



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

**EXPRESS MINI-PCI USB WIRELESS CDMA MODEM MODULE**

**MODEL NUMBER: MC5720**

**FCC ID: N7N-MC5720**

**REPORT NUMBER: 05U3780-1**

**ISSUE DATE: NOVEMBER 30, 2005**

*Prepared for*  
**SIERRA WIRELESS  
2290 COSMOS CT.  
CARLSBAD CALIFORNIA 92009  
U.S.A**

*Prepared by*  
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**LAB CODE:200065-0**

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Revision History

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Rev.	Date	Revisions	Revised By
A	11/30/05	Initial Issue	Thu

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# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** SIERRA WIRELESS  
2290 COSMOS CT.  
CARLSBAD CALIFORNIA 92009  
U.S.A

**EUT DESCRIPTION:** EXPRESS MINI-PCI USB WIRELESS CDMA MODEM MODULE

**MODEL:** MC5720

**SERIAL NUMBER:** ZZ-89077 and ZZ-89592

**DATE TESTED:** NOVEMBER 21-23, 2005

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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CHIN PANG  
EMC ENGINEER  
COMPLIANCE CERTIFICATION SERVICES

## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with TIA/EIA 603A (2001), 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 <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
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 dual band 800 / 1900MHz Express Mini-PCI USB Wireless CDMA Modem Module.in  
Lenovo Davinci 14" & 15" laptops.

### 5.2. DESCRIPTION OF CLASS II PERMISSIVE CHANGE

The purpose of this class II permissive change is to test MC5720 CDMA Module in both 14" and 15"  
Lenovo Davinci Laptops. So, all the tests were performed on radiated emissions only in this report.

### 5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a Planner Inverted F type antenna with a maximum gain as below:  
\_For 15" Lenovo Davinci Laptop: 0.31 dBi for cellular band and 2.15 dBi for PCS band  
\_For 14" Lenovo Davinci Laptop: 0.12 dBi for cellular band and 1.51 dBi for PCS band

### 5.4. MAXIMUM OUTPUT POWER

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

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

14" Davinci Laptop:

Frequency Range (MHz)	Modulation	ERP Peak Power (dBm)	ERP Peak Power (mW)
824.7 - 848.31	CDMA	23.00	199.53
1851.25 - 1908.75	CDMA	23.30	213.80

15" Davinci Laptop:

Frequency Range (MHz)	Modulation	EIRP Peak Power (dBm)	EIRP Peak Power (mW)
824.7 - 848.31	CDMA	21.60	144.54
1851.25 - 1908.75	CDMA	24.20	263.03

NOTE: RBW=VBW=3MHz

## 5.5. SOFTWARE AND FIRMWARE

The test utility software used during testing was Hyperterminal / ProcommPlus.

## 5.6. WORST-CASE CONFIGURATION AND MODE

The worst-case channel is determined as the channel with the highest output power. The highest measured output power was at mid channel 836.5 MHz for 800 MHz band both laptops; mid channel 1880 MHz for 14" laptop and low channel 1851.25Mhz for 15" laptop in 1900MHZ band.

## 5.7. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
DC Power Supply	IBM	E3610A	11592P1113Z1ZACU59X711V	NA
DC Power Supply	IBM	92P1113	11592P1113Z1ZACW59V12G	NA
14" Laptop	IBM	0800TSA	ZZ-89077	DoC
15" Laptop	IBM	0800TSA	ZZ-89592	DoC

