



**CONFORMANCE TEST REPORT
FOR
FCC 47 CFR, Part 2 and Part 22 Subpart H**

Report No.: 07-02-MAS-145-02

Client: **Nokia Inc.**
Product: **CDMA 2000 1xRTT Mobile Phone**
Trade name: **RM-307**
Model No.: **2505**
FCC ID: **QMNRM-307**
Manufacturer/supplier: **Foxconn International Holdings Limited**
Date test item received: 2007/02/27
Date test campaign completed: 2007/02/28
Date of issue: 2007/03/23

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Total number of pages of this test report: 43 pages

Total number of pages of photos: External photos 6 pages

Internal photos 6 pages

Setup photos 2 pages

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Client	: Nokia Inc.
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Manufacturer	: Foxconn International Holdings Limited
Address	: No.2, 2nd DongHuan Road, 10th YouSong Industrial District, Longhua Town, Baoan, Shenzhen, GuangDong, China
EUT	: CDMA 2000 1xRTT Mobile Phone
Trade name	: RM-307
Model No.	: 2505
Power Source	: Adapter : Nokia / AC-3C Input: 100-240Vac, 50-60Hz, 65mA Output: DC 5V, 350mA
Regulations applied	: FCC 47 CFR, Part2 and Part 22 Subpart H
Version / Status	: 1.1 Final

Version	Date	Status	Comments
0.1	01-Mar-07	Draft	
0.2	09-Mar-07	Draft	
1.0	14-Mar-07	Final	
1.1	23-Mar-07	Final	

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- FCC Registration Number: 90588, 91094, 91095
- Canada IC Registration Number: 2949-1, 2949-2



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Appendix A SETUP PHOTO

Appendix B EXTERNAL PHOTO

Appendix C INTERNAL PHOTO

1. GENERAL INFORMATION

1.1 Product Description

- a) Type of EUT : CDMA 2000 1xRTT Mobile Phone
- b) Trade Name : RM-307
- c) Model No. : 2505
- d) Hardware : 2000
- e) Software : RS_GEN_QS02251_R0510_RC_v1
- f) ESN : HEX 25A1CBBA
- g) Frequency Range : Tx: 824-849 MHz Rx: 869-894 MHz
- h) Max ERP : 17.90 dBm
- i) Emission Designator : 1M43F9W
- j) Antenna Type : Fixed Internal
- k) Modulation Type : QPSK

1.2 Characteristics of Device

CDMA2000 800MHz Cellular Phone, offering data rates up to 14.4 kbps on the forward and reverse links.

1.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures document on ANSI C63.4 , ANSI/TIA-603-C and FCC CFR 47 Parts 2.947, 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055 and 2.1057, Part 22 and Part 24.

1.4 Modification List of EUT

N/A

1.5 Test Facility

The semi-anechoic chamber and conducted measurement facility used to collect the radiated and conducted data are located inside the Building at No.8, Lane 29, Wen-ming Road, Lo-shan Tsun, Kweishan Hsiang, Taoyuan, Taiwan, R.O.C.

This site has been accreditation as a FCC filing site.

1.6 Test Summary

Test Performed	Reference	Result
Output Power (Conducted)	FCC §2.1046	Complies
ERP (Radiated)	FCC §2.1046 and FCC §22.913(a)(2)	Complies
Occupied Bandwidth	FCC §2.1049	Complies
Out of Band Emission at Antenna Terminals	FCC §2.1051	Complies
Field Strength of Spurious (Radiated)	FCC §2.1053	Complies
Frequency Stability	FCC §2.1055, FCC §22.355	Complies

2. SYSTEM TEST CONFIGURATION

2.1 Justification

For the purposes of this test report ancillary equipment is defined as equipment which is used in conjunction with the EUT to provide operational and control features to the EUT during the test. The simulate equipment was used to control the RF channel under the highest, middle and lowest frequency and transmit the maximum RF power.

2.2 Devices for Tested System

Device	Manufacture	Model	Cable Description
*CDMA 2000 1xRTT Mobile Phone	Foxconn International Holdings Limited	2505	----
Adapter	Nokia	AC-3C	1.8m*1, Unshielded Power Line
Headset	Nokia	HS-9	1.2m*1, Unshielded Signal Line
Battery	Nokia	BL-4B	----
Dummy Battery	----	----	----

Remark “*” means equipment under test.

2.3 Testing Mode / Configuration

(A) Test Channel – Frequency comparison table for test:

CDMA 800	
Channel	Frequency (MHz)
1013	824.70
384	836.52
777	848.31

(B) Pre-test by difference Radio Configuration and Service Options at low, middle and high channel. Choose MAX POWER mode for the final testing.

Radio Configuration	RC3
Service Options	SO55

3. OUTPUT POWER MEASUREMENT

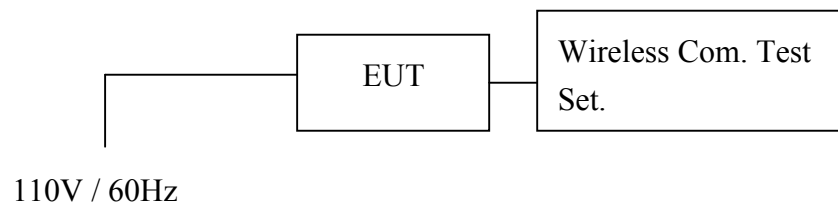
3.1 Applicable Standard

According to FCC §2.1046.

3.2 Measurement Procedure

The setup of the EUT as shown in figure 1. The transmitter output was connected to a Wireless Com. Test Set. Transmitter output was read off in dBm. The power output at the transmitter antenna port was determined by adding the value of the cable loss to the Wireless Com. Test Set reading.

Figure 1: Maximum Average Output Power measurement configuration.



3.3 Measuring Instrument

Equipment	Manufacturer	Model No.	Next Cal. Due
Wireless Com. Test Set	Agilent	8960	02/21/2008

3.4 Test Result

Test Date : : Feb. 28, 2007Temperature : 20°CHumidity : 60%

CDMA 800

EUT Status: Operated at max power

Power measurements:

Test Mode	Channel	Frequency (MHz)	Reading (dBm)	Cable Loss (dB)	Maximum Average Output Power (dBm)
CDMA800	1013	824.70	24.19	0.5	24.69
	384	836.52	24.14	0.5	24.64
	777	848.31	24.08	0.5	24.58
Measurement uncertainty: +1.44 / -1.45dB					

4. ERP MEASUREMENT

4.1 Standard Applicable

According to FCC §2.1046 and FCC §22.913(a)(2): The Effective Radiated Power (ERP) of mobile transmitters must not exceed 7 Watts.

4.2 Measurement Procedure

The setup of the EUT as shown in figure 2 and figure 3. The EUT was placed on a non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer.

During the measurement of the EUT, the resolution bandwidth was set to 3MHz and the average bandwidth was set to 3MHz. The highest emission was recorded with the rotation of the turntable and the lowering of the test antenna. The reading was recorded and the field strength (E in dBuV/m) was calculated.

ERP in frequency band 824-849MHz were measured using a substitution method. The EUT was replaced by half-wave dipole (824-849MHz) connected to a signal generator. The spectrum analyzer reading was recorded and ERP was calculated as follows:

$$\text{ERP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBd)} - \text{Cable (dB)}$$

4.3 Measurement Equipment

Equipment	Manufacturer	Model No.	Next Cal. Due
EMI Receiver	R&S	ESIB7	05/25/2007
Spectrum Analyzer	Rohde & Schwarz	FSU46	10/31/2007
BiLog Antenna	Schaffner	CBL 6112B	06/11/2007
SYNSESIZED SWEEPER	AGILENT	83640B	09/22/2007
DIPOLE ANTENNA	SCHWRZBECK	914; 915	07/13/2007
DIPOLE ANTENNA	SCHWRZBECK	897; 898	07/13/2007
Wireless Com. Test Set	Agilent	8960	02/21/2008

Figure 2 : Frequencies measured below 1 GHz configuration

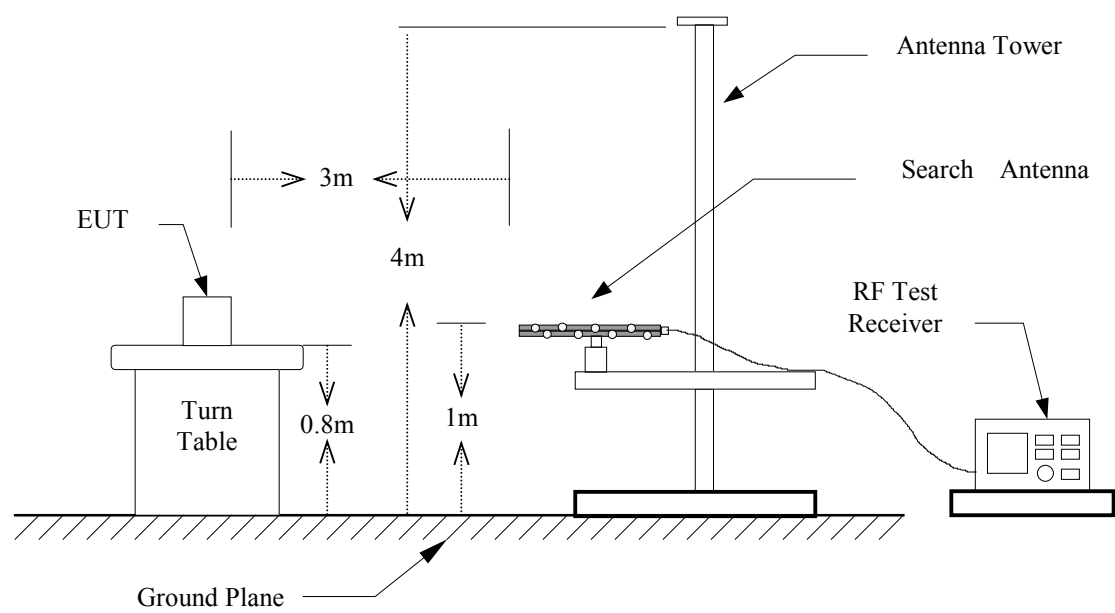
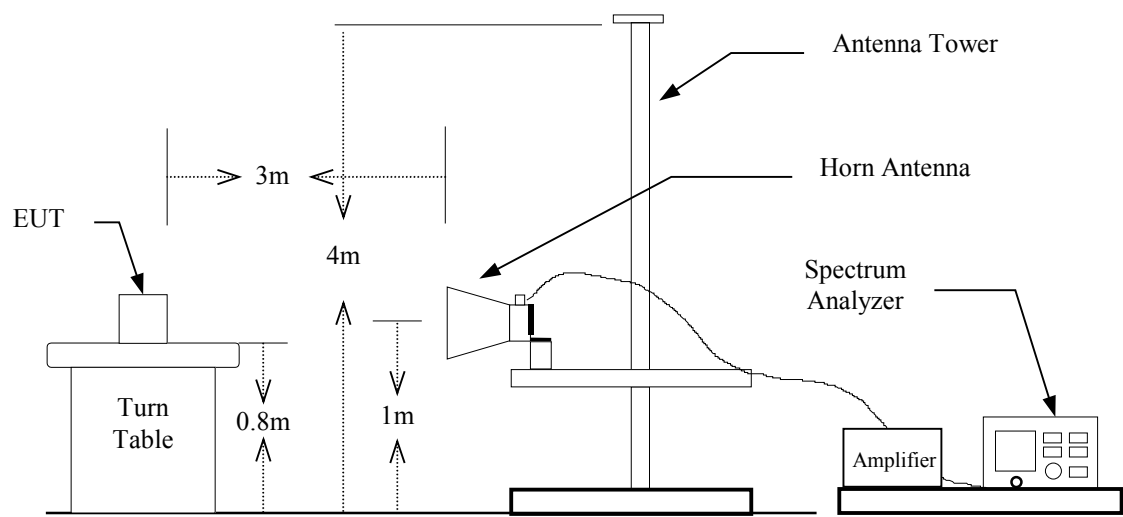


