FCC CFR47 PART 22 SUBPART H
FCC CFR47 PART 24 SUBPART E
INDUSTRY CANADA RSS-132 ISSUE 2
INDUSTRY CANADA RSS-133 ISSUE 5

CLASS II PERMISSIVE CHANGE

TEST REPORT
FOR

PCI EXPRESS MINI CARD (TESTED INSIDE OF DELL MINI COPPER NOTEBOOK PC, MODEL E4200-2)

MODEL NUMBER: UNDP-1

FCC ID: NBZNRMUNDP-1D
IC: 3229A-UNDP1D

REPORT NUMBER: 09U12749-1

ISSUE DATE: AUGUST 26, 2009

Prepared for

NOVATEL WIRELESS
9645 SCRANTON ROAD, SUITE 205
SAN DIEGO, CA 92121

Prepared by

COMPLIANCE CERTIFICATION SERVICES
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
---	08/26/09	Initial Issue	T. Chan

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: NOVATEL WIRELESS
9645 SCRANTON ROAD, SUITE 205
SAN DIEGO, CA 92121

EUT DESCRIPTION: UNDP-1 PCI E MODEM MODULE EMBEDDED IN NOTEBOOK PERSONAL COMPUTER

MODEL NUMBER: UNDP-1

SERIAL NUMBER: N/A

DATE TESTED: AUGUST 19 TO 24, 2009

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 22H and 24E	PASS
IC RSS-132 ISSUE 2 and RSS-133 ISSUE 5	

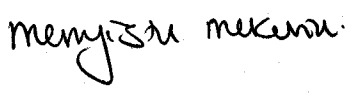
Compliance Certification Services, Inc. (CCS) tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by CCS based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. 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 MANAGER
COMPLIANCE CERTIFICATION SERVICES

Tested By:



MENGISTU MEKURIA
EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with TIA-603-C, FCC CFR 47 Part 2, FCC CFR 47 Part 22, FCC CFR Part 24, RSS-132 Issue 2, and RSS-133 Issue 5.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

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. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 1000 MHz	4.94 dB

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a mini-PCI E card that installed inside Dell Notebook. The radio module is manufactured by Qualcomm Communications.

5.2. MAXIMUM OUTPUT POWER

The test measurement passed within ± 0.5dBm of the original output power.

5.3. DESCRIPTION OF CLASS II PERMISSIVE CHANGE

The major change filed under this application is adding Dell mobile notebook.

5.4. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes two different PIFA antennas, with a maximum gain of -2.84 for Cell band and -1.92 dBi for PCS band respectively.

5.5. SOFTWARE AND FIRMWARE

The EUT is linked with Agilent Communication Test Set.

PROCEDURE USED TO ESTABLISH TEST SIGNAL

GSM/GPRS

To reset the Agilent 8960 to default all values > Shift & Preset

To adjust Input/Output offset, press SYSTEM CONFIG button above the control knob

> RF IN/OUT Amptd Offset

> RF IN/OUT Amptd Offset Setup

> Enter frequencies to be tested and corresponding offsets (enter negative values for offset, i.e.-35 is greater than -30).

Control

Operating Mode > Active Cell (GSM) / Active Cell (GPRS)

Connection Type > Auto (For Voice Mode) / ETSI Type A (For Data Mode)

Call Parms

BCH Parameters > Cell Power > adjust to (~ -50dBm) to maintain strong link OTA

> Cell Band > PCS or GSM850 (US band)

TCH Parameters > Timeslot >1

> Traffic Channel > PCS Channel 512 / 661 / 810

> GSM850 Channel 128 / 190 / 251

> MS TX Level > 1 (for both PCS or GSM850)

> Timeslot > 1

> Speech Setup > Speech Source > Echo (Default)

Press “Originate Call”

GPRS ONLY

TCH Parameters > Traffic Channel > PCS Channel 512 / 661 / 810

> GSM850 Channel 128 / 190 / 251

> MS TX Level > 3 (33dBm for Cell band); 3 (30dBm for PCS band)

PDTCH > Multislot Config > 1 Down, 2 Up

> MS TX Level > 5 (33dBm Cell band); 1 (30dBm PCS band)

> Coding Scheme > CS-4

After the 8960 attaches to the EUT, then press “Start Data Connection”

3G-CDMA2000 1xRTT

This procedure assumes the Agilent 8960 Test Set has the following applications installed and with valid license.

