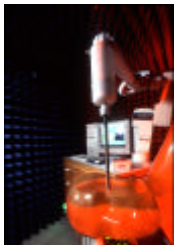


PCTEST Engineering Laboratory, Inc.

6660-B Dobbin Road • Columbia, MD 21045 • U.S.A.
TEL (410) 290-6652 • FAX (410) 290-6654
http://www.pctestlab.com

CERTIFICATE OF COMPLIANCE
FCC Parts 24/22 Certification

PANASONIC
Matsushita Mobile Communications
Development Corporation of U.S.A.
1225 Northbrook Parkway, Suite 2-400
Suwanee, GA 30024
Attn: Pieter C. Seidel, Sr. System Test Engineer

Dates of Tests: April 06, 2001
Test Report S/N: 24/22.2100404194.NWJ
Test Site: PCTEST Lab, Columbia MD

FCC ID	**NWJ10A006A**
APPLICANT	**PANASONIC**

Classification:	**Licensed Portable Transmitter Held to Ear (PCE)**
FCC Rule Part(s):	**§24(E), §22(H), §2**
EUT Type:	**Tri-Mode Dual-Band Phone (AMPS/TDMA)**
Trade Name/Model:	***PANASONIC Atlas CE***
Tx Frequency Range:	**824.04 – 848.97 MHz (AMPS) / 824.04 – 848.97 MHz (TDMA)** **1850.01 – 1909.99 MHz (PCS TDMA)**
Rx Frequency Range:	**869.04 – 893.97 MHz (AMPS) / 869.64 – 893.97 MHz (TDMA)** **1930.05 – 1989.95 MHz (PCS TDMA)**
Max. RF Output Power:	**0.285W ERP AMPS (24.555dBm) / 0.917W ERP TDMA (29.622dBm)** **0.664W EIRP PCS TDMA (28.211dBm)**
Max. SAR Measurement:	**1.470mW/g AMPS Head SAR; 0.321 mW/g AMPS Body SAR** **1.510mW/g Cell. TDMA Head SAR; 0.441mW/g Cell. TDMA Body SAR** **1.510mW/g PCS TDMA Head SAR; 1.160mW/g PCS TDMA Body SAR**
Emission Designator(s):	**40K0F8W, 40K0F1D, 30K0DXW**

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. (See Test Report)

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.

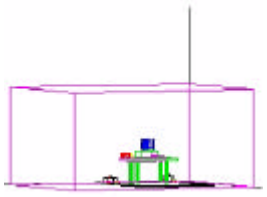
PCTEST certifies that no party to this application has been denied the FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. 862.

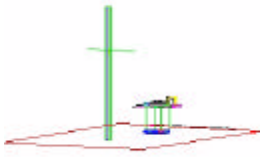
Randy Ortanez
President & Chief Engineer

NVLAP LAB CODE 100431-0

2 1 0 3 2 8 1 8 4 . N W J

MEASUREMENT REPORT





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.

General Information

Applicant Name:	**PANASONIC Matsushita Mobile Communications Development Corporation of U.S.A.**
Address:	**1225 Northbrook Parkway, Suite 2-400 Suwanee, GA 30024**
Attention:	**Pieter C. Seidel, Sr. System Test Engineer**

- FCC ID: **NWJ10A006A**
- Quantity: Quantity production is planned
- Emission Designator: 30K0DXW, 40K0F8W, 40K0F1D
- Tx Freq. Range: 824.04 – 848.97 MHz (AMPS) / 824.04 – 848.97 MHz (TDMA) 1850.01 –1909.99 MHz (PCS TDMA)
- Rx Freq. Range: 869.04 – 893.97 MHz (AMPS) / 869.64 – 893.97 MHz (TDMA) 1930.05 – 1989.95 MHz (PCS TDMA)
- Max. RF Power Rating: 0.285W ERP AMPS (24.555dBm) / 0.917W ERP TDMA (29.622dBm) 0.664W EIRP PCS TDMA (28.211dBm)
- FCC Classification(s): Licensed Portable Tx Held to Ear (PCE)
- Equipment (EUT) Type: Tri-Mode Dual-Band Analog/TDMA Phone
- Frequency Tolerance: ± 0.00025% (2.5 ppm)
- FCC Rule Part(s): § 24(E), §22(H), §2
- Dates of Tests: April 06, 2001
- Place of Tests: PCTEST Lab, Columbia, MD U.S.A.
- Test Report S/N: 24/22.2100404194.NWJ

