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

CERTIFICATE OF COMPLIANCE
FCC Part 22 & 24 Class II Permissive Change

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

Date of Testing:
March 7 - 8, 2007
Test Site/Location:
PCTEST Lab., Columbia, MD, USA
Test Report Serial No.:
0702280117.ACJ

FCC ID:	**ACJ9TGCF-193**
APPLICANT:	**PANASONIC CORPORATION OF NORTH AMERICA**

Application Type:	Class II Permissive Change
FCC Classification:	PCS Licensed Transmitter (PCB)
FCC Rule Part(s):	§2; §22(H), §24(E)
EUT Type:	Toughbook with Car Dock Model: CF-WEB184
Model(s):	CF-19
Tx Frequency Range:	824.70 - 848.31MHz (Cell. CDMA) / 1851.25 - 1908.75MHz (PCS CDMA)
Max. RF Output Power:	24.69 dBm Conducted (Cell. CDMA) / 24.67 dBm conducted (PCS CDMA)
Emission Designator(s):	1M27F9W (CDMA) / 1M27F9W (PCS)
Test Device Serial No.:	*identical prototype* [S/N: N/A]
Class II Permissive Change:	Add Car Mounter and External Antenna
Original Grant Date:	12/22/2006

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.

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 conducted for Part 22 and Part 24.

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

Randy Ortanez
President

ACCREDITED
TESTING LABORATORY
CERTIFICATE #2041.01

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§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)
MODEL NAME:	CF-19
FCC ID:	ACJ9TGCF-193
FCC CLASSIFICATION:	PCS Licensed Transmitter (PCB)
EMISSION DESIGNATOR(S):	1M27F9W (CDMA) / 1M27F9W (PCS)
MODE:	EvDO (Rev. A)
FREQUENCY TOLERANCE:	±0.00025 % (2.5 ppm)
Test Device Serial No.:	N/A ☐ Production ☒ Pre-Production ☐ Engineering
DATE(S) OF TEST:	March 7 - 8, 2007
TEST REPORT S/N:	0702280117.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 (IC-2451).
- 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 (IC-2451) test laboratory with the site description on file at Industry Canada.
- PCTEST is a CTIA Authorized Test Laboratory (CATL) for AMPS, CDMA, and EvDO wireless devices and for Over-the-Air (OTA) Antenna Performance testing for AMPS, CDMA, GSM, GPRS, EGPRS, UMTS (W-CDMA), CDMA 1xEVDO, and CDMA 1xRTT.

1.0 INTRODUCTION

1.1 Measurement Procedure

The radiated spurious measurements were made outdoors at a 3-meter test range (see Figure 1-1). 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. 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. 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.

Deviation from Measurement Procedure……..None

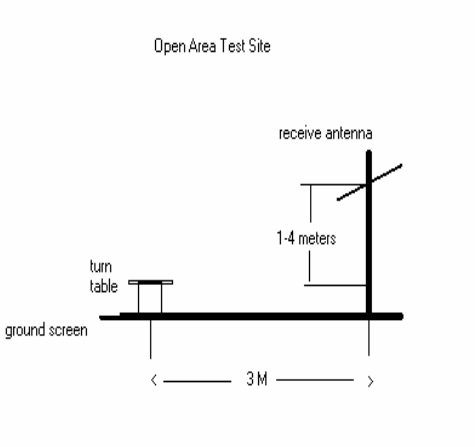


Figure 1-1. Diagram of 3-meter outdoor test range

1.2 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.

1.3 Testing Facility

These measurements 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 and Industry Canada.

