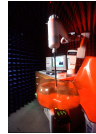




# PCTEST ENGINEERING LABORATORY, INC.

6660-B Dobbin Road, Columbia, MD 21045 USA  
Tel. 410.290.6652 / Fax 410.290.6554  
<http://www.pctestlab.com>



## CERTIFICATE OF COMPLIANCE FCC Part 27 Certification

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

**Date of Testing:**  
April 22, 2009  
**Test Site/Location:**  
PCTEST Lab., Columbia, MD, USA  
**Test Report Serial No.:**  
0903130461.ACJ

<b>FCC ID:</b>	<b>ACJ9TGCF-U14</b>
<b>APPLICANT:</b>	<b>PANASONIC CORPORATION OF NORTH AMERICA</b>


**Application Type:** Certification  
**FCC Classification:** Licensed Non-Broadcast Transmitter (TNB)  
**FCC Rule Part(s):** §2; §27 Subpart M  
**EUT Type:** Toughbook Model: CF-U1  
**Model(s):** CF-U1  
**Tx Frequency Range:** 2496 - 2690MHz (TD-CDMA)  
**Max. RF Output Power:** 0.308 W EIRP TD-CDMA (24.89 dBm)  
**Emission Designator(s):** 8M35G7D  
**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 EIRP for Part 27.

*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





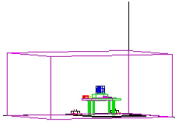
<b>FCC ID:</b> ACJ9TGCF-U14		<b>FCC Pt. 27 TD-CDMA MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Reviewed by:</b> Quality Manager
<b>Test Report S/N:</b> 0903130461.ACJ	<b>Test Dates:</b> April 22, 2009	<b>EUT Type:</b> Toughbook Model: CF-U1	Page 1 of 25	

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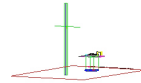
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# MEASUREMENT REPORT

## FCC Part 27



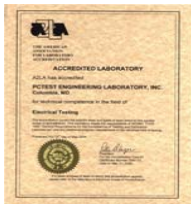
### §2.1033 General Information



**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; §27(C)(M)  
**BASE MODEL:** CF-U1  
**FCC ID:** ACJ9TGCF-U14  
**FCC CLASSIFICATION:** Licensed Non-Broadcast Transmitter (TNB)  
**EMISSION DESIGNATOR(S):** 8M35G7D  
**MODE:** TD-CDMA  
**FREQUENCY TOLERANCE:** Emission must remain in band  
**Test Device Serial No.:** N/A       Production     Pre-Production     Engineering  
**DATE(S) OF TEST:** April 22, 2009  
**TEST REPORT S/N:** 0903130461.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-U14	 ENGINEERING LABORATORY, INC.	<b>FCC Pt. 27 TD-CDMA MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Reviewed by:</b> Quality Manager
<b>Test Report S/N:</b> 0903130461.ACJ	<b>Test Dates:</b> April 22, 2009	<b>EUT Type:</b> Toughbook Model: CF-U1	Page 3 of 25	

# 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 Intern't'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.

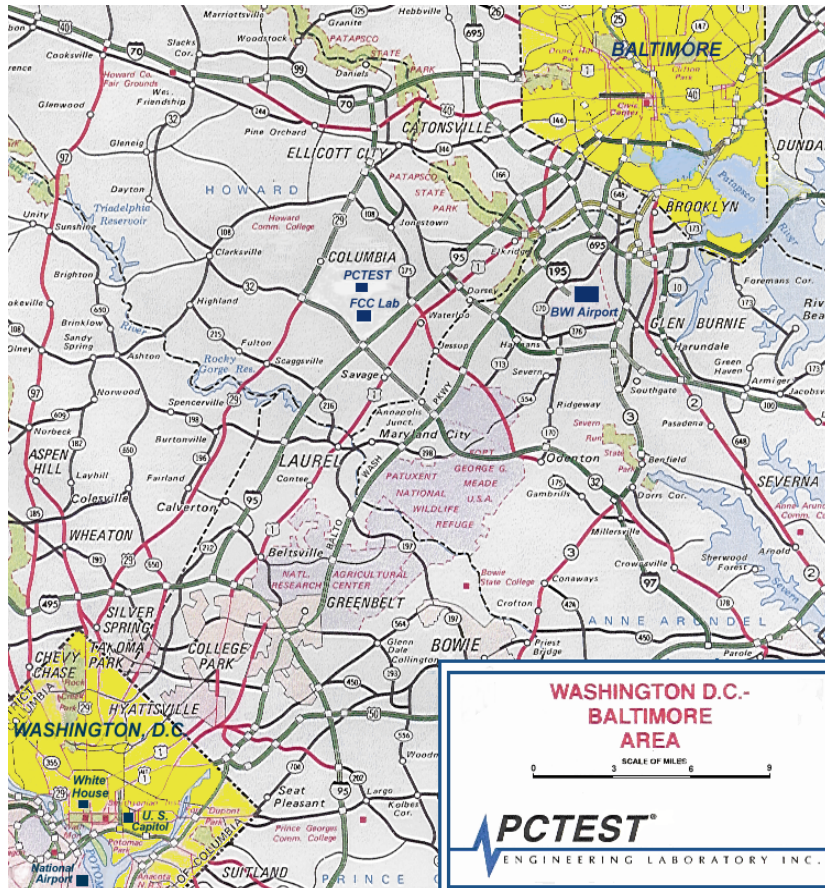




Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area

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## 2.0 PRODUCT INFORMATION

### 2.1 Equipment Description

The Equipment Under Test (EUT) is the **Panasonic Toughbook Model: CF-U1 FCC ID: ACJ9TGCF-U14**. The test data contained in this report pertains only to the emissions due to the EUT's TD-CDMA function. The EUT consisted of the following component(s):

Trade Name / Base Model	FCC ID	Description
Panasonic / Model: CF-U1	ACJ9TGCF-U14	Toughbook Model: CF-U1

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

The EUT was set to transmit at maximum power, per manufacturer instructions, through test software installed in the EUT.

### 2.2 EMI Suppression Device(s)/Modifications

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

### 2.3 Labeling Requirements

Per 2.925

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



Per 15.19; Docket 95-19

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

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

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

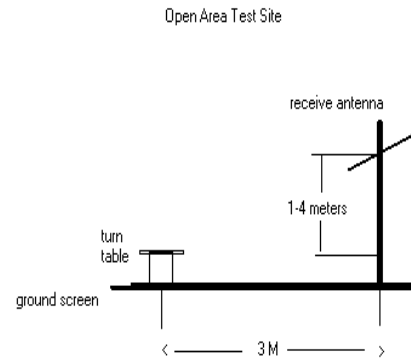
Please see attachment for FCC ID label and label location.

