

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: MC8775

FCC ID: N7NMC8775

REPORT NUMBER: 06U10342-1

ISSUE DATE: JUNE 27, 2006

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

Prepared by COMPLIANCE CERTIFICATION SERVICES 561F MONTEREY ROAD MORGAN HILL, CA 95037, USA TEL: (408) 463-0885 FAX: (408) 463-0888



Revision History

Rev.	Issue Date	Revisions	Revised By
А	06/27/06	Initial Issue	Thu

Page 2 of 27

TABLE OF CONTENTS

1.	AT	FESTATION OF TEST RESULTS4	ŀ
2.	TES	ST METHODOLOGY5	;
3.	FA	CILITIES AND ACCREDITATION5	;
4.	CA	LIBRATION AND UNCERTAINTY5	;
4	[!] .1.	MEASURING INSTRUMENT CALIBRATION	,
4	4.2.	MEASUREMENT UNCERTAINTY	,
5.	EQ	UIPMENT UNDER TEST	j
5	.1.	DESCRIPTION OF EUT	Í
5	5.2.	MAXIMUM OUTPUT POWER	Í
5	.3.	SOFTWARE AND FIRMWARE	Í
5	5.4.	WORST-CASE CONFIGURATION AND MODE	7
5	5.5.	DESCRIPTION OF TEST SETUP	}
6.	TES	ST AND MEASUREMENT EQUIPMENT 10)
7.	LIN	AITS AND RESULTS	
7	7.1.	RADIATED RF POWER OUTPUT 11	,
7	7.2.	FIELD STRENGTH OF SPURIOUS EMISSION)
8.	SET	ГUP PHOTOS	í

Page 3 of 27

1. ATTESTATION OF TEST RESULTS

STANDARD	TEST RESULTS	
	APPLICABLE STANDARDS	
DATE TESTED:	JUNE 20 - 21, 2006	
MODEL:	MC8775	
EUT DESCRIPTION:	850/900/1800/1900/2100 MHZ MULTI-BAND MODULE	
	RICHMOND, BC V6V 3A4, CANADA	
COMPANY NAME:	SIERRA WIRELESS 3811 WIRELESS WAY	

FCC PART 24 SUBPART E	NO NON-COMPLIANCE NOTED	
FCC PART 22 SUBPART H	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:

THU CHAN EMC SUPERVISOR COMPLIANCE CERTIFICATION SERVICES Tested By:

Sunay Shih

SUNNY SHIH EMC ENGINEER COMPLIANCE CERTIFICATION SERVICES

Page 4 of 27

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 561F Monterey Road, Morgan Hill, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.4, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <u>http://www.ccsemc.com</u>.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Radiated Emission, 30 to 200 MHz	+/- 3.3 dB
Radiated Emission, 200 to 1000 MHz	+4.5 / -2.9 dB
Radiated Emission, 1000 to 2000 MHz	+4.5 / -2.9 dB
Power Line Conducted Emission	+/- 2.9 dB

Uncertainty figures are valid to a confidence level of 95%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is an 850/900/1800/1900/2100 MHz multi-band module and manufactured by Sierra Wireless, Inc.

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. MAXIMUM OUTPUT POWER

Please refer to the other RF conducted test report attached.

5.3. SOFTWARE AND FIRMWARE

The test utility software used during testing was ProcommPlus 4.8, Built 71 by Symantec Corporation for GSM, GPRS and EDGE modulations, and the communication test set is used for WCDMA modulation to configure as below:

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	Ċ.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 Security Parameter - System Operations > None

Call Parms: (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

Page 6 of 27

HS-DSCH Data Pattern > CCITT PRBS15 RLC Header on HS-DSCH > Present

Channel (UARFCN) Parr 2 of 3	ns: DL Channel: 4357 / 4407 / 4458 UL Channel: 4132 / 4182 / 4233 UL Sep (Band) > 400MHz (Band 4) Freq Bnad Ind > On
DL DTCH Data:	CCITT PRBS15
RLC Reestablish:	Off
	•
Call Limit State:	Off
Call Drop Timer:	Off
SRB Config.: 3 of 3	13.6k DCCH
UE Target Power:	-5 dBm
UL CL Pwr Ctrl Parms:	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

5.4. WORST-CASE CONFIGURATION AND MODE

Based on previous experiment, GPRS 1 slot has the worst case between GSM & GPRS modulations, and the worst case on DSPDA mode for WCDMA modulation.

