PCTEST ENGINEERING LABORATORY, INC.
6660-B Dobbin Road, Columbia, MD 21045 USA
Tel. 410.290.6652 / Fax 410.290.6554
http://www.pctestlab.com

# CERTIFICATE OF COMPLIANCE
## FCC Part 22 & 24 Certification

**Applicant Name:**
Novatel Wireless Inc.
9645 Scranton Road, Suite 205
San Diego, CA 92121-3030
United States

**Date of Testing:**
October 26, 2009
**Test Site/Location:**
PCTEST Lab., Columbia, MD, USA
**Test Report Serial No.:**
0910051836.NBZ

| | |
|---|---|
| **FCC ID:** | **NBZNRM-MC998D** |
| **APPLICANT:** | **NOVATEL WIRELESS INC.** |

| | |
|---|---|
| **Application Type:** | Certification |
| **FCC Classification:** | PCS Licensed Transmitter Held to Ear (PCE) |
| **FCC Rule Part(s):** | §2; §22(H), §24(E) |
| **EUT Type:** | 850/1900 GSM/GPRS/EDGE/WCDMA USB Modem |
| **Model(s):** | MC998D |
| **Tx Frequency Range:** | 824.20 - 848.80MHz (Cell. GSM) / 1850.20 - 1909.80MHz (PCS GSM) |
| | 826.40 - 846.60MHz (Cell. WCDMA) / 1852.4 - 1907.6MHz (PCS WCDMA) |
| **Max. RF Output Power:** | 2.254 W ERP Cell. GSM (33.53 dBm) / 1.977 W EIRP PCS GSM (32.96 dBm) |
| | 0.248 W ERP Cell. WCDMA (23.94 dBm) / 0.275 W EIRP PCS WCDMA (24.39 dBm) |
| | 0.887 W ERP EDGE850 (29.48 dBm) / 0.953 W EIRP EDGE1900 (29.79 dBm) |
| **Emission Designator(s):** | 241KGXW (Cellular GSM), 245KGXW (PCS GSM) |
| | 247KG7W (EDGE850), 241KG7W (EDGE1900) |
| | 4M20F9W (Cellular WCDMA), 4M19F9W (PCS WCDMA) |
| **Test Device Serial No.:** | *identical prototype* [S/N: GS3] |
| **Class II Perm. Change:** | Please see change document |
| **Original Grant Date:** | October 23, 2009 |

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in §2.947. Test results reported herein relate only to the item(s) tested.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

**Grant Conditions:** Power output listed is ERP for Part 22 and EIRP for Part 24.

*PCTEST certifies that no party to this application has been denied the FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. 862.*

Randy Ortanez
President

ACCREDITED
TESTING LABORATORY
CERTIFICATE #2041.01

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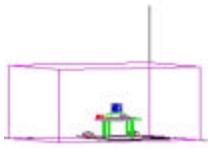


# MEASUREMENT REPORT
## FCC Part 22 & 24

## §2.1033 General Information

| | |
|---|---|
| **APPLICANT:** | Novatel Wireless Inc. |
| **APPLICANT ADDRESS:** | 9645 Scranton Road, Suite 205<br>San Diego, CA 92121-3030 |
| **TEST SITE:** | PCTEST ENGINEERING LABORATORY, INC. |
| **TEST SITE ADDRESS:** | 6660-B Dobbin Road, Columbia, MD 21045 USA |
| **FCC RULE PART(S):** | §2; §22(H), §24(E) |
| **BASE MODEL:** | MC998D |
| **FCC ID:** | NBZNRM-MC998D |
| **FCC CLASSIFICATION:** | PCS Licensed Transmitter Held to Ear (PCE) |
| **EMISSION DESIGNATOR(S):** | 241KGXW (Cellular GSM), 245KGXW (PCS GSM)<br>247KG7W (EDGE850), 241KG7W (EDGE1900)<br>4M20F9W (Cellular WCDMA), 4M19F9W (PCS WCDMA) |
| **MODE:** | GSM/EDGE/WCDMA |
| **FREQUENCY TOLERANCE:** | ±0.00025 % (2.5 ppm) |
| **Test Device Serial No.:** | GS3 ☐ Production ☒ Pre-Production ☐ Engineering |
| **DATE(S) OF TEST:** | October 26, 2009 |
| **TEST REPORT S/N:** | 0910051836.NBZ |

## Test Facility / Accreditations

**Measurements were performed at PCTEST Engineering Lab located in Columbia, MD 21045, U.S.A.**


- PCTEST facility is an FCC registered (PCTEST Reg. No. 90864) test facility with the site description report on file and has met all the requirements specified in Section 2.948 of the FCC Rules and Industry Canada (2451A-1).
- PCTEST Lab is accredited to ISO 17025 by U.S. National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP Lab code: 100431-0) in EMC, FCC and Telecommunications.
- PCTEST Lab is accredited to ISO 17025-2005 by the American Association for Laboratory Accreditation (A2LA) in Specific Absorption Rate (SAR) testing, Hearing Aid Compatibility (HAC) testing, CTIA Test Plans, and wireless testing for FCC and Industry Canada Rules.
- PCTEST Lab is a recognized U.S. Conformity Assessment Body (CAB) in EMC and R&TTE (n.b. 0982) under the U.S.-EU Mutual Recognition Agreement (MRA).
- PCTEST TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC Guide 65 by the American National Standards Institute (ANSI) in all scopes of FCC Rules and Industry Canada Standards (RSS).
- PCTEST facility is an IC registered (2451A-1) test laboratory with the site description on file at Industry Canada.
- PCTEST is a CTIA Authorized Test Laboratory (CATL) for AMPS, CDMA, and EvDO wireless devices and for Over-the-Air (OTA) Antenna Performance testing for AMPS, CDMA, GSM, GPRS, EGPRS, UMTS (W-CDMA), CDMA 1xEVDO, and CDMA 1xRTT.

# 1.0 INTRODUCTION

## 1.1 Scope

Measurement and determination of electromagnetic emissions (EME) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission.