NVLAP Lab Code 100431-0

INTRODUCTION

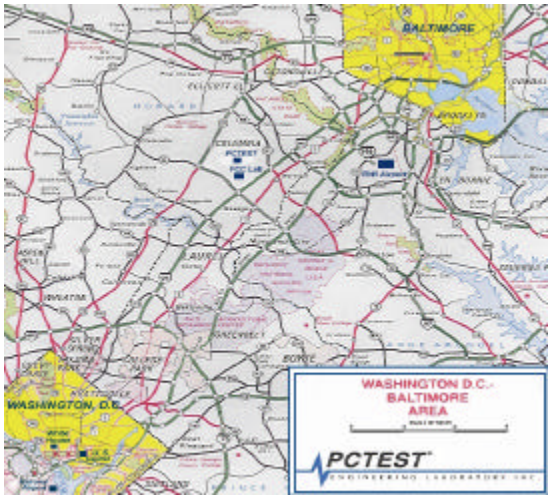


Figure 1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area.

These measurement tests were conducted at ***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 on October 19, 1992.

Measurement Procedure

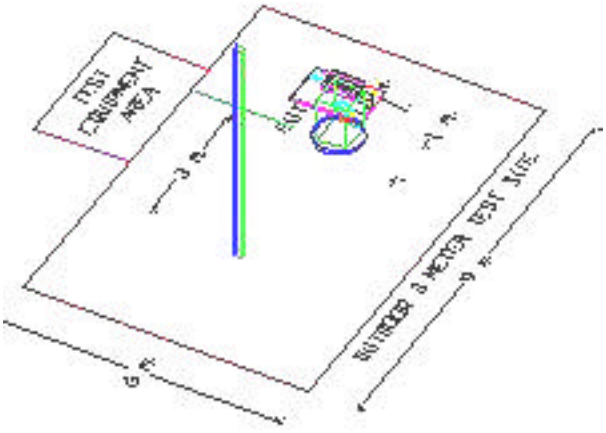


Figure 2. 3-meter Outdoor Test Site

The radiated and spurious measurements are made outdoors at the 3-meter test site range (see Figure2). The equipment under test is placed on a wooden turntable 3-meters from the receive antenna. The receive antenna height and turntable rotations are adjusted for the highest reading on the receive spectrum analyzer. A half-wave dipole is substituted in place of the EUT. This dipole antenna is driven by a signal generator and the level of the signal generator is 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.

Test Data

§ 22.913 Effective Radiated Power Output

A. POWER: **Low (Analog Mode)**

Freq. Tuned (MHz)	LEVEL (dBm)	POL (H/V)	ERP (W)	ERP (dBm)
824.04	-34.561	V	0.00470	6.71
836.49	-34.458	V	0.00499	6.97
848.97	-34.763	V	0.00482	6.82

A. POWER: **High (Analog Mode)**

Freq. Tuned (MHz)	LEVEL (dBm)	POL (H/V)	ERP (W)	ERP (dBm)	BATTERY
824.04	-17.044	V	0.26481	24.229	Standard
836.49	-16.874	V	0.28542	24.555	Standard
848.97	-17.100	V	0.28086	24.485	Standard

NOTES:

ERP Measurements by Substitution Method:
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. 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 ERP 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.

Test Data

§ 22.913 Effective Radiated Power Output

A. POWER: **High (TDMA Mode)**

Freq. Tuned (MHz)	LEVEL (dBm)	POL (H/V)	ERP (W)	ERP (dBm)	BATTERY
824.04	-11.989	V	0.84806	29.284	Standard
835.49	-11.794	V	0.91673	29.622	Standard
848.97	-12.105	V	0.88714	29.480	Standard

NOTES:

ERP Measurements by Substitution Method:
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. 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 ERP 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.

Test Data

Equivalent Isotropic Radiated Power (E.I.R.P.)