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### 3.0 DESCRIPTION OF TESTS

#### 3.1 Measurement Procedure

The radiated spurious measurements were made outdoors at a 3-meter test range (see Figure 3-1). The equipment under test is placed on a wooden turntable 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

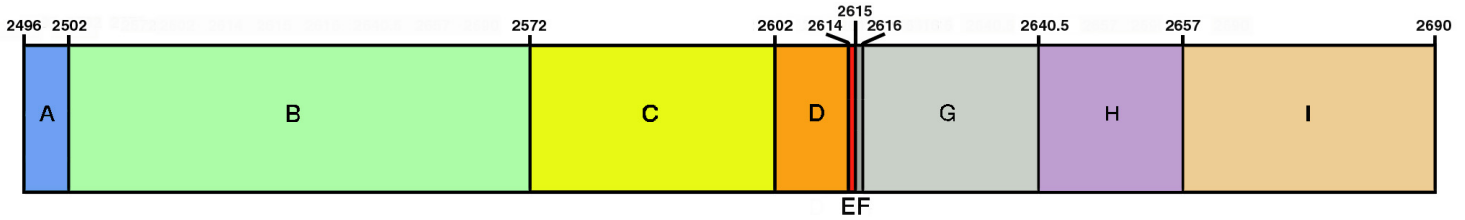
§2.1049, §27.53(l)(6)

- a. On any frequency outside but within 5.5MHz from the band edge of 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. At frequencies greater than 5.5MHz from any in-band channel edge, the transmitter power (P) shall be attenuated by at least  $55 + 10 \log(P)$  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.

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### 3.3 EBS/BRS - Frequency Blocks

§27.5(i)



<b>BLOCK A: 2496MHz – 2502MHz</b> (BRS)	<b>BLOCK B: 2502MHz – 2572MHz</b> (EBS)	<b>BLOCK C: 2572MHz – 2602MHz</b> (EBS)
<b>BLOCK D: 2602MHz – 2614MHz</b> (BRS)	<b>BLOCK E: 2614MHz – 2615MHz</b> (BRS)	<b>BLOCK F: 2615MHz – 2616MHz</b> (EBS)
<b>BLOCK G: 2616MHz – 2640.5MHz</b> (BRS)	<b>BLOCK H: 2640.5MHz – 2657MHz</b> (EBS)	<b>BLOCK I: 2657MHz – 2690MHz</b> (BRS)

### 3.4 Spurious and Harmonic Emissions at Antenna Terminal



§2.1051, §27.53(l)(4)(6)

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.

### 3.5 Radiated Spurious and Harmonic Emissions

§2.1053, §27.53(l)(4)(6)

Spurious and harmonic radiated emissions are measured outdoors at our 3-meter test range. The equipment under test is placed on a wooden turntable 3-meters from the receive antenna. The receive antenna height and turntable rotations were adjusted for the highest reading on the receive spectrum analyzer. This level is then measured with a broadband average power meter. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10<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 average power meter reading. This spurious level is recorded with the power meter. For readings above 1 GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration. This device was tested under all configurations at the maximum power setting.

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### 3.6 Frequency Stability / Temperature Variation

§2.1055, §27.54



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 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.*

**Time Period and Procedure:**

1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
2. The equipment is turned on in a “standby” condition for one minute before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.



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## 4.0 TEST EQUIPMENT CALIBRATION DATA

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

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	263-10dB	(DC-18GHz) 10 dB Attenuator	N/A		N/A	N/A
-	No.166	(1000-26500MHz) Microwave RF Cable	N/A		N/A	N/A
Agilent	11713A	Attenuation/Switch Driver	12/4/2008	Annual	12/4/2009	3439A02645
Agilent	8449B	(1-26.5GHz) Pre-Amplifier	12/4/2008	Annual	12/4/2009	3008A00985
Agilent	8495A	(0-70dB) DC-4GHz Attenuator	N/A		N/A	N/A
Agilent	85650A	Quasi-Peak Adapter	12/4/2008	Annual	12/4/2009	3303A01872
Agilent	8566B	(100Hz-22GHz) Spectrum Analyzer	12/5/2008	Annual	12/5/2009	3638A08713
Agilent	E8257D	(250kHz-20GHz) Signal Generator	3/25/2009	Biennial	3/25/2011	MY45470194
Agilent	N9020A	MXA Signal Analyzer	9/17/2008	Annual	9/17/2009	US46470561
Compliance Design	Roberts	Dipole Set	11/9/2007	Biennial	11/9/2009	146
Compliance Design	Roberts	Dipole Set	11/9/2007	Biennial	11/9/2009	147
Emco	3115	Horn Antenna (1-18GHz)	9/24/2007	Biennial	9/24/2009	9704-5182
Espec	ESX-2CA	Environmental Chamber	3/20/2009	Annual	3/20/2010	17620
Gigatronics	80701A	(0.05-18GHz) Power Sensor	8/18/2008	Annual	8/18/2009	1833460
Gigatronics	8651A	Universal Power Meter	8/18/2008	Annual	8/18/2009	1835299
MiniCircuits	VHF-1300+	High Pass Filter	N/A		N/A	30716
MiniCircuits	VHF-3100+	High Pass Filter	N/A		N/A	30721
Schwarzbeck	UHA9105	Dipole Antenna (400 - 1GHz) Rx	6/19/2007	Biennial	6/18/2009	9105-2404
Schwarzbeck	UHA9105	Dipole Antenna (400 - 1GHz) Tx	6/19/2007	Biennial	6/18/2009	9105-2403
Sunol	DRH-118	Horn Antenna (1 - 18GHz)	5/9/2007	Biennial	5/9/2009	A050307

**Table 4-1. Test Equipment**

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## 5.0 SAMPLE CALCULATIONS

### Emission Designator

#### QPSK Modulation

**Emission Designator = 8M35G7D**

TD-CDMA BW = 8.35 MHz

G = Phase Modulation



7 = Quantized/Digital Info

D = Data transmission, telemetry, telecommand

### Spurious Radiated Emission – TD-CDMA Band

#### **Example: Middle Channel TD-CDMA Mode 2<sup>nd</sup> Harmonic (5186 MHz)**

The average receive power meter reading at 3 meters with the EUT on the turntable was  $-81.0$  dBm. The gain of the substituted antenna is  $8.1$  dBi. The signal generator connected to the substituted antenna terminals is adjusted to produce a reading of  $-81.0$  dBm on the power meter. The loss of the cable between the signal generator and the terminals of the substituted antenna is  $2.0$  dB at  $5186.0$  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.

