



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

**FOR**

**850/900/1800/1900/2100 MHZ MULTI-BAND MODULE**

**MODEL NUMBER: MC8780**

**FCC ID: N7NMC8780**

**REPORT NUMBER: 07U10928-1**

**ISSUE DATE: APRIL 03, 2007**

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

*Prepared by*  
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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>
---	04/03/07	Initial Issue	T. Chan

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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 MULTI-BAND MODULE

**MODEL:** MC8780

**SERIAL NUMBER:** S3305970021E3

**DATE TESTED:** MARCH 27-28, 2007

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 22H and 24E	NO NON-COMPLIANCE NOTED (Radiated Portion)

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:



for Tom Chen

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THU CHAN  
EMC SUPERVISOR  
COMPLIANCE CERTIFICATION SERVICES

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TOM CHEN  
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	+/- 3.4 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 an 850/900/1800/1900/2100 MHz multi-band module and manufactured by Sierra Wireless, Inc.

The module supports GSM, GPRS, EGPRS and UMTS. Device capabilities are documented in the theory of operation

Only the 850/1900 MHz frequency bands were investigated under this project, and the test result documented in this report only applies to EUT operating in the 850/1900 MHz frequency bands. This device contains 900 MHz /1800 MHz/2100 MHz functions but these frequency bands are not operational in the U.S. territories.

## 5.2. SOFTWARE AND FIRMWARE

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:
  - DL Channel: 

	PCS band	Cell band
DL Channel:	9662 / 9800 / 9938	4357 / 4407 / 4458
UL Channel:	9262 / 9400 / 9538	4132 / 4182 / 4233
  - 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



### 5.3. DESCRIPTION OF TEST SETUP

#### SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	ELPAC	FW1805	46688	NA
Communications Test Set	Agilent	E5515C	10092	DoC
Test Fixture	Sierra Wireless	Mini Card Dev Board	1201102 Rev 2.X	NA