Radiated measurements at 3 meters

Supply Voltage: 4.2 **VDC**

Modulation: PCS TDMA

FREQ. (MHz)	LEVEL (dBm)	POL (H/V)	Azimuth (o angle)	EIRP (dBm)	EIRP (W)	Battery
1850.10	-18.870	H	65.0	28.211	0.664	Standard
1880.00	-19.347	H	65.0	27.904	0.617	Standard
1909.56	-19.391	H	65.0	28.030	0.635	Standard

NOTES:

ERP Measurements by Substitution Method:
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. 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 ERP 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.

Test Data

Radiated Measurements

Field Strength of SPURIOUS Radiation (TDMA)

OPERATING FREQUENCY:	824.04	MHz	
CHANNEL:	991 (Low)		
MEASURED OUTPUT POWER:	29.622 dBm =	0.917	W
MODULATION SIGNAL:	TDMA (Internal)		
DISTANCE:	3	meters	
LIMIT:	43 + 10 $\log_{10}$ (W) =	42.62	dBc

FREQ. (MHz)	LEVEL (dBm)	AFCL (dB)	POL (H/V)	F/S (μV/m)	ERP (dBm)	(dBc)
1648.08	-83.95	34.5	V	754.2	-39.83	69.4
2472.12	-94.66	38.8	V	360.6	-46.24	75.9
3296.16	-99.10	42.5	V	331.1	-46.98	76.6
4120.20	-101.42	46.1	V	383.7	-45.70	75.3
4944.24	< -130					

NOTES:

1. The bandwidth is set per §22.917 (RBW = 1MHz, VBW = 1MHz).
2. The spectrum was checked from 25 MHz up to the 10th harmonic.
3. All emissions not listed were found to be more than 20dB below the limit.
4. < -130dBm is below the floor of the spectrum analyzer.
5. The EUT is manipulated through 3 orthogonal axis and the worst-case are reported.
6. The EUT is placed 3m. away from the receiving antenna and the ERP is calculated using the formula:

ERP (dBm) = 10 Log_{10} (((r(mV/m)/1 x 10^6)^2 / 49.2/1 x 10^{-3})

ERP (dBm) = 10 Log_{10} [(3 x FS/1 x 10^6)^2 / (49.2) x 1000]

ERP (Watts) = {(3 x FS)/1 x 10^6}^{2} / 49.2

Test Data

Radiated Measurements

Field Strength of SPURIOUS Radiation (TDMA)

OPERATING FREQUENCY:	836.49	MHz	
CHANNEL:	383 (Middle)		
MEASURED OUTPUT POWER:	29.622 dBm =	0.919	W
MODULATION SIGNAL:	TDMA (Internal)		
DISTANCE:	3	meters	
LIMIT:	43 + 10 $\log_{10}$ (W) =	42.63	dBc

FREQ. (MHz)	LEVEL (dBm)	AFCL (dB)	POL (H/V)	F/S (μV/m)	ERP (dBm)	(dBc)
1672.98	-84.19	34.5	V	733.7	-40.07	69.7
2509.47	-93.22	39.0	V	435.5	-44.60	74.2
3345.96	-100.48	42.7	V	289.1	-48.16	77.8
4182.45	-101.70	46.2	V	375.8	-45.88	75.5
5018.94	< -130					

NOTES:

1. The bandwidth is set per §22.917 (RBW = 1MHz, VBW = 1MHz).
2. The spectrum was checked from 25 MHz up to the 10th harmonic.
3. All emissions not listed were found to be more than 20dB below the limit.
4. < -130dBm is below the floor of the spectrum analyzer.
5. The EUT is manipulated through 3 orthogonal axis and the worst-case are reported.
6. The EUT is placed 3m. away from the receiving antenna and the ERP is calculated using the formula:

ERP (dBm) = 10 Log_{10} (((r(mV/m)/1 x 10^6)^2 / 49.2/1 x 10^{-3})

ERP (dBm) = 10 Log_{10} [(3 x FS/1 x 10^6)^2 / (49.2) x 1000]

ERP (Watts) = {(3 x FS)/1 x 10^6}^{2} / 49.2

Test Data

Radiated Measurements

Field Strength of SPURIOUS Radiation (TDMA)

OPERATING FREQUENCY:	848.97	MHz	
CHANNEL:	799 (High)		
MEASURED OUTPUT POWER:	29.622 dBm =	0.919	W
MODULATION SIGNAL:	TDMA (Internal)		
DISTANCE:	3	meters	
LIMIT:	43 + 10 $\log_{10}$ (W) =	42.63	dBc

