

**FCC PART 15 SUBPART B and C
TEST REPORT***for***RANGE ENHANCING REPEATER****Model: WPR**

Prepared for

DYNAQUIP CONTROLS
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DATE: NOVEMBER 18, 2009

	REPORT BODY	APPENDICES					TOTAL
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FIGURE	TITLE
1	Conducted Emissions Test Setup
2	Plot Map And Layout of Test Site – 3 Meters

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: Range Enhancing Repeater
Model: WPR
S/N: N/A

Product Description: See Expository Statement

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

Customer: DynaQuip Controls
10 Harris Industrial Park
St. Clair, Missouri 63077

Test Date(s): October 27 and 28; and November 2, 2009

Test Specifications: EMI requirements
CFR Title 47, Part 15, Subpart B

Test Procedure: ANSI C63.4

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

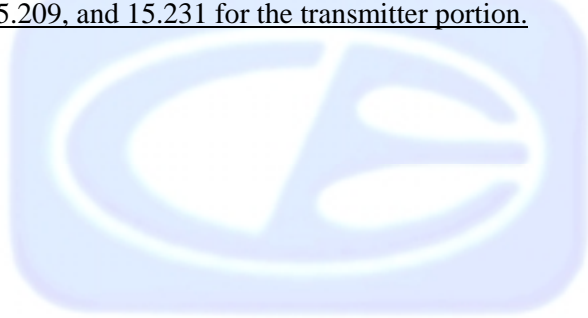
SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions, 150 kHz – 30 MHz	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 Highest reading in relation to spec limit: 45.8 dBuV @ 19.950 MHz (*U _c = 0.43 dB)
2	Radiated RF Emissions 10 kHz – 4400 MHz (Transmitter Portion)	Complies with the limits of CFR Title 47, Part 15, Subpart C, sections 15.205, 15.209, and 15.231. Highest reading in relation to spec limit: 78.88 dBuV @ 433.92 MHz (*U _c = 1.76 dB)
3	Radiated RF Emissions 10 kHz – 4400 MHz (Digital and Receiver Portion)	Complies with the Class B limits of CFR Title 47, Part 15, Subpart B.

*U_c = combined standard uncertainty

1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the Range Enhancing Repeater, Model: WPR. 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 15.231 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

DynaQuip Controls

Mike Purvis Design Engineer

Compatible Electronics Inc.

Kyle Fujimoto Test Engineer
Michael Christensen Lab Manager, Brea Division

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

The EUT's antenna is a PCB trace. The EUT stops transmitting within 5 seconds of being activated during normal operation.

Constant Transmit Mode: The Range Enhancing Repeater, Model: WPR (EUT) was directly connected to a power strip and tested in two orthogonal axis. The EUT was continuously transmitting and receiving.

Re-transmit Mode: The Range Enhancing Repeater, Model: WPR (EUT) was directly connected to a power strip and tested in two orthogonal axis.

A Flood Sensor, Model: WPFS was placed approximately 50 feet away from the test site. The Flood Sensor was continuously transmitting to the EUT. This caused the EUT to re-transmit the signal at the same frequency on a continuous basis.

The Flood Sensor, Model: WPFS was also placed next to the EUT so that the EUT was receiving the maximum signal strength from the Flood Sensor, Model: WPFS. The re-transmitted signal was then verified from the EUT that it did not change amplitude.

It was determined that the emissions were at their highest level when the EUT was operating in the above configurations. The final emissions data was taken in these modes 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 3-meter unshielded cable connecting the Flood Sensor to the Class 2 Transformer. The cable is hard wired into a 6 pin terminal block at the Flood Sensor end and is hard wired into the Class 2 Transformer.
- Cable 2** This is a 2.5-meter unshielded cable connecting the water sensor #1 to the Flood Sensor. The cable is hard wired into a 6 pin terminal block at the Flood Sensor end and is hard wired into the water sensor #1. The cable was bundled to a length of 40-centimeters.
- Cable 3** This is a 2.5-meter unshielded cable connecting the water sensor #2 to the Flood Sensor. The cable is hard wired into a 6 pin terminal block at the Flood Sensor end and is hard wired into the water sensor #2. The cable was bundled to a length of 40-centimeters.
- Cable 4** This is a 2-meter unshielded cable connecting the power strip to the AC public mains. The cable is hard wired into the power strip and has a 3-prong male AC connector at the AC public mains.

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

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID
RANGE ENHANCING REPEATER (EUT)	DYNAQUIP CONTROLS	WPR	N/A	TBD
SWITCHING ADAPTOR FOR EUT	N/A	DB0060020	N/A	N/A
FLOOD SENSOR (EUT)	DYNAQUIP CONTROLS	WPFS	N/A	TBD
(2) WATER SENSORS	DYNAQUIP CONTROLS	N/A	N/A	N/A

5.2 EMI Test Equipment

EQUIPMENT TYPE	MANUFACTURER	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
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
EMI Receiver	Rohde & Schwarz	ESIB40	100194	September 17, 2008	Sept. 17, 2010
Monitor	Hewlett Packard	D5258A	TW74500641	N/A	N/A
RF RADIATED EMISSIONS TEST EQUIPMENT					
Biconical Antenna	Com Power	AB-900	15250	February 23, 2009	Feb. 23, 2010
Log Periodic Antenna	Com Power	AL-100	16060	June 15, 2009	June 15, 2010
Preamplifier	Com-Power	PA-102	1017	January 12, 2009	Jan. 12, 2010
Loop Antenna	Com-Power	AL-130	17089	September 29, 2008	Sept. 29, 2010
Horn Antenna	Com-Power	AH-118	071175	June 27, 2008	June 27, 2010
Microwave Preamplifier	Com Power	PA-122	181921	March 12, 2009	March 12, 2010
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	12078	September 29, 2008	September 29, 2009
LISN	Com Power	LI-215	12082	September 29, 2008	September 29, 2009
Transient Limiter	Seaward	252A910	1	September 26, 2008	September 26, 2009

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 not grounded.

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 measurement receiver was used as a measuring meter. A preamplifier was used to increase the sensitivity of the instrument. The measurement receiver was used in the peak detect mode with the “Max Hold” feature activated. In this mode, the measurement receiver records the highest measured reading over all the sweeps.

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:

FREQUENCY RANGE	TRANSDUCER	EFFECTIVE MEASUREMENT BANDWIDTH
9 kHz to 150 kHz	Active Loop Antenna	200 Hz
150 kHz to 30 MHz	Active Loop Antenna	9 kHz
30 MHz to 300 MHz	Biconical Antenna	120 kHz
300 MHz to 1000 MHz	Log Periodic Antenna	120 kHz
1000 MHz to 4400 MHz	Horn Antenna	1 MHz

The final data was taken with a frequency span of 1 MHz for frequencies below 1000 MHz. For frequencies above 1000 MHz, the final data was taken with a frequency span of 10 MHz. The frequency span was reduced during the preliminary investigations as deemed necessary to distinguish between emissions from the EUT and any ambient signals.

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. 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 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 distance to obtain final test data. 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, sections 15.205, 15.209, and 15.231.



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. Plots 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 Range Enhancing Repeater, Model: WPR, 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 15.231 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 15.231 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 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

Range Enhancing Repeater
Model: WPR
S/N: N/A

No additional models were covered under this report.



