FCC CFR47 PART 15 SUBPART B
ICES-003 ISSUE 4, 2004-02

CERTIFICATION TEST REPORT

FOR

850/900/1800/1900/2100 MHZ USB MODEM

MODEL NUMBER: COMPASS 885

REPORT NUMBER: 08U11646-2, Revision A

ISSUE DATE: MAY 06, 2008

Prepared for
SIERRA WIRELESS INC.
13811 WIRELESS WAY
RICHMOND, BC V6V 3A4, CANADA

Prepared by
COMPLIANCE CERTIFICATION SERVICES
47173 BENICIA STREET
FREMONT, CA 94538, U.S.A.
TEL: (510) 771-1000
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
---	04/25/08	Initial Issue	T. Chan
A	05/06/08	Corrected to JBP report	T. Chan

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SIERRA WIRELESS
13811 WIRELESS WAY
RICHMOND, BC V6V 3A4, CANADA

EUT DESCRIPTION: 850/900/1800/1900/2100 MHZ USB WIRELESS MODEM

MODEL: COMPASS 885

SERIAL NUMBER: 2130

DATE TESTED: APRIL 4, 2007

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 15 SUBPART B	Pass
ICES-003 ISSUE 4, 2004-02	Pass

Compliance Certification Services, Inc. (CCS) tested the above equipment in accordance with the requirements set forth in the above standards. All expressions of Pass/Fail in this report are opinions expressed by CCS based on interpretations of the test results. 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:

CHIN PANG
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. The sites are constructed in conformance with the requirements of ANSI C63.4, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

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
Radiated Emission, Above 2000 MHz	+/- 4.3 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 a multi-band wireless modem operating on the GSM/GPRS/EDGE/UMTS network.

GENERAL INFORMATION

CHASSIS MATERIAL	PLASTIC
ENCLOSURE MATERIAL	PLASTIC
POWER REQUIREMENTS	5VDC from USB port
POWERLINE FILTER MANUFACTURER AND MODEL	N/A
THE HIGHEST OSCILLATOR FREQUENCY OR CPU CLOCK	3.9796 GHz

5.2. WORST CASE CONFIGURATIONS

The investigation conducted to determine the worst-case scenario between two different configurations, EUT directly attached to a laptop (without USB cable) and EUT connected to a laptop via USB cable. The worst-case configuration was determined to be EUT connected via USB cable. Then all tests have done with this configuration, i.e. EUT connected to a laptop via USB cable.

5.3. MODE(S) OF OPERATION

Mode	Description
Receiving & EMCTest	Receiving & I/O ports activated with H' patterns scrolling on the screen display.

5.4. SOFTWARE AND FIRMWARE

The test software used during the test was EMCTest software.

5.5. MODIFICATIONS

No modifications were made during testing.

5.6. DETAILS OF TESTED SYSTEM

SUPPORT EQUIPMENT & PERIPHERALS

Description	Manufacturer	Model	Serial Number	FCC ID
Telephone Line Simulator	Teltone	TLS 3	10/17/1906	N/A
Printer	OKI DATA	D22300A	AE5C018438A0	DoC
USB Mouse	Microsoft	X802382	868042	DoC
Laptop	Dell	Inspiiron 600m	CN-08U077-48643-35J-0920	DoC
AC/DC	Dell	NADP-130AB D	CN-0X7329-48661-72E-07TN	DoC

