



**FCC CFR47 PART 15 SUBPART C  
INDUSTRY CANADA RSS-210 ISSUE 7  
CLASS II PERMISSIVE CHANGE  
CERTIFICATION TEST REPORT**

**FOR**

**WIRELESS ACCESS POINT**

**MODEL NUMBER: 5054-XXXX-XXX-XXXXX**

**FCC ID: HZB-MP11R-ABG**

**IC: 1856A-MP11RABG**

**REPORT NUMBER: 07U11387-1**

**ISSUE DATE: OCTOBER 15, 2007**

*Prepared for*  
**PROXIM WIRELESS  
2115 O NEL DRIVE  
SANTA CLARA, CA 95131, U.S.A**

*Prepared by*  
**COMPLIANCE CERTIFICATION SERVICES  
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**NVLAP LAB CODE 200065-0**

Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
--	10/15/07	Initial Issue	T. Chan

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# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** PROXIM WIRELESS  
2115 O NEL DRIVE  
SANTA CLARA, CA 94538, U.S.A.

**EUT DESCRIPTION:** WIRELESS ACCESS POINT

**MODEL:** TSUNAMI MP.11 5054-BSU, 5054-XXXX-XXX-XXXXX

**SERIAL NUMBER:** 07UT417000046

**DATE TESTED:** OCTOBER 14, 2007

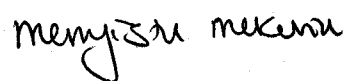
APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C and Subpart E	No Non-Compliance Noted
RSS-210 Issue 7 Annex 8 and RSS-GEN Issue 2	No Non-Compliance Noted

Compliance Certification Services, Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

**Note:** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification Services will constitute fraud and shall nullify the document. No part of this report may be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any government agency.

Approved & Released For CCS By:

Tested By:



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THU CHAN  
EMC SUPERVISOR  
COMPLIANCE CERTIFICATION SERVICES

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MENGISTU MEKURIA  
EMC ENGINEER  
COMPLIANCE CERTIFICATION SERVICES

## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2003, FCC CFR 47 Part 2, FCC CFR 47 Part 15, RSS-GEN Issue 2, and RSS-210 Issue 7.

## 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://www.ccsemc.com>.

## 4. CALIBRATION AND UNCERTAINTY

### 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

### 4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Radiated Emission, 30 to 200 MHz	+/- 3.3 dB
Radiated Emission, 200 to 1000 MHz	+4.5 / -2.9 dB
Radiated Emission, 1000 to 2000 MHz	+4.5 / -2.9 dB
Power Line Conducted Emission	+/- 2.9 dB

Uncertainty figures are valid to a confidence level of 95%.

## **5. EQUIPMENT UNDER TEST**

### **5.1. DESCRIPTION OF EUT**

The EUT is an 802.11a Wireless Access Point.

The radio module is manufactured by Proxim Wireless.

### **5.2. DESCRIPTION OF CLASS II PERMISSIVE CHANGE**

This is to request a Class II permissive change to add a new variant. This new variant uses the same 802.11a/b/g mini-PCI card, so the RF characteristics remain the same; the change is solely digital portion related. The daughter board and the main board are consolidated into one main board, but with the same size and layout of the main board in order to fit into a smaller enclosure.

### 5.3. DESCRIPTION OF TEST SETUP

#### SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST			
Description	Manufacturer	Model	Serial Number
Laptop	HP	Pavilion N5420	TW12308893
5 Port Wireless Hub	Linksys	EW5HUB	816002134 LEH5D
AC Adapter	HP	3892C094 V85	1203920
AC Adapter	DVT	DSA-0151F-12 A	3872F215
AC Adapter	Merry King Enterprises	MKD-4175700	PSA 12D7P5P7-A