APPENDIX D

DIAGRAMS, CHARTS, AND PHOTOS

FIGURE 1: CONDUCTED EMISSIONS TEST SETUP

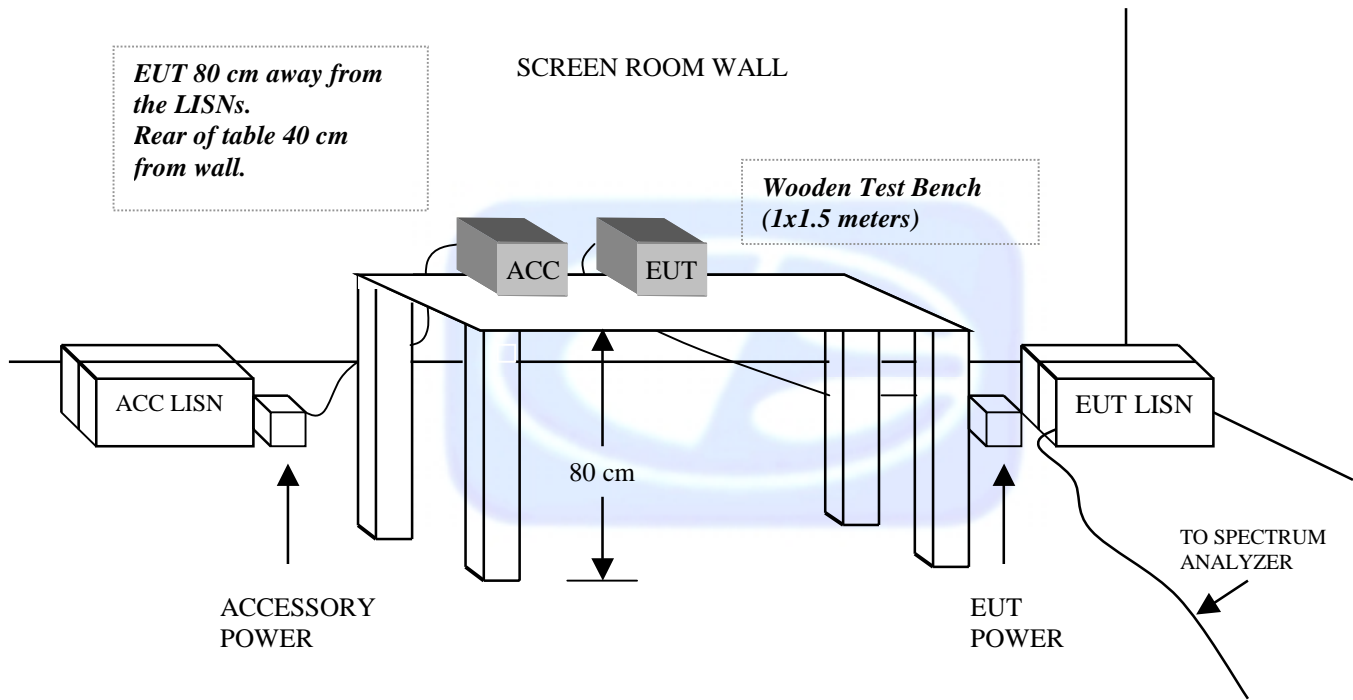
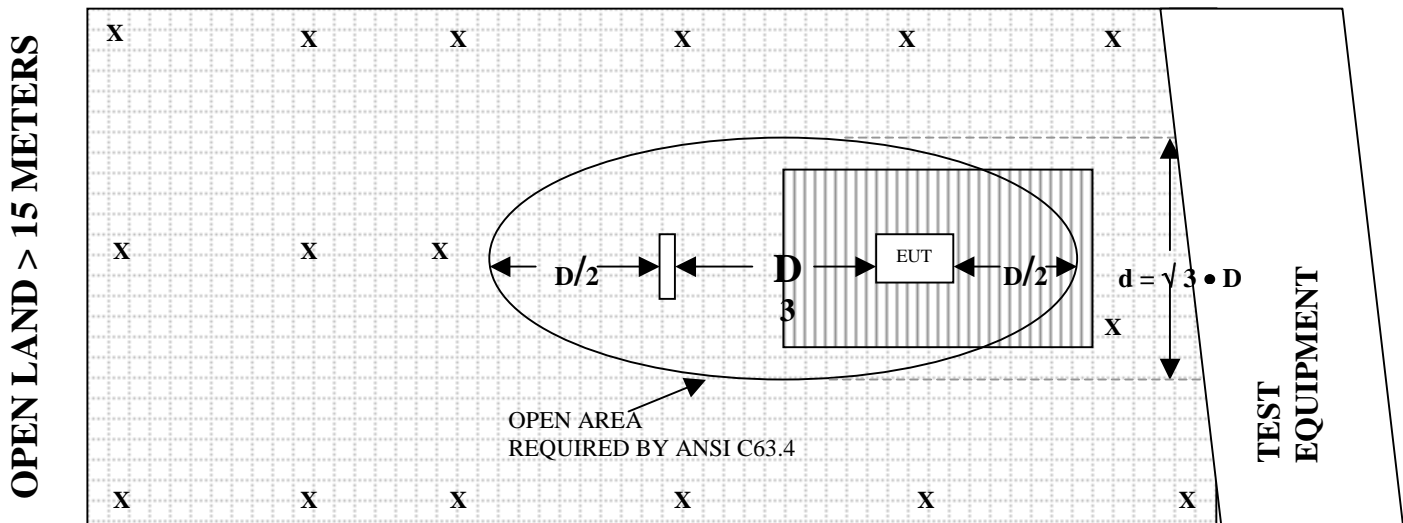


FIGURE 2: PLOT MAP AND LAYOUT OF RADIATED SITE – 3 METERS

OPEN LAND > 15 METERS



OPEN LAND > 15 METERS

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

COM-POWER AB-900

BICONICAL ANTENNA

S/N: 15250

CALIBRATION DATE: FEBRUARY 23, 2009

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	13.0	100	11.1
35	11.1	120	13.6
40	10.2	140	12.4
45	11.2	160	12.9
50	11.6	180	16.5
60	9.1	200	17.0
70	8.4	250	16.3
80	6.2	275	18.2
90	8.5	300	17.9

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

S/N: 16060

CALIBRATION DATE: JUNE 15, 2009

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
300	14.2	700	20.1
400	15.9	800	21.2
500	17.1	900	21.3
600	18.8	1000	22.3

COM POWER AH-118**HORN ANTENNA**

S/N: 071175

CALIBRATION DATE: JUNE 27, 2008

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	24.5	10.0	39.4
1.5	25.4	10.5	39.7
2.0	28.3	11.0	39.0
2.5	28.9	11.5	40.0
3.0	29.7	12.0	39.7
3.5	30.8	12.5	41.7
4.0	31.4	13.0	42.7
4.5	32.6	13.5	41.2
5.0	33.7	14.0	41.6
5.5	34.4	14.5	43.2
6.0	34.7	15.0	42.3
6.5	35.4	15.5	39.3
7.0	37.0	16.0	41.7
7.5	37.4	16.5	39.6
8.0	37.6	17.0	43.0
8.5	37.6	17.5	47.1
9.0	38.5	18.0	46.2
9.5	38.6		

COM-POWER PA-102**PREAMPLIFIER**

S/N: 1017

CALIBRATION DATE: JANUARY 12, 2009

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	39.0	300	38.8
40	39.0	350	38.8
50	38.8	400	38.7
60	38.7	450	38.6
70	38.8	500	38.3
80	38.8	550	38.9
90	39.1	600	38.4
100	39.1	650	38.8
125	38.9	700	38.4
150	38.9	750	38.5
175	38.9	800	38.3
200	38.8	850	38.4
225	39.0	900	38.1
250	38.9	950	37.4
275	38.8	1000	38.1

COM-POWER PA-122**PREAMPLIFIER**

S/N: 181921

CALIBRATION DATE: MARCH 12, 2009

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	36.46	10.0	35.06
1.5	35.36	10.5	34.82
2.0	34.76	11.0	33.12
2.5	34.94	11.5	34.33
3.0	34.59	12.0	34.75
3.5	34.55	12.5	33.94
4.0	34.25	13.0	35.50
4.5	33.89	13.5	34.89
5.0	34.22	14.0	36.56
5.5	34.81	14.5	36.06
6.0	35.74	15.0	36.67
6.5	36.51	15.5	36.84
7.0	36.66	16.0	34.31
7.5	35.72	16.5	35.11
8.0	33.28	17.0	35.35
8.5	33.11	17.5	34.11
9.0	34.71	18.0	33.88
9.5	35.50	18.5	32.20