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## 6.0 TEST RESULTS

### 6.1 Summary

Company Name: Panasonic Corporation of North America  
 FCC ID: ACJ9TGCF-U14  
 FCC Classification: Licensed Non-Broadcast Transmitter (TNB)  
 Mode(s): TD-CDMA

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
<b>TRANSMITTER MODE (Tx)</b>					
2.1049, 27.53(l)(6)	Occupied Bandwidth	N/A	CONDUCTED	PASS	Section 7.0
2.1051, 27.53(l)(4)(6)	Band Edge	< 43 + 10log <sub>10</sub> (P[Watts]) within 5.5MHz from the band edge		PASS	Section 7.0
2.1051, 27.53(l)(4)(6)	Conducted Spurious Emissions	< 55 + 10log <sub>10</sub> (P[Watts]) for all emissions greater than 5.5MHz from the band edge		PASS	Section 7.0
2.1046	Transmitter Conducted Output Power Measurements	N/A		PASS	See SAR Report
27.50(h)(2)	Equivalent Isotropic Radiated Power	< 2 Watts max. EIRP	RADIATED	PASS	Section 6.2
2.1053, 27.53(l)(4)	Undesirable Emissions	< 55 + 10log <sub>10</sub> (P[Watts]) for all out-of-band emissions		PASS	Section 6.3
2.1055, 27.54	Frequency Stability	Fundamental emissions must stay within the allotted band		PASS	Section 6.4

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

FCC ID: ACJ9TGCF-U14		FCC Pt. 27 TD-CDMA MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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## 6.2 Equivalent Isotropic Radiated Power Output Data

§27.50(h)(2)

**POWER: Maximum (TD-CDMA Mode)**

Frequency [MHz]	Mode	Measured Level [dBm]	Substitute Level [dBm]	Antenna Gain [dBi]	Pol [H/V]	EIRP [dBm]	EIRP [Watts]	Battery Type
2501.40	TD-CDMA	-22.460	16.89	8.00	H	24.89	0.308	Standard
2593.00	TD-CDMA	-24.270	15.08	8.00	H	23.08	0.203	Standard
2684.60	TD-CDMA	-25.730	13.62	8.00	H	21.62	0.145	Standard



**Table 6-2. Equivalent Isotropic Radiated Power Output Data**

**NOTES:**

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

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

This device was tested under all configurations at the maximum power setting. This unit was tested with its standard battery.

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### 6.3 TD-CDMA Radiated Measurements

§2.1053, §27.53(l)(4)

#### Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 2501.40 MHz  
 CHANNEL: 12507  
 MEASURED OUTPUT POWER: 24.890 dBm = 0.308 W  
 MODULATION SIGNAL: TD-CDMA (Internal)  
 DISTANCE: 3 meters  
 LIMIT:  $55 + 10 \log_{10} (W) =$  49.89 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
5002.80	-40.19	10.50	-29.69	H	54.6
7504.20	-43.94	10.60	-33.34	H	58.2
10005.60	-84.23	12.00	-72.23	H	97.1
12507.00	-77.21	12.50	-64.71	H	89.6
15008.40	-71.12	13.03	-58.09	H	83.0



**Table 6-3. Radiated Spurious Data (TD-CDMA Mode)**

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

This device was tested under all configurations at the maximum power setting. This unit was tested with its standard battery.

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## TD-CDMA Radiated Measurements (Cont'd)

§2.1053, §27.53(l)(4)

### Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 2593.00 MHz  
 CHANNEL: 12965  
 MEASURED OUTPUT POWER: 24.890 dBm = 0.308 W  
 MODULATION SIGNAL: TD-CDMA (Internal)  
 DISTANCE: 3 meters  
 LIMIT:  $55 + 10 \log_{10} (W) =$  49.89 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
5186.00	-41.03	10.46	-30.57	H	55.5
7779.00	-43.75	10.84	-32.91	H	57.8
10372.00	-83.85	12.16	-71.69	H	96.6
12965.00	-75.23	12.30	-62.93	H	87.8
15558.00	-75.30	15.30	-60.00	H	84.9



**Table 6-4. Radiated Spurious Data (TD-CDMA Mode)**

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

This device was tested under all configurations at the maximum power setting. This unit was tested with its standard battery.

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## TD-CDMA Radiated Measurements (Cont'd)

§2.1053, §27.53(l)(4)

### Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 2684.60 MHz  
 CHANNEL: 13420  
 MEASURED OUTPUT POWER: 24.890 dBm = 0.308 W  
 MODULATION SIGNAL: TD-CDMA (Internal)  
 DISTANCE: 3 meters  
 LIMIT:  $55 + 10 \log_{10} (W) =$  49.89 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
5369.20	-42.54	10.43	-32.12	H	57.0
8053.80	-38.38	11.03	-27.34	H	52.2
10738.40	-83.36	12.49	-70.87	H	95.8
13423.00	-73.99	12.30	-61.69	H	86.6
16107.60	-75.33	15.46	-59.87	H	84.8



**Table 6-5. Radiated Spurious Data (TD-CDMA Mode)**

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

This device was tested under all configurations at the maximum power setting. This unit was tested with its standard battery.

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## 6.4 TD-CDMA Frequency Stability Measurements

§2.1055, §27.54



OPERATING FREQUENCY: 2,593,000,000 Hz  
 CHANNEL: 12965  
 REFERENCE VOLTAGE: 7.2 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	7.20	+ 20 (Ref)	2,592,999,278	-722.00	-0.000028
100 %		- 30	2,592,998,401	-1,599	-0.000062
100 %		- 20	2,592,996,675	-3,325	-0.000128
100 %		- 10	2,592,997,786	-2,214	-0.000085
100 %		0	2,593,001,479	1,479	0.000057
100 %		+ 10	2,593,003,091	3,091	0.000119
100 %		+ 20	2,592,996,980	-3,020	-0.000116
100 %		+ 30	2,592,996,700	-3,300	-0.000127
100 %		+ 40	2,593,002,736	2,736	0.000106
100 %		+ 50	2,593,001,814	1,814	0.000070
115 %		8.28	+ 20	2,592,998,360	-1,640.00
BATT. ENDPOINT	6.52	+ 20	2,592,998,738	-1,262.00	-0.000049