FREQ. (MHz)	LEVEL (dBm)	AFCL (dB)	POL (H/V)	F/S (µV/m)	ERP (dBm)	(dBc)
1697.94	-85.82	34.9	V	636.8	-41.30	70.9
2546.91	-93.75	39.2	V	419.3	-44.93	74.5
3395.88	-96.21	42.9	V	483.6	-43.69	73.3
4244.85	-103.49	46.3	V	309.4	-47.57	77.2
5093.82	< -130					

NOTES:

1. The bandwidth is set per §22.917 (RBW = 1MHz, VBW = 1MHz).
2. The spectrum was checked from 25 MHz up to the 10th harmonic.
3. All emissions not listed were found to be more than 20dB below the limit.
4. < -130dBm is below the floor of the spectrum analyzer.
5. The EUT is manipulated through 3 orthogonal axis and the worst-case are reported.
6. The EUT is placed 3m. away from the receiving antenna and the ERP is calculated using the formula:

ERP (dBm) = 10 Log_{10} (((r(mV/m)/1 x 10^6)^2 / 49.2/1 x 10^{-3})

ERP (dBm) = 10 Log_{10} [(3 x FS/1 x 10^6)^2 / (49.2) x 1000]

ERP (Watts) = {(3 x FS)/1 x 10^6}^{2} / 49.2

Test Data

Radiated Measurements

Field Strength of SPURIOUS Radiation (AMPS)

OPERATING FREQUENCY:	824.04 MHz		
CHANNEL:	991 (Low)		
MEASURED OUTPUT POWER:	24.555 dBm =	0.286	W
MODULATION SIGNAL:	ST (Signalling Tone)		
DISTANCE:	3 meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	37.57	dBc

FREQ. (MHz)	LEVEL (dBm)	AFCL (dB)	POL (H/V)	F/S (μV/m)	ERP (dBm)	(dBc)
1648.08	-87.92	34.5	V	477.5	-43.80	68.4
2472.12	-98.46	38.8	V	232.8	-50.04	74.6
3296.16	-105.10	42.5	V	166.0	-52.98	77.5
4120.20	-106.26	46.1	V	219.8	-50.54	75.1
4944.24	< -130					

NOTES:

1. The bandwidth is set per §22.917 (RBW = 1MHz, VBW = 1MHz).
2. The spectrum was checked from 25 MHz up to the 10th harmonic.
3. All emissions not listed were found to be more than 20dB below the limit.
4. < -130dBm is below the floor of the spectrum analyzer.
5. The EUT is manipulated through 3 orthogonal axis and the worst-case are reported.
6. The EUT is placed 3m. away from the receiving antenna and the ERP is calculated using the formula:

ERP (dBm) = 10 Log_{10} (((r(mV/m)/1 x 10^6)^2 / 49.2/1 x 10^{-3})

ERP (dBm) = 10 Log_{10} [(3 x FS/1 x 10^6)^2 / (49.2) x 1000]

ERP (Watts) = {(3 x FS)/1 x 10^6}^{2} / 49.2

Test Data

Radiated Measurements

Field Strength of SPURIOUS Radiation (AMPS)

OPERATING FREQUENCY:	836.49	MHz	
CHANNEL:	383 (Middle)		
MEASURED OUTPUT POWER:	24.555 dBm =	0.286	W
MODULATION SIGNAL:	ST (Signalling Tone)		
DISTANCE:	3	meters	
LIMIT:	43 + 10 $\log_{10}$ (W) =	37.57	dBc

FREQ. (MHz)	LEVEL (dBm)	AFCL (dB)	POL (H/V)	F/S (μV/m)	ERP (dBm)	(dBc)
1672.98	-87.52	34.5	V	500.0	-43.40	68.0
2509.47	-97.34	39.0	V	271.0	-48.72	73.3
3345.96	-103.09	42.7	V	214.0	-50.77	75.3
4182.45	-105.11	46.2	V	253.8	-49.29	73.8
5018.94	< -130					

NOTES:

