

PCTEST ENGINEERING LABORATORY, INC.

6660-B Dobbin Road, Columbia, MD 21045 USA Tel. 410.290.6652 / Fax 410.290.6654 http://www.pctestlab.com



MEASUREMENT REPORT FCC Part 22 & 24 / IC RSS-132/RSS-133

Applicant Name:

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

Date of Testing:

June - July 28, 2011 Test Site/Location: PCTEST Lab., Columbia, MD, USA Test Report Serial No.: 0Y1106221043.PKR

FCC ID:

PKRNVWMC679

APPLICANT:

NOVATEL WIRELESS INC.

Application Type:	Certification
FCC Classification:	PCS Licensed Transmitter (PCB)
FCC Rule Part(s):	§2; §22(H), §24(E)
IC Specification(s):	RSS-132 Issue 2; RSS-133 Issue 5
EUT Type:	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA and Band 4/17 LTE USB Modem
Model(s):	MC679
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:	0.849 W ERP Cell. GSM (29.29 dBm) / 1.028 W EIRP PCS GSM (30.12 dBm)
Emission Designator(s):	0.226 W ERP EDGE850 (23.55 dBm) / 0.411 W EIRP EDGE1900 (26.14 dBm) 0.114 W ERP Cell. WCDMA (20.56 dBm) / 0.176 W EIRP PCS WCDMA (22.46 dBm) 242KGXW (Cellular GSM), 244KGXW (PCS GSM) 247KG7W (EDGE850), 248KG7W (EDGE1900) 4M16F9W (Cellular WCDMA), 4M16F9W (PCS WCDMA)
Test Device Serial No.:	identical prototype [S/N: LN010611600421, LN010611600444]

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 subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. 862.

Randy Ortanez President



FCC ID: PKRNVWMC679		FCC Pt. 22/24 GSM/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	WIRELESS.	Reviewed by: Quality Manager
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MEASUREMENT REPORT FCC Part 22 & 24



10/26/2010

§2.1033 General Information

APPLICANT:	Novatel Wireless Inc.
APPLICANT ADDRESS:	9645 Scranton Road, Suite 205
	San Diego, CA 92121-3030, United States
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)
IC SPECIFICATION(S):	RSS-132 Issue 2; RSS-133 Issue 5
BASE MODEL:	MC679
FCC ID:	PKRNVWMC679
FCC CLASSIFICATION:	PCS Licensed Transmitter (PCB)
EMISSION DESIGNATOR(S):	242KGXW (Cellular GSM), 244KGXW (PCS GSM) 247KG7W (EDGE850), 248KG7W (EDGE1900)
MODE:	4M16F9W (Cellular WCDMA), 4M16F9W (PCS WCDMA) GSM/EDGE/WCDMA
FREQUENCY TOLERANCE:	±0.00025 % (2.5 ppm)
Test Device Serial No.:	LN010611600421, Production Pre-Production Engineering
DATE(S) OF TEST:	June - July 28, 2011
TEST REPORT S/N:	0Y1106221043.PKR

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.

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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 and the Industry Canada Certification and Engineering Bureau.

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'I (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 28, 2009.

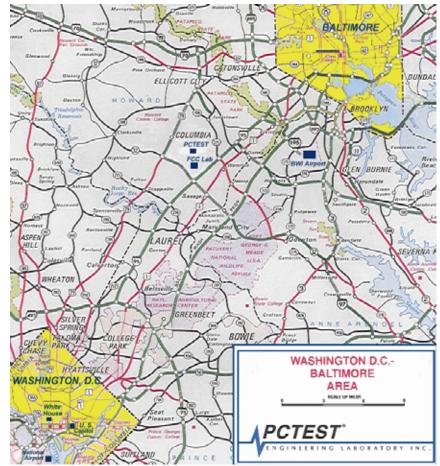


Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Novatel 850/1900 GSM/GPRS/EDGE/WCDMA/HSPA and Band 4/17 LTE USB Modem FCC ID: PKRNVWMC679**. The EUT consisted of the following component(s):

Trade Name / Base Model	FCC ID	Description
Novatel / Model: MC679	PKRNVWMC679	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA and Band 4/17 LTE 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.

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DESCRIPTION OF TESTS 3.0

3.1 Measurement Procedure

The radiated spurious measurements were made outdoors at a 3meter 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.

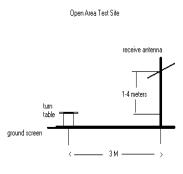
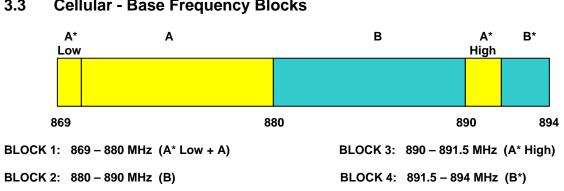


Figure 3-1. Diagram of 3-meter outdoor test range

Deviation from Measurement Procedure.....None

3.2 **Occupied Bandwidth** §2.1049, RSS-Gen (4.6.1)

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts. The resolution bandwidth shall be set to as close to 1 percent of the selected span as is possible without being below 1 percent. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used since a peak or, peak hold, may produce a wider bandwidth than actual. The trace data points are recovered and are directly summed in linear terms. The recovered amplitude data points. beginning at the lowest frequency, are placed in a running sum until 0.5 percent of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points. This frequency is recorded. The span between the two recorded frequencies is the occupied bandwidth.

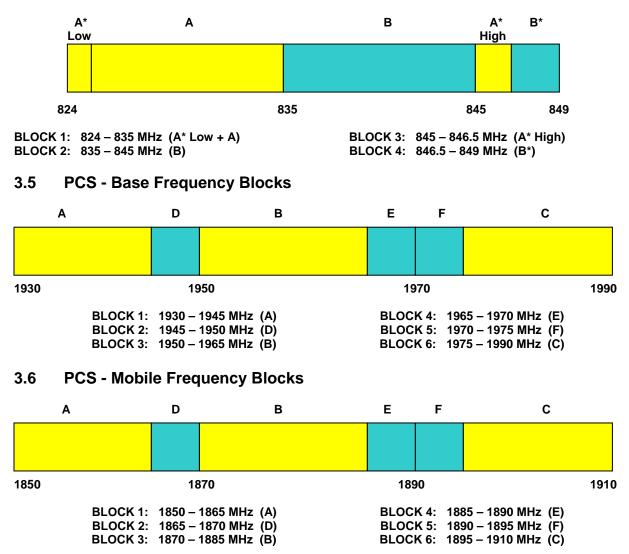


3.3 Cellular - Base Frequency Blocks

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3.4 Cellular - Mobile Frequency Blocks



3.7 Spurious and Harmonic Emissions at Antenna Terminal §2.1051, 22.917(a), 24.238(a)(b); RSS-132 (4.5.1), RSS-133 (6.5.1)

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least 43 + 10 log(P) dB. Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.

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3.8 Radiated Power and Radiated Spurious Emissions §2.1053, 22.913(a)(2), 22.917(a), 24.232(c), 24.238(a); RSS-132 (4.5.1), RSS-133 (6.5.1)

Radiated power and radiated spurious 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 10th 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 Inactive at 12.2 kbps RMC and TPC bits all set to "1" and in GPRS mode while transmitting with one slot active.

3.9 Peak-Average Ratio §24.232(d); RSS-133 (6.4)

A peak to average ratio measurement is performed at the conducted port of the EUT. For WCDMA signals, the spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level. For GSM signals, an average and a peak trace are used on a spectrum analyzer to determine the largest deviation between the average and the peak power of the EUT in a bandwidth greater than the emission bandwidth.

3.10 Frequency Stability / Temperature Variation §2.1055, 22.355, 24.235; RSS-132 (4.3) / RSS-133 (6.3)

The frequency stability of the transmitter is measured by:

- a.) **Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.
- b.) **Primary Supply Voltage:** The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

Specification – The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ (± 2.5 ppm) of the center frequency.

Time Period and Procedure:

1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).

2. The equipment is turned on in a "standby" condition for one minute before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.

3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

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TEST EQUIPMENT CALIBRATION DATA 4.0

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.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	8449B	(1-26.5GHz) Pre-Amplifier	2/8/2011	Annual	2/8/2012	3008A00985
Agilent	E4407B	ESA Spectrum Analyzer	4/5/2011	Annual	4/5/2012	US39210313
Agilent	E8257D	(250kHz-20GHz) Signal Generator	4/8/2011	Annual	4/8/2012	MY45470194
Agilent	N9020A	MXA Signal Analyzer	9/8/2010	Annual	9/8/2011	US46470561
Anritsu	ML2495A	Power Meter	10/13/2010	Annual	10/13/2011	941001
Anritsu	MA2411B	Pulse Sensor	N/A	Annual		1027293
Emco	3115	Horn Antenna (1-18GHz)	4/8/2010	Biennial	4/8/2012	9205-3874
Espec	ESX-2CA	Environmental Chamber	4/21/2011	Annual	4/21/2012	17620
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	N/A			836536/0005
Schwarzbeck	UHA9105	Dipole Antenna (400 - 1GHz) Rx	8/17/2009	Biennial	8/17/2011	9105-2404
Schwarzbeck	UHA9105	Dipole Antenna (400 - 1GHz) Tx	8/17/2009	Biennial	8/17/2011	9105-2403
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	8/17/2009	Biennial	8/17/2011	A051107
Sunol	DRH-118	Horn Antenna (1-18 GHz)	6/17/2011	Biennial	6/17/2013	A042511

Table 4-1. Test Equipment

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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 signal generator 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.