## 1.2 Testing Facility

The map below shows the location of the PCTEST LABORATORY, its proximity to the FCC Laboratory, the Columbia vicinity are, the Baltimore-Washington Internt'l (BWI) airport, the city of Baltimore and the Washington, DC area. (*See Figure 1-1*).

These measurement tests were conducted at the PCTEST Engineering Laboratory, Inc. facility in New Concept Business Park, Guilford Industrial Park, Columbia, Maryland. The site address is 6660-B Dobbin Road, Columbia, MD 21045. The test site is one of the highest points in the Columbia area with an elevation of 390 feet above mean sea level. The site coordinates are 39° 11'15" N latitude and 76° 49'38" W longitude. The facility is 1.5 miles North of the FCC laboratory, and the ambient signal and ambient signal strength are approximately equal to those of the FCC laboratory. There are no FM or TV transmitters within 15 miles of the site. The detailed description of the measurement facility was found to be in compliance with the requirements of § 2.948 according to ANSI C63.4-2003 on January 27, 2006.

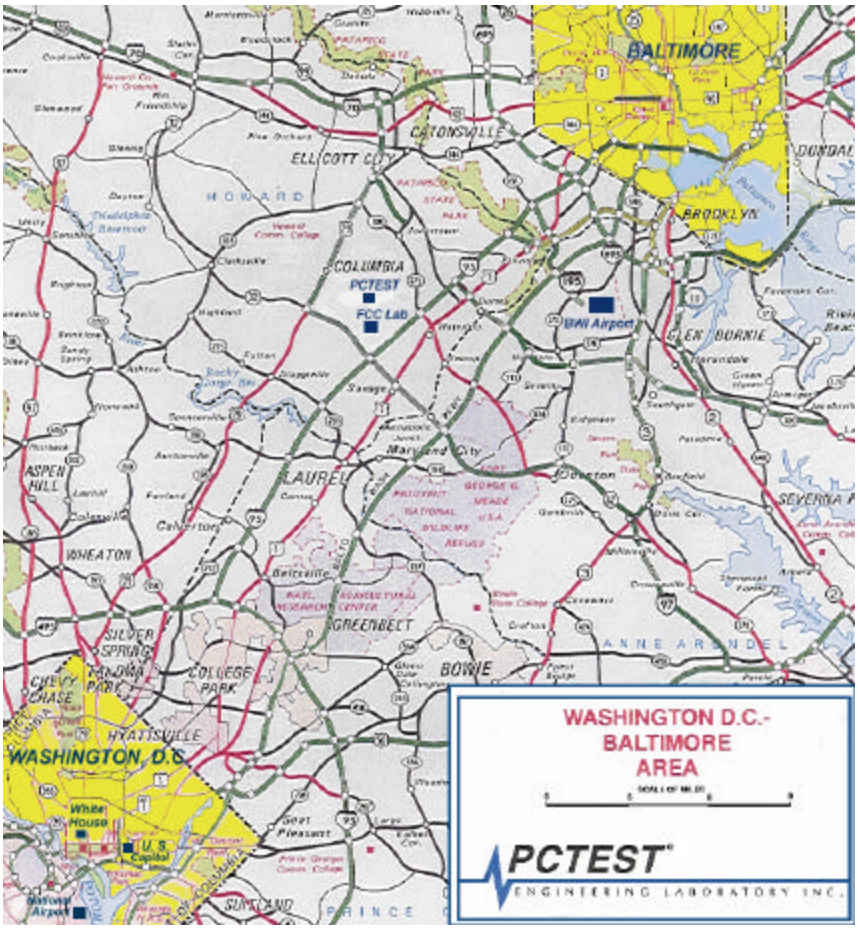



**Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area**

# 2.0 PRODUCT INFORMATION

## 2.1 Equipment Description

The Equipment Under Test (EUT) is the **Novatel 850/1900 GSM/GPRS/EDGE/WCDMA USB Modem FCC ID: NBZNRM-MC998D**. The EUT consisted of the following component(s):

| Trade Name / Base Model | FCC ID | Description |
|---|---|---|
| Novatel / Model: MC998D | NBZNRM-MC998D | 850/1900 GSM/GPRS/EDGE/WCDMA USB Modem |

**Table 2-1. EUT Equipment Description**

## 2.2 EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and no modifications were made during testing.

## 2.3 Labeling Requirements

Per 2.925

The FCC identifier shall be permanently affixed to the equipment and shall be readily visible to the purchaser at the time of purchase.

Per 15.19; Docket 95-19

In addition to this requirement, a device subject to certification shall be labeled as follows:

*This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.*

The label shall be permanently affixed at a conspicuous location on the device; instruction manual or pamphlet supplied to the user and be readily visible to the purchaser at the time of purchase. However, when the device is so small wherein placement of the label with specified statement is not practical, only the trade name and FCC ID must be displayed on the device per Section 15.19(b)(2).

Please see attachment for FCC ID label and label location.

# 3.0 DESCRIPTION OF TESTS

## 3.1 Measurement Procedure

The radiated spurious measurements were made outdoors at a 3-meter test range (See Figure 3-1). The equipment under test is placed on a wooden turntable 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotations were adjusted for the highest reading on the receive spectrum analyzer. This power level was recorded using a broadband average power meter. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. This level is recorded with the power meter. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic antenna are taken into consideration.