1. The bandwidth is set per §22.917 (RBW = 1MHz, VBW = 1MHz).
2. The spectrum was checked from 25 MHz up to the 10th harmonic.
3. All emissions not listed were found to be more than 20dB below the limit.
4. < -130dBm is below the floor of the spectrum analyzer.
5. The EUT is manipulated through 3 orthogonal axis and the worst-case are reported.
6. The EUT is placed 3m. away from the receiving antenna and the ERP is calculated using the formula:

ERP (dBm) = 10 Log_{10} (((r(mV/m)/1 x 10^6)^2 / 49.2/1 x 10^{-3})

ERP (dBm) = 10 Log_{10} [(3 x FS/1 x 10^6)^2 / (49.2) x 1000]

ERP (Watts) = {(3 x FS)/1 x 10^6}^{2} / 49.2

Test Data

Radiated Measurements

Field Strength of SPURIOUS Radiation (AMPS)

OPERATING FREQUENCY:	848.97 MHz		
CHANNEL:	799 (High)		
MEASURED OUTPUT POWER:	24.555 dBm =	0.286	W
MODULATION SIGNAL:	ST (Signalling Tone)		
DISTANCE:	3 meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	37.57	dBc

FREQ. (MHz)	LEVEL (dBm)	AFCL (dB)	POL (H/V)	F/S (μV/m)	ERP (dBm)	(dBc)
1697.94	-87.35	34.9	V	533.9	-42.83	67.4
2546.91	-98.71	39.2	V	236.9	-49.89	74.4
3395.88	-103.63	42.9	V	205.8	-51.11	75.7
4244.85	-104.17	46.1	V	279.6	-48.45	73.0
5093.82	< -130					

NOTES:

1. The bandwidth is set per §22.917 (RBW = 1MHz, VBW = 1MHz).
2. The spectrum was checked from 25 MHz up to the 10th harmonic.
3. All emissions not listed were found to be more than 20dB below the limit.
4. < -130dBm is below the floor of the spectrum analyzer.
5. The EUT is manipulated through 3 orthogonal axis and the worst-case are reported.
6. The EUT is placed 3m. away from the receiving antenna and the ERP is calculated using the formula:

ERP (dBm) = 10 Log_{10} (((r(mV/m)/1 x 10^6)^2 / 49.2/1 x 10^{-3})

ERP (dBm) = 10 Log_{10} [(3 x FS/1 x 10^6)^2 / (49.2) x 1000]

ERP (Watts) = {(3 x FS)/1 x 10^6}^{2} / 49.2

Test Data

Radiated Measurements

Field Strength of SPURIOUS Radiation (PCS TDMA)

OPERATING FREQUENCY:	1850.01 MHz		
CHANNEL:	0002 (Low)		
MEASURED OUTPUT POWER:	28.211 dBm =	0.662	W
MODULATION SIGNAL:	TDMA (Internal)		
DISTANCE:	3 meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	41.21	dBc

FREQ. (MHz)	LEVEL (dBm)	AFCL (dB)	POL (H/V)	F/S (μV/m)	EIRP (dBm)	(dBc)
3700.02	-97.53	44.4	H	493.7	-41.36	69.6
5550.03	-115.83	49.7	H	110.5	-54.36	82.6
7400.04	-116.19	53.7	H	168.1	-50.72	78.9
9250.05	<-130					
11100.06	< -130					

NOTES:

1. The bandwidth is set per §24.238 (RBW = 1MHz, VBW = 1MHz).
2. The spectrum was checked from 25 MHz up to the 10th harmonic.
3. All emissions not listed were found to be more than 20dB below the limit.
4. < -130dBm is below the floor of the spectrum analyzer.
5. The EUT is manipulated through 3 orthogonal axis and the worst-case are reported.
6. The EUT is placed 3m. away from the receiving antenna and the EIRP is calculated using the formula:

   EIRP (dBm) = 10 Log 10 $(((r(mV/m)/1 \times 10^6)^2 / 30.0/1 \times 10^{-3})$

   EIRP (dBm) = 10 Log 10 $[(3 \times FS/1 \times 10^6)^2 / (30.0) \times 1000]$

   EIRP (Watts) = $\{(3 \times FS)/1 \times 10^6\}^2 / 30.0$

Test Data

Radiated Measurements

Field Strength of SPURIOUS Radiation (PCS TDMA)

