



Express Card AC880E Partial Test Report

For

FCC Certification

FCC ID: N7NAC880E

**Prepared by
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Test Date: Aug. 7, 2007

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1 Introduction and Purpose

This document provides the FCC test data for the AC88X_EC wireless modem. The tests included in this report are limited to all conducted tests required. The radiated tests were performed at an external test facility.

2 Test Summary

FCC RULE	DESCRIPTION OF TEST	RESULT	PAGE
2.1046	RF Power Output	Complies	Error! Bookmark not defined.

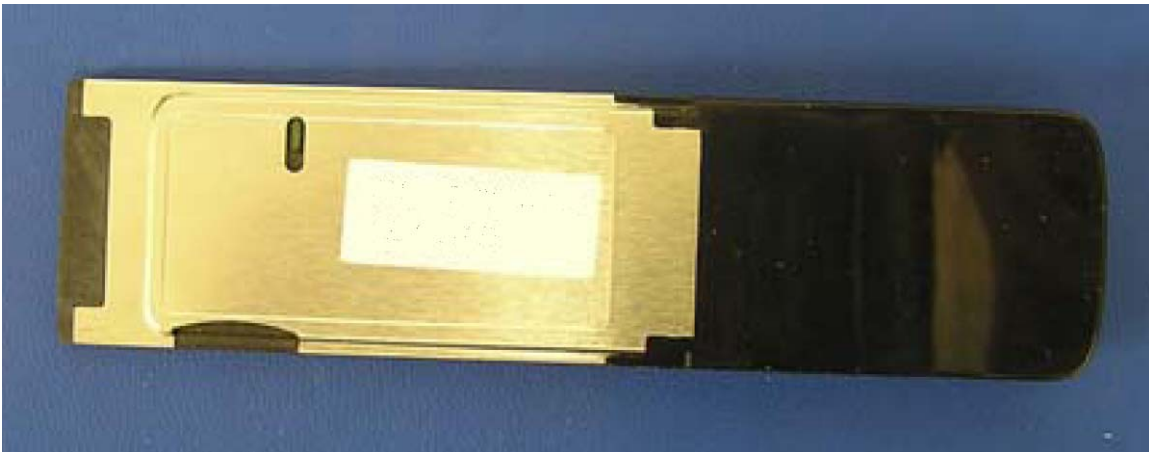
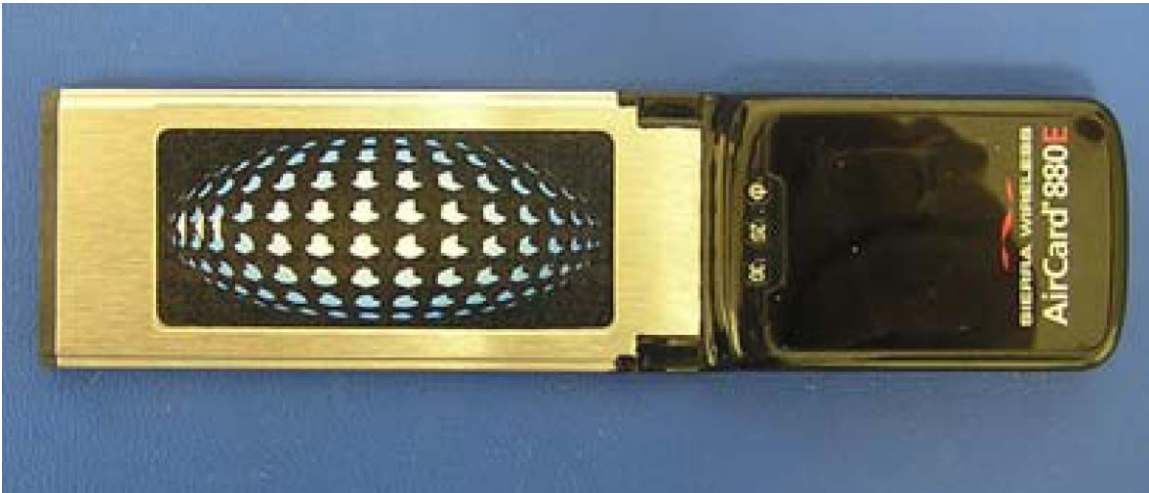
The tests described in this report were performed by Mr. Philip Wright at:

Sierra Wireless, Inc.
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3 Description of Equipment Under Test

The Sierra Wireless Inc. model AC88X_EC is a Seven-band 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/UMTS operation, so this test report only contains data for these two bands (850MHz and 1900MHz). The EUT was tested in only WCDMA modes. The EUT is a production sample and the serial number is D4619870157100J



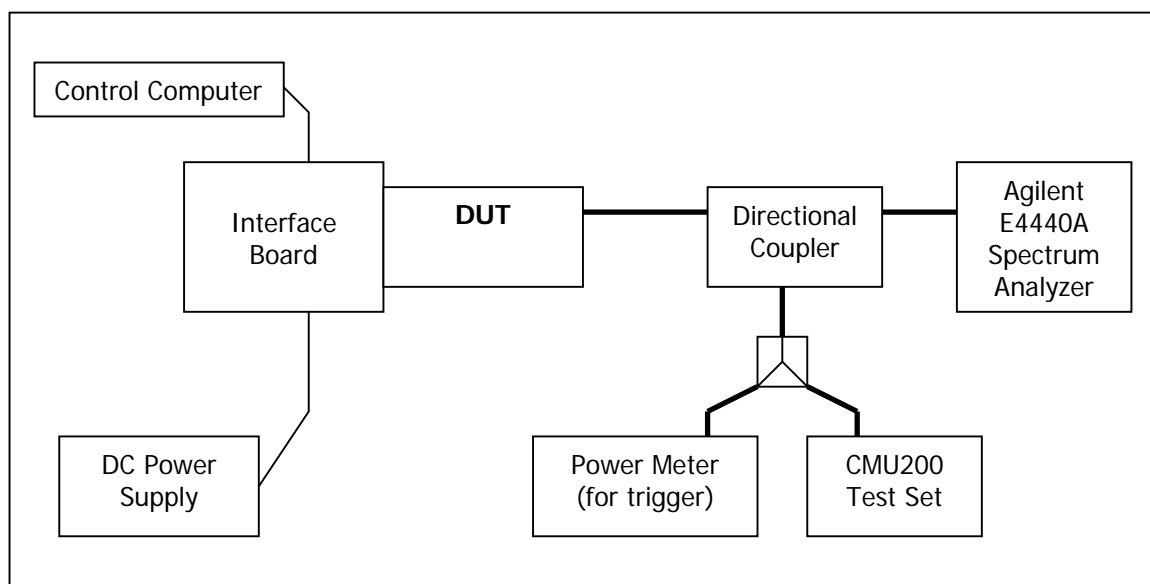
4 RF Power Output

FCC 2.1046

4.1 Test Procedure

The transmitter output was connected to a Rohde & Schwarz CMU200 Test Set and configured to operate at maximum power for each Sub-Tests. The power was measured using the spectrum analyzer at three equally spaced operating frequencies for each band. The RBW was set to 5MHz for the WCDMA measurements. The spectrum analyzer was set to measure the RF output power with the cable and coupler losses accounted for.

Test Setup



4.2 Test Equipment

Instrument List

EQUIPMENT	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DATE
Control Computer	TC	Generic PC	100488	N/A
Wireless Test Set	Rohde & Schwarz	CMU200	836766/030	N/A
Spectrum Analyzer	Agilent	PSA E4440A	US41421268	Mar. 1, 2007
DC Power Supply	HP	6632A	3530A	N/A
Interface Board	Shop built	Minnow	N/A	N/A
Directional Coupler	Mini-Circuits	ZA3PD-2	N/A	N/A

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4.3 Test Results HSPA (HSDPA & HSUPA)

The following Sub-Tests were completed according to the test requirements outlined in section 5.2B of the 3GPP TS34.121-1 V7.5.0 specification. All TX RMS and Peak power requirements were met according to table 5.2B.5 and achieved through the outlined test procedure. All UE channels and power rations are set according to table C11.1.3 in the 3GPP TS34.121-1 V7.5.0 specification.

