

FCC PART 15, SUBPART B and C
TEST REPORT

for

WIRELESS REMOTE TRANSMITTER

MODEL: XT2004

Prepared for

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DATE: JUNE 14, 2005

	REPORT BODY	APPENDICES					TOTAL
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GENERAL REPORT SUMMARY

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

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

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

Device Tested: Wireless Remote Transmitter
Model: XT2004
S/N: N/A

Product Description: See Expository Statement.

Modifications: The EUT was not modified during the testing.

Manufacturer: E R A D
P.O. Box 121715
Forth Worth, Texas 76121

Test Dates: June 2, 9, and 10, 2005

Test Specifications: EMI requirements
CFR Title 47, Part 15 Subpart B; and Subpart C, Sections 15.205, 15.209, and 15.231

Test Procedure: ANSI C63.4: 2003

Test Deviations: The test procedure was not deviated from during the testing.

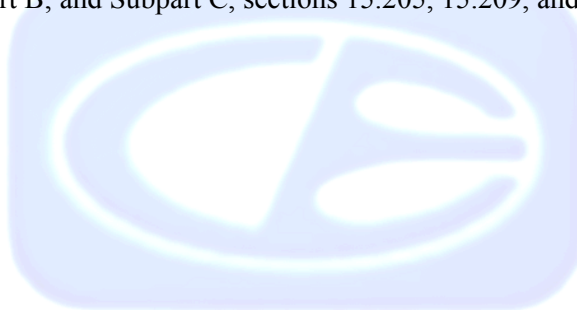
SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions, 150 kHz - 30 MHz	Complies with the Class B limits of CFR Title 47, Part 15, Subpart B; and Subpart C, section 15.207.
2	Radiated RF Emissions, 10 kHz - 4400 MHz	Complies with the Class B limits of CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209, and 15.231.
3	-20 dB Bandwidth of the Fundamental	Complies with the limits of Subpart C, sections 15.231 [c].



1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the Wireless Remote Transmitter Model: XT2004. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4: 2003. The tests were performed in order to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT hereafter, are within the **Class B** specification limits defined by CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209, and 15.231.



2. ADMINISTRATIVE DATA

2.1 Location of Testing

The EMI tests described herein were performed at the test facility of Compatible Electronics, 114 Olinda Drive, Brea, California 92823.

2.2 Traceability Statement

The calibration certificates of all test equipment used during the test are on file at the location of the test. The calibration is traceable to the National Institute of Standards and Technology (NIST).

2.3 Cognizant Personnel

E R A D

Greg Baack Owner

Compatible Electronics, Inc.

Kyle Fujimoto	Test Engineer
Benigno Chavez	Test Engineer
Michael Christensen	Lab Manager

2.4 Date Test Sample was Received

The test sample was received prior to its qualification testing on June 2, 2005.

2.5 Disposition of the Test Sample

The test sample has not been returned to E R A D as of the date of this test report.

2.6 Abbreviations and Acronyms

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

RF	Radio Frequency
EMI	Electromagnetic Interference
EUT	Equipment Under Test
P/N	Part Number
S/N	Serial Number
HP	Hewlett Packard
ITE	Information Technology Equipment
CML	Corrected Meter Limit
LISN	Line Impedance Stabilization Network
PCB	Printed Circuit Board
TX	Transmit
RX	Receive



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	Methods of measurement of radio-noise emissions from low-voltage electrical and electronic equipment in the range of 9 kHz to 40 GHz



4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description of Test Configuration - EMI

Setup and operation of the equipment under test.

Specifics of the EUT and Peripherals Tested

For Intentional Radiator Mode: The Wireless Remote Transmitter Model: XT2004 (EUT) was tested as a stand alone unit. The EUT was continuously transmitting.

For Com Port Mode: The Wireless Remote Transmitter Model: XT2004 (EUT) was connected to a computer via its USB port (through a USB to Serial Adapter). The computer was also connected to a modem, printer, monitor, keyboard, and mouse via its serial, parallel, video keyboard, and mouse ports, respectively. The computer was continuously downloading files from the EUT.

Note: the EUT does not transmit when put in the unintentional radiator mode. This mode is to only program the EUT with different programs and/or files.

The antenna is hard wired to the EUT's PCB.

After the EUT is activated by pressing the button, the transmission will cease operation once the button is released.

The final radiated data was taken in both modes described above. The final conducted data was taken in the Com Port mode described above. Please see Appendix E for the data sheets.



4.1.1 Cable Construction and Termination

Cable 1 (for Com Port mode only)

This is a 1.5 meter braid and foil shielded cable connecting the computer to the modem. The cable has a D-9 pin metallic connector at the computer end and a D-25 pin metallic connector at the modem end. The cable was bundled to a length of 95 centimeters. The shield of the cable was grounded to the chassis via the connectors.

Cable 2 (for Com Port mode only)

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 3 (for Com Port mode only)

This is a 40 centimeter braid shielded cable connecting the computer to the USB to serial adapter. The cable has a USB connector at the computer end and a D-9 pin metallic connector at the USB to serial adapter end. The shield of the cable was grounded to the chassis via the connectors.

Cable 4 (for Com Port mode only)

This is a 2.5 meter braid shielded cable connecting the EUT to the USB to serial adapter. The cable has a mini USB connector at the EUT end and a D-9 pin metallic connector at the USB to serial adapter end. The cable was bundled to a length of 90 centimeters. The shield of the cable was grounded to the chassis via the connectors.

Cable 5 (for Com Port mode only)

This is a 1.5 meter braid and foil shielded cable connecting the computer to the monitor. The cable has a high density D-15 pin metallic connector at the computer end and is hard wired into the monitor. The shield of the cable was grounded to the chassis via the connector. The cable has a molded ferrite at the computer end.

Cable 6 (for Com Port mode only)

This is a 2 meter foil shielded cable connecting the computer to the keyboard. The cable has a metallic 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 7 (for Com Port mode only)

This is a 1.8 meter foil shielded cable connecting the computer to the mouse. The cable has a metallic 6 pin mini DIN 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.



