HCT CO., LTD.

SAN 136-1, AMI-RI , BUBAL-EUP, ICHEON-SI, KYOUNGKI-DO, 467-701, KOREA
TEL: +82 31 639 8565 FAX : +82 31 639 8525 www.hct.co.kr

CERTIFICATE OF COMPLIANCE

RF REPORT

PANTECH&CURITEL COMMUNICATIONS, INC.

110-1, ONGJEONG-RI, TONGJIN-EUP, GIMPO-SI,
GYOUNGGI-DO, 415-865, KOREA

Date of Issue: April 21 , 2008
Test Report No.: HCT-R08-045
Test Site: HCT CO., LTD.

FCC ID : **PP4IM**

APPLICANT : PANTECH&CURITEL COMMUNICATIONS, INC.

EUT Type:	Single- Band CDMA Phone with Bluetooth
Tx Frequency:	1 851.25 — 1 908.75 MHz (PCS CDMA)
Rx Frequency:	1 931.25 — 1 988.75 MHz (PCS CDMA)
Max. RF Output Power:	0.333 W EIRP PCS CDMA (25.22 dBm)
Trade Name/Model(s):	PANTECH&CURITEL / CDM8964VM
FCC Classification:	Licensed Portable Transmitter Held to Ear (PCE)
Application Type:	Certification
FCC Rule Part(s):	§24(E), §2
Antenna Specifications:	Manufacturer: Partron co.,Ltd
	Max Gain: - 0.19 dBm
Emission Designator(s):	1M27F9W

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.

HCT Certifies that no party to this application has been denied FCC benefits pursuant to section 5301 of the Anti- Drug Abuse Act of 1998, 21 U.S. C. 853(a)

Youn Seok Jung

Report prepared by
: Youn Seok Jung
Test engineer of RF Part

Sang Jun Lee

Approved by
: Sang Jun Lee
Manager of RF Part

Table of Contents

MEASUREMENT REPORT

1. 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

Company Name:	PANTECH&CURITEL COMMUNICATION, INC.
Address:	110-1, ONGJEONG-RI, TONGJIN-EUP, GIMPO-SI, GYOUNGGI-DO, 415-865, KOREA
Attention:	Ki Yeoul, LEE
Tel. / Fax :	+82-31-999-8801 / +82-31-984-9771
E-Mail :	leekiyeoul@pantech.com

. FCC ID:	PP4IM
. Quantity:	Quantity production is planned
. EUT Type:	Single- Band CDMA Phone with Bluetooth
. Trade Name:	PANTECH&CURITEL
. Model(s):	CDM8964VM
. Emission Designator(s):	1M27F9W
. Tx Frequency:	1 851.25 – 1 908.75 MHz (PCS CDMA)
. Rx Frequency:	1 931.25 – 1 988.75 MHz (PCS CDMA)
. Application Type:	Certification
. FCC Classification:	Licensed Portable Transmitter Held to Ear (PCE)
. FCC Rule Part(s):	§24(E), §2
. Modulation(s):	PCS CDMA
. Antenna Type:	Intenna
. Date(s) of Tests:	April 17, 2008 ~ April 21, 2008
. Place of Tests:	HCT CO., LTD. Icheon, Kyoungki-Do, KOREA
. Report Serial No.:	HCT-R08-045

2. INTRODUCTION

EUT DESCRIPTION

The PANTECH&CURITEL. CDM8964VM Single- Band CDMA Phone with Bluetooth. Its basic purpose is used for communications. It transmits from PCS CDMA (1 851.25~1 908.75) MHz and receives from PCS CDMA (1 931.25~1 988.75) MHz. The RF power is rated at PCS CDMA (0.320 W).

MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

Test Facility

The open area test site and conducted measurement facility used to collect the radiated data are located at the 254-1, Maekok-Ri, Hobup-Myun, Ichon-Si, Kyoungki-Do, 467-701, KOREA. The site is constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22. Detailed description of test facility was submitted to the Commission and accepted dated July 6, 2006(Registration Number: 90661)

3. INSERTS

Function of Active Devices (Confidential)

The Function of active devices are shown in Attachment K.

Block/Circuit Diagrams & Description (Confidential)

The circuit diagrams & description are shown in Attachment J, and the block diagrams are shown in Attachment I.

Operating Instructions

The instruction manual is shown in Attachment M.

Parts List & Tune-Up Procedure (Confidential)

The parts list & tune-up procedure are shown in Attachment L.

Description of Freq. Stabilization Circuit (Confidential)

The description of frequency stabilization circuit is shown in Attachment K.

Description for Suppression of Spurious Radiation, for Limiting Modulation, and Harmonic Suppresion Circuits (Confidential)

The description of suppression stabilization circuits are shown in Attachment K

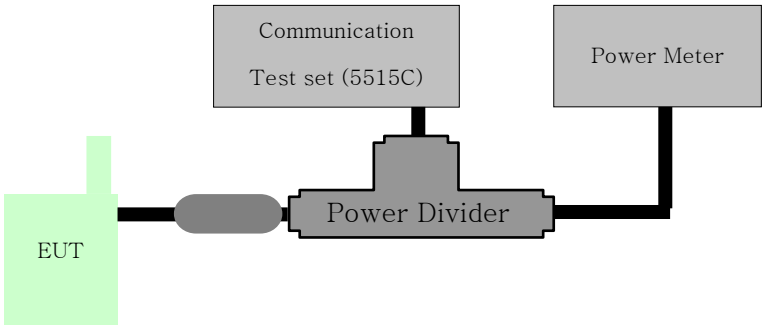
4. LIST OF TEST EQUIPMENT

Manufacture	Model/ Equipment	Serial Number	Calibration Date	Calibration Interval	Calibration Due
R&S	ESI40/ Spectrum Analyzer	831564/003	11/06/2007	Annual	11/06/2008
Advantest	R3273/ Spectrum Analyzer	J04821	05/02/2007	Annual	05/02/2008
Agilent	E4419B/ Power Meter	MY41291386	11/05/2007	Annual	11/05/2008
Agilent	8481A/ Power Sensor	MY41090870	11/05/2007	Annual	11/05/2008
Agilent	HP8901B/ Modulation Analyzer	3438A05231	08/04/2007	Annual	08/04/2008
Agilent	8903A/ Audio Analyzer	2433A04322	08/04/2007	Annual	08/04/2008
R&S	CMU200/ Base Station	110740	07/26/2007	Annual	07/26/2008
Agilent	8960 (E5515C)/ Base Station	GB444400269	02/11/2008	Annual	02/11/2009
Tescom	TC-3000/ Bluetooth Simulator	3000A4900112	01/11/2008	Annual	01/11/2009
MITEQ	AMF-6D-01180-35-20P/ AMP	990893	04/25/2007	Annual	04/25/2008
Wainwright	WHK1.2/15G-10EF/H.P.F	2	06/28/2007	Annual	06/28/2008
Wainwright	WHK3.3/18G-10EF/H.P.F	1	06/28/2007	Annual	06/28/2008
Agilent	778D/ Dual Directional Coupler	16072	11/09/2007	Annual	11/09/2008
Agilent	1506A/ Power Divider	99441	11/10/2007	Annual	11/10/2008
Digital	EP-3010/ Power Supply	3110117	12/29/2007	Annual	12/29/2008
Schwarzbeck	UHAP/ Dipole Antenna	630	11/13/2007	Annual	11/13/2008
Schwarzbeck	UHAP/ Dipole Antenna	605	11/13/2007	Annual	11/13/2008
R&S	HFH2-Z2/ Loop Antenna	881056/070	12/11/2007	Annual	12/11/2008
Korea Engineering	KR-1005L / Chamber	KRAB07063-2CH	01/05/2008	Annual	01/05/2009
Schwarzbeck	VULB9160/ TRILOG Antenna	3150	04/20/2007	Biennial	04/20/2009
Schwarzbeck	VULB9160/ TRILOG Antenna	3125	05/16/2007	Biennial	05/16/2009
Schwarzbeck	BBHA 9120D/ Horn Antenna	147	03/26/2008	Biennial	03/26/2009
Schwarzbeck	BBHA 9120D/ Horn Antenna	1201	05/02/2007	Biennial	05/02/2008
Agilent	E4440A/Spectrum Analyzer	US45303008	01/08/2008	Annual	01/08/2009