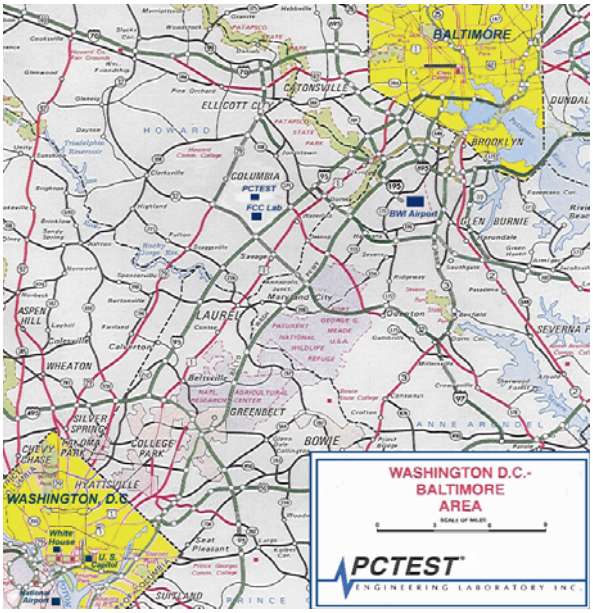


Figure 1-2. Map of the Greater Baltimore and Metropolitan Washington, D.C. area.

2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Panasonic Toughbook (FCC ID: ACJ9TGCF-193) with Car Dock Model: CF-WEB184**. The Toughbook has been previously FCC certified under the aforementioned FCC ID and was tested with a 50Ω TNC termination cap connected to the WWAN TNC port on the underside of the car dock. The test setup consisted of the following component(s):

Trade Name / Model	FCC ID	Description
Panasonic / Model: CF-19	ACJ9TGCF-193	Toughbook with EvDO and WLAN modules
Sierra Wireless / Model: MC5725	N7N-MC5725	Wireless CDMA Module
Model: CF-WEB184	N/A	Car Dock for use with Panasonic Toughbook Model: CF-19

Table 2-1. EUT Equipment Description

Mode	FCC Rule Part	Frequency [MHz]	Notes
EvDO (Rev. A)	22 / 24	824.7 – 848.31 1851.25 – 1908.75	This report contains data pertaining only to the EvDO (Rev. A) transmitter.
802.11a/b/g	15C / 15E	2412 – 2462 (b/g) 5150 – 5250 (a-UNII) 5745 – 5825 (a)	Data can be found in a separate test report under the same FCC ID.

Table 2-2. Supported EUT Modes

2.2 EMI Suppression Device(s)/Modifications

EMI suppression device(s) added and/or modifications made during testing.

- None

3.0 DESCRIPTION OF TESTS

3.1 Occupied Bandwidth Emission Limits

§2.1049, 22.917(a), 24.238(a)

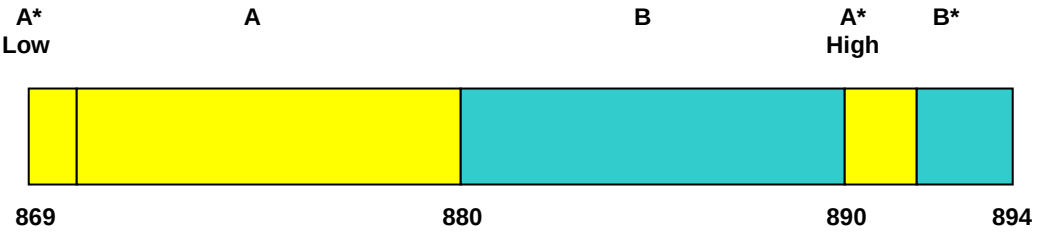
a. On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least 43 + 10 log(P) dB.

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.

3.2 Cellular - Base Frequency Blocks



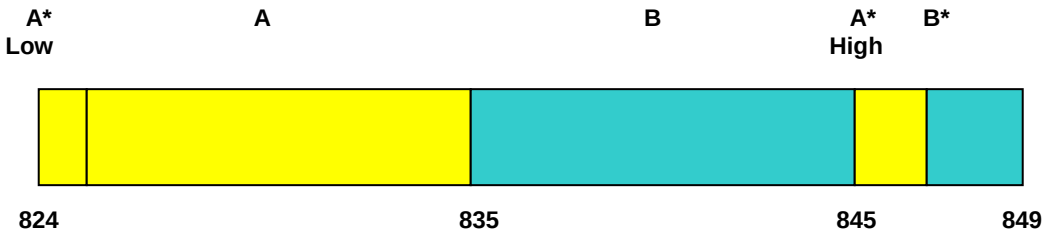
BLOCK 1: 869 – 880 MHz (A* Low + A)

