



FCC CFR47 PART 15 SUBPART B

**DECLARATION OF CONFORMITY
TEST REPORT**

FOR

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

MODEL NUMBER: AirCard 881U

REPORT NUMBER: 07U11027-3, REVISION B

ISSUE DATE: MAY 24, 2007

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
FAX: (510) 661-0888**



NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	05/21/07	Initial Issue	T. Chan
B	05/24/07	Revised sections 5.1 and 7.1	T. Hong

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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 MODEM

MODEL: AirCard 881U

SERIAL NUMBER: IMEI352678010301551

DATE TESTED: MAY 07-08, 2007

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



ANOOP SINGH
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 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 multiband 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
LIST OF ALL OSCILLATOR FREQUENCIES GREATER THAN OR EQUAL TO 9 kHz	3.9796 GHz CPU

5.2. WORST CASE CONFIGURATIONS

The worst-case configuration was determined to be EUT in the Cradle.

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

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
Modem	Hayes	4714US	A02247143261	BFJUSA-31719-M5-E
Printer	OKI DATA	D22300A	AE5C018438A0	DoC
USB Mouse	Logitech	90.00026.7730	HCA55002166	DoC
Laptop	Compaq	Presario R3000	CND5011HNJ	DoC
AC Adapter	HP	PPP017L	4Z01237302	DoC

