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

Applicant Name:
Panasonic Corporation of North America
One Panasonic Way, 4B-8
Secaucus, NJ 07094
United States

Date of Testing:
July 9-12, 2010
Test Site/Location:
PCTEST Lab., Columbia, MD, USA
Test Report Serial No.:
0Y1006151046.ACJ

FCC ID:	**ACJ9TGCF-S91**
IC CERTIFICATION NO.:	**216A-CFS91**
APPLICANT:	**PANASONIC CORPORATION OF NORTH AMERICA**

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:	Toughbook Model: CF-S9
Model(s):	CF-S9
IC Model(s):	CF-S91
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) 824.70 - 848.31MHz (Cell. CDMA) / 1851.25 - 1908.75MHz (PCS CDMA)
Max. RF Output Power:	1.114 W ERP Cell. GSM (30.47 dBm) / 1.445 W EIRP PCS GSM (31.6 dBm) 0.301 W ERP Cell. WCDMA (24.78 dBm) / 0.603 W EIRP PCS WCDMA (27.8 dBm) 0.336 W ERP Cell. CDMA (25.26 dBm) / 0.514 W EIRP PCS CDMA (27.11 dBm) 0.434 W ERP EDGE850 (26.37 dBm) 0.352 W EIRP EDGE1900 (25.47 dBm)
Emission Designator(s):	246KGXW (Cellular GSM), 240KGXW (PCS GSM) 245KG7W (EDGE850), 240KG7W (EDGE1900) 4M18F9W (Cellular WCDMA), 4M19F9W (PCS WCDMA) 1M27F9W (Cellular CDMA), 1M27F9W (PCS CDMA)
Test Device Serial No.:	*identical prototype* [S/N: 0DKSA00513]

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

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TABLE OF CONTENTS

FCC PART 22 & 24 MEASUREMENT REPORT 3

1.0 INTRODUCTION 4
- 1.1 SCOPE 4
- 1.2 TESTING FACILITY 4

2.0 PRODUCT INFORMATION 5
- 2.1 EQUIPMENT DESCRIPTION 5
- 2.2 EMI SUPPRESSION DEVICE(S)/MODIFICATIONS 5
- 2.3 LABELING REQUIREMENTS 5

3.0 DESCRIPTION OF TESTS 6
- 3.1 MEASUREMENT PROCEDURE 6
- 3.2 OCCUPIED BANDWIDTH EMISSION LIMITS 6
- 3.3 CELLULAR - BASE FREQUENCY BLOCKS 6
- 3.4 CELLULAR - MOBILE FREQUENCY BLOCKS 7
- 3.5 PCS - BASE FREQUENCY BLOCKS 7
- 3.6 PCS - MOBILE FREQUENCY BLOCKS 7
- 3.7 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL 7
- 3.8 RADIATED POWER AND RADIATED SPURIOUS EMISSIONS 8
- 3.9 PEAK-AVERAGE RATIO 8
- 3.10 FREQUENCY STABILITY / TEMPERATURE VARIATION 9

4.0 TEST EQUIPMENT CALIBRATION DATA 10

5.0 SAMPLE CALCULATIONS 11

6.0 TEST RESULTS 12
- 6.1 SUMMARY 12
- 6.2 EFFECTIVE RADIATED POWER OUTPUT DATA 13
- 6.3 EQUIVALENT ISOTROPIC RADIATED POWER OUTPUT DATA 14
- 6.4 CELLULAR GSM RADIATED MEASUREMENTS 15
- 6.5 CELLULAR WCDMA RADIATED MEASUREMENTS 18
- 6.6 CELLULAR CDMA RADIATED MEASUREMENTS 21
- 6.7 PCS GSM RADIATED MEASUREMENTS 24
- 6.8 PCS WCDMA RADIATED MEASUREMENTS 27
- 6.9 PCS CDMA RADIATED MEASUREMENTS 30
- 6.10 CELLULAR GSM FREQUENCY STABILITY MEASUREMENTS 33
- 6.11 CELLULAR WCDMA FREQUENCY STABILITY MEASUREMENTS 35
- 6.12 CELLULAR CDMA FREQUENCY STABILITY MEASUREMENTS 37
- 6.13 PCS GSM FREQUENCY STABILITY MEASUREMENTS 39
- 6.14 PCS WCDMA FREQUENCY STABILITY MEASUREMENTS 41
- 6.15 PCS CDMA FREQUENCY STABILITY MEASUREMENTS 43
- 6.16 RECEIVER SPURIOUS EMISSIONS 45

7.0 PLOTS OF EMISSIONS 46

8.0 CONCLUSION 80

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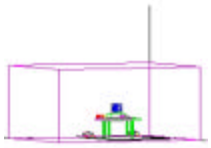

MEASUREMENT REPORT
FCC Part 22 & 24

§2.1033 General Information

APPLICANT:	Panasonic Corporation of North America
APPLICANT ADDRESS:	One Panasonic Way, 4B-8 Secaucus, NJ 07094, 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)
BASE MODEL :	CF-S9
FCC ID:	ACJ9TGCF-S91
FCC CLASSIFICATION:	PCS Licensed Transmitter (PCB)
EMISSION DESIGNATOR(S):	246KGXW (Cellular GSM), 240KGXW (PCS GSM) 245KG7W (EDGE850), 240KG7W (EDGE1900) 4M18F9W (Cellular WCDMA), 4M19F9W (PCS WCDMA) 1M27F9W (Cellular CDMA), 1M27F9W (PCS CDMA)
MODE:	GSM/EDGE/CDMA/WCDMA
FREQUENCY TOLERANCE:	±0.00025 % (2.5 ppm)
Test Device Serial No.:	0DKSA00513 ☐ Production ☒ Pre-Production ☐ Engineering
DATE(S) OF TEST:	July 9-12, 2010
TEST REPORT S/N:	0Y1006151046.ACJ

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'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 28, 2009.

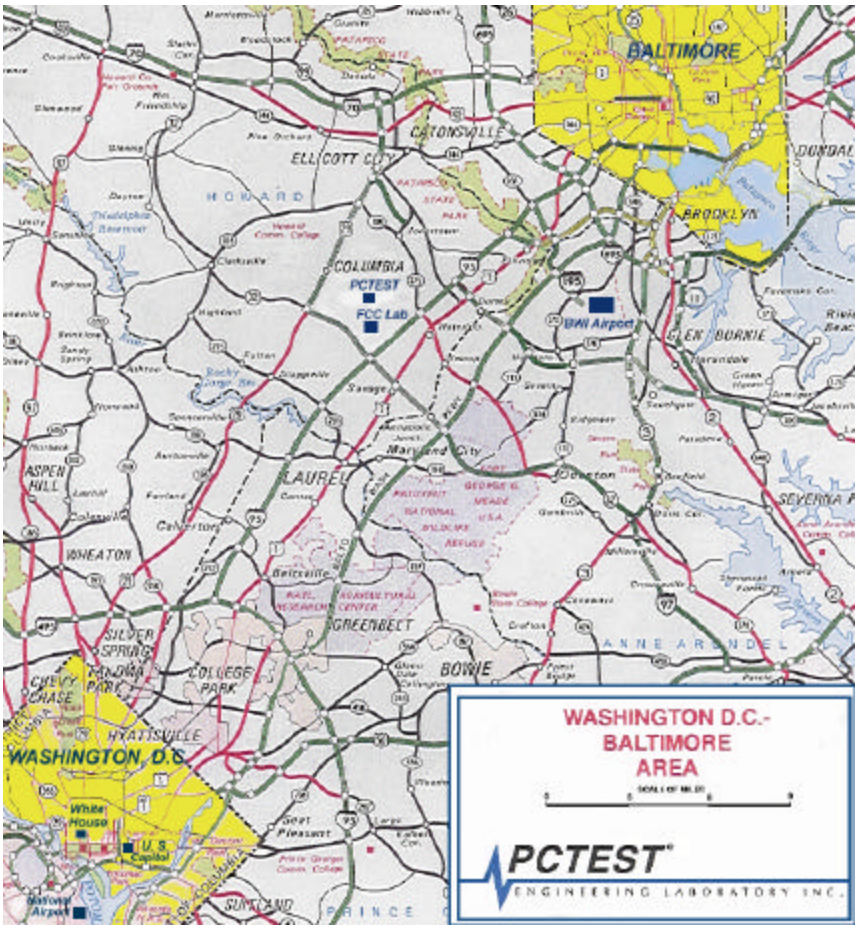

Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Panasonic Toughbook Model: CF-S9 FCC ID: ACJ9TGCF-S91**. The EUT consisted of the following component(s):

Manufacturer / Base Model	FCC ID	Description
Panasonic / Model: CF-S9	ACJ9TGCF-S91	Toughbook Model: CF-S9
Intel / Model: 622ANHMW	PD9622ANH, PD9622BGH	WLAN Module
Alps / Model: UGNZ4	N/A	Bluetooth Module
Sierra Wireless / Model: GOBI2000	N7NGOBI2	GSM/EDGE/WCDMA/CDMA Module

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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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.

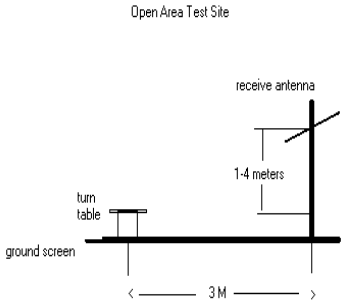


Figure 3-1. Diagram of 3-meter outdoor test range

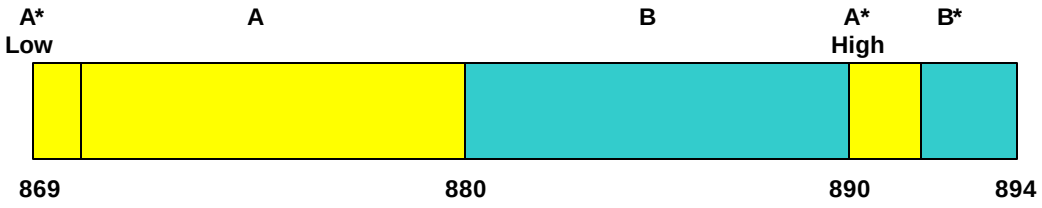
Deviation from Measurement Procedure……..None

3.2 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



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*)

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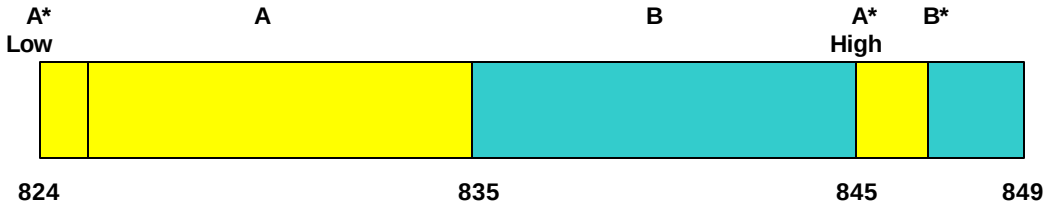
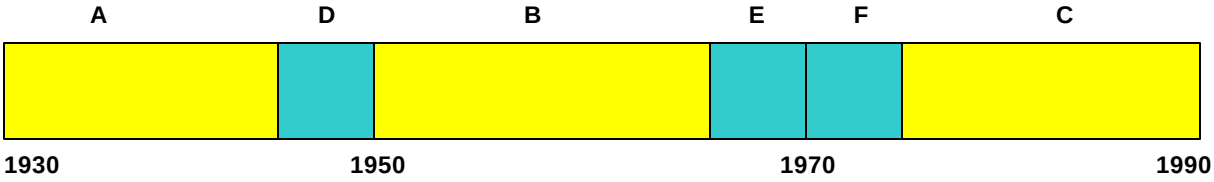
3.4 Cellular - Mobile Frequency Blocks



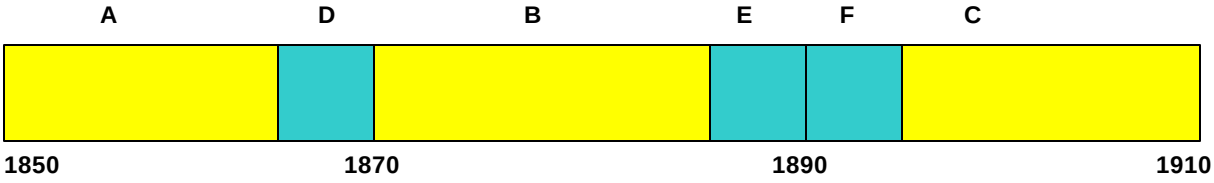
BLOCK 1: 824 – 835 MHz (A* Low + A)
BLOCK 2: 835 – 845 MHz (B)
BLOCK 3: 845 – 846.5 MHz (A* High)
BLOCK 4: 846.5 – 849 MHz (B*)

3.5 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)

3.6 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)

3.7 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 of the fundamental emission of the transmitter may be employed. 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, 22.917(a), 22.913(a), 24.232(c), 24.238(a); RSS-132 (4.5.1), RSS-133 (6.5.1)

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

For radiated power measurements below 1GHz, 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. The conducted power at the terminals of the dipole is measured. The ERP is recorded.

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

For radiated power measurements above 1GHz, 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. 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.

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. 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 spectrum analyzer reading. This level is recorded. 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. In CDMA mode, this device was tested under all R.C.s and S.O.s and the worst case is reported with RC3/SO55 with "All Up" power control bits.

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 CDMA and 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.

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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 ±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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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.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	12/2/2009	Annual	12/2/2010	3439A02645
Agilent	8449B	(1-26.5GHz) Pre-Amplifier	12/2/2009	Annual	12/2/2010	3008A00985
Agilent	85650A	Quasi-Peak Adapter	12/2/2009	Annual	12/2/2010	3303A01872
Agilent	85650A	Quasi-Peak Adapter	3/30/2010	Annual	3/30/2011	2043A00301
Agilent	8566B	(100Hz-22GHz) Spectrum Analyzer	12/2/2009	Annual	12/2/2010	3638A08713
Agilent	8648D	(9kHz-4GHz) Signal Generator	9/19/2009	Biennial	9/19/2011	3613A00315
Agilent	E4407B	ESA Spectrum Analyzer	3/30/2010	Annual	3/30/2011	US39210313
Agilent	E4432B	ESG-D Series Signal Generator	9/10/2009	Annual	9/10/2010	US40053896
Agilent	E4448A	PSA (3Hz-50GHz) Spectrum Analyzer	10/1/2009	Annual	10/1/2010	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	3/30/2010	Annual	3/30/2011	MY45470194
Agilent	E8267C	Vector Signal Generator	9/29/2009	Biennial	9/29/2011	US42340152
Agilent	N9020A	MXA Signal Analyzer	10/22/2009	Annual	10/22/2010	US46470561
Compliance Design	Roberts	Dipole Set	4/7/2010	Biennial	4/7/2012	146
Compliance Design	Roberts	Dipole Set	4/7/2010	Biennial	4/7/2012	147
Emco	3115	Horn Antenna (1-18GHz)	10/14/2009	Biennial	10/14/2011	9704-5182
Emco	3115	Horn Antenna (1-18GHz)	4/8/2010	Biennial	4/8/2012	9205-3874
Espec	ESX-2CA	Environmental Chamber	4/1/2010	Annual	4/1/2011	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	6/21/2010	Annual	6/21/2011	833855/0010
Rohde & Schwarz	CMU200	Base Station Simulator	9/4/2009	Annual	9/4/2010	109892
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
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	7/17/2009	Biennial	7/17/2011	A051107
Rohde & Schwarz	CMU200	Base Station Simulator	6/17/2010	Annual	6/17/2011	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

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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)

CDMA Emission Designator

Emission Designator = 1M27F9W

CDMA BW = 1.27 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 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 terminal 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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6.0 TEST RESULTS

6.1 Summary

Company Name: Panasonic Corporation of North America

FCC ID: ACJ9TGCF-S91

FCC Classification: PCS Licensed Transmitter (PCB)

Mode(s): GSM/EDGE/CDMA/WCDMA

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	CONDUCTED	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		PASS	Section 7.0
2.1046	RSS-133 (6.4)	Transmitter Conducted Output Power	N/A		PASS	RF Exposure Report
24.232(d)	RSS-132 (4.4) RSS-133 (4.1)	Peak-Average Ratio	< 13 dB		PASS	Section 7.0
22.913(a)(2)	RSS-132 (4.4) [SRSP-503(5.1.3)]	Effective Radiated Power	< 7 Watts max. ERP	RADIATED	PASS	Section 6.2
24.232(c)	RSS-133 (6.4) [SRSP-510 (5.1.2)]	Equivalent Isotropic Radiated Power	< 2 Watts max. EIRP		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		PASS	Sections 6.4, 6.5, 6.6, 6.7, 6.8, 6.9
2.1055, 22.355, 24.235	RSS-132 (4.3) RSS-133 (6.3)	Frequency Stability	< 2.5 ppm		PASS	Sections 6.10, 6.11, 6.12, 6.13, 6.14, 6.15
RECEIVER MODE (RX) / DIGITAL EMISSIONS						
N/A	RSS-132 (4.6) RSS-133 (6.6)	Receiver Spurious Emissions Limits	< RSS-Gen limits [Section 6; Table 1]	RADIATED	PASS	Section 6.16

Table 6-1. Summary of Test Results

Note:
The conducted plots shown in this test report shows test dates prior to the date listed on this test report. The conducted plots remain applicable to the device evaluated for this test report.

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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	-11.750	28.49	0.00	H	28.49	0.706	Standard
836.60	GSM850	-9.770	30.47	0.00	H	30.47	1.114	Standard
848.80	GSM850	-9.820	30.42	0.00	H	30.42	1.102	Standard
836.60	EDGE850	-13.870	26.37	0.00	H	26.37	0.434	Standard

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

Frequency [MHz]	Mode	Measured Level [dBm]	Substitute Level [dBm]	Antenna Gain [dBd]	Pol [H/V]	ERP [dBm]	ERP [Watts]	Battery Type
826.40	WCDMA850	-15.650	24.59	0.00	H	24.59	0.288	Standard
836.60	WCDMA850	-15.460	24.78	0.00	H	24.78	0.301	Standard
846.60	WCDMA850	-16.170	24.07	0.00	H	24.07	0.255	Standard

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

Frequency [MHz]	Mode	Measured Level [dBm]	Substitute Level [dBm]	Antenna Gain [dBd]	Pol [H/V]	ERP [dBm]	ERP [Watts]	Battery Type
824.70	CDMA850	-16.150	24.09	0.00	H	24.09	0.256	Standard
836.52	CDMA850	-14.980	25.26	0.00	H	25.26	0.336	Standard
848.31	CDMA850	-15.260	24.98	0.00	H	24.98	0.315	Standard

Table 6-4. Effective Radiated Power Output Data (CDMA)

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 Inactive at 12.2 kbps RMC and TPC bits all set to "1" and in GPRS mode while transmitting with one slot active. In CDMA mode, this device was tested under all R.C.s and S.O.s and the worst case is reported with RC3/SO55 with "All Up" power control bits. This unit was tested with its standard battery. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT open 90 degrees. The data reported in the table above was measured in this test setup.

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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	-16.670	20.75	8.00	H	28.75	0.750	Standard
1880.00	GSM1900	-13.820	23.60	8.00	H	31.60	1.445	Standard
1909.80	GSM1900	-16.570	20.85	8.00	H	28.85	0.767	Standard
1880.00	EDGE1900	-19.950	17.47	8.00	H	25.47	0.352	Standard

Table 6-5. 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	-18.140	19.11	8.00	H	27.11	0.514	Standard
1880.00	WCDMA1900	-17.450	19.80	8.00	H	27.80	0.603	Standard
1907.60	WCDMA1900	-20.470	16.78	8.00	H	24.78	0.301	Standard

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

Frequency [MHz]	Mode	Measured Level [dBm]	Substitute Level [dBm]	Antenna Gain [dBi]	Pol [H/V]	EIRP [dBm]	EIRP [Watts]	Battery Type
1851.25	CDMA1900	-18.140	19.11	8.00	V	27.11	0.514	Standard
1880.00	CDMA1900	-20.800	16.45	8.00	V	24.45	0.279	Standard
1908.75	CDMA1900	-21.130	16.12	8.00	V	24.12	0.258	Standard

Table 6-7. Equivalent Isotropic Radiated Power Output Data (CDMA)

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 Inactive at 12.2 kbps RMC and TPC bits all set to "1" and in GPRS mode while transmitting with one slot active. In CDMA mode, this device was tested under all R.C.s and S.O.s and the worst case is reported with RC3/SO55 with "All Up" power control bits. This unit was tested with its standard battery. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT open 90 degrees. The data reported in the table above was measured in this test setup.

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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: 128
MEASURED OUTPUT POWER: 30.470 dBm = 1.114 W
MODULATION SIGNAL: GSM (Internal)
DISTANCE: 3 meters
LIMIT: 43 + 10 log10 (W) = 43.47 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1648.40	-58.00	6.42	-51.58	H	82.1
2472.60	-51.59	6.74	-44.85	H	75.3
3296.80	-57.25	7.55	-49.70	H	80.2
4121.00	-94.08	7.56	-86.53	H	117.0
4945.20	-93.86	9.05	-84.81	H	115.3

Table 6-8. 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 Inactive at 12.2 kbps RMC and TPC bits all set to "1" and in GPRS mode while transmitting with one slot active. In CDMA mode, this device was tested under all R.C.s and S.O.s and the worst case is reported with RC3/SO55 with "All Up" power control bits. This unit was tested with its standard battery. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT open 90 degrees. The data reported in the table above was measured in this test setup.

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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: 190
MEASURED OUTPUT POWER: 30.470 dBm = 1.114 W
MODULATION SIGNAL: GSM (Internal)
DISTANCE: 3 meters
LIMIT: 43 + 10 log10 (W) = 43.47 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1673.20	-57.12	6.43	-50.69	H	81.2
2509.80	-49.83	6.77	-43.06	H	73.5
3346.40	-59.07	7.55	-51.52	H	82.0
4183.00	-94.36	7.81	-86.55	H	117.0
5019.60	-93.51	9.02	-84.49	H	115.0

Table 6-9. 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 Inactive at 12.2 kbps RMC and TPC bits all set to "1" and in GPRS mode while transmitting with one slot active. In CDMA mode, this device was tested under all R.C.s and S.O.s and the worst case is reported with RC3/SO55 with "All Up" power control bits. This unit was tested with its standard battery. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT open 90 degrees. The data reported in the table above was measured in this test setup.

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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: 251
MEASURED OUTPUT POWER: 30.470 dBm = 1.114 W
MODULATION SIGNAL: GSM (Internal)
DISTANCE: 3 meters
LIMIT: 43 + 10 log10 (W) = 43.47 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1697.60	-57.91	6.44	-51.48	H	81.9
2546.40	-50.66	6.83	-43.83	H	74.3
3395.20	-56.98	7.55	-49.43	H	79.9
4244.00	-94.62	8.06	-86.56	H	117.0
5092.80	-93.04	8.91	-84.12	H	114.6

Table 6-10. 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 Inactive at 12.2 kbps RMC and TPC bits all set to "1" and in GPRS mode while transmitting with one slot active. In CDMA mode, this device was tested under all R.C.s and S.O.s and the worst case is reported with RC3/SO55 with "All Up" power control bits. This unit was tested with its standard battery. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT open 90 degrees. The data reported in the table above was measured in this test setup.

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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:	24.780	dBm	=	0.301 W
MODULATION SIGNAL:	WCDMA (Internal)			
DISTANCE:	3	meters		
LIMIT:	43 + 10 log10 (W) =	37.78	dBc	

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1652.80	-63.64	6.42	-57.22	H	82.0
2479.20	-98.09	6.74	-91.35	H	116.1
3305.60	-96.65	7.55	-89.10	H	113.9
4132.00	-94.13	7.60	-86.53	H	111.3
4958.40	-93.80	9.05	-84.75	H	109.5

Table 6-11. 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 Inactive at 12.2 kbps RMC and TPC bits all set to "1" and in GPRS mode while transmitting with one slot active. In CDMA mode, this device was tested under all R.C.s and S.O.s and the worst case is reported with RC3/SO55 with "All Up" power control bits. This unit was tested with its standard battery. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT open 90 degrees. The data reported in the table above was measured in this test setup.

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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: 836.60 MHz
CHANNEL: 4183
MEASURED OUTPUT POWER: 24.780 dBm = 0.301 W
MODULATION SIGNAL: WCDMA (Internal)
DISTANCE: 3 meters
LIMIT: 43 + 10 log10 (W) = 37.78 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1673.20	-64.18	6.42	-57.75	H	82.5
2509.80	-98.00	6.76	-91.24	H	116.0
3346.40	-96.55	7.55	-89.00	H	113.8
4183.00	-94.32	7.78	-86.54	H	111.3
5019.60	-93.58	9.04	-84.54	H	109.3

Table 6-12. 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 Inactive at 12.2 kbps RMC and TPC bits all set to "1" and in GPRS mode while transmitting with one slot active. In CDMA mode, this device was tested under all R.C.s and S.O.s and the worst case is reported with RC3/SO55 with "All Up" power control bits. This unit was tested with its standard battery. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT open 90 degrees. The data reported in the table above was measured in this test setup.

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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: 846.60 MHz
CHANNEL: 4233
MEASURED OUTPUT POWER: 24.780 dBm = 0.301 W
MODULATION SIGNAL: WCDMA (Internal)
DISTANCE: 3 meters
LIMIT: 43 + 10 log10 (W) = 37.78 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1693.20	-63.08	6.43	-56.64	H	81.4
2539.80	-97.97	6.82	-91.16	H	115.9
3386.40	-96.41	7.55	-88.86	H	113.6
4233.00	-94.57	8.01	-86.56	H	111.3
5079.60	-93.12	8.93	-84.19	H	109.0

Table 6-13. 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 Inactive at 12.2 kbps RMC and TPC bits all set to "1" and in GPRS mode while transmitting with one slot active. In CDMA mode, this device was tested under all R.C.s and S.O.s and the worst case is reported with RC3/SO55 with "All Up" power control bits. This unit was tested with its standard battery. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT open 90 degrees. The data reported in the table above was measured in this test setup.

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6.6 Cellular CDMA Radiated Measurements

§2.1053, 22.917(a); RSS-132 (4.5.1)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 824.70 MHz

CHANNEL: 1013

MEASURED OUTPUT POWER: 25.260 dBm = 0.336 W

MODULATION SIGNAL: CDMA (Internal)

DISTANCE: 3 meters

LIMIT: 43 + 10 $\log_{10}$ (W) = 38.26 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1649.40	-64.56	6.42	-58.15	H	83.4
2474.10	-98.11	6.74	-91.37	H	116.6
3298.80	-96.67	7.55	-89.12	H	114.4
4123.50	-94.09	7.57	-86.53	H	111.8
4948.20	-93.84	9.05	-84.79	H	110.1

Table 6-14. Radiated Spurious Data (Cellular CDMA Mode – Ch. 1013)

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 Inactive at 12.2 kbps RMC and TPC bits all set to "1" and in GPRS mode while transmitting with one slot active. In CDMA mode, this device was tested under all R.C.s and S.O.s and the worst case is reported with RC3/SO55 with "All Up" power control bits. This unit was tested with its standard battery. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT open 90 degrees. The data reported in the table above was measured in this test setup.

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Cellular CDMA Radiated Measurements (Cont'd)

§2.1053, 22.917(a); RSS-132 (4.5.1)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 836.52 MHz
CHANNEL: 384
MEASURED OUTPUT POWER: 25.260 dBm = 0.336 W
MODULATION SIGNAL: CDMA (Internal)
DISTANCE: 3 meters
LIMIT: 43 + 10 $\log_{10}$ (W) = 38.26 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1673.04	-63.63	6.43	-57.20	H	82.5
2509.56	-56.01	6.77	-49.24	H	74.5
3346.08	-96.53	7.55	-88.98	H	114.2
4182.60	-94.35	7.81	-86.55	H	111.8
5019.12	-93.52	9.02	-84.49	H	109.8

Table 6-15. Radiated Spurious Data (Cellular CDMA Mode – Ch. 384)

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 Inactive at 12.2 kbps RMC and TPC bits all set to "1" and in GPRS mode while transmitting with one slot active. In CDMA mode, this device was tested under all R.C.s and S.O.s and the worst case is reported with RC3/SO55 with "All Up" power control bits. This unit was tested with its standard battery. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT open 90 degrees. The data reported in the table above was measured in this test setup.

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Cellular CDMA Radiated Measurements (Cont'd)

§2.1053, 22.917(a); RSS-132 (4.5.1)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 848.31 MHz
CHANNEL: 777
MEASURED OUTPUT POWER: 25.260 dBm = 0.336 W
MODULATION SIGNAL: CDMA (Internal)
DISTANCE: 3 meters
LIMIT: 43 + 10 $\log_{10}$ (W) = 38.26 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1696.62	-61.61	6.44	-55.17	H	80.4
2544.93	-57.92	6.83	-51.09	H	76.4
3393.24	-57.93	7.55	-50.38	H	75.6
4241.55	-94.61	8.05	-86.56	H	111.8
5089.86	-93.06	8.92	-84.14	H	109.4

Table 6-16. Radiated Spurious Data (Cellular CDMA Mode – Ch. 777)

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 Inactive at 12.2 kbps RMC and TPC bits all set to "1" and in GPRS mode while transmitting with one slot active. In CDMA mode, this device was tested under all R.C.s and S.O.s and the worst case is reported with RC3/SO55 with "All Up" power control bits. This unit was tested with its standard battery. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT open 90 degrees. The data reported in the table above was measured in this test setup.

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6.7 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: 512

MEASURED OUTPUT POWER: 31.600 dBm = 1.445 W

MODULATION SIGNAL: GSM (Internal)

DISTANCE: 3 meters

LIMIT: 43 + 10 log10 (W) = 44.60 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3700.40	-51.74	9.49	-42.25	H	73.8
5550.60	-51.11	10.41	-40.71	H	72.3
7400.80	-89.45	11.08	-78.37	H	110.0
9251.00	-88.40	12.26	-76.14	H	107.7
11101.20	-86.28	13.19	-73.09	H	104.7

Table 6-17. 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 Inactive at 12.2 kbps RMC and TPC bits all set to "1" and in GPRS mode while transmitting with one slot active. In CDMA mode, this device was tested under all R.C.s and S.O.s and the worst case is reported with RC3/SO55 with "All Up" power control bits. This unit was tested with its standard battery. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT open 90 degrees. The data reported in the table above was measured in this test setup.

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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: 31.600 dBm = 1.445 W
MODULATION SIGNAL: GSM (Internal)
DISTANCE: 3 meters
LIMIT: 43 + 10 log10 (W) = 44.60 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3760.00	-51.44	9.43	-42.01	H	73.6
5640.00	-48.51	10.24	-38.27	H	69.9
7520.00	-89.37	11.12	-78.25	H	109.9
9400.00	-88.65	12.32	-76.33	H	107.9
11280.00	-85.65	13.17	-72.48	H	104.1

Table 6-18. 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 Inactive at 12.2 kbps RMC and TPC bits all set to "1" and in GPRS mode while transmitting with one slot active. In CDMA mode, this device was tested under all R.C.s and S.O.s and the worst case is reported with RC3/SO55 with "All Up" power control bits. This unit was tested with its standard battery. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT open 90 degrees. The data reported in the table above was measured in this test setup.

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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: 810
MEASURED OUTPUT POWER: 31.600 dBm = 1.445 W
MODULATION SIGNAL: GSM (Internal)
DISTANCE: 3 meters
LIMIT: 43 + 10 log10 (W) = 44.60 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3819.60	-53.18	9.37	-43.81	H	75.4
5729.40	-50.55	10.08	-40.48	H	72.1
7639.20	-89.36	11.21	-78.14	H	109.7
9549.00	-88.75	12.38	-76.37	H	108.0
11458.80	-85.03	13.15	-71.88	H	103.5

Table 6-19. 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 Inactive at 12.2 kbps RMC and TPC bits all set to "1" and in GPRS mode while transmitting with one slot active. In CDMA mode, this device was tested under all R.C.s and S.O.s and the worst case is reported with RC3/SO55 with "All Up" power control bits. This unit was tested with its standard battery. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT open 90 degrees. The data reported in the table above was measured in this test setup.

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6.8 PCS WCDMA Radiated Measurements

§2.1053, 24.238(a); RSS-133 (6.5.1)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1852.40 MHz
CHANNEL: 9262
MEASURED OUTPUT POWER: 27.800 dBm = 0.603 W
MODULATION SIGNAL: WCDMA (Internal)
DISTANCE: 3 meters
LIMIT: 43 + 10 log10 (W) = 40.80 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3704.80	-47.07	9.49	-37.58	V	65.4
5557.20	-91.79	10.39	-81.40	V	109.2
7409.60	-89.45	11.08	-78.36	V	106.2
9262.00	-88.42	12.27	-76.15	V	104.0
11114.40	-86.24	13.19	-73.05	V	100.8

Table 6-20. 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 Inactive at 12.2 kbps RMC and TPC bits all set to "1" and in GPRS mode while transmitting with one slot active. In CDMA mode, this device was tested under all R.C.s and S.O.s and the worst case is reported with RC3/SO55 with "All Up" power control bits. This unit was tested with its standard battery. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT open 90 degrees. The data reported in the table above was measured in this test setup.