OPERATING FREQUENCY:	1880.00	MHz	
CHANNEL:	1000 (Middle)		
MEASURED OUTPUT POWER:	28.211 dBm =	0.662	W
MODULATION SIGNAL:	TDMA (Internal)		
DISTANCE:	3	meters	
LIMIT:	43 + 10 $\log_{10}$ (W) =	41.21	dBc

FREQ. (MHz)	LEVEL (dBm)	AFCL (dB)	POL (H/V)	F/S (μV/m)	EIRP (dBm)	(dBc)
3760.00	-97.38	44.7	H	520.0	-40.91	69.1
5640.00	-117.24	49.9	H	96.2	-55.57	83.8
7520.00	-117.59	54.0	H	148.1	-51.82	80.0
9400.00	<-130					
11280.00	< -130					

NOTES:

1. The bandwidth is set per §24.238 (RBW = 1MHz, VBW = 1MHz).
2. The spectrum was checked from 25 MHz up to the 10th harmonic.
3. All emissions not listed were found to be more than 20dB below the limit.
4. < -130dBm is below the floor of the spectrum analyzer.
5. The EUT is manipulated through 3 orthogonal axis and the worst-case are reported.
6. The EUT is placed 3m. away from the receiving antenna and the EIRP is calculated using the formula:

   EIRP (dBm) = 10 Log 10 $(((r(mV/m)/1 \times 10^6)^2 / 30.0/1 \times 10^{-3})$

   EIRP (dBm) = 10 Log 10 $[(3 \times FS/1 \times 10^6)^2 / (30.0) \times 1000]$

   EIRP (Watts) = $\{(3 \times FS)/1 \times 10^6\}^2 / 30.0$

Test Data

Radiated Measurements

Field Strength of SPURIOUS Radiation (PCS TDMA)

OPERATING FREQUENCY:	1909.56	MHz	
CHANNEL:	1998 (High)		
MEASURED OUTPUT POWER:	28.211 dBm =	0.662	W
MODULATION SIGNAL:	TDMA (Internal)		
DISTANCE:	3	meters	
LIMIT:	43 + 10 $\log_{10}$ (W) =	41.21	dBc

FREQ. (MHz)	LEVEL (dBm)	AFCL (dB)	POL (H/V)	F/S (μV/m)	EIRP (dBm)	(dBc)
3819.12	-98.72	45.0	H	461.3	-41.95	70.2
5728.68	-116.42	50.1	H	108.1	-54.55	82.8
7638.24	-117.06	54.2	H	161.1	-51.09	79.3
9547.80	<-130					
11457.36	< -130					

NOTES:

1. The bandwidth is set per §24.238 (RBW = 1MHz, VBW = 1MHz).
2. The spectrum was checked from 25 MHz up to the 10th harmonic.
3. All emissions not listed were found to be more than 20dB below the limit.
4. < -130dBm is below the floor of the spectrum analyzer.
5. The EUT is manipulated through 3 orthogonal axis and the worst-case are reported.
6. The EUT is placed 3m. away from the receiving antenna and the EIRP is calculated using the formula:

EIRP (dBm) = 10 Log 10 (((r(mV/m)/1 x 10^6)^2 / 30.0/1 x 10^{-3})
EIRP (dBm) = 10 Log 10 [(3 x FS/1 x 10^6)^2 / (30.0) x 1000]
EIRP (Watts) = {(3 x FS)/1 x 10^6}^{2} / 30.0

