MONITOR	LISHIN INTERNATIONAL ENTERPRISE CORP.	LSE9901B1250	A2M34101098	N/A
COMPUTER	IBM	42U	KCT7WKF	DoC
KEYBOARD	DELL	RT7D20	CN-04N454-37172-4C3-010J	AQC-7D20
MOUSE	DELL	M056U0A	G0P02BG6	DoC
DOT MATRIX PRINTER	CITIZEN	LSP-10	1262247	DLK66TLSP-10
SWITCHING POWER SUPPLY FOR THE EUT	GEFEN, LLC	HK-H5-A05	001668	DoC
D15 TO DVI ADAPTER	N/A	N/A	N/A	N/A

5.2 EMI Test Equipment

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CALIBRATION DATE	CALIBRATION DUE DATE
GENERAL TEST EQUIPMENT USED FOR ALL RF EMISSIONS TESTS					
Computer	Hewlett Packard	4530	US91912319	N/A	N/A
EMI Receiver	Rohde & Schwarz	ESIB40	100194	September 17, 2008	Sept. 17, 2010
Spectrum Analyzer – Main Section	Hewlett Packard	8566B	3638A08784	May 29, 2009	May 29, 2010
Spectrum Analyzer – Display Section	Hewlett Packard	85662A	2648A14530	May 29, 2009	May 29, 2010
Quasi-Peak Adapter	Hewlett Packard	85650A	2430A00424	May 29, 2009	May 29, 2010
Monitor	Hewlett Packard	D5258A	TW74500641	N/A	N/A
RF RADIATED EMISSIONS TEST EQUIPMENT					
Combilog Antenna	Com Power	AC-220	61027	June 12, 2009	June 12, 2010
Preamplifier	Com-Power	PA-103	1582	January 6, 2010	January 6, 2011
Loop Antenna	Com-Power	AL-130	17089	September 29, 2008	Sept. 29, 2010
Horn Antenna	Com-Power	AH-118	071175	March 18, 2010	March 18, 2012
Horn Antenna	Com-Power	AH826	71957	N/A	N/A
Microwave Preamplifier	Com-Power	PA-840	711013	March 11, 2010	March 11, 2011
Microwave Preamplifier	Com-Power	PA-122	181921	March 10, 2010	March 10, 2011
Antenna Mast	Com Power	AM-100	N/A	N/A	N/A
RF CONDUCTED EMISSIONS TEST EQUIPMENT					
Emissions Program	Compatible Electronics	2.3 (SR19)	N/A	N/A	N/A
LISN	Com Power	LI-215	12076	September 28, 2009	Sept. 28, 2010
LISN	Com Power	LI-215	12090	September 28, 2009	Sept. 28, 2010
Transient Limiter	Com Power	252A910	1	September 28, 2009	Sept. 28, 2010

6. TEST SITE DESCRIPTION

6.1 Test Facility Description

Please refer to section 2.1 and 7.1.2 of this report for EMI test location.

6.2 EUT Mounting, Bonding and Grounding

The EUT was mounted on a 1.0 by 1.5 meter non-conductive table 0.8 meters above the ground plane.

The EUT was grounded to the computer via the shield of the serial cable.

6.3 Facility Environmental Characteristics

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

7. TEST PROCEDURES

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

7.1 RF Emissions

7.1.1 Conducted Emissions Test

The measurement receiver was used as a measuring meter. The data was collected with the measurement receiver in the peak detect mode with the "Max Hold" feature activated. The quasi-peak was used only where indicated in the data sheets. A transient limiter was used for the protection of the measurement receiver's input stage, and the offset was adjusted accordingly to read the actual data measured. The LISN output was measured using the measurement receiver. The output of the second LISN was terminated by a 50-ohm termination. The effective measurement bandwidth used for this test was 9 kHz.

Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The EUT was powered through the LISN, which was bonded to the ground plane. The LISN power was filtered and the filter was bonded to the ground plane. The EUT was set up with the minimum distances from any conductive surfaces as specified in ANSI C63.4. The excess power cord was wrapped in a figure eight pattern to form a bundle not exceeding 0.4 meters in length.

The conducted emissions from the EUT were maximized for operating mode as well as cable placement. The final data was collected under program control by the Compatible Electronics conducted emissions software in several overlapping sweeps by running the spectrum analyzer at a minimum scan rate of 10 seconds per octave. The final qualification data is located in Appendix E.

Test Results:

The EUT complies with the **Class B** limits of CFR Title 47, Part 15, Subpart B; and CFR Title 47, Part 15, Subpart C, section 15.207.

7.1.2 Radiated Emissions (Spurious and Harmonics) Test

The spectrum analyzer and EMI Receiver were used as a measuring meter along with the quasi-peak adapter. Amplifiers were used to increase the sensitivity of the instrument. The Com Power Preamplifier Model: PA-102 was used for frequencies from 30 MHz to 1 GHz and the Com Power Microwave Preamplifier Model: PA-122 was used for frequencies above 1 GHz. The spectrum analyzer and EMI Receiver were used in the peak detect mode with the "Max Hold" feature activated. In this mode, the spectrum analyzer records the highest measured reading over all the sweeps.

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

The readings were averaged by a “duty cycle correction factor,” derived from 20 log (dwell time / one pulse train with blanking interval). The measurement bandwidths and transducers used for the radiated emissions test were:

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

FREQUENCY RANGE	EFFECTIVE MEASUREMENT BANDWIDTH	TRANSDUCER
10 kHz to 150 kHz	200 Hz	Active Loop Antenna
150 kHz to 30 MHz	9 kHz	Active Loop Antenna
30 MHz to 300 MHz	120 kHz	Biconical Antenna
300 MHz to 1 GHz	120 kHz	Log Periodic Antenna
1 GHz to 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: 2003. Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The turntable supporting the EUT is remote controlled using a motor. The turntable permits EUT rotation of 360 degrees in order to maximize emissions. Also, the antenna mast allows height variation of the antenna from 1 meter to 4 meters. Data was collected in the worst case (highest emission) configuration of the EUT by the Radiated Emission Manual Test software. At each reading, the EUT was rotated 360 degrees and the antenna height was varied from 1 to 4 meters (for E field radiated field strength). The gunsight method was used when measuring with the horn antenna in order to ensure accurate results. The loop antenna was also rotated in the horizontal and vertical axis in order to ensure accurate results.

Radiated Emissions (Spurious and Harmonics) Test (continued)

The presence of ambient signals was verified by turning the EUT off. In case an ambient signal was detected, the measurement bandwidth was reduced temporarily and verification was made that an additional adjacent peak did not exist. This ensures that the ambient signal does not hide any emissions from the EUT. The EUT was tested at a 3-meter test distance to obtain the final test data.

Test Results:

The EUT complies with the **Class B** limits of CFR Title 47, Part 15, Subpart B; and the limits of CFR Title 47, Part 15, Subpart C, Sections 15.209 and 15.249.

8. CONCLUSIONS

The Wireless RS232 Extender, Part Number: EXT-WRS232R, as tested, meets all of the **Class B** specification limits defined in 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.

APPENDIX A

LABORATORY RECOGNITIONS

LABORATORY RECOGNITIONS

Compatible Electronics has the following agency accreditations:

National Voluntary Laboratory Accreditation Program - Lab Code: 200528-0

Voluntary Control Council for Interference - Registration Numbers: R-983, C-1026, R-984 and C-1027

Bureau of Standards and Metrology Inspection - Reference Number: SL2-IN-E-1031

Conformity Assessment Body for the EMC Directive Under the US/EU MRA Appointed by NIST

Compatible Electronics is recognized or on file with the following agencies:

Federal Communications Commission

Industry Canada

APPENDIX B

MODIFICATIONS TO THE EUT

MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC 15.249 and/or FCC **Class B** specifications.

All the rework described below was implemented during the test in a method that could be reproduced in all the units by the manufacturer.

No modification were made to the EUT during the testing.

APPENDIX C

ADDITIONAL MODELS COVERED UNDER THIS REPORT

ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

Wireless RS232 Extender
P/N: EXT-WRS232R
S/N: N/A

ALSO APPROVED UNDER THIS REPORT:

There were no additional models covered under this report.

APPENDIX D

DIAGRAMS, CHARTS, AND PHOTOS

FIGURE 1: CONDUCTED EMISSIONS TEST SETUP

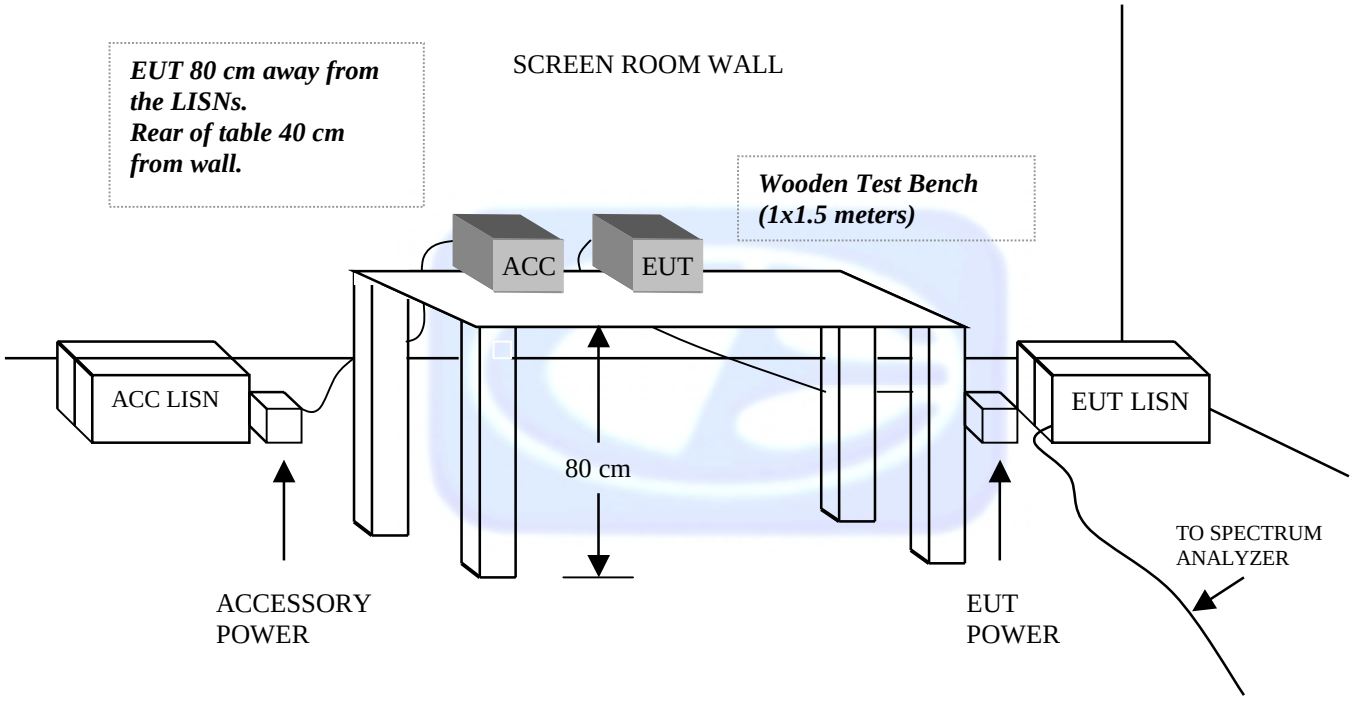
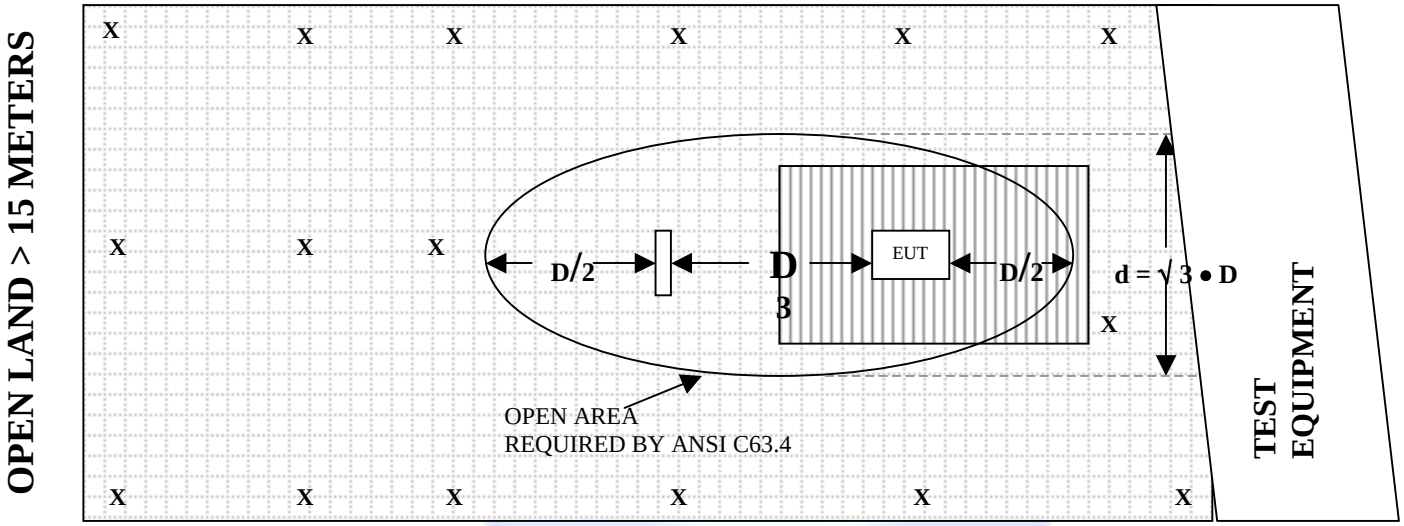