Page 7 of 27

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

TEST PERIPHERALS							
Device Type	Device Type Manufacturer Model Number Serial Number FCC ID						
Laptop	IBM	ThinkPAd	ZZ-89595	DoC			
AC / DC Adapter	IBM	92P1103	N/A	DoC			
AC / DC Adapter	ELPAC Power Systems	FW1805	37727	DoC			

I/O CABLES

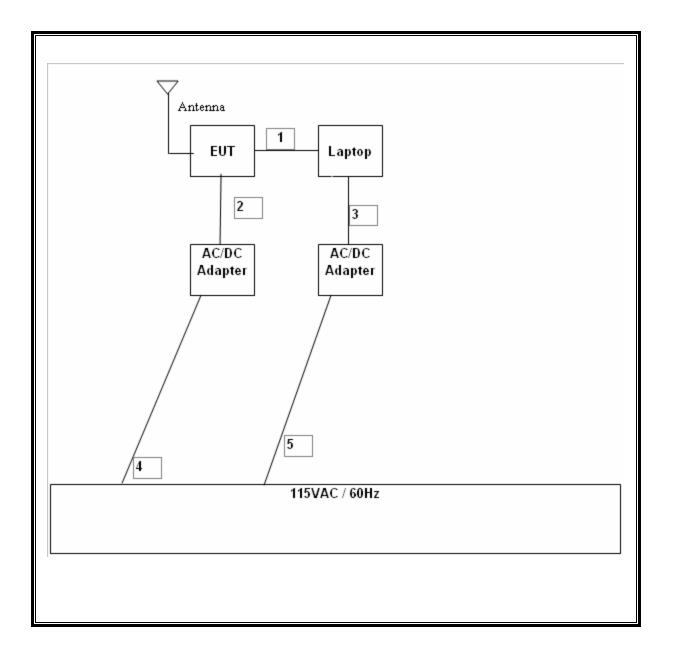
	TEST I / O CABLES							
Cable	I/O	# of I/O	Connector	Type of	Cable	Data		
No	Port	Port	Туре	Cable	Length	Traffic	Bundled	Remark
1	USB	1	USB	Shielded	2m	Yes	No	N/A
2	DC	1	Din	Un-shielded	lm	No	No	N/A
3	DC	1	Din	Un-shielded	lm	No	No	N/A
4	AC	1	US 115V	Un-shielded	lm	No	No	N/A
5	AC	1	US 115V	Un-shielded	lm	No	No	N/A

TEST SETUP

The EUT is installed in the adapter boards to PCI Express Mini Card via USB port of host laptop computer during the tests. The ProcommPlus or Wireless Communication test set exercised the EUT.

Page 8 of 27

RADIATED TEST SETUP DIAGRAM



Page 9 of 27

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 3 Hz ~ 44 GHz	Agilent / HP	E4446A	US42070220	07/29/06	
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	2238	04/22/07	
Preamplifier, 1 ~ 26 GHz	Miteq	NSP2600-SP	924342	09/02/06	
Antenna, Horn 1 ~ 18 GHz	EIS	3117	29301	04/22/07	
Preamplifier, 1 ~ 26 GHz	Agilent / HP	8449B	3008A00931	06/24/07	
EMI Receiver, 9 kHz ~ 2.9 GHz	Agilent / HP	8542E	3942A00286	02/04/07	
RF Filter Section	Agilent / HP	85420E	3705A00256	02/04/07	
Antenna, Bilog 30 MHz ~ 2 Ghz	Sunol Sciences	J B1	A121003	09/03/06	
2.7 GHz Highpass Filter	Micro-Tronics	HPM13194	1	CNR	
1.5 GHz Highpass Filter	Micro-Tronics	HPM13193	1	CNR	
Wireless Communication Test Set	Agilent	E5515C	N101149	08/31/06	

Page 10 of 27

7. LIMITS AND RESULTS

7.1. RADIATED RF POWER OUTPUT

<u>LIMIT</u>

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 The transmitter output is connected to the spectrum analyzer.

RESULTS

No non-compliance noted.

