



AirCard 881 Additional Test Data

For

FCC ID: N7NAC881

**Prepared by
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July 23, 2007

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1 Introduction and Purpose

This document provides additional test data for the AirCard 881 wireless modem (FCC ID: N7NAC881) following FCC's response to our inquiry on the certification issues of HSUPA products.

2 Test Summary

FCC RULE	DESCRIPTION OF TEST	RESULT	PAGE
2.1046	RF Power Output	Complies	5

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

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3 Description of Device Under Test

AirCard 881 is a multi-band wireless modem operating on the GSM/GPRS/EDGE/UMTS network. In the US, 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).

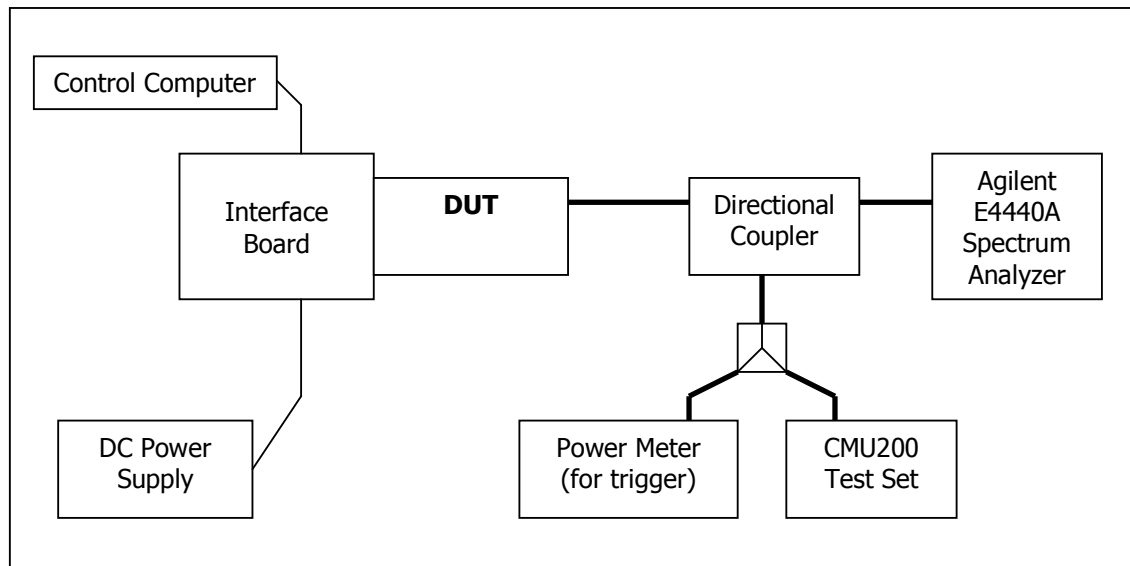
4 RF Power Output

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 in a call. Different physical channels were configured according to the FCC's *Interim SAR Procedures for Release 6 HSPA Devices* dated June 6, 2007. 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



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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

4.3 Test Results UMTS R99 and HSDPA

Frequency (MHz)	Channel	RMS Power (dBm)	
		WCDMA Mode	HSDPA Mode
826.4	4132	22.4	22.3
836.4	4182	22.5	22.2
846.6	4233	22.6	22.3
1852.4	9262	22.5	22.5
1880.0	9400	22.4	22.3
1907.6	9538	22.5	22.4

Frequency (MHz)	Channel	Peak Power (dBm)	
		WCDMA Mode	HSDPA Mode
826.4	4132	25.9	25.6
836.4	4182	26.1	26.1
846.6	4233	25.8	26.1
1852.4	9262	25.8	25.4
1880.0	9400	25.7	25.6
1907.6	9538	25.9	25.5

Note: The results above reflect max power with all up bits.

4.4 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 ratios are set according to table C11.1.3 in the 3GPP TS34.121-1 V7.5.0 specification.

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4.4.1 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	21.8	25.8
836.4	4182	22.2	26.1
846.6	4233	22.0	26.1
1852.4	9262	22.3	26.1
1880.0	9400	22.0	25.9
1907.5	9538	22.1	26.1

4.4.2 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	21.9	26.1
836.4	4182	22.1	26.1
846.6	4233	22.2	26.0
1852.4	9262	22.2	26.1
1880.0	9400	22.2	25.9
1907.5	9538	21.8	26.0

4.4.3 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	21.8	26.1
836.4	4182	21.8	26.0
846.6	4233	21.9	26.1
1852.4	9262	21.7	26.1
1880.0	9400	21.9	26.1
1907.5	9538	21.7	26.0

4.4.4 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	22.2	26.1
836.4	4182	22.2	25.9
846.6	4233	22.2	26.1
1852.4	9262	21.8	26.0
1880.0	9400	22.1	26.1
1907.5	9538	22.1	26.1

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4.4.5 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	22.2	26.1
836.4	4182	22.1	26.0
846.6	4233	22.0	25.9
1852.4	9262	22.2	25.9
1880.0	9400	22.1	26.1
1907.5	9538	22.2	26.0

5 Conclusion

The test results shown above demonstrate that the output power in HSUPA mode is not higher than in WCDMA mode or HSDPA mode, therefore SAR testing in HSUPA mode is not required.

Additionally since both HSDPA and HSUPA use the same frequency bands and modulation scheme for transmit, enabling the HSUPA feature will not change the occupied bandwidth, spurious emissions, frequency stability, etc. No further testing is required.