FIGURE 2: PLOT MAP AND LAYOUT OF RADIATED SITE – 3 METERS

OPEN LAND > 15 METERS



OPEN LAND > 15 METERS

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

COM-POWER AC-220

COMBILOG ANTENNA

S/N: 61027

CALIBRATION DATE: JUNE 12, 2009

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
25	17.7	180	10.0
30	18.1	200	10.2
35	17.4	250	11.7
40	16.8	275	13.3
45	16.1	300	13.9
50	16.3	400	15.8
60	14.0	500	17.3
70	8.1	600	18.7
80	7.5	700	19.6
90	8.5	800	20.9
100	9.9	900	21.5
120	9.9	1000	22.3
125	10.4	1200	18.1
140	10.1	1400	17.9
150	8.9	1600	20.1
160	8.9	1800	18.8
175	10.2	2000	20.0

COM-POWER PA-103

PREAMPLIFIER

S/N: 1582

CALIBRATION DATE: JANUARY 6, 2010

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	33.1	300	32.7
40	33.0	350	32.6
50	32.9	400	33.0
60	33.1	450	32.3
70	33.1	500	32.1
80	32.9	550	32.5
90	32.9	600	32.3
100	32.9	650	32.0
125	33.0	700	32.6
150	32.9	750	32.5
175	32.9	800	31.8
200	32.7	850	31.9
225	32.8	900	32.2
250	32.8	950	32.1
275	32.8	1000	32.1

COM POWER AH-118

HORN ANTENNA

S/N: 071175

CALIBRATION DATE: MARCH 18, 2010

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

COM-POWER PA-122

PREAMPLIFIER

S/N: 181921

CALIBRATION DATE: MARCH 10, 2010

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

COM-POWER PA-840

PREAMPLIFIER

S/N: 711013

CALIBRATION DATE: MARCH 11, 2010

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
18.0	24.36	29.0	24.83
18.5	24.54	29.5	23.52
19.0	24.06	30.0	21.73
19.5	23.71	30.5	22.34
20.0	23.42	31.0	20.06
20.5	22.87	31.5	20.02
21.0	22.60	32.0	18.11
21.5	21.08	32.5	19.35
22.0	22.13	33.0	17.50
22.5	22.42	33.5	17.49
23.0	22.85	34.0	17.48
23.5	22.85	34.5	18.57
24.0	23.82	35.0	18.64
24.5	22.33	35.5	18.82
25.0	24.09	36.0	19.14
25.5	23.20	36.5	18.58
26.0	23.18	37.0	15.07
26.5	23.50	37.5	17.29
27.0	24.25	38.0	20.82
27.5	23.58	38.5	19.96
28.0	23.81	39.0	20.06
28.5	23.76	39.5	21.41

COM-POWER AH826

HORN ANTENNA

S/N: 71957

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
18.0	33.5	22.5	35.5
18.5	33.5	23.0	35.9
19.0	34.0	23.5	35.7
19.5	34.0	24.0	35.6
20.0	34.3	24.5	36.0
20.5	34.9	25.0	36.2
21.0	34.7	25.5	36.1
21.5	35.0	26.0	36.2
22.0	35.0	26.5	35.7

COM-POWER AL-130

LOOP ANTENNA

S/N: 17089

CALIBRATION DATE: SEPTEMBER 29, 2008

FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)
0.009	-41.57	9.93
0.01	-42.06	9.44
0.02	-42.43	9.07
0.05	-42.50	9.00
0.07	-42.10	9.40
0.1	-42.03	9.47
0.2	-44.50	7.00
0.3	-41.93	9.57
0.5	-41.90	9.60
0.7	-41.73	9.77
1	-41.23	10.27
2	-40.90	10.60
3	-41.20	10.30
4	-41.30	10.20
5	-40.70	10.80
10	-41.10	10.40
15	-42.17	9.33
20	-42.00	9.50
25	-42.20	9.30
30	-43.10	8.40

FRONT VIEW

GEFEN, LLC
WIRELESS RS232 EXTENDER
PART NUMBER: EXT-WRS232R
FCC SUBPART B AND C – RADIATED EMISSIONS

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

REAR VIEW

GEFEN, LLC
WIRELESS RS232 EXTENDER
PART NUMBER: EXT-WRS232R
FCC SUBPART B AND C – RADIATED EMISSIONS

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

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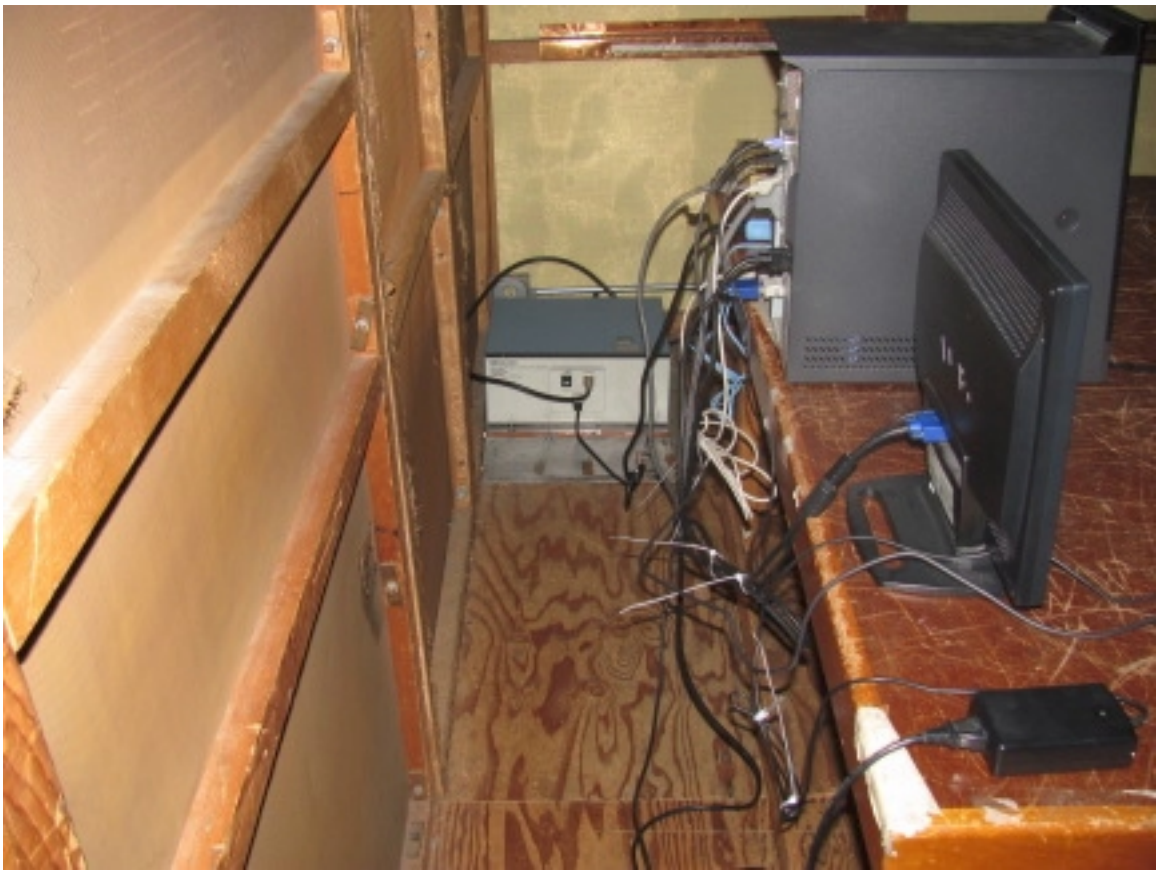
GEFEN, LLC
WIRELESS RS232 EXTENDER
PART NUMBER: EXT-WRS232R
FCC SUBPART B AND C – CONDUCTED EMISSIONS

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



REAR VIEW

GEFEN, LLC
WIRELESS RS232 EXTENDER
PART NUMBER: EXT-WRS232R
FCC SUBPART B AND C – CONDUCTED EMISSIONS

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

APPENDIX E

DATA SHEETS

RADIATED EMISSIONS

DATA SHEETS

FCC 15.249
Gefen, LLC
Wireless RS232 Extender
P/N: EXT-WRS232R

Date: 04/21/2010
Labs: B and D
Tested By: Kyle Fujimoto

X-Axis - Transmit Mode - Low Channel - Duty Cycle = 17.13%

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2403	100.14	V	94	6.14	Peak	1.25	135	
2403	84.82	V	94	-9.18	Avg	1.25	135	
4806	47.73	V	74	-26.27	Peak	1.25	135	
4806	32.41	V	54	-21.59	Avg	1.25	135	
7209	47.35	V	74	-26.65	Peak	1.25	135	
7209	32.03	V	54	-21.97	Avg	1.25	135	
9612	44.19	V	74	-29.81	Peak	1.25	135	
9612	28.87	V	54	-25.13	Avg	1.25	135	
12015								**No Emission**
12015								**Detected**
14418								**No Emission**
14418								**Detected**
16821								**No Emission**
16821								**Detected**
19224								**No Emission**
19224								**Detected**
21627								**No Emission**
21627								**Detected**
24030								**No Emission**
24030								**Detected**

