



**FCC 47 CFR PART 22 SUBPART H AND PART 24 SUBPART E**

**TEST REPORT**

**For**

**Personal computer**

**Model:  
PCG-51311L, PCG-51411L**

**Trade Name: SONY**

*Issued to*

**Sony Corporation  
1-7-1 Konan Minato-ku Tokyo 108-0075 Japan**

*Issued by*

**Compliance Certification Services Inc.  
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Testing Laboratory  
1309

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# 1. TEST RESULT CERTIFICATION

**Applicant:** Sony Corporation  
 1-7-1 Konan Minato-ku Tokyo 108-0075 Japan

**Equipment Under Test:** Personal computer

**Trade Name:** SONY

**Model:** PCG-51311L, PCG-51411L

**Date of Test:** March 22 ~ April 3, 2010

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC 47 CFR Part 22 Subpart H & Part 24 Subpart E	No non-compliance noted

### We hereby certify that:

The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in TIA/EIA-603-C: 2004 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rule FCC PART 22 Subpart H and PART 24 Subpart E.

The test results of this report relate only to the tested sample identified in this report.

Approved by:

Reviewed by:

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Rex Lai  
 Section Manager  
 Compliance Certification Services Inc.

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Gina Lo  
 Section Manager  
 Compliance Certification Services Inc.



## 2. EUT DESCRIPTION

<b>Product</b>	Personal computer
<b>Trade Name</b>	SONY
<b>Model Number</b>	PCG-51311L, PCG-51411L
<b>Model Discrepancy</b>	All the specification and layout are identical except they come with different model numbers for marketing purposes.
<b>Power Adapter</b>	<p>1. Power Adapter</p> <p>a) Brand Name/ Description: SONY / VGP-AC19V43 I/P: 100-240V, 1.6A, 50-60Hz O/P: 19.5V, 3.3A</p> <p>b) Brand Name / Description: SONY / VGP-AC19V39 I/P: 100-240V, 1A, 50-60Hz O/P: 19.5V, 2A</p> <p>c) Brand Name / Description: SONY / VGP-AC19V44 I/P: 100-240V, 1.6A, 50-60Hz O/P: 19.5V, 3.3A</p> <p>d) Brand Name / Description: SONY / VGP-AC19V48 I/P: 100-240V, 1.5A, 50-60Hz O/P: 19.5V, 3.3A</p> <p>e) Brand Name / Description: SONY / VGP-AC19V49 I/P: 100-240V, 1.5A, 50-60Hz O/P: 19.5V, 3.3A</p> <p>f) Brand Name / Description: SONY / VGP-AC19V40 I/P: 100-240V, 1A, 50-60Hz O/P: 19.5V, 2A</p> <p>g) Brand Name / Description: SONY / VGP-AC19V47 I/P: 100-240V, 0.75A, 50-60Hz O/P: 19.5V, 2A</p> <p>2. Li-ion Battery:</p> <p>a) Trade Name / Description SONY / VGP-BPL21 Rating: 10.8V, 7500mAh, 81Wh</p> <p>b) Trade Name / Description SONY / VGP-BPS21A Rating: 10.8V, 5000mAh, 54Wh</p>



<b>Frequency Range</b>	TX: 824.7 ~ 848.31 MHz / 1851.25 ~ 1908.75 MHz RX: 869.7 ~ 893.31 MHz / 1931.25 ~ 1988.75 MHz
<b>Transmit Power (ERP &amp; EIRP Power)</b>	CDMA2000 1xRTT 850 MHz: 25.81 dBm 1900 MHz: 28.81 dBm CDMA2000 1xEVDO 850 MHz: 25.22 dBm 1900 MHz: 29.30 dBm
<b>Cellular Phone Protocol</b>	CDMA2000 1xRTT CDMA2000 1xEVDO
<b>Type of Emission</b>	CDMA2000 1xRTT: 824.7 ~ 848.31 MHz: 1M27F9W--- 1851.25 ~ 1908.75 MHz: 1M27F9W--- CDMA2000 1xEVDO 824.7 ~ 848.31 MHz: 1M27F9W--- 1851.25 ~ 1908.75 MHz: 1M27F9W---
<b>Antenna Specification</b>	Main: Brand / Part Number: Foxlink / 25.91006.001 850MHz: PIFA Antenna / Gain: -1.23 dBi 1900MHz: PIFA Antenna / Gain: 2.37 dBi Aux: Brand / Part Number: Foxlink / 25.91006.011 850MHz: PIFA Antenna / Gain: -4.47dBi 1900MHz: PIFA Antenna / Gain: -0.12 dBi

**Remark:**

1. The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.
2. This submittal(s) (test report) is intended for FCC ID: AK8PCG51311L filing to comply with Part 22 and Part 24 of the FCC 47 CFR Rules.



### **3. TEST METHODOLOGY**

Both conducted and radiated testing were performed according to the procedures document on chapter 13 of ANSI C63.4: 2003, TIA/EIA-603-C: 2004 and FCC CFR 47, 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055 and 2.1057.

#### **3.1 EUT CONFIGURATION**

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

#### **3.2 EUT EXERCISE**

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

#### **3.3 GENERAL TEST PROCEDURES**

##### **Conducted Emissions**

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

##### **Radiated Emissions**

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4.



### 3.4 DESCRIPTION OF TEST MODES

The EUT (model: PCG-51311L) comes with seven power adaptors, two batteries for sale. After the preliminary test, the EUT with power adapter (Model: VGP-AC19V39) and battery (VGP-BPS21A) was found to emit the worst emissions and therefore had been tested under operating condition.

After verification, all tests were carried out with the worst case test modes as shown below except radiated spurious emission below 1GHz and power line conducted emissions below 30MHz, which worst case was in normal link mode only.

EUT staying in continuous transmitting mode was programmed.

Pre-scan was performed on RF conducted port to determine the worst-case scenario:

Band	Channel	SO2	SO2	SO55	SO55	TDSO SO32	1xEvDO Rev.0	1xEvDO Rev.0
		RC1/1 (dBm)	RC3/3 (dBm)	RC1/1 (dBm)	RC3/3 (dBm)	RC3/3 (dBm)	(FTAP) (dBm)	(RTAP) (dBm)
Cellular	1013	24.33	24.35	24.32	24.36	24.35	24.35	24.33
	384	24.51	24.58	24.56	<b>24.62</b>	24.61	<b>24.71</b>	24.68
	777	24.38	24.39	24.34	24.42	24.39	24.61	24.57
PCS	25	23.64	23.66	23.61	23.67	23.63	23.68	23.64
	600	23.49	23.52	23.51	23.53	23.51	24.5	24.43
	1175	23.61	23.64	23.60	23.65	23.62	24.43	24.41

Based on the above results from the different modulations, CDMA2000 1xRTT RC3, SO32 (+F-SCH) and 1xEvDO, FTAP370 were determined to be the worst-case scenario for all tests.



## **4. INSTRUMENT CALIBRATION**

### **4.1 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.



## 4.2 MEASUREMENT EQUIPMENT USED

### Equipment Used for Emissions Measurement

*Remark: Each piece of equipment is scheduled for calibration once a year.*

Conducted Emissions Test Site				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY43360131	03/04/2011
Power Meter	Agilent	E4416A	GB41291611	06/28/2010
Power Sensor	Agilent	E9327A	US40441097	06/28/2010
Temp. / Humidity Chamber	Terchy	MHG-150LF	930619	09/15/2010
DC Power Source	Agilent	E3640A	MY40001774	01/08/2011

3M Semi Anechoic Chamber				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	US42510252	10/25/2010
Test Receiver	Rohde & Schwarz	ESCI	100064	11/29/2010
Switch Controller	TRC	Switch Controller	SC94050010	05/02/2010
4 Port Switch	TRC	4 Port Switch	SC94050020	05/02/2010
Horn-Antenna	TRC	HA-0502	06	06/03/2010
Horn-Antenna	TRC	HA-0801	04	10/19/2010
Bilog- Antenna	Sunol Sciences	JB3	A030205	09/11/2010
Loop Antenna	EMCO	6502	8905/2356	05/28/2010
Turn Table	Max-Full	MFT-120S	T120S940302	N.C.R.
Antenna Tower	Max-Full	MFA-430	A440940302	N.C.R.
Controller	Max-Full	MF-CM886	CC-C-1F-13	N.C.R.
Site NSA	CCS	N/A	FCC MRA: TW1039 IC: IC 2324G-1/-2	10/17/2010 11/04/2010
Reject Filter	Micro-Tronics	HPM13194	003	04/22/2011
S.G.	HP	83630B	3844A01022	07/08/2010
Substituted Dipole	Schwazbeck	VHAP/UHAP	998 +999/ 981+982	06/08/2010
Substituted Horn	EMCO	3115	00022257	12/15/2010
Test S/W	LABVIEW (V 6.1)			

Powerline Conducted Emissions Test Site				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI Test Receiver	R&S	ESHS30	828144/003	12/06/2010
LISN	EMCO	3825/2	9106-1809	05/03/2010
LISN	SCHAFFNER	NNB 41	03/10013	12/03/2010
Test S/W	LABVIEW (V 6.1)			



### 4.3 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
Powerline Conducted Emission	+/-1.1559
3M Semi Anechoic Chamber / 30M~200M	+/-3.9944
3M Semi Anechoic Chamber / 200M~1000M	+/-3.9285
3M Semi Anechoic Chamber / 1G~8G	+/-2.4734
3M Semi Anechoic Chamber / 8G~18G	+/-2.4878
3M Semi Anechoic Chamber / 18G~26G	+/-2.6215
3M Semi Anechoic Chamber / 26G~40G	+/-2.8603

**Remark:** This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=2$ .



## 5. FACILITIES AND ACCREDITATIONS

### 5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

No.199, Chunghsen Road, Hsintien City, Taipei Hsien, Taiwan, R.O.C.

Tel: 886-2-2217-0894 / Fax: 886-2-2217-1029

No.11, Wugong 6th Rd., Wugu Industrial Park, Taipei Hsien 248, Taiwan

Tel: 886-2-2299-9720 / Fax: 886-2-2298-4045

No.81-1, Lane 210, Bade 2nd Rd., Luchu Hsiang, Taoyuan Hsien 338, Taiwan

Tel: 886-3-324-0332 / Fax: 886-3-324-5235

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

### 5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."



### 5.3 TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	FCC	3M Semi Anechoic Chamber (FCC MRA: TW1039) to perform FCC Part 15 measurements	 FCC MRA: TW1039
Taiwan	TAF	LP0002, RTTE01, FCC Method-47 CFR Part 15 Subpart C, D, E, RSS-210, RSS-310 IDA TS SRD, AS/NZS 4268, AS/NZS 4771, TS 12.1 & 12.2, ETSI EN 300 440-1, ETSI EN 300 440-2, ETSI EN 300 328, ETSI EN 300 220-1, ETSI EN 300 220-2, ETSI EN 301 893, ETSI EN 301 489-1/3/7/17 FCC OET Bulletin 65 + Supplement C, EN 50360, EN 50361, EN 50371, RSS 102, EN 50383, EN 50385, EN 50392, IEC 62209, CNS 14958-1, CNS 14959 FCC Method -47 CFR Part 15 Subpart B IEC / EN 61000-3-2, IEC / EN 61000-3-3, IEC / EN 61000-4-2/3/4/5/6/8/11	
Canada	Industry Canada	3M Semi Anechoic Chamber (IC 2324G-1 / IC 2324G-2) to perform	 IC 2324G-1 IC 2324G-2

\* No part of this report may be used to claim or imply product endorsement by A2LA or any agency of the US Government.



## 6. SETUP OF EQUIPMENT UNDER TEST

### 6.1 SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix I for the actual connections between EUT and support equipment.