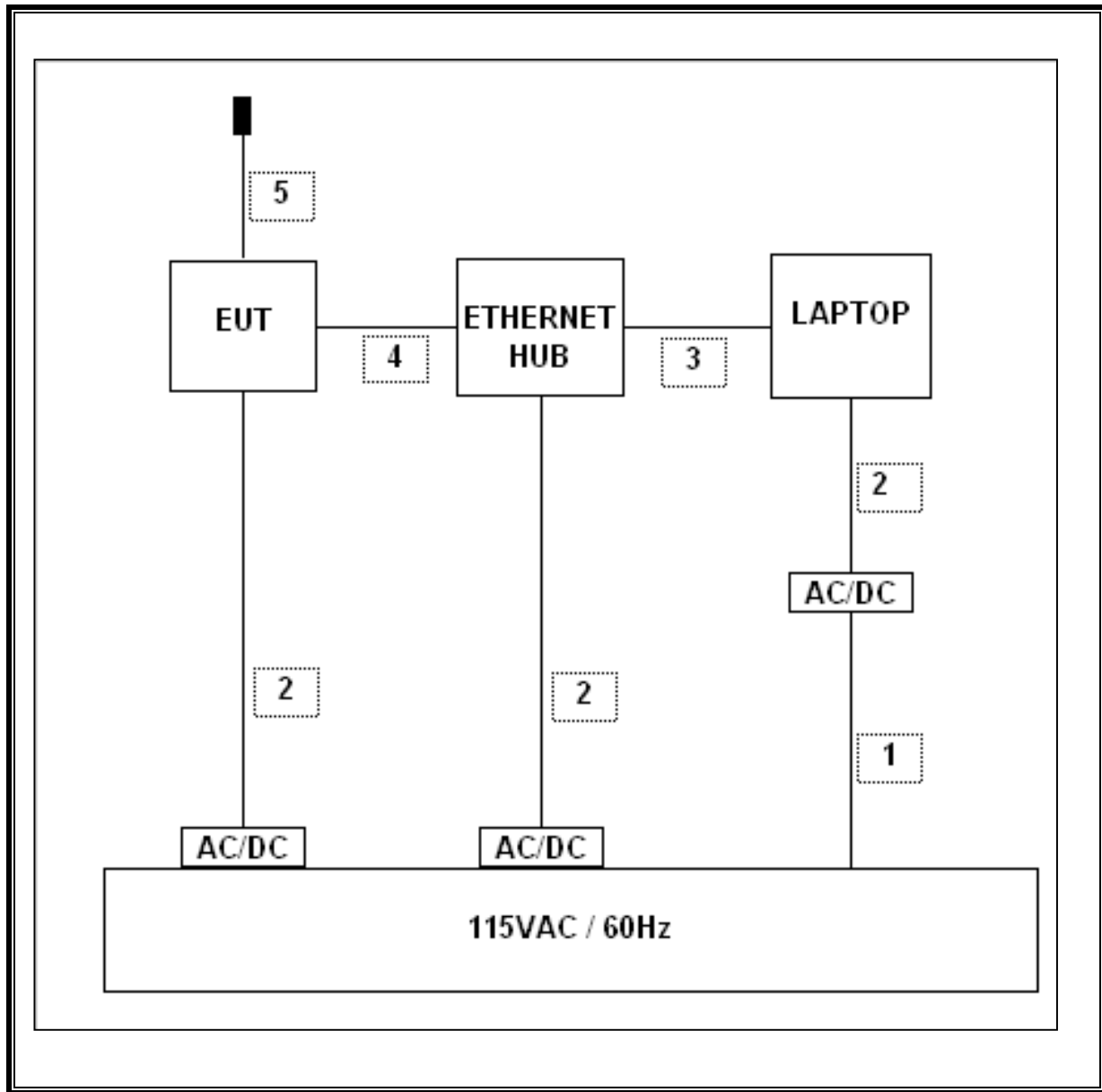
#### I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	1	AC	UNSHIELDED	2.0 m	N/A
2	DC	3	DC	UNSHIELDED	2.0 m	N/A
3	ETHERNET	1	RJ45	UNSHIELDED	1.0 m	N/A
4	ETHERNET	1	RJ45	UNSHIELDED	10.0 m	N/A
5	COAXIAL	1	N-TYPE	SHIELDED	0.20 m	N/A

#### TEST SETUP

The EUT is connected to a host laptop computer via Ethernet hub during the tests. Test software made possible data transfer between the EUT and the host laptop.