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

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID
WIRELESS REMOTE TRANSMITTER (EUT)	E R A D	P/N: XT2004	N/A	S9FXT2004

Unintentional Radiator Mode

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID
WIRELESS REMOTE TRANSMITTER (EUT)	E R A D	XT2004	N/A	S9FXT2004
USB TO SERIAL ADAPTER	iCONCEPTS	N/A	N/A	N/A
COMPUTER	DELL	DHM	JJ19M41	DoC
MONITOR	HEWLETT PACKARD	D7438A	DT91401489	DoC
KEYBOARD	DELL	RT7D20	CN-04N454-37172-419-4862	AQ6-7D20
MOUSE	DELL	M-SAW34	HCD35312230	DZL211029
PRINTER	CITIZEN	LSP-10	1130060-73	DLK66TLSP-10
MODEM	HAYES	231AA	A05631003823	BFJ9D9231AA



5.2 EMI Test Equipment

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. DUE DATE
Radiate Emissions Data Capture Program	Compatible Electronics	2.0	N/A	N/A	N/A
Emissions Program	Compatible Electronics	2.3 (SR19)	N/A	N/A	N/A
Spectrum Analyzer – Main Section	Hewlett Packard	8566B	3638A08784	June 16, 2004	June 16, 2005
Spectrum Analyzer – Display Section	Hewlett Packard	85662A	3701A22279	June 16, 2004	June 16, 2005
Quasi-Peak Adapter	Hewlett Packard	85650A	2430A00424	June 16, 2004	June 16, 2005
Preamplifier	Com Power	PA-103	1582	February 3, 2005	Feb. 3, 2006
Biconical Antenna	Com Power	AB-900	15250	March 11, 2005	Mar. 11, 2006
Log Periodic Antenna	Com Power	AL-100	16202	February 17, 2005	Feb. 17, 2006
Computer	Hewlett Packard	D5251A 888	US74458128	N/A	N/A
Monitor	Hewlett Packard	D5258A	DK74889705	N/A	N/A
Loop Antenna	Com-Power	AL-130	17089	September 3, 2004	Sept. 3, 2005
Horn Antenna	Antenna Research	DRG-118/A	1053	January 16, 2004	Jan. 16, 2006
Microwave Preamplifier	Com-Power	PA-122	25195	February 25, 2005	Feb. 25, 2006
EMI Receiver	Rohde & Schwarz	ESIB40	100172	October 28, 2004	Oct. 28, 2005



5.3 EMI Test Equipment Continued

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. DUE DATE
Antenna Mast	Com-Power	AM-100	N/A	N/A	N/A
Turntable	Com-Power	TT-100	N/A	N/A	N/A
Preamplifier	Com-Power	PA-102	1017	January 5, 2005	Jan. 5, 2006
Biconical Antenna	Com Power	AB-100	1548	September 29, 2004	Sept. 29, 2005
Log Periodic Antenna	Com Power	AL-100	16060	September 27, 2004	Sept. 27, 2005
LISN	Com Power	LI-215	12090	October 26, 2004	Oct. 26, 2005
LISN	Com Power	LI-215	12076	October 26, 2004	Oct. 26, 2005
Transient Limiter	Seaward	252A910	K39-0220	September 20, 2004	Sept. 20, 2005
Antenna Mast	EMCO	2090	9609-1176	N/A	N/A



6. TEST SITE DESCRIPTION**6.1 Test Facility Description**

Please refer to section 2.1 and 7.1 of this report for EMI test location.

6.2 EUT Mounting, Bonding and Grounding

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

For Intentional Radiator Mode: The EUT was suspended 80 cm from the ground plane.

The EUT was not grounded.



7. TEST PROCEDURES

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

7.1 RF Emissions

7.1.1 Conducted Emissions Test

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

Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The EUT was powered through the LISN, which was bonded to the ground plane. The LISN power was filtered and the filter was bonded to the ground plane. The EUT was set up with the minimum distances from any conductive surfaces as specified in ANSI C63.4: 2003. 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 for conducted emissions; and the limits of 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 Preamplifiers Model: PA-102 and PA-103 were used for frequencies from 30 MHz to 1 GHz, and the Com-Power Microwave Preamplifier Model: PA-122 was used for frequencies above 1 GHz. The spectrum analyzer was used in the peak detect mode with the "Max Hold" feature activated. In this mode, the spectrum analyzer and EMI Receiver record the highest measured reading over all the sweeps.

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

FREQUENCY RANGE	EFFECTIVE MEASUREMENT BANDWIDTH	TRANSDUCER
9 kHz to 150 kHz	200 Hz	Active Loop Antenna
150 kHz to 30 MHz	9 kHz	Active Loop Antenna
30 MHz to 300 MHz	120 kHz	Biconical Antenna
300 MHz to 1 GHz	120 kHz	Log Periodic Antenna
1 GHz to 4.40 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. At each reading, the EUT was rotated 360 degrees and the antenna height was varied from 1 to 4 meters (for E field radiated field strength). The gunsight method was used when measuring with the horn antenna in order to ensure accurate results. The loop antenna was also rotated in the horizontal and vertical axis in order to ensure accurate results.



7.1.3 Radiated Emissions (Spurious and Harmonics) Test (continued)

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

Test Results:

The EUT complies with the limits of CFR Title 47, Part 15, Subpart B; and Subpart C, section 15.205, 15.209 and 15.231 for radiated emissions.

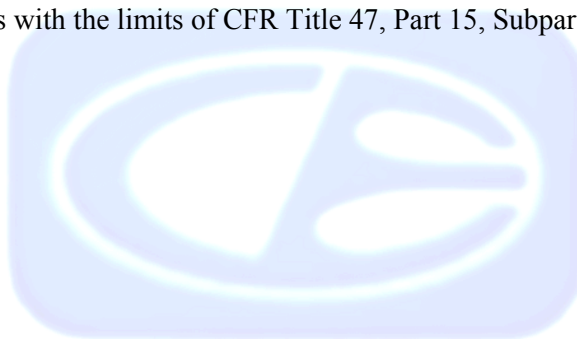


7.2 Bandwidth of the Fundamental

The -20 dB bandwidth was checked to see that it was within 0.25% of the fundamental frequency for the EUT. Data sheets of the -20 dB bandwidth are located in Appendix E.

Test Results:

The EUT complies with the limits of CFR Title 47, Part 15, Subpart C, section 15.231 [c].



8. CONCLUSIONS

The Wireless Remote Transmitter Model: XT2004 meets all of the Class B specification limits defined in CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209, and 15.231.



APPENDIX A

LABORATORY RECOGNITIONS



LABORATORY RECOGNITIONS

Compatible Electronics has the following agency accreditations:

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

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

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

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

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

Federal Communications Commission

Industry Canada

Radio-Frequency Technologies (Competent Body)



APPENDIX B

MODIFICATIONS TO THE EUT



MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC 15.231 or FCC Class B specifications.

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

No modifications were made to the EUT during the testing.



APPENDIX C

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



ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

Wireless Remote Transmitter
Model: XT2004
S/N: N/A

There were no additional models covered under this report.