### 6.2 SUPPORT EQUIPMENT

No.	Device Type	Brand	Model	Series No.	FCC ID	Data Cable	Power Cord
1.	LCD Monitor	DELL	2408WFPb	CN-OG293H-74261-95M-1KGS	FCC DoC	Shielded, 1.8m with 2 cores	Unshielded, 1.8m
2.	USB Mouse	HP	M-UAL-96	570580-001	FCC DoC	Shielded, 1.8m	N/A
3.	Multimedia Headset	Labtec	Axis-301	N/A	FCC DoC	Unshielded, 1.8m x 2	N/A
4.	320GB 2.5" HDD	Seagate	9ZA2MG-500	2GE2NB00	FCC DoC	Shielded, 1.8m	N/A
5.	320GB 2.5" HDD	Seagate	9ZA2MG-500	2GE3NHGE	FCC DoC	Shielded, 1.8m	N/A
6.	USB 2.0 External HDD	TeraSyS	F12-UF(COMBO)	A0100215-42O014	FCC DoC	Shielded, 1.8m	N/A
7.	8960 Series 10 Wireless Communication test set (Remote)	Agilent	E5515C	GB44051665	N/A	N/A	Unshielded, 1.8m

**Remark:**

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.



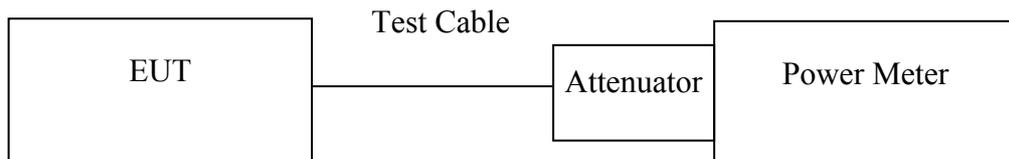
## 7. FCC PART 22 & 24 REQUIREMENTS

### 7.1 TRANSMIT POWER

#### LIMIT

According to FCC §2.1046.

#### Test Configuration



*Remark: Measurement setup for testing on Antenna connector*

#### TEST PROCEDURE

The transmitter output was connected to a calibrated attenuator, the other end of which was connected to a power meter. Transmitter output was read off the power meter in dBm. The power output at the transmitter antenna port was determined by adding the value of the attenuator to the power meter reading.

#### TEST RESULTS

*No non-compliance noted.*



**Test Data**

**Average Power**

Test Mode	CH	Frequency (MHz)	Average Power (dBm)
CDMA2000 1xRTT Cellular	1013	824.70	24.36
	384	836.52	24.62
	777	848.31	24.42
CDMA2000 1xEVDO Cellular	1013	824.70	24.35
	384	836.52	24.71
	777	848.31	24.61

Test Mode	CH	Frequency (MHz)	Average Power (dBm)
CDMA2000 1xRTT PCS	25	1851.25	23.67
	600	1880.00	23.53
	1175	1908.75	23.65
CDMA2000 1xEVDO PCS	25	1851.25	23.68
	600	1880.00	24.50
	1175	1908.75	24.43

*Remark: The value of factor includes both the loss of cable and external attenuator*

**Peak Power**

Test Mode	CH	Frequency (MHz)	Peak Power (dBm)
CDMA2000 1xRTT Cellular	1013	824.70	24.73
	384	836.52	24.85
	777	848.31	24.83
CDMA2000 1xEVDO Cellular	1013	824.70	24.84
	384	836.52	25.13
	777	848.31	24.08

Test Mode	CH	Frequency (MHz)	Peak Power (dBm)
CDMA2000 1xRTT PCS	25	1851.25	24.55
	600	1880.00	24.56
	1175	1908.75	24.28
CDMA2000 1xEVDO PCS	25	1851.25	24.46
	600	1880.00	25.21
	1175	1908.75	24.87

*Remark: The value of factor includes both the loss of cable and external attenuator*

## 7.2 ERP & EIRP MEASUREMENT

### LIMIT

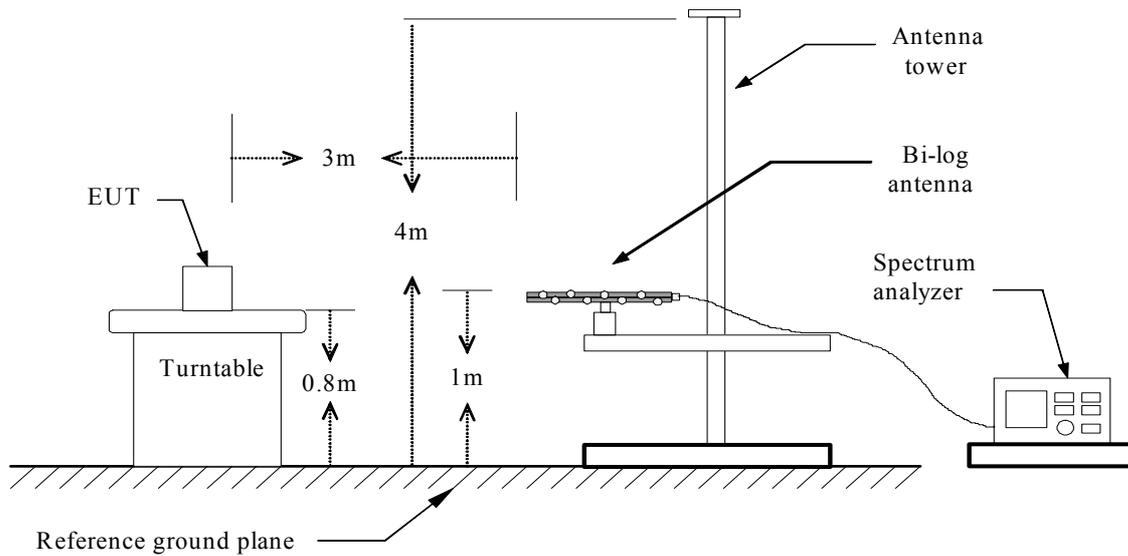
According to FCC §2.1046

FCC 22.913(b): The Effective Radiated Power (ERP) of mobile transmitters must not exceed 7 Watts.

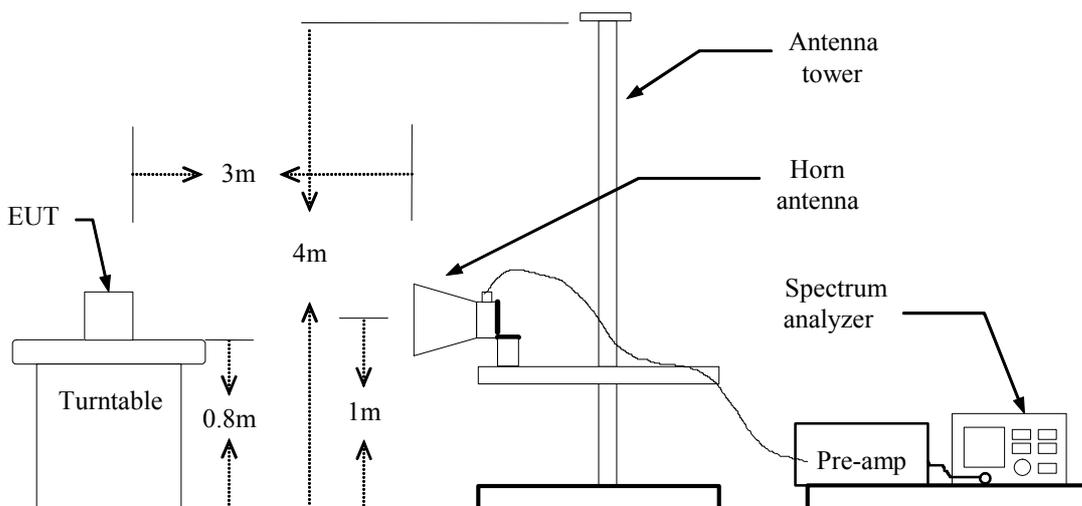
FCC 24.232(b): The equivalent Isotropic Radiated Power (EIRP) must not exceed 2 Watts.

### TEST CONFIGURATION

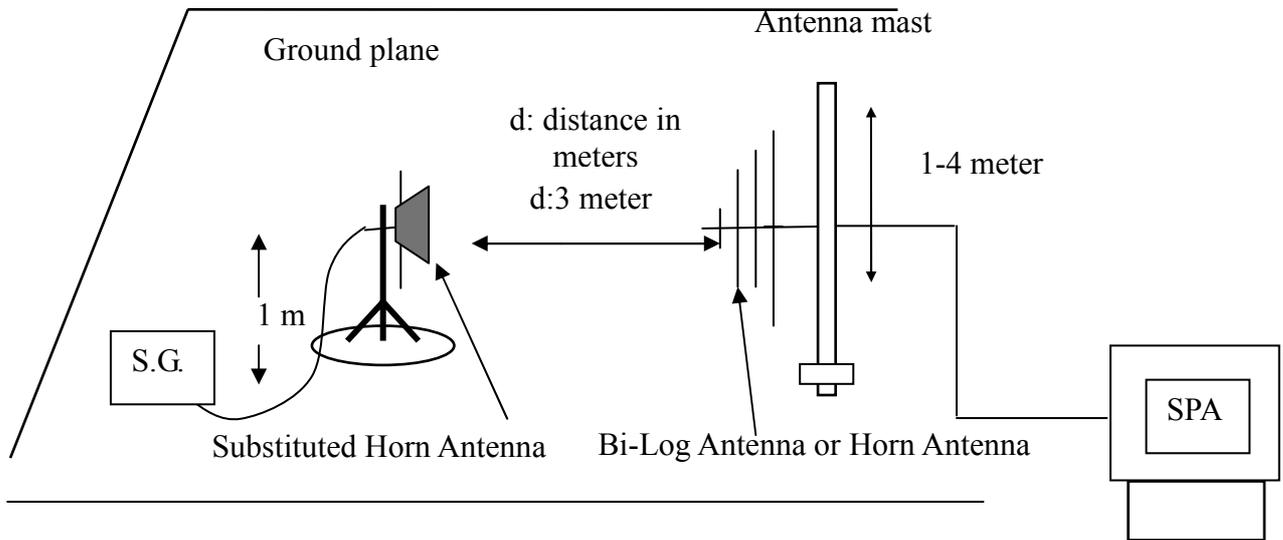
#### Below 1 GHz



#### Above 1 GHz



**For Substituted Method Test Set-UP**



**TEST PROCEDURE**

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, and EIRP in frequency band 1851.25 –1910MHz were measured using a substitution method. The EUT was replaced by half-wave dipole (824-849MHz) or horn antenna (1851.25-1910MHz) connected to a signal generator. The spectrum analyzer reading was recorded and ERP/EIRP was calculated as follows:

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

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



**TEST RESULTS**

*No non-compliance noted.*

**CDMA2000 1xRTT Cellular Test Data**

Channel	Frequency (MHz)	Reading level (dBuV)	Antenna Pol.	Correction Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)
1013	824.78	-10.08	V	34.61	24.53	38.50	-13.97
	824.50	-9.46	H	34.65	25.19	38.50	-13.31
384	836.47	-9.94	V	34.53	24.58	38.50	-13.92
	836.54	-8.82	H	34.63	<b>*25.81</b>	38.50	-12.69
777	848.30	-10.51	V	34.63	24.12	38.50	-14.38
	848.58	-9.43	H	34.75	25.32	38.50	-13.18

**CDMA2000 1xEVDO Cellular Test Data**

Channel	Frequency (MHz)	Reading level (dBuV)	Antenna Pol.	Correction Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)
1013	824.71	-10.32	V	34.61	24.29	38.50	-14.21
	824.78	-9.42	H	34.65	<b>*25.22</b>	38.50	-13.28
384	836.61	-10.01	V	34.53	24.52	38.50	-13.98
	836.26	-11.77	H	34.63	22.86	38.50	-15.64
777	848.30	-10.52	V	34.63	24.11	38.50	-14.39
	848.16	-9.54	H	34.74	25.21	38.50	-13.29



**CDMA2000 1xRTT PCS Test Data**

Channel	Frequency (MHz)	Reading level (dBuV)	Antenna Pol.	Correction Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)
25	1851.10	-13.62	V	41.17	27.55	33.00	-5.45
	1851.20	-12.91	H	40.80	27.89	33.00	-5.11
600	1880.00	-13.19	V	41.23	28.04	33.00	-4.96
	1880.10	-12.34	H	41.15	<b>*28.81</b>	33.00	-4.19
1175	1908.70	-14.14	V	41.30	27.15	33.00	-5.85
	1908.70	-12.58	H	41.38	28.79	33.00	-4.21

**CDMA2000 1xEVDO PCS Test Data**

Channel	Frequency (MHz)	Reading level (dBuV)	Antenna Pol.	Correction Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)
25	1851.30	-13.82	V	41.17	27.35	33.00	-5.65
	1851.40	-12.35	H	40.81	28.46	33.00	-4.54
600	1880.00	-12.98	V	41.23	28.25	33.00	-4.75
	1880.10	-11.88	H	41.15	29.26	33.00	-3.74
1175	1908.80	-13.78	V	41.30	27.52	33.00	-5.48
	1908.60	-12.08	H	41.38	<b>*29.30</b>	33.00	-3.70

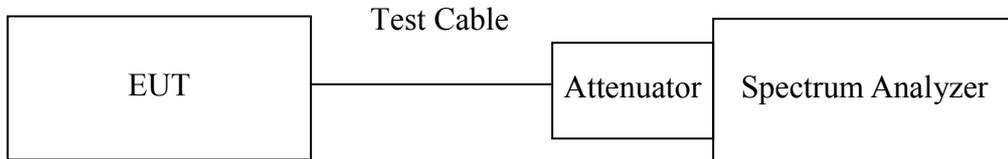


### 7.3 OCCUPIED BANDWIDTH MEASUREMENT

#### LIMIT

According to §FCC 2.1049.