BLOCK 2: 880 – 890 MHz (B)

BLOCK 3: 890 – 891.5 MHz (A* High)

BLOCK 4: 891.5 – 894 MHz (B*)

3.3 Cellular - Mobile Frequency Blocks



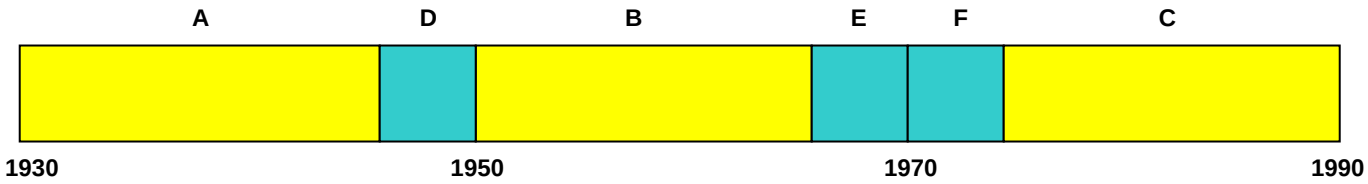
BLOCK 1: 824 – 835 MHz (A* Low + A)

BLOCK 2: 835 – 845 MHz (B)

BLOCK 3: 845 – 846.5 MHz (A* High)

BLOCK 4: 846.5 – 849 MHz (B*)

3.4 PCS - Base Frequency Blocks



BLOCK 1: 1930 – 1945 MHz (A)

BLOCK 2: 1945 – 1950 MHz (D)

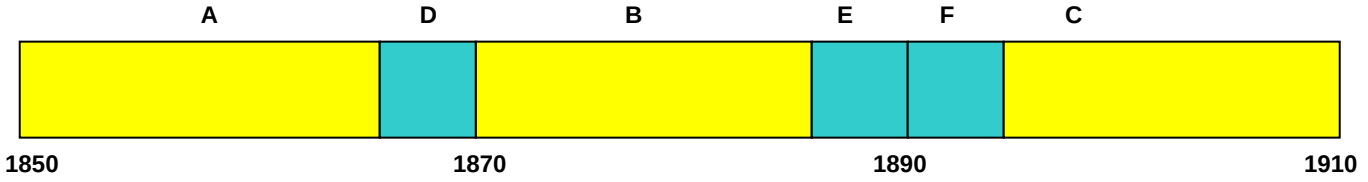
BLOCK 3: 1950 – 1965 MHz (B)

BLOCK 4: 1965 – 1970 MHz (E)

BLOCK 5: 1970 – 1975 MHz (F)

BLOCK 6: 1975 – 1990 MHz (C)

3.5 PCS - Mobile Frequency Blocks



BLOCK 1: 1850 – 1865 MHz (A)

BLOCK 2: 1865 – 1870 MHz (D)

BLOCK 3: 1870 – 1885 MHz (B)

BLOCK 4: 1885 – 1890 MHz (E)

BLOCK 5: 1890 – 1895 MHz (F)

BLOCK 6: 1895 – 1910 MHz (C)

3.6 Radiated Spurious and Harmonic Emissions

§2.1053, 22.917(a), 24.238(a); RSS-129 (8.1.1), RSS-133 (6.5.1(i))

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. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator with the level of the signal generator being adjusted to obtain the same receive 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 applicable configurations and the highest power is reported with EvDO (Rev. A) RETAP with "All Up" power control bits.