APPENDIX D

DIAGRAMS, CHARTS, AND PHOTOS



FIGURE 1: CONDUCTED EMISSIONS TEST SETUP

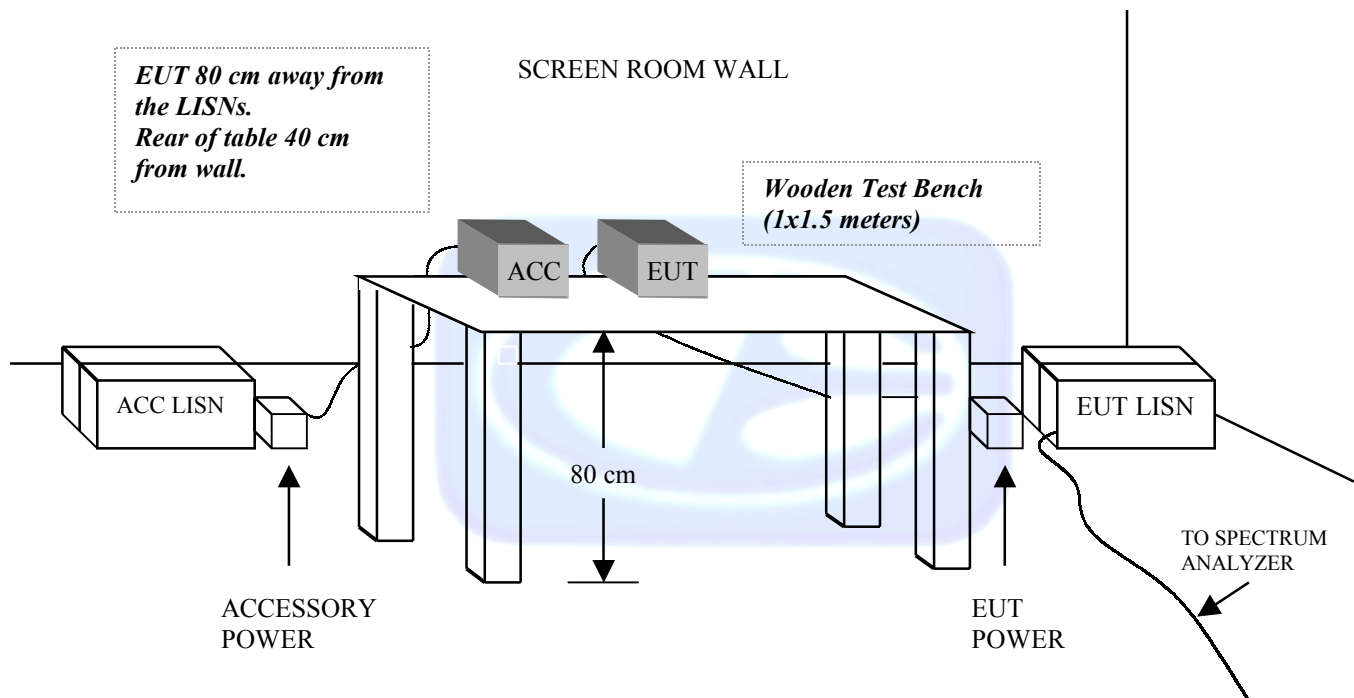
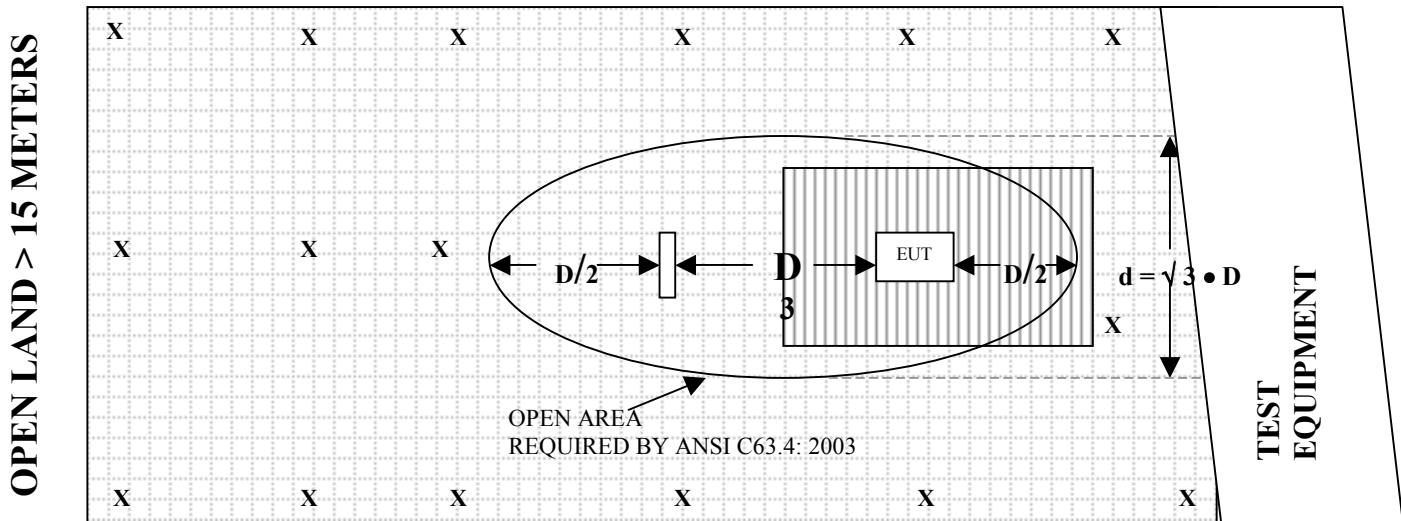
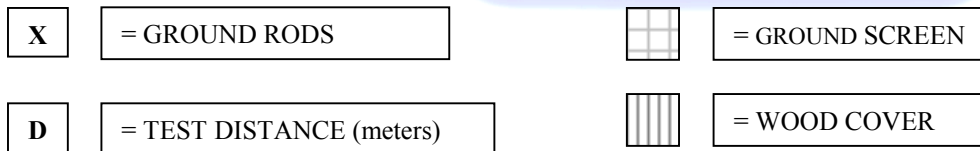


FIGURE 2: PLOT MAP AND LAYOUT OF RADIATED TEST SITE

OPEN LAND > 15 METERS



OPEN LAND > 15 METERS



COM-POWER AB-900

BICONICAL ANTENNA

S/N: 15250

CALIBRATION DATE: MARCH 11, 2005

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	10.90	120	13.10
35	10.90	125	12.40
40	10.90	140	11.90
45	10.30	150	11.80
50	11.40	160	13.30
60	10.40	175	15.40
70	7.40	180	14.60
80	6.20	200	15.70
90	8.20	250	16.50
100	10.10	300	19.20



COM-POWER AL-100

LOG PERIODIC ANTENNA

S/N: 16202

CALIBRATION DATE: FEBRURY 17, 2005

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
300	12.70	700	19.20
400	13.70	800	19.40
500	16.00	900	21.50
600	16.50	1000	23.50



COM-POWER PA-103**PREAMPLIFIER**

S/N: 1582

CALIBRATION DATE: FEBRUARY 3, 2005

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	33.2	300	33.0
40	33.0	350	32.8
50	33.1	400	32.8
60	33.0	450	32.8
70	33.2	500	32.5
80	33.2	550	32.5
90	33.1	600	32.4
100	33.2	650	32.4
125	33.1	700	32.3
150	33.0	750	32.2
175	33.0	800	32.2
200	33.0	850	32.4
225	33.0	900	31.8
250	33.0	950	32.3
275	32.9	1000	32.0



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

S/N: 25195

CALIBRATION DATE: FEBRUARY 25, 2005

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	31.45	6.0	31.35
1.1	31.34	6.5	31.10
1.2	31.29	7.0	30.54
1.3	31.28	7.5	29.72
1.4	31.25	8.0	29.22
1.5	31.21	8.5	28.75
1.6	31.14	9.0	28.67
1.7	31.07	9.5	29.14
1.8	31.12	10.0	30.12
1.9	31.04	11.0	29.30
2.0	31.20	12.0	29.86
2.5	31.56	13.0	30.57
3.0	32.17	14.0	29.90
3.5	32.56	15.0	30.14
4.0	32.51	16.0	31.13
4.5	32.52	17.0	29.97
5.0	32.33	18.0	28.77
5.5	31.60		