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TEST RESULTS 6.0

6.1 Summary

Company Name:	Novatel Wireless Inc.
FCC ID:	PKRNVWMC679
FCC Classification:	PCS Licensed Transmitter (PCB)
Mode(s):	<u>GSM/EDGE/WCDMA</u>

FCC Part Section(s)	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference				
TRANSMITTER MODE (TX)										
2.1049, 22.917(a), 24.238(a)	RSS-Gen (4.6.1) RSS-133 (2.3)	Occupied Bandwidth	N/A		PASS	Section 7.0				
2.1051, 22.917(a), 24.238(a)	RSS-132 (4.5.1) RSS-133 (6.5.1)	Band Edge / Conducted Spurious Emissions	< 43 + log ₁₀ (P[Watts]) at Band Edge and for all out-of-band emissions	CONDUCTED	PASS	Section 7.0				
24.232(d)	RSS-133 (6.4)	Peak-Average Ratio	< 13 dB		PASS	Section 7.0				
2.1046	RSS-132 (4.4) RSS-133 (4.1)	Transmitter Conducted Output Power	N/A		PASS	RF Exposure Report				
22.913(a)(2)	RSS-132 (4.4) [SRSP-503(5.1.3)]	Effective Radiated Power	< 7 Watts max. ERP		PASS	Section 6.2				
24.232(c)	RSS-133 (6.4) [SRSP-510 (5.1.2)]	Equivalent Isotropic Radiated Power	< 2 Watts max. EIRP	RADIATED	PASS	Section 6.3				
2.1053, 22.917(a), 24.238(a)	RSS-132 (4.5.1) RSS-133 (6.5.1)	Undesirable Emissions	< 43 + log ₁₀ (P[Watts]) for all out- of-band emissions	RADIATED	PASS	Sections 6.4, 6.5, 6.6, 6.7				
2.1055, 22.355, 24.235	RSS-132 (4.3) RSS-133 (6.3)	Frequency Stability	< 2.5 ppm		PASS	Sections 6.8, 6.9, 6.10, 6.11				
RECEIVER MOD	DE (RX) / DIGITAL EN	<u>AISSIONS</u>								
N/A	RSS-132 (4.6) RSS-133 (6.6)	Receiver Spurious Emissions Limits	< RSS-Gen limits [Section 6; Table 1]	RADIATED	PASS	15B Test Report				

Table 6-1. Summary of Test Results

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6.2 Effective Radiated Power Output Data §22.913(a)(2); RSS-132 (4.4) [SRSP-503(5.1.3)]

Frequency [MHz]	Mode	Measured Level [dBm]	Substitute Level [dBm]	Antenna Gain [dBd]	Pol [H/V]	ERP [dBm]	ERP [Watts]	Battery Type
824.20	GSM850	-9.390	28.23	0.00	Н	28.23	0.665	Standard
836.60	GSM850	-8.810	28.81	0.00	Н	28.81	0.760	Standard
848.80	GSM850	-8.330	29.29	0.00	Н	29.29	0.849	Standard
848.80	EDGE850	-14.070	23.55	0.00	Н	23.55	0.226	Extended

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

Frequency [MHz]	Mode	Measured Level [dBm]	Sub stitute Level [dBm]	Antenna Gain [dBd]	Pol [H/V]	ERP [dBm]	ERP [Watts]	Battery Type
826.40	WCDMA850	- 17.060	20.56	0.00	Н	20.56	0.114	Standard
836.60	WCDMA850	-17.190	20.43	0.00	Н	20.43	0.110	Standard
846.60	WCDMA850	-18.590	19.03	0.00	Н	19.03	0.080	Standard

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.

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6.3 Equivalent Isotropic Radiated Power Output Data §24.232(c); RSS-133 (6.4) [SRSP-510 (5.1.2)]

Frequency [MHz]	Mode	Measured Level [dBm]	Substitute Level [dBm]	Antenna Gain [dBi]	Pol [H/V]	EIRP [dBm]	EIRP [Watts]	Battery Type
1850.20	GSM1900	-12.410	21.57	8.55	V	30.12	1.028	Standard
1880.00	GSM1900	-13.880	20.10	8.56	V	28.66	0.735	Standard
1909.80	GSM1900	-13.360	20.62	8.57	V	29.19	0.830	Standard
1850.20	EDGE1900	-16.390	17.59	8.55	V	26.14	0.411	Extended

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

Frequency [MHz]	Mode	Measured Level [dBm]	Substitute Level [dBm]	Antenna Gain [dBi]	Pol [H/V]	EIRP [dBm]	EIRP [Watts]	Battery Type
1852.40	WCDMA1900	-20.070	13.91	8.55	V	22.46	0.176	Standard
1880.00	WCDMA1900	-20.420	13.56	8.56	V	22.12	0.163	Standard
1907.60	WCDMA1900	-20.560	13.42	8.57	V	21.99	0.158	Standard

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.

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6.4 Cellular GSM Radiated Measurements §2.1053, 22.917(a); RSS-132 (4.5.1)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY:	824.20		MHz
CHANNEL:	12	8	-
MEASURED OUTPUT POWER:	29.290	dBm =	<u>0.849</u> W
MODULATION SIGNAL:	GSM (Internal)		
DISTANCE:	3	meters	
LIMIT:	43 + 10 log10 (W) =	42.29	dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1648.40	-49.51	6.16	-43.34	Н	72.6
2472.60	-55.60	6.34	-49.25	Н	78.5
3296.80	-51.50	6.70	-44.79	Н	74.1
4121.00	-51.61	7.38	-44.23	Н	73.5
4945.20	-89.69	8.91	-80.77	Н	110.1

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.

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Cellular GSM Radiated Measurements (Cont'd) §2.1053, 22.917(a); RSS-132 (4.5.1)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY:	836.60		MHz
CHANNEL:	19	0	_
MEASURED OUTPUT POWER:	29.290	_dBm =	<u>0.849</u> W
MODULATION SIGNAL:	GSM (Internal)		
DISTANCE:	3	meters	
LIMIT:	43 + 10 log10 (W) =	42.29	dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1673.20	-44.05	6.09	-37.96	Н	67.3
2509.80	-35.02	6.38	-28.64	Н	57.9
3346.40	-50.80	6.90	-43.90	Н	73.2
4183.00	-50.55	7.80	-42.75	Н	72.0
5019.60	-89.20	8.83	-80.37	Н	109.7

 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.

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Cellular GSM Radiated Measurements (Cont'd) §2.1053, 22.917(a); RSS-132 (4.5.1)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY:	848.80		MHz
CHANNEL:	25	51	_
MEASURED OUTPUT POWER:	29.290	dBm =	<u>0.849</u> W
MODULATION SIGNAL:	GSM (Internal)		
DISTANCE:	3	meters	
LIMIT:	43 + 10 log10 (W) =	42.29	dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1697.60	-40.91	6.01	-34.90	Н	64.2
2546.40	-38.57	6.48	-32.09	Н	61.4
3395.20	-48.45	7.10	-41.35	Н	70.6
4244.00	-42.47	8.10	-34.37	Н	63.7
5092.80	-88.94	8.86	-80.08	Н	109.4

 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.

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6.5 Cellular WCDMA Radiated Measurements §2.1053, 22.917(a); RSS-132 (4.5.1)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY:	826.40		MHz
CHANNEL:	4132		_
MEASURED OUTPUT POWER:	20.560	dBm =	<u>0.114</u> W
MODULATION SIGNAL:	WCDMA (Internal)		
DISTANCE:	3	meters	
LIMIT:	43 + 10 log10 (W) =	33.56	dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1652.80	-52.37	6.15	-46.22	Н	66.8
2479.20	-52.08	6.34	-45.74	Н	66.3
3305.60	-92.14	6.73	-85.40	Н	106.0
4132.00	-90.34	7.45	-82.89	Н	103.4
4958.40	-89.58	8.89	-80.69	Н	101.3

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.

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Cellular WCDMA Radiated Measurements (Cont'd) §2.1053, 22.917(a); RSS-132 (4.5.1)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY:	836.	MHz	
CHANNEL:	418	_	
MEASURED OUTPUT POWER:	20.560	dBm =	<u>0.114</u> W
MODULATION SIGNAL:	WCDMA (Internal)		
DISTANCE:	3	meters	
LIMIT:	43 + 10 log10 (W) =	33.56	dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1673.20	-50.62	6.10	-44.53	Н	65.1
2509.80	-49.60	6.37	-43.23	Н	63.8
3346.40	-92.29	6.88	-85.41	Н	106.0
4183.00	-90.76	7.74	-83.02	Н	103.6
5019.60	-89.23	8.82	-80.41	Н	101.0

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.

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Cellular WCDMA Radiated Measurements (Cont'd) §2.1053, 22.917(a); RSS-132 (4.5.1)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY:	846.	MHz	
CHANNEL:	423	_	
MEASURED OUTPUT POWER:	20.560	dBm =	<u>0.114</u> W
MODULATION SIGNAL:	WCDMA (Internal)		
DISTANCE:	3	meters	
LIMIT:	43 + 10 log10 (W) =	33.56	dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1693.20	-50.69	6.02	-44.66	Н	65.2
2539.80	-49.40	6.46	-42.94	Н	63.5
3386.40	-92.49	7.07	-85.42	Н	106.0
4233.00	-91.16	8.05	-83.11	Н	103.7
5079.60	-88.98	8.85	-80.13	Н	100.7

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.

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6.6 PCS GSM Radiated Measurements §2.1053, 24.238(a); RSS-133 (6.5.1)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY:	1850.20		MHz
CHANNEL:	51	2	_
MEASURED OUTPUT POWER:	30.120	dBm =	<u>1.028</u> W
MODULATION SIGNAL:	GSM (Internal)		
DISTANCE:	3	meters	
LIMIT:	43 + 10 log10 (W) =	43.12	dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3700.40	-44.66	9.63	-35.03	V	65.1
5550.60	-47.18	10.60	-36.58	V	66.7
7400.80	-83.92	10.85	-73.07	V	103.2
9251.00	-81.79	12.20	-69.59	V	99.7
11101.20	-77.08	12.85	-64.23	V	94.4

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.