4.0 TEST EQUIPMENT CALIBRATION DATA

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

Manufacturer	Model / Equipment	Calibration Date	Cal Interval	Calibration Due	Serial No.
Agilent	E4404B/E4407B ESA Spectrum Analyzer	04/20/06	Annual	04/20/07	US39210313
Agilent	E5515C Wireless Communications Test Set	07/27/06	Annual	07/27/07	GB41450275
Agilent	E5515C Wireless Communications Test Set	10/06/06	Annual	10/06/07	GB43193972
Agilent	E4432B ESG-D Series Signal Generator	08/08/06	Annual	08/08/07	US40053896
Agilent	8648D (9kHz-4GHz) Signal Generator	10/01/06	Annual	10/01/07	3613A00315
Agilent	E5515C Wireless Communications Test Set	10/26/06	Biennial	10/25/08	GB46310798
EMCO	Model 3115 (1-18GHz) Horn Antenna	08/24/06	Biennial	08/23/08	9203-2178
EMCO	Model 3115 (1-18GHz) Horn Antenna	08/25/06	Biennial	08/24/08	9704-5182
Gigatronics	8657A Universal Power Meter	04/07/06	Annual	04/07/07	8650319
Gigatronics	80701A (0.05-18GHz) Power Sensor	04/11/06	Annual	04/11/07	1833460
Rohde & Schwarz	NRVS Power Meter	06/01/05	Biennial	06/01/07	835360/079
Rohde & Schwarz	NRV-Z53 Power Sensor	06/01/05	Biennial	06/01/07	846076/007
Rohde & Schwarz	CMU200 Base Station Simulator	11/08/06	Annual	11/08/07	107826
Rohde & Schwarz	CMU200 Base Station Simulator	07/26/06	Annual	07/26/07	833855/010
Rohde & Schwarz	CMU200 Base Station Simulator	04/20/06	Annual	04/20/07	836371/079
Agilent	HP 8566B (100Hz–22GHz)	12/21/06	Annual	12/21/07	3638A08713
Agilent	E4448A (3Hz-50GHz)	09/22/06	Annual	09/22/07	US42510244
Gigatronics	8651A (50MHz-18GHz)	07/28/06	Annual	07/28/07	1834052
Gigatronics	80701A (0.05-18GHz) Power Sensor	08/04/06	Annual	08/04/07	1835299
Agilent	HP 85650A Quasi-Peak Adapter	12/21/06	Annual	12/21/07	2043A00301
Agilent	HP 8449B (1-26.5GHz) Pre-Amplifier	12/12/06	Annual	12/12/07	3008A00985
Agilent	HP 11713A Attenuation/Switch Driver	12/12/06	Annual	12/12/07	N/A
Agilent	HP 85685A (20Hz-2GHz) Preselector	12/12/06	Annual	12/12/07	N/A
Agilent	HP 8566B Opt. 462 Impulse Bandwidth	12/12/06	Annual	12/12/07	3701A22204
EMCO	3115 (1-18GHz) Horn Antenna	04/04/05	Biennial	04/04/07	9205-3874
Compliance Design	A100 Roberts Dipoles	08/31/05	Biennial	08/31/07	5118
EMCO	Dipole Pair	09/21/06	Biennial	09/20/08	23951
SOLAR	8012-50 LISN (2)	11/18/05	Biennial	11/18/07	0313233, 0310234
Agilent	HP 8901A Modulation Analyzer	06/05/06	Annual	06/05/07	2432A03467
Agilent	HP 8903 B Audio Analyzer	06/01/06	Annual	06/01/07	3011A09025
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
Agilent	HP 8495A (0-70dB) DC-4GHz Attenuator	N/A		N/A	N/A
-	263-10dB (DC-18GHz) 10 dB Attenuator	N/A		N/A	N/A
Pasternack	PE2208-6 Bidirectional Coupler	N/A		N/A	N/A
-	No.165 (30MHz - 1000MHz) RG58 Coax Cable	N/A		N/A	N/A
-	No.166 (1000-26500MHz) Microwave RF Cable	N/A		N/A	N/A
-	No.167 (100kHz - 100MHz) RG58 Coax Cable	N/A		N/A	N/A

Table 4-1. Test Equipment

5.0 SAMPLE CALCULATIONS

Emission Designator

Emission Designator = 1M25F9W

CDMA BW = 1.25 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: Channel 25 PCS Mode 2nd Harmonic (3702.50 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 receive analyzer. The loss of the cable between the signal generator and the terminals of the substituted antenna is 2.0 dB at 3702.50 MHz. So 6.1 dB is added to the signal generator reading of –30.9 dBm yielding –24.80 dBm. The fundamental EIRP was 25.501 dBm so this harmonic was 25.501 dBm – (-24.80) = 50.3 dBc.