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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: 1880.00 MHz
CHANNEL: 9400
MEASURED OUTPUT POWER: 27.800 dBm = 0.603 W
MODULATION SIGNAL: WCDMA (Internal)
DISTANCE: 3 meters
LIMIT: 43 + 10 log10 (W) = 40.80 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3760.00	-46.81	9.43	-37.38	V	65.2
5640.00	-91.28	10.24	-81.04	V	108.8
7520.00	-89.37	11.12	-78.25	V	106.1
9400.00	-88.65	12.32	-76.33	V	104.1
11280.00	-85.65	13.17	-72.48	V	100.3

Table 6-21. 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 Inactive at 12.2 kbps RMC and TPC bits all set to "1" and in GPRS mode while transmitting with one slot active. In CDMA mode, this device was tested under all R.C.s and S.O.s and the worst case is reported with RC3/SO55 with "All Up" power control bits. This unit was tested with its standard battery. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT open 90 degrees. The data reported in the table above was measured in this test setup.

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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: 1907.60 MHz
CHANNEL: 9538
MEASURED OUTPUT POWER: 27.800 dBm = 0.603 W
MODULATION SIGNAL: WCDMA (Internal)
DISTANCE: 3 meters
LIMIT: 43 + 10 log10 (W) = 40.80 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3815.20	-44.91	9.38	-35.54	V	63.3
5722.80	-90.79	10.09	-80.70	V	108.5
7630.40	-89.36	11.21	-78.15	V	106.0
9538.00	-88.77	12.37	-76.39	V	104.2
11445.60	-85.08	13.16	-71.92	V	99.7

Table 6-22. 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 Inactive at 12.2 kbps RMC and TPC bits all set to "1" and in GPRS mode while transmitting with one slot active. In CDMA mode, this device was tested under all R.C.s and S.O.s and the worst case is reported with RC3/SO55 with "All Up" power control bits. This unit was tested with its standard battery. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT open 90 degrees. The data reported in the table above was measured in this test setup.

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6.9 PCS CDMA Radiated Measurements

§2.1053, 24.238(a); RSS-133 (6.5.1)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1851.25 MHz
CHANNEL: 25
MEASURED OUTPUT POWER: 27.110 dBm = 0.514 W
MODULATION SIGNAL: CDMA (Internal)
DISTANCE: 3 meters
LIMIT: 43 + 10 $\log_{10}$ (W) = 40.11 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3702.50	-44.18	9.49	-34.69	V	61.8
5553.75	-91.81	10.40	-81.41	V	108.5
7405.00	-89.45	11.08	-78.37	V	105.5
9256.25	-88.41	12.26	-76.15	V	103.3
11107.50	-86.26	13.19	-73.07	V	100.2

Table 6-23. Radiated Spurious Data (PCS CDMA Mode – Ch. 25)

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 Inactive at 12.2 kbps RMC and TPC bits all set to "1" and in GPRS mode while transmitting with one slot active. In CDMA mode, this device was tested under all R.C.s and S.O.s and the worst case is reported with RC3/SO55 with "All Up" power control bits. This unit was tested with its standard battery. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT open 90 degrees. The data reported in the table above was measured in this test setup.

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PCS CDMA 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: 600
MEASURED OUTPUT POWER: 27.110 dBm = 0.514 W
MODULATION SIGNAL: CDMA (Internal)
DISTANCE: 3 meters
LIMIT: 43 + 10 $\log_{10}$ (W) = 40.11 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3760.00	-46.99	9.43	-37.56	V	64.7
5640.00	-91.28	10.24	-81.04	V	108.2
7520.00	-89.37	11.12	-78.25	V	105.4
9400.00	-88.65	12.32	-76.33	V	103.4
11280.00	-85.65	13.17	-72.48	V	99.6

Table 6-24. Radiated Spurious Data (PCS CDMA Mode – Ch. 600)

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 Inactive at 12.2 kbps RMC and TPC bits all set to "1" and in GPRS mode while transmitting with one slot active. In CDMA mode, this device was tested under all R.C.s and S.O.s and the worst case is reported with RC3/SO55 with "All Up" power control bits. This unit was tested with its standard battery. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT open 90 degrees. The data reported in the table above was measured in this test setup.

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PCS CDMA Radiated Measurements (Cont'd)

§2.1053, 24.238(a); RSS-133 (6.5.1)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1908.75 MHz
CHANNEL: 1175
MEASURED OUTPUT POWER: 27.110 dBm = 0.514 W
MODULATION SIGNAL: CDMA (Internal)
DISTANCE: 3 meters
LIMIT: 43 + 10 $\log_{10}$ (W) = 40.11 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3817.50	-46.35	9.37	-36.97	V	64.1
5726.25	-90.77	10.08	-80.68	V	107.8
7635.00	-49.53	11.21	-38.32	V	65.4
9543.75	-88.76	12.38	-76.38	V	103.5
11452.50	-85.05	13.15	-71.90	V	99.0

Table 6-25. Radiated Spurious Data (PCS CDMA Mode – Ch. 1175)

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 Inactive at 12.2 kbps RMC and TPC bits all set to "1" and in GPRS mode while transmitting with one slot active. In CDMA mode, this device was tested under all R.C.s and S.O.s and the worst case is reported with RC3/SO55 with "All Up" power control bits. This unit was tested with its standard battery. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT open 90 degrees. The data reported in the table above was measured in this test setup.

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6.10 Cellular GSM Frequency Stability Measurements

§2.1055, 22.355; RSS-132 (4.3)

OPERATING FREQUENCY: 836,600,000 Hz

CHANNEL: 190

REFERENCE VOLTAGE: 7.2 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	7.20	+ 20 (Ref)	836,599,987	-13	-0.000002
100 %		- 30	836,600,020	20	0.000002
100 %		- 20	836,600,019	19	0.000002
100 %		- 10	836,599,978	-22	-0.000003
100 %		0	836,599,974	-26	-0.000003
100 %		+ 10	836,599,984	-16	-0.000002
100 %		+ 20	836,599,980	-20	-0.000002
100 %		+ 30	836,600,018	18	0.000002
100 %		+ 40	836,600,017	17	0.000002
100 %		+ 50	836,599,984	-16	-0.000002
115 %	8.28	+ 20	836,600,020	20	0.000002
BATT. ENDPOINT	6.90	+ 20	836,600,013	13	0.000002

Table 6-26. Frequency Stability Data (Cellular GSM Mode – Ch. 190)

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Cellular GSM Frequency Stability Measurements (Cont'd)

§2.1055, 22.355; RSS-132 (4.3)

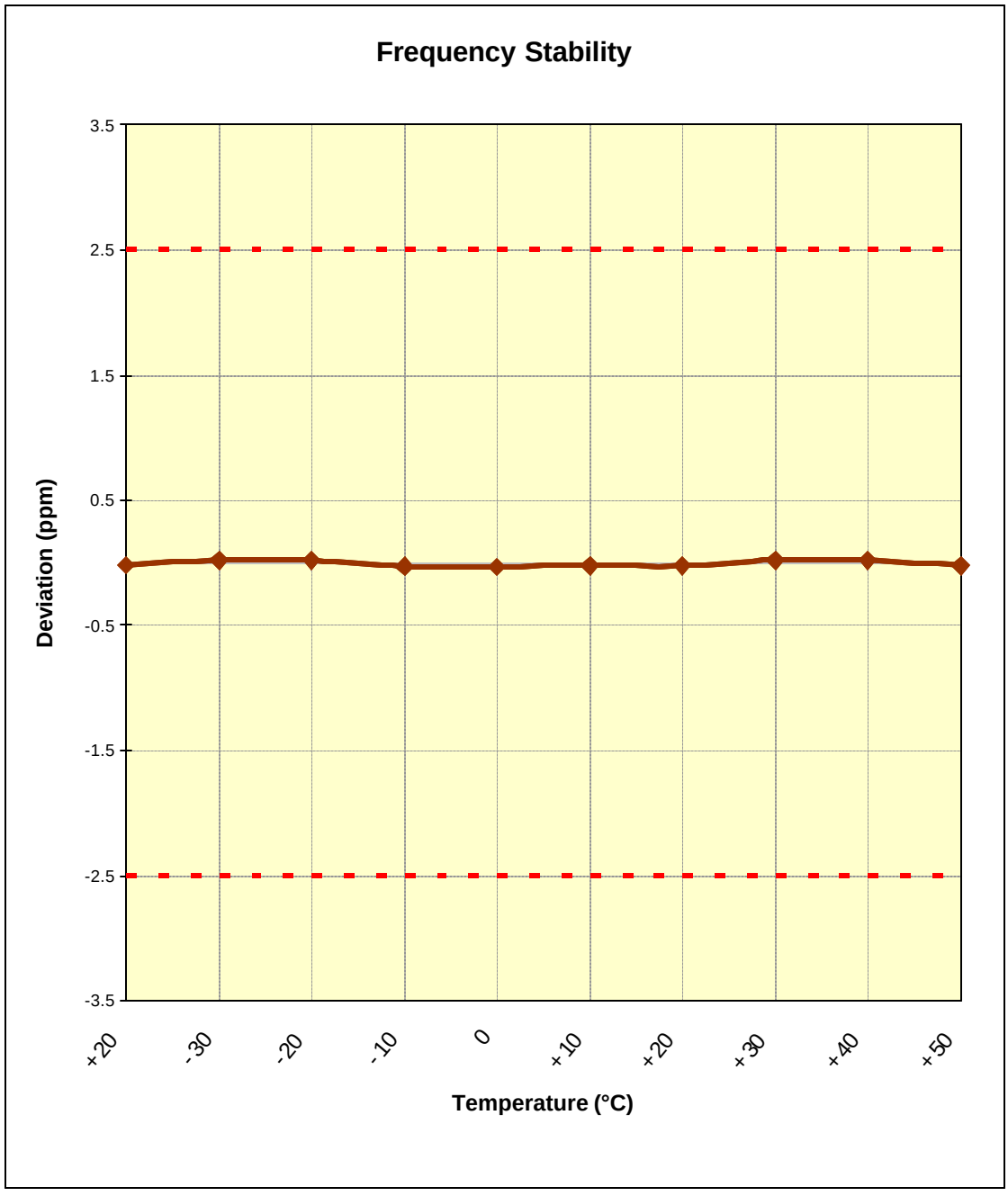

Figure 6-1. Frequency Stability Graph (Cellular GSM Mode – Ch. 190)

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6.11 Cellular WCDMA Frequency Stability Measurements

§2.1055, 22.355; RSS-132 (4.3)

OPERATING FREQUENCY: 836,600,000 Hz

CHANNEL: 4183

REFERENCE VOLTAGE: 7.2 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	7.20	+ 20 (Ref)	836,599,978	-22	-0.000003
100 %		- 30	836,600,020	20	0.000002
100 %		- 20	836,600,016	16	0.000002
100 %		- 10	836,599,982	-18	-0.000002
100 %		0	836,600,020	20	0.000002
100 %		+ 10	836,600,013	13	0.000002
100 %		+ 20	836,599,979	-21	-0.000003
100 %		+ 30	836,600,020	20	0.000002
100 %		+ 40	836,600,016	16	0.000002
100 %		+ 50	836,600,015	15	0.000002
115 %	8.28	+ 20	836,599,978	-22	-0.000003
BATT. ENDPOINT	6.90	+ 20	836,600,020	20	0.000002

Table 6-27. Frequency Stability Data (Cellular WCDMA Mode – Ch. 4183)

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Cellular WCDMA Frequency Stability Measurements (Cont'd)

§2.1055, 22.355; RSS-132 (4.3)

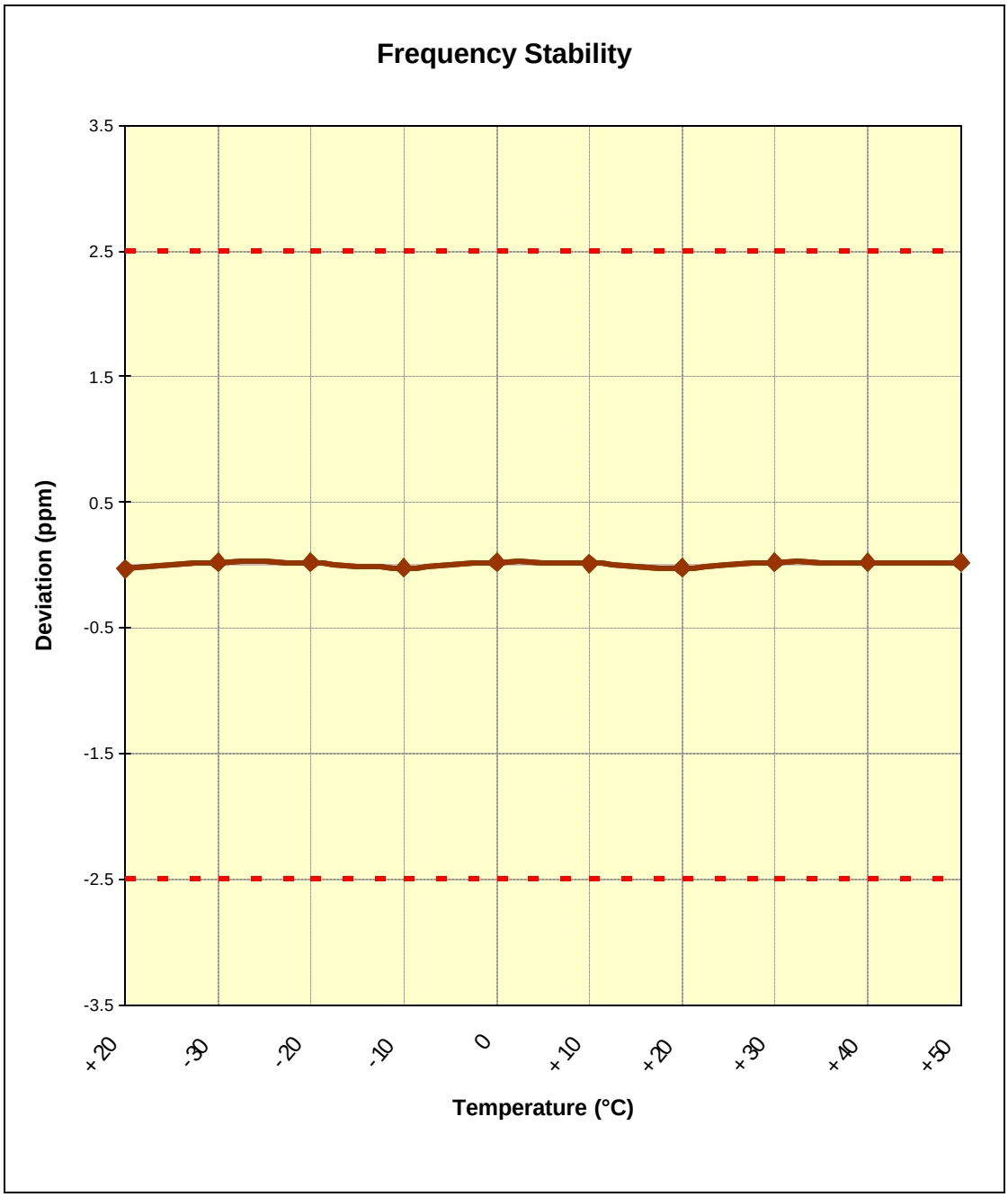

Figure 6-2. Frequency Stability Graph (Cellular WCDMA Mode – Ch. 4183)

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6.12 Cellular CDMA Frequency Stability Measurements

§2.1055, 22.355; RSS-132 (4.3)

OPERATING FREQUENCY: 836,520,000 Hz

CHANNEL: 384

REFERENCE VOLTAGE: 7.2 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	7.20	+ 20 (Ref)	836,519,977	-23	-0.000003
100 %		- 30	836,519,978	-22	-0.000003
100 %		- 20	836,520,020	20	0.000002
100 %		- 10	836,520,018	18	0.000002
100 %		0	836,520,019	19	0.000002
100 %		+ 10	836,519,983	-17	-0.000002
100 %		+ 20	836,520,020	20	0.000002
100 %		+ 30	836,519,984	-16	-0.000002
100 %		+ 40	836,520,015	15	0.000002
100 %		+ 50	836,520,022	22	0.000003
115 %	8.28	+ 20	836,520,020	20	0.000002
BATT. ENDPOINT	6.90	+ 20	836,519,984	-16	-0.000002

Table 6-28. Frequency Stability Data (Cellular CDMA Mode – Ch. 384)

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Cellular CDMA Frequency Stability Measurements (Cont'd)

§2.1055, 22.355; RSS-132 (4.3)

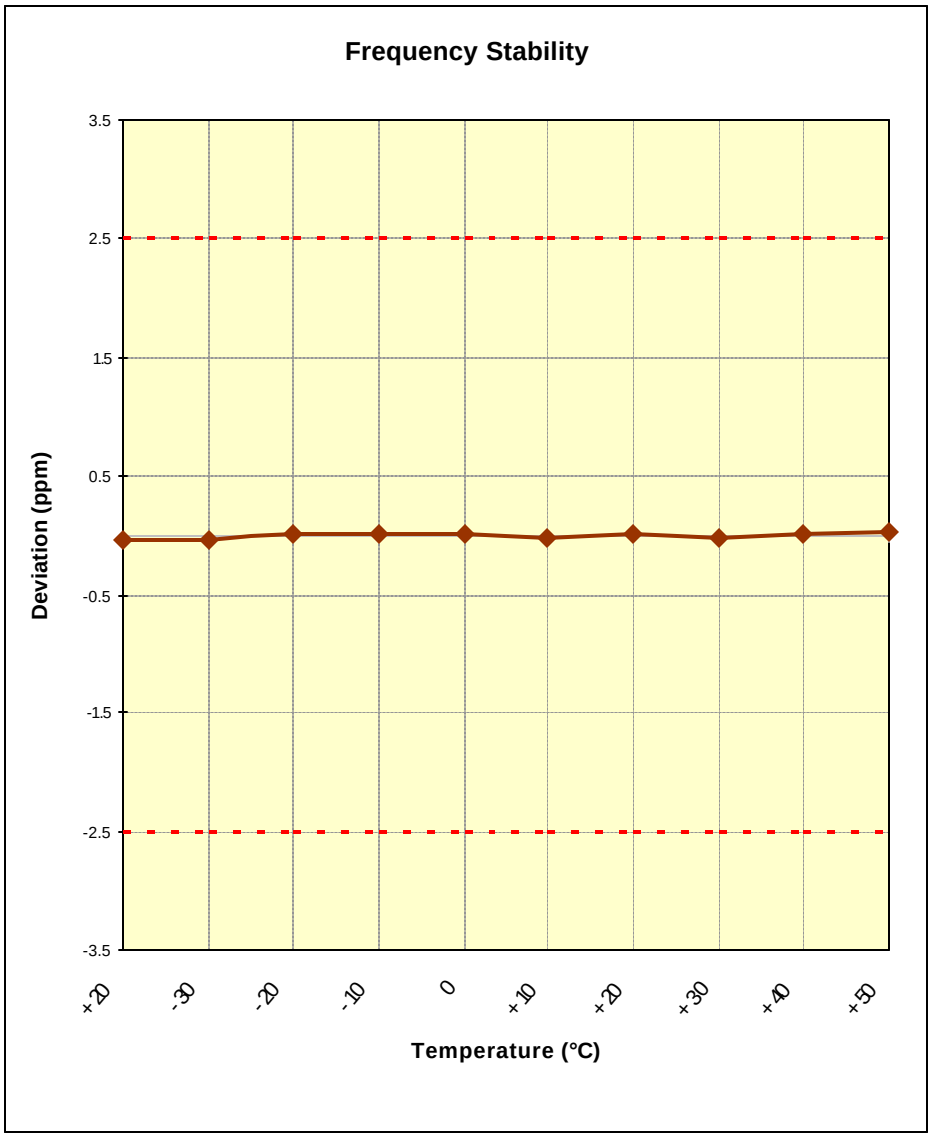

Figure 6-3. Frequency Stability Graph (Cellular CDMA Mode – Ch. 384)

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6.13 PCS GSM Frequency Stability Measurements

§2.1055, 24.235; RSS-133 (6.3)

OPERATING FREQUENCY: 1,880,000,000 Hz

CHANNEL: 661

REFERENCE VOLTAGE: 7.2 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	7.20	+ 20 (Ref)	1,879,999,981	-19	-0.000001
100 %		- 30	1,880,000,020	20	0.000001
100 %		- 20	1,879,999,988	-12	-0.000001
100 %		- 10	1,879,999,983	-17	-0.000001
100 %		0	1,880,000,016	16	0.000001
100 %		+ 10	1,880,000,022	22	0.000001
100 %		+ 20	1,880,000,020	20	0.000001
100 %		+ 30	1,879,999,982	-18	-0.000001
100 %		+ 40	1,880,000,016	16	0.000001
100 %		+ 50	1,880,000,020	20	0.000001
115 %	8.28	+ 20	1,879,999,981	-19	-0.000001
BATT. ENDPOINT	6.90	+ 20	1,880,000,020	20	0.000001

Table 6-29. Frequency Stability Data (PCS GSM Mode – Ch. 661)

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PCS GSM Frequency Stability Measurements (Cont'd)

§2.1055, 24.235; RSS-133 (6.3)

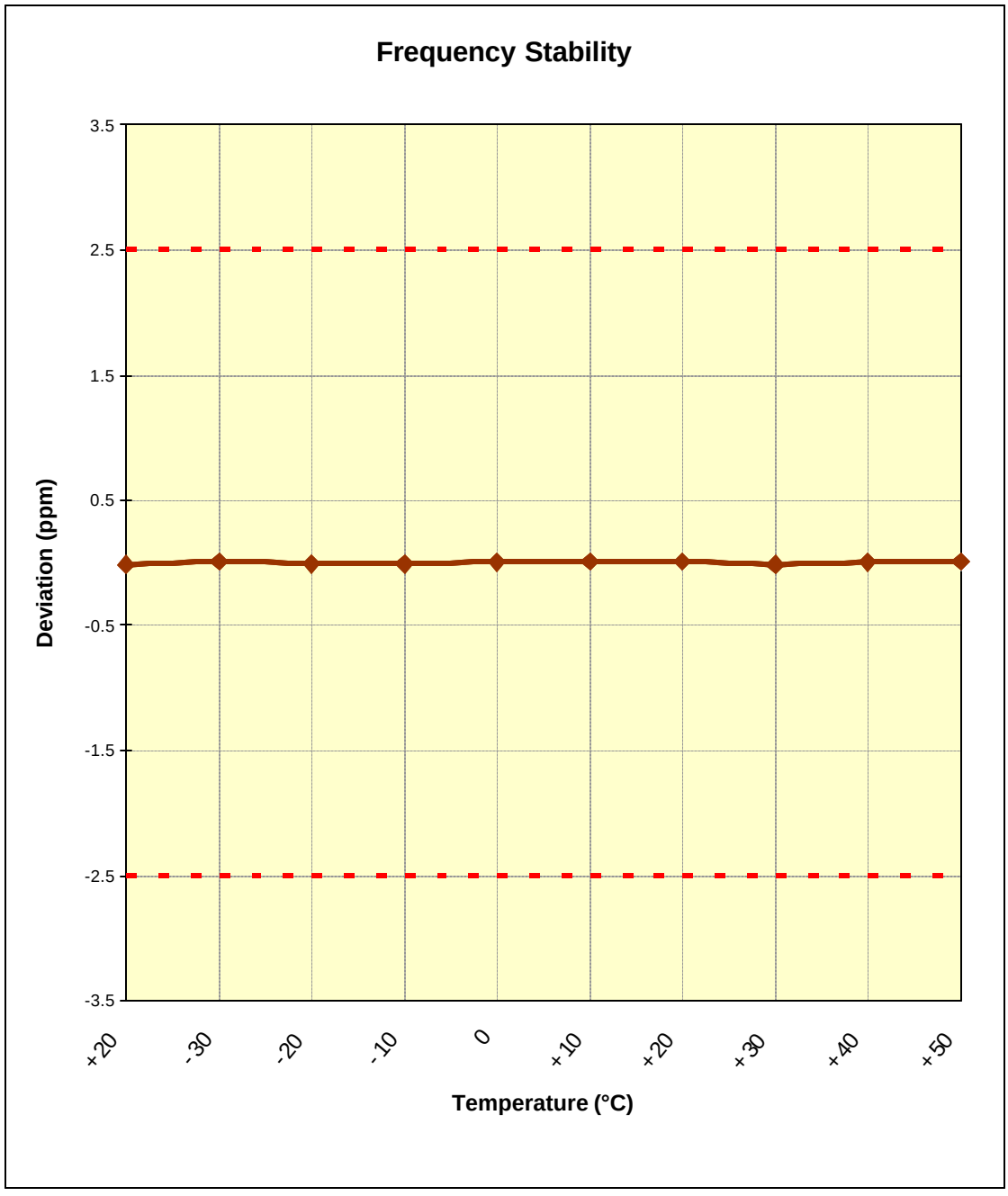

Figure 6-4. Frequency Stability Graph (PCS GSM Mode – Ch. 661)

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6.14 PCS WCDMA Frequency Stability Measurements

§2.1055, 24.235; RSS-133 (6.3)

OPERATING FREQUENCY: 1,880,000,000 Hz

CHANNEL: 9400

REFERENCE VOLTAGE: 7.2 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	7.20	+ 20 (Ref)	1,879,999,977	-23	-0.000001
100 %		- 30	1,880,000,020	20	0.000001
100 %		- 20	1,880,000,018	18	0.000001
100 %		- 10	1,880,000,016	16	0.000001
100 %		0	1,879,999,982	-18	-0.000001
100 %		+ 10	1,880,000,022	22	0.000001
100 %		+ 20	1,880,000,015	15	0.000001
100 %		+ 30	1,880,000,017	17	0.000001
100 %		+ 40	1,880,000,017	17	0.000001
100 %		+ 50	1,879,999,981	-19	-0.000001
115 %	8.28	+ 20	1,880,000,020	20	0.000001
BATT. ENDPOINT	6.90	+ 20	1,879,999,982	-18	-0.000001

Table 6-30. Frequency Stability Data (PCS WCDMA Mode – Ch. 9400)

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PCS WCDMA Frequency Stability Measurements (Cont'd)

§2.1055, 24.235; RSS-133 (6.3)

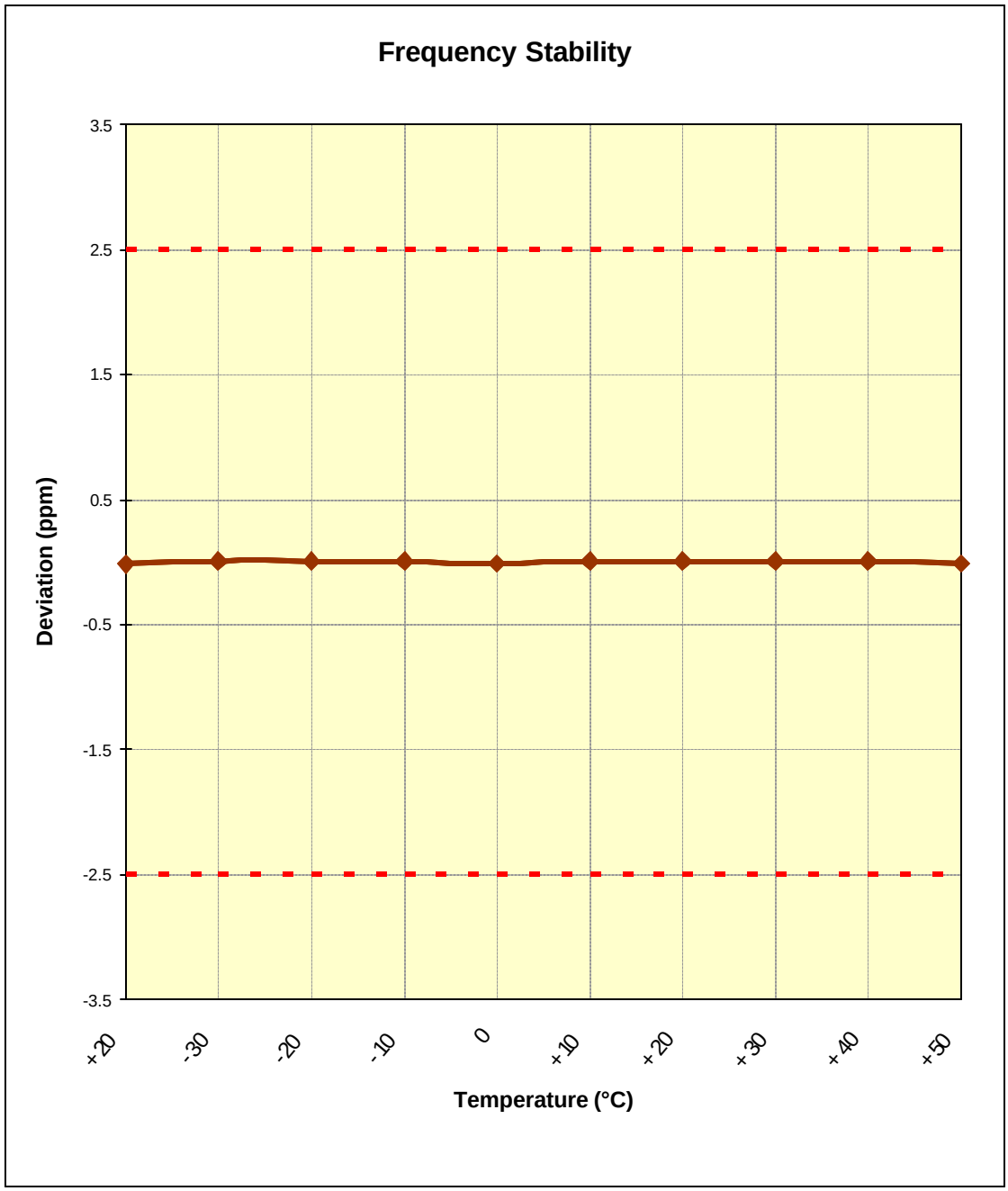

Figure 6-5. Frequency Stability Graph (PCS WCDMA Mode – Ch. 9400)

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6.15 PCS CDMA Frequency Stability Measurements

§2.1055, 24.235; RSS-133 (6.3)

OPERATING FREQUENCY: 1,880,000,000 Hz

CHANNEL: 600

REFERENCE VOLTAGE: 7.2 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	7.20	+ 20 (Ref)	1,879,999,977	-23	-0.000001
100 %		- 30	1,880,000,022	22	0.000001
100 %		- 20	1,880,000,018	18	0.000001
100 %		- 10	1,880,000,016	16	0.000001
100 %		0	1,880,000,022	22	0.000001
100 %		+ 10	1,879,999,990	-10	-0.000001
100 %		+ 20	1,879,999,983	-17	-0.000001
100 %		+ 30	1,880,000,014	14	0.000001
100 %		+ 40	1,879,999,984	-16	-0.000001
100 %		+ 50	1,880,000,015	15	0.000001
115 %	8.28	+ 20	1,879,999,985	-15	-0.000001
BATT. ENDPOINT	6.90	+ 20	1,880,000,019	19	0.000001

Table 6-31. Frequency Stability Data (PCS CDMA Mode – Ch. 600)

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PCS CDMA Frequency Stability Measurements (Cont'd)

§2.1055, 24.235; RSS-133 (6.3)

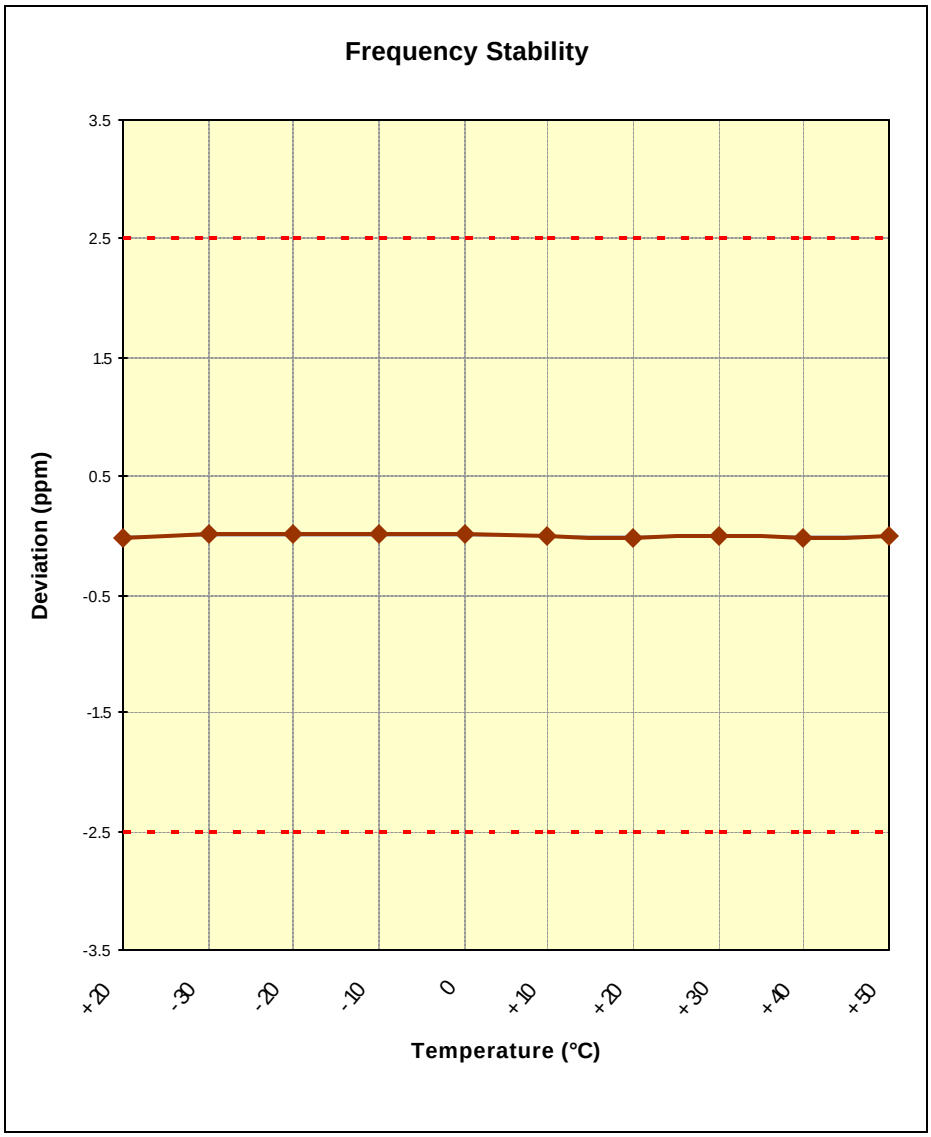

Figure 6-6. Frequency Stability Graph (PCS CDMA Mode – Ch. 600)

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6.16 Receiver Spurious Emissions

RSS-132 (4.6), RSS-133 (6.6)

Frequency [MHz]	Level [dBm]	AFCL [dB]	Pol [H/V]	Height [m]	Azimuth [degrees]	Field Strength [dBmV/m]	Limit [dBmV/m]	Margin [dB]
248.30	-95.06	10.86	V	1.8	331	22.79	46.02	-23.23
280.70	-91.76	12.01	H	1.7	215	27.25	46.02	-18.77
338.00	-94.80	13.79	V	2.1	185	26.00	46.02	-20.02
369.05	-95.23	14.62	H	1.6	36	26.40	46.02	-19.63
437.40	-95.33	16.11	H	1.5	274	27.78	46.02	-18.24
575.60	-95.41	18.82	V	2.0	149	30.41	46.02	-15.61

Table 6-32. Radiated Measurements at 3-meters

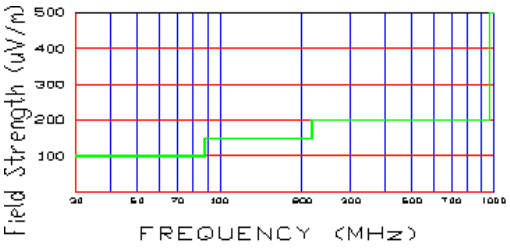

Figure 6-7. 3-Meter Limits

NOTES:

1. All modes of operation were investigated and the worst-case emissions are reported.
2. The EUT was set to receive mode in the middle channel of operation.
3. Radiated emissions were measured from 30MHz to three times that of the highest tunable frequency or local oscillator.
4. The radiated limits are shown on Figure 6-7. Above 960MHz the limit is 500µV/m.

