



RADIATED EMISSIONS PORTIONS OF
FCC CFR47 PART 22 SUBPART H
FCC CFR47 PART 24 SUBPART E
INDUSTRY CANADA RSS-132 ISSUE 2
INDUSTRY CANADA RSS-133 ISSUE 4

CERTIFICATION TEST REPORT

FOR

USB WIRELESS MODEM

MODEL NUMBER: USB306

**FCC ID: N7NU306
IC: 2417C-U306**

REPORT NUMBER: 09U12651-1

ISSUE DATE: JUNE 25, 2009

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[®]

NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	06/25/09	Initial Issue	T. Chan

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS.....	4
2. TEST METHODOLOGY	5
3. FACILITIES AND ACCREDITATION.....	5
4. CALIBRATION AND UNCERTAINTY	5
4.1. <i>MEASURING INSTRUMENT CALIBRATION.....</i>	<i>5</i>
4.2. <i>SAMPLE CALCULATION.....</i>	<i>5</i>
4.3. <i>MEASUREMENT UNCERTAINTY.....</i>	<i>5</i>
5. EQUIPMENT UNDER TEST	6
5.1. <i>DESCRIPTION OF EUT.....</i>	<i>6</i>
5.2. <i>SOFTWARE AND FIRMWARE.....</i>	<i>6</i>
5.3. <i>WORST-CASE CONFIGURATION AND MODE</i>	<i>7</i>
5.4. <i>DESCRIPTION OF TEST SETUP.....</i>	<i>7</i>
6. TEST AND MEASUREMENT EQUIPMENT	9
7. LIMITS AND RESULTS	10
7.1. <i>RADIATED OUTPUT POWER.....</i>	<i>10</i>
7.2. <i>FIELD STRENGTH OF SPURIOUS EMISSION</i>	<i>19</i>
7.3. <i>RECEIVER SPURIOUS EMISSIONS</i>	<i>26</i>
7.4. <i>POWER LINE CONDUCTED EMISSION</i>	<i>31</i>
8. SETUP PHOTOS.....	35

1. ATTESTATION OF TEST RESULTS

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

EUT DESCRIPTION: USB WIRELESS MODEM

MODEL: USB306

SERIAL NUMBER: 2

DATE TESTED: JUNE19 - JUNE 24, 2009

APPLICABLE STANDARDS		TEST RESULTS
STANDARD		TEST RESULTS
Radiated emissions portions of CFR 47 Part 22 Subpart H		Pass
Radiated emissions portions of CFR 47 Part 24 Subpart E		Pass
Radiated emissions portions of INDUSTRY CANADA RSS-132 Issue 2		Pass
Radiated emissions portions of INDUSTRY CANADA RSS-133 Issue 4		Pass

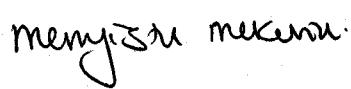
Compliance Certification Services, Inc. (CCS) tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by CCS based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. 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 CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by CCS will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For CCS By:



Tested By:



THU CHAN
EMC MANAGER
COMPLIANCE CERTIFICATION SERVICES

MENGISTU MEKURIA
EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with TIA-603-C, FCC CFR 47 Part 2, FCC CFR 47 Part 22, FCC CFR Part 24, RSS-132 Issue 2, and RSS-133 Issue 4.

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. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

$$\begin{aligned} \text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \\ &\text{Cable Loss (dB)} - \text{Preamp Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m} \end{aligned}$$

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 1000 MHz	4.94 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. In the US and Canada, only cellular and PCS bands are used for EDGE/GPRS/UMTS operation, so this test report only contains data for these two bands (850MHz and 1900MHz).

5.2. SOFTWARE AND FIRMWARE

The following settings were used to configure the Wireless Communications Test Set, Agilent 8960 Series 10, E5515C.

Instrument information: (by press SYSTEM CONFIG)

Application: WCDMA Lap App C
E6703C C.03.11
Format: WCDMA

Call Control: (by press CALL SETUP)

2 of 4 Cell Parameters: PS Domain Information > Present
ATT (IMSI Attach) Flag State > Set
4 of 4 Security Info: Security Parameter - System Operations > None

CallParms: (by press CALL SETUP)

1 of 3
Channel Type: 12.2k RMC
Paging Service: RB Test Mode

HSDPA Parameters:

1 of 2
HSDPA RB Test Mode Setup
FRC Type > H-Set 5 QPSK
CN Domain > PS Domain
Uplink 64k DTCH for HSDPA Loopback State > On
HS-DSCH Data Pattern > CCITT PRBS15
RLC Header on HS-DSCH > Present

Channel (UARFCN) Params: DL Channel: 4357 / 4407 / 4458
UL Channel: 4132 / 4182 / 4233
UL Sep (Band) > 400MHz (Band 4)
Freq Bnad Ind > On

2 of 3
DL DTCH Data: ALL ONES
RLC Reestablish: Off
Call Limit State: Off
Call Drop Timer: Off
SRB Config.: 13.6k DCCH
3 of 3
UE Target Power: 25 dBm
UL CL Pwr Ctrl Params: Active bits (Select "All Up bits" after linked to get maximum power)
DL Channel: 9662 / 9800 / 9938 / 4357 / 4407 / 4458
UL Channel: 9262 / 9400 / 9538 / 4132 / 4182 / 4233

5.3. WORST-CASE CONFIGURATION AND MODE

The worst-position was the EUT with highest emissions. To determine the worst-case, the EUT was investigated at X and Y-Positions, and the worst position is X-position for Cell band and Y-position for PCS band.

5.4. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	Lenovo	T60 IBM ThinkPad	ZZBC354	DoC
AC Adapter	Lenovo	PA-1650-171	11S92P1160Z1ZAW65C90MH	DoC

