



**FCC CFR47 PART 22 SUBPART H  
AND PART 24 SUBPART E  
CERTIFICATION TEST REPORT**

**FOR**

**DUAL BAND 1xRTT CDMA PHONE WITH BLUETOOTH**

**MODEL NUMBER: E1000**

**FCC ID: OVF E1000-255**

**REPORT NUMBER: 07U11009-3**

**ISSUE DATE: MAY 09, 2007**

*Prepared for*

**KYOCERA WIRELESS CORP.  
10300 CAMPUS POINT DRIVE  
SAN DIEGO, CA 92121 U.S.A.**

*Prepared by*

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**NVLAP LAB CODE 200065-0**

Revision History

Rev.	Date	Revisions	Revised By
---	05/09/07	Initial Issue	T. Chan

## TABLE OF CONTENTS

1.	ATTESTATION OF TEST RESULTS .....	4
2.	TEST METHODOLOGY .....	5
3.	FACILITIES AND ACCREDITATION .....	5
4.	CALIBRATION AND UNCERTAINTY .....	5
4.1.	<i>MEASURING INSTRUMENT CALIBRATION</i> .....	5
4.2.	<i>MEASUREMENT UNCERTAINTY</i> .....	5
5.	EQUIPMENT UNDER TEST .....	6
5.1.	<i>DESCRIPTION OF EUT</i> .....	6
5.2.	<i>SOFTWARE AND FIRMWARE</i> .....	6
5.3.	<i>DESCRIPTION OF TEST SETUP</i> .....	7
6.	TEST AND MEASUREMENT EQUIPMENT .....	9
7.	LIMITS AND RESULTS .....	10
7.1.	<i>RF POWER OUTPUT</i> .....	10
7.2.	<i>FIELD STRENGTH OF SPURIOUS RADIATION</i> .....	13
7.3.	<i>MAXIMUM PERMISSIBLE EXPOSURE</i> .....	16
8.	SETUP PHOTOS .....	19

# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** KYOCERA WIRELESS CORP.  
10300 CAMPUS POINT DRIVE  
SAN DIEGO, CA 92121 U.S.A.

**EUT DESCRIPTION:** DUAL BAND 1xRTT CDMA PHONE WITH BLUETOOTH

**MODEL NUMBER:** E1000

**SERIAL NUMBER:** FFE10000001274

**DATE TESTED:** APRIL 24 – MAY 4, 2007

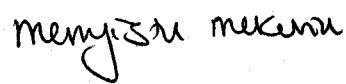
APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 22 SUBPART H	NO NON-COMPLIANCE NOTED
FCC PART 24 SUBPART E	NO NON-COMPLIANCE NOTED

Compliance Certification Services, Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

**Note:** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification Services will constitute fraud and shall nullify the document. No part of this report may be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any government agency.

Approved & Released For CCS By:

Tested By:



THU CHAN  
EMC SUPERVISOR  
COMPLIANCE CERTIFICATION SERVICES

MEGISTU MEKURIA  
EMC ENGINEER  
COMPLIANCE CERTIFICATION SERVICES

## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with TIA/EIA 603C (2004), ANSI C63.4-2003, FCC CFR 47 Part 2, FCC CFR 47 Part 22H and 24E.

## 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 561F Monterey Road, Morgan Hill, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.4, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://www.ccsemc.com>.

## 4. CALIBRATION AND UNCERTAINTY

### 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

### 4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Radiated Emission, 30 to 200 MHz	+/- 3.3 dB
Radiated Emission, 200 to 1000 MHz	+4.5 / -2.9 dB
Radiated Emission, 1000 to 2000 MHz	+4.5 / -2.9 dB
Radiated Emission, Above 2000 MHz	+/- 4.3 dB
Power Line Conducted Emission	+/- 2.9 dB

Uncertainty figures are valid to a confidence level of 95%.

## **5. EQUIPMENT UNDER TEST**

### **5.1. DESCRIPTION OF EUT**

The EUT is a dual band 1xRTT CDMA phone with BT.

The radio module is manufactured by Kyocera Wireless.

### **5.2. SOFTWARE AND FIRMWARE**

The EUT is linked with Agilent Communication Test Set.