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1. All readings are calibrated by a Signal Generator with accuracy traceable to the National Institute of Standards and Technology (NIST).
2. AFCL = Antenna Factor and Cable Loss
3. Measurements are made using CISPR quasi-peak mode. Average measurements are recorded above 1GHz.

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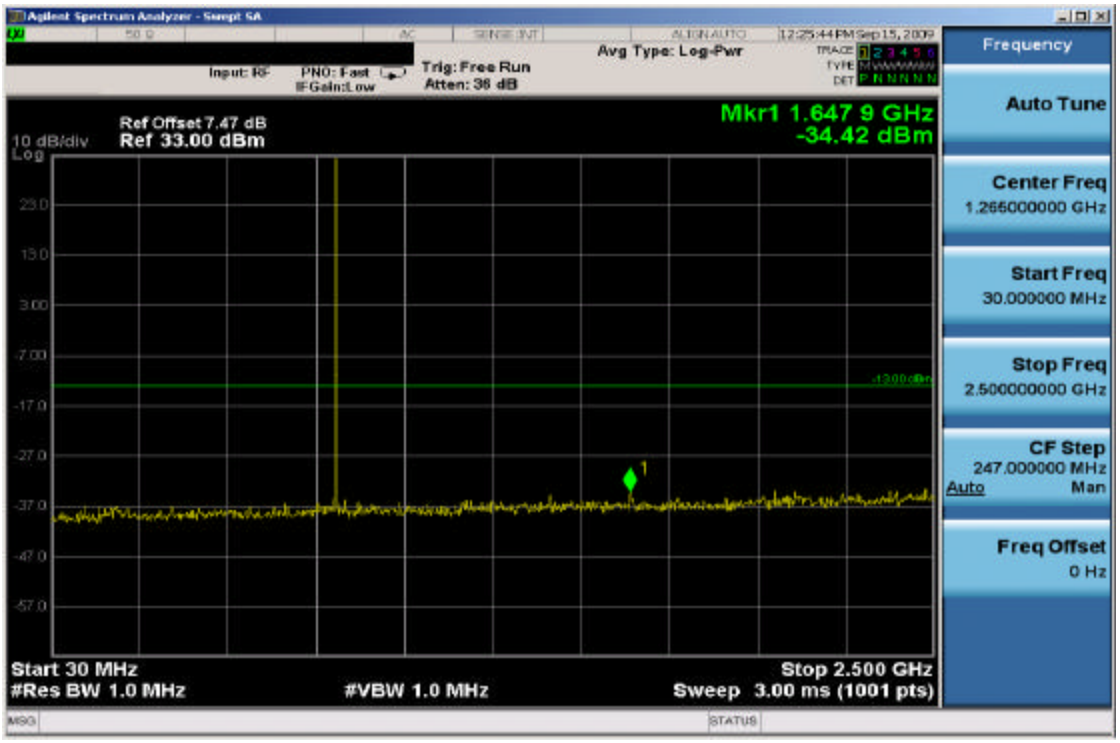
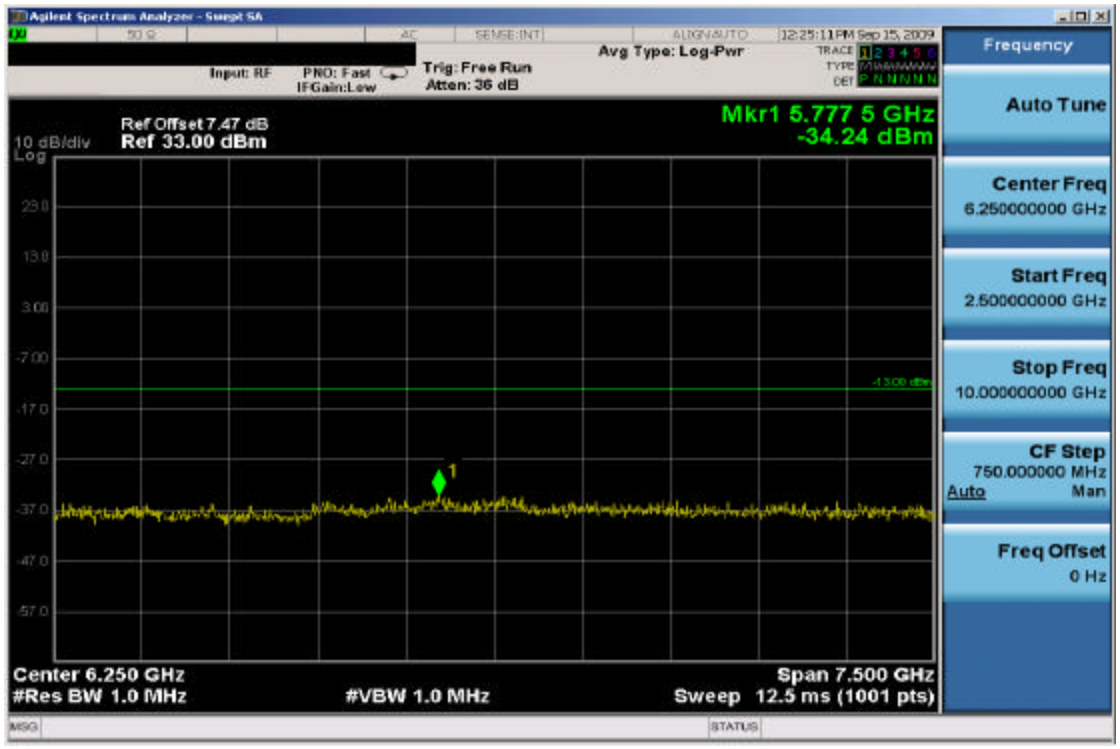
7.0 PLOTS OF EMISSIONS



Plot 7-1. Conducted Spurious Plot (Cellular GSM Mode – Ch. 128)



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

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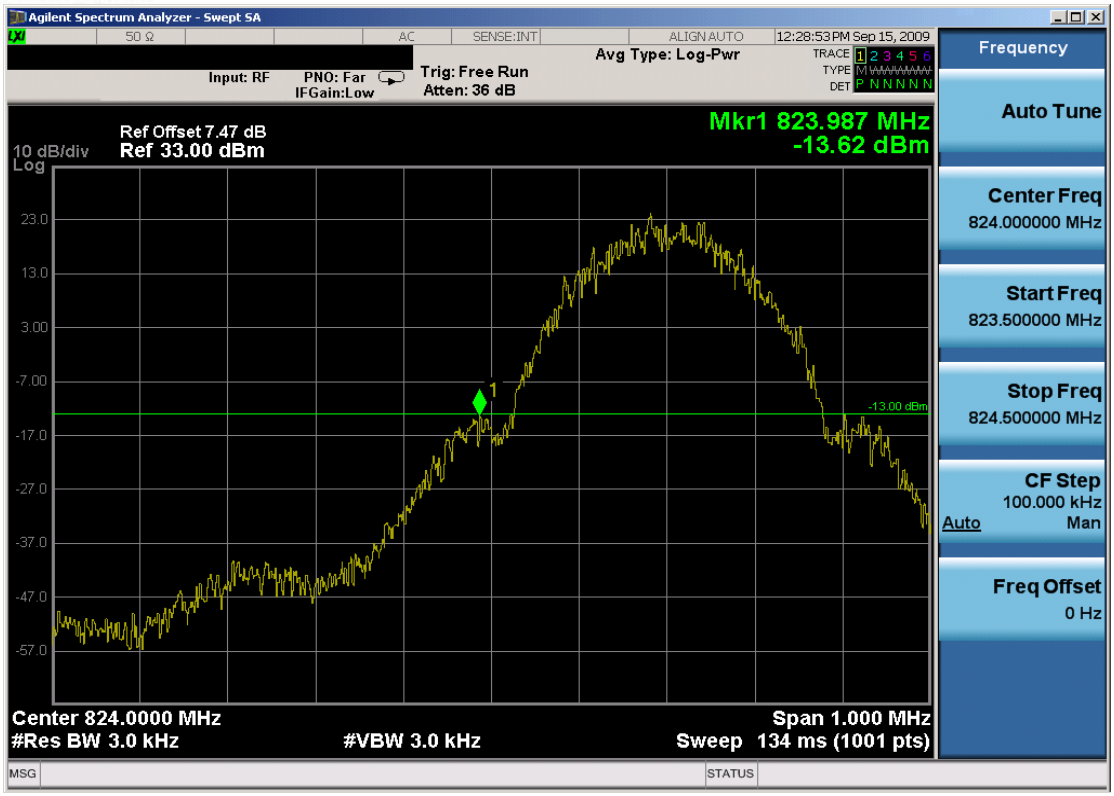
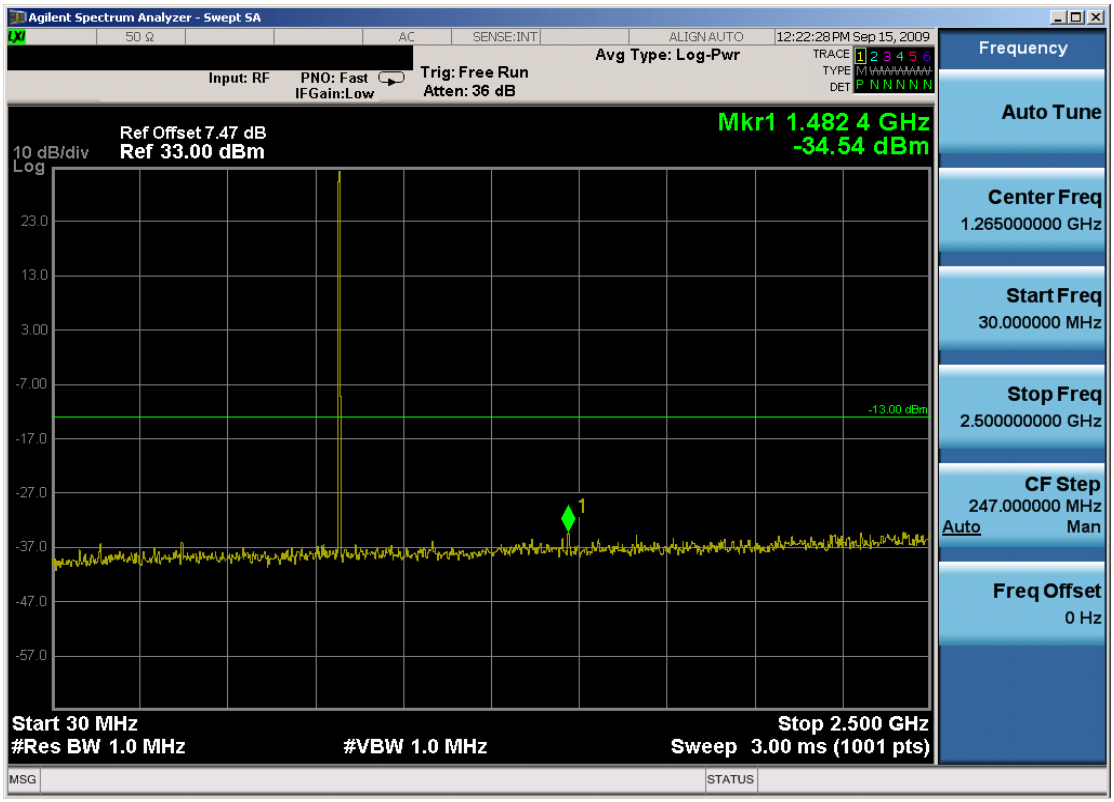


Plot 7-3. Band Edge Plot (Cellular GSM Mode – Ch. 128)



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

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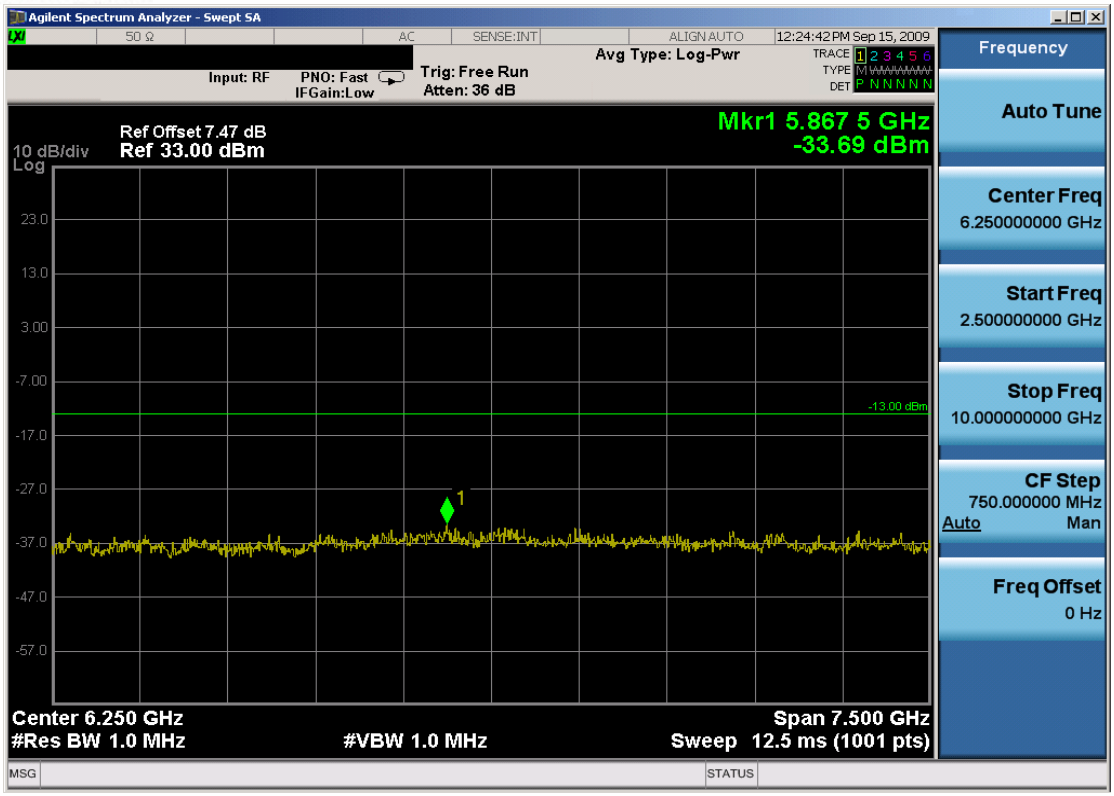
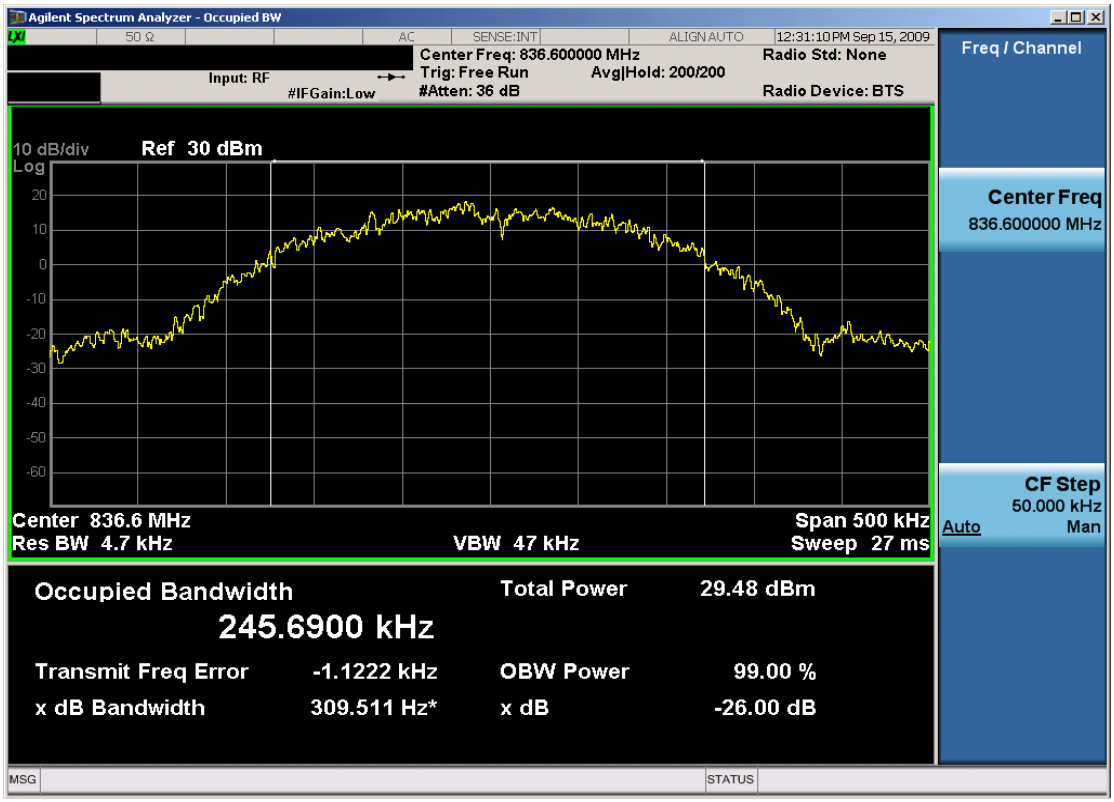


Plot 7-5. Conducted Spurious Plot (Cellular GSM Mode – Ch. 190)



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

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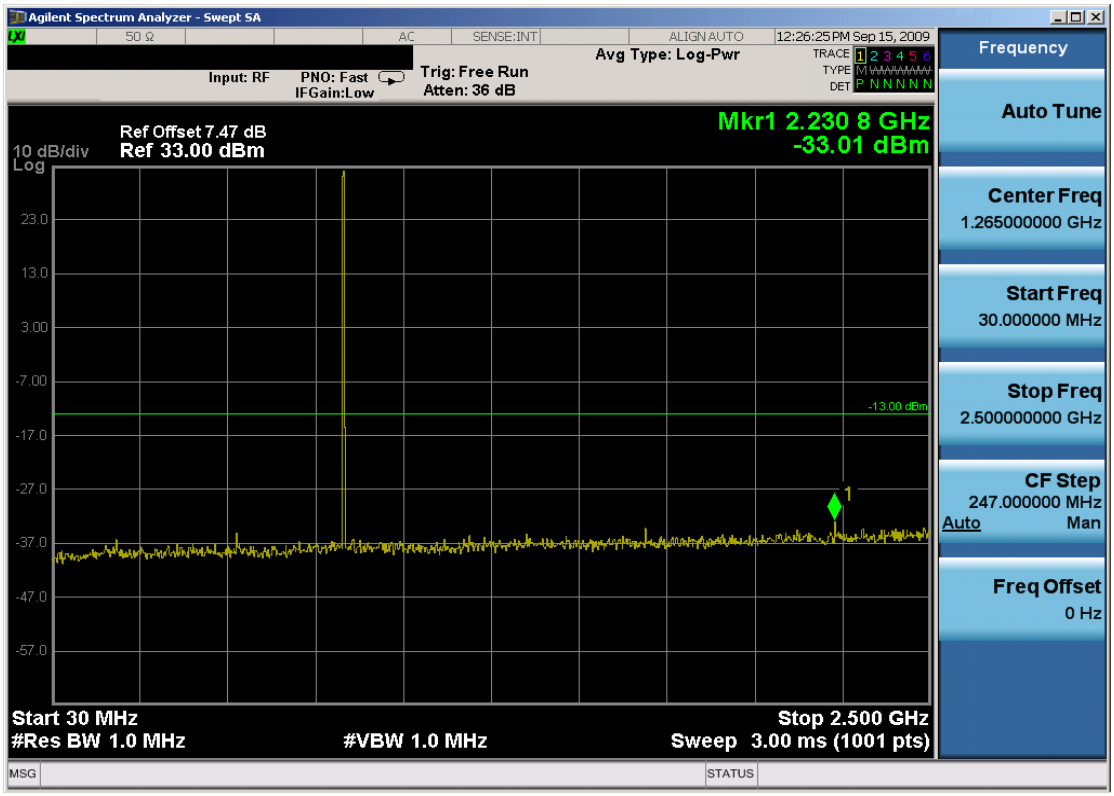
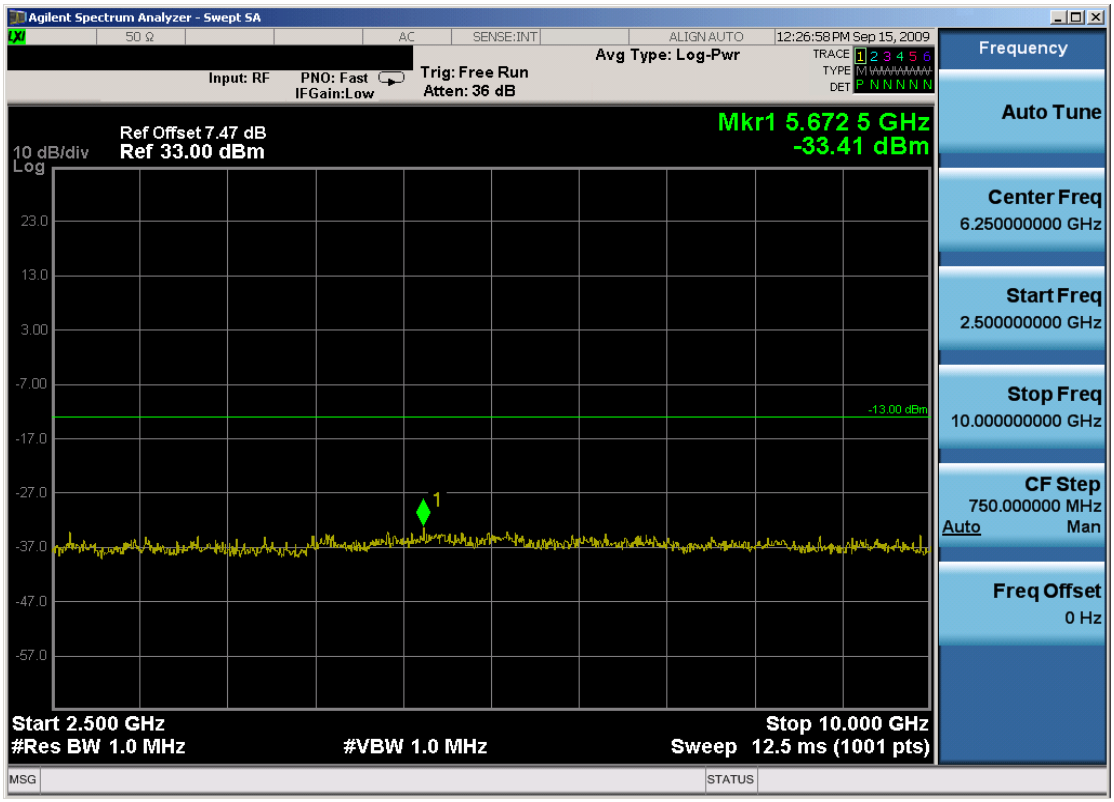


Plot 7-7. Conducted Spurious Plot (Cellular GSM Mode – Ch. 251)



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

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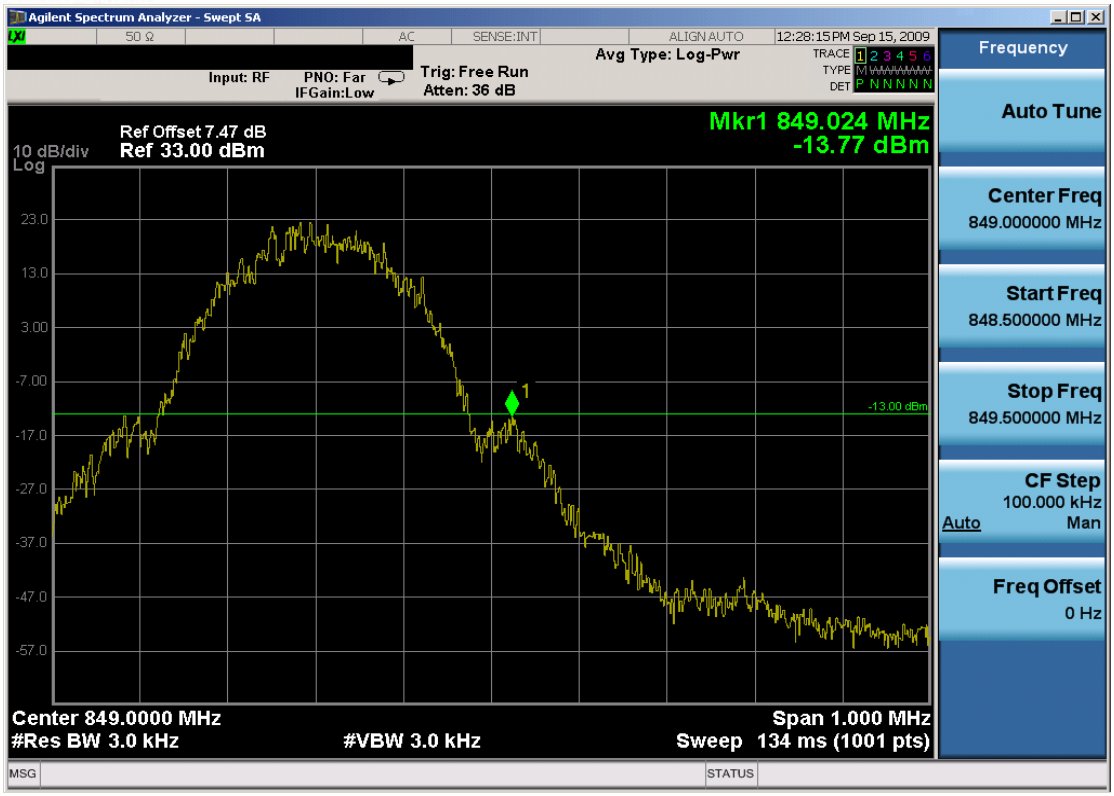
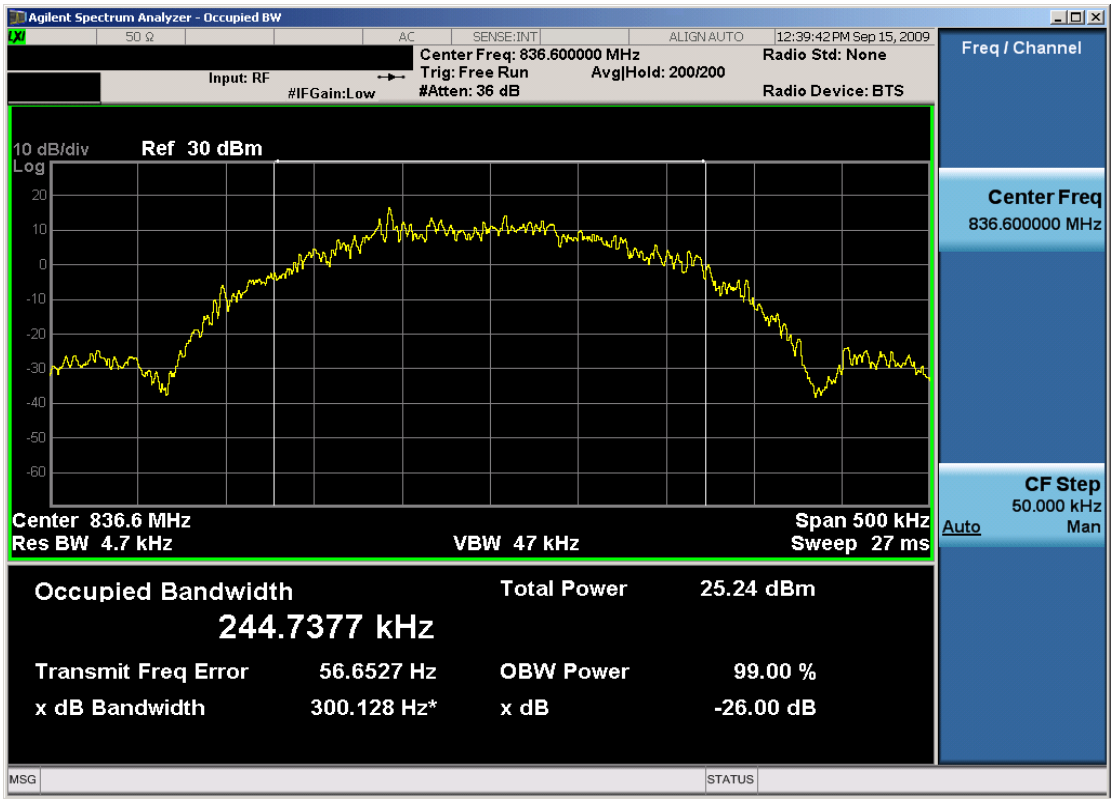


Plot 7-9. Band Edge Plot (Cellular GSM Mode – Ch. 251)



Plot 7-10. Occupied Bandwidth Plot (EDGE850 Mode – Ch. 190)

