



**FCC CFR47 PART 15 SUBPART B
DECLARATION OF CONFORMITY
TEST REPORT
FOR**

PCMCIA ExpressCard MODEM CDMA

MODEL NUMBER: AC597E

REPORT NUMBER: 06U10740-3

ISSUE DATE: JANUARY 09, 2007

Prepared for
**SIERRA WIRELESS
2290 COSMOS CT.
CARLSBAD, CA 92011, USA**

Prepared by
**COMPLIANCE CERTIFICATION SERVICES
561F MONTEREY ROAD
MORGAN HILL, CA 95037, USA
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Date	Revisions	Revised By
--	01/09/07	Initial Issue	Thu

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SIERRA WIRELESS
2290 COSMOS CT.
CARLSBAD, CA 92011, USA

EUT DESCRIPTION: PCMCIA ExpressCard MODEM CDMA

MODEL: AC597E

SERIAL NUMBER: 1827

DATE TESTED: DECEMBER 18-22, 2006

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 15 SUBPART B	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:



THU CHAN
EMC SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES

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.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 561F Monterey Road, Morgan Hill, 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
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 wireless wide area network high-speed modem module tested in ThinkPad T60 laptop as specified in Section 5.6.

GENERAL INFORMATION

CHASSIS MATERIAL	ThinkPad T60
ENCLOSURE MATERIAL	PLASTIC
POWER REQUIREMENTS	100-240 VAC / 50-60 Hz
POWERLINE FILTER MANUFACTURER AND MODEL	Built-In
LIST OF ALL OSCILLATOR FREQUENCIES, CPU GREATER THAN OR EQUAL TO 9 kHz	2.16 GHz

5.2. TEST CONFIGURATION

The following configuration was investigated during testing:

EUT Configuration	Description
Typical Configuration	EUT inserted into PCMCIA slot of laptop with minimum configuration

5.3. MODE(s) OF OPERATION

Mode	Description
EMCTest	Telephone line, & all I/O ports activate with H' patterns scrolling on the screen display.

5.4. SOFTWARE AND FIRMWARE

The test software used during the tests was running on EMCTest.

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	OKI DATA	Microline 186	AC5C018494A0	DoC
USB Mouse	Logitech	90.00026.773	HCA54107442	DoC
Modem	U.S. Robotics	5686	2ABLYCRF2309	CJEMUL-35730-M5-E
Laptop	IBM	Thinkpad T60	ZZ9E242	DoC
AC Adapter	IBM	92P1154	52569-11	DoC