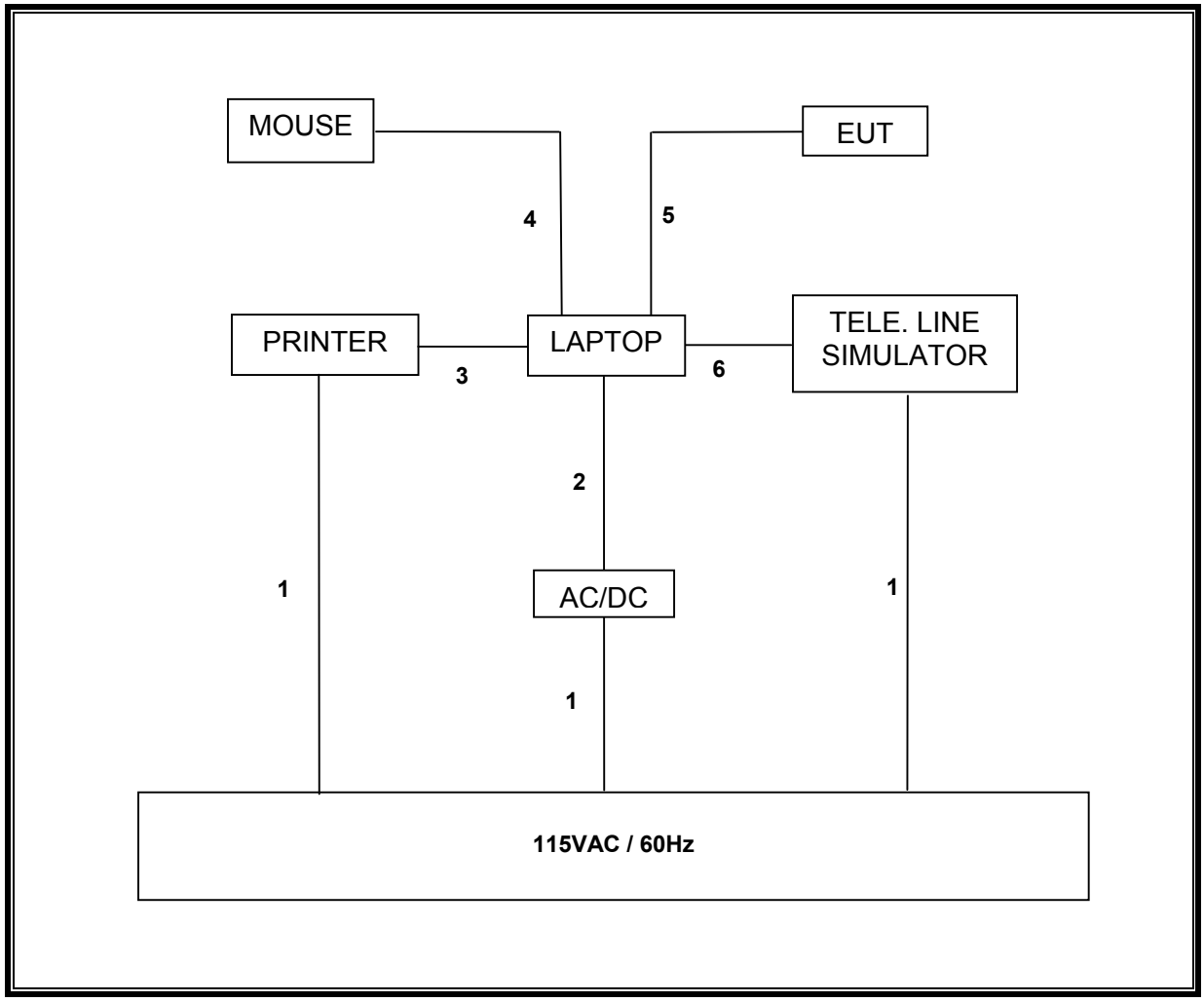
I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identica Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	3	US 115V	Un-shielded	2.0m	N/A
2	DC	1	DC	Un-shielded	2.0m	Ferrite at one end
3	Parallel	1	DB25	Shielded	1.5m	N/A
4	USB	1	Mouse	Un-shielded	2.0m	Ferrite at one end
5	USB	1	EUT	Un-shielded	0.5m	Ferrite at one end
6	RJ11	1	Tele. Line	Un-shielded	2.0m	N/A

TEST SETUP

The EUT is installed into a laptop via USB cable, and 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**	**Serial Number**	**Cal Due**
RF Filter Section, 2.9 GHz	Agilent / HP	85420E	C00958	6/12/2008
EMI Receiver, 2.9 GHz	Agilent / HP	8542E	C00957	6/12/2008
Spectrum Analyzer 3 Hz ~ 44 GHz	Agilent / HP	E4446A	MY45300064	10/27/2008
Preamplifier, 1 ~ 26.5 GHz	Agilent / HP	8449B	C00749	9/27/2008
Preamplifier, 1300 MHz	Agilent / HP	8447D	1937A02062	3/31/2009
Antenna, Bilog 30 MHz ~ 2 Ghz	Sunol Sciences	JB1	A121003	9/28/2008
Antenna, Horn, 18 GHz	EMCO	3115	C00872	4/15/2008
EMI Test Receiver	R & S	ESHS 20	827129/006	8/6/2009
LISN, 30 MHz	FCC	LISN-50/250-25-2	N02625	10/25/2008
LISN, 10 kHz ~ 30 MHz	Solar	8012-50-R-24-BNC	N02481	10/26/2008

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 3.9796 GHz. Therefore the frequency range was investigated from 30 MHz to 20 GHz.