5. TEST Results

5.1 Conducted RF Power Test

Test Set-up



Test Procedure

According to FCC §2.1046 (A), for transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in § 2.1033(c)(8). The electrical characteristics of the radio frequency load attached to the output terminals when this test is made shall be stated.

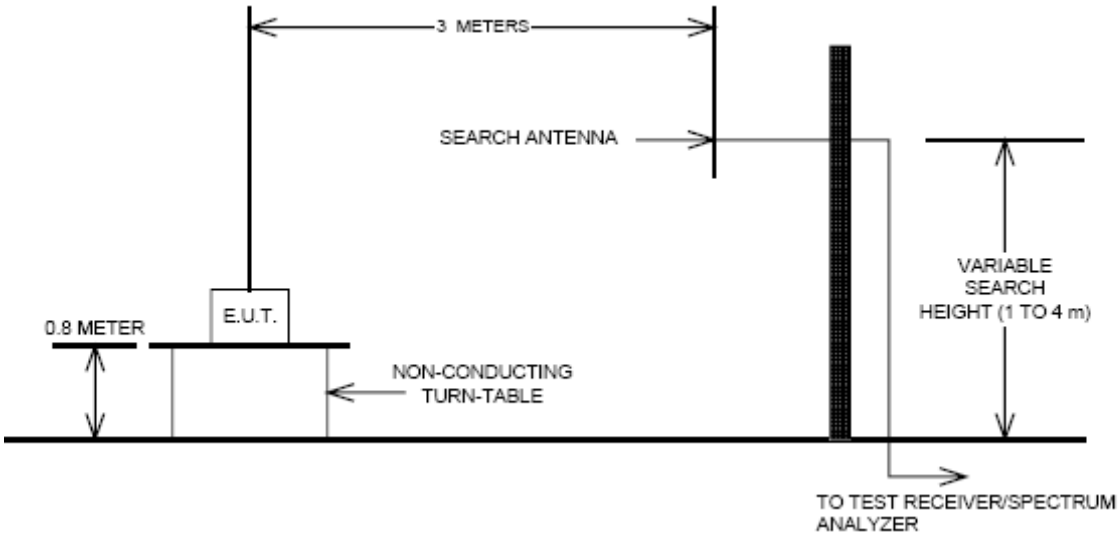
1) The EUT was coupled to the spectrum analyzer and the base station simulator through a power divider. The radio frequency load attached to the EUT antenna terminal was 50 Ohm.
2) The output power of the EUT was measured at the antenna terminal connecting to a power meter.

Band	Channel	SO2	SO2	SO55	SO55	TDSO SO32	1xEvDO Rev.0	1xEvDO Rev.0
		RC1/1	RC3/3	RC1/1	RC3/3	RC3/3	(FTAP)	(RTAP)
PCS	25	24.95	25.05	24.93	24.88	24.94	25.03	25.01
	600	24.7	24.93	24.83	24.64	24.63	25.01	24.98
	1175	24.62	24.68	24.52	24.59	24.61	24.98	24.99

(PCS CDMA Conducted Output Powers)

5.2 Effective Radiated Power/Equivalent Isotropic Radiated Power

Test Set-up



Test Procedure

Radiated emission measurements were performed at an open Site.

The equipment under test is placed on a wooden turntable 3-meters from the receive antenna.

A wooden turntable was rotated 360° and the receiving antenna scanned from 1-4m in order to capture the maximum emission. A halfwave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the previously recorded signal was duplicated.

The maximum EIRP was calculated by adding the forward power to the calibrated source plus its appropriate gain value. These steps were carried out with the receiving antenna in both vertical and horizontal polarization.

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.

Equivalent Isotropic Radiated Power Output Data

Modulation: PCS CDMA

Mode	Ch./ Freq.		Measured Level(dBm)	Substitude LEVEL(dBm)	Ant. Gain	C.L	Pol.	ERP	
	channel	Freq.(MHz)						W	dBm
PCS	25	1851.25	-14.59	17.09	10.045	1.91	H	0.333	25.22
	600	1880.00	-15.08	16.79	10.054	1.95	H	0.308	24.89
	1175	1908.75	-15.22	16.82	10.063	1.97	H	0.310	24.91
EVDO	600	1880.00	-14.90	16.97	10.054	1.95	V	0.321	25.07

Note: Extended batteries are the options for this phone

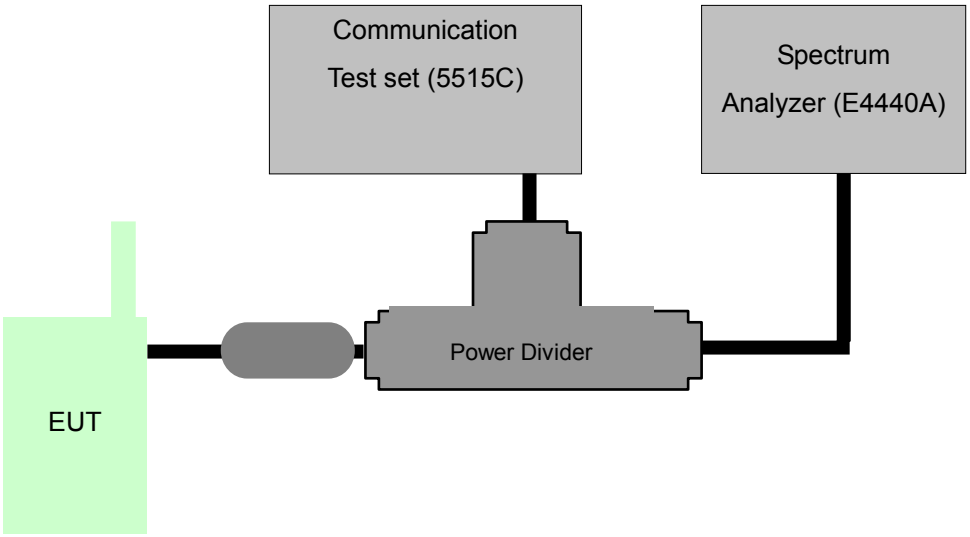
NOTES:

Equivalent Isotropic Radiated Power 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 AMPS, GSM, and NADC TDMA signals, a peak detector is used, with RBW = VBW = 1 MHz. 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.