FCC 15.249
Gefen, LLC
Wireless RS232 Extender
P/N: EXT-WRS232R

Date: 04/21/2010
Labs: B and D
Tested By: Kyle Fujimoto

X-Axis - Transmit Mode - Low Channel - Duty Cycle = 17.13%

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2403	87.99	H	94	-6.01	Peak	1.25	180	
2403	72.67	H	94	-21.33	Avg	1.25	180	
4806	42.81	H	74	-31.19	Peak	1.35	175	
4806	27.49	H	54	-26.51	Avg	1.35	175	
7209	45.07	H	74	-28.93	Peak	1.25	185	
7209	29.75	H	54	-24.25	Avg	1.25	185	
9612	43.67	H	74	-30.33	Peak	1.25	135	
9612	28.35	H	54	-25.65	Avg	1.25	135	
12015								**No Emission**
12015								**Detected**
14418								**No Emission**
14418								**Detected**
16821								**No Emission**
16821								**Detected**
19224								**No Emission**
19224								**Detected**
21627								**No Emission**
21627								**Detected**
24030								**No Emission**
24030								**Detected**

FCC 15.249
Gefen, LLC
Wireless RS232 Extender
P/N: EXT-WRS232R

Date: 04/21/2010
Labs: B and D
Tested By: Kyle Fujimoto

Y-Axis - Transmit Mode - Low Channel - Duty Cycle = 17.13%

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2403	98.11	V	94	4.11	Peak	1.25	135	
2403	82.79	V	94	-11.21	Avg	1.25	135	
4806	44.79	V	74	-29.21	Peak	1.35	165	
4806	29.47	V	54	-24.53	Avg	1.35	165	
7209	46.83	V	74	-27.17	Peak	1.25	175	
7209	31.51	V	54	-22.49	Avg	1.25	175	
9612	44.51	V	74	-29.49	Peak	1.25	155	
9612	29.19	V	54	-24.81	Avg	1.25	155	
12015								**No Emission**
12015								**Detected**
14418								**No Emission**
14418								**Detected**
16821								**No Emission**
16821								**Detected**
19224								**No Emission**
19224								**Detected**
21627								**No Emission**
21627								**Detected**
24030								**No Emission**
24030								**Detected**

FCC 15.249
Gefen, LLC
Wireless RS232 Extender
P/N: EXT-WRS232R

Date: 04/21/2010
Labs: B and D
Tested By: Kyle Fujimoto

Y-Axis - Transmit Mode - Low Channel - Duty Cycle = 17.13%

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2403	89.47	H	94	-4.53	Peak	1.25	135	
2403	74.15	H	94	-19.85	Avg	1.25	135	
4806	41.08	H	74	-32.92	Peak	1.25	135	
4806	25.76	H	54	-28.24	Avg	1.25	135	
7209	46.75	H	74	-27.25	Peak	1.35	155	
7209	31.43	H	54	-22.57	Avg	1.35	155	
9612	45.21	H	74	-28.79	Peak	1.45	165	
9612	29.89	H	54	-24.11	Avg	1.45	165	
12015								**No Emission**
12015								**Detected**
14418								**No Emission**
14418								**Detected**
16821								**No Emission**
16821								**Detected**
19224								**No Emission**
19224								**Detected**
21627								**No Emission**
21627								**Detected**
24030								**No Emission**
24030								**Detected**

FCC 15.249
Gefen, LLC
Wireless RS232 Extender
P/N: EXT-WRS232R

Date: 04/20/2010
Labs: B and D
Tested By: Kyle Fujimoto

Z-Axis - Transmit Mode - Low Channel - Duty Cycle = 17.13%

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2403	98.69	V	94	4.69	Peak	1.25	135	
2403	83.37	V	94	-10.63	Avg	1.25	135	
4806	51.46	V	74	-22.54	Peak	1.25	155	
4806	36.14	V	54	-17.86	Avg	1.25	155	
7209	48.08	V	74	-25.92	Peak	1.35	175	
7209	32.76	V	54	-21.24	Avg	1.35	175	
9612	49.23	V	74	-24.77	Peak	1.28	185	
9612	33.91	V	54	-20.09	Avg	1.28	185	
12015								**No Emission**
12015								**Detected**
14418								**No Emission**
14418								**Detected**
16821								**No Emission**
16821								**Detected**
19224								**No Emission**
19224								**Detected**
21627								**No Emission**
21627								**Detected**
24030								**No Emission**
24030								**Detected**

FCC 15.249
Gefen, LLC
Wireless RS232 Extender
P/N: EXT-WRS232R

Date: 04/21/2010
Labs: B and D
Tested By: Kyle Fujimoto

Z-Axis - Transmit Mode - Low Channel - Duty Cycle = 17.13%

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2403	90.31	H	94	-3.69	Peak	1.25	135	
2403	74.99	H	94	-19.01	Avg	1.25	135	
4806	43.11	H	74	-30.89	Peak	1.25	165	
4806	27.79	H	54	-26.21	Avg	1.25	165	
7209	46.95	H	74	-27.05	Peak	1.65	175	
7209	31.63	H	54	-22.37	Avg	1.65	175	
9612	46.21	H	74	-27.79	Peak	1.85	185	
9612	30.89	H	54	-23.11	Avg	1.85	185	
12015								**No Emission**
12015								**Detected**
14418								**No Emission**
14418								**Detected**
16821								**No Emission**
16821								**Detected**
19224								**No Emission**
19224								**Detected**
21627								**No Emission**
21627								**Detected**
24030								**No Emission**
24030								**Detected**

FCC 15.249
Gefen, LLC
Wireless RS232 Extender
P/N: EXT-WRS232R

Date: 04/21/2010
Labs: B and D
Tested By: Kyle Fujimoto

X-Axis - Transmit Mode - Middle Channel - Duty Cycle = 17.13%

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2442	101.92	V	94	7.92	Peak	1.25	90	
2442	86.6	V	94	-7.4	Avg	1.25	90	
4884	46.67	V	74	-27.33	Peak	1.35	155	
4884	31.35	V	54	-22.65	Avg	1.35	155	
7326	45.23	V	74	-28.77	Peak	1.25	165	
7326	29.91	V	54	-24.09	Avg	1.25	165	
9768	44.32	V	74	-29.68	Peak	1.25	135	
9768	29	V	54	-25	Avg	1.25	135	
12210								**No Emission**
12210								**Detected**
14652								**No Emission**
14652								**Detected**
17094								**No Emission**
17094								**Detected**
19536								**No Emission**
19536								**Detected**
21978								**No Emission**
21978								**Detected**
24420								**No Emission**
24420								**Detected**

FCC 15.249
Gefen, LLC
Wireless RS232 Extender
P/N: EXT-WRS232R

Date: 04/21/2010
Labs: B and D
Tested By: Kyle Fujimoto

X-Axis - Transmit Mode - Middle Channel - Duty Cycle = 17.13%

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2442	94.75	H	94	0.75	Peak	1.25	135	
2442	79.43	H	94	-14.57	Avg	1.25	135	
4884	49.89	H	74	-24.11	Peak	1.25	165	
4884	34.57	H	54	-19.43	Avg	1.25	165	
7326	53.21	H	74	-20.79	Peak	1.35	175	
7326	37.89	H	54	-16.11	Avg	1.35	175	
9768	58.15	H	74	-15.85	Peak	1.25	135	
9768	42.83	H	54	-11.17	Avg	1.25	135	
12210								**No Emission**
12210								**Detected**
14652								**No Emission**
14652								**Detected**
17094								**No Emission**
17094								**Detected**
19536								**No Emission**
19536								**Detected**
21978								**No Emission**
21978								**Detected**
24420								**No Emission**
24420								**Detected**

FCC 15.249
Gefen, LLC
Wireless RS232 Extender
P/N: EXT-WRS232R

Date: 04/21/2010
Labs: B and D
Tested By: Kyle Fujimoto

Y-Axis - Transmit Mode - Middle Channel - Duty Cycle = 17.13%

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2442	93.48	V	94	-0.52	Peak	1.25	135	
2442	78.16	V	94	-15.84	Avg	1.25	135	
4884	47.51	V	74	-26.49	Peak	1.25	165	
4884	32.19	V	54	-21.81	Avg	1.25	165	
7326	47.54	V	74	-26.46	Peak	1.35	175	
7326	32.22	V	54	-21.78	Avg	1.35	175	
9768	48.34	V	74	-25.66	Peak	1.25	155	
9768	33.02	V	54	-20.98	Avg	1.25	155	
12210								**No Emission**
12210								**Detected**
14652								**No Emission**
14652								**Detected**
17094								**No Emission**
17094								**Detected**
19536								**No Emission**
19536								**Detected**
21978								**No Emission**
21978								**Detected**
24420								**No Emission**
24420								**Detected**

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Gefen, LLC
Wireless RS232 Extender
P/N: EXT-WRS232R

Date: 04/21/2010
Labs: B and D
Tested By: Kyle Fujimoto

Y-Axis - Transmit Mode - Middle Channel - Duty Cycle = 17.13%

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2442	89.15	H	94	-4.85	Peak	1.25	135	
2442	73.83	H	94	-20.17	Avg	1.25	135	
4884	42.22	H	74	-31.78	Peak	1.25	155	
4884	26.9	H	54	-27.1	Avg	1.25	155	
7326	48.17	H	74	-25.83	Peak	2.25	135	
7326	32.85	H	54	-21.15	Avg	2.25	135	
9768	49.74	H	74	-24.26	Peak	1.25	155	
9768	34.42	H	54	-19.58	Avg	1.25	155	
12210								**No Emission**
12210								**Detected**
14652								**No Emission**
14652								**Detected**
17094								**No Emission**
17094								**Detected**
19536								**No Emission**
19536								**Detected**
21978								**No Emission**
21978								**Detected**
24420								**No Emission**
24420								**Detected**

FCC 15.249
Gefen, LLC
Wireless RS232 Extender
P/N: EXT-WRS232R

Date: 04/21/2010
Labs: B and D
Tested By: Kyle Fujimoto

Z-Axis - Transmit Mode - Middle Channel - Duty Cycle = 17.13%

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2442	99.47	V	94	5.47	Peak	1.25	135	
2442	84.15	V	94	-9.85	Avg	1.25	135	
4884	49.62	V	74	-24.38	Peak	1.25	45	
4884	34.3	V	54	-19.7	Avg	1.25	45	
7326	43.87	V	74	-30.13	Peak	1.35	165	
7326	28.55	V	54	-25.45	Avg	1.35	165	
9768	44.72	V	74	-29.28	Peak	1.55	175	
9768	29.4	V	54	-24.6	Avg	1.55	175	
12210								**No Emission**
12210								**Detected**
14652								**No Emission**
14652								**Detected**
17094								**No Emission**
17094								**Detected**
19536								**No Emission**
19536								**Detected**
21978								**No Emission**
21978								**Detected**
24420								**No Emission**
24420								**Detected**

FCC 15.249
Gefen, LLC
Wireless RS232 Extender
P/N: EXT-WRS232R

Date: 04/21/2010
Labs: B and D
Tested By: Kyle Fujimoto

Z-Axis - Transmit Mode - Middle Channel - Duty Cycle = 17.13%

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2442	88.34	H	94	-5.66	Peak	1.25	90	
2442	73.02	H	94	-20.98	Avg	1.25	90	
4884	42.76	H	74	-31.24	Peak	1.35	175	
4884	27.44	H	54	-26.56	Avg	1.35	175	
7326	48.86	H	74	-25.14	Peak	1.25	165	
7326	33.54	H	54	-20.46	Avg	1.25	165	
9768	49.16	H	74	-24.84	Peak	1.25	175	
9768	33.84	H	54	-20.16	Avg	1.25	175	
12210								**No Emission**
12210								**Detected**
14652								**No Emission**
14652								**Detected**
17094								**No Emission**
17094								**Detected**
19536								**No Emission**
19536								**Detected**
21978								**No Emission**
21978								**Detected**
24420								**No Emission**
24420								**Detected**

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Gefen, LLC
Wireless RS232 Extender
P/N: EXT-WRS232R