LIMIT

§15.109 (a) Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Limits for radiated disturbance of Class B ITE at measuring distance of 3 m	
Frequency range (MHz)	Quasi-peak limits (dBµV/m)
30 to 88	40
88 to 216	43.5
216 to 960	46
Above 960 MHz	54
Note: The lower limit shall apply at the transition frequency.	

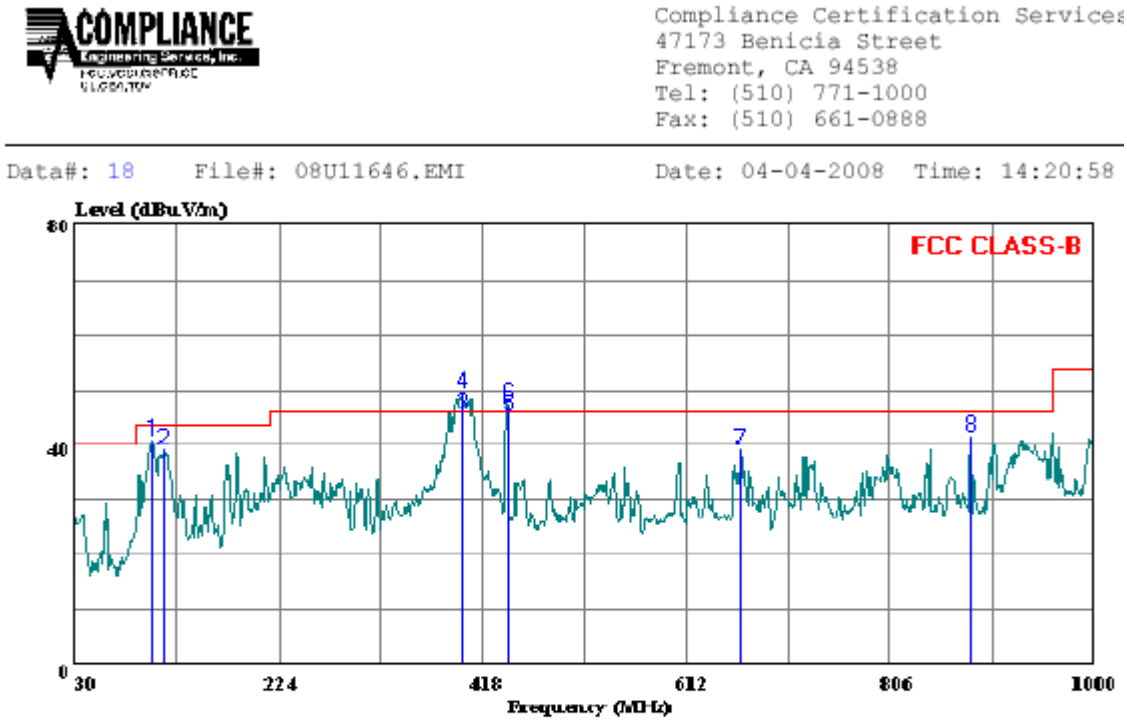
RESULTS

No non-compliance noted:

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

WITH USB CABLE

HORIZONTAL PLOT



HORIZONTAL DATA

Page: 1

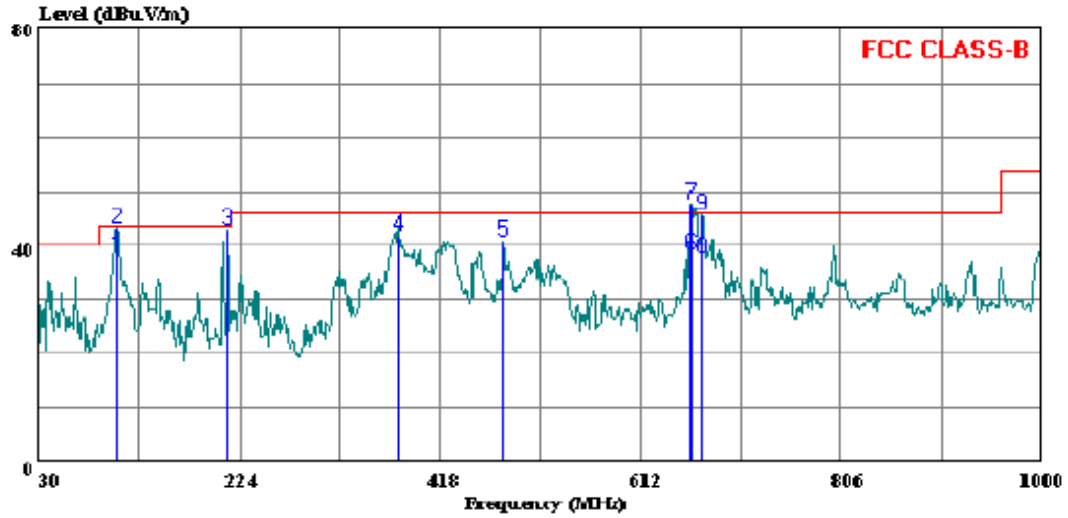
		Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1		103.720	60.67	-19.78	40.89	43.50	-2.61	Peak
2		113.420	57.00	-17.99	39.01	43.50	-4.49	Peak
3		398.600	59.20	-13.49	45.71	46.00	-0.29	QP
4	*	398.600	63.17	-13.49	49.68	46.00	3.68	Peak
5		442.250	57.60	-12.34	45.26	46.00	-0.74	QP
6	*	442.250	59.83	-12.34	47.50	46.00	1.50	Peak
7		663.410	48.17	-9.01	39.16	46.00	-6.84	Peak
8		883.600	47.00	-5.29	41.71	46.00	-4.29	Peak

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

VERTICAL PLOT

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

Data#: 14 File#: 08U11646.EMI Date: 04-04-2008 Time: 13:57:40



Trace: 11 Ref Trace:

Condition: FCC CLASS-B VERTICAL
Test Operator:: Tom Chen
Project #: : 08U11646
Company: : Sierra Wireless Inc,.
Configuration:: EUT With cable and Peripheral
Mode : : Normal
Target: : FCC Class B