#### Test Configuration



*Remark: Measurement setup for testing on Antenna connector*

#### TEST PROCEDURE

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, VBW is set to 3 times the RBW, -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.

#### TEST RESULTS

*No non-compliance noted.*

#### Test Data

Test Mode	CH	Frequency (MHz)	Bandwidth (MHz)
CDMA2000 1xRTT Cellular	1013	824.710	1.2671
	384	836.570	1.2738
	777	824.270	1.2772
CDMA2000 1xEVDO Cellular	1013	824.710	1.2678
	384	836.570	1.2720
	777	848.270	1.2726

Test Mode	CH	Frequency (MHz)	Bandwidth (MHz)
CDMA2000 1xRTT PCS	25	1851.250	1.2676
	600	1880.000	1.2733
	1175	1908.730	1.2634
CDMA2000 1xEVDO PCS	25	1851.250	1.2671
	600	1880.000	1.2679
	1175	1908.730	1.2721

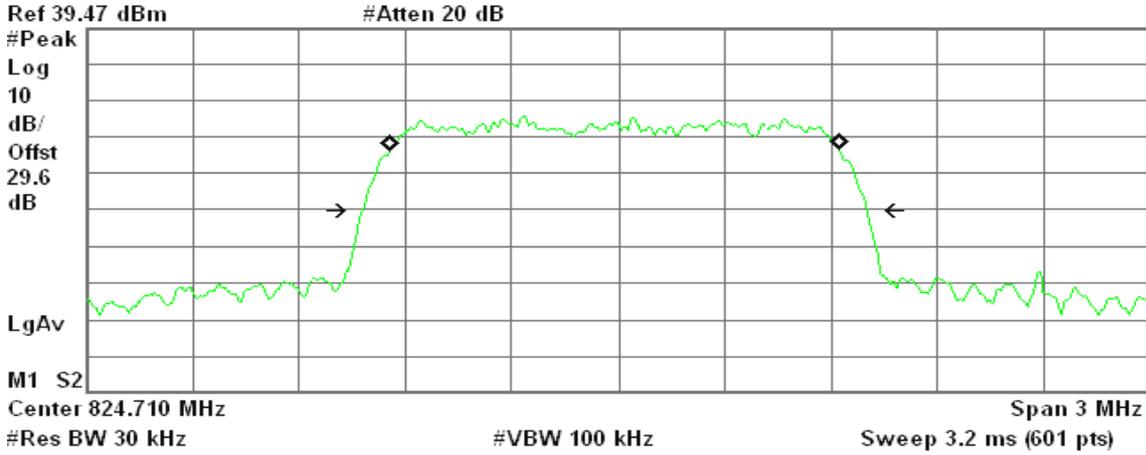


**Test Plot**

**CDMA2000 1xRTT Cellular / CH Low**

Agilent 15:03:41 Mar 27, 2010

R T



Occupied Bandwidth  
1.2671 MHz

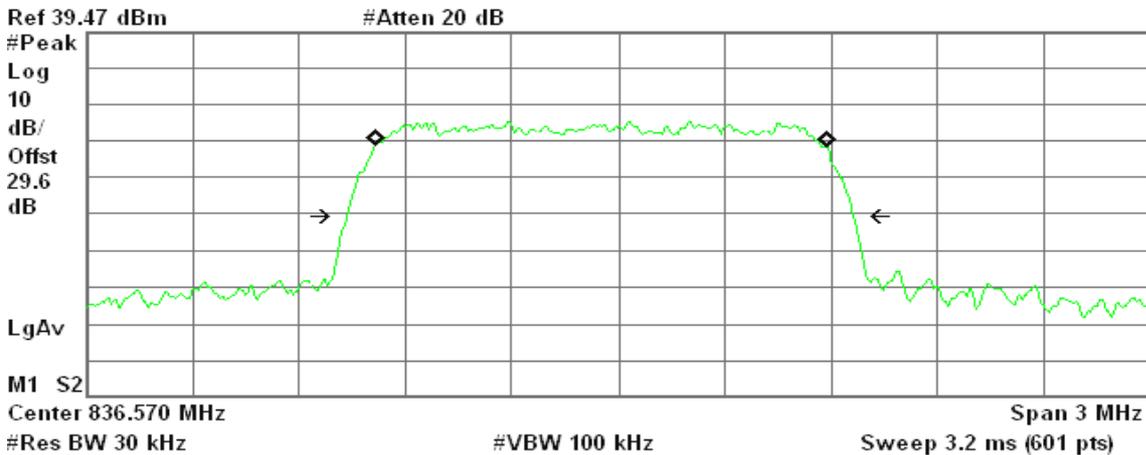
Occ BW % Pwr 99.00 %  
x dB -26.00 dB

Transmit Freq Error -9.256 kHz  
x dB Bandwidth 1.426 MHz

**CDMA2000 1xRTT Cellular / CH Mid**

Agilent 15:00:17 Mar 27, 2010

R T



Occupied Bandwidth  
1.2738 MHz

Occ BW % Pwr 99.00 %  
x dB -26.00 dB

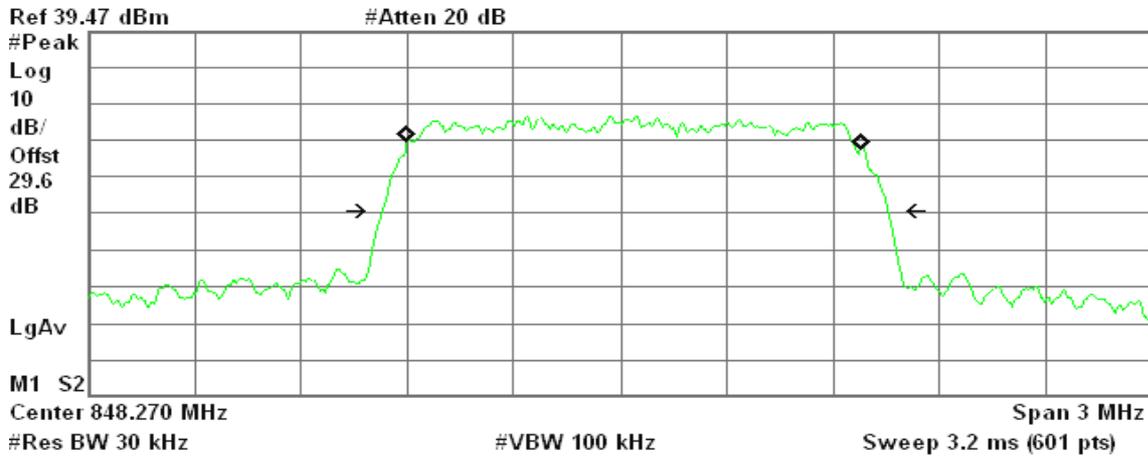
Transmit Freq Error -50.170 kHz  
x dB Bandwidth 1.429 MHz



### CDMA2000 1xRTT Cellular / CH High

Agilent 15:01:47 Mar 27, 2010

R T



Occupied Bandwidth  
1.2772 MHz

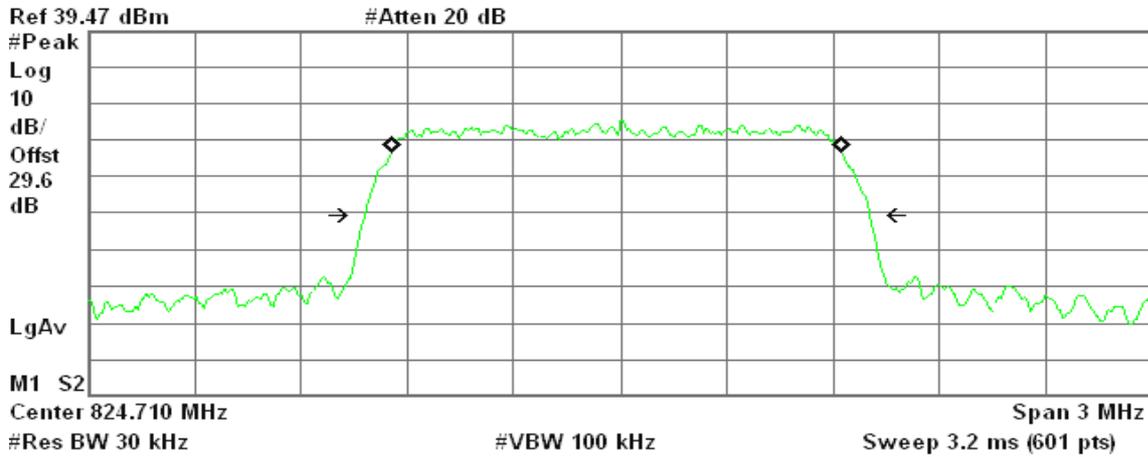
Occ BW % Pwr 99.00 %  
x dB -26.00 dB

Transmit Freq Error 39.954 kHz  
x dB Bandwidth 1.428 MHz

### CDMA2000 1xEVDO Cellular / CH Low

Agilent 15:03:31 Mar 27, 2010

R T



Occupied Bandwidth  
1.2678 MHz

Occ BW % Pwr 99.00 %  
x dB -26.00 dB

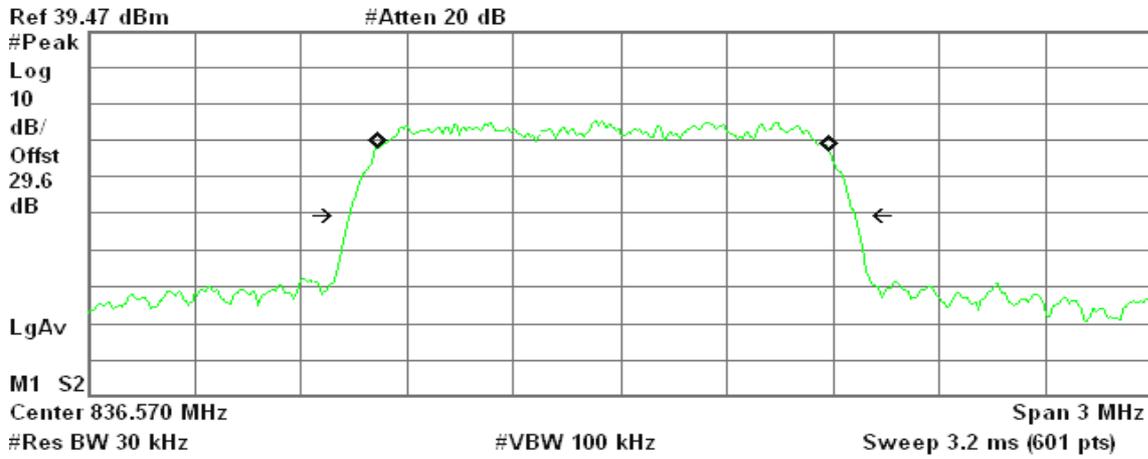
Transmit Freq Error -9.111 kHz  
x dB Bandwidth 1.424 MHz



