



**FCC CFR47 PART 22 SUBPART H  
AND PART 24 SUBPART E  
CERTIFICATION TEST REPORT**

**FOR**

**EXPRESSCARD WIRELESS MODEM**

**MODEL NUMBER: AirCard 880E**

**FCC ID: N7NAC880E**

**REPORT NUMBER: 07U11121-1**

**ISSUE DATE: JULY 5, 2007**

*Prepared for*  
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**NVLAP LAB CODE 200065-0**

Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
<u>---</u>	<u>07/05/07</u>	<u>Initial Issue</u>	<u>T. Chan</u>

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# 1. ATTESTATION OF TEST RESULTS

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

**EUT DESCRIPTION:** EXPRESSCARD WIRELESS MODEM

**MODEL:** AirCard 880E

**SERIAL NUMBER:** 01976

**DATE TESTED:** JUNE 21-22, 2007

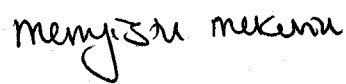
APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 22 SUBPART H	NO NON-COMPLIANCE NOTED
FCC PART 24 SUBPART E	NO NON-COMPLIANCE NOTED

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:



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THU CHAN  
EMC SUPERVISOR  
COMPLIANCE CERTIFICATION SERVICES

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MENGISTU MEKURIA  
EMC ENGINEER  
COMPLIANCE CERTIFICATION SERVICES

## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with TIA/EIA 603C (2004), ANSI C63.4-2003, FCC CFR 47 Part 2, FCC CFR 47 Part 15 and FCC CFR 47 Part 22H and 24E.

## 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. In the US and Canada, only cellular and PCS bands are used for GSM/GPRS/EDGE/UMTS operation, so this test report only contains data for these two bands (850MHz and 1900MHz). The EUT was tested in all modes of operation: GMSK, 8PSK, and WCDMA modulation.

### 5.2. MAXIMUM OUTPUT POWER

The transmitter has maximum ERP and EIRP output powers as follows:

#### Part 22 (824 - 849MHz) & Part 24 (1850 - 1910MHz) Authorized Band:

Frequency Range (MHz)	Modulation	ERP Peak Power (dBm)	ERP Peak Power (mW)
824.2 - 848.8	GPRS	28.80	758.58
824.2 - 848.8	EGPRS	26.80	478.63
826.4 - 846.6	WCDMA	25.90	389.05
826.4 - 846.6	HSDPA	26.00	398.11

Frequency Range (MHz)	Modulation	EIRP Peak Power (dBm)	EIRP Peak Power (mW)
1850.2 - 1909.8	GPRS	29.30	851.14
1850.2 - 1909.8	EGPRS	27.00	501.19
1852.4 - 1907.6	WCDMA	27.10	512.86
1852.4 - 1907.6	HSDPA	27.60	575.44

NOTE: RBW=VBW=8MHz

### 5.3. SOFTWARE AND FIRMWARE

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

This procedure assumes the Agilent 8960 Test Set has the following applications installed and with valid license.

#### GPRS Mode

- Call Setup > Shift & Preset
- Active Cell > Active Cell (GPRS)
- Connection Type > ETSI Type A
- BCH Parameters > Cell Band > PCS or GSM850 (US band)
- TCH Parameters > Traffic Band > PCS or GSM850 (US band)
  - > MS TX Level > 3 (33dBm for Cell band); 3 (30dBm for PCS band)
- PDTCH > Multislot Config > 1 Down, 4 Up
  - > MS TX Level > 3 (33dBm Cell band); 3 (30dBm PCS band)
  - > Coding Scheme > CS-4
- Press "Start Data Connection"

#### EGPRS Mode

- Call Setup > Shift & Preset
- Active Cell > Active Cell (EGPRS)
- Connection Type > ETSI Type A
- BCH Parameters > Cell Band > PCS or GSM850 (US band)
- TCH Parameters > Traffic Band > PCS or GSM850 (US band)
  - > MS TX Level > 6 (27dBm Cell band); 5 (26dBm PCS band)
- PDTCH > Multislot Config > 1 Down, 4 Up
  - > MS TX Level > 6 (27dBm Cell band); 5 (26dBm PCS band)
  - > Modulation Coding Scheme > Downlink > As Uplink
    - > Uplink > MSC-5 (8PSK)
- Press "Start Data Connection" and you will see "Transferring"

### UMTS

- Call Setup > Shift & Preset
- Cell Parameters: PS Domain Information > Present
  - ATT (IMSI Attach) Flag State > Set
- Security Parameter - System Operations > None
- Channel Type:
  - RMC: 12.2k, 64k, 144k, or 384k
  - AMC: 12.2 UL / 64/ DL AM RMC, 12.2 UL / 144/ DL AM RMC, or 12.2 UL / 384/ DL AM RMC,
  
- Paging Service: RB Test Mode
- Channel (UARFCN) Parms:

	<u>PCS band</u>	<u>Cell band</u>
▪ DL Channel:	9662 / 9800 / 9938	4357 / 4407 / 4458
▪ UL Channel:	9262 / 9400 / 9538	4132 / 4182 / 4233
  
- DL DTCH Data: All Ones
- RLC Reestablish: Off
- Call Limit State: Off
- Call Drop Timer: Off
- SRB Config.: 13.6k DCCH
- UE Target Power: 25 dBm
- UL CL Power Ctrl Parameters
  - UL CL Power Ctrl Mode: All Up Bits

### HSDPA

- Uplink Parameter:
  - UPLINK DPCH Bc / Bd Control: Manual
  - Manual Uplink DPCH Bc: 9
  - Manual Uplink DPCH Bd: 15
  
- Channel Type: 12.2k+HSDPA
- HSDPA Parameters:
  - HSDPA RB Test Mode Setup
    - HS-DSCH Configuration Type: FRC
    - FRC Type: **H-Set 3**
    - CN Domain: CS Domain
    - Uplink 64k DTCH for HSDPA Loopback State: On
    - HS-DSCH Data Pattern: All Ones
    - RLC Header on HS-DSCH: Present
  - HSDPA Uplink Parameters
    - DeltaACK: 5
    - DeltaNACK: 5
    - DeltaCQI: 2



#### 5.4. WORST-CASE CONFIGURATION AND MODE

Based on all test cases, GPRS has the worst case between GPRS & EGPRS modulations. The worst-case channel is determined as the channel with the highest output power. The highest measured output power was at high channel for CELL band and low channel for PCS band the worst case on HSDPA mode for WCDMA modulation