**SETUP DIAGRAM FOR TESTS**





## 6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	Cal Due
Spectrum Analyzer 3 Hz ~ 44 GHz	Agilent / HP	E4446A	MY43360112	5/3/2008
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	6717	4/22/2008
Preamplifier, 1 ~ 26.5 GHz	Agilent / HP	8449B	3008A00931	8/1/2008
EMI Test Receiver	R & S	ESHS 20	827129/006	1/27/2008
LISN, 10 kHz ~ 30 MHz	Solar	8012-50-R-24-BNC	8379443	11/15/2007
LISN, 10 kHz ~ 30 MHz	FCC	LISN-50/250-25-2	2023	11/15/2007
EMI Test Receiver	R & S	ESHS 20	827129/006	1/27/2008
Antenna, Bilog 30 MHz ~ 2 Ghz	Sunol Sciences	JB1	A0022704	9/28/2008
Preamplifier, 1300 MHz	Agilent / HP	8447D	1937A02062	1/23/2008
RF Filter Section	Agilent / HP	85420E	3705A00256	2/4/2008

## 7. RADIATED TEST RESULTS

### 7.1. LIMITS AND PROCEDURE

#### LIMITS

FCC §15.205 and §15.209

IC RSS-210 Clause 2.6 (Transmitter)

IC RSS-GEN Clause 6 (Receiver)

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

#### TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

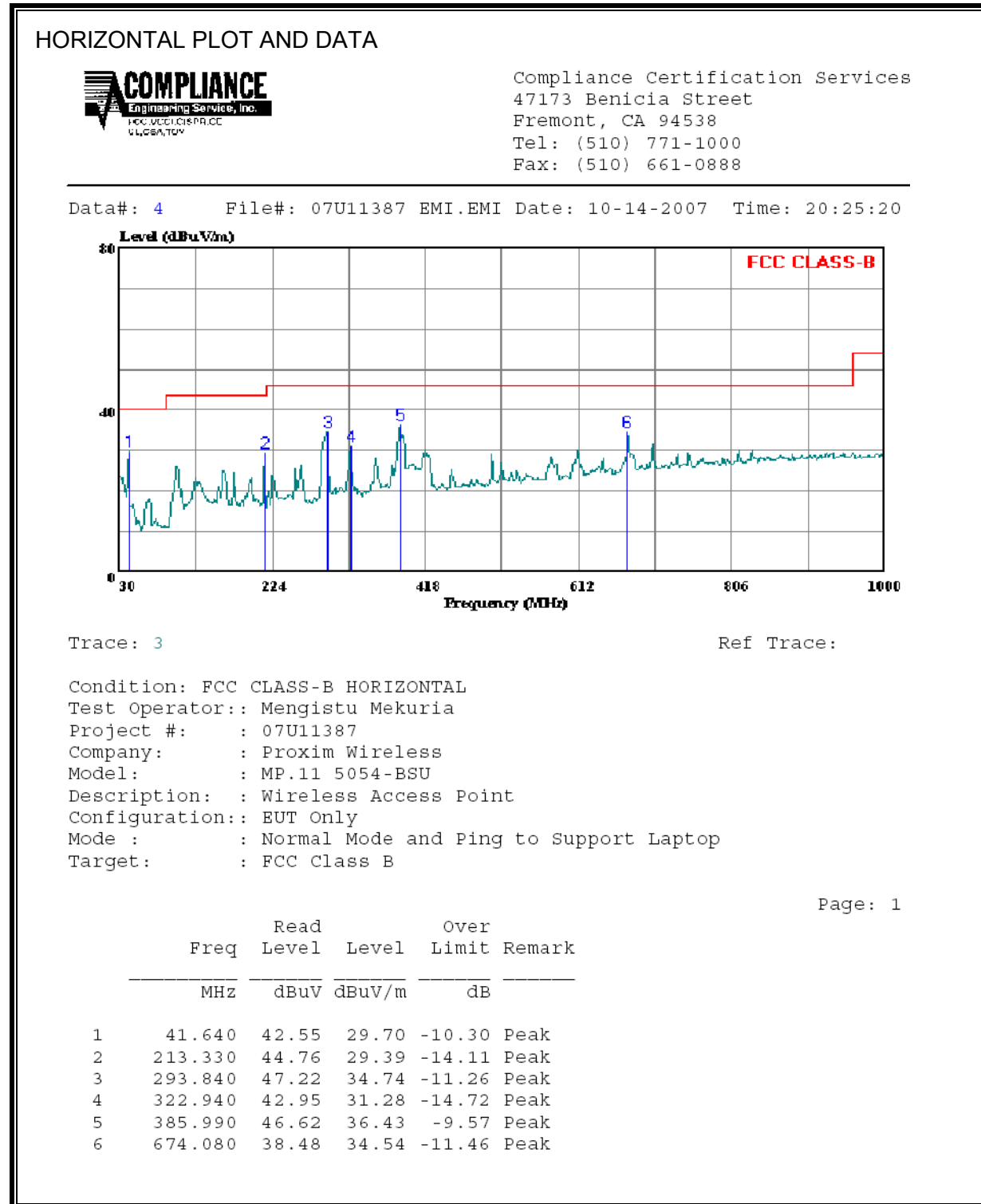
For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