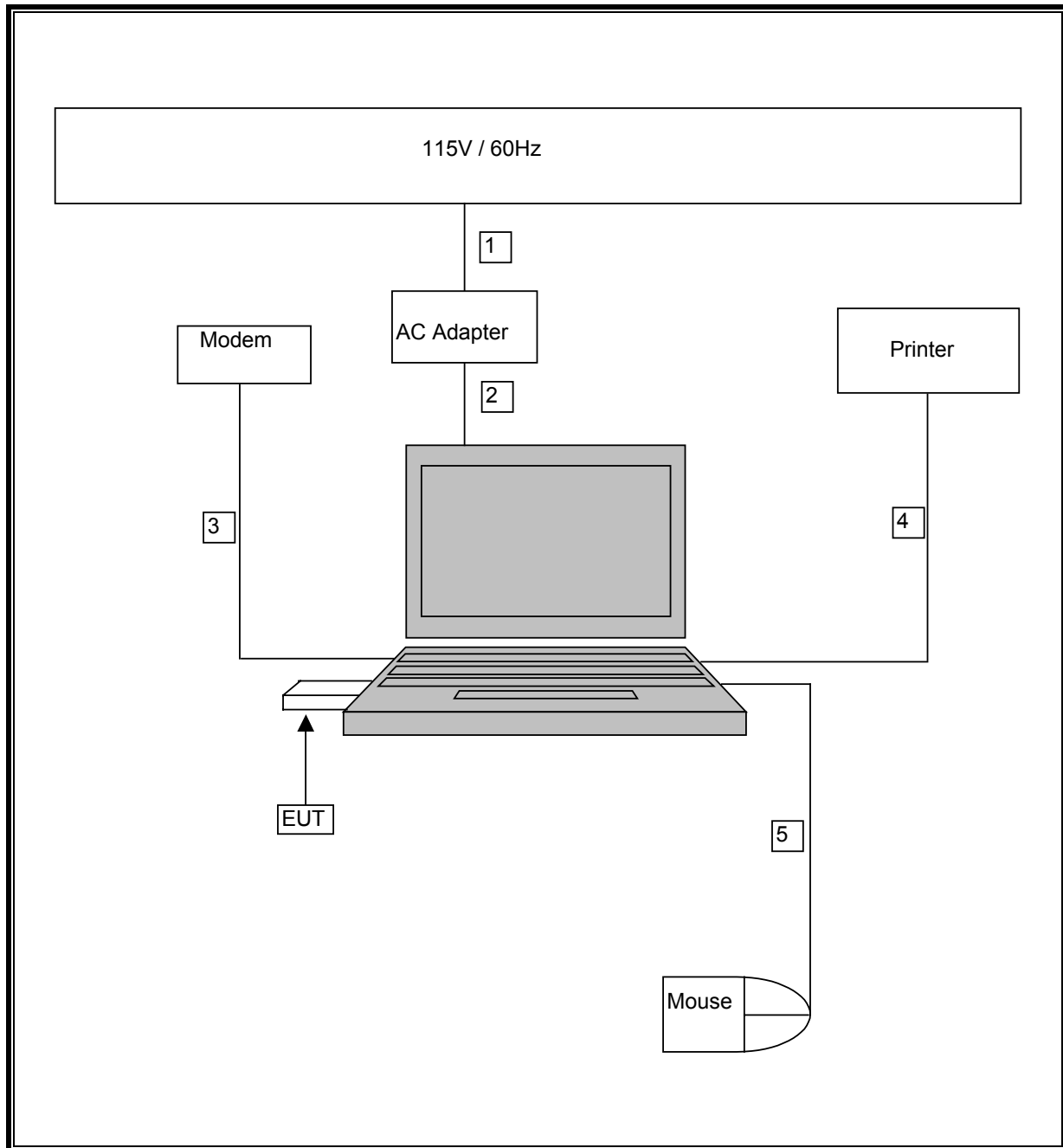
I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	1	US 115V	Un-shielded	2m	NA
2	DC	1	DC	Un-shielded	1m	Ferrite on laptop's end
3	RJ11	1	Modem	Un-shielded	2m	NA
4	USB	1	Printer	Shielded	2m	NA
5	Mouse	1	PS/2	Un-shielded	2m	NA

TEST SETUP

The EUT is installed in a typical configuration. Test software exercised the radio card and activated all I/O ports.

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
Antenna, Bilog 30 MHz ~ 2 Ghz	Sunol Sciences	JB1	A121003	8/13/07
EMI Receiver, 9 kHz ~ 2.9 GHz	Agilent / HP	8542E	3942A00286	2/4/07
RF Filter Section	Agilent / HP	85420E	3705A00256	2/4/07
LISN, 10 kHz ~ 30 MHz	FCC	LISN-50/250-25-2	2023	9/15/07
EMI Test Receiver	R & S	ESHS 20	827129/006	1/27/08
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	9001-3245	4/22/07
Preamplifier, 1 ~ 26.5 GHz	Agilent / HP	8449B	3008A00561	10/3/07
Spectrum Analyzer 3 Hz ~ 44 GHz	Agilent / HP	E4446A	US42070220	7/29/07

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 2.16GHz; therefore the frequency range was investigated from 30 MHz to 11GHz.

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 (dB μ V/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:

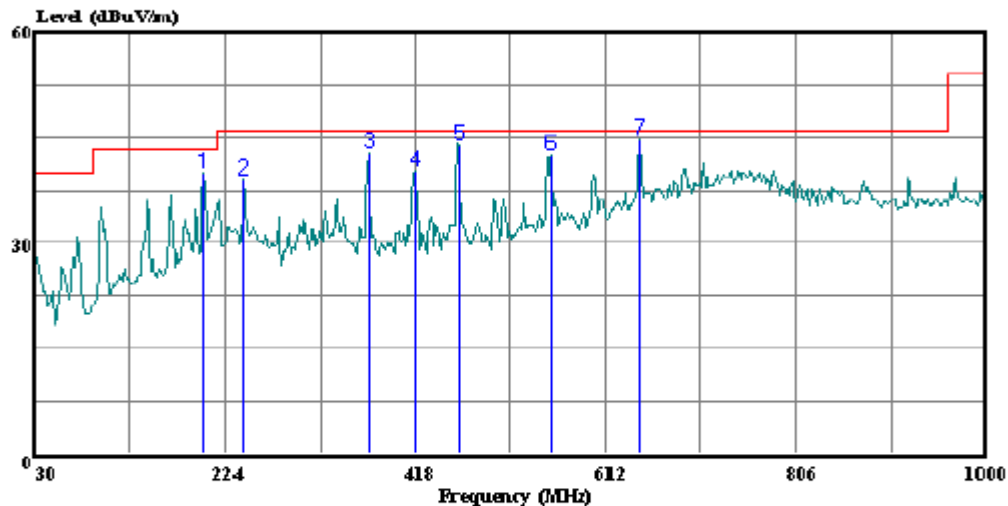
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT



561F Monterey Road
Morgan Hill, CA 95037
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 8 File#: 30-1000 MHz.EMI Date: 12-18-2006 Time: 11:24:20



(Audix A TC)

Trace: 7

Ref Trace:

Condition: FCC CLASS-B HORIZONTAL
Test Operator: : Thanh Nguyen
Company: : Sierra Wireless
Project #: : 06U10740
Configuration: : EUT Plug in Laptop w/ Basic Peripheral
Mode of Operation: : Standby/ Receive And EMCTest Program
Target: : FCC Class B

HORIZONTAL DATA

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	201.690	25.75	14.32	40.07	43.50	-3.43	Peak
2	242.430	25.41	13.63	39.04	46.00	-6.96	Peak
3	371.440	25.48	17.44	42.92	46.00	-3.08	Peak
4	417.030	21.90	18.47	40.37	46.00	-5.63	Peak
5	463.590	24.47	19.50	43.97	46.00	-2.03	Peak
6	555.740	21.54	20.95	42.49	46.00	-3.51	Peak
7	644.980	22.42	22.23	44.65	46.00	-1.35	Peak

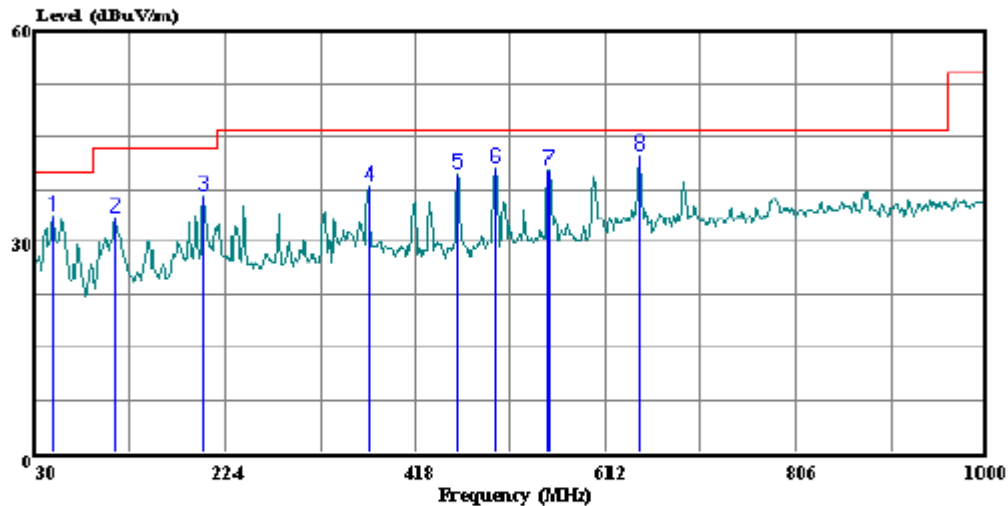
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)

VERTICAL PLOT



561F Monterey Road
Morgan Hill, CA 95037
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 10 File#: 30-1000 MHz.EMI Date: 12-18-2006 Time: 11:28:28



(Auxiliary ATC)

Trace: 9

Ref Trace:

Condition: FCC CLASS-B VERTICAL
Test Operator: : Thanh Nguyen
Company: : Sierra Wireless
Project #: : 06U10740
Configuration: : BUT Plug in Laptop w/ Basic Peripheral
Mode of Operation: : Standby/ Receive and EMCTest Program
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	48.430	23.38	10.29	33.67	40.00	-6.33	Peak
2	111.480	19.66	13.82	33.48	43.50	-10.02	Peak
3	201.690	22.31	14.32	36.63	43.50	-6.87	Peak
4	371.440	20.42	17.44	37.86	46.00	-8.14	Peak
5	460.680	20.22	19.44	39.66	46.00	-6.34	Peak
6	499.480	20.24	20.22	40.46	46.00	-5.54	Peak
7	552.830	19.25	20.90	40.15	46.00	-5.85	Peak
8	644.980	19.98	22.23	42.21	46.00	-3.79	Peak