### CDMA2000 1xEVDO Cellular / CH Mid

Agilent 15:00:44 Mar 27, 2010

R T



Occupied Bandwidth  
1.2720 MHz

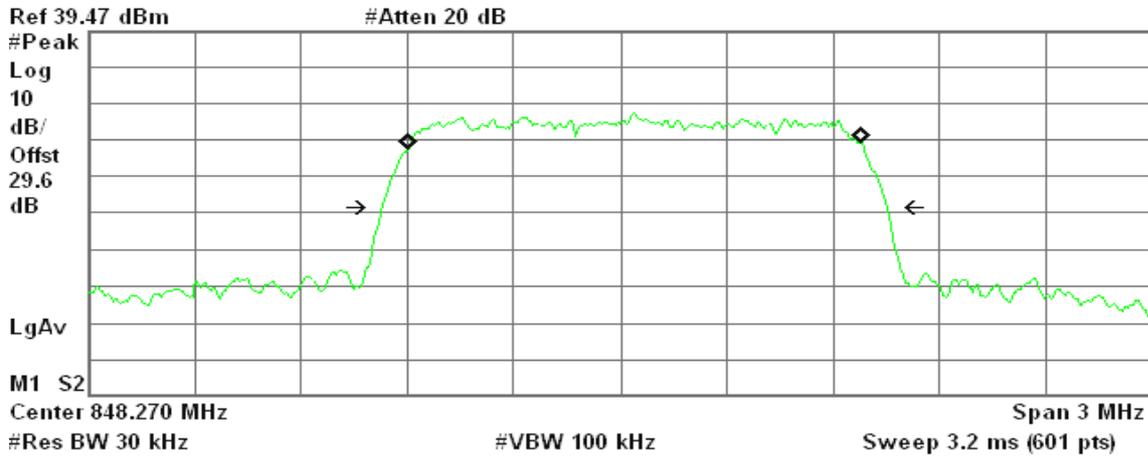
Occ BW % Pwr 99.00 %  
x dB -26.00 dB

Transmit Freq Error -49.969 kHz  
x dB Bandwidth 1.429 MHz

### CDMA2000 1xEVDO Cellular / CH High

Agilent 15:00:59 Mar 27, 2010

R T



Occupied Bandwidth  
1.2726 MHz

Occ BW % Pwr 99.00 %  
x dB -26.00 dB

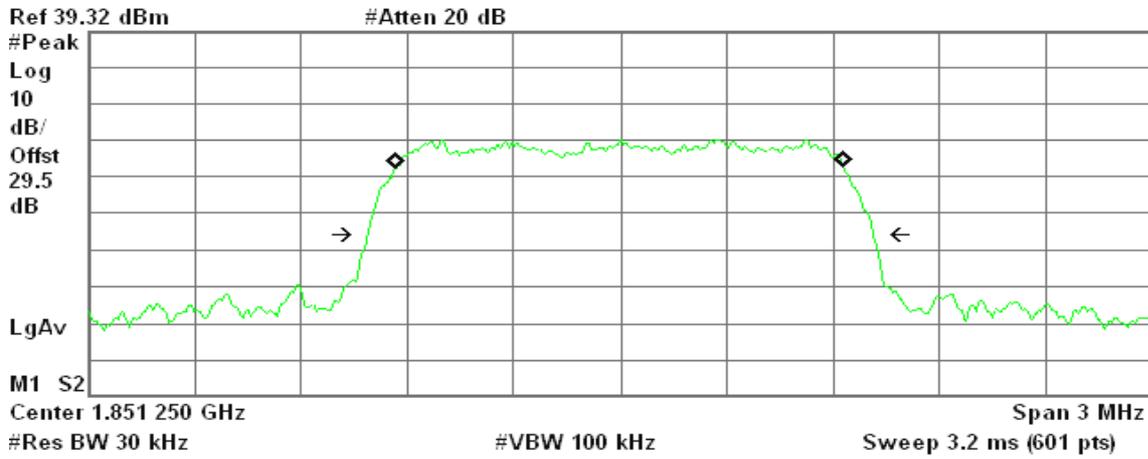
Transmit Freq Error 43.189 kHz  
x dB Bandwidth 1.427 MHz



### CDMA2000 1xRTT PCS / CH Low

Agilent 15:05:54 Mar 27, 2010

R T



Occupied Bandwidth  
1.2676 MHz

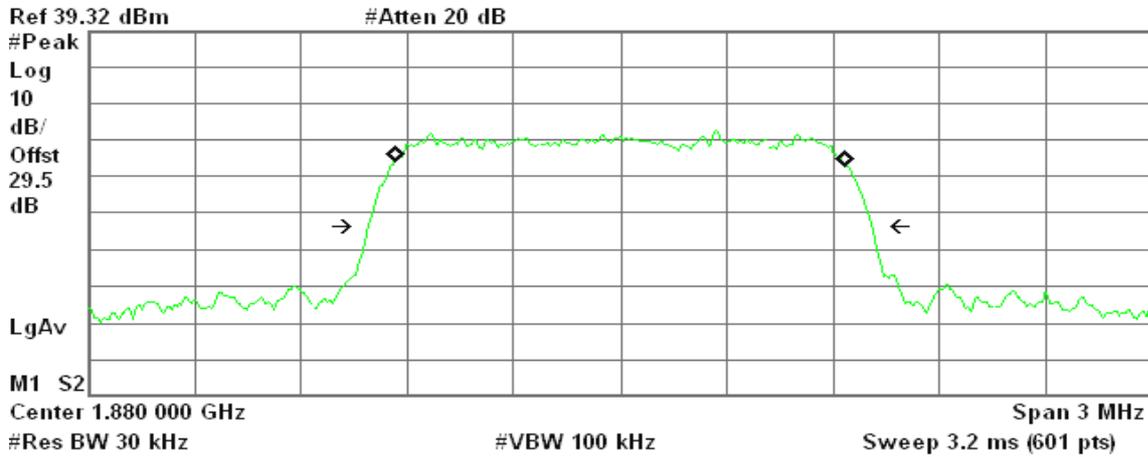
Occ BW % Pwr 99.00 %  
x dB -26.00 dB

Transmit Freq Error -1.394 kHz  
x dB Bandwidth 1.427 MHz

### CDMA2000 1xRTT PCS / CH Mid

Agilent 15:06:48 Mar 27, 2010

R T



Occupied Bandwidth  
1.2733 MHz

Occ BW % Pwr 99.00 %  
x dB -26.00 dB

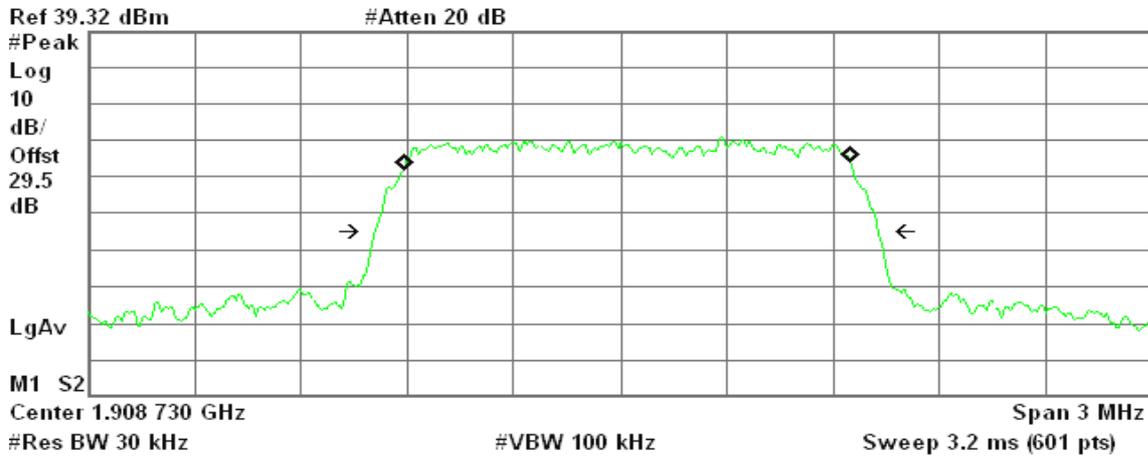
Transmit Freq Error 36.643 Hz  
x dB Bandwidth 1.424 MHz



### CDMA2000 1xRTT PCS / CH High

Agilent 15:07:28 Mar 27, 2010

R T



Occupied Bandwidth  
1.2634 MHz

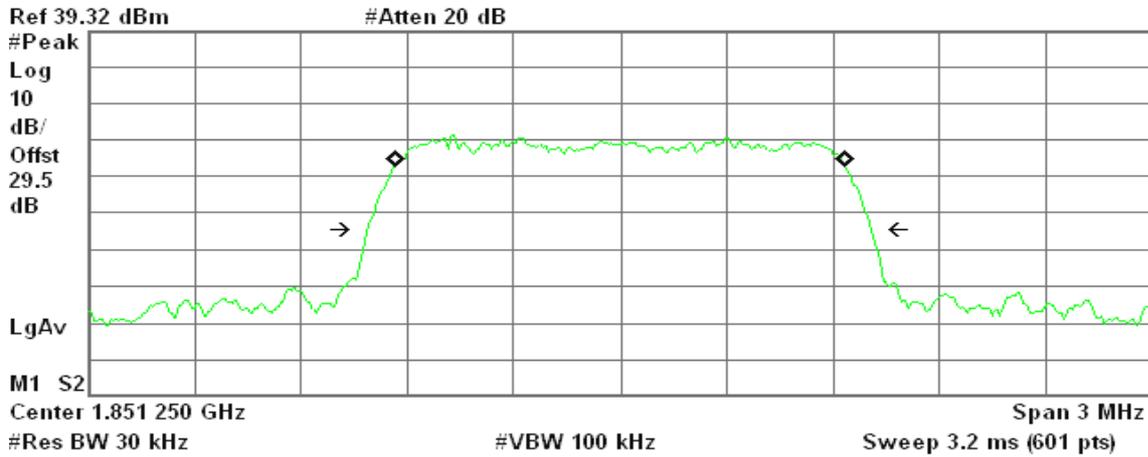
Occ BW % Pwr 99.00 %  
x dB -26.00 dB

Transmit Freq Error 20.799 kHz  
x dB Bandwidth 1.422 MHz

### CDMA2000 1xEVDO PCS / CH Low

Agilent 15:06:08 Mar 27, 2010

R T



Occupied Bandwidth  
1.2671 MHz

Occ BW % Pwr 99.00 %  
x dB -26.00 dB

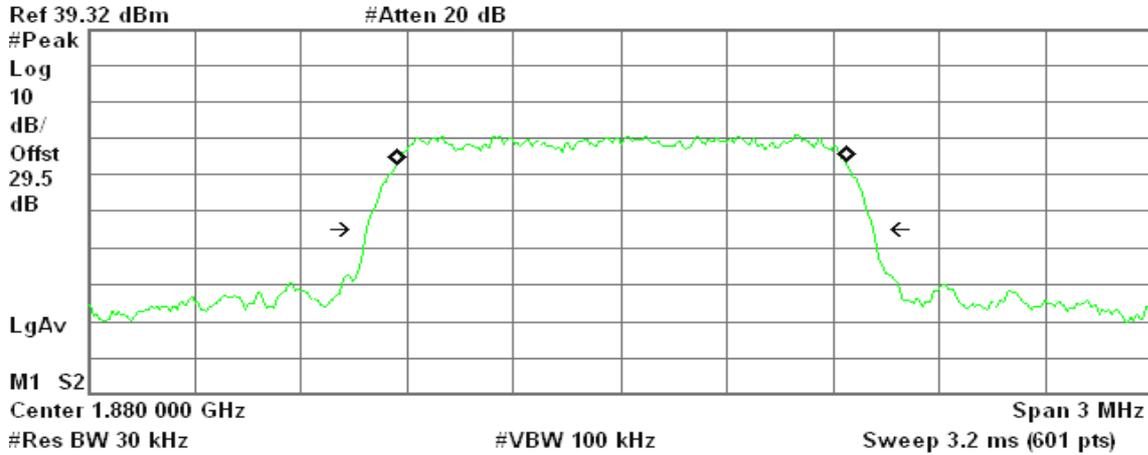
Transmit Freq Error -308.363 Hz  
x dB Bandwidth 1.423 MHz