### 7.1.1. WORST-CASE BELOW 1 GHz

#### SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)



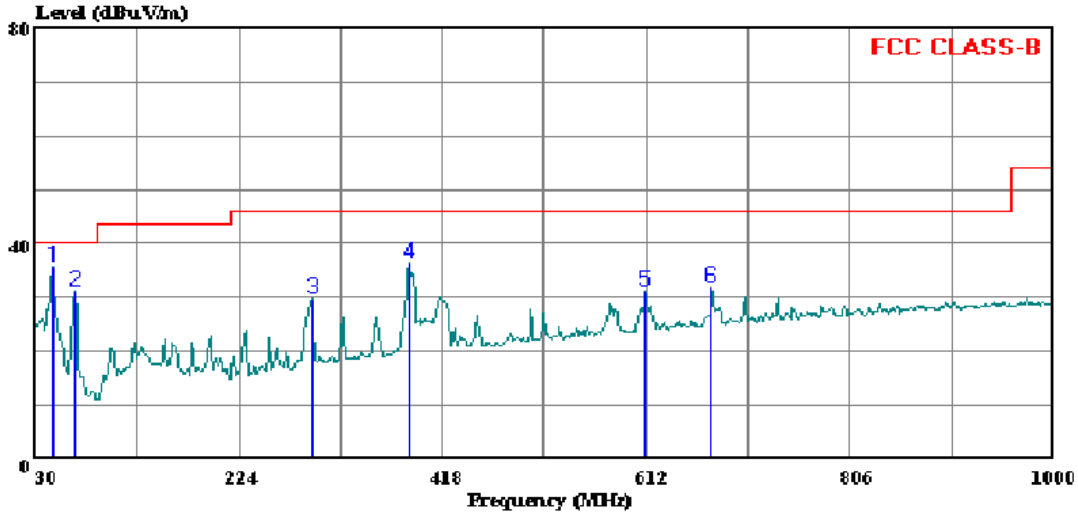
**SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)**