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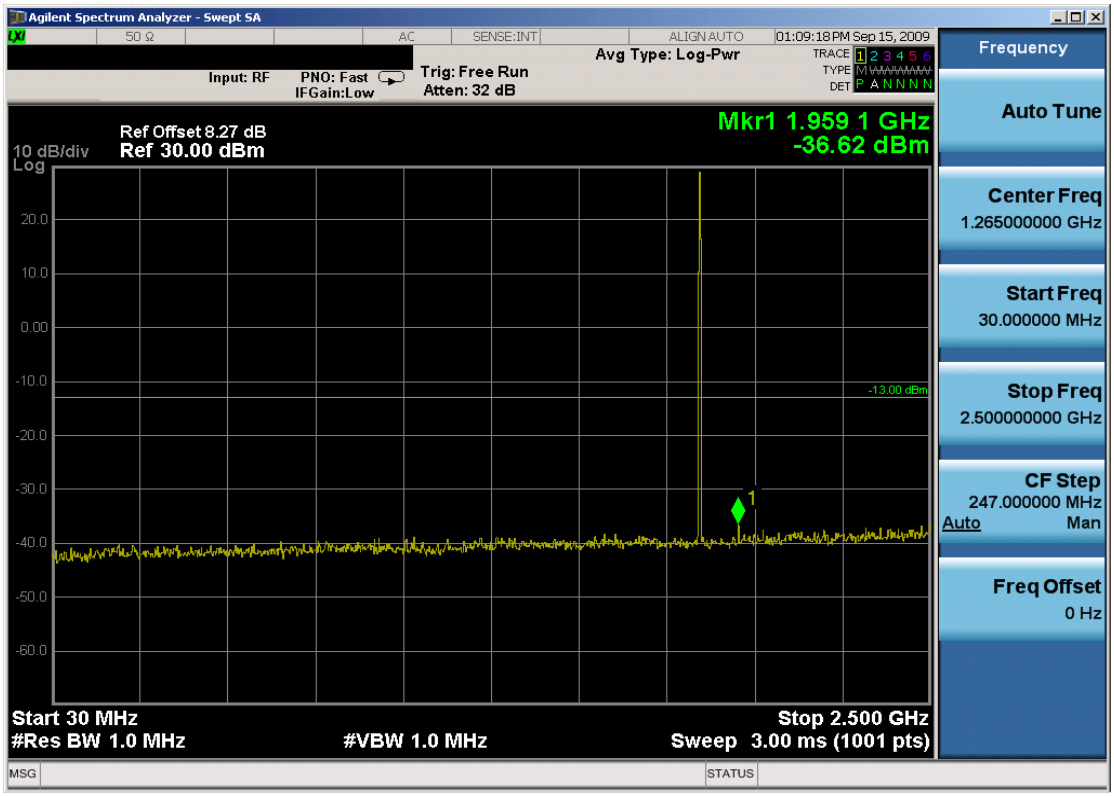
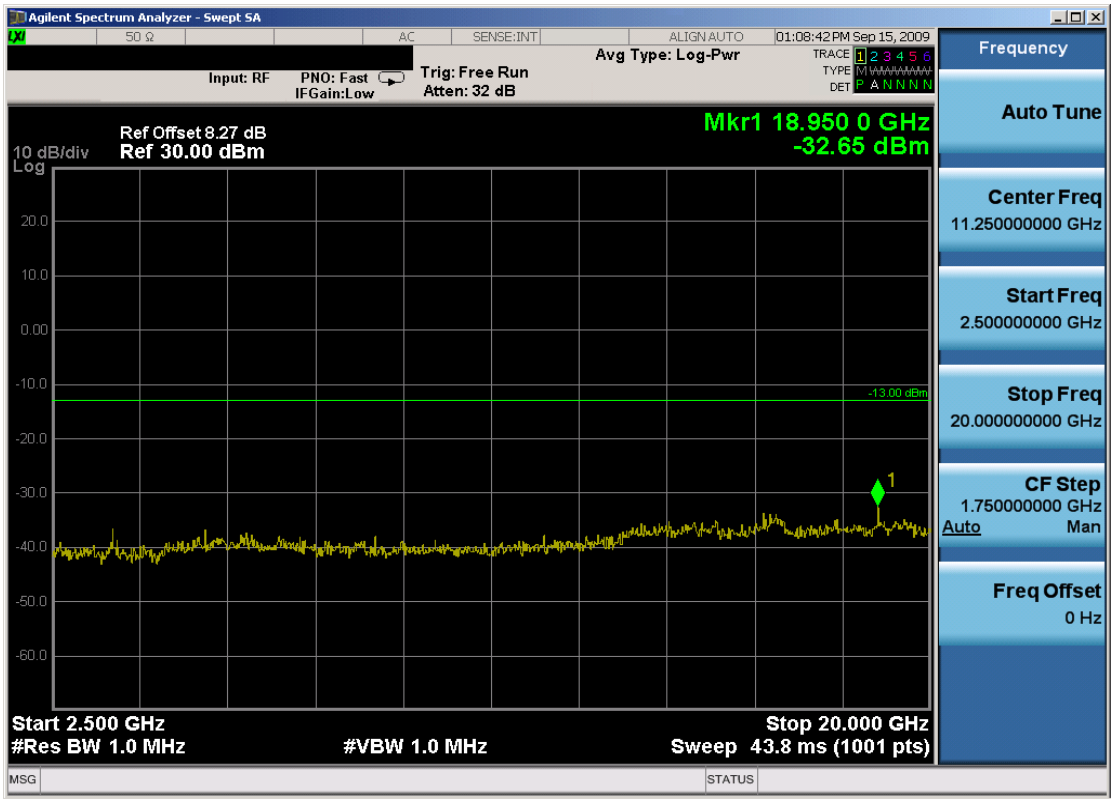


Plot 7-11. Conducted Spurious Plot (PCS GSM Mode – Ch. 512)



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

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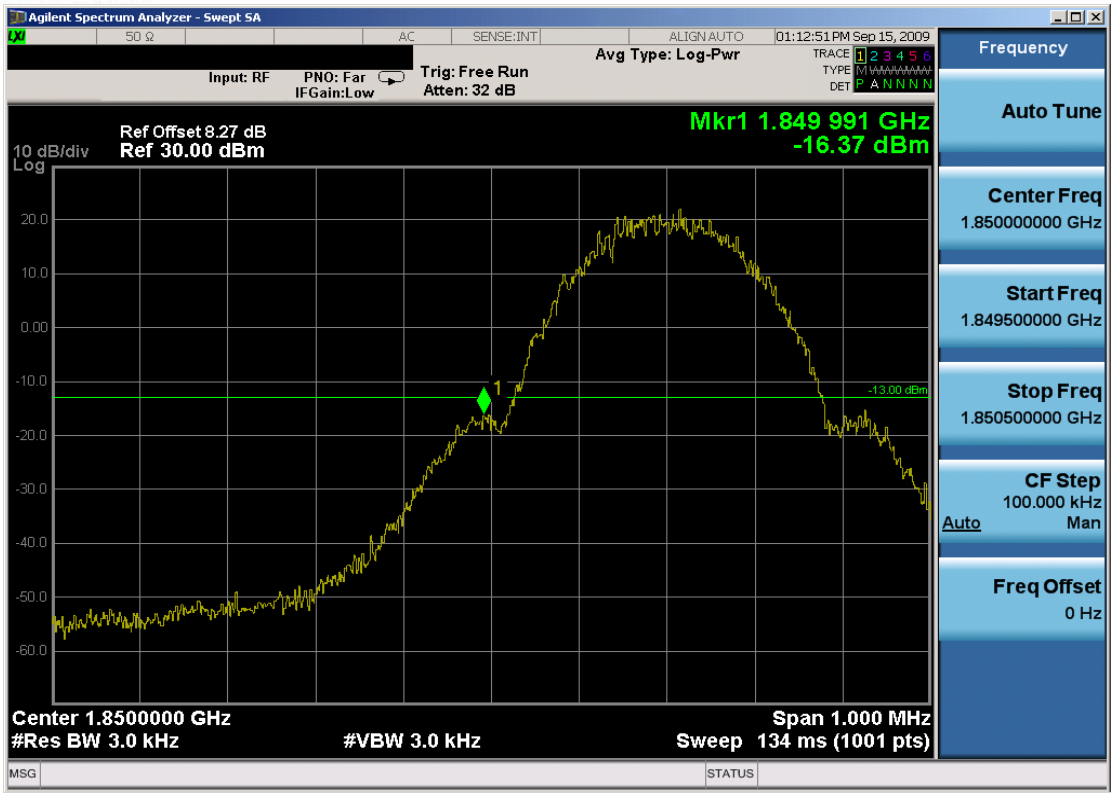
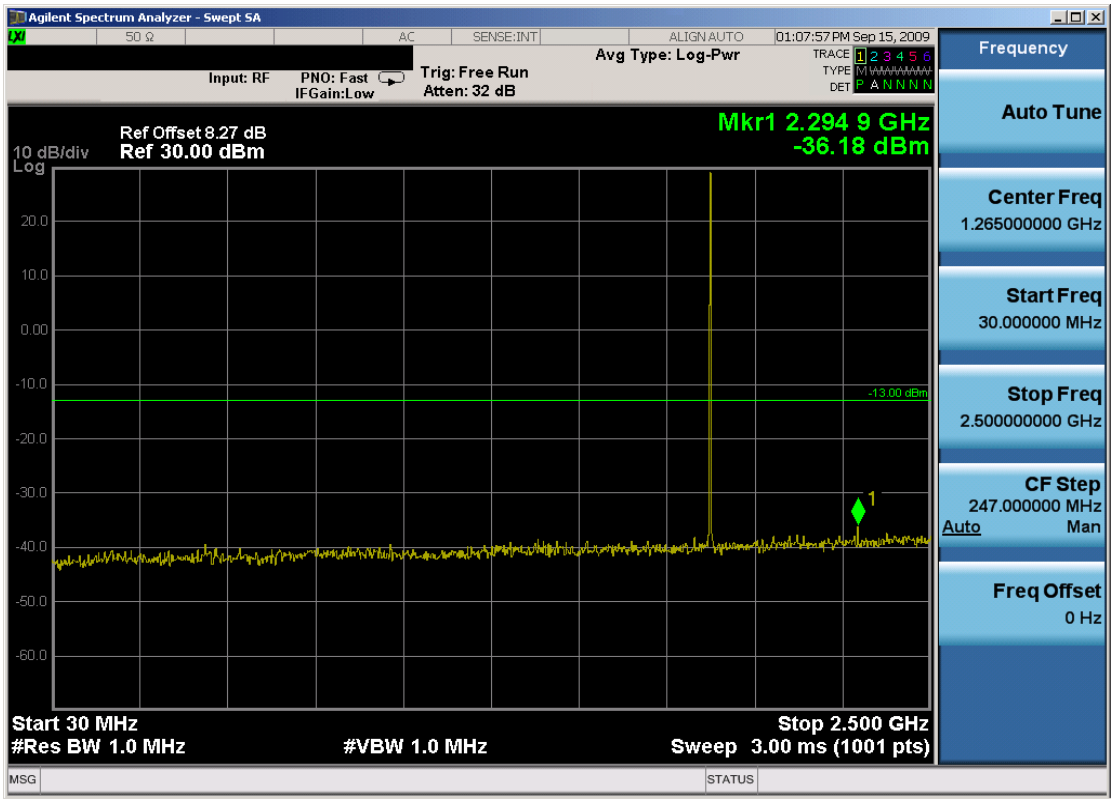


Plot 7-13. Band Edge Plot (PCS GSM Mode – Ch. 512)



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

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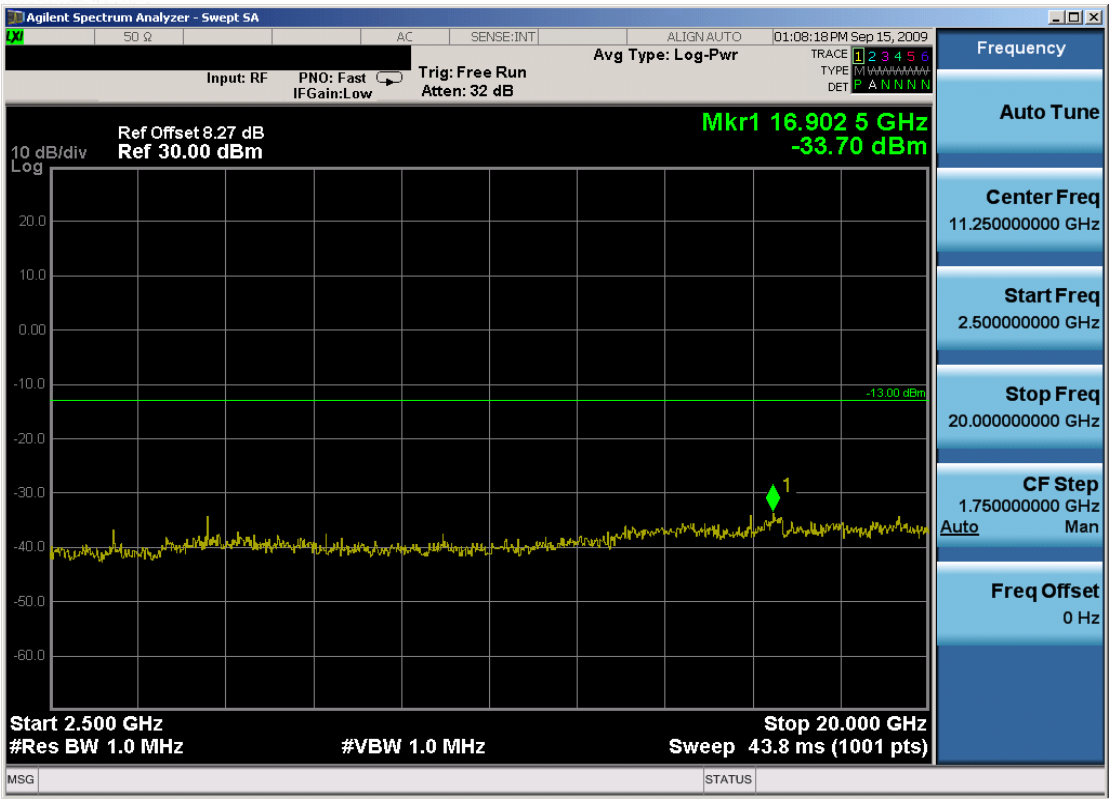
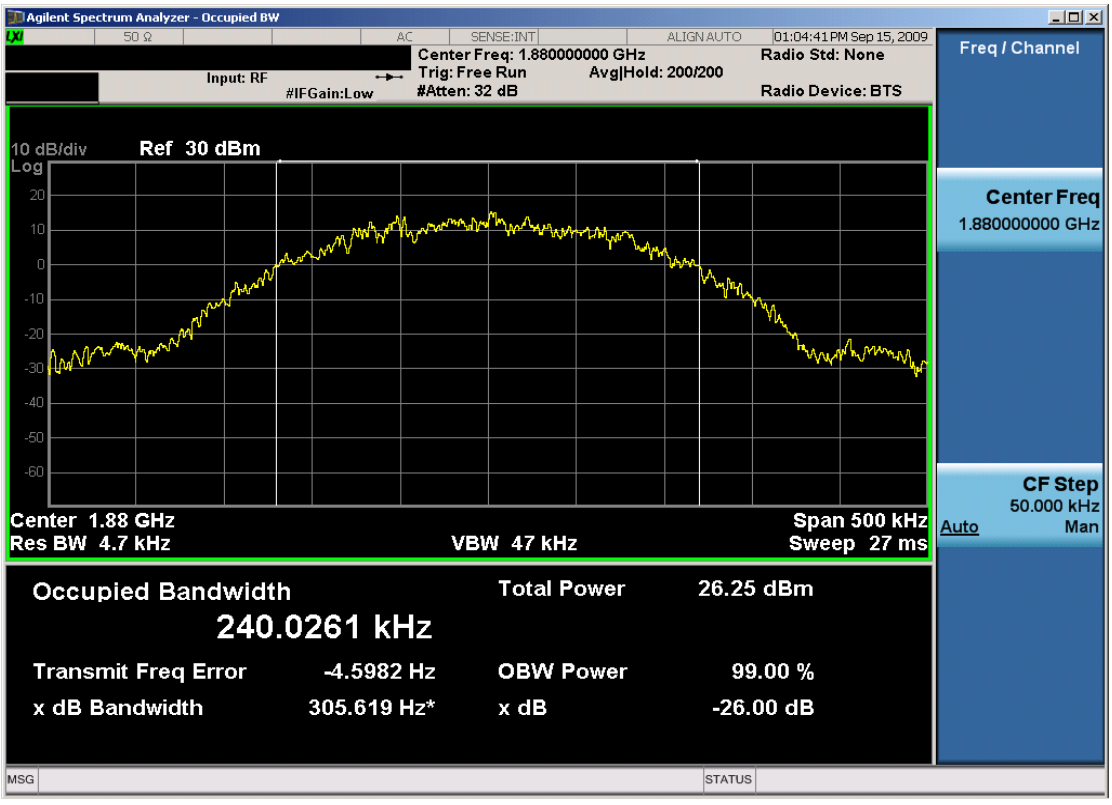


Plot 7-15. Conducted Spurious Plot (PCS GSM Mode – Ch. 661)



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

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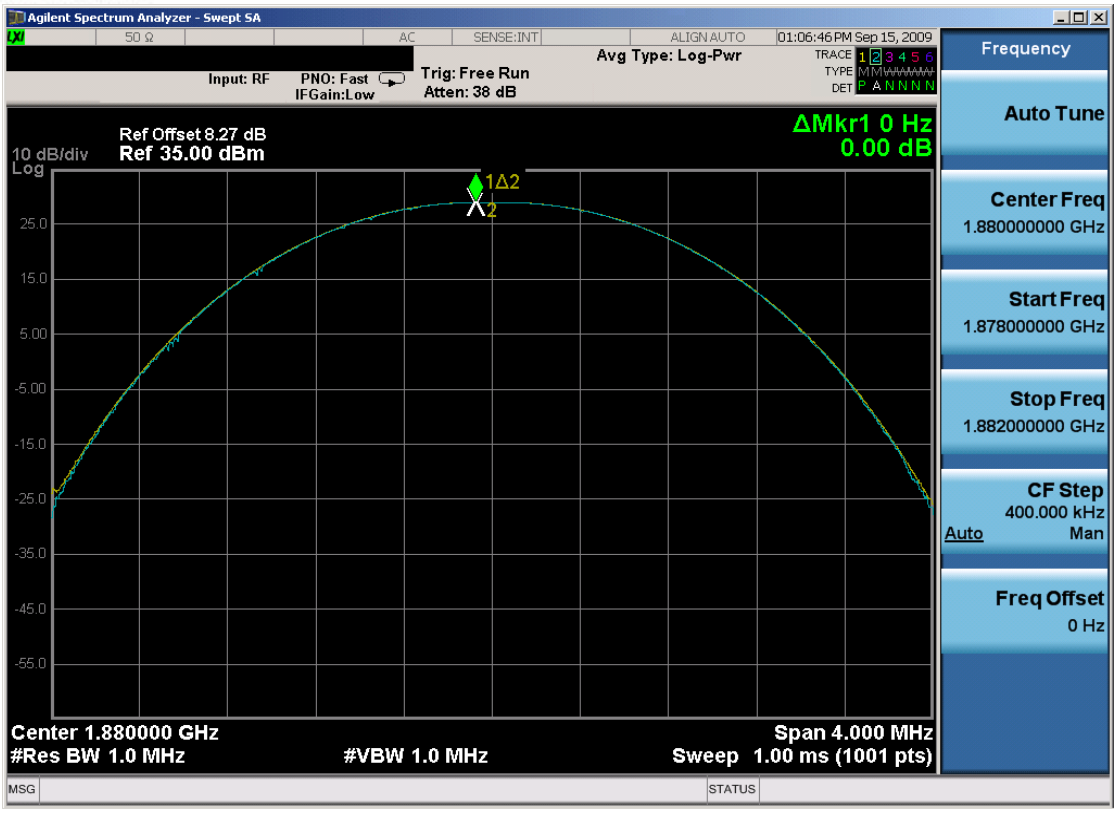
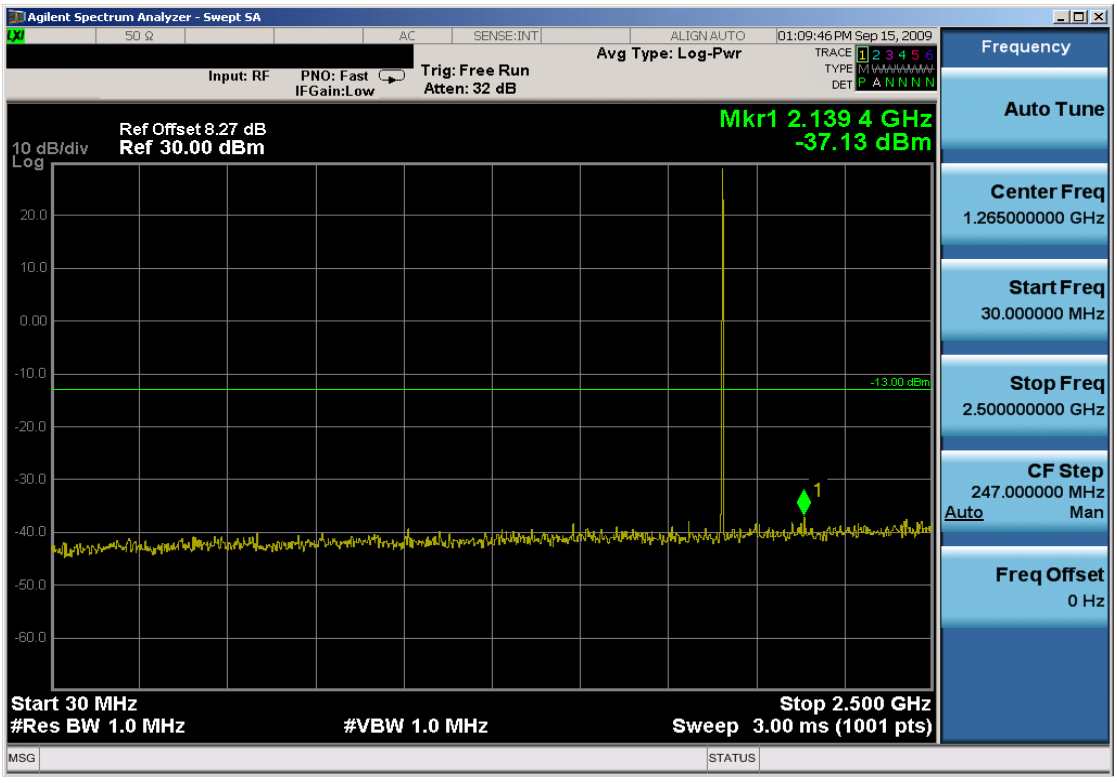


Plot 7-17. Peak-Average Ratio Plot (PCS GSM Mode – Ch. 661)



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

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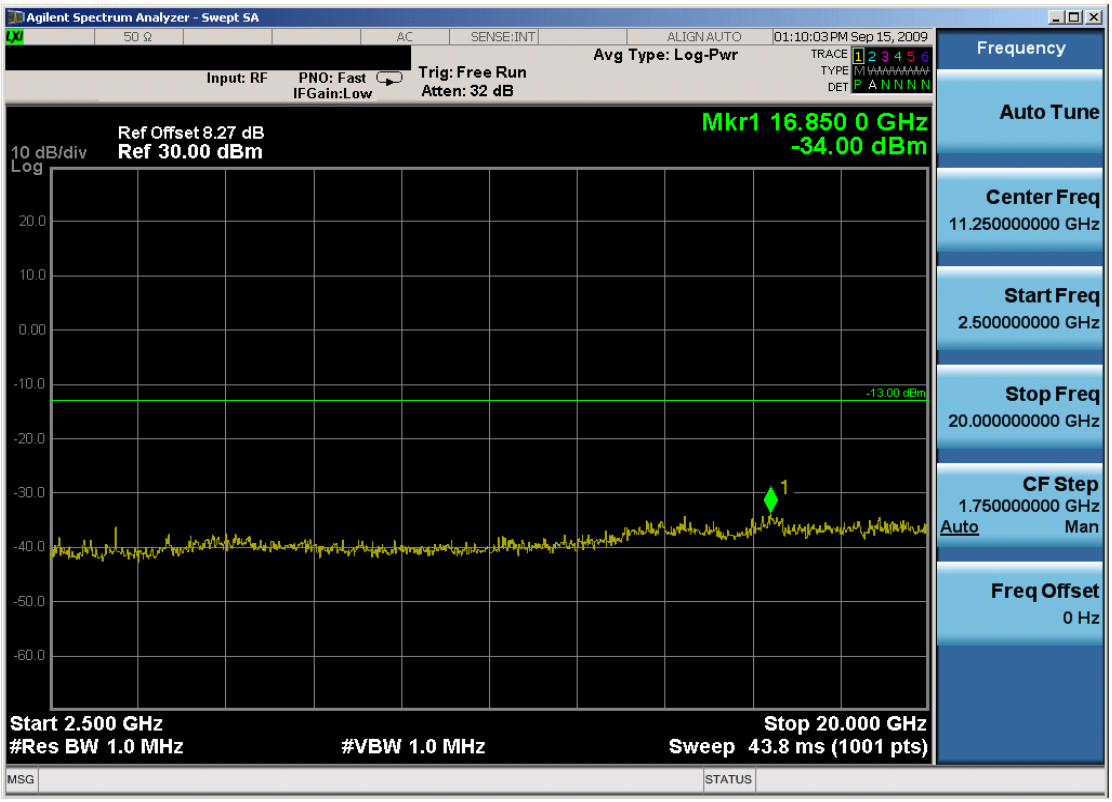
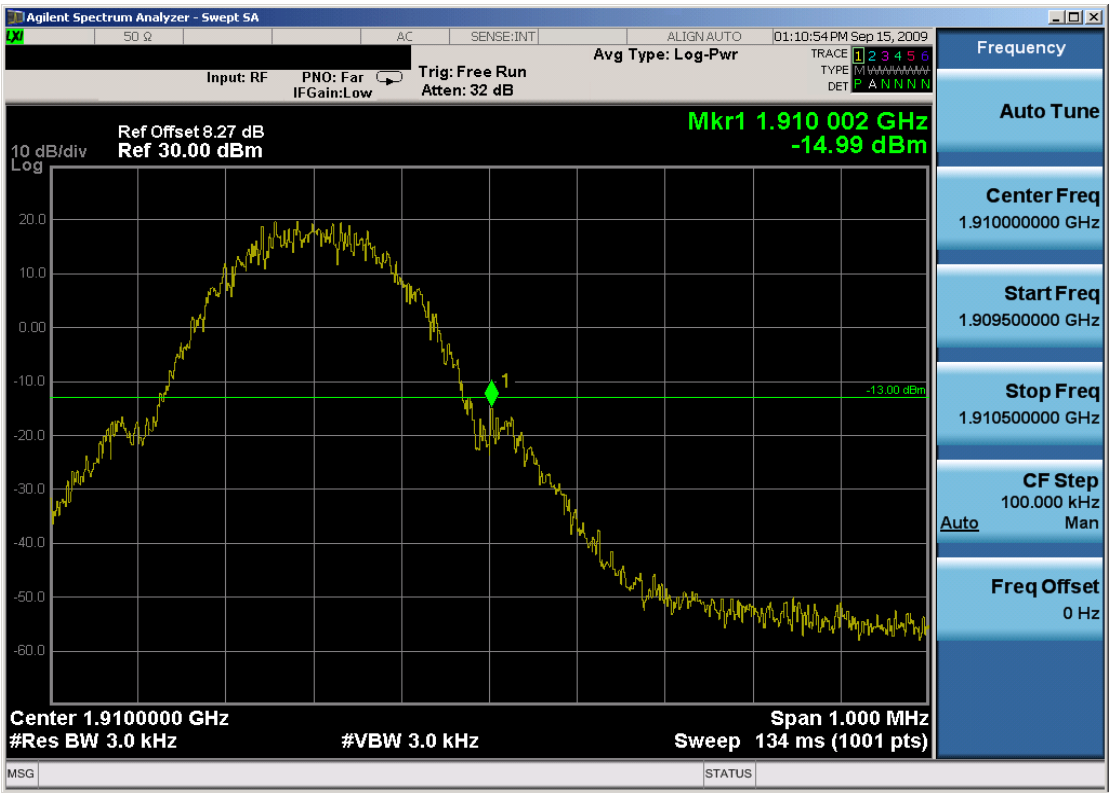


Plot 7-19. Conducted Spurious Plot (PCS GSM Mode – Ch. 810)



Plot 7-20. Band Edge Plot (PCS GSM Mode – Ch. 810)

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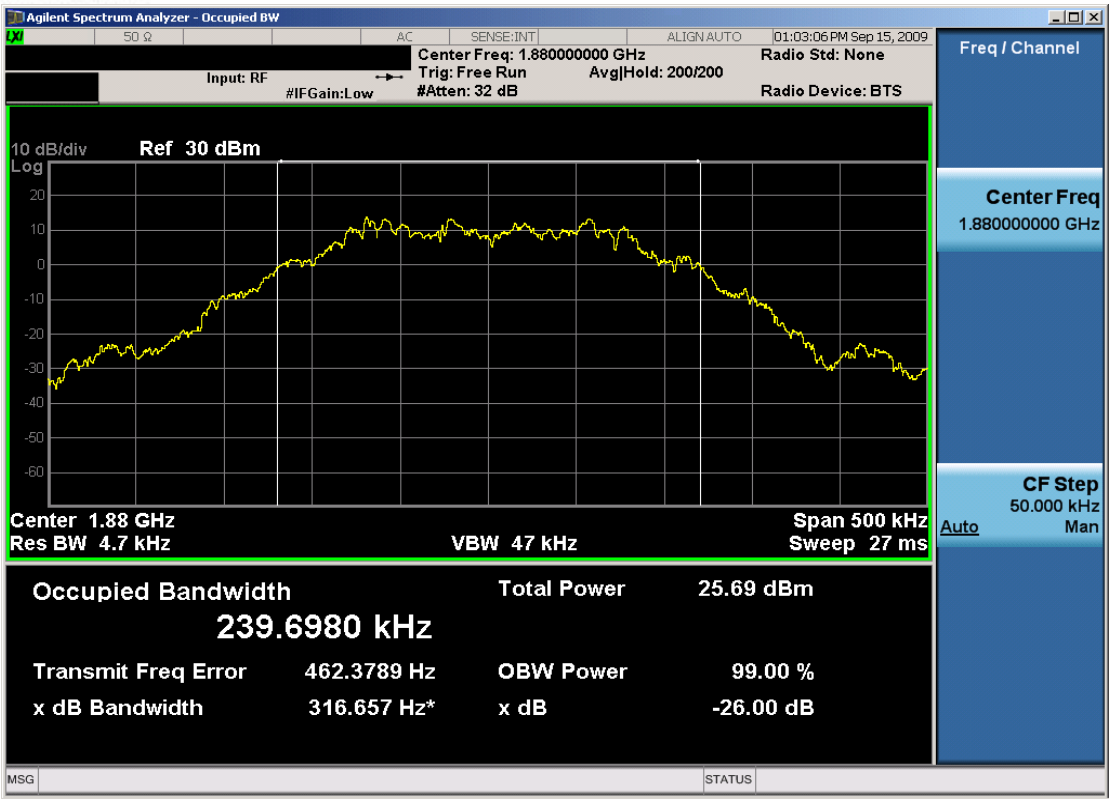
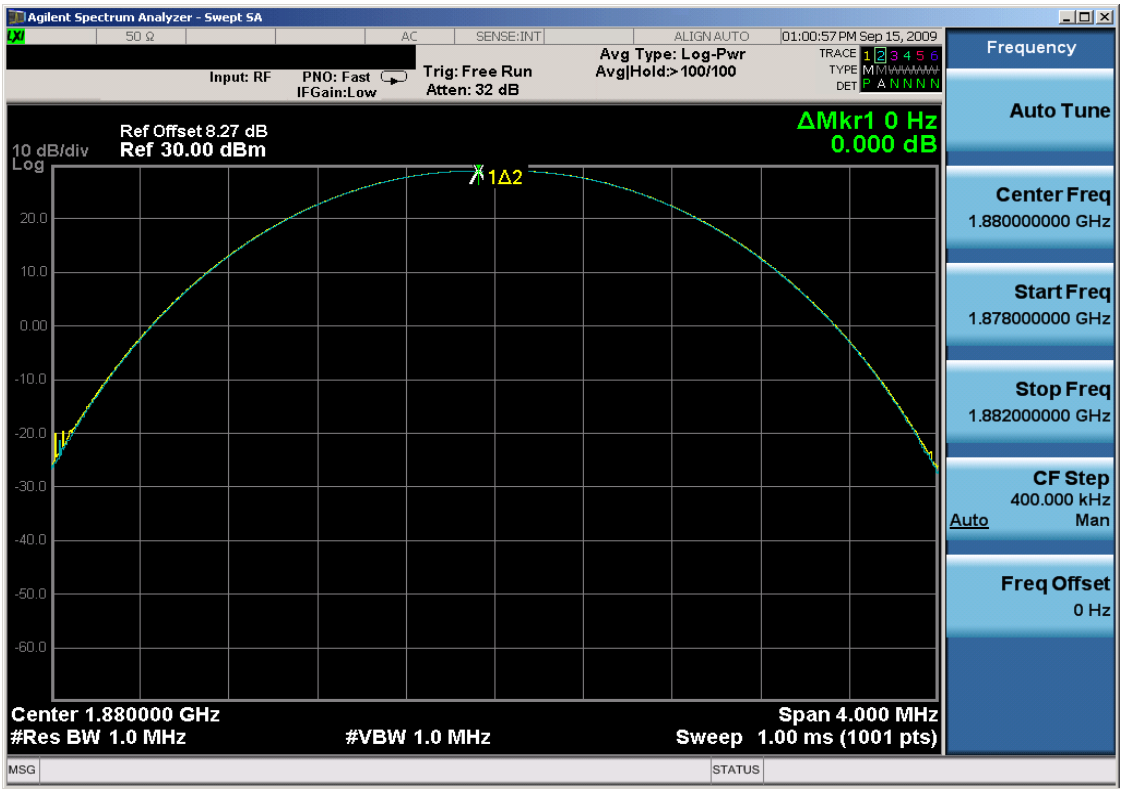