Figure 3 : Frequencies measured above 1 GHz configuration



4.4 Test Result

Test Date : : Mar. 09, 2007Temperature : 17°CHumidity : 74%

CDMA800 Band (ERP)

EUT Status: Operated at max power

Test Mode	Channel	Frequency (MHz)	Antenna Pol.	Reference Reading (dBUV/m)	SG & Amp (dBm)	Ant. Gain (dBd)	Cable Lose (dB)	ERP Result (dBm)	Limit (dBm)
CDMA800	1013	824.70	H	115.3	28.8	-10.2	0.7	17.9	38.5
			V	117.7	31.6	-10.2	0.7	20.7	38.5
	384	836.52	H	116.2	29.6	-10.2	0.7	18.7	38.5
			V	117.8	31.7	-10.2	0.7	20.8	38.5
	777	848.31	H	116.0	29.7	-10.2	0.7	18.8	38.5
			V	118.0	31.7	-10.2	0.7	20.8	38.5
Measurement uncertainty: ± 4.38dB									

5. OCCUPIED BANDWIDTH MEASUREMENT

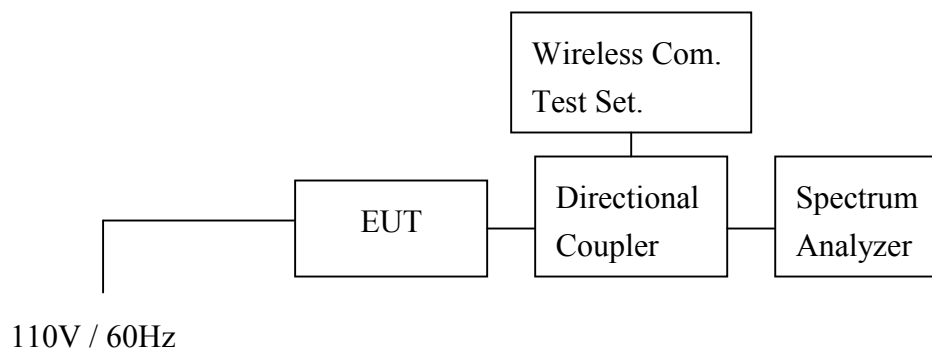
5.1 Standard Applicable

According to §FCC 2.1049.

5.2 Measurement Procedure

The setup of the EUT as shown in figure 4. The EUT's output RF connector was connected with a short cable to the spectrum analyzer, RBW was set to about 1% of emission BW, -26dBc display line was placed on the screen (or 99% bandwidth), the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace.

Figure 4: Occupied Bandwidth measurement



5.3 Measuring Instrument

Equipment	Manufacturer	Model No.	Next Cal. Due
Spectrum Analyzer	Rohde & Schwarz	FSU46	10/31/2007
Directional Coupler	AR	DC7420	12/05/2007
Wireless Com. Test Set	Agilent	8960	02/21/2008
Spectrum Analyzer	Agilent	8564EC	09/22/2007

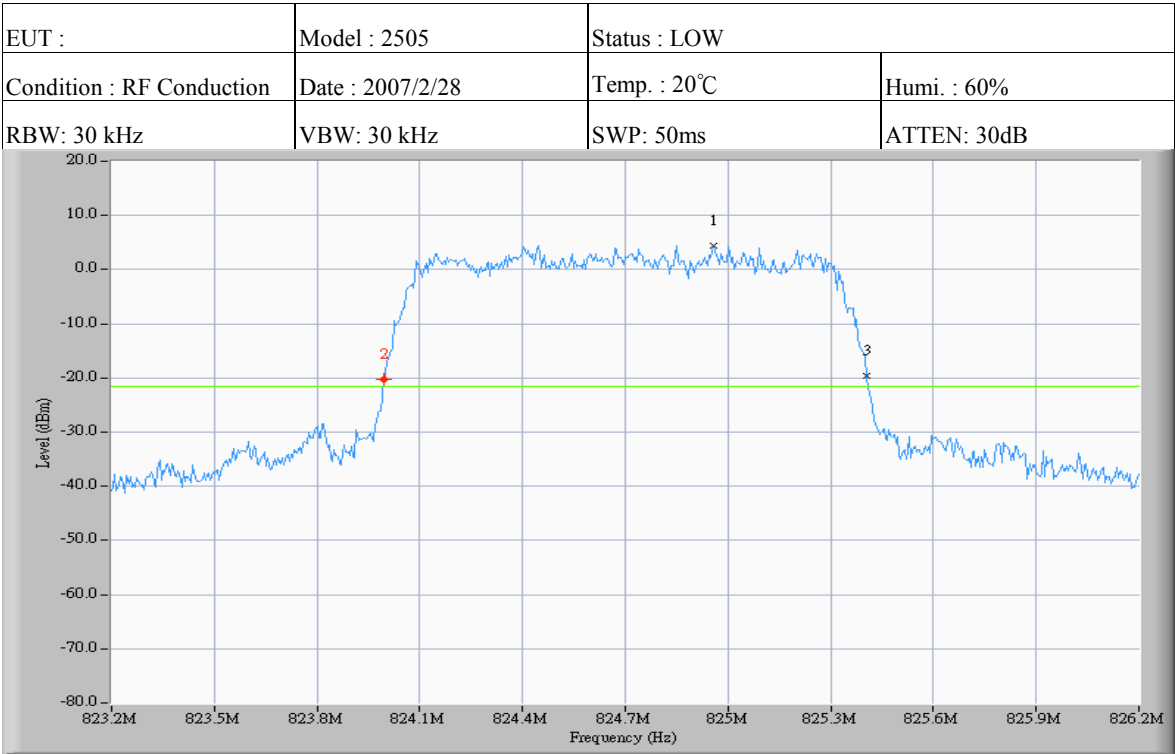
5.4 Test ResultTest Date : : Feb. 28, 2007Temperature : 20°CHumidity : 60%

CDMA800Band

EUT Status: Operated at max power

Test Mode	Channel	Frequency (MHz)	Bandwidth (kHz)	Chart
CDMA800	1013	824.70	1423	Page 14
	384	836.52	1431	Page 15
	777	848.31	1415	Page 16
Measurement uncertainly: $\pm 1.17 \times 10^{-6}$				

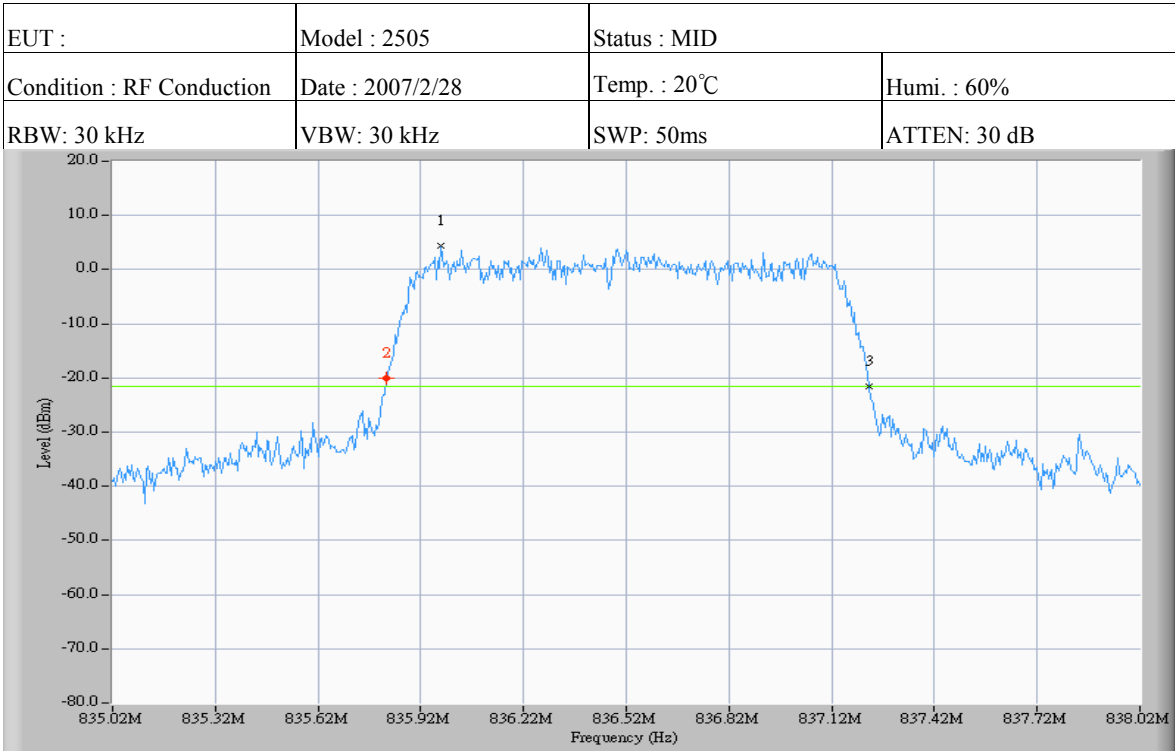
Note: Please refer to page 14 to page 16 for chart.