### 5.3. DESCRIPTION OF TEST SETUP

#### SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
Wireless Communications Test Set	Agilent	E5515C	10092	DoC
Horn	EMCO	3115	2238	NA

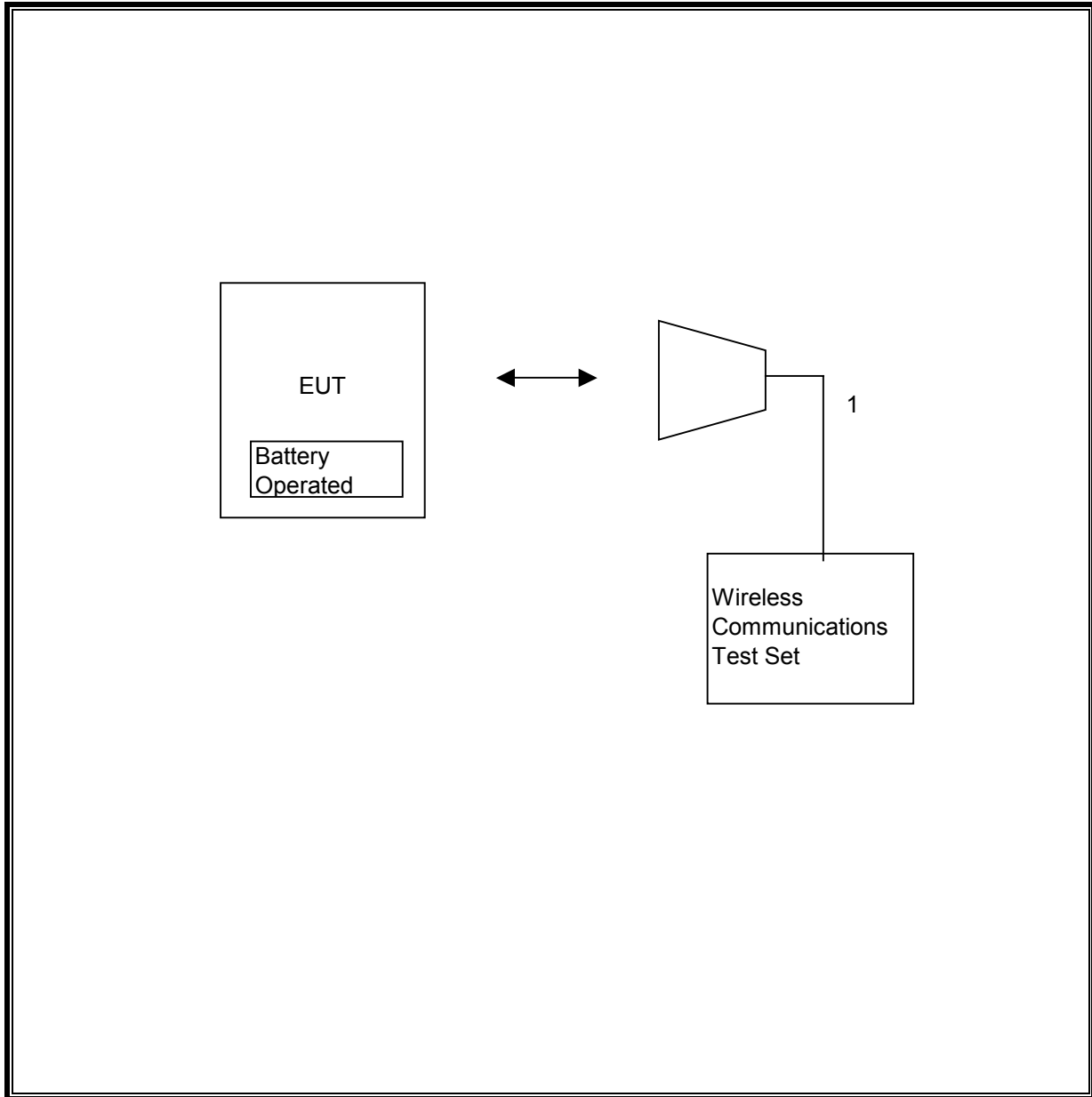
#### I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	RF In/out	1	N-Type	Shielded	1m	N/A

#### TEST SETUP

The EUT is a standalone device. The Agilent Communication Test Set is used to link the EUT.