Plot 7-21. Occupied Bandwidth Plot (EDGE1900 Mode – Ch. 661)



Plot 7-22. Peak-Average Ratio Plot (EDGE1900 Mode – Ch. 661)

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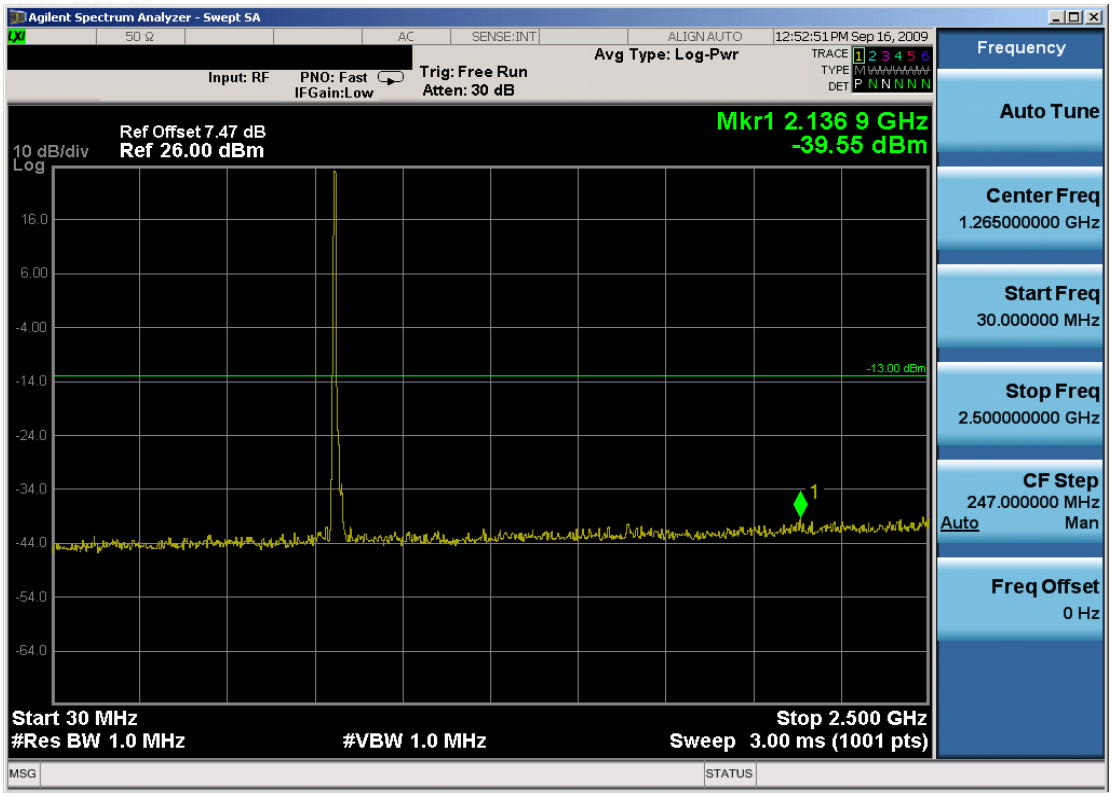
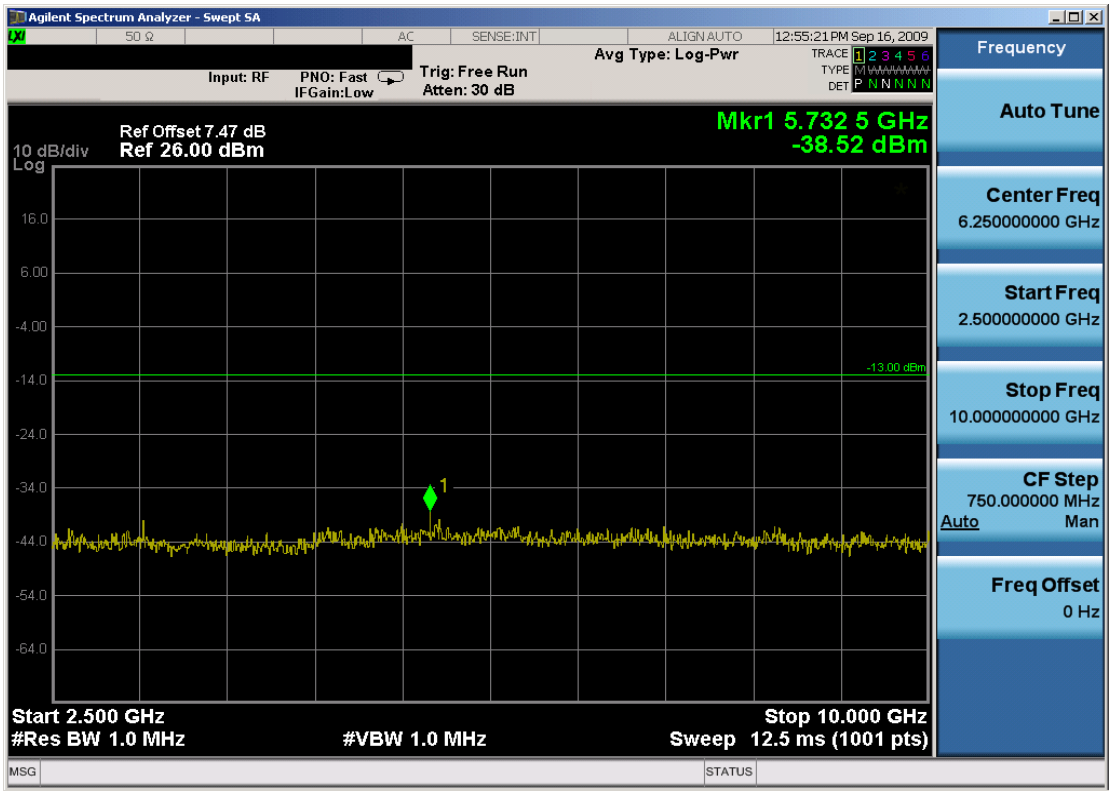


Plot 7-23. Conducted Spurious Plot (Cellular WCDMA Mode – Ch. 4132)



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

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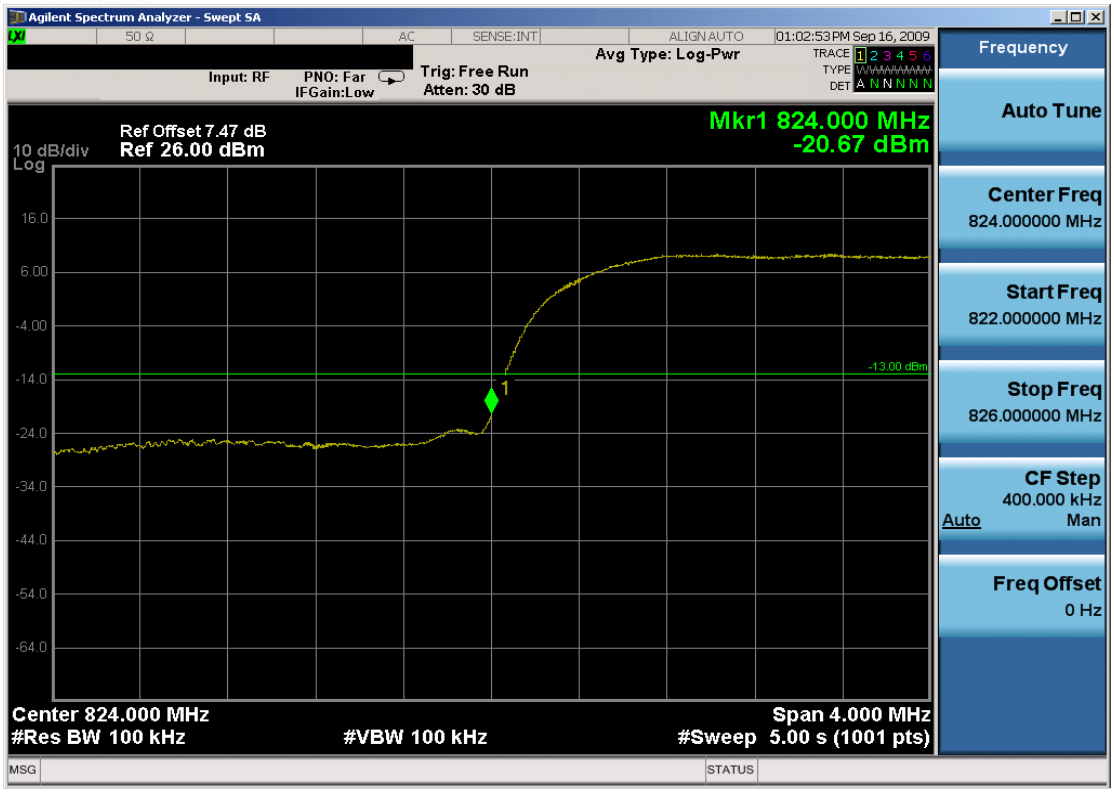

Plot 7-25. Band Edge Plot (Cellular WCDMA Mode – Ch. 4132)

Plot 7-26. 4MHz Span Plot (Cellular WCDMA Mode – Ch. 4132)

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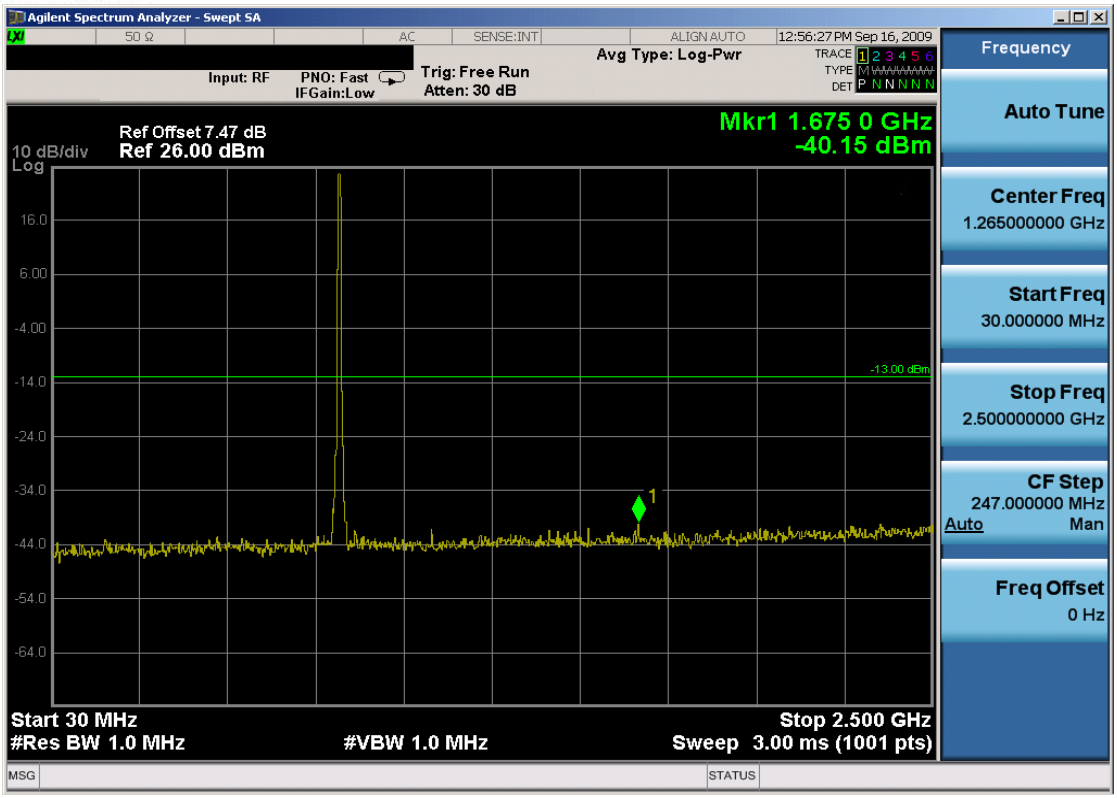
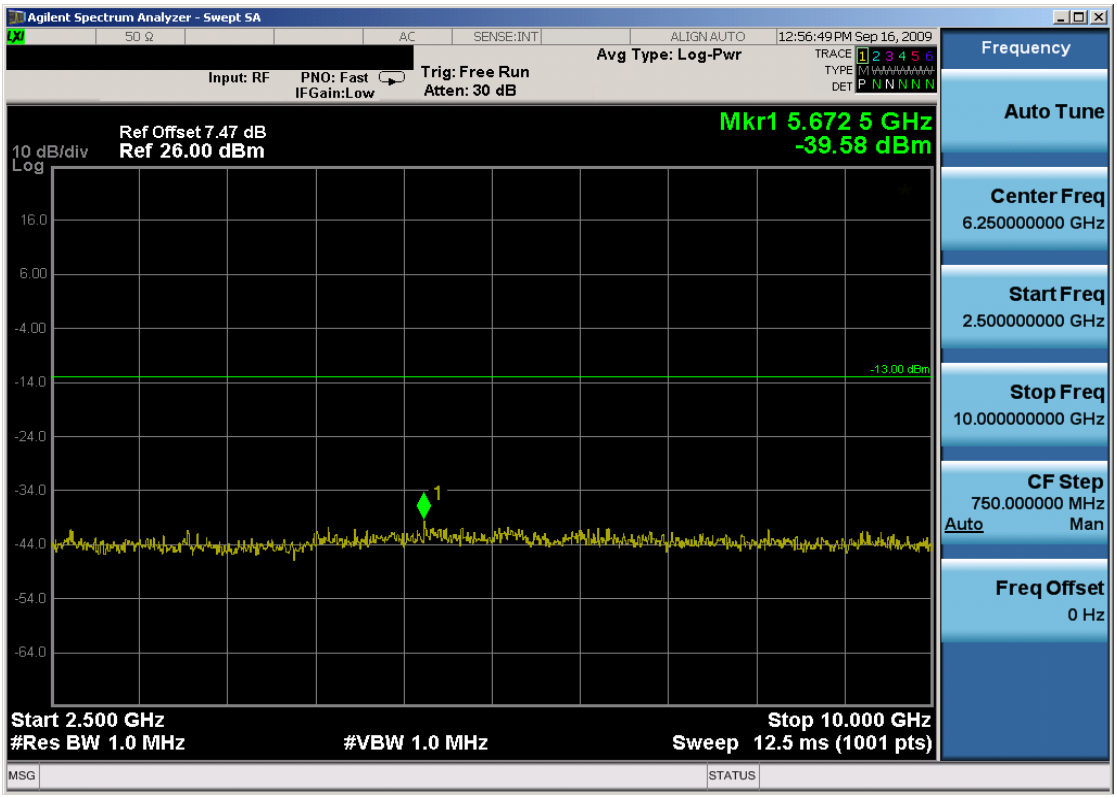


Plot 7-27. Conducted Spurious Plot (Cellular WCDMA Mode – Ch. 4183)



Plot 7-28. Conducted Spurious Plot (Cellular WCDMA Mode – Ch. 4183)

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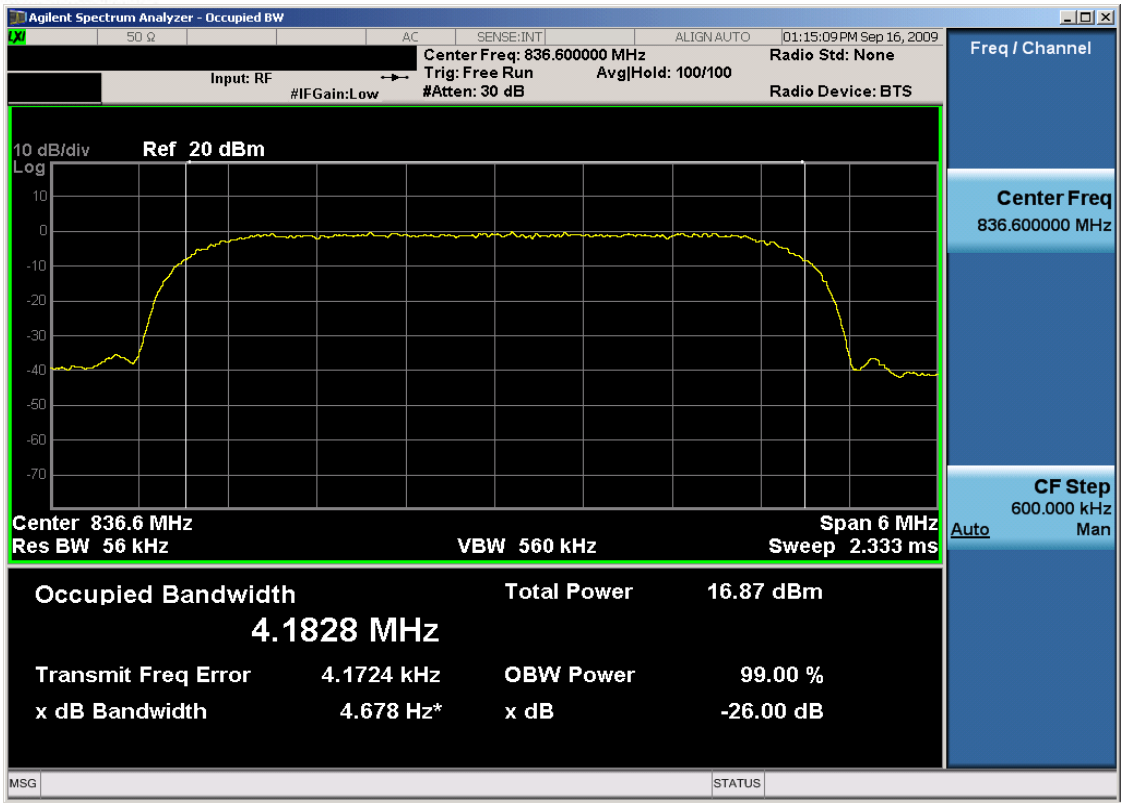
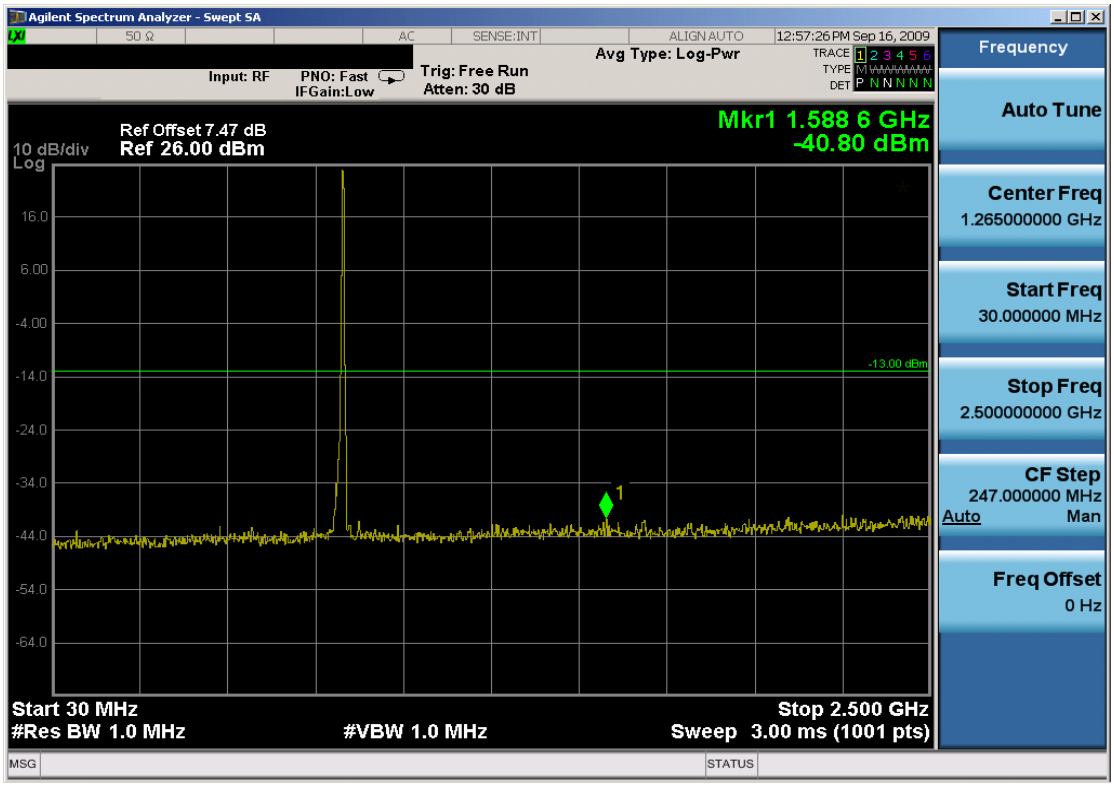


Plot 7-29. Occupied Bandwidth Plot (Cellular WCDMA Mode – Ch. 4183)



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

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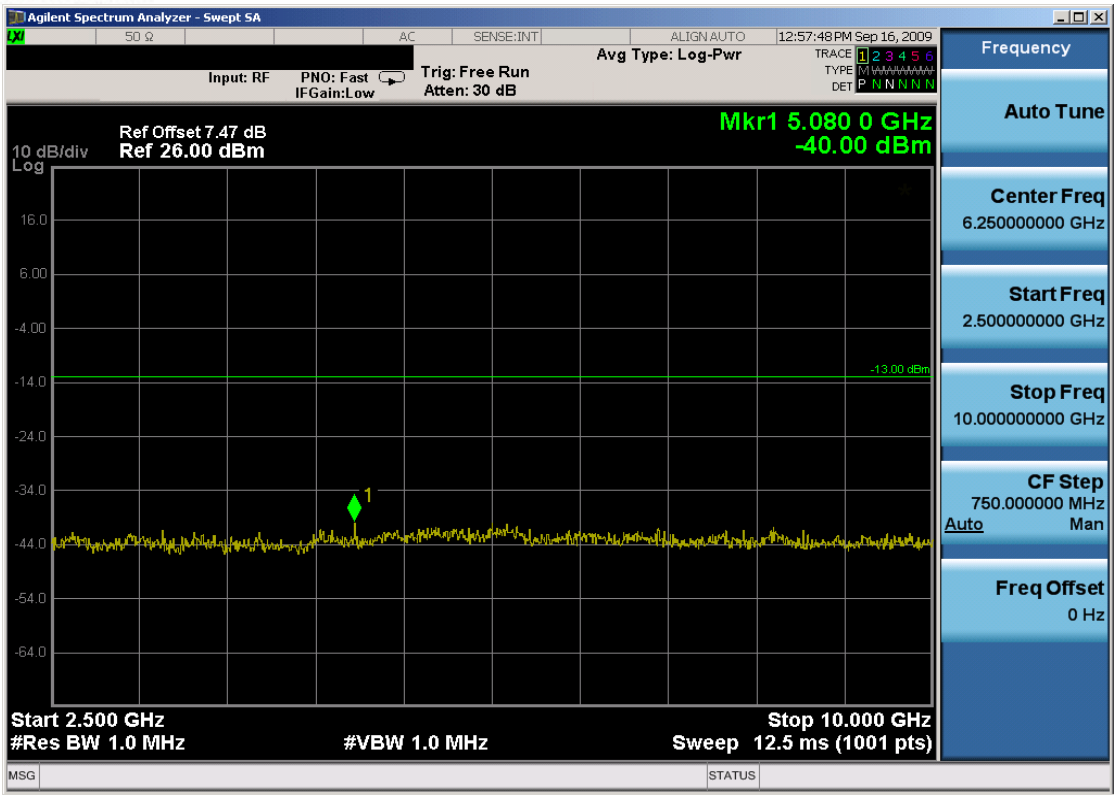
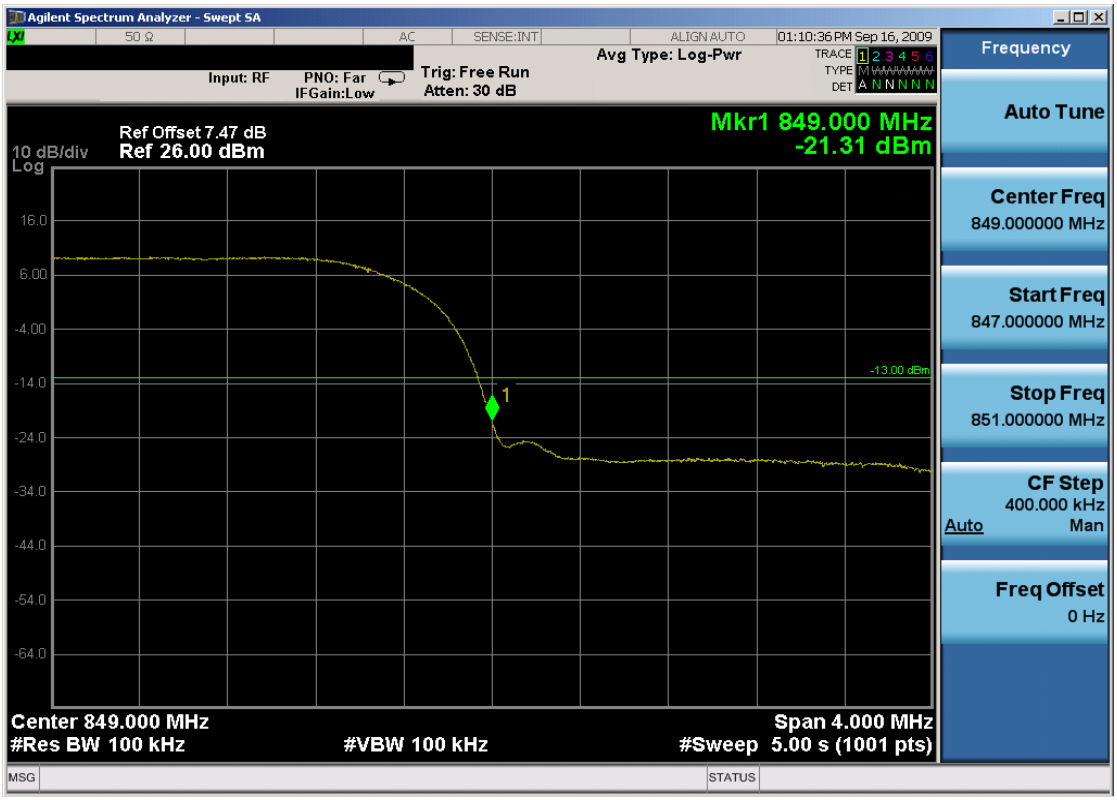


Plot 7-31. Conducted Spurious Plot (Cellular WCDMA Mode – Ch. 4233)



Plot 7-32. Band Edge Plot (Cellular WCDMA Mode – Ch. 4233)

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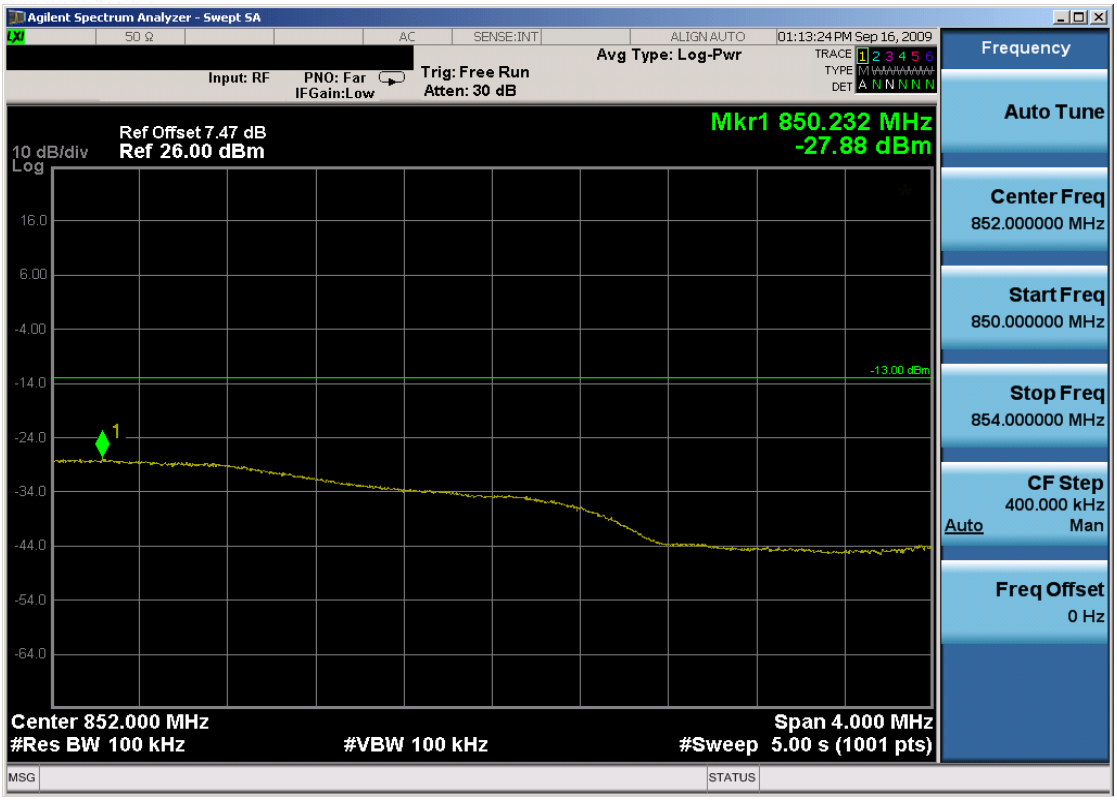
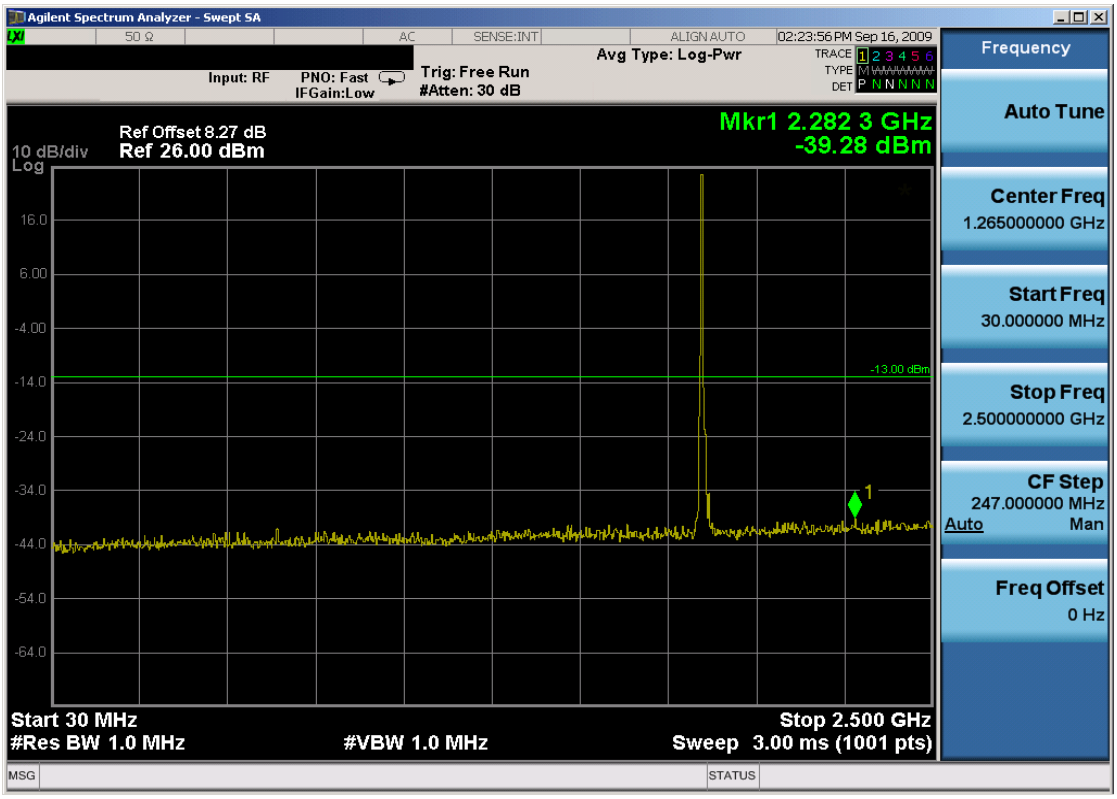