850 MHz GSM Modulation

Channel	Frequency	ERP	ERP
		Peak Power	Peak Power
	(MHz)	(dBm)	(mW)
Low	824.2	27.80	602.56
Middle	836.5	27.20	524.81
High	848.8	26.10	407.38

1900 MHz GSM Modulation

Channel	Frequency	EIRP	EIRP
		Peak Power	Peak Power
	(MHz)	(dBm)	(mW)
Low	1850.2	28.90	776.25
Middle	1880.00	30.20	1047.13
High	1909.8	31.30	1348.96

Page 11 of 27

850 MHz EDGE Modulation

Channel	Frequency	ERP	ERP
		Peak Power	Peak Power
	(MHz)	(dBm)	(mW)
Low	824.2	26.20	416.87
Middle	836.5	27.20	524.81
High	848.8	24.20	263.03

1900 MHz EDGE Modulation

Channel	Frequency	EIRP	EIRP
		Peak Power	Peak Power
	(MHz)	(dBm)	(mW)
Low	1850.2	28.10	645.65
Middle	1880.00	29.90	977.24
High	1909.8	31.10	1288.25

850 MHz WCDMA Modulation

Channel	Frequency	ERP	ERP
		Peak Power	Peak Power
	(MHz)	(dBm)	(mW)
Low	826.5	21.70	147.91
Middle	836.5	22.00	158.49
High	846.6	21.10	128.82

1900 MHz WCDMA Modulation

Channel	Frequency	EIRP	EIRP
		Peak Power	Peak Power
	(MHz)	(dBm)	(mW)
Low	1852.4	28.00	630.96
Middle	1880.00	27.10	512.86
High	1907.6	28.20	660.69

GSM Output Power (ERP)

Cellular Fundamental Substitution Measurement Compliance Certification Services, Morgan Hill Immunity Chamber

Company: Sierra Wireless, Inc. Project #: 06U10342 Date: June 20, 2006 Test Engineer: Sunny Shih Configuration: EUT only Mode: GSM850 GPRS mode RBW=VBW=8MHz, Peak Detection

Test Equipment:

Receiving: EMCO LP T17, and 12 ft Chin SMA Cable (Setup this one for testing EUT) Substitution: Dipole ETS S/N: 1629, and 6ft SMA Cable Warehouse S/N: 208947 002

f	SA reading	Ant. Pol.	SG reading	CL	Gain	ERP	Limit	Margin	Notes
MHz	(dBuV/m)	(H/V)	(dBm)	(dB)	(dBd)	(dBm)	(dBm)	(dB)	
Low Channel									
824.20	102.0	v	27.5	0.5	0.0	27.0	38.5	-11.4	
824.20	102.6	Η	28.3	0.5	0.0	27.8	38.5	-10.6	
Mid Channel									
837.00	100.9	v	26.4	0.6	0.0	25.8	38.5	-12.7	
837.00	102.3	Η	27.8	6.0	0.0	27.2	38.5	-11.2	
High Channe	1								
848.80	101.2	v	26.6	0.7	0.0	25.9	38.5	-12.5	
848.80	101.4	Н	26.8	0.7	0.0	26.1	38.5	-12.3	

Page 13 of 27

EDGE Output Power (ERP)

Cellular Fundamental Substitution Measurement Compliance Certification Services, Morgan Hill Immunity Chamber

Company: Sierra Wireless, Inc. Project #: 06U10342 Date: June 20, 2006 Test Engineer: Sunny Shih Configuration: EUT only Mode: GSM850 EGPRS mode RBW=VBW=8MHz, Peak Detection

Test Equipment:

Receiving: EMCO LP T17, and 12 ft Chin SMA Cable (Setup this one for testing EUT) Substitution: Dipole ETS S/N: 1629, and 6ft SMA Cable Warehouse S/N: 208947 002

f	SA reading	Ant. Pol.	SG reading	CL	Gain	ERP	Limit	Margin	Notes
MHz	(dBuV/m)	(H/V)	(dBm)	(dB)	(dBd)	(dBm)	(dBm)	(dB)	
Low Channel									
824.20	100.2	v	25.8	0.5	0.0	25.3	38.5	-13.2	
824.20	101.0	Η	26.7	0.5	0.0	26.2	38.5	-12.3	
Mid Channel					•				
837.00	99.1	v	24.5	0.0	0.0	23.9	38.5	-14.5	
837.00	100.0	Η	27.8	6.0	0.0	27.2	38.5	-11.2	
High Channe	1								
848.80	99 <i>.</i> 3	v	24.7	0.7	0.0	24.0	38.5	-14.4	
848.80	99.5	Н	24.9	0.7	0.0	24.2	38.5	-14.2	