### CDMA2000 1xEVDO PCS / CH Mid

Agilent 15:06:37 Mar 27, 2010

R T



Occupied Bandwidth  
1.2679 MHz

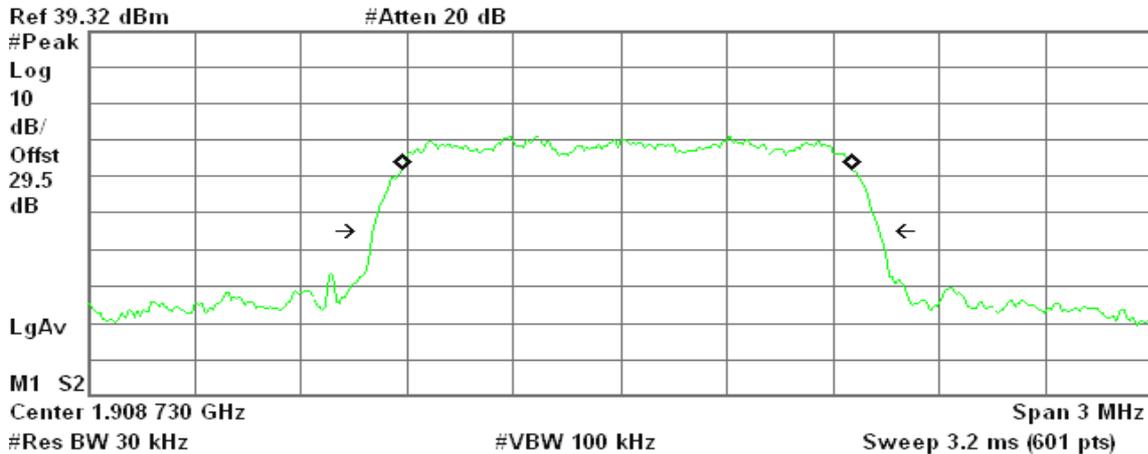
Occ BW % Pwr 99.00 %  
x dB -26.00 dB

Transmit Freq Error 3.836 kHz  
x dB Bandwidth 1.431 MHz

### CDMA2000 1xEVDO PCS / CH High

Agilent 15:07:43 Mar 27, 2010

R T



Occupied Bandwidth  
1.2721 MHz

Occ BW % Pwr 99.00 %  
x dB -26.00 dB

Transmit Freq Error 19.796 kHz  
x dB Bandwidth 1.429 MHz



## 7.4 OUT OF BAND EMISSION AT ANTENNA TERMINALS

### LIMIT

According to FCC §2.1051, FCC §22.917, FCC §24.238(a).

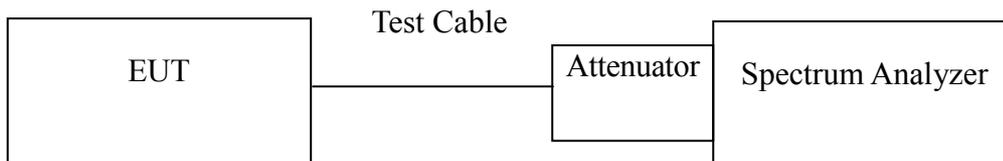
**Out of Band Emissions:** The mean power of emission must be attenuated below the mean power of the non-modulated carrier (P) on any frequency twice or more than twice the fundamental frequency by at least  $43 + 10 \log P$  dB.

**Mobile 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.

**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

### TEST CONFIGURATION

**Out of band emission at antenna terminals:**



### TEST PROCEDURE

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= 10 th harmonic. Limit = -13dBm

Band Edge Requirements (824 MHz and 849 MHz /1850MHz and 1910MHz): 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.

**TEST RESULTS***No non-compliance noted.***Test Data**

Mode	CH	Location	Description
CDMA2000 1xRTT Cellular	1013	Figure 7-1	Conducted spurious emissions, 30MHz - 20GHz
	777	Figure 7-2	Conducted spurious emissions, 30MHz - 20GHz
	384	Figure 7-3	Conducted spurious emissions, 30MHz - 20GHz
Mode	CH	Location	Description
CDMA2000 1xEVDO Cellular	1013	Figure 8-1	Conducted spurious emissions, 30MHz - 20GHz
	777	Figure 8-2	Conducted spurious emissions, 30MHz - 20GHz
	384	Figure 8-3	Conducted spurious emissions, 30MHz - 20GHz
Mode	CH	Location	Description
CDMA2000 1xRTT PCS	25	Figure 9-1	Conducted spurious emissions, 30MHz - 20GHz
	600	Figure 9-2	Conducted spurious emissions, 30MHz - 20GHz
	1175	Figure 9-3.	Conducted spurious emissions, 30MHz - 20GHz
Mode	CH	Location	Description
CDMA2000 1xEVDO PCS	25	Figure 10-1	Conducted spurious emissions, 30MHz - 20GHz
	600	Figure 10-2	Conducted spurious emissions, 30MHz - 20GHz
	1175	Figure 10-3.	Conducted spurious emissions, 30MHz - 20GHz
Mode	CH	Location	Description
CDMA2000 1xRTT Cellular	1013	Figure 11-1	Band Edge emissions
	384	Figure 11-2	Band Edge emissions
Mode	CH	Location	Description
CDMA2000 1xEVDO Cellular	1013	Figure 12-1	Band Edge emissions
	384	Figure 12-2	Band Edge emissions
Mode	CH	Location	Description
CDMA2000 1xRTT PCS	25	Figure 13-1	Band Edge emissions
	1175	Figure 13-2	Band Edge emissions
Mode	CH	Location	Description
CDMA2000 1xEVDO PCS	25	Figure 14-1	Band Edge emissions
	1175	Figure 14-2	Band Edge emissions



Test Plot

CDMA2000 1xRTT Cellular

Figure 7-1: Out of Band emission at antenna terminals – CDMA2000 1xRTT / CH Low

Agilent 14:47:52 Mar 27, 2010

R T

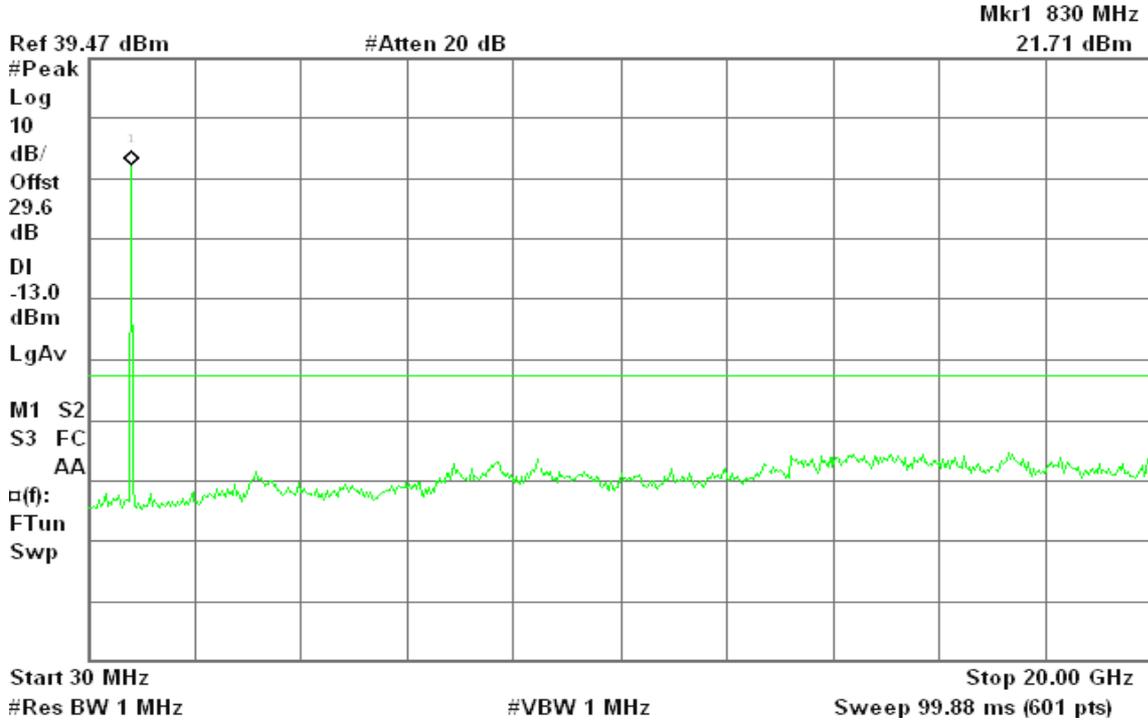


Figure 7-2: Out of Band emission at antenna terminals – CDMA2000 1xRTT / CH Mid

Agilent 14:47:00 Mar 27, 2010

R L

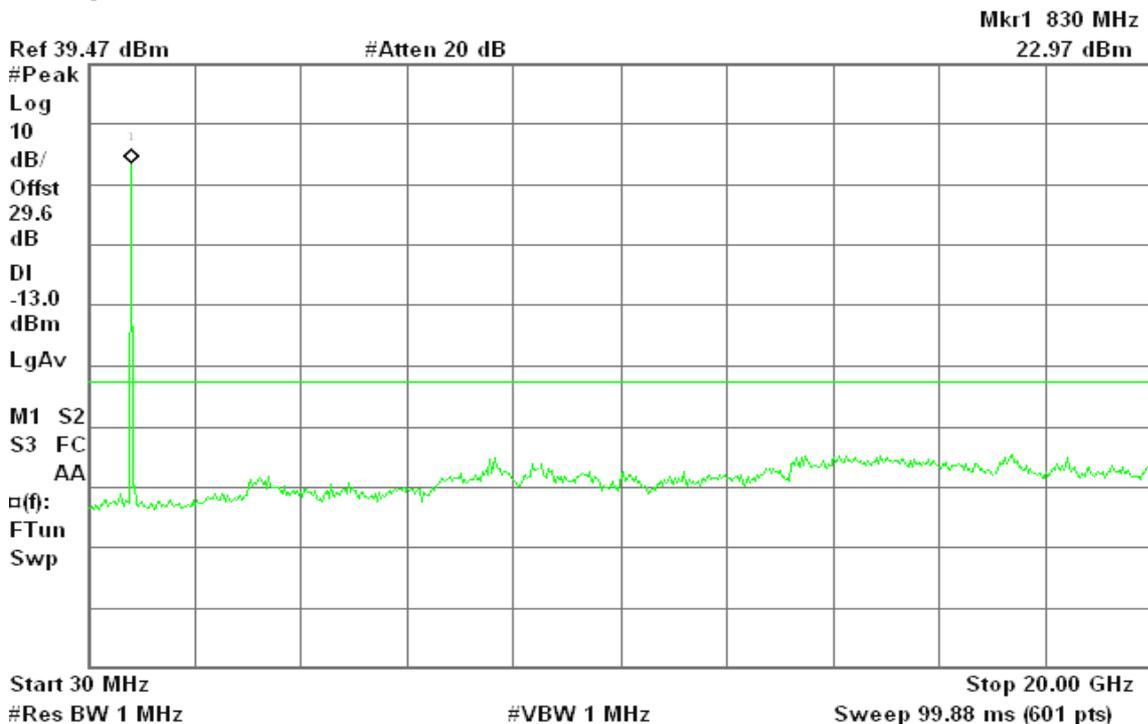
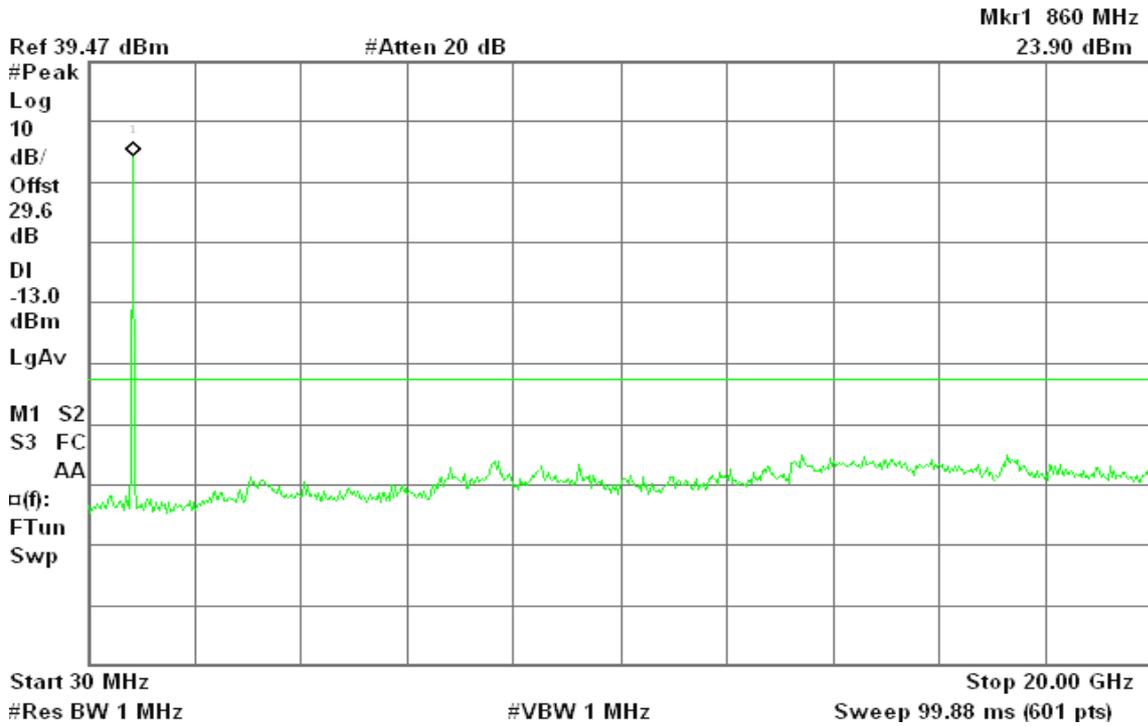