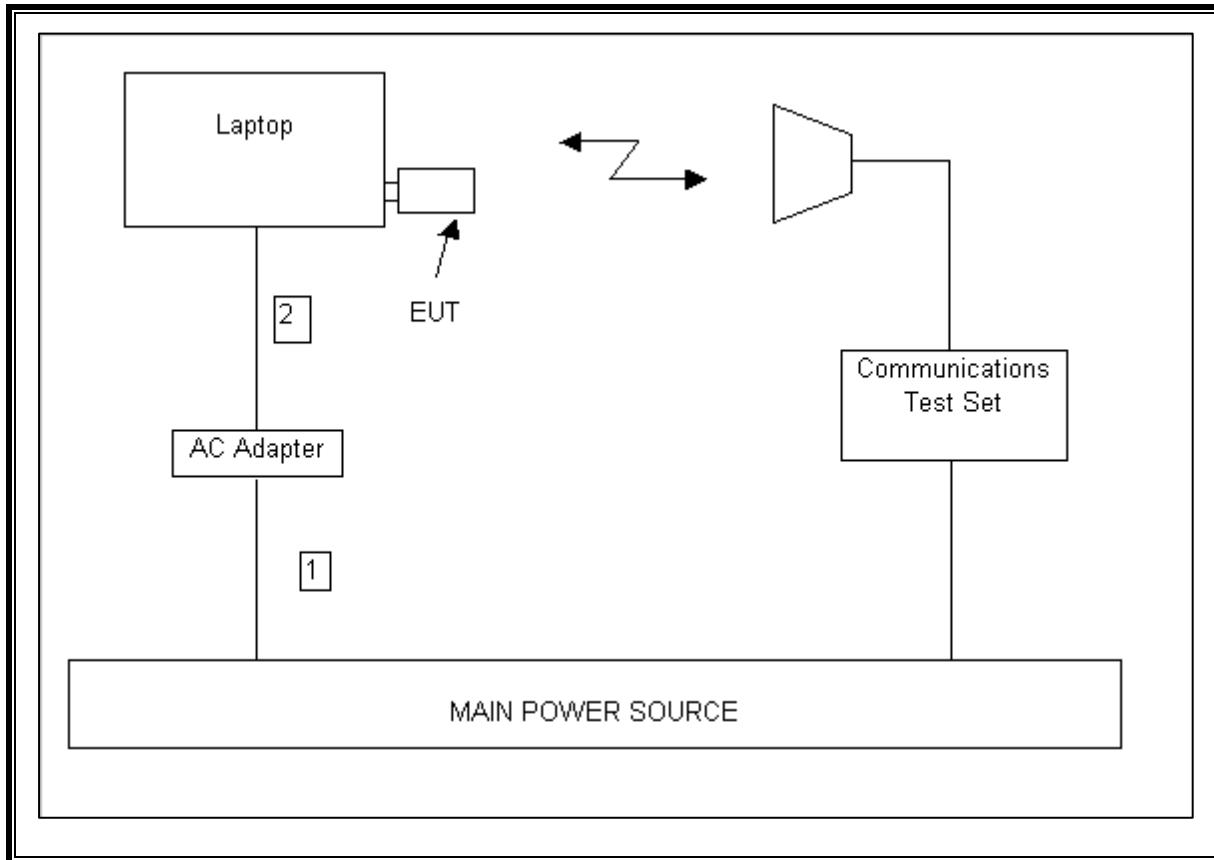
I/O CABLES

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	No
2	DC	1	DC	Un-shielded	2m	No

TEST SETUP

The EUT directly plugged into the laptop during the tests. The Wireless Communication test set exercised the EUT.

RADIATED 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
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	MY45300064	01/05/10
Antenna, Horn, 18 GHz	EMCO	3115	9001-3245	01/29/10
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	A121003	01/14/10
Preamplifier, 26.5 GHz	Agilent / HP	8449B	3008A00931	02/04/10
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00580	12/16/09
Communication Test Set	R & S	CMU 200	838114/032	12/16/10
Wireless Communications Test Set	Agilent / HP	E5515C	NA	09/28/09
LISN, 30 MHz	FCC	LISN-50/250-25-2	2023	10/29/09
EMI Test Receiver, 30 MHz	R & S	ESHS 20	827129/006	08/06/09
Signal Generator 1024 MHz	R & S	SMY01	DE 12311	05/28/10
Dipole	EMCO	3121C-DB2	22435	06/17/10
2.7GHz HPF	MicroTronic	HPM13194	2	CNR
1.5GHz HPF	MicroTronic	HPM13195	1	CNR

7. LIMITS AND RESULTS

7.1. RADIATED OUTPUT POWER

LIMIT

22.913(a) The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

24.232(b) & RSS133 § 6.4 Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

RSS-132 § 4.4 The maximum ERP shall be 6.3 Watts for mobile stations.

TEST PROCEDURE

RSS-132, RSS-133, & ANSI / TIA / EIA 603C Clause 2.2.17

RESULTS

850 MHz GPRS Mode

Channel	Frequency (MHz)	ERP Peak Power (dBm)	ERP Peak Power (mW)
Low	824.2	31.10	1288.25
Middle	836.6	32.10	1621.81
High	848.8	31.90	1548.82

850 MHz EGPRS Mode

Channel	Frequency (MHz)	ERP Peak Power (dBm)	ERP Peak Power (mW)
Low	824.2	29.40	870.96
Middle	836.6	30.60	1148.15
High	848.8	30.50	1122.02

850 MHz WCDMA Modulation

Channel	Frequency (MHz)	ERP Peak Power (dBm)	ERP Peak Power (mW)
Low	826.4	26.10	407.38
Middle	836.4	25.20	331.13
High	846.6	25.20	331.13

1900 MHz GPRS Mode

Channel	Frequency (MHz)	EIRP Peak Power (dBm)	EIRP Peak Power (mW)
Low	1850.2	28.80	758.58
Middle	1880.0	28.80	758.58
High	1909.8	29.90	977.24

1900 MHz EGPRS Mode

Channel	Frequency (MHz)	EIRP Peak Power (dBm)	EIRP Peak Power (mW)
Low	1850.2	28.70	741.31
Middle	1880.0	28.60	724.44
High	1909.8	30.10	1023.29

1900 MHz WCDMA Modulation

Channel	Frequency (MHz)	EIRP Peak Power (dBm)	EIRP Peak Power (mW)
Low	1852.4	23.50	223.87
Middle	1880.0	23.20	208.93
High	1907.6	24.20	263.03

CELL BAND GPRS OUTPUT POWER (ERP)

**High Frequency Substitution Measurement
Compliance Certification Services Chamber B**

Company: SIERRA WIRELESS INC.
Project #: 09U12651
Date: 6/19/2009
Test Engineer: MENGISTU MEKURIA
Configuration: EUT WITH SUPPORT LAPTOP
Mode: TX 850 MHz CELL BAND, GPRS

Test Equipment:

Receiving: Sunol T130, and 3m Chamber N-type Cable (Setup this one for testing EUT)

Substitution: Dipole S/N: 00022117, 6ft SMA Cable (SN # 208947003) Warehouse.

f MHz	SA reading (dBm)	Ant. Pol. (H/V)	Path Loss (dBm)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
824.20	-3.2	V	32.6	29.4	38.5	-9.0	
824.20	0.8	H	30.4	31.1	38.5	-7.3	
836.60	-3.2	V	32.7	29.5	38.5	-9.0	
836.60	1.4	H	30.7	32.1	38.5	-6.3	
848.80	-3.3	V	32.0	28.7	38.5	-9.8	
848.80	1.2	H	30.8	31.9	38.5	-6.5	

Rev. 1.24.7

CELL BAND EGPRS OUTPUT POWER (ERP)

**High Frequency Substitution Measurement
Compliance Certification Services Chamber B**

Company: SIERRA WIRELESS INC.
Project #: 09U12651
Date: 6/19/2009
Test Engineer: MENGISTU MEKURIA
Configuration: EUT WITH SUPPORT LAPTOP
Mode: TX 850 MHz CELL BAND, EGPRS

Test Equipment:

Receiving: Sunol T130, and 3m Chamber N-type Cable (Setup this one for testing EUT)

Substitution: Dipole S/N: 00022117, 6ft SMA Cable (SN # 208947003) Warehouse.

f MHz	SA reading (dBm)	Ant. Pol. (H/V)	Path Loss (dBm)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
824.20	-4.1	V	32.6	28.5	38.5	-10.0	
824.20	-1.0	H	30.4	29.4	38.5	-9.1	
836.60	-4.2	V	32.7	28.5	38.5	-10.0	
836.60	-0.1	H	30.7	30.6	38.5	-7.8	
848.80	-4.2	V	32.0	27.8	38.5	-10.7	
848.80	-0.2	H	30.8	30.5	38.5	-7.9	

Rev. 1.24.7

CELL BAND WCDMA OUTPUT POWER (ERP)

High Frequency Substitution Measurement Compliance Certification Services Chamber A							
Company:	SIERRA WIRELESS INC.						
Project #:	09U12651						
Date:	6/19/2009						
Test Engineer:	MENGISTU MEKURIA						
Configuration:	EUT WITH SUPPORT LAPTOP						
Mode:	TX 850 MHz CELL BAND, WCDMA						
<u>Test Equipment:</u>							
Receiving: Sunol T122, and 3m Chamber N-type Cable (Setup this one for testing EUT)							
Substitution: Dipole S/N: 00022117, 6ft SMA Cable (SN # 208947003) Warehouse.							
f MHz	SA reading (dBm)	Ant. Pol. (H/V)	Path Loss (dBm)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
826.40	-8.7	V	34.8	26.1	38.5	-12.4	
826.40	-4.9	H	30.5	25.6	38.5	-12.8	
836.40	-11.0	V	33.1	22.1	38.5	-16.4	
836.40	-6.0	H	31.2	25.2	38.5	-13.3	
846.60	-11.4	V	32.1	20.8	38.5	-17.7	
846.60	-6.0	H	31.2	25.2	38.5	-13.2	

Rev. 1.24.7

PCS BAND GPRS OUTPUT POWER (EIRP)

High Frequency Fundamental Measurement Compliance Certification Services Chamber B							
Company:	SIERRA WIRELESS INC.						
Project #:	09U12651						
Date:	6/19/2009						
Test Engineer:	MENGISTU MEKURIA						
Configuration:	EUT WITH SUPPORT LAPTOP						
Mode:	TX 1900 MHz PCS BAND, GPRS						
<u>Test Equipment:</u>							
Receiving: Horn T59, and Chamber B SMA Cables							
Substitution: Horn T72 Substitution, 6ft SMA Cable (208947003) Warehouse							
f GHz	SA reading (dBm)	Ant. Pol. (H/V)	Path Loss (dBm)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
1.850	-12.8	V	40.2	27.4	33.0	-5.6	
1.850	-10.7	H	39.5	28.8	33.0	-4.2	
1.880	-13.2	V	40.3	27.1	33.0	-5.9	
1.880	-11.3	H	40.1	28.8	33.0	-4.2	
1.910	-12.0	V	40.2	28.2	33.0	-4.9	
1.910	-10.2	H	40.1	29.9	33.0	-3.1	

Rev. 1.24.7

PCS BAND EGPRS OUTPUT POWER (EIRP)

**High Frequency Fundamental Measurement
Compliance Certification Services Chamber B**

Company: SIERRA WIRELESS INC.
Project #: 09U12651
Date: 6/19/2009
Test Engineer: MENGISTU MEKURIA
Configuration: EUT WITH SUPPORT LAPTOP
Mode: TX 1900 MHz PCS BAND, EGPRS

Test Equipment:

Receiving: Horn T59, and Chamber B SMA Cables

Substitution: Horn T72 Substitution, 6ft SMA Cable (208947003) Warehouse

f GHz	SA reading (dBm)	Ant. Pol. (H/V)	Path Loss (dBm)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
1.850	-12.1	V	40.2	28.0	33.0	-5.0	
1.850	-10.8	H	39.5	28.7	33.0	-4.3	
1.880	-13.3	V	40.3	27.0	33.0	-6.0	
1.880	-11.5	H	40.1	28.6	33.0	-4.4	
1.910	-12.4	V	40.2	27.8	33.0	-5.2	
1.910	-10.0	H	40.1	30.1	33.0	-2.9	

Rev. 1.24.7

PCS BAND WCDMA OUTPUT POWER (EIRP)

High Frequency Fundamental Measurement Compliance Certification Services Chamber A														
Company:	SIERRA WIRELESS INC.													
Project #:	09U12651													
Date:	6/19/2009													
Test Engineer:	MENGISTU MEKURIA													
Configuration:	EUT WITH SUPPORT LAPTOP													
Mode:	TX 1900 MHz PCS BAND, WCDMA													
<u>Test Equipment:</u>														
Receiving: Horn T73, and Camber B SMA Cables														
Substitution: Horn T72 Substitution, 6ft SMA Cable (208947003) Warehouse														
f GHz	SA reading (dBm)	Ant. Pol. (H/V)	Path Loss (dBm)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes							
1.852	-16.9	V	40.4	23.5	33.0	9.5								
1.852	-22.8	H	39.7	17.0	33.0	-16.0								
1.880	-16.8	V	39.9	23.2	33.0	-9.8								
1.880	-22.0	H	40.1	18.1	33.0	-14.9								
1.908	-15.6	V	39.8	24.2	33.0	-8.8								
1.908	-23.2	H	40.2	17.0	33.0	-16.0								

Rev. 1.24.7

7.2. FIELD STRENGTH OF SPURIOUS EMISSION

LIMIT

§22.917 (e), §24.238 (a), RSS-132 § 4.5, & RSS-133 § 6.5 Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB.

TEST PROCEDURE

RSS-132, RSS-133, & ANSI / TIA / EIA 603C Clause 2.2.12

RESULTS

Note: No emissions were found within 30-1000MHz & after the third harmonic of 20dB below the system noise.