Page 14 of 27

WCDMA Output Power (ERP)

Cellular Fundamental Substitution Measurement Compliance Certification Services, Morgan Hill Immunity Chamber

Company: Sierra Wireless, Inc. Project #: 06U10342 Date: June 21, 2006 Test Engineer: Sunny Shih Configuration: EUT only Mode: WCDMA850 RBW=VBW=8MHz, Peak Detection

Test Equipment:

Receiving: EMCO LP T17, and 12 ft Chin SMA Cable (Setup this one for testing EUT) Substitution: Dipole ETS S/N: 1629, and 6ft SMA Cable Warehouse S/N: 208947 002

f	SA reading	Ant. Pol.	SG reading	CL	Gain	ERP	Limit	Margin	Notes
MHz	(dBuV/m)	(H/V)	(dBm)	(dB)	(dBd)	(dBm)	(dBm)	(dB)	
Low Channel									
826.40	94.1	v	19.6	0.5	0.0	19.1	38.5	-19.3	
826.40	96 <i>5</i>	Н	22.2	0.5	0.0	21.7	38.5	-16.7	
Mid Channel									
836.40	94.9	Y	20.3	0.0	0.0	19.7	38.5	-18.7	
836.40	97.1	Н	22.6	0.0	0.0	22.0	38.5	-16.4	
High Channe	1								
846.60	94.4	v	19.8	0.7	0.0	19.1	38.5	-19.3	
846.60	96.4	н	21.8	0.7	0.0	21.1	38.5	-17.3	

Page 15 of 27

GSM Output Power (EIRP)

PCS Fundamental Substitution Measurement Compliance Certification Services, Morgan Hill Immunity Chamber

Company: Sierra Wireless, Inc. Project #: 06U10342 Date: June 20, 2006 Test Engineer: Sunny Shih Configuration: EUT only Mode: GSM1900 GPRS mode RBW=VBW=8MHz, Peak Detection

Test Equipment:

Receiving: Horn T59, and Chin SMA Cables 2 & 12 ft (Setup this one for testing EUT) Substitution: Horn T60, and 6ft SMA Cable Warehouse S/N: 208947 002

f	SA reading	Ant. Pol.	SG reading	CL	Gain	EIRP	Limit	Margin	Notes
GHz	(dBuV/m)	(H/V)	(dBm)	(dB)	(dBi)	(dBm)	(dBm)	(dB)	
Low Chan	nel								
1.850	95.4	v	21.5	0.9	8.3	28.9	33.0	-4.1	
1.850	93.2	Н	17.1	0.9	83	24.5	33.0	-8.5	
Mid Chan	nel								
1.880	95.9	v	22.8	0.9	8.3	30.2	33.0	-2.8	
1.880	92.8	H	18.0	0.9	83	25.5	33.0	-7.6	
High Cha	i nnel								
1,910	97.1	Y	23.8	0.9	8.4	31.3	33.0	-1.7	
1.910	93.4	Н	18.3	0.9	8.4	25.8	33.0	-7.2	

Page 16 of 27

EDGE Output Power (EIRP)

PCS Fundamental Substitution Measurement Compliance Certification Services, Morgan Hill Immunity Chamber

Company: Sierra Wireless, Inc. Project #: 06U10342 Date: June 20, 2006 Test Engineer: Sunny Shih Configuration: EUT only Mode: GSM1900 EGPRS mode RBW=VBW=8MHz, Peak Detection

Test Equipment:

Receiving: Horn T59, and Chin SMA Cables 2 & 12 ft (Setup this one for testing EUT) Substitution: Horn T60, and 6ft SMA Cable Warehouse S/N: 208947 002

f	SA reading	Ant. Pol.	SG reading	CL	Gain	EIRP	Limit	Margin	Notes
GHz	(dBuV/m)	(H/V)	(dBm)	(dB)	(dBi)	(dBm)	(dBm)	(dB)	
Low Chan	nel								
1.850	94.7	v	20.7	0.9	8.3	28.1	33.0	-49	
1.850	93.1	Н	17.1	0.9	8.3	24.5	33.0	-8.5	
Mid Chan	nel								
1.880	95.6	v	22.5	0.9	8.3	29.9	33.0	-3.1	
1.880	92.5	H	17.7	0.9	83	25.2	33.0	-79	
High Cha	nnel								
1.910	96.9	v	23.6	0.9	8.4	31.1	33.0	-2.0	
1.910	93.4	н	18.3	0.9	8.4	25.8	33.0	-7.2	