Application	Rev, License
CDMA2000 Mobil Test	B.10.11, L

1xRTT

- Call Setup > Shift & Preset
- Protocol Rev > 6 (IS-2000-0)
- Radio Config (RC) > RC3 (Fwd3, Rvs3)
- FCH Service Option (SO) Setup > 55
- Traffic Data Rate > Full
- TDSO SCH Info > F-SCH Parameters > F-SCH Data Rate > 153.6 kbps
  > R-SCH Parameters > R-SCH Data Rate > 153.6 kbps
- Cell Info > Cell Parameters > System ID (SID) > 2004
  > Network ID (NID) > 65535

Once “Active Cell” show “Connected ” then change “Rvs Power Ctrl” from “Active bits” to “**All Up bits**” to get the maximum power.

Worst-case Measurement Result @ Low, Middle and High Channel

Worst-case Measurement Result for Low, Middle and High Channel under Radio Configuration RC3 and Service Option 55.

UMTS REL99

The following tests were completed according to the test requirements outlined in section 5.2 of the 3GPP TS34.121-1 V7.5.0 specification. The EUT supports power Class 3, which has a nominal maximum output power of 24 dBm (+1.7/-3.7) 12.2kps RMC is used for this testing. Power control set to All bits up. A summary of these settings are illustrated below:

	Mode	Rel99
	Subtest	-
WCDMA General Settings	Loopback Mode	Test Mode 1
	Rel99 RMC	12.2kbps RMC
	HSDPA FRC	Not Applicable
	HSUPA Test	Not Applicable
	Power Control Algorithm	Algorithm2
	βc	Not Applicable
	βd	Not Applicable
	βec	Not Applicable
	βc/βd	8/15
	βhs	Not Applicable
	βed	Not Applicable

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Laptop	Dell	Latitude E4200	2194408900042	DoC
AC/DC	Delta Electronics Inc.	LA65NE1-00	CN-0CM164-71615-96U-1ADD-A01	DoC

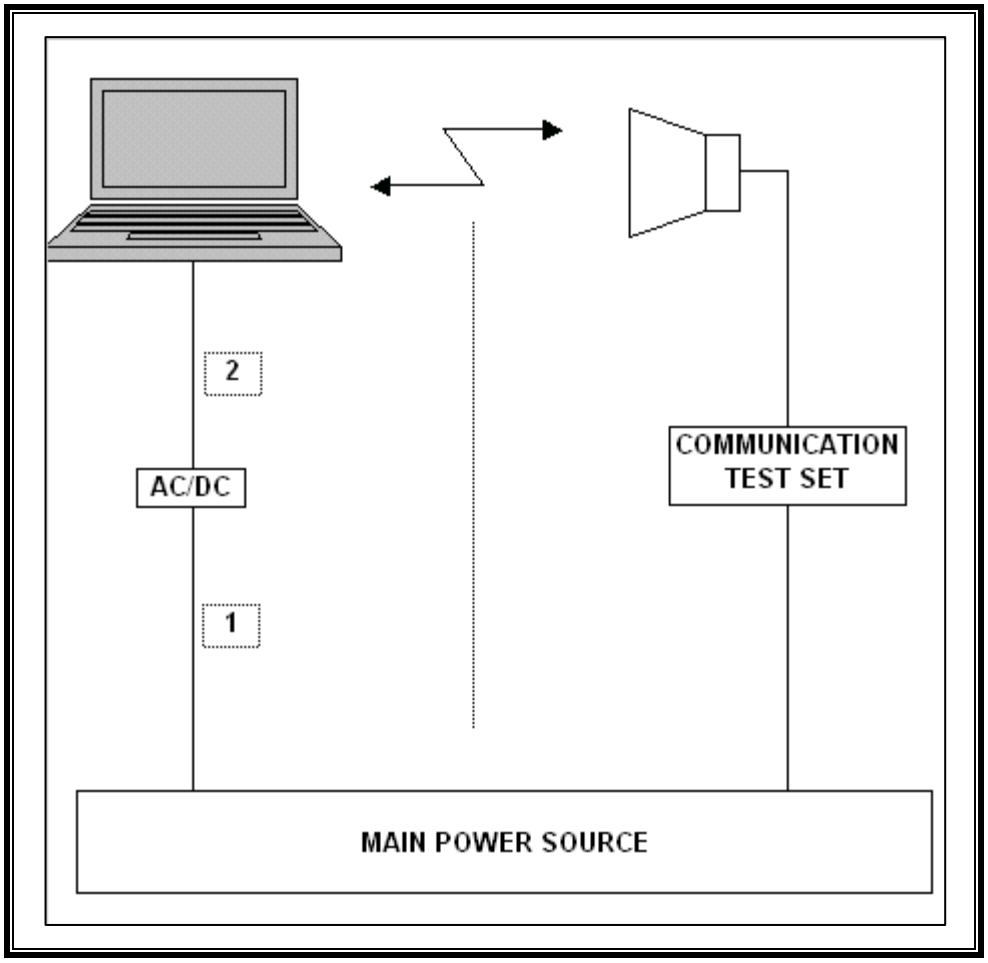
I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC Input	1	DC	Un-Shielded	1.0 m	N/A
2	DC Input	1	DC	Un-Shielded	2.0 m	FERRITE AT ONE END

TEST SETUP

The EUT is a UNDP-1 PCI E Mini card that installed inside Dell Notebook Laptop. Communications Test Set is used to link the device under test.