COM-POWER AB-100**BICONICAL ANTENNA****S/N: 1548****CALIBRATION DATE: SEPTEMBER 29, 2004**

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	13.87	140	12.02
35	12.48	150	11.70
40	12.66	160	13.55
45	12.49	175	14.36
50	12.47	180	14.67
60	10.30	200	14.95
70	8.26	250	16.86
80	7.94	275	18.16
90	8.36	287.5	23.23
100	8.73	295	19.10
120	11.06	300	19.70
125	10.64		



COM-POWER AL-100

LOG PERIODIC ANTENNA

S/N: 16060

CALIBRATION DATE: SEPTEMBER 27, 2004

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
300	12.30	700	19.20
400	14.10	800	21.30
500	15.20	900	21.90
600	15.90	1000	25.20



COM-POWER PA-102**PREAMPLIFIER**

S/N: 1017

CALIBRATION DATE: JANUARY 5, 2005

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	38.4	300	38.5
40	38.3	350	38.5
50	38.2	400	38.3
60	38.4	450	38.0
70	38.4	500	38.0
80	38.3	550	38.1
90	38.3	600	38.2
100	37.7	650	37.8
125	38.4	700	37.9
150	38.6	750	37.5
175	38.4	800	37.2
200	38.5	850	37.6
225	38.	900	36.9
250	38.6	950	37.0
275	38.4	1000	36.3



ANTENNA RESEARCH DRG-118/A**HORN ANTENNA**

S/N: 1053

CALIBRATION DATE: JANUARY 16, 2004

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



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

S/N: 17089

CALIBRATION DATE: SEPTEMBER 3, 2004

FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)
0.009	-40.8	10.7
0.01	-40.9	10.6
0.02	-41.8	9.7
0.05	-42.0	9.5
0.07	-41.5	10.0
0.1	-41.7	9.8
0.2	-44.1	7.4
0.3	-41.6	9.9
0.5	-41.5	10.0
0.7	-41.4	10.1
1	-41.0	10.5
2	-40.6	10.9
3	-40.8	10.7
4	-41.0	10.5
5	-40.4	11.1
10	-40.7	10.8
15	-41.6	9.9
20	-41.3	10.2
25	-43.0	8.5
30	-42.6	8.9





FRONT VIEW

E R A D

WIRELESS REMOTE TRANSMITTER

MODEL: XT2004

FCC SUBPART B AND C – RADIATED EMISSIONS

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





REAR VIEW

E R A D

WIRELESS REMOTE TRANSMITTER

MODEL: XT2004

FCC SUBPART B AND C – RADIATED EMISSIONS

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





FRONT VIEW

E R A D

WIRELESS REMOTE TRANSMITTER

MODEL: XT2004

FCC SUBPART B AND C – RADIATED EMISSIONS

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





REAR VIEW

E R A D

WIRELESS REMOTE TRANSMITTER

MODEL: XT2004

FCC SUBPART B AND C – RADIATED EMISSIONS

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





FRONT VIEW

**E R A D
WIRELESS REMOTE TRANSMITTER
MODEL: XT2004
FCC SUBPART B – RADIATED EMISSIONS**

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





REAR VIEW

E R A D
WIRELESS REMOTE TRANSMITTER
MODEL: XT2004
FCC SUBPART B – RADIATED EMISSIONS

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





FRONT VIEW

E R A D
WIRELESS REMOTE TRANSMITTER
MODEL: XT2004
FCC SUBPART B AND C – CONDUCTED EMISSIONS

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





REAR VIEW

E R A D

WIRELESS REMOTE TRANSMITTER

MODEL: XT2004

FCC SUBPART B AND C – CONDUCTED EMISSIONS

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



APPENDIX E

DATA SHEETS



FCC 15.231

E R A D

Wireless Remote Transmitter

Model: XT2004

Configuration: Transmit Mode

Date: 06/02/05

Lab: B

Tested By: Kyle Fujimoto

Duty Cycle: less than 10%

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
418	99.24	V	100.2	-0.96	Peak	1.25	0	
418	79.24	V	80.2	-0.96	Avg	1.25	0	
836	48.72	V	80.2	-31.48	Peak	1.5	45	
836	28.72	V	60.2	-31.48	Avg	1.5	45	
1254	37.84	V	74	-36.16	Peak	1.88	135	
1254	17.84	V	54	-36.16	Avg	1.88	135	
1672	42.07	V	74	-31.93	Peak	1.88	270	
1672	22.07	V	54	-31.93	Avg	1.88	270	
2090	46.95	V	80.8	-33.85	Peak	1.92	270	
2090	26.95	V	60.8	-33.85	Avg	1.92	270	
2508	38.64	V	80.8	-42.16	Peak	1.92	270	
2508	18.64	V	60.8	-42.16	Avg	1.92	270	
2926	39.19	V	80.8	-41.61	Peak	1.92	45	
2926	19.19	V	60.8	-41.61	Avg	1.92	45	
3344	39.01	V	80.8	-41.79	Peak	1.92	270	
3344	19.1	V	60.8	-41.7	Avg	1.92	270	
3762	40.7	V	74	-33.3	Peak	1.92	270	
3762	20.7	V	54	-33.3	Avg	1.92	270	
4180	40.18	V	74	-33.82	Peak	1.92	315	
4180	20.18	V	54	-33.82	Avg	1.92	315	

FCC 15.231

E R A D

Wireless Remote Transmitter

Model: XT2004

Configuration: Transmit Mode

Date: 06/02/05

Lab: B

Tested By: Kyle Fujimoto

Duty Cycle: less than 10%

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
418	81.45	H	100.2	-18.75	Peak	1	45	
418	61.45	H	80.2	-18.75	Avg	1	45	
836	43.23	H	80.2	-36.97	Peak	1.5	45	
836	23.23	H	60.2	-36.97	Avg	1.5	45	
1254	31.99	H	74	-42.01	Peak	1.92	315	
1254	11.99	H	54	-42.01	Avg	1.92	315	
1672	42.11	H	74	-31.89	Peak	1.99	45	
1672	22.11	H	54	-31.89	Avg	1.99	45	
2090	46.74	H	80.8	-34.06	Peak	3.27	45	
2090	26.74	H	60.8	-34.06	Avg	3.27	45	
2508	38.82	H	80.8	-41.98	Peak	2.06	45	
2508	18.82	H	60.8	-41.98	Avg	2.06	45	
2926	41.54	H	80.8	-39.26	Peak	2.06	270	
2926	21.54	H	60.8	-39.26	Avg	2.06	270	
3344	40.23	H	80.8	-40.57	Peak	2.06	270	
3344	20.23	H	60.8	-40.57	Avg	2.06	270	
3762	41	H	74	-33	Peak	2.06	270	
3762	21	H	54	-33	Avg	2.06	270	
4180	40.89	H	74	-33.11	Peak	2.06	315	
4180	20.89	H	54	-33.11	Avg	2.06	315	