Page 17 of 27

WCDMA Output Power (EIRP)

PCS Fundamental Substitution Measurement Compliance Certification Services, Morgan Hill Immunity Chamber

Company: Sierra Wireless, Inc. Project #: 06U10342 Date: June 21, 2006 Test Engineer: Sunny Shih Configuration: EUT only Mode: WCDMA1900 RBW=VBW=8MHz, Peak Detection

Test Equipment:

Receiving: Horn T59, and Chin SMA Cables 2 & 12 ft (Setup this one for testing EUT) Substitution: Horn T60, and 6ft SMA Cable Warehouse S/N: 208947 002

f	SA reading	Ant. Pol.	SG reading	CL	Gain	EIRP	Limit	Margin	Notes
GHz	(dBuV/m)	(H/V)	(dBm)	(dB)	(dBi)	(dBm)	(dBm)	(dB)	
Low Chan	mel								
1.852	94.6	v	20.6	0.9	8.3	28.0	33.0	-5.0	
1.852	91 <i>5</i>	Н	15.5	0.9	83	22.9	33.0	-10.1	
Mid Chan	nel								
1.880	92.8	v	19.7	0.9	8.3	27.1	33.0	-59	
1.880	89.3	H	14.5	0.9	83	21.9	33.0	-11.1	
High Cha	nnel								
1.908	94.0	v	20.7	0.9	8.4	28.2	33.0	-4.8	
1.908	90.3	н	15.2	0.9	8.4	22.6	33.0	-10.4	

Page 18 of 27

7.2. FIELD STRENGTH OF SPURIOUS EMISSION

<u>LIMIT</u>

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.

Page 19 of 27

850MHz Band GSM Spurious & Harmonic (ERP)

Cellular Harmonic Substitution Measurement

Compliance Certification Services, Morgan Hill Immunity Chamber

Company: Sierra Wireless, Inc. Project #: 06U10342 Date: June 20, 2006 Test Engineer: Sunny Shih Configuration: EUT only Mode: GSM850 GPRS mode RBW=VBW=1MHz, Peak Detection

Test Equipment:

Receiving: Horn T59, Pre-amp T34, Chin SMA Cables 2 & 12 ft (Setup this one for testing EUT) Substitution: Horn T60, 6ft SMA Cable Warehouse S/N: 208947 002

f	SA reading	Ant. Pol.	SG reading	CL	Gain	ERP	Limit	Margin	Notes
GHz	(dBuV/m)	(H/V)	(dBm)	(dB)	(dBd)	(dBm)	(dBm)	(dB)	
Low Chan	nel (824.2MHz)								
1.648	65.1	v	-48.2	0.8	4.9	-44.1	-13.0	-31.1	
2.472	68.2	v	-42.2	1.0	7.1	-36.0	-13.0	-23,0	
1.648	62.1	Н	-43.4	13	7.8	-36.9	-13.0	-23.9	
2.472	59.1	Н	-44.9	15	8.8	-37.5	-13.0	-24.5	
Mid Chan	nel (837.0MHz)								
1.674	63.8	v	-49.3	0.8	5.0	-45.1	-13.0	-32.1	
2511	61.5	v	-47.9	1.0	7.1	-41.8	-13.0	-28.8	
1.674	62.5	Н	-43.0	1.4	79	-36.5	-13.0	-23.5	
2.511	55.6	Н	-47.9	15	8.9	-40.5	-13.0	-27.5	
High Chai	i nnel (848.8MHz)								
1.697	63.2	v	-49.7	0.8	5.1	-45.4	-13.0	-32.4	
2.546	60.1	v	-48.7	1.0	7.1	-42.5	-13.0	-29.5	
1.697	61.5	Н	-44.4	1.4	0.8	-37.8	-13.0	-24.8	
2.546	54.0	Н	-48.9	1.5	8.9	-41.6	-13.0	-28.6	