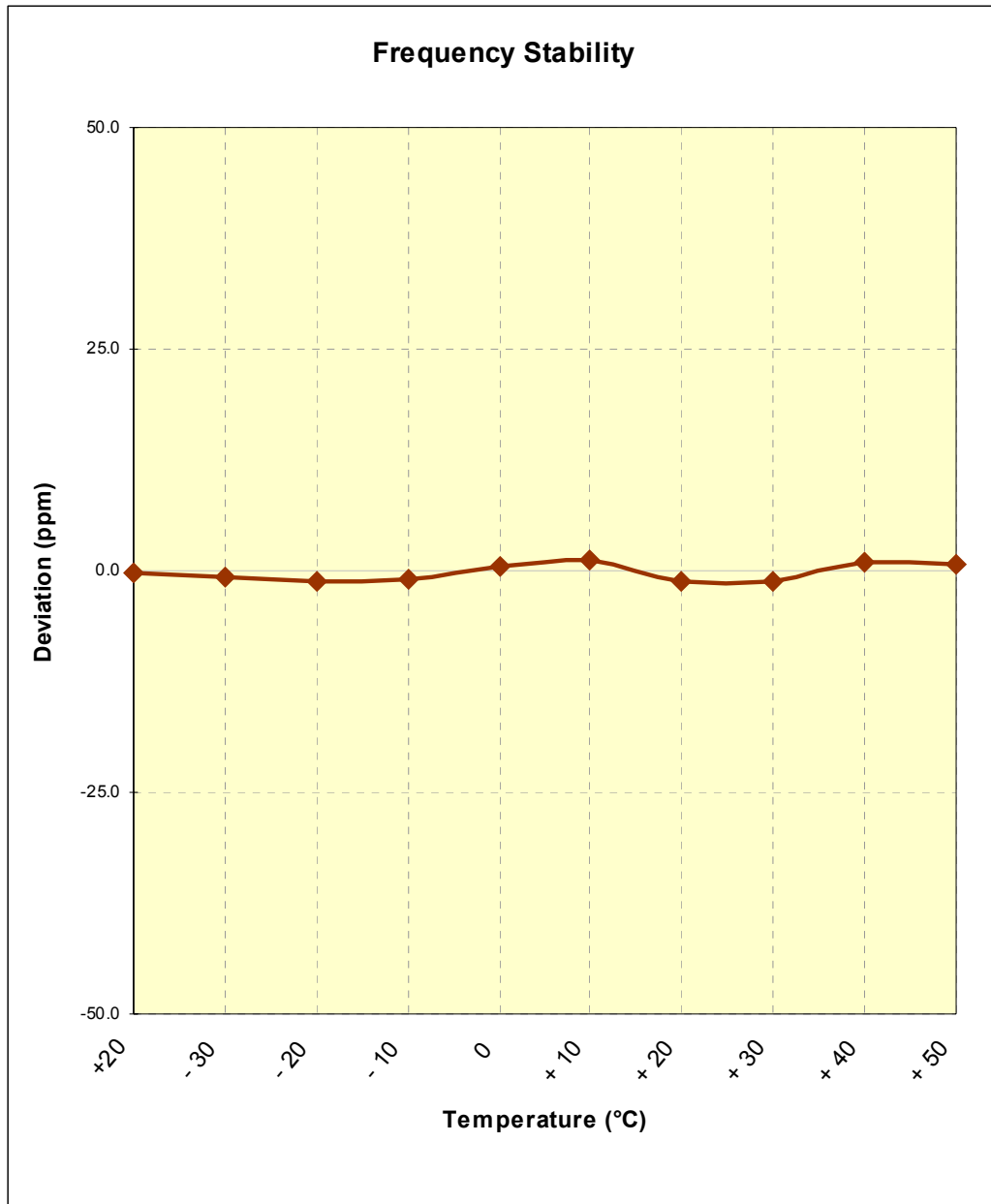
**Table 6-6. Frequency Stability Data (TD-CDMA Mode)**

**Note:**

The frequency deviation was measured to ensure that the channels emissions remained within the authorized band with varying temperature and voltage.

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**TD-CDMA Frequency Stability Measurements (Cont'd)**  
**§2.1055, §27.54**



**Figure 6-1. Frequency Stability Graph (TD-CDMA Mode)**

**Note:**

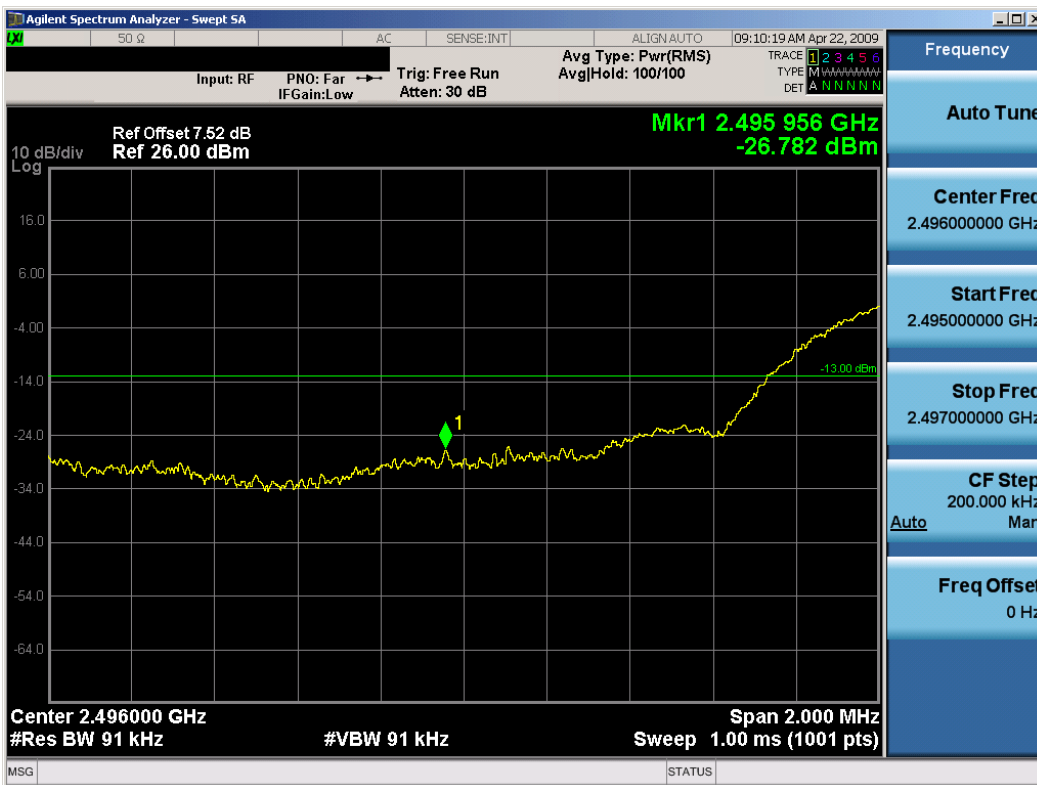
The frequency deviation was measured to ensure that the channels emissions remained within the authorized band with varying temperature and voltage.