Test Location : Compatible Electronics

Customer : ERAD

Manufacturer : ERAD

Eut name : TRANSCEIVER

Model : XT2004

Serial # :

Specification : FCC B

Distance correction factor ($20 * \log(\text{test}/\text{spec})$)

: 0.00

Test Mode : QUALIFICATION SCAN

TEST RANGE: 30-1000 MHz

VERTICAL AND HORIZONTAL POLARIZATIONS

TESTED BY: BENIGNO CHAVEZ

Page : 1/1

Date : 6/09/2005

Time : 19:26:39

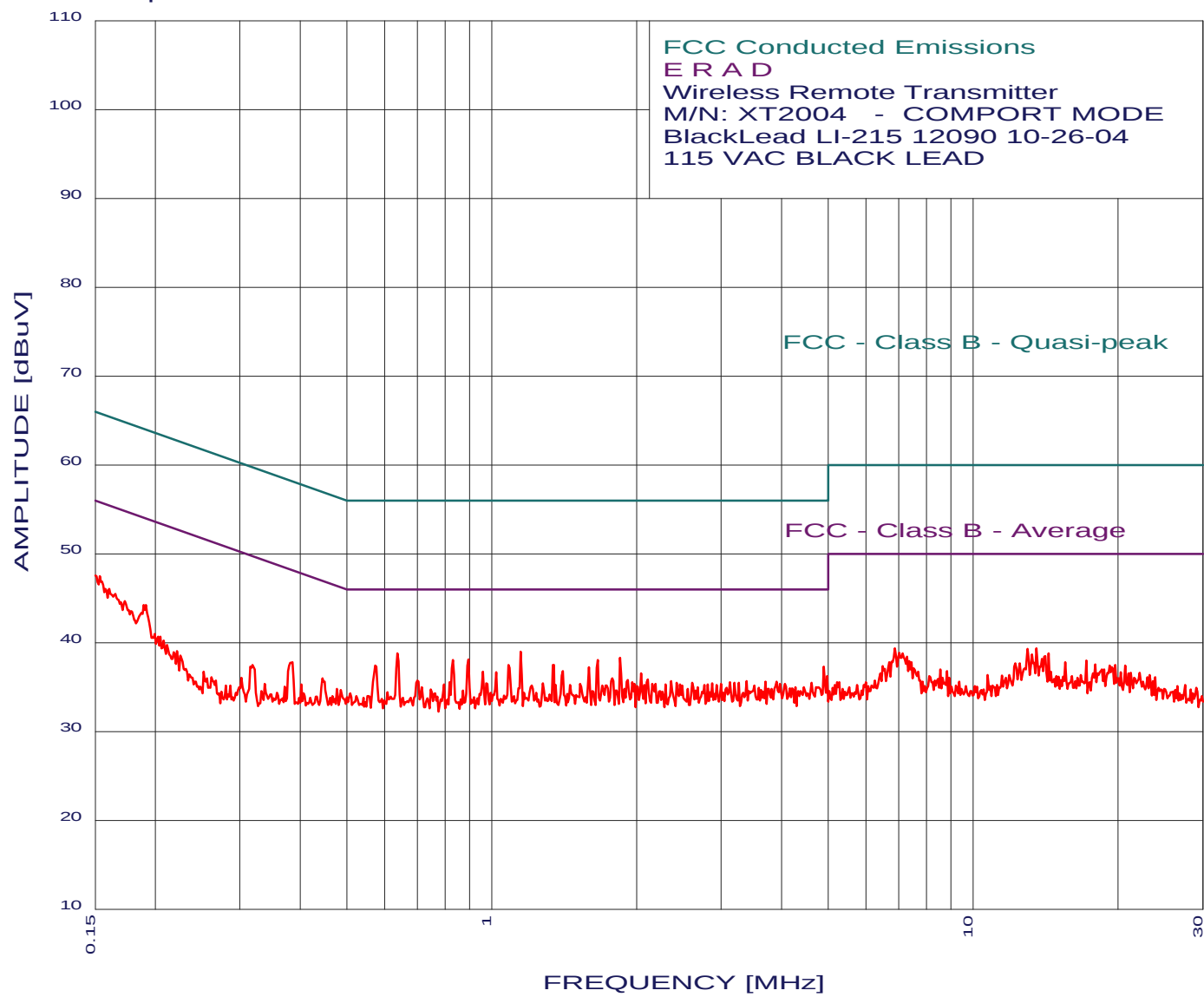
Lab : A

Test Distance : 3.0

Pol	Freq MHz	Rdng dBuV	Cable loss dB	Ant factor dB	Amp gain dB	Cor'd rdg = R dBuV	Limit = L dBuV/m	Delta R-L dB
1H	36.054	49.60	1.69	10.90	33.07	29.12	40.00	-10.88
2V	64.130	60.20	2.23	9.10	33.09	38.45	40.00	-1.55
3V	64.130Qp	55.58	2.23	9.10	33.09	33.83	40.00	-6.17
4V	66.926	61.60	2.31	8.27	33.14	39.04	40.00	-0.96
5V	66.926Qp	59.05	2.31	8.27	33.14	36.49	40.00	-3.51
6H	69.737	62.20	2.39	7.47	33.20	38.87	40.00	-1.13
7H	69.738Qp	58.51	2.39	7.47	33.20	35.18	40.00	-4.82
8V	70.796	64.20	2.41	7.30	33.20	40.71	40.00	0.71
9V	70.796Qp	60.73	2.41	7.30	33.20	37.24	40.00	-2.76
10V	72.227	63.10	2.42	7.12	33.20	39.44	40.00	-0.56
11V	72.230Qp	59.99	2.42	7.12	33.20	36.33	40.00	-3.67
12H	72.696	60.70	2.43	7.06	33.20	36.99	40.00	-3.01
13V	73.988	60.80	2.44	6.90	33.20	36.94	40.00	-3.06
14H	120.085	50.80	3.03	13.09	33.12	33.80	43.50	-9.70
15H	192.089	52.80	3.51	15.28	33.00	38.59	43.50	-4.91
16V	240.090	44.00	3.86	16.35	33.00	31.22	46.00	-14.78
17V	252.096	43.00	3.93	16.62	32.99	30.56	46.00	-15.44
18V	264.083	41.80	4.07	17.31	32.94	30.24	46.00	-15.76
19H	276.070	42.50	4.20	17.97	32.90	31.76	46.00	-14.24
20V	276.108	40.70	4.20	17.97	32.90	29.97	46.00	-16.03
21V	288.069	45.10	4.20	18.60	32.95	34.95	46.00	-11.05
22H	288.072	49.00	4.20	18.60	32.95	38.85	46.00	-7.15
23H	288.331	47.40	4.20	18.61	32.95	37.26	46.00	-8.74
24H	300.095	51.00	4.20	12.70	33.00	34.90	46.00	-11.10
25V	300.134	42.60	4.20	12.70	33.00	26.50	46.00	-19.50
26H	324.088	47.90	4.55	12.97	32.90	32.52	46.00	-13.48
27H	336.076	50.10	4.72	13.09	32.85	35.06	46.00	-10.94
28V	336.081	45.80	4.72	13.09	32.85	30.76	46.00	-15.24
29H	384.073	46.90	5.18	13.56	32.80	32.84	46.00	-13.16
30V	384.085	44.40	5.18	13.56	32.80	30.34	46.00	-15.66
31V	408.072	40.30	5.38	13.91	32.80	26.79	46.00	-19.21