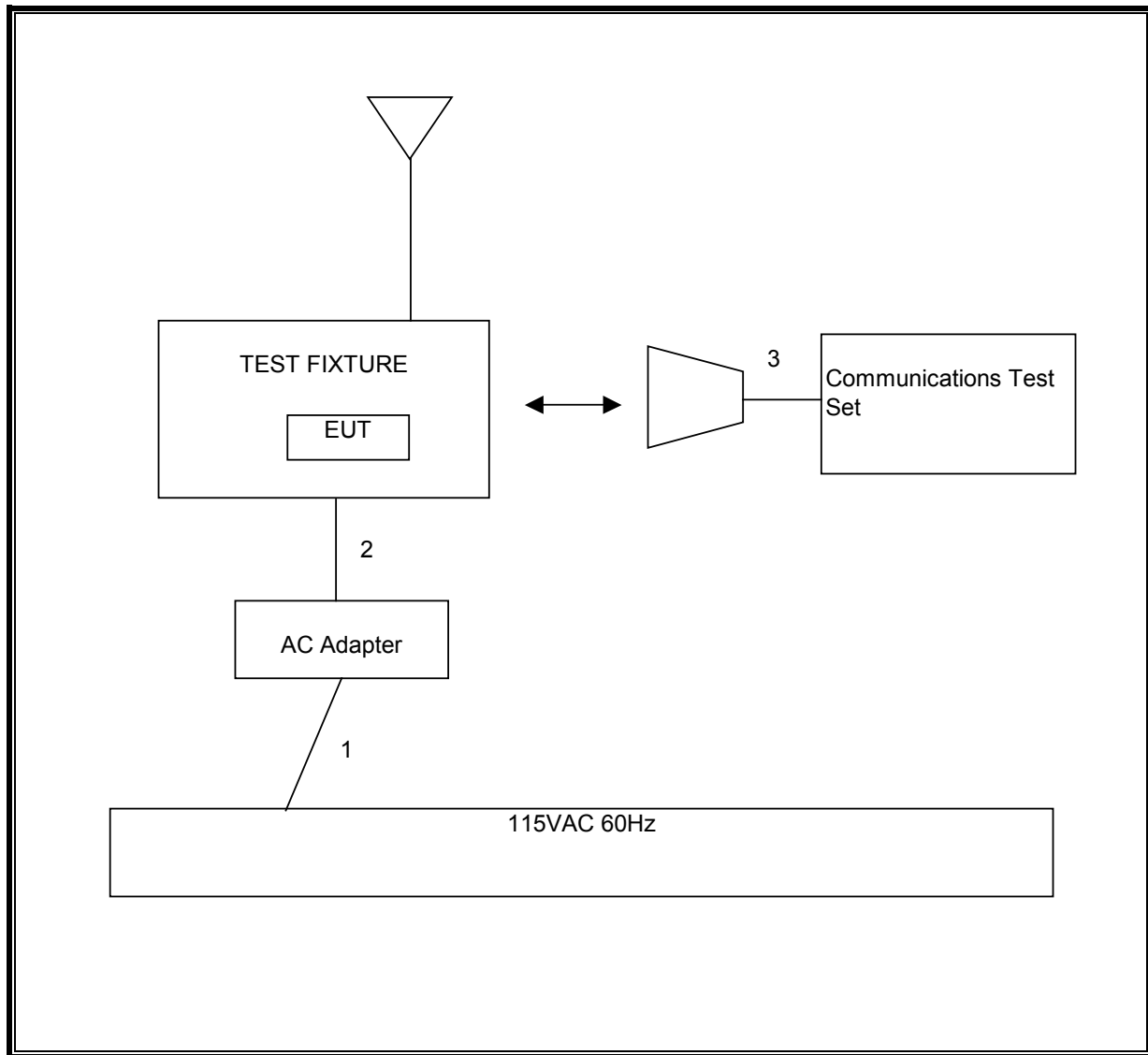
#### I/O CABLES

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	2m	NA
3	RF In/Out	1	Horn	Un-shielded	2m	NA

#### TEST SETUP

The EUT module is installed in a test fixture during the tests. The Wireless Communication test set exercised the EUT.

**SETUP DIAGRAM FOR TESTS**



## 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
Preamplifier, 1 ~ 26.5 GHz	Agilent / HP	8449B	3008A00561	10/03/07
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	6717	04/22/07
Antenna, Horn 1 ~ 18 GHz	ETS	3117	35234	04/22/07
Spectrum Analyzer 3 Hz ~ 44 GHz	Agilent / HP	E4446A	MY43360112	05/03/07
Wireless Communications Test Set	Agilent	E5515C	10092	10/19/07
2.7GHz HPF	MicroTronic	HPM13194	2	CNR
1.5GHz HPF	MicroTronic	HPM13195	1	CNR
Signal Generator 2 -40 GHz	R & S	SMP04	DE 34210	06/02/07
Signal Generator 1024 MHz	R & S	SMY01	DE 12311	05/11/07
Dipole	EMCO	3121C-DB2	22435	06/25/07

## 7. LIMITS AND RESULTS

### 7.1. FIELD STRENGTH OF SPURIOUS RADIATION

#### 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.

**GSM850 GPRS Spurious & Harmonic (ERP)**

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

Company: Sierra Wireless  
 Project #: 07U10928  
 Date: 3/27/2007  
 Test Engineer: Tom Chen  
 Configuration: EUT Only  
 Mode: Cell TX, GPRS