SETUP DIAGRAM FOR TESTS



6. TEST AND MEASUREMENT EQUIPMENT

TEST EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Asset**	**Cal Due**
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01052	02/04/10
Antenna, Horn, 18 GHz	EMCO	3115	C00943	01/29/10
Antenna, Horn, 18 GHz	EMCO	3115	C00945	01/29/10
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01011	01/14/10
Dipole	Speag	D900V2	NA	11/16/11
Highpass Filter, 1.5 GHz	Micro-Tronics	HPM13193	N02689`	CNR
Highpass Filter, 2.7 GHz	Micro-Tronics	HPM13194	N02687	CNR
Signal Generator	R & S	SMP04	C00953	02/16/11
Communications Test Set	Agilent / HP	E5515C	C01086	06/16/10
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01176	08/24/10

The following test and measurement equipment was utilized for the tests documented in this report:

7. LIMITS AND RESULTS

7.1. MAXIMUM RADIATED OUTPUT POWER

The transmitter has a maximum ERP & EIRP Peak output powers as follows:

824 to 849 MHz Authorized Band GPRS

Frequency Range (MHz)	Modulation	ERP Peak Power (dBm)	ERP Peak Power (mW)
Low CH - 824.2	GPRS	27.9	616.6
Mid CH - 836.6		27.2	524.8
High CH - 848.8		27.5	562.3

1850 to 1910 MHz Authorized Band

Frequency Range (MHz)	Modulation	EIRP Peak Power (dBm)	EIRP Peak Power (mW)
Low CH - 1850.20	GPRS	30.1	1023.3
Mid CH - 1880.00		31.3	1349.0
High CH - 1909.80		29.3	851.1

824 to 849 MHz Authorized Band CDMA 2000

Frequency Range (MHz)	Modulation	ERP Peak Power (dBm)	ERP Peak Power (mW)
Low CH - 824.70	CDMA2000	24.0	251.2
Mid CH - 836.52		24.7	295.1
High CH - 848.31		24.2	263.0

1850 to 1910 MHz Authorized Band

Frequency Range (MHz)	Modulation	EIRP Peak Power (dBm)	EIRP Peak Power (mW)
Low CH - 1851.25	CDMA2000	29.3	851.1
Mid CH - 1880.00		27.4	549.5
High CH - 1908.75		26.1	407.4

824 to 849 MHz Authorized Band WCDMA

Frequency Range (MHz)	Modulation	ERP Peak Power (dBm)	ERP Peak Power (mW)
Low CH - 826.4	WCDMA	22.8	190.5
Mid CH - 836.4		22.2	166.0
High CH - 846.6		21.9	154.9

1850 to 1910 MHz Authorized Band

Frequency Range (MHz)	Modulation	EIRP Peak Power (dBm)	EIRP Peak Power (mW)
Low CH - 1852.4	WCDMA	27.5	562.3
Mid CH - 1880.00		26.1	407.4
High CH - 1907.8		25.2	331.1

7.2. RADIATED OUTPUT POWER

LIMITS

22.913(a) The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

24.232(b) & RSS133 § 6.4 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.

RSS-132 § 4.4 The maximum ERP shall be 6.3 Watts for mobile stations.

TEST PROCEDURE

ANSI / TIA / EIA 603 Clause 2.2.17, RSS-132, and RSS-133.

