FCC CFR47 PART 15 SUBPART B
ICES-003 ISSUE 4, 2004-02
DECLARATION OF CONFORMITY TEST REPORT

FOR

USB MODEM

MODEL NUMBER: COMPASS 597

FCC ID: N7NC597

IC: 2417C-C597

REPORT NUMBER: 07U11455-4

ISSUE DATE: MARCH 03, 2008

Prepared for

SIERRA WIRELESS
2290 COSMOS CT.
CARLSBAD, CA 92010, U.S.A

Prepared by

COMPLIANCE CERTIFICATION SERVICES
47173 BENICIA STREET
FREMONT, CA 94538, U.S.A.
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	02/29/08	Initial Issue	T. Chan

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	SIERRA WIRELESS 2290 COSMOS CT. CARLSBAD, CA 92010, USA
EUT DESCRIPTION:	USB MODEM
MODEL:	COMPASS 597
SERIAL NUMBER:	FCC #1
DATE TESTED:	FEBRUARY 29 to MARCH 03, 2008

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 15 SUBPART B	No Non-Compliance Noted
ICES-003 ISSUE 4, 2004-02	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:

THU CHAN
EMC SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES

Tested By:

DOUG ANDERSON
EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2003 and ICES-003 ISSUE 4, 2004-02.

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
Power Line Conducted Emission	+/- 2.3 dB
Radiated Emission	+/- 3.4 dB

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a dual band 800 / 1900MHz USB Modem CDMA Module, and manufactured by Sierra Wireless, Inc.

GENERAL INFORMATION

CHASSIS MATERIAL	METAL
ENCLOSURE MATERIAL	PLASTIC
POWER REQUIREMENTS	100-240 VAC / 50-60 Hz
POWERLINE FILTER MANUFACTURER AND MODEL	BUILT-IN
LIST OF ALL OSCILLATOR FREQUENCIES GREATER THAN OR EQUAL TO 9 kHz	2.0 GHz CPU

5.2. TEST CONFIGURATIONS

The following configurations were investigated during preliminary testing:

EUT Configuration	Description
Typical	EUT placed in USB cradle connected to the laptop with accompanying printer, modem, and USB Mouse.

5.3. MODE(S) OF OPERATION

Mode	Description
Receiving & EMCTest	Receiving & I/O ports activated with scrolling “H” pattern on the laptop display.

5.4. SOFTWARE AND FIRMWARE

The test software used during the test was EMC Test software.

5.5. MODIFICATIONS

No modifications were made during testing.

5.6. DETAILS OF TESTED SYSTEM

SUPPORT EQUIPMENT & PERIPHERALS

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Printer	Microline 186	D22300A	AE5A048148A0	DoC
USB Mouse	Logitech	90.00026.7730	HCA55002169	DoC
Modem	Hayes	4714US	A02247143261	BFJUSA-31719-M5-E
Laptop	Toshiba	PSDAGU-00J00V	37065149W	DoC
Laptop AC Adapter	Targus	APM12	R0708027330	DoC