4.3.1 Sub-Test 1:

$\beta_c=11/15$, $\beta_d=15/15$, $\beta_{hs}=22/15$, $\beta_{ec}=209/225$, $\beta_{ed}=1039/225$, AG=20, 1xSF4, E-TFCI=75.

Frequency (MHz)	Channel	Power (dBm)	
		RMS	Peak
826.4	4132	21.98	26.2
836.4	4182	22.21	26.1
846.6	4233	22.11	26.2
1852.4	9262	22.19	25.9
1880.0	9400	22.06	26.1
1907.5	9538	22.08	26.1

4.3.2 Sub-Test 2:

$\beta_c=6/15$, $\beta_d=15/15$, $\beta_{hs}=12/15$, $\beta_{ec}=12/15$, $\beta_{ed}=94/75$, AG=12, 1xSF4, E-TFCI=67.

Frequency (MHz)	Channel	Power (dBm)	
		RMS	Peak
826.4	4132	22.02	25.9
836.4	4182	22.13	25.9
846.6	4233	22.15	25.8
1852.4	9262	22.11	26.2
1880.0	9400	22.29	26.0
1907.5	9538	22.15	25.9

4.3.3 Sub-Test 3:

$\beta_c=15/15$, $\beta_d=15/15$, $\beta_{hs}=30/15$, $\beta_{ec}=30/15$, $\beta_{ed}=47/15$, AG=15, 2xSF4. E-TFCI=92, Note: # of Reference E-TFCI=2.

Frequency (MHz)	Channel	Power (dBm)	
		RMS	Peak
826.4	4132	22.16	26.2
836.4	4182	22.03	26.1
846.6	4233	22.09	26.1
1852.4	9262	22.23	26.2
1880.0	9400	21.97	26.0
1907.5	9538	21.94	26.1

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4.3.4 Sub-Test 4:

$\beta_c=2/15$, $\beta_d=15/15$, $\beta_{hs}=4/15$, $\beta_{ec}=2/15$, $\beta_{ed}=56/75$, AG=17, 1xSF4, E-TFCI=71.

Frequency (MHz)	Channel	Power (dBm)	
		RMS	Peak
826.4	4132	22.22	26.0
836.4	4182	22.21	25.6
846.6	4233	22.27	26.1
1852.4	9262	22.28	25.8
1880.0	9400	22.13	25.7
1907.5	9538	22.32	25.9

4.3.5 Sub-Test 5:

$\beta_c=15/15$, $\beta_d=15/15$, $\beta_{hs}=30/15$, $\beta_{ec}=24/15$, $\beta_{ed}=134/15$, AG=21, 1xSF4, E-TFCI=81.

Frequency (MHz)	Channel	Power (dBm)	
		RMS	Peak
826.4	4132	21.78	25.6
836.4	4182	21.82	25.7
846.6	4233	21.93	25.6
1852.4	9262	21.87	25.9
1880.0	9400	22.03	25.9
1907.5	9538	21.95	25.8

4.4 Settings for UMTS Mode on the CMU200

UE Power Control Settings

Maximum allowable UE-Power = 24.0 dBm

UL Target Power = 24.0 dBm

Node B Settings

Primary Scrambling Code = 9

Output Channel Power = -51.7 dBm

OCNS = Off

Total Output Power (Ior+Ioc) = -51.7 dBm

RMC Settings

Reference Channel Type: 12.2 kbps Downlink/Uplink DL DTCH Transport Format: 12.2 kbps DL Resources in Use: 100 % UL CRC (Sym. Loop Mode 2): Off

