



# PCTEST ENGINEERING LABORATORY, INC.

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http://www.pctestlab.com



## CERTIFICATE OF COMPLIANCE FCC Part 22 & 24 Certification

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

**Date of Testing:**  
January 19 - 21, 2010  
**Test Site/Location:**  
PCTEST Lab., Columbia, MD, USA  
**Test Report Serial No.:**  
0912152263.ACJ

<b>FCC ID:</b>	<b>ACJ9TGCF-311</b>
<b>APPLICANT:</b>	<b>PANASONIC CORPORATION OF NORTH AMERICA</b>

**Application Type:** Certification

**FCC Classification:** PCS Licensed Transmitter (PCB)

**FCC Rule Part(s):** §2; §22(H), §24(E)

**EUT Type:** ToughBook Model: CF-31

**Model(s):** CF-31

**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:** 1.227 W ERP Cell. GSM (30.89 dBm) / 1.186 W EIRP PCS GSM (30.74 dBm)  
0.31 W ERP Cell. WCDMA (24.92 dBm) / 0.39 W EIRP PCS WCDMA (25.91 dBm)  
0.308 W ERP Cell. CDMA (24.89 dBm) / 0.264 W EIRP PCS CDMA (24.21 dBm)  
0.472 W ERP EDGE850 (26.74 dBm) 0.467 W EIRP EDGE1900 (26.69 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: N/A]

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

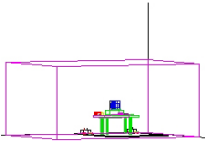


<b>FCC ID:</b> ACJ9TGCF-311		<b>FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)</b>		<b>Reviewed by:</b> Quality Manager
<b>Test Report S/N:</b> 0912152263.ACJ	<b>Test Dates:</b> January 19 - 21, 2010	<b>EUT Type:</b> ToughBook Model: CF-31		Page 1 of 81

# T A B L E O F C O N T E N T S

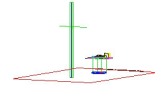
FCC PART 22 & 24 MEASUREMENT REPORT .....	3
1.0 INTRODUCTION .....	4
1.1 SCOPE .....	4
1.2 TESTING FACILITY .....	4
2.0 PRODUCT INFORMATION .....	5
2.1 EQUIPMENT DESCRIPTION .....	5
2.2 EMI SUPPRESSION DEVICE(S)/MODIFICATIONS .....	5
2.3 LABELING REQUIREMENTS .....	5
3.0 DESCRIPTION OF TESTS .....	6
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 SPURIOUS AND HARMONIC 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 CONDUCTED OUTPUT POWER .....	13
6.3 EFFECTIVE RADIATED POWER OUTPUT DATA .....	15
6.4 EQUIVALENT ISOTROPIC RADIATED POWER OUTPUT DATA .....	16
6.5 CELLULAR GSM RADIATED MEASUREMENTS .....	17
6.6 CELLULAR WCDMA RADIATED MEASUREMENTS .....	20
6.7 CELLULAR CDMA RADIATED MEASUREMENTS .....	23
6.8 PCS GSM RADIATED MEASUREMENTS .....	26
6.9 PCS WCDMA RADIATED MEASUREMENTS .....	29
6.10 PCS CDMA RADIATED MEASUREMENTS .....	32
6.11 CELLULAR GSM FREQUENCY STABILITY MEASUREMENTS .....	35
6.12 CELLULAR WCDMA FREQUENCY STABILITY MEASUREMENTS .....	37
6.13 CELLULAR CDMA FREQUENCY STABILITY MEASUREMENTS .....	39
6.14 PCS GSM FREQUENCY STABILITY MEASUREMENTS .....	41
6.15 PCS WCDMA FREQUENCY STABILITY MEASUREMENTS .....	43
6.16 PCS CDMA FREQUENCY STABILITY MEASUREMENTS .....	45
7.0 PLOTS OF EMISSIONS .....	47
8.0 CONCLUSION .....	81

<b>FCC ID:</b> ACJ9TGCF-311	 <b>PCTEST</b> <small>ENGINEERING LABORATORY, INC.</small>	<b>FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)</b>	 <b>Panasonic</b>	<b>Reviewed by:</b> Quality Manager
<b>Test Report S/N:</b> 0912152263.ACJ	<b>Test Dates:</b> January 19 - 21, 2010	<b>EUT Type:</b> ToughBook Model: CF-31	Page 2 of 81	



# MEASUREMENT REPORT

## FCC Part 22 & 24



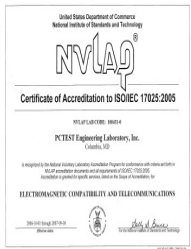
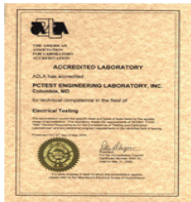
### §2.1033 General Information



**APPLICANT:** Panasonic Corporation of North America  
**APPLICANT ADDRESS:** One Panasonic Way, 4B-8  
 Secaucus, NJ 07094  
**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-31  
**FCC ID:** ACJ9TGCF-311  
**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.:** N/A       Production     Pre-Production     Engineering  
**DATE(S) OF TEST:** January 19 - 21, 2010  
**TEST REPORT S/N:** 0912152263.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.



<b>FCC ID:</b> ACJ9TGCF-311	 ENGINEERING LABORATORY, INC.	<b>FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)</b>	 <b>Reviewed by:</b> Quality Manager
<b>Test Report S/N:</b> 0912152263.ACJ	<b>Test Dates:</b> January 19 - 21, 2010	<b>EUT Type:</b> ToughBook Model: CF-31	Page 3 of 81

# 1.0 INTRODUCTION

## 1.1 Scope

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

## 1.2 Testing Facility

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

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

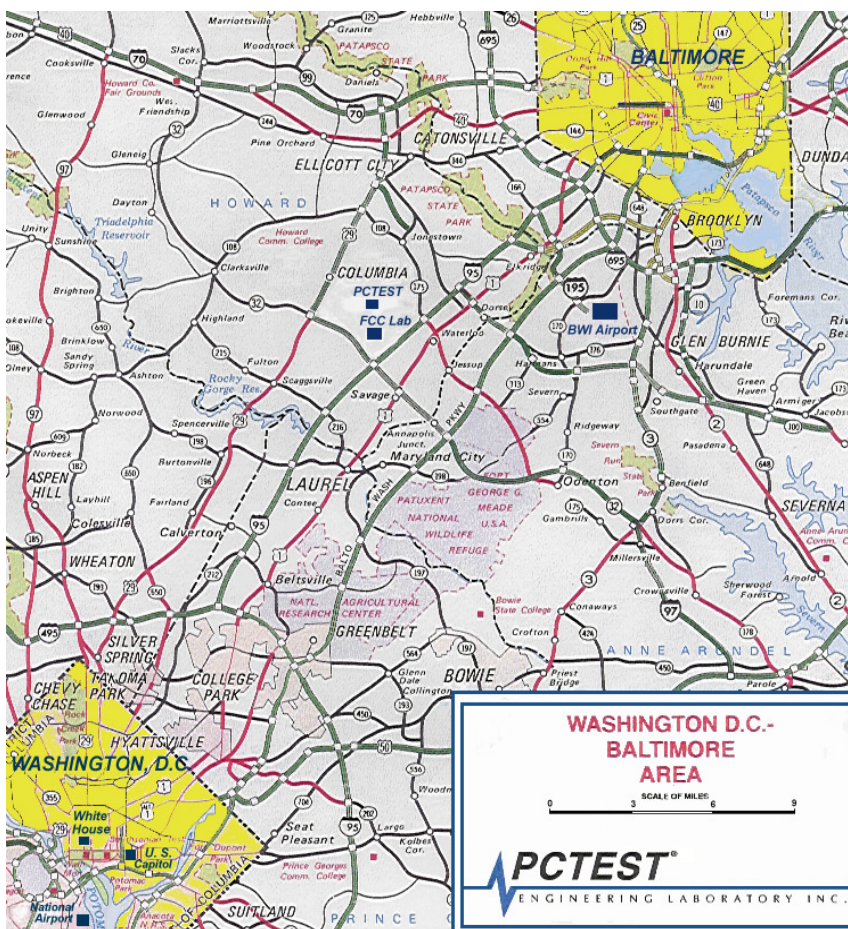


Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area

FCC ID: ACJ9TGQF-311	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)	Panasonic	Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 4 of 81

## 2.0 PRODUCT INFORMATION

### 2.1 Equipment Description

The Equipment Under Test (EUT) is the **Panasonic ToughBook Model: CF-31 FCC ID: ACJ9TGCF-311**. The EUT consisted of the following component(s):

Trade Name / Base Model	FCC ID	Description
Panasonic / Model: CF-31	ACJ9TGCF-311	ToughBook Model: CF-31
Alps / Model: UGNZA	N/A	Bluetooth Module
Sierra / Model: Gobi2000	N7NGOBI2	WWAN Module
Intel / Model: 622ANHMW	N/A	802.11a/b/g/n Wireless LAN 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).

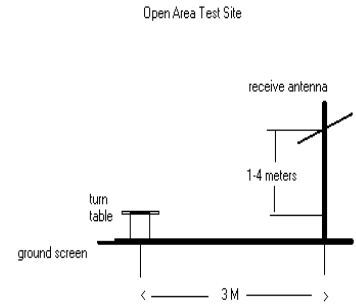
Please see attachment for FCC ID label and label location.

FCC ID: ACJ9TGCF-311		FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31	Page 5 of 81	

### 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**

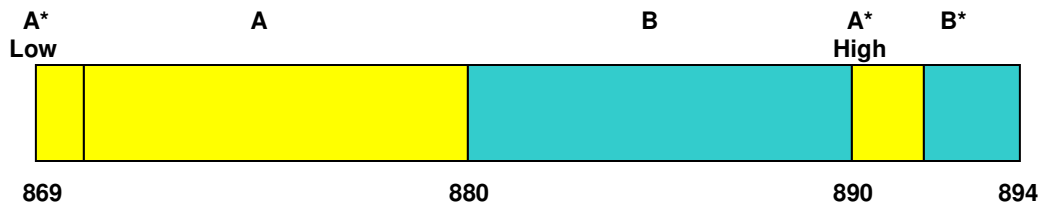
**Deviation from Measurement Procedure.....None**

#### 3.2 Occupied Bandwidth Emission Limits

§2.1049, 22.917(a), 24.238(a)

- a. 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.
- b. 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.
- c. When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the licensee’s frequency block edges, both upper and lower, as the design permits.
- d. The measurement of emission power can be expressed in peak or average values, provided they are expressed in the same parameters as the transmitter power.

#### 3.3 Cellular - Base Frequency Blocks



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

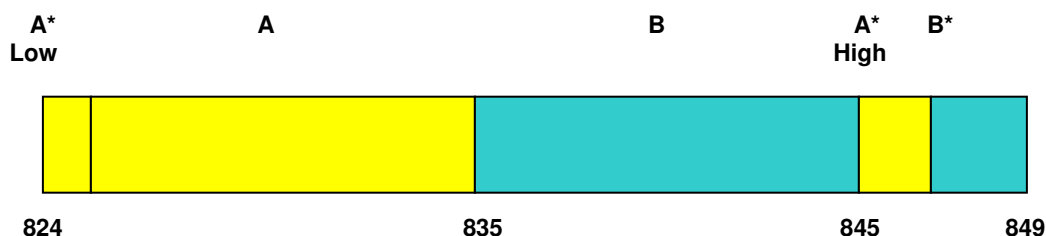
**BLOCK 3: 890 – 891.5 MHz (A\* High)**

**BLOCK 2: 880 – 890 MHz (B)**

**BLOCK 4: 891.5 – 894 MHz (B\*)**

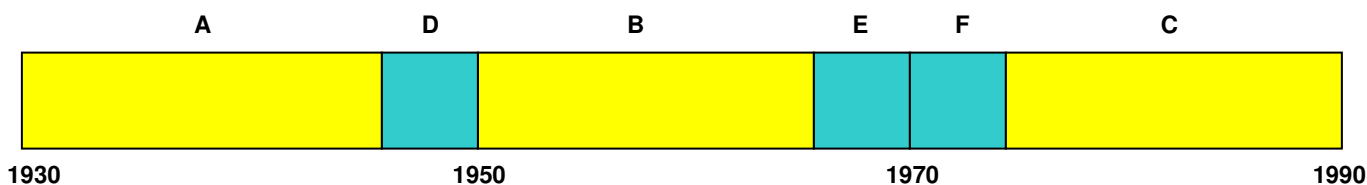
FCC ID: ACJ9TGCF-311	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)	Panasonic	Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31	Page 6 of 81	

### 3.4 Cellular - Mobile Frequency Blocks



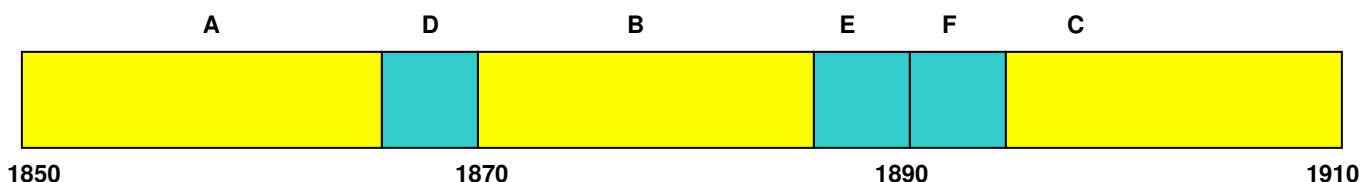
- BLOCK 1: 824 – 835 MHz (A\* Low + A)
- BLOCK 2: 835 – 845 MHz (B)
- BLOCK 3: 845 – 846.5 MHz (A\* High)
- BLOCK 4: 846.5 – 849 MHz (B\*)

### 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)

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 10<sup>th</sup> harmonic.

FCC ID: ACJ9TGCF-311		FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 7 of 81

### 3.8 Radiated Spurious and Harmonic Emissions

#### §2.1053, 22.917(a), 24.238(a)

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

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:



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.

Spurious and harmonic radiated emissions are measured outdoors at our 3-meter test range. The equipment under test is placed on a wooden turntable 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotations were adjusted for the highest reading on the receive spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10<sup>th</sup> 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 GSM mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band. 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)

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.

FCC ID: ACJ9TGCF-311		FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 8 of 81

### 3.10 Frequency Stability / Temperature Variation

**§2.1055, 22.355, 24.235**



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.



FCC ID: ACJ9TGCF-311		FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 9 of 81

## 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	8495A	(0-70dB) DC-4GHz Attenuator	N/A		N/A	N/A
Agilent	85650A	Quasi-Peak Adapter	12/2/2009	Annual	12/2/2010	3303A01872
Agilent	85650A	Quasi-Peak Adapter	3/24/2009	Annual	3/24/2010	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	9/28/2009	Annual	9/28/2010	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	3/25/2009	Biennial	3/25/2011	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
Anritsu	ML2495A	Power Meter	10/12/2009	Annual	10/12/2010	941001
Emco	3115	Horn Antenna (1-18GHz)	10/14/2009	Biennial	10/14/2011	9704-5182
Espec	ESX-2CA	Environmental Chamber	3/30/2009	Annual	3/30/2010	17620
Gigatronics	80701A	(0.05-18GHz) Power Sensor	9/9/2009	Annual	9/9/2010	1833460
Gigatronics	8651A	Universal Power Meter	9/9/2009	Annual	9/9/2010	8650319
K & L	11SH10	Band Pass Filter	N/A	Annual	N/A	1300/4000
K & L	11SH10	Band Pass Filter	N/A	Annual	N/A	4000/12000
MiniCircuits	VHF-1300+	High Pass Filter	N/A		N/A	30716
MiniCircuits	VHF-3100+	High Pass Filter	N/A		N/A	30721
Pasternack	PE2208-6	Bidirectional Coupler	N/A		N/A	N/A
Rohde & Schwarz	CMU200	Base Station Simulator	9/11/2009	Annual	9/11/2010	836371/0079
Rohde & Schwarz	CMU200	Base Station Simulator	9/4/2009	Annual	9/4/2010	109892
Rohde & Schwarz	CMU200	Base Station Simulator	6/12/2009	Annual	6/12/2010	836536/0005
Rohde & Schwarz	FSQ 26	Spectrum Analyzer	9/19/2009	Annual	9/19/2010	200452
Rohde & Schwarz	CMW500	LTE Base Station Simulator	8/25/2009	Annual	8/25/2010	100976
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

**Table 4-1. Test Equipment**

FCC ID: ACJ9TGCF-311		FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 10 of 81

## 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 2<sup>nd</sup> Harmonic (3700.40 MHz)**

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

FCC ID: ACJ9TGCF-311		FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 11 of 81



## 6.0 TEST RESULTS

### 6.1 Summary

Company Name: Panasonic Corporation of North America  
 FCC ID: ACJ9TGCF-311  
 FCC Classification: PCS Licensed Transmitter (PCB)  
 Mode(s): GSM/EDGE/CDMA/WCDMA

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
<b>TRANSMITTER MODE (TX)</b>					
2.1049, 22.917(a), 24.238(a)	Occupied Bandwidth	N/A	CONDUCTED	PASS	Section 7.0
2.1051, 22.917(a), 24.238(a)	Band Edge / Conducted Spurious Emissions	< 43 + log <sub>10</sub> (P[Watts]) at Band Edge and for all out-of-band emissions		PASS	Section 7.0
24.232(d)	Peak-Average Ratio	< 13 dB		PASS	Section 7.0
2.1046	GSM/WCDMA/CDMA Conducted Output Powers	N/A		PASS	Section 6.2
22.913(a)(2)	Effective Radiated Power	< 7 Watts max. ERP (<6.3 Watts max. ERP (IC))	RADIATED	PASS	Section 6.3
24.232(c)	Equivalent Isotropic Radiated Power	< 2 Watts max. EIRP		PASS	Section 6.4
2.1053, 22.917(a), 24.238(a)	Undesirable Emissions	< 43 + log <sub>10</sub> (P[Watts]) for all out-of-band emissions		PASS	Sections 6.5, 6.6, 6.8, 6.9
2.1055, 22.355, 24.235	Frequency Stability	< 2.5 ppm		PASS	Sections 6.11, 6.12, 6.14, 6.15

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

FCC ID: ACJ9TGCF-311		FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 12 of 81

## 6.2 Conducted Output Power

### §2.1046



A base station simulator (Rhode and Schwartz Model: CMU200) was used to establish communication with the **Panasonic Toughbook Model: CF-52 FCC ID: ACJ9TGCF-527**. The base station simulator parameters were set to produce the maximum power from the EUT. 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 GSM mode and using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band. 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. The GSM, WCDMA, and CDMA conducted powers are reported below, respectively.

		RF Conducted Power Table			
		GPRS Data		EDGE Data	
Band	Channel	GPRS [dBm] 1 Tx Slot	GPRS [dBm] 2 Tx Slot	EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot
Cellular	128	32.90	32.84	27.82	27.79
	190	32.58	32.55	27.57	27.54
	251	32.09	32.05	27.19	27.16
PCS	512	29.79	29.74	20.80	20.81
	661	30.18	30.12	21.20	21.16
	810	30.11	30.05	21.21	21.16

Table 6-2. GSM Conducted Output Powers

Mode	3GPP 34.121 Subtest	Cellular Band [dBm]			PCS Band [dBm]		
		4132	4183	4233	9262	9400	9538
WCDMA	12.2 kbps RMC	24.67	24.51	24.46	24.32	24.38	24.02
HSDPA	Subtest 1	24.65	24.48	24.42	24.27	24.36	24.01
	Subtest 2	24.69	24.50	24.41	24.15	24.42	24.00
	Subtest 3	24.15	23.95	23.84	23.78	23.95	23.48
	Subtest 4	24.17	23.98	23.86	23.82	23.98	23.48
HSUPA	Subtest 1	24.63	24.43	24.42	24.35	24.45	23.87
	Subtest 2	22.62	22.40	22.38	22.32	22.43	21.89
	Subtest 3	23.65	23.36	23.37	23.31	23.40	22.81
	Subtest 4	22.57	22.33	22.32	22.24	22.47	21.90
	Subtest 5	24.59	24.34	24.31	24.27	24.41	23.81

Table 6-3. WCDMA Conducted Output Powers

FCC ID: ACJ9TGCF-311		FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 13 of 81

Band	Channel	TDSO SO32 [dBm]	1x EvDO Rev. 0 [dBm]	1x EvDO Rev. 0 [dBm]	1x EvDO Rev. A [dBm]	1x EvDO Rev. A [dBm]
	F-RC	RC3	(FTAP)	(RTAP)	(FETAP)	(RETAP)
	Vocoder Rate	N/A	N/A	N/A	N/A	N/A
Cellular	1013	24.68	24.76	24.15	24.97	23.86
	384	24.58	24.38	23.67	24.61	23.72
	777	24.57	24.36	23.67	24.57	23.67
PCS	25	25.04	24.98	24.76	25.17	24.24
	600	25.08	24.90	25.00	25.07	24.28
	1175	25.11	24.87	24.63	24.94	24.01

Table 6-4. CDMA Conducted Output Powers

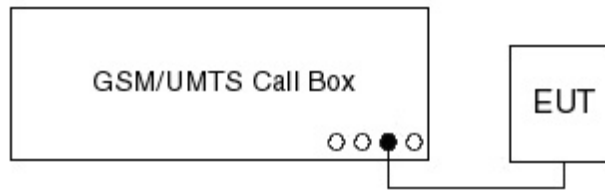


Figure 6-1. GSM/WCDMA/CDMA Conducted Power Test Setup Diagram

### 6.3 Effective Radiated Power Output Data §22.913(a)(2)

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

Frequency [MHz]	Mode	Measured Level [dBm]	Substitute Level [dBm]	Antenna Gain [dBd]	Pol [H/V]	ERP [dBm]	ERP [Watts]	Battery Type
824.20	GSM850	-6.450	30.89	0.00	H	30.89	1.227	Standard
836.60	GSM850	-7.600	29.74	0.00	H	29.74	0.942	Standard
848.80	GSM850	-8.200	29.14	0.00	H	29.14	0.820	Standard
824.20	EDGE850	-10.600	26.74	0.00	H	26.74	0.472	Standard

**Table 6-5. Effective Radiated Power Output Data (GSM)**

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

Frequency [MHz]	Mode	Measured Level [dBm]	Substitute Level [dBm]	Antenna Gain [dBd]	Pol [H/V]	ERP [dBm]	ERP [Watts]	Battery Type
826.40	WCDMA850	-16.760	22.79	0.00	V	22.79	0.190	Standard
836.60	WCDMA850	-15.580	23.97	0.00	V	23.97	0.249	Standard
846.60	WCDMA850	-14.630	24.92	0.00	V	24.92	0.310	Standard

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

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

Frequency [MHz]	Mode	Measured Level [dBm]	Substitute Level [dBm]	Antenna Gain [dBd]	Pol [H/V]	ERP [dBm]	ERP [Watts]	Battery Type
824.70	CDMA850	-14.300	23.04	0.00	H	23.04	0.201	Standard
836.52	CDMA850	-12.450	24.89	0.00	H	24.89	0.308	Standard
848.31	CDMA850	-13.490	23.85	0.00	H	23.85	0.243	Standard

**Table 6-7. Effective Radiated Power Output Data (CDMA)**

## 6.4 Equivalent Isotropic Radiated Power Output Data §24.232(c)

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

Frequency [MHz]	Mode	Measured Level [dBm]	Substitute Level [dBm]	Antenna Gain [dBi]	Pol [H/V]	EIRP [dBm]	EIRP [Watts]	Battery Type
1850.20	GSM1900	-9.900	22.74	8.00	H	30.74	1.186	Standard
1880.00	GSM1900	-11.200	21.44	8.00	H	29.44	0.879	Standard
1909.80	GSM1900	-13.800	18.84	8.00	H	26.84	0.483	Standard
1850.20	EDGE1900	-13.950	18.69	8.00	H	26.69	0.467	Standard

Table 6-8. Equivalent Isotropic Radiated Power Output Data (GSM)

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



Frequency [MHz]	Mode	Measured Level [dBm]	Substitute Level [dBm]	Antenna Gain [dBi]	Pol [H/V]	EIRP [dBm]	EIRP [Watts]	Battery Type
1852.40	WCDMA1900	-16.020	17.91	8.00	V	25.91	0.390	Standard
1880.00	WCDMA1900	-16.300	17.63	8.00	V	25.63	0.366	Standard
1907.60	WCDMA1900	-16.550	17.38	8.00	V	25.38	0.345	Standard

Table 6-9. Equivalent Isotropic Radiated Power Output Data (WCDMA)

### POWER: All "1" bits (PCS CDMA Mode)

Frequency [MHz]	Mode	Measured Level [dBm]	Substitute Level [dBm]	Antenna Gain [dBi]	Pol [H/V]	EIRP [dBm]	EIRP [Watts]	Battery Type
1851.25	CDMA1900	-16.430	16.21	8.00	H	24.21	0.264	Standard
1880.00	CDMA1900	-17.200	15.44	8.00	H	23.44	0.221	Standard
1908.75	CDMA1900	-17.370	15.27	8.00	H	23.27	0.212	Standard

Table 6-10. Equivalent Isotropic Radiated Power Output Data (CDMA)

FCC ID: ACJ9TGCF-311		FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 16 of 81

## 6.5 Cellular GSM Radiated Measurements

### §2.1053, 22.917(a)

#### Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 824.20 MHz  
 CHANNEL: 128  
 MEASURED OUTPUT POWER: 30.890 dBm = 1.227 W  
 MODULATION SIGNAL: GSM (Internal)  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) =$  43.89 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1648.40	-43.56	6.08	-37.48	H	68.4
2472.60	-49.31	6.53	-42.78	H	73.7
3296.80	-58.82	6.87	-51.95	H	82.8
4121.00	-91.53	7.21	-84.33	H	115.2
4945.20	-90.35	8.37	-81.97	H	112.9



**Table 6-11. 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 GSM mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band. 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.

FCC ID: ACJ9TGCF-311		FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 17 of 81

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

**Field Strength of SPURIOUS Radiation**

OPERATING FREQUENCY: 836.60 MHz  
 CHANNEL: 190  
 MEASURED OUTPUT POWER: 30.890 dBm = 1.227 W  
 MODULATION SIGNAL: GSM (Internal)  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) =$  43.89 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1673.20	-51.07	6.09	-44.99	H	75.9
2509.80	-50.12	6.55	-43.56	H	74.5
3346.40	-58.53	6.89	-51.64	H	82.5
4183.00	-91.74	7.43	-84.30	H	115.2
5019.60	-89.99	8.35	-81.65	H	112.5



**Table 6-12. 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 GSM mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band. 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.

FCC ID: ACJ9TGCF-311		FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 18 of 81

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

**Field Strength of SPURIOUS Radiation**

OPERATING FREQUENCY: 848.80 MHz  
 CHANNEL: 251  
 MEASURED OUTPUT POWER: 30.890 dBm = 1.227 W  
 MODULATION SIGNAL: GSM (Internal)  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) =$  43.89 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1697.60	-52.99	6.09	-46.90	H	77.8
2546.40	-51.30	6.57	-44.73	H	75.6
3395.20	-58.44	6.91	-51.53	H	82.4
4244.00	-91.93	7.65	-84.28	H	115.2
5092.80	-89.71	8.33	-81.38	H	112.3



**Table 6-13. 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 GSM mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band. 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.

FCC ID: ACJ9TGCF-311		FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 19 of 81

## 6.6 Cellular WCDMA Radiated Measurements

### §2.1053, 22.917(a)

#### Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 826.40 MHz  
 CHANNEL: 4132  
 MEASURED OUTPUT POWER: 24.920 dBm = 0.310 W  
 MODULATION SIGNAL: WCDMA (Internal)  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) =$  37.92 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1652.80	-64.54	6.08	-58.45	V	83.4
2479.20	-96.71	6.54	-90.17	V	115.1
3305.60	-93.85	6.88	-86.98	V	111.9
4132.00	-91.57	7.25	-84.32	V	109.2
4958.40	-90.28	8.37	-81.91	V	106.8



**Table 6-14. 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 GSM mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band. 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.