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

**DYNAQUIP CONTROLS
RANGE ENHANCING REPEATER
MODEL: WPR
FCC SUBPART B AND C – RADIATED EMISSIONS**

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



REAR VIEW

DYNAQUIP CONTROLS
RANGE ENHANCING REPEATER
MODEL: WPR
FCC SUBPART B AND C – RADIATED EMISSIONS

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



FRONT VIEW

**DYNAQUIP CONTROLS
RANGE ENHANCING REPEATER
MODEL: WPR
FCC SUBPART B AND C – CONDUCTED EMISSIONS**

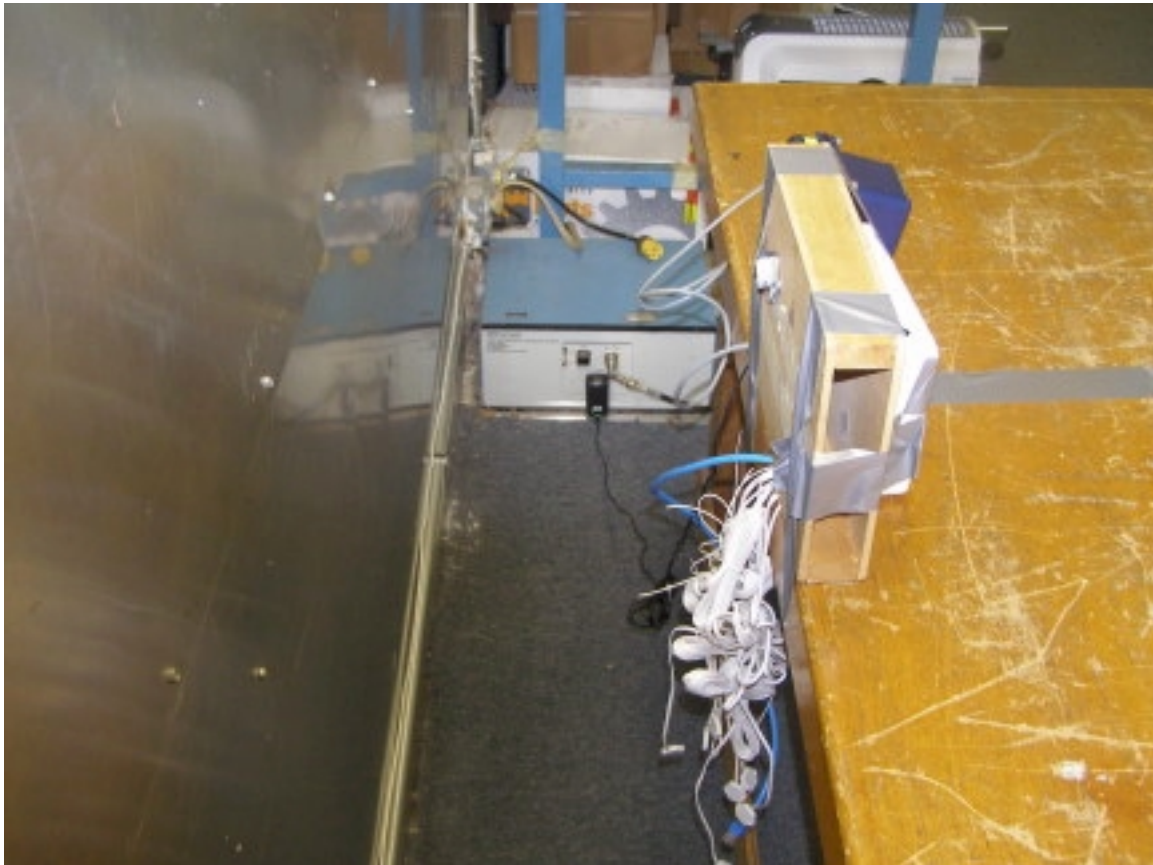
**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

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**Ajoura Division
2337 Troutdale Drive
Agoura, CA 91301
(818) 597-0600**

**Silverado Division
19121 El Toro Road
Silverado, CA 92676
(949) 589-0700**

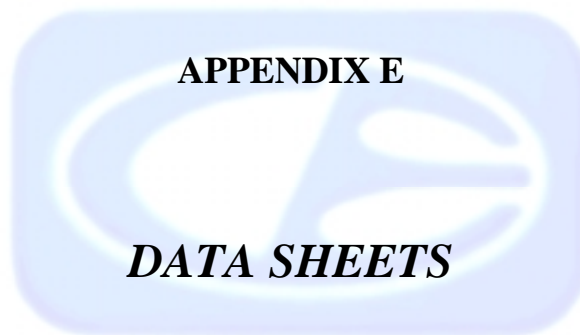
**Lake Forest Division
20621 Pascal Way
Lake Forest, CA 92630
(949) 587-0400**



REAR VIEW

DYNAQUIP CONTROLS
RANGE ENHANCING REPEATER
MODEL: WPR
FCC SUBPART B AND C – CONDUCTED EMISSIONS

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



RADIATED EMISIONS

DATA SHEETS

FCC 15.231

DynaQuip Controls
 Range Enhancing Repeater
 Model: WPR

Date: 10/27/09
 Labs: B and D
 Tested By: Kyle Fujimoto

X-Axis - Constant Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
433.92	72.15	V	100.82	-28.67	Peak	1	180	
433.92	65.36	V	80.82	-15.46	Avg	1	180	
867.84	46.21	V	80.82	-34.61	Peak	1.11	225	
867.84	39.42	V	60.82	-21.4	Avg	1.11	225	
1301.76	35.67	V	74	-38.33	Peak	1.25	135	
1301.76	28.88	V	54	-25.12	Avg	1.25	135	
1735.68	35.71	V	74	-38.29	Peak	1.35	155	
1735.68	28.92	V	54	-25.08	Avg	1.35	155	
2169.6	43.94	V	74	-30.06	Peak	1.56	175	
2169.6	37.15	V	54	-16.85	Avg	1.56	175	
2603.52	41.33	V	74	-32.67	Peak	1.58	155	
2603.52	34.54	V	54	-19.46	Avg	1.58	155	
3037.44	50.55	V	74	-23.45	Peak	1.25	135	
3037.44	43.76	V	54	-10.24	Avg	1.25	135	
3471.36	40.16	V	74	-33.84	Peak	1.35	155	
3471.36	33.37	V	54	-20.63	Avg	1.35	155	
3905.28	40.69	V	74	-33.31	Peak	1.25	165	
3905.28	33.9	V	54	-20.1	Avg	1.25	165	
4339.2	41.47	V	74	-32.53	Peak	1.35	155	
4339.2	34.68	V	54	-19.32	Avg	1.35	155	

FCC 15.231

DynaQuip Controls
 Range Enhancing Repeater
 Model: WPR

Date: 10/27/09
 Labs: B and D
 Tested By: Kyle Fujimoto

X-Axis - Constant Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
433.92	82.69	H	100.82	-18.13	Peak	1	180	
433.92	75.9	H	80.82	-4.92	Avg	1	180	
867.84	39.05	H	80.82	-41.77	Peak	1	90	
867.84	32.26	H	60.82	-28.56	Avg	1	90	
1301.76	36.81	H	74	-37.19	Peak	1.25	135	
1301.76	30.02	H	54	-23.98	Avg	1.25	135	
1735.68	36.67	H	74	-37.33	Peak	1.35	225	
1735.68	29.88	H	54	-24.12	Avg	1.35	225	
2169.6	43.42	H	74	-30.58	Peak	1.25	155	
2169.6	36.63	H	54	-17.37	Avg	1.25	155	
2603.52	40.76	H	74	-33.24	Peak	1.35	155	
2603.52	33.97	H	54	-20.03	Avg	1.35	155	
3037.44	46.95	H	74	-27.05	Peak	1.55	135	
3037.44	40.16	H	54	-13.84	Avg	1.55	135	
3471.36	40.21	H	74	-33.79	Peak	1.65	135	
3471.36	33.42	H	54	-20.58	Avg	1.65	135	
3905.28	41.19	H	74	-32.81	Peak	1.75	155	
3905.28	34.4	H	54	-19.6	Avg	1.75	155	
4339.2	40.91	H	74	-33.09	Peak	1.65	155	
4339.2	34.12	H	54	-19.88	Avg	1.65	155	