SPURIOUS EMISSIONS ABOVE 1 GHz

High Frequency Measurement															
Compliance Certification Services, Morgan Hill Open Field Site															
Company: Sierra Wireless Inc.															
Project #: 06U10740															
Date: 12/22/06															
Test Engineer: Chin Pang															
Configuration: EUT / Support Peripherals															
Mode: EMCtest Program															
Test Equipment:															
Horn 1-18GHz		Pre-amplifier 1-26GHz		Pre-amplifier 26-40GHz		Horn > 18GHz		Limit							
T119; S/N: 29301 @3m		T145 Agilent 3008A005						FCC 15.209							
Hi Frequency Cables															
2 foot cable		3 foot cable		12 foot cable		HPF		Reject Filter		<u>Peak Measurements</u> RBW=VBW=1MHz <u>Average Measurements</u> RBW=1MHz ; VBW=10Hz					
		Chin 197538001		Chin 200354001											
f GHz	Dist (m)	Read Pk 330.0	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
1.330	3.0	62.0	40.5	29.0	1.6	-35.9	0.0	0.0	56.7	35.2	74	54	-17.3	-18.8	V
1.600	3.0	58.5	38.4	30.0	1.8	-35.7	0.0	0.0	54.6	34.5	74	54	-19.4	-19.5	V
2.160	3.0	57.0	37.3	31.6	2.1	-35.3	0.0	0.0	55.4	35.7	74	54	-18.6	-18.3	V
1.330	3.0	60.0	39.2	29.0	1.6	-35.9	0.0	0.0	54.7	33.9	74	54	-19.3	-20.1	H
1.595	3.0	56.2	36.6	30.0	1.8	-35.7	0.0	0.0	52.3	32.7	74	54	-21.7	-21.3	H
2.160	3.0	54.0	36.3	31.6	2.1	-35.3	0.0	0.0	52.4	34.7	74	54	-21.6	-19.3	H
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 μ H/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 (dB μ V)	
	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.		