RESULTS

CELL OUTPUT POWER (ERP)

GPRS MODE

High Frequency Substitution Measurement
Compliance Certification Services Chamber A

Company: NOVATEL WIRELESS
Project #: 09U12749
Date: 8/22/2009
Test Engineer: MENGISTU MEKURIA
Configuration: EUT EMBEDDED ISNIDE DELL MINI LAPTOP COMPUTER
Mode: TX CELL BAND GPRS MODE

Test Equipment:
Receiving: Sunol T122, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 6ft SMA Cable (SN # 208947003) Warehouse.

f MHz	SA reading (dBm)	Ant. Pol. (H/V)	Path Loss (dBm)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
824.20	-6.9	V	34.8	27.9	38.5	-10.6	
824.20	-2.8	H	30.5	27.8	38.5	-10.7	
836.60	-8.2	V	33.1	24.9	38.5	-13.5	
836.60	-4.0	H	31.2	27.2	38.5	-11.3	
848.80	-7.6	V	32.1	24.5	38.5	-14.0	
848.80	-3.7	H	31.2	27.5	38.5	-11.0	

Rev. 1.24.7

CDMA MODE

High Frequency Substitution Measurement
Compliance Certification Services Chamber A

Company: NOVATEL WIRELESS
Project #: 09U12749
Date: 8/22/2009
Test Engineer: MENGISTU MEKURIA
Configuration: EUT EMBEDDED ISNIDE DELL MINI LAPTOP COMPUTER
Mode: TX CELL BAND CDMA MODE

Test Equipment:
Receiving: Sunol T122, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 6ft SMA Cable (SN # 208947003) Warehouse.

f MHz	SA reading (dBm)	Ant. Pol. (H/V)	Path Loss (dBm)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
824.70	-10.7	V	34.8	24.0	38.5	-14.4	
824.70	-7.6	H	30.5	23.0	38.5	-15.5	
836.52	-10.0	V	33.1	23.1	38.5	-15.4	
836.52	-6.4	H	31.2	24.7	38.5	-13.7	
848.31	-10.7	V	32.1	21.4	38.5	-17.0	
848.31	-7.0	H	31.2	24.2	38.5	-14.2	

Rev. 1.24.7

WCDMA MODE

High Frequency Substitution Measurement
Compliance Certification Services Chamber A

Company: NOVATEL WIRELESS
Project #: 09U12749
Date: 8/22/2009
Test Engineer: MENGISTU MEKURIA
Configuration: EUT EMBEDDED ISNIDE DELL MINI LAPTOP COMPUTER
Mode: TX CELL BAND WCDMA MODE

Test Equipment:
Receiving: Sunol T122, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 6ft SMA Cable (SN # 208947003) Warehouse.

f MHz	SA reading (dBm)	Ant. Pol. (H/V)	Path Loss (dBm)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
826.40	-12.0	V	34.8	22.8	38.5	-15.7	
826.40	-9.0	H	30.5	21.5	38.5	-17.0	
836.40	-12.5	V	33.1	20.6	38.5	-17.8	
836.40	-8.9	H	31.2	22.2	38.5	-16.2	
846.60	-12.8	V	32.1	19.4	38.5	-19.1	
846.60	-9.3	H	31.2	21.9	38.5	-16.6	

Rev. 1.24.7

PCS OUTPUT POWER (EIRP)

GPRS MODE

High Frequency Fundamental Measurement
Compliance Certification Services Chamber A

Company: NOVATEL WIRELESS
Project #: 09U12749
Date: 8/22/2009
Test Engineer: MENGISTU MEKURIA
Configuration: EUT EMBEDDED ISNIDE DELL MINI LAPTOP COMPUTER
Mode: TX PCS BAND GPRS MODE

Test Equipment:
Receiving: Horn T73, and Camber B SMA Cables
Substitution: Horn T72 Substitution, 6ft SMA Cable (208947003) Warehouse

f GHz	SA reading (dBm)	Ant. Pol. (H/V)	Path Loss (dBm)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
1.850	-10.4	V	40.4	30.1	33.0	-2.9	
1.850	-15.2	H	39.7	24.6	33.0	-8.4	
1.880	-8.7	V	39.9	31.3	33.0	-1.7	
1.880	-14.6	H	40.1	25.5	33.0	-7.5	
1.910	-10.5	V	39.8	29.3	33.0	-3.7	
1.910	-16.4	H	40.2	23.8	33.0	-9.2	

Rev. 1.24.7

CDMA MODE

High Frequency Fundamental Measurement
Compliance Certification Services Chamber A

Company: NOVATEL WIRELESS
Project #: 09U12749
Date: 8/22/2009
Test Engineer: MENGISTU MEKURIA
Configuration: EUT EMBEDDED ISNIDE DELL MINI LAPTOP COMPUTER
Mode: TX PCS BAND CDMA MODE

Test Equipment:
Receiving: Horn T73, and Camber B SMA Cables
Substitution: Horn T72 Substitution, 6ft SMA Cable (208947003) Warehouse

f GHz	SA reading (dBm)	Ant. Pol. (H/V)	Path Loss (dBm)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
1.851	-11.1	V	40.4	29.3	33.0	-3.7	
1.851	-16.1	H	39.7	23.6	33.0	-9.4	
1.880	-12.6	V	39.9	27.4	33.0	-5.6	
1.880	-16.9	H	40.1	23.2	33.0	-9.8	
1.909	-13.7	V	39.8	26.1	33.0	-6.9	
1.909	-20.0	H	40.2	20.1	33.0	-12.9	