5.3 Occupied bandwidth.

Test Set-up

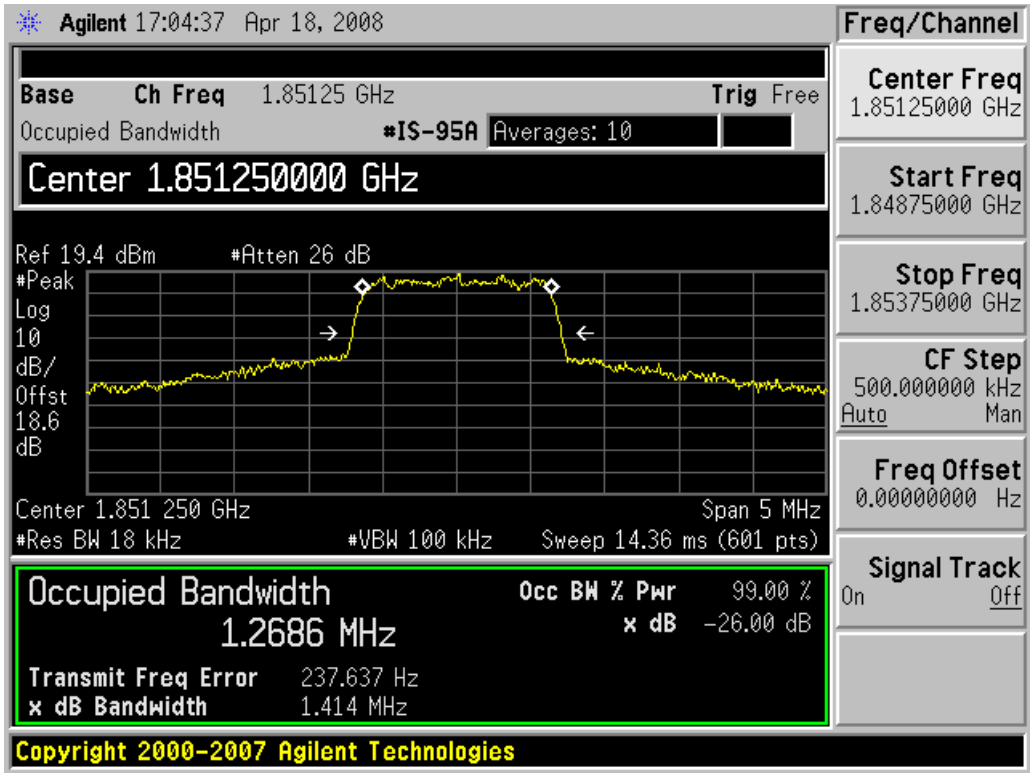


Test Procedure

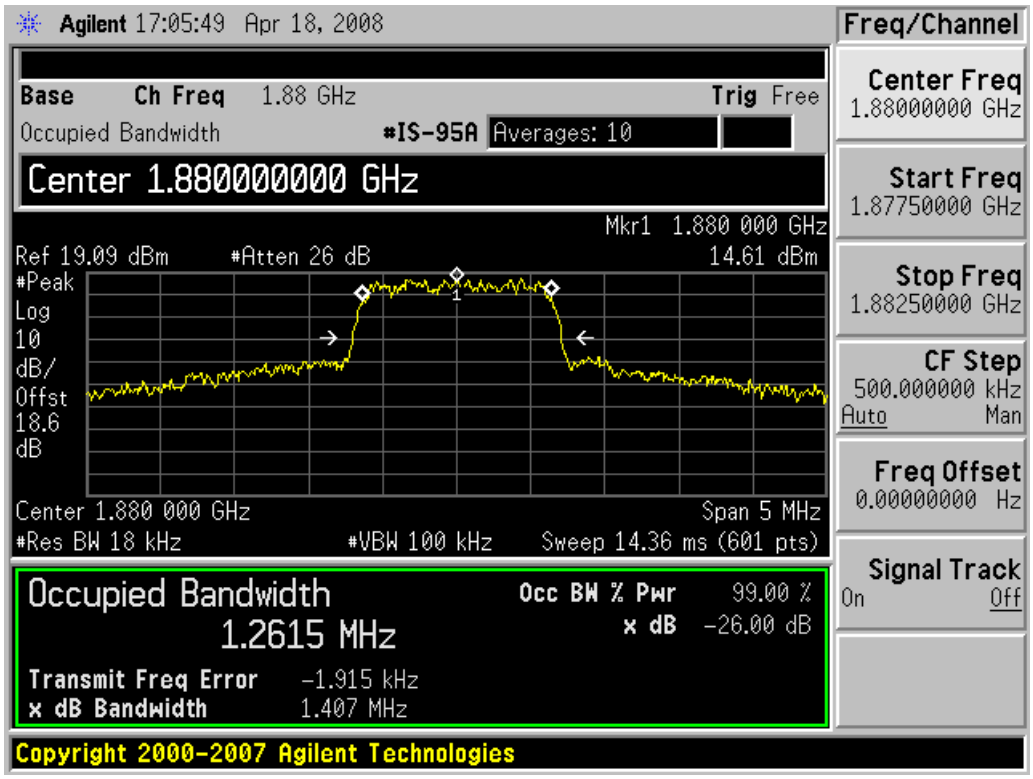
The EUT was setup to maximum output power at its lowest channel. The occupied bandwidth was measured using a spectrum analyzer. The measurements are repeated for the highest and a middle channel. The EUT's occupied bandwidth is measured as the width of the signal between two points, one below the carrier center frequency and one above the carrier frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power. Plots of the EUT's occupied bandwidth are shown below.