Test Condition: Display Line (-21.80dBm)

Mkr	Frequency (MHz)	Level (dBm)
1	824.971	4.2
2	823.997	-20.3
3	825.409	-19.7

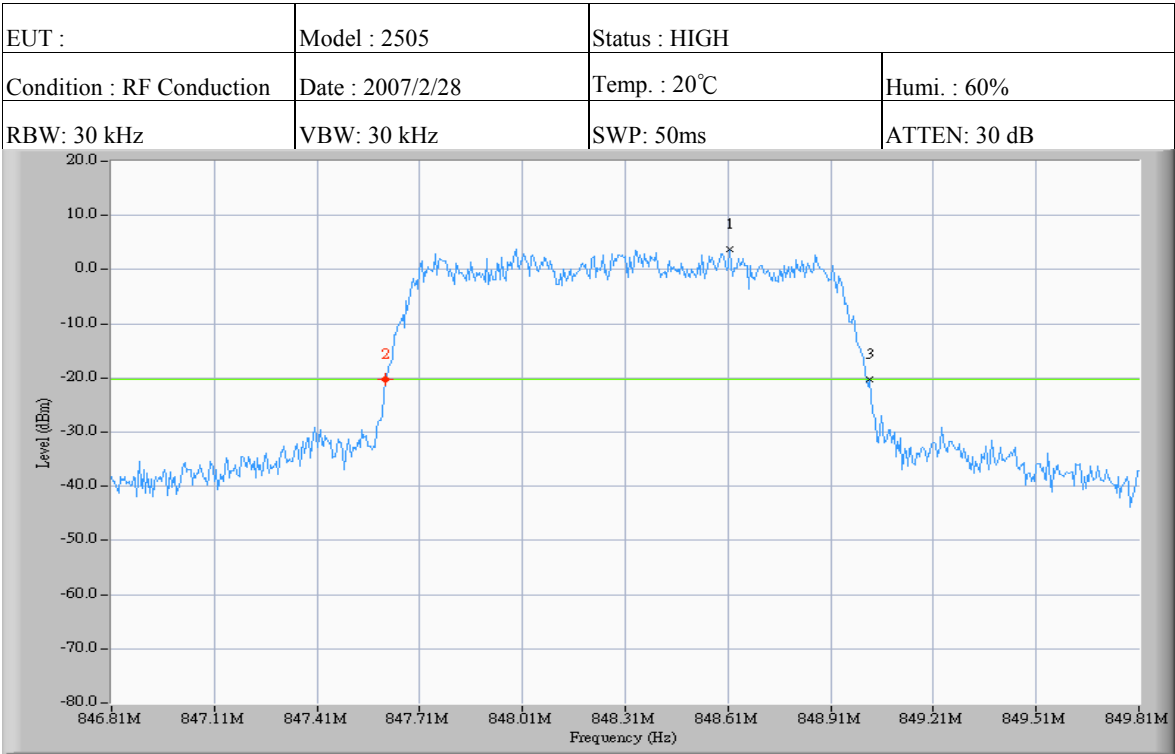
		Δ Frequency (MHz)	Δ Level (dB)
1	Mkr 3 - Mkr 2	1.412	0.6



Test Condition: Display Line (-21.86dBm)

Mkr	Frequency (MHz)	Level (dBm)
1	835.980	4.1
2	835.820	-20.0
3	837.251	-21.5

		Δ Frequency (MHz)	Δ Level (dB)
1	Mkr 3 - Mkr 2	1.431	-1.5



Test Condition: Display Line (-20.64dBm)

Mkr	Frequency (MHz)	Level (dBm)
1	848.615	3.4
2	847.612	-20.2
3	849.027	-20.4

		Δ Frequency (MHz)	Δ Level (dB)
1	Mkr 3 - Mkr 2	1.415	-0.2

6. OUT OF BAND EMISSION AT ANTENNA TERMINALS

6.1 Standard Applicable

According to FCC §2.1051

Out of Band Emissions: The mean power of emission must be attenuated below the mean power of the non-modulated carrier (P) on any frequency twice or more than twice the fundamental frequency by at least $43 + 10 \log P$ dB.

Band Edge Requirements: In the 1MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1% of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the Out of band Emission.

Mobile Receiver Emissions in Base Frequency Range: The mean power of any emissions appearing in the base station frequency range from cellular mobile transmitters operated must be attenuated to a level not exceed -80 dBm at the transmit antenna connector.

6.2 Measurement Procedure

The setup of the EUT as shown in figure 4 (Section 5.2).

The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 1MHz, sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic.

For the out of band: Set the RBW, VBW=1MHz, Start=30MHz, Stop= 10th harmonic. Limit = -13 dBm

Band Edge Requirements: In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band emissions. Limit = -13dBm.

For Receiver Emission: Set the RBW = 10kHz, VBW = 30kHz, Start = 30MHz, Stop = 10th harmonic, Limit = -80 dBm

6.3 Measurement Equipment

Equipment	Manufacturer	Model No.	Next Cal. Due
Spectrum Analyzer	Rohde & Schwarz	FSU46	10/31/2007
Directional Coupler	AR	DC7420	12/05/2007
Wireless Com. Test Set	Agilent	8960	02/21/2008
Spectrum Analyzer	Agilent	8564EC	09/22/2007

6.4 Test Result

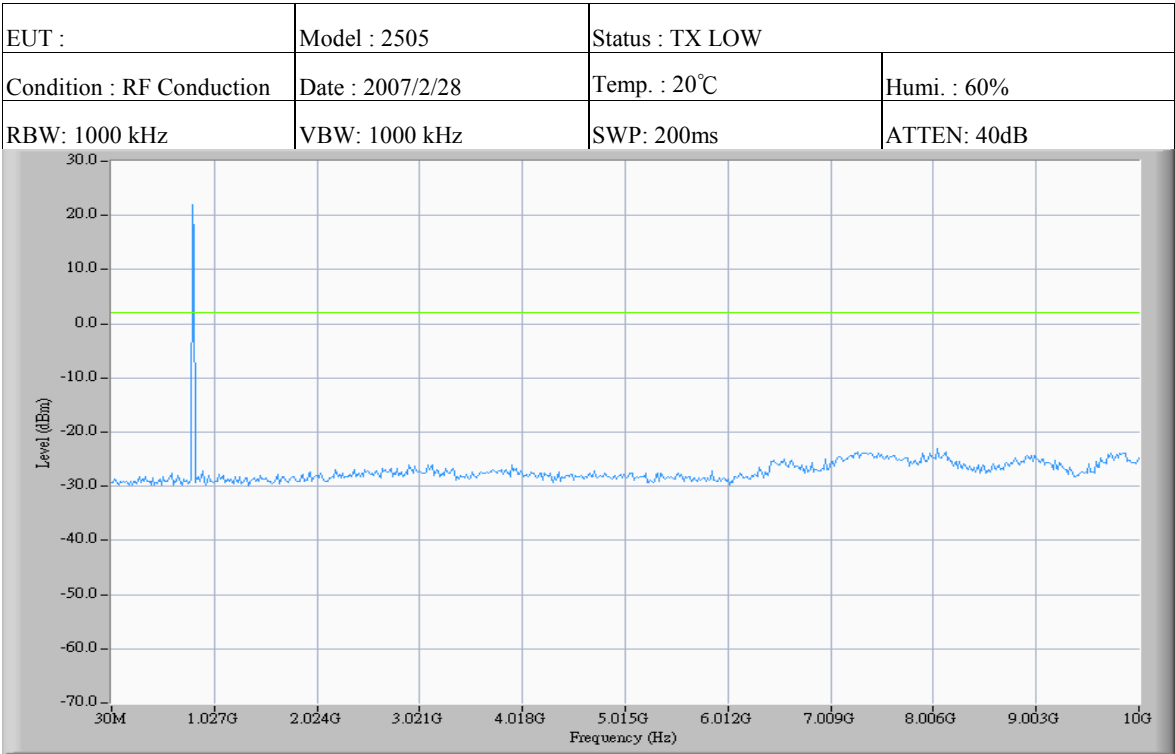
Test Date : : Feb. 28, 2007Temperature : 20°CHumidity : 60%

CDMA800 Band

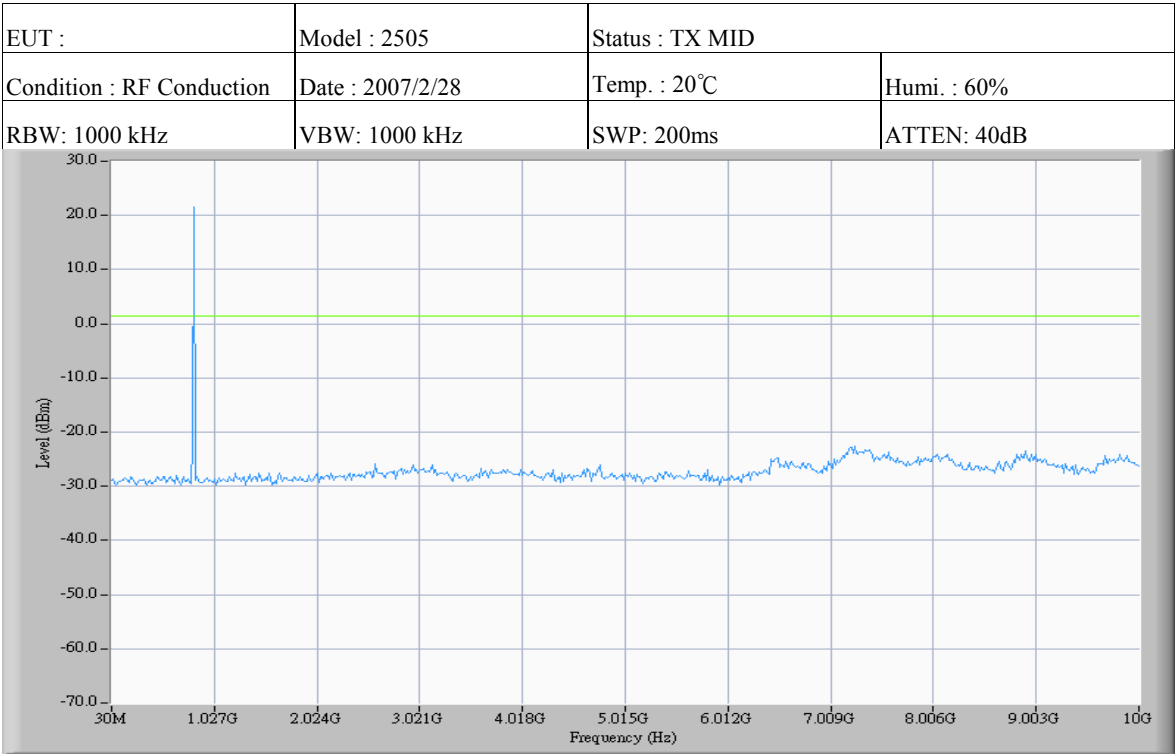
EUT Status: Operated at max power

Test Mode	Channel	Frequency Range	Note	Chart
CDMA800 TX	1013	30MHz-20GHz	All Band Edge	Page 19
	384	30MHz-20GHz	All Band Edge	Page 20
	777	30MHz-20GHz	All Band Edge	Page 21
	1013	823MHz-825MHz	Lower Band Edge	Page 22
	777	848MHz-850MHz	Upper Band Edge	Page 23
CDMA800 RX	1013	869MHz-894MHz	--	Page 24
	384	869MHz-894MHz	--	Page 25
	777	869MHz-894MHz	--	Page 26
Measurement uncertainty: +1.44 / -1.45dB				

Note: Please refer to page 19 to page 26 for chart.