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PCS GSM Radiated Measurements (Cont'd) §2.1053, 24.238(a); RSS-133 (6.5.1)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY:	1880.00	MHz
CHANNEL:	661	
MEASURED OUTPUT POWER:	<u> </u>	<u>1.028</u> W
MODULATION SIGNAL:	GSM (Internal)	
DISTANCE:	3 meters	
LIMIT:	43 + 10 log10 (W) =43.12	dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3760.00	-42.97	9.30	-33.67	V	63.8
5640.00	-47.82	10.89	-36.93	V	67.1
7520.00	-83.66	10.85	-72.80	V	102.9
9400.00	-81.75	12.17	-69.58	V	99.7
11280.00	-77.08	13.05	-64.03	V	94.2

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.

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PCS GSM Radiated Measurements (Cont'd) §2.1053, 24.238(a); RSS-133 (6.5.1)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY:	1909.80		MHz
CHANNEL:	81	0	_
MEASURED OUTPUT POWER:	30.120	dBm =	<u>1.028</u> W
MODULATION SIGNAL:	GSM (Internal)		
DISTANCE:	3	meters	
LIMIT:	43 + 10 log10 (W) =	43.12	dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3819.60	-42.40	9.05	-33.35	V	63.5
5729.40	-49.05	11.08	-37.98	V	68.1
7639.20	-83.82	11.11	-72.70	V	102.8
9549.00	-81.97	12.37	-69.61	V	99.7
11458.80	-77.01	13.23	-63.77	V	93.9

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.

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6.7 PCS WCDMA Radiated Measurements \$2,1053, 24,238(a): RSS-133 (6,5,1)

<u>§2.1053, 24.238(a); RSS-133 (6.5.1)</u>

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY:	1852	MHz	
CHANNEL:	926	_	
MEASURED OUTPUT POWER:	22.460	dBm =	<u>0.176</u> W
MODULATION SIGNAL:	WCDMA (Internal)		
DISTANCE:	3	meters	
LIMIT:	43 + 10 log10 (W) =	35.46	dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3704.80	-49.59	9.61	-39.99	V	62.4
5557.20	-50.38	10.62	-39.75	V	62.2
7409.60	-83.89	10.84	-73.05	V	95.5
9262.00	-81.79	12.20	-69.59	V	92.1
11114.40	-77.08	12.86	-64.21	V	86.7

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.

FCC ID: PKRNVWMC679		FCC Pt. 22/24 GSM/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	Reviewed by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Page 23 of 57	
0Y1106221043.PKR	June - July 28, 2011	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA and Band 4/17 LTE USB Modem	raye 23 01 37	
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PCS WCDMA Radiated Measurements (Cont'd) §2.1053, 24.238(a); RSS-133 (6.5.1)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY:	1880	MHz	
CHANNEL:	940	_	
MEASURED OUTPUT POWER:	22.460	dBm =	<u>0.176</u> W
MODULATION SIGNAL:	WCDMA (Internal)		
DISTANCE:	3	meters	
LIMIT:	43 + 10 log10 (W) =	35.46	dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3760.00	-47.84	9.30	-38.54	V	61.0
5640.00	-50.16	10.89	-39.27	V	61.7
7520.00	-83.66	10.85	-72.80	V	95.3
9400.00	-81.75	12.17	-69.58	V	92.0
11280.00	-77.08	13.05	-64.03	V	86.5

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.

FCC ID: PKRNVWMC679		FCC Pt. 22/24 GSM/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	Reviewed by: Quality Manager	
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PCS WCDMA Radiated Measurements (Cont'd) §2.1053, 24.238(a); RSS-133 (6.5.1)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY:	1907	MHz	
CHANNEL:	953	_	
MEASURED OUTPUT POWER:	22.460	dBm =	<u>0.176</u> W
MODULATION SIGNAL:	WCDMA (Internal)		
DISTANCE:	3	meters	
LIMIT:	43 + 10 log10 (W) =	35.46	dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3815.20	-46.09	9.05	-37.04	V	59.5
5722.80	-49.66	11.07	-38.59	V	61.1
7630.40	-83.83	11.10	-72.72	V	95.2
9538.00	-81.97	12.34	-69.62	V	92.1
11445.60	-77.01	13.22	-63.79	V	86.2

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.

FCC ID: PKRNVWMC679		FCC Pt. 22/24 GSM/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 25 of 57
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Cellular GSM Frequency Stability Measurements 6.8 §2.1055, 22.355; RSS-132 (4.3)

OPERATING FREQUENCY: 836,600,000 Hz

CHANNEL: 190

REFERENCE VOLTAGE: 5 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	5.00	+ 20 (Ref)	836,600,007	7	0.000001
100 %		- 30	836,600,003	3	0.000000
100 %		- 20	836,599,990	-10	-0.000001
100 %		- 10	836,599,977	-23	-0.000003
100 %		0	836,599,995	-5	-0.000001
100 %		+ 10	836,600,020	20	0.000002
100 %		+ 20	836,600,010	10	0.000001
100 %		+ 30	836,599,989	-11	-0.000001
100 %		+ 40	836,600,021	21	0.000003
100 %		+ 50	836,600,004	4	0.000000
115 %	5.75	+ 20	836,600,006	6	0.000001
85 %	4.25	+ 20	836,599,984	-16	-0.000002

Table 6-18. Frequency Stability Data (Cellular GSM Mode – Ch. 190)

FCC ID: PKRNVWMC679	PCTEST	FCC Pt. 22/24 GSM/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	Reviewed by: Quality Manager
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Cellular GSM Frequency Stability Measurements (Cont'd) §2.1055, 22.355; RSS-132 (4.3)

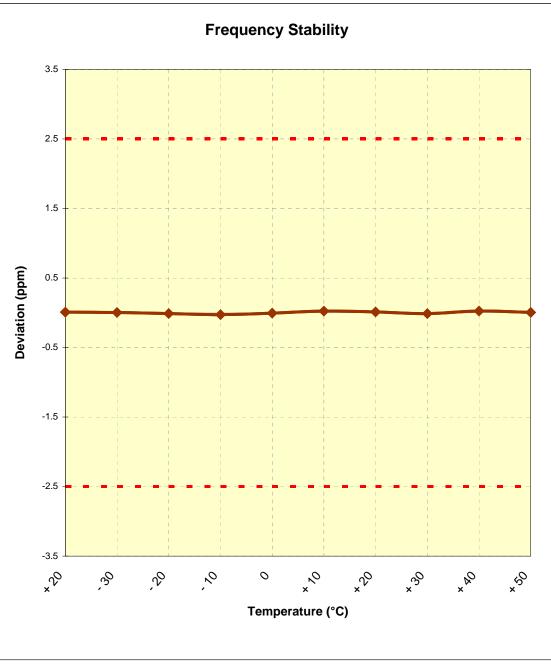


Figure 6-1. Frequency Stability Graph (Cellular GSM Mode – Ch. 190)

FCC ID: PKRNVWMC679		FCC Pt. 22/24 GSM/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	Reviewed by: Quality Manager
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Cellular WCDMA Frequency Stability Measurements 6.9 §2.1055, 22.355; RSS-132 (4.3)

OPERATING FREQUENCY: 836,600,000 Hz

CHANNEL: _____ 4183 _____

REFERENCE VOLTAGE: 5 VDC

DEVIATION LIMIT: <u>±0.00025</u>% or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	5.00	+ 20 (Ref)	836,599,993	-7	-0.000001
100 %		- 30	836,599,981	-19	-0.000002
100 %		- 20	836,600,009	9	0.000001
100 %		- 10	836,599,989	-11	-0.000001
100 %		0	836,600,021	21	0.000003
100 %		+ 10	836,599,993	-7	-0.000001
100 %		+ 20	836,599,983	-17	-0.000002
100 %		+ 30	836,600,024	24	0.000003
100 %		+ 40	836,600,014	14	0.000002
100 %		+ 50	836,599,987	-13	-0.000002
115 %	5.75	+ 20	836,600,005	5	0.000001
BATT. ENDPOINT	4.25	+ 20	836,599,987	-13	-0.000002

Table 6-19. Frequency Stability Data (Cellular WCDMA Mode – Ch. 4183)

FCC ID: PKRNVWMC679	PCTEST	FCC Pt. 22/24 GSM/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	TEL WIRELESS.	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 28 of 57
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Cellular WCDMA Frequency Stability Measurements (Cont'd) §2.1055, 22.355; RSS-132 (4.3)

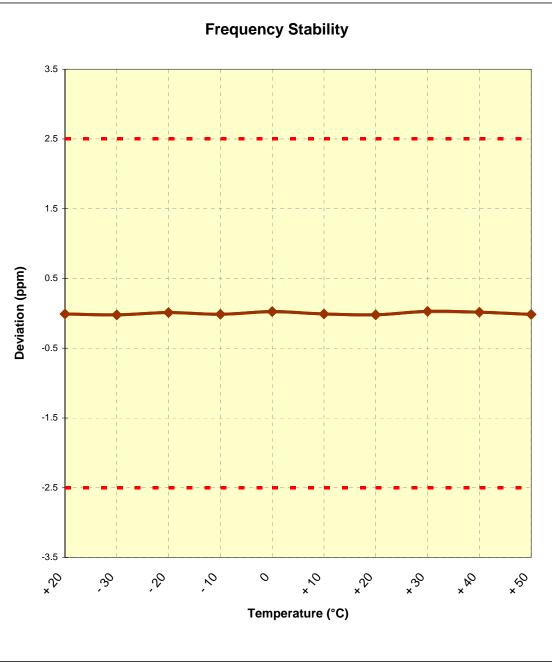


Figure 6-2. Frequency Stability Graph (Cellular WCDMA Mode – Ch. 4183)