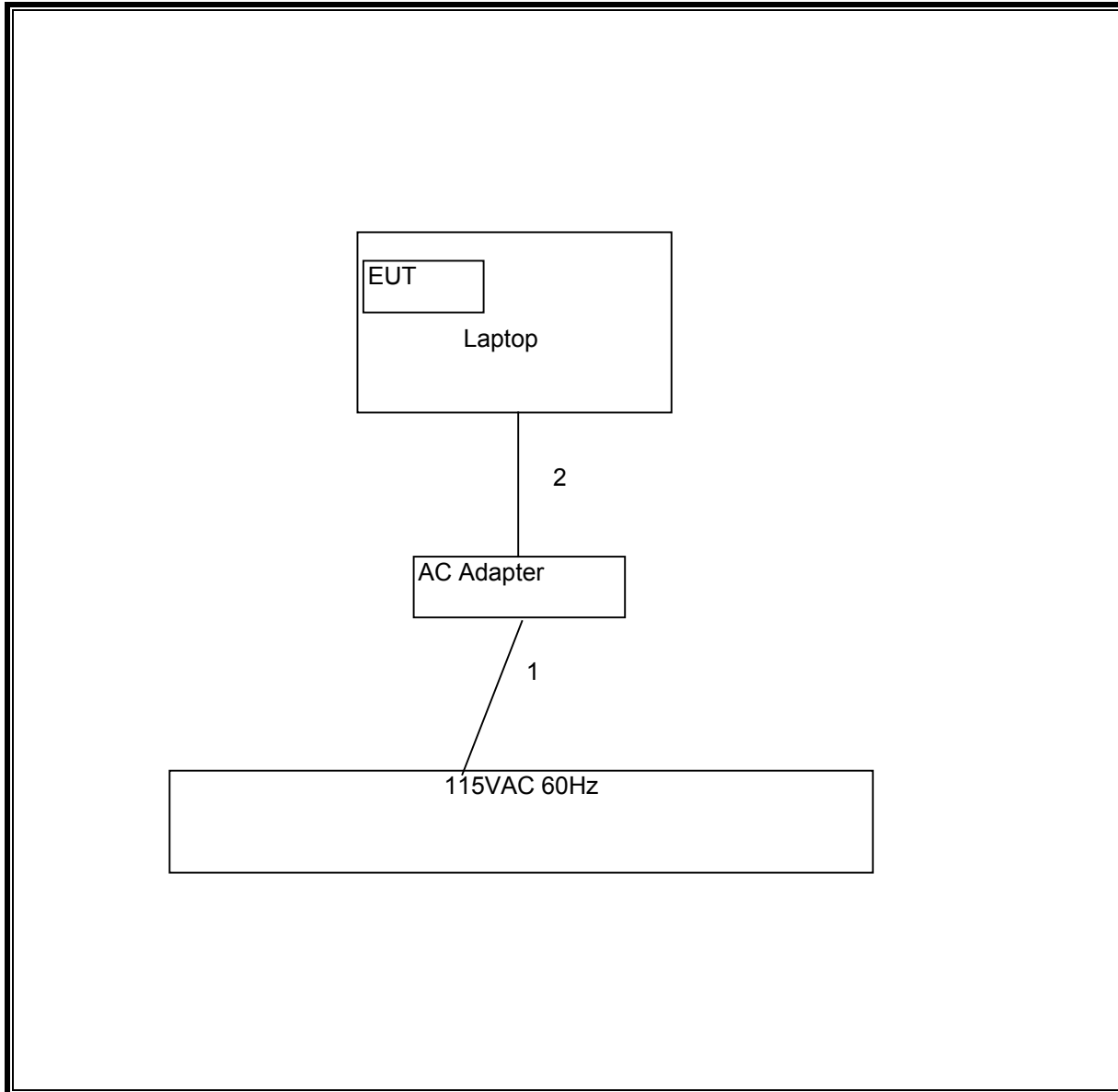
### I/O CABLES

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	NA
2	DC	1	DC	Un-shielded	0.5m	NA

### TEST SETUP

The EUT is installed inside the laptop during the tests. The test software 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 30MHz ~ 2Ghz	Solar	JB1	A121003	3/3/06
Preamplifier, 1300MHz	HP	8447D	1937A02062	1/7/06
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	2238	4/22/06
Antenna, Horn 1 ~ 18 GHz	Ertco	3115	6717	4/22/06
Preamplifier, 1 ~ 26.5 GHz	HP	8449B	3008A00369	8/17/06
Signal Generator, 10 MHz ~ 20 GHz	HP	83732B	US34490599	10/5/06
Dipole	EMCO	3121C-DB2	22435	3/25/06
Signal Generator, 1024 MHz	R & S	SMY01	DE 12311	4/11/06
EMI Receiver, 9 kHz ~ 2.9 GHz	HP	8542E	3942A00286	3/29/06
Spectrum Analyzer 3 Hz ~ 44 GHz	Agilent	E4446A	MY43360112	3/28/06
RF Filter Section	HP	85420E	3705A00256	3/29/06
Antenna, Bilog 30MHz ~ 2Ghz	Solar	JB1	A121003	03/03/06
2.7GHz HPF	MicroTronic	HPM13194	2	CNR
1.5GHz HPF	MicroTronic	HPM13195	1	CNR