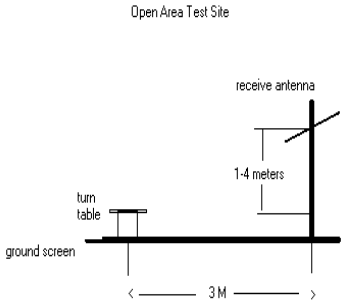
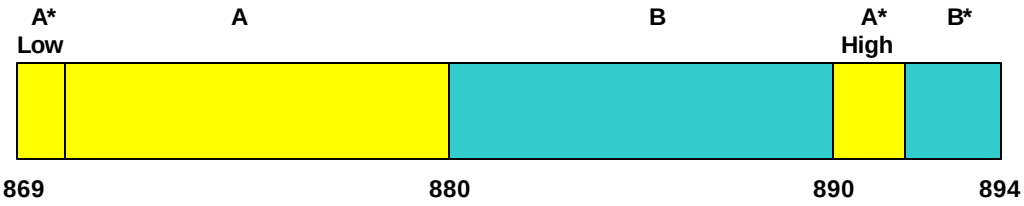



**Figure 3-1. Diagram of 3-meter outdoor test range**

**Deviation from Measurement Procedure……..None**

## 3.2 Cellular - Base Frequency Blocks



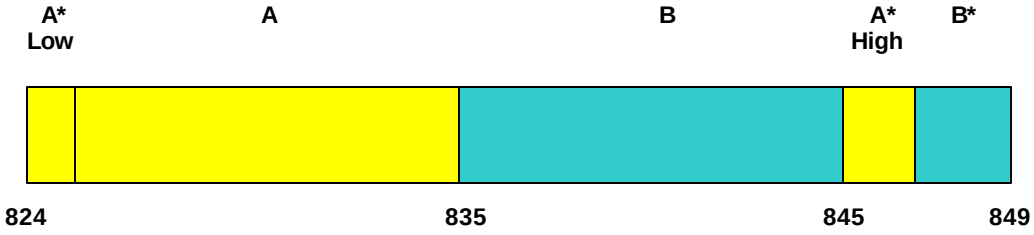

**BLOCK 1: 869 – 880 MHz (A* Low + A)**

**BLOCK 2: 880 – 890 MHz (B)**

**BLOCK 3: 890 – 891.5 MHz (A* High)**

**BLOCK 4: 891.5 – 894 MHz (B*)**

## 3.3 Cellular - Mobile Frequency Blocks



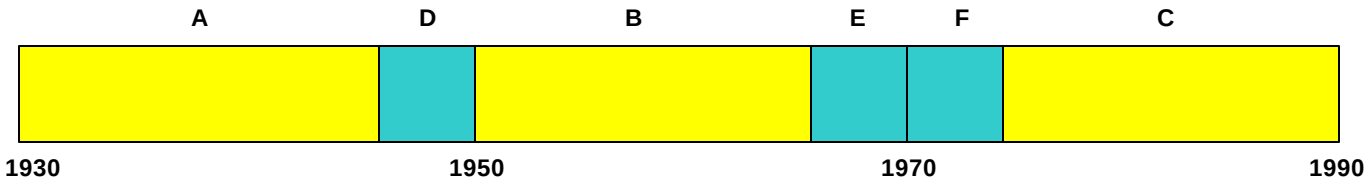

**BLOCK 1: 824 – 835 MHz (A* Low + A)**

**BLOCK 2: 835 – 845 MHz (B)**

**BLOCK 3: 845 – 846.5 MHz (A* High)**

**BLOCK 4: 846.5 – 849 MHz (B*)**

## 3.4 PCS - Base Frequency Blocks




**BLOCK 1: 1930 – 1945 MHz (A)**

**BLOCK 2: 1945 – 1950 MHz (D)**

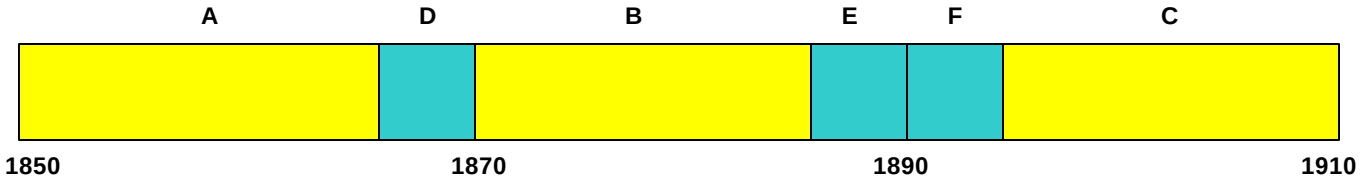
**BLOCK 3: 1950 – 1965 MHz (B)**

**BLOCK 4: 1965 – 1970 MHz (E)**

**BLOCK 5: 1970 – 1975 MHz (F)**

**BLOCK 6: 1975 – 1990 MHz (C)**

## 3.5 PCS - Mobile Frequency Blocks




**BLOCK 1: 1850 – 1865 MHz (A)**

**BLOCK 2: 1865 – 1870 MHz (D)**

**BLOCK 3: 1870 – 1885 MHz (B)**

**BLOCK 4: 1885 – 1890 MHz (E)**

**BLOCK 5: 1890 – 1895 MHz (F)**

**BLOCK 6: 1895 – 1910 MHz (C)**

## 3.6 Radiated Spurious and Harmonic Emissions

**§2.1053, 22.917(a), 24.238(a)**

Spurious and harmonic radiated emissions are measured outdoors at our 3-meter test range. The equipment under test is placed on a wooden turntable 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotations were adjusted for the highest reading on the receive spectrum analyzer. This level is then measured with a broadband average power meter. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10$^{th}$ harmonic. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator with the level of the signal generator being adjusted to obtain the same receive average power meter reading. This spurious level is recorded with the power meter. For readings above 1 GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration. This device was tested under all configurations and the highest power is reported in WCDMA mode with HSDPA Active at 12.2 kbps RMC and TPC bits all set to "1" and in GSM mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band.