**Test Equipment:**

EMCO Horn 1-18GHz  
T 73; S/N: 6717 @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 75.0	CL (dB)	Gain (dBi)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
<b>Low Ch</b>										
1.64820	61.5	V	-44.5	3.8	8.0	5.8	-42.5	-13.0	-29.5	
2.47410	57.5	V	-44.9	4.9	9.5	7.4	-42.4	-13.0	-29.4	
3.29600	48.9	V	-50.1	5.6	9.8	7.6	-48.1	-13.0	-35.1	
1.64820	60.4	H	-44.9	3.8	8.0	5.8	-42.9	-13.0	-29.9	
2.47410	56.0	H	-46.2	4.9	9.5	7.4	-43.7	-13.0	-30.7	
3.29600	50.0	H	-48.9	5.6	9.8	7.6	-46.9	-13.0	-33.9	
<b>Mid Ch</b>										
1.67400	59.0	V	-46.9	3.9	8.0	5.9	-44.9	-13.0	-31.9	
2.51100	58.6	V	-43.7	4.9	9.6	7.4	-41.2	-13.0	-28.2	
3.34800	50.0	V	-48.8	5.6	9.8	7.6	-46.8	-13.0	-33.8	
1.67400	58.9	H	-46.3	3.9	8.0	5.9	-44.3	-13.0	-31.3	
2.51100	55.8	H	-46.3	4.9	9.6	7.4	-43.8	-13.0	-30.8	
3.34800	47.9	H	-50.8	5.6	9.8	7.6	-48.8	-13.0	-35.8	
<b>High Ch</b>										
1.69760	54.4	V	-51.4	3.9	8.1	5.9	-49.3	-13.0	-36.3	
2.54640	55.5	V	-46.7	4.9	9.6	7.4	-44.2	-13.0	-31.2	
3.39520	47.9	V	-50.7	5.7	9.7	7.6	-48.7	-13.0	-35.7	
1.69760	54.5	H	-50.6	3.9	8.1	5.9	-48.5	-13.0	-35.5	
2.54640	52.2	H	-49.8	4.9	9.6	7.4	-47.3	-13.0	-34.3	
3.39520	48.3	H	-50.1	5.7	9.7	7.6	-48.2	-13.0	-35.2	

Rev. 1.24.7  
 Note: No other emissions were detected above the system noise floor.

**GSM850 EGPRS Spurious & Harmonic (ERP)**

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

Company: Sierra Wireless  
 Project #: 07U10928  
 Date: 3/27/2007  
 Test Engineer: Tom Chen  
 Configuration: EUT Only  
 Mode: Cell TX, EGPRS

**Test Equipment:**

EMCO Horn 1-18GHz  
T73; S/N: 6717 @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 75.0	CL (dB)	Gain (dBi)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
<b>Low Ch</b>										
1.64840	62.6	V	-43.4	3.8	8.0	5.8	-41.4	-13.0	-28.4	
2.47410	56.7	V	-45.7	4.9	9.5	7.4	-43.2	-13.0	-30.2	
3.29600	47.7	V	-51.3	5.6	9.8	7.6	-49.3	-13.0	-36.3	
1.64840	62.7	H	-42.6	3.8	8.0	5.8	-40.6	-13.0	-27.6	
2.47410	55.4	H	-46.8	4.9	9.5	7.4	-44.3	-13.0	-31.3	
3.29600	47.6	H	-51.3	5.6	9.8	7.6	-49.3	-13.0	-36.3	
<b>Mid Ch</b>										
1.67400	57.6	V	-48.3	3.9	8.0	5.9	-46.3	-13.0	-33.3	
2.51100	53.5	V	-48.8	4.9	9.6	7.4	-46.3	-13.0	-33.3	
3.34800	48.1	V	-50.7	5.6	9.8	7.6	-48.7	-13.0	-35.7	
1.67400	58.0	H	-47.2	3.9	8.0	5.9	-45.2	-13.0	-32.2	
2.51100	53.5	H	-48.6	4.9	9.6	7.4	-46.1	-13.0	-33.1	
3.34800	47.8	H	-50.9	5.6	9.8	7.6	-48.9	-13.0	-35.9	
<b>High Ch</b>										
1.69760	58.0	V	-47.8	3.9	8.1	5.9	-45.7	-13.0	-32.7	
2.54640	52.5	V	-49.7	4.9	9.6	7.4	-47.2	-13.0	-34.2	
3.39520	45.2	V	-53.3	5.7	9.7	7.6	-51.4	-13.0	-38.4	
1.69760	57.4	H	-47.6	3.9	8.1	5.9	-45.6	-13.0	-32.6	
2.54640	45.5	H	-56.5	4.9	9.6	7.4	-54.0	-13.0	-41.0	
3.39520	43.6	H	-54.8	5.7	9.7	7.6	-52.9	-13.0	-39.9	

Rev. 1.24.7  
 Note: No other emissions were detected above the system noise floor.