Plot 7-33. 4MHz Span Plot (Cellular WCDMA Mode – Ch. 4233)



Plot 7-34. Conducted Spurious Plot (PCS WCDMA Mode – Ch. 9262)

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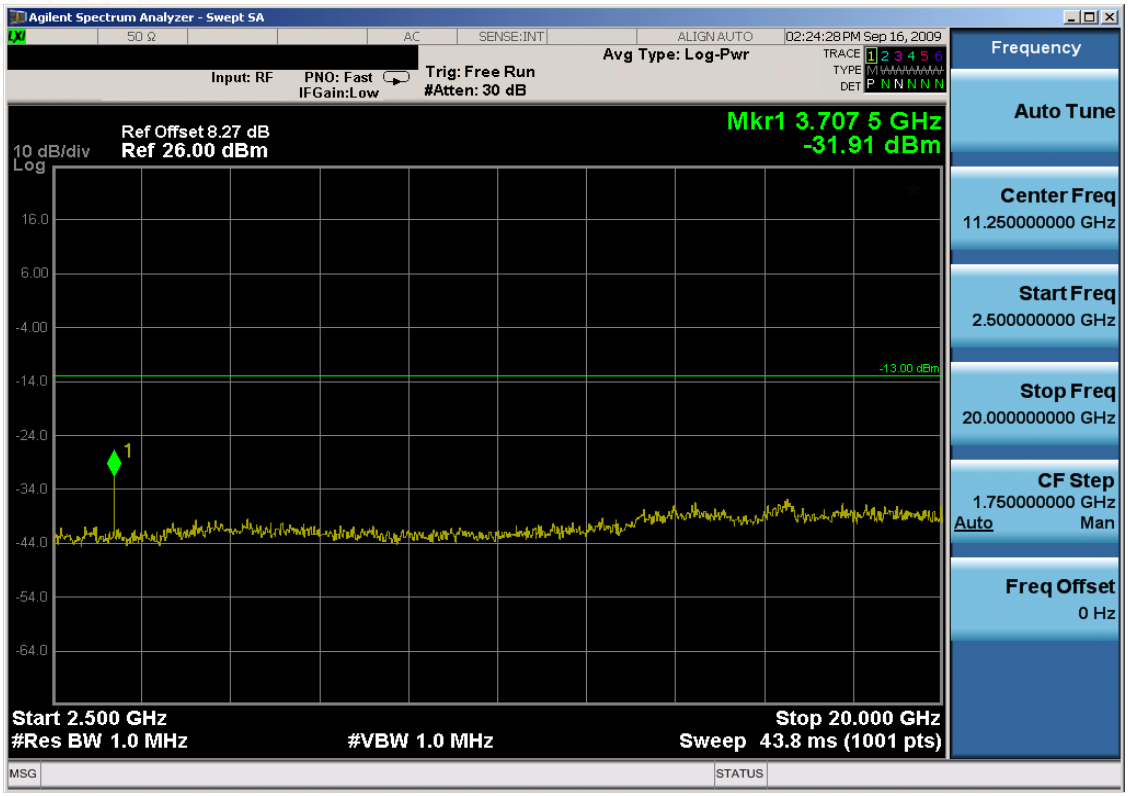
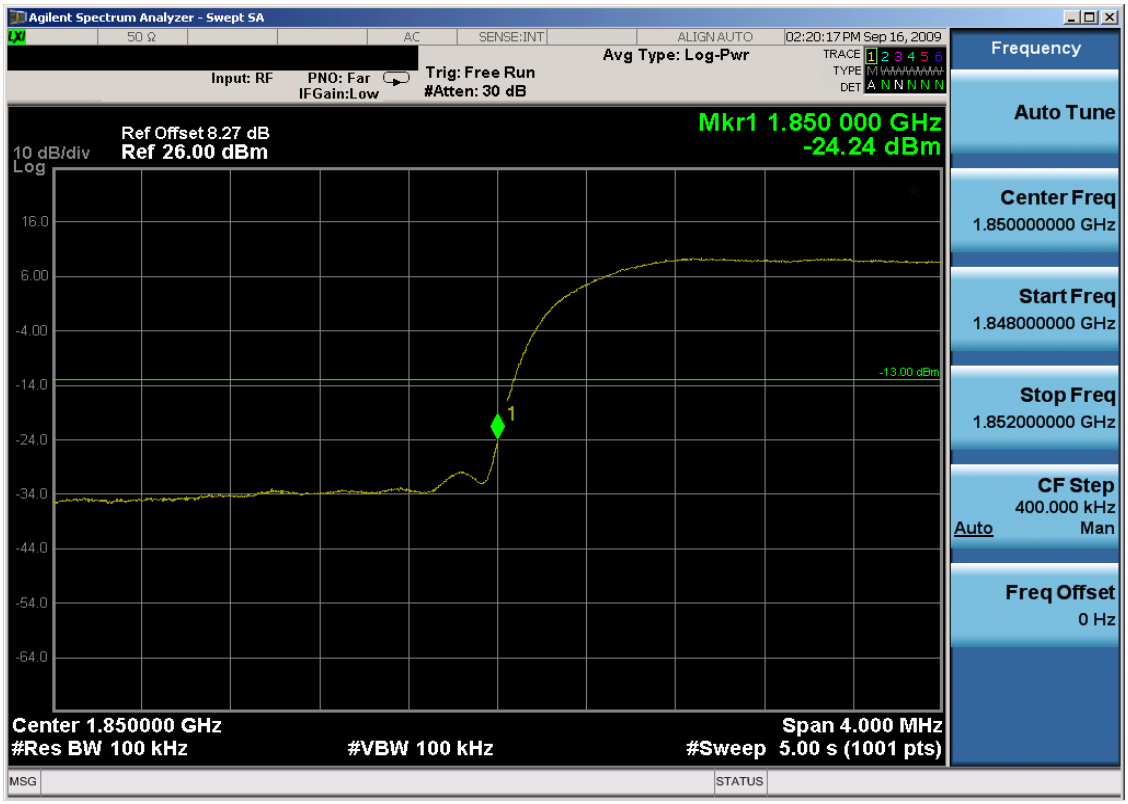


Plot 7-35. Conducted Spurious Plot (PCS WCDMA Mode – Ch. 9262)



Plot 7-36. Band Edge Plot (PCS WCDMA Mode – Ch. 9262)

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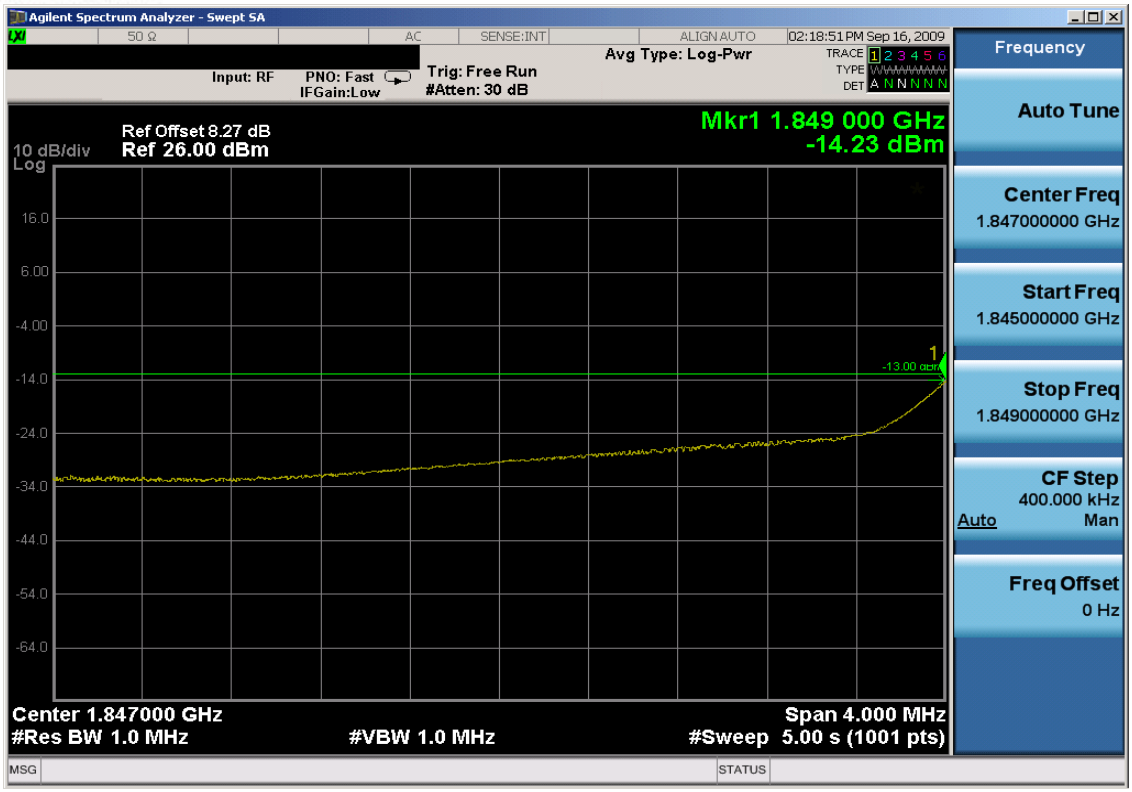
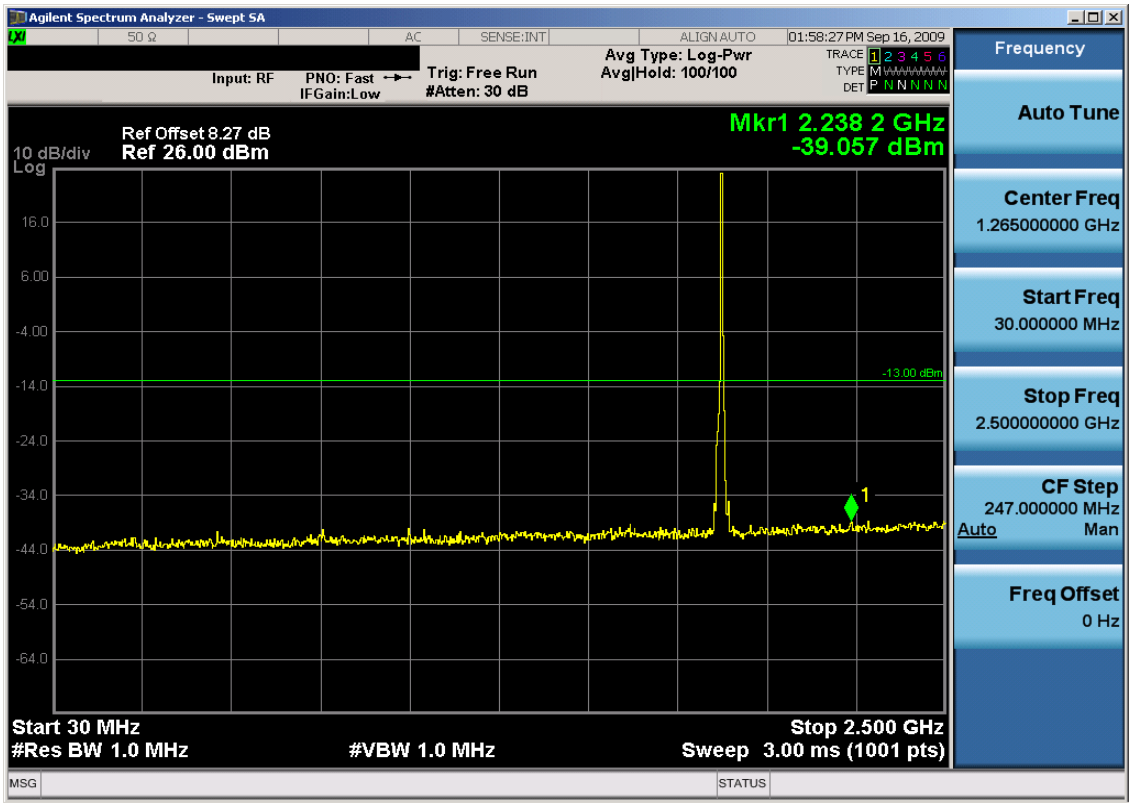


Plot 7-37. 4MHz Span Plot (PCS WCDMA Mode – Ch. 9262)



Plot 7-38. Conducted Spurious Plot (PCS WCDMA Mode – Ch. 9400)

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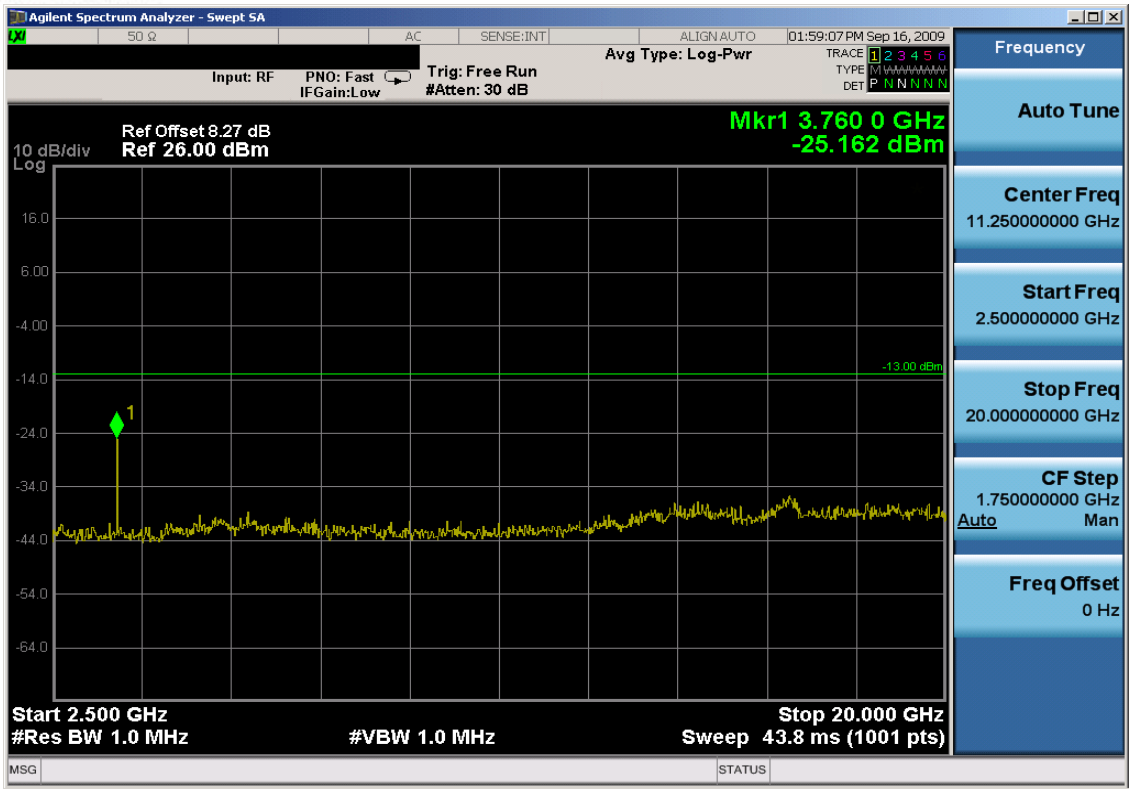
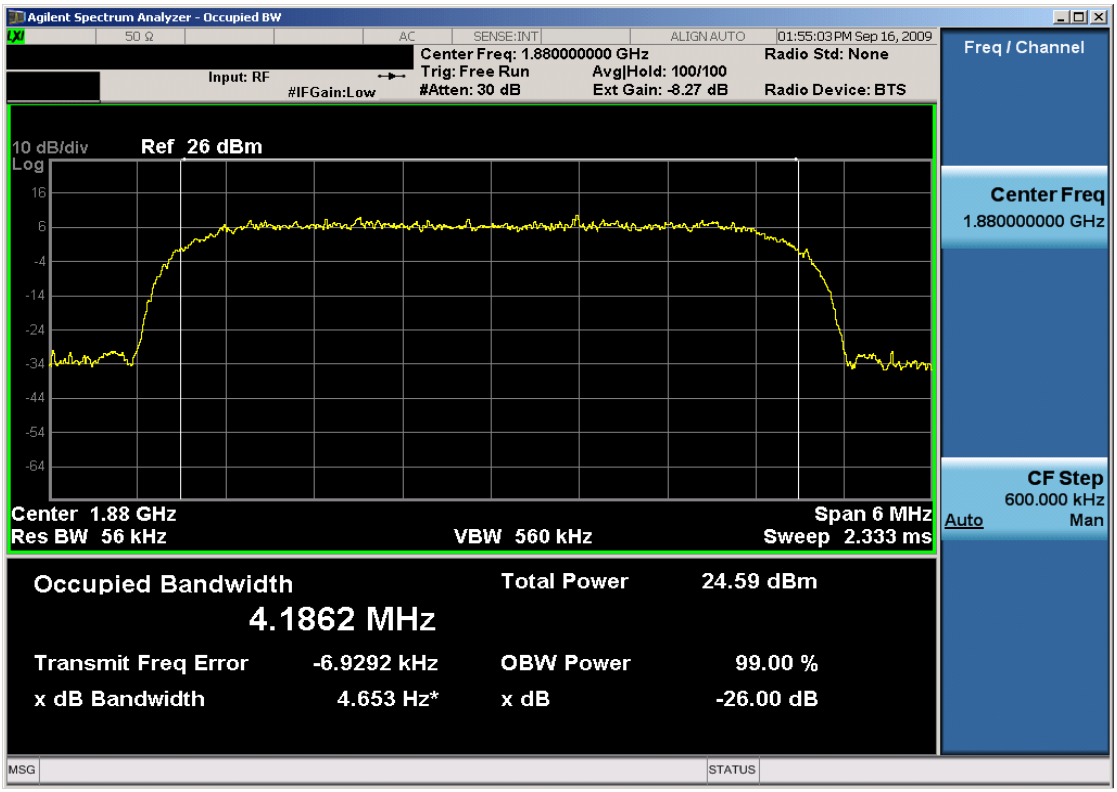


Plot 7-39. Conducted Spurious Plot (PCS WCDM A Mode – Ch. 9400)



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

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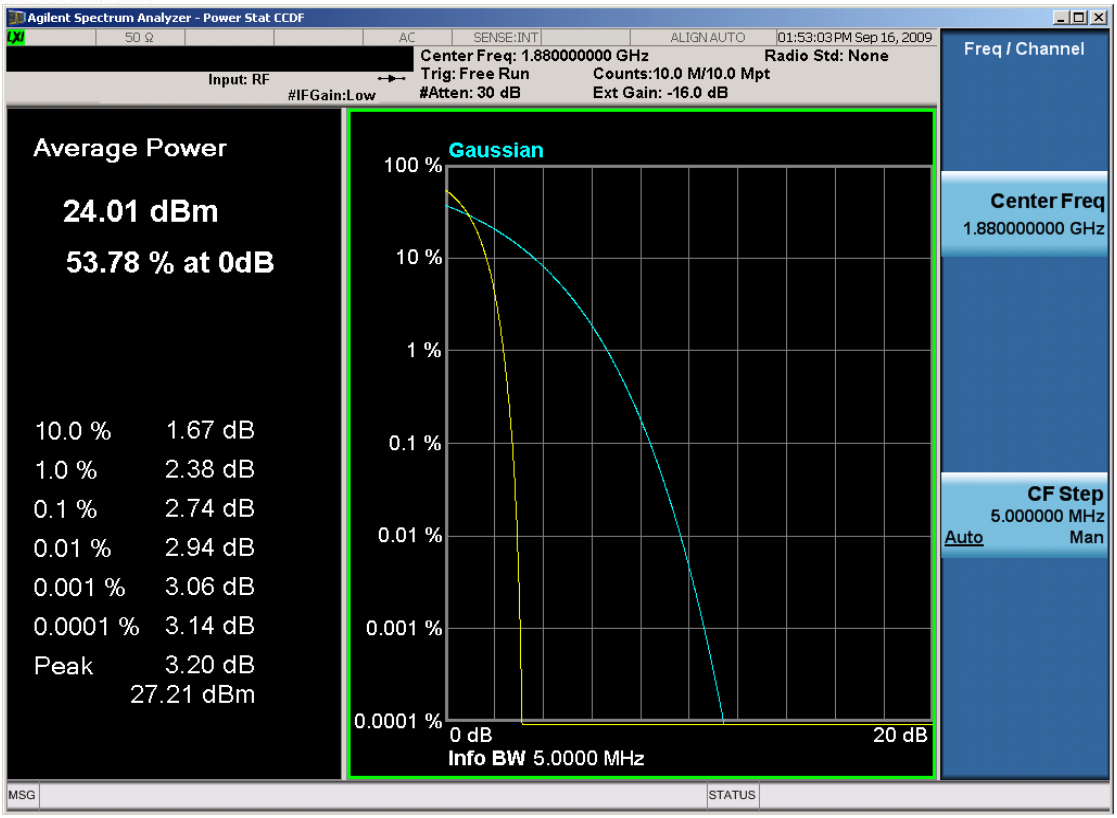
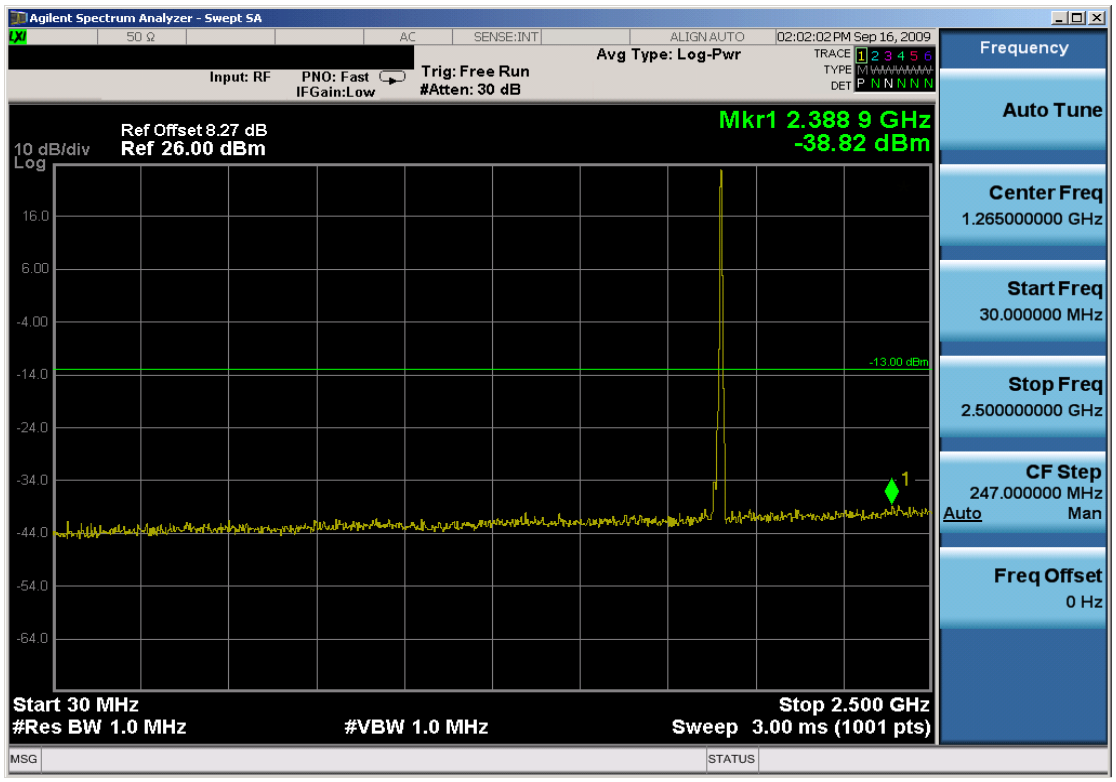


Plot 7-41. Peak-Average Ratio Plot (PCS WCDMA Mode – Ch. 9400)



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

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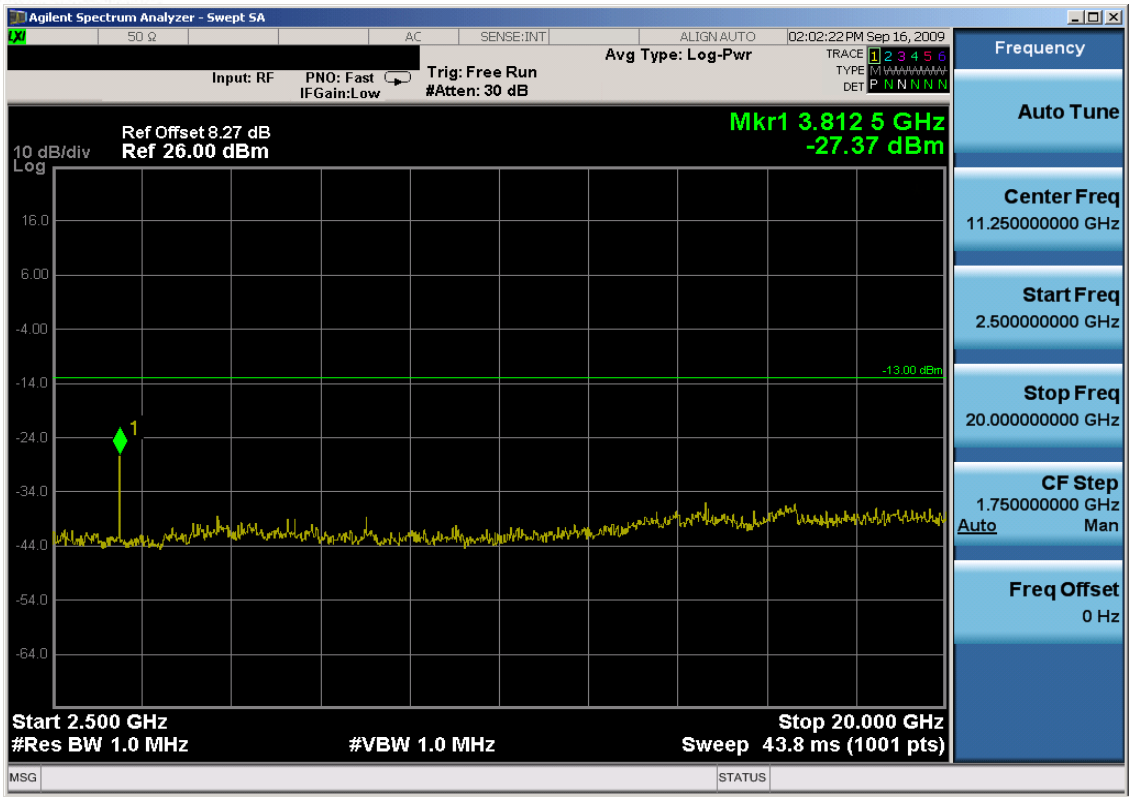
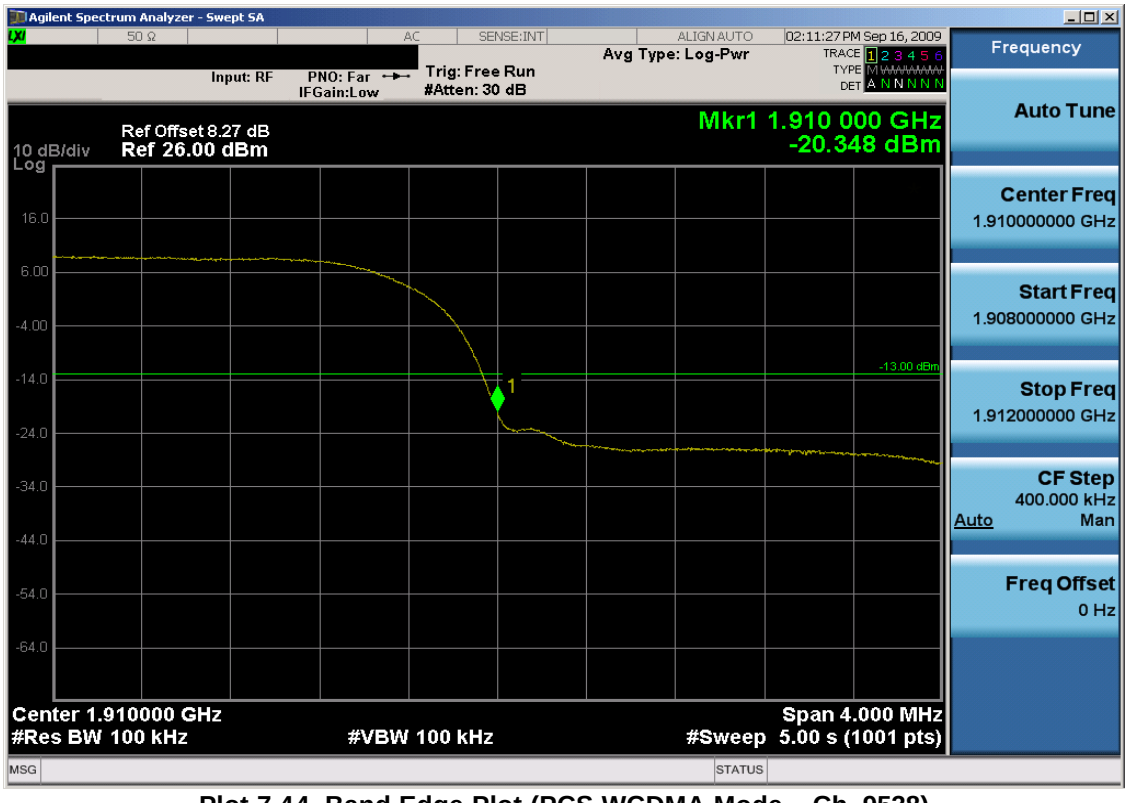


Plot 7-43. Conducted Spurious Plot (PCS WCDMA Mode – Ch. 9538)