# 4.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST).

| Manufacturer | Model | Description | Cal Date | Cal Interval | Cal Due | Serial Number |
|---|---|---|---|---|---|---|
| - | 263-10dB | (DC-18GHz) 10 dB Attenuator | N/A | | N/A | N/A |
| - | No.165 | (30MHz - 1000MHz) RG58 Coax Cable | N/A | | N/A | N/A |
| - | No.166 | (1000-26500MHz) Microwave RF Cable | N/A | | N/A | N/A |
| - | No.167 | (100kHz - 100MHz) RG58 Coax Cable | N/A | | N/A | N/A |
| Agilent | 11713A | Attenuation/Switch Driver | 12/4/2008 | Annual | 12/4/2009 | 3439A02645 |
| Agilent | 8449B | (1-26.5GHz) Pre-Amplifier | 12/4/2008 | Annual | 12/4/2009 | 3008A00985 |
| Agilent | 8495A | (0-70dB) DC-4GHz Attenuator | N/A | | N/A | N/A |
| Agilent | 85650A | Quasi-Peak Adapter | 12/4/2008 | Annual | 12/4/2009 | 3303A01872 |
| Agilent | 85650A | Quasi-Peak Adapter | 3/24/2009 | Annual | 3/24/2010 | 2043A00301 |
| Agilent | 8566B | (100Hz-22GHz) Spectrum Analyzer | 12/5/2008 | Annual | 12/5/2009 | 3638A08713 |
| Agilent | 8648D | (9kHz-4GHz) Signal Generator | 9/19/2009 | Biennial | 9/19/2011 | 3613A00315 |
| Agilent | E4407B | ESA Spectrum Analyzer | 3/24/2009 | Annual | 3/24/2010 | US39210313 |
| Agilent | E4432B | ESG-D Series Signal Generator | 9/10/2009 | Annual | 9/10/2010 | US40053896 |
| Agilent | E4448A | PSA (3Hz-50GHz) Spectrum Analyzer | 12/5/2008 | Annual | 12/5/2009 | US42510244 |
| Agilent | E5515C | Wireless Communications Test Set | 9/10/2009 | Annual | 9/10/2010 | GB46110872 |
| Agilent | E5515C | Wireless Communications Test Set | 9/11/2009 | Annual | 9/11/2010 | GB46310798 |
| Agilent | E5515C | Wireless Communications Test Set | 8/25/2009 | Annual | 8/25/2010 | GB41450275 |
| Agilent | E8257D | (250kHz-20GHz) Signal Generator | 3/25/2009 | Biennial | 3/25/2011 | MY45470194 |
| Agilent | E8267C | Vector Signal Generator | 11/15/2007 | Biennial | 11/15/2009 | US42340152 |
| Compliance Design | Roberts | Dipole Set | 11/9/2007 | Biennial | 11/9/2009 | 146 |
| Compliance Design | Roberts | Dipole Set | 11/9/2007 | Biennial | 11/9/2009 | 147 |
| Emco | 3115 | Horn Antenna (1-18GHz) | 11/4/2007 | Biennial | 11/4/2009 | 9205-3874 |
| Espec | ESX-2CA | Environmental Chamber | 3/30/2009 | Annual | 3/30/2010 | 17620 |
| Gigatronics | 80701A | (0.05-18GHz) Power Sensor | 9/9/2009 | Annual | 9/9/2010 | 1833460 |
| Gigatronics | 8651A | Universal Power Meter | 9/9/2009 | Annual | 9/9/2010 | 8650319 |
| K & L | 11SH10 | Band Pass Filter | N/A | Annual | N/A | 1300/4000 |
| K & L | 11SH10 | Band Pass Filter | N/A | Annual | N/A | 4000/12000 |
| MiniCircuits | VHF-1300+ | High Pass Filter | N/A | | N/A | 30716 |
| MiniCircuits | VHF-3100+ | High Pass Filter | N/A | | N/A | 30721 |
| Pasternack | PE2208-6 | Bidirectional Coupler | N/A | | N/A | N/A |
| Rohde & Schwarz | CMU200 | Base Station Simulator | 9/11/2009 | Annual | 9/11/2010 | 836371/0079 |
| Rohde & Schwarz | CMU200 | Base Station Simulator | 9/4/2009 | Annual | 9/4/2010 | 109892 |
| Rohde & Schwarz | NRVD | Dual Channel Power Meter | 8/20/2008 | Biennial | 8/20/2010 | 101695 |
| Rohde & Schwarz | NRV-Z32 | Peak Power Sensor (100uW-2W) | 12/5/2008 | Biennial | 12/5/2010 | 100155 |
| Rohde & Schwarz | NRV-Z33 | Peak Power Sensor (1mW-20W) | 12/5/2008 | Biennial | 12/5/2010 | 100004 |
| Schwarzbeck | UHA9105 | Dipole Antenna (400 - 1GHz) Rx | 7/17/2009 | Biennial | 7/17/2011 | 9105-2404 |
| Schwarzbeck | UHA9105 | Dipole Antenna (400 - 1GHz) Tx | 7/17/2009 | Biennial | 7/17/2011 | 9105-2403 |
| Sunol | DRH-118 | Horn Antenna (1 - 18GHz) | 5/14/2009 | Biennial | 5/14/2011 | A050307 |
| Rohde & Schwarz | CMU200 | Base Station Simulator | 6/12/2009 | Annual | 6/12/2010 | 836536/0005 |
| Rohde & Schwarz | FSQ 26 | Spectrum Analyzer | 9/19/2009 | Annual | 9/19/2010 | 200452 |
| Rohde & Schwarz | CMW500 | LTE Base Station Simulator | 8/25/2009 | Annual | 8/25/2010 | 100976 |
| Anritsu | ML2495A | Power Meter | 10/12/2009 | Annual | 10/12/2010 | 941001 |

**Table 4-1. Test Equipment**

# 5.0 SAMPLE CALCULATIONS

## GSM Emission Designator

**Emission Designator = 250KGXW**

GSM BW = 250 kHz
G = Phase Modulation
X = Cases not otherwise covered
W = Combination (Audio/Data)

## WCDMA Emission Designator

**Emission Designator = 4M16F9W**

WCDMA BW = 4.16 MHz
F = Frequency Modulation
9 = Composite Digital Info
W = Combination (Audio/Data) (Measured at the 99.75% power bandwidth)

## Spurious Radiated Emission - PCS Band

**Example: GSM Channel 512 PCS Mode 2nd Harmonic (3700.40 MHz)**

The average receive power meter reading at 3 meters with the EUT on the turntable was –81.0 dBm. The gain of the substituted antenna is 8.1 dBi. The signal generator connected to the substituted antenna terminals is adjusted to produce a reading of –81.0 dBm on the power meter. The loss of the cable between the signal generator and the terminals of the substituted antenna is 2.0 dB at 3700.40 MHz. So 6.1 dB is added to the power meter reading of –30.9 dBm yielding –24.80 dBm. The fundamental EIRP was 25.501 dBm so this harmonic was 25.501 dBm – (-24.80) = 50.3 dBc.