Antenna Gain Calculations

Cellular Band

The ERP is determined by a calculation dependent upon the maximum conducted output power of the module and the maximum permissible antenna gain: ERP(dBm) = P_{max}(dBm) + G_{Tx}(dBi). The maximum antenna gain is determined by calculating the ERP that yields a maximum power density level equal to the MPE limit at 20cm for mobile condition. At 848.31MHz, the conducted power is 294.44mW (24.69dBm) and the RF exposure limit is 0.566mW/cm^2, therefore:

$P_d = (P(mW) * G)/(4\pi R^2) = (294.44mW * G)/(4\pi\ (20cm)^2) = 0.566mW/cm^2$

From this calculation, the maximum permissible antenna gain is 7.71dBd, as long as there is no collocation with the electromagnetic field of a nearby antenna.

PCS Band

In the PCS band, the calculation of the maximum permissible antenna gain is limited by the maximum EIRP level of 2 Watts (33.010dBm). Since the conducted power is 293.09mW (24.67dBm), the maximum antenna gain can be calculated as:

G_{Tx} = Maximum EIRP[dBm] – P_{cond}[dBm] = 33.010dBm – 24.67dBm = 8.34dBi.

From this calculation, thet maximum permissible antenna gain is 8.34dBi, as long as there is no collocation with the electromagnetic field of a nearby antenna.

6.0 TEST RESULTS

Summary

Company Name: Panasonic Corporation of North America

FCC ID: ACJ9TGCF-193

FCC Classification: PCS Licensed Transmitter (PCB)

Mode(s): EvDO (Rev. A)

FCC Part Section(s)	RSS Section	Test Description	Test Limit	Test Condition	Test Result	Reference
TRANSMITTER MODE (TX)						
SAR Measurement Procedures for 3G Devices, June '06	N/A	Conducted Power Measurements for 3G Devices	N/A	CONDUCTED	PASS	FCC 3G Power Table
2.1053, 22.917(a), 24.238(a)	RSS-129 (8.1.1) RSS-133 (6.5.1)	Undesirable Emissions	< 43 + 10log$_{10}$ (P[Watts]) for all out-of-band emissions	RADIATED	PASS	Sections 6.1, 6.2
RF EXPOSURE (MPE)						
2.1091 / 2.1093	RSS-102	MPE Test	1 mW/cm² (MPE Limit) @ 20 cm	MPE	PASS	MPE Report

Table 6-1. Summary of Test Results

Note:

The Panasonic Toughbook Model: CF-19 is docked into the CF-WEB184 vehicle docking station. The docking station provides a passive RF pass-thru to which an external antenna may be connected. The RF pass-thru does not affect the characteristics of the RF output port so the conducted power on the original grant (filed 12/22/2006) remains unchanged.

The original conducted output power was used for calculation of the maximum permissible antenna gain and spurious radiated emissions (ERP/EIRP) for this report.

6.1 Cellular CDMA Radiated Measurements

§2.1053, 22.917(a): RSS-129 (8.1.1)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY:	824.70	MHz		
CHANNEL:	1013			
CALCULATED OUTPUT POWER:	32.390	dBm	=	1.734 W
MODULATION SIGNAL:	CDMA (External Car Mounted)			
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	45.39	dBc	

FREQ. (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	CORRECT GENERATOR LEVEL (dBm)	POL (H/V)	(dBc)
1649.40	-78.89	6.16	-72.73	V	105.1
2474.10	-75.10	7.26	-67.85	V	100.2
3298.80	-72.09	7.40	-64.69	V	97.1
4123.50	-86.76	7.59	-79.18	V	111.6
4948.20	-85.85	8.47	-77.38	V	109.8

Table 6-2. 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 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. For CDMA signals, a peak detector is used, with RBW = VBW = 3 MHz. For WCDMA signals, a peak detector is used, with RBW = VBW = 5 MHz. For AMPS, GSM, and NADC TDMA signals, a peak detector is used, with RBW = VBW = 1 MHz. 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 spurious level is recorded. 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 applicable configurations and the highest power is reported with EvDO (Rev. A) RETAP with "All Up" power control bits. This unit was tested with its standard battery. The calculated output power was determined by a calculation that assumes the highest permissible gain antenna for each band (see “Antenna Gain Calculations” on page 10).