FCC ID: ACJ9TGCF-311		FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 20 of 81

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

**Field Strength of SPURIOUS Radiation**

OPERATING FREQUENCY: 836.60 MHz  
 CHANNEL: 4183  
 MEASURED OUTPUT POWER: 24.920 dBm = 0.310 W  
 MODULATION SIGNAL: WCDMA (Internal)  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) =$  37.92 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1673.20	-63.69	6.09	-57.60	V	82.5
2509.80	-96.66	6.55	-90.10	V	115.0
3346.40	-93.75	6.89	-86.86	V	111.8
4183.00	-91.71	7.40	-84.31	V	109.2
5019.60	-90.03	8.35	-81.68	V	106.6



**Table 6-15. 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 GSM mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band. 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.

FCC ID: ACJ9TGCF-311		FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 21 of 81

## Cellular WCDMA Radiated Measurements (Cont'd)

§2.1053, 22.917(a)

### Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 846.60 MHz  
 CHANNEL: 4233  
 MEASURED OUTPUT POWER: 24.920 dBm = 0.310 W  
 MODULATION SIGNAL: WCDMA (Internal)  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10}(W) =$  37.92 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1693.20	-60.16	6.09	-54.07	V	79.0
2539.80	-96.51	6.57	-89.95	V	114.9
3386.40	-93.61	6.91	-86.71	V	111.6
4233.00	-91.90	7.62	-84.28	V	109.2
5079.60	-89.76	8.33	-81.43	V	106.4



**Table 6-16. 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 GSM mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band. 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.

FCC ID: ACJ9TGCF-311		FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 22 of 81

## 6.7 Cellular CDMA Radiated Measurements §2.1053, 22.917(a)

### Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 824.70 MHz  
 CHANNEL: 1013  
 MEASURED OUTPUT POWER: 24.890 dBm = 0.308 W  
 MODULATION SIGNAL: CDMA (Internal)  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) =$  37.89 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1649.40	-65.15	6.08	-59.07	H	84.0
2474.10	-61.06	6.53	-54.53	H	79.4
3298.80	-55.36	6.87	-48.49	H	73.4
4123.50	-52.42	7.21	-45.20	H	70.1
4948.20	-90.33	8.37	-81.96	H	106.9



**Table 6-17. 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 GSM mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band. 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.

FCC ID: ACJ9TGCF-311		FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 23 of 81

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

**Field Strength of SPURIOUS Radiation**

OPERATING FREQUENCY: 836.52 MHz  
 CHANNEL: 384  
 MEASURED OUTPUT POWER: 24.890 dBm = 0.308 W  
 MODULATION SIGNAL: CDMA (Internal)  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) =$  37.89 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1673.04	-62.97	6.09	-56.89	H	81.8
2509.56	-56.62	6.55	-50.06	H	75.0
3346.08	-53.83	6.89	-46.94	H	71.8
4182.60	-91.73	7.43	-84.30	H	109.2
5019.12	-89.99	8.35	-81.65	H	106.5



**Table 6-18. 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 GSM mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band. 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.

FCC ID: ACJ9TGCF-311		FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 24 of 81

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

**Field Strength of SPURIOUS Radiation**

OPERATING FREQUENCY: 848.31 MHz  
 CHANNEL: 777  
 MEASURED OUTPUT POWER: 24.890 dBm = 0.308 W  
 MODULATION SIGNAL: CDMA (Internal)  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) =$  37.89 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1696.62	-56.40	6.09	-50.30	H	75.2
2544.93	-58.95	6.57	-52.38	H	77.3
3393.24	-56.70	6.91	-49.79	H	74.7
4241.55	-52.55	7.65	-44.91	H	69.8
5089.86	-89.73	8.33	-81.39	H	106.3



**Table 6-19. 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 GSM mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band. 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.

FCC ID: ACJ9TGCF-311		FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 25 of 81

## 6.8 PCS GSM Radiated Measurements

### §2.1053, 24.238(a)

### Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1850.20 MHz  
 CHANNEL: 512  
 MEASURED OUTPUT POWER: 30.740 dBm = 1.186 W  
 MODULATION SIGNAL: GSM (Internal)  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) =$  43.74 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3700.40	-54.95	9.02	-45.93	H	76.7
5550.60	-53.01	10.40	-42.61	H	73.3
7400.80	-82.58	10.50	-72.08	H	102.8
9251.00	-76.22	11.85	-64.37	H	95.1
11101.20	-76.51	12.76	-63.76	H	94.5



**Table 6-20. 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 GSM mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band. 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.

FCC ID: ACJ9TGCF-311		FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 26 of 81

**PCS GSM Radiated Measurements (Cont'd)**  
§2.1053, 24.238(a)

**Field Strength of SPURIOUS Radiation**

OPERATING FREQUENCY: 1880.00 MHz  
 CHANNEL: 661  
 MEASURED OUTPUT POWER: 30.740 dBm = 1.186 W  
 MODULATION SIGNAL: GSM (Internal)  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) =$  43.74 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3760.00	-56.12	8.99	-47.13	H	77.9
5640.00	-52.54	10.40	-42.14	H	72.9
7520.00	-82.40	10.62	-71.79	H	102.5
9400.00	-73.36	11.70	-61.66	H	92.4
11280.00	-76.66	12.69	-63.97	H	94.7



**Table 6-21. 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 GSM mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band. 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.

FCC ID: ACJ9TGCF-311		FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 27 of 81

**PCS GSM Radiated Measurements (Cont'd)**  
§2.1053, 24.238(a)

**Field Strength of SPURIOUS Radiation**

OPERATING FREQUENCY: 1909.80 MHz  
 CHANNEL: 810  
 MEASURED OUTPUT POWER: 30.740 dBm = 1.186 W  
 MODULATION SIGNAL: GSM (Internal)  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) =$  43.74 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3819.60	-55.86	8.97	-46.89	H	77.6
5729.40	-52.37	10.40	-41.97	H	72.7
7639.20	-82.32	10.71	-71.61	H	102.4
9549.00	-71.66	11.64	-60.02	H	90.8
11458.80	-76.80	12.62	-64.19	H	94.9



**Table 6-22. 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 GSM mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band. 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.

FCC ID: ACJ9TGCF-311		FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 28 of 81

## 6.9 PCS WCDMA Radiated Measurements

### §2.1053, 24.238(a)

#### Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1852.40 MHz  
 CHANNEL: 9262  
 MEASURED OUTPUT POWER: 25.910 dBm = 0.390 W  
 MODULATION SIGNAL: WCDMA (Internal)  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10}(W) =$  38.91 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3704.80	-36.27	9.01	-27.25	V	53.2
5557.20	-52.61	10.40	-42.21	V	68.1
7409.60	-82.57	10.51	-72.05	V	98.0
9262.00	-76.00	11.83	-64.17	V	90.1
11114.40	-76.53	12.75	-63.77	V	89.7



**Table 6-23. 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 GSM mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band. 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.

FCC ID: ACJ9TGCF-311		FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 29 of 81

**PCS WCDMA Radiated Measurements (Cont'd)**  
§2.1053, 24.238(a)

**Field Strength of SPURIOUS Radiation**

OPERATING FREQUENCY: 1880.00 MHz  
 CHANNEL: 9400  
 MEASURED OUTPUT POWER: 25.910 dBm = 0.390 W  
 MODULATION SIGNAL: WCDMA (Internal)  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) =$  38.91 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3760.00	-41.92	8.99	-32.93	V	58.8
5640.00	-53.69	10.40	-43.29	V	69.2
7520.00	-82.40	10.62	-71.79	V	97.7
9400.00	-73.36	11.70	-61.66	V	87.6
11280.00	-76.66	12.69	-63.97	V	89.9



**Table 6-24. 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 GSM mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band. 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.

FCC ID: ACJ9TGCF-311		FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 30 of 81

**PCS WCDMA Radiated Measurements (Cont'd)**  
§2.1053, 24.238(a)

**Field Strength of SPURIOUS Radiation**

OPERATING FREQUENCY: 1907.60 MHz  
 CHANNEL: 9538  
 MEASURED OUTPUT POWER: 25.910 dBm = 0.390 W  
 MODULATION SIGNAL: WCDMA (Internal)  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) =$  38.91 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3815.20	-47.98	8.97	-39.01	V	64.9
5722.80	-53.87	10.40	-43.47	V	69.4
7630.40	-82.33	10.71	-71.62	V	97.5
9538.00	-71.62	11.63	-59.98	V	85.9
11445.60	-76.79	12.62	-64.17	V	90.1



**Table 6-25. 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 GSM mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band. 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.

FCC ID: ACJ9TGCF-311	 PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 31 of 81

## 6.10 PCS CDMA Radiated Measurements §2.1053, 24.238(a)

### Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1851.25 MHz  
 CHANNEL: 25  
 MEASURED OUTPUT POWER: 24.210 dBm = 0.264 W  
 MODULATION SIGNAL: CDMA (Internal)  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10}(W) =$  37.21 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3702.50	-36.90	9.02	-27.89	H	52.1
5553.75	-52.24	10.40	-41.84	H	66.0
7405.00	-86.54	10.51	-76.04	H	100.2
9256.25	-86.23	11.84	-74.39	H	98.6
11107.50	-83.73	12.76	-70.97	H	95.2



**Table 6-26. 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 GSM mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band. 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.

FCC ID: ACJ9TGCF-311		FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 32 of 81

**PCS CDMA Radiated Measurements (Cont'd)**  
§2.1053, 24.238(a)

**Field Strength of SPURIOUS Radiation**

OPERATING FREQUENCY: 1880.00 MHz  
 CHANNEL: 600  
 MEASURED OUTPUT POWER: 24.210 dBm = 0.264 W  
 MODULATION SIGNAL: CDMA (Internal)  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) =$  37.21 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3760.00	-39.17	8.99	-30.18	H	54.4
5640.00	-52.80	10.40	-42.40	H	66.6
7520.00	-86.58	10.62	-75.96	H	100.2
9400.00	-86.05	11.70	-74.35	H	98.6
11280.00	-82.98	12.69	-70.29	H	94.5



**Table 6-27. 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 GSM mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band. 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.

FCC ID: ACJ9TGCF-311		FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 33 of 81

**PCS CDMA Radiated Measurements (Cont'd)**  
§2.1053, 24.238(a)

**Field Strength of SPURIOUS Radiation**

OPERATING FREQUENCY: 1908.75 MHz  
 CHANNEL: 1175  
 MEASURED OUTPUT POWER: 24.210 dBm = 0.264 W  
 MODULATION SIGNAL: CDMA (Internal)  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) =$  37.21 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3817.50	-43.33	8.97	-34.36	H	58.6
5726.25	-54.31	10.40	-43.91	H	68.1
7635.00	-86.52	10.71	-75.81	H	100.0
9543.75	-85.88	11.64	-74.25	H	98.5
11452.50	-82.24	12.62	-69.62	H	93.8



**Table 6-28. 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 GSM mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band. 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.

FCC ID: ACJ9TGCF-311		FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 34 of 81

## 6.11 Cellular GSM Frequency Stability Measurements

§2.1055, 22.355

OPERATING FREQUENCY: 836,600,000 Hz

CHANNEL: 190

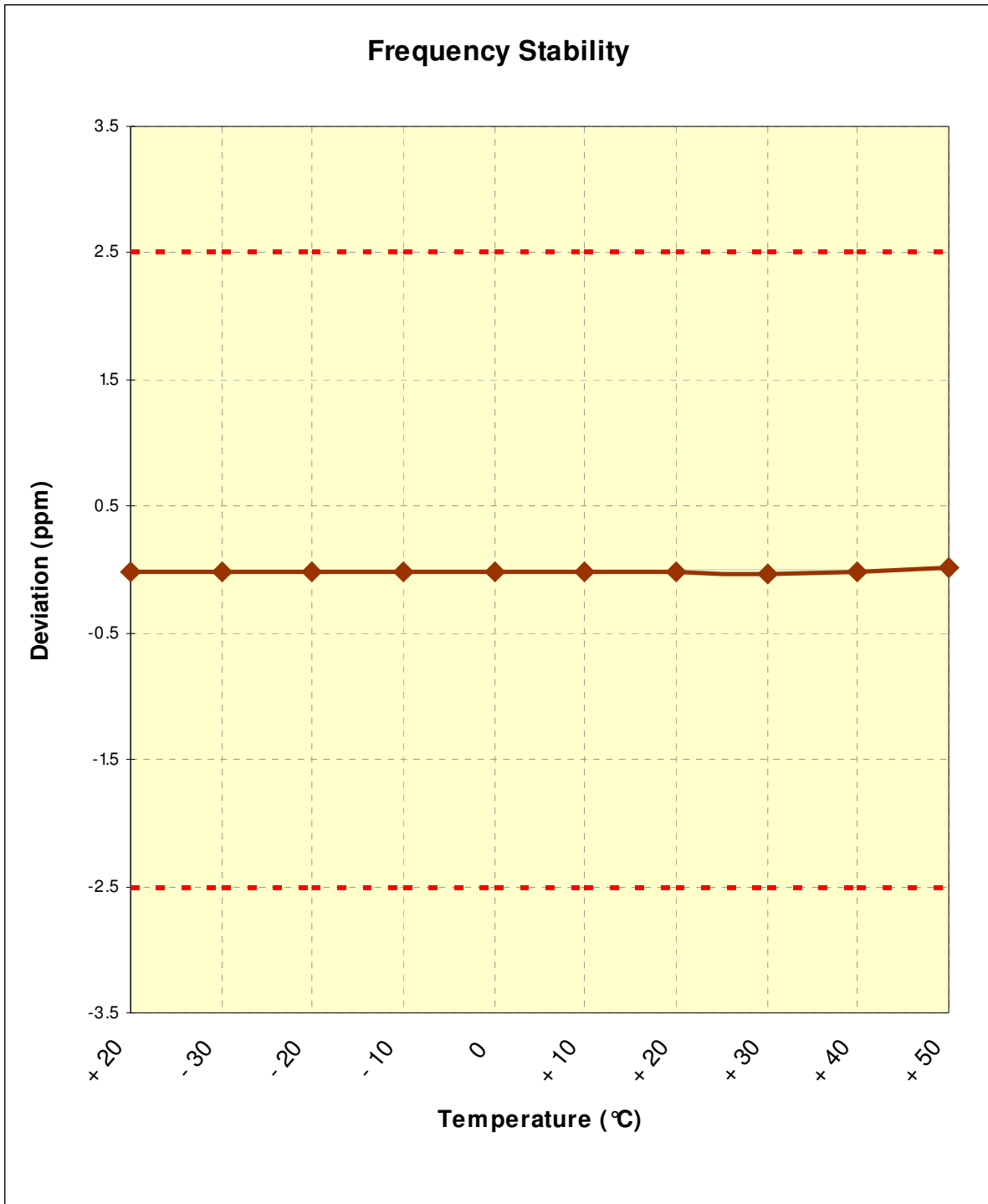
REFERENCE VOLTAGE: 7.2 VDC

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	836,599,981	-19	-0.000002
100 %		- 20	836,599,979	-21	-0.000003
100 %		- 10	836,599,984	-16	-0.000002
100 %		0	836,599,986	-14	-0.000002
100 %		+ 10	836,599,981	-19	-0.000002
100 %		+ 20	836,599,987	-13	-0.000002
100 %		+ 30	836,599,978	-22	-0.000003
100 %		+ 40	836,599,990	-10	-0.000001
100 %		+ 50	836,600,012	12	0.000001
115 %		8.28	+ 20	836,599,978	-22
BATT. ENDPOINT	6.52	+ 20	836,599,972	-28	-0.000003

Table 6-29. Frequency Stability Data (Cellular GSM Mode – Ch. 190)

**Cellular GSM Frequency Stability Measurements (Cont'd)**  
**§2.1055, 22.355**



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

FCC ID: ACJ9TGCF-311	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)	<b>Panasonic</b>	Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 36 of 81

## 6.12 Cellular WCDMA Frequency Stability Measurements

§2.1055, 22.355

OPERATING FREQUENCY: 836,600,000 Hz

CHANNEL: 4183

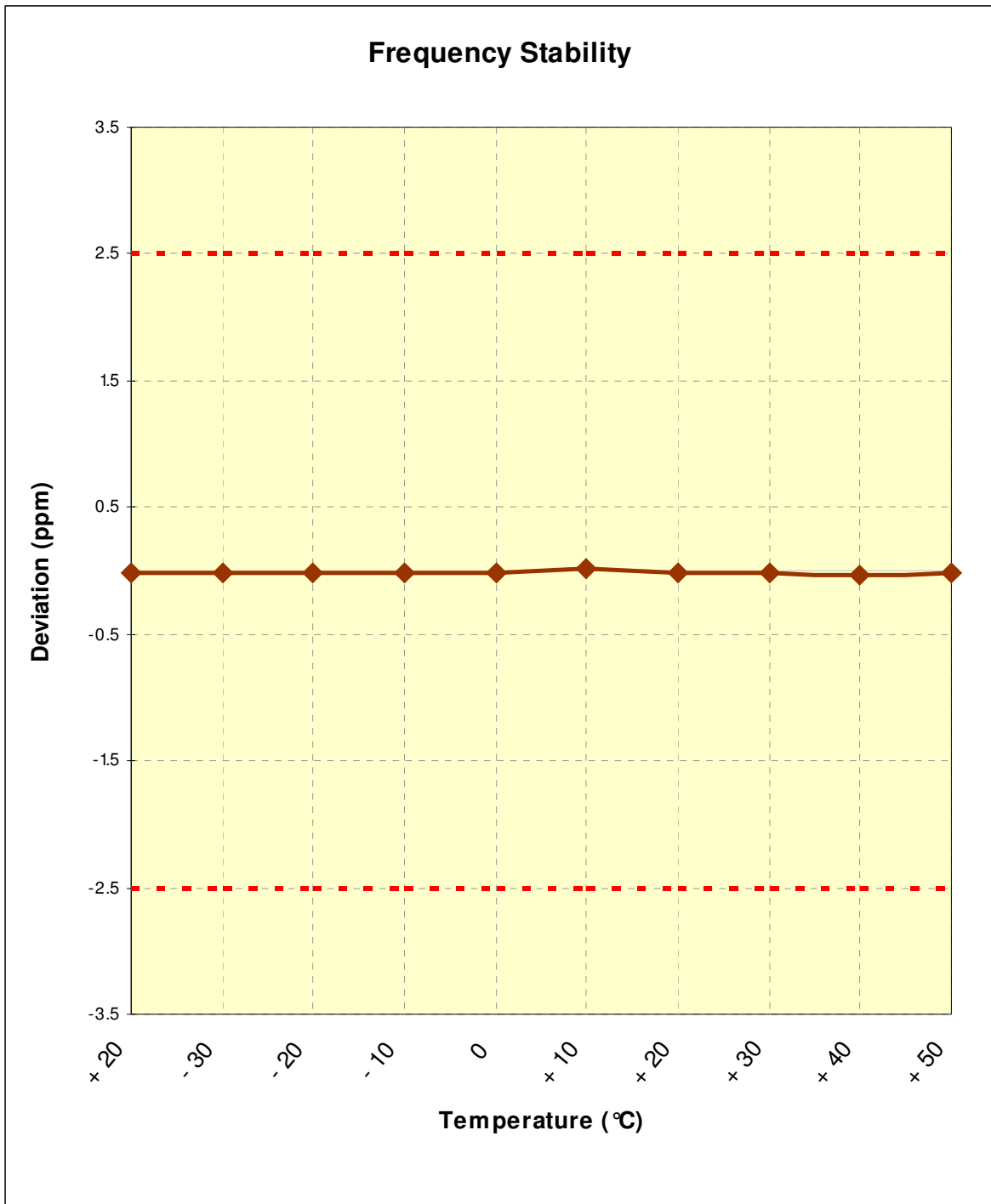
REFERENCE VOLTAGE: 7.2 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	7.20	+ 20 (Ref)	836,599,979	-21	-0.000003
100 %		- 30	836,599,982	-18	-0.000002
100 %		- 20	836,599,986	-14	-0.000002
100 %		- 10	836,599,983	-17	-0.000002
100 %		0	836,599,981	-19	-0.000002
100 %		+ 10	836,600,015	15	0.000002
100 %		+ 20	836,599,979	-21	-0.000003
100 %		+ 30	836,599,984	-16	-0.000002
100 %		+ 40	836,599,976	-24	-0.000003
100 %		+ 50	836,599,983	-17	-0.000002
115 %	8.28	+ 20	836,599,974	-26	-0.000003
BATT. ENDPOINT	6.52	+ 20	836,599,969	-31	-0.000004

Table 6-30. Frequency Stability Data (Cellular WCDMA Mode – Ch. 4183)

**Cellular WCDMA Frequency Stability Measurements (Cont'd)**  
**§2.1055, 22.355**



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

<b>FCC ID:</b> ACJ9TGQF-311	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	<b>FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)</b>	<b>Panasonic</b>	<b>Reviewed by:</b> Quality Manager
<b>Test Report S/N:</b> 0912152263.ACJ	<b>Test Dates:</b> January 19 - 21, 2010	<b>EUT Type:</b> ToughBook Model: CF-31	Page 38 of 81	

### 6.13 Cellular CDMA Frequency Stability Measurements

§2.1055, 22.355

OPERATING FREQUENCY: 836,520,000 Hz

CHANNEL: 384

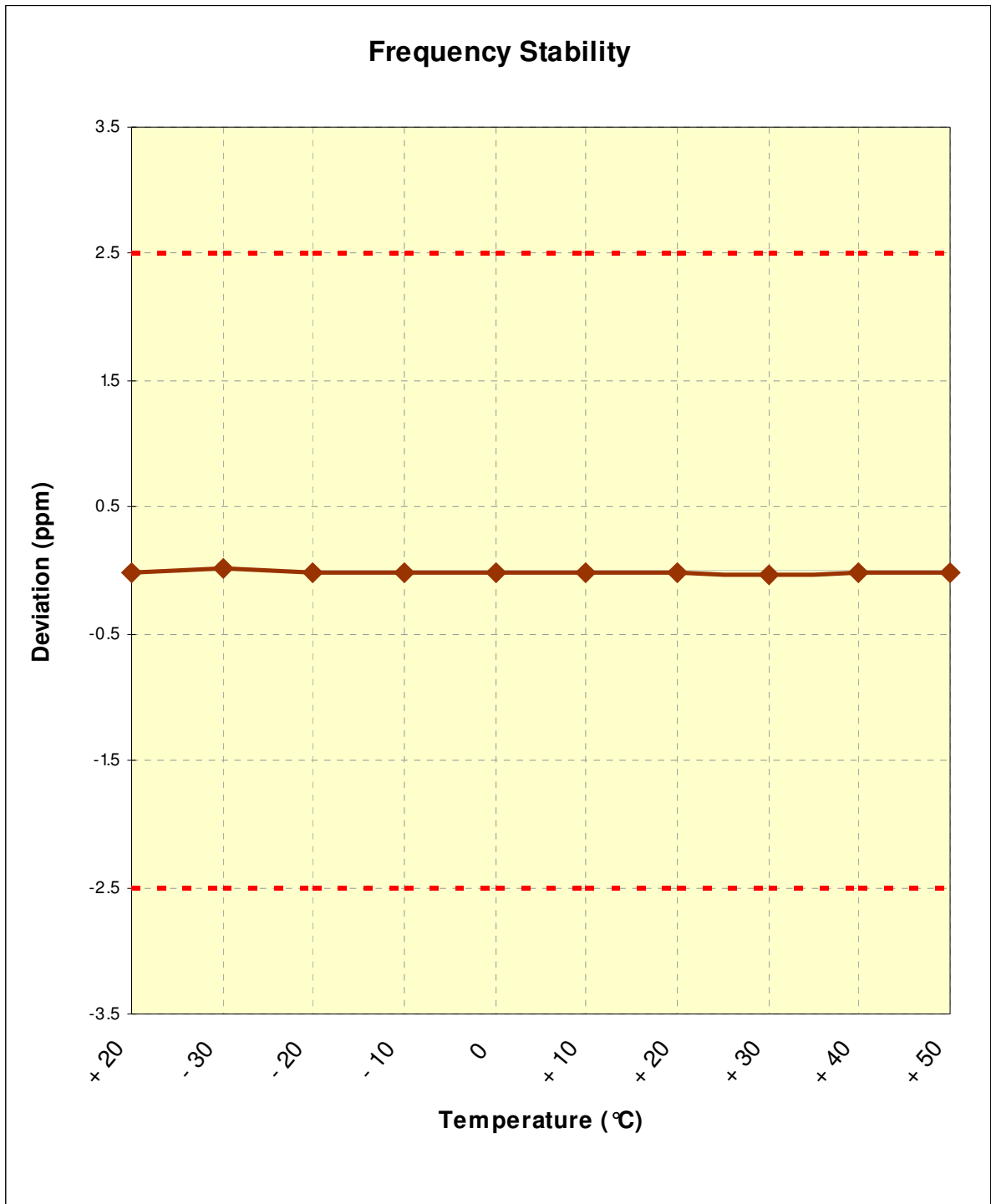
REFERENCE VOLTAGE: 7.2 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	7.20	+ 20 (Ref)	836,519,984	-16	-0.000002
100 %		- 30	836,520,018	18	0.000002
100 %		- 20	836,519,986	-14	-0.000002
100 %		- 10	836,519,985	-15	-0.000002
100 %		0	836,519,981	-19	-0.000002
100 %		+ 10	836,519,982	-18	-0.000002
100 %		+ 20	836,519,984	-16	-0.000002
100 %		+ 30	836,519,977	-23	-0.000003
100 %		+ 40	836,519,986	-14	-0.000002
100 %		+ 50	836,519,983	-17	-0.000002
115 %		8.28	+ 20	836,519,978	-22
BATT. ENDPOINT	6.52	+ 20	836,519,969	-31	-0.000004

Table 6-31. Frequency Stability Data (Cellular CDMA Mode – Ch. 384)

**Cellular CDMA Frequency Stability Measurements (Cont'd)**  
**§2.1055, 22.355**



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

FCC ID: ACJ9TGCF-311	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)	<b>Panasonic</b>	Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 40 of 81