Rev. 1.24.7

WCDMA MODE

High Frequency Fundamental Measurement
Compliance Certification Services Chamber A

Company: NOVATEL WIRELESS
Project #: 09U12749
Date: 8/22/2009
Test Engineer: MENGISTU MEKURIA
Configuration: EUT EMBEDDED ISNIDE DELL MINI LAPTOP COMPUTER
Mode: TX PCS BAND WCDMA MODE

Test Equipment:
Receiving: Horn T73, and Camber B SMA Cables
Substitution: Horn T72 Substitution, 6ft SMA Cable (208947003) Warehouse

f GHz	SA reading (dBm)	Ant. Pol. (H/V)	Path Loss (dBm)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
1.852	-12.9	V	40.4	27.5	33.0	-5.5	
1.852	-19.2	H	39.7	20.5	33.0	-12.5	
1.880	-13.8	V	39.9	26.1	33.0	-6.9	
1.880	-20.4	H	40.1	19.7	33.0	-13.3	
1.908	-14.7	V	39.8	25.2	33.0	-7.8	
1.908	-22.0	H	40.2	18.2	33.0	-14.8	

Rev. 1.24.7

7.3. FIELD STRENGTH OF SPURIOUS RADIATION

LIMIT

§22.917 (e) and §24.238 (a), RSS-132 § 4.5.1, & RSS-133 § 6.5.1 (a) (i) & (b): 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 (b), FCC 24.238 (b), & FCC 27.53 (g)(1)(2)(3), RSS-132, and RSS-133.

RESULTS

CELL SPURIOUS & HARMONIC (ERP)

GPRS MODE

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Novatel Wireless
Project #: 09U12749
Date: 8/21/2009
Test Engineer: Ekta Budhbhatti
Configuration: EUT Only
Mode: Tx, Cell Band GPRS

Chamber	Pre-amplifer	Filter	Limit
5m Chamber A	T144 8449B	Filter 1	FCC PART 22

f GHz	SA reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Path Loss (dB)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch.										
1.648	-49.7	H	3.0	36.5	38.2	1.0	-50.3	-13.0	-37.3	
2.473	-45.4	H	3.0	40.0	37.5	1.0	-41.9	-13.0	-28.9	
3.300	-62.4	H	3.0	43.9	37.1	1.0	-54.7	-13.0	-41.7	
1.648	-45.6	V	3.0	36.8	38.2	1.0	-45.9	-13.0	-32.9	
2.473	-42.7	V	3.0	41.7	37.5	1.0	-37.5	-13.0	-24.5	
3.300	-62.9	V	3.0	44.0	37.1	1.0	-55.0	-13.0	-42.0	
Mid Ch.										
1.673	-52.8	H	3.0	36.8	38.1	1.0	-53.1	-13.0	-40.1	
2.510	-45.9	H	3.0	40.1	37.5	1.0	-42.2	-13.0	-29.2	
3.346	-63.3	H	3.0	44.0	37.1	1.0	-55.4	-13.0	-42.4	
1.673	-49.4	V	3.0	37.1	38.1	1.0	-49.4	-13.0	-36.4	
2.510	-44.4	V	3.0	41.9	37.5	1.0	-39.0	-13.0	-26.0	
3.346	-63.6	V	3.0	44.1	37.1	1.0	-55.6	-13.0	-42.6	
High Ch.										
1.698	-46.6	H	3.0	37.0	38.1	1.0	-46.6	-13.0	-33.6	
2.546	-44.7	H	3.0	40.4	37.5	1.0	-40.8	-13.0	-27.8	
3.395	-62.6	H	3.0	44.1	37.1	1.0	-54.5	-13.0	-41.5	
1.698	-45.7	V	3.0	37.4	38.1	1.0	-45.4	-13.0	-32.4	
2.546	-41.6	V	3.0	42.0	37.5	1.0	-36.1	-13.0	-23.1	
3.395	-62.1	V	3.0	44.2	37.1	1.0	-54.0	-13.0	-41.0	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

CDMA MODE

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Novatel Wireless
Project #: 09U12749
Date: 8/21/2009
Test Engineer: Ekta Budhbhatti
Configuration: EUT Only
Mode: Tx, Cell Band CDMA