TEST EQUIPMENT

Type	Model	Cal. Due Date	S/N
Microwave Spectrum Analyzer	HP 8566B (100Hz-22GHz)	08/15/01	3638A08713
Microwave Spectrum Analyzer	HP 8566B (100Hz-22GHz)	04/17/02	2542A11898
Spectrum Analyzer/Tracking Gen.	HP 8591A (100Hz-1.8GHz)	08/10/01	3144A02458
Signal Generator*	HP 8640B (500Hz-1GHz)	06/03/01	2232A19558
Signal Generator*	HP 8640B (500Hz-1GHz)	06/03/01	1851A09816
Signal Generator*	Rohde & Schwarz (0.1-1000MHz)	09/11/01	894215/012
Ailtech/Eaton Receiver	NM 37/57A-SL (30-1000MHz)	04/12/02	0792-03271
Ailtech/Eaton Receiver	NM 37/57A (30-1000MHz)	03/11/02	0805-03334
Ailtech/Eaton Receiver	NM 17/27A (0.1-32MHz)	09/17/01	0608-03241
Quasi-Peak Adapter	HP 85650A	08/15/01	2043A00301
Ailtech/Eaton Adapter	CCA-7 CISPR/ANSI QP Adapter	03/11/02	0194-04082
Gigatronics Universal Power Meter	8657A		1835256
Gigatronics Power Sensor	80701A (0.05-18GHz)		1833460
Signal Generator	HP 8648D (9kHz-4GHz)		3613A00315
Amplifier Research	5S1G4 (5W, 800MHz-4.2GHz)		22322
Network Analyzer	HP 8753E (30kHz-3GHz)		JP38020182
Audio Analyzer	HP 8903B		3011A09025
Modulation Analyzer	HP 8901A		2432A03467
Power Meter	HP 437B		3125U24437
Power Sensor	HP 8482H (30µW-3W)		2237A02084
Harmonic/Flicker Test System	HP 6841A (IEC 555-2/3)		3531A00115
Broadband Amplifier (2)	HP 8447D		1145A00470, 1937A03348
Broadband Amplifier	HP 8447F		2443A03784
Horn Antenna	EMCO Model 3115 (1-18GHz)		9704-5182
Horn Antenna	EMCO Model 3115 (1-18GHz)		9205-3874
Horn Antenna	EMCO Model 3116 (18-40GHz)		9203-2178
Biconical Antenna (4)	Eaton 94455/Eaton 94455-1/Singer 94455-1/Compliance Design 1295, 1332, 0355		
Log-Spiral Antenna (3)	Ailtech/Eaton 93490-1		0608, 1103, 1104
Roberts Dipoles	Compliance Design (1 set)		
Ailtech Dipoles	DM-105A (1 set)		33448-111
EMCO LISN (6)	3816/2		1079
Microwave Preamplifier 40dB Gain	HP 83017A (0.5-26.5GHz)		3123A00181
Microwave Cables	MicroCoax (1.0-26.5GHz)		
Ailtech/Eaton Receiver	NM37/57A-SL		0792-03271
Spectrum Analyzer	HP 8594A		3051A00187
Spectrum Analyzer (2)	HP 8591A		3034A01395, 3108A02053
Microwave Survey Meter	Holaday Model 1501 (2.450GHz)		80931
Digital Thermometer	Extech Instruments 421305		426966
Attenuator	HP 8495A (0-70dB) DC-4GHz		
Bi-Directional Coax Coupler	Narda 3020A (50-1000MHz)		
Shielded Screen Room	RF Lindgren Model 26-2/2-0		6710 (PCT270)
Shielded Semi-Anechoic Chamber	Ray Proof Model S81		R2437 (PCT278)
Enviromental Chamber	Associated Systems Model 1025 (Temperature/Humidity)		PCT285

* Calibration traceable to the National Institute of Standards and Technology (NIST).

SAMPLE CALCULATIONS

A. ERP Sample Calculation

$$\text{Level } \mu\text{/Vm @ 3 meters} = \text{Log } 10^{\frac{(\text{dBm} + 107 + \text{AFCL})}{20}}$$

$$\text{Log } 10^{\frac{(-14 + 107 + 31.7)}{20}}$$

1717908.4 µ/Vm @ 3 meters

Sample Calculation (relative to a dipole)

ERP (dBm) = $10 \text{ Log}_{10} (((r(\mu V/m)1x10^{6})^{2}/49.2/1x10^{-3})$

ERP (dBm) = $10 \text{ Log}_{10}(((3(1717908.4)1x10^{6})^{2}/49.2/1x10^{-3})$

ERP (dBm) = 27.32

B. Emission Designator per §2.201

TDMA Sample

2M + 2DK

TDMA BW = 30.0 kHz

D = AM or Angle-Modulated

X = Other

W = Combination (Audio/Data)

Emission Designator = 30K0 DXW

12.1 CONCLUSION

The data collected shows that the **PANASONIC Tri-Mode Analog/PCS (AMPS/TDMA) Phone FCC ID: NWJ10A006A** complies with all the requirements of Parts 2, 22, and 24 of the FCC rules.