FCC 15.231

DynaQuip Controls
 Range Enhancing Repeater
 Model: WPR

Date: 10/27/09
 Labs: B and D
 Tested By: Kyle Fujimoto

Y-Axis - Constant Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
433.92	81.99	V	100.82	-18.83	Peak	1.25	135	
433.92	75.2	V	80.82	-5.62	Avg	1.25	135	
867.84	53.5	V	80.82	-27.32	Peak	1.35	215	
867.84	46.71	V	60.82	-14.11	Avg	1.35	215	
1301.76	40.27	V	74	-33.73	Peak	1.35	155	
1301.76	33.48	V	54	-20.52	Avg	1.35	155	
1735.68	37.18	V	74	-36.82	Peak	1.45	155	
1735.68	30.39	V	54	-23.61	Avg	1.45	155	
2169.6	45.32	V	74	-28.68	Peak	1.55	160	
2169.6	38.53	V	54	-15.47	Avg	1.55	160	
2603.52	41.39	V	74	-32.61	Peak	1.65	175	
2603.52	34.6	V	54	-19.4	Avg	1.65	175	
3037.44	46.81	V	74	-27.19	Peak	1.75	165	
3037.44	40.02	V	54	-13.98	Avg	1.75	165	
3471.36	39.53	V	74	-34.47	Peak	1.55	175	
3471.36	32.74	V	54	-21.26	Avg	1.55	175	
3905.28	39.72	V	74	-34.28	Peak	1.65	155	
3905.28	32.93	V	54	-21.07	Avg	1.65	155	
4339.2	42.45	V	74	-31.55	Peak	1.65	180	
4339.2	35.66	V	54	-18.34	Avg	1.65	180	

FCC 15.231

DynaQuip Controls
 Range Enhancing Repeater
 Model: WPR

Date: 10/27/09
 Labs: B and D
 Tested By: Kyle Fujimoto

Y-Axis - Constant Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
433.92	75.65	H	100.82	-25.17	Peak	1.25	135	
433.92	68.86	H	80.82	-11.96	Avg	1.25	135	
867.84	46.9	H	80.82	-33.92	Peak	1.25	155	
867.84	40.11	H	60.82	-20.71	Avg	1.25	155	
1301.76	34.76	H	74	-39.24	Peak	1.35	165	
1301.76	27.97	H	54	-26.03	Avg	1.35	165	
1735.68	36.23	H	74	-37.77	Peak	1.55	165	
1735.68	29.44	H	54	-24.56	Avg	1.55	165	
2169.6	43.01	H	74	-30.99	Peak	1.65	175	
2169.6	36.22	H	54	-17.78	Avg	1.65	175	
2603.52	40.96	H	74	-33.04	Peak	1.35	155	
2603.52	34.17	H	54	-19.83	Avg	1.35	155	
3037.44	46.31	H	74	-27.69	Peak	1.55	175	
3037.44	39.52	H	54	-14.48	Avg	1.55	175	
3471.36	40.36	H	74	-33.64	Peak	1.35	155	
3471.36	33.57	H	54	-20.43	Avg	1.35	155	
3905.28	41.62	H	74	-32.38	Peak	1.55	175	
3905.28	34.83	H	54	-19.17	Avg	1.55	175	
4339.2	42.91	H	74	-31.09	Peak	1.35	155	
4339.2	36.12	H	54	-17.88	Avg	1.35	155	

FCC 15.231

DynaQuip Controls
 Range Enhancing Repeater
 Model: WPR

Date: 10/27/09
 Labs: B and D
 Tested By: Kyle Fujimoto

X-Axis - Re-Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
433.92	76.59	V	100.28	-23.69	Peak	1.35	150	
433.92	69.8	V	80.28	-10.48	Avg	1.35	150	
867.84	51.26	V	80.28	-29.02	Peak	1.35	155	
867.84	44.47	V	60.28	-15.81	Avg	1.35	155	
1301.76	33.77	V	74	-40.23	Peak	1.25	165	
1301.76	26.98	V	54	-27.02	Avg	1.25	165	
1735.68	35.85	V	74	-38.15	Peak	1.35	155	
1735.68	29.06	V	54	-24.94	Avg	1.35	155	
2169.6	42.81	V	74	-31.19	Peak	1.55	165	
2169.6	36.02	V	54	-17.98	Avg	1.55	165	
2603.52	37.41	V	74	-36.59	Peak	1.69	135	
2603.52	30.62	V	54	-23.38	Avg	1.69	135	
3037.44	48.17	V	74	-25.83	Peak	1.69	155	
3037.44	41.38	V	54	-12.62	Avg	1.69	155	
3471.36	39.41	V	74	-34.59	Peak	1.58	135	
3471.36	32.62	V	54	-21.38	Avg	1.58	135	
3905.28	39.77	V	74	-34.23	Peak	1.69	180	
3905.28	32.98	V	54	-21.02	Avg	1.69	180	
4339.2	41.14	V	74	-32.86	Peak	1.58	155	
4339.2	34.35	V	54	-19.65	Avg	1.58	155	

FCC 15.231

DynaQuip Controls
 Range Enhancing Repeater
 Model: WPR

Date: 10/27/09
 Labs: B and D
 Tested By: Kyle Fujimoto

X-Axis - Re-Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
433.92	85.67	H	100.28	-14.61	Peak	1.35	155	
433.92	78.88	H	80.28	-1.4	Avg	1.35	155	
867.84	45.69	H	80.28	-34.59	Peak	1.35	155	
867.84	38.9	H	60.28	-21.38	Avg	1.35	155	
1301.76	31.71	H	74	-42.29	Peak	1.55	135	
1301.76	24.92	H	54	-29.08	Avg	1.55	135	
1735.68	34.53	H	74	-39.47	Peak	1.65	150	
1735.68	27.74	H	54	-26.26	Avg	1.65	150	
2169.6	42.31	H	74	-31.69	Peak	1.75	155	
2169.6	35.52	H	54	-18.48	Avg	1.75	155	
2603.52	39.07	H	74	-34.93	Peak	1.58	135	
2603.52	32.28	H	54	-21.72	Avg	1.58	135	
3037.44	48.55	H	74	-25.45	Peak	1.69	165	
3037.44	41.76	H	54	-12.24	Avg	1.69	165	
3471.36	40.08	H	74	-33.92	Peak	1.58	135	
3471.36	33.29	H	54	-20.71	Avg	1.58	135	
3905.28	42.18	H	74	-31.82	Peak	1.69	155	
3905.28	35.39	H	54	-18.61	Avg	1.69	155	
4339.2	41.63	H	74	-32.37	Peak	1.58	135	
4339.2	34.84	H	54	-19.16	Avg	1.58	135	

FCC 15.231

DynaQuip Controls
 Range Enhancing Repeater
 Model: WPR

Date: 10/27/09
 Labs: B and D
 Tested By: Kyle Fujimoto

Y-Axis - Re-Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
433.92	85.59	V	100.28	-14.69	Peak	1.35	155	
433.92	78.8	V	80.28	-1.48	Avg	1.35	155	
867.84	56.36	V	80.28	-23.92	Peak	1.35	155	
867.84	49.57	V	60.28	-10.71	Avg	1.35	155	
1301.76	34.81	V	74	-39.19	Peak	1.55	135	
1301.76	28.02	V	54	-25.98	Avg	1.55	135	
1735.68	34.63	V	74	-39.37	Peak	1.65	150	
1735.68	27.84	V	54	-26.16	Avg	1.65	150	
2169.6	42.78	V	74	-31.22	Peak	1.75	155	
2169.6	35.99	V	54	-18.01	Avg	1.75	155	
2603.52	37.79	V	74	-36.21	Peak	1.58	135	
2603.52	31	V	54	-23	Avg	1.58	135	
3037.44	46.87	V	74	-27.13	Peak	1.69	165	
3037.44	40.08	V	54	-13.92	Avg	1.69	165	
3471.36	40.95	V	74	-33.05	Peak	1.58	135	
3471.36	34.16	V	54	-19.84	Avg	1.58	135	
3905.28	40.82	V	74	-33.18	Peak	1.69	155	
3905.28	34.03	V	54	-19.97	Avg	1.69	155	
4339.2	42.13	V	74	-31.87	Peak	1.58	135	
4339.2	35.34	V	54	-18.66	Avg	1.58	135	