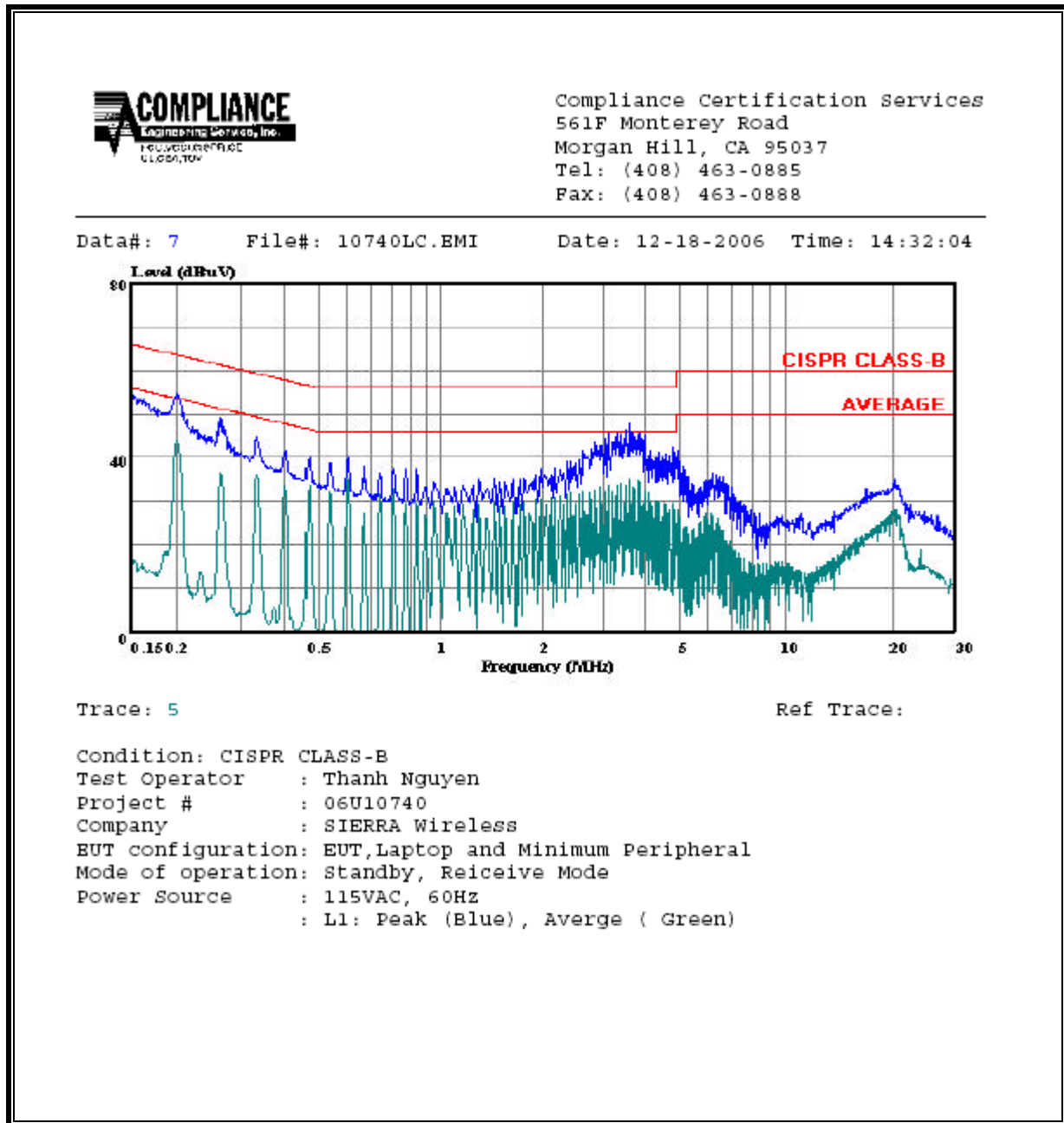
RESULTS

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
0.20	54.58	--	44.05	0.00	63.57	53.57	-8.99	-9.52	L1
0.27	49.06	--	36.28	0.00	61.21	51.21	-12.15	-14.93	L1
3.70	47.96	--	34.91	0.00	56.00	46.00	-8.04	-11.09	L1
0.20	51.21	--	38.66	0.00	63.53	53.53	-12.32	-14.87	L2
0.27	46.85	--	33.99	0.00	61.21	51.21	-14.36	-17.22	L2
3.86	46.70	--	31.26	0.00	56.00	46.00	-9.30	-14.74	L2
6 Worst Data									

LINE 1 RESULTS

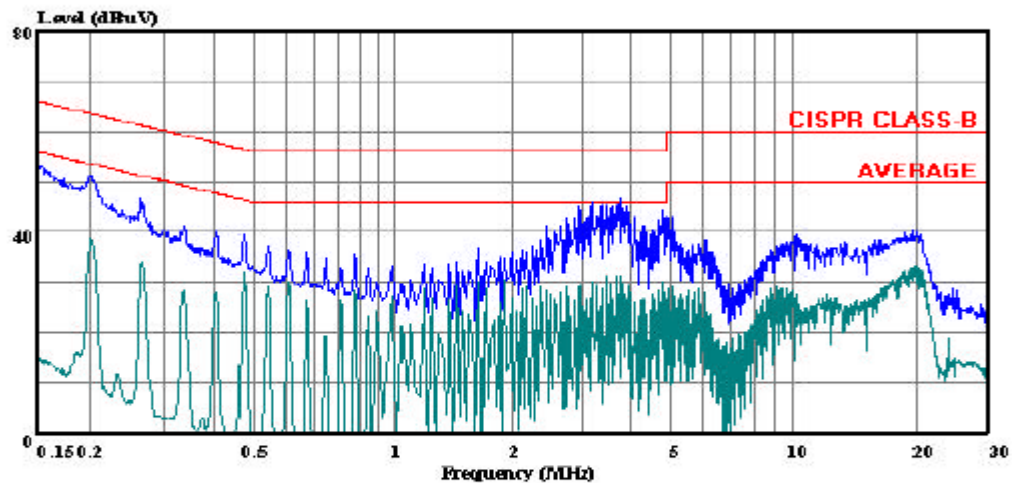


LINE 2 RESULTS



Compliance Certification Services
561F Monterey Road
Morgan Hill, CA 95037
Tel: (408) 463-0885
Fax: (408) 463-0888

Data#: 14 File#: 10740LC.EMI Date: 12-18-2006 Time: 14:59:51



Trace: 12

Ref Trace:

Condition: CISPR CLASS-B
Test Operator : Thanh Nguyen
Project # : 06U10740
Company : SIERRA Wireless
EUT configuration: EUT, Laptop and Minimum Peripheral
Mode of operation: Standby, Receive Mode
Power Source : 115VAC, 60Hz
: L2: Peak (Blue), Average (Green)