## 7. LIMITS AND RESULTS

### 7.1. 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.

#### 14 INCH LENOVO DAVINCI LAPTOP

800 MHz CELL CDMA Modulation

Channel	Frequency (MHz)	ERP Peak Power (dBm)	ERP Peak Power (mW)
Low	824.7	21.40	138.04
Middle	836.5	23.00	199.53
High	848.31	22.90	194.98

1900 MHz PCS CDMA Modulation

Channel	Frequency (MHz)	EIRP Peak Power (dBm)	EIRP Peak Power (mW)
Low	1851.25	23.00	199.53
Middle	1880.00	23.30	213.80
High	1908.75	22.20	165.96

NOTE: RBW=VBW=3MHz.

**15 INCH LENOVO DAVINCI LAPTOP**

800 MHz CELL CDMA Modulation

<b>Channel</b>	<b>Frequency (MHz)</b>	<b>ERP Peak Power (dBm)</b>	<b>ERP Peak Power (mW)</b>
Low	824.7	21.10	128.82
Middle	836.5	21.40	138.04
High	848.31	21.60	144.54

1900 MHz PCS CDMA Modulation

<b>Channel</b>	<b>Frequency (MHz)</b>	<b>EIRP Peak Power (dBm)</b>	<b>EIRP Peak Power (mW)</b>
Low	1851.25	24.20	263.03
Middle	1880.00	23.20	208.93
High	1908.75	22.50	177.83

NOTE: RBW=VBW=3MHz.

**CDMA OUTPUT POWER (ERP) WITH 14 INCH LENOVO DAVINCI LAPTOP**

11/21/05 <b>High Frequency Substitution Measurement</b> <b>Compliance Certification Services, Morgan Hill 5m Chamber Site</b>  Test Engr: Chin Pang Project #: 05U3780-1 Company: Sierra Wireless EUT Descrip.: CDMA EUT M/N: MC5720-CDMA with 14 inch Levovo Davinci Laptop Test Target: CDMA Cell Mode Oper: TX, Fundamental  <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
824.70	98.8	V	21.9	0.5	0.0	21.4	38.5	-17.1	
824.70	99.2	H	20.9	0.5	0.0	20.4	38.5	-18.1	
836.50	99.6	V	23.6	0.6	0.0	23.0	38.5	-15.4	
836.50	97.9	H	19.7	0.6	0.0	19.1	38.5	-19.3	
848.31	99.0	V	23.6	0.7	0.0	22.9	38.5	-15.5	
848.31	96.6	H	18.5	0.7	0.0	17.8	38.5	-20.6	

NOTE: RBW=VBW=3MHz

**PCS OUTPUT POWER (EIRP) WITH 14 INCH LENOVO DAVINCI LAPTOP**

11/22/05 **High Frequency Fundamental Measurement**  
**Compliance Certification Services, Morgan Hill 5m Chamber Site**

**Test Engr:** Chin Pang  
**Project #:** 05U3780  
**Company:** Sierra Wireless  
**EUT Descrip.:** CDMA, PCS 1900MHz  
**EUT M/N:** MC5720-CDMA Module with 14 inch Lenovo Davinci Laptop  
**Test Target:** CDMA 1900MHz  
**Mode Oper:** TX, Fundamental

**Test Equipment:**

**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
1.851	92.4	H	15.2	0.9	8.3	22.6	33.0	-10.4	
1.851	93.0	V	15.6	0.9	8.3	23.0	33.0	-10.0	
1.880	92.0	H	15.1	0.9	8.3	22.6	33.0	-10.5	
1.880	93.6	V	15.9	0.9	8.3	23.3	33.0	-9.7	
1.909	91.0	H	14.4	0.9	8.4	21.9	33.0	-11.1	
1.909	91.7	V	14.7	0.9	8.4	22.2	33.0	-10.8	