FCC ID: ACJ9TGCF-U14	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 27 TD-CDMA MEASUREMENT REPORT (CERTIFICATION)	Panasonic	Reviewed by: Quality Manager
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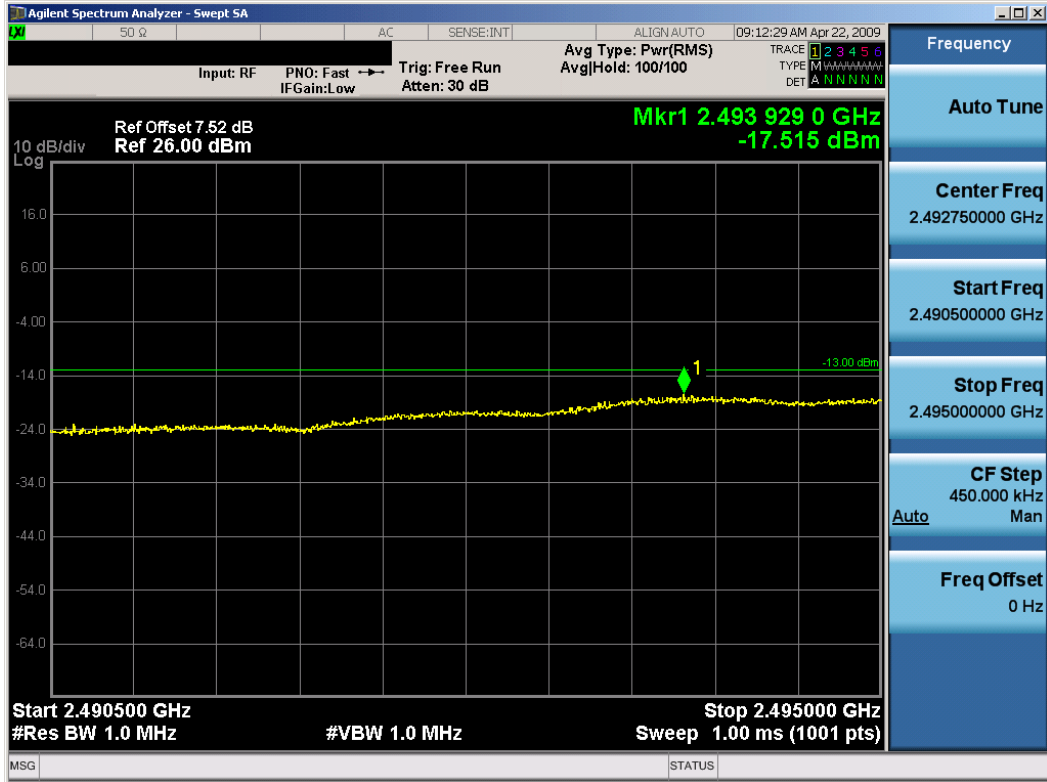


Plot 7-3. Conducted Spurious Plot (TD-CDMA Mode – Low Channel)

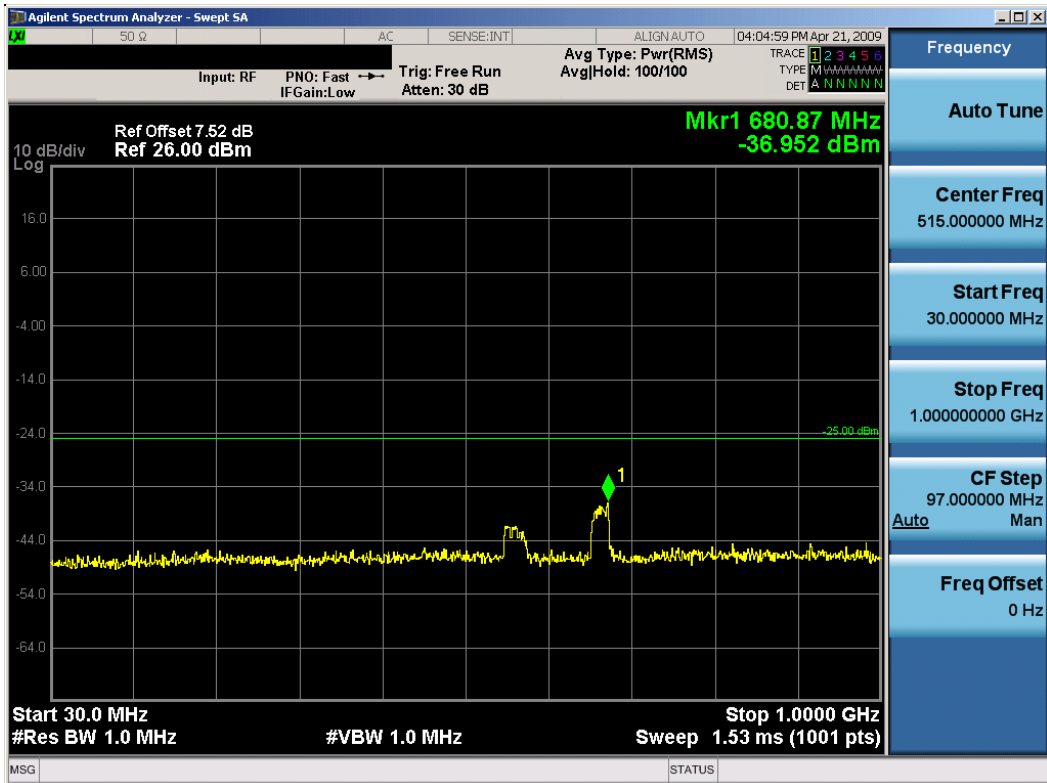


Plot 7-4. Band Edge Plot (TD-CDMA Mode – Low Channel)

FCC ID: ACJ9TGCF-U14	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 27 TD-CDMA MEASUREMENT REPORT (CERTIFICATION)	<b>Panasonic</b>	Reviewed by: Quality Manager
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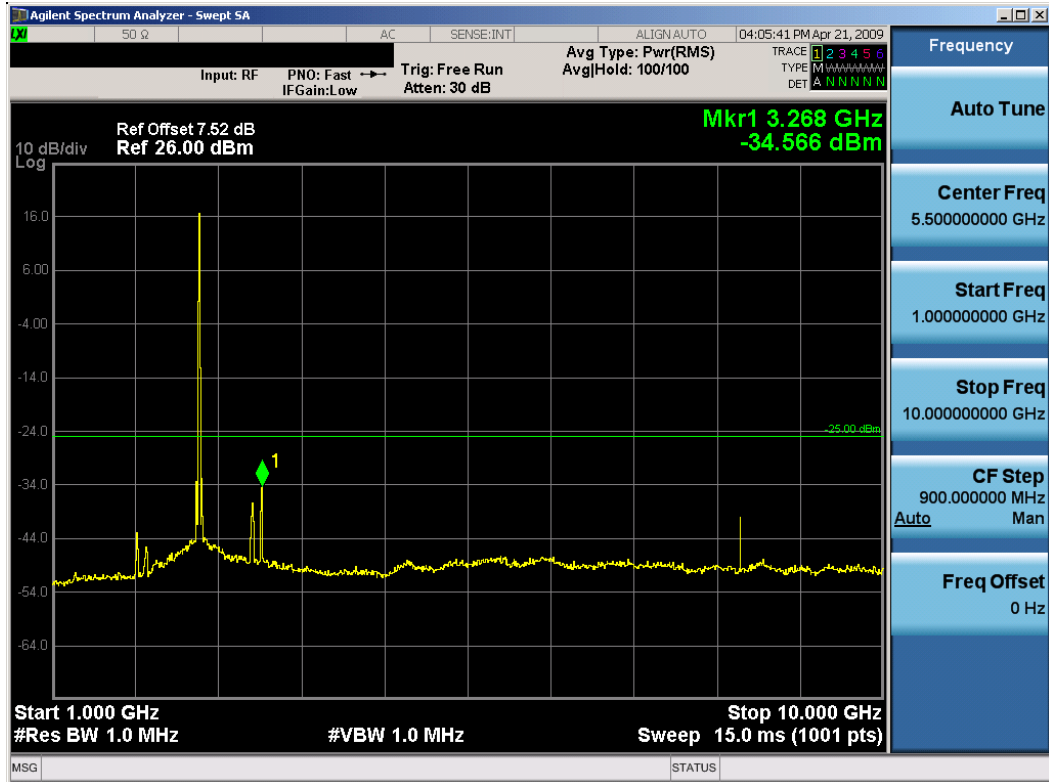