# 6.0 TEST RESULTS

## 6.1 Summary

Company Name: Novatel Wireless Inc.

FCC ID: NBZNRM-MC998D

FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)

Mode(s): GSM/EDGE/WCDMA

| FCC Part Section(s) | Test Description | Test Limit | Test Condition | Test Result | Reference |
|---|---|---|---|---|---|
| **TRANSMITTER MODE (TX)** | | | | | |
| 22.913(a)(2) | Effective Radiated Power | < 7 Watts max. ERP (<6.3 Watts max. ERP (IC)) | RADIATED | PASS | Section 6.2 |
| 24.232(c) | Equivalent Isotropic Radiated Power | < 2 Watts max. EIRP | | PASS | Section 6.3 |
| 2.1053, 22.917(a), 24.238(a) | Undesirable Emissions | < 43 + $\log_{10}$ (P[Watts]) for all out-of-band emissions | | PASS | Sections 6.4, 6.5, 6.6, 6.7 |

**Table 6-1. Summary of Test Results**

## 6.2 Effective Radiated Power Output Data

**§22.913(a)(2)**

**POWER: PCL "5" (Cellular GSM Mode)**

| Frequency [MHz] | Mode | Measured Level [dBm] | Substitute Level [dBm] | Antenna Gain [dBd] | Pol [H/V] | ERP [dBm] | ERP [Watts] |
|---|---|---|---|---|---|---|---|
| 824.20 | GSM850 | -6.900 | 31.73 | 0.00 | H | 31.73 | 1.489 |
| 836.60 | GSM850 | -6.260 | 32.37 | 0.00 | H | 32.37 | 1.726 |
| 848.80 | GSM850 | -5.100 | 33.53 | 0.00 | H | 33.53 | 2.254 |
| 848.80 | EDGE850 | -9.150 | 29.48 | 0.00 | H | 29.48 | 0.887 |

**Table 6-2. Effective Radiated Power Output Data (GSM)**

**POWER: All "1" bits (Cellular WCDMA Mode)**

| Frequency [MHz] | Mode | Measured Level [dBm] | Substitute Level [dBm] | Antenna Gain [dBd] | Pol [H/V] | ERP [dBm] | ERP [Watts] |
|---|---|---|---|---|---|---|---|
| 826.40 | WCDMA850 | -15.340 | 23.94 | 0.00 | H | 23.94 | 0.248 |
| 836.60 | WCDMA850 | -15.640 | 23.64 | 0.00 | H | 23.64 | 0.231 |
| 846.60 | WCDMA850 | -16.530 | 22.75 | 0.00 | H | 22.75 | 0.188 |

**Table 6-3. Effective Radiated Power Output Data (WCDMA)**

**NOTES:**

Effective Radiated Power Output Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. Final power measurements are made with a broadband average power meter. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. This level is recorded using the power meter. The conducted power at the terminals of the dipole is measured. The ERP is recorded.

This device was tested under all configurations and the highest power is reported in WCDMA mode with HSDPA Active at 12.2 kbps RMC and TPC bits all set to "1" and in GSM mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band.

## 6.3 Equivalent Isotropic Radiated Power Output Data

**§24.232(c)**

**POWER: PCL "0" (PCS GSM Mode)**

| Frequency [MHz] | Mode | Measured Level [dBm] | Substitute Level [dBm] | Antenna Gain [dBi] | Pol [H/V] | EIRP [dBm] | EIRP [Watts] |
|---|---|---|---|---|---|---|---|
| 1850.20 | GSM1900 | -7.910 | 24.96 | 8.00 | H | 32.96 | 1.977 |
| 1880.00 | GSM1900 | -8.880 | 23.99 | 8.00 | H | 31.99 | 1.581 |
| 1909.80 | GSM1900 | -9.780 | 23.09 | 8.00 | H | 31.09 | 1.285 |
| 1850.20 | EDGE1900 | -11.080 | 21.79 | 8.00 | H | 29.79 | 0.953 |

**Table 6-4. Equivalent Isotropic Radiated Power Output Data (GSM)**

**POWER: All "1" bits (PCS WCDMA Mode)**

| Frequency [MHz] | Mode | Measured Level [dBm] | Substitute Level [dBm] | Antenna Gain [dBi] | Pol [H/V] | EIRP [dBm] | EIRP [Watts] |
|---|---|---|---|---|---|---|---|
| 1852.40 | WCDMA1900 | -17.250 | 16.01 | 8.00 | H | 24.01 | 0.252 |
| 1880.00 | WCDMA1900 | -16.870 | 16.39 | 8.00 | H | 24.39 | 0.275 |
| 1907.60 | WCDMA1900 | -17.540 | 15.72 | 8.00 | H | 23.72 | 0.236 |

**Table 6-5. Equivalent Isotropic Radiated Power Output Data (WCDMA)**

**NOTES:**

Equivalent Isotropic Radiated Power Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. Final power measurements are made with a broadband average power meter. A Horn antenna was substituted in place of the EUT. This Horn antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. This level is recorded using the power meter. The conducted power at the terminals of the Horn antenna is measured. The difference between the gain of the horn and an isotropic antenna is taken into consideration and the EIRP is recorded.

This device was tested under all configurations and the highest power is reported in WCDMA mode with HSDPA Active at 12.2 kbps RMC and TPC bits all set to "1" and in GSM mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band.