FCC ID: PKRNVWMC679		FCC Pt. 22/24 GSM/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	TEL WIRELESS.	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 29 of 57
0Y1106221043.PKR	June - July 28, 2011	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA and Band 4/17 LTE USB Modem		Faye 23 01 57
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6.10 PCS GSM Frequency Stability Measurements §2.1055, 24.235; RSS-133 (6.3)

OPERATING FREQUENCY: 1,880,000,000 Hz

CHANNEL: ______661

REFERENCE VOLTAGE: 5 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	5.00	+ 20 (Ref)	1,880,000,015	15	0.000001
100 %		- 30	1,879,999,998	-2	0.000000
100 %		- 20	1,880,000,017	17	0.000001
100 %		- 10	1,880,000,004	4	0.000000
100 %		0	1,879,999,997	-3	0.000000
100 %		+ 10	1,879,999,987	-13	-0.000001
100 %		+ 20	1,879,999,980	-20	-0.000001
100 %		+ 30	1,880,000,005	5	0.000000
100 %		+ 40	1,880,000,014	14	0.000001
100 %		+ 50	1,879,999,979	-21	-0.000001
115 %	5.75	+ 20	1,880,000,017	17	0.000001
BATT. ENDPOINT	4.25	+ 20	1,880,000,009	9	0.000000

Table 6-20. Frequency Stability Data (PCS GSM Mode – Ch. 661)

FCC ID: PKRNVWMC679	PCTEST	FCC Pt. 22/24 GSM/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	WIRELESS.	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 30 of 57
0Y1106221043.PKR	June - July 28, 2011	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA and Band 4/17 LTE USB Mode	em	Fage 50 01 57
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PCS GSM Frequency Stability Measurements (Cont'd) §2.1055, 24.235; RSS-133 (6.3)

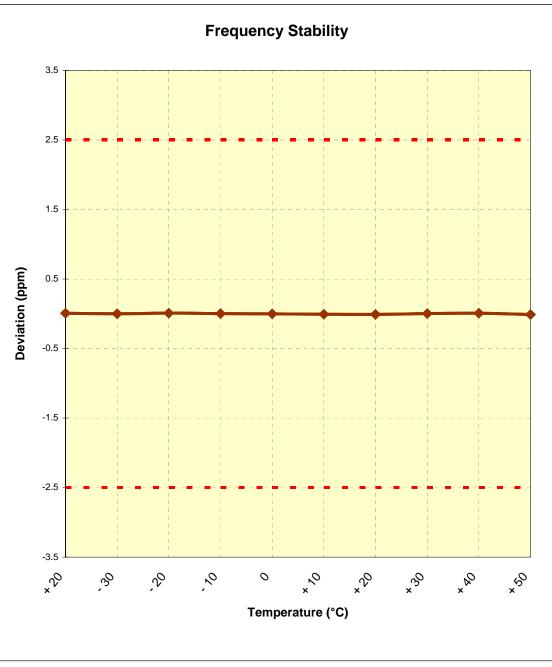


Figure 6-3. Frequency Stability Graph (PCS GSM Mode – Ch. 661)

FCC ID: PKRNVWMC679		FCC Pt. 22/24 GSM/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	Reviewed by: Quality Manager
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6.11 PCS WCDMA Frequency Stability Measurements §2.1055, 24.235; RSS-133 (6.3)

OPERATING FREQUENCY: 1,880,000,000 Hz

CHANNEL: <u>9400</u>

REFERENCE VOLTAGE: 5 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	5.00	+ 20 (Ref)	1,880,000,002	2	0.000000
100 %		- 30	1,880,000,014	14	0.000001
100 %		- 20	1,880,000,006	6	0.000000
100 %		- 10	1,879,999,979	-21	-0.000001
100 %		0	1,879,999,976	-24	-0.000001
100 %		+ 10	1,880,000,007	7	0.000000
100 %		+ 20	1,879,999,997	-3	0.000000
100 %		+ 30	1,879,999,984	-16	-0.000001
100 %		+ 40	1,880,000,004	4	0.000000
100 %		+ 50	1,879,999,987	-13	-0.000001
115 %	5.75	+ 20	1,880,000,010	10	0.000001
BATT. ENDPOINT	4.25	+ 20	1,879,999,988	-12	-0.000001

Table 6-21. Frequency Stability Data (PCS WCDMA Mode – Ch. 9400)

FCC ID: PKRNVWMC679	PCTEST	FCC Pt. 22/24 GSM/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	WIRELESS.	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 32 of 57
0Y1106221043.PKR	June - July 28, 2011	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA and Band 4/17 LTE USB Mode	em	raye 52 01 57
2011 PCTEST Engineering Laboratory, Inc.				REV 1.3GWCFI



PCS WCDMA Frequency Stability Measurements (Cont'd) §2.1055, 24.235; RSS-133 (6.3)

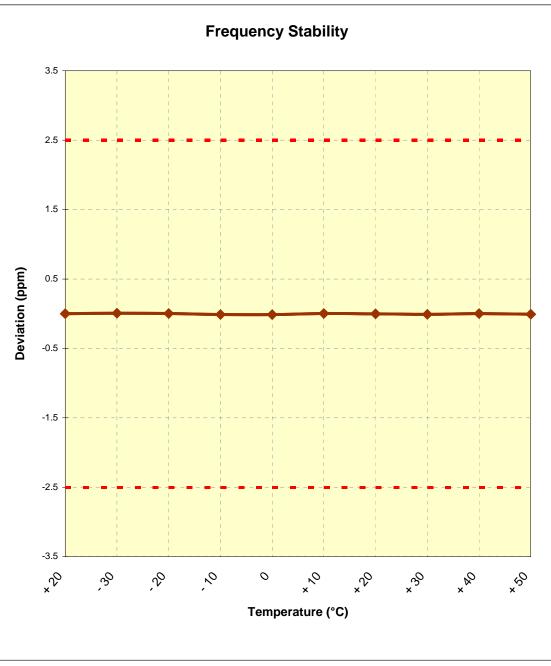


Figure 6-4. Frequency Stability Graph (PCS WCDMA Mode - Ch. 9400)

FCC ID: PKRNVWMC679		FCC Pt. 22/24 GSM/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	Reviewed by:Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 33 of 57
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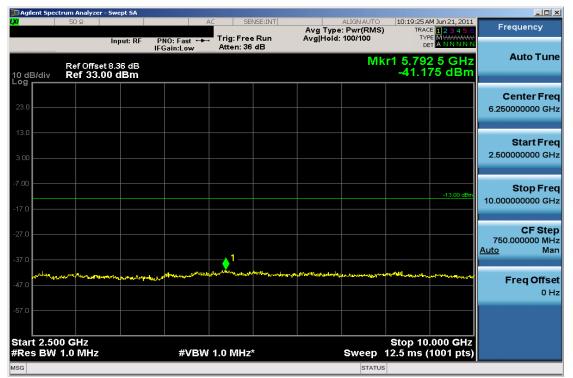
10/26/2010



PLOTS OF EMISSIONS 7.0

🇊 Agilent Spec	trum Analyzer -	Swept SA								_ 🗆 🗵
L)XI	50 Ω	Input: RF	PNO: Fast 🕶	Trig: Fre		Avg Type Avg Hold	ALIGN AUTO e: Pwr(RMS) : 100/100	10:19:50 AM Jun: TRACE 1 2 TYPE MW DET A N	21, 2011 3 4 5 6 WWWW	Frequency
10 dB/div	Ref Offset Ref 33.0	:8.36 dB 0 dBm	IFGain:Low	Atten: 3	6 dB		Mki	1 1.647 9 -36.814 c	GHz	Auto Tune
23.0										Center Freq 1.265000000 GHz
13.0 3.00										Start Fred 30.000000 MHz
-7.00									3.00 dBm	Stop Fred 2.500000000 GHz
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-57.0	ЛНг							Stop 2.500	GHz	
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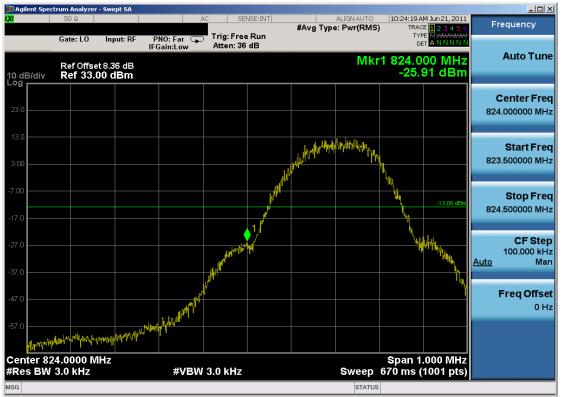


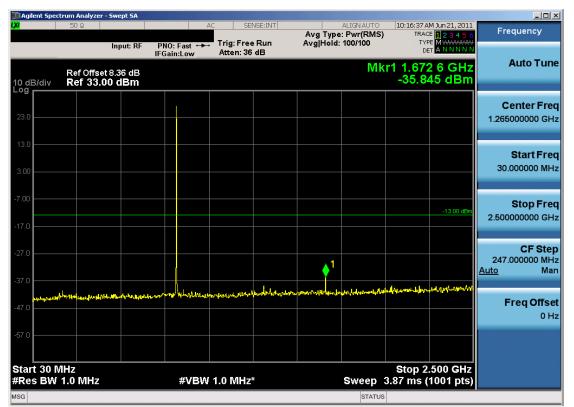


Plot 7-2. Conducted Spurious Plot (Cellular GSM Mode - Ch. 128)

FCC ID: PKRNVWMC679	PCTEST	FCC Pt. 22/24 GSM/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	Reviewed by: Quality Manager		
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Plot 7-3. Band Edge Plot (Cellular GSM Mode - Ch. 128)

Plot 7-4. Conducted Spurious (Cellular GSM Mode - Ch. 190)