#### 5.5. DESCRIPTION OF TEST SETUP

##### SUPPORT EQUIPMENT

Test Peripherals				
Device Type	Manufacturer	Model Number	Serial Number	FCC ID
Laptop	HP	Pavilion	2CA6312Z0T	DoC
AC Adapter	HP	PA-1650-02C	3408869504	DoC
Communications Test Set	Agilent	E5515C	GB46160222	DoC

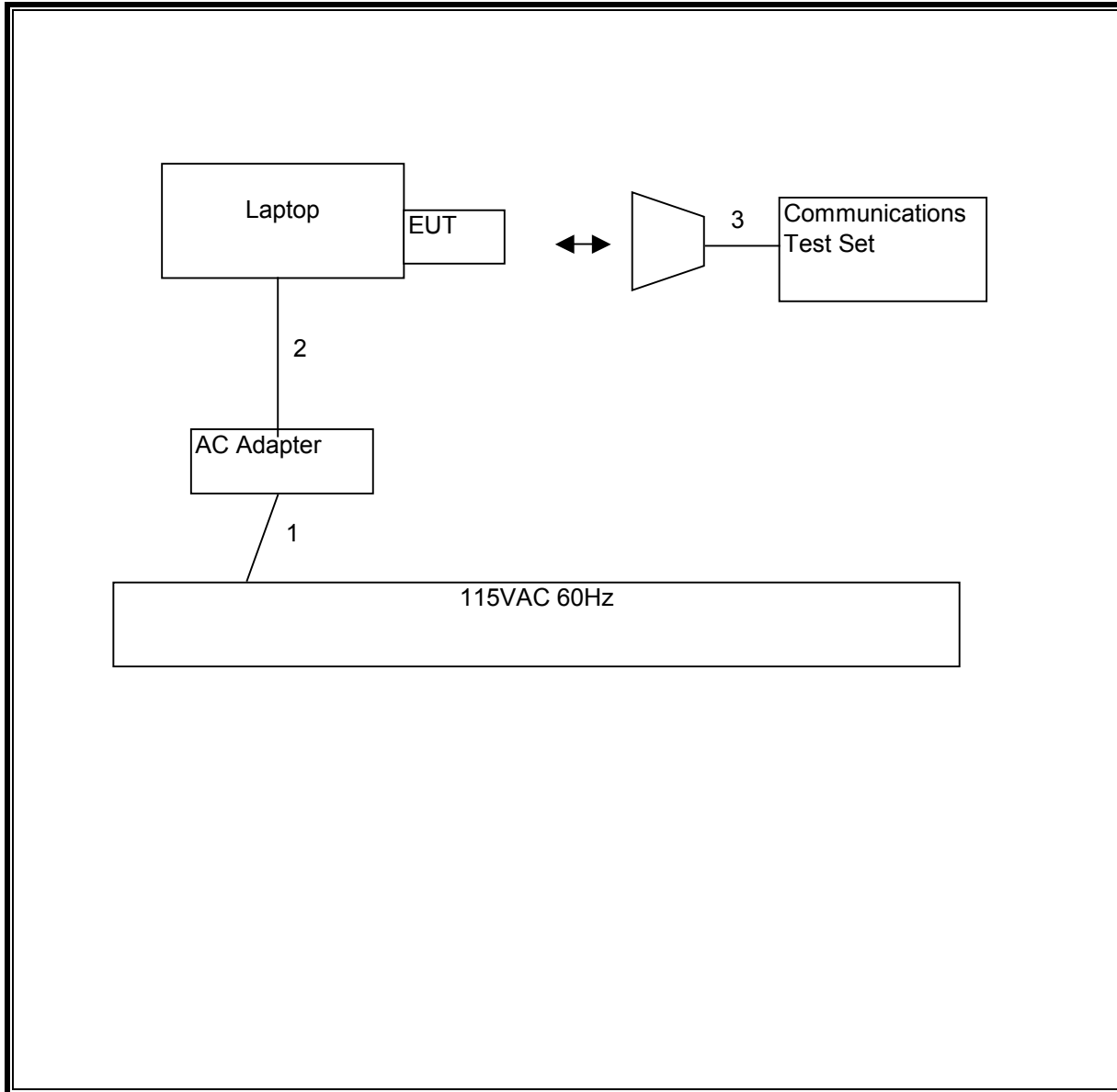
##### I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	1	US 115V	Un-shielded	2 m	NA
2	DC	1	DC	Un-shielded	2m	Ferrite on DC end
3	RF In/Out	1	SMA	Un-shielded	1m	NA

##### TEST SETUP

The EUT is connected directly to 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
Antenna, Bilog 30 MHz ~ 2 Ghz	Sunol Sciences	JB1	A121003	09/06/07
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	6717	04/15/08
Antenna Biconical	EMCO	5116	9103163	03/11/08
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	6717	04/15/08
Signal Generator 2 -40 GHz	R & S	SMP04	DE 34210	06/02/08
Signal Generator 1024 MHz	R & S	SMY01	DE 12311	05/11/08
Dipole	EMCO	3121C-DB2	22435	05/07/08
2.7GHz HPF	MicroTronic	HPM13194	2	CNR
1.5GHz HPF	MicroTronic	HPM13195	1	CNR
Communication Test Set	Agilent	E5515C	91936	06/29/08

## 7. LIMITS AND RESULTS

### 7.1. RADIATED RF POWER OUTPUT

#### LIMIT

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

#### TEST PROCEDURE

ANSI / TIA / EIA 603 Clause 2.2.17

#### RESULTS

No non-compliance noted.

850 MHz GPRS Mode

Channel	Frequency (MHz)	ERP Peak Power (dBm)	ERP Peak Power (mW)
Low	824.2	28.80	758.58
Middle	837	28.70	741.31
High	848.8	27.90	616.60

1900 MHz GPRS Mode

Channel	Frequency (MHz)	EIRP Peak Power (dBm)	EIRP Peak Power (mW)
Low	1850.2	29.30	851.14
Middle	1880.00	28.70	741.31
High	1909.8	28.20	660.69

NOTE: RBW=VBW=8MHz.