Plot 7-5. 5.5MHz Band Edge Plot (TD-CDMA Mode – Low Channel)

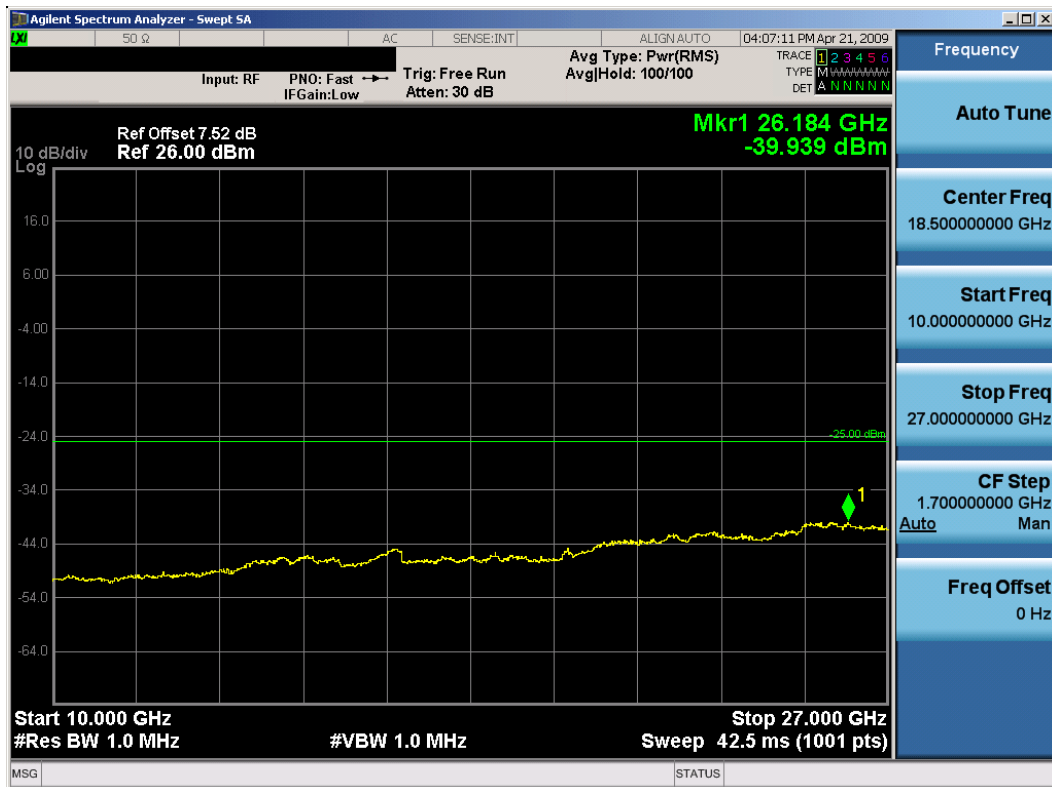


Plot 7-6. Conducted Spurious Plot (TD-CDMA Mode – Mid Channel)

FCC ID: ACJ9TGCF-U14	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 27 TD-CDMA MEASUREMENT REPORT (CERTIFICATION)	<b>Panasonic</b>	Reviewed by: Quality Manager
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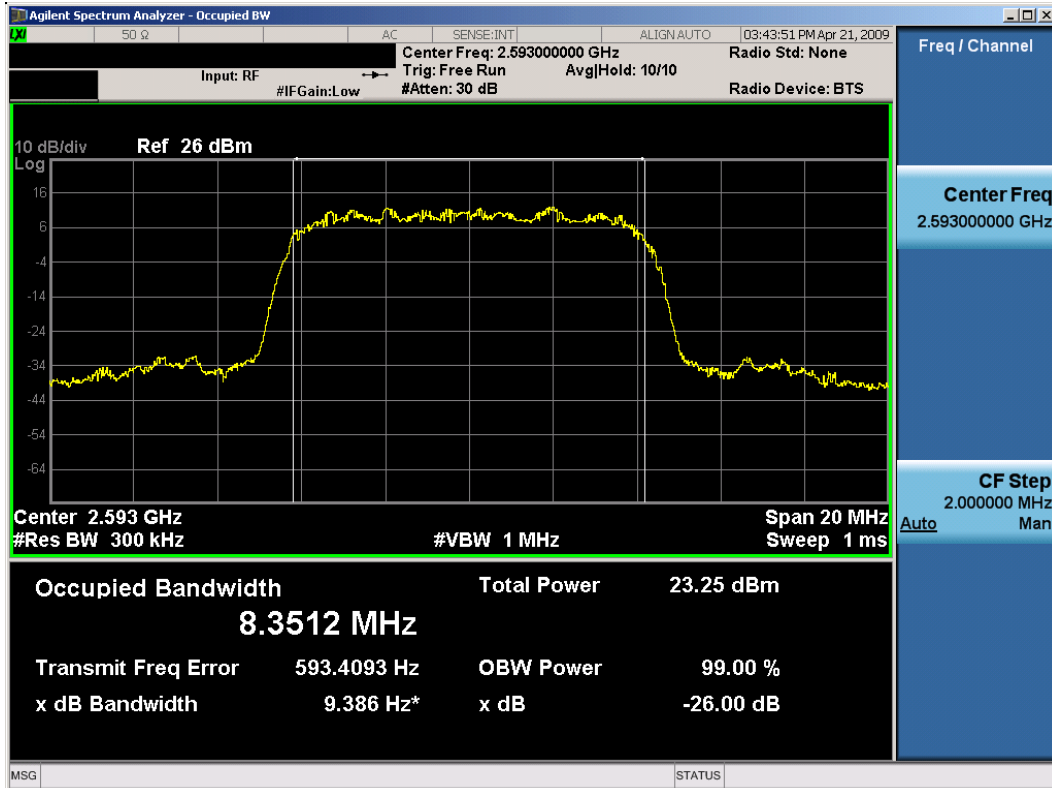


Plot 7-7. Conducted Spurious Plot (TD-CDMA Mode – Mid Channel)