FCC 15.231

DynaQuip Controls
 Range Enhancing Repeater
 Model: WPR

Date: 10/27/09
 Labs: B and D
 Tested By: Kyle Fujimoto

Y-Axis - Re-Transmit Mode

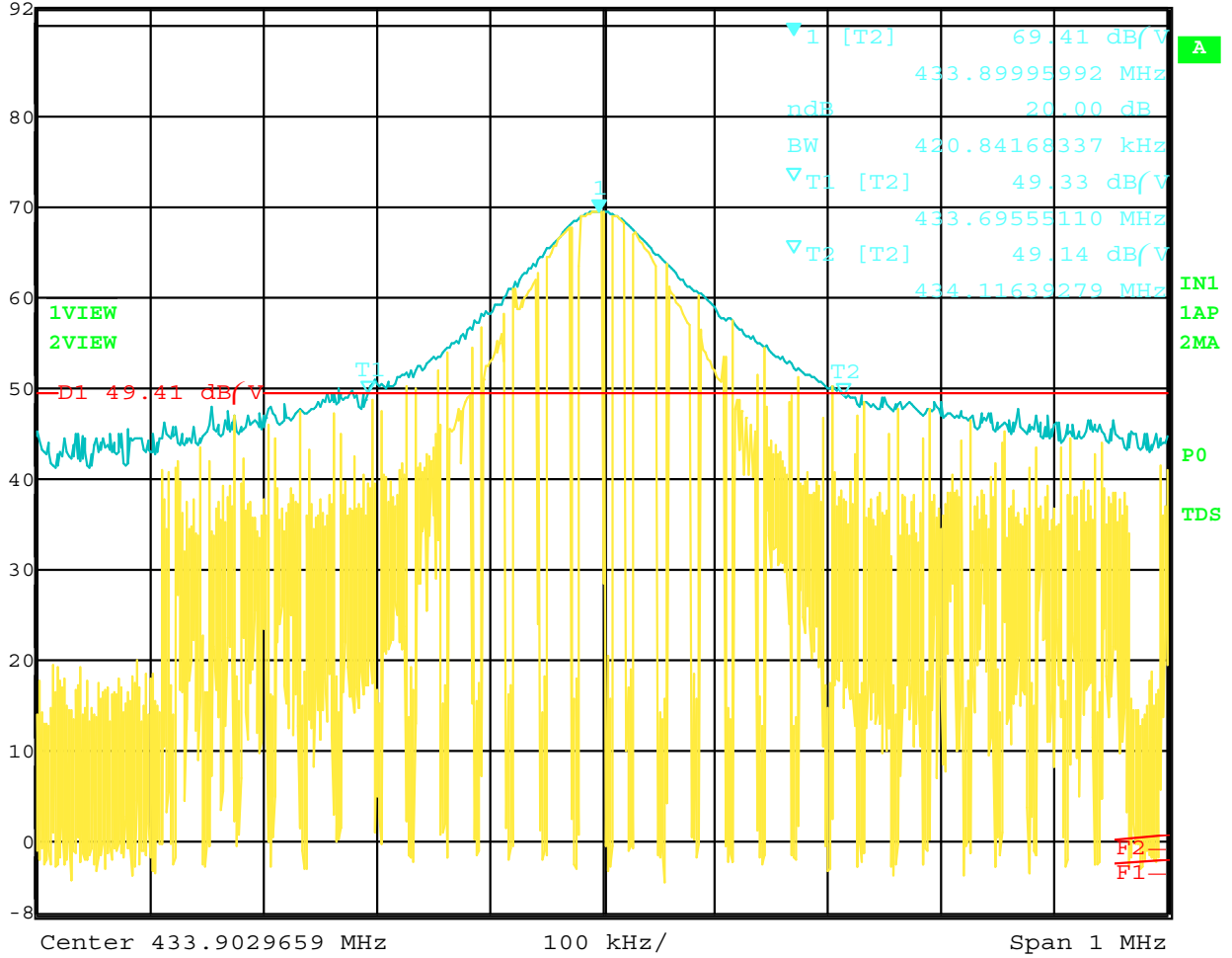
Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
433.92	80.26	H	100.28	-20.02	Peak	1.35	155	
433.92	73.47	H	80.28	-6.81	Avg	1.35	155	
867.84	49.96	H	80.28	-30.32	Peak	1.35	155	
867.84	43.17	H	60.28	-17.11	Avg	1.35	155	
1301.76	31.71	H	74	-42.29	Peak	1.55	135	
1301.76	24.92	H	54	-29.08	Avg	1.55	135	
1735.68	36.62	H	74	-37.38	Peak	1.65	150	
1735.68	29.83	H	54	-24.17	Avg	1.65	150	
2169.6	41.95	H	74	-32.05	Peak	1.75	155	
2169.6	35.16	H	54	-18.84	Avg	1.75	155	
2603.52	37.83	H	74	-36.17	Peak	1.58	135	
2603.52	31.04	H	54	-22.96	Avg	1.58	135	
3037.44	50.11	H	74	-23.89	Peak	1.69	165	
3037.44	43.32	H	54	-10.68	Avg	1.69	165	
3471.36	39.81	H	74	-34.19	Peak	1.58	135	
3471.36	33.02	H	54	-20.98	Avg	1.58	135	
3905.28	40.19	H	74	-33.81	Peak	1.69	155	
3905.28	33.4	H	54	-20.6	Avg	1.69	155	
4339.2	42.81	H	74	-31.19	Peak	1.58	135	
4339.2	36.02	H	54	-17.98	Avg	1.58	135	

-20 dB BANDWIDTH

DATA SHEET



Ref Lvl	92 dB/V	Marker 1 [T2 ndB]	ndB	20.00 dB	RBW	100 kHz	RF Att	10 dB
		BW	420.84168337 kHz		VBW	300 kHz	Unit	dB/V
		SWT	5.5 ms					