850 MHz EGPRS Mode

Channel	Frequency (MHz)	ERP Peak Power (dBm)	ERP Peak Power (mW)
Low	824.2	26.80	478.63
Middle	837	26.50	446.68
High	848.8	26.30	426.58

1900 MHz EGPRS Mode

Channel	Frequency (MHz)	EIRP Peak Power (dBm)	EIRP Peak Power (mW)
Low	1850.2	27.00	501.19
Middle	1880.00	26.60	457.09
High	1909.8	25.60	363.08

850 MHz WCDMA Modulation

Channel	Frequency (MHz)	ERP Peak Power (dBm)	ERP Peak Power (mW)
Low	826.4	24.10	257.04
Middle	836.4	25.90	389.05
High	846.6	25.80	380.19

1900 MHz WCDMA Modulation

Channel	Frequency (MHz)	EIRP Peak Power (dBm)	EIRP Peak Power (mW)
Low	1852.4	27.10	512.86
Middle	1880.00	26.40	436.52
High	1907.6	25.80	380.19

NOTE: RBW=VBW=8MHz

850 MHz WCDMA+HSDPA Modulation

<b>Channel</b>	<b>Frequency (MHz)</b>	<b>ERP Peak Power (dBm)</b>	<b>ERP Peak Power (mW)</b>
Low	826.4	24.70	295.12
Middle	836.4	26.00	398.11
High	846.6	24.40	275.42

1900 MHz WCDMA+HSDPA Modulation

<b>Channel</b>	<b>Frequency (MHz)</b>	<b>EIRP Peak Power (dBm)</b>	<b>EIRP Peak Power (mW)</b>
Low	1852.4	27.60	575.44
Middle	1880.00	26.80	478.63
High	1907.6	26.20	416.87

NOTE: RBW=VBW=8MHz

**GPRS Output Power (ERP)**

High Frequency Substitution Measurement									
Compliance Certification Services, Fremont 5m Chamber Site									
Company:		SIERRA WIRELESS							
Project #:		07u11121							
Date:		6/21/2007							
Test Engineer:		MENGISTU MEKURIA							
Configuration:		EUT WITH SUPPORT LAPTOP							
Mode:		TX 850MHz, GPRS MODE							
<b>Test Equipment:</b>									
Receiving: Sunol T122, and 5m Chamber N-type Cable (Setup this one for testing EUT)									
Substitution: Dipole S/N: 00022117, and 4ft SMA Cable Warehouse S/N: 177081002									
f MHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
<b>Low Ch</b>									
824.20	102.5	V	28.9	0.5	0.0	28.4	38.5	-10.0	
824.20	104.6	H	29.3	0.5	0.0	28.8	38.5	-9.6	
<b>Mid Ch</b>									
837.00	101.7	V	28.7	0.6	0.0	28.1	38.5	-10.3	
837.00	104.4	H	29.3	0.6	0.0	28.7	38.5	-9.8	
<b>High Ch</b>									
848.80	101.8	V	28.6	0.7	0.0	27.9	38.5	-10.5	
848.80	102.8	H	27.3	0.7	0.0	26.6	38.5	-11.9	
Rev. 1.247									

**EGPRS Output Power (ERP)**

High Frequency Substitution Measurement Compliance Certification Services, Morgan Hill 5m Chamber Site									
Company:		SIERRA WIRELESS							
Project #:		07u11121							
Date:		6/21/2007							
Test Engineer:		MENGISTU MEKURIA							
Configuration:		EUT WITH SUPPORT LAPTOP							
Mode:		TX 850MHz, EGPRS MODE							
<b>Test Equipment:</b>									
Receiving: Sunol T122, and 5m Chamber N-type Cable (Setup this one for testing EUT)									
Substitution: Dipole S/N: 00022117, and 4ft SMA Cable Warehouse S/N: 177081002									
f MHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
<b>Low Ch</b>									
824.20	100.0	V	26.4	0.5	0.0	25.9	38.5	-12.5	
824.20	102.6	H	27.3	0.5	0.0	26.8	38.5	-11.6	
<b>Mid Ch</b>									
837.00	99.3	V	26.3	0.6	0.0	25.7	38.5	-12.7	
837.00	102.2	H	27.1	0.6	0.0	26.5	38.5	-12.0	
<b>High Ch</b>									
848.80	99.0	V	25.8	0.7	0.0	25.1	38.5	-13.3	
848.80	102.5	H	27.0	0.7	0.0	26.3	38.5	-12.1	
Rev. 1.24.7									



**WCDMA Output Power (ERP)**

High Frequency Substitution Measurement									
Compliance Certification Services, Fremont 5m Chamber Site									
Company:		SIERRA WIRELESS							
Project #:		07u11121							
Date:		6/21/2007							
Test Engineer:		MENGISTU MEKURIA							
Configuration:		EUT WITH SUPPORT LAPTOP							
Mode:		TX 850MHz, WCDMA MODE							
<b>Test Equipment:</b>									
Receiving: Sunol T122, and 5m Chamber N-type Cable (Setup this one for testing EUT)									
Substitution: Dipole S/N: 00022117, and 4ft SMA Cable Warehouse S/N: 177081002									
f MHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
<b>Low Ch</b>									
826.40	96.7	V	23.1	0.5	0.0	22.6	38.5	-15.8	
826.40	99.9	H	24.6	0.5	0.0	24.1	38.5	-14.3	
<b>Mid Ch</b>									
836.40	98.1	V	25.1	0.6	0.0	24.5	38.5	-13.9	
836.40	101.6	H	26.5	0.6	0.0	25.9	38.5	-12.6	
<b>High Ch</b>									
846.60	98.3	V	25.1	0.7	0.0	24.4	38.5	-14.0	
846.60	102.0	H	26.5	0.7	0.0	25.8	38.5	-12.6	
Rev. 1.24.7									

**WCDMA+HSDPA Output Power (ERP)**

High Frequency Substitution Measurement									
Compliance Certification Services, Fremont 5m Chamber Site									
Company:		SIERRA WIRELESS							
Project #:		07u11121							
Date:		6/21/2007							
Test Engineer:		MENGISTU MEKURIA							
Configuration:		EUT WITH SUPPORT LAPTOP							
Mode:		TX 850MHz, HSDPA MODE							
<b>Test Equipment:</b>									
Receiving: Smol T122, and 5m Chamber N-type Cable (Setup this one for testing EUT)									
Substitution: Dipole S/N: 00022117, and 4ft SMA Cable Warehouse S/N: 177081002									
f MHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
<b>Low Ch</b>									
826.40	97.1	V	23.5	0.5	0.0	23.0	38.5	-15.5	
826.40	100.5	H	25.2	0.5	0.0	24.7	38.5	-13.7	
<b>Mid Ch</b>									
836.40	98.0	V	25.0	0.6	0.0	24.4	38.5	-14.1	
836.40	101.7	H	26.6	0.6	0.0	26.0	38.5	-12.5	
<b>High Ch</b>									
846.60	96.4	V	23.2	0.7	0.0	22.5	38.5	-16.0	
846.60	100.6	H	25.1	0.7	0.0	24.4	38.5	-14.0	
Rev. 1.24.7									