Page 20 of 27

850MHz Band EDGE Spurious & Harmonic (ERP)

Cellular Harmonic Substitution Measurement Compliance Certification Services, Morgan Hill Immunity Chamber

Company: Sierra Wireless, Inc. Project #: 06U10342 Date: June 20, 2006 Test Engineer: Sunny Shih Configuration: EUT only Mode: GSM850 EGPRS mode RBW=VBW=1MHz, Peak Detection

Test Equipment:

Receiving: Horn T59, Pre-amp T34, Chin SMA Cables 2 & 12 ft (Setup this one for testing EUT) Substitution: Horn T60, 6ft SMA Cable Warehouse S/N: 208947 002

f	SA reading	Ant. Pol.	SG reading	CL	Gain	ERP	Limit	Margin	Notes
GHz	(dBuV/m)	(H/V)	(dBm)	(dB)	(dBd)	(dBm)	(dBm)	(dB)	
Low Chan	mel (824.2MHz)								
1.648	60.7	v	-52.6	0.8	4.9	-48.5	-13.0	-35.5	
2.472	60.4	v	-50.0	1.0	7.1	-43.8	-13.0	-30.8	
1.648	56.1	Н	-49.5	13	7.8	-43.0	-13.0	-30.0	
2.472	52.9	H	-51.1	15	8.8	-43.8	-13.0	-30.8	
Mid Chan	i. .nel (837.0MHz)								
1.674	59.0	v	-54.1	0.8	5.0	-49.9	-13.0	-36.9	
2.511	53.6	v	-55.8	1.0	7.1	-49.7	-13.0	-36.7	
1.674	55.2	Н	-50.3	1.4	79	-43.8	-13.0	-30.8	
2.511	53.1	Н	-50.4	15	8.9	-43.0	-13.0	-30,0	
High Cha	nnel (848.8MHz)								
1.697	55.0	v	-57.9	0.8	5.1	-53.6	-13.0	-40.6	
2.546	53.6	v	-55.2	1.0	7.1	-49.0	-13.0	-36.0	
1.697	57.0	Н	-48.9	1.4	8.0	-42.3	-13.0	-29.3	
2.546	47.1	н	-55.8	15	8.9	-48.5	-13.0	-35.5	

Page 21 of 27

850MHz Band WCDMA Spurious & Harmonic (ERP)

Cellular Harmonic Substitution Measurement

Compliance Certification Services, Morgan Hill Immunity Chamber

Company: Sierra Wireless, Inc. Project #: 06U10342 Date: June 21, 2006 Test Engineer: Sunny Shih Configuration: EUT only Mode: WCDMA850 RBW=VBW=1MHz, Peak Detection

Test Equipment:

Receiving: Horn T59, Pre-amp T34, Chin SMA Cables 2 & 12 ft (Setup this one for testing EUT) Substitution: Horn T60, 6ft SMA Cable Warehouse S/N: 208947 002

f	SA reading	Ant. Pol.	SG reading	CL	Gain	ERP	Limit	Margin	Notes
GHz	(dBuV/m)	(H/V)	(dBm)	(dB)	(dBd)	(dBm)	(dBm)	(dB)	
Low Chan	nel (826.4MHz)								
1.652	54 <i>.</i> 4	v	-58.9	0.8	4.9	-54.8	-13.0	-41.8	
2.479	52.1	v	-58.3	1.0	7.1	-52.1	-13.0	-39.1	
1.652	53.3	н	-52.2	13	7.8	-45.7	-13.0	-32.7	
2.479	51.2	Н	-52.8	15	8.8	-45.5	-13.0	-32.5	
Mid Chan	nel (836.4MHz)								
1.672	54.0	v	-59.1	0.8	5.0	-54.9	-13.0	-41.9	
2.509	51.2	v	-58.3	1.0	7.1	-52.1	-13.0	-39.1	
1.672	53.4	Н	-52.1	1.4	79	-45.6	-13.0	-32.6	
2.509	50.8	H	-52.7	15	8.9	-45.3	-13.0	-32.3	
High Cha	nnel (846.6MHz)								
1.693	54.8	v	-58.1	0.8	5.1	-53.8	-13.0	-40.8	
2.539	50 <i>9</i>	v	-57.9	1.0	7.1	-51.7	-13.0	-38.7	
1.693	54.7	Н	-51.2	1.4	0.8	-44.6	-13,0	-31.6	
2.539	50.7	н	-52.2	1.5	8.9	-44.8	-13.0	-31.8	