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

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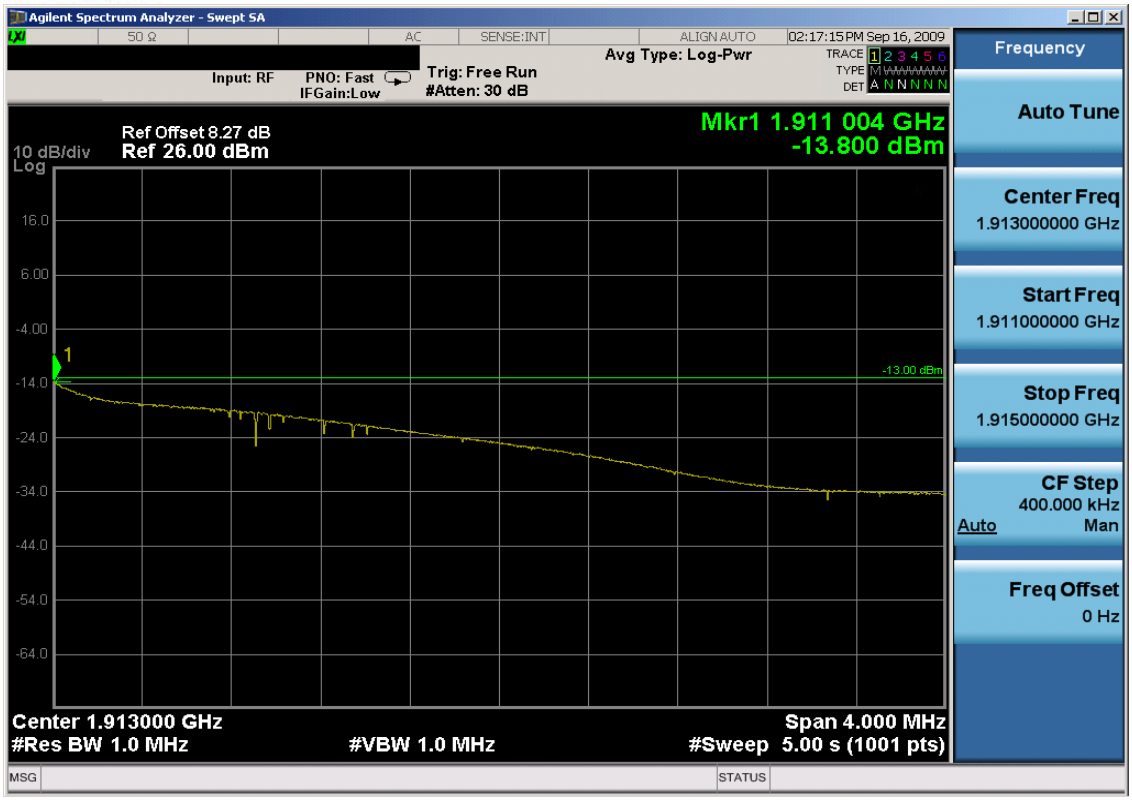
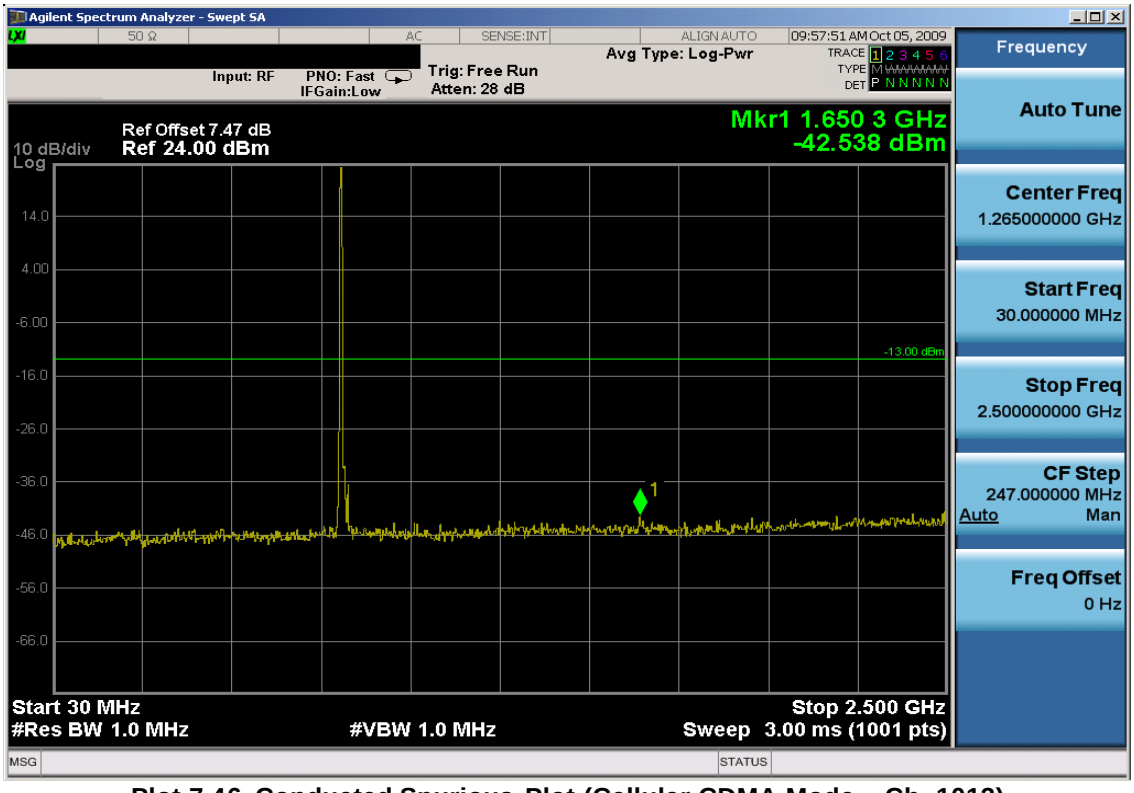


Plot 7-45. 4MHz Span Plot (PCS WCDMA Mode – Ch. 9538)



Plot 7-46. Conducted Spurious Plot (Cellular CDMA Mode – Ch. 1013)

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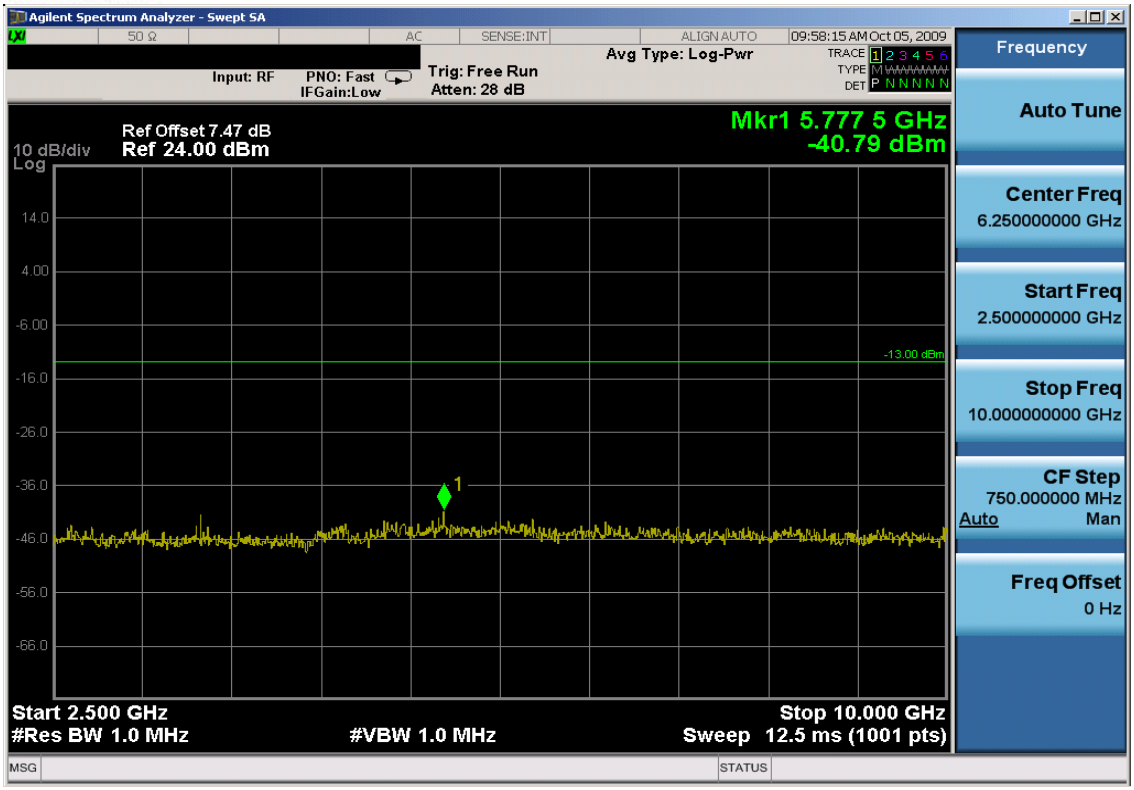
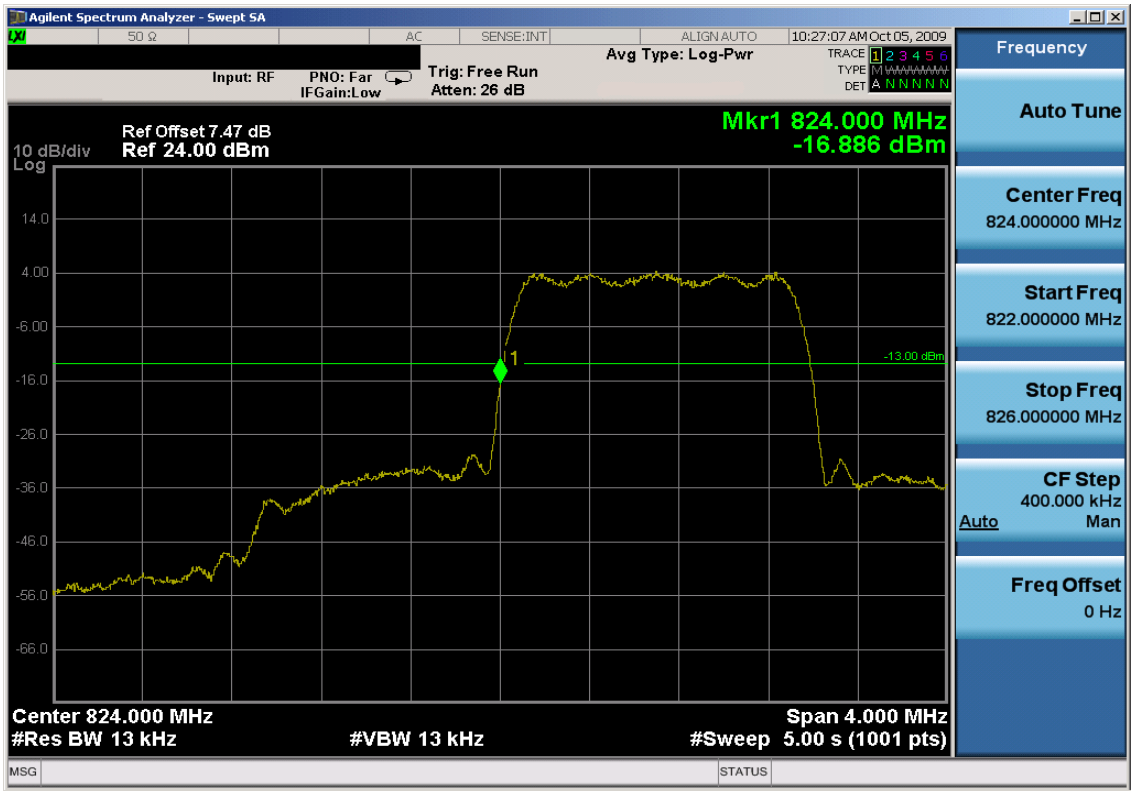


Plot 7-47. Conducted Spurious Plot (Cellular CDMA Mode – Ch. 1013)



Plot 7-48. Band Edge Plot (Cellular CDMA Mode – Ch. 1013)

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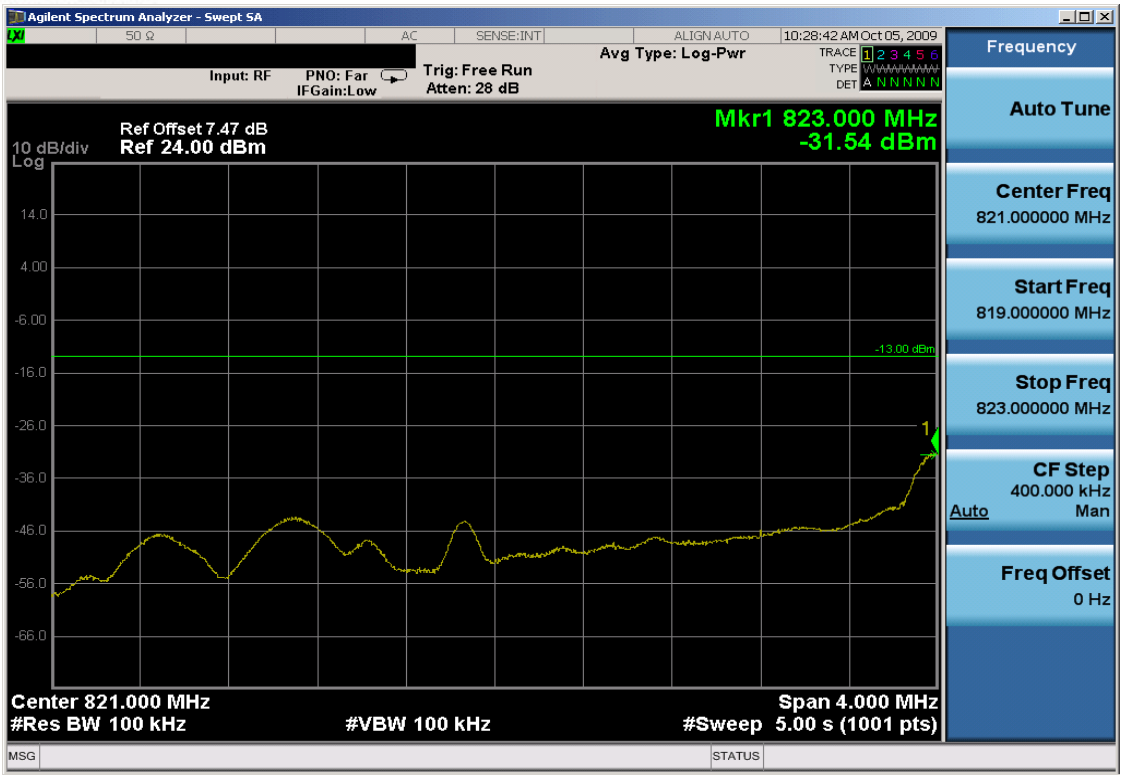
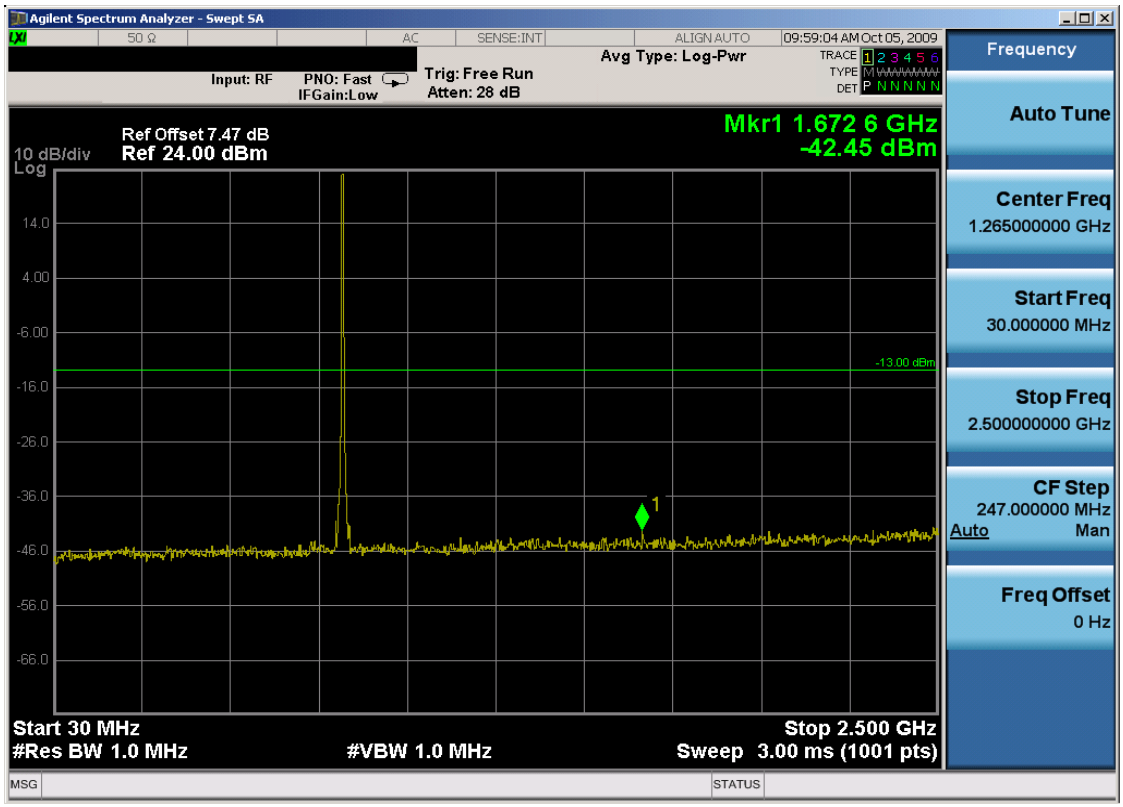


Plot 7-49. 4MHz Span Plot (Cellular CDMA Mode – Ch. 1013)



Plot 7-50. Conducted Spurious Plot (Cellular CDMA Mode – Ch. 384)

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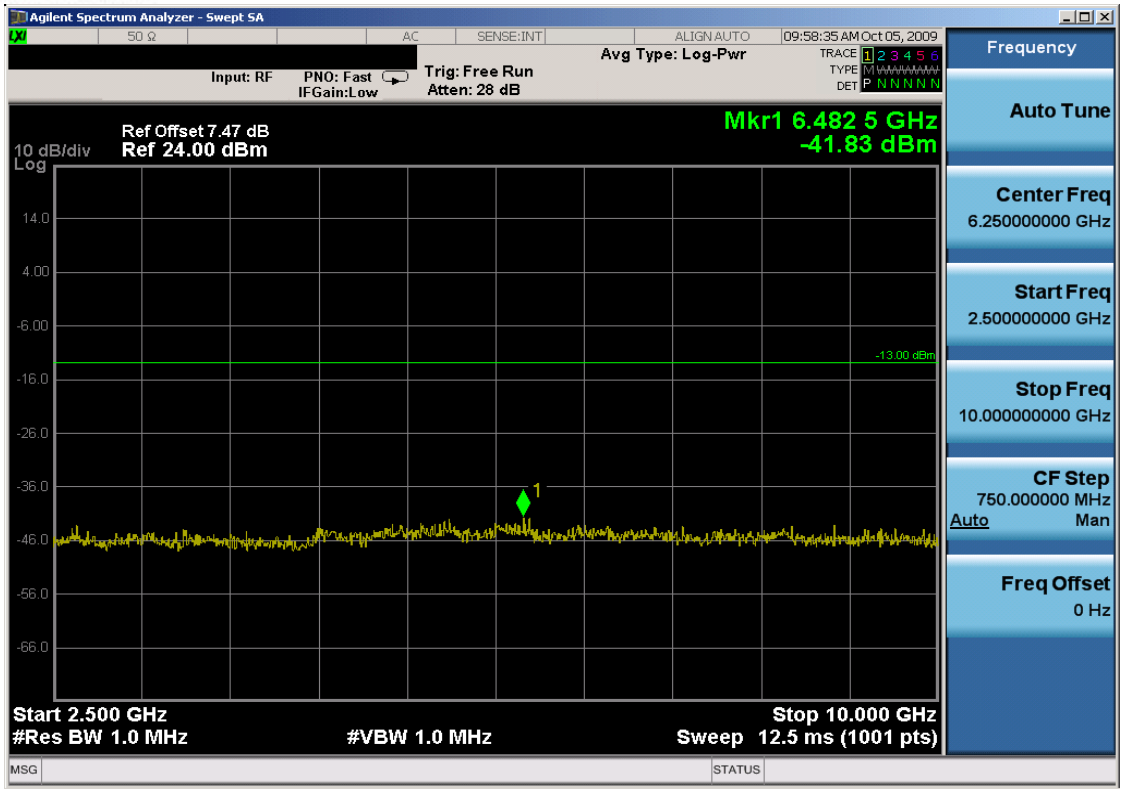
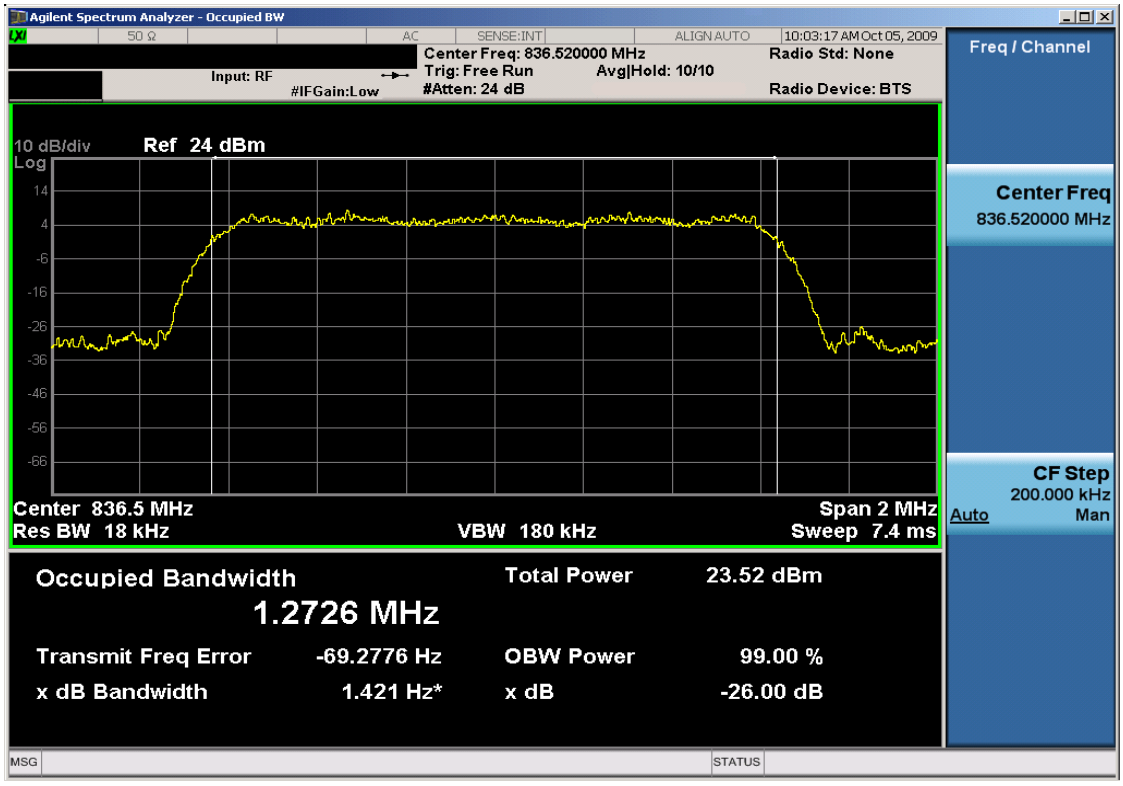


Plot 7-51. Conducted Spurious Plot (Cellular CDMA Mode – Ch. 384)



Plot 7-52. Occupied Bandwidth Plot (Cellular CDMA Mode – Ch. 1013)

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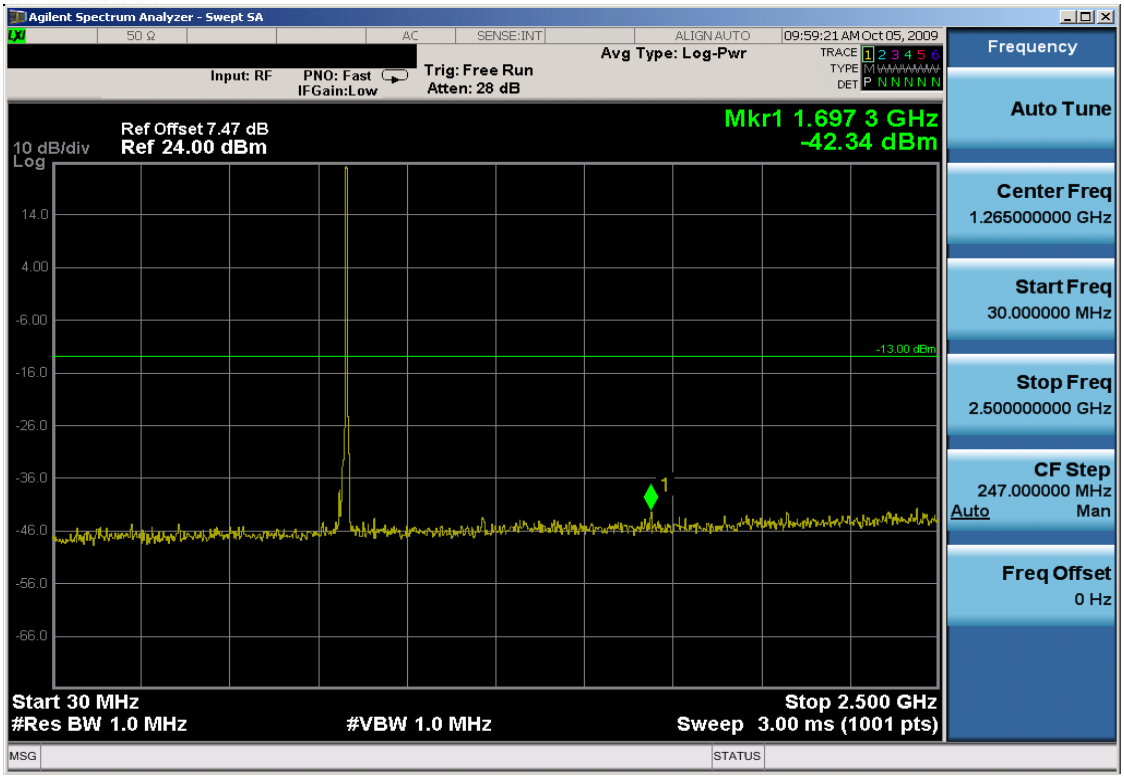
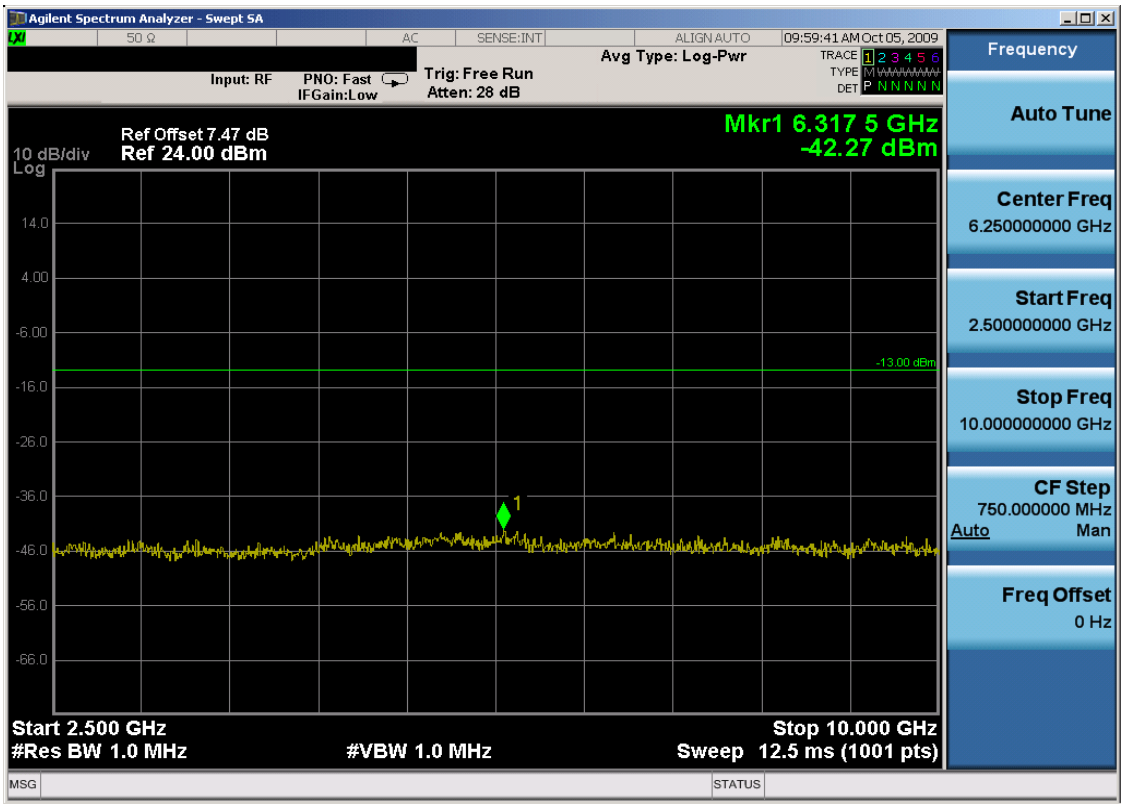


Plot 7-53. Conducted Spurious Plot (Cellular CDMA Mode – Ch. 777)



Plot 7-54. Conducted Spurious Plot (Cellular CDMA Mode – Ch. 777)

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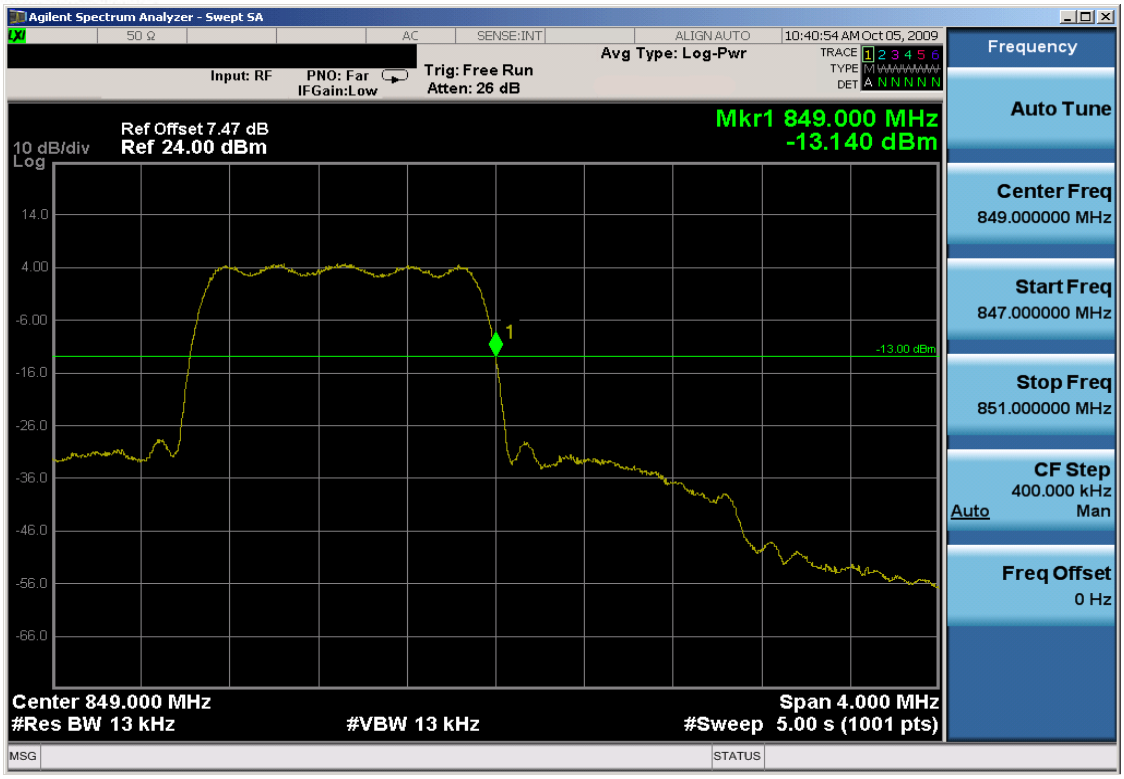
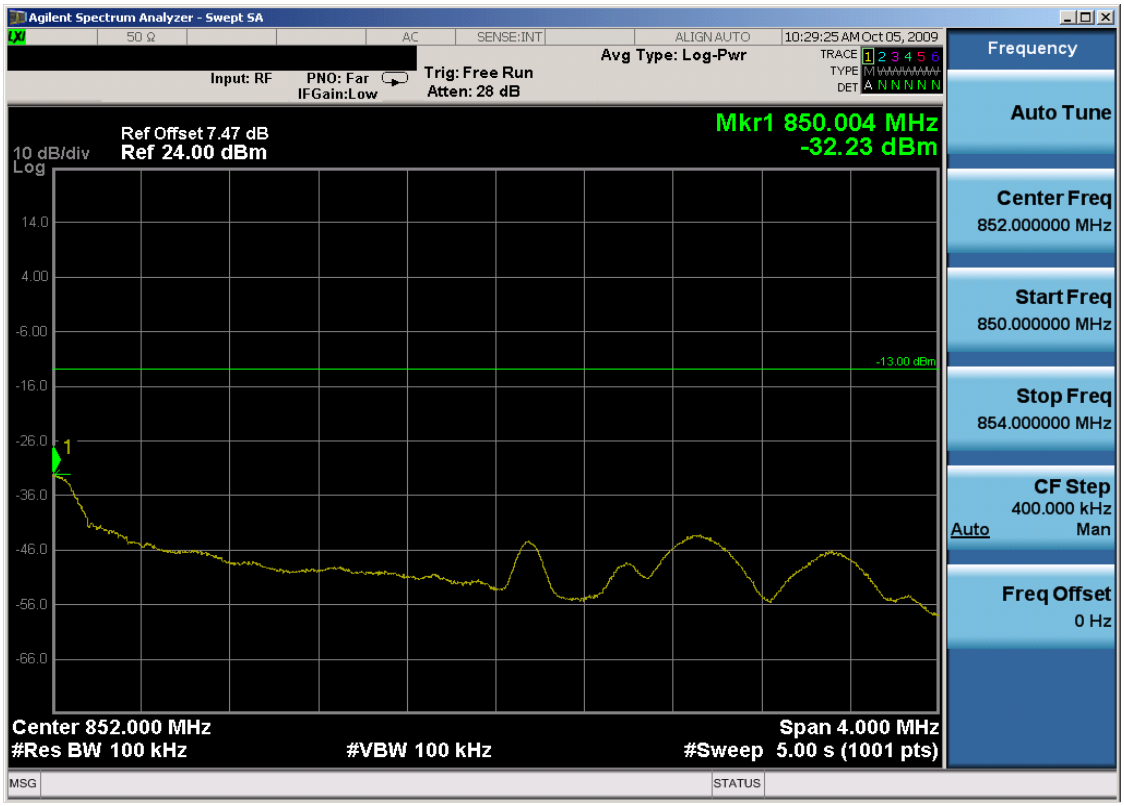