**GPRS Output Power (EIRP)**

High Frequency Fundamental Measurement									
Compliance Certification Services, Fremont 5m Chamber Site									
Company:		SIERRA WIRELESS							
Project #:		07u11121							
Date:		6/21/2007							
Test Engineer:		MENGI STU MEKURIA							
Configuration:		EUT WITH SUPPORT LAPTOP							
Mode:		TX 1900MHz, GPRS MODE							
<b>Test Equipment:</b>									
Receiving: Horn T73, and 12ft S/N: 197209005 (Setup this one for testing EUT)									
Substitution: Horn T60 Substitution, 4ft SMA Cable Warehouse S/N: 177081002									
f GHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
<b>Low Ch</b>									
1.850	95.3	V	21.9	0.9	8.3	29.3	33.0	-3.7	
1.850	93.8	H	19.8	0.9	8.3	27.2	33.0	-5.8	
<b>Mid Ch</b>									
1.880	95.6	V	21.3	0.9	8.3	28.7	33.0	-4.3	
1.880	90.5	H	15.7	0.9	8.3	23.1	33.0	-9.9	
<b>High Ch</b>									
1.910	94.0	V	20.7	0.9	8.4	28.2	33.0	-4.8	
1.910	90.2	H	17.4	0.9	8.4	24.9	33.0	-8.2	
Rev. 1.24.7									

**EGPRS Output Power (EIRP)**

High Frequency Fundamental Measurement Compliance Certification Services, Fremont 5m Chamber Site									
Company:		SIERRA WIRELESS							
Project #:		07u11121							
Date:		6/21/2007							
Test Engineer:		MENGISTU MEKURIA							
Configuration:		EUT WITH SUPPORT LAPTOP							
Mode:		TX 1900MHz, EGPRS MODE							
<b>Test Equipment:</b>									
Receiving: Horn T73, and 12ft S/N: 197209005 (Setup this one for testing EUT)									
Substitution: Horn T60 Substitution, 4ft SMA Cable Warehouse S/N: 177081002									
f GHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
<b>Low Ch</b>									
1.850	93.0	V	19.6	0.9	8.3	27.0	33.0	-6.0	
1.850	91.3	H	17.4	0.9	8.3	24.8	33.0	-8.2	
<b>Mid Ch</b>									
1.880	93.5	V	19.2	0.9	8.3	26.6	33.0	-6.4	
1.880	89.3	H	14.5	0.9	8.3	21.9	33.0	-11.1	
<b>High Ch</b>									
1.910	91.4	V	18.1	0.9	8.4	25.6	33.0	-7.4	
1.910	88.7	H	15.9	0.9	8.4	23.4	33.0	-9.6	
Rev. 1.24.7									

**WCDMA Output Power (EIRP)**

High Frequency Fundamental Measurement									
Compliance Certification Services, Fremont 5m Chamber Site									
Company:		SIERRA WIRELESS							
Project #:		07u11121							
Date:		6/21/2007							
Test Engineer:		MENGISTU MEKURIA							
Configuration:		EUT WITH SUPPORT LAPTOP							
Mode:		TX 1900MHz, WCDMA MODE							
<b>Test Equipment:</b>									
Receiving: Horn T73, and 12ft S/N: 197209005 (Setup this one for testing EUT)									
Substitution: Horn T60 Substitution, 4ft SMA Cable Warehouse S/N: 177081002									
f GHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
<b>Low Ch</b>									
1.852	93.1	V	19.7	0.9	8.3	27.1	33.0	-5.9	
1.852	91.6	H	17.7	0.9	8.3	25.1	33.0	-7.9	
<b>Mid Ch</b>									
1.880	93.3	V	19.0	0.9	8.3	26.4	33.0	-6.6	
1.880	90.9	H	16.1	0.9	8.3	23.5	33.0	-9.5	
<b>High Ch</b>									
1.908	91.6	V	18.3	0.9	8.4	25.8	33.0	-7.2	
1.908	90.1	H	17.3	0.9	8.4	24.8	33.0	-8.2	
Rev. 1.24.7									

**WCDMA+HSDPA Output Power (EIRP)**

High Frequency Fundamental Measurement									
Compliance Certification Services, Fremont 5m Chamber Site									
Company:		SIERRA WIRELESS							
Project #:		07u11121							
Date:		6/21/2007							
Test Engineer:		MENGISTU MEKURIA							
Configuration:		EUT WITH SUPPORT LAPTOP							
Mode:		TX 1900MHz, HSDPA MODE							
<b>Test Equipment:</b>									
Receiving: Horn T73, and 12ft S/N: 197209005 (Setup this one for testing EUT)									
Substitution: Horn T60 Substitution, 4ft SMA Cable Warehouse S/N: 177081002									
f GHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
<b>Low Ch</b>									
1852	93.6	V	20.2	0.9	8.3	27.6	33.0	-5.4	
1852	92.2	H	18.3	0.9	8.3	25.7	33.0	-7.3	
<b>Mid Ch</b>									
1880	93.7	V	19.4	0.9	8.3	26.8	33.0	-6.2	
1880	91.0	H	16.2	0.9	8.3	23.6	33.0	-9.4	
<b>High Ch</b>									
1908	92.0	V	18.7	0.9	8.4	26.2	33.0	-6.8	
1908	90.3	H	17.5	0.9	8.4	25.0	33.0	-8.0	
Rev. 1.24.7									

## **7.2. FIELD STRENGTH OF SPURIOUS EMISSION**

### **LIMIT**

§22.917 (e) and §24.238 (a) 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**

ANSI / TIA / EIA 603 Clause 3.2.12, FCC 22.917 (h), & FCC 24.238 (b)

### **RESULTS**

No non-compliance noted.