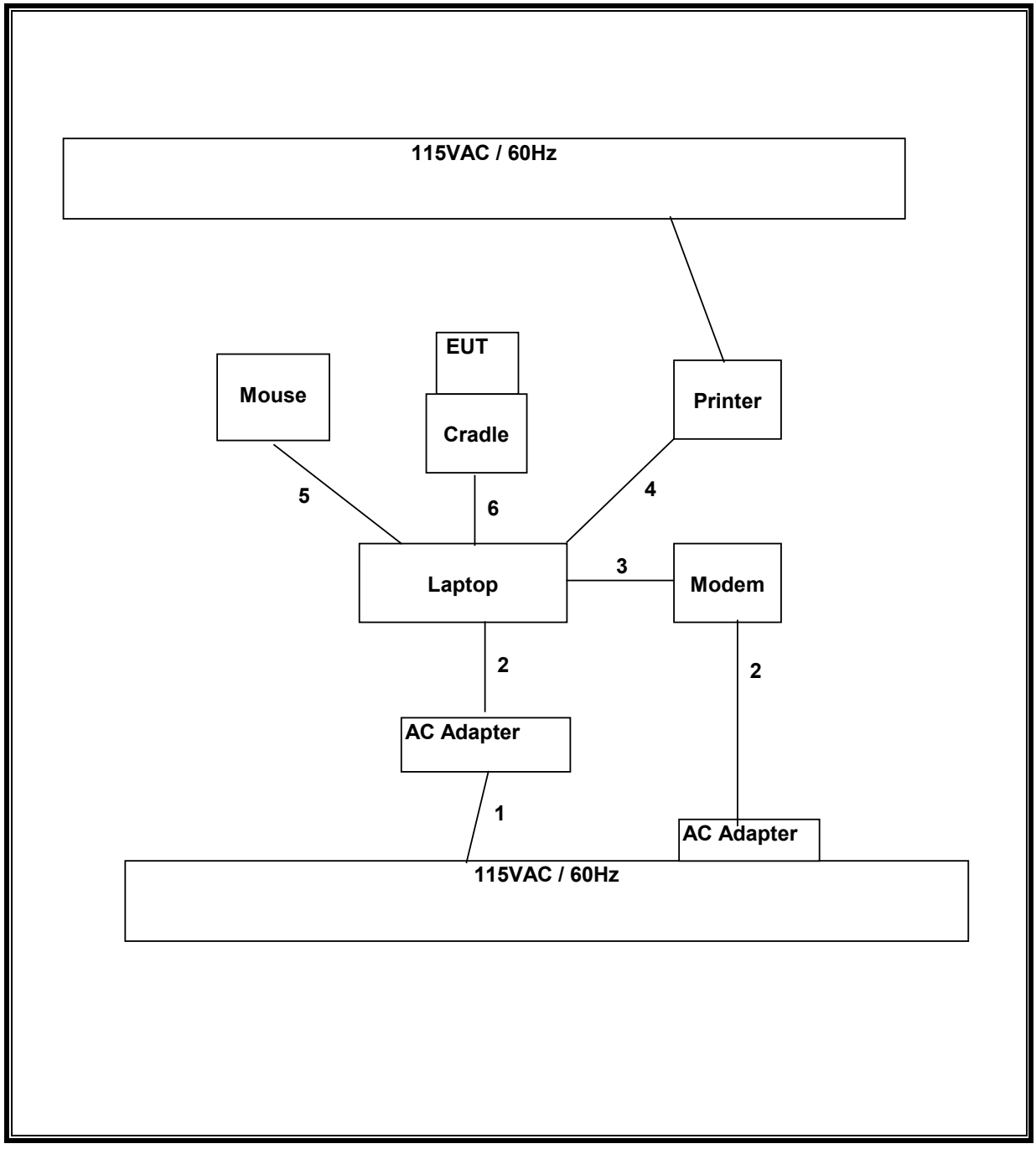
I/O CABLES

I/O CABLE LIST						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length**	**Remarks**
1	AC Input	1	US 115V	Un-shielded	2m	
2	DC Input	2	US 115V	Un-shielded	2m	
3	Modem	1	RJ-11	Un-shielded	2m	
4	USB	1	USB	Shielded	2m	
5	USB	1	USB	Shielded	2m	
6	USB	1	USB	Shielded	20cm	

TEST SETUP

The EUT is installed in a typical configuration. Test software exercised the EUT.

TEST SETUP DIAGRAM



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**	**Asset**	**Cal Due**
EMI Receiver, 2.9 GHz	Agilent / HP	8542E	C00957	06/12/08
RF Filter Section, 2.9 GHz	Agilent / HP	85420E	C00958	06/12/08
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01011	9/28/2008
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00885	5/9/2008
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01012	8/7/2008
Antenna, Horn, 18 GHz	EMCO	3115	C00945	4/15/2008
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01063	9/27/2008
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	8/8/2009
LISN, 30 MHz	FCC	LISN-50/250-25-2	N02625	10/25/2008

7. APPLICABLE LIMITS AND TEST RESULTS

7.1. RADIATED EMISSIONS

TEST PROCEDURE

ANSI C63.4

The highest clock frequency generated or used in the EUT is 2 GHz, therefore the frequency range was investigated from 30 MHz to 10GHz.