### 6.14 PCS GSM Frequency Stability Measurements

§2.1055, 24.235

OPERATING FREQUENCY: 1,880,000,000 Hz

CHANNEL: 661

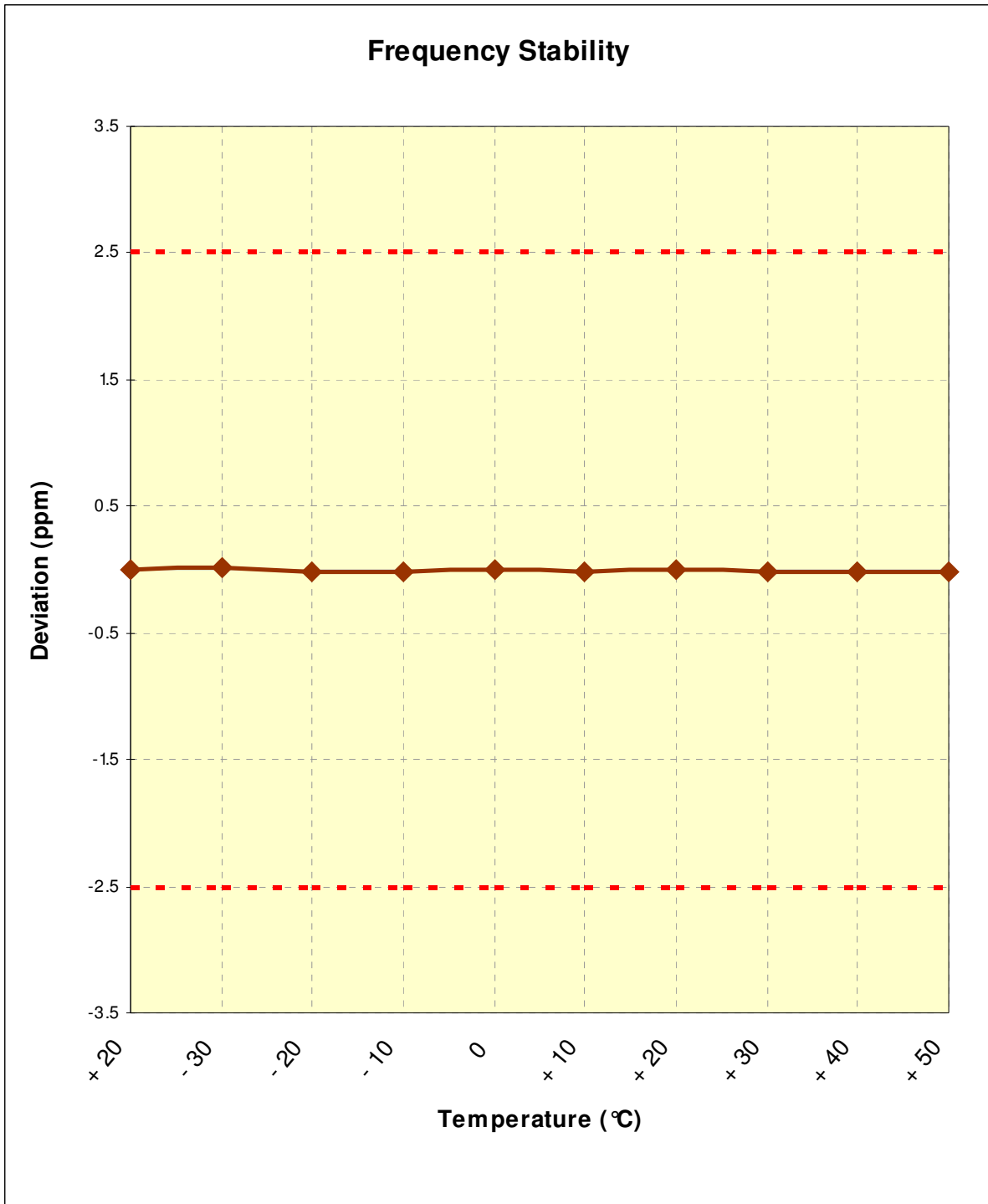
REFERENCE VOLTAGE: 7.2 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	7.20	+ 20 (Ref)	1,879,999,990	-10	-0.000001
100 %		- 30	1,880,000,016	16	0.000001
100 %		- 20	1,879,999,981	-19	-0.000001
100 %		- 10	1,879,999,979	-21	-0.000001
100 %		0	1,879,999,986	-14	-0.000001
100 %		+ 10	1,879,999,978	-22	-0.000001
100 %		+ 20	1,879,999,990	-10	-0.000001
100 %		+ 30	1,879,999,983	-17	-0.000001
100 %		+ 40	1,879,999,982	-18	-0.000001
100 %		+ 50	1,879,999,978	-22	-0.000001
115 %		8.28	+ 20	1,879,999,979	-21
BATT. ENDPOINT	6.52	+ 20	1,879,999,973	-27	-0.000001

Table 6-32. Frequency Stability Data (PCS GSM Mode – Ch. 661)

**PCS GSM Frequency Stability Measurements (Cont'd)**  
§2.1055, 24.235



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

FCC ID: ACJ9TGCF-311	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)	<b>Panasonic</b>	Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 42 of 81

## 6.15 PCS WCDMA Frequency Stability Measurements

§2.1055, 24.235

OPERATING FREQUENCY: 1,880,000,000 Hz

CHANNEL: 9400

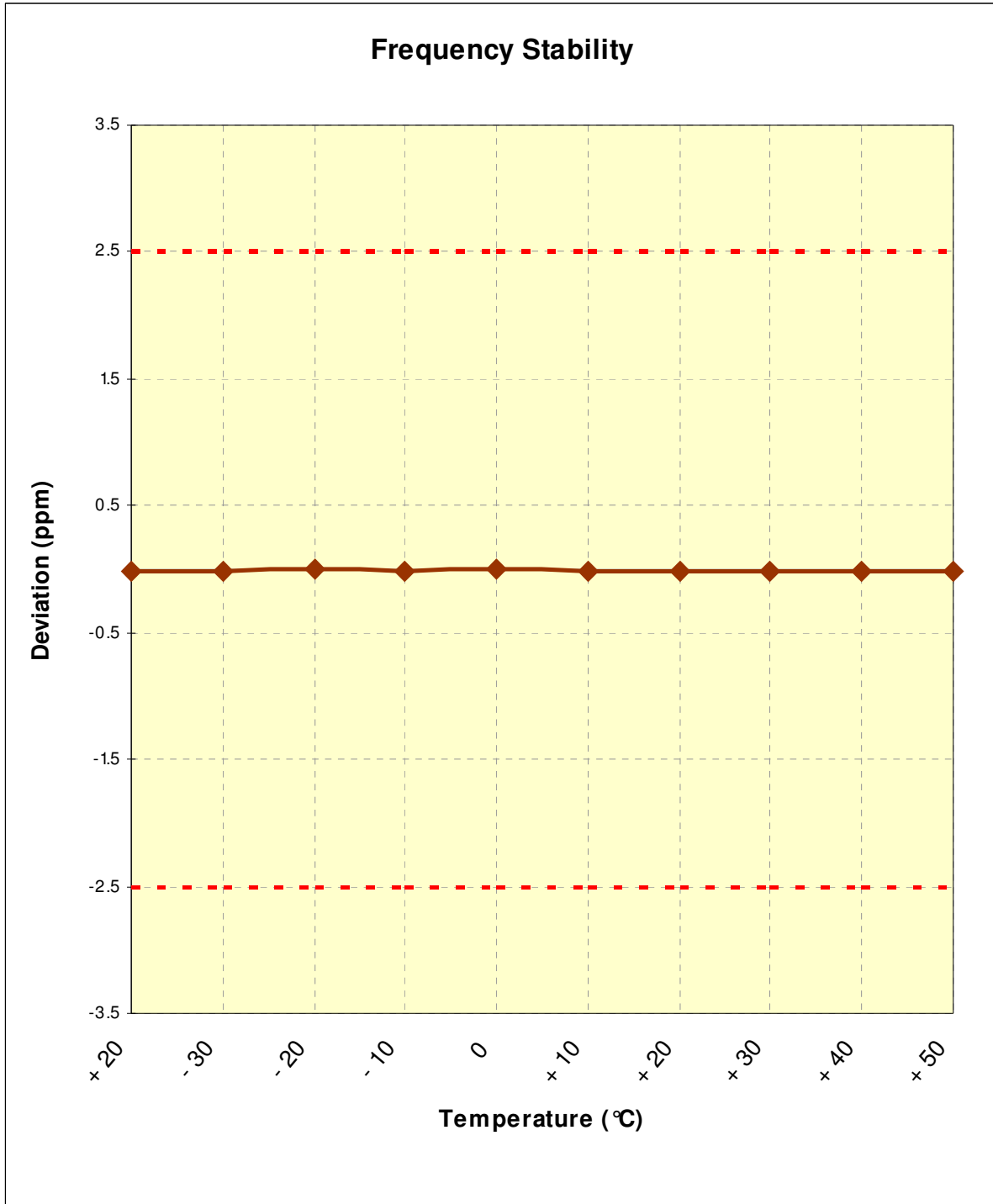
REFERENCE VOLTAGE: 7.2 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	7.20	+ 20 (Ref)	1,879,999,981	-19	-0.000001
100 %		- 30	1,879,999,979	-21	-0.000001
100 %		- 20	1,879,999,986	-14	-0.000001
100 %		- 10	1,879,999,982	-18	-0.000001
100 %		0	1,879,999,985	-15	-0.000001
100 %		+ 10	1,879,999,984	-16	-0.000001
100 %		+ 20	1,879,999,981	-19	-0.000001
100 %		+ 30	1,879,999,984	-16	-0.000001
100 %		+ 40	1,879,999,982	-18	-0.000001
100 %		+ 50	1,879,999,979	-21	-0.000001
115 %		8.28	+ 20	1,879,999,978	-22
BATT. ENDPOINT	6.52	+ 20	1,879,999,974	-26	-0.000001

**Table 6-33. Frequency Stability Data (PCS WCDMA Mode – Ch. 9400)**

**PCS WCDMA Frequency Stability Measurements (Cont'd)**  
**§2.1055, 24.235**



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

<b>FCC ID:</b> ACJ9TGCF-311	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	<b>FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)</b>	<b>Panasonic</b>	<b>Reviewed by:</b> Quality Manager
<b>Test Report S/N:</b> 0912152263.ACJ	<b>Test Dates:</b> January 19 - 21, 2010	<b>EUT Type:</b> ToughBook Model: CF-31	Page 44 of 81	

## 6.16 PCS CDMA Frequency Stability Measurements

§2.1055, 24.235

OPERATING FREQUENCY: 1,880,000,000 Hz

CHANNEL: 600

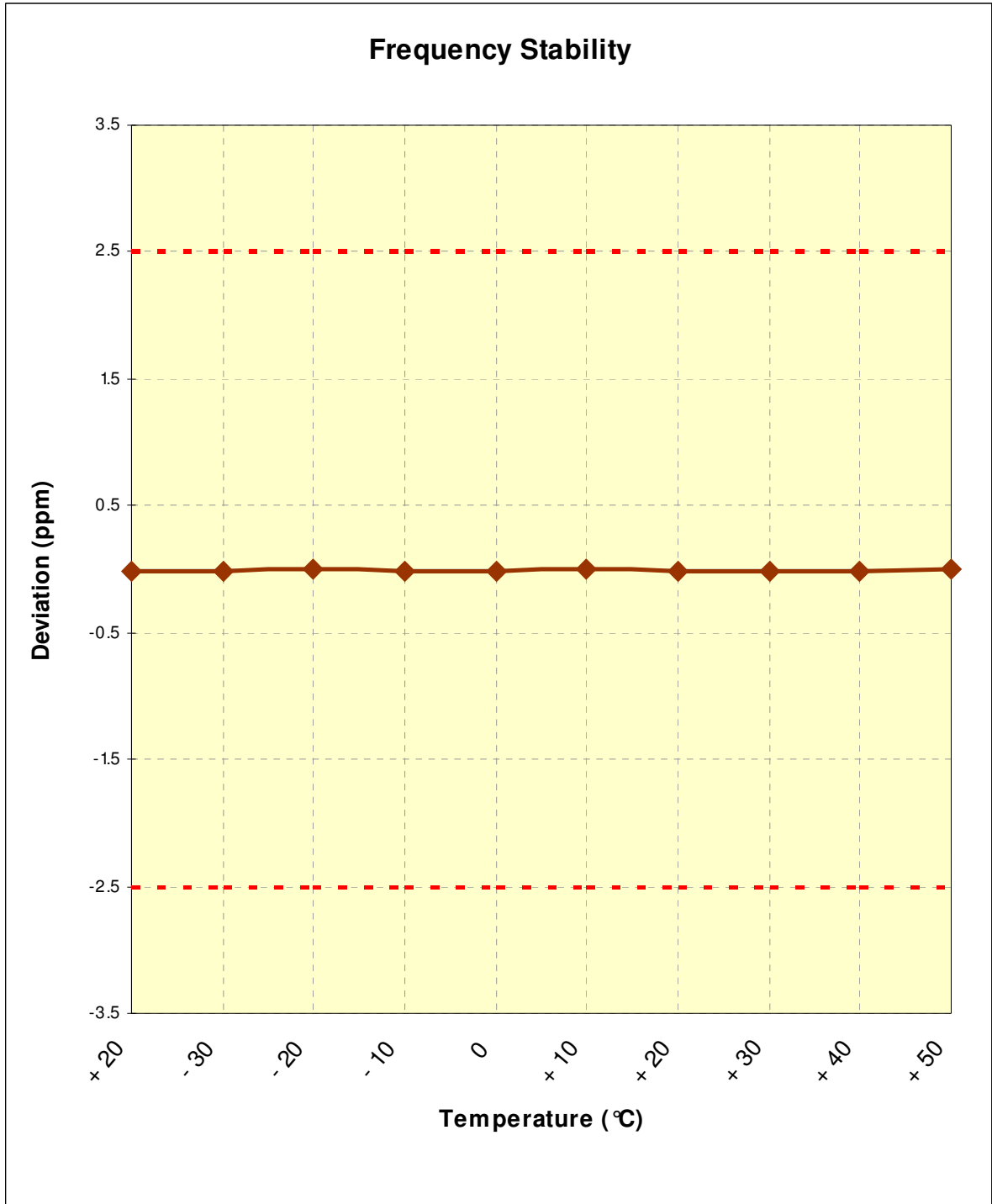
REFERENCE VOLTAGE: 7.2 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	7.20	+ 20 (Ref)	1,879,999,978	-22	-0.000001
100 %		- 30	1,879,999,975	-25	-0.000001
100 %		- 20	1,879,999,988	-12	-0.000001
100 %		- 10	1,879,999,983	-17	-0.000001
100 %		0	1,879,999,982	-18	-0.000001
100 %		+ 10	1,880,000,012	12	0.000001
100 %		+ 20	1,879,999,978	-22	-0.000001
100 %		+ 30	1,879,999,973	-27	-0.000001
100 %		+ 40	1,879,999,981	-19	-0.000001
100 %		+ 50	1,879,999,985	-15	-0.000001
115 %		8.28	+ 20	1,879,999,976	-24
BATT. ENDPOINT	6.52	+ 20	1,879,999,968	-32	-0.000002

Table 6-34. Frequency Stability Data (PCS CDMA Mode – Ch. 600)

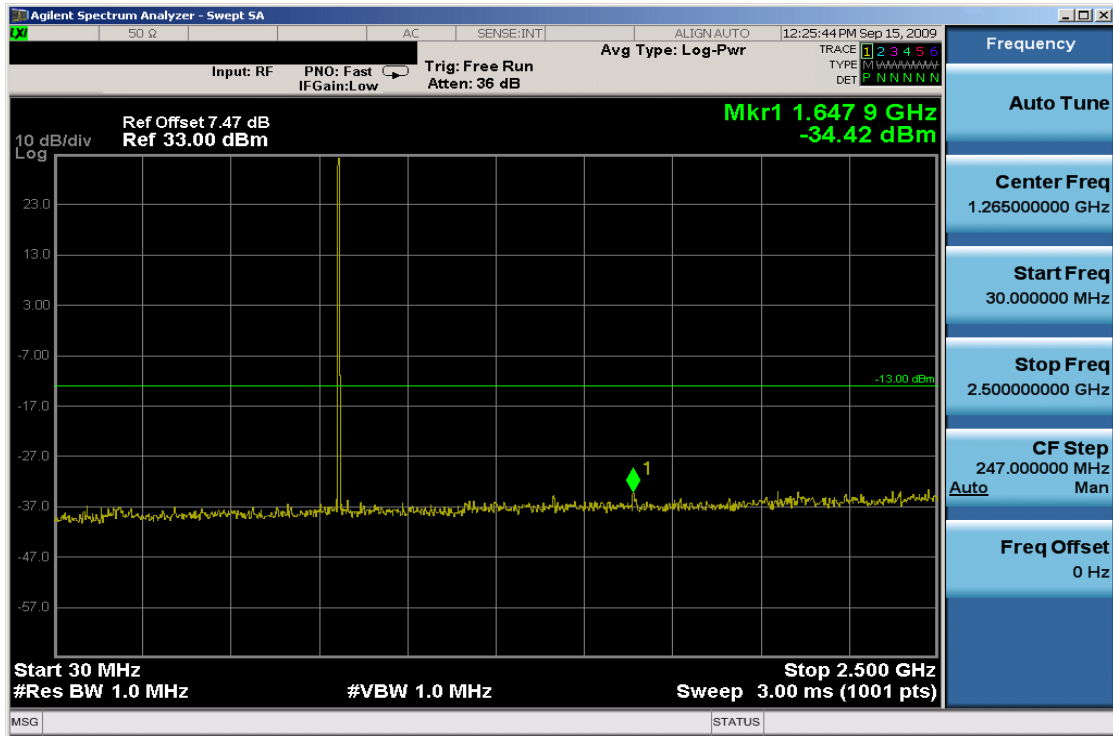
**PCS CDMA Frequency Stability Measurements (Cont'd)**  
**§2.1055, 24.235**



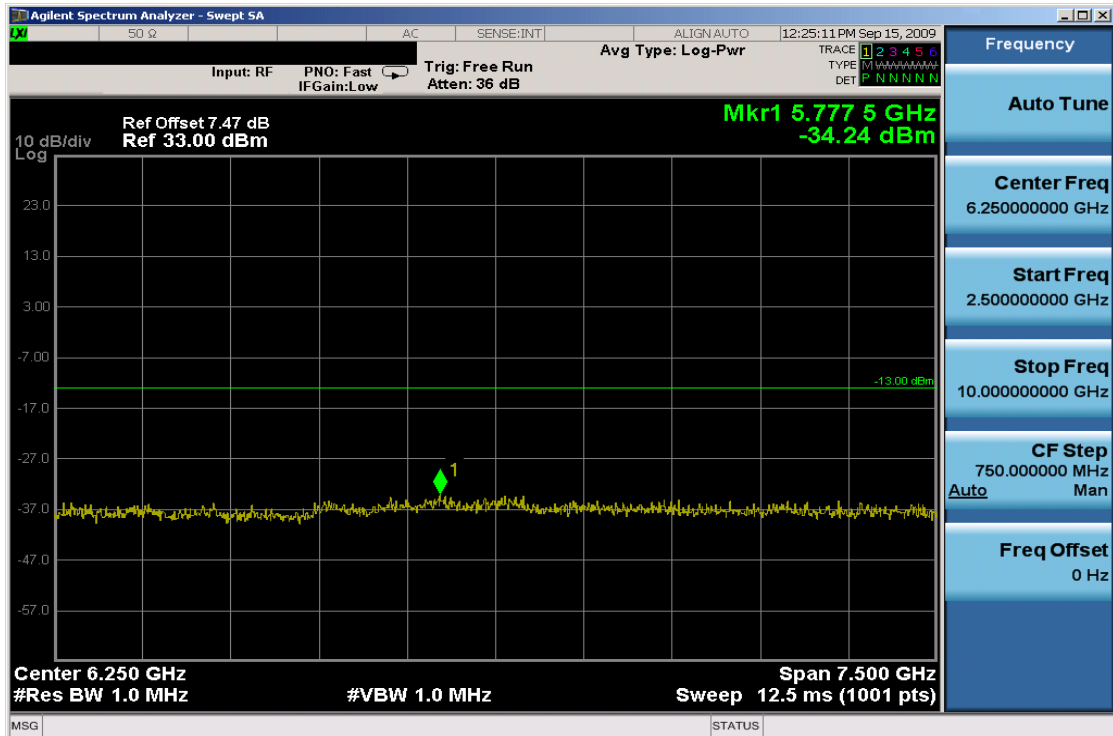
**Plot 6-6. Frequency Stability Graph (PCS CDMA Mode – Ch. 600)**

<b>FCC ID:</b> ACJ9TGCF-311	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	<b>FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)</b>	<b>Panasonic</b>	<b>Reviewed by:</b> Quality Manager
<b>Test Report S/N:</b> 0912152263.ACJ	<b>Test Dates:</b> January 19 - 21, 2010	<b>EUT Type:</b> ToughBook Model: CF-31	Page 46 of 81	

## 7.0 PLOTS OF EMISSIONS

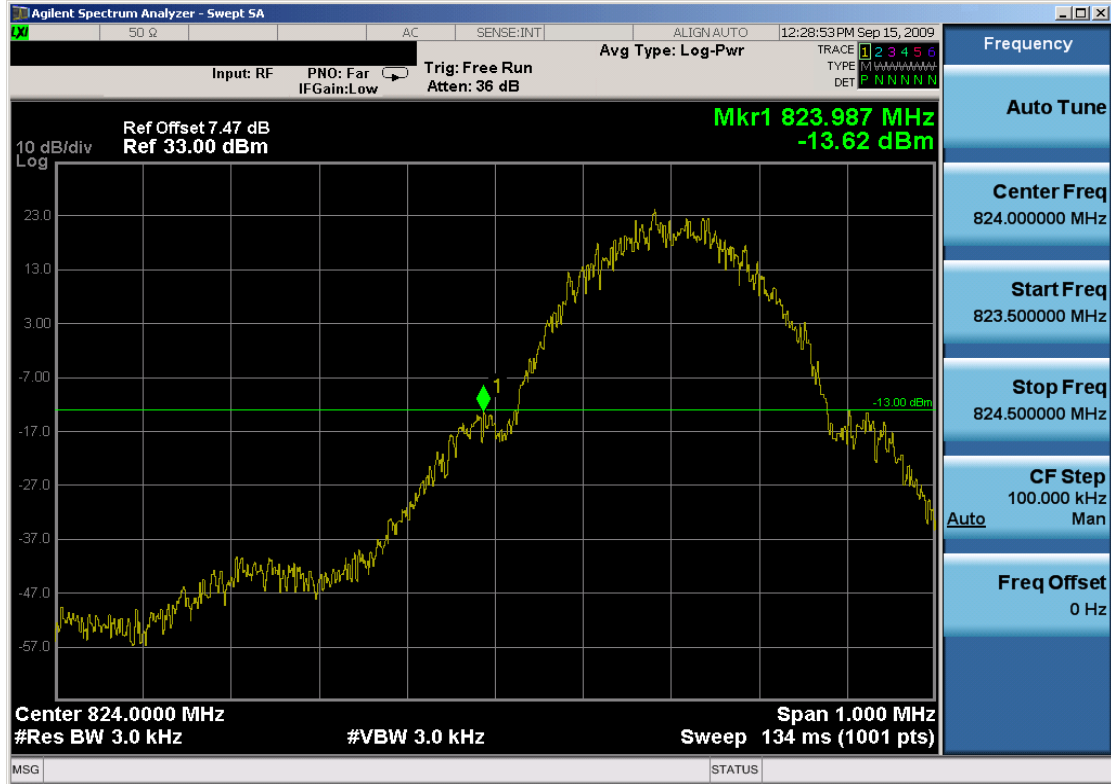


Plot 7-1. Conducted Spurious Plot (Cellular GSM Mode – Ch. 128)

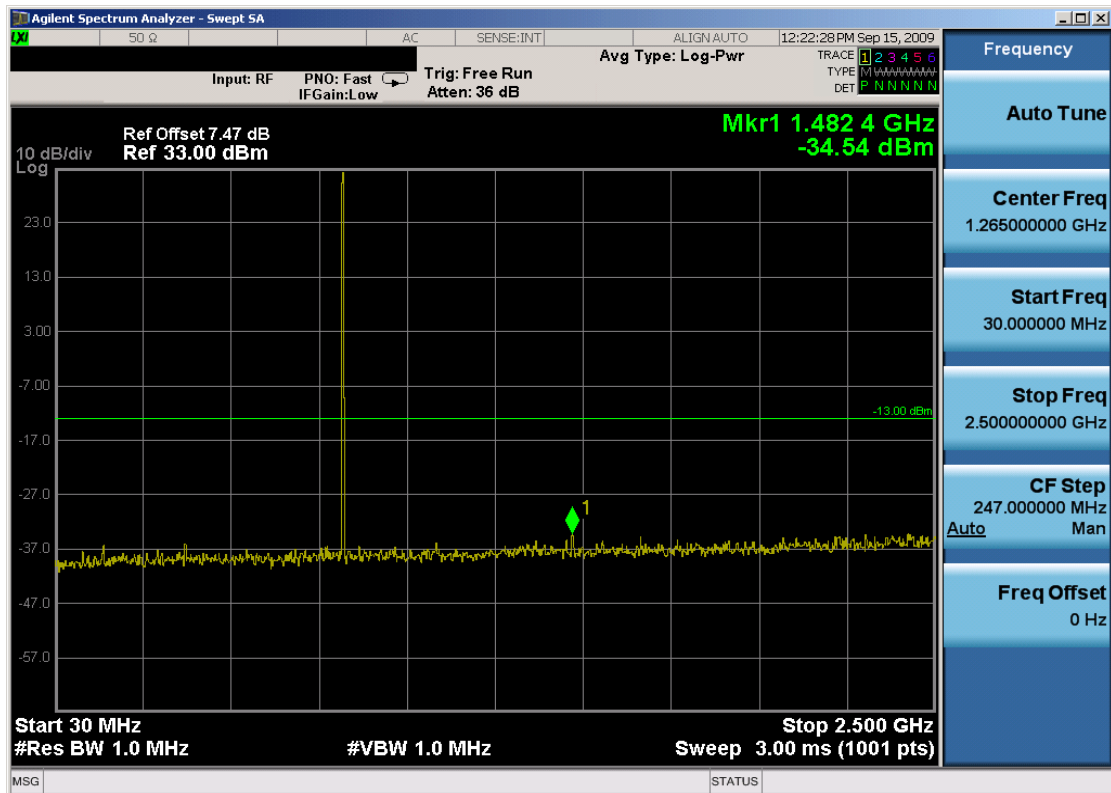


Plot 7-2. Conducted Spurious Plot (Cellular GSM Mode – Ch. 128)

FCC ID: ACJ9TGCF-311	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)	<b>Panasonic</b>	Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 47 of 81

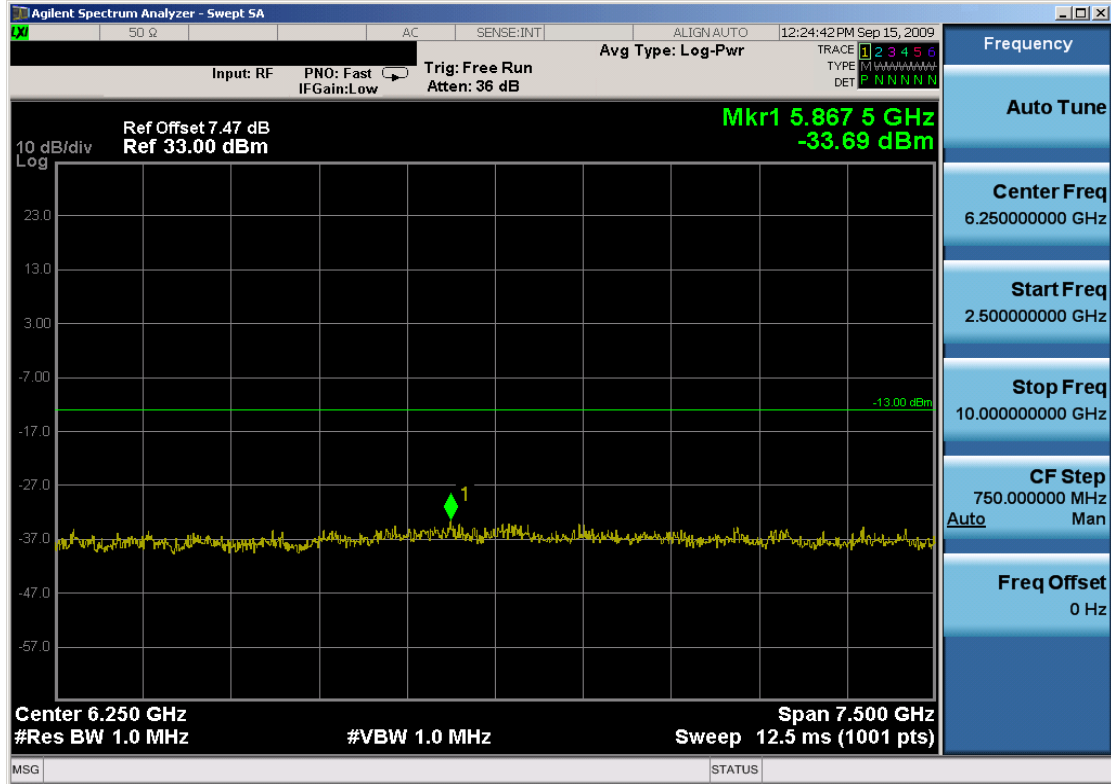


Plot 7-3. Band Edge Plot (Cellular GSM Mode – Ch. 128)