EMISSION LEVEL [dBuV] PEAK
Graph for Peak

6/10/2005 18:53:28





E R A D

Wireless Remote Transmitter

M/N: XT2004 - COMPORT MODE

115 VAC BLACK LEAD

TEST ENGINEER : BENIGNO CHAVEZ

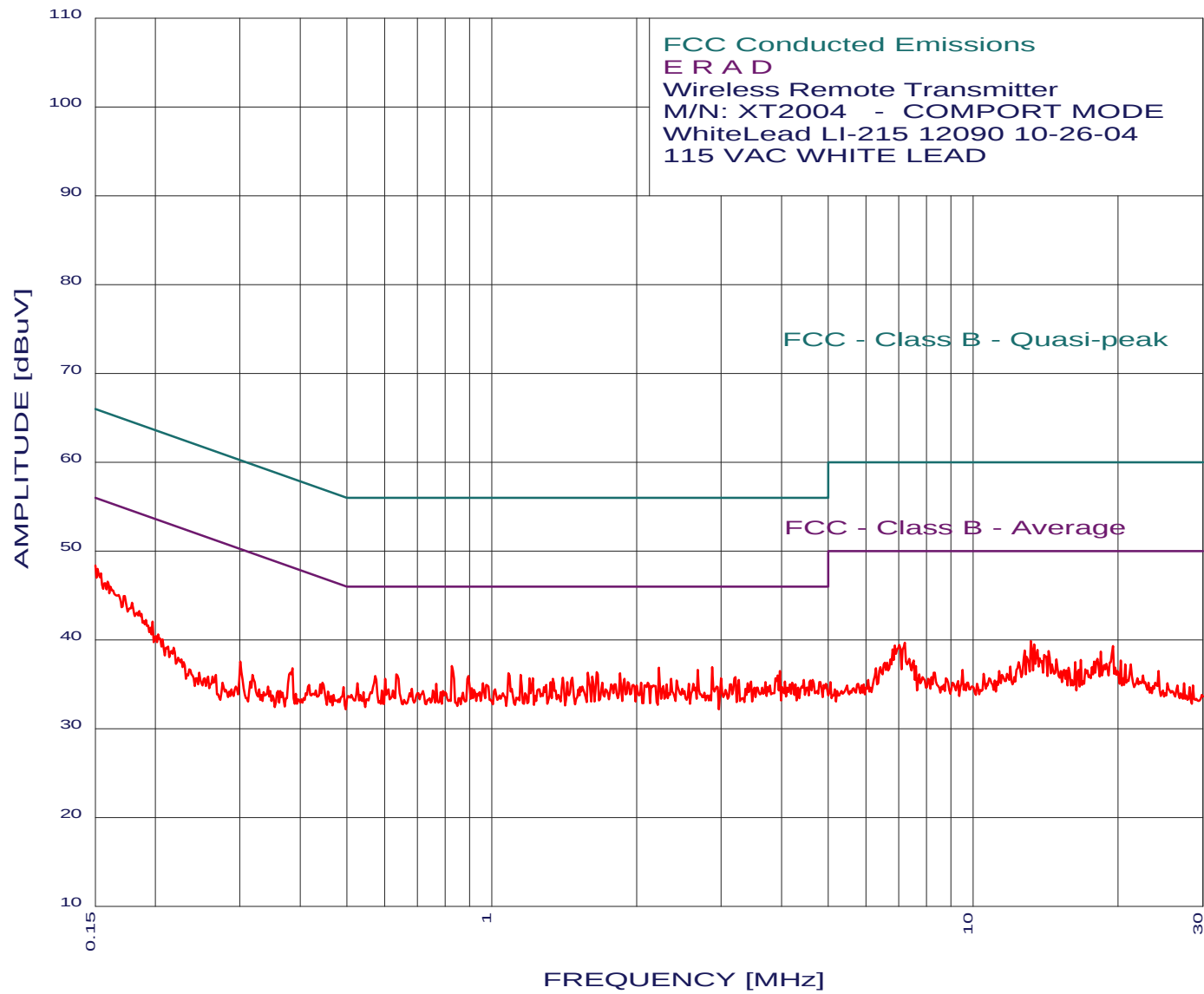
40 highest peaks above -50.00 dB of FCC - Class B - Average limit line

Peak criteria : 1.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	1.148	38.95	46.00	-7.05
2	0.637	38.79	46.00	-7.21
3	1.849	38.29	46.00	-7.71
4	0.895	38.11	46.00	-7.89
5	1.663	38.05	46.00	-7.95
6	0.831	38.00	46.00	-8.00
7	1.345	37.49	46.00	-8.51
8	1.083	37.44	46.00	-8.56
9	0.573	37.38	46.00	-8.62
10	4.902	37.31	46.00	-8.69
11	1.594	37.24	46.00	-8.76
12	1.404	36.80	46.00	-9.20
13	0.958	36.72	46.00	-9.28
14	1.021	36.63	46.00	-9.37
15	2.044	36.53	46.00	-9.47
16	4.980	36.22	46.00	-9.78
17	0.189	44.24	54.06	-9.81
18	1.781	35.98	46.00	-10.02
19	2.111	35.83	46.00	-10.17
20	1.918	35.80	46.00	-10.20
21	0.701	35.69	46.00	-10.31
22	3.383	35.66	46.00	-10.34
23	2.358	35.66	46.00	-10.34
24	0.385	37.80	48.16	-10.36
25	3.903	35.61	46.00	-10.39
26	3.702	35.59	46.00	-10.41
27	3.124	35.53	46.00	-10.47
28	1.960	35.51	46.00	-10.49
29	0.818	35.50	46.00	-10.50
30	4.624	35.48	46.00	-10.52
31	2.610	35.48	46.00	-10.52
32	2.423	35.46	46.00	-10.54
33	3.260	35.45	46.00	-10.55
34	3.192	35.44	46.00	-10.56
35	0.974	35.42	46.00	-10.58
36	2.870	35.41	46.00	-10.59
37	1.276	35.38	46.00	-10.62
38	6.882	39.36	50.00	-10.64
39	13.559	39.35	50.00	-10.65
40	2.190	35.34	46.00	-10.66