VERTICAL DATA

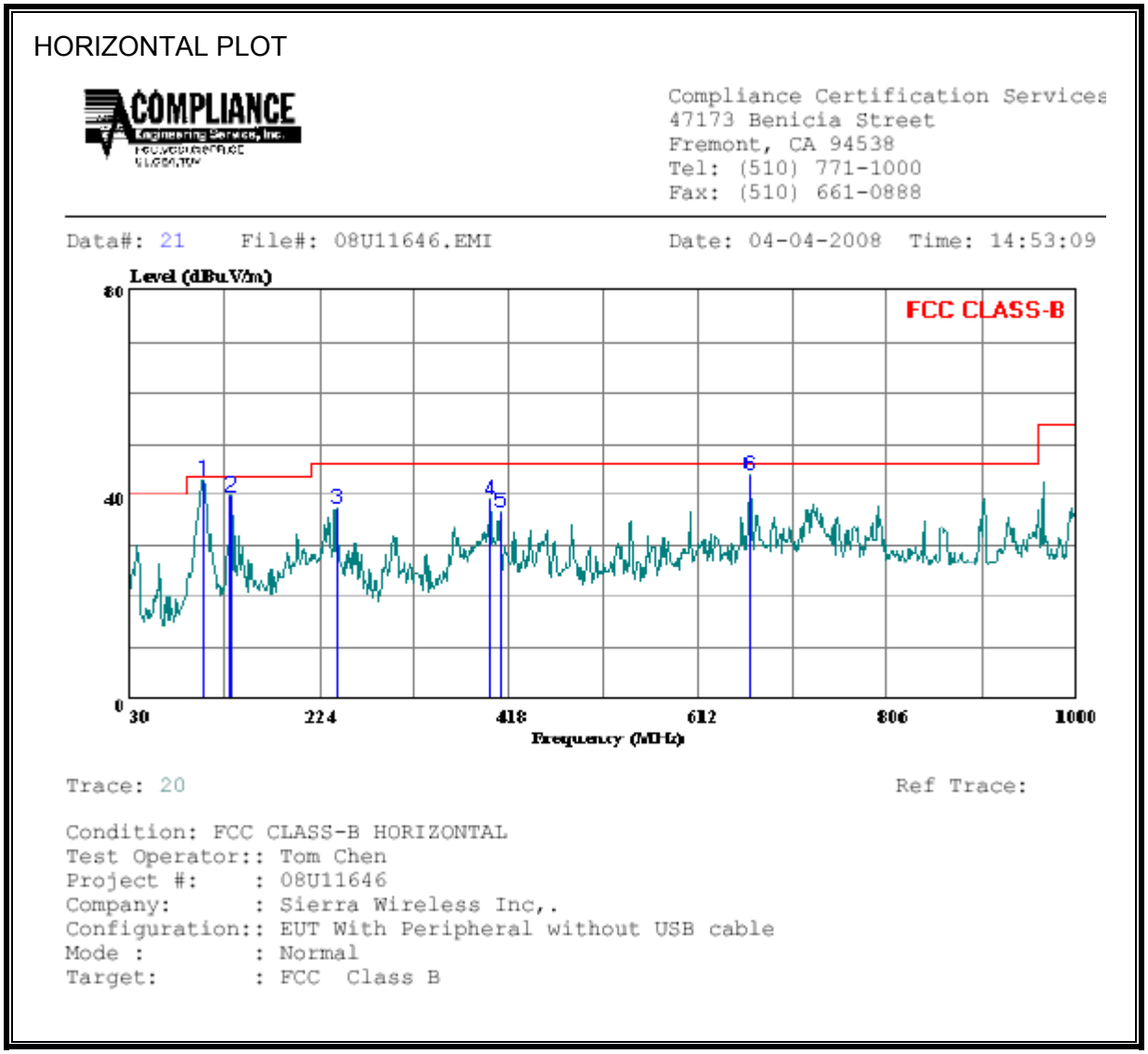
Page: 1

		Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1		105.660	57.50	-19.47	38.03	43.50	-5.47	QP
2		105.660	62.83	-19.47	43.37	43.50	-0.13	Peak
3		212.360	62.00	-18.93	43.07	43.50	-0.43	Peak
4		378.230	56.00	-13.96	42.04	46.00	-3.96	Peak
5		479.110	52.50	-11.71	40.79	46.00	-5.21	Peak
6		661.470	47.30	-8.88	38.42	46.00	-7.58	QP
7	*	661.470	56.50	-8.88	47.62	46.00	1.62	Peak
8		671.170	46.50	-8.89	37.61	46.00	-8.39	QP
9		671.170	54.50	-8.92	45.58	46.00	-0.42	Peak

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

WITHOUT USB CABLE

HORIZONTAL PLOT



HORIZONTAL DATA

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	105.660	62.33	-19.47	42.87	43.50	-0.63	Peak
2	132.820	56.50	-16.66	39.84	43.50	-3.66	Peak
3	241.460	55.50	-18.06	37.44	46.00	-8.56	Peak
4	399.570	52.50	-13.47	39.03	46.00	-6.97	Peak
5	408.300	50.00	-13.19	36.81	46.00	-9.19	Peak
6	665.350	53.00	-9.02	43.98	46.00	-2.02	Peak

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

VERTICAL PLOT

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

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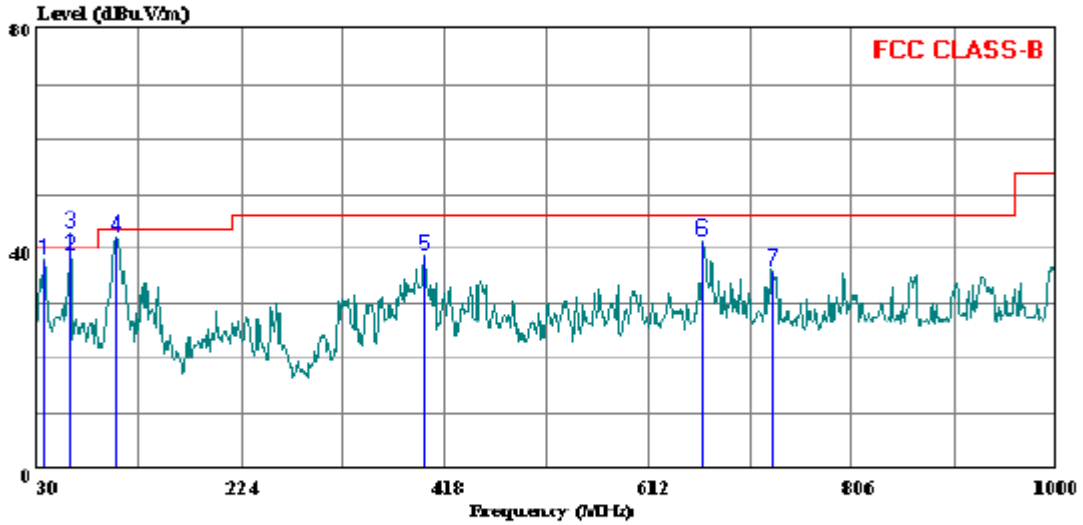