FCC ID: PKRNVWMC679		FCC Pt. 22/24 GSM/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	NOVATEL WIRELESS.	Reviewed by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Page 35 of 57		
0Y1106221043.PKR	June - July 28, 2011	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA and Band 4/17 LTE USE	Fage 35 01 57		
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	n Analyzer - Swept SA							×
(X) 5	οΩ Input: RF				Avg Type Avg Hold:	ALIGN AUTO :: Pwr(RMS) 100/100	10:18:48 AM Jun 21, 201: TRACE 1 2 3 4 5 TYPE MWWWW DET A N N N N	Frequency
	ef Offset 8.36 dB ef 33.00 dBm					Mk	r1 5.875 0 GHz -40.523 dBm	Auto Tune
23.0								Center Freq 6.250000000 GHz
3.00								Start Fred 2.500000000 GHz
-7.00							-13.00 dBn	Stop Fred 10.000000000 GH;
27.0			1					CF Step 750.000000 MH <u>Auto</u> Mar
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57.0 Start 2.500 C #Res BW 1.0	GHz MHz	#VBM	1.0 MHz			Sweep	Stop 10.000 GHz 12.5 ms (1001 pts	
ISG		<i>#VBW</i>				STATUS		



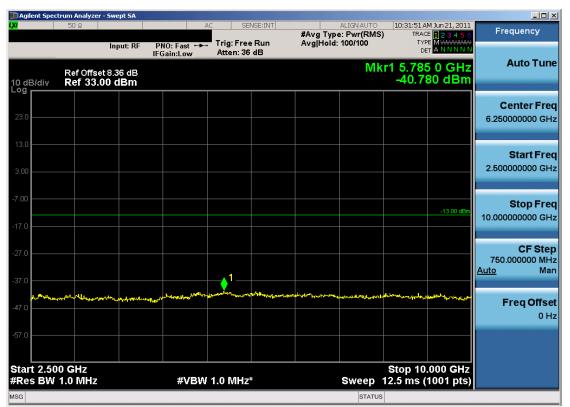


Plot 7-6. Occupied Bandwidth Plot (Cellular GSM Mode - Ch. 190)

FCC ID: PKRNVWMC679		FCC Pt. 22/24 GSM/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	Reviewed by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:	Page 36 of 57		
0Y1106221043.PKR	June - July 28, 2011	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA and Band 4/17 LTE USB Modem	Fage 30 01 57		



	trum Analyzer	- Swept SA								
	50 Ω	Input: RF	PNO: Fast ≁ IFGain:Low			#Avg Typ Avg Hold	ALIGN AUTO e: Pwr(RMS) : 100/100	TRAC	M Jun 21, 2011 E 1 2 3 4 5 6 E M WWWWW T A N N N N N	Frequency
0 dB/div	Ref Offse Ref 33.	et 8.36 dB 00 dBm	IFGain:Low	Atten. 5			Mk	r1 1.69	7 3 GHz 26 dBm	Auto Tun
°g :3.0										Center Fre 1.265000000 GF
3.0										Start Fre 30.000000 MH
7.0									-13.00 dBm	Stop Fre 2.50000000 GF
7.0						• ¹				CF Ste 247.00000 MH <u>Auto</u> Ma
7.0	Manipagyikowa	udiniji, di Progradaje	, Marina La Para and an	gunden han gegeneter	, Jptang Palanta Panta Panta Panta	rha Auryan Milayan Ara	d Auchoren and Anna and Anna and Anna Anna Anna A		han bala (ting al Aray and the	Freq Offs 0 H
tart 30 M	/IHz 1.0 MHz		#VB	W 1.0 MH;			Sweep	Stop 2 3.87 ms.(.500 GHz 1001 pts)	
G							STATUS			



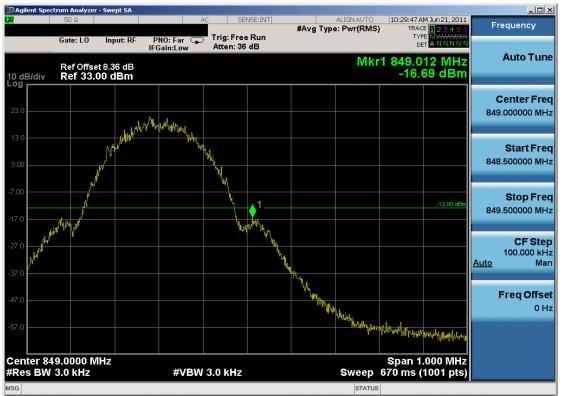
Plot 7-7. Conducted Spurious Plot (Cellular GSM Mode – Ch. 251)

Plot 7-8. Conducted Spurious Plot (Cellular GSM Mode - Ch. 251)

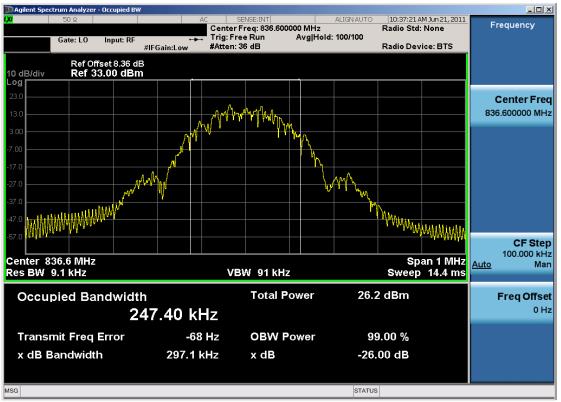
FCC ID: PKRNVWMC679	PCTEST	FCC Pt. 22/24 GSM/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	NOVATEL WIRELESS.	Reviewed by: Quality Manager			
Test Report S/N:	Test Dates:	EUT Type:		Dage 27 of 57			
0Y1106221043.PKR	June - July 28, 2011	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA and Band 4/17 LTE USB	Page 37 of 57				
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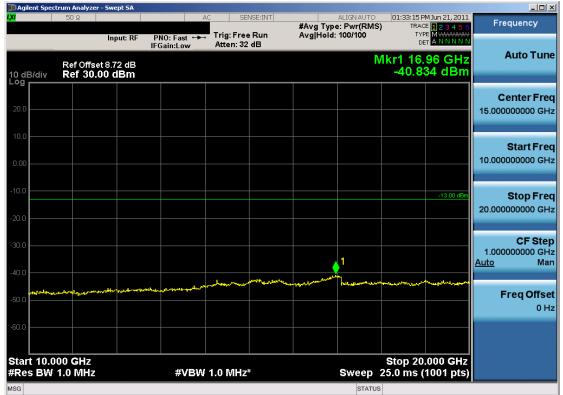
Plot 7-10. Occupied Bandwidth Plot (EDGE850 Mode - Ch. 190)

FCC ID: PKRNVWMC679		FCC Pt. 22/24 GSM/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 38 of 57
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🕅 Agilent Spec	trum Analyzer	- Swept SA								×
XI	50 Ω	Input: RF	PNO: Fast ++ IFGain:Low			#Avg Typ Avg Hold	ALIGN AUTO e: Pwr(RMS) I: 100/100	TRAC	M Jun 21, 2011 E 1 2 3 4 5 6 E M WWWWW T A N N N N N	Frequency
I0 dB/div	Ref Offse Ref 30.0		n odineou				Mkr	1 3.140 -43.5	64 GHz 29 dBm	Auto Tune
20.0										Center Fred 5.015000000 GH;
0.00										Start Free 30.000000 MH
20.0									-13.00 dBm	Stop Free 10.000000000 GH
40.0			1							CF Stej 997.000000 MH <u>Auto</u> Ma
50.0 - 14. 14. 14.	Jon Inden and a start of the second	hundraderader	month interme	hardone-ll-soller	Net and a second second	t _{ered} hoden _{edene} t		ورو بر وس ^{ار} و و مراجع می و می	u ^{tt} () ff ^{ger} te ⁿ ten flager	Freq Offse 0 H
Start 30 N			#\/B\A	/ 1.0 MHz	*		Sweep	Stop 10	.000 GHz 1001 pts)	
SG	NO WITZ						STATUS	iva-ilis (roor pts)	

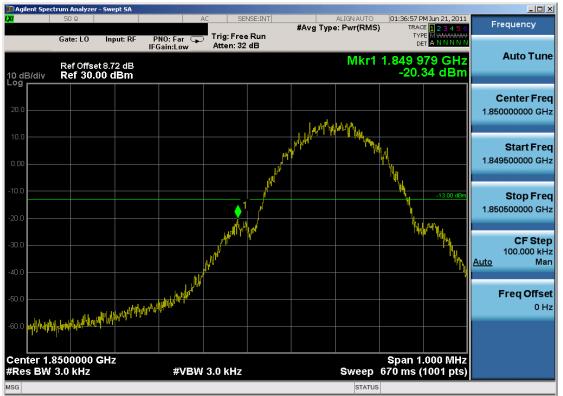




Plot 7-12. Conducted Spurious Plot (PCS GSM Mode - Ch. 512)

FCC ID: PKRNVWMC679		FCC Pt. 22/24 GSM/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	Reviewed by:Quality Manager				
Test Report S/N:	Test Dates:	EUT Type:	Page 39 of 57				
0Y1106221043.PKR	June - July 28, 2011	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA and Band 4/17 LTE USB Modem	Fage 39 01 57				
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Plot 7-13. Band Edge Plot (PCS GSM Mode - Ch. 512)

Plot 7-14. Conducted Spurious Plot (PCS GSM Mode - Ch. 661)