EMISSION LEVEL [dBuV] PEAK
Graph for Peak

6/10/2005 19:01:13





**COMPATIBLE
ELECTRONICS**

6/10/2005 19:01:13

E R A D

Wireless Remote Transmitter

M/N: XT2004 - COMPORT MODE

115 VAC WHITE LEAD

TEST ENGINEER : BENIGNO CHAVEZ

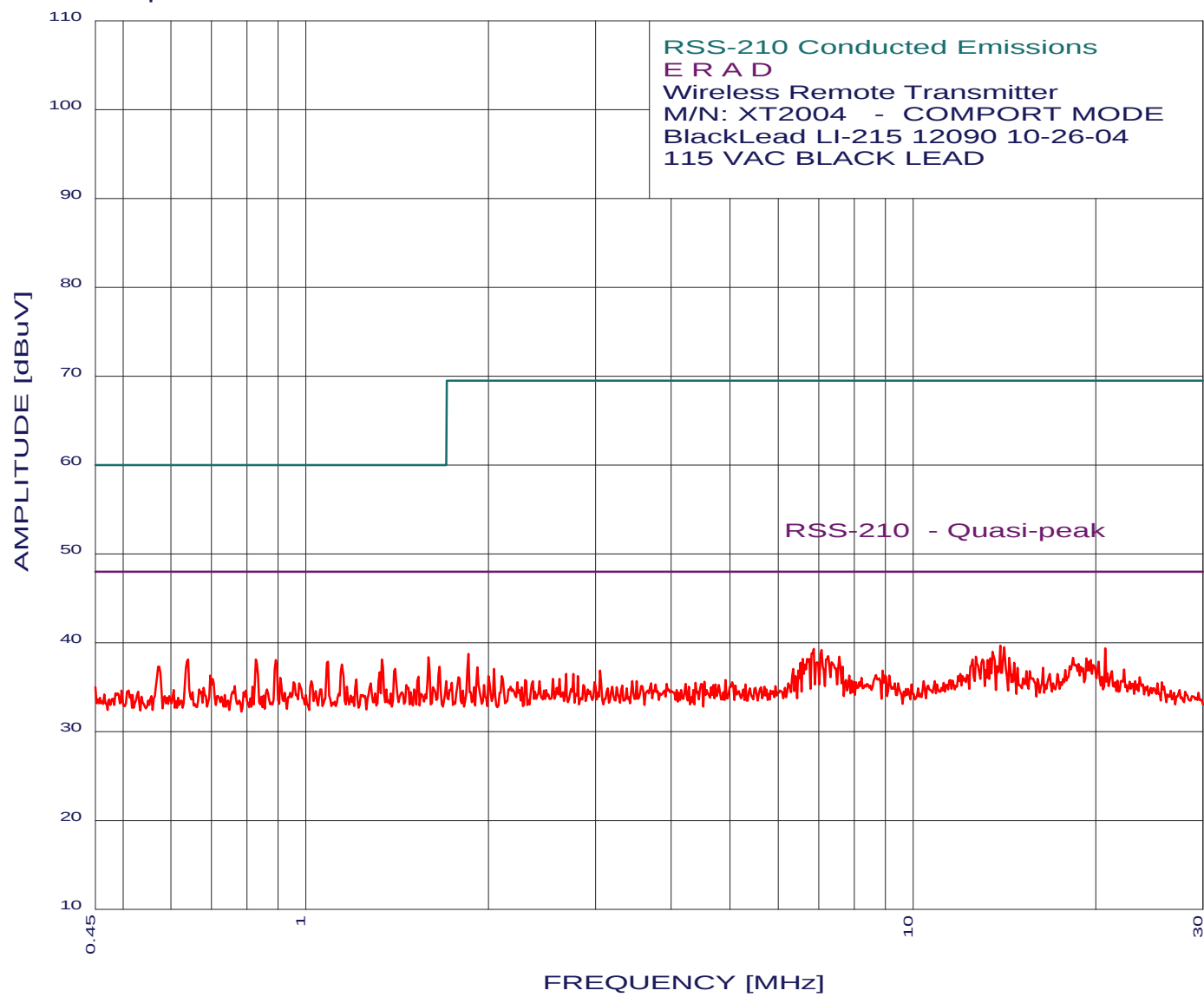
40 highest peaks above -50.00 dB of FCC - Class B - Average limit line

Peak criteria : 1.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.826	37.01	46.00	-8.99
2	2.870	36.94	46.00	-9.06
3	2.226	36.86	46.00	-9.14
4	2.679	36.62	46.00	-9.38
5	3.966	36.46	46.00	-9.54
6	1.654	36.37	46.00	-9.63
7	1.586	36.25	46.00	-9.75
8	1.083	36.24	46.00	-9.76
9	1.849	36.21	46.00	-9.79
10	0.634	36.09	46.00	-9.91
11	0.172	44.93	54.86	-9.92
12	1.148	36.06	46.00	-9.94
13	3.924	35.95	46.00	-10.05
14	0.895	35.92	46.00	-10.08
15	0.573	35.88	46.00	-10.12
16	1.620	35.86	46.00	-10.14
17	13.197	39.84	50.00	-10.16
18	3.209	35.77	46.00	-10.23
19	1.472	35.73	46.00	-10.27
20	1.404	35.71	46.00	-10.29
21	1.217	35.67	46.00	-10.33
22	1.197	35.67	46.00	-10.33
23	2.995	35.65	46.00	-10.35
24	7.217	39.64	50.00	-10.36
25	1.889	35.62	46.00	-10.38
26	1.338	35.60	46.00	-10.40
27	0.601	35.58	46.00	-10.42
28	2.358	35.58	46.00	-10.42
29	4.648	35.50	46.00	-10.50
30	4.456	35.49	46.00	-10.51
31	3.260	35.48	46.00	-10.52
32	13.414	39.46	50.00	-10.54
33	7.027	39.43	50.00	-10.57
34	4.600	35.40	46.00	-10.60
35	2.423	35.39	46.00	-10.61
36	3.456	35.30	46.00	-10.70
37	19.541	39.28	50.00	-10.72
38	4.071	35.27	46.00	-10.73
39	3.702	35.23	46.00	-10.77
40	1.918	35.22	46.00	-10.78