Date: 28.OCT.2009 09:23:01

-20 dB Bandwidth of the Fundamental

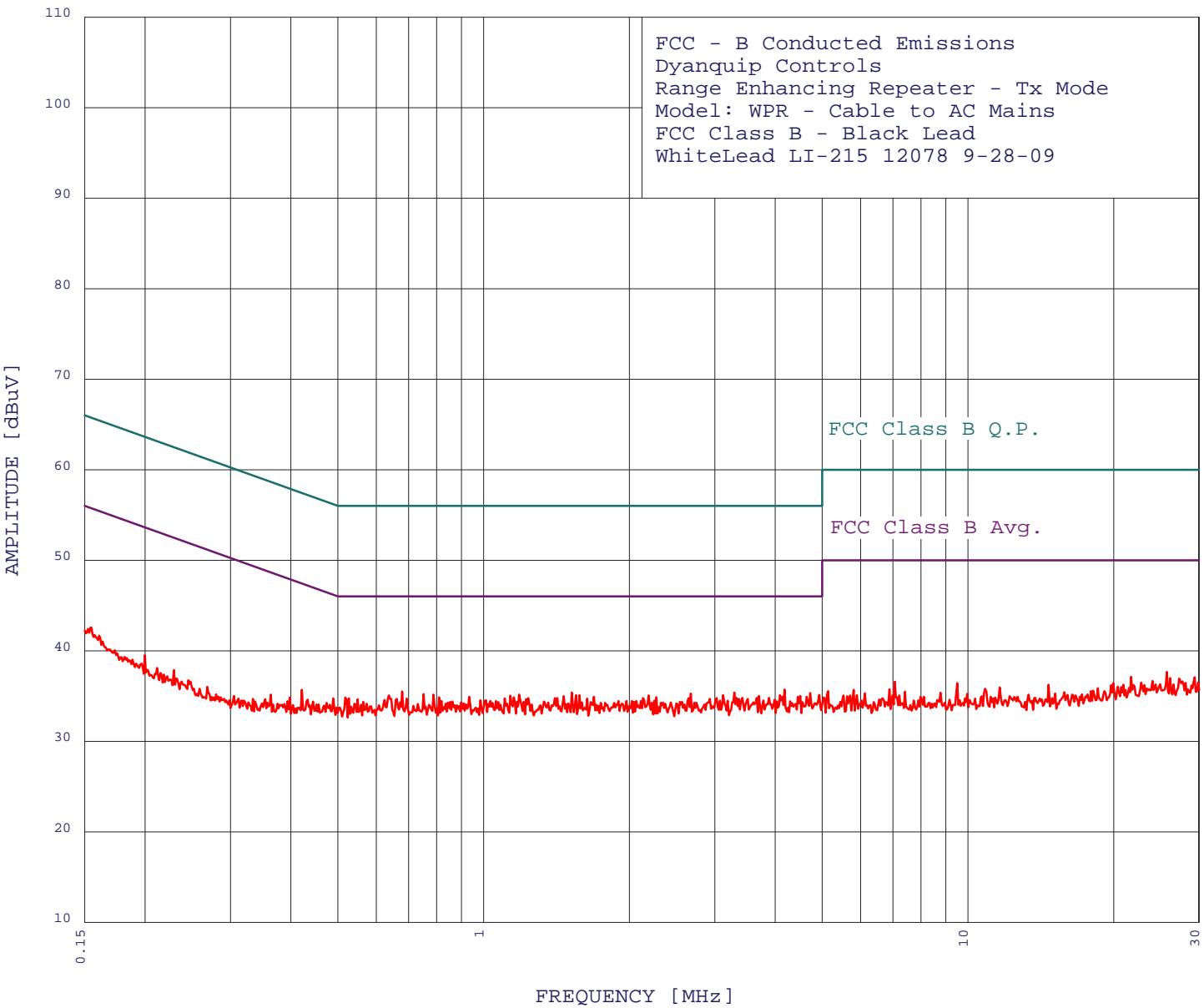
CONDUCTED EMISSIONS

DATA SHEETS



11/02/2009 13:50:43

EMISSION LEVEL [dBuV] PEAK
Graph for **Peak**



Brea Division
114 Olinda Drive
Brea, CA 92823
(714) 579-0500

Ajoura Division
2337 Troutdale Drive
Agoura, CA 91301
(818) 597-0600

Silverado Division
19121 El Toro Road
Silverado, CA 92676
(949) 589-0700

Lake Forest Division
20621 Pascal Way
Lake Forest, CA 92630
(949) 587-0400

FCC - B Conducted Emissions

Dyanquip Controls

Range Enhancing Repeater - Tx Mode

Model: WPR - Cable to AC Mains

FCC Class B - Black Lead

WhiteLead LI-215 12078 9-28-09

TEST ENGINEER : Kyle Fujimoto

49 highest peaks above -50.00 dB of FCC Class B Avg. limit line

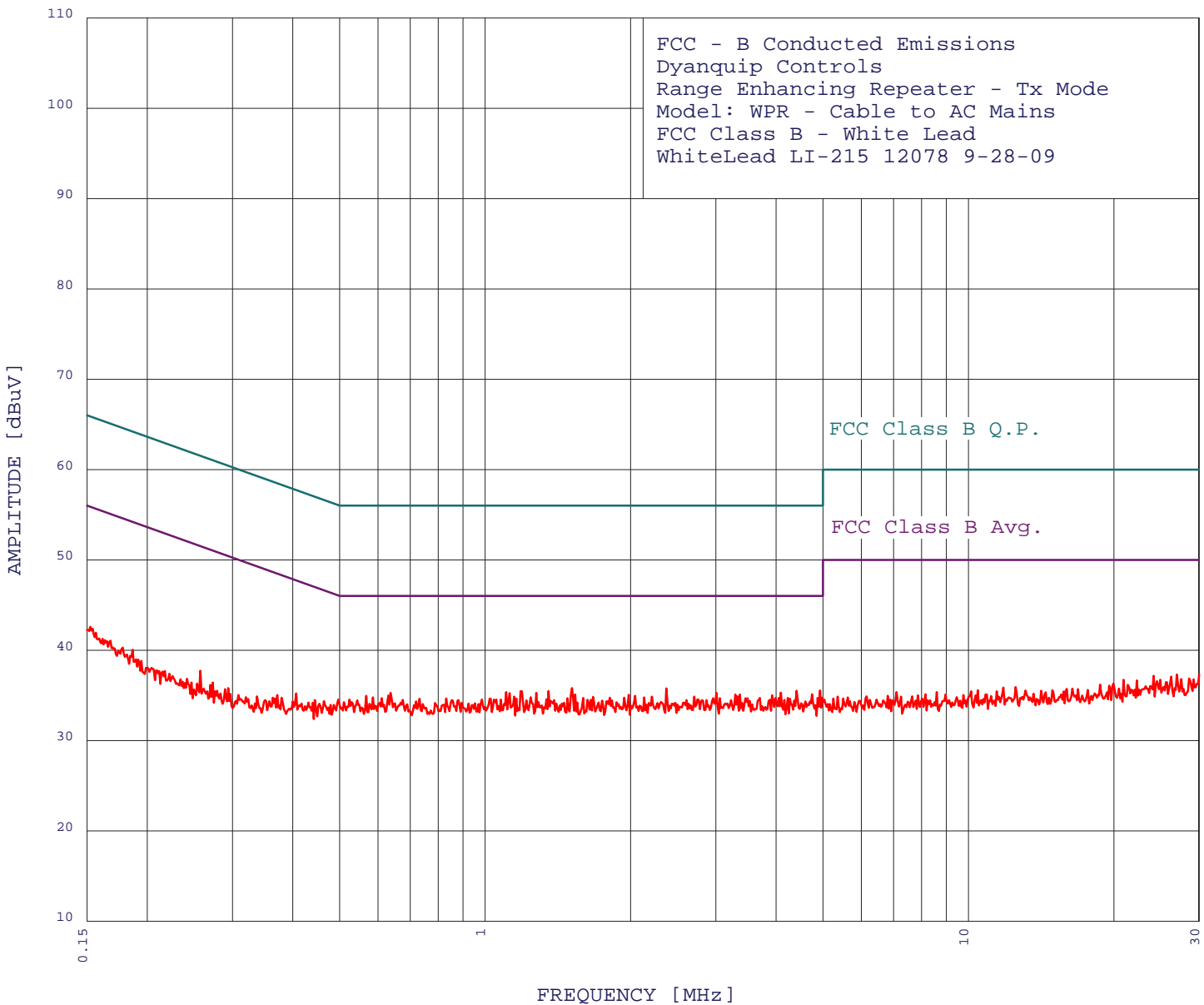
Peak criteria : 1.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	4.182	35.70	46.00	-10.30
2	0.679	35.49	46.00	-10.51
3	1.520	35.39	46.00	-10.61
4	3.294	35.38	46.00	-10.62
5	4.722	35.31	46.00	-10.69
6	2.679	35.27	46.00	-10.73
7	0.751	35.22	46.00	-10.78
8	1.184	35.15	46.00	-10.85
9	0.788	35.14	46.00	-10.86
10	4.928	35.12	46.00	-10.88
11	4.092	35.10	46.00	-10.90
12	1.577	35.10	46.00	-10.90
13	1.552	35.09	46.00	-10.91
14	3.124	35.08	46.00	-10.92
15	0.637	35.07	46.00	-10.93
16	2.190	35.05	46.00	-10.95
17	1.136	35.04	46.00	-10.96
18	4.504	35.01	46.00	-10.99
19	3.702	34.99	46.00	-11.01
20	1.464	34.98	46.00	-11.02
21	1.690	34.91	46.00	-11.09
22	0.934	34.90	46.00	-11.10
23	2.274	34.86	46.00	-11.14
24	0.809	34.85	46.00	-11.15
25	1.154	34.85	46.00	-11.15
26	0.518	34.82	46.00	-11.18
27	3.882	34.79	46.00	-11.21
28	3.663	34.79	46.00	-11.21
29	3.419	34.78	46.00	-11.22
30	1.419	34.78	46.00	-11.22
31	3.027	34.77	46.00	-11.23
32	1.236	34.76	46.00	-11.24
33	1.106	34.74	46.00	-11.26
34	0.527	34.73	46.00	-11.27
35	1.637	34.71	46.00	-11.29
36	0.694	34.70	46.00	-11.30
37	3.511	34.69	46.00	-11.31
38	0.662	34.68	46.00	-11.32
39	2.932	34.67	46.00	-11.33
40	0.550	34.64	46.00	-11.36
41	3.987	34.60	46.00	-11.40
42	0.489	34.73	46.18	-11.46
43	1.011	34.53	46.00	-11.47
44	0.984	34.52	46.00	-11.48
45	3.192	34.48	46.00	-11.52
46	2.250	34.46	46.00	-11.54
47	2.023	34.45	46.00	-11.55
48	0.818	34.45	46.00	-11.55
49	1.971	34.45	46.00	-11.55