CELL BAND GPRS SPURIOUS & HARMONIC (ERP)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement										
Company:	SIERRA WIRELESS INC.									
Project #:	09U12651									
Date:	6/23/2009									
Test Engineer:	MENGISTU MEKURIA									
Configuration:	EUT WITH SUPPORT LAPTOP									
Mode:	TX 850 MHz CELL BAND, GPRS									
Chamber			Pre-amplifier		Filter		Limit			
5m Chamber B			T145 8449B		Filter 1		FCC PART 22			
f GHz	SA reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Path Loss (dB)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low CH. (824.2 MHz)										
1.648	-51.1	H	3.0	37.2	35.5	1.0	-48.4	-13.0	-35.4	
2.473	-49.2	H	3.0	39.8	35.4	1.0	-43.8	-13.0	-30.8	
3.297	-61.7	H	3.0	43.9	35.5	1.0	-52.3	-13.0	-39.3	
4.121	-63.5	H	3.0	46.7	35.2	1.0	-51.0	-13.0	-38.0	
1.648	-47.6	V	3.0	36.8	35.5	1.0	-45.3	-13.0	-32.3	
2.473	-44.4	V	3.0	41.7	35.4	1.0	-37.1	-13.0	-24.1	
3.297	-60.5	V	3.0	44.1	35.5	1.0	-50.9	-13.0	-37.9	
4.121	-63.3	V	3.0	46.1	35.2	1.0	-51.4	-13.0	-38.4	
Mid Ch. (836.6 MHz)										
1.673	-50.9	H	3.0	37.5	35.5	1.0	-47.9	-13.0	-34.9	
2.510	-48.7	H	3.0	39.9	35.4	1.0	-43.2	-13.0	-30.2	
3.346	-60.8	H	3.0	44.1	35.5	1.0	-51.2	-13.0	-38.2	
4.183	-64.5	H	3.0	46.8	35.2	1.0	-51.9	-13.0	-38.9	
1.673	-46.8	V	3.0	37.1	35.5	1.0	-44.2	-13.0	-31.2	
2.510	-43.7	V	3.0	41.8	35.4	1.0	-36.2	-13.0	-23.2	
3.346	-59.7	V	3.0	44.3	35.5	1.0	-49.9	-13.0	-36.9	
4.183	-64.4	V	3.0	46.3	35.2	1.0	-52.3	-13.0	-39.3	
Mid Ch. (848.8 MHz)										
1.698	-49.6	H	3.0	37.7	35.5	1.0	-46.4	-13.0	-33.4	
2.546	-47.7	H	3.0	40.1	35.4	1.0	-42.0	-13.0	-29.0	
3.395	-59.6	H	3.0	44.3	35.5	1.0	-49.8	-13.0	-36.8	
4.244	-62.5	H	3.0	47.0	35.2	1.0	-49.7	-13.0	-36.7	
1.698	-45.5	V	3.0	37.4	35.5	1.0	-42.5	-13.0	-29.5	
2.546	-44.7	V	3.0	42.0	35.4	1.0	-37.1	-13.0	-24.1	
3.395	-58.6	V	3.0	44.4	35.5	1.0	-48.7	-13.0	-35.7	
4.244	-63.6	V	3.0	46.5	35.2	1.0	-51.4	-13.0	-38.4	

Rev. 03.03.09

CELL BAND EGPRS SPURIOUS & HARMONIC (ERP)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement											
Company:	SIERRA WIRELESS INC.										
Project #:	09U12651										
Date:	6/19/2009										
Test Engineer:	MENGISTU MEKURIA										
Configuration:	EUT WITH SUPPORT LAPTOP										
Mode:	TX 850 MHz CELL BAND, EGPRS										
Chamber			Pre-amplifier			Filter			Limit		
5m Chamber B			T145 8449B			Filter 1			FCC PART 22		
f GHz	SA reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Path Loss (dB)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	
Low Ch. (824.2 MHz)											
1.648	-47.3	H	3.0	37.2	35.5	1.0	-44.6	-13.0	-31.6		
2.473	-49.6	H	3.0	39.8	35.4	1.0	-44.2	-13.0	-31.2		
3.297	-59.7	H	3.0	43.9	35.5	1.0	-50.3	-13.0	-37.3		
4.121	-63.5	H	3.0	46.7	35.2	1.0	-51.1	-13.0	-38.1		
1.648	-46.4	V	3.0	36.8	35.5	1.0	-44.1	-13.0	-31.1		
2.473	-43.5	V	3.0	41.7	35.4	1.0	-36.2	-13.0	-23.2		
3.297	-58.5	V	3.0	44.1	35.5	1.0	-48.9	-13.0	-35.9		
4.121	-64.3	V	3.0	46.1	35.2	1.0	-52.4	-13.0	-39.4		
Mid Ch. (836.6 MHz)											
1.673	-47.0	H	3.0	37.5	35.5	1.0	-44.1	-13.0	-31.1		
2.510	-48.6	H	3.0	39.9	35.4	1.0	-43.2	-13.0	-30.2		
3.346	-59.4	H	3.0	44.1	35.5	1.0	-49.8	-13.0	-36.8		
4.183	-63.7	H	3.0	46.8	35.2	1.0	-51.1	-13.0	-38.1		
1.673	-47.4	V	3.0	37.1	35.5	1.0	-44.8	-13.0	-31.8		
2.510	-43.9	V	3.0	41.8	35.4	1.0	-36.5	-13.0	-23.5		
3.346	-59.3	V	3.0	44.3	35.5	1.0	-49.6	-13.0	-36.6		
4.183	-62.5	V	3.0	46.3	35.2	1.0	-50.5	-13.0	-37.5		
Mid Ch. (848.8 MHz)											
1.698	-48.5	H	3.0	37.7	35.5	1.0	-45.3	-13.0	-32.3		
2.546	-49.4	H	3.0	40.1	35.4	1.0	-43.7	-13.0	-30.7		
3.395	-60.4	H	3.0	44.3	35.5	1.0	-50.6	-13.0	-37.6		
4.244	-64.6	H	3.0	47.0	35.2	1.0	-51.9	-13.0	-38.9		
1.698	-48.5	V	3.0	37.4	35.5	1.0	-45.5	-13.0	-32.5		
2.546	-44.2	V	3.0	42.0	35.4	1.0	-36.7	-13.0	-23.7		
3.395	-61.2	V	3.0	44.4	35.5	1.0	-51.3	-13.0	-38.3		
4.244	-64.3	V	3.0	46.5	35.2	1.0	-52.1	-13.0	-39.1		
Rev. 03.03.09											