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

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

Company: Sierra Wireless  
 Project #: 07U10928  
 Date: 3/27/2007  
 Test Engineer: Tom Chen  
 Configuration: EUT Only  
 Mode: WCDMA850  
 Module No: MC8780

**Test Equipment:**

EMCO Horn 1-18GHz  
T73; S/N: 6717 @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 75.0	CL (dB)	Gain (dBi)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
<b>Low Ch:</b>										
1.653	51.0	V	-54.3	4.2	8.0	5.8	-52.7	-13.0	-39.7	
2.479	48.6	V	-53.2	5.2	9.6	7.4	-51.0	-13.0	-38.0	
1.653	51.0	H	-53.6	4.2	8.0	5.8	-52.0	-13.0	-39.0	
2.479	48.1	H	-53.5	5.2	9.6	7.4	-51.3	-13.0	-38.3	
<b>Mid Ch:</b>										
1.673	51.2	V	-54.0	4.2	8.0	5.9	-52.4	-13.0	-39.4	
2.509	48.7	V	-52.9	5.2	9.6	7.4	-50.8	-13.0	-37.8	
1.673	50.8	H	-53.7	4.2	8.0	5.9	-52.0	-13.0	-39.0	
2.509	48.8	H	-52.6	5.2	9.6	7.4	-50.5	-13.0	-37.5	
<b>High Ch:</b>										
1.693	50.5	V	-54.6	4.2	8.1	5.9	-52.9	-13.0	-39.9	
2.540	48.0	V	-53.5	5.3	9.6	7.4	-51.4	-13.0	-38.4	
1.693	49.4	H	-55.0	4.2	8.1	5.9	-53.3	-13.0	-40.3	
2.540	47.8	H	-53.5	5.3	9.6	7.4	-51.4	-13.0	-38.4	

Rev. 1.24.7  
 Note: No other emissions were detected above the system noise floor.

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

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

Company: Sierra Wireless  
 Project #: 07U10928  
 Date: 3/27/2007  
 Test Engineer: Tom Chen  
 Configuration: EUT Only  
 Mode: WCDMA850+HSDPA  
 Module No: MC8780

**Test Equipment:**

EMCO Horn 1-18GHz  
T 73; S/N: 6717 @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 75.0	CL (dB)	Gain (dBi)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
<b>Low Ch:</b>										
1.653	51.0	V	-54.3	4.2	8.0	5.8	-52.7	-13.0	-39.7	
2.479	48.6	V	-53.2	5.2	9.6	7.4	-51.0	-13.0	-38.0	
1.653	51.0	H	-53.6	4.2	8.0	5.8	-52.0	-13.0	-39.0	
2.479	48.1	H	-53.5	5.2	9.6	7.4	-51.3	-13.0	-38.3	
<b>Mid Ch:</b>										
1.673	51.2	V	-54.0	4.2	8.0	5.9	-52.4	-13.0	-39.4	
2.509	48.7	V	-52.9	5.2	9.6	7.4	-50.8	-13.0	-37.8	
1.673	50.8	H	-53.7	4.2	8.0	5.9	-52.0	-13.0	-39.0	
2.509	48.8	H	-52.6	5.2	9.6	7.4	-50.5	-13.0	-37.5	
<b>High Ch:</b>										
1.693	50.5	V	-54.6	4.2	8.1	5.9	-52.9	-13.0	-39.9	
2.540	48.0	V	-53.5	5.3	9.6	7.4	-51.4	-13.0	-38.4	
1.693	49.4	H	-55.0	4.2	8.1	5.9	-53.3	-13.0	-40.3	
2.540	47.8	H	-53.5	5.3	9.6	7.4	-51.4	-13.0	-38.4	

Rev. 1.24.7  
 Note: No other emissions were detected above the system noise floor.