LIMIT

§15.109 (g) As an alternative to the radiated emission limits shown in paragraphs (a) and (b) of this section, digital devices may be shown to comply with the standards contained in Third Edition of the International Special Committee on Radio Interference (CISPR), Pub. 22, "Information Technology Equipment—Radio Disturbance Characteristics—Limits and Methods of Measurement" (incorporated by reference, see §15.38). In addition:

(1) The test procedure and other requirements specified in this part shall continue to apply to digital devices.

(2) If, in accordance with §15.33 of this part, measurements must be performed above 1000 MHz, compliance above 1000 MHz shall be demonstrated with the emission limit in paragraph (a) or (b) of this section, as appropriate. Measurements above 1000 MHz may be performed at the distance specified in the CISPR 22 publications for measurements below 1000 MHz provided the limits in paragraphs (a) and (b) of this section are extrapolated to the new measurement distance using an inverse linear distance extrapolation factor (20 dB/decade), e.g., the radiated limit above 1000 MHz for a Class B digital device is 150 uV/m, as measured at a distance of 10 meters.

(3) The measurement distances shown in CISPR Pub. 22, including measurements made in accordance with this paragraph above 1000 MHz, are considered, for the purpose of §15.31(f)(4) of this part, to be the measurement distances specified in this part.

(4) If the radiated emissions are measured to demonstrate compliance with the alternative standards in this paragraph, compliance must also be demonstrated with the conducted limits shown in §15.107(e).

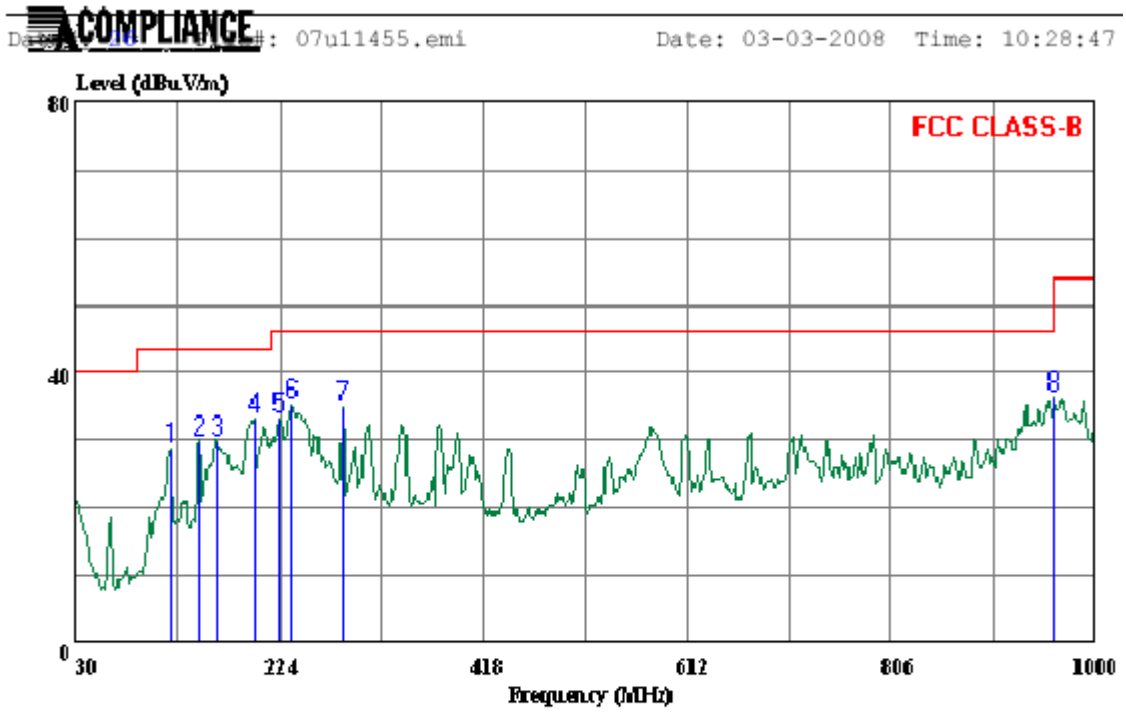
Limits for radiated disturbance of Class B ITE at measuring distance of 10 m	
Frequency range (MHz)	Quasi-peak limits (dBµV/m)
30 to 230	30
230 to 1000	37
Note: The lower limit shall apply at the transition frequency.	