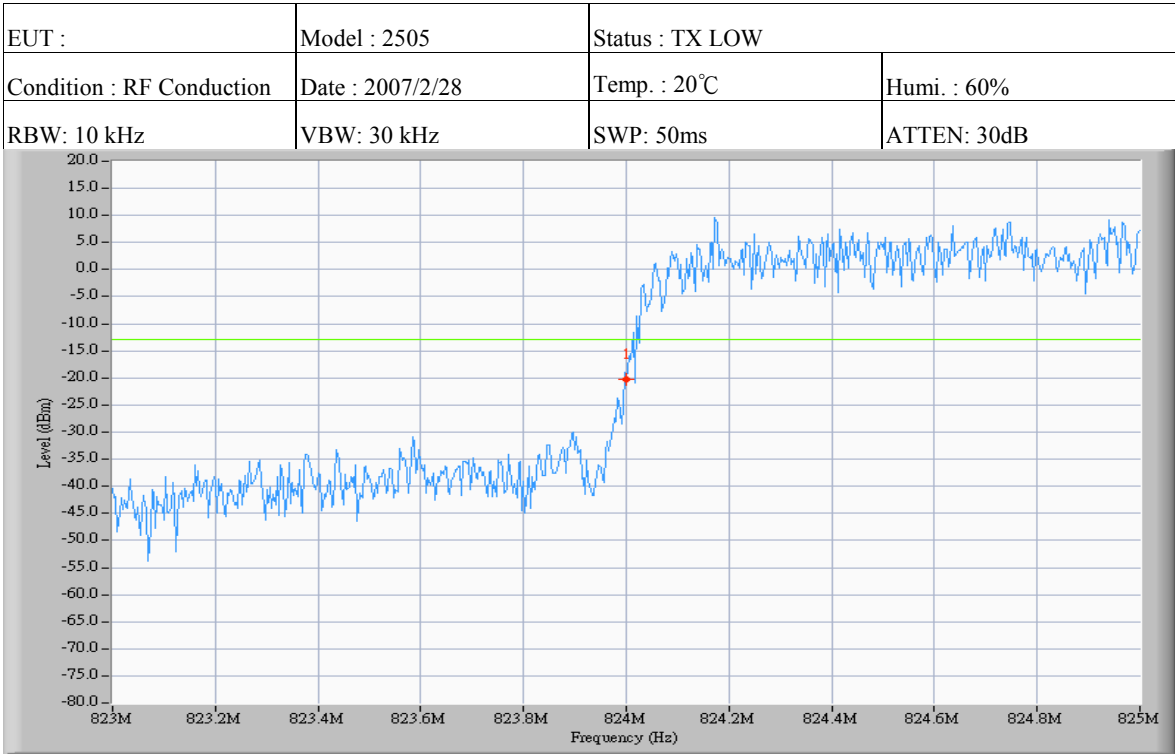
Test Request: (2.00dBm)



Test Request: (1.50dBm)

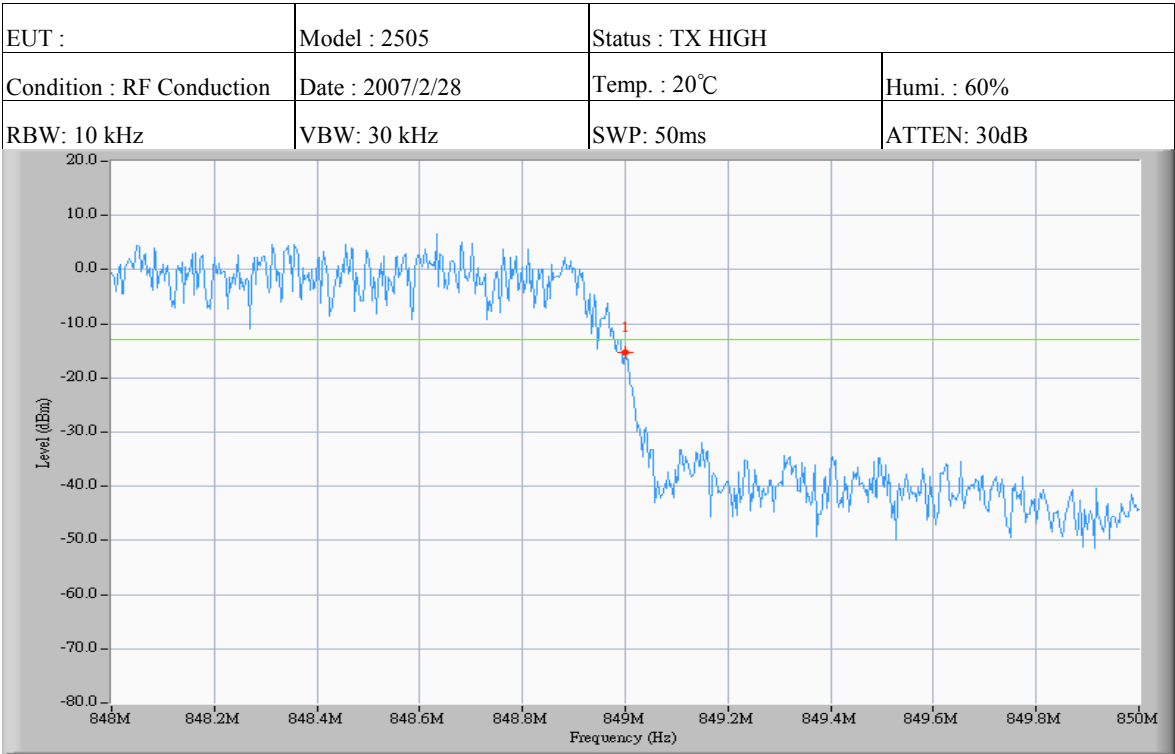


Test Request: (1.84dBm)



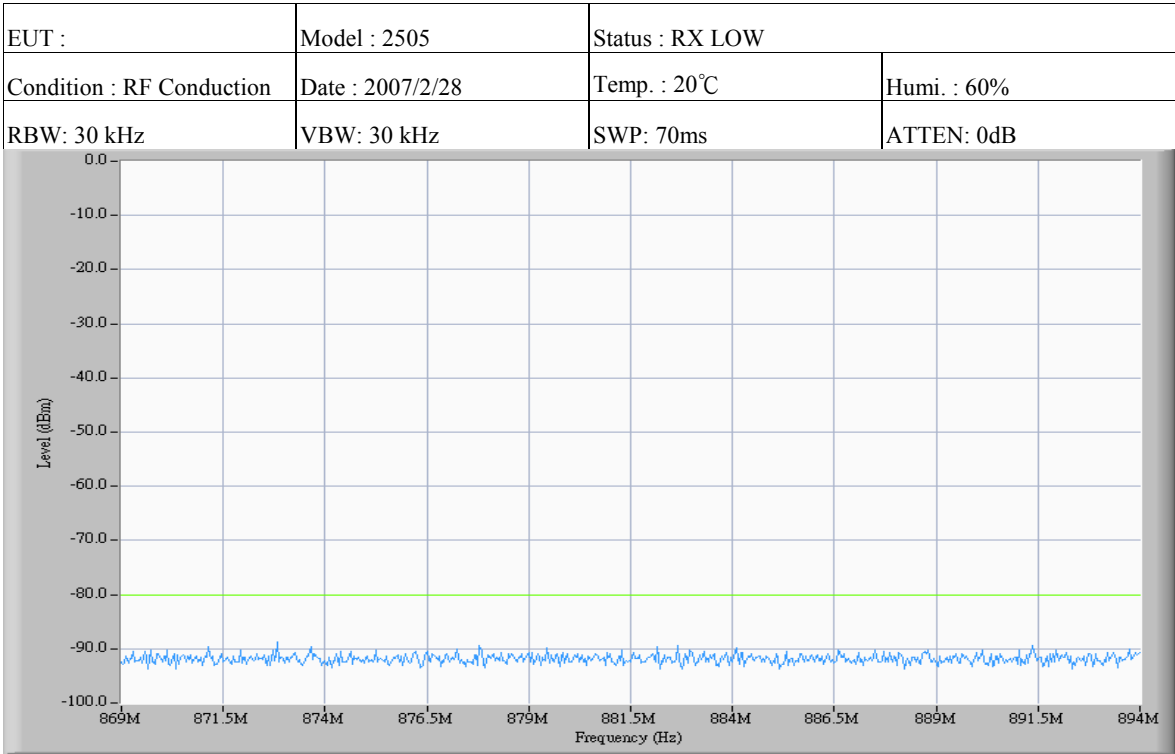
Test Request: (-13dBm)

Mkr	Frequency (MHz)	Level (dBm)
1	824.000	-20.3

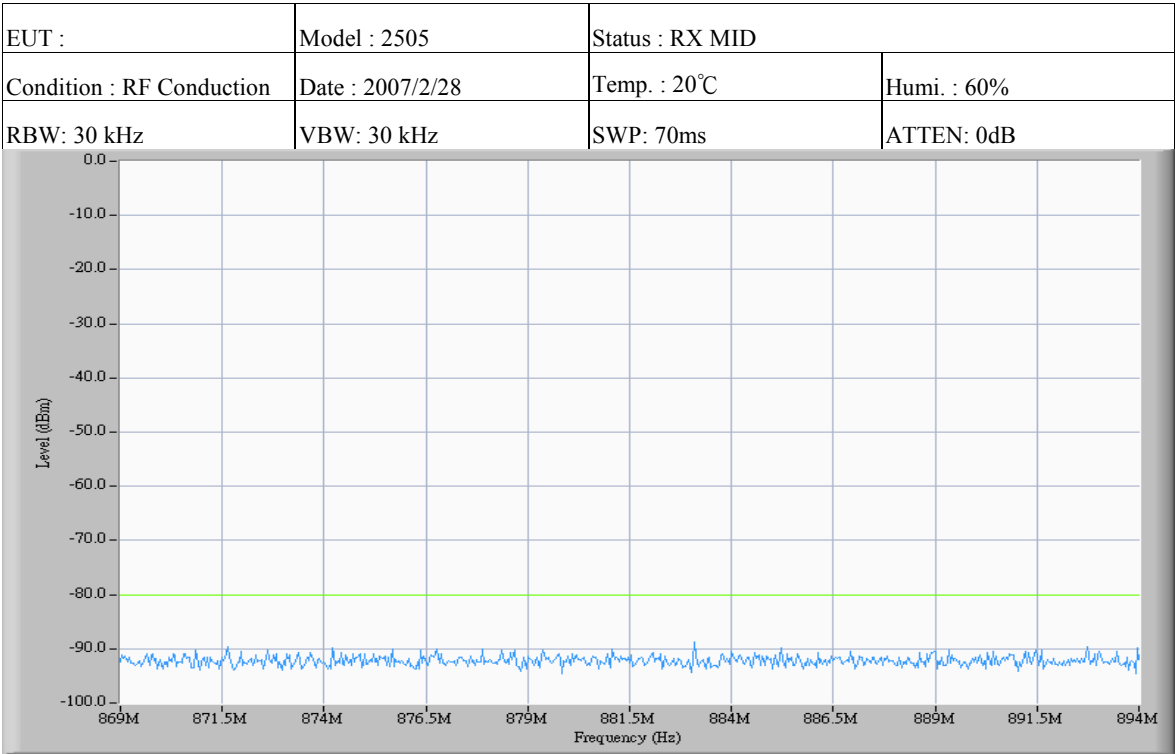


Test Request: (-13dBm)