Test Mode: Loop Mode 2 Channel Data Source DTCH: PRBS9

Voice Settings

Voice Source: Echo

Loopback Type: Off

Adaptive Multirate Settings

Active Code Set: Selection A

Codec Mode: 12.2 kbps

Signaling RAB Settings

SRB Cell DCH: 3.4 kbps

BS Down Link Physical Channels Settings

Ior = -51.7 dBm

P-CPICH = -3.3 dB

P-SCH = -8.3 dB

S-SCH = -8.3 dB

P-CCPCH = -5.3 dB

S-CCPCH = -5.3 dB

S-CCPCH Channel Code = 2

PICH = -8.3 dB

PICH Channel Code = 3

AICH = -8.3 dB

AICH Channel Code = 6

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DPDCH = -10.3 dB
DPDCH Channel Code = 96
Power Offset (DPCCH/DPDCH) = 0.0 dB
DL DPCH Timing Offset = 0
Secondary Scrambling Code = 0
Secondary Scrambling Code (HSDPA) = 0
HSDPA Channels = On

TPC Settings

Algorithm = 2
TPC Step Size = 1dB
TPC Pattern Setup = Set 1 (All 1, after linked to get maximum power)

HSDPA Mode Settings:

Network Settings

Packet Switched Domain = ON

HSDPA Test Mode Settings

Radiobearer Setup = RMC 12.2 kbps + HSPDA
RMC Test Loop = Loop Mode 1 RLC TM

HSDPA HS-DSCH Settings

Data Pattern = PRBS9
Force NACK = Off
CQI Feedback Cycle = 4 ms
UE Category = 8
Channel Configuration Type = Fixed Reference Channel

Fixed Reference Channel Settings

H-Set Selection = H-Set 5 QPSK
RV Coding Sequence = {0,2,5,6}

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HSPA Mode Settings:

UE Power Control Settings

Maximum allowable UE-Power = 24.0 dBm

UL Target Power: Set according to each specific sub-test in table 5.2B.5 of 3GPP TS 34.121 less 5db for starting point.

UE Packet Data Gain Factors

Bc and Bd: *

Δ ACK, Δ NACK, Δ CQI=8

HSUPA

E-DCH Physical Layer Category = 5

E-TFCI Table Index = 1

Minimum Set E-TFCI = 1*

Maximum Channelisation Code: 1xSF4 or 2xSF4

Initial Service Grant: *

UE Gain Factors

Δ E-DPCCH: *

Number of Reference E-TFCIs: *

Reference E-TFCI's: *

E-TFCI Power offsets: *

Node B Settings

Primary Scrambling Code = 9

Output Channel Power = -86 dBm

OCNS = Off

Total Output Power (Ior+Ioc) = -86 dBm

Paket Switched

DCH Type: HSUPA Test Mode

Data Rate: HSDPA/HSUPA

HSDPA Test Mode Settings

Radiobearer Setup = RMC 12.2kbps + HSDPA

RMC Test Loop = Loop Mode 1 RLC TM

HSDPA HS-DSCH

CQI Feedback Cycle = 4ms

CQI Repetition Factor = 2

ACK/NACK Repetition Factor = 3

UE Category = 8

Channel Configuration Type = FRC

H-Set Selection = H-Set 1 QPSK

RV Coding Sequence {0,2,5,6}

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HSUPA Test Mode Settings

Radiobearer Setup = SRB 3.4 + HSPA

HSUPA Settings

TTI mode: 10ms

E-AGCH

Pattern Length: 1

AG Value: *

Downlink Physical Channels

HSUPA Channels: On

E-AGCH: -6.0db

E-AGCH Chan. Code: 6

E-RGCH/E-HICH: -5.0db

E-RGCH Active: Off

E-RGCH/E-HICH Chan. Code: 6

*Set according to each specific sub-test in table C.11.1.3 of 3GPP TS 34.121.