## 6.4 Cellular GSM Radiated Measurements

**§2.1053, 22.917(a)**

### Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 824.20 MHz
CHANNEL: 128
MEASURED OUTPUT POWER: 33.530 dBm = 2.254 W
MODULATION SIGNAL: GSM (Internal)
DISTANCE: 3 meters
LIMIT: 43 + 10 $\log_{10}$ (W) = 46.53 dBc

| FREQUENCY (MHz) | LEVEL @ ANTENNA TERMINALS (dBm) | SUBSTITUTE ANTENNA GAIN (dBd) | SPURIOUS EMISSION LEVEL (dBm) | POL (H/V) | (dBc) |
|---|---|---|---|---|---|
| 1648.40 | -33.89 | 6.32 | -27.57 | H | 61.1 |
| 2472.60 | -47.48 | 7.69 | -39.80 | H | 73.3 |
| 3296.80 | -48.02 | 7.83 | -40.19 | H | 73.7 |
| 4121.00 | -43.55 | 7.83 | -35.72 | H | 69.3 |
| 4945.20 | -50.04 | 8.62 | -41.41 | H | 74.9 |

**Table 6-6. Radiated Spurious Data (Cellular GSM Mode – Ch. 128)**

**NOTES:**

Radiated Spurious Emission Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. Final power measurements are made with a broadband average power meter. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

This device was tested under all configurations and the highest power is reported in WCDMA mode with HSDPA Active at 12.2 kbps RMC and TPC bits all set to "1" and in GSM mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band.

## Cellular GSM Radiated Measurements (Cont'd)
**§2.1053, 22.917(a)**

### Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 836.60 MHz
CHANNEL: 190
MEASURED OUTPUT POWER: 33.530 dBm = 2.254 W
MODULATION SIGNAL: GSM (Internal)
DISTANCE: 3 meters
LIMIT: 43 + 10 $\log_{10}$ (W) = 46.53 dBc

| FREQUENCY (MHz) | LEVEL @ ANTENNA TERMINALS (dBm) | SUBSTITUTE ANTENNA GAIN (dBd) | SPURIOUS EMISSION LEVEL (dBm) | POL (H/V) | (dBc) |
|---|---|---|---|---|---|
| 1673.20 | -43.00 | 6.33 | -36.68 | H | 70.2 |
| 2509.80 | -39.91 | 7.75 | -32.16 | H | 65.7 |
| 3346.40 | -52.06 | 7.86 | -44.20 | H | 77.7 |
| 4183.00 | -43.39 | 8.07 | -35.32 | H | 68.9 |
| 5019.60 | -48.83 | 8.55 | -40.29 | H | 73.8 |

**Table 6-7. Radiated Spurious Data (Cellular GSM Mode – Ch. 190)**

**NOTES:**

Radiated Spurious Emission Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. Final power measurements are made with a broadband average power meter. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

This device was tested under all configurations and the highest power is reported in WCDMA mode with HSDPA Active at 12.2 kbps RMC and TPC bits all set to "1" and in GSM mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band.

## Cellular GSM Radiated Measurements (Cont'd)
**§2.1053, 22.917(a)**

### Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 848.80 MHz
CHANNEL: 251
MEASURED OUTPUT POWER: 33.530 dBm = 2.254 W
MODULATION SIGNAL: GSM (Internal)
DISTANCE: 3 meters
LIMIT: 43 + 10 $\log_{10}$ (W) = 46.53 dBc

| FREQUENCY (MHz) | LEVEL @ ANTENNA TERMINALS (dBm) | SUBSTITUTE ANTENNA GAIN (dBd) | SPURIOUS EMISSION LEVEL (dBm) | POL (H/V) | (dBc) |
|---|---|---|---|---|---|
| 1697.60 | -33.72 | 6.34 | -27.38 | H | 60.9 |
| 2546.40 | -37.74 | 7.74 | -30.00 | H | 63.5 |
| 3395.20 | -52.91 | 7.89 | -45.01 | H | 78.5 |
| 4244.00 | -45.23 | 8.31 | -36.93 | H | 70.5 |
| 5092.80 | -48.57 | 8.53 | -40.04 | H | 73.6 |

**Table 6-8. Radiated Spurious Data (Cellular GSM Mode – Ch. 251)**

**NOTES:**

Radiated Spurious Emission Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. Final power measurements are made with a broadband average power meter. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

This device was tested under all configurations and the highest power is reported in WCDMA mode with HSDPA Active at 12.2 kbps RMC and TPC bits all set to "1" and in GSM mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band.

## 6.5 Cellular WCDMA Radiated Measurements

**§2.1053, 22.917(a)**

### Field Strength of SPURIOUS Radiation

| | | | | |
|---|---|---|---|---|
| OPERATING FREQUENCY: | 826.40 | MHz | | |
| CHANNEL: | 4132 | | | |
| MEASURED OUTPUT POWER: | 23.940 | dBm | = | 0.248 W |
| MODULATION SIGNAL: | WCDMA (Internal) | | | |
| DISTANCE: | 3 | meters | | |
| LIMIT: | 43 + 10 log10 (W) = | 36.94 | dBc | |

| FREQUENCY (MHz) | LEVEL @ ANTENNA TERMINALS (dBm) | SUBSTITUTE ANTENNA GAIN (dBd) | SPURIOUS EMISSION LEVEL (dBm) | POL (H/V) | (dBc) |
|---|---|---|---|---|---|
| 1652.80 | -63.00 | 6.08 | -56.92 | H | 80.9 |
| 2479.20 | -61.59 | 6.54 | -55.05 | H | 79.0 |
| 3305.60 | -93.31 | 6.88 | -86.44 | H | 110.4 |
| 4132.00 | -91.07 | 7.25 | -83.83 | H | 107.8 |
| 4958.40 | -89.68 | 8.37 | -81.32 | H | 105.3 |

**Table 6-9. Radiated Spurious Data (Cellular WCDMA Mode – Ch. 4132)**

**NOTES:**

Radiated Spurious Emission Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. Final power measurements are made with a broadband average power meter. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

This device was tested under all configurations and the highest power is reported in WCDMA mode with HSDPA Active at 12.2 kbps RMC and TPC bits all set to "1" and in GSM mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band.