CELL BAND WCDMA SPURIOUS & HARMONIC (ERP)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement											
Company:		SIERRA WIRELESS INC.									
Project #:		09U12651									
Date:		6/23/2009									
Test Engineer:		MENGISTU MEKURIA									
Configuration:		EUT WITH SUPPORT LAPTOP									
Mode:		TX 850 MHz CELL BAND, WCDMA									
Chamber			Pre-amplifier			Filter			Limit		
5m Chamber A			T144 8449B			Filter 1			FCC PART 22		
f GHz	SA reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Path Loss (dB)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	
Low Ch. (826.4 MHz)											
1.653	-50.3	H	3.0	36.6	38.1	1.0	-50.8	-13.0	-37.8		
2.479	-53.3	H	3.0	40.0	37.5	1.0	-49.8	-13.0	-36.8		
3.306	-55.2	H	3.0	43.9	37.1	1.0	-47.5	-13.0	-34.5		
4.132	-60.5	H	3.0	46.2	36.5	1.0	-49.8	-13.0	-36.8		
1.653	-50.9	V	3.0	36.9	38.1	1.0	-51.2	-13.0	-38.2		
2.479	-51.3	V	3.0	41.7	37.5	1.0	-46.1	-13.0	-33.1		
3.306	-48.3	V	3.0	44.0	37.1	1.0	-40.4	-13.0	-27.4		
4.132	-61.6	V	3.0	45.9	36.5	1.0	-51.2	-13.0	-38.2		
Mid Ch. (836.4 MHz)											
1.673	-51.6	H	3.0	36.8	38.1	1.0	-51.9	-13.0	-38.9		
2.509	-54.4	H	3.0	40.1	37.5	1.0	-50.8	-13.0	-37.8		
3.346	-54.7	H	3.0	44.0	37.1	1.0	-46.8	-13.0	-33.8		
4.182	-61.1	H	3.0	46.4	36.5	1.0	-50.2	-13.0	-37.2		
1.673	-49.9	V	3.0	37.1	38.1	1.0	-49.9	-13.0	-36.9		
2.509	-50.2	V	3.0	41.8	37.5	1.0	-44.8	-13.0	-31.8		
3.346	-49.1	V	3.0	44.1	37.1	1.0	-41.1	-13.0	-28.1		
4.182	-62.5	V	3.0	46.1	36.5	1.0	-51.9	-13.0	-38.9		
Mid Ch. (848.6 MHz)											
1.697	-52.3	H	3.0	37.0	38.1	1.0	-52.4	-13.0	-39.4		
2.546	-54.9	H	3.0	40.4	37.5	1.0	-51.0	-13.0	-38.0		
3.394	-55.2	H	3.0	44.1	37.1	1.0	-47.2	-13.0	-34.2		
4.243	-60.5	H	3.0	46.6	36.5	1.0	-49.5	-13.0	-36.5		
1.697	-48.9	V	3.0	37.4	38.1	1.0	-48.6	-13.0	-35.6		
2.546	-51.2	V	3.0	42.0	37.5	1.0	-45.7	-13.0	-32.7		
3.394	-50.3	V	3.0	44.2	37.1	1.0	-42.2	-13.0	-29.2		
4.243	-61.3	V	3.0	46.2	36.5	1.0	-50.6	-13.0	-37.6		

Rev. 03.03.09

PCS BAND GPRS SPURIOUS & HARMONIC (EIRP)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement										
Company:	SIERRA WIRELESS INC.									
Project #:	09U12651									
Date:	6/23/2009									
Test Engineer:	MENGISTU MEKURIA									
Configuration:	EUT WITH SUPPORT LAPTOP									
Mode:	TX 1900 MHz PCS BAND, GPRS									
Chamber			Pre-amplifier			Filter		Limit		
5m Chamber A			T144 8449B			Filter 1		FCC PART 24		
f GHz	SA reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Path Loss (dB)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low CH. (1850.2 MHz)										
3.700	-62.8	H	3.0	45.0	36.8	1.0	-53.6	-13.0	-40.6	
5.551	-64.9	H	3.0	49.9	36.3	1.0	-50.3	-13.0	-37.3	
7.401	-68.2	H	3.0	52.9	36.6	1.0	-50.9	-13.0	-37.9	
9.251	-68.4	H	3.0	55.2	37.0	1.0	-49.2	-13.0	-36.2	
3.700	-62.6	V	3.0	44.9	36.8	1.0	-53.5	-13.0	-40.5	
5.551	-63.3	V	3.0	49.3	36.3	1.0	-49.3	-13.0	-36.3	
7.401	-68.5	V	3.0	51.8	36.6	1.0	-52.2	-13.0	-39.2	
9.251	-68.0	V	3.0	54.2	37.0	1.0	-49.8	-13.0	-36.8	
Mid Ch. (1880.0 MHz)										
3.760	-67.9	H	3.0	45.2	36.8	1.0	-58.5	-13.0	-45.5	
5.640	-59.0	H	3.0	50.1	36.3	1.0	-44.2	-13.0	-31.2	
7.520	-68.4	H	3.0	53.1	36.6	1.0	-50.9	-13.0	-37.9	
9.400	-67.9	H	3.0	55.4	37.0	1.0	-48.5	-13.0	-35.5	
3.760	-64.6	V	3.0	45.1	36.8	1.0	-55.4	-13.0	-42.4	
5.640	-60.7	V	3.0	49.4	36.3	1.0	-46.6	-13.0	-33.6	
7.520	-66.3	V	3.0	52.0	36.6	1.0	-49.9	-13.0	-36.9	
9.400	-67.9	V	3.0	54.4	37.0	1.0	-49.5	-13.0	-36.5	
Mid Ch. (1909.8 MHz)										
3.820	-63.0	H	3.0	45.3	36.7	1.0	-53.4	-13.0	-40.4	
5.729	-62.9	H	3.0	50.2	36.3	1.0	-47.9	-13.0	-34.9	
7.639	-68.5	H	3.0	53.2	36.6	1.0	-50.9	-13.0	-37.9	
9.549	-68.3	H	3.0	55.6	37.1	1.0	-48.8	-13.0	-35.8	
3.820	-62.5	V	3.0	45.2	36.7	1.0	-53.0	-13.0	-40.0	
5.729	-63.0	V	3.0	49.5	36.3	1.0	-48.8	-13.0	-35.8	
7.639	-66.3	V	3.0	52.1	36.6	1.0	-49.8	-13.0	-36.8	
9.549	-66.8	V	3.0	54.6	37.1	1.0	-48.3	-13.0	-35.3	

Rev. 03.03.09

PCS BAND EGPRS SPURIOUS & HARMONIC (EIRP)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement										
Company:		SIERRA WIRELESS INC.								
Project #:		09U12651								
Date:		6/22/2009								
Test Engineer:		MENGISTU MEKURIA								
Configuration:		EUT WITH SUPPORT LAPTOP								
Mode:		TX 1900 MHz PCS BAND, EGPRS								
Chamber		Pre-amplifier			Filter		Limit			Notes
5m Chamber A		T144 8449B			Filter 1		FCC PART 24			
f GHz	SA reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Path Loss (dB)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch. (1850.2 MHz)										
3.700	-64.2	H	3.0	45.0	36.8	1.0	-55.0	-13.0	-42.0	
5.551	-61.3	H	3.0	49.9	36.3	1.0	-46.6	-13.0	-33.6	
9.251	-68.5	H	3.0	55.2	37.0	1.0	-87.7	-13.0	-100.7	
3.700	-62.8	V	3.0	44.9	36.8	1.0	-53.7	-13.0	-40.7	
5.551	-57.9	V	3.0	49.3	36.3	1.0	-44.0	-13.0	-31.0	
9.251	-68.9	V	3.0	54.2	37.0	1.0	-50.7	-13.0	-37.7	
Mid Ch. (1880.0 MHz)										
3.760	-67.2	H	3.0	45.2	36.8	1.0	-57.8	-13.0	-44.8	
5.640	-59.0	H	3.0	50.1	36.3	1.0	-44.2	-13.0	-31.2	
9.400	-68.9	H	3.0	55.4	37.0	1.0	-49.5	-13.0	-36.5	
3.760	-66.5	V	3.0	45.1	36.8	1.0	-57.2	-13.0	-44.2	
5.640	-60.5	V	3.0	49.4	36.3	1.0	-46.4	-13.0	-33.4	
9.400	-68.7	V	3.0	54.4	37.0	1.0	-50.3	-13.0	-37.3	
Mid Ch. (1909.8 MHz)										
3.820	-65.8	H	3.0	45.3	36.7	1.0	-56.1	-13.0	-43.1	
5.729	-59.8	H	3.0	50.2	36.3	1.0	-44.9	-13.0	-31.9	
9.549	-68.4	H	3.0	55.6	37.1	1.0	-48.9	-13.0	-35.9	
3.820	-60.7	V	3.0	45.2	36.7	1.0	-51.2	-13.0	-38.2	
5.729	-60.6	V	3.0	49.5	36.3	1.0	-46.4	-13.0	-33.4	
9.549	-68.7	V	3.0	54.6	37.1	1.0	-50.1	-13.0	-37.1	