EMISSION LEVEL [dBuV] PEAK
Graph for Peak

6/10/2005 18:56:23





E R A D

Wireless Remote Transmitter

M/N: XT2004 - COMPORT MODE

115 VAC BLACK LEAD

TEST ENGINEER : BENIGNO CHAVEZ

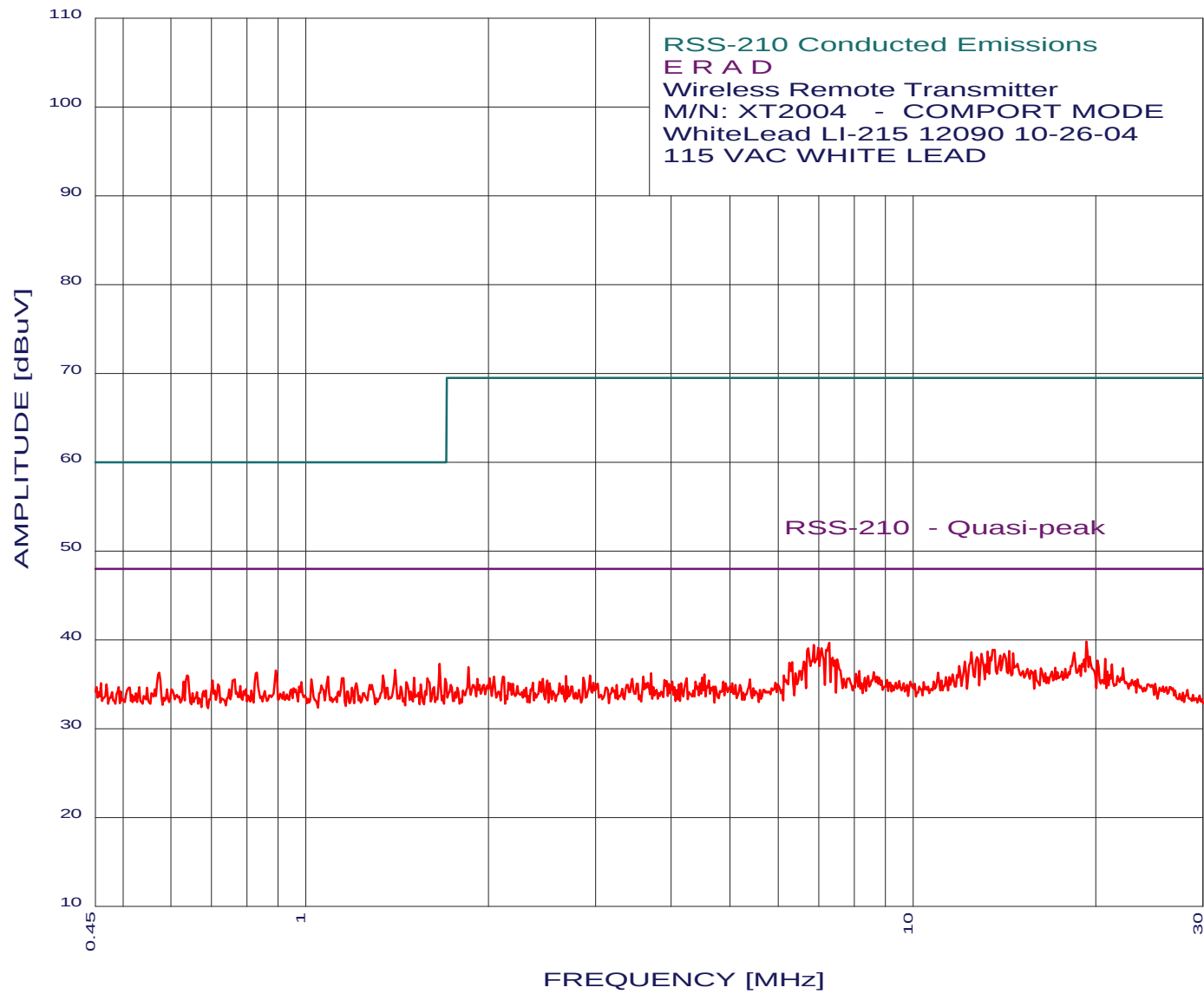
40 highest peaks above -50.00 dB of RSS-210 - Quasi-peak limit line

Peak criteria : 1.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	13.913	39.67	48.00	-8.33
2	14.149	39.49	48.00	-8.51
3	20.735	39.32	48.00	-8.68
4	6.870	39.26	48.00	-8.74
5	7.077	39.17	48.00	-8.83
6	13.512	38.94	48.00	-9.06
7	1.853	38.69	48.00	-9.31
8	7.256	38.48	48.00	-9.52
9	7.569	38.39	48.00	-9.61
10	12.685	38.39	48.00	-9.61
11	1.593	38.34	48.00	-9.66
12	14.391	38.30	48.00	-9.70
13	18.356	38.27	48.00	-9.73
14	13.397	38.24	48.00	-9.76
15	19.306	38.23	48.00	-9.77
16	6.758	38.15	48.00	-9.85
17	6.588	38.15	48.00	-9.85
18	13.011	38.11	48.00	-9.89
19	0.827	38.10	48.00	-9.90
20	1.336	38.09	48.00	-9.91
21	0.641	38.09	48.00	-9.91
22	12.525	38.08	48.00	-9.92
23	19.633	38.05	48.00	-9.95
24	13.283	38.03	48.00	-9.97
25	0.893	38.01	48.00	-9.99
26	1.087	37.84	48.00	-10.16
27	20.221	37.83	48.00	-10.17
28	7.348	37.78	48.00	-10.22
29	6.958	37.76	48.00	-10.24
30	6.532	37.74	48.00	-10.26
31	14.694	37.72	48.00	-10.28
32	1.148	37.55	48.00	-10.45
33	18.908	37.31	48.00	-10.69
34	7.663	37.30	48.00	-10.70
35	0.574	37.28	48.00	-10.72
36	1.661	37.25	48.00	-10.75
37	1.917	37.20	48.00	-10.80
38	16.389	37.14	48.00	-10.86
39	14.879	37.14	48.00	-10.86
40	6.345	37.03	48.00	-10.97

EMISSION LEVEL [dBuV] PEAK
Graph for Peak

6/10/2005 18:59:10





E R A D - Wireless Remote Transmitter
 M/N: XT2004 - COMPORT MODE
 115 VAC WHITE LEAD
 TEST ENGINEER : BENIGNO CHAVEZ

 40 highest peaks above -50.00 dB of RSS-210 - Quasi-peak limit line

Peak criteria : 1.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	19.306	39.79	48.00	-8.21
2	7.286	39.64	48.00	-8.36
3	6.870	39.42	48.00	-8.58
4	6.988	39.12	48.00	-8.88
5	7.077	39.03	48.00	-8.97
6	6.729	39.01	48.00	-8.99
7	13.627	38.87	48.00	-9.13
8	14.391	38.73	48.00	-9.27
9	13.283	38.65	48.00	-9.35
10	12.474	38.59	48.00	-9.41
11	18.431	38.54	48.00	-9.46
12	14.633	38.45	48.00	-9.55
13	12.957	38.42	48.00	-9.58
14	14.149	38.41	48.00	-9.59
15	13.913	38.20	48.00	-9.80
16	19.549	38.08	48.00	-9.92
17	12.740	38.01	48.00	-9.99
18	7.380	37.95	48.00	-10.05
19	20.735	37.83	48.00	-10.17
20	19.147	37.80	48.00	-10.20
21	7.506	37.75	48.00	-10.25
22	20.137	37.65	48.00	-10.35
23	12.166	37.56	48.00	-10.44
24	6.617	37.50	48.00	-10.50
25	6.318	37.49	48.00	-10.51
26	1.661	37.27	48.00	-10.73
27	21.267	37.22	48.00	-10.78
28	11.909	37.04	48.00	-10.96
29	1.853	36.91	48.00	-11.09
30	17.166	36.85	48.00	-11.15
31	22.180	36.81	48.00	-11.19
32	16.254	36.78	48.00	-11.22
33	15.455	36.72	48.00	-11.28
34	1.405	36.61	48.00	-11.39
35	15.917	36.55	48.00	-11.45
36	0.893	36.52	48.00	-11.48
37	8.161	36.49	48.00	-11.51
38	20.912	36.43	48.00	-11.57
39	8.619	36.32	48.00	-11.68
40	0.831	36.31	48.00	-11.69