Limits for radiated disturbance of Class B ITE at measuring distance of 3 m		
Frequency range (MHz)	Peak limits (dBµV/m)	Average limits (dBµV/m)
Above 1000	74	54

RESULTS

No non-compliance noted:

HORIZONTAL PLOT



Trace: 25 Ref Trace:

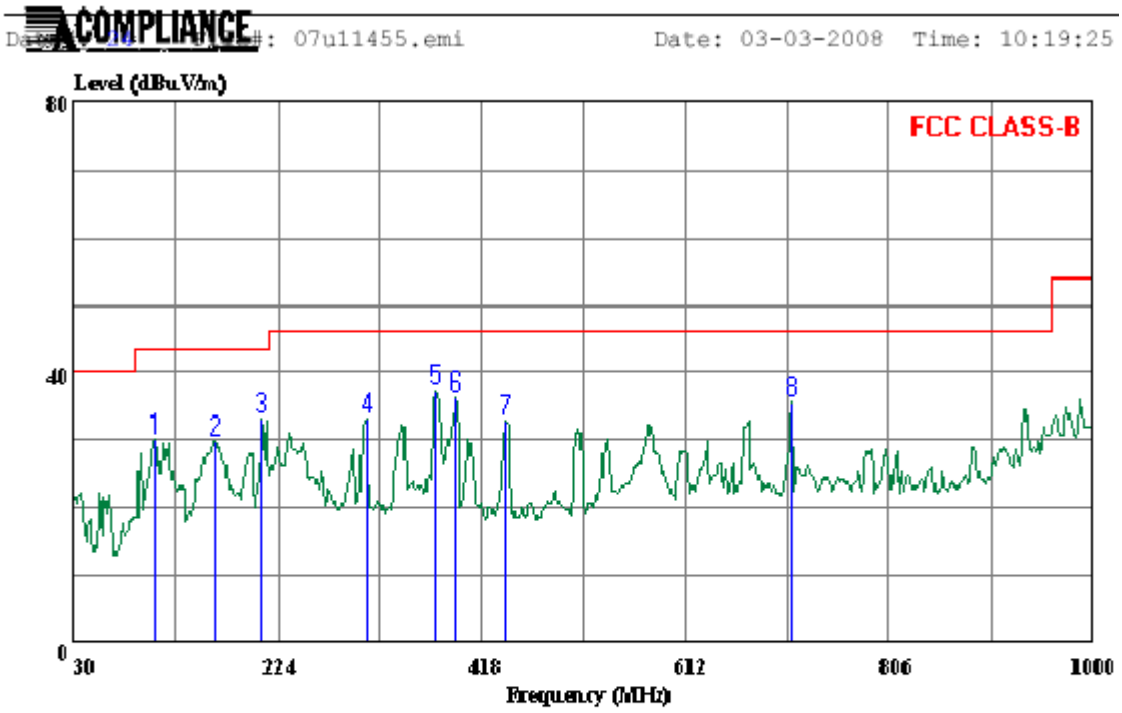
Condition: FCC CLASS-B HORIZONTAL
Engineer: : Doug Anderson
Company: : Sierra Wireless
Project #: : 07U11455
Test Configuration:: EUT/New USB Cable with Support Equip.
Mode of operation: : Normal Mode
Test Target: : FCC Class B

HORIZONTAL DATA

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	119.240	42.25	-13.42	28.83	43.50	-14.67	Peak
2	146.400	43.30	-13.67	29.63	43.50	-13.87	Peak
3	163.860	43.95	-14.34	29.61	43.50	-13.89	Peak
4	198.780	46.80	-13.63	33.17	43.50	-10.33	Peak
5	223.030	48.36	-15.08	33.28	46.00	-12.72	Peak
6	235.640	50.16	-14.67	35.49	46.00	-10.51	Peak
7	284.140	47.90	-12.86	35.04	46.00	-10.96	Peak
8	960.230	36.89	-0.67	36.22	54.00	-17.78	Peak

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

VERTICAL PLOT



Trace: 23 Ref Trace:

Condition: FCC CLASS-B VERTICAL
Engineer: : Doug Anderson
Company: : Sierra Wireless
Project #: : 07U11455
Test Configuration:: EUT/New USB Cable with Support Equip.
Mode of operation: : Normal Mode
Test Target: : FCC Class B