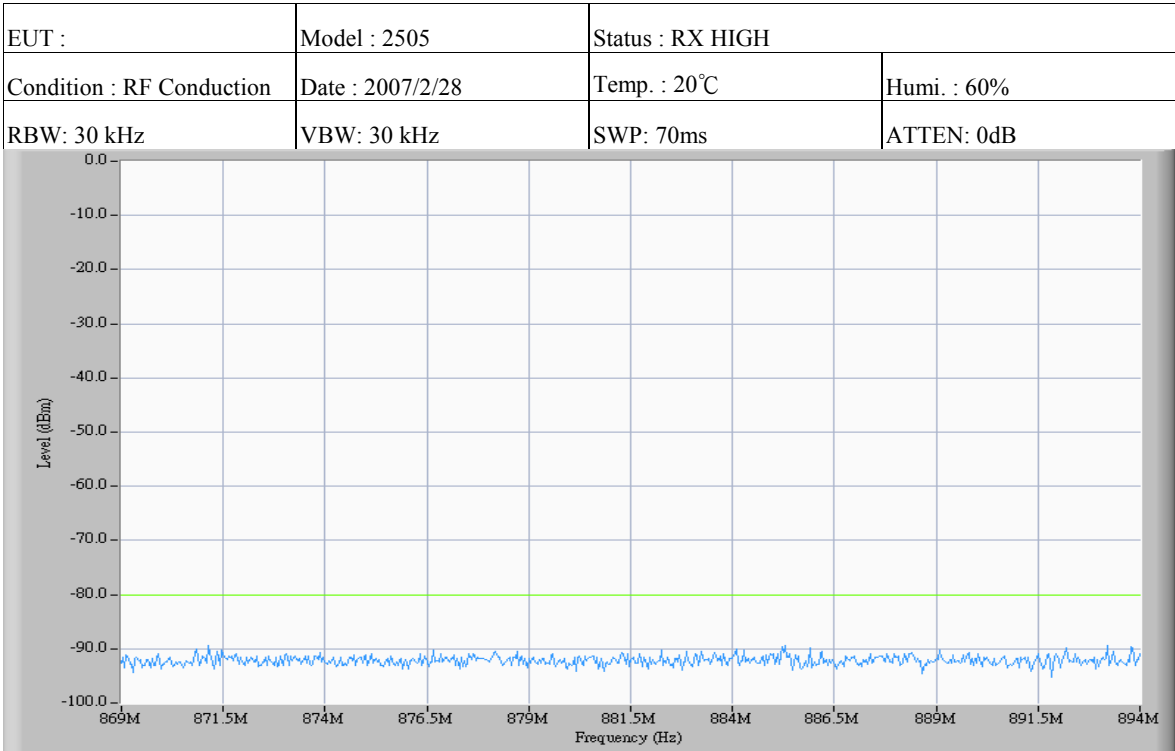
Mkr	Frequency (MHz)	Level (dBm)
1	849.000	-15.3



Test Request: (-80dBm)



Test Request: (-80dBm)



Test Request: (-80dBm)

7. FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT

7.1 Standard Applicable

According to FCC §2.1053

7.2 Measurement Procedure

The setup of the EUT as shown in figure 2 and figure 3. The EUT was placed on a non-conductive, the measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

The worst case position: x-axis.

The frequency range up to tenth harmonic was investigated for each of three fundamental frequency (low, middle and high channels). Once spurious emission were identified, the power of the emission was determined using the substitution method.

The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency.

$ERP = \text{S.G. output (dBm)} + \text{Antenna Gain (dBd)} - \text{Cable (dB)}$

$EIRP = \text{S.G. output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable (dB)}$

Note: Frequency to be investigated up to the 10th harmonic of the highest clock or frequency used.

7.3 Measurement Equipment

Equipment	Manufacturer	Model No.	Next Cal. Due
EMI Test Receiver	R&S	ESIB7	05/25/2007
Spectrum Analyzer	Rohde & Schwarz	FSU46	10/31/2007
Horn Antenna	EMCO	3115	06/06/2007
BiLog Antenna	Schaffner	CBL 6112B	06/11/2007
Horn Antenna	COM-POWER	AH-118	04/16/2007
Preamplifier	Hewlett-Packard	8449B	09/17/2007
SYNSESIZED SWEEPER	AGILENT	83640B	09/22/2007
DIPOLE ANTENNA	SCHWRZBECK	914; 915	07/13/2007
DIPOLE ANTENNA	SCHWRZBECK	897; 898	07/13/2007
Wireless Com. Test Set	Agilent	8960	02/21/2008

7.4 Test Result

Test Date : : Feb. 28, 2007Temperature : 20°CHumidity : 60%

EUT Status: Operated at max power

Operated mode : CDMA800 / CH1013

Frequency (MHz)	Antenna Pol.	Reference Reading (dBuv)	SG Output (dBm)	Antenna Gain (dBi)	Cable Loss & Att. (dB)	EIRP Result (dBm)	Limit (dBm)
1649.038	H	62.1	-11.2	8.5	40.7	-43.4	-13.0
1649.038	V	60.7	-13.8	8.5	40.7	-46.0	-13.0
2485.772	H	60.8	-10.4	9.7	41.0	-41.7	-13.0
2485.772	V	55.2	-15.0	9.7	41.0	-46.3	-13.0

Operated mode : CDMA800 / CH384

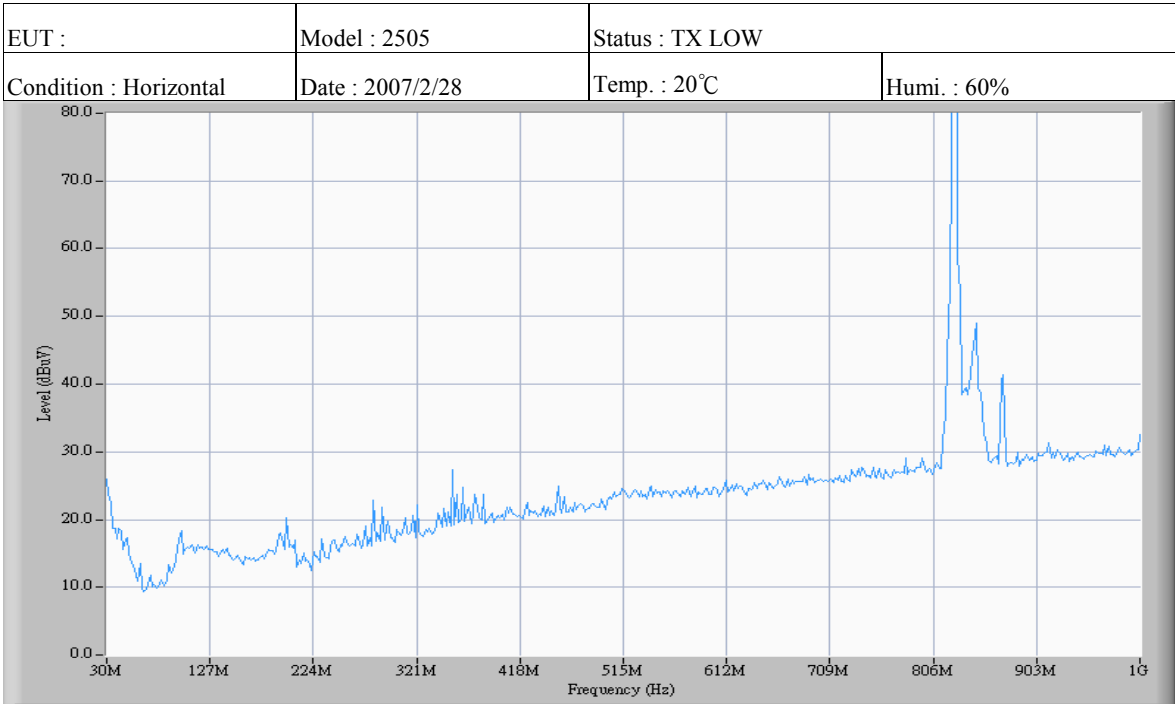
Frequency (MHz)	Antenna Pol.	Reading (dBuv)	SG Output (dBm)	Antenna Gain (dBi)	Cable Loss & Att. (dB)	EIRP Result (dBm)	Limit (dBm)
1677.885	H	65.2	-8.5	8.5	40.7	-40.7	-13.0
1677.885	V	62.2	-11.3	8.5	40.7	-43.5	-13.0
2514.423	H	68.9	-2.2	9.7	41.0	-33.5	-13.0
2514.423	V	66.2	-3.9	9.7	41.0	-35.2	-13.0