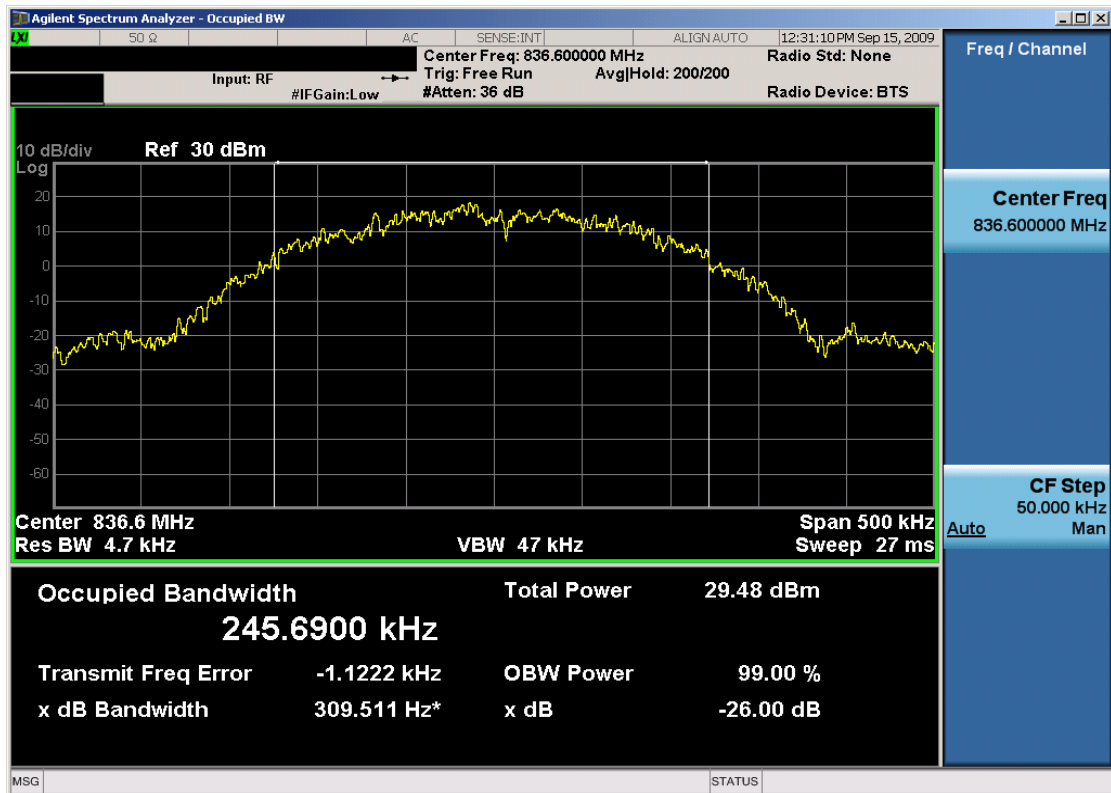


Plot 7-4. Conducted Spurious (Cellular GSM Mode – Ch. 190)

FCC ID: ACJ9TGCF-311	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)	<b>Panasonic</b>	Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 48 of 81

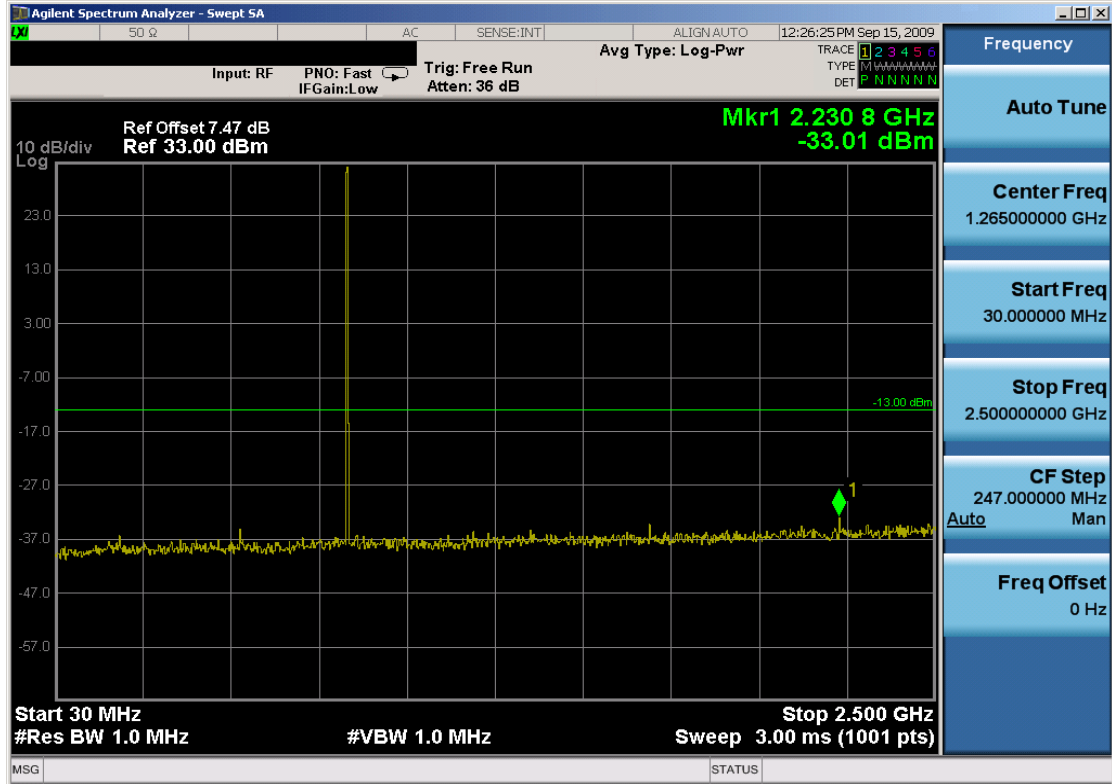


Plot 7-5. Conducted Spurious Plot (Cellular GSM Mode – Ch. 190)

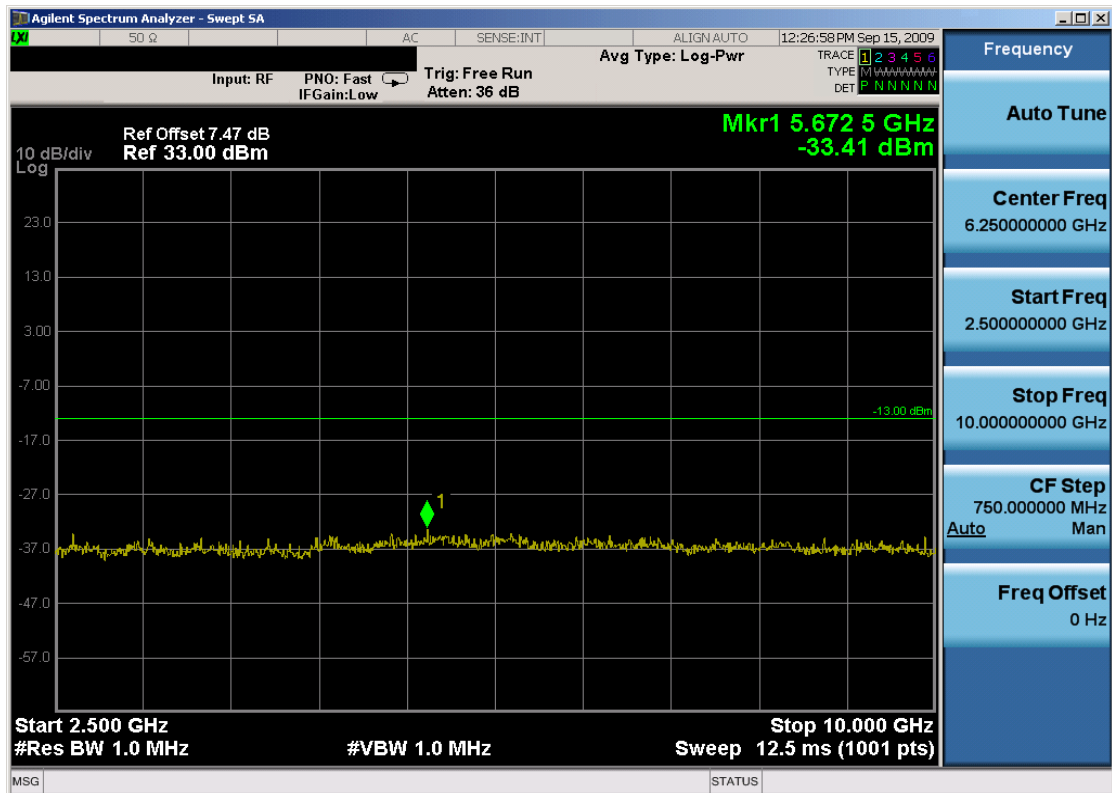


Plot 7-6. Occupied Bandwidth Plot (Cellular GSM Mode – Ch. 190)

FCC ID: ACJ9TGQF-311	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)	<b>Panasonic</b>	Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 49 of 81

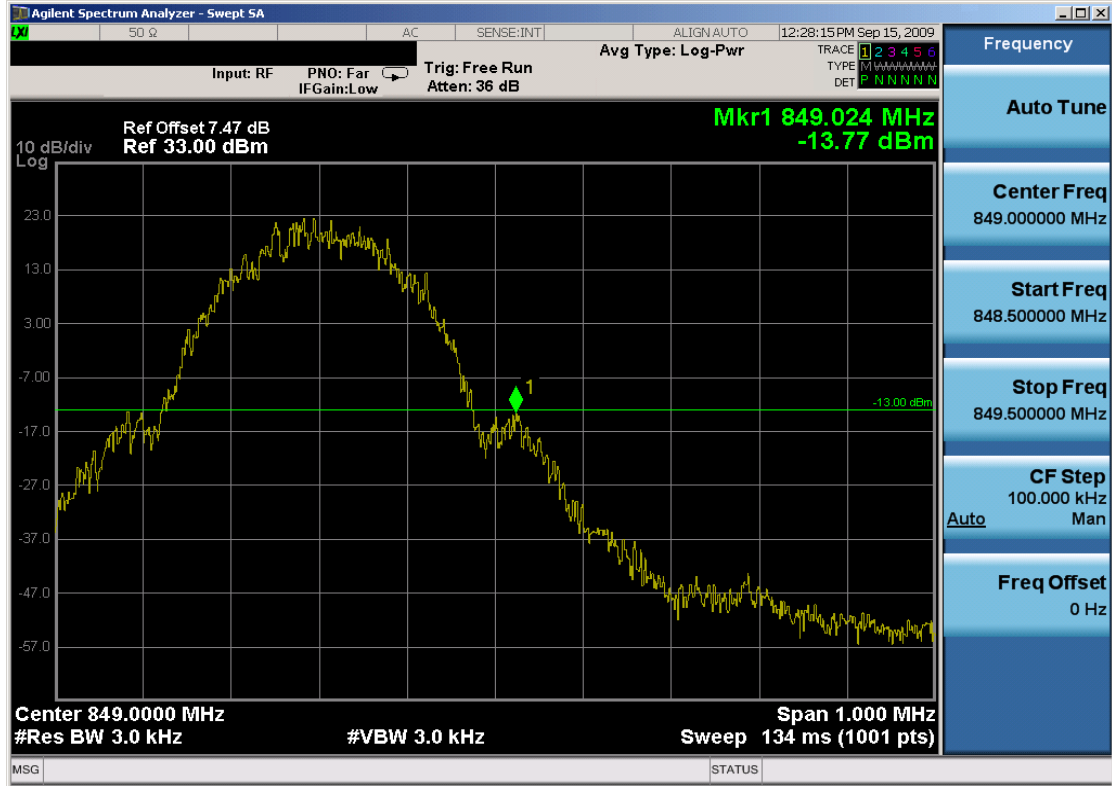


Plot 7-7. Conducted Spurious Plot (Cellular GSM Mode – Ch. 251)

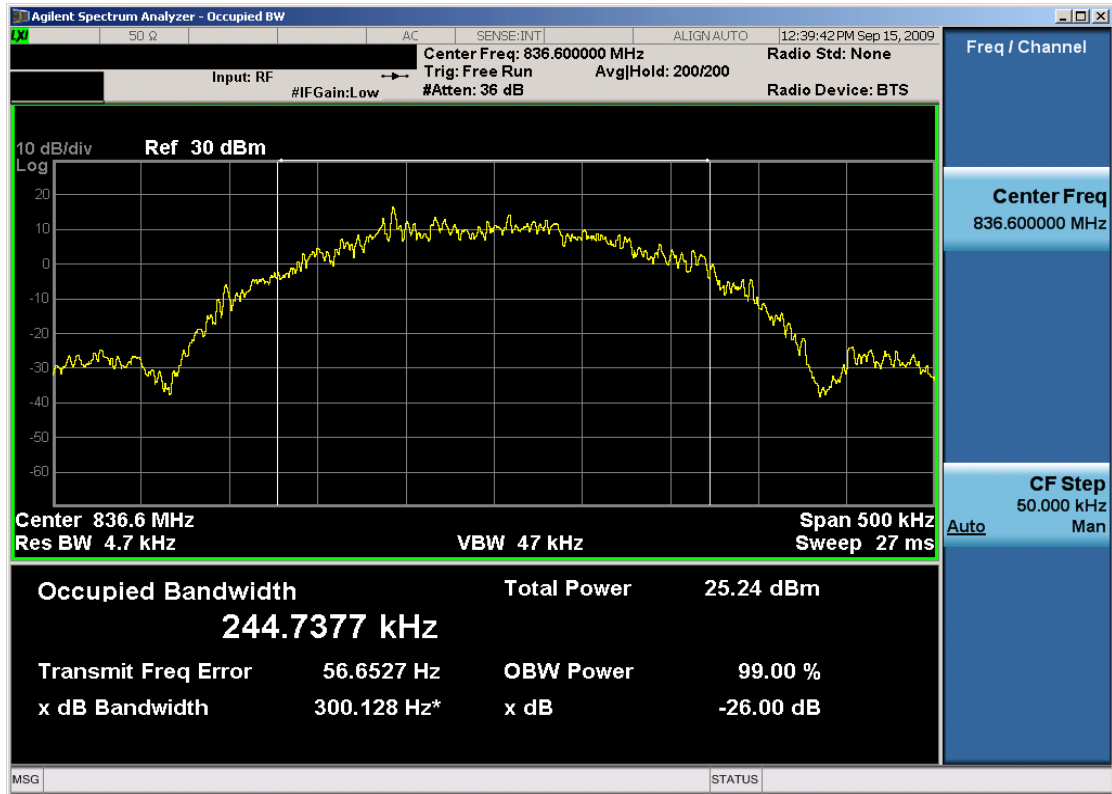


Plot 7-8. Conducted Spurious Plot (Cellular GSM Mode – Ch. 251)

FCC ID: ACJ9TGCF-311	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)	<b>Panasonic</b>	Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 50 of 81



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



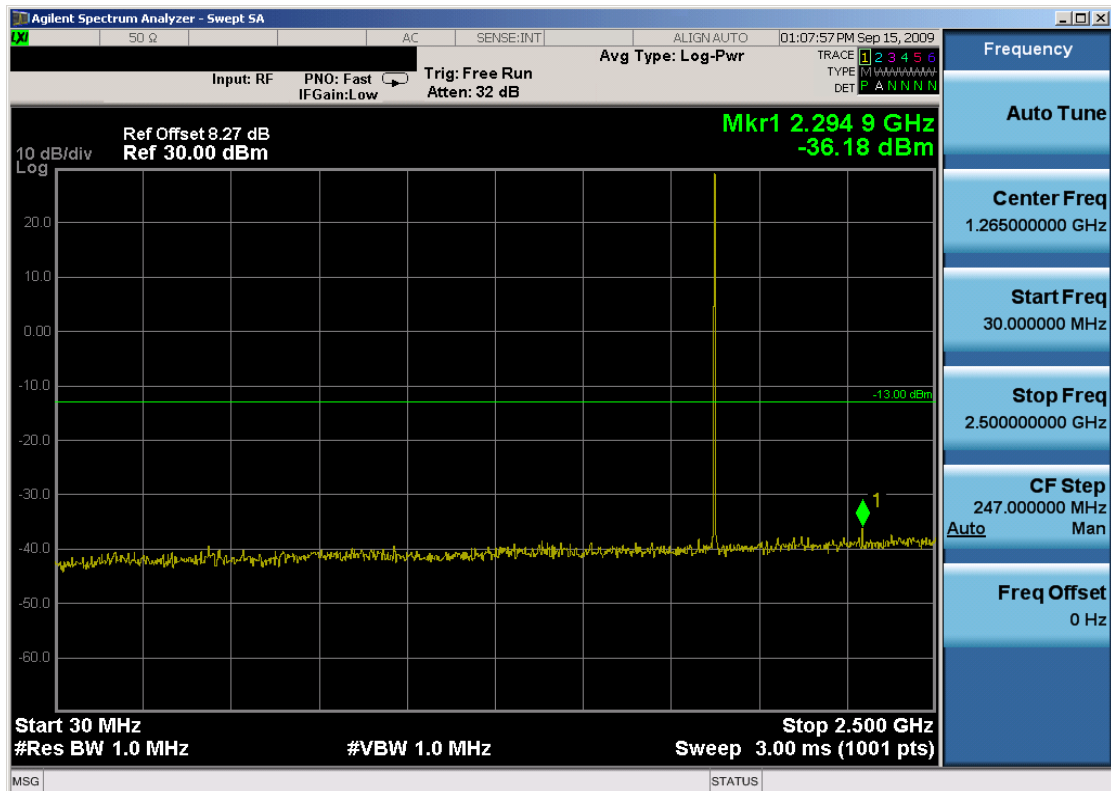
Plot 7-10. Occupied Bandwidth Plot (EDGE850 Mode – Ch. 190)

FCC ID: ACJ9TGQF-311	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)	<b>Panasonic</b>	Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 51 of 81





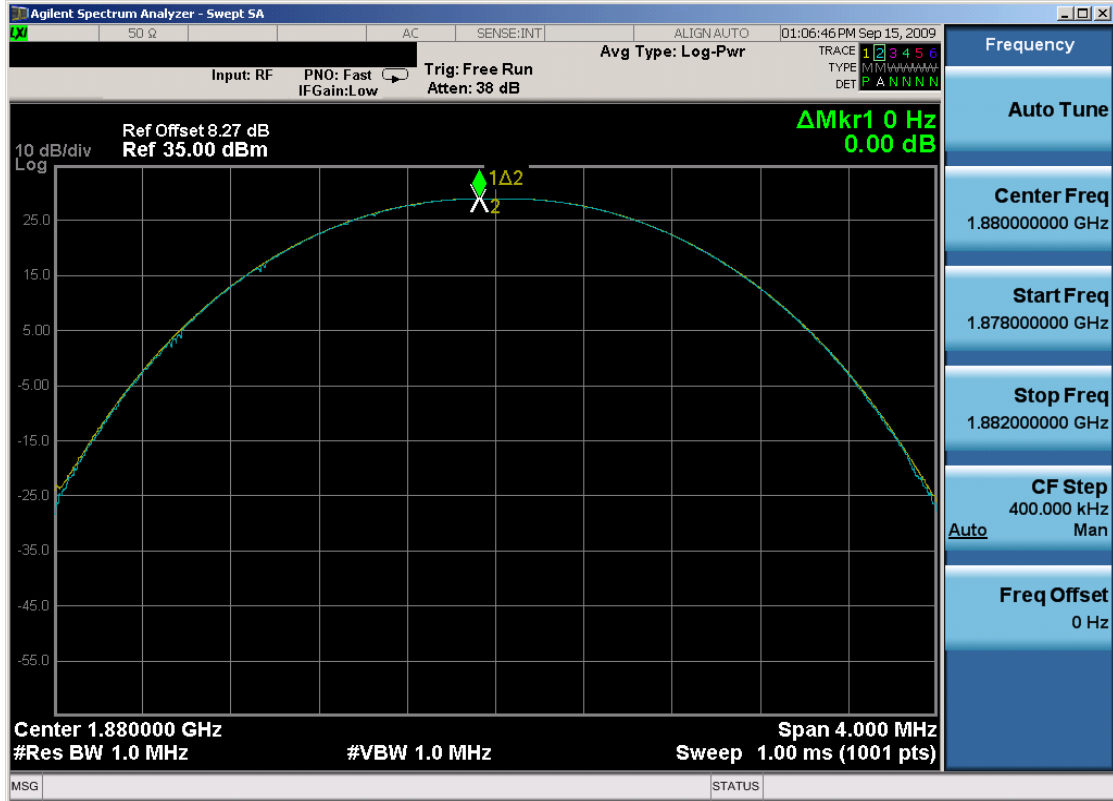
Plot 7-13. Band Edge Plot (PCS GSM Mode – Ch. 512)



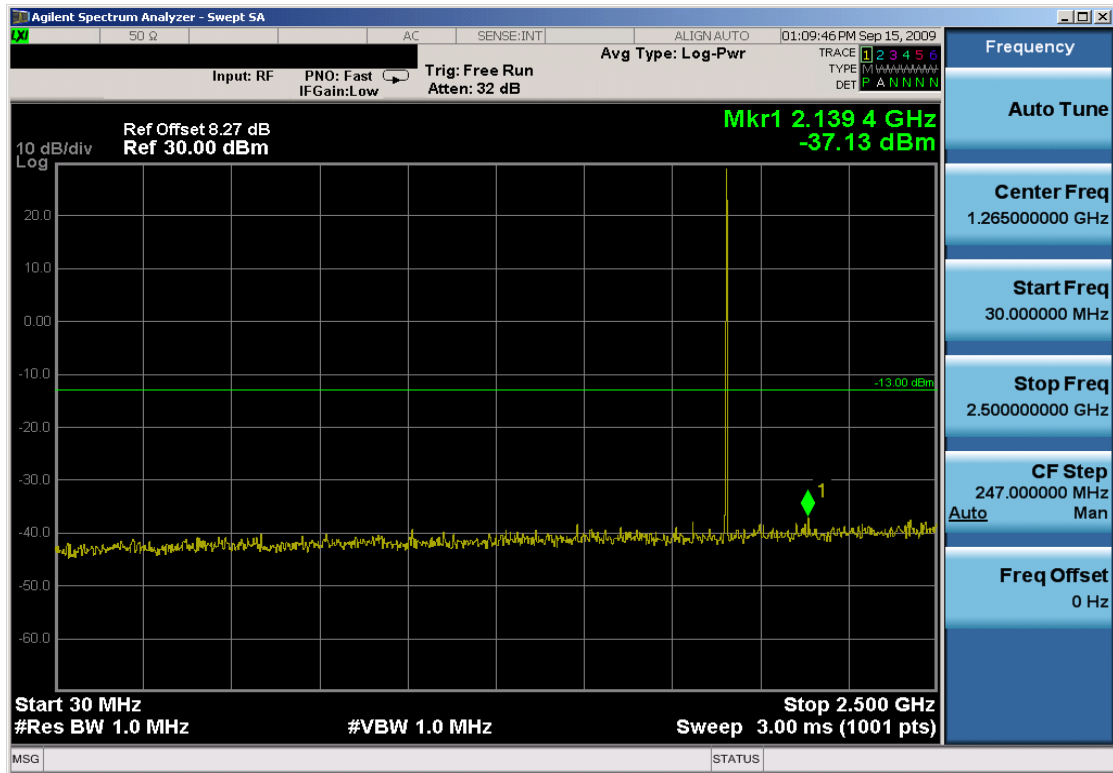
Plot 7-14. Conducted Spurious Plot (PCS GSM Mode – Ch. 661)

FCC ID: ACJ9TGCF-311	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)	<b>Panasonic</b>	Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 53 of 81



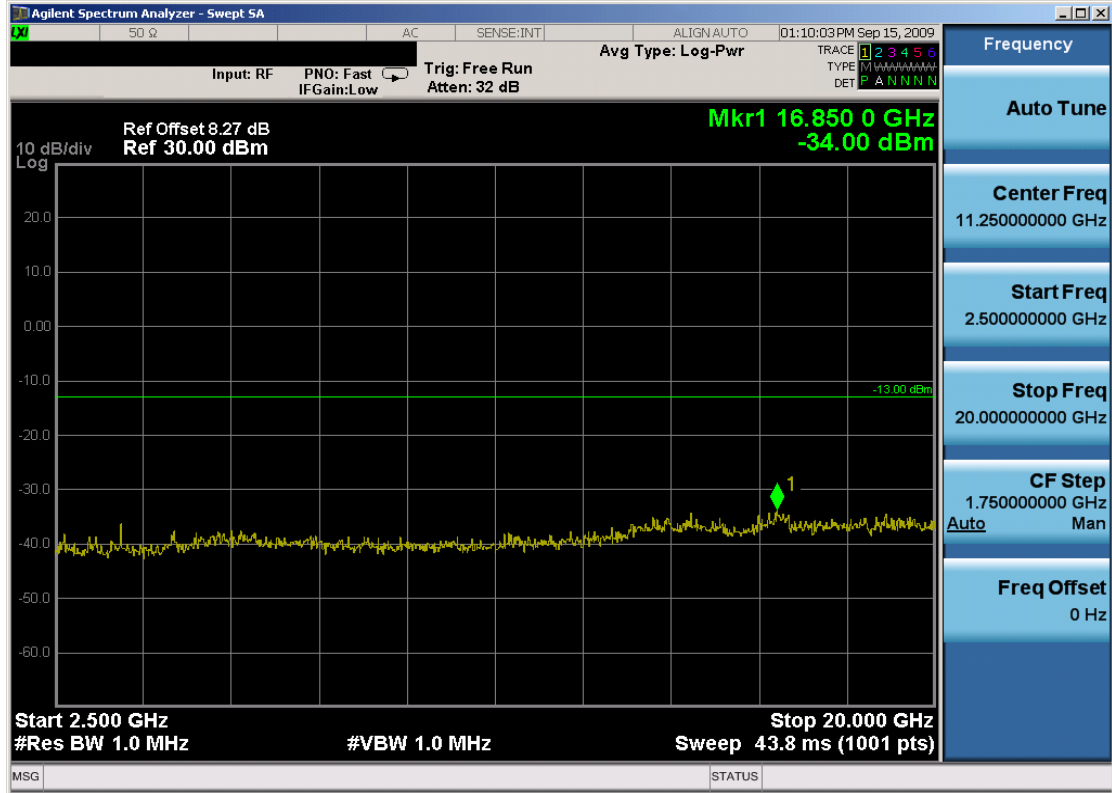


Plot 7-17. Peak-Average Ratio Plot (PCS GSM Mode – Ch. 661)