VERTICAL DATA

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	106.630	45.85	-15.77	30.08	43.50	-13.42	Peak
2	163.860	44.00	-14.34	29.66	43.50	-13.84	Peak
3	208.480	48.11	-14.79	33.32	43.50	-10.18	Peak
4	308.390	45.25	-12.04	33.21	46.00	-12.79	Peak
5	374.350	47.83	-10.46	37.37	46.00	-8.63	Peak
6	392.780	46.55	-10.08	36.47	46.00	-9.53	Peak
7	441.280	41.79	-8.78	33.01	46.00	-12.99	Peak
8	712.880	38.96	-3.31	35.65	46.00	-10.35	Peak

SPURIOUS EMISSIONS ABOVE 1000 MHz (WORST-CASE CONFIGURATION)

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Company: Sierra Wireless
Project #: 07U11455
Date: 02/29/2008
Test Engineer: Doug Anderson
Configuration: EUT in USB Cradle w/Support Equipment
Mode: Normal

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T60; S/N: 2238 @3m	T145 Agilent 3008A005(			FCC Class B

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
		B-5m Chamber		

Peak Measurements
RBW=VBW=1MHz
Average Measurements
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)
1.001	3.0	60.6	40.6	25.4	3.2	-36.1	0.0	0.0	53.1	33.1	74	54	-20.9	-20.9	V
1.499	3.0	47.9	42.7	26.7	3.9	-35.8	0.0	0.0	42.7	37.4	74	54	-31.3	-16.6	V
1.590	3.0	44.3	31.1	26.9	4.0	-35.7	0.0	0.0	39.5	26.3	74	54	-34.5	-27.7	V
1.722	3.0	68.9	41.3	27.2	4.2	-35.6	0.0	0.0	64.7	37.1	74	54	-9.3	-16.9	V
2.002	3.0	55.4	34.1	27.9	4.5	-35.4	0.0	0.0	52.5	31.2	74	54	-21.5	-22.8	V
1.007	3.0	63.4	43.9	25.4	3.2	-36.1	0.0	0.0	56.0	36.4	74	54	-18.0	-17.6	H
1.183	3.0	46.8	37.0	25.9	3.5	-36.0	0.0	0.0	40.1	30.4	74	54	-33.9	-23.6	H
1.722	3.0	45.4	34.2	27.2	4.2	-35.6	0.0	0.0	41.2	30.0	74	54	-32.8	-24.0	H
2.002	3.0	56.4	33.1	27.9	4.5	-35.4	0.0	0.0	53.5	30.2	74	54	-20.5	-23.8	H
2.120	3.0	45.4	30.0	28.1	4.7	-35.3	0.0	0.0	42.9	27.5	74	54	-31.1	-26.5	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		

7.2. AC MAINS LINE CONDUCTED EMISSIONS

TEST PROCEDURE

ANSI C63.4

LIMIT

§15.107 (a) Except for Class A digital devices, for equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the band edges.

Frequency range (MHz)	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50
Notes: 1. The lower limit shall apply at the transition frequencies 2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.		

RESULTS

No Non-Compliance Noted:

6 WORST EMISSIONS

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	EN_B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.18	36.81	--	29.00	0.00	64.63	54.63	-27.82	-25.63	L1
0.24	30.72	--	24.99	0.00	62.13	52.13	-31.41	-27.14	L1
21.49	34.18	--	16.17	0.00	60.00	50.00	-25.82	-33.83	L1
0.18	33.83	--	29.94	0.00	64.63	54.63	-30.80	-24.69	L2
0.24	30.70	--	24.00	0.00	62.13	52.13	-31.43	-28.13	L2
21.60	30.78	--	15.21	0.00	60.00	50.00	-29.22	-34.79	L2
6 Worst Data									