**SETUP DIAGRAM FOR TESTS**





## 6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	Cal Due
Antenna, Bilog 30 MHz ~ 2 Ghz	Sunol Sciences	JB1	A121003	9/3/07
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	6717	4/22/08
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	6717	4/22/08
Signal Generator 2 -40 GHz	R & S	SMP04	DE 34210	6/2/07
Signal Generator 1024 MHz	R & S	SMY01	DE 12311	5/11/08
Dipole	EMCO	3121C-DB2	22435	5/7/08
2.7GHz HPF	MicroTronic	HPM13194	2	CNR
1.5GHz HPF	MicroTronic	HPM13195	1	CNR
Communication Test Set	Agilent	E5515C	91936	4/8/08
Power Splitter	HP	11667B	324	CNR
Spectrum Analyzer 3 Hz ~ 44 GHz	Agilent / HP	E4446A	MY45300064	3/18/08
Preamplifier, 1 ~ 26.5 GHz	Agilent / HP	8449B	3008A00369	8/1/07

## 7. LIMITS AND RESULTS

### 7.1. RF POWER OUTPUT

#### LIMIT

22.913(a) The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.  
24.232(b) Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

#### TEST PROCEDURE

ANSI / TIA / EIA 603C Clause 2.2.17

#### RESULTS

No non-compliance noted.

#### 800MHz CELL CDMA Modulation

Channel	Frequency (MHz)	ERP Peak Power (dBm)	ERP Peak Power (mW)
Low	824.7	28.20	660.69
Middle	836.5	27.70	588.84
High	848.3	27.40	549.54

#### 1900MHz PCS Modulation

Channel	Frequency (MHz)	EIRP Peak Power (dBm)	EIRP Peak Power (mW)
Low	1851.25	30.80	1202.26
Middle	1880.00	29.50	891.25
High	1908.75	29.70	933.25

**Cellular Output Power (ERP)**

High Frequency Substitution Measurement									
Compliance Certification Services, Fremont 5m Chamber Site									
Company: Kyocera									
Project #: 07U11009									
Date: 04-23-07									
Test Engineer: Mengistu Mekuria									
Configuration: EUT only									
Mode: Cell Tx on									
Test Equipment:									
Receiving: Smol T122, and 5m Chamber N-type Cable (Setup this one for testing EUT)									
Substitution: Dipole S/N: 00022117, and 4ft SMA Cable Warehouse S/N: 177081002									
f MHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
824.70	95.1	V	21.5	0.5	0.0	21.0	38.5	-17.4	
824.70	104.0	H	28.7	0.5	0.0	28.2	38.5	-10.2	
836.50	94.1	V	21.1	0.6	0.0	20.5	38.5	-18.0	
836.50	103.4	H	28.3	0.6	0.0	27.7	38.5	-10.7	
848.30	94.3	V	21.1	0.7	0.0	20.4	38.5	-18.1	
848.30	103.6	H	28.1	0.7	0.0	27.4	38.5	-11.0	

Rev. 1.24.7

**PCS Output Power (EIRP)**

High Frequency Fundamental Measurement									
Compliance Certification Services, Fremont 5m Chamber Site									
Company: Kyocera									
Project #: 07U11009									
Date: 04-23-07									
Test Engineer: Mengistu Mekuria									
Configuration: EUT only									
Mode: PCS Tx on									
Test Equipment:									
Receiving: Horn T73, and 12ft S/N: 197209005 (Setup this one for testing EUT)									
Substitution: Horn T60 Substitution, 4ft SMA Cable Warehouse S/N: 177081002									
f GHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
1.851	90.2	V	16.8	0.9	8.3	24.2	33.0	-8.8	
1.851	97.3	H	23.4	0.9	8.3	30.8	33.0	-2.2	
1.880	90.2	V	15.9	0.9	8.3	23.4	33.0	-9.7	
1.880	96.9	H	22.1	0.9	8.3	29.5	33.0	-3.5	
1.909	89.0	V	15.7	0.9	8.4	23.2	33.0	-9.8	
1.909	95.0	H	22.2	0.9	8.4	29.7	33.0	-3.4	

Rev. 1.24.7

## 7.2. FIELD STRENGTH OF SPURIOUS RADIATION

### LIMIT

§22.917 (e) and §24.238 (a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log (P)$  dB.

### TEST PROCEDURE

ANSI / TIA / EIA 603C Clause 2.2.12, FCC 22.917 (h), & FCC 24.238 (b)

### RESULTS

No non-compliance noted.

Note: No emissions were found within 30-1000MHz of 20dB below the system noise.