Plots of Occupied bandwidth

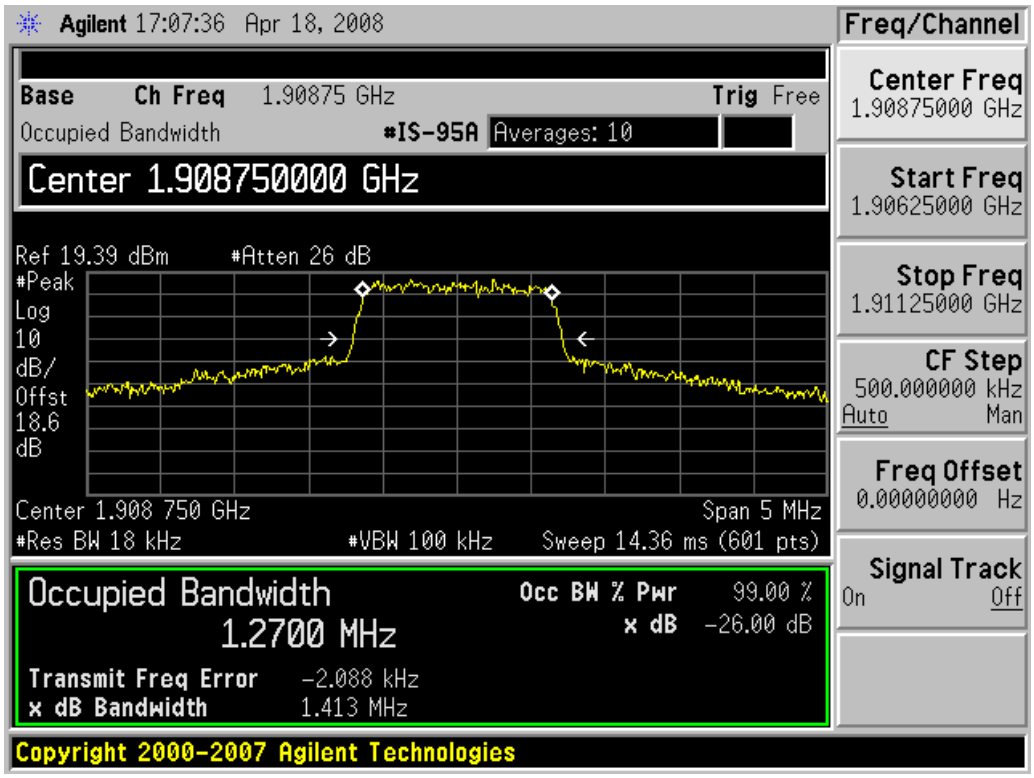
PLOT 5.3-1 (PCS CDMA MODE, 25 CH.)



PLOT 5.3-2 (PCS CDMA MODE, 600 CH.)

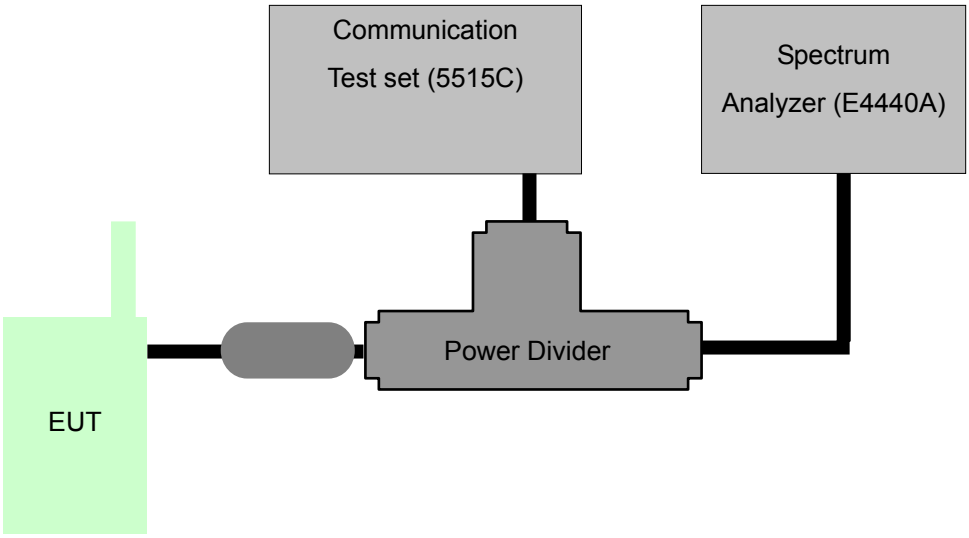


PLOT 5.3-3 (PCS CDMA MODE, 1175 CH.)