LINE 1 RESULTS

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

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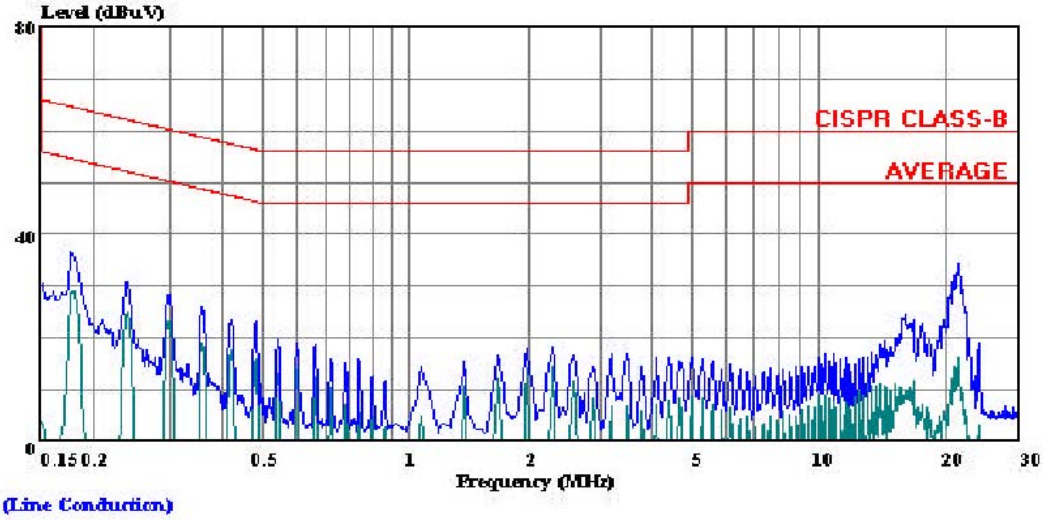


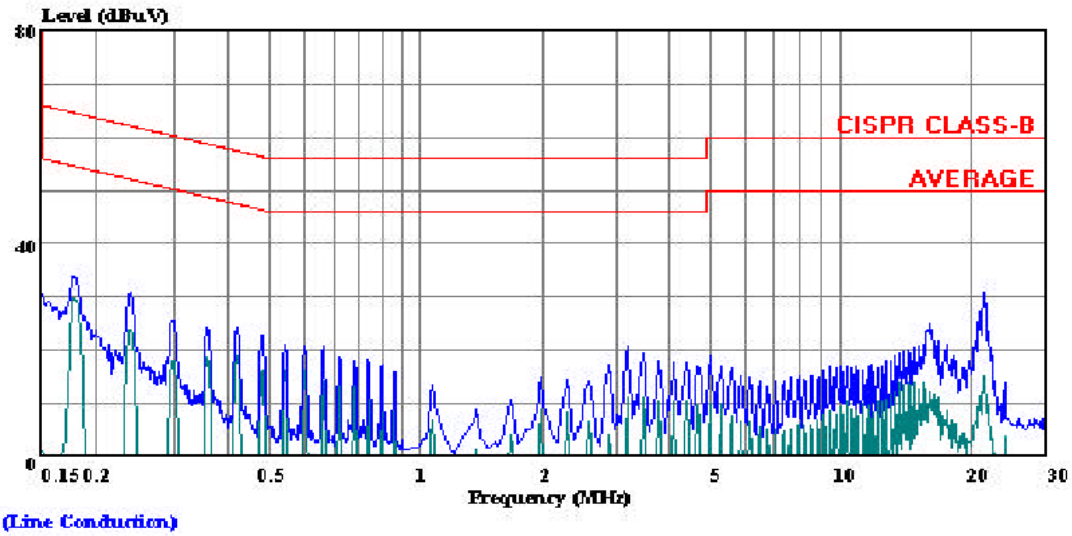
Trace: 47 Ref Trace:

Condition: CISPR CLASS-B
Test Operator:: Doug Anderson
Project #: : 07U11455
Company: : Sierra Wireless
Configuration:: EUT/New USB Cable with Support Equip.
Mode: : Normal
Target: : FCC Class B
Voltage: : 115VAC / 60Hz
: L1: Peak (Blue), Average (Green)

LINE 2 RESULTS

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

Data#: 56 File#: 07u11455.emi Date: 03-03-2008 Time: 11:05:22



(Line Conduction)

Trace: 54 Ref Trace:

Condition: CISPR CLASS-B
Test Operator:: Doug Anderson
Project #: : 07U11455
Company: : Sierra Wireless
Configuration:: EUT/New USB Cable with Support Equip.
Mode: : Normal
Target: : FCC Class B
Voltage: : 115VAC / 60Hz
: L2: Peak (Blue), Average (Green)