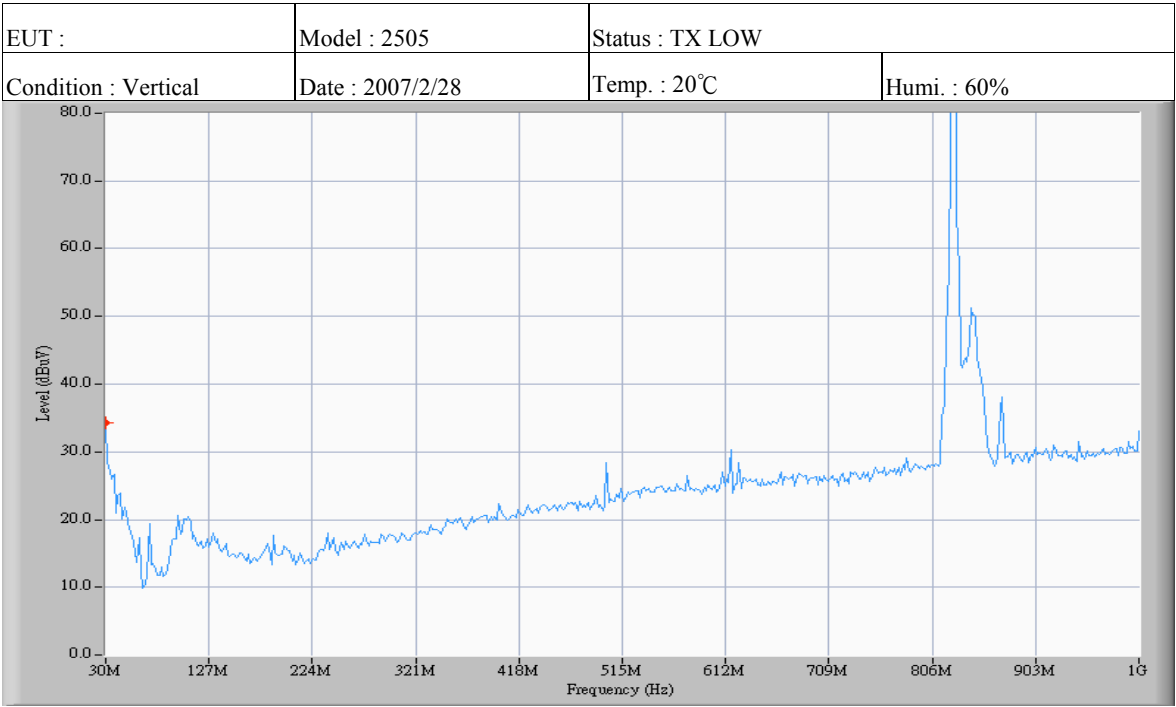
Operated mode : CDMA800 / CH777

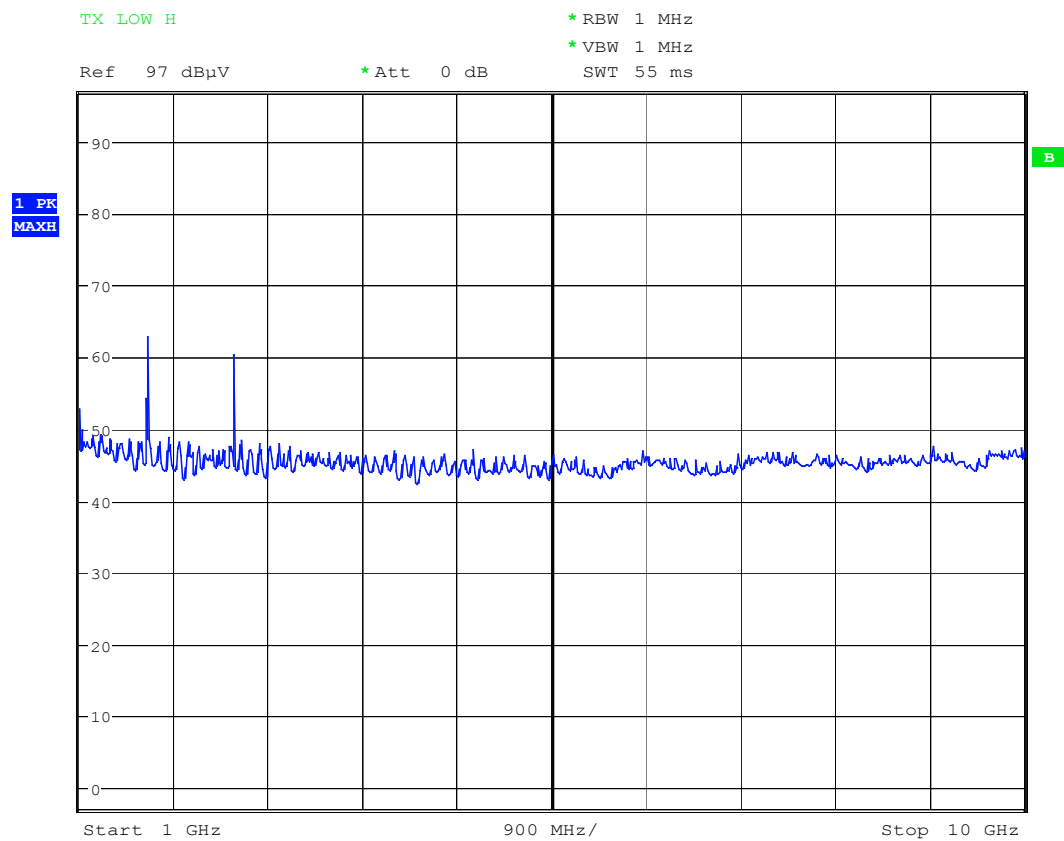
Frequency (MHz)	Antenna Pol.	Reading (dBuv)	SG Output (dBm)	Antenna Gain (dBi)	Cable Loss & Att. (dB)	EIRP Result (dBm)	Limit (dBm)
1692.307	H	62.3	-11.6	8.5	40.7	-43.8	-13.0
1692.307	V	59.1	-14.8	8.5	40.7	-47.0	-13.0
2543.269	H	61.2	-9.3	9.7	41.0	-40.6	-13.0
2543.269	V	56.7	-14.1	9.7	41.0	-45.4	-13.0

Note:

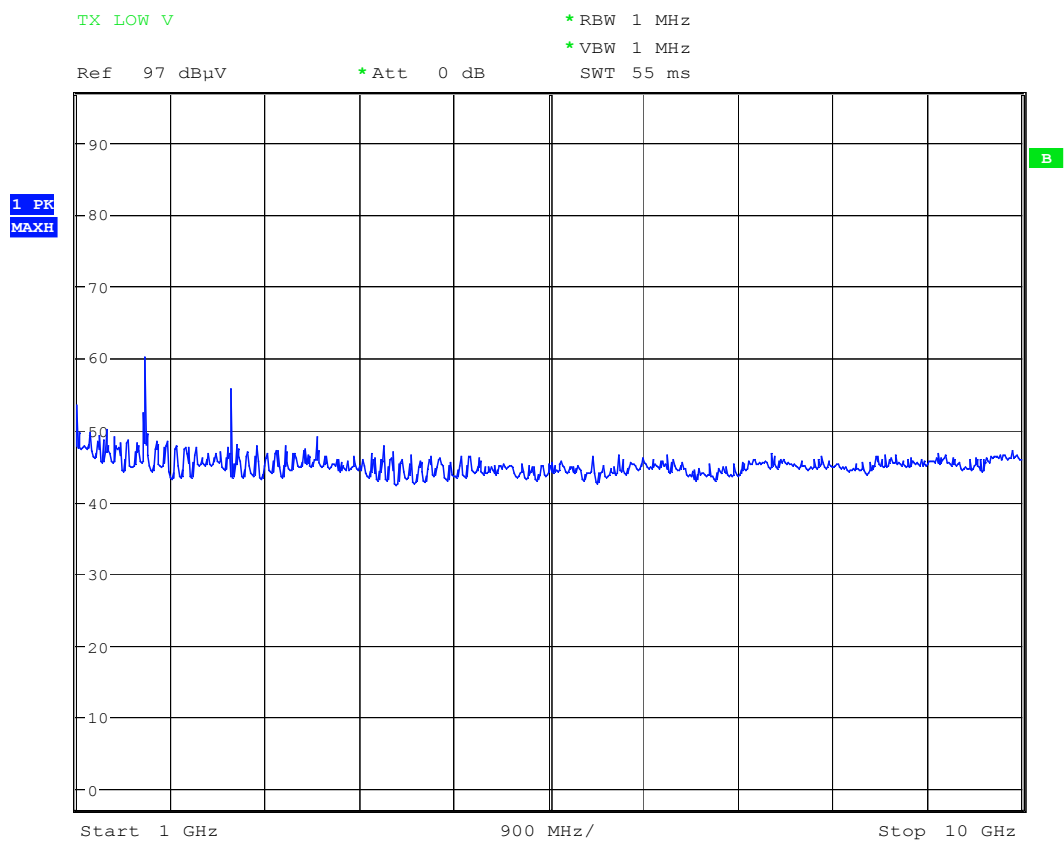
1. Place of Measurement: Measuring site of the ETC.
2. The estimated measurement uncertainty of the result measurement is
 $\pm 4.6\text{dB}$ ($30\text{MHz} \leq f < 300\text{MHz}$).
 $\pm 4.4\text{dB}$ ($300\text{MHz} \leq f < 1000\text{MHz}$).
 $\pm 4.1\text{dB}$ ($1\text{GHz} \leq f \leq 18\text{GHz}$).