VERTICAL PLOT AND DATA



Compliance Certification Services  
 47173 Benicia Street  
 Fremont, CA 94538  
 Tel: (510) 771-1000  
 Fax: (510) 661-0888

Data#: 2 File#: 07U11387 EMI.EMI Date: 10-14-2007 Time: 20:13:09



Trace: 1

Ref Trace:

Condition: FCC CLASS-B VERTICAL  
 Test Operator:: Mengistu Mekuria  
 Project #: : 07U11387  
 Company: : Proxim Wireless  
 Model: : MP.11 5054-BSU  
 Description: : Wireless Access Point  
 Configuration: : EUT Only  
 Mode : : Normal Mode and Ping to Support Laptop  
 Target: : FCC Class B

Page: 1

	Read	Over		
Freq	Level	Level	Limit	Remark
MHz	dBuV	dBuV/m	dB	
1	46.490	52.05	35.78	-4.22 Peak
2	67.830	50.29	31.05	-8.95 Peak
3	293.840	42.25	29.77	-16.23 Peak
4	385.990	46.64	36.45	-9.55 Peak
5	611.030	36.48	31.33	-14.67 Peak
6	674.080	35.88	31.94	-14.06 Peak

### 7.1.2. WORST-CASE ABOVE 1 GHz

#### SPURIOUS EMISSIONS ABOVE 1000 MHz (WORST-CASE CONFIGURATION)

High Frequency Measurement																
Compliance Certification Services, Fremont 5m Chamber																
Company:		Proxim Wireless														
Project #:		07U11387														
Date:		10/14/2007														
Test Engineer:		Mengistu Mekuria														
Configuration:		EUT Alone														
Mode:		Normal Mode and Ping to Support Laptop														
<b>Test Equipment:</b>																
Horn 1-18GHz				Pre-amplifier 1-26GHz				Pre-amplifier 26-40GHz				Horn > 18GHz				
T73; S/N: 6717 @3m				T144 Miteq 3008A00931												
Hi Frequency Cables																
2 foot cable			3 foot cable			12 foot cable			HPF			Reject Filter			A-5m Chamber	
															<b>Peak Measurements</b> RBW=VBW=1MHz <b>Average Measurements</b> RBW=1MHz ; VBW=10Hz	
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)	
1.150	3.0	53.5	36.0	24.3	3.2	-39.3	0.0	0.0	41.8	24.3	74	54	-32.2	-29.7	V	
1.255	3.0	57.5	40.7	24.7	3.3	-39.1	0.0	0.0	46.4	29.7	74	54	-27.6	-24.3	V	
1.540	3.0	60.0	38.0	25.8	3.7	-38.7	0.0	0.0	50.7	28.7	74	54	-23.3	-25.3	V	
1.240	3.0	52.4	38.2	24.7	3.3	-39.1	0.0	0.0	41.2	27.0	74	54	-32.8	-27.0	H	
1.540	3.0	50.9	34.2	25.8	3.7	-38.7	0.0	0.0	41.6	24.9	74	54	-32.4	-29.1	H	
Rev. 4.12.7																
f	Measurement Frequency		Amp	Preamp Gain		Avg Lim	Average Field Strength Limit									
Dist	Distance to Antenna		D Corr	Distance Correct to 3 meters		Pk Lim	Peak Field Strength Limit									
Read	Analyzer Reading		Avg	Average Field Strength @ 3 m		Avg Mar	Margin vs. Average Limit									
AF	Antenna Factor		Peak	Calculated Peak Field Strength		Pk Mar	Margin vs. Peak Limit									
CL	Cable Loss		HPF	High Pass Filter												

## 8. AC POWER LINE CONDUCTED EMISSIONS

### LIMITS

FCC §15.207 (a)

RSS-Gen 7.2.2

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

\*Decreases with the logarithm of the frequency.

### TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4.

The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

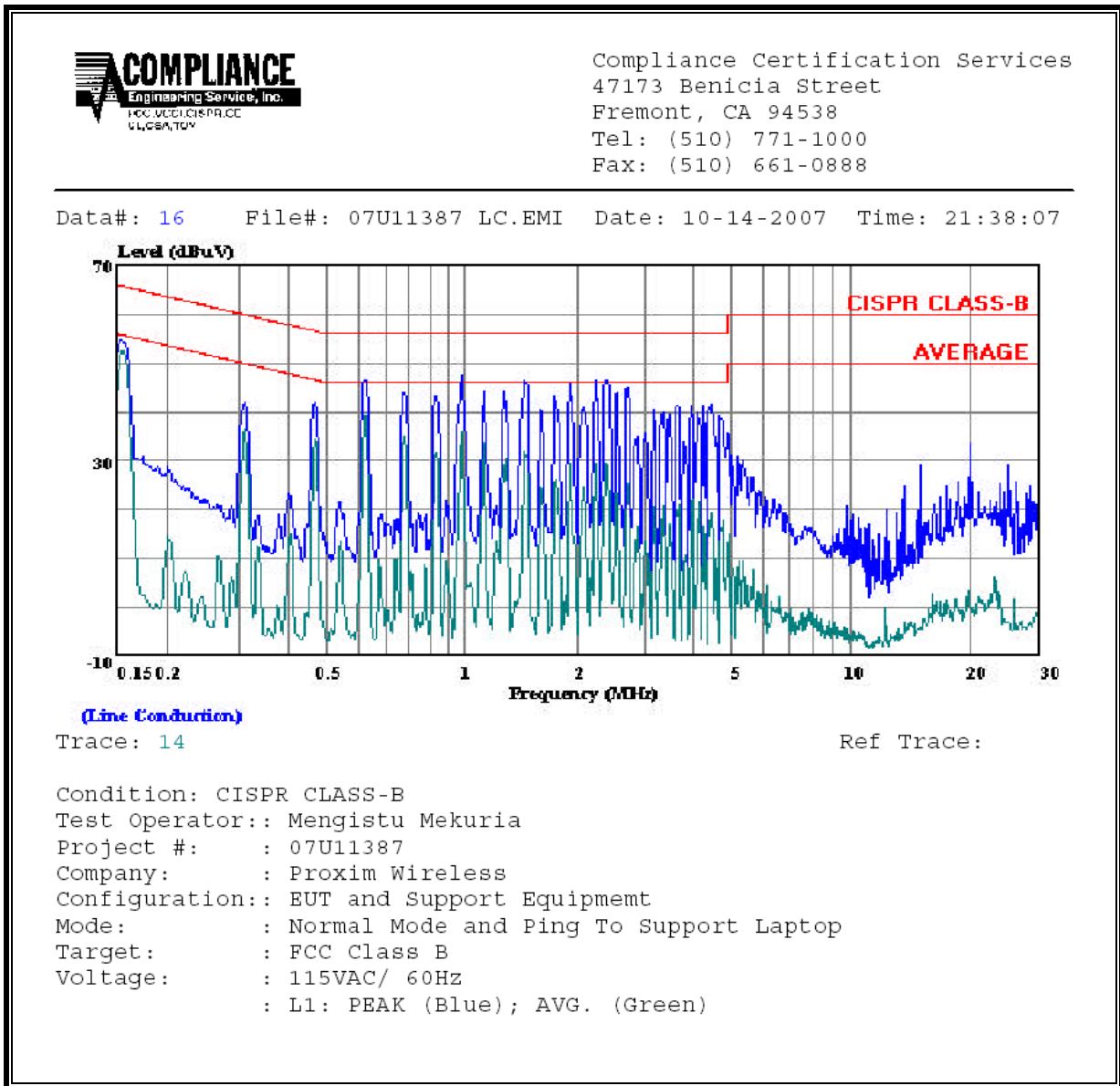
Line conducted data is recorded for both NEUTRAL and HOT lines.

