



# PCTEST Engineering Laboratory, Inc.

6660-B Dobbin Road • Columbia, MD 21045 • U.S.A.

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<http://www.pctestlab.com>



## EIRP & RADIATED SPURIOUS DATA

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

Dates of Tests: July 9-10, 2002  
Test Report S/N: 24.220709387.NWJ  
Test Site: PCTEST Lab, Columbia MD

FCC ID

**NWJ10A008A**

APPLICANT

**MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.**

Classification: Licensed Portable Transmitter Held to Ear (PCE)  
FCC Rule Part(s): §24(E), §2  
EUT Type: Single-Mode PCS GSM Phone  
Model: EB-GD87  
Tx Frequency Range: 1850.2MHz – 1909.8MHz (PCS GSM)  
Rx Frequency Range: 1930.2MHz – 1989.8MHz (PCS GSM)  
Max. RF Output Power: 1.374W EIRP PCS GSM (31.381 dBm)  
Max. SAR Measurement: 0.982W/kg PCS GSM Head SAR; 0.364/kg PCS GSM Body SAR  
Emission Designator(s): 277KGXW

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.

*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.*

Alfred Cirwithian  
Vice President Engineering



PCTEST™	PCTEST Engineering Laboratory, Inc.	FCC CERTIFICATION	Panasonic®	Reviewed By: Quality Manager
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## 1.1 INTRODUCTION

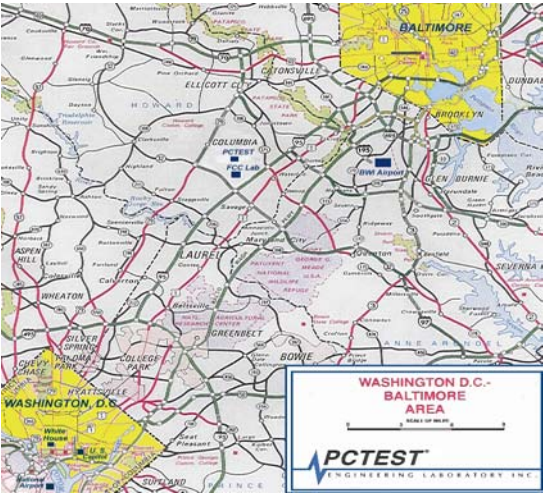


Figure 1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area.

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

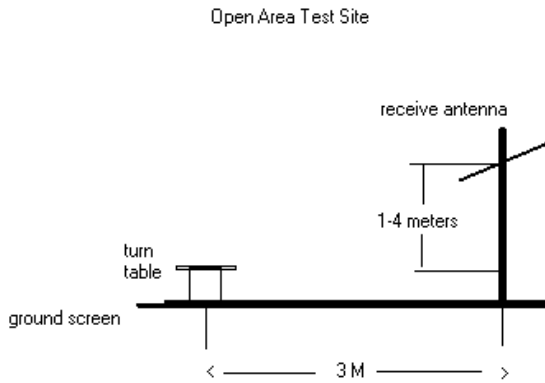




Figure 2. Diagram of 3-meter outdoor test range

The radiated and spurious measurements were made outdoors at a 3-meter test 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 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.


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## 2.1 DESCRIPTION OF TESTS

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### 2.2 Radiation Spurious and Harmonic Emissions

Radiation and harmonic 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. 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 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.

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## 3.1 Test Data

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

Radiated measurements at 3 meters

Supply Voltage: 3.7 VDC

Modulation: PCS GSM


FREQ. (MHz)	REF. LEVEL (dBm)	POL (H/V)	Azimuth (o angle)	EIRP (dBm)	EIRP (W)	Battery
1851.25	-11.700	V	60	31.381	1.374	Standard
1880.00	-12.000	V	60	31.251	1.333	Standard
1908.75	-12.100	V	60	31.321	1.356	Standard

Note: Standard batteries are the only options for this phone

#### NOTES:

Equivalent Isotropic Radiated Power Measurements by Substitution Method according to ANSI/TIA/EIA-603-A-2001, Aug. 15, 2001:

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 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 receive 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.

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## 4.1 Test Data

### 4.2 PCS GSM Radiated Measurements

#### Field Strength of SPURIOUS Radiation


OPERATING FREQUENCY: 1850.20 MHz  
 CHANNEL: 0512 (Low)  
 MEASURED OUTPUT POWER: 31.381 dBm = 1.374 W  
 MODULATION SIGNAL: PCS GSM  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) =$  44.38 dBc

FREQ. (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	CORRECT GENERATOR LEVEL (dBm)	POL (H/V)	(dBc)
3700.40	-70.03	8.70	-61.33	V	92.7
5550.60	-80.23	9.70	-70.53	V	101.9

#### NOTES:

Radiated Spurious Emission Measurements by Substitution Method  
according to ANSI/TIA/EIA-603-A-2001, Aug. 15, 2001:

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 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.

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## 4.1 Test Data (Continued)

### 4.3 PCS GSM Radiated Measurements

#### Field Strength of SPURIOUS Radiation


OPERATING FREQUENCY: 1880.00 MHz  
 CHANNEL: 0661 (Mid)  
 MEASURED OUTPUT POWER: 31.381 dBm = 1.374 W  
 MODULATION SIGNAL: PCS GSM  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10}(W) =$  44.38 dBc

FREQ. (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	CORRECT GENERATOR LEVEL (dBm)	POL (H/V)	(dBc)
3760.00	-70.23	8.70	-61.53	V	92.9
5640.00	-79.53	9.70	-69.83	V	101.2

#### NOTES:

Radiated Spurious Emission Measurements by Substitution Method  
according to ANSI/TIA/EIA-603-A-2001, Aug. 15, 2001:

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 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.

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## 4.1 Test Data (Continued)

### 4.4 PCS GSM Radiated Measurements

#### Field Strength of SPURIOUS Radiation


OPERATING FREQUENCY: 1909.80 MHz  
 CHANNEL: 0810 (High)  
 MEASURED OUTPUT POWER: 31.381 dBm = 1.374 W  
 MODULATION SIGNAL: PCS GSM  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10}(W) =$  44.38 dBc

FREQ. (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	CORRECT GENERATOR LEVEL (dBm)	POL (H/V)	(dBc)
3819.60	-71.03	8.70	-62.33	V	93.7
5729.40	-79.33	9.70	-69.63	V	101.0

#### NOTES:

Radiated Spurious Emission Measurements by Substitution Method  
according to ANSI/TIA/EIA-603-A-2001, Aug. 15, 2001:

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 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.

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