NOTE: RBW=VBW=3MHz

**CDMA OURPUT POWER (ERP) WITH 15 INCH LENOVO DAVINCI LAPTOP**

11/22/05 <b>High Frequency Substitution Measurement</b> <b>Compliance Certification Services, Morgan Hill 5m Chamber Site</b>  <b>Test Engr: Chin Pang</b> <b>Project #: 05U3780-1</b> <b>Company: Sierra Wireless</b> <b>EUT Descrip.: CDMA</b> <b>EUT M/N: MC5720-CDMA Module with 15" Lenovo Davinci Laptop</b> <b>Test Target: CDMA Cell</b> <b>Mode Oper: TX, Fundamental</b>  <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
824.70	98.4	V	21.5	0.5	0.0	21.0	38.5	-17.5	
824.70	100.0	H	21.6	0.5	0.0	21.1	38.5	-17.3	
836.50	98.0	V	22.0	0.6	0.0	21.4	38.5	-17.0	
836.50	99.3	H	21.1	0.6	0.0	20.5	38.5	-18.0	
848.31	97.7	V	22.3	0.7	0.0	21.6	38.5	-16.8	
848.31	99.3	H	21.2	0.7	0.0	20.5	38.5	-17.9	

NOTE: RBW=VBW=3MHz

**PCS OUTPUT POWER (EIRP) WITH 15 INCH LENOVO DAVINCI LAPTOP**

11/22/05 <b>High Frequency Fundamental Measurement</b> Compliance Certification Services, Morgan Hill 5m Chamber Site  Test Engr: Chin Pang Project #: 05U3780 Company: Sierra Wireless EUT Descrip.: CDMA, PCS 1900MHz EUT M/N: MC5720-CDMA Module with 15 inch Lenovo Davinci Laptop. Test Target: CDMA 1900MHz Mode Oper: TX, Fundamental  <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
1.851	93.4	H	16.1	0.9	8.3	23.5	33.0	-9.5	
1.851	94.1	V	16.8	0.9	8.3	24.2	33.0	-8.8	
1.880	92.3	H	15.4	0.9	8.3	22.9	33.0	-10.2	
1.880	93.4	V	15.7	0.9	8.3	23.2	33.0	-9.8	
1.909	91.6	H	15.1	0.9	8.4	22.5	33.0	-10.5	
1.909	92.0	V	15.0	0.9	8.4	22.5	33.0	-10.5	

NOTE: RBW=VBW=3MHz

## **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.



**800MHz Band CDMA Spurious & Harmonic (ERP) WITH 14 INCH LENOVO DAVINCI LAPTOP**

11/21/05 <b>High Frequency Substitution Measurement</b>										
Compliance Certification Services, Morgan Hill 5m Chamber Site										
Test Engr: Chin Pang										
Project #:05U3780										
Company:Sierra Wireless										
EUT Descrip.: Express Mini PCI USB Wireless Dual band 800/1900MHz CDMA Modem Module										
EUT M/N: MC5720-CDMA Module with 14 inch lenovo davinci Laptop										
Test Target:FCC 22										
Mode Oper:Tx, 800MHz Band										
<b>Test Equipment:</b>										
EMCO Horn 1-18GHz		Horn > 18GHz			Limit		High Pass Filter			
T60; S/N: 2238 @3m					FCC 22					
Hi Frequency Cables				Pre-amplifer 1-26GHz		Pre-amplifer 26-40GHz				
<input type="checkbox"/> (2 ft) <input type="checkbox"/> (2 ~ 3 ft) <input checked="" type="checkbox"/> (4 ~ 6 ft) <input checked="" type="checkbox"/> (12 ft)				T34 HP 8449B						
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, 824.70MHz</b>										
1.649	53.5	V	-51.1	2.1	7.9	5.7	-47.5	-13.0	-34.5	
2.474	57.5	V	-43.0	2.6	9.8	7.6	-38.0	-13.0	-25.0	
3.299	55.0	V	-41.6	3.0	9.7	7.6	-37.1	-13.0	-24.1	
4.124	45.0	V	-48.6	3.5	9.9	7.7	-44.4	-13.0	-31.4	
1.649	51.0	H	-52.9	2.1	7.9	5.7	-49.3	-13.0	-36.3	
2.474	54.0	H	-46.3	2.6	9.8	7.6	-41.3	-13.0	-28.3	
3.299	48.0	H	-48.5	3.0	9.7	7.6	-44.0	-13.0	-31.0	
4.124	43.5	H	-49.8	3.5	9.9	7.7	-45.6	-13.0	-32.6	
<b>MID CH, 836.52MHz</b>										
1.673	50.6	V	-53.9	2.1	7.9	5.8	-50.2	-13.0	-37.2	
2.509	50.0	V	-50.4	2.6	9.8	7.6	-45.4	-13.0	-32.4	
3.346	58.5	V	-38.0	3.1	9.7	7.6	-33.5	-13.0	-20.5	
4.182	46.0	V	-47.6	3.5	9.9	7.8	-43.3	-13.0	-30.3	
1.673	48.0	H	-55.8	2.1	7.9	5.8	-52.1	-13.0	-39.1	
2.509	47.0	H	-53.2	2.6	9.8	7.6	-48.2	-13.0	-35.2	
3.346	59.0	H	-37.4	3.1	9.7	7.6	-32.9	-13.0	-19.9	
4.182	45.0	H	-48.2	3.5	9.9	7.8	-44.0	-13.0	-31.0	
<b>HIGH CH, 848.31MHz</b>										
1.697	55.2	V	-49.1	2.1	8.0	5.8	-45.5	-13.0	-32.5	
2.545	51.0	V	-49.2	2.6	9.8	7.6	-44.2	-13.0	-31.2	
3.393	54.1	V	-42.2	3.1	9.7	7.6	-37.7	-13.0	-24.7	
4.242	45.0	V	-48.5	3.6	10.0	7.9	-44.2	-13.0	-31.2	
1.697	52.0	H	-51.6	2.1	8.0	5.8	-47.9	-13.0	-34.9	
2.545	50.0	H	-50.0	2.6	9.8	7.6	-45.0	-13.0	-32.0	
3.393	55.0	H	-41.2	3.1	9.7	7.6	-36.7	-13.0	-23.7	
4.242	44.3	H	-48.9	3.6	10.0	7.9	-44.5	-13.0	-31.5	
NO OTHER EMISSIONS WERE DETECTED ABOVE SYSTEM NOISE FLOOR										