Figure 7-3: Out of Band emission at antenna terminals – CDMA2000 1xRTT / CH High

Agilent 14:47:38 Mar 27, 2010

R T



### 1xEVDO Cellular

Figure 8-1: Out of Band emission at antenna terminals – CDMA2000 1xEVDO / CH Low

Agilent 14:48:03 Mar 27, 2010

R T

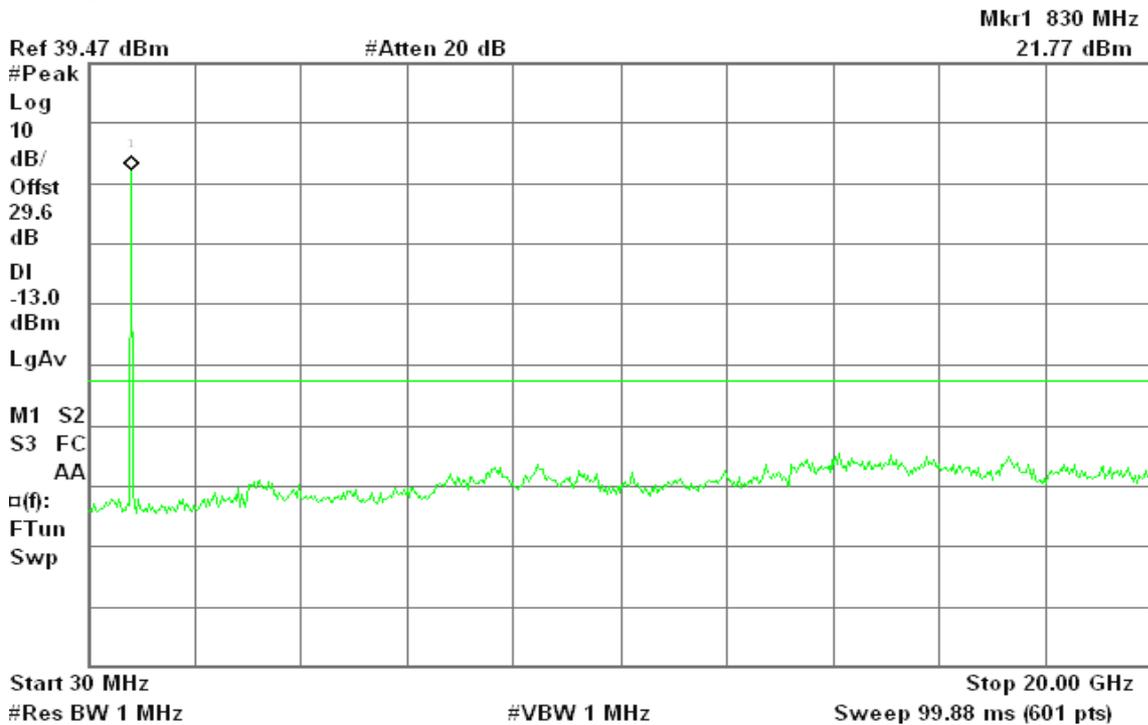




Figure 8-2: Out of Band emission at antenna terminals – CDMA2000 1xEVDO / CH Mid

Agilent 14:47:11 Mar 27, 2010

R T

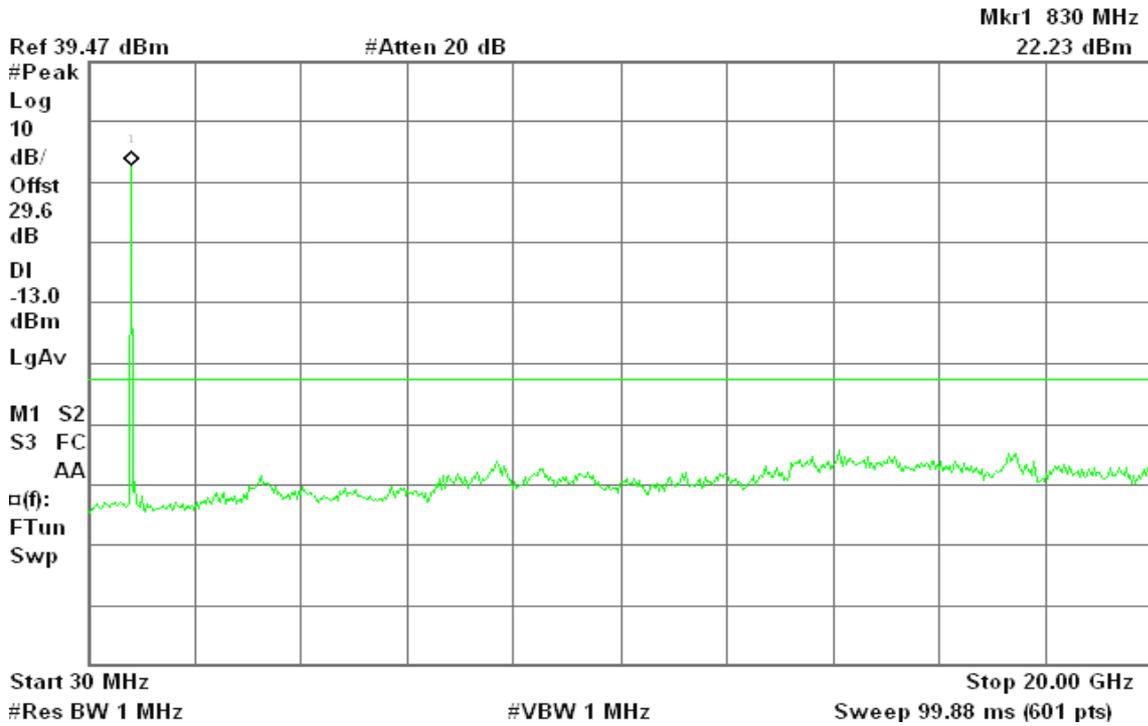
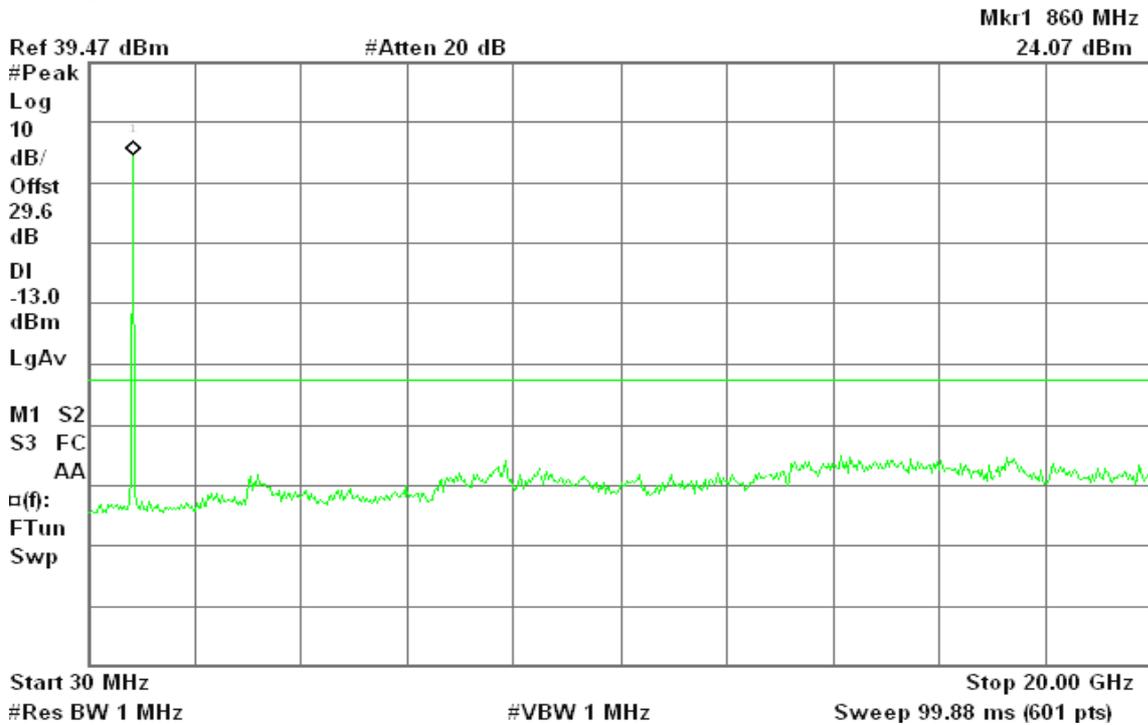


Figure 8-3: Out of Band emission at antenna terminals – CDMA2000 1xEVDO / CH High