Trace: 22 Ref Trace:

Condition: FCC CLASS-B VERTICAL
Test Operator:: Tom Chen
Project #: : 08U11646
Company: : Sierra Wireless Inc,.
Configuration:: EUT With Peripheral without USB cable
Mode : : Normal
Target: : FCC Class B

VERTICAL DATA

Page: 1

		Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1		35.820	50.35	-12.14	38.21	40.00	-1.79	Peak
2		62.010	61.80	-23.14	38.66	40.00	-1.34	QP
3	*	62.010	66.00	-23.05	42.95	40.00	2.95	Peak
4		105.660	61.83	-19.47	42.37	43.50	-1.13	Peak
5		398.600	52.33	-13.49	38.85	46.00	-7.15	Peak
6		663.410	50.67	-9.01	41.66	46.00	-4.34	Peak
7		729.370	44.00	-7.81	36.19	46.00	-9.81	Peak

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

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Company: Sierra Wireless
Project #: 08U11646
Date: 4/4/2008
Test Engineer: Chin Pang
Configuration: EUT/Support Equipment (Worst Case-With USB Cable and Micro memory stick)
Mode: Normal

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T136; M/N: 3117 @3m	T144 Miteq 3008A00931			FCC 15.209

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
		A-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)
1.061	3.0	56.0	38.0	27.4	3.1	-39.4	0.0	0.0	47.1	29.1	74	54	-26.9	-24.9	V
1.333	3.0	55.4	36.7	28.3	3.4	-39.0	0.0	0.0	48.1	29.4	74	54	-25.9	-24.6	V
1.600	3.0	54.5	35.4	29.2	3.8	-38.6	0.0	0.0	48.9	29.8	74	54	-25.1	-24.2	V
1.061	3.0	58.0	38.3	27.4	3.1	-39.4	0.0	0.0	49.1	29.4	74	54	-24.9	-24.6	H
1.200	3.0	57.7	37.0	27.9	3.3	-39.2	0.0	0.0	49.6	28.9	74	54	-24.4	-25.1	H
1.330	3.0	53.6	35.0	28.3	3.4	-39.0	0.0	0.0	46.3	27.7	74	54	-27.7	-26.3	H

Rev. 4.12.7
Note: No other emissions were detected above the system noise floor.

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:

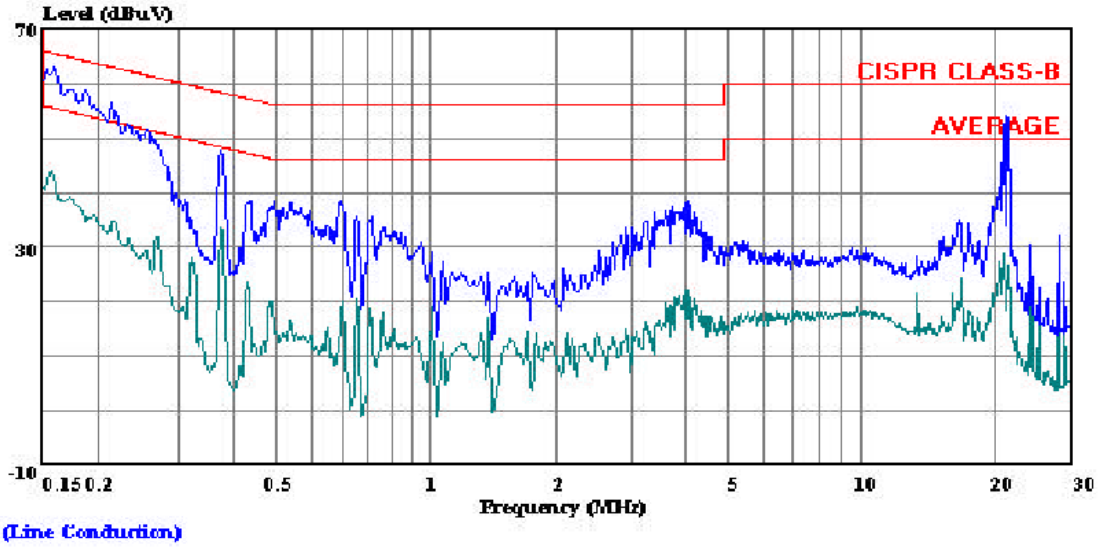
6 WORST EMISSIONS

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
0.16	63.05	--	44.06	0.00	65.52	55.52	-2.47	-11.46	L1
0.19	58.78	--	39.06	0.00	64.26	54.26	-5.48	-15.20	L1
21.49	53.72	--	26.44	0.00	60.00	50.00	-6.28	-23.56	L1
0.16	62.37	--	43.43	0.00	65.52	55.52	-3.15	-12.09	L2
0.19	57.73	--	35.96	0.00	64.26	54.26	-6.53	-18.30	L2
0.21	55.12	--	33.95	0.00	63.05	53.05	-7.93	-19.10	L2
6 Worst Data									

LINE 1 RESULTS

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

Data#: 21 File#: 08U11646 LC.EMI Date: 04-04-2008 Time: 17:16:25



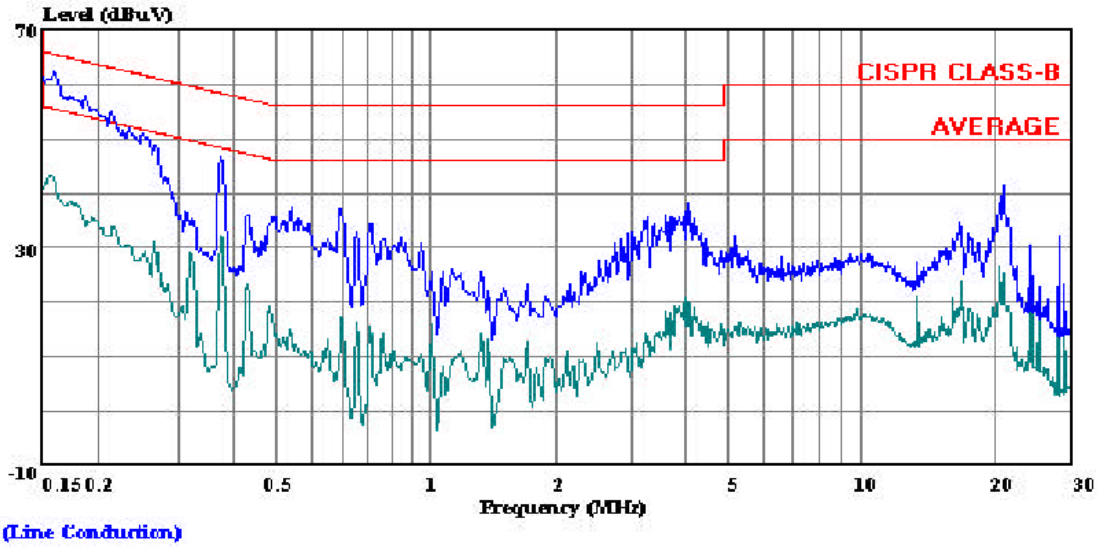
Trace: 19 Ref Trace:

Condition: CISPR CLASS-B
Test Operator:: Mengistu Mekuria
Project #: : 08U116464
Company: : Seirra Wireless
Configuration:: EUT With Laptop and other Peripherals
Mode: : Normal
Target: : FCC Class B
Voltage: : 115VAC / 60Hz
: Line 1: 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#: 14 File#: 08U11646 LC.EMI Date: 04-04-2008 Time: 17:07:50



Trace: 12 Ref Trace:

Condition: CISPR CLASS-B
Test Operator:: Mengistu Mekuria
Project #: : 08U116464
Company: : Seirra Wireless
Configuration:: EUT With Laptop and other Peripherals
Mode: : Normal
Target: : FCC Class B
Voltage: : 115VAC / 60Hz
: Line 2: Peak (Blue); Average (Green)