5.4 Spurious and Harmonic Emissions at Antenna Terminal.

Test Set-up

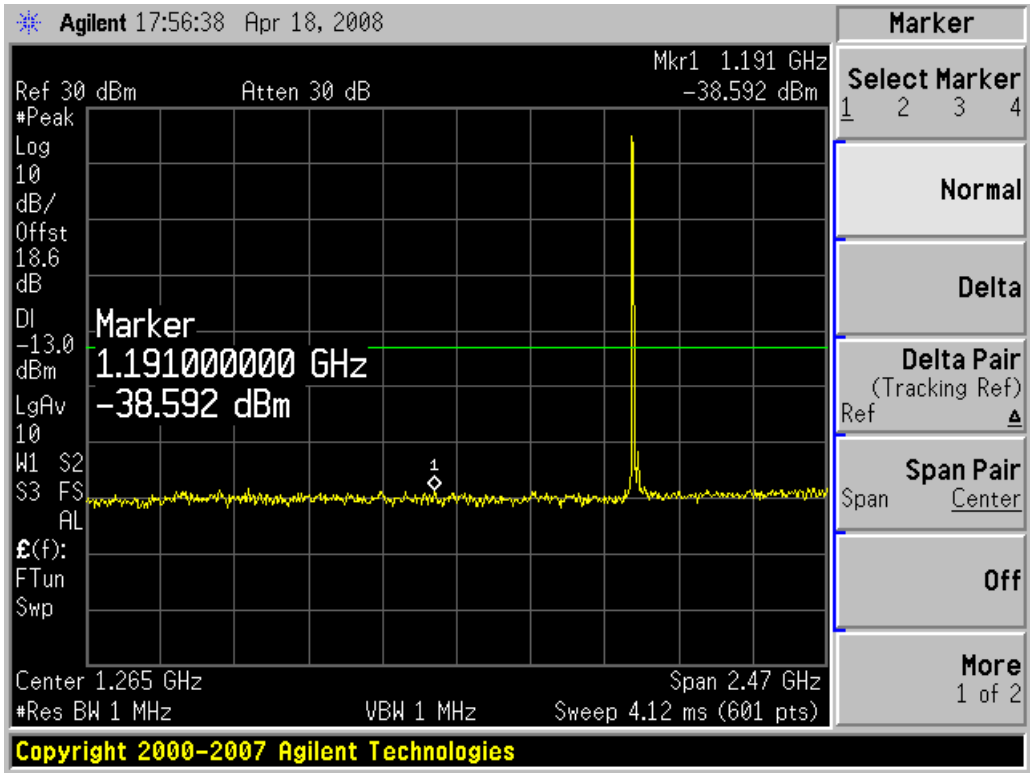


Test Procedure

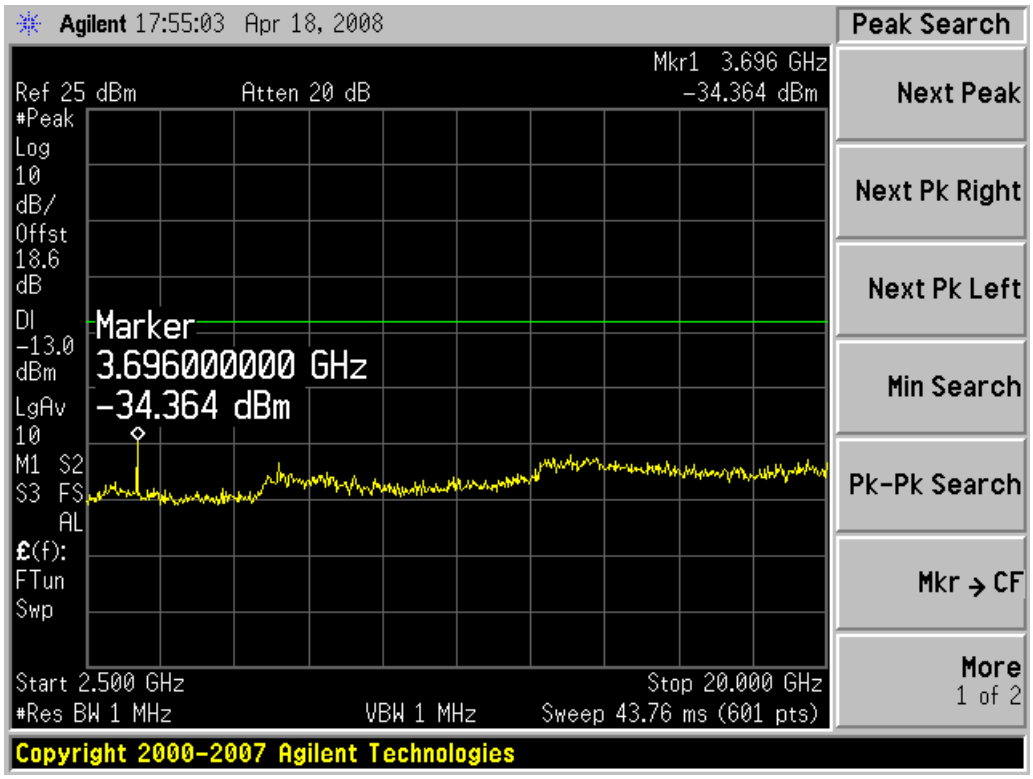
The EUT was setup to maximum output power at its lowest channel. The Resolution BW of the analyzer is set to 1 % of the emission bandwidth to show compliance with the – 13 dBm limit, in the 1 MHz bands immediately outside and adjacent to the edge of the frequency block. The 1 MHz RBW was used to scan from 30 MHz to 20 GHz. A display line was placed at – 13 dBm to show compliance. The high, lowest and a middle channel were tested for out of band measurements.

Plots of Conducted Spurious Emission

PLOT 5.4-1 (PCS CDMA MODE, 25 CH.)

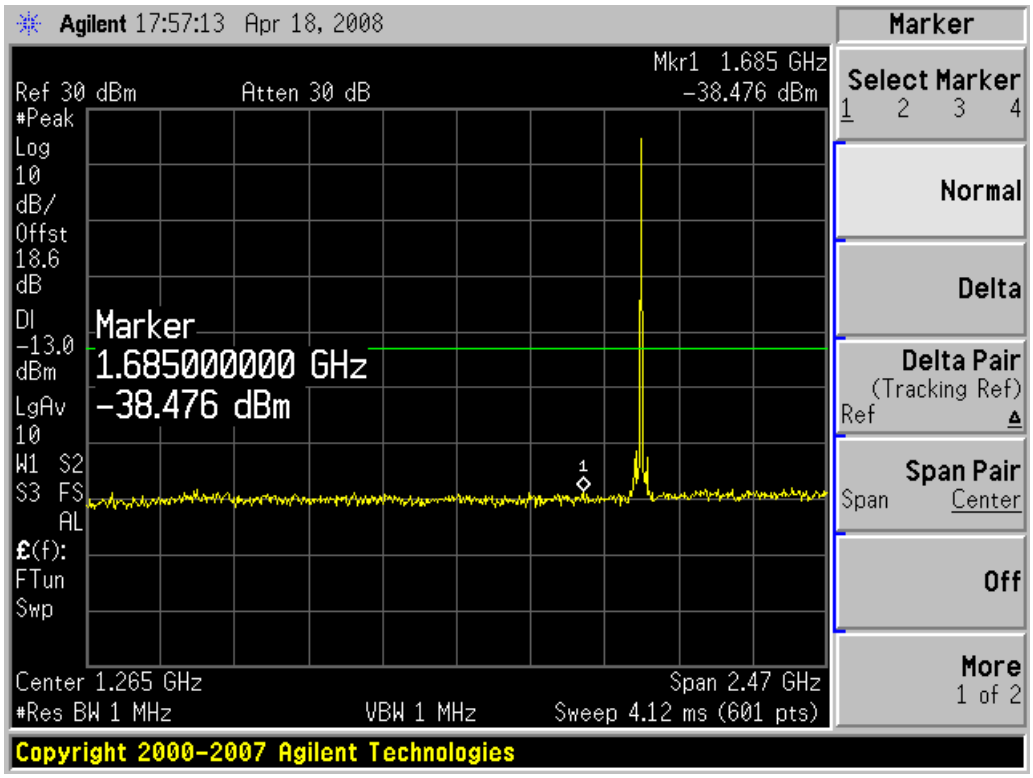


(30 MHz ~ 1 GHz)

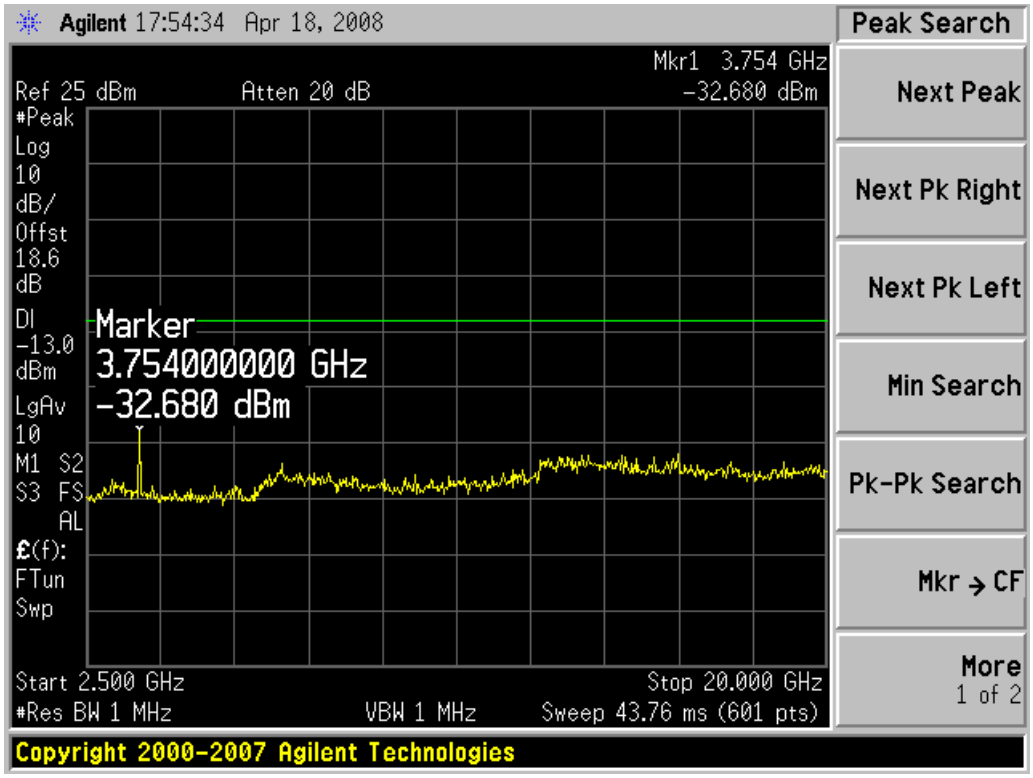


(1 GHz ~ 20 GHz)

PLOT 5.4-2 (PCS CDMA MODE, 600 CH.)