Agilent 14:47:28 Mar 27, 2010

R T





### CDMA2000 1xRTT PCS

Figure 9-1: Out of Band emission at antenna terminals – CDMA2000 1xRTT / CH Low

Agilent 15:16:22 Mar 27, 2010

R T

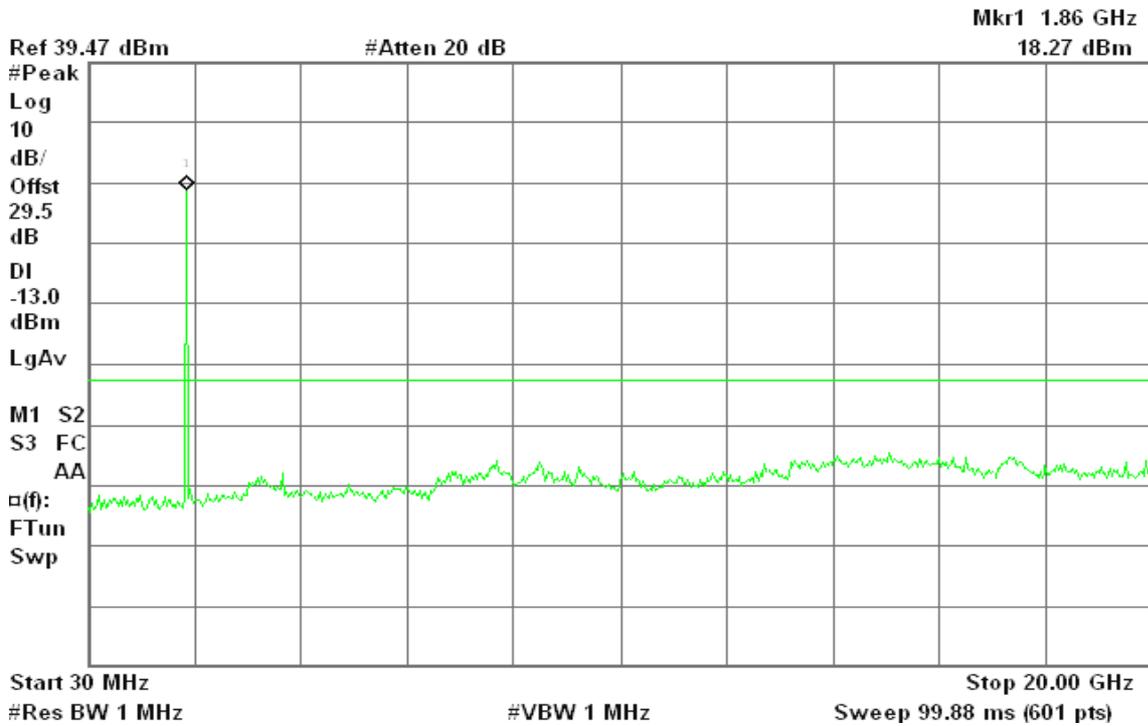


Figure 9-2: Out of Band emission at antenna terminals – CDMA2000 1xRTT / CH Mid

Agilent 15:16:56 Mar 27, 2010

R T

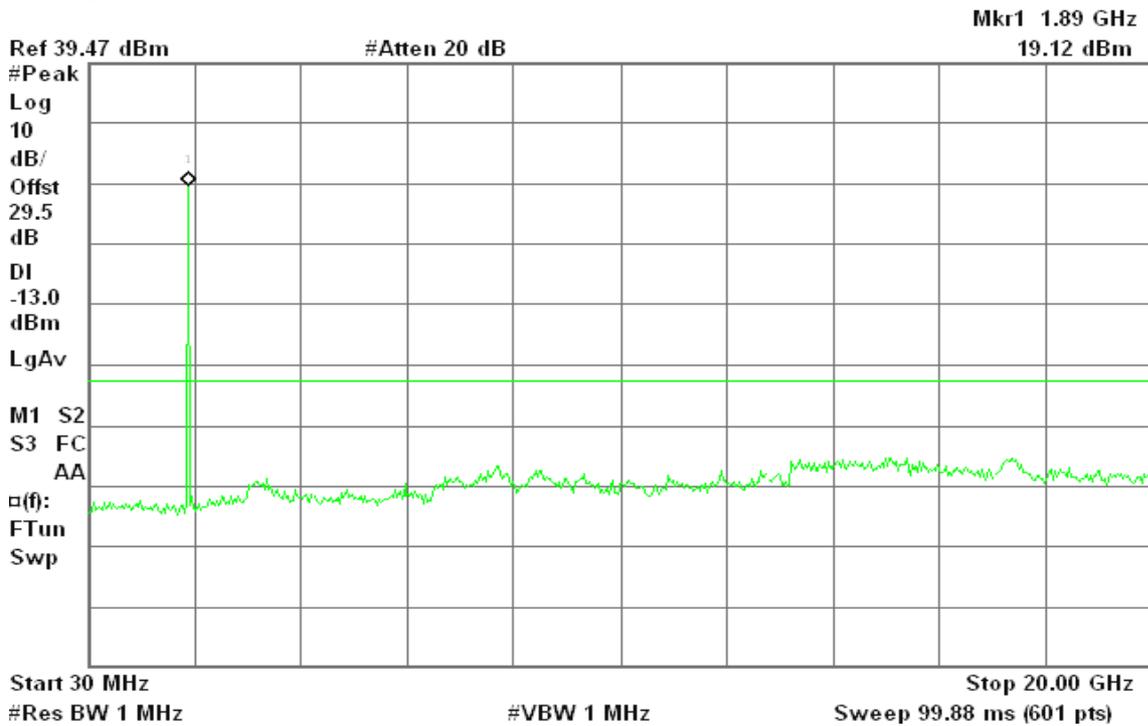
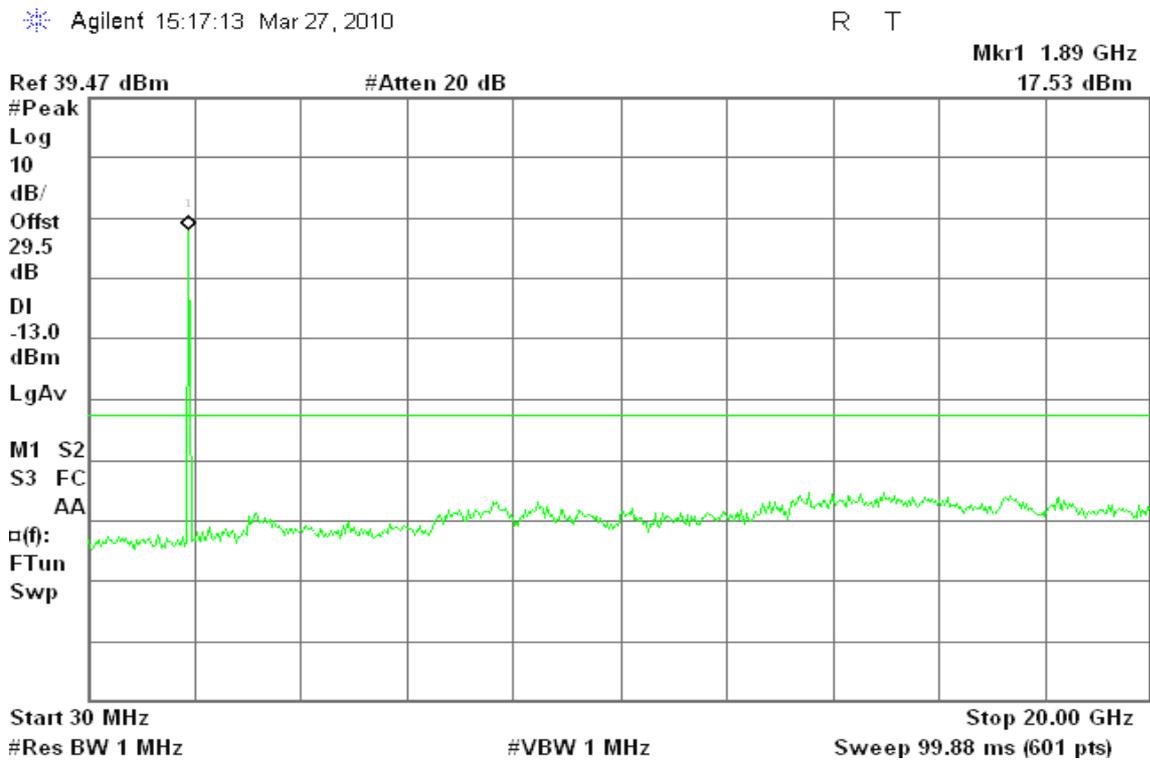




Figure 9-3: Out of Band emission at antenna terminals – CDMA2000 1xRTT / CH High



### CDMA2000 1xEVDO PCS

Figure 10-1: Out of Band emission at antenna terminals – CDMA2000 1xEVDO / CH Low

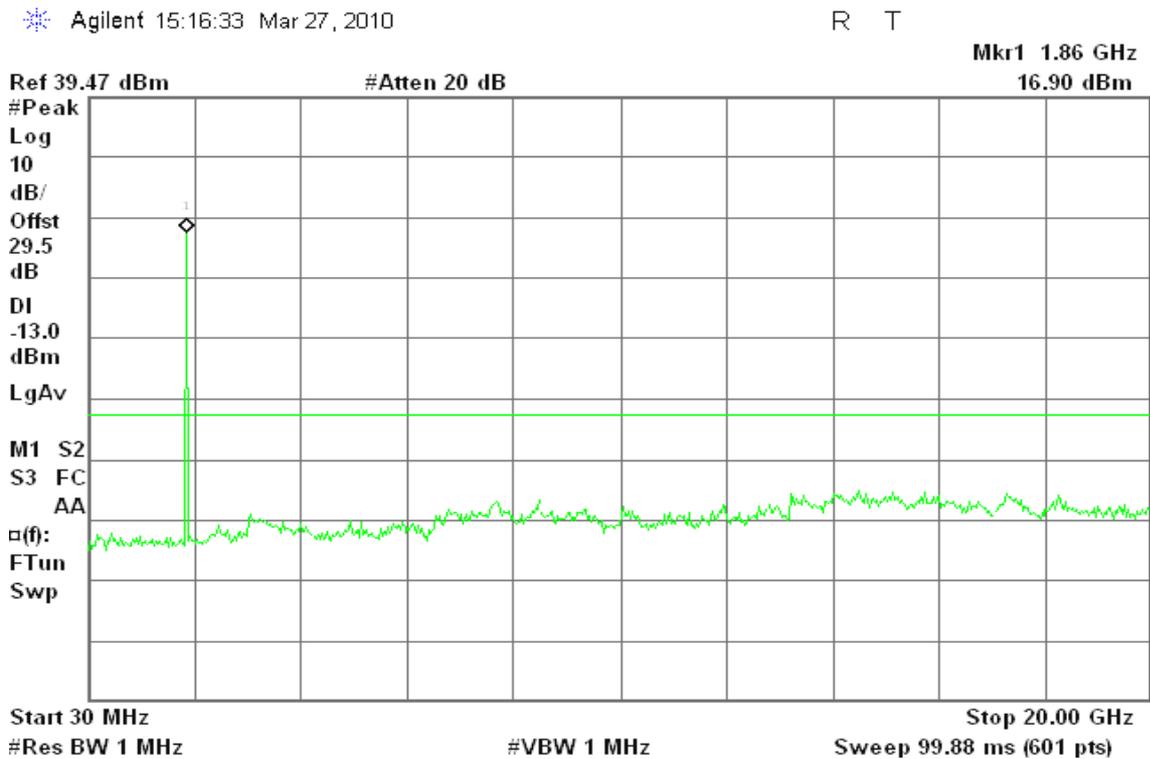




Figure 10-2: Out of Band emission at antenna terminals – CDMA2000 1xEVDO / CH Mid