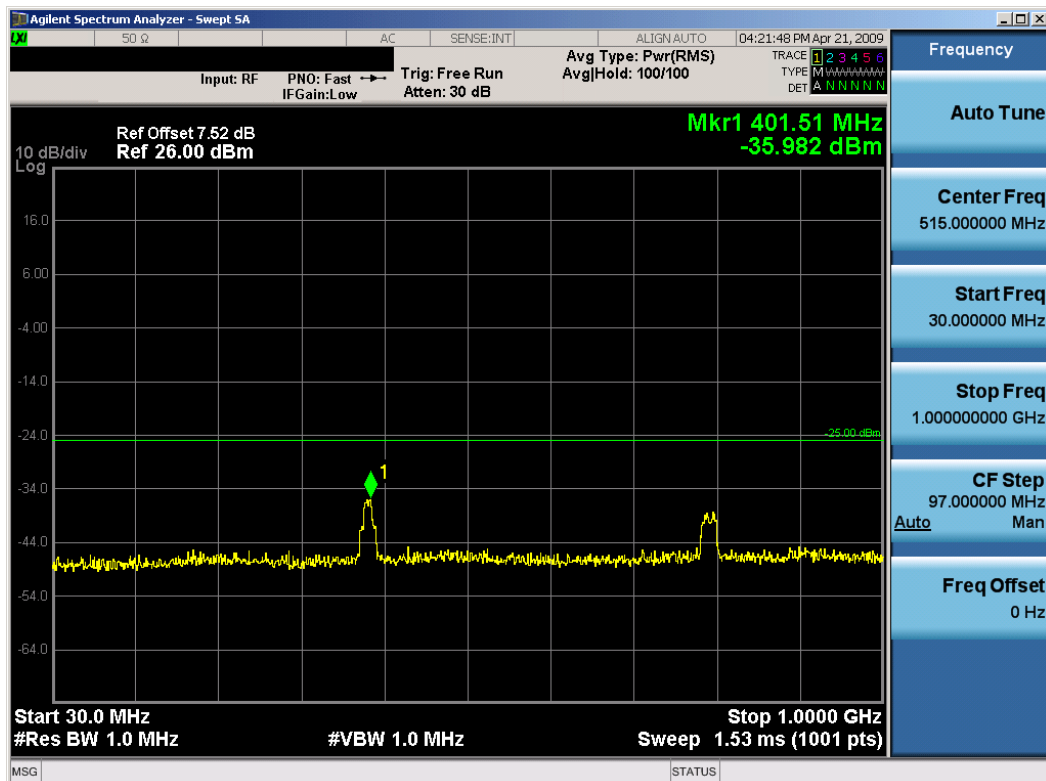


Plot 7-8. Conducted Spurious Plot (TD-CDMA Mode – Mid Channel)

FCC ID: ACJ9TGCF-U14	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 27 TD-CDMA MEASUREMENT REPORT (CERTIFICATION)	<b>Panasonic</b>	Reviewed by: Quality Manager
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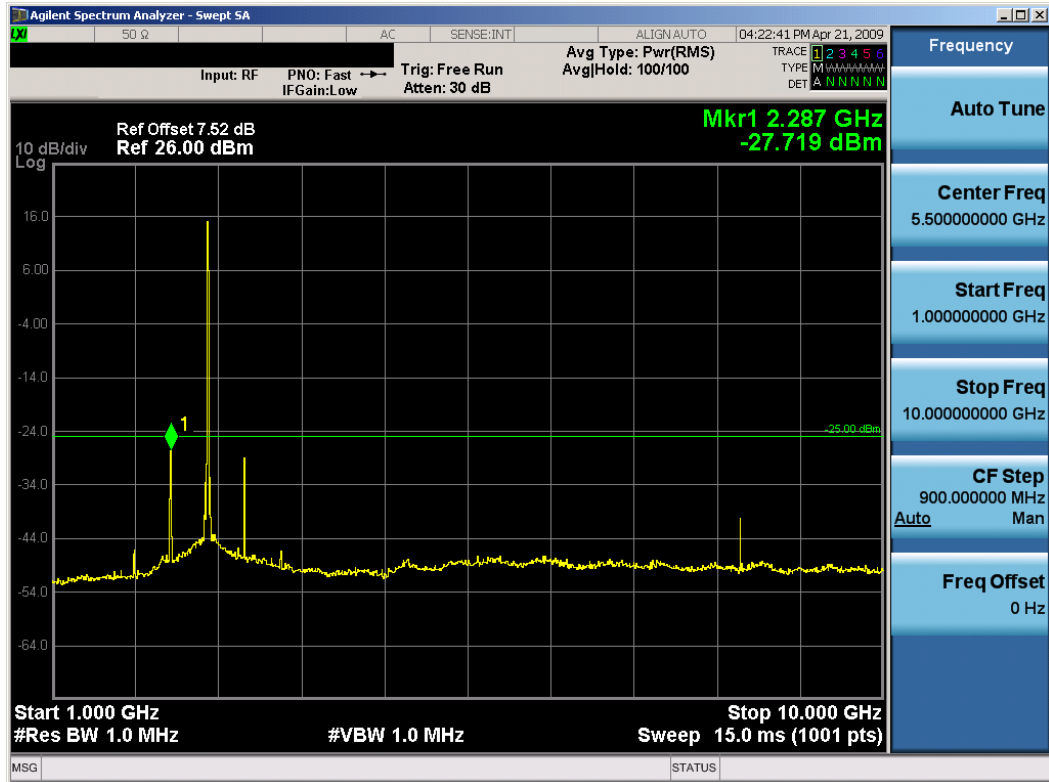


Plot 7-9. Occupied Bandwidth Plot (TD-CDMA Mode – Mid Channel)

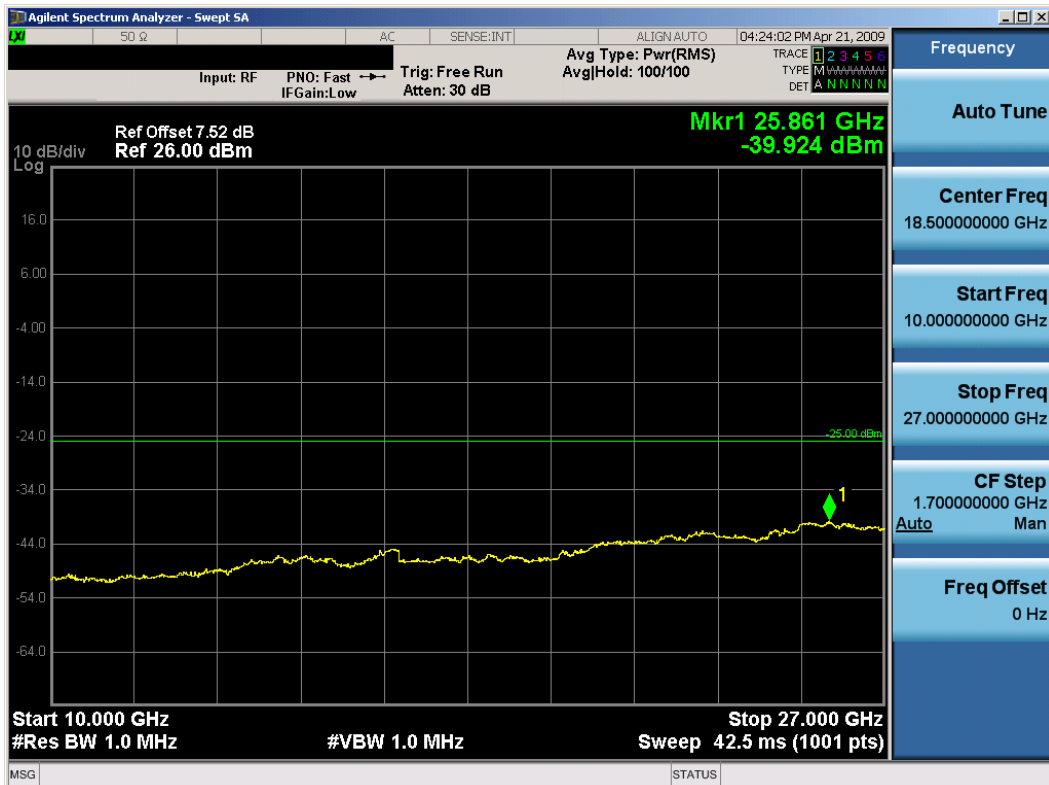


Plot 7-10. Conducted Spurious Plot (TD-CDMA Mode – High Channel)