Rev. 03.03.09

PCS BAND WCDMA SPURIOUS & HARMONIC (EIRP)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement										
Company:	SIERRA WIRELESS INC.									
Project #:	09U12651									
Date:	6/22/2009									
Test Engineer:	MENGISTU MEKURIA									
Configuration:	EUT WITH SUPPORT LAPTOP									
Mode:	TX 1900 MHz PCS BAND, WCDMA									
Chamber		Pre-amplifier		Filter		Limit				
5m Chamber A		T144 8449B		Filter 1		FCC PART 24				
f GHz	SA reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Path Loss (dB)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low CH. (1852.4 MHz)										
3.705	-50.9	H	3.0	45.0	36.8	1.0	-41.7	-13.0	-28.7	
5.557	-62.5	H	3.0	50.0	36.3	1.0	-47.8	-13.0	-34.8	
9.262	-65.3	H	3.0	55.3	37.0	1.0	-46.1	-13.0	-33.1	
3.705	-44.2	V	3.0	44.9	36.8	1.0	-35.0	-13.0	-22.0	
5.557	-63.5	V	3.0	49.3	36.3	1.0	-49.5	-13.0	-36.5	
9.262	-65.5	V	3.0	54.2	37.0	1.0	-47.3	-13.0	-34.3	
Mid Ch. (1880.0 MHz)										
3.760	-49.8	H	3.0	45.2	36.8	1.0	-40.4	-13.0	-27.4	
5.640	-62.2	H	3.0	50.1	36.3	1.0	-47.4	-13.0	-34.4	
9.400	-69.2	H	3.0	55.4	37.0	1.0	-49.8	-13.0	-36.8	
3.760	-44.8	V	3.0	45.1	36.8	1.0	-35.6	-13.0	-22.6	
5.640	-63.3	V	3.0	49.4	36.3	1.0	-49.2	-13.0	-36.2	
9.400	-67.0	V	3.0	54.4	37.0	1.0	-48.6	-13.0	-35.6	
Mid Ch. (1907.6 MHz)										
3.815	-46.6	H	3.0	45.3	36.7	1.0	-37.0	-13.0	-24.0	
5.723	-59.7	H	3.0	50.2	36.3	1.0	-44.7	-13.0	-31.7	
9.538	-66.4	H	3.0	55.6	37.1	1.0	-46.8	-13.0	-33.8	
3.815	-41.6	V	3.0	45.2	36.7	1.0	-32.2	-13.0	-19.2	
5.723	-59.9	V	3.0	49.5	36.3	1.0	-45.7	-13.0	-32.7	
9.538	-69.1	V	3.0	54.6	37.1	1.0	-50.6	-13.0	-37.6	

Rev. 03.03.09

7.3. RECEIVER SPURIOUS EMISSIONS

LIMIT

RSS-Gen § 6a

Spurious Emission Limits for Receivers:

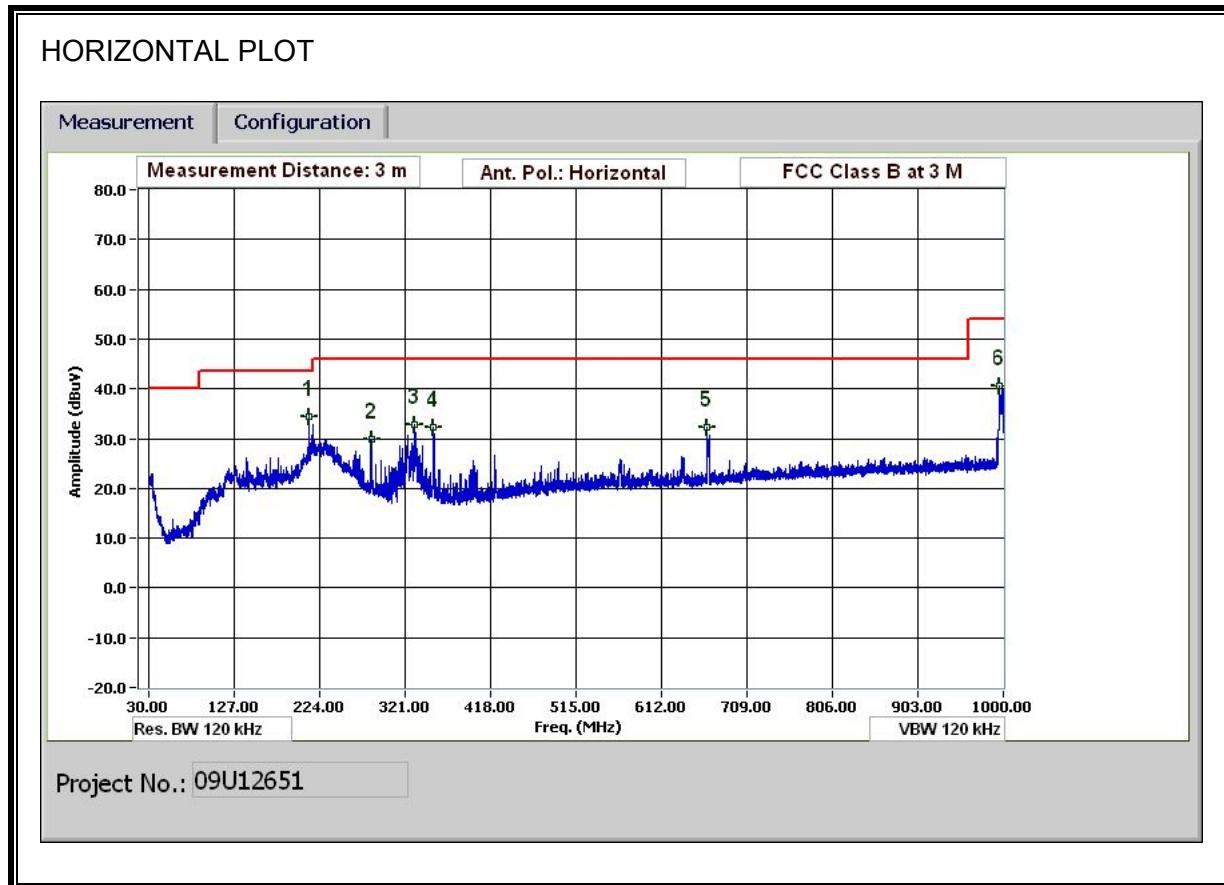
Spurious Frequency (MHz)	Field Strength (microvolts/m at 3 metres)
30-88	100
88-216	150
216-960	200
Above 960	500