800MHz Band CDMA Spurious & Harmonic (ERP)

**High Frequency Substitution Measurement**  
 Compliance Certification Services, Fremont 5m A-Chamber

Company: Kyocera  
 Project #: 07U11009  
 Date: 04-23-07  
 Test Engineer: Mengistu Mekuria  
 Configuration: EUT only  
 Mode: Cell Tx on

**Test Equipment:**

EMCO Horn 1-18GHz  
T73; S/N: 6717 @3m

Horn > 18GHz

Limit  
ERP

High Pass Filter

Hi Frequency Cables

(2 ft)   
  (2~3 ft)   
  (4~6 ft)   
  (12 ft)

Pre-amplifier 1-26GHz  
T34 HP 8449B

Pre-amplifier 26-40GHz

f GHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
<b>Low Ch 824.70MHz</b>										
1.649	71.8	V	-35.9	3.8	8.0	5.8	-33.9	-13.0	-20.9	
2.474	52.7	V	-50.9	4.9	9.5	7.4	-48.4	-13.0	-35.4	
3.299	55.1	V	-44.4	5.6	9.8	7.6	-42.4	-13.0	-29.4	
4.124	43.9	V	-51.6	6.3	9.8	7.7	-50.3	-13.0	-37.3	
1.649	79.2	H	-27.8	3.8	8.0	5.8	-25.8	-13.0	-12.8	
2.474	56.9	H	-46.5	4.9	9.5	7.4	-44.0	-13.0	-31.0	
3.299	48.8	H	-50.6	5.6	9.8	7.6	-48.6	-13.0	-35.6	
4.124	43.8	H	-51.4	6.3	9.8	7.7	-50.0	-13.0	-37.0	
<b>Mid Ch 836.52MHz</b>										
1.673	60.9	V	-46.6	3.9	8.0	5.9	-44.6	-13.0	-31.6	
2.510	54.1	V	-49.3	4.9	9.6	7.4	-46.8	-13.0	-33.8	
3.346	50.9	V	-48.4	5.6	9.8	7.6	-46.4	-13.0	-33.4	
4.183	42.4	V	-53.0	6.3	9.9	7.7	-51.6	-13.0	-38.6	
1.673	69.3	H	-37.5	3.9	8.0	5.9	-35.5	-13.0	-22.5	
2.510	57.4	H	-45.8	4.9	9.6	7.4	-43.3	-13.0	-30.3	
3.346	45.6	H	-53.6	5.6	9.8	7.6	-51.6	-13.0	-38.6	
4.183	41.4	H	-53.6	6.3	9.9	7.7	-52.3	-13.0	-39.3	
<b>Hi Ch 848.31MHz</b>										
1.697	75.7	V	-31.8	3.9	8.1	5.9	-29.8	-13.0	-16.8	
2.545	59.2	V	-44.1	4.9	9.6	7.4	-41.6	-13.0	-28.6	
3.393	56.9	V	-42.2	5.7	9.7	7.6	-40.2	-13.0	-27.2	
4.241	45.7	V	-49.6	6.4	9.9	7.8	-48.2	-13.0	-35.2	
1.697	77.3	H	-29.5	3.9	8.1	5.9	-27.4	-13.0	-14.4	
2.545	62.7	H	-40.3	4.9	9.6	7.4	-37.8	-13.0	-24.8	
3.393	51.2	H	-47.7	5.7	9.7	7.6	-45.8	-13.0	-32.8	
4.241	45.0	H	-49.9	6.4	9.9	7.8	-48.6	-13.0	-35.6	

Rev. 412.7

PCS Spurious & Harmonic (EIRP):

**High Frequency Substitution Measurement**  
 Compliance Certification Services, Fremont 5m A-Chamber

Company: Kyocera  
 Project #: 07U11009  
 Date: 04-23-07  
 Test Engineer: Mengistu Mekuria  
 Configuration: EUT only  
 Mode: PCS Tx on

Test Equipment:

EMCO Horn 1-18GHz

T73; S/N: 6717 @3m

Horn > 18GHz

Limit

EIRP

High Pass Filter

Hi Frequency Cables

(2 ft)   (2~3 ft)   (4~6 ft)    (12 ft)