Date: 04/21/2010
Labs: B and D
Tested By: Kyle Fujimoto

X-Axis - Transmit Mode - High Channel - Duty Cycle = 17.13%

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2480	101.24	V	94	7.24	Peak	1.25	135	
2480	85.92	V	94	-8.08	Avg	1.25	135	
4960	48.08	V	74	-25.92	Peak	1.35	155	
4960	32.76	V	54	-21.24	Avg	1.35	155	
7440	43.42	V	74	-30.58	Peak	1.25	165	
7440	28.1	V	54	-25.9	Avg	1.25	165	
9920	44.17	V	74	-29.83	Peak	1.35	175	
9920	28.85	V	54	-25.15	Avg	1.35	175	
12400								**No Emission**
12400								**Detected**
14880								**No Emission**
14880								**Detected**
17360								**No Emission**
17360								**Detected**
19840								**No Emission**
19840								**Detected**
22320								**No Emission**
22320								**Detected**
24800								**No Emission**
24800								**Detected**

FCC 15.249
Gefen, LLC
Wireless RS232 Extender
P/N: EXT-WRS232R

Date: 04/21/2010
Labs: B and D
Tested By: Kyle Fujimoto

X-Axis - Transmit Mode - High Channel - Duty Cycle = 17.13%

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2480	89.15	H	94	-4.85	Peak	1.25	135	
2480	73.83	H	94	-20.17	Avg	1.25	135	
4960	47.04	H	74	-26.96	Peak	1.25	155	
4960	31.72	H	54	-22.28	Avg	1.25	155	
7440	47.29	H	74	-26.71	Peak	1.35	175	
7440	31.97	H	54	-22.03	Avg	1.35	175	
9920	50.19	H	74	-23.81	Peak	1.25	185	
9920	34.87	H	54	-19.13	Avg	1.25	185	
12400								**No Emission**
12400								**Detected**
14880								**No Emission**
14880								**Detected**
17360								**No Emission**
17360								**Detected**
19840								**No Emission**
19840								**Detected**
22320								**No Emission**
22320								**Detected**
24800								**No Emission**
24800								**Detected**

FCC 15.249
Gefen, LLC
Wireless RS232 Extender
P/N: EXT-WRS232R

Date: 04/21/2010
Labs: B and D
Tested By: Kyle Fujimoto

Y-Axis - Transmit Mode - High Channel - Duty Cycle = 17.13%

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2480	101.21	V	94	7.21	Peak	1.25	135	
2480	85.89	V	94	-8.11	Avg	1.25	135	
4960	45.64	V	74	-28.36	Peak	1.25	155	
4960	30.32	V	54	-23.68	Avg	1.25	155	
7440	43.89	V	74	-30.11	Peak	1.25	165	
7440	28.57	V	54	-25.43	Avg	1.25	165	
9920	45.31	V	74	-28.69	Peak	1.35	175	
9920	29.99	V	54	-24.01	Avg	1.35	175	
12400								**No Emission**
12400								**Detected**
14880								**No Emission**
14880								**Detected**
17360								**No Emission**
17360								**Detected**
19840								**No Emission**
19840								**Detected**
22320								**No Emission**
22320								**Detected**
24800								**No Emission**
24800								**Detected**

FCC 15.249
Gefen, LLC
Wireless RS232 Extender
P/N: EXT-WRS232R

Date: 04/21/2010
Labs: B and D
Tested By: Kyle Fujimoto

Y-Axis - Transmit Mode - High Channel - Duty Cycle = 17.13%

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2480	91.19	H	94	-2.81	Peak	1.25	45	
2480	75.87	H	94	-18.13	Avg	1.25	45	
4960	46.76	H	74	-27.24	Peak	1.35	125	
4960	31.44	H	54	-22.56	Avg	1.35	125	
7440	46.85	H	74	-27.15	Peak	1.25	155	
7440	31.53	H	54	-22.47	Avg	1.25	155	
9920	49.81	H	74	-24.19	Peak	1.35	165	
9920	34.49	H	54	-19.51	Avg	1.35	165	
12400								**No Emission**
12400								**Detected**
14880								**No Emission**
14880								**Detected**
17360								**No Emission**
17360								**Detected**
19840								**No Emission**
19840								**Detected**
22320								**No Emission**
22320								**Detected**
24800								**No Emission**
24800								**Detected**

FCC 15.249
Gefen, LLC
Wireless RS232 Extender
P/N: EXT-WRS232R

Date: 04/21/2010
Labs: B and D
Tested By: Kyle Fujimoto

Z-Axis - Transmit Mode - High Channel - Duty Cycle = 17.13%

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2480	101.13	V	94	7.13	Peak	1.35	135	
2480	85.81	V	94	-8.19	Avg	1.35	135	
4960	49.06	V	74	-24.94	Peak	1.25	45	
4960	33.74	V	54	-20.26	Avg	1.25	45	
7440	45.71	V	74	-28.29	Peak	1.35	135	
7440	30.39	V	54	-23.61	Avg	1.35	135	
9920	46.95	V	74	-27.05	Peak	1.25	155	
9920	31.63	V	54	-22.37	Avg	1.25	155	
12400								**No Emission**
12400								**Detected**
14880								**No Emission**
14880								**Detected**
17360								**No Emission**
17360								**Detected**
19840								**No Emission**
19840								**Detected**
22320								**No Emission**
22320								**Detected**
24800								**No Emission**
24800								**Detected**

FCC 15.249
Gefen, LLC
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P/N: EXT-WRS232R

Date: 04/21/2010
Labs: B and D
Tested By: Kyle Fujimoto

Z-Axis - Transmit Mode - High Channel - Duty Cycle = 17.13%

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2480	93.82	H	94	-0.18	Peak	1.25	135	
2480	78.5	H	94	-15.5	Avg	1.25	135	
4960	42.59	H	74	-31.41	Peak	1.35	155	
4960	27.27	H	54	-26.73	Avg	1.35	155	
7440	47.25	H	74	-26.75	Peak	1.45	175	
7440	31.93	H	54	-22.07	Avg	1.45	175	
9920	46.82	H	74	-27.18	Peak	1.26	185	
9920	31.5	H	54	-22.5	Avg	1.26	185	
12400								**No Emission**
12400								**Detected**
14880								**No Emission**
14880								**Detected**
17360								**No Emission**
17360								**Detected**
19840								**No Emission**
19840								**Detected**
22320								**No Emission**
22320								**Detected**
24800								**No Emission**
24800								**Detected**

FCC Class B, RSS-210, and FCC 15.249
Gefen, LLC
Wireless RS232 Extender
P/N: EXT-WRS232R

Date: 04/21/2010
Labs: B and D
Tested By: Kyle Fujimoto

Non-Harmonic Emissions From the Transmitter - X-Axis (Worst Case)
Digital Portion in Transmit Mode - X-Axis (Worst Case)
and Receiver Mode (Middle Channel - X-Axis - Worst Case)

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
								No Non-Harmonic Emissions
								Found for the EUT from
								1 GHz to 25 GHz
								Vertical and Horizontal
								Polarizations
								No Emissions
								Found for the EUT from
								1 GHz to 25 GHz for both
								Vertical and Horizontal
								Polarizations
								For the Receiver Portion
								No Emissions
								Found for the EUT from
								1 GHz to 25 GHz for both
								Vertical and Horizontal
								Polarizations
								For the Digital Portion in
								Transmit Mode

Test Location : Compatible Electronics — Page : 1/2
Customer : Gefen. LLC — Date : 4/23/2010
Manufacturer : Gefen. LLC — Time : 8:58:35
Eut name : Wireless RS232 Extender — Lab : A
Model : EXT-WRS232R — Test Distance : 3.0 Meters
Serial # : N/A
Specification : FCC B
Distance correction factor (20 * log(test/spec) : 0.00
Test Mode : Transmit Mode (AC Adapter Powered)
Radiated Emissions Qualification
10 kHz to 1000 MHz (Vetical and Horizontal)
Alex Benitez, Test Engineer

Pol	Freq	Rdng	Cable loss	Ant factor	Amp gain	Cor'd rdg = R	Limit = L	Delta R-L
	MHz	dBuV	dB	dB	dB	dBuV	dBuV/m	dB
1V	63.065	50.70	1.16	12.09	33.10	30.86	40.00	-9.14
2V	65.574	57.00	1.22	10.60	33.10	35.72	40.00	-4.28
3V	67.299	55.90	1.25	9.61	33.10	33.66	40.00	-6.34
4V	76.324	57.90	1.36	7.71	32.97	34.01	40.00	-5.99
5V	118.755	55.00	1.71	9.90	32.98	33.63	43.50	-9.87
6V	122.907	53.00	1.77	10.19	32.99	31.97	43.50	-11.53
7V	143.391	56.10	1.88	9.68	32.92	34.73	43.50	-8.77
8V	147.482	57.50	1.89	9.19	32.91	35.68	43.50	-7.82
9V	210.031	50.40	2.38	10.53	32.74	30.57	43.50	-12.93
10V	221.071	52.10	2.47	10.87	32.79	32.66	46.00	-13.34
11V	232.127	46.80	2.50	11.20	32.80	27.70	46.00	-18.30
12V	267.019	55.50	2.64	12.81	32.80	38.14	46.00	-7.86
13V	276.542	53.10	2.71	13.34	32.79	36.35	46.00	-9.65
14V	305.164	51.20	2.83	14.01	32.69	35.36	46.00	-10.64
15V	331.409	52.60	2.99	14.56	32.64	37.52	46.00	-8.48
16V	333.213	54.10	3.00	14.59	32.63	39.07	46.00	-6.93
17V	336.090	51.60	3.02	14.65	32.63	36.65	46.00	-9.35
18V	572.370	50.70	4.25	18.34	32.41	40.88	46.00	-5.12
19V	602.347	54.80	4.31	18.72	32.29	45.55	46.00	-0.45
20V	602.349Qp	54.19	4.31	18.72	32.29	44.94	46.00	-1.06
21V	644.338	50.10	4.48	19.12	32.03	41.66	46.00	-4.34
22V	668.387	50.70	4.65	19.33	32.23	42.45	46.00	-3.55
23V	701.923	45.60	4.91	19.63	32.60	37.54	46.00	-8.46
24H	63.795	51.30	1.18	11.65	33.10	31.03	40.00	-8.97
25H	66.786	53.40	1.24	9.90	33.10	31.44	40.00	-8.56
26H	76.567	54.20	1.37	7.70	32.97	30.30	40.00	-9.70
27H	80.815	49.30	1.40	7.59	32.90	25.39	40.00	-14.61
28H	118.735	51.90	1.71	9.90	32.98	30.53	43.50	-12.97
29H	181.208	49.70	2.15	10.01	32.85	29.02	43.50	-14.48
30H	204.821	45.20	2.34	10.36	32.72	25.18	43.50	-18.32
31H	267.012	55.40	2.64	12.81	32.80	38.04	46.00	-7.96
32H	276.536	54.50	2.71	13.34	32.79	37.75	46.00	-8.25
33H	298.499	50.40	2.79	13.87	32.71	34.35	46.00	-11.65
34H	299.520	51.70	2.80	13.89	32.70	35.69	46.00	-10.31
35H	324.208	50.00	2.95	14.41	32.65	34.71	46.00	-11.29

Test Location : Compatible Electronics — Page : 2/2
Customer : Gefen. LLC — Date : 4/23/2010
Manufacturer : Gefen. LLC — Time : 8:58:35
Eut name : Wireless RS232 Extender — Lab : A
Model : EXT-WRS232R — Test Distance : 3.0 Meters
Serial # : N/A
Specification : FCC B
Distance correction factor (20 * log(test/spec) : 0.00
Test Mode : Transmit Mode (AC Adapter Powered)
Radiated Emissions Qualification
10 kHz to 1000 MHz (Vetical and Horizontal)
Alex Benitez, Test Engineer