TEST PROCEDURE

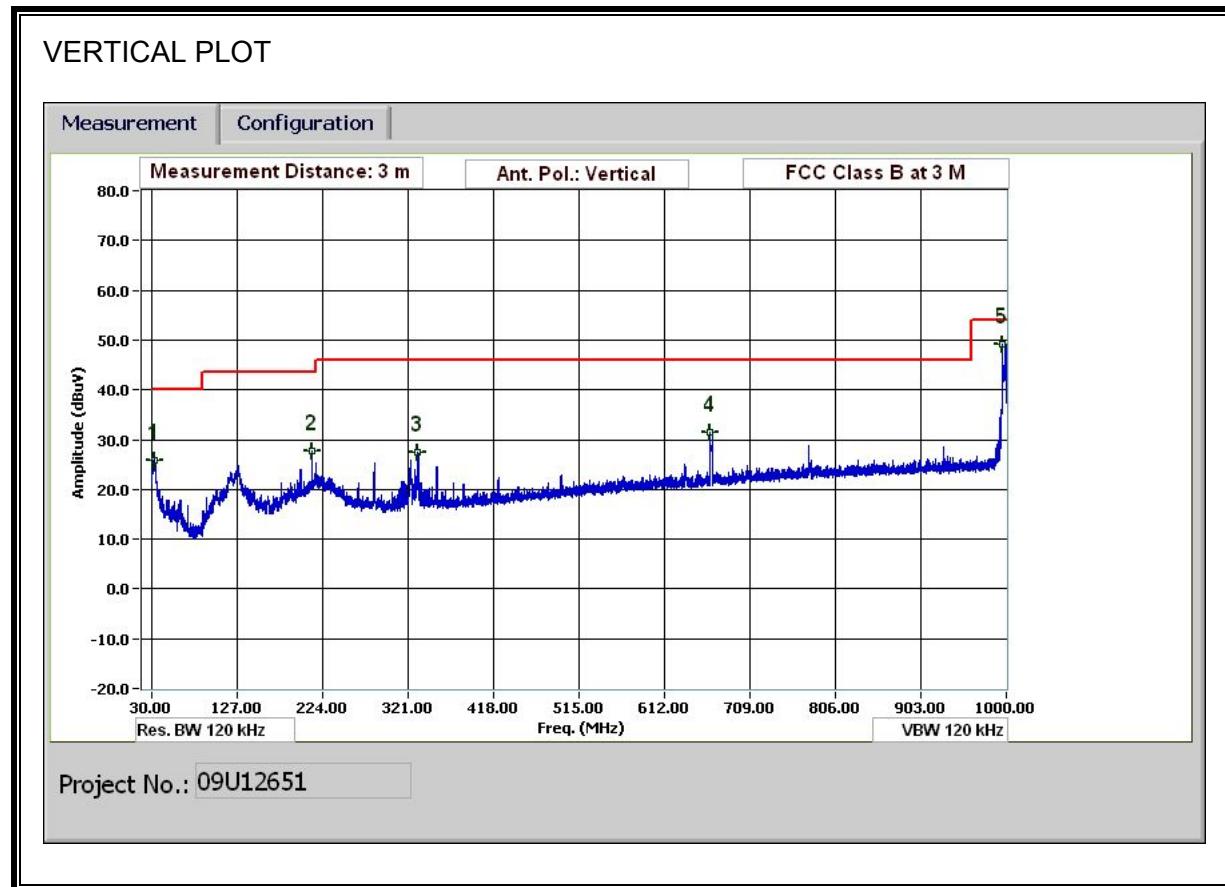
The search for spurious emissions shall be from the lowest frequency internally generated or used in the receiver (local oscillator frequency, intermediate frequency or carrier frequency), or 30 MHz, whichever is the higher, to at least 3 times the highest tunable and local oscillator frequencies.

RESULTS

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



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



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

HORIZONTAL AND VERTICAL DATA

30-1000MHz Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Mengistu Mekuria
Date: 02/12/09
Project #: 09U12651
Company: Sierra Wireless Inc.
EUT Description: USB Wireless Modem
EUT M/N: USB306
Test Target: FCC Class B
Mode Oper: RX Mode

f	Measurement Frequency	Amp	Preamp Gain	Margin	Margin vs. Limit
Dist	Distance to Antenna	D	Corr	Distance Correct to 3 meters	
Read	Analyzer Reading	Filter		Filter Insert Loss	
AF	Antenna Factor	Corr.		Calculated Field Strength	
CL	Cable Loss	Limit		Field Strength Limit	

f MHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filter dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Notes
211.928	3.0	49.4	12.0	1.3	28.2	0.0	0.0	34.4	43.5	-9.1	H	
282.970	3.0	43.7	12.9	1.5	28.1	0.0	0.0	29.9	46.0	-16.1	H	
332.052	3.0	45.4	13.9	1.6	28.1	0.0	0.0	32.8	46.0	-13.2	H	
352.693	3.0	44.6	14.2	1.7	28.1	0.0	0.0	32.3	46.0	-13.7	H	
663.866	3.0	38.0	19.2	2.4	27.3	0.0	0.0	32.2	46.0	-13.8	H	
995.680	3.0	43.2	22.4	3.0	27.9	0.0	0.0	40.7	54.0	-13.3	H	
33.240	3.0	35.0	18.7	0.5	28.4	0.0	0.0	25.8	40.0	-14.2	V	
211.687	3.0	42.7	12.0	1.3	28.2	0.0	0.0	27.7	43.5	-15.8	V	
332.052	3.0	40.2	13.9	1.6	28.1	0.0	0.0	27.6	46.0	-18.4	V	
663.746	3.0	37.2	19.2	2.4	27.3	0.0	0.0	31.4	46.0	-14.6	V	
995.800	3.0	51.7	22.4	3.0	27.9	0.0	0.0	49.2	54.0	-4.8	V	