Plot 7-55. Band Edge Plot (Cellular CDMA Mode – Ch. 777)



Plot 7-56. 4MHz Span Plot (Cellular CDMA Mode – Ch. 777)

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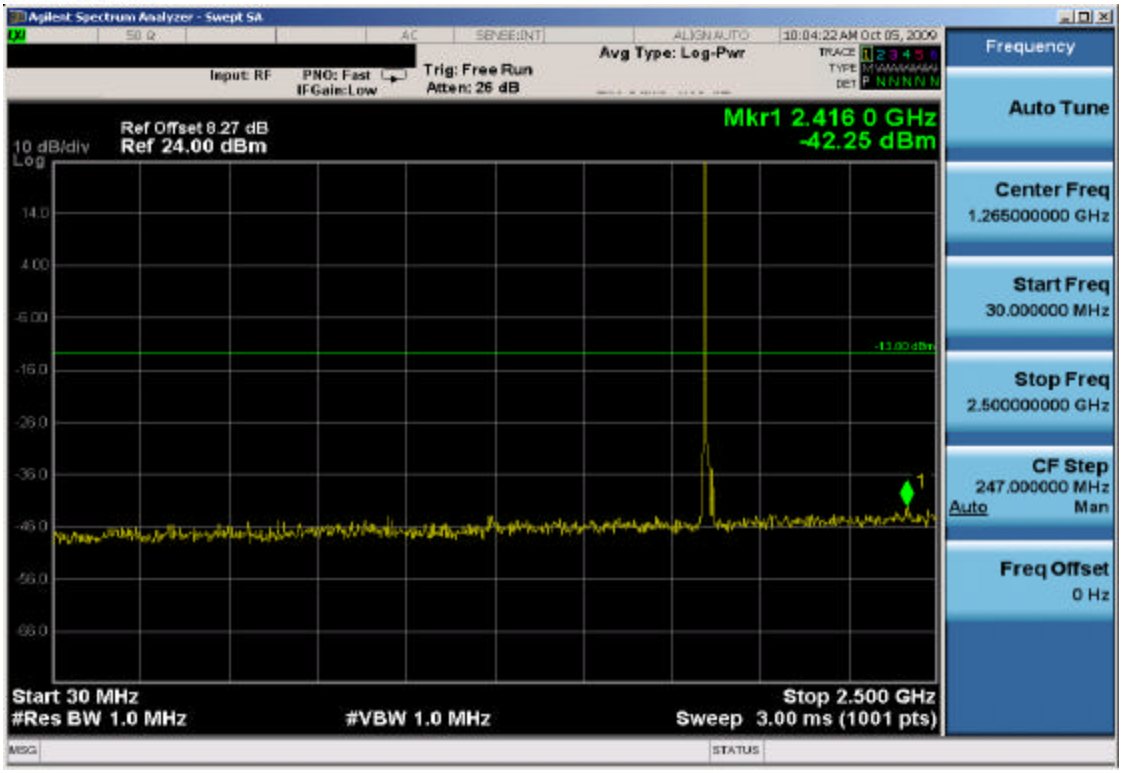
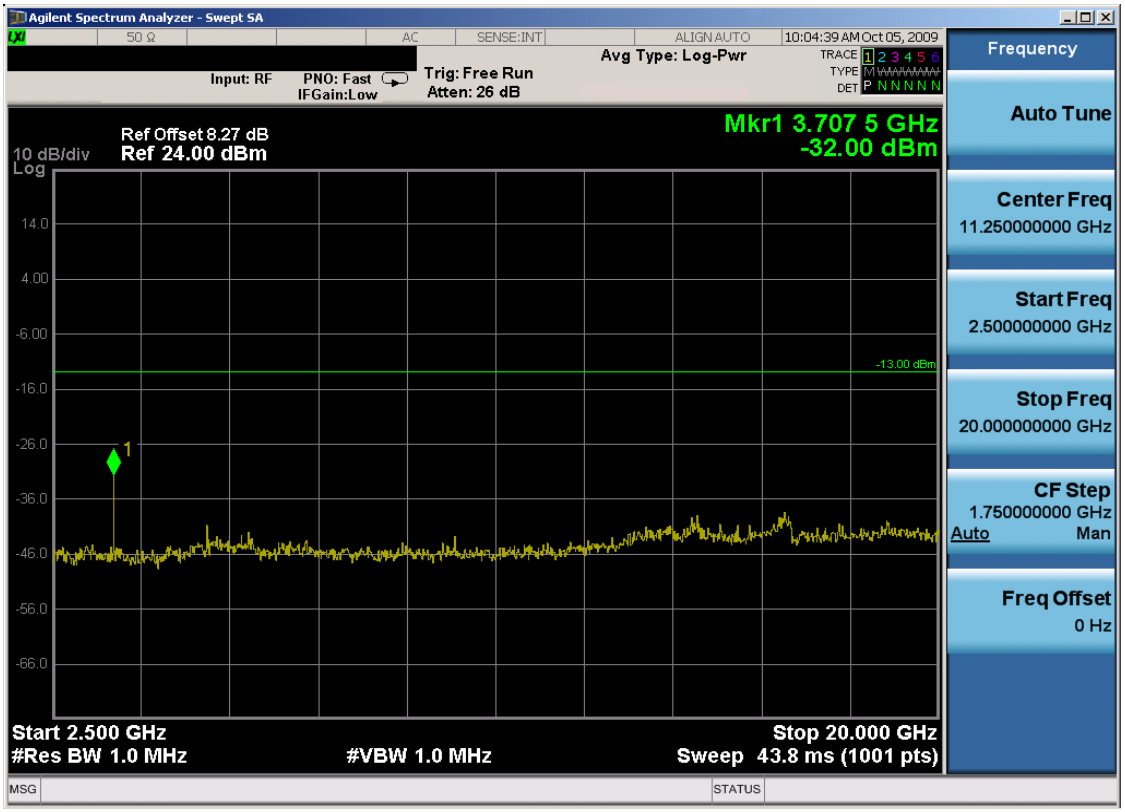


Plot 7-57. Conducted Spurious Plot (PCS CDMA Mode – Ch. 25)



Plot 7-58. Conducted Spurious Plot (PCS CDMA Mode – Ch. 25)

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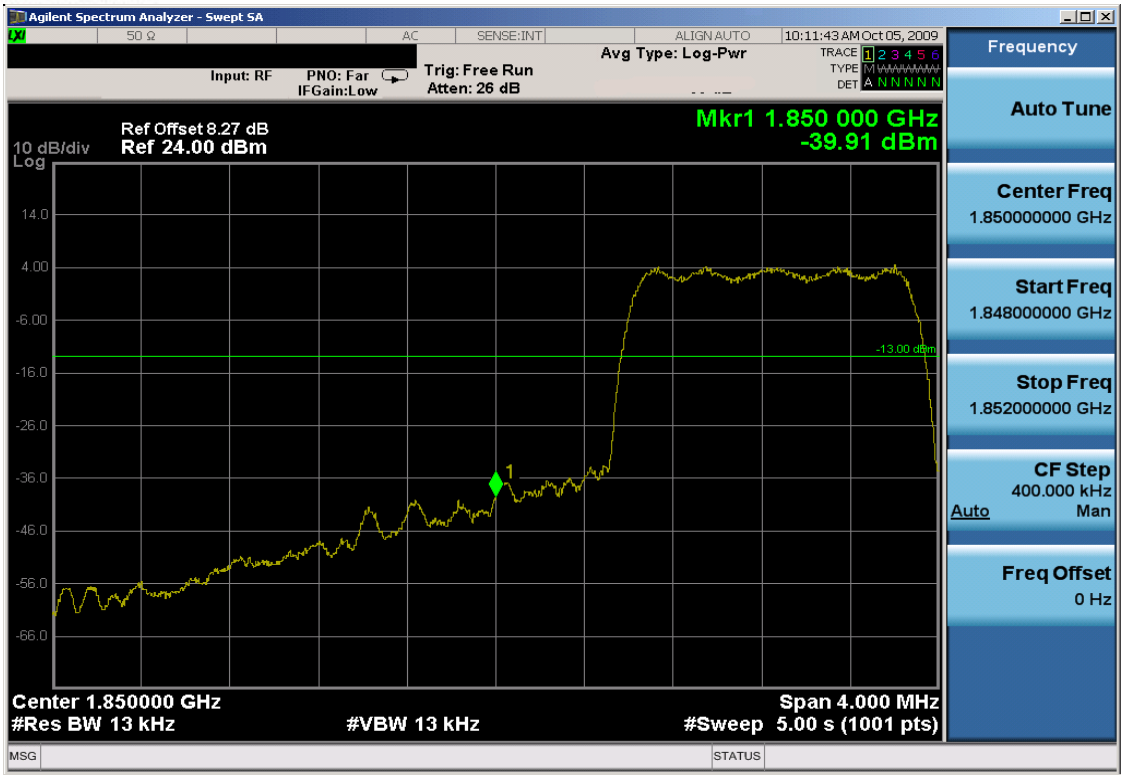
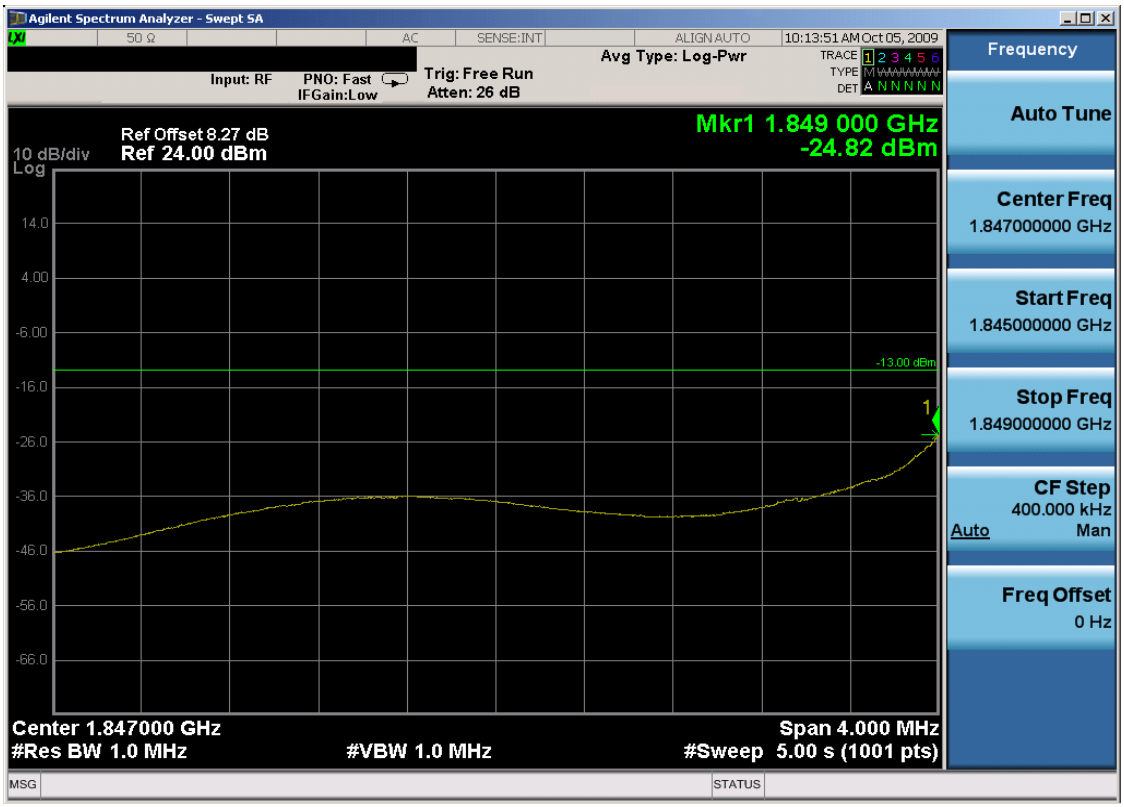


Plot 7-59. Band Edge Plot (PCS CDMA Mode – Ch. 25)



Plot 7-60. 4MHz Span Plot (PCS CDMA Mode – Ch. 25)

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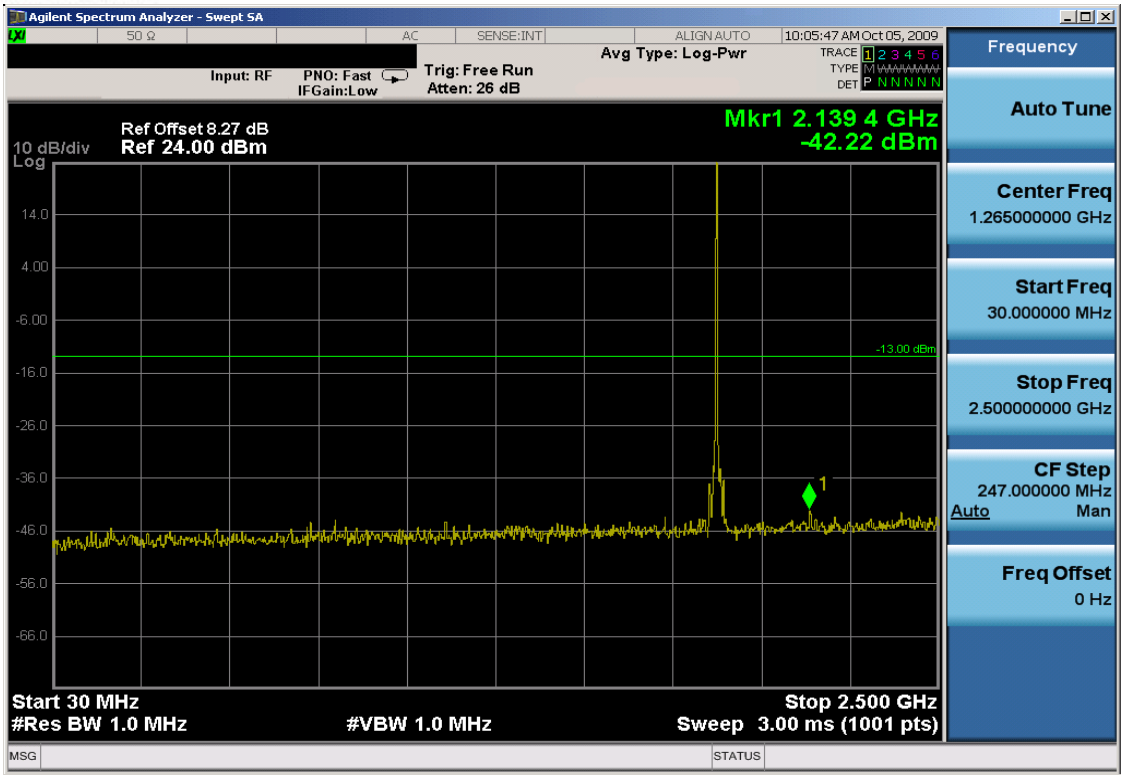
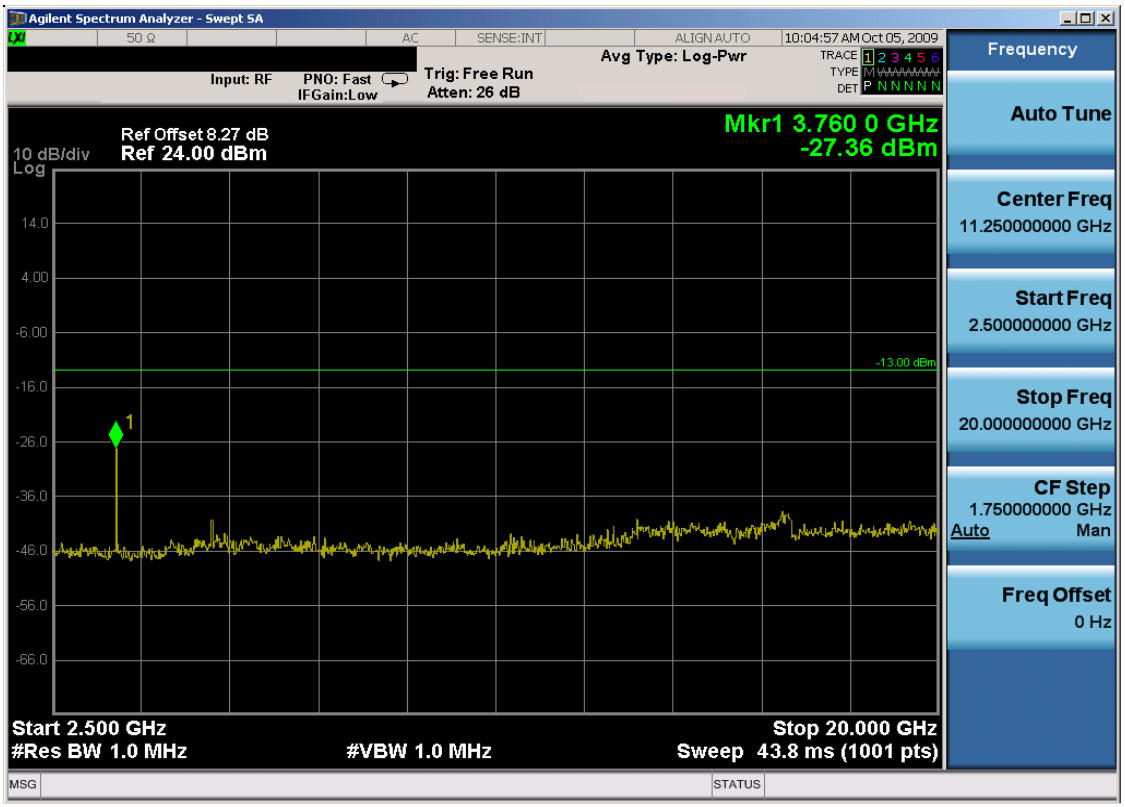


Plot 7-61. Conducted Spurious Plot (PCS CDMA Mode – Ch. 600)



Plot 7-62. Conducted Spurious Plot (PCS CDMA Mode – Ch. 600)

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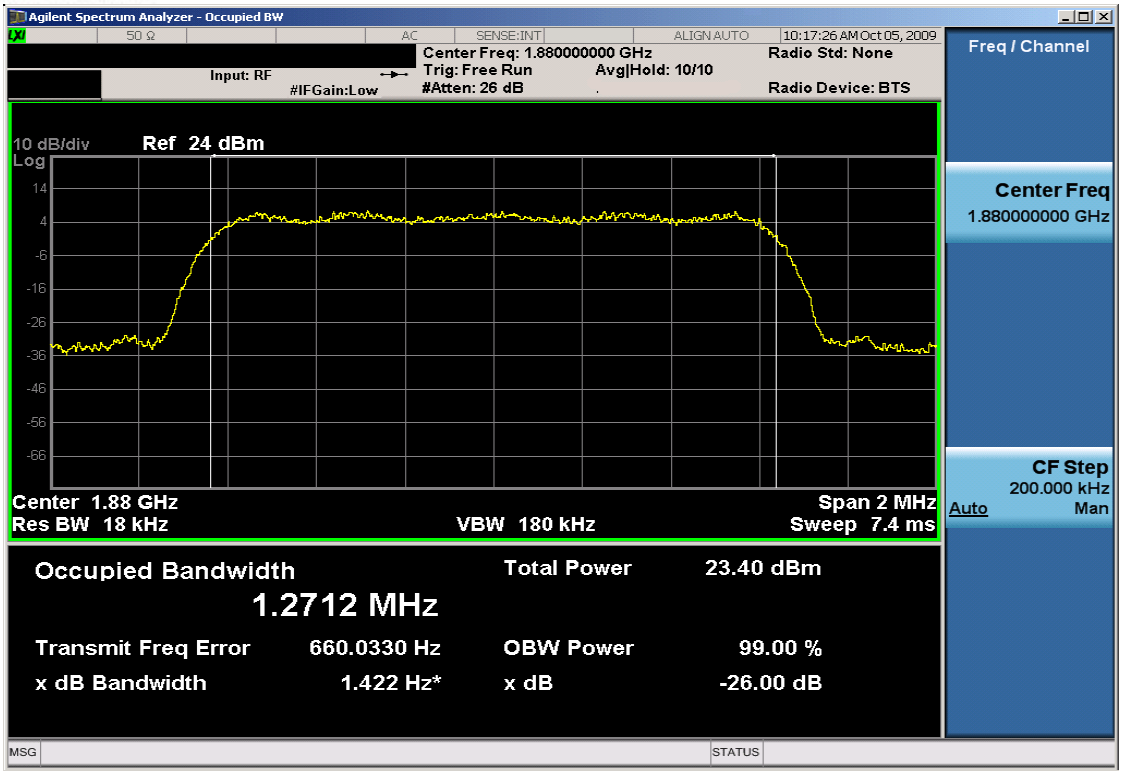
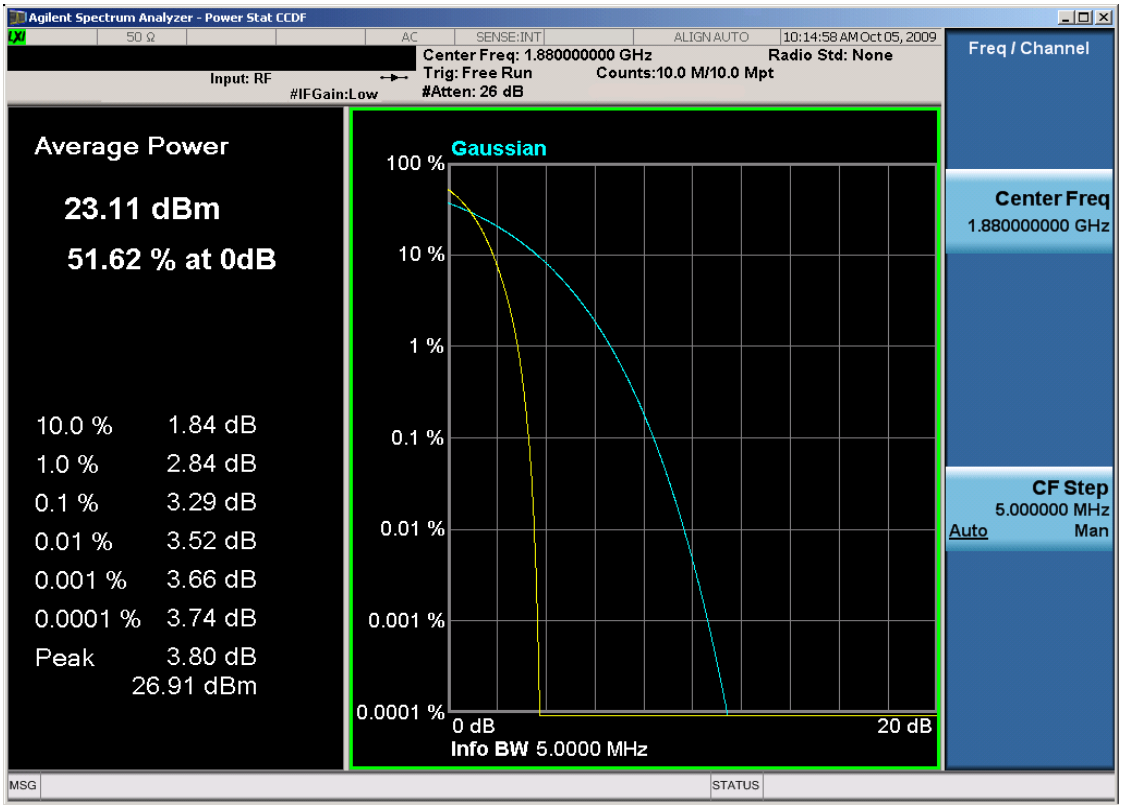


Plot 7-63. Occupied Bandwidth Plot (PCS CDMA Mode – Ch. 600)



Plot 7-64. Peak-Average Ratio Plot (PCS CDMA Mode – Ch. 600)

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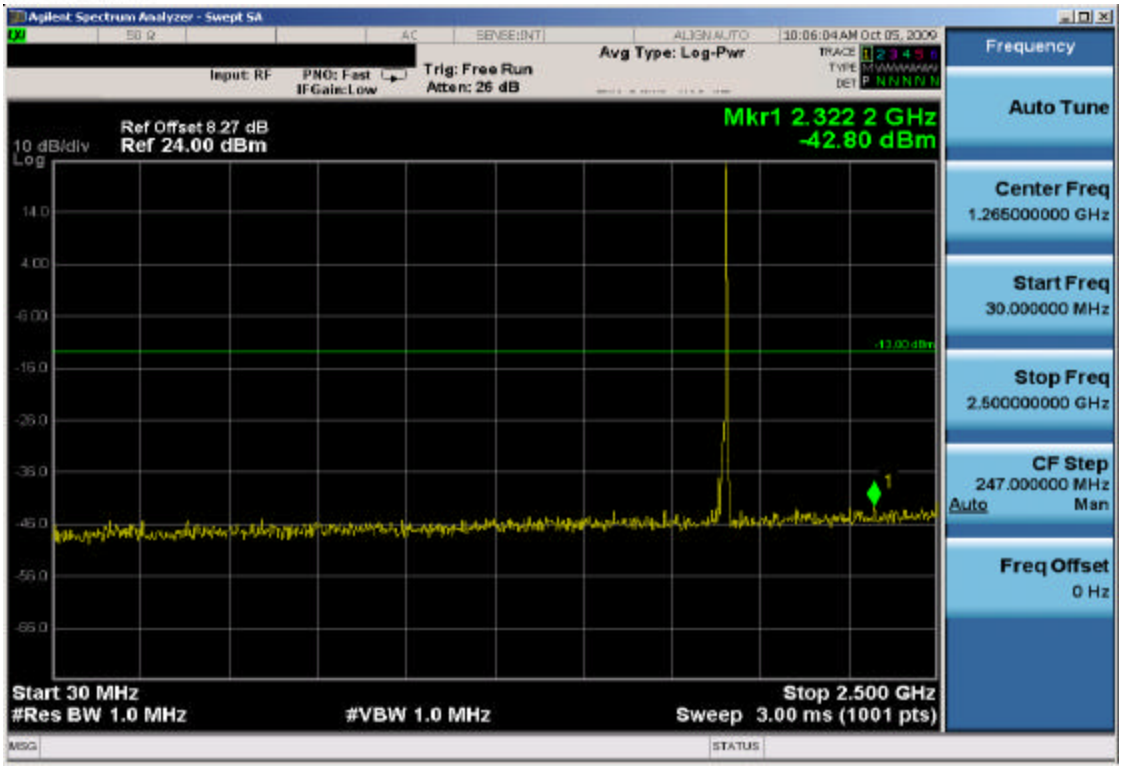
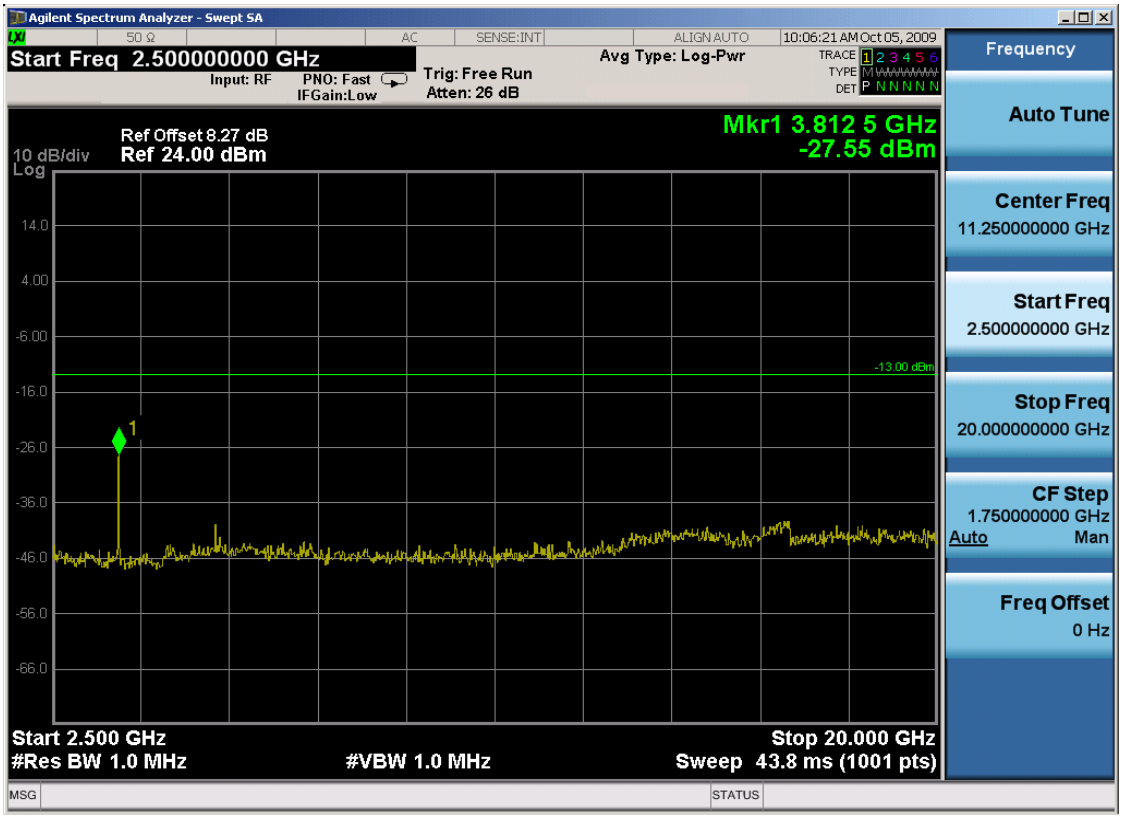


Plot 7-65. Conducted Spurious Plot (PCS CDMA Mode – Ch. 1175)



Plot 7-66. Conducted Spurious Plot (PCS CDMA Mode – Ch. 1175)

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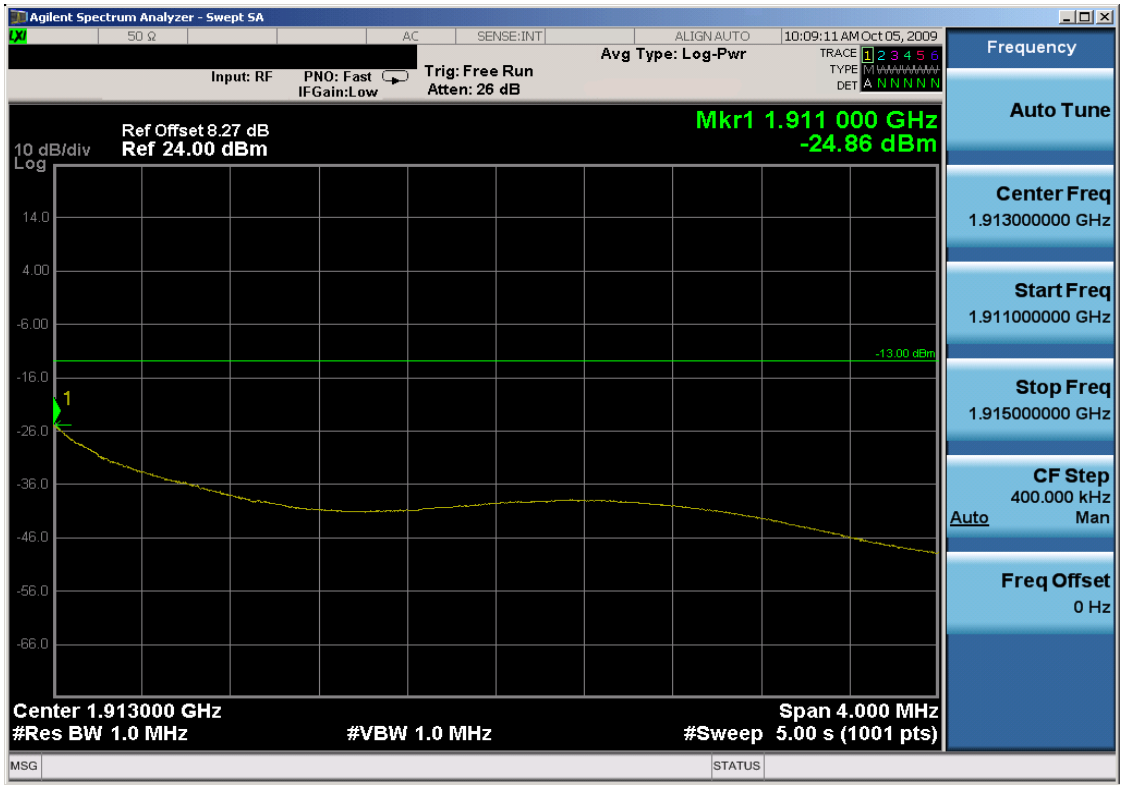
Plot 7-67. Band Edge Plot (PCS CDMA Mode – Ch. 1175)



Plot 7-68. 4MHz Span Plot (PCS CDMA Mode – Ch. 1175)

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8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Panasonic Toughbook Model: CF-S9 FCC ID: ACJ9TGCF-S91** 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.

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