Pol	Freq	Rdng	Cable loss	Ant factor	Amp gain	Cor'd rdg = R	Limit = L	Delta R-L
	MHz	dBuV	dB	dB	dB	dBuV	dBuV/m	dB
36H	331.358	53.10	2.99	14.56	32.64	38.01	46.00	-7.99
37H	333.199	53.80	3.00	14.59	32.63	38.77	46.00	-7.23
38H	364.501	53.20	3.19	15.19	32.72	38.86	46.00	-7.14
39H	418.086	54.90	3.44	16.10	32.74	41.70	46.00	-4.30
40H	519.574	51.10	3.96	17.59	32.26	40.39	46.00	-5.61
41H	554.358	46.70	4.21	18.09	32.48	36.52	46.00	-9.48
42H	614.347	47.60	4.36	18.84	32.21	38.59	46.00	-7.41
43H	692.344	48.20	4.84	19.54	32.51	40.07	46.00	-5.93

Test Location : Compatible Electronics — Page : 1/2
Customer : Gefen, LLC — Date : 4/23/2010
Manufacturer : Gefen, LLC — Time : 11:49:22
Eut name : Wireless RS232 Extender — Lab : A
Model : EXT-WRS232R — Test Distance : 3.0 Meters
Serial # : N/A
Specification : FCC B
Distance correction factor (20 * log(test/spec) : 0.00
Test Mode : Receive Mode (AC Adapter Powered)
Radiated Emissions Qualification
30 MHz to 1000 MHz (Vetical and Horizontal)
Alex Benitez, Test Engineer

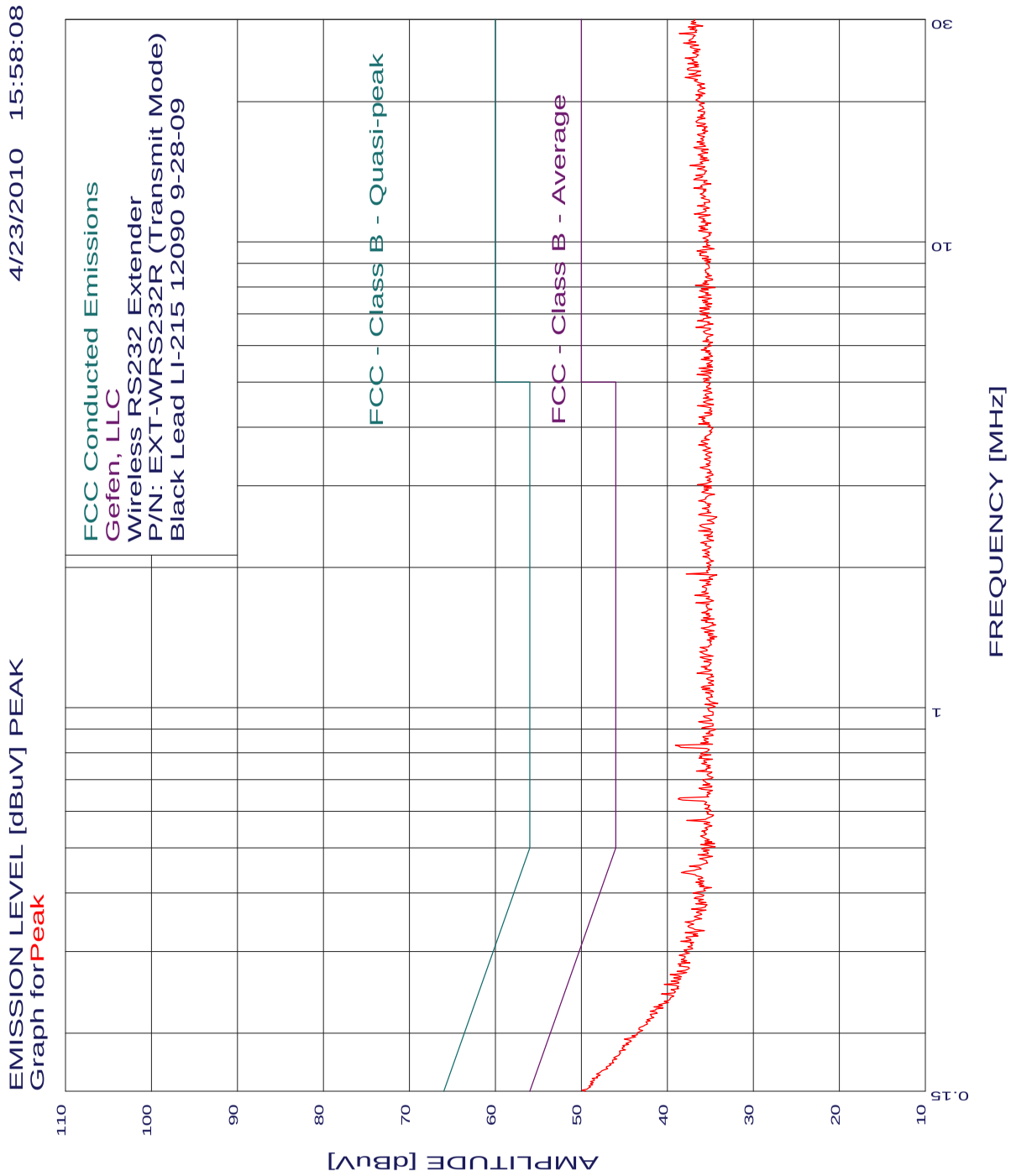
Pol	Freq	Rdng	Cable loss	Ant factor	Amp gain	Cor'd rdg = R	Limit = L	Delta R-L
	MHz	dBuV	dB	dB	dB	dBuV	dBuV/m	dB
1H	63.227	51.90	1.17	11.99	33.10	31.96	40.00	-8.04
2H	80.077	48.90	1.40	7.51	32.90	24.91	40.00	-15.09
3H	118.746	51.30	1.71	9.90	32.98	29.93	43.50	-13.57
4H	181.211	50.50	2.15	10.01	32.85	29.82	43.50	-13.68
5H	204.824	45.60	2.34	10.36	32.72	25.58	43.50	-17.92
6H	267.008	55.30	2.64	12.80	32.80	37.94	46.00	-8.06
7H	276.553	53.60	2.71	13.34	32.79	36.85	46.00	-9.15
8H	298.231	53.40	2.79	13.86	32.71	37.35	46.00	-8.65
9H	299.889	54.50	2.80	13.90	32.70	38.50	46.00	-7.50
10H	324.244	49.10	2.95	14.41	32.65	33.81	46.00	-12.19
11H	331.387	49.10	2.99	14.56	32.64	34.02	46.00	-11.98
12H	333.226	51.00	3.00	14.59	32.63	35.97	46.00	-10.03
13H	336.065	53.40	3.02	14.65	32.63	38.44	46.00	-7.56
14H	364.505	58.00	3.19	15.19	32.72	43.66	46.00	-2.34
15H	364.505Qp	57.01	3.19	15.19	32.72	42.67	46.00	-3.33
16H	366.539	58.30	3.20	15.22	32.74	43.99	46.00	-2.01
17H	366.539Qp	57.16	3.20	15.22	32.74	42.85	46.00	-3.15
18H	430.793	42.50	3.46	16.30	32.56	29.70	46.00	-16.30
19H	494.361	54.50	3.77	17.22	32.12	43.37	46.00	-2.63
20H	494.367Qp	52.85	3.77	17.22	32.12	41.72	46.00	-4.28
21H	729.277	39.60	5.08	20.00	32.54	32.14	46.00	-13.86
22V	49.197	54.30	1.19	16.27	32.91	38.85	40.00	-1.15
23V	49.198Qp	53.24	1.19	16.27	32.91	37.79	40.00	-2.21
24V	110.620	54.40	1.58	9.90	32.95	32.94	43.50	-10.56
25V	118.759	56.00	1.71	9.90	32.98	34.63	43.50	-8.87
26V	135.219	49.50	1.84	10.19	32.96	28.58	43.50	-14.92
27V	143.395	53.90	1.88	9.68	32.92	32.53	43.50	-10.97
28V	147.492	55.20	1.89	9.19	32.91	33.37	43.50	-10.13
29V	223.847	50.20	2.49	10.96	32.80	30.85	46.00	-15.15
30V	267.008	55.50	2.64	12.80	32.80	38.14	46.00	-7.86
31V	276.541	53.90	2.71	13.34	32.79	37.15	46.00	-8.85
32V	298.267	46.70	2.79	13.86	32.71	30.65	46.00	-15.35
33V	299.954	48.10	2.80	13.90	32.70	32.10	46.00	-13.90
34V	331.652	53.70	3.00	14.56	32.63	38.62	46.00	-7.38
35V	333.202	54.30	3.00	14.59	32.63	39.27	46.00	-6.73

Test Location : Compatible Electronics Page : 2/2
Customer : Gefen. LLC Date : 4/23/2010
Manufacturer : Gefen. LLC Time : 11:49:22
Eut name : Wireless RS232 Extender Lab : A
Model : EXT-WRS232R Test Distance : 3.0 Meters
Serial # : N/A
Specification : FCC B
Distance correction factor (20 * log(test/spec) : 0.00
Test Mode : Receive Mode (AC Adapter Powered)
Radiated Emissions Qualification
30 MHz to 1000 MHz (Vetical and Horizontal)
Alex Benitez, Test Engineer

Pol	Freq	Rdng	Cable loss	Ant factor	Amp gain	Cor'd rdg = R	Limit = L	Delta R-L
	MHz	dBuV	dB	dB	dB	dBuV	dBuV/m	dB
36V	336.083	50.40	3.02	14.65	32.63	35.44	46.00	-10.56
37V	430.778	48.70	3.46	16.30	32.56	35.90	46.00	-10.10
38V	519.382	45.80	3.96	17.59	32.26	35.09	46.00	-10.91
39V	692.875	44.00	4.84	19.54	32.52	35.87	46.00	-10.13

CONDUCTED EMISSIONS

DATA SHEETS


4/23/2010 15:58:08
FCC Conducted Emissions
Gefen, LLC
Wireless RS232 Extender
P/N: EXT-WRS232R (Transmit Mode)
Black Lead LI-215 12090 9-28-09
FCC - Class B - Quasi-peak
FCC - Class B - Average
EMISSION LEVEL [dBuV] PEAK
Graph forPeak
AMPLITUDE [dBuV]
FREQUENCY [MHz]
110
100
90
80
70
60
50
40
30
20
10
0.15
1
10
30

Gefen, LLC
Wireless RS232 Extender
P/N: EXT-WRS232R (Transmit Mode)
Black Lead 120 VAC
TEST ENGINEER : Alex Benitez