Page 22 of 27

1900MHz Band GSM Spurious & Harmonic (EIRP)

PCS Harmonic Substitution Measurement Compliance Certification Services, Morgan Hill Immunity Chamber

Company: Sierra Wireless, Inc. Project #: 06U10342 Date: June 20, 2006 Test Engineer: Sunny Shih Configuration: EUT only Mode: GSM1900 GPRS mode RBW=VBW=1MHz, Peak Detection

Test Equipment:

Receiving: Horn T59, Pre-amp T34, and Chin SMA Cables 2 & 12 ft (Setup this one for testing EUT) Substitution: Horn T60, and 6ft SMA Cable Warehouse S/N: 208947 002

f	SA reading	Ant. Pol.	SG reading	CL	Gain	EIRP	Limit	Margin	Notes
GHz	(dBuV/m)	(H/V)	(dBm)	(dB)	(dBi)	(dBm)	(dBm)	(dB)	
Low Chan	mel (1850.2MHz)								
3.700	49.8	v	-55.2	1.2	9.7	-46.8	-13.0	-33.8	
5.550	44.9	v	-57.6	1.6	11.0	-48.2	-13.0	-35.2	
3.700	43.2	н	-54.6	2.1	12.7	-44.0	-13.0	-31.0	
5.550	44.1	Н	-52.6	23	13.8	-41.1	-13.0	-28.1	
Mid Chan	nel (1880MHz)								
3.760	47.5	v	-57.0	13	9.7	-48.5	-13.0	-35.5	
5.640	46.0	v	-56.8	1.7	11.2	-47.3	-13.0	-34.3	
3.760	46.2	H	-50.3	2.1	12.7	-39.7	-13.0	-26.7	
5.640	48.5	H	-47.3	2.3	13.9	-35.8	-13.0	-22.8	
High Cha	nnel (1909.8MHz)								
3.819	45.7	v	-58.5	13	9.7	-50.1	-13.0	-37.1	
5.729	48.3	v	-54.2	1.7	11.3	-44.6	-13.0	-31.6	
3.819	43.7	Н	-51.9	2.1	12.7	-41.3	-13.0	-28.3	
5.729	48.7	н	-46.5	2.4	14.0	-34.9	-13.0	-21.9	

Page 23 of 27

1900MHz Band EDGE Spurious & Harmonic (EIRP)

PCS Harmonic Substitution Measurement

Compliance Certification Services, Morgan Hill Immunity Chamber

Company: Sierra Wireless, Inc. Project #: 06U10342 Date: June 20, 2006 Test Engineer: Sunny Shih Configuration: EUT only Mode: GSM1900 EGPRS mode RBW=VBW=1MHz, Peak Detection

Test Equipment:

Receiving: Horn T59, Pre-amp T34, and Chin SMA Cables 2 & 12 ft (Setup this one for testing EUT) Substitution: Horn T60, and 6ft SMA Cable Warehouse S/N: 208947 002

f	SA reading	Ant. Pol.	SG reading	CL	Gain	EIRP	Limit	Margin	Notes
\mathbf{GHz}	(dBuV/m)	(H/V)	(dBm)	(dB)	(dBi)	(dBm)	(dBm)	(dB)	
Low Chan	nel (1850.2MHz)								
3.700	48.5	v	-56.5	1.2	9.7	-48.1	-13.0	-35.1	
5.550	44.7	v	-57.8	1.6	11.0	-48.4	-13,0	-35,4	
3.700	41.2	н	-56.6	2.1	12.7	-46.0	-13.0	-33.0	
5.550	43.1	H	-53.6	23	13.8	-42.1	-13.0	-29.1	
Mid Chan	i nel (1880MHz)								
3.760	46.1	v	-58.4	13	9.7	-49.9	-13.0	-36.9	
5.640	45.5	v	-57.3	1.7	11.2	-47.8	-13.0	-34.8	
3.760	44 <i>.</i> 6	Н	-51.9	2.1	12.7	-41.3	-13.0	-28.3	
5.640	47.1	H	-48.8	23	13.9	-37.2	-13.0	-24.2	
High Cha	nnel (1909.8MHz)								
3.819	44.5	v	-59.7	13	9.7	-51.3	-13.0	-38.3	
5.729	47.6	v	-54.9	1.7	11.3	-45.3	-13.0	-32.3	
3.819	43.5	Н	-52.1	2.1	12.7	-41.5	-13.0	-28.5	
5.729	46.7	н	-48.5	2.4	14.0	-36.9	-13.0	-23.9	