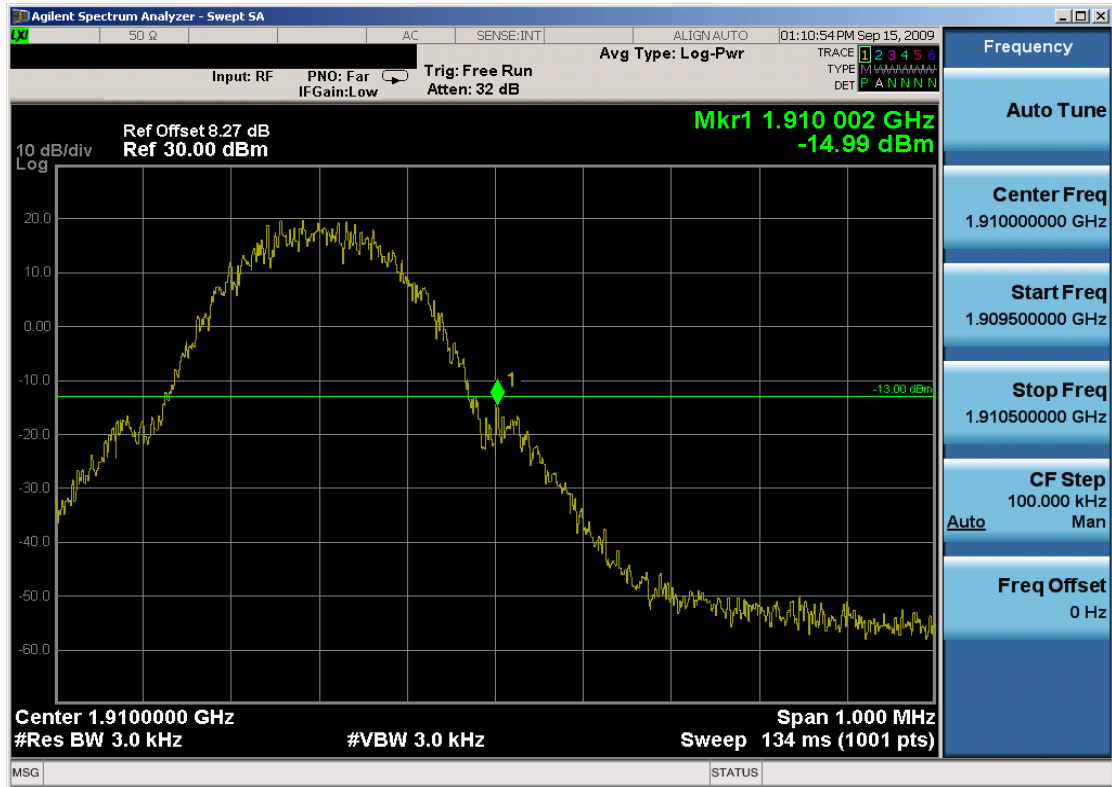


Plot 7-18. Conducted Spurious Plot (PCS GSM Mode – Ch. 810)

FCC ID: ACJ9TGCF-311	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)	<b>Panasonic</b>	Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 55 of 81



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

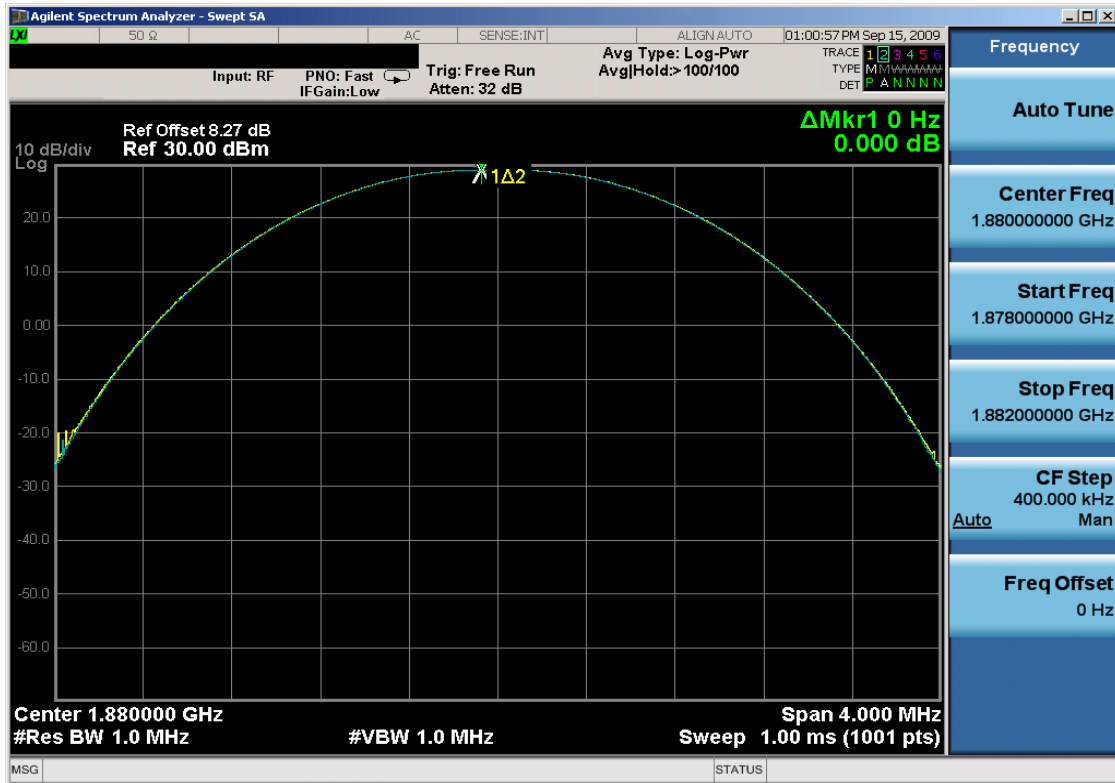


Plot 7-20. Band Edge Plot (PCS GSM Mode – Ch. 810)

FCC ID: ACJ9TGCF-311	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)	<b>Panasonic</b>	Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 56 of 81



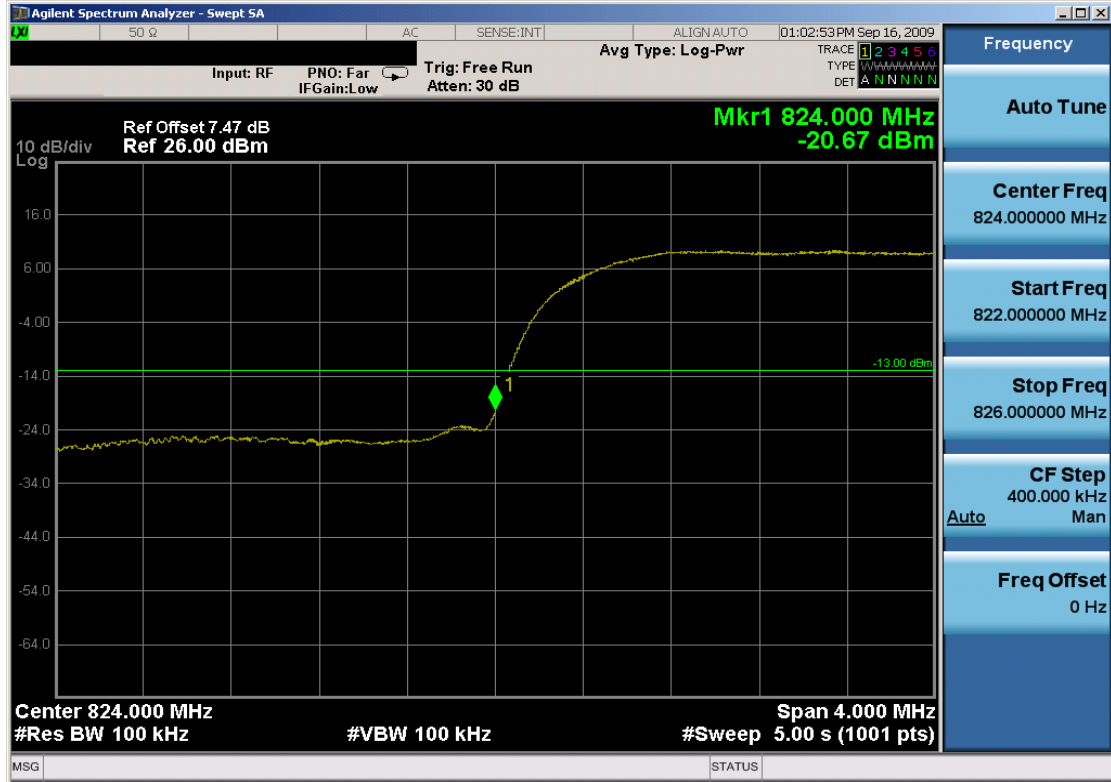
Plot 7-21. Occupied Bandwidth Plot (EDGE1900 Mode – Ch. 661)



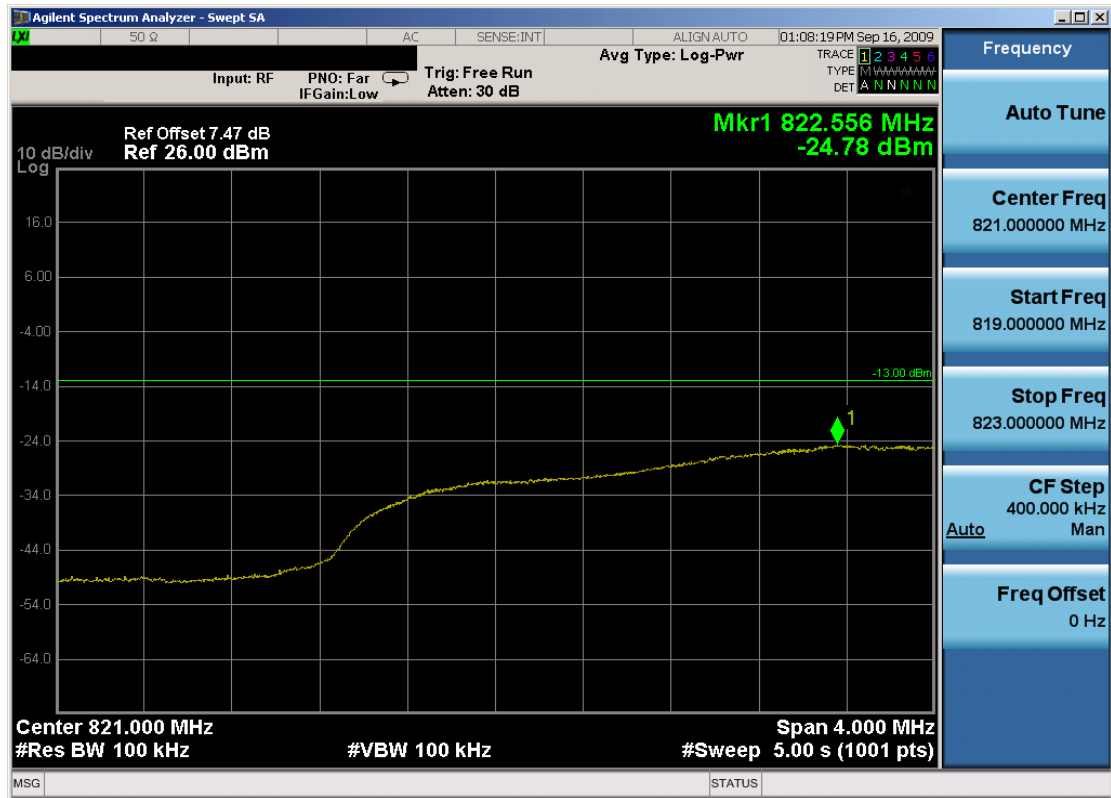
Plot 7-22. Peak-Average Ratio Plot (EDGE1900 Mode – Ch. 661)

FCC ID: ACJ9TGCF-311	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)	<b>Panasonic</b>	Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 57 of 81



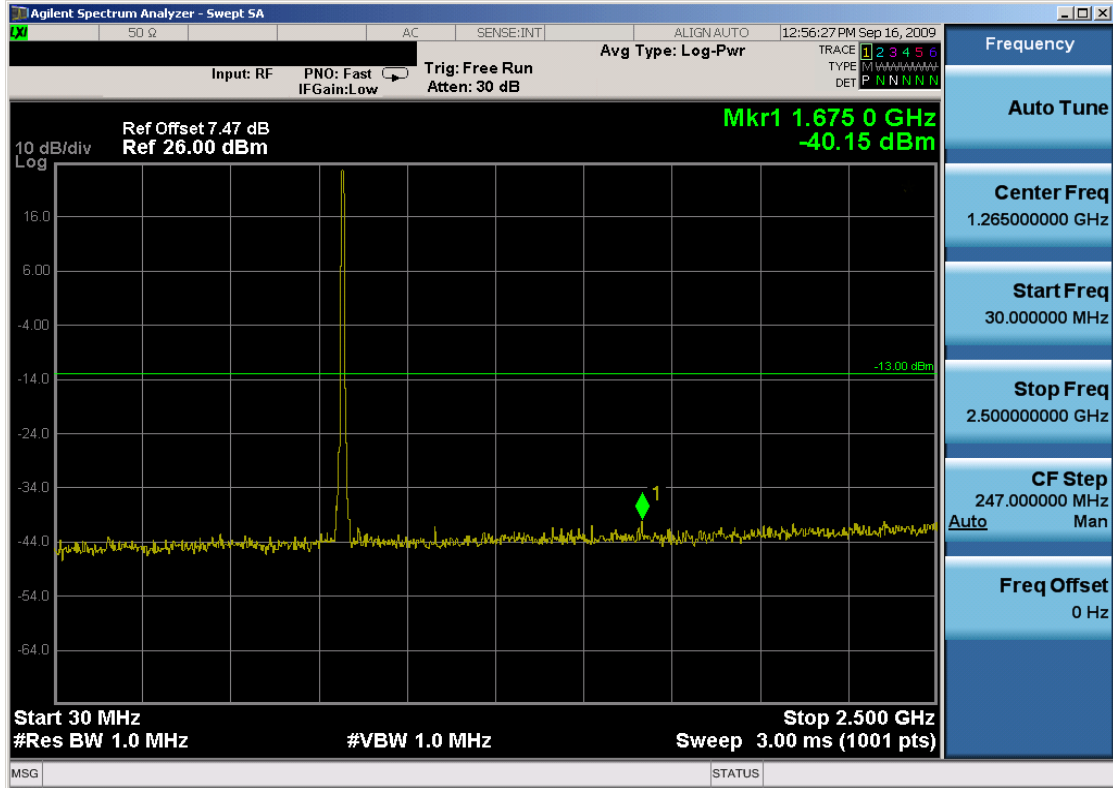


Plot 7-25. Band Edge Plot (Cellular WCDMA Mode – Ch. 4132)

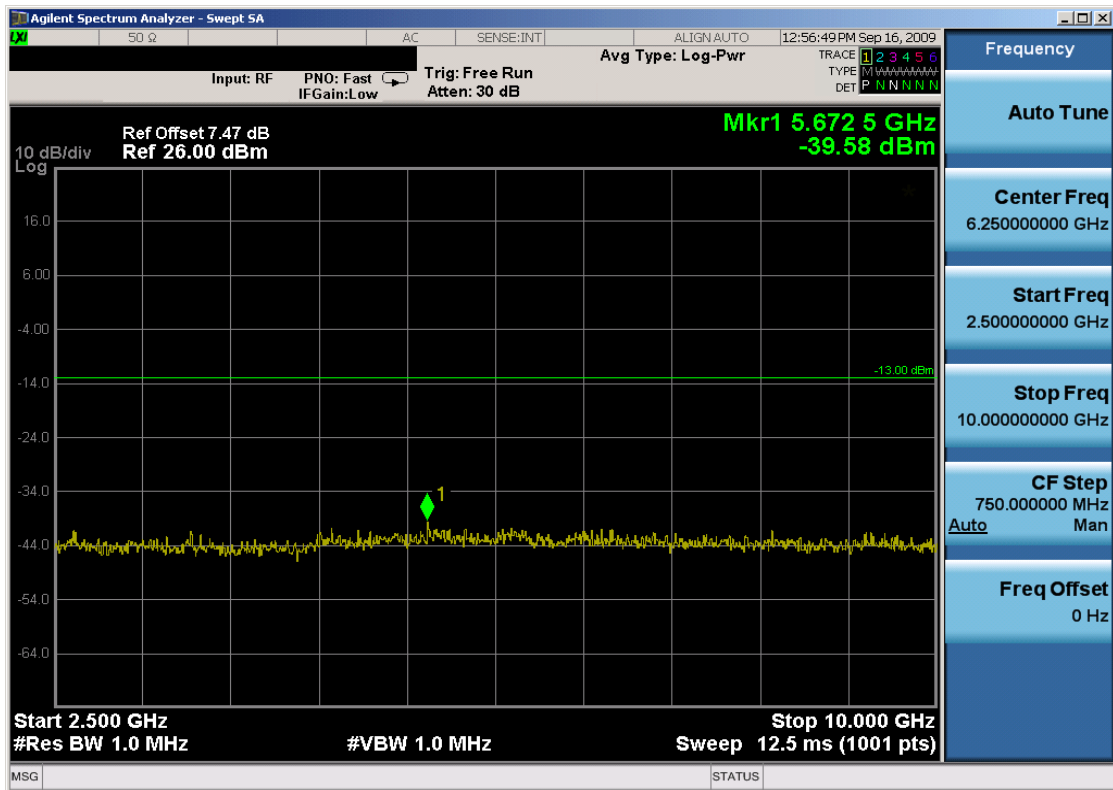


Plot 7-26. 4MHz Span Plot (Cellular WCDMA Mode – Ch. 4132)

FCC ID: ACJ9TGQF-311	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)	<b>Panasonic</b>	Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 59 of 81

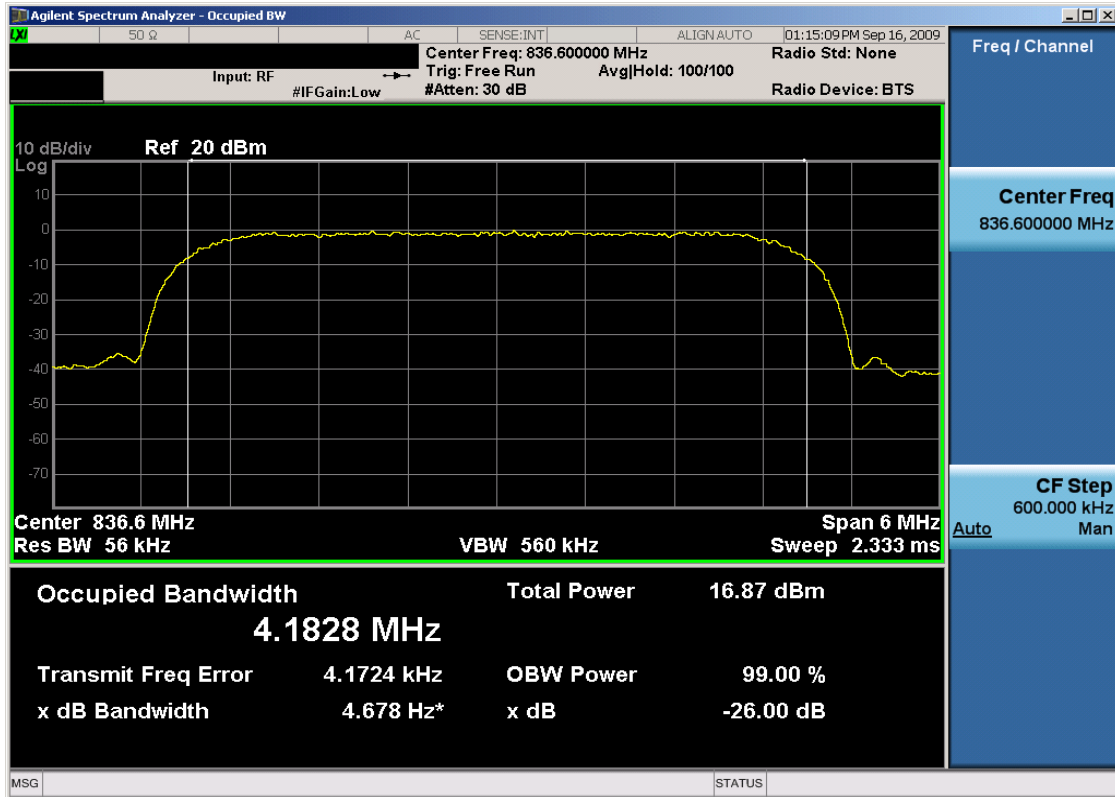


Plot 7-27. Conducted Spurious Plot (Cellular WCDMA Mode – Ch. 4183)

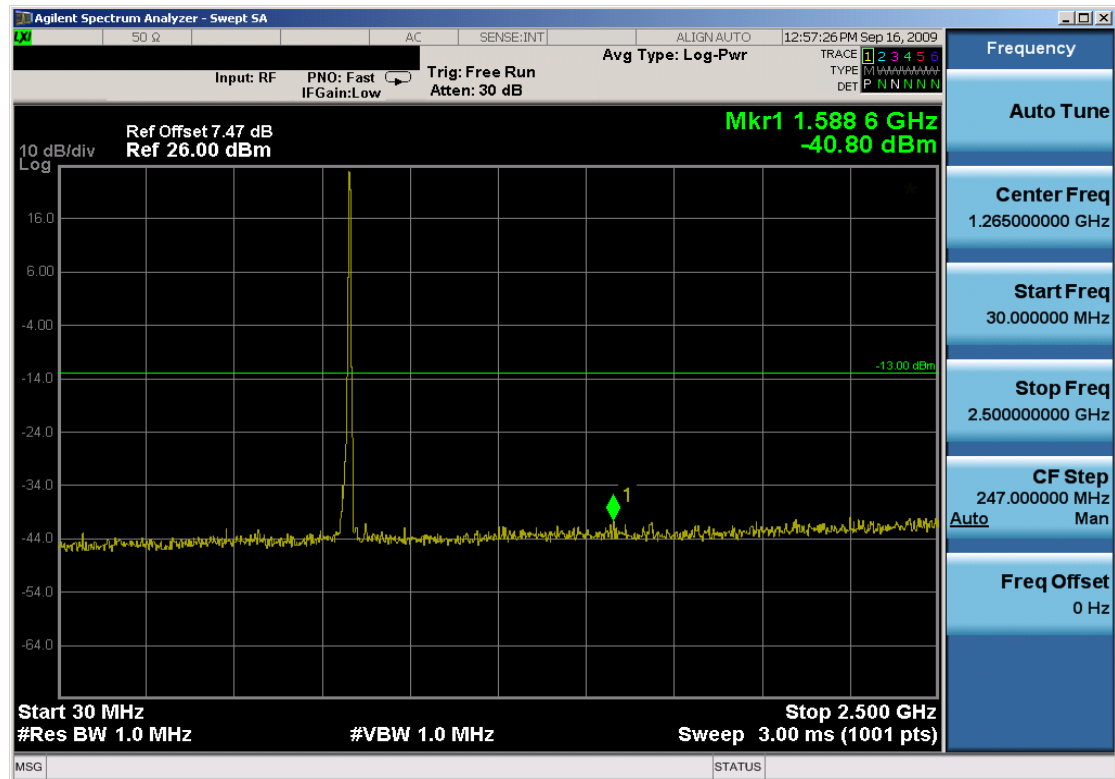


Plot 7-28. Conducted Spurious Plot (Cellular WCDMA Mode – Ch. 4183)

FCC ID: ACJ9TGCF-311	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)	<b>Panasonic</b>	Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 60 of 81

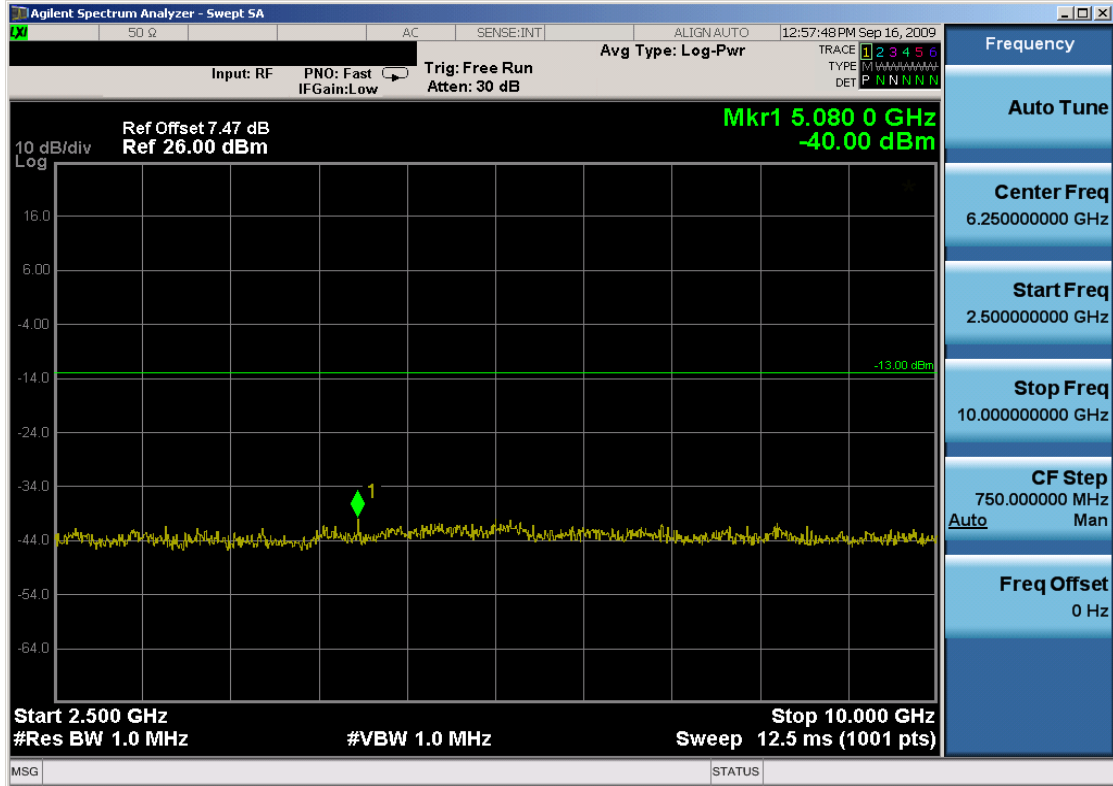


Plot 7-29. Occupied Bandwidth Plot (Cellular WCDMA Mode – Ch. 4183)

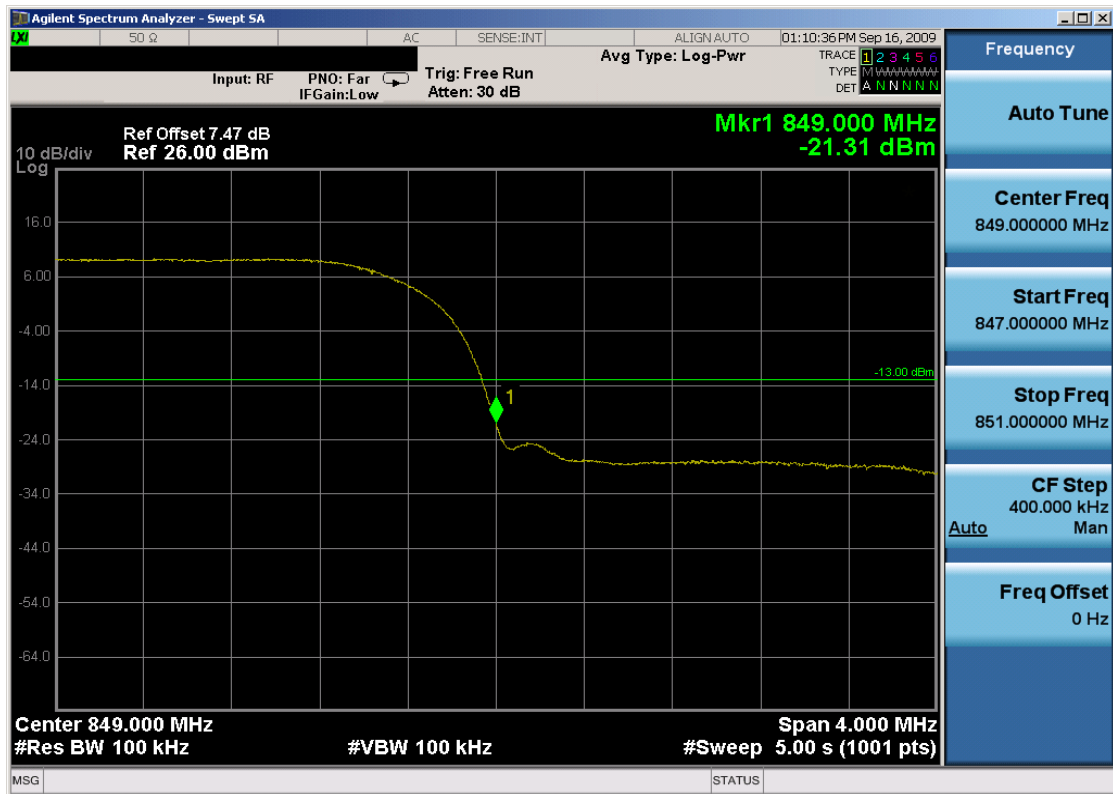


Plot 7-30. Conducted Spurious Plot (Cellular WCDMA Mode – Ch. 4233)