Chamber	Pre-amplifer	Filter	Limit
5m Chamber A	T144 8449B	Filter 1	FCC PART 22

f GHz	SA reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Path Loss (dB)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch.										
1.649	-53.5	H	3.0	36.6	38.2	1.0	-54.1	-13.0	-41.1	
2.474	-44.9	H	3.0	40.0	37.5	1.0	-41.4	-13.0	-28.4	
3.299	-62.8	H	3.0	43.9	37.1	1.0	-55.1	-13.0	-42.1	
1.649	-45.1	V	3.0	36.8	38.2	1.0	-45.4	-13.0	-32.4	
2.474	-43.5	V	3.0	41.7	37.5	1.0	-38.3	-13.0	-25.3	
3.299	-63.1	V	3.0	44.0	37.1	1.0	-55.2	-13.0	-42.2	
Mid Ch.										
1.673	-51.7	H	3.0	36.8	38.1	1.0	-52.0	-13.0	-39.0	
2.510	-48.2	H	3.0	40.1	37.5	1.0	-44.5	-13.0	-31.5	
3.346	-62.9	H	3.0	44.0	37.1	1.0	-55.0	-13.0	-42.0	
1.673	-43.7	V	3.0	37.1	38.1	1.0	-43.8	-13.0	-30.8	
2.510	-47.7	V	3.0	41.8	37.5	1.0	-42.3	-13.0	-29.3	
3.346	-63.7	V	3.0	44.1	37.1	1.0	-55.6	-13.0	-42.6	
High Ch.										
1.697	-50.4	H	3.0	37.0	38.1	1.0	-50.5	-13.0	-37.5	
2.545	-50.8	H	3.0	40.3	37.5	1.0	-46.9	-13.0	-33.9	
3.393	-63.2	H	3.0	44.1	37.1	1.0	-55.1	-13.0	-42.1	
1.697	-50.0	V	3.0	37.4	38.1	1.0	-49.7	-13.0	-36.7	
2.545	-52.9	V	3.0	42.0	37.5	1.0	-47.4	-13.0	-34.4	
3.393	-62.4	V	3.0	44.2	37.1	1.0	-54.2	-13.0	-41.2	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

WCDMA MODE

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Novatel Wireless
Project #: 09U12749
Date: 8/24/2009
Test Engineer: Ekta Budhbhatti
Configuration: EUT Only
Mode: Tx, Cell Band WCDMA

Chamber	Pre-amplifer	Filter	Limit
5m Chamber A	T144 8449B	Filter 1	FCC PART 22

f GHz	SA reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Path Loss (dB)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch.										
1.653	-53.7	H	3.0	36.6	38.1	1.0	-54.3	-13.0	-41.3	
2.479	-45.2	H	3.0	40.0	37.5	1.0	-41.7	-13.0	-28.7	
3.306	-62.4	H	3.0	43.9	37.1	1.0	-54.7	-13.0	-41.7	
1.653	-49.7	V	3.0	36.9	38.1	1.0	-50.0	-13.0	-37.0	
2.479	-44.0	V	3.0	41.7	37.5	1.0	-38.8	-13.0	-25.8	
3.306	-62.6	V	3.0	44.0	37.1	1.0	-54.7	-13.0	-41.7	
Mid Ch.										
1.673	-54.6	H	3.0	36.8	38.1	1.0	-54.9	-13.0	-41.9	
2.509	-55.9	H	3.0	40.1	37.5	1.0	-52.2	-13.0	-39.2	
3.346	-63.5	H	3.0	44.0	37.1	1.0	-55.6	-13.0	-42.6	
1.673	-50.5	V	3.0	37.1	38.1	1.0	-50.5	-13.0	-37.5	
2.509	-54.5	V	3.0	41.8	37.5	1.0	-49.1	-13.0	-36.1	
3.346	-63.7	V	3.0	44.1	37.1	1.0	-55.7	-13.0	-42.7	
High Ch.										
1.693	-53.7	H	3.0	37.0	38.1	1.0	-53.8	-13.0	-40.8	
2.540	-58.1	H	3.0	40.3	37.5	1.0	-54.2	-13.0	-41.2	
3.386	-62.9	H	3.0	44.1	37.1	1.0	-54.9	-13.0	-41.9	
1.693	-49.9	V	3.0	37.3	38.1	1.0	-49.7	-13.0	-36.7	
2.540	-55.7	V	3.0	41.9	37.5	1.0	-50.2	-13.0	-37.2	
3.386	-63.4	V	3.0	44.2	37.1	1.0	-55.3	-13.0	-42.3	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

PCS Spurious & Harmonic (EIRP)

GPRS MODE

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Novatel Wireless
Project #: 09U12749
Date: 8/21/2009
Test Engineer: Ekta Budhbhatti
Configuration: EUT Only
Mode: Tx, PCS Band GPRS