**PCS SPURIOUS & HARMONIC (EIRP): WITH 14 INCH LENOVO DAVINCI LAPTOP**

11/21/05 <b>High Frequency Substitution Measurement</b>										
Compliance Certification Services, Morgan Hill 5m Chamber Site										
Test Engr: Chin Pang										
Project #:05U3780-1										
Company:Sierra Wireless										
EUT Descrip.: Express Mini PCI USB Wireless Dual band 800/1900MHz CDMA Modem Module										
EUT M/N: MC5720-CDMA Module with 14 inch Lenovo Davinci Laptop.										
Test Target:FCC 24										
Mode Oper:Tx, 1900MHz Band										
<b>Test Equipment:</b>										
EMCO Horn 1-18GHz		Horn > 18GHz			Limit		High Pass Filter			
T60; S/N: 2238 @3m					FCC 24					
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)					T34 HP 8449B					
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, 1851.25MHz</b>										
3.703	55.0	V	-40.9	2.4	9.7	7.5	-33.6	-13.0	-20.6	
5.554	63.0	V	-27.9	3.2	11.0	8.8	-20.1	-13.0	-7.1	
7.405	50.0	V	-38.2	3.7	11.6	9.5	-30.3	-13.0	-17.3	
9.256	44.2	V	-43.3	4.2	11.7	9.6	-35.7	-13.0	-22.7	
3.703	51.4	H	-44.4	2.4	9.7	7.5	-37.1	-13.0	-24.1	
5.554	54.0	H	-35.9	3.2	11.0	8.8	-28.1	-13.0	-15.1	
7.405	50.0	H	-37.4	3.7	11.6	9.5	-29.5	-13.0	-16.5	
9.256	43.7	H	-43.8	4.2	11.7	9.6	-36.2	-13.0	-23.2	
<b>MID CH, 1880MHz</b>										
3.760	59.2	V	-36.4	2.5	9.7	7.5	-29.2	-13.0	-16.2	
5.640	62.0	V	-28.8	3.3	11.1	8.9	-21.0	-13.0	-8.0	
7.520	52.0	V	-36.0	3.7	11.6	9.5	-28.1	-13.0	-15.1	
9.400	44.1	V	-43.2	4.2	11.8	9.6	-35.7	-13.0	-22.7	
3.760	58.0	H	-37.5	2.5	9.7	7.5	-30.3	-13.0	-17.3	
5.640	54.0	H	-35.8	3.3	11.1	8.9	-28.0	-13.0	-15.0	
7.520	50.5	H	-36.7	3.7	11.6	9.5	-28.8	-13.0	-15.8	
9.400	43.5	H	-43.8	4.2	11.8	9.6	-36.3	-13.0	-23.3	
<b>HIGH CH, 1908.75MHz</b>										
3.818	60.6	V	-34.8	2.5	9.7	7.5	-27.6	-13.0	-14.6	
5.763	65.1	V	-25.6	3.3	11.2	9.1	-17.7	-13.0	-4.7	
7.635	51.0	V	-36.8	3.8	11.6	9.4	-29.0	-13.0	-16.0	
9.544	43.5	V	-43.7	4.3	11.8	9.6	-36.2	-13.0	-23.2	
3.818	62.2	H	-33.1	2.5	9.7	7.5	-25.9	-13.0	-12.9	
5.763	53.6	H	-36.2	3.3	11.2	9.1	-28.2	-13.0	-15.2	
7.635	50.0	H	-37.0	3.8	11.6	9.4	-29.2	-13.0	-16.2	
9.544	43.0	H	-44.2	4.3	11.8	9.6	-36.7	-13.0	-23.7	
<b>NO OTHER EMISSIONS WERE DETECTED ABOVE SYSTEM NOISE FLOOR.</b>										