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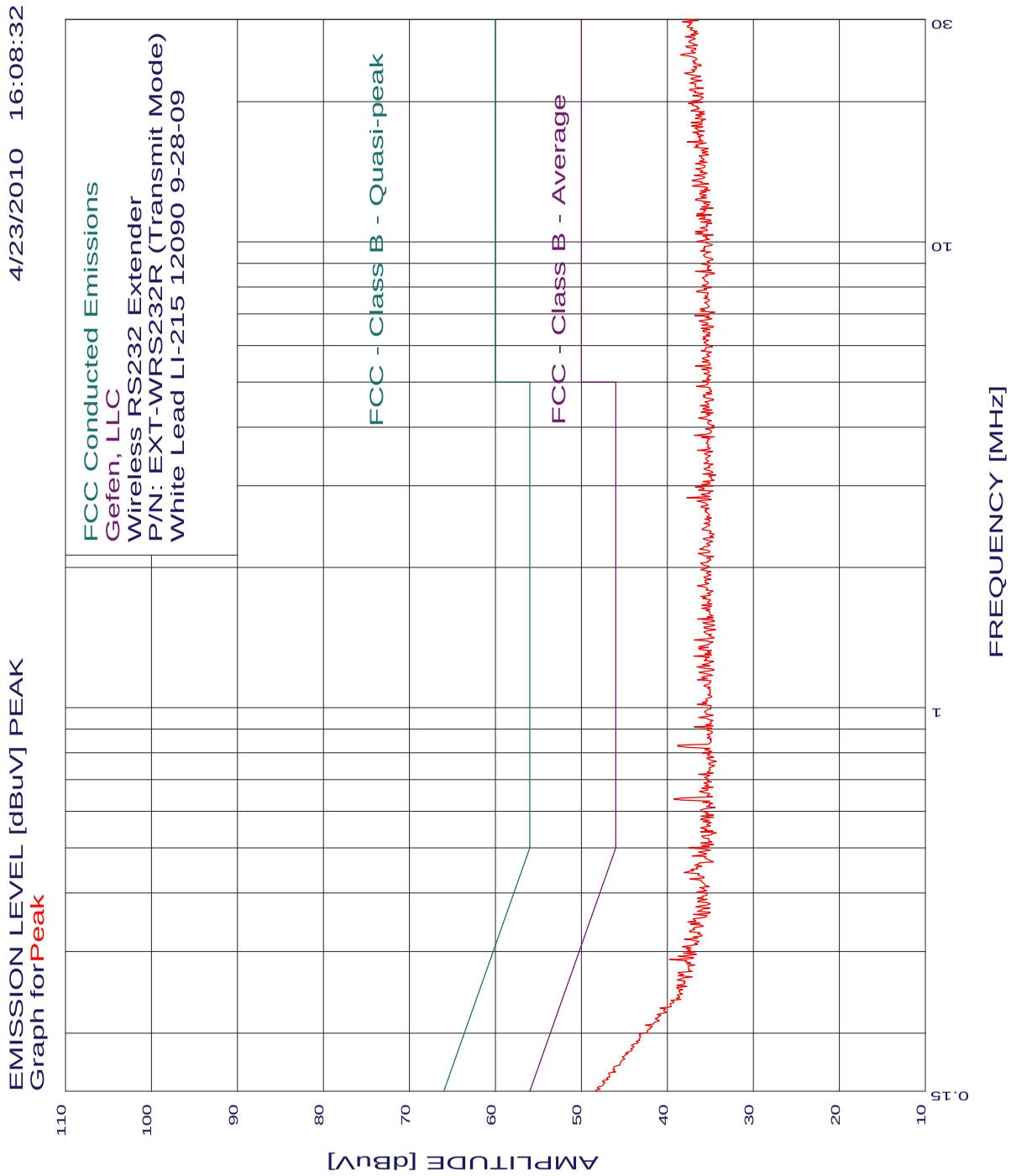
30 highest peaks above -50.00 dB of FCC - Class B - Average limit line
Peak criteria : 1.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.831	39.02	46.00	-6.98
2	0.637	38.74	46.00	-7.26
3	1.939	37.81	46.00	-8.19
4	0.573	37.71	46.00	-8.29
5	0.442	38.32	47.02	-8.70
6	1.745	36.79	46.00	-9.21
7	1.680	36.68	46.00	-9.32
8	0.457	37.41	46.76	-9.35
9	0.731	36.58	46.00	-9.42
10	1.184	36.51	46.00	-9.49
11	4.456	36.48	46.00	-9.52
12	3.011	36.44	46.00	-9.56
13	4.071	36.37	46.00	-9.63
14	0.934	36.36	46.00	-9.64
15	3.663	36.36	46.00	-9.64
16	2.781	36.34	46.00	-9.66
17	2.596	36.33	46.00	-9.67
18	2.397	36.33	46.00	-9.67
19	0.779	36.30	46.00	-9.70
20	4.204	36.27	46.00	-9.73
21	0.672	36.25	46.00	-9.75
22	1.318	36.23	46.00	-9.77
23	2.462	36.23	46.00	-9.77
24	1.879	36.20	46.00	-9.80
25	3.277	36.15	46.00	-9.85
26	1.283	36.13	46.00	-9.87
27	2.262	36.12	46.00	-9.88
28	0.839	36.12	46.00	-9.88
29	0.484	36.39	46.27	-9.89
30	0.530	36.09	46.00	-9.91


4/23/2010 16:08:32
FCC Conducted Emissions
Gefen, LLC
Wireless RS232 Extender
P/N: EXT-WRS232R (Transmit Mode)
White Lead LI-215 12090 9-28-09
FCC - Class B - Quasi-peak
FCC - Class B - Average
EMISSION LEVEL [dBuV] PEAK
Graph forPeak
AMPLITUDE [dBuV]
FREQUENCY [MHz]
110
100
90
80
70
60
50
40
30
20
10
0.15
1
10
30

Gefen, LLC
Wireless RS232 Extender
P/N: EXT-WRS232S (Transmit Mode)
White Lead 120 VAC
TEST ENGINEER : Alex Benitez

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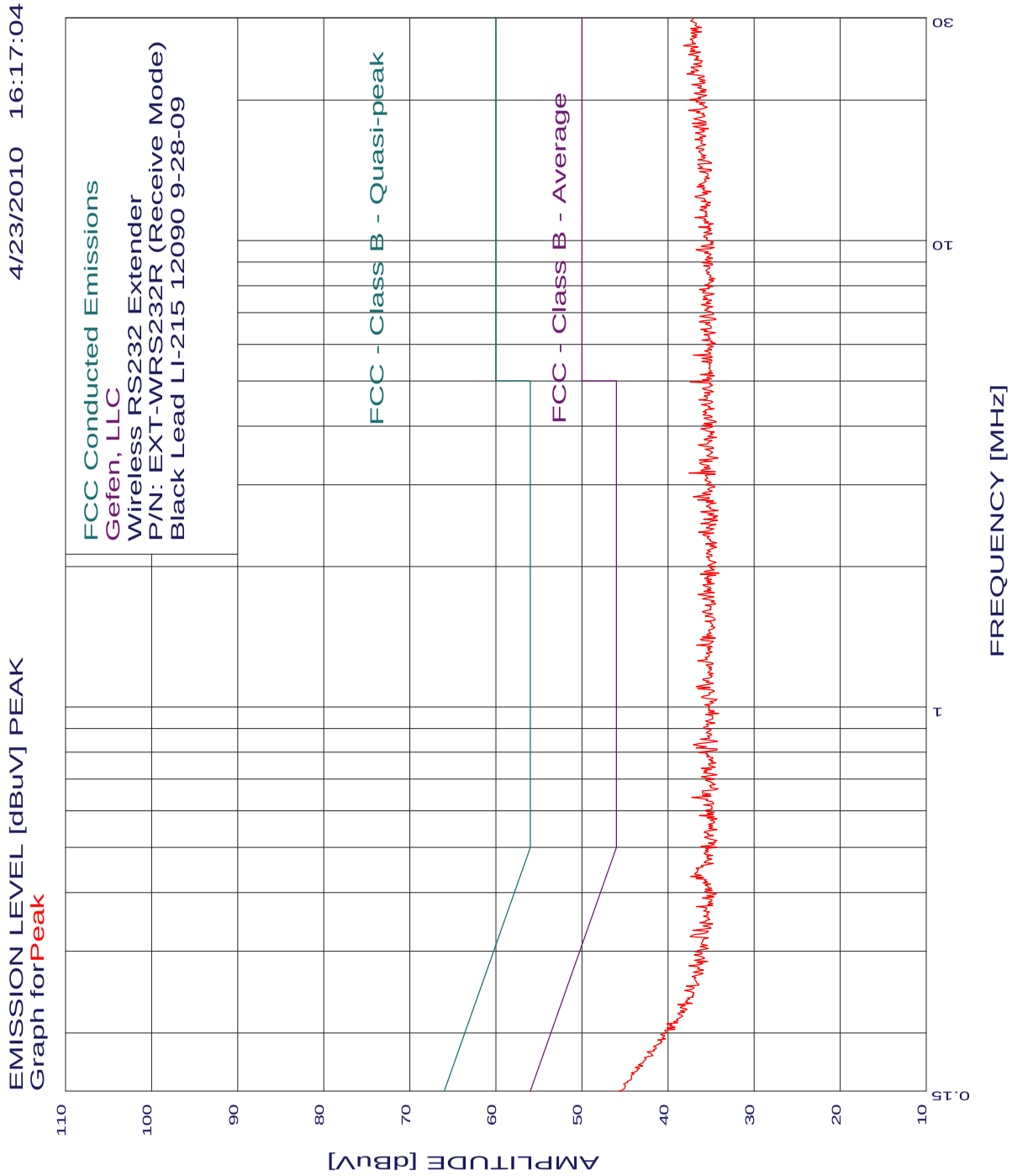
30 highest peaks above -50.00 dB of FCC - Class B - Average limit line
Peak criteria : 1.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.637	39.23	46.00	-6.77
2	0.831	38.81	46.00	-7.19
3	2.826	37.72	46.00	-8.28
4	0.500	37.47	46.01	-8.54
5	0.442	38.00	47.02	-9.01
6	1.290	36.92	46.00	-9.08
7	3.841	36.85	46.00	-9.15
8	0.909	36.84	46.00	-9.16
9	1.397	36.83	46.00	-9.17
10	0.481	37.08	46.32	-9.24
11	2.979	36.73	46.00	-9.27
12	4.902	36.58	46.00	-9.42
13	2.781	36.52	46.00	-9.48
14	1.223	36.51	46.00	-9.49
15	1.148	36.50	46.00	-9.50
16	1.830	36.48	46.00	-9.52
17	1.016	36.48	46.00	-9.52
18	1.552	36.45	46.00	-9.55
19	3.565	36.44	46.00	-9.56
20	2.145	36.41	46.00	-9.59
21	0.720	36.36	46.00	-9.64
22	0.953	36.36	46.00	-9.64
23	4.182	36.36	46.00	-9.64
24	1.352	36.32	46.00	-9.68
25	1.338	36.32	46.00	-9.68
26	1.191	36.30	46.00	-9.70
27	0.662	36.24	46.00	-9.76
28	2.190	36.21	46.00	-9.79
29	4.456	36.17	46.00	-9.83
30	0.601	36.11	46.00	-9.89


4/23/2010 16:17:04
FCC Conducted Emissions
Gefen, LLC
Wireless RS232 Extender
P/N: EXT-WRS232R (Receive Mode)
Black Lead LI-215 12090 9-28-09
FCC - Class B - Quasi-peak
FCC - Class B - Average
EMISSION LEVEL [dBuV] PEAK
Graph forPeak
AMPLITUDE [dBuV]
FREQUENCY [MHz]
110
100
90
80
70
60
50
40
30
20
10
0.15
1
10
30

Gefen, LLC
Wireless RS232 Extender
P/N: EXT-WRS232R (Receive Mode)
Black Lead 120 VAC
TEST ENGINEER : Alex Benitez