Cellular CDMA Radiated Measurements (Cont'd)

§2.1053, 22.917(a); RSS-129 (8.1.1)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY:	836.52	MHz		
CHANNEL:	384			
CALCULATED OUTPUT POWER:	32.390	dBm	=	1.734 W
MODULATION SIGNAL:	CDMA (External Car Mounted)			
DISTANCE:	3	meters		
LIMIT:	$43 + 10 \log_{10}$ (W) =	45.39	dBc	

FREQ. (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	CORRECT GENERATOR LEVEL (dBm)	POL (H/V)	(dBc)
1673.04	-75.91	6.18	-69.73	V	102.1
2509.56	-76.56	7.30	-69.26	V	101.6
3346.08	-70.72	7.42	-63.30	V	95.7
4182.60	-87.03	7.75	-79.28	V	111.7
5019.12	-85.24	8.46	-76.78	V	109.2

Table 6-3. 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 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. For CDMA signals, a peak detector is used, with RBW = VBW = 3 MHz. For WCDMA signals, a peak detector is used, with RBW = VBW = 5 MHz. For AMPS, GSM, and NADC TDMA signals, a peak detector is used, with RBW = VBW = 1 MHz. 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 spurious level is recorded. 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 applicable configurations and the highest power is reported with EvDO (Rev. A) RETAP with "All Up" power control bits. This unit was tested with its standard battery. The calculated output power was determined by a calculation that assumes the highest permissible gain antenna for each band (see "Antenna Gain Calculations" on page 10).

Cellular CDMA Radiated Measurements (Cont'd)

§2.1053, 22.917(a); RSS-129 (8.1.1)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY:	848.31	MHz		
CHANNEL:	777			
CALCULATED OUTPUT POWER:	32.390	dBm	=	1.734 W
MODULATION SIGNAL:	CDMA (External Car Mounted)			
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	45.39	dBc	

FREQ. (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	CORRECT GENERATOR LEVEL (dBm)	POL (H/V)	(dBc)
1696.62	-77.53	6.19	-71.34	V	103.7
2544.93	-75.25	7.30	-67.96	V	100.3
3393.24	-73.15	7.44	-65.71	V	98.1
4241.55	-87.08	7.91	-79.18	V	111.6
5089.86	-85.44	8.46	-76.98	V	109.4

Table 6-4. 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 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. For CDMA signals, a peak detector is used, with RBW = VBW = 3 MHz. For WCDMA signals, a peak detector is used, with RBW = VBW = 5 MHz. For AMPS, GSM, and NADC TDMA signals, a peak detector is used, with RBW = VBW = 1 MHz. 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 spurious level is recorded. 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 applicable configurations and the highest power is reported with EvDO (Rev. A) RETAP with "All Up" power control bits. This unit was tested with its standard battery. The calculated output power was determined by a calculation that assumes the highest permissible gain antenna for each band (see "Antenna Gain Calculations" on page 10).

6.2 PCS CDMA Radiated Measurements

§2.1053, 24.238(a); RSS-133 (6.5.1)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY:	1851.25	MHz		
CHANNEL:	25			
CALCULATED OUTPUT POWER:	33.010	dBm	=	2.000 W
MODULATION SIGNAL:	CDMA (External Car Mounted)			
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	46.01	dBc	

FREQ. (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	CORRECT GENERATOR LEVEL (dBm)	POL (H/V)	(dBc)
3702.50	-68.98	9.54	-59.45	V	92.5
5553.75	-65.96	10.66	-55.30	V	88.3
7405.00	-80.67	11.14	-69.53	V	102.5
9256.25	-77.18	11.15	-66.03	V	99.0
11107.50	-77.98	12.75	-65.23	V	98.2

