



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

**FOR**

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

**MODEL NUMBER: M1000-2J0**

**FCC ID: OVFKWC-M1000-2J0**

**REPORT NUMBER: 07U11078-1**

**ISSUE DATE: MAY 29, 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

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
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**1. ATTESTATION OF TEST RESULTS**

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

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

**MODEL NUMBER:** M1000-2J0

**SERIAL NUMBER:** FFMK0000000473

**DATE TESTED:** MAY 21-22, 2007

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
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:





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EMC SUPERVISOR  
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## 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 Single 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. WORST-CASE CONFIGURATION AND MODE

For the worst case position, EUT at Y position at close position is determined to be the worst case for the PCS band.

## 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

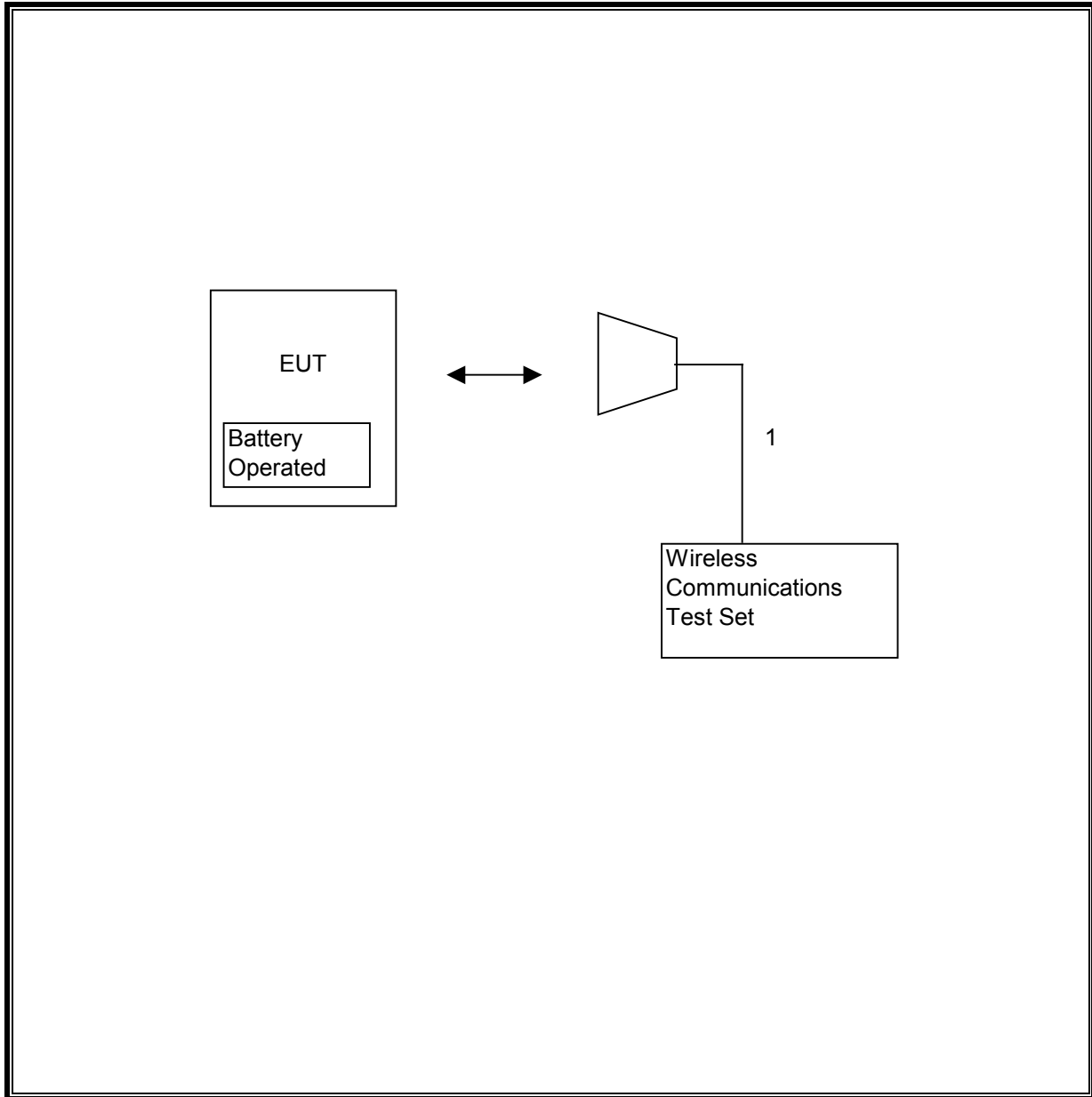
**I/O CABLES**

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, 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
Dipole	EMCO	3121C-DB2	22435	5/7/08
2.7GHz HPF	MicroTronic	HPM13194	2	CNR
Communication Test Set	Agilent	E5515C	91936	4/8/08
Spectrum Analyzer 9KHz ~ 26.5 GHz	Agilent / HP	E4407B	MY41444592	10/6/07
Preamplifier, 1 ~ 26.5 GHz	Agilent / HP	8449B	3008A00369	8/1/07

## 7. LIMITS AND RESULTS

### 7.1. RF POWER OUTPUT

#### LIMIT

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.