**800MHz Band CDMA Spurious & Harmonic (ERP) WITH 15 INCH LENOVO DAVINCI LAPTOP**

11/28/05 High Frequency Substitution Measurement  
 Compliance Certification Services, Morgan Hill 5m Chamber Site  
 Test Engr: Chin Pang  
 Project #:05U3780  
 Company:Sierra Wireless  
 EUT Descrip.: Express Mini PCI USB Wireless Dual band 800/1900MHz CDMA Modem Module  
 EUT M/N: MC5720-CDMA Module with 15 inch Lenovo Davinci Laptop  
 Test Target:FCC 22  
 Mode Oper:Tx, 800MHz Band

**Test Equipment:**

EMCO Horn 1-18GHz      Horn > 18GHz      Limit       High Pass Filter  
 T73; S/N: 6717 @3m      FCC 22

Hi Frequency Cables      Pre-amplifier 1-26GHz      Pre-amplifier 26-40GHz  
 (2 ft)     (2 ~ 3 ft)     (4 ~ 6 ft)     (12 ft)      T34 HP 8449B

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, 824.70MHz</b>										
1.649	57.5	V	-47.6	2.1	8.3	6.2	-43.5	-13.0	-30.5	
2.474	50.0	V	-50.5	2.6	9.7	7.6	-45.5	-13.0	-32.5	
3.299	54.5	V	-42.3	3.0	9.8	7.7	-37.6	-13.0	-24.6	
4.124	44.7	V	-49.5	3.5	10.4	8.3	-44.7	-13.0	-31.7	
1.649	51.3	H	-53.1	2.1	8.3	6.2	-49.0	-13.0	-36.0	
2.474	52.4	H	-47.9	2.6	9.7	7.6	-42.9	-13.0	-29.9	
3.299	53.2	H	-43.5	3.0	9.8	7.7	-38.8	-13.0	-25.8	
4.124	43.3	H	-50.6	3.5	10.4	8.3	-45.8	-13.0	-32.8	
<b>MID CH, 836.52MHz</b>										
1.673	57.5	V	-47.4	2.1	8.4	6.2	-43.3	-13.0	-30.3	
2.509	53.0	V	-47.3	2.6	9.7	7.5	-42.4	-13.0	-29.4	
3.346	54.3	V	-42.3	3.1	9.9	7.7	-37.7	-13.0	-24.7	
4.182	45.0	V	-49.1	3.5	10.5	8.3	-44.3	-13.0	-31.3	
1.673	51.1	H	-53.1	2.1	8.4	6.2	-49.0	-13.0	-36.0	
2.509	51.5	H	-48.6	2.6	9.7	7.5	-43.7	-13.0	-30.7	
3.346	55.0	H	-41.5	3.1	9.9	7.7	-36.9	-13.0	-23.9	
4.182	44.2	H	-49.6	3.5	10.5	8.3	-44.8	-13.0	-31.8	
<b>HIGH CH, 848.31MHz</b>										
1.697	55.0	V	-49.8	2.1	8.4	6.3	-45.7	-13.0	-32.7	
2.545	52.2	V	-47.9	2.6	9.7	7.5	-43.0	-13.0	-30.0	
3.393	54.5	V	-42.0	3.1	9.9	7.7	-37.3	-13.0	-24.3	
4.242	44.1	V	-49.9	3.6	10.5	8.4	-45.1	-13.0	-32.1	
1.697	53.0	H	-51.1	2.1	8.4	6.3	-46.9	-13.0	-33.9	
2.545	52.8	H	-47.1	2.6	9.7	7.5	-42.2	-13.0	-29.2	
3.393	51.0	H	-45.4	3.1	9.9	7.7	-40.7	-13.0	-27.7	
4.242	44.0	H	-49.7	3.6	10.5	8.4	-44.8	-13.0	-31.8	
<b>NO OTHER EMISSIONS WERE DETECTED ABOVE SYSTEM NOISE FLOOR.</b>										