FCC ID: ACJ9TGCF-311	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)	<b>Panasonic</b>	Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 61 of 81



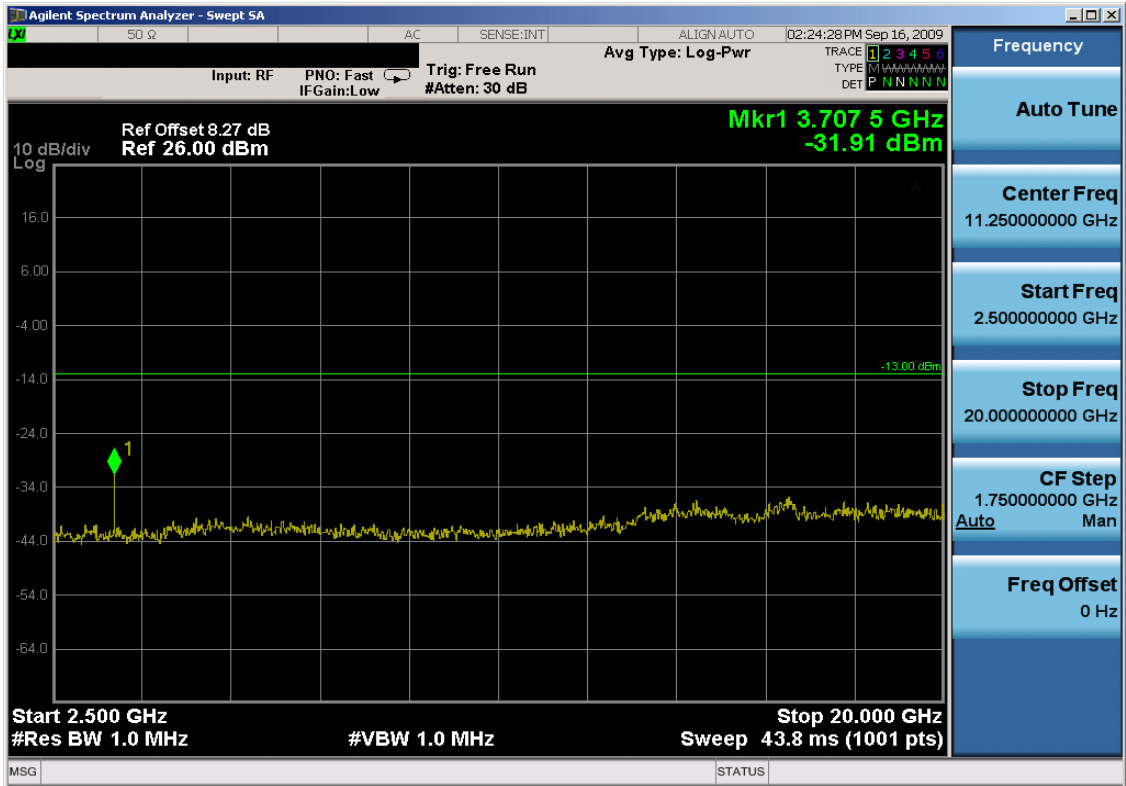
Plot 7-31. Conducted Spurious Plot (Cellular WCDMA Mode – Ch. 4233)



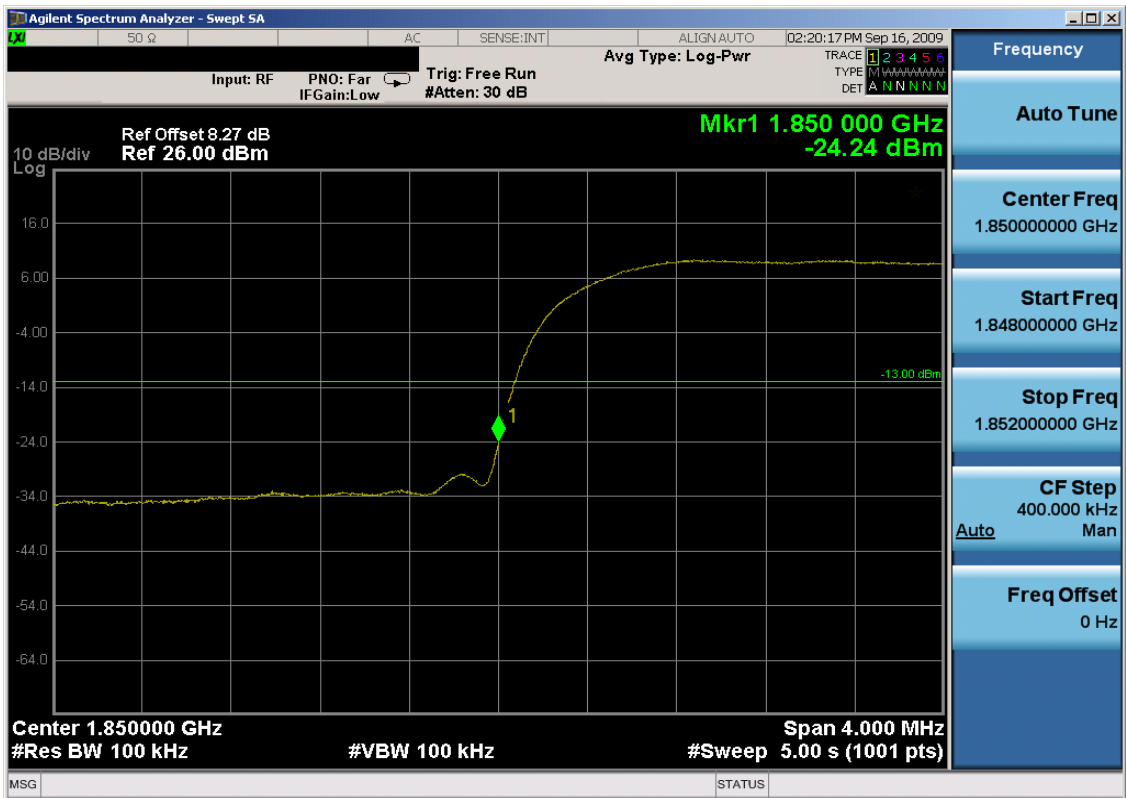
Plot 7-32. Band Edge Plot (Cellular WCDMA Mode – Ch. 4233)

FCC ID: ACJ9TGCF-311	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)	<b>Panasonic</b>	Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 62 of 81



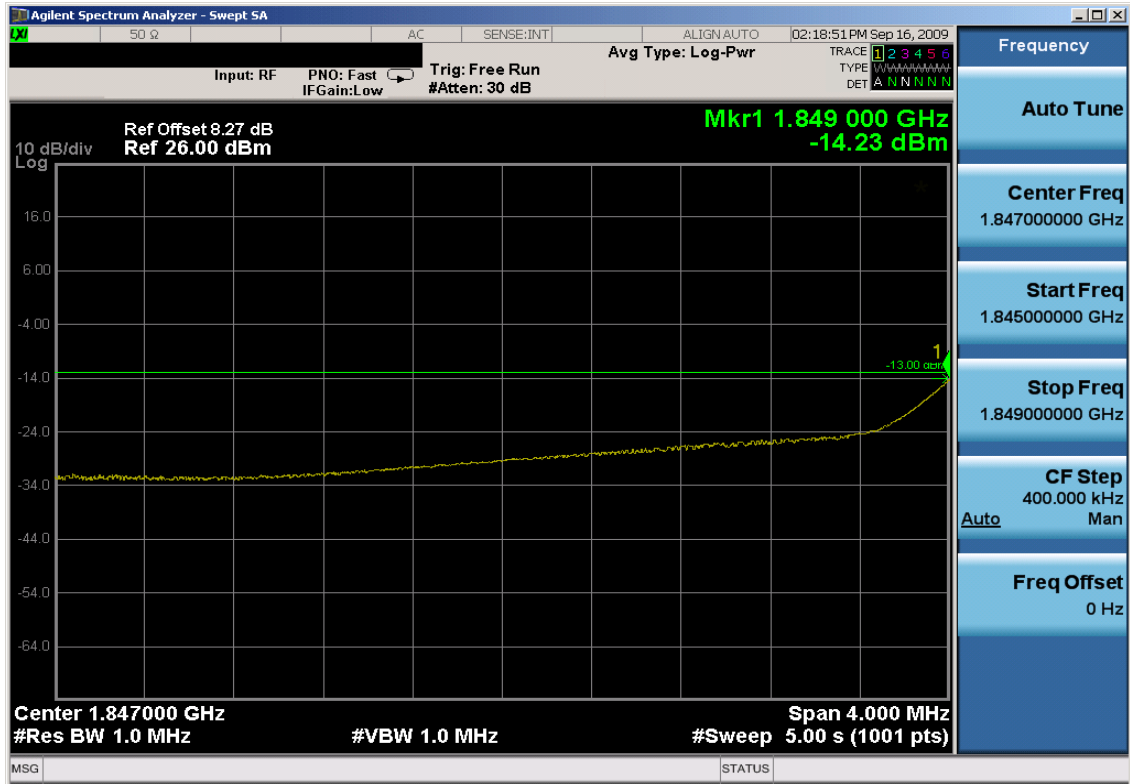


Plot 7-35. Conducted Spurious Plot (PCS WCDMA Mode – Ch. 9262)

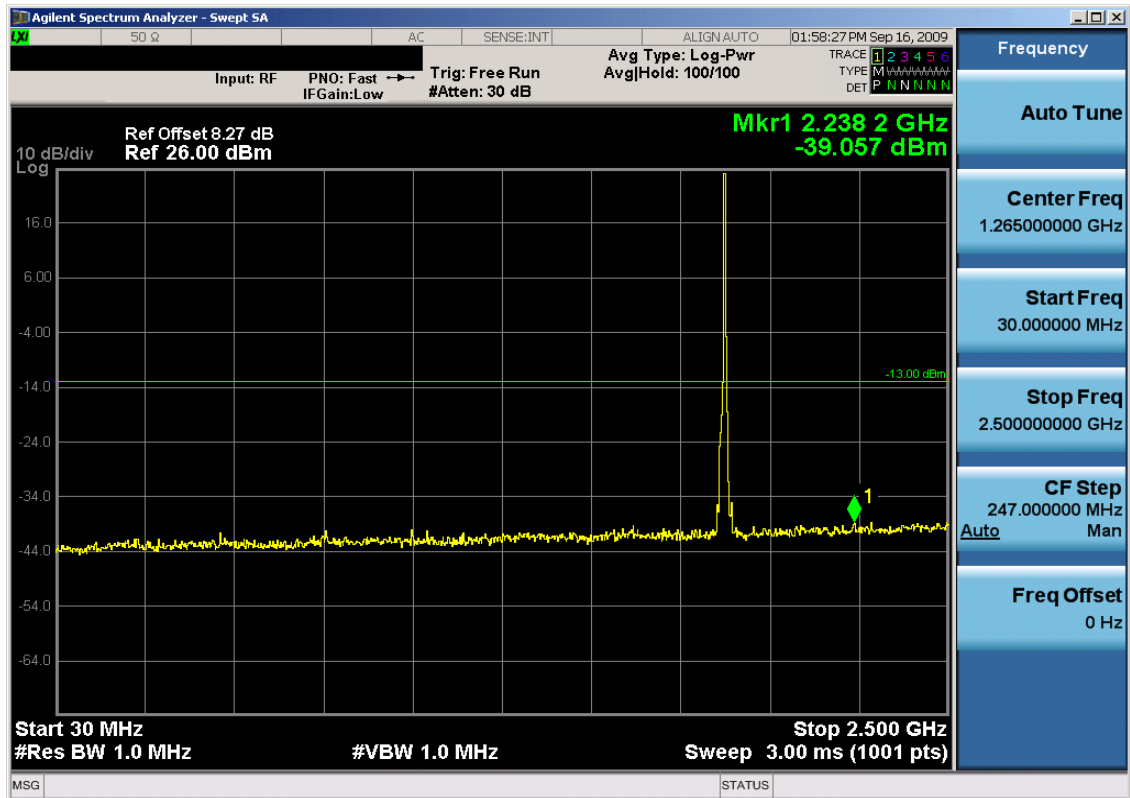


Plot 7-36. Band Edge Plot (PCS WCDMA Mode – Ch. 9262)

FCC ID: ACJ9TGQF-311	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)	<b>Panasonic</b>	Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 64 of 81

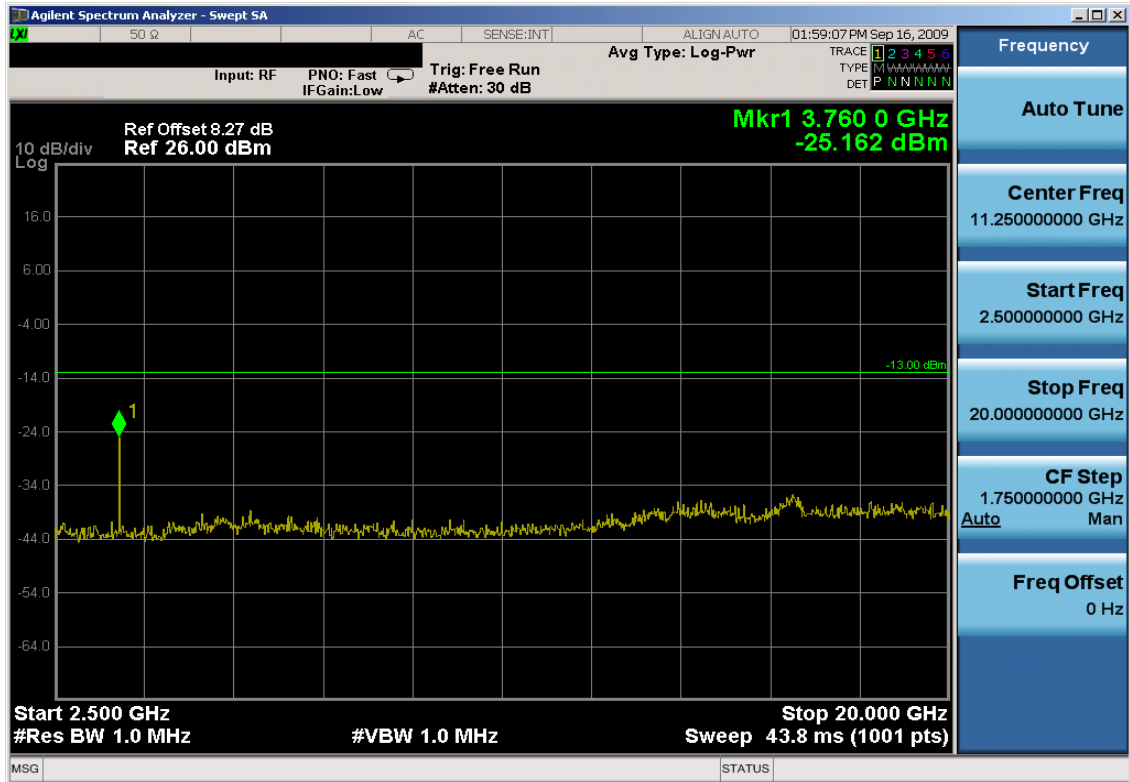


Plot 7-37. 4MHz Span Plot (PCS WCDMA Mode – Ch. 9262)

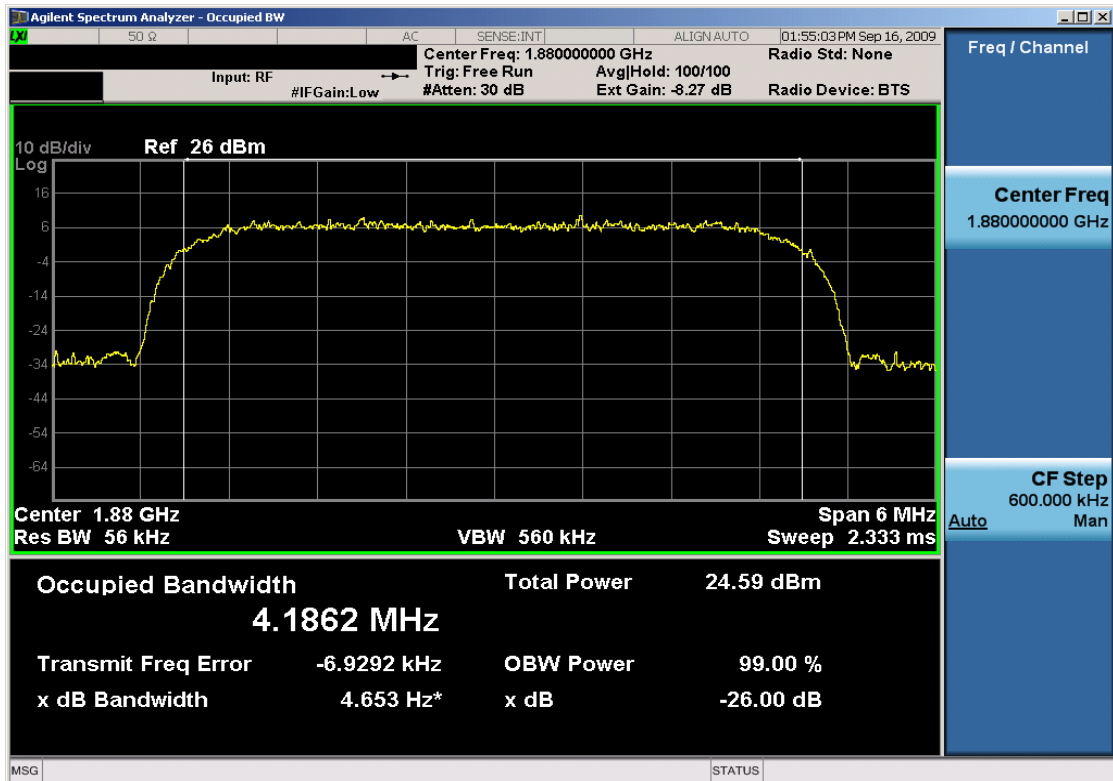


Plot 7-38. Conducted Spurious Plot (PCS WCDMA Mode – Ch. 9400)

FCC ID: ACJ9TGCF-311	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)	<b>Panasonic</b>	Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 65 of 81

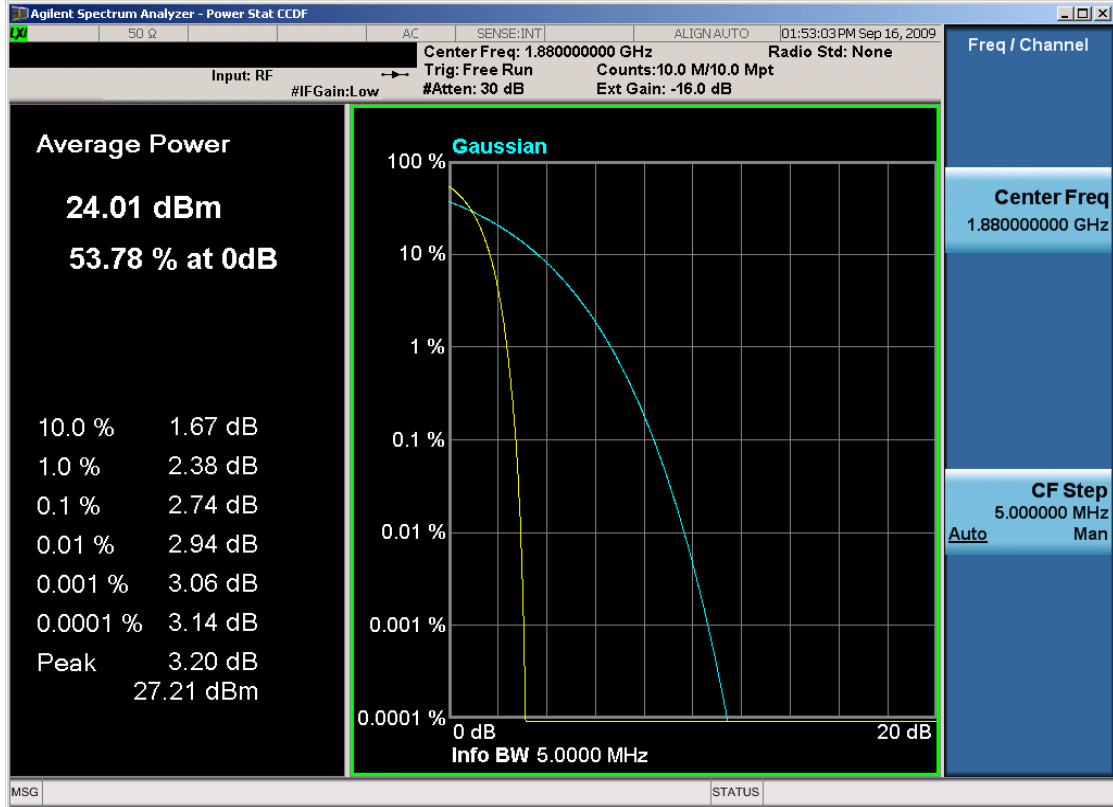


Plot 7-39. Conducted Spurious Plot (PCS WCDMA Mode – Ch. 9400)

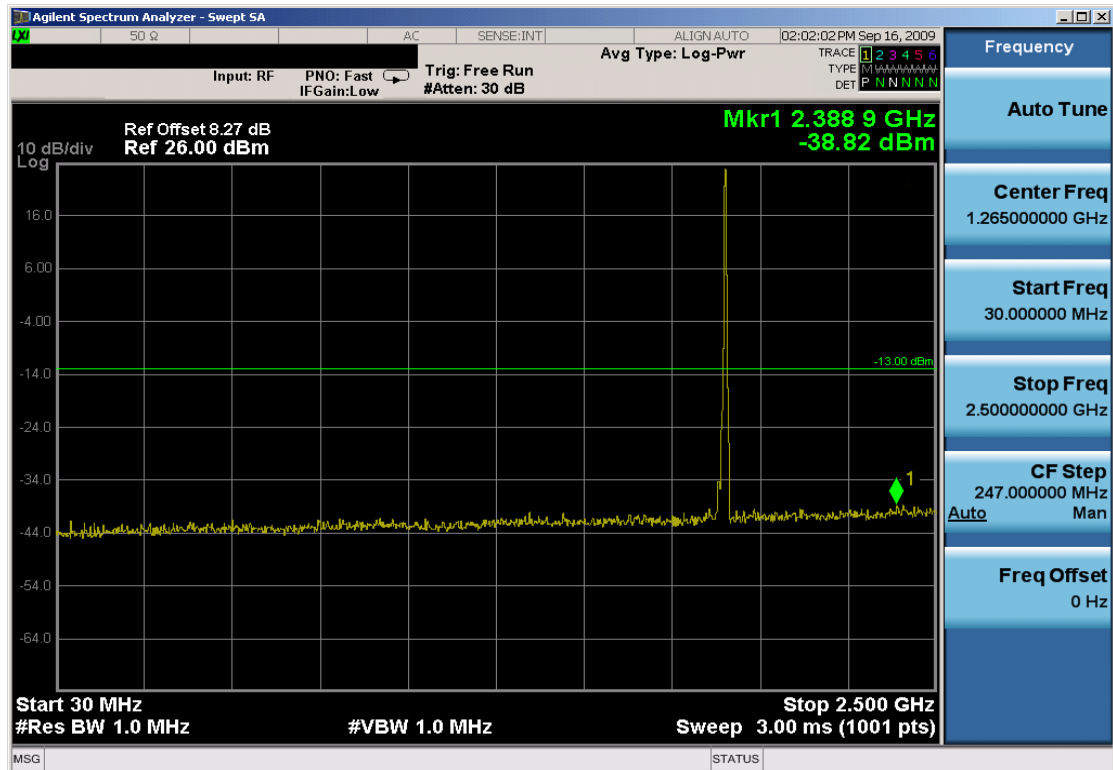


Plot 7-40. Occupied Bandwidth Plot (PCS WCDMA Mode – Ch. 9400)

FCC ID: ACJ9TGCF-311	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)	<b>Panasonic</b>	Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 66 of 81

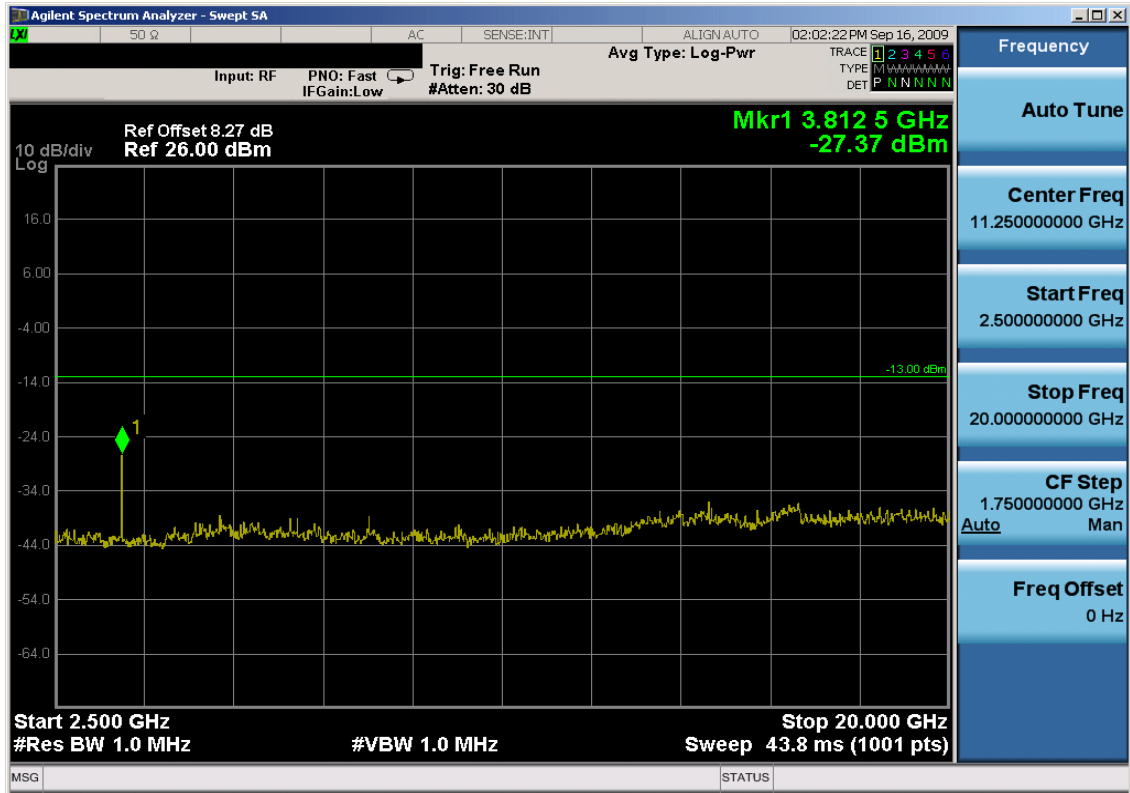


**Plot 7-41. Peak-Average Ratio Plot (PCS WCDMA Mode – Ch. 9400)**

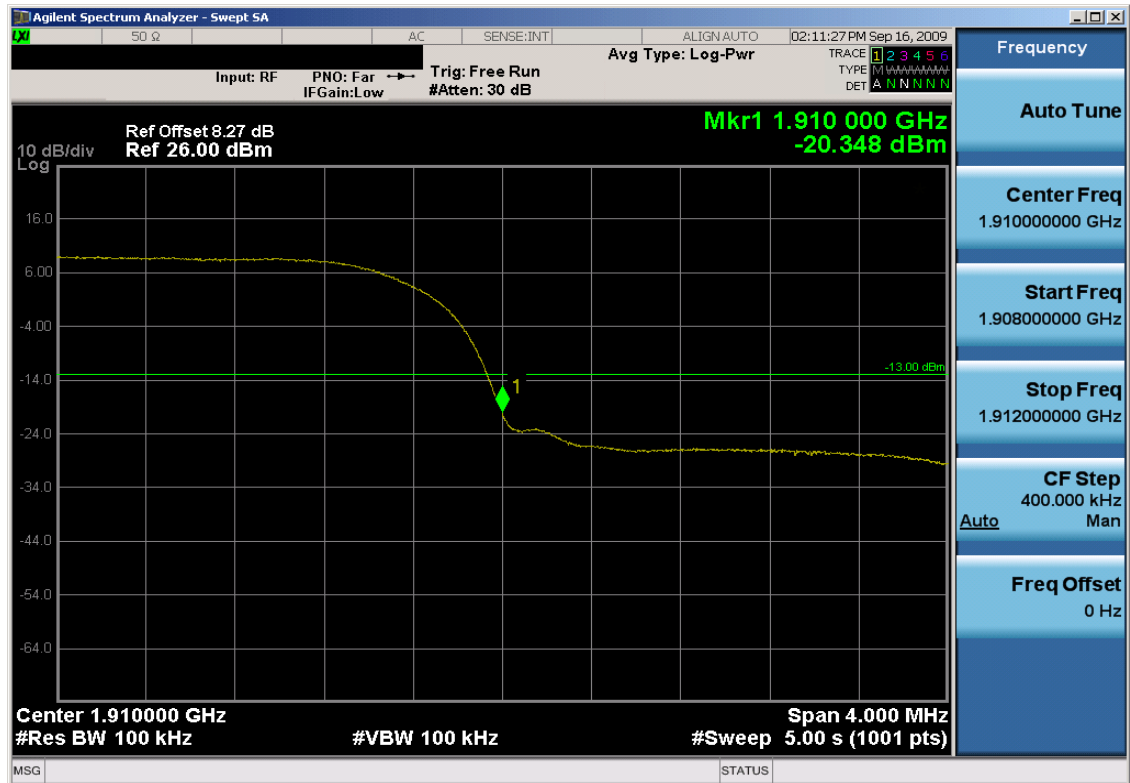


**Plot 7-42. Conducted Spurious Plot (PCS WCDMA Mode – Ch. 9538)**

FCC ID: ACJ9TGCF-311	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)	<b>Panasonic</b>	Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 67 of 81