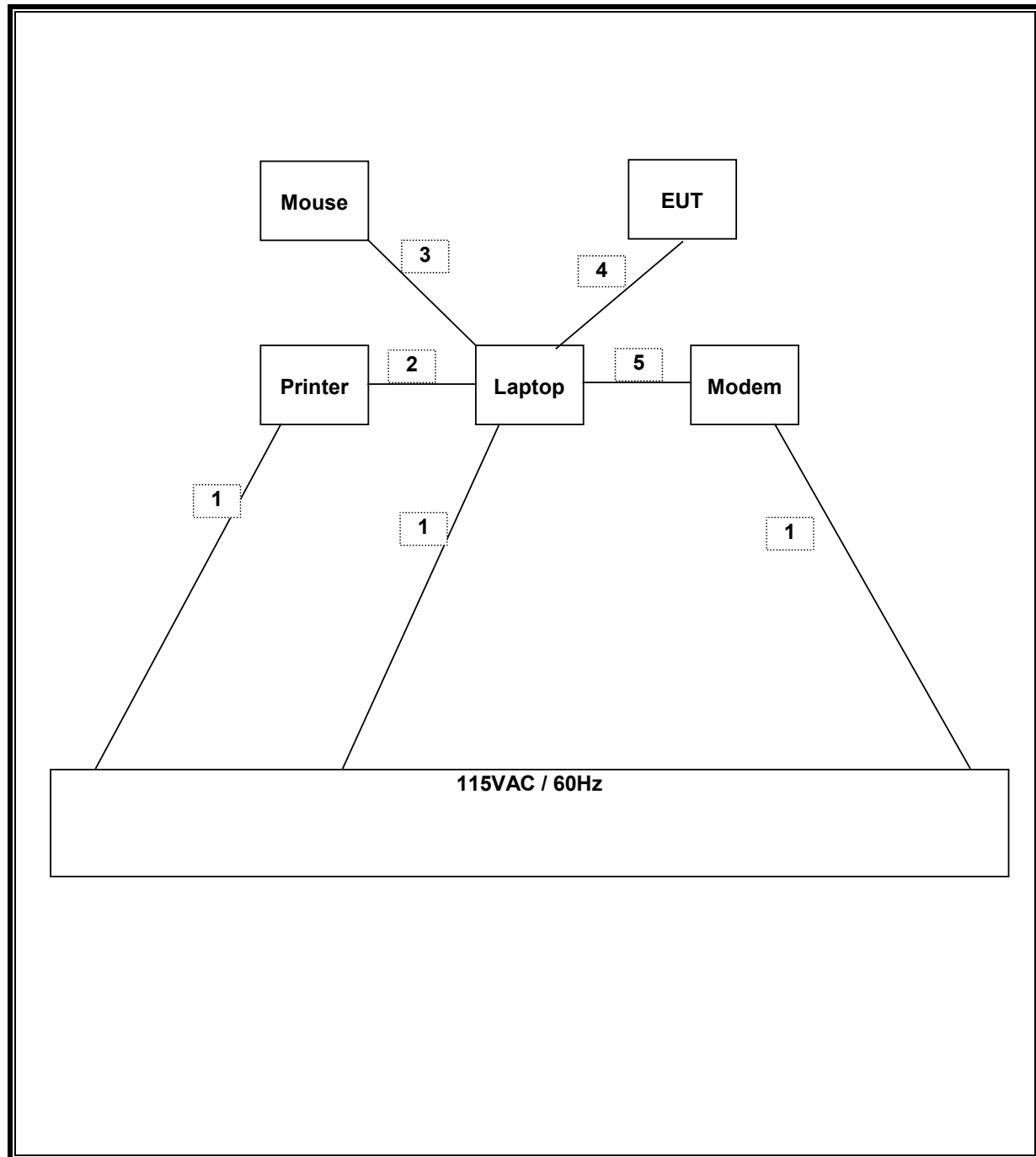
I/O CABLES

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

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	Serial Number	Cal Due
SA RF Section, 1.5 GHz	Agilent / HP	85680B	2814A04227	1/7/2008
Quasi-Peak Adaptor	Agilent / HP	85650A	3145A01654	1/21/2008
SA Display Section 2	Agilent / HP	85662A	2816A16696	4/7/2008
Spectrum Analyzer 3 Hz ~ 44 GHz	Agilent / HP	E4446A	MY45300064	3/18/2008
Preamplifier, 1 ~ 26.5 GHz	Agilent / HP	8449B	3008A00931	8/1/2007
Antenna, Bilog 30 MHz ~ 2 Ghz	Sunol Sciences	JB1	A121003	8/13/2007
EMI Test Receiver	R & S	ESHS 20	827129/006	1/27/2008
LISN, 10 kHz ~ 30 MHz	FCC	LISN-50/250-25-2	2023	9/15/2007
Preamplifier, 1300 MHz	Agilent / HP	8447D	1937A02062	1/23/2008

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 (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 DATA



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

Data#: 20 File#: 07u11027.emi

Date: 05-07-2007 Time: 20:17:20

Condition: FCC CLASS-B B-5M CHAMBER 012007 HORIZONTAL
Test Operator: : Mengistu Mekuria
Project #: : 07U11027
Company: : Sierra Wireless Inc.
Configuration : ETU, Support Laptop, and Peripherals
Mode of Operation: Normal
Target : FCC Class B

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	58.130	55.30	-23.02	32.29	40.00	-7.71	Peak
2	94.990	55.40	-21.79	33.61	43.50	-9.89	Peak
3	142.520	51.00	-16.90	34.10	43.50	-9.40	Peak
4	480.080	48.90	-11.67	37.23	46.00	-8.77	Peak
5	566.410	52.10	-10.35	41.75	46.00	-4.25	Peak
6	638.190	50.00	-9.31	40.69	46.00	-5.31	Peak

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

VERTICAL DATA



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

Data#: 22 File#: 07u11027.emi Date: 05-07-2007 Time: 20:36:53

Condition: FCC CLASS-B B-5M CHAMBER 012007 VERTICAL
Test Operator: : Mengistu Mekuria
Project #: : 07U11027
Company: : Sierra Wireless Inc.
Configuration : EUT, Support Laptop, and Peripherals
Mode of Operation: Normal
Target : FCC Class B

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	46.490	55.26	-19.65	35.61	40.00	-4.39	Peak
2	58.130	61.40	-23.02	38.39	40.00	-1.61	Peak
3	480.080	47.70	-11.67	36.03	46.00	-9.97	Peak
4	923.370	43.00	-4.56	38.44	46.00	-7.56	Peak
5	929.190	46.20	-4.41	41.79	46.00	-4.21	Peak

High Frequency Measurement

Compliance Certification Services

Company:

Project #:

Date:

Test Engineer:

Configuration:

Mode:

Sierra Wireless

07U11027

5/7/2007

Mengistu Mekuria

EUT, Support Laptop, and Peripherals

Normal

Test Equipment:

Horn 1-18GHz

T60; S/N: 2238 @3m

Pre-amplifier 1-26GHz

T144 Miteq 3008A00931

Pre-amplifier 26-40GHz

Horn > 18GHz

Limit

FCC 15.209

Hi Frequency Cables

2 foot cable

3 foot cable

12 foot cable

Gordon 203134001

HPF

Reject Filter

Peak Measurements

RBW=VBW=1MHz

Average Measurements

RBW=1MHz ; VBW=10Hz

f	Dist	Read Pk	Read Avg.	AF	CL	Amp	D Corr	Ftr	Peak	Avg	Pk Lim	Avg Lim	Pk Mar	Avg Mar	Notes
GHz	(m)	dBuV	dBuV		dB	dB	dB	dB	dBuV/m	dBuV/m	dBuV/m	dBuV/m	dB	dB	(V/H)
1.190	3.0	68.6	54.2	25.9	3.2	-39.2	0.0	0.0	58.5	44.1	74	54	-15.5	-9.9	V
1.202	3.0	58.3	49.8	25.9	3.3	-39.2	0.0	0.0	48.3	39.8	74	54	-25.7	-14.2	V
1.862	3.0	54.5	38.3	27.6	4.1	-38.3	0.0	0.0	48.0	31.7	74	54	-26.0	-22.3	V
1.998	3.0	56.2	40.5	27.9	4.3	-38.1	0.0	0.0	50.3	34.6	74	54	-23.7	-19.4	V
2.398	3.0	53.1	37.9	28.6	4.8	-37.5	0.0	0.0	48.9	33.7	74	54	-25.1	-20.3	V
2.519	3.0	50.7	34.2	28.9	4.9	-37.5	0.0	0.0	47.1	30.6	74	54	-26.9	-23.4	V
2.795	3.0	50.3	35.5	29.8	5.2	-37.4	0.0	0.0	47.9	33.1	74	54	-26.1	-20.9	V
3.060	3.0	52.3	38.6	30.6	5.4	-37.3	0.0	0.0	51.0	37.2	74	54	-23.0	-16.8	V
3.322	3.0	49.7	36.0	31.1	5.6	-37.1	0.0	0.0	49.3	35.6	74	54	-24.7	-18.4	V
3.595	3.0	48.5	35.2	31.6	5.8	-36.9	0.0	0.0	49.1	35.8	74	54	-24.9	-18.2	V
4.180	3.0	46.8	32.9	32.6	6.3	-36.6	0.0	0.0	49.1	35.2	74	54	-24.9	-18.8	V
4.788	3.0	46.9	32.2	33.0	6.8	-36.5	0.0	0.0	50.3	35.5	74	54	-23.7	-18.5	V
5.385	3.0	44.6	30.4	33.9	7.3	-36.3	0.0	0.0	49.4	35.3	74	54	-24.6	-18.7	V
1.060	3.0	53.3	38.3	25.6	3.1	-39.4	0.0	0.0	42.5	27.5	74	54	-31.5	-26.5	H
1.200	3.0	62.1	51.4	25.9	3.3	-39.2	0.0	0.0	52.1	41.3	74	54	-21.9	-12.7	H
1.263	3.0	54.6	38.4	26.1	3.3	-39.1	0.0	0.0	44.9	28.8	74	54	-29.1	-25.2	H
1.413	3.0	55.9	38.6	26.5	3.5	-38.9	0.0	0.0	47.0	29.7	74	54	-27.0	-24.3	H
1.600	3.0	53.1	37.7	26.9	3.8	-38.6	0.0	0.0	45.2	29.8	74	54	-28.8	-24.2	H
1.663	3.0	56.0	39.0	27.1	3.9	-38.5	0.0	0.0	48.4	31.4	74	54	-25.6	-22.6	H
1.727	3.0	55.3	36.2	27.3	3.9	-38.5	0.0	0.0	48.1	29.0	74	54	-25.9	-25.0	H
1.993	3.0	51.7	32.4	27.9	4.3	-38.1	0.0	0.0	45.8	26.6	74	54	-28.2	-27.4	H
2.263	3.0	58.3	40.0	28.3	4.6	-37.7	0.0	0.0	53.6	35.3	74	54	-20.4	-18.7	H
2.323	3.0	56.5	38.3	28.4	4.7	-37.6	0.0	0.0	52.0	33.8	74	54	-22.0	-20.2	H
2.390	3.0	51.5	33.2	28.5	4.8	-37.5	0.0	0.0	47.4	29.0	74	54	-26.6	-25.0	H
2.523															