Chamber	Pre-amplifer	Filter	Limit
5m Chamber A	T144 8449B	Filter 1	FCC PART 24

f GHz	SA reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Path Loss (dB)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch.										
3.700	-57.4	H	3.0	45.0	36.8	1.0	-48.3	-13.0	-35.3	
5.550	-53.1	H	3.0	49.9	36.3	1.0	-38.5	-13.0	-25.5	
7.400	-67.1	H	3.0	52.9	36.6	1.0	-49.8	-13.0	-36.8	
3.700	-54.1	V	3.0	44.9	36.8	1.0	-45.0	-13.0	-32.0	
5.550	-57.4	V	3.0	49.3	36.3	1.0	-43.4	-13.0	-30.4	
7.400	-66.7	V	3.0	51.8	36.6	1.0	-50.5	-13.0	-37.5	
Mid Ch.										
3.760	-58.5	H	3.0	45.2	36.8	1.0	-49.1	-13.0	-36.1	
5.640	-52.4	H	3.0	50.1	36.3	1.0	-37.6	-13.0	-24.6	
7.520	-67.6	H	3.0	53.1	36.6	1.0	-50.1	-13.0	-37.1	
3.760	-55.2	V	3.0	45.1	36.8	1.0	-45.9	-13.0	-32.9	
5.640	-55.5	V	3.0	49.4	36.3	1.0	-41.4	-13.0	-28.4	
7.520	-66.6	V	3.0	52.0	36.6	1.0	-50.2	-13.0	-37.2	
High Ch.										
3.820	-61.4	H	3.0	45.3	36.7	1.0	-51.8	-13.0	-38.8	
5.730	-52.3	H	3.0	50.2	36.3	1.0	-37.3	-13.0	-24.3	
7.640	-66.6	H	3.0	53.2	36.6	1.0	-49.1	-13.0	-36.1	
3.820	-57.5	V	3.0	45.2	36.7	1.0	-48.0	-13.0	-35.0	
5.730	-54.6	V	3.0	49.5	36.3	1.0	-40.4	-13.0	-27.4	
7.640	-66.5	V	3.0	52.1	36.6	1.0	-50.0	-13.0	-37.0	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

CDMA MODE

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Novatel Wireless
Project #: 09U12749
Date: 8/21/2009
Test Engineer: Ekta Budhbhatti
Configuration: EUT Only
Mode: Tx, PCS Band CDMA

Chamber	Pre-amplifer	Filter	Limit
5m Chamber A	T144 8449B	Filter 1	FCC PART 24

f GHz	SA reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Path Loss (dB)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch.										
3.700	-57.6	H	3.0	45.0	36.8	1.0	-48.4	-13.0	-35.4	
5.550	-53.0	H	3.0	49.9	36.3	1.0	-38.3	-13.0	-25.3	
7.400	-66.6	H	3.0	52.9	36.6	1.0	-49.3	-13.0	-36.3	
3.700	-53.1	V	3.0	44.9	36.8	1.0	-44.0	-13.0	-31.0	
5.550	-60.8	V	3.0	49.3	36.3	1.0	-46.8	-13.0	-33.8	
7.400	-66.5	V	3.0	51.8	36.6	1.0	-50.2	-13.0	-37.2	
Mid Ch.										
3.760	-45.1	H	3.0	45.2	36.8	1.0	-35.7	-13.0	-22.7	
5.640	-59.7	H	3.0	50.1	36.3	1.0	-44.9	-13.0	-31.9	
7.520	-66.6	H	3.0	53.1	36.6	1.0	-49.1	-13.0	-36.1	
3.760	-40.5	V	3.0	45.1	36.8	1.0	-31.2	-13.0	-18.2	
5.640	-64.7	V	3.0	49.4	36.3	1.0	-50.6	-13.0	-37.6	
7.520	-63.6	V	3.0	52.0	36.6	1.0	-47.2	-13.0	-34.2	
High Ch.										
3.820	-33.0	H	3.0	45.3	36.7	1.0	-23.3	-13.0	-10.3	
5.730	-62.4	H	3.0	50.2	36.3	1.0	-47.5	-13.0	-34.5	
7.640	-66.3	H	3.0	53.2	36.6	1.0	-48.7	-13.0	-35.7	
3.820	-27.3	V	3.0	45.2	36.7	1.0	-17.9	-13.0	-4.9	
5.730	-64.8	V	3.0	49.5	36.3	1.0	-50.6	-13.0	-37.6	
7.640	-61.4	V	3.0	52.1	36.6	1.0	-44.9	-13.0	-31.9	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