**GSM1900 Band GPRS Spurious & Harmonic (ERP)**

High Frequency Substitution Measurement										
Compliance Certification Services, B- 5m Chamber Fremont Site										
Company: Sierra Wireless										
Project #: 07U10928										
Date: 3/28/2007										
Test Engineer: Tom Chen										
Configuration: EUT Only										
Mode: GSM1900 GPRS										
<b>Test Equipment:</b>										
EMCO Horn 1-18GHz		Horn > 18GHz			Limit		High Pass Filter			
T73; S/N: 6717 @3m					FCC 24		<input checked="" type="checkbox"/>			
Hi Frequency Cables				Pre-amplifier 1-26GHz		Pre-amplifier 26-40GHz				
<input type="checkbox"/> (2 ft) <input checked="" type="checkbox"/> (2~3 ft) <input type="checkbox"/> (4~6 ft) <input checked="" type="checkbox"/> (12 ft)				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 (1.8502 GHz)</b>										
3.700	47.0	V	-49.2	6.4	9.7	7.6	-45.9	-13.0	-32.9	
5.551	42.3	V	-48.9	8.0	11.3	9.1	-45.7	-13.0	-32.7	
9.251	48.7	V	-38.0	10.1	13.0	10.8	-35.1	-13.0	-22.1	
11.101	47.0	V	-33.7	12.2	13.8	11.7	-32.1	-13.0	-19.1	
3.700	45.0	H	-51.1	6.4	9.7	7.6	-47.8	-13.0	-34.8	
5.551	41.3	H	-48.9	8.0	11.3	9.1	-45.7	-13.0	-32.7	
9.251	44.6	H	-42.1	10.1	13.0	10.8	-39.2	-13.0	-26.2	
<b>Mid Ch (1.88 GHz)</b>										
3.760	47.0	V	-48.9	6.4	9.7	7.6	-45.6	-13.0	-32.6	
5.640	42.1	V	-49.3	8.1	11.5	9.3	-45.9	-13.0	-32.9	
9.400	50.9	V	-35.5	10.3	13.0	10.9	-32.8	-13.0	-19.8	
11.280	48.3	V	-31.8	12.4	13.9	11.7	-30.3	-13.0	-17.3	
3.760	46.8	H	-49.0	6.4	9.7	7.6	-45.7	-13.0	-32.7	
5.640	41.0	H	-49.4	8.1	11.5	9.3	-46.0	-13.0	-33.0	
<b>High Ch (1.9098 GHz)</b>										
3.820	45.8	V	-49.8	6.5	9.7	7.5	-46.6	-13.0	-33.6	
9.549	49.5	V	-36.6	10.5	13.1	11.0	-34.0	-13.0	-21.0	
3.820	44.8	H	-50.7	6.5	9.7	7.5	-47.5	-13.0	-34.5	
5.729	41.3	H	-49.3	8.1	11.7	9.5	-45.8	-13.0	-32.8	
Rev. 1.24.7										
Note: No other emissions were detected above the system noise floor.										

**GSM1900 Band EGPRS Spurious & Harmonic (EIRP)**

**High Frequency Substitution Measurement**

Compliance Certification Services, B- 5m Chamber Fremont Site

Company: Sierra Wireless  
 Project #: 07U10928  
 Date: 3/28/2007  
 Test Engineer: Tom Chen  
 Configuration: EUT Only  
 Mode: GSM1900 EGPRS

**Test Equipment:**

EMCO Horn 1-18GHz

T 73; S/N: 6717 @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 (1.8502 GHz)</b>										
3.700	46.8	V	-49.4	6.4	9.7	7.6	-46.1	-13.0	-33.1	
5.551	43.8	V	-47.4	8.0	11.3	9.1	-44.2	-13.0	-31.2	
3.700	45.9	H	-50.2	6.4	9.7	7.6	-46.9	-13.0	-33.9	
5.551	43.0	H	-47.2	8.0	11.3	9.1	-44.0	-13.0	-31.0	
<b>Mid Ch (1.88 GHz)</b>										
3.760	47.0	V	-48.9	6.4	9.7	7.6	-45.6	-13.0	-32.6	
5.640	43.1	V	-48.3	8.1	11.5	9.3	-44.9	-13.0	-31.9	
3.760	47.8	H	-48.0	6.4	9.7	7.6	-44.7	-13.0	-31.7	
5.640	42.1	H	-48.3	8.1	11.5	9.3	-44.9	-13.0	-31.9	
<b>High Ch (1.9098 GHz)</b>										
3.820	46.0	V	-49.6	6.5	9.7	7.5	-46.4	-13.0	-33.4	
5.729	42.8	V	-48.8	8.1	11.7	9.5	-45.3	-13.0	-32.3	
3.820	46.7	H	-48.8	6.5	9.7	7.5	-45.6	-13.0	-32.6	
5.729	41.5	H	-49.1	8.1	11.7	9.5	-45.6	-13.0	-32.6	

Rev. 1.24.7  
 Note: No other emissions were detected above the system noise floor.