FCC ID: PKRNVWMC679		FCC Pt. 22/24 GSM/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	Reviewed by:Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 40 of 57
0Y1106221043.PKR	June - July 28, 2011	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA and Band 4/17 LTE USB Modem	Fage 40 01 57
© 2011 PCTEST Engineering Lab	vratory Inc	•	DEV 1 3CW/CEI



	trum Analyzer	- Swept SA							
	50 Ω	Input: RF	PNO: Fast ↔ IEGain:Low			ALIGN AUTO be: Pwr(RMS) d: 100/100	TRAC	M Jun 21, 2011 CE 1 2 3 4 5 6 PE M WWWWW T A N N N N N	Frequency
10 dB/div	Ref Offse Ref 30.0	t 8.72 dB 00 dBm	Foanteow	i ktorii 02		N	1kr1 16. -41.3	.99 GHz 08 dBm	Auto Tune
20.0									Center Free 15.000000000 GH
0.00									Start Fre 10.000000000 GH
20.0								-13.00 dBm	Stop Fre 20.000000000 GH
40.0						↓ 1			CF Ste 1.000000000 G⊢ <u>Auto</u> Ma
50.0	anggeneration and the second	and a strategy	and a stand of the		and a spectra the	 and and a second second	iiteosterreteoster	- agent the store prod	Freq Offse 0 H
50.0			#\/D\\			0	Stop 20	.000 GHz	
Res BW	1.0 MHz		#VBW	/ 1.0 MHz		sweep .		1001 pts)	





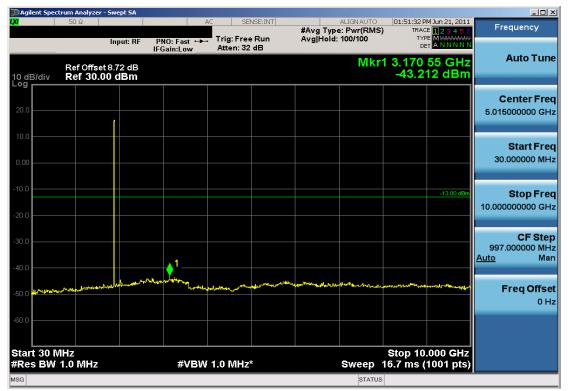
Plot 7-16. Occupied Bandwidth Plot (PCS GSM Mode - Ch. 661)

FCC ID: PKRNVWMC679		FCC Pt. 22/24 GSM/EDGE/WCDMA MEASUREMENT REPORT	Reviewed by:		
	Y	(CERTIFICATION) NOVATEL WIREL	Cality Manager		
Test Report S/N:	Test Dates:	EUT Type:			
0Y1106221043.PKR	June - July 28, 2011	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA and Band 4/17 LTE USB Modem	Page 41 of 57		
© 2011 PCTEST Engineering Lab	aratony Inc	•	DEV 1 3CW/CEI		



🗊 Agilent Spec	ctrum Analyzei	- Swept SA								_ 🗆 ×
X	50 Ω	Input: RF	AC PNO: Fast IFGain:Low			#Avg Typ	ALIGNAUTO e: Pwr(RMS)	09:05:38 AM Jun 22 TRACE 123 TYPE A MW DET SPN	456 Fre	quency
odB/div	Ref Offse Ref 35.	et 8.72 dB 00 dBm						ΔMkr1 0.00 0.03	USI	Auto Tune
30.0					*	ΙΔ2 2				enter Fred 000000 GH:
25.0										Start Free 000000 GH
15.0									1.880	Stop Fre 000000 GH
5.00									Auto 1.	CF Ste j 000000 MH Ma
5.00									F	r eq Offse 0 H
center 1.	88000000	00 GHz	#\/B\M	1.0 MHz			Sween 1	Span (000 ms (1001) Hz	
SG	ITY WITZ		<i></i>	1.0 10112			STATUS	1	p(3)	





Plot 7-18. Conducted Spurious Plot (PCS GSM Mode - Ch. 810)

FCC ID: PKRNVWMC679	PCTEST	FCC Pt. 22/24 GSM/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	Reviewed by:Quality Manager					
Test Report S/N:	Test Dates:	EUT Type:	Dogo 42 of 57					
0Y1106221043.PKR	June - July 28, 2011	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA and Band 4/17 LTE USB Modem	Page 42 of 57					
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	trum Analyzer	- Swept SA								
	50 Ω	Input: RF	PNO: Fast ↔► IEGain:Low			#Avg Typ Avg Hold	ALIGN AUTO e: Pwr(RMS) : 100/100	TRAC	M Jun 21, 2011 E 1 2 3 4 5 6 PE M WWWWW T A N N N N N	Frequency
10 dB/div	Ref Offse Ref 30.0		IFGam.Low	Atten. 02			Ν	1kr1 16. -41.0	95 GHz 12 dBm	Auto Tune
20.0										Center Free 15.000000000 GH
0.00										Start Fre 10.000000000 GH
20.0									-13.00 dBm	Stop Fre 20.000000000 GH
40.0							1			CF Ste 1.000000000 G⊢ <u>Auto</u> Ma
50.0	and the state of the	nd Arnover and		and the part of the part	and the second	nand frances and the	The second second	***************************************	Munga at Ulana	Freq Offse 0 ⊢
50.0 Start 10.0	000 GHz 1.0 MHz		#\(B)//	1.0 MHz	*		Swoon		.000 GHz	
			#48//	T.U IVIHZ			Sweep		1001 pts)	





FCC ID: PKRNVWMC679		FCC Pt. 22/24 GSM/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 43 of 57
0Y1106221043.PKR	June - July 28, 2011	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA and Band 4/17 LTE USB Modem	raye 43 01 57
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Plot 7-21. Occupied Bandwidth Plot (EDGE1900 Mode - Ch. 661)

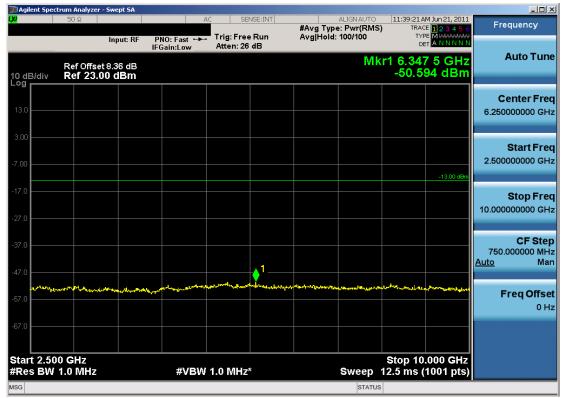


FCC ID: PKRNVWMC679		FCC Pt. 22/24 GSM/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	NOVATEL WIRELESS.	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 44 of 57
0Y1106221043.PKR	June - July 28, 2011	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA and Band 4/17 LTE USB	3 Modem	r aye 44 01 57



	50 Ω			AC SENSE:	TA LTT	ALIGN AUTO	11,00,50	AM Jun 21, 2011	
	20 22	Input: RF	PNO: Fast ↔►		#Avg	Type: Pwr(RM Hold: 100/100	S) TRA	CE 123456 PE MWWWWWW PET A N N N N N	Frequency
0 dB/div		et 8.36 dB 00 dBm	I Guilleow			М	kr1 1.65 -42.2	5 3 GHz 43 dBm	Auto Tun
3.0									Center Fre 1.265000000 GH
.00								-13.00 dBm	Start Fre 30.000000 M⊦
7.0									Stop Fre 2.500000000 G⊦
7.0					•	1			CF Ste 247.000000 M⊦ <u>Auto</u> Ma
7.0	him alaym	anghadanah/	ishneed have and	they all styles and the plants	Wydlaeton angwlwi	annan ing an Unan	entrefilient officies	ntrajinaljogi statagante	Freq Offs 0 ⊦
tart 30 M Res BW 7			#VBM	/ 1.0 MHz*		Sweep	Stop 2	2.500 GHz (1001 pts)	
G						STAT			

Plot 7-23. Conducted Spurious Plot (Cellular WCDMA Mode – Ch. 4132)



Plot 7-24. Conducted Spurious Plot (Cellular WCDMA Mode – Ch. 4132)

FCC ID: PKRNVWMC679	PCTEST	FCC Pt. 22/24 GSM/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	ELESS.	Reviewed by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:		Page 45 of 57		
0Y1106221043.PKR	June - July 28, 2011	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA and Band 4/17 LTE USB Modem	M/GPRS/EDGE/WCDMA/HSPA and Band 4/17 LTE USB Modem			
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🚺 Agilent Spec		- Swept SA								_ 🗆 ×
	50 Ω	Input: RF	PNO: Far 🖵 IFGain:Low			#Avg Typ	ALIGN AUTO e: Pwr(RMS)	11:41:50 AM Jun TRACE 1 2 TYPE MY DET A M		Frequency
10 dB/div	Ref Offse Ref 23.0						Mkr	1 823.972 -29.24	MHz dBm	Auto Tune
13.0										Center Freq 824.000000 MHz
7.00						, le and a second second	99 ⁹⁹⁹⁴⁹ 999 64 - 9 ⁹ 6 - 46 - 99		13.00 dBm	Start Fred 822.000000 MHz
-17.0					1					Stop Fred 826.000000 MHz
37.0	and the second	anderson of the fight of the sound developments of the fight of the sound developments of the sound development	Marine and a second	\sim	V				A	CF Step 400.000 kH; uto Mar
57.0										Freq Offse 0 H
Center 82 Res BW		z	#VBW	47 kHz			#Sweep	Span 4.000 3.00 s (100) MHz 1 pts)	
ISG							STATUS			



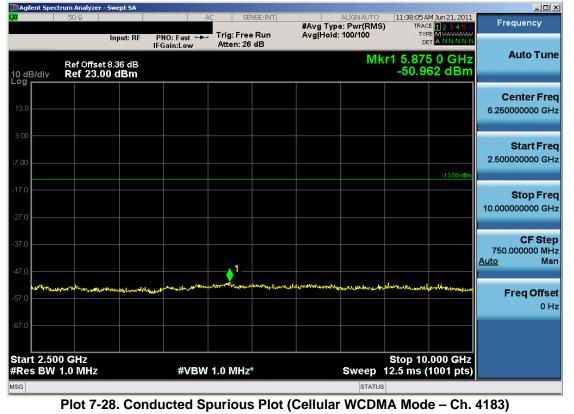


FCC ID: PKRNVWMC679	PCTEST	FCC Pt. 22/24 GSM/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	NOVATEL WIRELESS.	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 46 of 57
0Y1106221043.PKR	June - July 28, 2011	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA and Band 4/17 LTE US	SB Modem	Fage 40 01 57