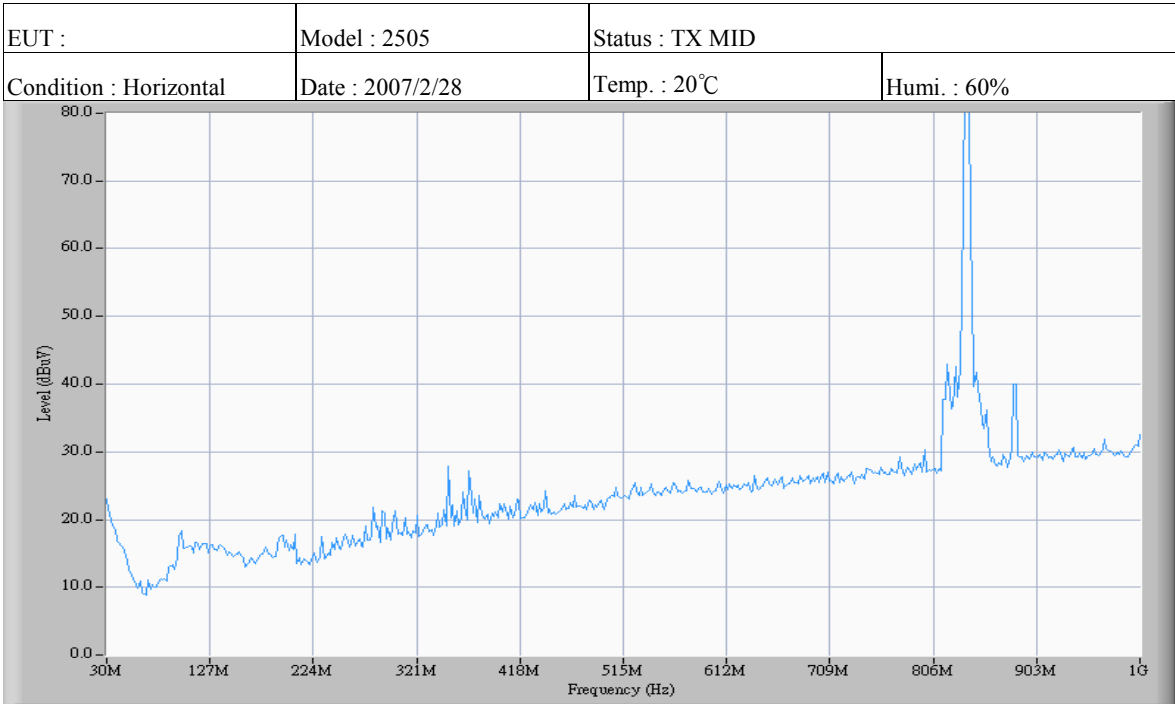


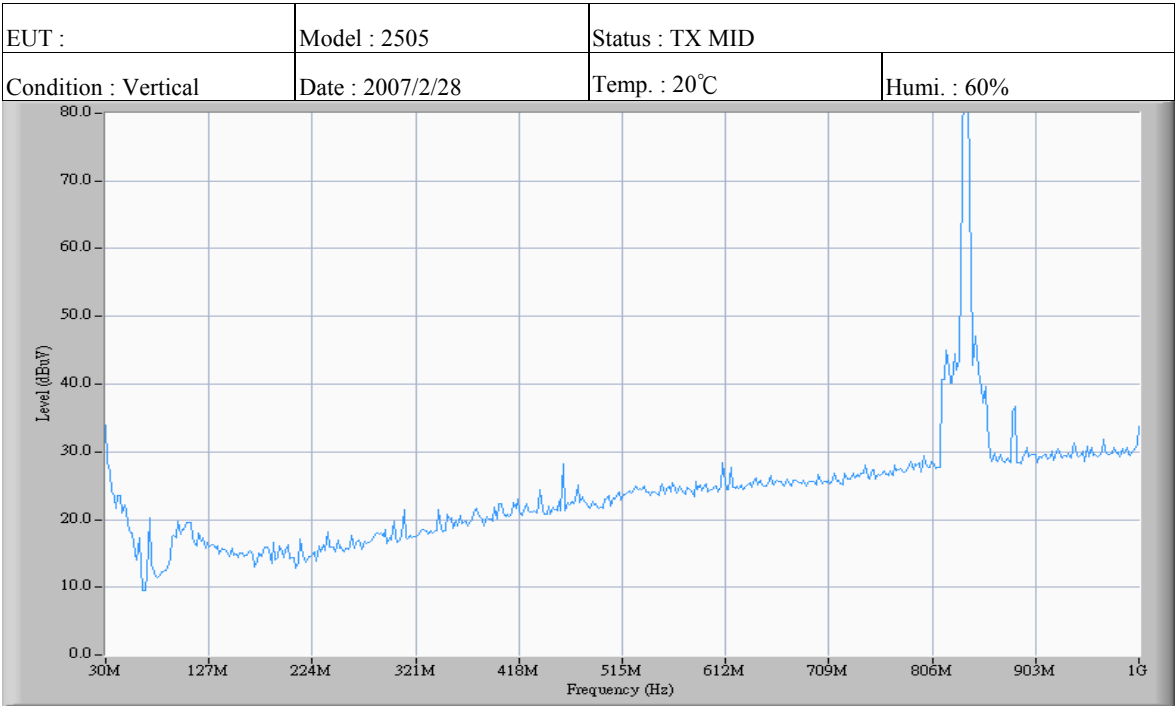


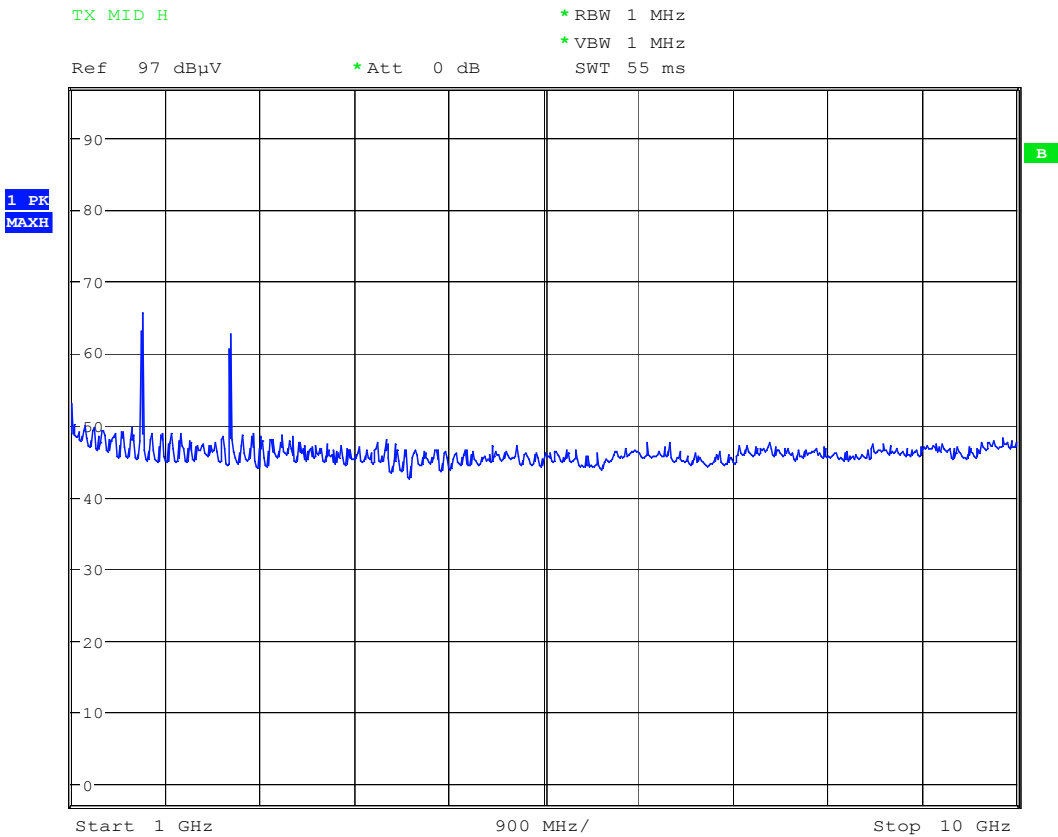
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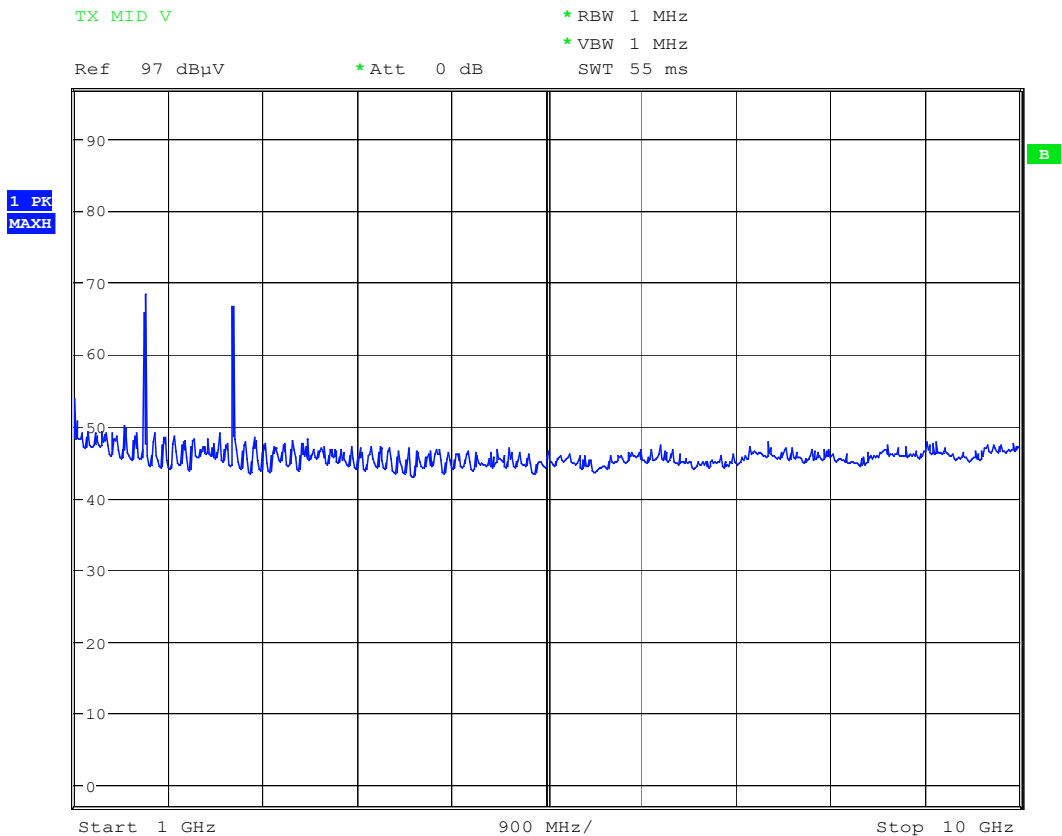
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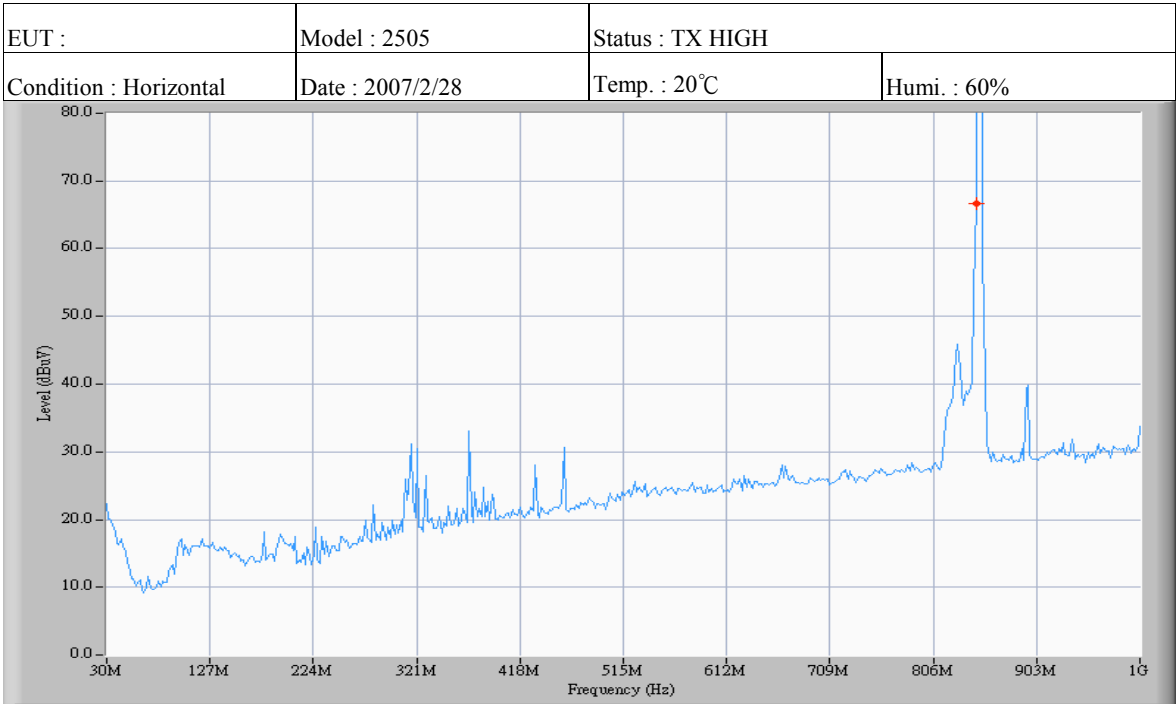