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

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

Company: Sierra Wireless  
 Project #: 07U10928  
 Date: 3/27/2007  
 Test Engineer: Tom Chen  
 Configuration: EUT Only  
 Mode: WCDMA1900  
 Module No: MC8780

**Test Equipment:**

EMCO Horn 1-18GHz  
T 73; S/N: 6717 @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 75.0	CL (dB)	Gain (dBi)	Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
<b>Low Ch:</b>										
3.705	48.9	V	-47.3	6.4	9.7	7.6	-43.9	-13.0	-30.9	
5.556	48.1	V	-43.2	8.0	11.3	9.1	-39.9	-13.0	-26.9	
3.705	48.6	H	-47.5	6.4	9.7	7.6	-44.1	-13.0	-31.1	
5.556	48.0	H	-42.3	8.0	11.3	9.1	-39.0	-13.0	-26.0	
<b>Mid Ch:</b>										
3.760	48.7	V	-47.2	6.4	9.7	7.6	-43.9	-13.0	-30.9	
5.640	47.8	V	-43.6	8.1	11.5	9.3	-40.2	-13.0	-27.2	
3.760	48.2	H	-47.6	6.4	9.7	7.6	-44.3	-13.0	-31.3	
5.640	47.4	H	-43.0	8.1	11.5	9.3	-39.6	-13.0	-26.6	
<b>High Ch:</b>										
3.815	49.0	V	-46.6	6.5	9.7	7.5	-43.4	-13.0	-30.4	
5.723	48.5	V	-43.1	8.1	11.6	9.5	-39.6	-13.0	-26.6	
3.815	48.5	H	-47.0	6.5	9.7	7.5	-43.8	-13.0	-30.8	
5.723	47.8	H	-42.8	8.1	11.6	9.5	-39.3	-13.0	-26.3	

Rev. 1.24.7  
 Note: No other emissions were detected above the system noise floor.

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

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

**Company:** Sierra Wireless  
**Project #:** 07U10928  
**Date:** 3/27/2007  
**Test Engineer:** Tom Chen  
**Configuration:** EUT Only  
**Mode:** WCDMA1900 HSDPA  
**Module No:** MC8780

**Test Equipment:**

EMCO Horn 1-18GHz  
T 73; S/N: 6717 @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 75.0	CL (dB)	Gain (dBi)	Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
<b>Low Ch:</b>										
3.705	49.6	V	-46.6	6.4	9.7	7.6	-43.2	-13.0	-30.2	
5.556	48.7	V	-42.6	8.0	11.3	9.1	-39.3	-13.0	-26.3	
3.705	49.2	H	-46.9	6.4	9.7	7.6	-43.5	-13.0	-30.5	
5.556	48.6	H	-41.7	8.0	11.3	9.1	-38.4	-13.0	-25.4	
<b>Mid Ch:</b>										
3.760	50.3	V	-45.6	6.4	9.7	7.6	-42.3	-13.0	-29.3	
5.640	48.6	V	-42.8	8.1	11.5	9.3	-39.4	-13.0	-26.4	
3.760	48.8	H	-47.0	6.4	9.7	7.6	-43.7	-13.0	-30.7	
5.640	48.2	H	-42.2	8.1	11.5	9.3	-38.8	-13.0	-25.8	
<b>High Ch:</b>										
3.815	50.7	V	-44.9	6.5	9.7	7.5	-41.7	-13.0	-28.7	
5.723	49.3	V	-42.3	8.1	11.6	9.5	-38.8	-13.0	-25.8	
3.815	49.7	H	-45.8	6.5	9.7	7.5	-42.6	-13.0	-29.6	
5.723	48.3	H	-42.3	8.1	11.6	9.5	-38.8	-13.0	-25.8	

Rev. 1.24.7  
 Note: No other emissions were detected above the system noise floor.