WCDMA MODE

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Novatel Wireless
Project #: 09U12749
Date: 8/24/2009
Test Engineer: Ekta Budhbhatti
Configuration: EUT Only
Mode: Tx, PCS Band WCDMA

Chamber	Pre-amplifer	Filter	Limit
5m Chamber A	T144 8449B	Filter 1	FCC PART 24

f GHz	SA reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Path Loss (dB)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch.										
3.704	-59.0	H	3.0	45.0	36.8	1.0	-49.8	-13.0	-36.8	
5.556	-58.6	H	3.0	49.9	36.3	1.0	-44.0	-13.0	-31.0	
7.408	-66.0	H	3.0	52.9	36.6	1.0	-48.7	-13.0	-35.7	
3.704	-53.8	V	3.0	44.9	36.8	1.0	-44.7	-13.0	-31.7	
5.556	-64.1	V	3.0	49.3	36.3	1.0	-50.1	-13.0	-37.1	
7.408	-67.2	V	3.0	51.8	36.6	1.0	-50.9	-13.0	-37.9	
Mid Ch.										
3.760	-48.1	H	3.0	45.2	36.8	1.0	-38.7	-13.0	-25.7	
5.640	-62.3	H	3.0	50.1	36.3	1.0	-47.6	-13.0	-34.6	
7.520	-66.9	H	3.0	53.1	36.6	1.0	-49.4	-13.0	-36.4	
3.760	-42.3	V	3.0	45.1	36.8	1.0	-33.0	-13.0	-20.0	
5.640	-63.7	V	3.0	49.4	36.3	1.0	-49.6	-13.0	-36.6	
7.520	-65.4	V	3.0	52.0	36.6	1.0	-49.0	-13.0	-36.0	
High Ch.										
3.816	-38.6	H	3.0	45.3	36.7	1.0	-29.0	-13.0	-16.0	
5.724	-64.9	H	3.0	50.2	36.3	1.0	-50.0	-13.0	-37.0	
7.632	-67.1	H	3.0	53.2	36.6	1.0	-49.5	-13.0	-36.5	
3.816	-31.5	V	3.0	45.2	36.7	1.0	-22.0	-13.0	-9.0	
5.724	-65.9	V	3.0	49.5	36.3	1.0	-51.7	-13.0	-38.7	
7.632	-66.8	V	3.0	52.1	36.6	1.0	-50.3	-13.0	-37.3	

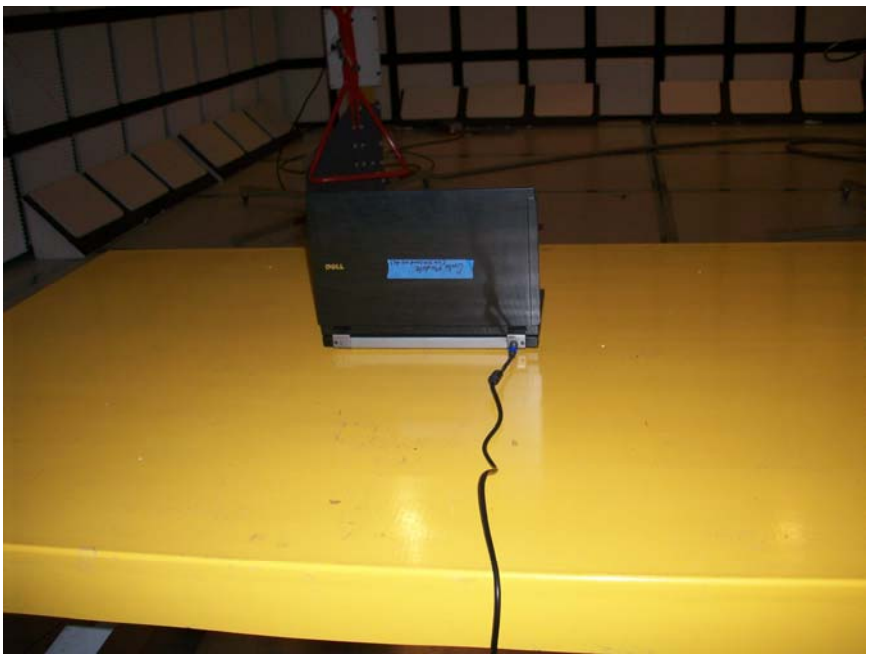
Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

8. SETUP PHOTOS

RADIATED RF MEASUREMENT SETUP FOR PORTABLE CONFIGURATION

MOBILE POSITION FRONT PHOTO

MOBILE POSITION BACK PHOTO



END OF REPORT