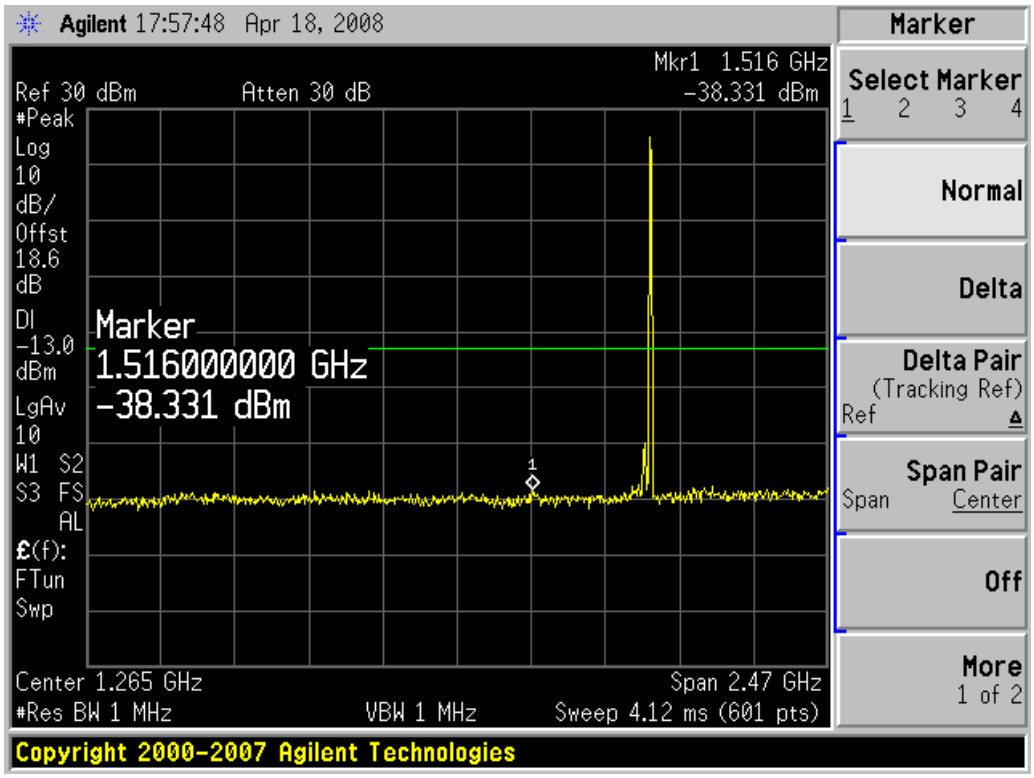


(30 MHz ~ 1 GHz)

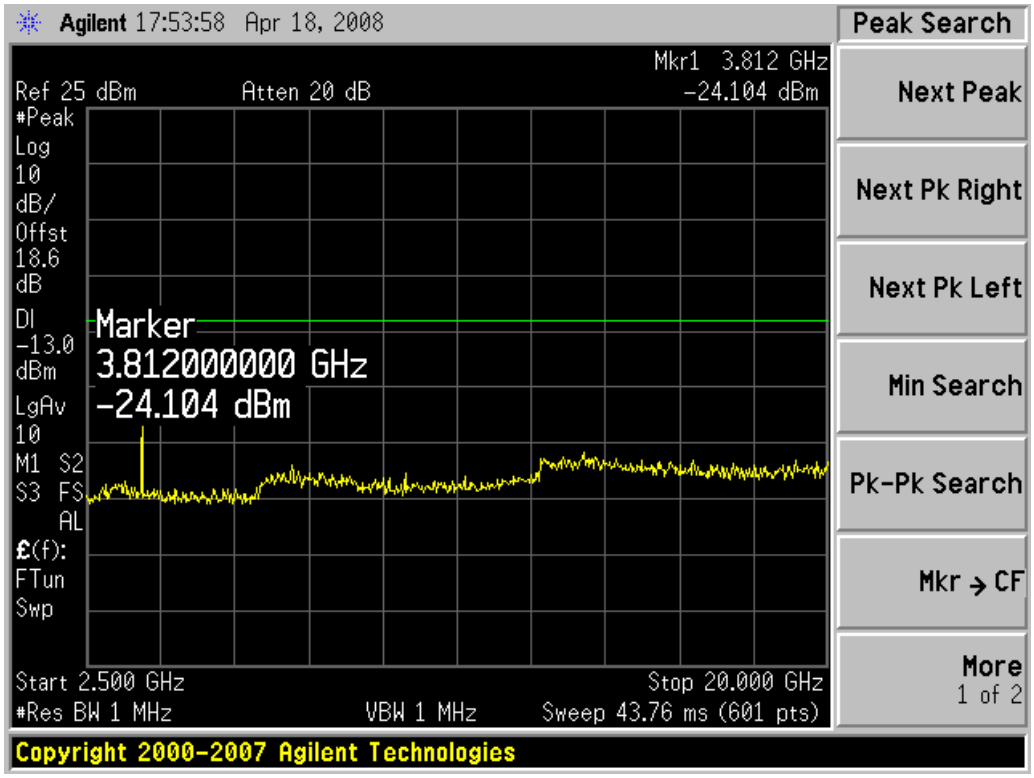


(1 GHz ~ 20 GHz)

PLOT 5.4-3 (PCS CDMA MODE, 1175 CH.)