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

**CELL Band GPRS Spurious & Harmonic (ERP)**

High Frequency Substitution Measurement											
Compliance Certification Services, Fremont 5m B-Chamber											
Company:		SIERRA WIRELESS									
Project #:		07u11121									
Date:		6/22/2007									
Test Engineer:		MENGISTU MEKURIA									
Configuration:		EUT WITH SUPPORT LAPTOP									
Mode:		TX 850MHz, GPRS MODE									
Test Equipment:											
EMCO Horn 1-18GHz		Horn > 18GHz				Limit		High Pass Filter			
T60; S/N: 2238 @3m						FCC 22		<input checked="" type="checkbox"/>			
Hi Frequency Cables											
<input type="checkbox"/> (2 ft)		<input type="checkbox"/> (2~3 ft)		<input type="checkbox"/> (4~6 ft)		<input checked="" type="checkbox"/> (12 ft)		Pre-amplifier 1-26GHz		Pre-amplifier 26-40GHz	
						T145 Agilent 3008A					
f GHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes	
<b>Low Ch</b>											
2.473	71.8	V	-30.1	4.9	9.3	7.1	-27.9	-13.0	-14.9		
3.297	55.9	V	-42.5	5.6	9.4	7.3	-40.8	-13.0	-27.8		
8.242	49.6	V	-38.8	8.7	12.2	10.0	-37.5	-13.0	-24.5		
9.066	63.1	V	-25.2	9.1	12.7	10.5	-23.7	-13.0	-10.7		
9.890	48.0	V	-38.3	9.9	12.8	10.6	-37.6	-13.0	-24.6		
2.473	72.6	H	-29.1	4.9	9.3	7.1	-26.8	-13.0	-13.8		
3.297	51.9	H	-46.4	5.6	9.4	7.3	-44.7	-13.0	-31.7		
8.242	47.4	H	-39.8	8.7	12.2	10.0	-38.4	-13.0	-25.4		
9.066	59.5	H	-28.7	9.1	12.7	10.5	-27.3	-13.0	-14.3		
<b>Mid Ch</b>											
2.511	67.6	V	-34.2	4.9	9.3	7.1	-31.9	-13.0	-18.9		
3.348	50.9	V	-47.3	5.6	9.5	7.3	-45.6	-13.0	-32.6		
5.859	45.5	V	-46.7	7.5	11.5	9.4	-44.9	-13.0	-31.9		
8.367	49.4	V	-39.0	8.7	12.2	10.1	-37.6	-13.0	-24.6		
9.207	57.4	V	-30.5	9.2	12.7	10.5	-29.2	-13.0	-16.2		
10.044	49.0	V	-36.2	10.1	12.9	10.7	-35.6	-13.0	-22.6		
2.511	68.2	H	-33.3	4.9	9.3	7.1	-31.1	-13.0	-18.1		
4.185	49.6	H	-45.6	6.4	10.0	7.9	-44.0	-13.0	-31.0		
8.367	47.6	H	-39.6	8.7	12.2	10.1	-38.2	-13.0	-25.2		
9.207	56.7	H	-31.3	9.2	12.7	10.5	-30.0	-13.0	-17.0		
10.044	43.9	H	-40.3	10.1	12.9	10.7	-39.7	-13.0	-26.7		
<b>Hi Ch</b>											
2.546	63.8	V	-37.8	4.9	9.3	7.1	-35.6	-13.0	-22.6		
4.244	51.4	V	-44.1	6.4	10.1	8.0	-42.5	-13.0	-29.5		
5.942	49.3	V	-42.9	7.6	11.6	9.5	-41.0	-13.0	-28.0		
7.639	48.2	V	-40.4	8.4	12.0	9.8	-38.9	-13.0	-25.9		
8.488	49.9	V	-38.5	8.8	12.3	10.2	-37.1	-13.0	-24.1		
9.337	57.7	V	-30.0	9.4	12.7	10.6	-28.8	-13.0	-15.8		
2.546	65.3	H	-36.0	4.9	9.3	7.1	-33.8	-13.0	-20.8		
4.244	48.9	H	-46.2	6.4	10.1	8.0	-44.6	-13.0	-31.6		
7.639	44.7	H	-43.1	8.4	12.0	9.8	-41.7	-13.0	-28.7		
8.488	49.2	H	-38.0	8.8	12.3	10.2	-36.6	-13.0	-23.6		
9.337	56.8	H	-30.8	9.4	12.7	10.6	-29.6	-13.0	-16.6		
Rev. 4.12.7											



**CELL Band EGPRS Spurious & Harmonic (ERP)**

**High Frequency Substitution Measurement**  
 Compliance Certification Services, Fremont 5m B-Chamber

Company: SIERRA WIRELESS  
 Project #: 07u11121  
 Date: 6/22/2007  
 Test Engineer: MENGISTU MEKURIA  
 Configuration: EUT WITH SUPPORT LAPTOP  
 Mode: TX 850MHz, EGPRS MODE

**Test Equipment:**

EMCO Horn 1-18GHz  
 T60; S/N: 2238 @3m

Horn > 18GHz

Limit  
 FCC 22

High Pass Filter

Hi Frequency Cables  
 (2 ft)  (2~3 ft)  (4~6 ft)  (12 ft)

Pre-amplifier 1-26GHz  
 T145 Agilent 3008A

Pre-amplifier 26-40GHz

f GHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
<b>Low Ch</b>										
2.390	60.3	V	-41.9	4.8	9.2	7.1	-39.7	-13.0	-26.7	
2.473	63.6	V	-38.3	4.9	9.3	7.1	-36.1	-13.0	-23.1	
3.297	56.0	V	-42.4	5.6	9.4	7.3	-40.7	-13.0	-27.7	
8.242	45.5	V	-42.9	8.7	12.2	10.0	-41.5	-13.0	-28.5	
9.066	58.4	V	-29.9	9.1	12.7	10.5	-28.5	-13.0	-15.5	
2.390	55.0	H	-47.0	4.8	9.2	7.1	-44.8	-13.0	-31.8	
2.473	63.7	H	-38.0	4.9	9.3	7.1	-35.8	-13.0	-22.8	
3.297	51.2	H	-47.1	5.6	9.4	7.3	-45.4	-13.0	-32.4	
8.242	44.8	H	-42.4	8.7	12.2	10.0	-41.0	-13.0	-28.0	
9.066	58.3	H	-30.0	9.1	12.7	10.5	-28.5	-13.0	-15.5	
<b>Mid Ch</b>										
2.511	61.4	V	-40.3	4.9	9.3	7.1	-38.1	-13.0	-25.1	
3.348	47.3	V	-50.9	5.6	9.5	7.3	-49.2	-13.0	-36.2	
4.185	48.7	V	-46.9	6.4	10.0	7.9	-45.3	-13.0	-32.3	
8.367	46.4	V	-42.0	8.7	12.2	10.1	-40.6	-13.0	-27.6	
9.207	57.3	V	-30.6	9.2	12.7	10.5	-29.3	-13.0	-16.3	
2.511	60.9	H	-40.6	4.9	9.3	7.1	-38.4	-13.0	-25.4	
3.348	45.3	H	-52.8	5.6	9.5	7.3	-51.2	-13.0	-38.2	
4.185	49.7	H	-45.5	6.4	10.0	7.9	-44.0	-13.0	-31.0	
8.367	46.0	H	-41.1	8.7	12.2	10.1	-39.8	-13.0	-26.8	
9.207	55.0	H	-32.9	9.2	12.7	10.5	-31.6	-13.0	-18.6	
<b>Hi Ch</b>										
2.546	58.4	V	-43.1	4.9	9.3	7.1	-41.0	-13.0	-28.0	
4.244	47.9	V	-47.6	6.4	10.1	8.0	-46.0	-13.0	-33.0	
7.639	46.9	V	-41.7	8.4	12.0	9.8	-40.2	-13.0	-27.2	
8.488	46.8	V	-41.5	8.8	12.3	10.2	-40.1	-13.0	-27.1	
2.546	57.6	H	-43.7	4.9	9.3	7.1	-41.5	-13.0	-28.5	
4.244	47.5	H	-47.6	6.4	10.1	8.0	-46.0	-13.0	-33.0	
7.639	44.2	H	-43.6	8.4	12.0	9.8	-42.1	-13.0	-29.1	
8.488	47.3	H	-39.8	8.8	12.3	10.2	-38.4	-13.0	-25.4	
9.337	52.6	H	-35.0	9.4	12.7	10.6	-33.8	-13.0	-20.8	