11/02/2009 13:52:34

EMISSION LEVEL [dBuV] PEAK
Graph for **Peak**



Brea Division
114 Olinda Drive
Brea, CA 92823
(714) 579-0500

Ajoura Division
2337 Troutdale Drive
Agoura, CA 91301
(818) 597-0600

Silverado Division
19121 El Toro Road
Silverado, CA 92676
(949) 589-0700

Lake Forest Division
20621 Pascal Way
Lake Forest, CA 92630
(949) 587-0400

FCC - B Conducted Emissions

Dyanquip Controls

Range Enhancing Repeater - Tx Mode

Model: WPR - Cable to AC Mains

FCC Class B - White Lead

WhiteLead LI-215 12078 9-28-09

TEST ENGINEER : Kyle Fujimoto

49 highest peaks above -50.00 dB of FCC Class B Avg. limit line

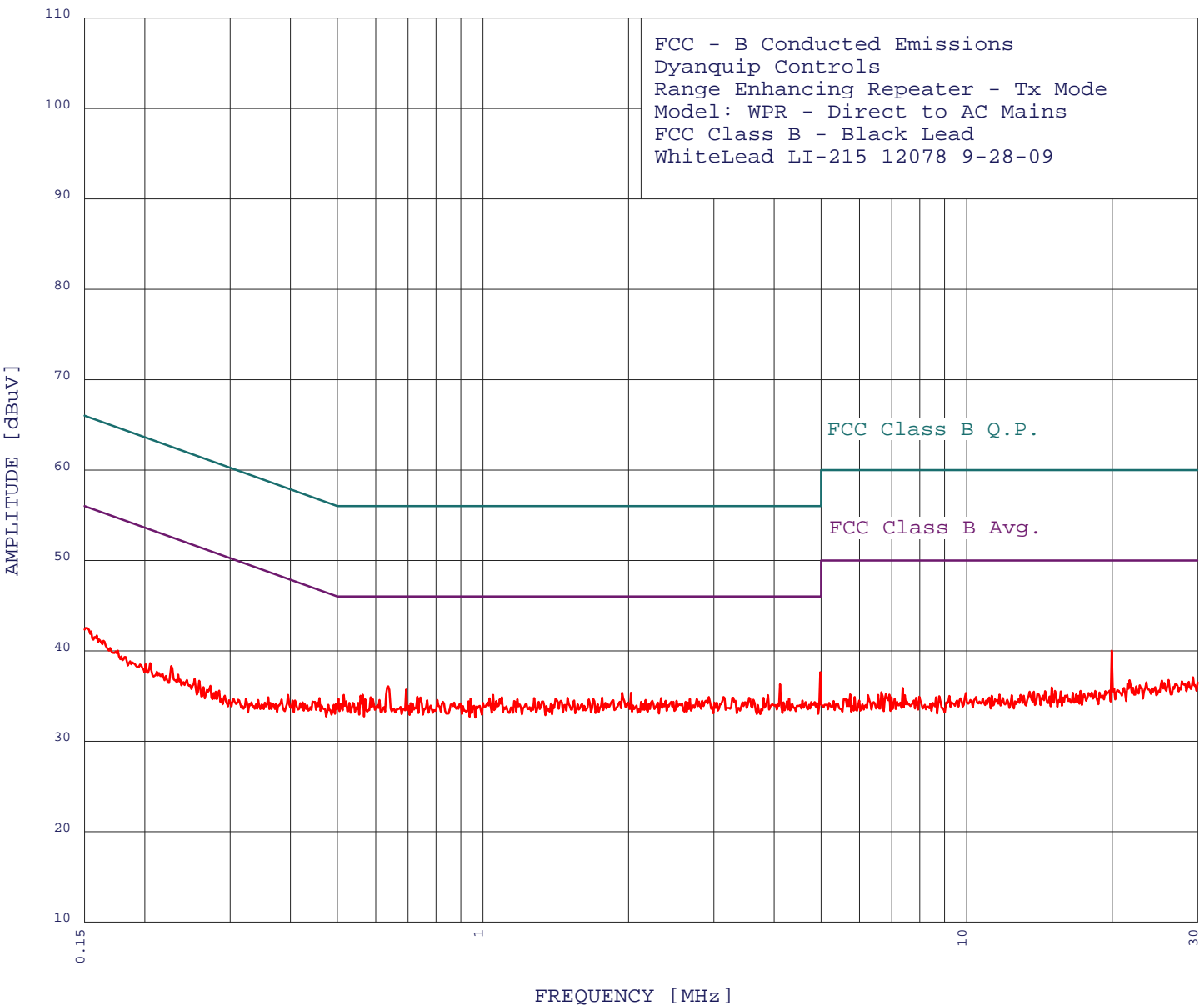
Peak criteria : 1.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	1.512	35.79	46.00	-10.21
2	2.371	35.76	46.00	-10.24
3	4.928	35.52	46.00	-10.48
4	4.408	35.51	46.00	-10.49
5	1.352	35.47	46.00	-10.53
6	1.191	35.45	46.00	-10.55
7	1.106	35.34	46.00	-10.66
8	4.092	35.30	46.00	-10.70
9	3.011	35.27	46.00	-10.73
10	0.637	35.27	46.00	-10.73
11	1.276	35.26	46.00	-10.74
12	1.124	35.24	46.00	-10.76
13	4.748	35.12	46.00	-10.88
14	1.536	35.09	46.00	-10.91
15	3.365	35.08	46.00	-10.92
16	3.294	35.08	46.00	-10.92
17	1.981	35.05	46.00	-10.95
18	3.924	35.00	46.00	-11.00
19	2.044	34.95	46.00	-11.05
20	0.567	34.94	46.00	-11.06
21	2.707	34.87	46.00	-11.13
22	2.214	34.86	46.00	-11.14
23	1.148	34.84	46.00	-11.16
24	1.671	34.81	46.00	-11.19
25	1.243	34.76	46.00	-11.24
26	2.134	34.75	46.00	-11.25
27	0.586	34.75	46.00	-11.25
28	1.939	34.74	46.00	-11.26
29	1.810	34.73	46.00	-11.27
30	4.980	34.72	46.00	-11.28
31	4.227	34.70	46.00	-11.30
32	1.594	34.70	46.00	-11.30
33	3.702	34.69	46.00	-11.31
34	1.480	34.69	46.00	-11.31
35	3.492	34.69	46.00	-11.31
36	3.059	34.68	46.00	-11.32
37	0.611	34.66	46.00	-11.34
38	0.831	34.65	46.00	-11.35
39	1.160	34.65	46.00	-11.35
40	1.027	34.63	46.00	-11.37
41	0.731	34.61	46.00	-11.39
42	4.272	34.60	46.00	-11.40
43	1.338	34.57	46.00	-11.43
44	1.077	34.54	46.00	-11.46
45	1.055	34.53	46.00	-11.47
46	0.524	34.52	46.00	-11.48
47	0.984	34.52	46.00	-11.48
48	1.654	34.51	46.00	-11.49
49	1.629	34.50	46.00	-11.50



11/02/2009 13:44:38

EMISSION LEVEL [dBuV] PEAK
Graph for **Peak**



Brea Division
114 Olinda Drive
Brea, CA 92823
(714) 579-0500

Ajoura Division
2337 Troutdale Drive
Agoura, CA 91301
(818) 597-0600

Silverado Division
19121 El Toro Road
Silverado, CA 92676
(949) 589-0700

Lake Forest Division
20621 Pascal Way
Lake Forest, CA 92630
(949) 587-0400

FCC - B Conducted Emissions
Dyanquip Controls, Inc.
Range Enhancing Repeater - Tx Mode
Model: WPR - Direct to AC Mains
FCC Class B - Black Lead
WhiteLead LI-215 12078 9-28-09
TEST ENGINEER : Kyle Fujimoto