Pre-amplifier 1-26GHz

T34 HP 8449B

Pre-amplifier 26-40GHz

f GHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
<b>Low Ch 1851.25MHz</b>										
3.703	61.0	V	-36.5	5.9	9.7	7.6	-32.7	-13.0	-19.7	
5.554	49.6	V	-42.7	7.4	11.3	9.1	-38.8	-13.0	-25.8	
3.703	60.4	H	-37.0	5.9	9.7	7.6	-33.2	-13.0	-20.2	
5.554	45.4	H	-45.9	7.4	11.3	9.1	-42.0	-13.0	-29.0	
<b>Mid Ch 1880.00MHz</b>										
3.760	52.8	V	-44.3	6.0	9.7	7.6	-40.6	-13.0	-27.6	
5.640	50.6	V	-41.9	7.4	11.5	9.3	-37.9	-13.0	-24.9	
3.760	52.0	H	-45.0	6.0	9.7	7.6	-41.3	-13.0	-28.3	
5.640	45.4	H	-46.1	7.4	11.5	9.3	-42.1	-13.0	-29.1	
<b>Hi Ch 1908.75MHz</b>										
3.818	52.8	V	-44.1	6.0	9.7	7.5	-40.4	-13.0	-27.4	
5.726	49.4	V	-43.4	7.5	11.6	9.5	-39.2	-13.0	-26.2	
3.818	51.6	H	-45.1	6.0	9.7	7.5	-41.4	-13.0	-28.4	
5.726	44.1	H	-47.7	7.5	11.6	9.5	-43.5	-13.0	-30.5	

Rev. 4.12.7

### 7.3. MAXIMUM PERMISSIBLE EXPOSURE

#### LIMITS

§1.1310 The criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in §1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of §2.1093 of this chapter.

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0 .....	614	1.63	*(100)	6
3.0–30 .....	1842/f	4.89/f	*(900/f <sup>2</sup> )	6
30–300 .....	61.4	0.163	1.0	6
300–1500 .....	.....	.....	f/300	6
1500–100,000 .....	.....	.....	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34 .....	614	1.63	*(100)	30
1.34–30 .....	824/f	2.19/f	*(180/f <sup>2</sup> )	30

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)—Continued

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
30–300 .....	27.5	0.073	0.2	30
300–1500 .....	.....	.....	f/1500	30
1500–100,000 .....	.....	.....	1.0	30

f = frequency in MHz

\* = Plane-wave equivalent power density

NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.



## **CALCULATIONS**

Given

$$E = \sqrt{(30 * P * G) / d}$$

and

$$S = E^2 / 3770$$

where

E = Field Strength in Volts/meter

P = Power in Watts

G = Numeric antenna gain

d = Distance in meters

S = Power Density in milliwatts/square centimeter

Combining equations and rearranging the terms to express the distance as a function of the remaining variables yields:

$$d = \sqrt{((30 * P * G) / (3770 * S))}$$

Changing to units of Power to mW and Distance to cm, using:

$$P \text{ (mW)} = P \text{ (W)} / 1000 \text{ and}$$

$$d \text{ (cm)} = 100 * d \text{ (m)}$$

yields

$$d = 100 * \sqrt{((30 * (P / 1000) * G) / (3770 * S))}$$

$$d = 0.282 * \sqrt{(P * G / S)}$$

where

d = distance in cm

P = Power in mW

G = Numeric antenna gain

S = Power Density in mW/cm<sup>2</sup>

Substituting the logarithmic form of power and gain using:

$$P \text{ (mW)} = 10^{(P \text{ (dBm)} / 10)} \text{ and}$$

$$G \text{ (numeric)} = 10^{(G \text{ (dBi)} / 10)}$$

yields

$$d = 0.282 * 10^{((P + G) / 20)} / \sqrt{S} \quad \text{Equation (1)}$$

where

d = MPE distance in cm

P = Power in dBm

G = Antenna Gain in dBi

S = Power Density Limit in mW/cm<sup>2</sup>

Equation (1) and the measured peak power is used to calculate the MPE distance.

**LIMITS**

From §1.1310 Table 1 (B),  $S = 1.0 \text{ mW/cm}^2$

**RESULTS**

No non-compliance noted: (MPE distance equals 20 cm)

<b>Mode</b>	<b>MPE Distance (cm)</b>	<b>Output Power (dBm)</b>	<b>Antenna Gain (dBi)</b>	<b>Power Density (mW/cm<sup>2</sup>)</b>
800MHz Celllar	20.0	28.20	0.00	0.131
1900 MHz PCS	20.0	30.80	0.00	0.239

NOTE: For mobile or fixed location transmitters, the minimum separation distance is 20 cm, even if calculations indicate that the MPE distance would be less.