Rev. 4.12.7

**CELL Band WCDMA Spurious & Harmonic (ERP)**

High Frequency Substitution Measurement											
Compliance Certification Services, Fremont 5m B-Chamber											
Company:		SIERRA WIRELESS									
Project #:		07u11121									
Date:		6/22/2007									
Test Engineer:		MENGISTU MEKURIA									
Configuration:		EUT WITH SUPPORT LAPTOP									
Mode:		TX 850MHz, WCDMA MODE									
Test Equipment:											
EMCO Horn 1-18GHz			Horn > 18GHz			Limit			<input checked="" type="checkbox"/> High Pass Filter		
T60; S/N: 2238 @3m						FCC 22					
Hi Frequency Cables											
<input type="checkbox"/> (2 ft)			<input type="checkbox"/> (2~3 ft)			<input type="checkbox"/> (4~6 ft)			<input checked="" type="checkbox"/> (12 ft)		
Pre-amplifier 1-26GHz			Pre-amplifier 26-40GHz								
T145 Agilent 3008A											
f GHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes	
<b>Low Ch</b>											
2.479	50.2	V	-51.7	4.9	9.3	7.1	-49.5	-13.0	-36.5		
2.719	53.0	V	-47.7	5.1	9.3	7.1	-45.7	-13.0	-32.7		
4.000	53.2	V	-42.5	6.2	9.8	7.7	-41.1	-13.0	-28.1		
2.400	55.4	H	-46.6	4.8	9.3	7.1	-44.3	-13.0	-31.3		
2.479	46.6	H	-55.0	4.9	9.3	7.1	-52.8	-13.0	-39.8		
4.000	48.3	H	-47.1	6.2	9.8	7.7	-45.6	-13.0	-32.6		
<b>Mid Ch</b>											
2.400	59.9	V	-42.3	4.8	9.3	7.1	-40.0	-13.0	-27.0		
2.509	49.2	V	-52.5	4.9	9.3	7.1	-50.3	-13.0	-37.3		
4.000	52.6	V	-43.2	6.2	9.8	7.7	-41.7	-13.0	-28.7		
1.673	51.5	H	-51.9	3.9	7.2	5.0	-50.8	-13.0	-37.8		
2.400	55.7	H	-46.3	4.8	9.3	7.1	-44.0	-13.0	-31.0		
2.509	46.2	H	-55.3	4.9	9.3	7.1	-53.1	-13.0	-40.1		
4.000	48.0	H	-47.4	6.2	9.8	7.7	-46.0	-13.0	-33.0		
<b>Hi Ch</b>											
1.729	52.3	V	-51.7	3.9	7.3	5.2	-50.4	-13.0	-37.4		
2.390	59.3	V	-43.0	4.8	9.2	7.1	-40.7	-13.0	-27.7		
2.594	48.7	V	-52.6	5.0	9.3	7.1	-50.5	-13.0	-37.5		
4.000	53.0	V	-42.7	6.2	9.8	7.7	-41.2	-13.0	-28.2		
1.729	50.3	H	-53.0	3.9	7.3	5.2	-51.7	-13.0	-38.7		
2.390	56.0	H	-46.0	4.8	9.2	7.1	-43.7	-13.0	-30.7		
2.594	45.9	H	-55.3	5.0	9.3	7.1	-53.1	-13.0	-40.1		
4.000	48.4	H	-47.0	6.2	9.8	7.7	-45.5	-13.0	-32.5		
Rev. 4.12.7											

**CELL Band WCDMA+HSDPA Spurious & Harmonic (ERP)**

High Frequency Substitution Measurement										
Compliance Certification Services, Fremont 5m B-Chamber										
Company:		SIERRA WIRELESS								
Project #:		07u11121								
Date:		6/22/2007								
Test Engineer:		MENGISTU MEKURIA								
Configuration:		EUT WITH SUPPORT LAPTOP								
Mode:		TX 850MHz, HSDPA MODE								
<b>Test Equipment:</b>										
EMCO Horn 1-18GHz		Horn > 18GHz			Limit		<input checked="" type="checkbox"/> High Pass Filter			
T60; S/N: 2238 @3m					FCC 22					
Hi Frequency Cables										
<input type="checkbox"/> (2 ft)		<input type="checkbox"/> (2~3 ft)		<input type="checkbox"/> (4~6 ft)		<input checked="" type="checkbox"/> (12 ft)		Pre-amplifier 1-26GHz		Pre-amplifier 26-40GHz
						T145 Agilent 3008A				
f GHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
<b>Low Ch</b>										
1.653	50.7	V	-53.5	3.8	7.1	4.9	-52.4	-13.0	-39.4	
2.388	60.5	V	-41.8	4.8	9.2	7.1	-39.5	-13.0	-26.5	
2.479	50.1	V	-51.8	4.9	9.3	7.1	-49.6	-13.0	-36.6	
4.000	53.3	V	-42.5	6.2	9.8	7.7	-41.0	-13.0	-28.0	
1.653	50.3	H	-53.1	3.8	7.1	4.9	-52.0	-13.0	-39.0	
2.388	55.8	H	-46.2	4.8	9.2	7.1	-44.0	-13.0	-31.0	
2.479	47.4	H	-54.3	4.9	9.3	7.1	-52.0	-13.0	-39.0	
4.000	48.2	H	-47.2	6.2	9.8	7.7	-45.7	-13.0	-32.7	
<b>Mid Ch</b>										
1.673	51.5	V	-52.6	3.9	7.2	5.0	-51.5	-13.0	-38.5	
2.388	59.0	V	-43.3	4.8	9.2	7.1	-41.0	-13.0	-28.0	
2.509	49.8	V	-51.9	4.9	9.3	7.1	-49.7	-13.0	-36.7	
4.000	53.6	V	-42.1	6.2	9.8	7.7	-40.7	-13.0	-27.7	
1.673	50.6	H	-52.8	3.9	7.2	5.0	-51.6	-13.0	-38.6	
2.400	55.2	H	-46.8	4.8	9.3	7.1	-44.5	-13.0	-31.5	
2.509	46.6	H	-54.9	4.9	9.3	7.1	-52.7	-13.0	-39.7	
4.000	48.7	H	-46.7	6.2	9.8	7.7	-45.2	-13.0	-32.2	
<b>Hi Ch</b>										
1.729	53.0	V	-51.0	3.9	7.3	5.2	-49.8	-13.0	-36.8	
2.388	59.3	V	-42.9	4.8	9.2	7.1	-40.6	-13.0	-27.6	
2.594	49.2	V	-52.1	5.0	9.3	7.1	-50.0	-13.0	-37.0	
4.000	53.1	V	-42.7	6.2	9.8	7.7	-41.2	-13.0	-28.2	
1.729	51.9	H	-51.3	3.9	7.3	5.2	-50.1	-13.0	-37.1	
2.390	55.1	H	-47.0	4.8	9.2	7.1	-44.7	-13.0	-31.7	
2.594	46.8	H	-54.3	5.0	9.3	7.1	-52.2	-13.0	-39.2	
4.000	49.3	H	-46.1	6.2	9.8	7.7	-44.6	-13.0	-31.6	
Rev. 4.12.7										