Agilent Spec	trum Analyzer	- Swept SA				1				
	50 Ω	Input: RF	PNO: Fast ↔			#Avg Type Avg Hold:	ALIGN AUTO e: Pwr(RMS 100/100) TRACE	1 Jun 21, 2011 1 2 3 4 5 6 M WWWWW A N N N N N	Frequency
0 dB/div	Ref Offse Ref 23.0		II Guilleow				Mk	r1 1.670 -40.74	1 GHz 0 dBm	Auto Tun
3.0										Center Fre 1.265000000 G⊦
.00									-13.00 dBm	Start Fre 30.000000 M⊦
7.0										Stop Fre 2.50000000 G⊦
7.0						1				CF Ste 247.000000 MH <u>Auto</u> Ma
7.0 1999-04-14-1 7.0	Kanalan Mara	door als Abbyljilians	water Instantion	ananady taalinta	partiasofel opposition	an a	ng panguna pawa	Ŋ <mark>₺</mark> ĨĨħĸŧġĸIJġĦĿţĸŔĹġĸIJĸŔ	ana ang ang ang ang ang ang ang ang ang	Freq Offs 0 F
7.0 tart 30 M								Stop 2.	500 GHz	
Res BW	1.0 MHz		#VBW	/ 1.0 MHz*	;		Sweep	3.87 ms (1	001 pts)	
-							STATUS	,		

Plot 7-27. Conducted Spurious Plot (Cellular WCDMA Mode - Ch. 4183)

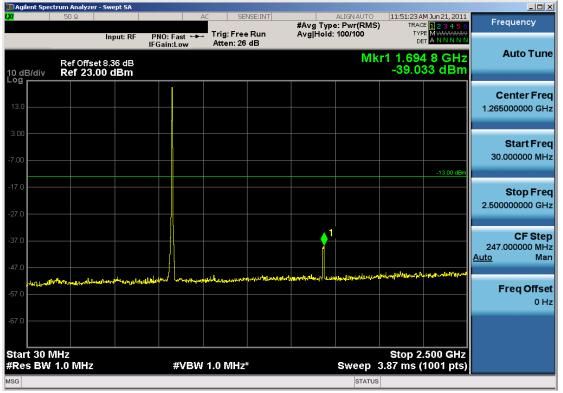


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Test Report S/N: Test Dates: EUT Type:	Page 47 of 57	
0Y1106221043.PKR June - July 28, 2011 850/1900 GSM/GPRS/EDGE/WCDMA/HSPA and Band 4/17 LTE USB Modem	Faye 41 01 57	



Agilent Spectrum Analyzer - Occupied BW					
50 Ω		SENSE:INT Freq: 836.600000 MHz		.:36:23 AM Jun 21, 2011 lio Std: None	Frequency
Input: RF	#IEGain:Low #Atten:		d: 100/100 Bad	lio Device: BTS	
Ref Offset 8.36 dl					
0 dB/div Ref 23.00 dBm	р 1				
og					
13.0					Center Fre
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7.00					
17.0					
لىر			\		
37.0			· · · · · · · · · · · · · · · · · · ·	m	
47.0					
57.0					
57.0					CF Ste
enter 836.6 MHz				Span 10 MHz	1.000000 MI
tes BW 91 kHz	VE	3W 910 kHz	Sw	eep 1.467 ms	Auto Ma
Occupied Bandwidt	h	Total Power	22.5 dE	3m	Freq Offs
	1566 MHz				0 H
Transmit Freq Error	-6.661 kHz	OBW Power	99.00	%	
x dB Bandwidth	4.668 MHz	x dB	-26.00	dB	
SG			STATUS		

Plot 7-29. Occupied Bandwidth Plot (Cellular WCDMA Mode - Ch. 4183)

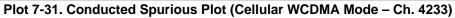


Plot 7-30. Conducted Spurious Plot (Cellular WCDMA Mode - Ch. 4233)

FCC ID: PKRNVWMC679	PCTEST	FCC Pt. 22/24 GSM/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	Reviewed by:Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 48 of 57
0Y1106221043.PKR	June - July 28, 2011	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA and Band 4/17 LTE USB Modem	Fage 46 01 57
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📜 Agilent Spec	trum Analyzer	- Swept SA								<u>_ 0 ×</u>
	50 Ω	Input: RF	PNO: Fast 🔸			#Avg Typ Avg Hold:	ALIGN AUTO e: Pwr(RMS : 100/100	TRACE	1 Jun 21, 2011 1 2 3 4 5 6 MWWWWW A N N N N N	Frequency
10 dB/div	Ref Offse Ref 23.0		IFGain:Low	Atten: 26			Mk	r1 5.845		Auto Tune
13.0										Center Free 6.250000000 GH
7.00									-13.00 dBm	Start Fre 2.500000000 GH
27.0										Stop Fre 10.000000000 GH
37.0 47.0 				1						CF Ste 750.000000 MH <u>Auto</u> Ma
57.0	anter and a star	withen the test of the second	Here Hereit Jan Jan Brage	hallow a start and the second	hand a specific and	an a	ſŦĨ _{ſĸŦ} ĸŊġĸĨŀŧŦţĸſĸĕſĬŴ	wert the framework and	uting many and a source of the	Freq Offse 0 H
67.0 Start 2.50 Res BW			#VBW	1.0 MHz	*		Sweep	Stop 10. 12.5 ms (1	000 GHz	
SG			<i>"</i> •Ви				STATUS		oo i ptsj	



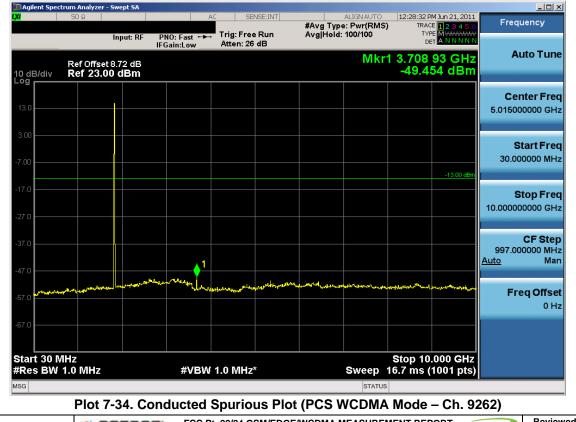


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FCC ID: PKRNVWMC679	A PCTEST	FCC Pt. 22/24 GSM/EDGE/WCDMA MEASUREMENT REPORT		Reviewed by:
	····· Y	(CERTIFICATION)	NOVATEL WIRELESS.	Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 49 of 57
0Y1106221043.PKR	June - July 28, 2011	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA and Band 4/17 LTE US	B Modem	Fage 49 01 57
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	trum Analyzer	- Swept SA							_0
	50 Ω	Input: RF	A PNO: Far 🍙 IFGain:Low	C SE Trig: Free Atten: 26		ALIGN AUTO :: Pwr(RMS)	11:50:49 AM TRACE TYPE DET	Jun 21, 2011 1 2 3 4 5 6 MWWWWWW A N N N N N	Frequency
0 dB/div	Ref Offse Ref 23.0	t 8.36 dB 00 dBm				Mkr	1 850.07 -35.4	2 MHz 2 dBm	Auto Tur
3.0									Center Fre 852.000000 MH
00								-13.00 dBm	Start Fre 850.000000 MH
7.0									Stop Fre 854.000000 MF
7.0				سر معرف المحمد المحمد الم					CF Ste 400.000 kH Auto Ma
7.0									Freq Offs 0 F
	.000 MHz 100 kHz		#VBM	100 kHz		#Sween	top 854.0 3.00 s (1	00 MHz	
G	100 KHZ		<i></i>			STATUS	0.00 3 (1)	501 pt3)	

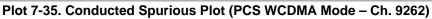
Plot 7-33. 4MHz Span Plot (Cellular WCDMA Mode – Ch. 4233)



FCC ID: PKRNVWMC679		FCC Pt. 22/24 GSM/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 50 of 57
0Y1106221043.PKR	June - July 28, 2011	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA and Band 4/17 LTE USB Modem	Fage 50 01 57



	trum Analyzer	- Swept SA								
u I	50 Ω	Input: RF	PNO: Fast ↔ IFGain:Low			#Avg Typ Avg Hold:	ALIGN AUTO e: Pwr(RMS) : 100/100	TRAC	M Jun 21, 2011 E 1 2 3 4 5 6 DE M WWWWW T A N N N N N	Frequency
0 dB/div	Ref Offse Ref 23.0	t 8.72 dB 00 dBm	I Guineow				ľv	1kr1 16. -46.4	92 GHz 64 dBm	Auto Tun
13.0										Center Fre 15.000000000 GH
7.00									-13.00 dBm	Start Fre 10.000000000 GH
17.0 27.0										Stop Fre 20.000000000 GH
37.0 							1			CF Ste 1.00000000 G⊦ <u>Auto</u> Ma
7.0	sert rales are	ANTOCO AND	And the second s	and the second second			hand had the second	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	nter ann thu special sec	Freq Offse 0 ⊦
tart 10.0	00 GHz 1.0 MHz		#VBW	1.0 MHz	*		Sween	Stop 20.	.000 GHz 1001 pts)	
G			<i></i>				STATUS		roor pts)	