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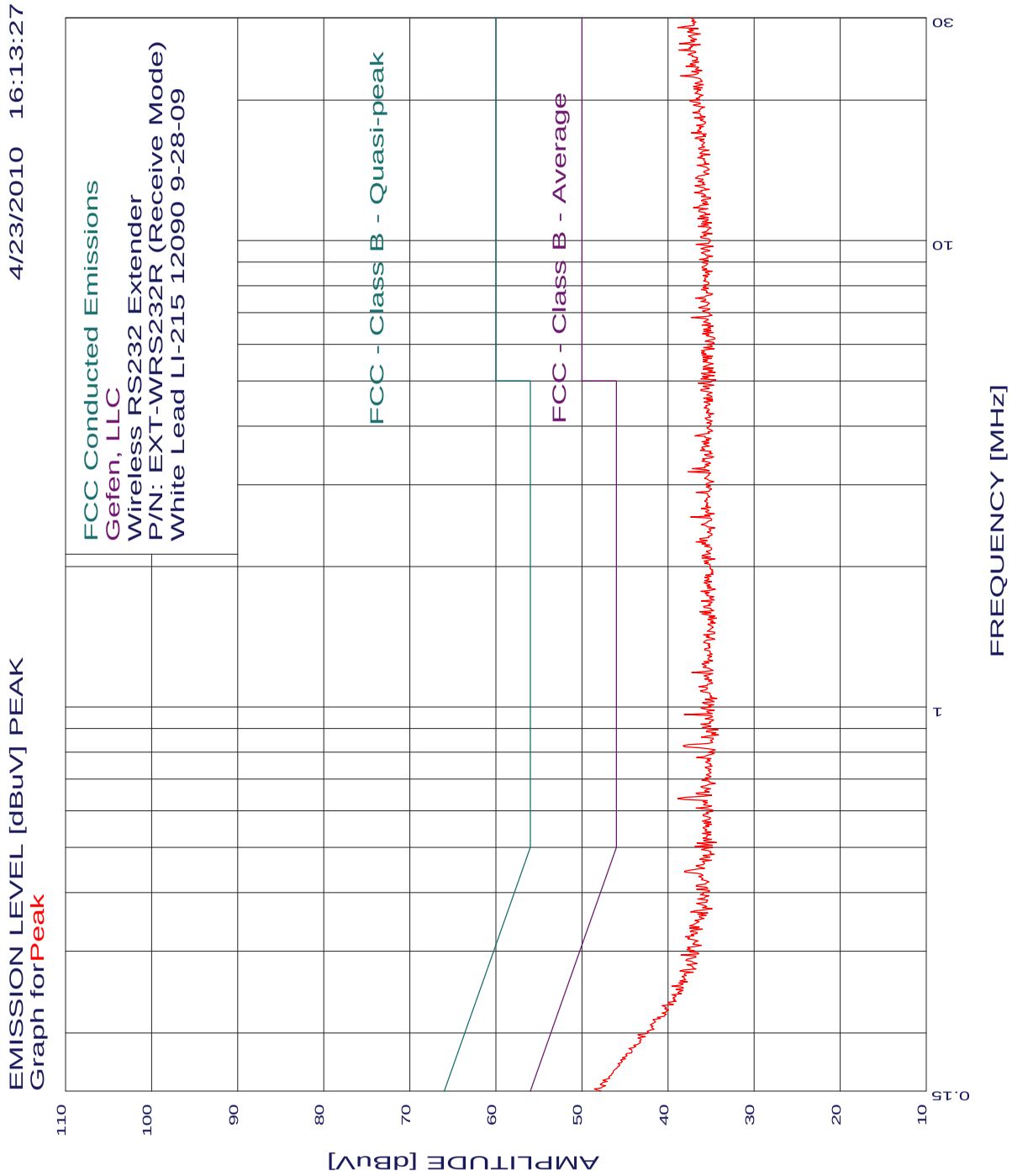
30 highest peaks above -50.00 dB of FCC - Class B - Average limit line
Peak criteria : 1.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	3.175	37.55	46.00	-8.45
2	4.980	37.39	46.00	-8.61
3	0.641	37.24	46.00	-8.76
4	2.826	37.04	46.00	-8.96
5	0.831	37.02	46.00	-8.98
6	0.818	36.71	46.00	-9.29
7	1.106	36.71	46.00	-9.29
8	1.359	36.64	46.00	-9.36
9	2.781	36.54	46.00	-9.46
10	1.256	36.52	46.00	-9.48
11	1.094	36.50	46.00	-9.50
12	1.745	36.49	46.00	-9.51
13	3.644	36.46	46.00	-9.54
14	2.371	36.43	46.00	-9.57
15	0.801	36.41	46.00	-9.59
16	4.552	36.38	46.00	-9.62
17	3.383	36.35	46.00	-9.65
18	0.586	36.32	46.00	-9.68
19	3.328	36.25	46.00	-9.75
20	1.397	36.24	46.00	-9.76
21	0.853	36.23	46.00	-9.77
22	1.929	36.21	46.00	-9.79
23	0.502	36.18	46.00	-9.82
24	3.945	36.17	46.00	-9.83
25	3.209	36.15	46.00	-9.85
26	2.624	36.13	46.00	-9.87
27	2.475	36.13	46.00	-9.87
28	0.433	37.32	47.19	-9.87
29	1.049	36.10	46.00	-9.90
30	4.456	36.08	46.00	-9.92


4/23/2010 16:13:27
FCC Conducted Emissions
Gefen, LLC
Wireless RS232 Extender
P/N: EXT-WRS232R (Receive Mode)
White Lead LI-215 12090 9-28-09
FCC - Class B - Quasi-peak
FCC - Class B - Average
EMISSION LEVEL [dBuV] PEAK
Graph forPeak
AMPLITUDE [dBuV]
FREQUENCY [MHz]
110
100
90
80
70
60
50
40
30
20
10
0.15
1
10
30

Gefen, LLC
Wireless RS232 Extender
P/N: EXT-WRS232R (Receive Mode)
White Lead 120 VAC
TEST ENGINEER : Alex Benitez

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30 highest peaks above -50.00 dB of FCC - Class B - Average limit line
Peak criteria : 1.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.637	38.83	46.00	-7.17
2	0.826	38.21	46.00	-7.79
3	0.963	38.06	46.00	-7.94
4	3.192	37.63	46.00	-8.37
5	2.554	37.32	46.00	-8.68
6	1.184	37.20	46.00	-8.80
7	3.243	37.14	46.00	-8.86
8	0.442	38.00	47.02	-9.01
9	0.502	36.87	46.00	-9.13
10	3.820	36.85	46.00	-9.15
11	0.655	36.73	46.00	-9.27
12	2.885	36.73	46.00	-9.27
13	0.608	36.71	46.00	-9.29
14	2.262	36.71	46.00	-9.29
15	0.779	36.69	46.00	-9.31
16	0.510	36.57	46.00	-9.43
17	4.954	36.48	46.00	-9.52
18	1.106	36.39	46.00	-9.61
19	1.603	36.25	46.00	-9.75
20	3.547	36.24	46.00	-9.76
21	0.995	36.18	46.00	-9.82
22	1.772	36.18	46.00	-9.82
23	4.799	36.17	46.00	-9.83
24	0.919	36.14	46.00	-9.86
25	0.676	36.14	46.00	-9.86
26	0.862	36.12	46.00	-9.88
27	2.665	36.12	46.00	-9.88
28	2.462	36.12	46.00	-9.88
29	1.690	36.07	46.00	-9.93
30	1.586	36.05	46.00	-9.95

BAND EDGES

DATA SHEETS

FCC 15.249

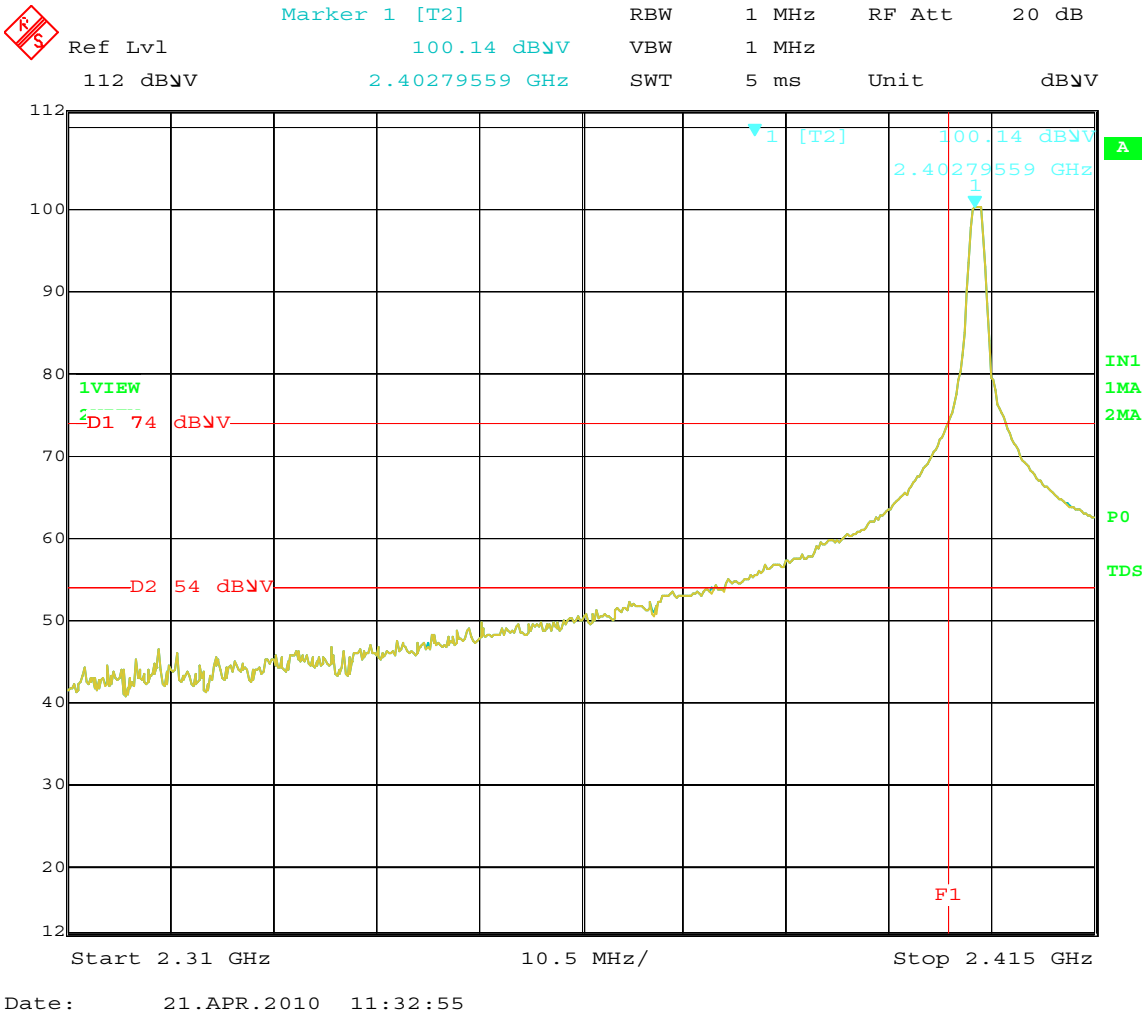
Gefen, LLC
Wireless RS232 Extender
P/N: EXT-WRS232R