**PCS Band GPRS Spurious & Harmonic (EIRP)**

**High Frequency Substitution Measurement**  
 Compliance Certification Services, Fremont 5m B-Chamber

Company: SIERRA WIRELESS  
 Project #: 07u11121  
 Date: 6/22/2007  
 Test Engineer: MENGISTU MEKURIA  
 Configuration: EUT WITH SUPPORT LAPTOP  
 Mode: TX 1900MHz, GPRS MODE

Test Equipment:

EMCO Horn 1-18GHz  
 T60; S/N: 2238 @3m

Horn > 18GHz

Limit  
 FCC 24

High Pass Filter

Hi Frequency Cables  
 (2 ft)  (2~3 ft)  (4~6 ft)  (12 ft)

Pre-amplifier 1-26GHz  
 T145 Agilent 3008A

Pre-amplifier 26-40GHz

f GHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
<b>Low Ch</b>										
3.700	51.7	V	-45.2	5.9	9.7	7.5	-41.5	-13.0	-28.5	
4.000	53.3	V	-42.5	6.2	9.8	7.7	-38.9	-13.0	-25.9	
7.401	47.4	V	-41.8	8.3	12.0	9.8	-38.1	-13.0	-25.1	
9.251	60.6	V	-27.3	9.3	12.7	10.5	-23.9	-13.0	-10.9	
3.700	51.6	H	-45.3	5.9	9.7	7.5	-41.6	-13.0	-28.6	
7.401	45.5	H	-42.8	8.3	12.0	9.8	-39.1	-13.0	-26.1	
9.251	59.5	H	-28.4	9.3	12.7	10.5	-25.0	-13.0	-12.0	
<b>Mid Ch</b>										
3.760	52.7	V	-44.1	6.0	9.7	7.5	-40.4	-13.0	-27.4	
4.000	53.0	V	-42.7	6.2	9.8	7.7	-39.1	-13.0	-26.1	
7.520	49.5	V	-39.4	8.3	12.0	9.8	-35.7	-13.0	-22.7	
9.400	56.8	V	-30.7	9.4	12.7	10.6	-27.4	-13.0	-14.4	
3.760	51.5	H	-45.2	6.0	9.7	7.5	-41.5	-13.0	-28.5	
7.520	47.3	H	-40.9	8.3	12.0	9.8	-37.2	-13.0	-24.2	
9.400	53.9	H	-33.6	9.4	12.7	10.6	-30.3	-13.0	-17.3	
<b>Hi Ch</b>										
3.820	53.5	V	-43.1	6.0	9.7	7.6	-39.4	-13.0	-26.4	
4.000	52.9	V	-42.8	6.2	9.8	7.7	-39.2	-13.0	-26.2	
7.639	51.1	V	-37.6	8.4	12.0	9.8	-34.0	-13.0	-21.0	
9.549	52.1	V	-35.1	9.6	12.7	10.6	-31.9	-13.0	-18.9	
3.820	52.5	H	-43.9	6.0	9.7	7.6	-40.2	-13.0	-27.2	
7.639	46.7	H	-41.1	8.4	12.0	9.8	-37.5	-13.0	-24.5	
9.549	50.4	H	-36.7	9.6	12.7	10.6	-33.6	-13.0	-20.6	

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**PCS Band EGPRS Spurious & Harmonic (EIRP)**