## Cellular WCDMA Radiated Measurements (Cont'd)

**§2.1053, 22.917(a)**

### Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 836.60 MHz
CHANNEL: 4183
MEASURED OUTPUT POWER: 23.940 dBm = 0.248 W
MODULATION SIGNAL: WCDMA (Internal)
DISTANCE: 3 meters
LIMIT: 43 + 10 log10 (W) = 36.94 dBc

| FREQUENCY (MHz) | LEVEL @ ANTENNA TERMINALS (dBm) | SUBSTITUTE ANTENNA GAIN (dBd) | SPURIOUS EMISSION LEVEL (dBm) | POL (H/V) | (dBc) |
|---|---|---|---|---|---|
| 1673.20 | -63.61 | 6.09 | -57.52 | H | 81.5 |
| 2509.80 | -61.94 | 6.55 | -55.39 | H | 79.3 |
| 3346.40 | -93.21 | 6.89 | -86.32 | H | 110.3 |
| 4183.00 | -91.21 | 7.40 | -83.80 | H | 107.7 |
| 5019.60 | -89.43 | 8.35 | -81.08 | H | 105.0 |

**Table 6-10. Radiated Spurious Data (Cellular WCDMA Mode – Ch. 4183)**

**NOTES:**

Radiated Spurious Emission Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. Final power measurements are made with a broadband average power meter. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

This device was tested under all configurations and the highest power is reported in WCDMA mode with HSDPA Active at 12.2 kbps RMC and TPC bits all set to "1" and in GSM mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band.

## Cellular WCDMA Radiated Measurements (Cont'd)

**§2.1053, 22.917(a)**

### Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 846.60 MHz
CHANNEL: 4233
MEASURED OUTPUT POWER: 23.940 dBm = 0.248 W
MODULATION SIGNAL: WCDMA (Internal)
DISTANCE: 3 meters
LIMIT: 43 + 10 log10 (W) = 36.94 dBc

| FREQUENCY (MHz) | LEVEL @ ANTENNA TERMINALS (dBm) | SUBSTITUTE ANTENNA GAIN (dBd) | SPURIOUS EMISSION LEVEL (dBm) | POL (H/V) | (dBc) |
|---|---|---|---|---|---|
| 1693.20 | -61.88 | 6.09 | -55.79 | H | 79.7 |
| 2539.80 | -59.53 | 6.57 | -52.96 | H | 76.9 |
| 3386.40 | -93.08 | 6.91 | -86.18 | H | 110.1 |
| 4233.00 | -91.39 | 7.62 | -83.77 | H | 107.7 |
| 5079.60 | -89.15 | 8.33 | -80.81 | H | 104.8 |

**Table 6-11. Radiated Spurious Data (Cellular WCDMA Mode – Ch. 4233)**

**NOTES:**

Radiated Spurious Emission Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. Final power measurements are made with a broadband average power meter. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

This device was tested under all configurations and the highest power is reported in WCDMA mode with HSDPA Active at 12.2 kbps RMC and TPC bits all set to "1" and in GSM mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band.

## 6.6 PCS GSM Radiated Measurements

**§2.1053, 24.238(a)**

### Field Strength of SPURIOUS Radiation

| | | | | |
|---|---|---|---|---|
| OPERATING FREQUENCY: | 1850.20 | MHz | | |
| CHANNEL: | 512 | | | |
| MEASURED OUTPUT POWER: | 32.960 | dBm | = | 1.977 W |
| MODULATION SIGNAL: | GSM (Internal) | | | |
| DISTANCE: | 3 | meters | | |
| LIMIT: | 43 + 10 $\log_{10}$ (W) = | 45.96 | dBc | |

| FREQUENCY (MHz) | LEVEL @ ANTENNA TERMINALS (dBm) | SUBSTITUTE ANTENNA GAIN (dBi) | SPURIOUS EMISSION LEVEL (dBm) | POL (H/V) | (dBc) |
|---|---|---|---|---|---|
| 3700.40 | -44.85 | 9.85 | -35.00 | H | 68.0 |
| 5550.60 | -48.00 | 10.72 | -37.29 | H | 70.2 |
| 7400.80 | -44.16 | 11.60 | -32.55 | H | 65.5 |
| 9251.00 | -37.07 | 11.36 | -25.72 | H | 58.7 |
| 11101.20 | -32.65 | 12.74 | -19.92 | H | 52.9 |

**Table 6-12. Radiated Spurious Data (PCS GSM Mode – Ch. 512)**

**NOTES:**

Radiated Spurious Emission Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. Final power measurements are made with a broadband average power meter. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

This device was tested under all configurations and the highest power is reported in WCDMA mode with HSDPA Active at 12.2 kbps RMC and TPC bits all set to "1" and in GSM mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band.

## PCS GSM Radiated Measurements (Cont'd)

**§2.1053, 24.238(a)**

### Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1880.00 MHz
CHANNEL: 661
MEASURED OUTPUT POWER: 32.960 dBm = 1.977 W
MODULATION SIGNAL: GSM (Internal)
DISTANCE: 3 meters
LIMIT: 43 + 10 $\log_{10}$ (W) = 45.96 dBc

| FREQUENCY (MHz) | LEVEL @ ANTENNA TERMINALS (dBm) | SUBSTITUTE ANTENNA GAIN (dBi) | SPURIOUS EMISSION LEVEL (dBm) | POL (H/V) | (dBc) |
|---|---|---|---|---|---|
| 3760.00 | -43.55 | 9.78 | -33.78 | H | 66.7 |
| 5640.00 | -49.09 | 10.92 | -38.18 | H | 71.1 |
| 7520.00 | -43.90 | 11.66 | -32.24 | H | 65.2 |
| 9400.00 | -39.14 | 11.56 | -27.57 | H | 60.5 |
| 11280.00 | -32.96 | 12.63 | -20.33 | H | 53.3 |

**Table 6-13. Radiated Spurious Data (PCS GSM Mode – Ch. 661)**

**NOTES:**

Radiated Spurious Emission Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. Final power measurements are made with a broadband average power meter. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

This device was tested under all configurations and the highest power is reported in WCDMA mode with HSDPA Active at 12.2 kbps RMC and TPC bits all set to "1" and in GSM mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band.