Page 24 of 27

1900MHz Band WCDMA Spurious & Harmonic (EIRP)

PCS Harmonic Substitution Measurement Compliance Certification Services, Morgan Hill Immunity Chamber

Company: Sierra Wireless, Inc. Project #: 06U10342 Date: June 21, 2006 Test Engineer: Sunny Shih Configuration: EUT only with power adaptor Mode: WCDMA1900 RBW=VBW=1MHz, Peak Detection

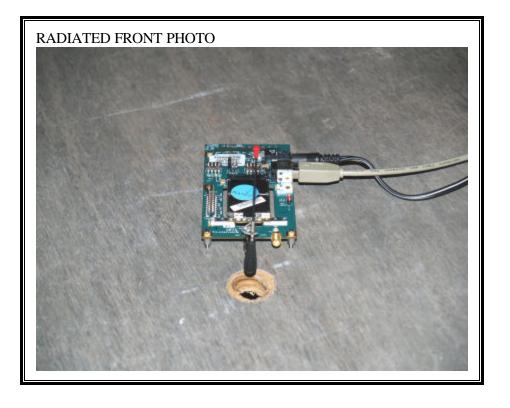
Test Equipment:

Receiving: Horn T59, Pre-amp T34, and Chin SMA Cables 2 & 12 ft (Setup this one for testing EUT) Substitution: Horn T60, and 6ft SMA Cable Warehouse S/N: 208947 002

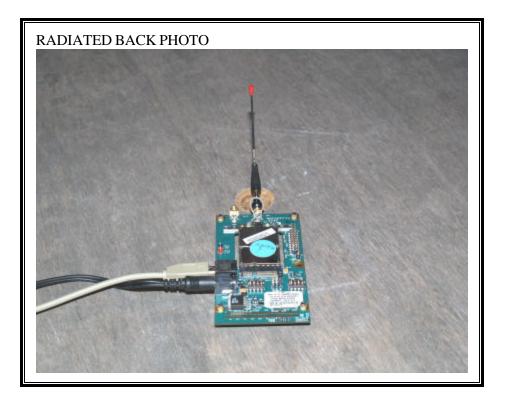
f	SA reading	Ant. Pol.	SG reading	CL	Gain	EIRP	Limit	Margin	Notes
GHz	(dBuV/m)	(H/V)	(dBm)	(dB)	(dBi)	(dBm)	(dBm)	(dB)	
Low Chan	mel (1852.4MHz)								
3.704	53.8	v	-51.2	1.2	9.7	-42.8	-13.0	-29.8	
5.557	52,0	v	-50.5	1.6	11,0	-41.1	-13.0	-28.1	
3.704	53.6	Н	-44.2	2.1	12.7	-33.6	-13.0	-20.6	
5.557	51.9	Н	-44.8	2.3	13.8	-33.3	-13.0	-20.3	
Mid Chan	nel (1880MHz)								
3.760	65.0	v	-39.5	13	9.7	-31.1	-13.0	-18.1	
5.640	52.5	v	-50.3	1.7	11.2	-40.8	-13.0	-27.8	
3.760	61.7	Н	-34.8	2.1	12.7	-24.2	-13.0	-11.2	
5.640	519	H	-43.9	23	13.9	-32.4	-13.0	-19.4	
High Cha	nnel (1907.6MHz)								
3.815	67.8	v	-36.4	13	9.7	-27.9	-13.0	-14.9	
5.722	53.2	v	-49.3	1.7	113	-39.7	-13.0	-26.7	
3.815	57.6	Н	-38.0	2.1	12.7	-27.4	-13.0	-14.4	
5.722	53.1	н	-42.1	2.4	14.0	-30.5	-13.0	-17.5	

Page 25 of 27

8. SETUP PHOTOS



Page 26 of 27



END OF REPORT

Page 27 of 27