FCC ID: ACJ9TGCF-U14	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 27 TD-CDMA MEASUREMENT REPORT (CERTIFICATION)	<b>Panasonic</b>	Reviewed by: Quality Manager
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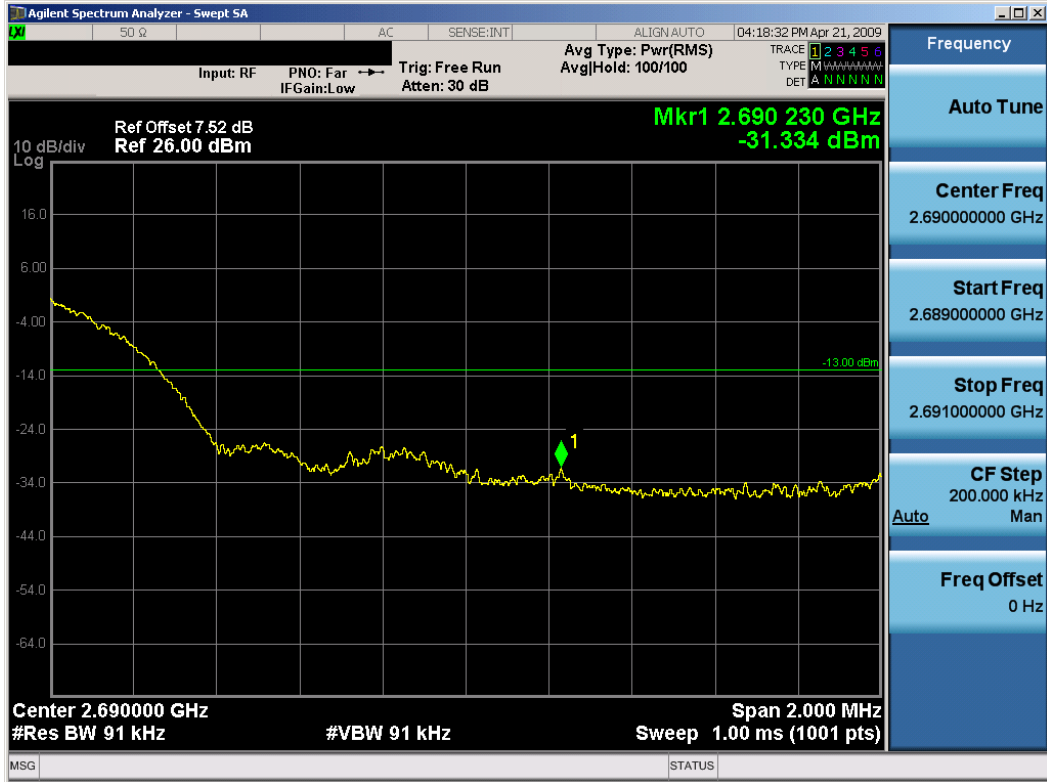


Plot 7-11. Conducted Spurious Plot (TD-CDMA Mode – High Channel)

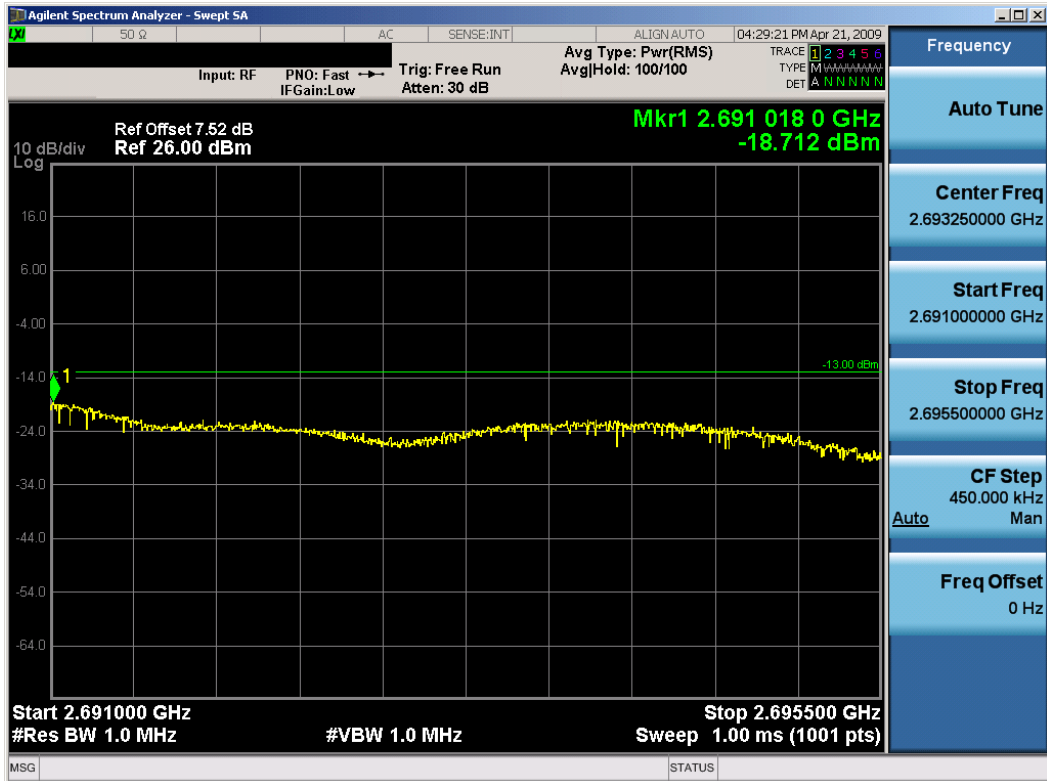


Plot 7-12. Conducted Spurious Plot (TD-CDMA Mode – High Channel)

FCC ID: ACJ9TGCF-U14	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 27 TD-CDMA MEASUREMENT REPORT (CERTIFICATION)	<b>Panasonic</b>	Reviewed by: Quality Manager
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**Plot 7-13. Band Edge Plot (TD-CDMA Mode – High Channel)**





**Plot 7-14. 5.5MHz Band Edge Plot (TD-CDMA Mode – High Channel)**

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## 8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Panasonic Toughbook Model: CF-U1 FCC ID: ACJ9TGCF-U14** complies with all the requirements of Parts 2 and 27 of the FCC rules.

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