**RESULTS**

**6 WORST EMISSIONS**

CONDUCTED EMISSIONS DATA (115VAC 60Hz)										
Freq. (MHz)	Reading			Class (dB)	Limit QP	EN B		Margin		Remark L1 / L2
	PK (dBuV)	QP (dBuV)	AV (dBuV)			AV	QP (dB)	AV (dB)		
0.62	46.50	--	39.20	0.00	56.00	46.00	-9.50	-6.80	L1	
1.08	47.38	--	35.97	0.00	56.00	46.00	-8.62	-10.03	L1	
2.51	46.62	--	29.35	0.00	56.00	46.00	-9.38	-16.65	L1	
0.62	47.46	--	40.66	0.00	56.00	46.00	-8.54	-5.34	L2	
1.08	47.86	--	36.90	0.00	56.00	46.00	-8.14	-9.10	L2	
20.06	56.08	--	6.09	0.00	60.00	50.00	-3.92	-43.91	L2	
6 Worst Data										

**LINE 1 RESULTS**



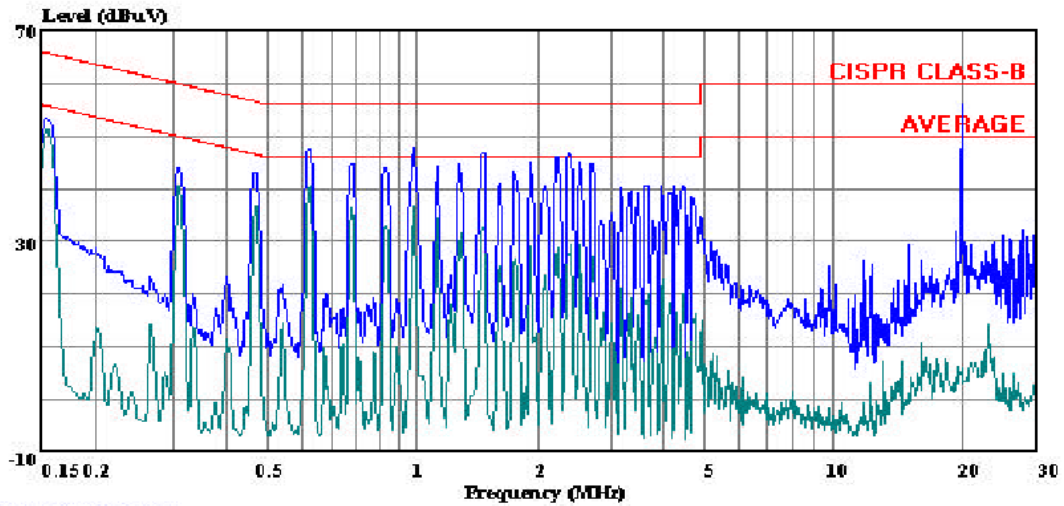


**LINE 2 RESULTS**



Compliance Certification Services  
47173 Benicia Street  
Fremont, CA 94538  
Tel: (510) 771-1000  
Fax: (510) 661-0888

Data#: 9 File#: 07U11387 LC.EMI Date: 10-14-2007 Time: 21:26:59



(Line Conduction)

Trace: 7

Ref Trace:

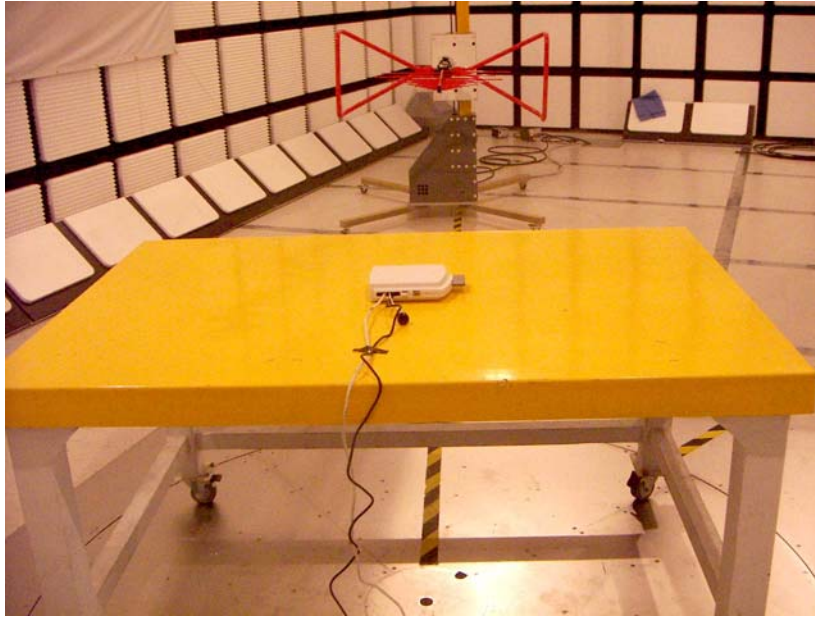
Condition: CISPR CLASS-B  
Test Operator:: Mengistu Mekuria  
Project #: : 07U11387  
Company: : Proxim Wireless  
Configuration:: EUT and Support Equipment  
Mode: : Normal Mode and Ping To Support Laptop  
Target: : FCC Class B  
Voltage: : 115VAC/ 60HZ  
: L2: PEAK (Blue); AVG. (Green)

## 9. SETUP PHOTOS

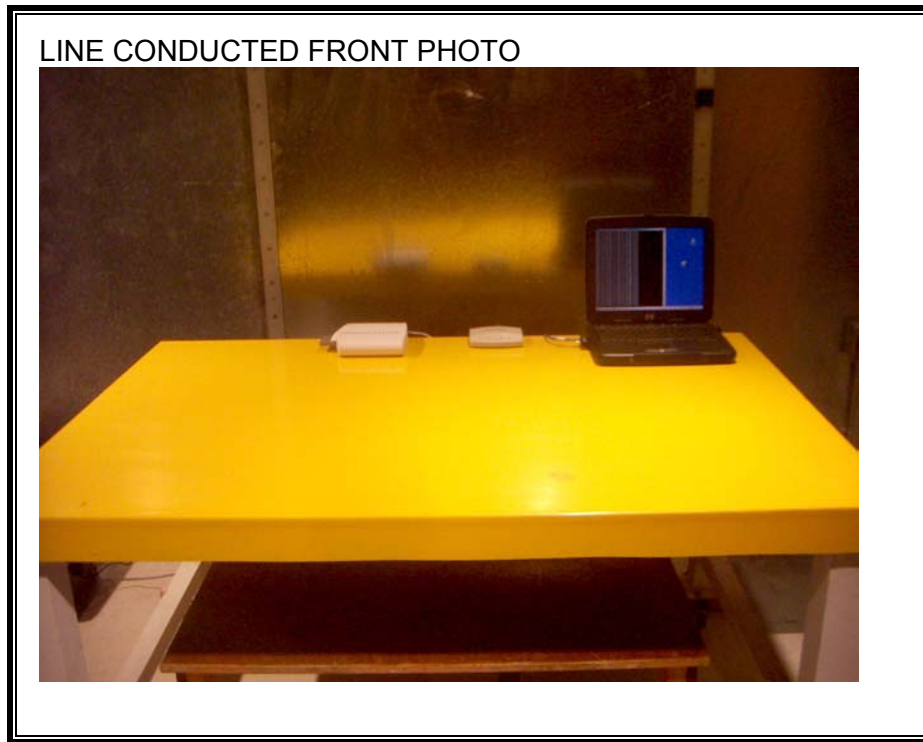
### DIGITAL DEVICE RADIATED EMISSIONS SETUP



DIGITAL DEVICE BACK PHOTO



**POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP**





**END OF REPORT**