## PCS GSM Radiated Measurements (Cont'd)

**§2.1053, 24.238(a)**

### Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1909.80 MHz
CHANNEL: 810
MEASURED OUTPUT POWER: 32.960 dBm = 1.977 W
MODULATION SIGNAL: GSM (Internal)
DISTANCE: 3 meters
LIMIT: 43 + 10 $\log_{10}$ (W) = 45.96 dBc

| FREQUENCY (MHz) | LEVEL @ ANTENNA TERMINALS (dBm) | SUBSTITUTE ANTENNA GAIN (dBi) | SPURIOUS EMISSION LEVEL (dBm) | POL (H/V) | (dBc) |
|---|---|---|---|---|---|
| 3819.60 | -41.06 | 9.71 | -31.35 | H | 64.3 |
| 5729.40 | -49.99 | 11.12 | -38.87 | H | 71.8 |
| 7639.20 | -42.18 | 11.44 | -30.74 | H | 63.7 |
| 9549.00 | -38.71 | 11.73 | -26.98 | H | 59.9 |
| 11458.80 | -35.29 | 12.52 | -22.76 | H | 55.7 |

**Table 6-14. Radiated Spurious Data (PCS GSM Mode – Ch. 810)**

**NOTES:**

Radiated Spurious Emission Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. Final power measurements are made with a broadband average power meter. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

This device was tested under all configurations and the highest power is reported in WCDMA mode with HSDPA Active at 12.2 kbps RMC and TPC bits all set to "1" and in GSM mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band.

## 6.7 PCS WCDMA Radiated Measurements

**§2.1053, 24.238(a)**

### Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1852.40 MHz
CHANNEL: 9262
MEASURED OUTPUT POWER: 24.390 dBm = 0.275 W
MODULATION SIGNAL: WCDMA (Internal)
DISTANCE: 3 meters
LIMIT: 43 + 10 log10 (W) = 37.39 dBc

| FREQUENCY (MHz) | LEVEL @ ANTENNA TERMINALS (dBm) | SUBSTITUTE ANTENNA GAIN (dBd) | SPURIOUS EMISSION LEVEL (dBm) | POL (H/V) | (dBc) |
|---|---|---|---|---|---|
| 3704.80 | -48.58 | 9.01 | -39.57 | H | 64.0 |
| 5557.20 | -89.03 | 10.40 | -78.63 | H | 103.0 |
| 7409.60 | -85.65 | 10.51 | -75.14 | H | 99.5 |
| 9262.00 | -48.64 | 11.83 | -36.80 | H | 61.2 |
| 11114.40 | -82.53 | 12.75 | -69.78 | H | 94.2 |

**Table 6-15. Radiated Spurious Data (PCS WCDMA Mode – Ch. 9262)**

**NOTES:**

Radiated Spurious Emission Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. Final power measurements are made with a broadband average power meter. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

This device was tested under all configurations and the highest power is reported in WCDMA mode with HSDPA Active at 12.2 kbps RMC and TPC bits all set to "1" and in GSM mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band.

## PCS WCDMA Radiated Measurements (Cont'd)

**§2.1053, 24.238(a)**

### Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1880.00 MHz
CHANNEL: 9400
MEASURED OUTPUT POWER: 24.390 dBm = 0.275 W
MODULATION SIGNAL: WCDMA (Internal)
DISTANCE: 3 meters
LIMIT: 43 + 10 log10 (W) = 37.39 dBc

| FREQUENCY (MHz) | LEVEL @ ANTENNA TERMINALS (dBm) | SUBSTITUTE ANTENNA GAIN (dBd) | SPURIOUS EMISSION LEVEL (dBm) | POL (H/V) | (dBc) |
|---|---|---|---|---|---|
| 3760.00 | -52.27 | 8.99 | -43.28 | H | 67.7 |
| 5640.00 | -88.81 | 10.40 | -78.41 | H | 102.8 |
| 7520.00 | -85.71 | 10.62 | -75.09 | H | 99.5 |
| 9400.00 | -84.87 | 11.70 | -73.17 | H | 97.6 |
| 11280.00 | -81.79 | 12.69 | -69.10 | H | 93.5 |

**Table 6-16. Radiated Spurious Data (PCS WCDMA Mode – Ch. 9400)**

**NOTES:**

Radiated Spurious Emission Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. Final power measurements are made with a broadband average power meter. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

This device was tested under all configurations and the highest power is reported in WCDMA mode with HSDPA Active at 12.2 kbps RMC and TPC bits all set to "1" and in GSM mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band.

## PCS WCDMA Radiated Measurements (Cont'd)

**§2.1053, 24.238(a)**

### Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1907.60 MHz
CHANNEL: 9538
MEASURED OUTPUT POWER: 24.390 dBm = 0.275 W
MODULATION SIGNAL: WCDMA (Internal)
DISTANCE: 3 meters
LIMIT: 43 + 10 log10 (W) = 37.39 dBc

| FREQUENCY (MHz) | LEVEL @ ANTENNA TERMINALS (dBm) | SUBSTITUTE ANTENNA GAIN (dBd) | SPURIOUS EMISSION LEVEL (dBm) | POL (H/V) | (dBc) |
|---|---|---|---|---|---|
| 3815.20 | -44.47 | 8.97 | -35.50 | H | 59.9 |
| 5722.80 | -88.60 | 10.40 | -78.20 | H | 102.6 |
| 7630.40 | -85.68 | 10.71 | -74.97 | H | 99.4 |
| 9538.00 | -46.82 | 11.63 | -35.18 | H | 59.6 |
| 11445.60 | -81.05 | 12.62 | -68.43 | H | 92.8 |

**Table 6-17. Radiated Spurious Data (PCS WCDMA Mode – Ch. 9538)**

**NOTES:**

Radiated Spurious Emission Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. Final power measurements are made with a broadband average power meter. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

This device was tested under all configurations and the highest power is reported in WCDMA mode with HSDPA Active at 12.2 kbps RMC and TPC bits all set to "1" and in GSM mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band.

# 7.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Novatel 850/1900 GSM/GPRS/EDGE/WCDMA USB Modem FCC ID: NBZNRM-MC998D** complies with all the requirements of Parts 2, 22, and 24 of the FCC rules.