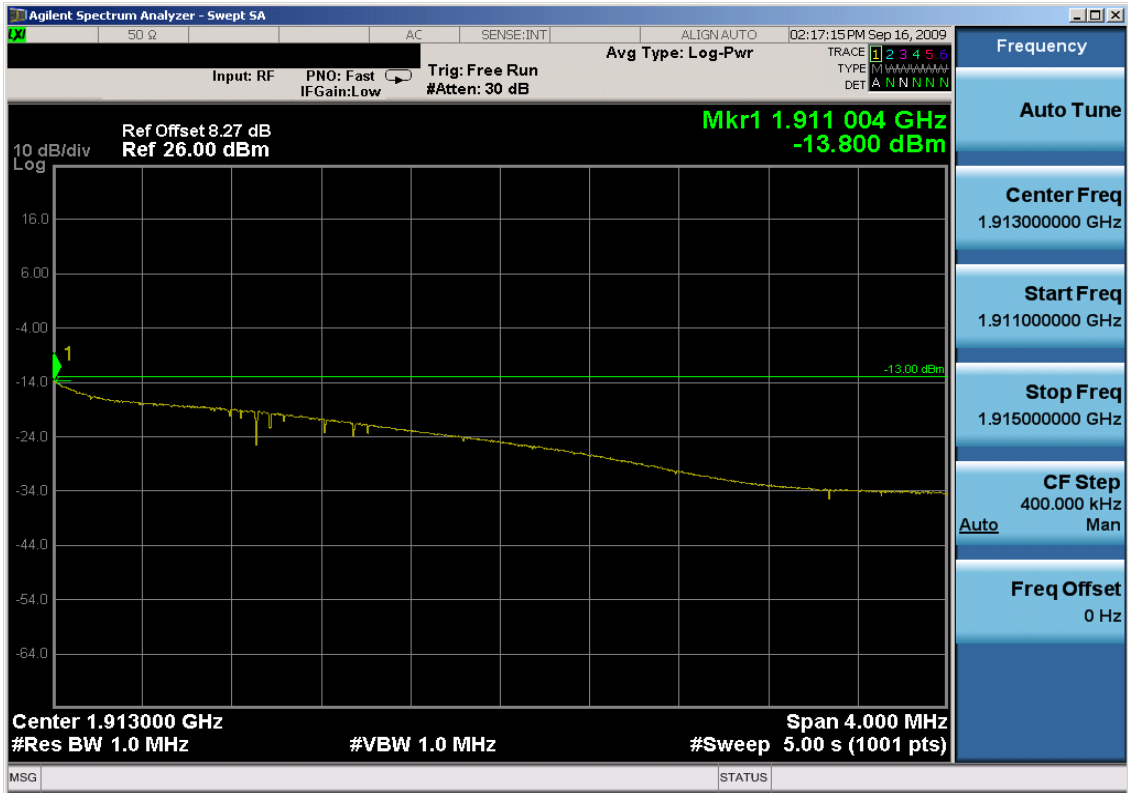


Plot 7-43. Conducted Spurious Plot (PCS WCDMA Mode – Ch. 9538)

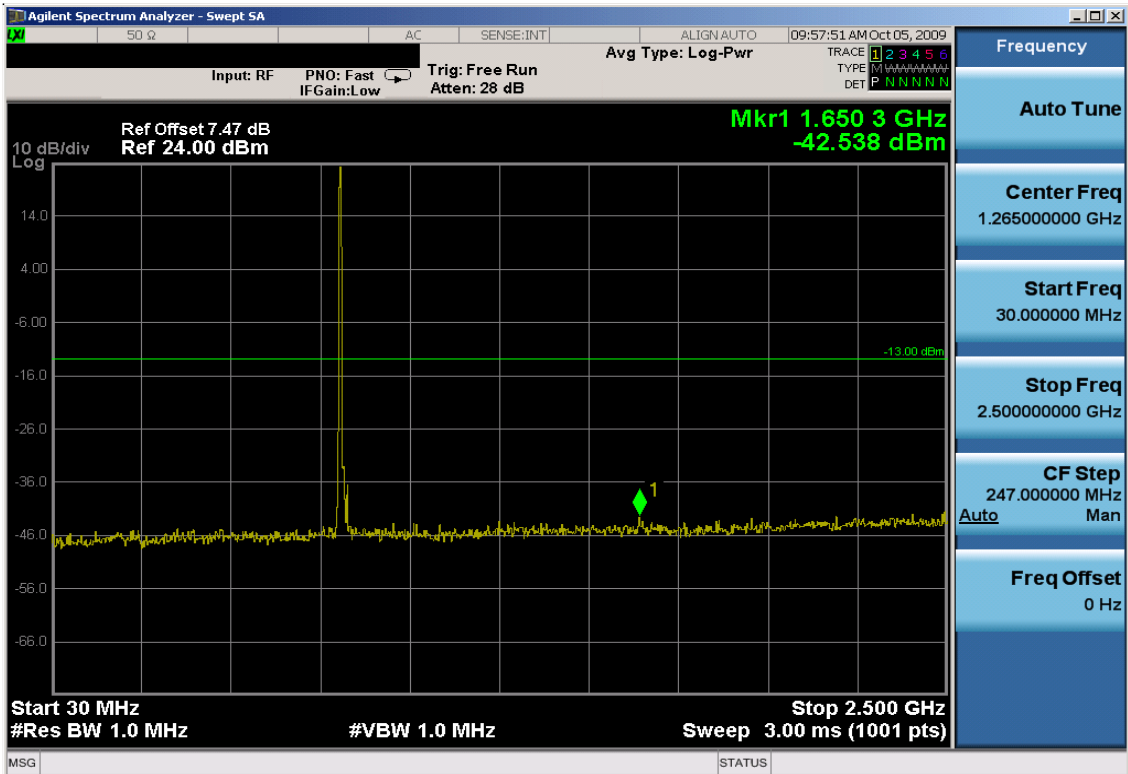


Plot 7-44. Band Edge Plot (PCS WCDMA Mode – Ch. 9538)

FCC ID: ACJ9TGQF-311	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)	<b>Panasonic</b>	Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 68 of 81



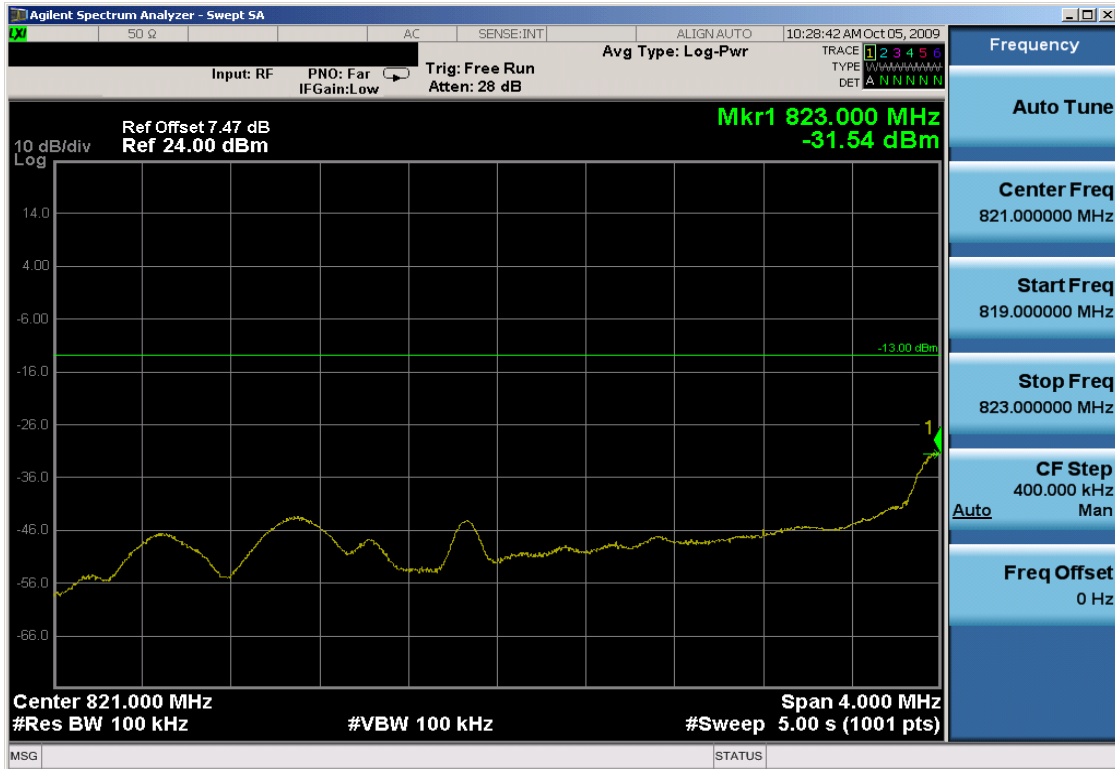
Plot 7-45. 4MHz Span Plot (PCS WCDMA Mode – Ch. 9538)



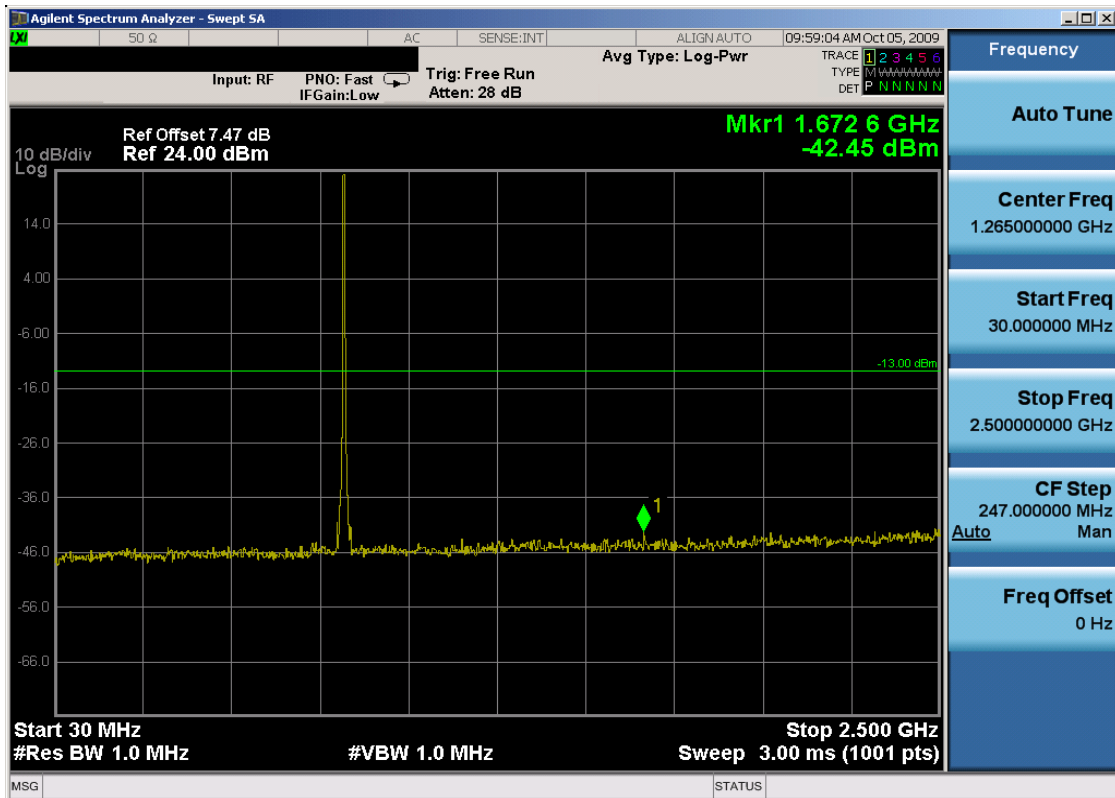
Plot 7-46. Conducted Spurious Plot (Cellular CDMA Mode – Ch. 1013)

FCC ID: ACJ9TGCF-311	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)	<b>Panasonic</b>	Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 69 of 81



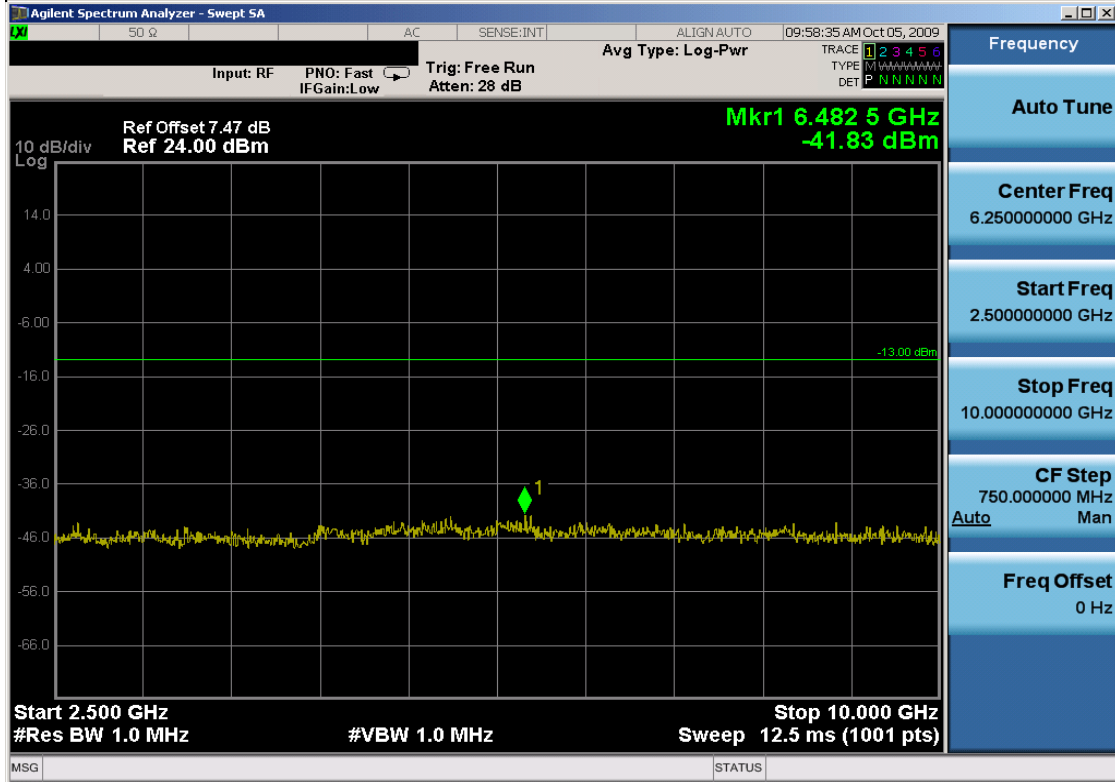


Plot 7-49. 4MHz Span Plot (Cellular CDMA Mode – Ch. 1013)

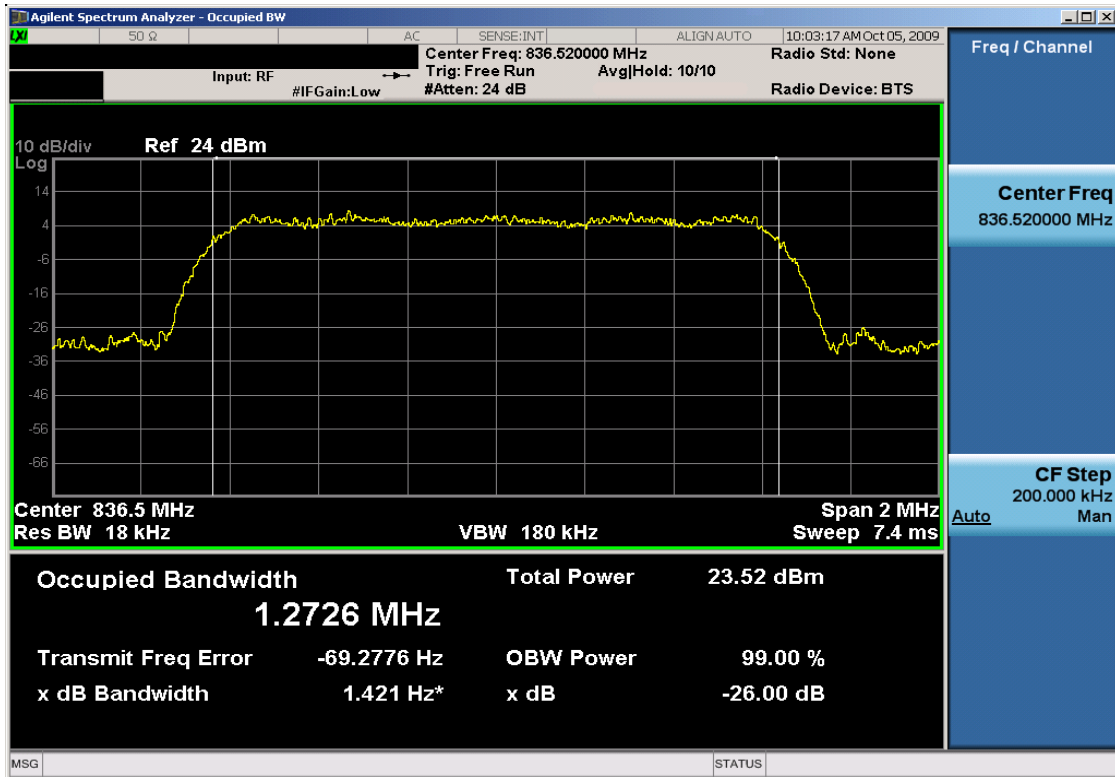


Plot 7-50. Conducted Spurious Plot (Cellular CDMA Mode – Ch. 384)

FCC ID: ACJ9TGCF-311	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)	<b>Panasonic</b>	Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 71 of 81



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



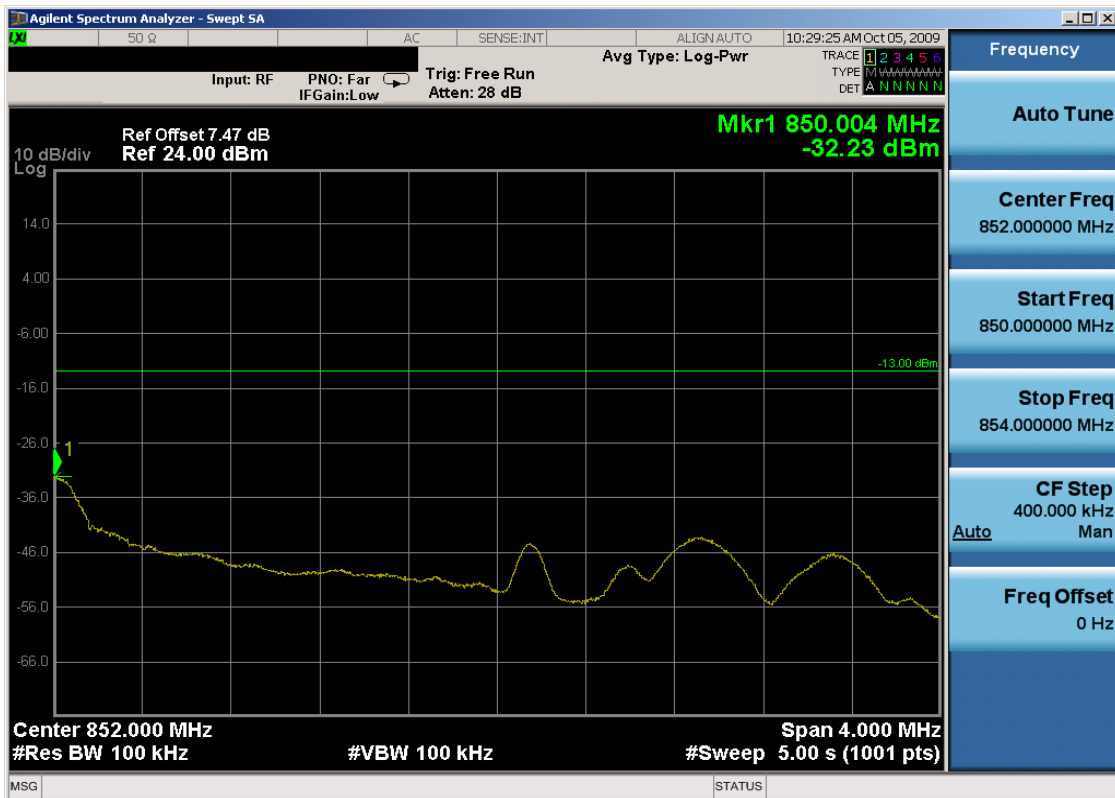
Plot 7-52. Occupied Bandwidth Plot (Cellular CDMA Mode – Ch. 1013)

FCC ID: ACJ9TGQF-311	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)	<b>Panasonic</b>	Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 72 of 81



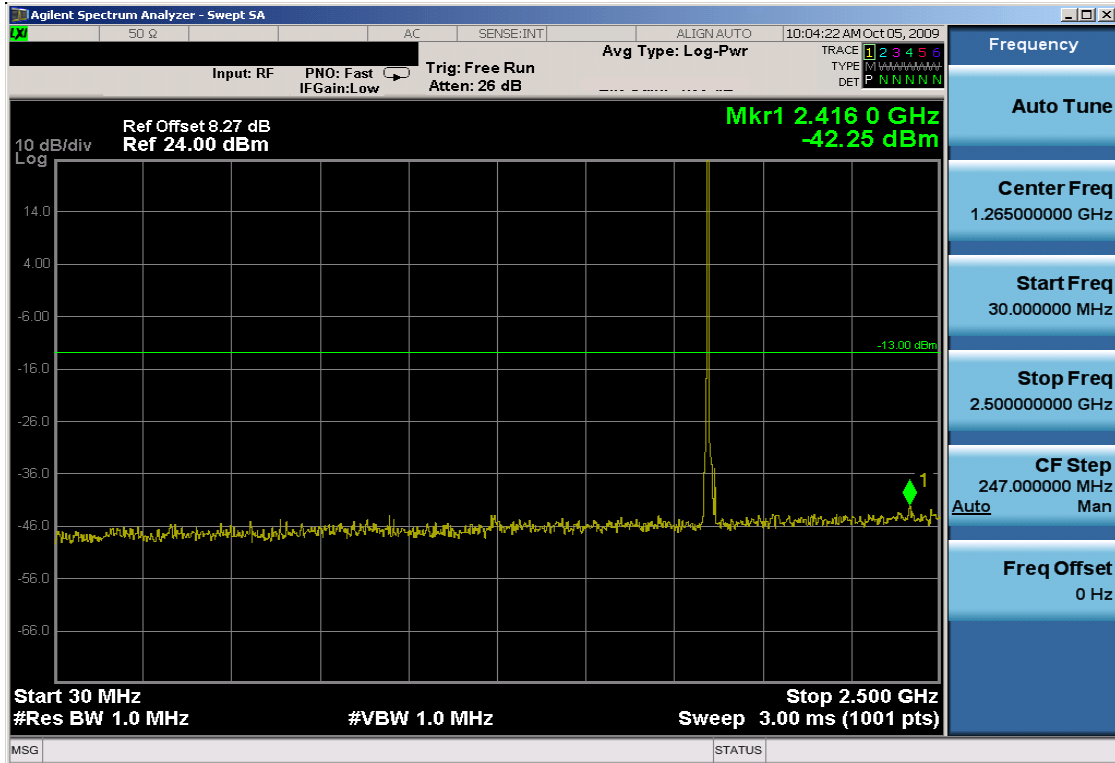


Plot 7-55. Band Edge Plot (Cellular CDMA Mode – Ch. 777)

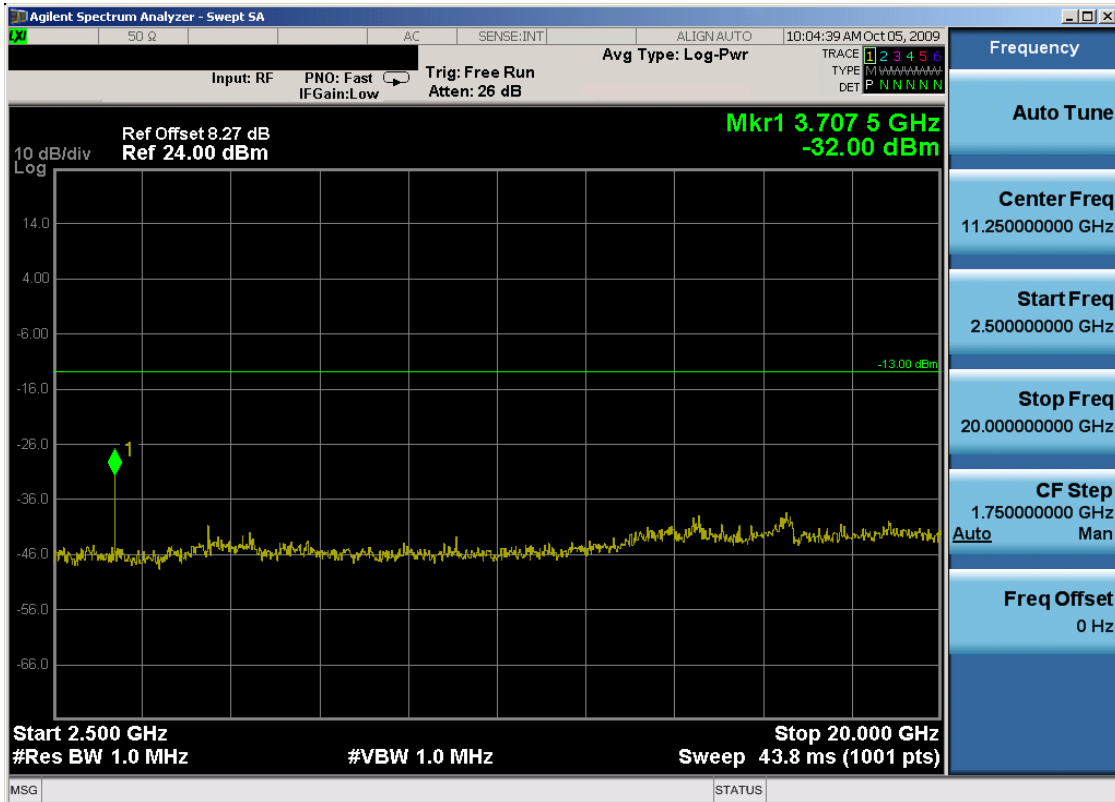


Plot 7-56. 4MHz Span Plot (Cellular CDMA Mode – Ch. 777)