Rev. 1.27.09

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

SPURIOUS EMISSIONS ABOVE 1000 MHz

High Frequency Measurement Compliance Certification Services, Fremont 5m Chamber															
Company:	SIERRA WIRELESS INC.														
Project #:	09U12651														
Date:	6/24/2009														
Test Engineer:	MENGISTU MEKURIA														
Configuration:	EUT WITH SUPPORT LAPTOP														
Mode:	RX MODE														
Test Equipment:															
Horn 1-18GHz		Pre-amplifier 1-26GHz		Pre-amplifier 26-40GHz		Horn > 18GHz		Limit							
T73; S/N: 6717 @3m		T144 Miteq 3008A00931						RX RSS 210							
Hi Frequency Cables															
3' cable 22807700			12' cable 22807600			20' cable 22807500			HPF		Reject Filter		Peak Measurements RBW=VBW=1MHz		
3' cable 22807700			12' cable 22807600			20' cable 22807500							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)
1.000	3.0	64.4	41.7	23.9	2.4	-39.5	0.0	0.0	51.1	28.4	74	54	-22.9	-25.6	H
1.330	3.0	51.0	34.1	25.0	2.7	-39.0	0.0	0.0	39.7	22.8	74	54	-34.3	-31.2	H
1.660	3.0	52.4	33.6	26.1	3.1	-38.5	0.0	0.0	43.0	24.3	74	54	-31.0	-29.7	H
1.000	3.0	67.7	51.0	23.9	2.4	-39.5	0.0	0.0	54.4	37.7	74	54	-19.6	-16.3	V
1.315	3.0	48.3	37.6	24.9	2.7	-39.0	0.0	0.0	36.9	26.2	74	54	-37.1	-27.8	V
1.660	3.0	58.5	35.1	26.1	3.1	-38.5	0.0	0.0	49.1	25.7	74	54	-24.9	-28.3	V
1.990	3.0	52.4	31.5	27.2	3.4	-38.1	0.0	0.0	44.9	24.0	74	54	-29.1	-30.0	V
2.260	3.0	47.6	32.2	27.9	3.7	-37.7	0.0	0.0	41.5	26.1	74	54	-32.5	-27.9	V
2.665	3.0	49.6	31.4	29.0	4.1	-37.4	0.0	0.0	45.3	27.0	74	54	-28.7	-27.0	V
Rev. 11.10.08															
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										

7.4. POWER LINE CONDUCTED EMISSION

LIMIT

RSS-Gen 7.2.2

Except when the requirements applicable to a given device state otherwise, for any licence-exempt radio communication device equipped to operate from the public utility AC power supply, either directly or indirectly, the radio frequency voltage that is conducted back onto the AC power lines in the frequency range of 0.15 MHz to 30 MHz shall not exceed the limits shown in Table 2. The tighter limit applies at the frequency range boundaries.

Table 2 – AC Power Lines Conducted Emission Limits

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

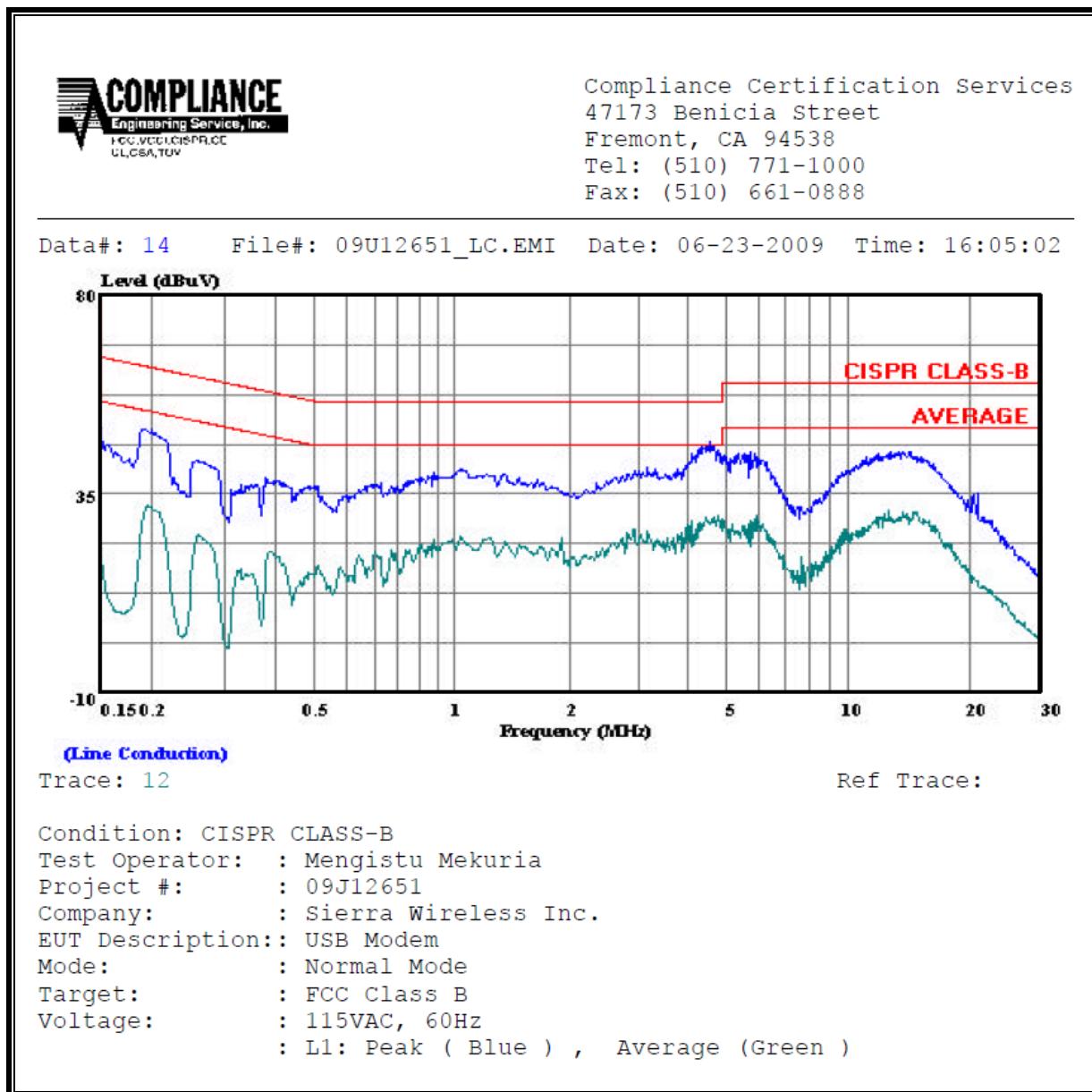
^{*} Decreases with the logarithm of the frequency.

RESULTS

6 WORST EMISSIONS

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq. (MHz)	Reading			Closs (dB)	Limit	EN_B	Margin		Remark
	PK (dBuV)	QP (dBuV)	AV (dBuV)				QP (dB)	AV (dB)	
0.19	49.64	--	32.34	0.00	64.08	54.08	-14.44	-21.74	L1
4.67	46.93	--	30.17	0.00	56.00	46.00	-9.07	-15.83	L1
13.41	44.51	--	30.92	0.00	60.00	50.00	-15.49	-19.08	L1
0.19	49.16	--	32.80	0.00	64.08	54.08	-14.92	-21.28	L2
4.67	47.33	--	30.40	0.00	56.00	46.00	-8.67	-15.60	L2
13.34	44.49	--	30.80	0.00	60.00	50.00	-15.51	-19.20	L2
6 Worst Data									

LINE 1 RESULTS



LINE 2 RESULTS