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

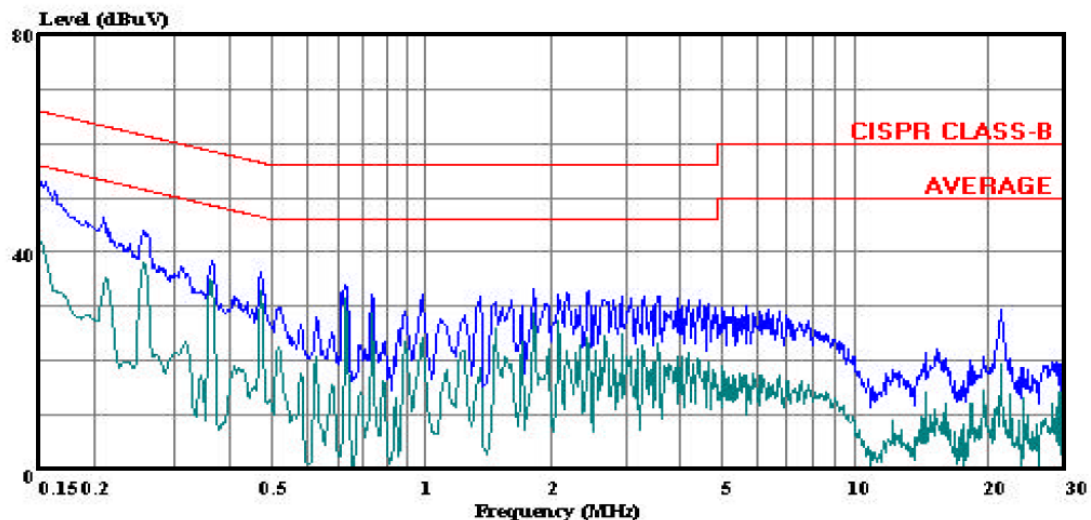
CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	EN B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.16	52.91	--	41.05	0.00	65.73	55.73	-12.82	-14.68	L1
0.26	43.52	--	37.67	0.00	61.56	51.56	-18.04	-13.89	L1
1.93	33.38	--	28.84	0.00	56.00	46.00	-22.62	-17.16	L1
0.18	47.22	--	42.06	0.00	64.30	54.30	-17.08	-12.24	L2
0.27	43.34	--	38.86	0.00	61.06	51.06	-17.72	-12.20	L2
1.08	34.69	--	30.06	0.00	56.00	46.00	-21.31	-15.94	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#: 23 File#: 07u110271c.EMI Date: 05-07-2007 Time: 22:53:49



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Ref Trace:

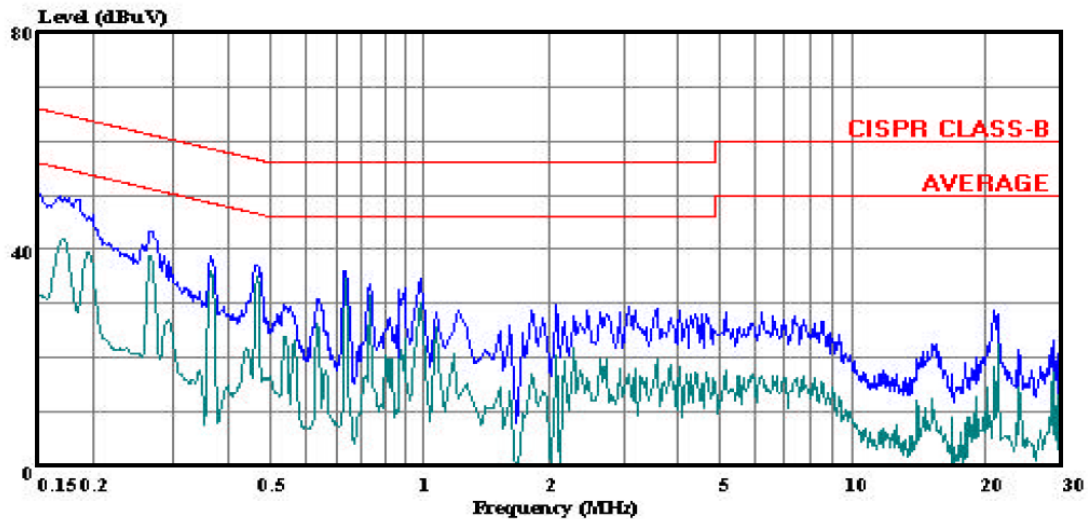
Condition: CISPR CLASS-B
Test Operator: : Mengistu Mekuria
Project #: : 07U11027
Company: : Sierra Wireless Inc.
Configuration : EUT, Support Laptop, and Peripherals
Mode of Operation: Normal
Target : FCC Class B
Source : 115VAC/60Hz
: L1: Blue(peak), Green(Average)