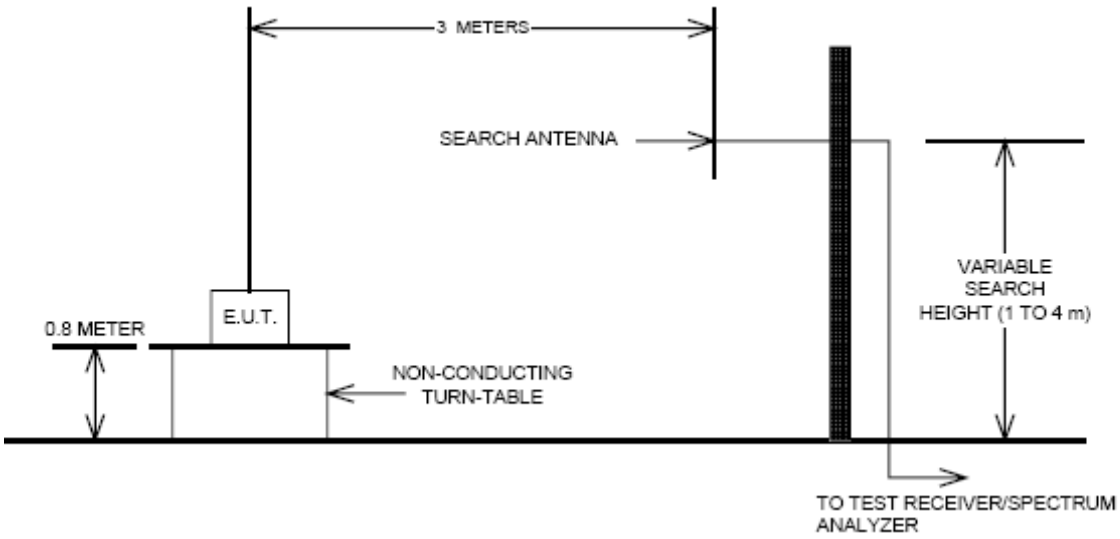
(30 MHz ~ 1 GHz)



(1 GHz ~ 20 GHz)

5.5 Field strength of spurious radiation.

Test Set-up



Test Procedure

Radiated emission measurements were performed at an open Site.

The equipment under test is placed on a wooden turntable 3-meters from the receive antenna.

A wooden turntable was rotated 360° and the receiving antenna scanned from 1-4m in order to capture the maximum emission. A halfwave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the previously recorded signal was duplicated.

The maximum EIRP was calculated by adding the forward power to the calibrated source plus its appropriate gain value. These steps were carried out with the receiving antenna in both vertical and horizontal polarization.

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.

PCS CDMA Radiated Measurements

Field Strength of SPURIOUS Radiation

▣ OPERATING FREQUENCY: 1 851.25 MHz
▣ CHANNEL: 25 (Low)
▣ MEASURED OUTPUT POWER: 25.22 dBm = 0.333 W
▣ MODULATION SIGNAL: CDMA (Internal)
▣ DISTANCE: 3 meters
▣ LIMIT: - (43 + 10 lo_{g10} (W)) = - 38.22 dBc

Freq. (MHz)	**LEVEL@ ANTENNA TERMINALS** (dBm)	**SUBSTITUTE ANTENNA GAIN** (dBi)	**CORRECT GENERATOR LEVEL** (dBm)	**POL** (H/V)	**(dBc)**
3 702.50	-58.99	9.4	-49.59	H	-74.81
5 553.75	-60.67	8.2	-52.47	H	-77.69
7405.00	-37.93	7.5	-30.43	H	-55.65

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 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 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.

Field Strength of SPURIOUS Radiation

▣ OPERATING FREQUENCY: 1 880.00 MHz

▣ CHANNEL: 600 (Middle)

▣ MEASURED OUTPUT POWER: 25.22 dBm = 0.333 W

▣ MODULATION SIGNAL: CDMA (Internal)

▣ DISTANCE: 3 meters

▣ LIMIT: - (43 + 10 $\log_{10}$ (W)) = - 38.22 dBc

Freq. (MHz)	**LEVEL@ ANTENNA TERMINALS** (dBm)	**SUBSTITUTE ANTENNA GAIN** (dBi)	**CORRECT GENERATOR LEVEL** (dBm)	**POL** (H/V)	**(dBc)**
3 760.00	-61.42	9.4	-52.02	H	-77.24
5 640.00	-60.53	8.2	-52.33	H	-77.55
7 520.00	-39.39	7.5	-31.89	H	-57.11

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 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 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.

Field Strength of SPURIOUS Radiation

▣ OPERATING FREQUENCY: 1 908.75 MHz

▣ CHANNEL: 1175 (High)

▣ MEASURED OUTPUT POWER: 25.22 dBm = 0.333 W

▣ MODULATION SIGNAL: CDMA (Internal)

▣ DISTANCE: 3 meters

▣ LIMIT: - (43 + 10 lo_{g10} (W)) = - 38.22 dBc

Freq. (MHz)	**LEVEL@ ANTENNA TERMINALS** (dBm)	**SUBSTITUTE ANTENNA GAIN** (dBi)	**CORRECT GENERATOR LEVEL** (dBm)	**POL** (H/V)	**(dBc)**
3 817.50	-61.28	9.4	-51.88	H	-77.10
5 726.25	-60.72	8.2	-52.52	H	-77.74
7 635.00	-48.73	7.5	-41.23	H	-66.45

NOTES:

Radiated Spurious Emission Measurements by Substitution Method

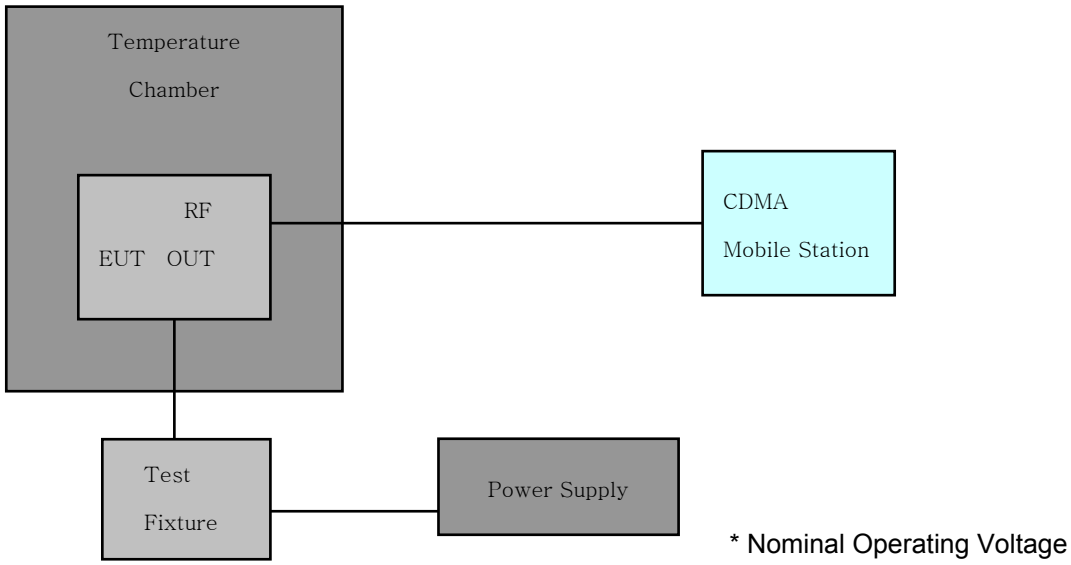
According to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

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 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 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.