Table 6-5. 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 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. For CDMA signals, a peak detector is used, with RBW = VBW = 3 MHz. For WCDMA signals, a peak detector is used, with RBW = VBW = 5 MHz. For AMPS, GSM, and NADC TDMA signals, a peak detector is used, with RBW = VBW = 1 MHz. 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 spurious level is recorded. 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 applicable configurations and the highest power is reported with EvDO (Rev. A) RETAP with "All Up" power control bits. This unit was tested with its standard battery. The calculated output power was determined by a calculation that assumes the highest permissible gain antenna for each band (see "Antenna Gain Calculations" on page 10).

PCS CDMA Radiated Measurements (Cont'd)

§2.1053, 24.238(a); RSS-133 (6.5.1)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY:	1880.00	MHz		
CHANNEL:	600			
CALCULATED OUTPUT POWER:	33.010	dBm	=	2.000 W
MODULATION SIGNAL:	CDMA (External Car Mounted)			
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	46.01	dBc	

FREQ. (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	CORRECT GENERATOR LEVEL (dBm)	POL (H/V)	(dBc)
3760.00	-64.40	9.51	-54.90	V	87.9
5640.00	-65.39	10.76	-54.63	V	87.6
7520.00	-80.24	11.01	-69.23	V	102.2
9400.00	-77.15	11.32	-65.83	V	98.8
11280.00	-77.77	12.74	-65.03	V	98.0

Table 6-6. 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 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. For CDMA signals, a peak detector is used, with RBW = VBW = 3 MHz. For WCDMA signals, a peak detector is used, with RBW = VBW = 5 MHz. For AMPS, GSM, and NADC TDMA signals, a peak detector is used, with RBW = VBW = 1 MHz. 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 spurious level is recorded. 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 applicable configurations and the highest power is reported with EvDO (Rev. A) RETAP with "All Up" power control bits. This unit was tested with its standard battery. The calculated output power was determined by a calculation that assumes the highest permissible gain antenna for each band (see "Antenna Gain Calculations" on page 10).

PCS CDMA Radiated Measurements (Cont'd)

§2.1053, 24.238(a); RSS-133 (6.5.1)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY:	1908.75	MHz		
CHANNEL:	1175			
CALCULATED OUTPUT POWER:	33.010	dBm	=	2.000 W
MODULATION SIGNAL:	CDMA (External Car Mounted)			
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	46.01	dBc	

FREQ. (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	CORRECT GENERATOR LEVEL (dBm)	POL (H/V)	(dBc)
3817.50	-48.12	9.48	-38.64	V	71.6
5726.25	-55.68	10.86	-44.82	V	77.8
7635.00	-80.06	11.03	-69.03	V	102.0
9543.75	-77.02	11.49	-65.53	V	98.5
11452.50	-77.55	12.72	-64.83	V	97.8

Table 6-7. 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 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. For CDMA signals, a peak detector is used, with RBW = VBW = 3 MHz. For WCDMA signals, a peak detector is used, with RBW = VBW = 5 MHz. For AMPS, GSM, and NADC TDMA signals, a peak detector is used, with RBW = VBW = 1 MHz. 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 spurious level is recorded. 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 applicable configurations and the highest power is reported with EvDO (Rev. A) RETAP with "All Up" power control bits. This unit was tested with its standard battery. The calculated output power was determined by a calculation that assumes the highest permissible gain antenna for each band (see "Antenna Gain Calculations" on page 10).

7.0 CONCLUSION

The data collected show that the **Panasonic Toughbook (FCC ID: ACJ9TGCF-193) with Car Dock Model: CF-WEB184** complies with all the requirements of Parts 2, 22, and 24 of the FCC rules.

EXHIBIT A – TEST SETUP PHOTOGRAPHS

EXHIBIT B – INTERNAL PHOTOGRAPHS

EXHIBIT C – EXTERNAL PHOTOGRAPHS