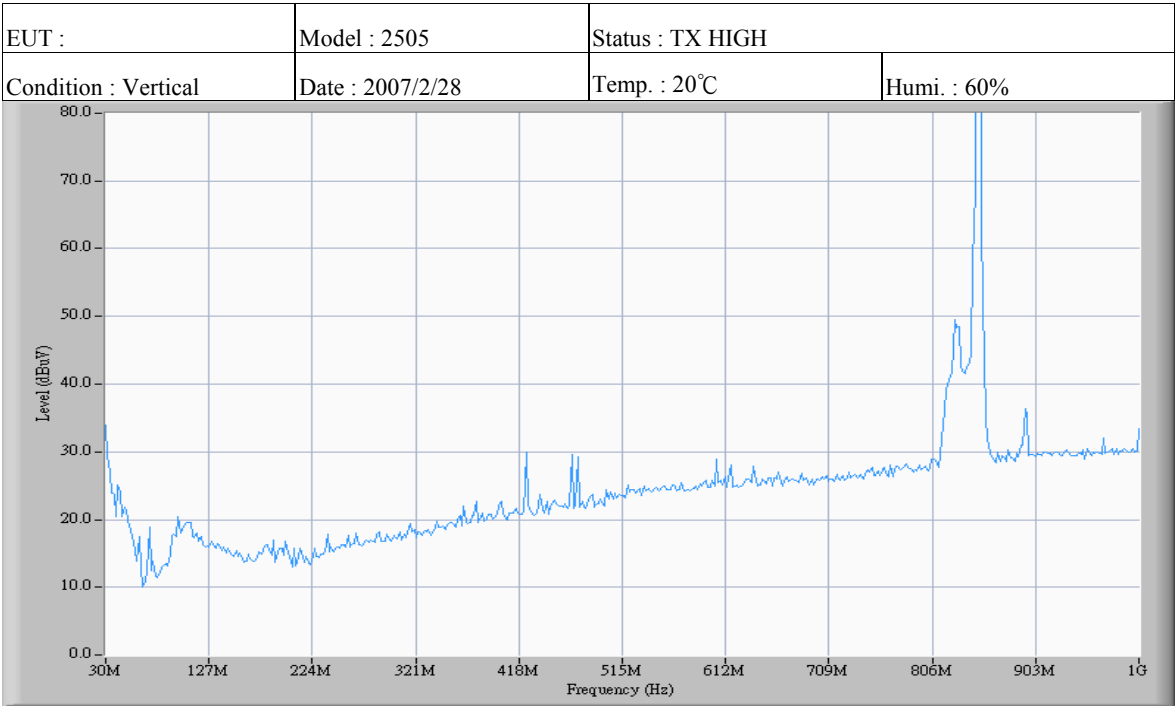


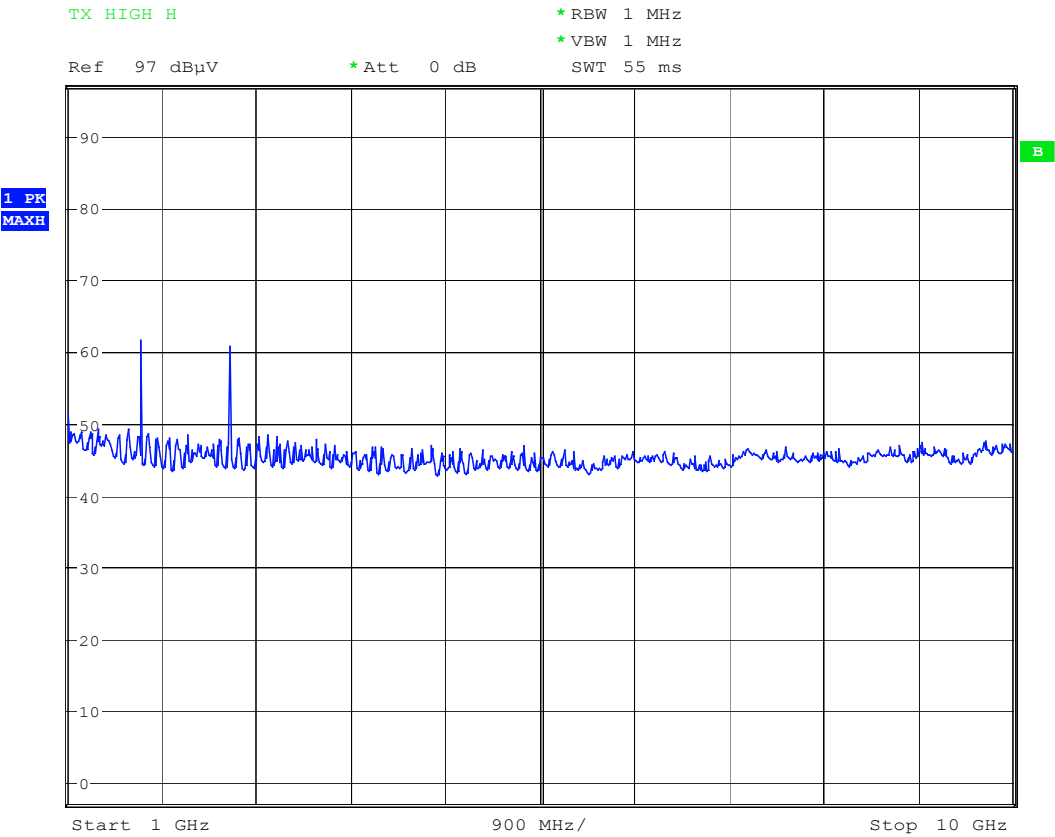
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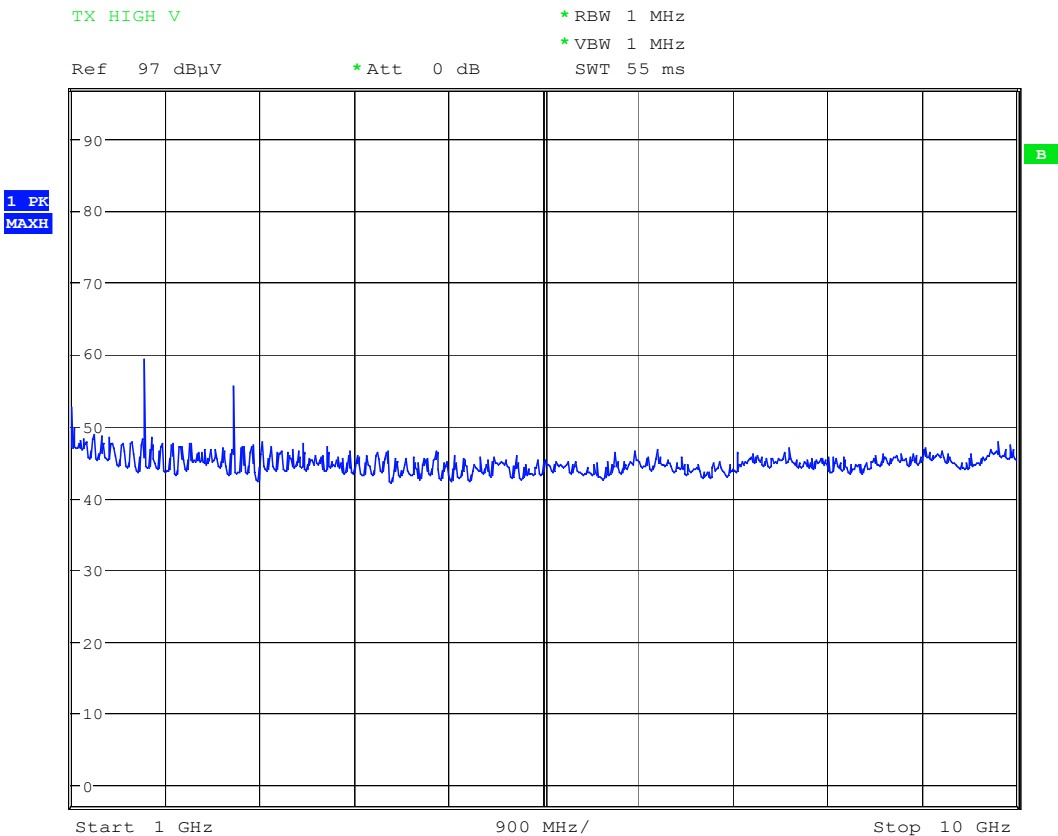
Date: 28.FEB.2007 18:54:16







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8. FREQUENCY STABILITY MEASUREMENT

8.1 Standard Applicable

According to FCC §2.1055, FCC §22.355.

Frequency Tolerance: 2.5 ppm

8.2 Measurement Procedure

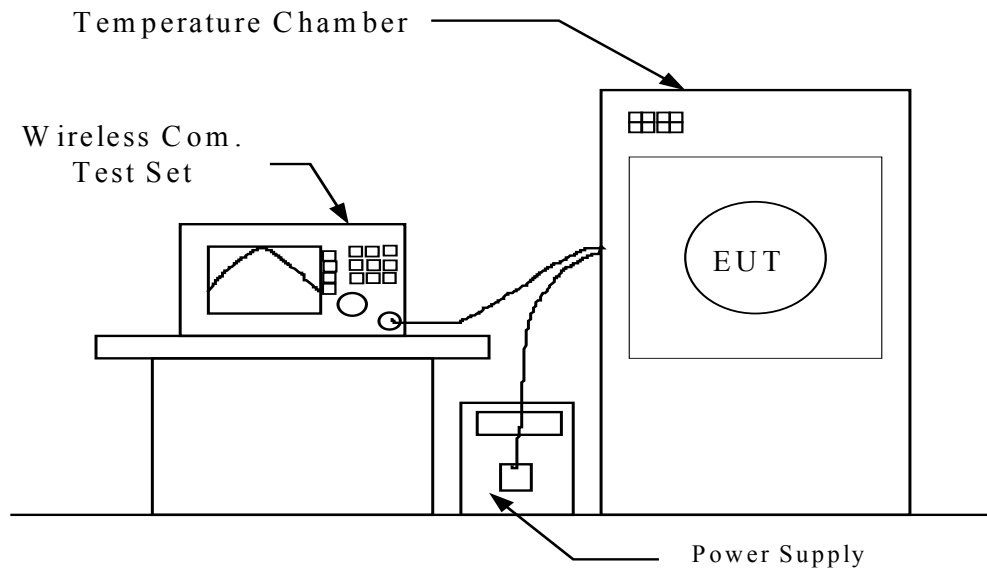
Frequency Error V.S. Temperature:

The setup of the EUT as shown in figure 5. The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to the base station simulator. The EUT was placed inside the temperature chamber. Measure EUT 20°C operating frequency change and record. Turn EUT off and set the chamber temperature to -30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency change. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

Frequency Error V.S. Voltage:

Set chamber temperature to 20°C. Use a variable DC (AC) power supply to power the EUT and set the voltage to rated voltage. Reduce the input voltage to specify extreme voltage variation (15%) and endpoint, record the maximum frequency change.

Figure 5: Frequency stability measurement configuration.



8.3 Measurement Equipment

Equipment	Manufacturer	Model No.	Next Cal. Date
Wireless Com. Test Set	Agilent	8960	02/21/2008
Temperature Chamber	ESPEC	EBR-3HW2P3A-22	01/16/2008
DC Power Supply	GW	GPC-3030D	N/A
Multimeter	YU FONG	YF-1069	04/26/2007

8.4 Test Result

Test Date : : Feb. 28, 2007Temperature : 20°CHumidity : 60%

EUT Status: Operated at max power

Reference Frequency: CDMA800 Mid Channel 836.52 MHz @ 20°C			
Limit: ± 2.5 ppm = ± 2091 Hz			
Power Supply Vdc	Environment Temperature (°C)	Frequency Change(Hz)	Limit (Hz)
3.7Vdc	50	8	± 2091
	40	7	
	30	6	
	20	6	
	10	6	
	0	7	
	-10	6	
	-20	7	
	-30	6	
4.3Vdc	20	7	
3.4Vdc		6	
Measurement uncertainly: ± 1.17 x 10 ⁻⁶			