5.6 Frequency stability.

5.6.1 Frequency stability with variation of ambient temperature.

Test Set-up



Test Procedure

The frequency stability of the transmitter is measured by:

a.) **Temperature:** The temperature is varied from - 30 °C to + 50 °C using an environmental chamber.

b.) **Primary Supply Voltage:** The primary supply voltage is varied from battery end point to 115 % of the voltage normally at the input to the device or at the power supply terminals if cables are not normally supplied.

Specification — the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within ± 0.000 25 %(± 2.5 ppm) of the center frequency.

Time Period and Procedure:

1. The carrier frequency of the transmitter and the individual oscillators is measured at room temperature (25 °C to 27 °C to provide a reference).
2. The equipment is subjected to an overnight “soak” at - 30 °C without any power applied.
3. After the overnight “soak” at 30 °C (usually 14-16 hours), the equipment is turned on in a “standby” condition for one minute before applying power to the transmitter. Measurement of the carrier frequency of the transmitter and the individual oscillators is made within a three minute interval after applying power to the transmitter.
4. Frequency measurements are made at 10 °C interval up to room temperature. At least a period of one and one half-hour is provided to allow stabilization of the equipment at each temperature level.
5. Again the transmitter carrier frequency and the individual oscillators is measured at room temperature to begin measurement of the upper temperature levels.
6. Frequency were made at 10 °C intervals starting at - 30 °C up to + 50 °C allowing at least two hours at each temperature for stabilization. In all measurements the frequency is measured within three minutes after applying power to the transmitter.
7. The artificial load is mounted external to the temperature chamber.

NOTE: The EUT is tested down to the battery endpoint.

FREQUENCY STABILITY (PCS CDMA)

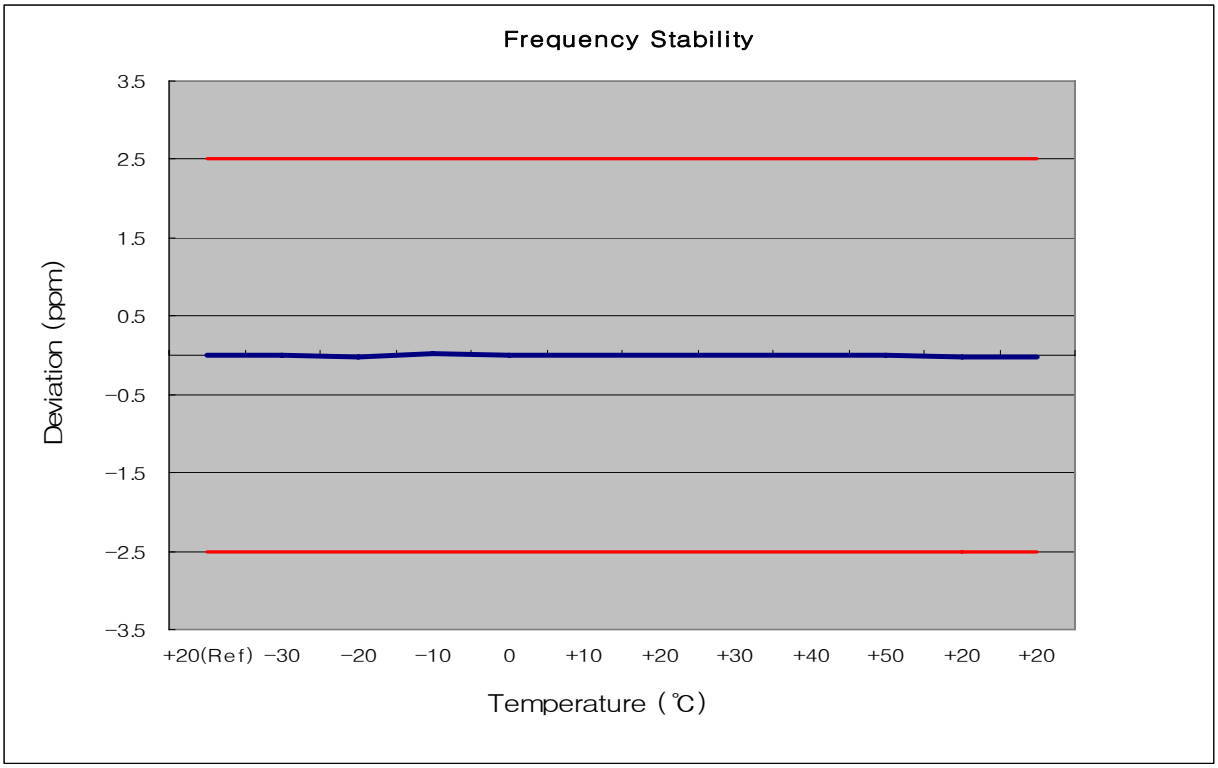
OPERATING FREQUENCY: 1,880,000,000 Hz

CHANNEL: 600

REFERENCE VOLTAGE: 3.7 VDC

DEVIATION LIM IT: ± 0.000 25 % or 2.5 ppm

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	3.70	+20(Ref)	1,799,999,988	-12	-0.000001	-0.006
100%		-30	1,799,999,981	-19	-0.000002	-0.010
100%		-20	1,799,999,980	-20	-0.000002	-0.011
100%		-10	1,800,000,027	27	0.000003	0.014
100%		0	1,800,000,018	18	0.000002	0.010
100%		+10	1,800,000,014	14	0.000002	0.007
100%		+20	1,799,999,989	-11	-0.000001	-0.006
100%		+30	1,799,999,985	-15	-0.000002	-0.008
100%		+40	1,799,999,983	-17	-0.000002	-0.009
100%		+50	1,800,000,019	19	0.000002	0.010
115%	4.26	+20	1,799,999,979	-21	-0.000003	-0.011
Batt. Endpoint	3.21	+20	1,799,999,973	-27	-0.000003	-0.014



6. SAMPLE CALCULATION

A. ERP Sample Calculation

Mode	Ch./ Freq.		Measured Level(dBm)	Substitude LEVEL(dBm)	Ant. Gain	C.L	Pol.	ERP	
	channel	Freq.(MHz)						W	dBm
PCS	600	1880.00	-15.08	16.79	10.054	1.95	H	0.308	24.89

ERP = SubstitudeLEVEL(dBm) + Ant. Gain – CL(Cable Loss)

1) The EUT mounted on a wooden tripod is 0.8 meter above test site ground level.
2) During the test , the turn table is rotated and the antenna height is also varied from 1 to 4 meters until the maximum signal is found.
3) Record the field strength meter's level.
4) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.
5) Increase the signal generator output till the field strength meter's level is equal to the item (3).
6) The signal generator output level with Ant. Gain and cable loss are the rating of effective radiated power (**ERP**).

B. Emission Designator

Emission Designator = 1M27F9W

CDMA BW = 1.27 MHz

F = Frequency Modulation

9 = Composite Digital Info

W = Combination (Audio/Data)

(Measured at the 99.75 % power bandwidth)

7. CONCLUSION

The data collected shows that the **Single- Band CDMA Phone with Bluetooth**

FCC ID: PP4IM complies with all the requirements of Parts 2 and 22, 24 of the FCC rules.