49 highest peaks above -50.00 dB of FCC Class B Avg. limit line

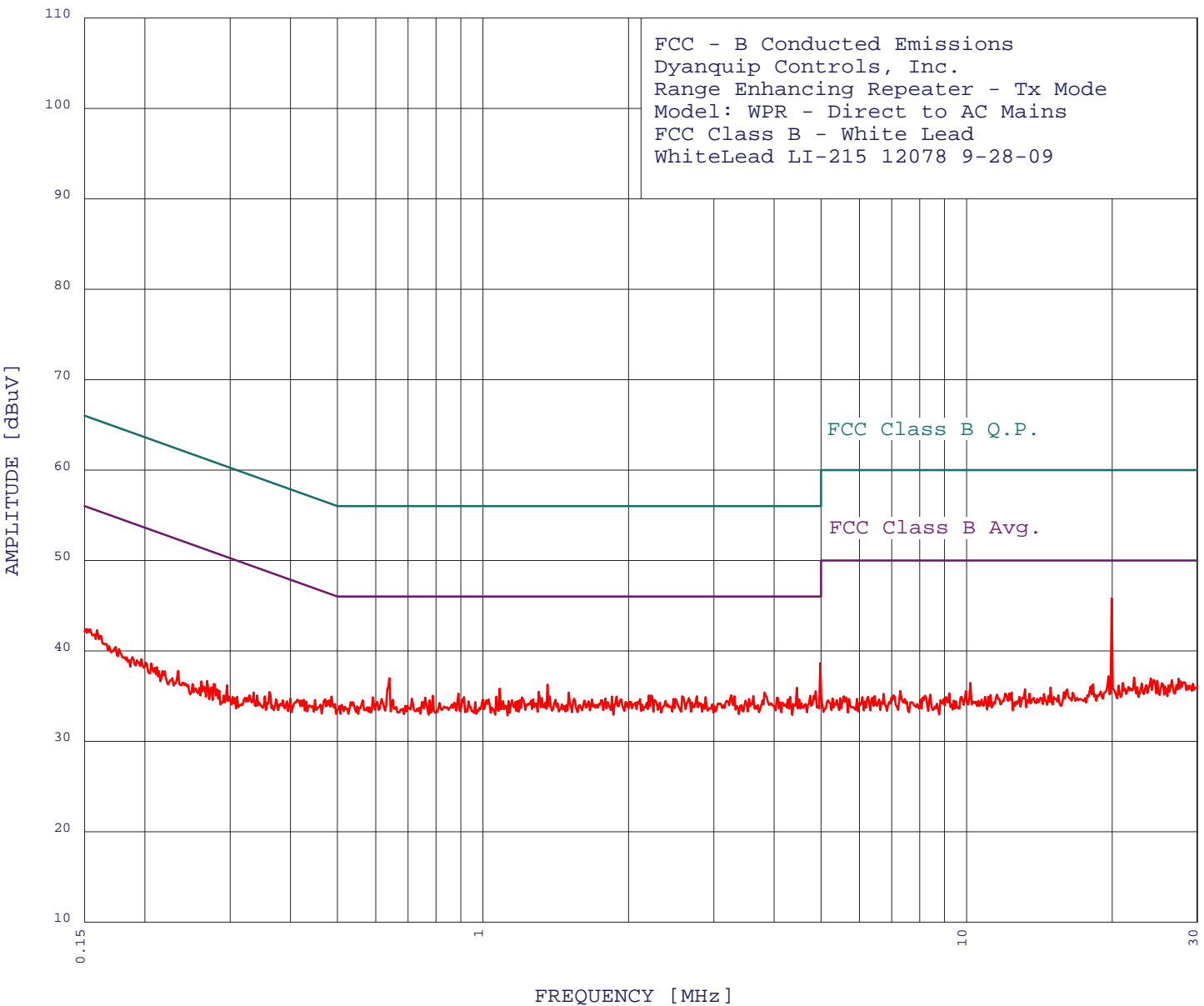
Peak criteria : 1.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	4.980	37.62	46.00	-8.38
2	4.114	36.30	46.00	-9.70
3	0.637	36.07	46.00	-9.93
4	19.950	40.00	50.00	-10.00
5	0.694	35.70	46.00	-10.30
6	2.023	35.35	46.00	-10.65
7	1.939	35.34	46.00	-10.66
8	0.564	35.14	46.00	-10.86
9	1.049	35.13	46.00	-10.87
10	0.516	35.12	46.00	-10.88
11	3.882	35.09	46.00	-10.91
12	0.731	34.91	46.00	-11.09
13	3.141	34.88	46.00	-11.12
14	2.932	34.87	46.00	-11.13
15	0.586	34.85	46.00	-11.15
16	1.094	34.84	46.00	-11.16
17	1.763	34.82	46.00	-11.18
18	0.743	34.82	46.00	-11.18
19	3.800	34.79	46.00	-11.21
20	1.496	34.79	46.00	-11.21
21	3.547	34.79	46.00	-11.21
22	3.294	34.78	46.00	-11.22
23	1.276	34.76	46.00	-11.24
24	2.334	34.76	46.00	-11.24
25	1.032	34.73	46.00	-11.27
26	0.502	34.72	46.00	-11.28
27	1.690	34.71	46.00	-11.29
28	4.294	34.70	46.00	-11.30
29	0.944	34.70	46.00	-11.30
30	1.412	34.68	46.00	-11.32
31	2.766	34.67	46.00	-11.33
32	2.679	34.67	46.00	-11.33
33	1.178	34.65	46.00	-11.35
34	0.570	34.64	46.00	-11.36
35	1.654	34.61	46.00	-11.39
36	0.611	34.56	46.00	-11.44
37	2.168	34.55	46.00	-11.45
38	0.805	34.54	46.00	-11.46
39	1.859	34.53	46.00	-11.47
40	0.767	34.53	46.00	-11.47
41	4.576	34.51	46.00	-11.49
42	1.544	34.49	46.00	-11.51
43	2.514	34.46	46.00	-11.54
44	2.238	34.46	46.00	-11.54
45	1.160	34.45	46.00	-11.55
46	0.934	34.40	46.00	-11.60
47	1.331	34.37	46.00	-11.63
48	2.624	34.36	46.00	-11.64
49	0.826	34.35	46.00	-11.65



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EMISSION LEVEL [dBuV] PEAK
Graph for **Peak**



Brea Division
114 Olinda Drive
Brea, CA 92823
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FCC - B Conducted Emissions
Dyanquip Controls, Inc.
Range Enhancing Repeater - Tx Mode
Model: WPR - Direct to AC Mains
FCC Class B - White Lead
WhiteLead LI-215 12078 9-28-09
TEST ENGINEER : Kyle Fujimoto

49 highest peaks above -50.00 dB of FCC Class B Avg. limit line

Peak criteria : 1.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	19.950	45.80	50.00	-4.20
2	4.980	38.62	46.00	-7.38
3	0.641	36.97	46.00	-9.03
4	1.359	36.27	46.00	-9.73
5	4.456	35.91	46.00	-10.09
6	1.083	35.84	46.00	-10.16
7	4.877	35.52	46.00	-10.48
8	1.304	35.46	46.00	-10.54
9	3.820	35.39	46.00	-10.61
10	1.504	35.39	46.00	-10.61
11	0.890	35.28	46.00	-10.72
12	3.260	35.08	46.00	-10.92
13	2.226	35.06	46.00	-10.94
14	2.201	35.05	46.00	-10.95
15	0.788	35.04	46.00	-10.96
16	4.748	35.02	46.00	-10.98
17	3.624	34.99	46.00	-11.01
18	3.311	34.98	46.00	-11.02
19	1.374	34.97	46.00	-11.03
20	2.766	34.97	46.00	-11.03
21	2.582	34.96	46.00	-11.04
22	1.889	34.94	46.00	-11.06
23	1.066	34.93	46.00	-11.07
24	1.849	34.93	46.00	-11.07
25	4.316	34.91	46.00	-11.09
26	0.914	34.89	46.00	-11.11
27	2.885	34.87	46.00	-11.13
28	0.592	34.85	46.00	-11.15
29	1.204	34.85	46.00	-11.15
30	0.759	34.82	46.00	-11.18
31	4.071	34.80	46.00	-11.20
32	1.325	34.77	46.00	-11.23
33	2.665	34.77	46.00	-11.23
34	1.790	34.72	46.00	-11.28
35	0.713	34.70	46.00	-11.30
36	0.486	34.93	46.23	-11.30
37	1.544	34.69	46.00	-11.31
38	0.618	34.66	46.00	-11.34
39	2.501	34.66	46.00	-11.34
40	1.269	34.66	46.00	-11.34
41	2.111	34.65	46.00	-11.35
42	1.027	34.63	46.00	-11.37
43	1.000	34.63	46.00	-11.37
44	1.680	34.61	46.00	-11.39
45	4.504	34.61	46.00	-11.39
46	0.651	34.58	46.00	-11.42
47	1.412	34.58	46.00	-11.42
48	2.262	34.56	46.00	-11.44
49	1.148	34.54	46.00	-11.46