FCC ID: ACJ9TGOF-311	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)	<b>Panasonic</b>	Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 74 of 81

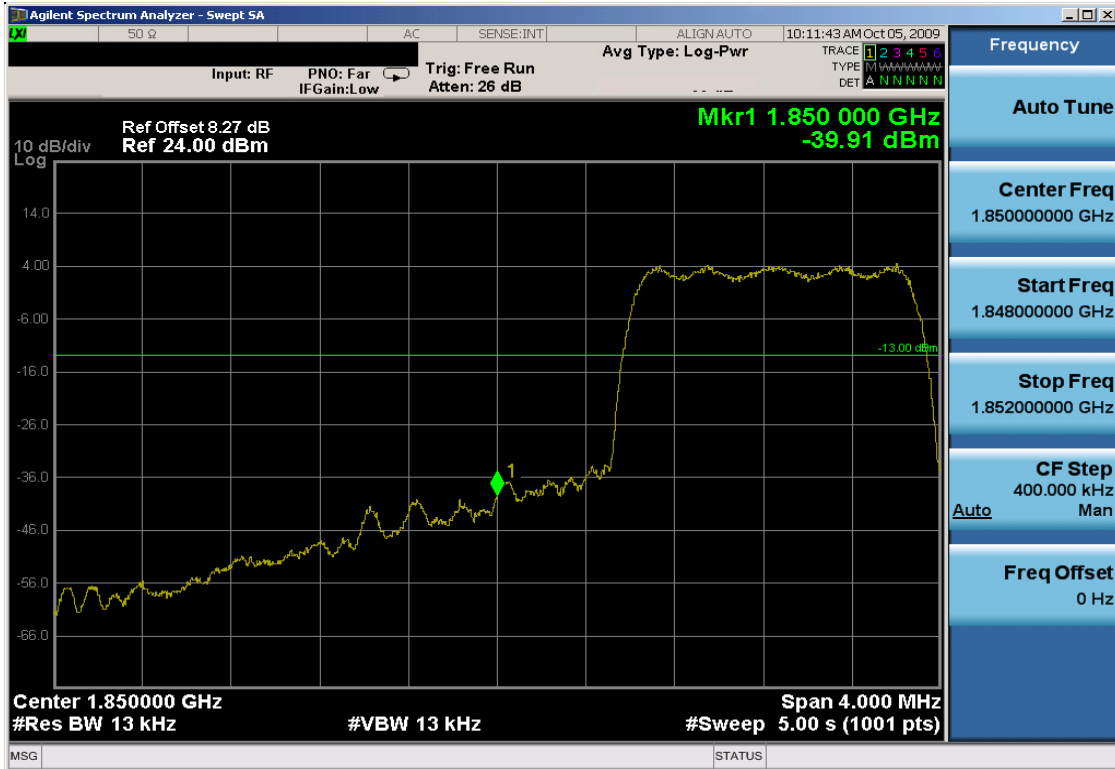


Plot 7-57. Conducted Spurious Plot (PCS CDMA Mode – Ch. 25)

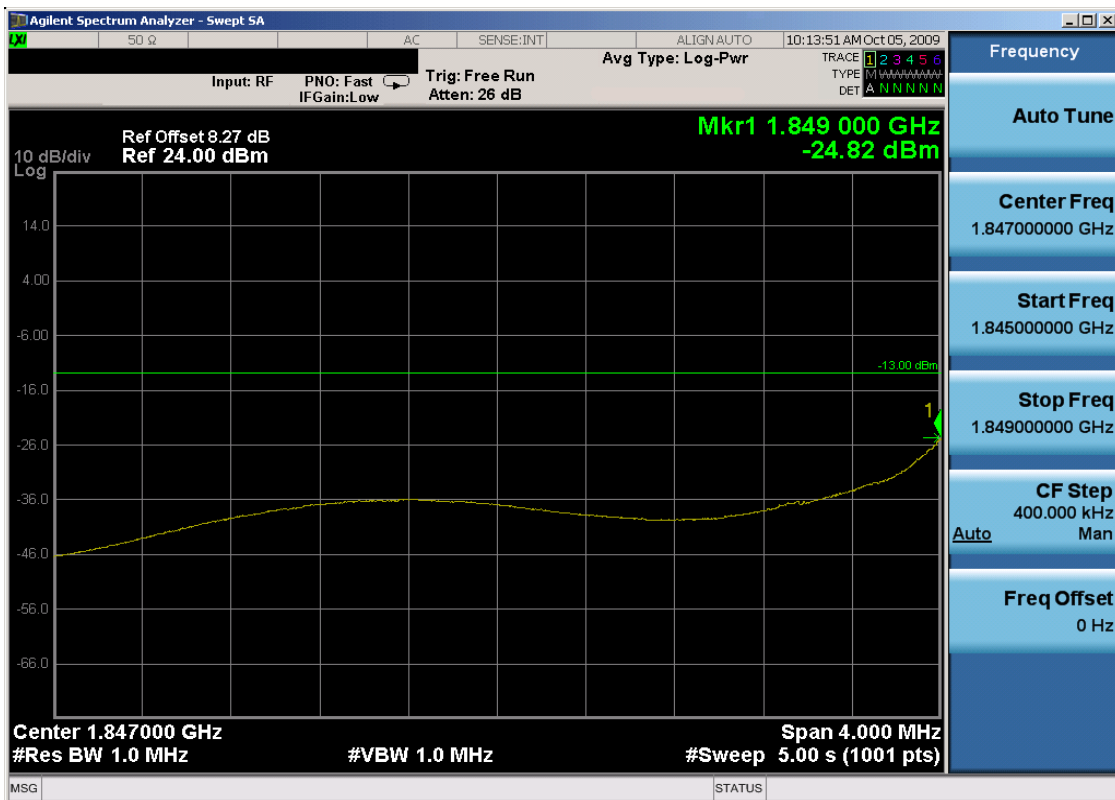


Plot 7-58. Conducted Spurious Plot (PCS CDMA Mode – Ch. 25)

FCC ID: ACJ9TGCF-311	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)	<b>Panasonic</b>	Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 75 of 81

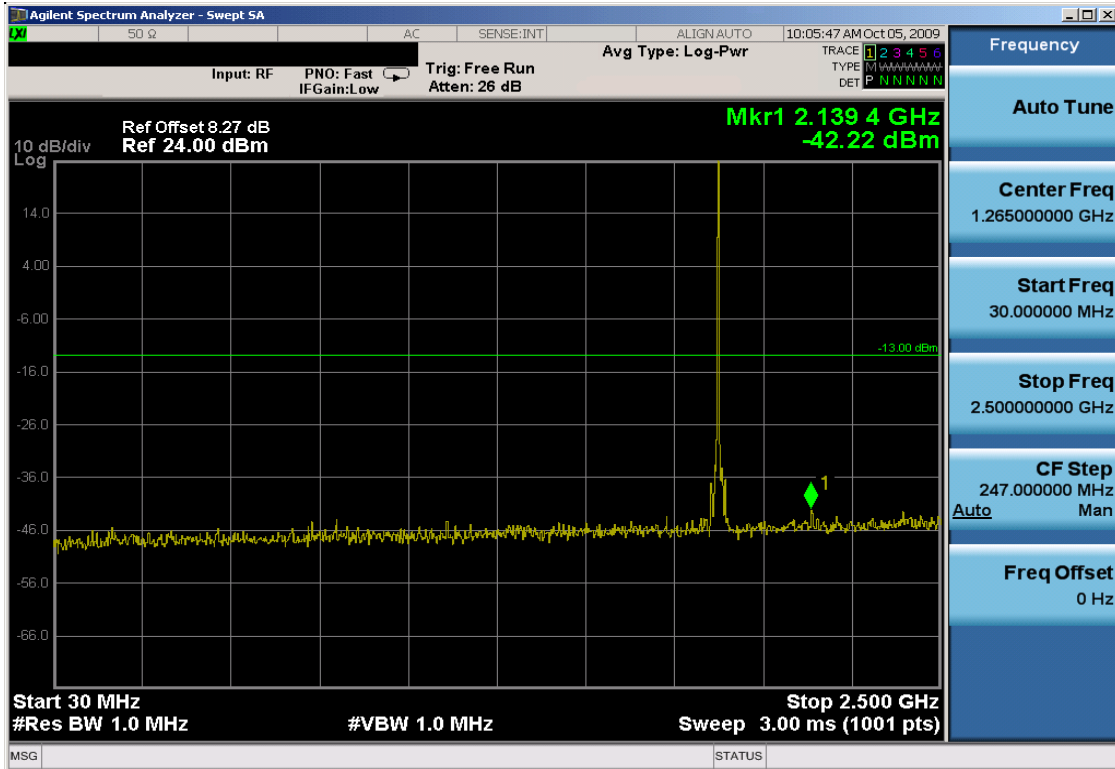


Plot 7-59. Band Edge Plot (PCS CDMA Mode – Ch. 25)

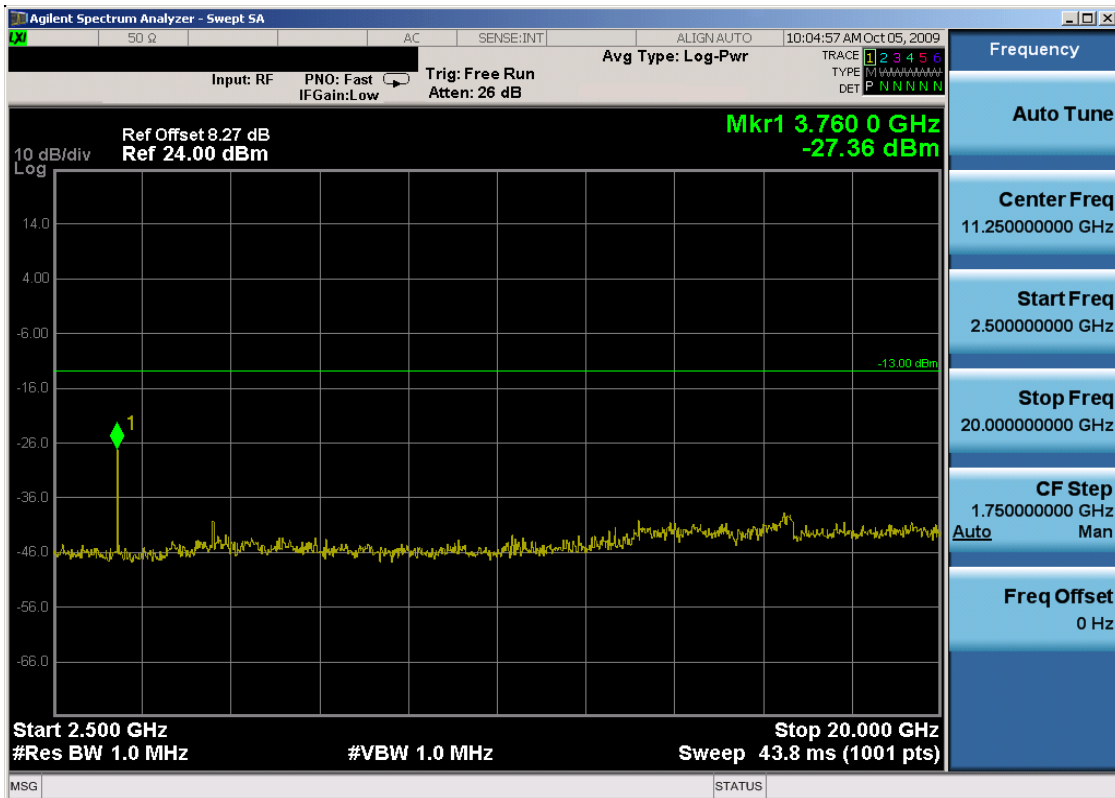


Plot 7-60. 4MHz Span Plot (PCS CDMA Mode – Ch. 25)

FCC ID: ACJ9TGQF-311	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)	<b>Panasonic</b>	Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 76 of 81

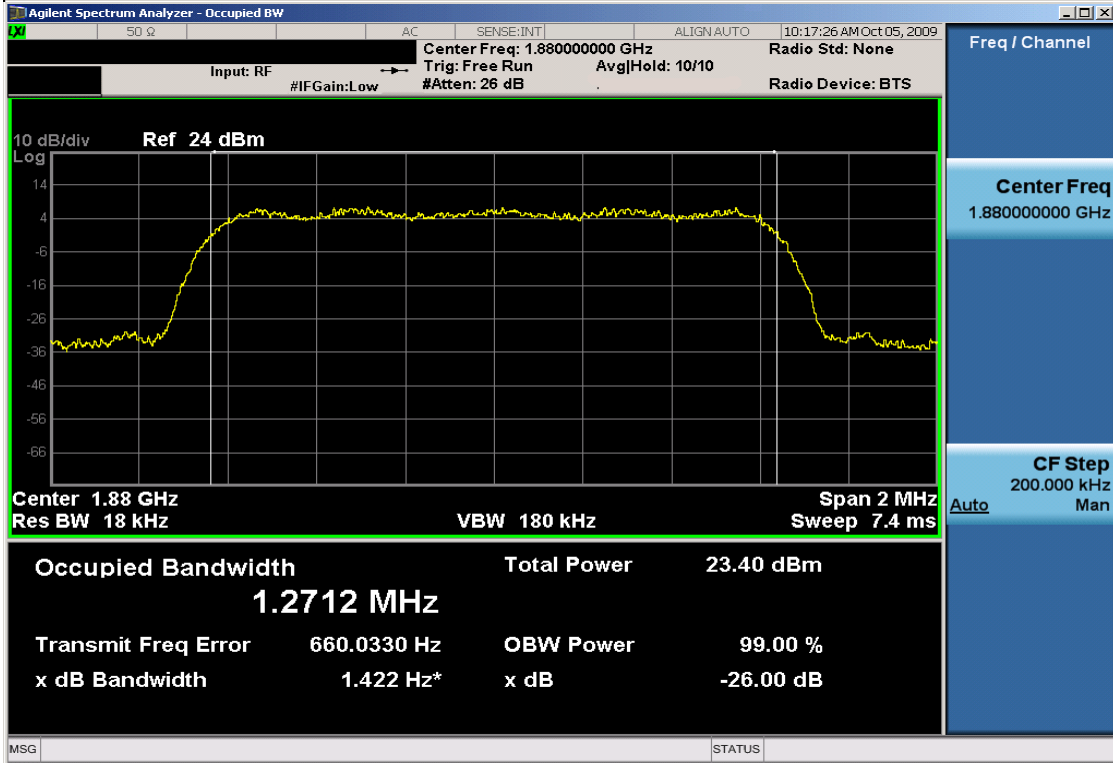


Plot 7-61. Conducted Spurious Plot (PCS CDMA Mode – Ch. 600)

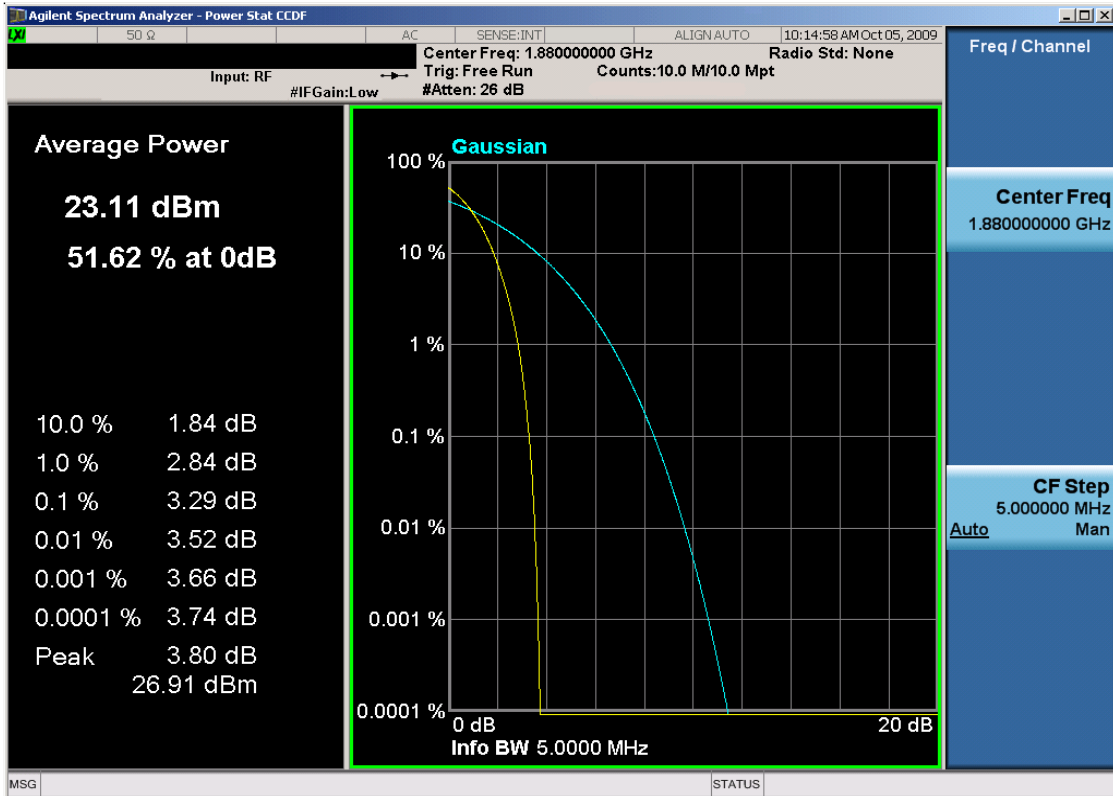


Plot 7-62. Conducted Spurious Plot (PCS CDMA Mode – Ch. 600)

FCC ID: ACJ9TGCF-311	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)	<b>Panasonic</b>	Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 77 of 81

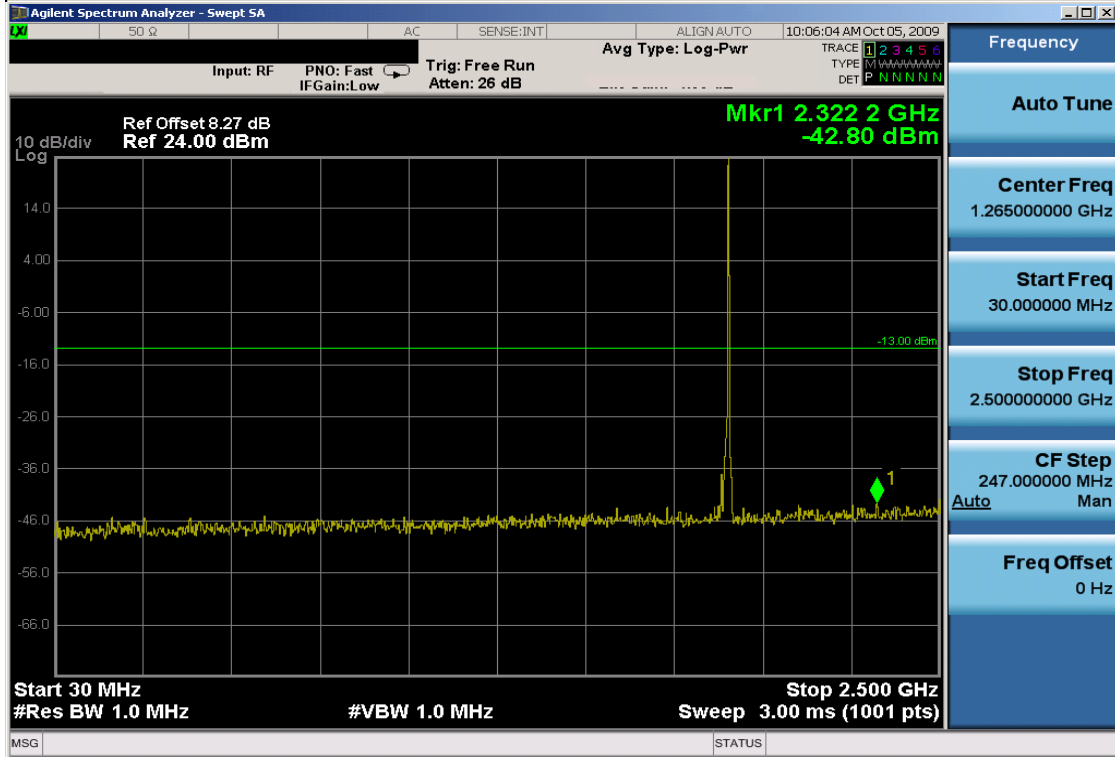


Plot 7-63. Occupied Bandwidth Plot (PCS CDMA Mode – Ch. 600)

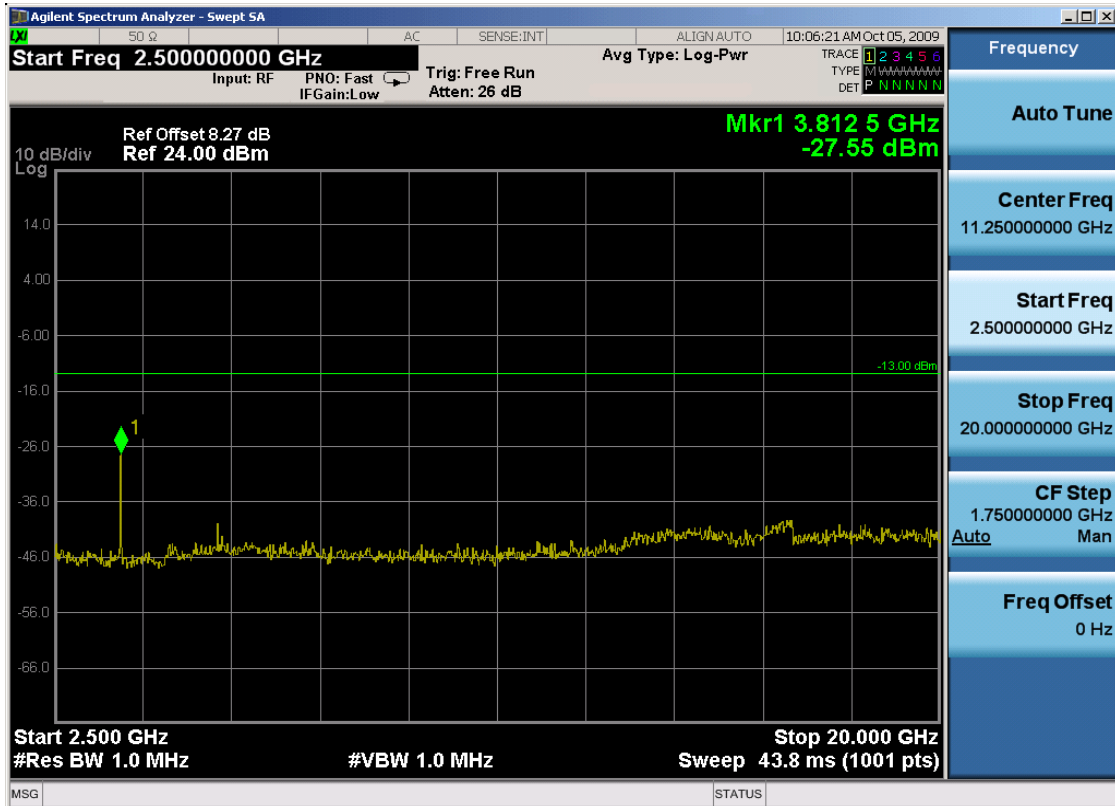


Plot 7-64. Peak-Average Ratio Plot (PCS CDMA Mode – Ch. 600)

FCC ID: ACJ9TGQF-311	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)	<b>Panasonic</b>	Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 78 of 81



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

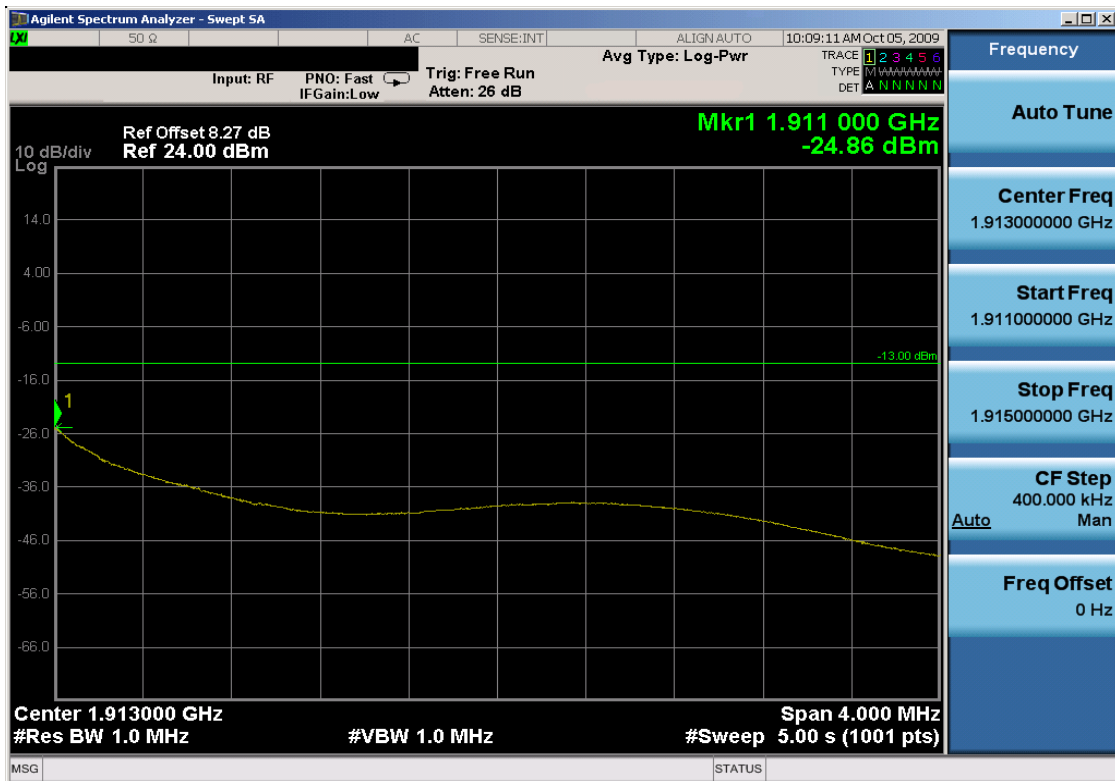


Plot 7-66. Conducted Spurious Plot (PCS CDMA Mode – Ch. 1175)

FCC ID: ACJ9TGCF-311	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)	<b>Panasonic</b>	Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 79 of 81



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





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

FCC ID: ACJ9TGCF-311	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)	<b>Panasonic</b>	Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 80 of 81

## 8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Panasonic ToughBook Model: CF-31 FCC ID: ACJ9TGCF-311** complies with all the requirements of Parts 2, 22, and 24 of the FCC rules.

FCC ID: ACJ9TGCF-311		FCC Pt. 22/24 GSM/EDGE/CDMA/WCDMA TEST REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0912152263.ACJ	Test Dates: January 19 - 21, 2010	EUT Type: ToughBook Model: CF-31		Page 81 of 81