#### 1900MHz PCS Modulation

Channel	Frequency (MHz)	EIRP Peak Power (dBm)	EIRP Peak Power (mW)
Low	1851.20	24.80	302.00
Middle	1880.00	24.60	288.40
High	1908.80	24.90	309.03

**PCS Output Power (EIRP)**

High Frequency Fundamental Measurement									
Compliance Certification Services, Fremont 5m Chamber Site									
Company: Kyocera									
Project #: 07U11078									
Date: 5/21/2007									
Test Engineer: Chin Pang									
Configuration: EUT Only									
Mode: TX, Single Band, CDMA 2000 1xRTT									
Worst Case: EUT without AC Aapter									
<u>Test Equipment:</u>									
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
<b>Low Ch</b>									
1.851	89.6	V	16.2	0.9	8.3	23.6	33.0	-9.4	
1.851	91.3	H	17.4	0.9	8.3	24.8	33.0	-8.2	
<b>Mid Ch</b>									
1.880	89.6	V	15.3	0.9	8.3	22.7	33.0	-10.3	
1.880	92.0	H	17.2	0.9	8.3	24.6	33.0	-8.4	
<b>High Ch</b>									
1.909	88.5	V	15.2	0.9	8.4	22.7	33.0	-10.3	
1.909	90.2	H	17.4	0.9	8.4	24.9	33.0	-8.2	
Rev. 1.247									

## 7.2. FIELD STRENGTH OF SPURIOUS RADIATION

### LIMIT

§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 24.238 (b)

### RESULTS

No non-compliance noted.

Note: No emissions were found within 20dB above the system noise floor from 30-1000MHz.

PCS Spurious & Harmonic (EIRP):

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

Company: Kyocera  
Project #: 07U11078  
Date: 5/21/2007  
Test Engineer: Chin Pang  
Configuration: EUT Without AC adapter  
Mode: TX, CDMA 200 1XRTT

Test Equipment:

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

Horn > 18GHz

Limit  
FCC 24

High Pass Filter

Hi Frequency Cables  
 (2 ft)    (2 ~ 3 ft)    (4 ~ 6 ft)    (12 ft)

Pre-amplifier 1-26GHz  
 T144 Miteq 3008A01

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 Vh</b>										
3.703	67.0	V	-32.0	5.9	9.7	7.6	-28.2	-13.0	-15.2	
5.554	57.4	V	-36.5	7.4	11.3	9.1	-32.6	-13.0	-19.6	
7.405	48.2	V	-43.7	8.3	12.6	10.4	-39.4	-13.0	-26.4	
3.703	68.6	H	-30.3	5.9	9.7	7.6	-26.5	-13.0	-13.5	
5.554	59.2	H	-33.7	7.4	11.3	9.1	-29.8	-13.0	-16.8	
7.405	49.0	H	-42.1	8.3	12.6	10.4	-37.8	-13.0	-24.8	
<b>Mid Ch</b>										
3.760	71.4	V	-27.3	6.0	9.7	7.6	-23.6	-13.0	-10.6	
5.640	50.0	V	-44.1	7.4	11.5	9.3	-40.0	-13.0	-27.0	
3.760	73.5	H	-25.1	6.0	9.7	7.6	-21.4	-13.0	-8.4	
5.640	51.6	H	-41.5	7.4	11.5	9.3	-37.4	-13.0	-24.4	
<b>High Ch</b>										
3.817	75.2	V	-23.2	6.0	9.7	7.5	-19.5	-13.0	-6.5	
5.726	52.0	V	-42.3	7.5	11.6	9.5	-38.1	-13.0	-25.1	
3.817	77.0	H	-21.3	6.0	9.7	7.5	-17.6	-13.0	-4.6	
5.726	54.6	H	-38.7	7.5	11.6	9.5	-34.5	-13.0	-21.5	

Note: No other emissions were detected above the system noise floor.  
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>
1900 MHz PCS	20.0	24.90	0.00	0.061

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.

**NOTE: Setup photos are contained in a separate document.**