LINE 2 RESULTS



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

Data#: 32 File#: 07u110271c.EMI Date: 05-07-2007 Time: 23:30:35



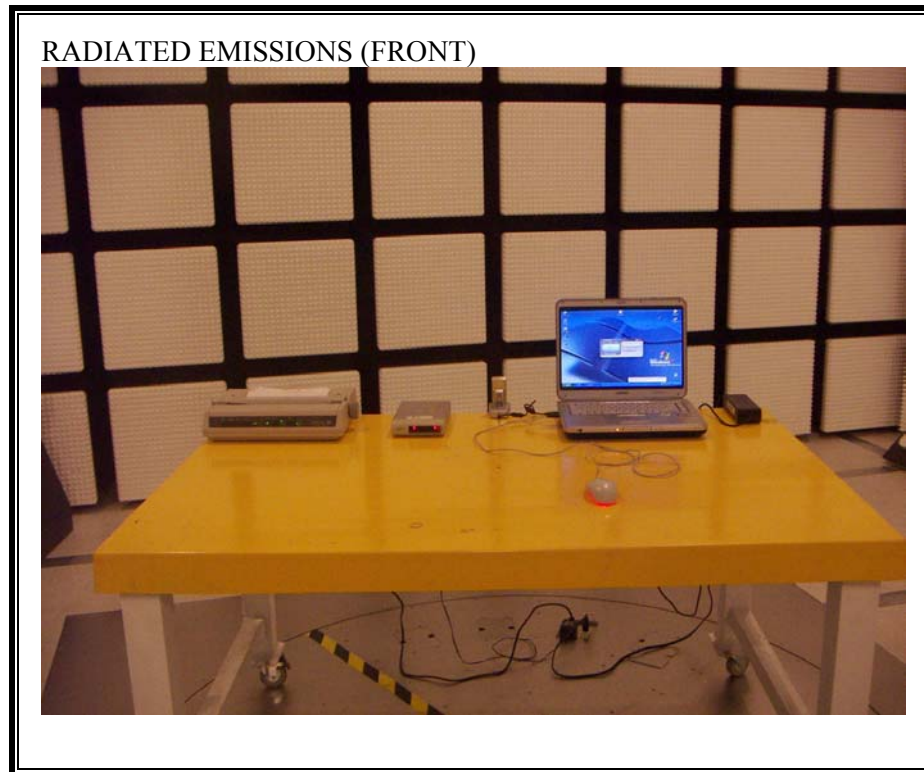
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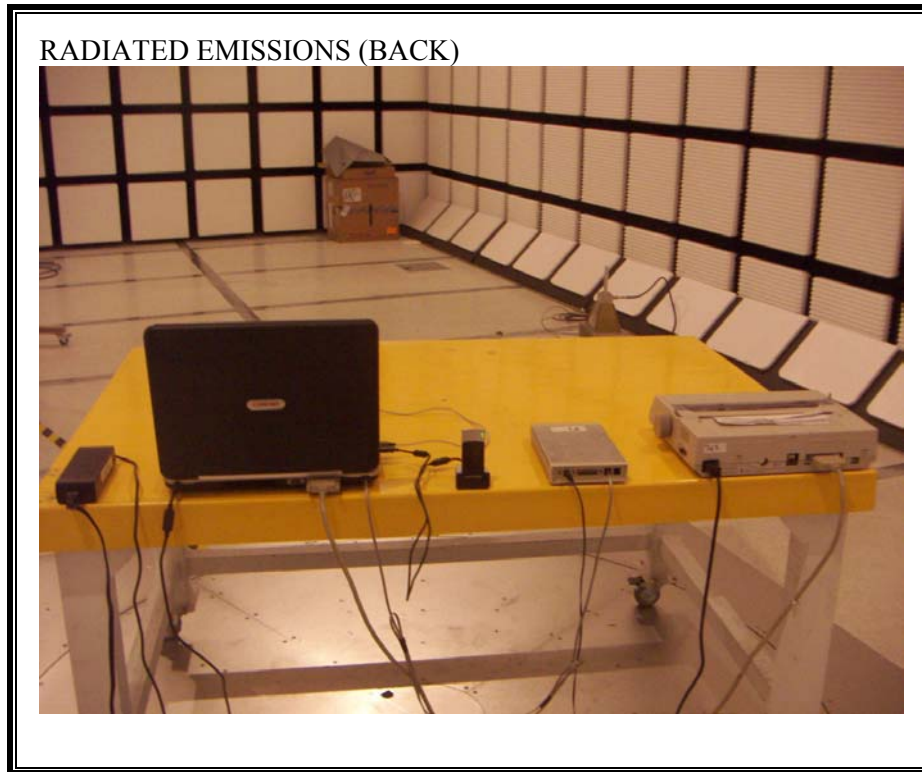
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Condition: CISPR CLASS-B
Test Operator: : Mengistu Mekuria
Project #: : 07U11027
Company: : Sierra Wireless Inc.
Configuration : EUT, Support Laptop, and Peripherals
Mode of Operation: : Normal
Target : FCC Class B
Source : 115VAC/60Hz
: L2: Blue(peak) , Green(Average)

8. SETUP PHOTOS

RADIATED EMISSION





AC MAINS LINE CONDUCTED EMISSION

LINE CONDUCTED EMISSION (FRONT)



LINE CONDUCTED EMISSION (BACK)



END OF REPORT