High Frequency Substitution Measurement											
Compliance Certification Services, Fremont 5m B-Chamber											
Company:		SIERRA WIRELESS									
Project #:		07u11121									
Date:		6/22/2007									
Test Engineer:		MENGISTU MEKURIA									
Configuration:		EUT WITH SUPPORT LAPTOP									
Mode:		TX 1900MHz, EGPRS MODE									
<b>Test Equipment:</b>											
EMCO Horn 1-18GHz		Horn > 18GHz				Limit		High Pass Filter			
T60; S/N: 2238 @3m						FCC 24		<input checked="" type="checkbox"/>			
Hi Frequency Cables											
<input type="checkbox"/> (2 ft)		<input type="checkbox"/> (2 ~ 3 ft)		<input type="checkbox"/> (4 ~ 6 ft)		<input checked="" type="checkbox"/> (12 ft)		Pre-amplifier 1-26GHz		Pre-amplifier 26-40GHz	
						T145 Agilent 3008A					
f GHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes	
<b>Low Ch</b>											
3.700	47.7	V	-49.2	5.9	9.7	7.5	-45.5	-13.0	-32.5		
4.000	53.5	V	-42.3	6.2	9.8	7.7	-38.7	-13.0	-25.7		
7.401	47.5	V	-41.7	8.3	12.0	9.8	-38.0	-13.0	-25.0		
9.251	57.5	V	-30.3	9.3	12.7	10.5	-26.9	-13.0	-13.9		
3.700	46.8	H	-50.1	5.9	9.7	7.5	-46.4	-13.0	-33.4		
7.401	45.9	H	-42.5	8.3	12.0	9.8	-38.7	-13.0	-25.7		
9.251	58.3	H	-29.5	9.3	12.7	10.5	-26.1	-13.0	-13.1		
<b>Mid Ch</b>											
3.760	48.3	V	-48.4	6.0	9.7	7.5	-44.7	-13.0	-31.7		
4.000	53.4	V	-42.4	6.2	9.8	7.7	-38.8	-13.0	-25.8		
7.520	46.0	V	-42.9	8.3	12.0	9.8	-39.2	-13.0	-26.2		
9.400	52.5	V	-35.0	9.4	12.7	10.6	-31.7	-13.0	-18.7		
3.760	48.1	H	-48.6	6.0	9.7	7.5	-44.9	-13.0	-31.9		
7.520	44.9	H	-43.2	8.3	12.0	9.8	-39.5	-13.0	-26.5		
9.400	53.6	H	-33.9	9.4	12.7	10.6	-30.6	-13.0	-17.6		
<b>Hi Ch</b>											
3.820	49.6	V	-46.9	6.0	9.7	7.6	-43.3	-13.0	-30.3		
4.000	53.3	V	-42.5	6.2	9.8	7.7	-38.9	-13.0	-25.9		
7.639	47.7	V	-41.0	8.4	12.0	9.8	-37.4	-13.0	-24.4		
9.549	52.2	V	-35.0	9.6	12.7	10.6	-31.8	-13.0	-18.8		
3.820	50.3	H	-46.1	6.0	9.7	7.6	-42.4	-13.0	-29.4		
7.639	44.9	H	-43.0	8.4	12.0	9.8	-39.4	-13.0	-26.4		
9.549	47.6	H	-39.5	9.6	12.7	10.6	-36.4	-13.0	-23.4		
Rev. 4.12.7											

**PCS Band WCDMA Spurious & Harmonic (EIRP)**

**High Frequency Substitution Measurement**  
 Compliance Certification Services, Fremont 5m B-Chamber

**Company:** SIERRA WIRELESS  
**Project #:** 07u11121  
**Date:** 6/22/2007  
**Test Engineer:** MENGISTU MEKURIA  
**Configuration:** EUT WITH SUPPORT LAPTOP  
**Mode:** TX 1900MHz, WCDMA MODE

**Test Equipment:**

EMCO Horn 1-18GHz: T60; S/N: 2238 @3m  
 Horn > 18GHz:   
 Limit: FCC 24  
 High Pass Filter

Hi Frequency Cables:  (2 ft)  (2~3 ft)  (4~6 ft)  (12 ft)

Pre-amplifier 1-26GHz: T145 Agilent 3008A  
 Pre-amplifier 26-40GHz:   
 T145 Agilent 3008A

f GHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
<b>Low Ch</b>										
3.705	46.2	V	-50.7	5.9	9.7	7.5	-47.0	-13.0	-34.0	
4.000	53.0	V	-42.7	6.2	9.8	7.7	-39.1	-13.0	-26.1	
3.705	45.3	H	-51.5	5.9	9.7	7.5	-47.8	-13.0	-34.8	
4.000	46.5	H	-49.0	6.2	9.8	7.7	-45.3	-13.0	-32.3	
<b>Mid Ch</b>										
3.760	47.6	V	-49.1	6.0	9.7	7.5	-45.4	-13.0	-32.4	
4.000	54.4	V	-41.3	6.2	9.8	7.7	-37.7	-13.0	-24.7	
3.760	43.6	V	-53.2	6.0	9.7	7.5	-49.5	-13.0	-36.5	
4.000	46.8	H	-48.7	6.2	9.8	7.7	-45.0	-13.0	-32.0	
<b>Hi Ch</b>										
3.815	59.2	V	-37.3	6.0	9.7	7.6	-33.7	-13.0	-20.7	
4.000	53.3	V	-42.4	6.2	9.8	7.7	-38.8	-13.0	-25.8	
3.815	56.6	H	-39.8	6.0	9.7	7.6	-36.1	-13.0	-23.1	
4.000	46.4	H	-49.0	6.2	9.8	7.7	-45.4	-13.0	-32.4	

Rev. 4.12.7

**PCS Band WCDMA+HSDPA Spurious & Harmonic (EIRP)**

**High Frequency Substitution Measurement**  
 Compliance Certification Services, Fremont 5m B-Chamber

**Company:** SIERRA WIRELESS  
**Project #:** 07u11121  
**Date:** 6/22/2007  
**Test Engineer:** MENGISTU MEKURIA  
**Configuration:** EUT WITH SUPPORT LAPTOP  
**Mode:** TX 1900MHz, HSDPA MODE

**Test Equipment:**

EMCO Horn 1-18GHz: T60; S/N: 2238 @3m  
 Horn > 18GHz:   
 Limit: FCC 24  
 High Pass Filter

Hi Frequency Cables:  (2 ft)  (2~3 ft)  (4~6 ft)  (12 ft)  
 Pre-amplifier 1-26GHz: T145 Agilent 3008A  
 Pre-amplifier 26-40GHz:   
 Rev. 4.12.7

f GHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
<b>Low Ch</b>										
3.705	44.9	V	-52.0	5.9	9.7	7.5	-48.3	-13.0	-35.3	
4.000	52.6	V	-43.2	6.2	9.8	7.7	-39.5	-13.0	-26.5	
3.700	43.5	H	-53.3	5.9	9.7	7.5	-49.6	-13.0	-36.6	
4.000	46.8	H	-48.7	6.2	9.8	7.7	-45.1	-13.0	-32.1	
<b>Mid Ch</b>										
3.760	46.0	V	-50.8	6.0	9.7	7.5	-47.1	-13.0	-34.1	
4.000	53.0	V	-42.8	6.2	9.8	7.7	-39.2	-13.0	-26.2	
3.760	43.2	V	-53.5	6.0	9.7	7.5	-49.8	-13.0	-36.8	
4.000	46.1	H	-49.4	6.2	9.8	7.7	-45.8	-13.0	-32.8	
<b>Hi Ch</b>										
3.815	57.3	V	-39.2	6.0	9.7	7.6	-35.6	-13.0	-22.6	
4.000	53.4	V	-42.4	6.2	9.8	7.7	-38.7	-13.0	-25.7	
3.815	54.8	H	-41.7	6.0	9.7	7.6	-38.0	-13.0	-25.0	
4.000	46.4	H	-49.1	6.2	9.8	7.7	-45.4	-13.0	-32.4	