Date: 04/21/2010
Labs: B and D
Tested By: Kyle Fujimoto

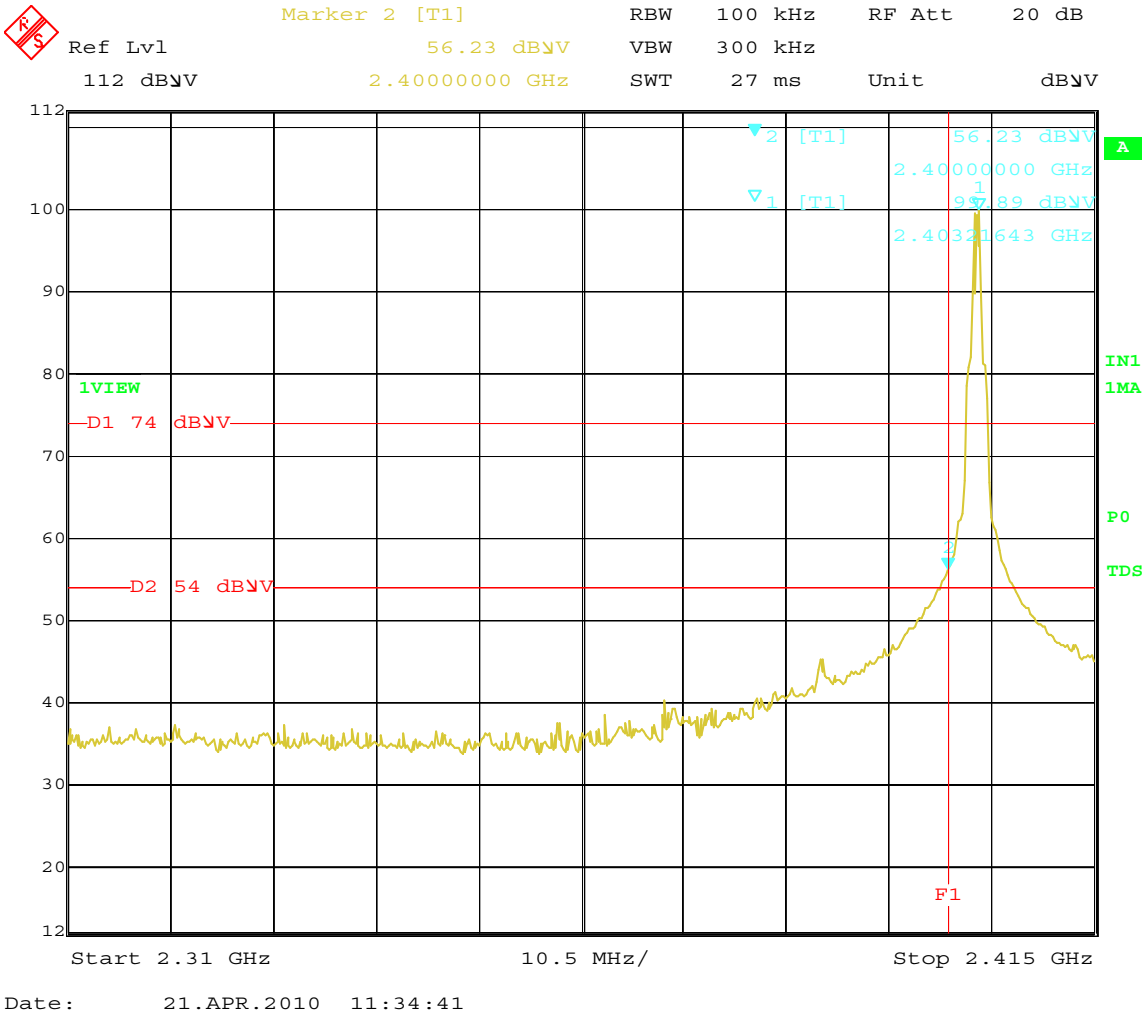
Band Edges - Vertical Polarization (Worst Case) - X-Axis (Worst Case) - Duty Cycle - 17.13%

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2403	100.14	V	94	6.14	Peak	1.25	135	Fundamental of Channel 1
2403	84.82	V	94	-9.18	Avg	1.25	135	@ 3 meters
2400	66.23	V	74	-7.77	Peak	1.25	135	Used 100 kHz RBW*
2400	50.91	V	54	-3.09	Avg	1.25	135	Used 100 kHz RBW*
2480	101.24	V	94	7.24	Peak	1.25	135	Fundamental of Channel 11
2480	85.92	V	94	-8.08	Avg	1.25	135	@ 3 meters
2483.8	65.34	V	74	-8.66	Peak	1.25	135	Used 100 kHz RBW*
2483.8	50.02	V	54	-3.98	Avg	1.25	135	Used 100 kHz RBW*

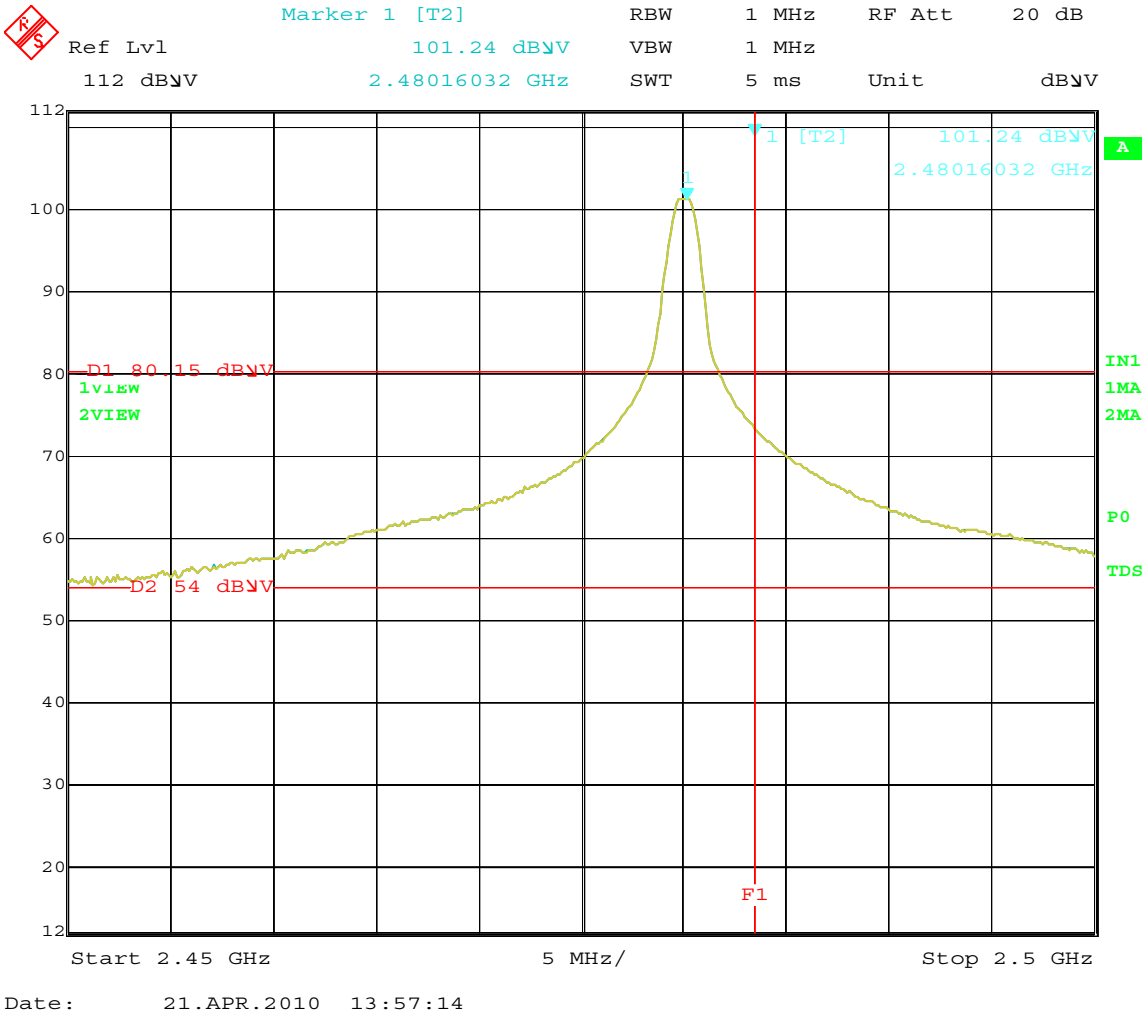
* The Reading was corrected back to a 1 MHz RBW by using a correction factor of
10 log (1000 kHz / 100 kHz) = 10 dB. The Level indicated has already been corrected using this factor.



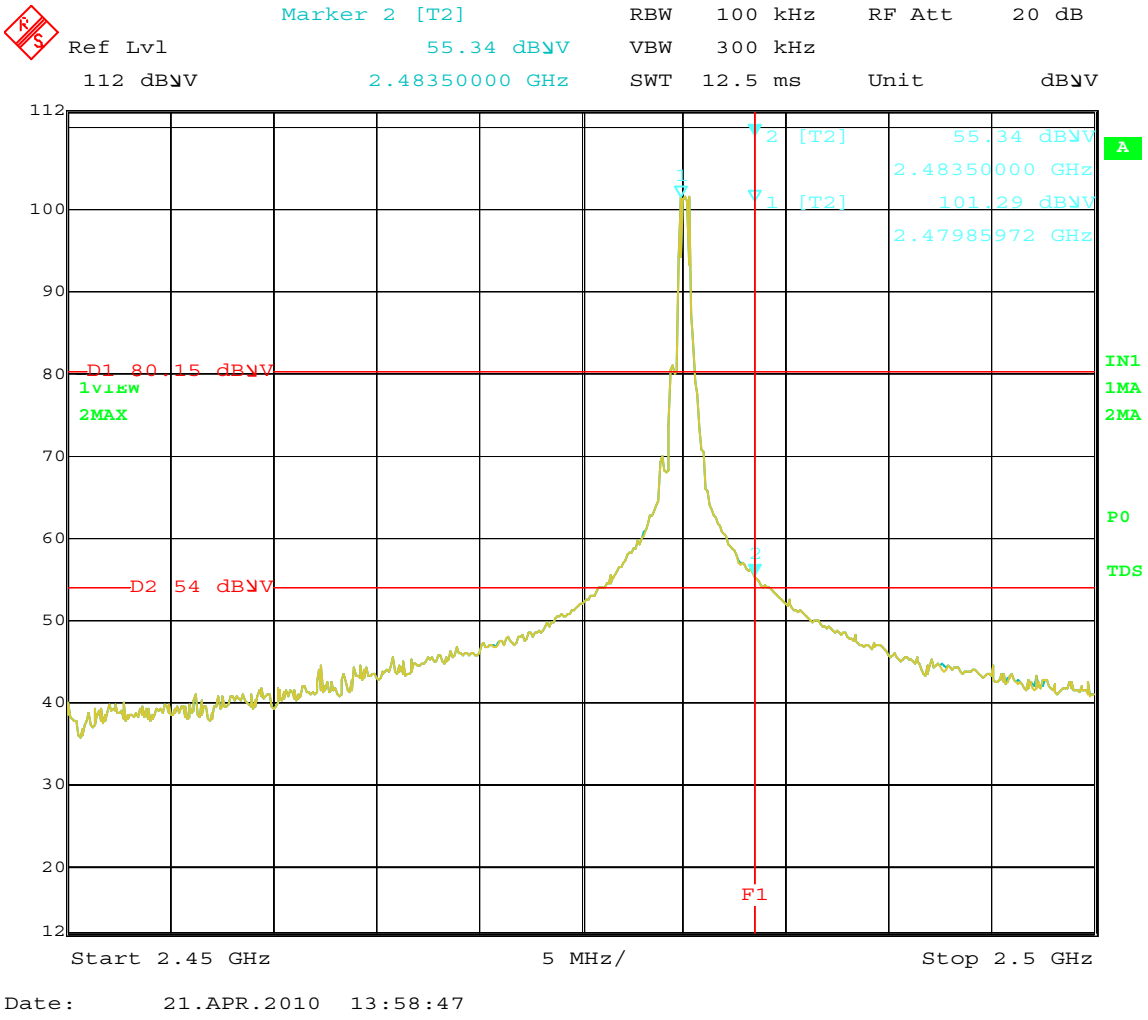
Band Edge – Low Channel – Vertical Polarization – X-Axis (Worst Case)
Plot for Fundamental Only



Band Edge – Low Channel – Vertical Polarization – X-Axis (Worst Case)
Plot for Band Edge Only
See Data Sheet for Correction Factor back to 1 MHz RBW



Band Edge – High Channel – Vertical Polarization – X-Axis (Worst Case)
Plot for Fundamental Only



Band Edge – High Channel – Vertical Polarization – X-Axis (Worst Case)
Plot for Band Edge Only
See Data Sheet for Correction Factor back to 1 MHz RBW