**PCS SPURIOUS & HARMONIC (EIRP): WITH 15 INCH LENOVO DAVINCI LAPTOP**

11/21/05 **High Frequency Substitution Measurement**  
 Compliance Certification Services, Morgan Hill 5m Chamber Site  
 Test Engr: Chin Pang  
 Project #:05U3780-1  
 Company:Sierra Wireless  
 EUT Descrip.: Express Mini PCI USB Wireless Dual band 800/1900MHz CDMA Modem Module  
 EUT M/N: MC5720-CDMA Module with 15 inch Lenovo Davinci Laptop.  
 Test Target:FCC 24  
 Mode Oper:Tx, 1900MHz Band

**Test Equipment:**

EMCO Horn 1-18GHz  
 T73; 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  
 T34 HP 8449B

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, 1851.25MHz</b>										
3.703	52.0	V	-44.3	2.4	10.1	8.0	-36.6	-13.0	-23.6	
5.554	61.0	V	-29.9	3.2	11.0	8.8	-22.1	-13.0	-9.1	
7.405	51.2	V	-37.1	3.7	11.7	9.5	-29.1	-13.0	-16.1	
9.256	44.0	V	-43.9	4.2	12.2	10.0	-35.9	-13.0	-22.9	
3.703	50.0	H	-46.2	2.4	10.1	8.0	-38.5	-13.0	-25.5	
5.554	51.6	H	-38.3	3.2	11.0	8.8	-30.5	-13.0	-17.5	
7.405	51.5	H	-35.9	3.7	11.7	9.5	-28.0	-13.0	-15.0	
9.256	43.7	H	-44.2	4.2	12.2	10.0	-36.2	-13.0	-23.2	
<b>MID CH, 1880MHz</b>										
3.760	56.0	V	-40.1	2.5	10.2	8.0	-32.4	-13.0	-19.4	
5.640	58.0	V	-32.8	3.3	11.1	8.9	-25.0	-13.0	-12.0	
7.520	49.7	V	-38.3	3.7	11.6	9.5	-30.4	-13.0	-17.4	
9.400	43.6	V	-44.3	4.2	12.3	10.1	-36.2	-13.0	-23.2	
3.760	52.0	H	-44.0	2.5	10.2	8.0	-36.3	-13.0	-23.3	
5.640	50.0	H	-39.8	3.3	11.1	8.9	-32.0	-13.0	-19.0	
7.520	51.0	H	-36.2	3.7	11.6	9.5	-28.3	-13.0	-15.3	
9.400	43.5	H	-44.4	4.2	12.3	10.1	-36.3	-13.0	-23.3	
<b>HIGH CH, 1908.75MHz</b>										
3.818	70.5	V	-25.4	2.5	10.2	8.0	-17.7	-13.0	-4.7	
5.763	58.0	V	-32.7	3.3	11.2	9.1	-24.8	-13.0	-11.8	
7.635	54.0	V	-33.7	3.8	11.5	9.4	-26.0	-13.0	-13.0	
9.544	44.0	V	-43.8	4.3	12.4	10.2	-35.7	-13.0	-22.7	
3.818	71.5	H	-24.4	2.5	10.2	8.0	-16.7	-13.0	-3.7	
5.763	50.0	H	-39.7	3.3	11.2	9.1	-31.8	-13.0	-18.8	
7.635	55.6	H	-31.3	3.8	11.5	9.4	-23.6	-13.0	-10.6	
9.544	44.2	H	-43.6	4.3	12.4	10.2	-35.5	-13.0	-22.5	
<b>NO OTHER EMISSIONS WERE DETECTED ABOVE SYSTEM NOISE FLOOR.</b>										