FCC ID: PKRNVWMC679	A PCTEST	FCC Pt. 22/24 GSM/EDGE/WCDMA MEASUREMENT REPORT	Reviewed by:
	···· V ·······························	(CERTIFICATION) NOVATEL WIRELESS.	Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 51 of 57
0Y1106221043.PKR	June - July 28, 2011	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA and Band 4/17 LTE USB Modem	Fage 51 01 57
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	trum Analyzer ·	- Swept SA							>
<u>u</u>	50 Ω	Input: RF	PNO: Fast ⊂ IFGain:Low			ALIGNAUTO : Pwr(RMS)	01:07:50 PM TRACE TYPE DE	M Jun 21, 2011 1 2 3 4 5 6 E M WWWWW T A N N N N N	Frequency
0 dB/div	Ref Offset Ref 23.0					Mkr1	1.849 0 -16.8	00 GHz 38 dBm	Auto Tune
13.0									Center Free 1.847000000 GH
3.00 .00								-13.00 c 1 /	Start Free 1.845000000 GH
27.0						 			Stop Free 1.849000000 GH
7.0									CF Ste 400.000 k⊢ <u>Auto</u> Ma
7.0									FreqOffse 0 ⊢
tart 1.84	5000 GHz 1.0 MHz		#VB	₩ 1.0 MH	z	St #Sweep	op 1.849 3.00 s (′	000 GHz 1001 pts)	
SG						STATUS			



Plot 7-37. 4MHz Span Plot (PCS WCDMA Mode - Ch. 9262)

 Test Report S/N:
 Test Dates:
 EUT Type:

 0Y1106221043.PKR
 June - July 28, 2011
 850/1900 GSM/GPRS/EDGE/WCDMA/HSPA and Band 4/17 LTE USB Modem

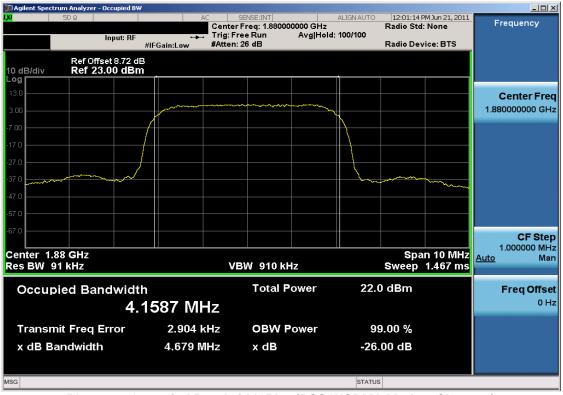
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Agilent Spectr		- Swept SA								
	50 Ω	Input: RF	PNO: Fast ↔ IFGain:Low			#Avg Typ Avg Hold	ALIGN AUTO e: Pwr(RMS) : 100/100	TRAC	M Jun 21, 2011 E 1 2 3 4 5 6 PE M WWWWW ET A N N N N N	Frequency
0 dB/div	Ref Offset Ref 23.0						Μ	kr1 16. -46.4	.97 GHz 05 dBm	Auto Tun
13.0										Center Fre 15.000000000 GH
.00									-13.00 dBm	Start Fre 10.000000000 GH
7.0										Stop Fre 20.000000000 GH
7.0							1			CF Ste 1.00000000 G⊦ <u>Auto</u> Ma
7.0	man	_{VI} ndt#M _{RN} Y-m++++++	Ababa Aparter and a second	an far an		northing and a start a	L _{grigend} erter ter etiter	Sana and States of States	in a carry in the state of the	Freq Offs 0 ⊦
7.0 tart 10.00 Res BW 1			#VBW	1.0 MHz	*		Sweep 2	Stop 20	.000 GHz 1001 pts)	
Res BW 1			#VBW	1.0 MHz	*		Sweep 2	25.0 ms (1001 pts)	

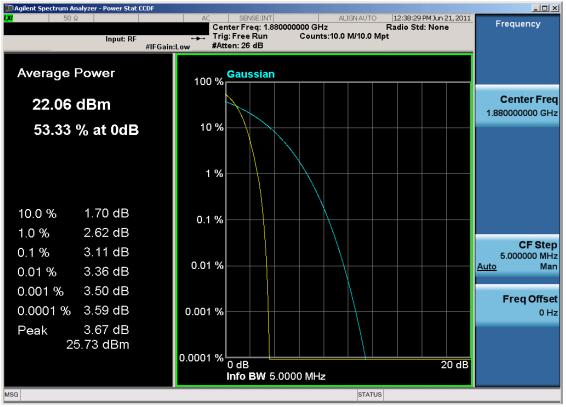




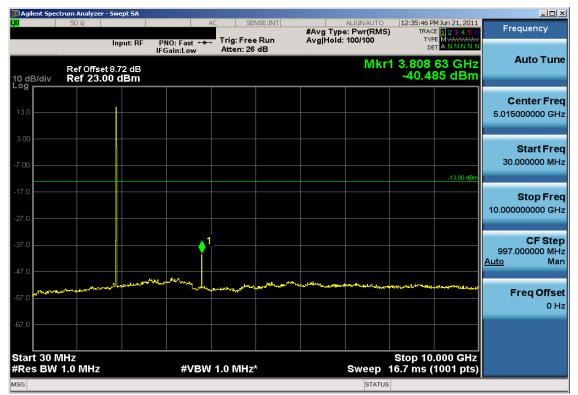
Plot 7-40. Occupied Bandwidth Plot (PCS WCDMA Mode - Ch. 9400)

FCC ID: PKRNVWMC679		FCC Pt. 22/24 GSM/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	Reviewed by: Quality Manager				
Test Report S/N:	Test Dates:	EUT Type:	Page 53 of 57				
0Y1106221043.PKR	June - July 28, 2011	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA and Band 4/17 LTE USB Modem	Fage 33 01 57				
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Plot 7-41. Peak-Average Ratio Plot (PCS WCDMA Mode - Ch. 9400)



Plot 7-42. Conducted Spurious Plot (PCS WCDMA Mode - Ch. 9538)

FCC ID: PKRNVWMC679		FCC Pt. 22/24 GSM/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	EL WIRELESS.	Reviewed by: Quality Manager				
Test Report S/N:	Test Dates:	EUT Type:	Page 54 of 57					
0Y1106221043.PKR	June - July 28, 2011	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA and Band 4/17 LTE USB Mod	dem	Fage 54 01 57				
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10/26/2010



Agilent Spec	trum Analyze 50 Ω	r - Swept SA		AC SE	ENSE:INT		ALIGNAUTO	10,06,00 5	M Jun 21, 2011	
	20 22	Input: RF	PNO: Fast ↔ IFGain:Low		e Run	#Avg Typ Avg Hold	e: Pwr(RMS)		E 1 2 3 4 5 6 M M M M M M M M M M M M M M M M M M M	Frequency
0 dB/div og		et 8.72 dB 00 dBm	II Gam.cow				N	1kr1 17. -46.4	03 GHz 60 dBm	Auto Tun
3.0										Center Fre 15.000000000 GH
.00									-13.00 dBm	Start Fre 10.000000000 GH
7.0										Stop Fre 20.000000000 GH
7.0							• 1			CF Ste 1.00000000 GF <u>Auto</u> Ma
7.0	and the state of the	in and the second s	and a stand of the	and a second	ar and a start	P. A. and P. A. Barris	hat you we had not	<i>سراليوليوني منيعة المريز والمح</i> ال	The Public Contract of Contrac	Freq Offso 0 ⊦
tart 10.0	00 GHz 1.0 MHz		#VBW	1.0 MHz	,*		Sween	Stop 20	.000 GHz 1001 pts)	
G			<i>"</i> 021	1.0 10112			STATUS		1001 pt0/	





Plot 7-44. Band Edge Plot (PCS WCDMA Mode - Ch. 9538)

FCC ID: PKRNVWMC679	PCTEST	FCC Pt. 22/24 GSM/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	Reviewed by: Quality Manager					
Test Report S/N:	Test Dates:	EUT Type:	Page 55 of 57					
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	1.0 MHz		#VBW	/ 1.0 MHz			#Sweep	3.00 s (′	000 GH2 1001 pts)		
tart 1.91	1000 GH:	7					St	on 1.915	000 GHz		
57.0											
											0 H
7.0										Fr	eq Offs
7.0										<u>Auto</u>	IVIC
7.0											00.000 kł Ma
											CF Ste
7.0										1.9150	00000 GI
										5	Stop Fre
1									-13.00 dBm		
											Start Fre
.00											
3.0										1.9130	00000 GI
											nter Fre
) dB/div og r	Ref Offse Ref 23.0							-16.94	l4 dBm		
			IFGain:Low	Atten: 26	GB		Mkr1		00 GHz	A	uto Tur
		Input: RF	PNO: Fast 🖵	Trig: Fre		#Avg lype	: Pwr(RMS)	TYP	123456 MWWWWW ANNNN	1100	laonoy
	50 Ω			AC SE	NSE:INT		ALIGN AUTO	01:09:26 PM	1 Jun 21, 2011	Fred	uency

Plot 7-45. 4MHz Span Plot (PCS WCDMA Mode – Ch. 9538)

FCC ID: PKRNVWMC679	PCTEST	FCC Pt. 22/24 GSM/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	Reviewed by:Quality Manager			
Test Report S/N:	Test Dates:	EUT Type:	Page 56 of 57			
0Y1106221043.PKR	June - July 28, 2011	850/1900 GSM/GPRS/EDGE/WCDMA/HSPA and Band 4/17 LTE USB Modem	Fage 50 01 57			
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CONCLUSION 8.0

The data collected relate only to the item(s) tested and show that the Novatel 850/1900 GSM/GPRS/EDGE/WCDMA/HSPA and Band 4/17 LTE USB Modem FCC ID: PKRNVWMC679 complies with all the requirements of Parts 2, 22, and 24 of the FCC rules and RSS-132 and RSS-133 of the Industry Canada rules.

FCC ID: PKRNVWMC679	PCTEST	FCC Pt. 22/24 GSM/EDGE/WCDMA MEASUREMENT REPORT (CERTIFICATION)	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 57 of 57
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10/26/2010