Agilent 15:16:45 Mar 27, 2010

R T

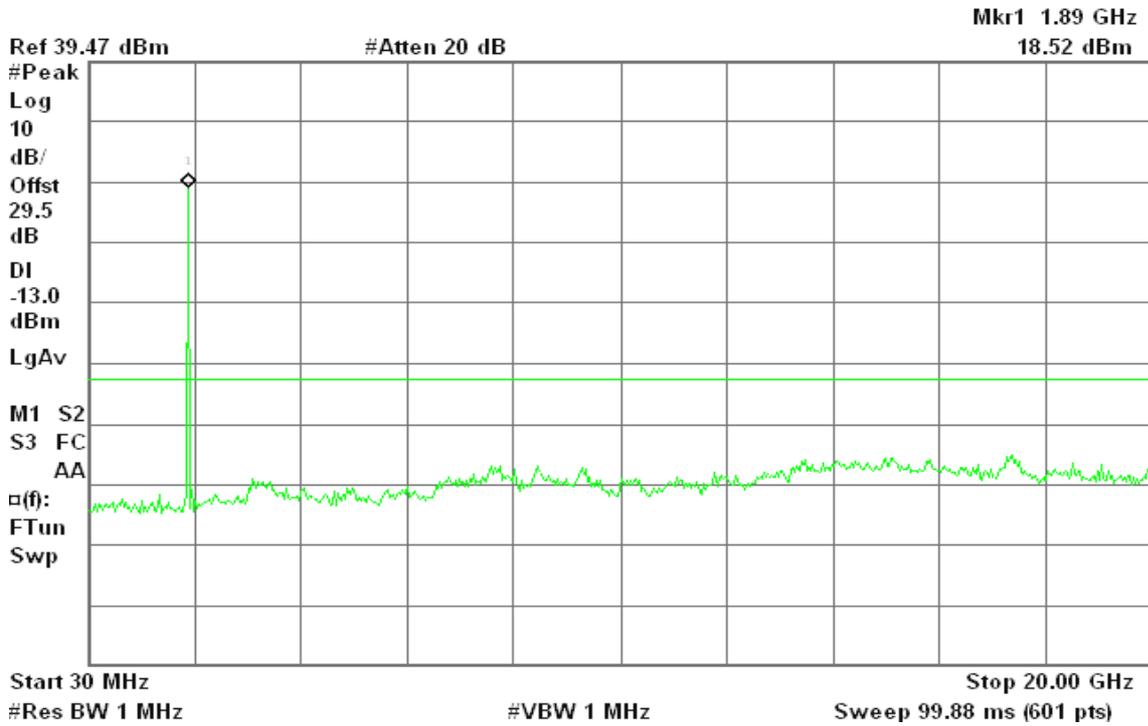
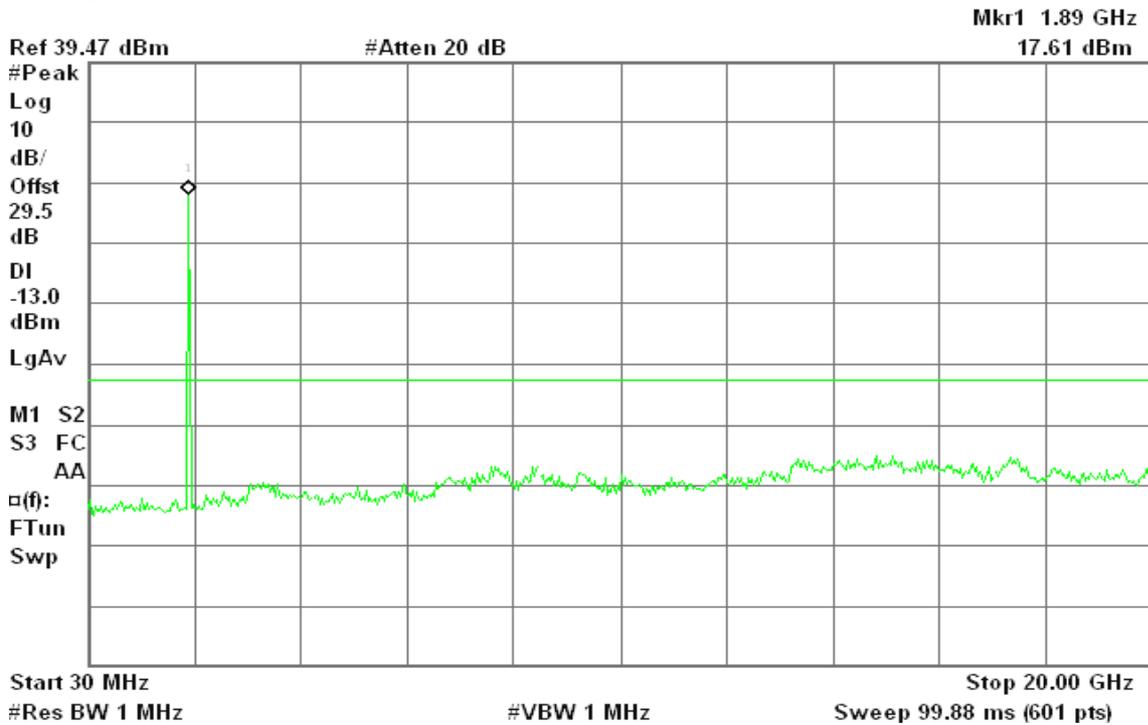


Figure 10-3: Out of Band emission at antenna terminals – CDMA2000 1xEVDO / CH High

Agilent 15:17:22 Mar 27, 2010

R T





### CDMA2000 1xRTT Cellular

Figure 11-1: Band Edge emissions – CDMA2000 1xRTT / CH Low

Agilent 14:50:35 Mar 27, 2010

R T

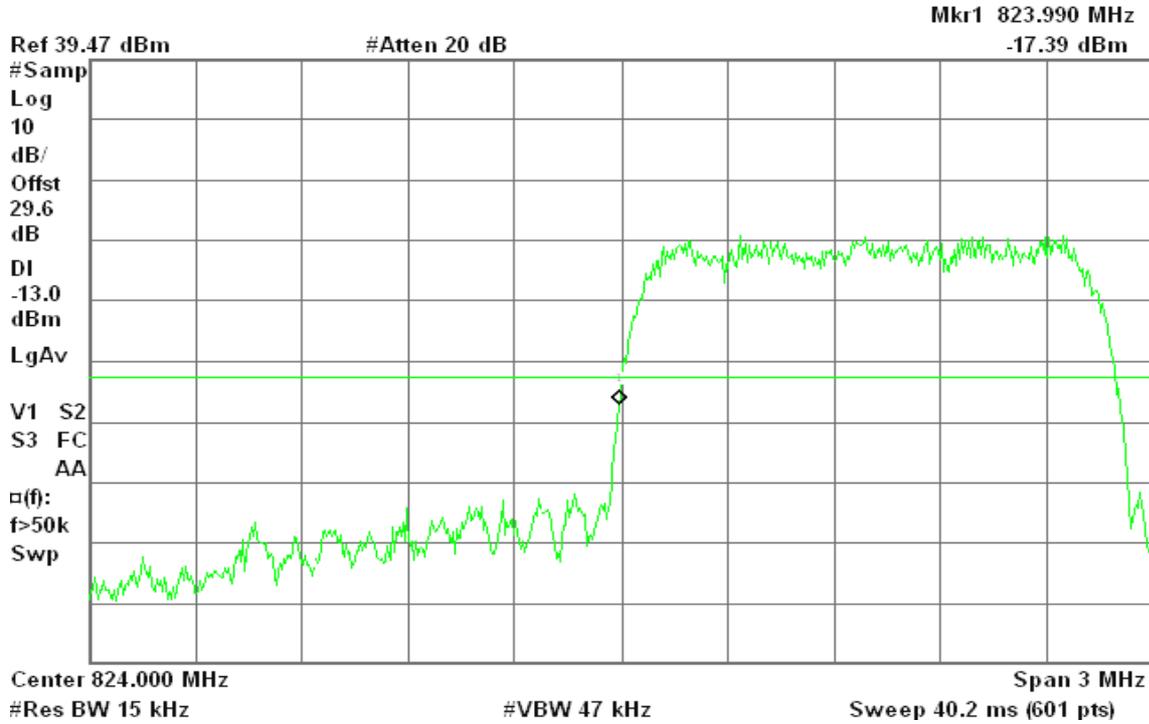


Figure 11-2: Band Edge emissions – CDMA2000 1xRTT / CH High

Agilent 14:56:57 Mar 27, 2010

R T





### CDMA2000 1xEVDO Cellular

Figure 12-1: Band Edge emissions – CDMA2000 1xEVDO / CH Low

Agilent 14:51:04 Mar 27, 2010

R T

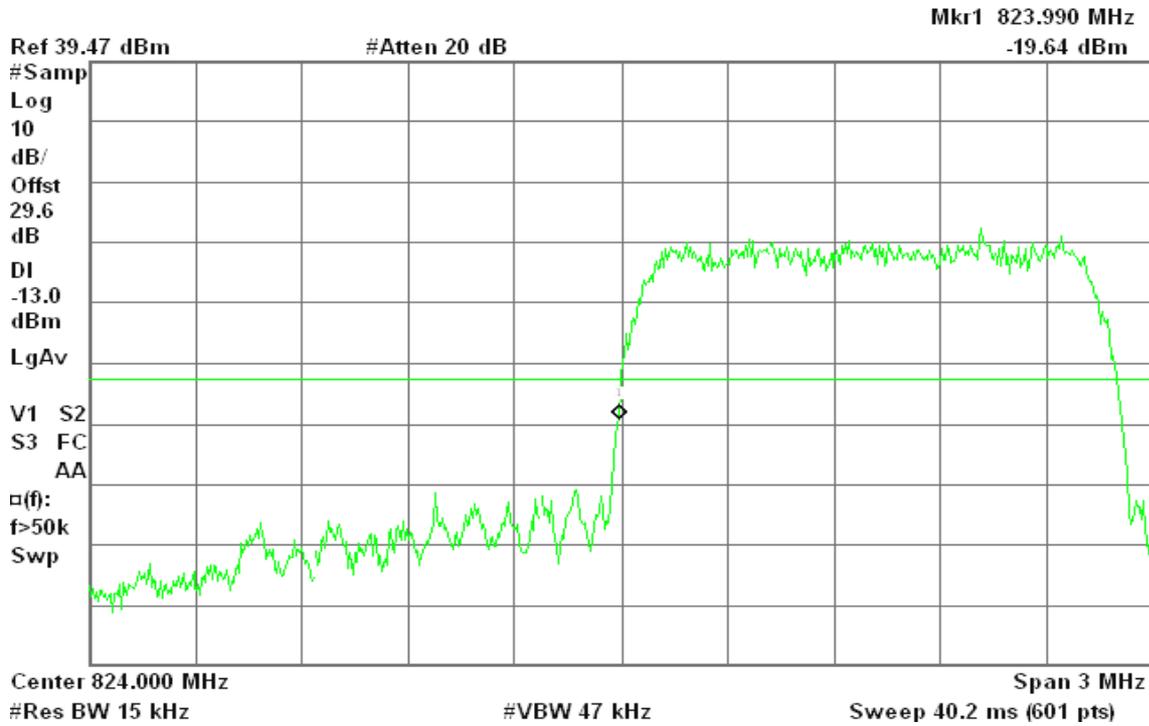
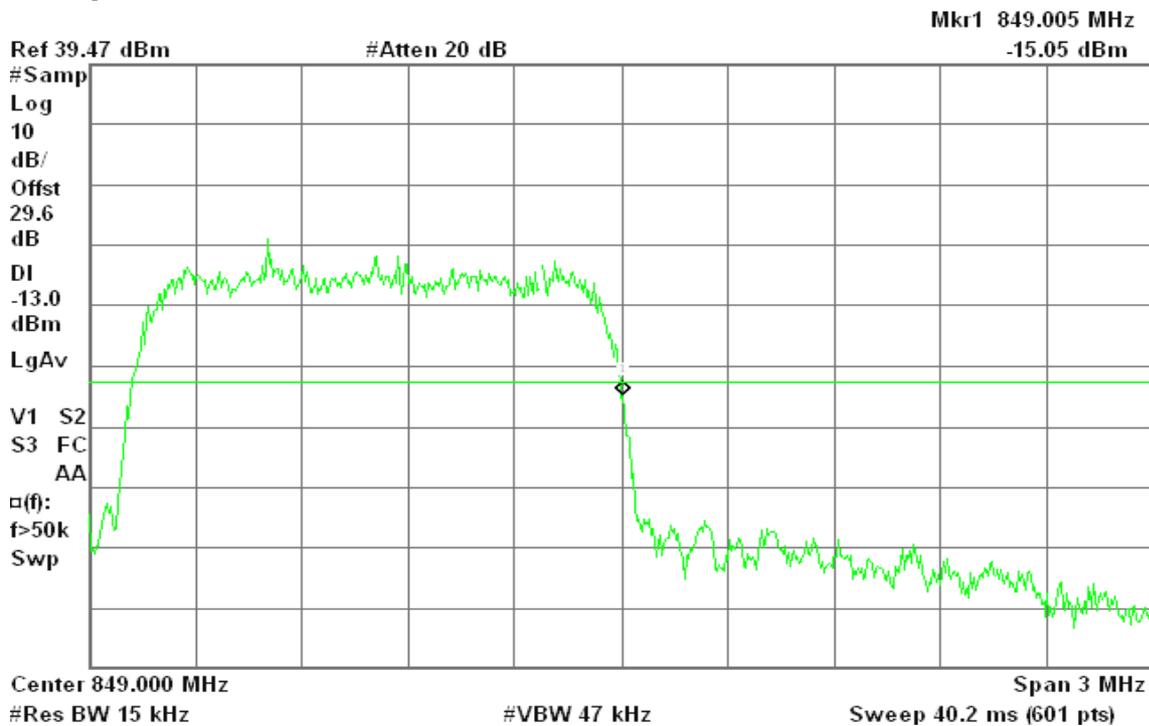


Figure 12-2: Band Edge emissions – CDMA2000 1xEVDO / CH High

Agilent 14:56:40 Mar 27, 2010

R T





### CDMA2000 1xRTT PCS

Figure 13-1: Band Edge emissions – CDMA2000 1xRTT / CH Low

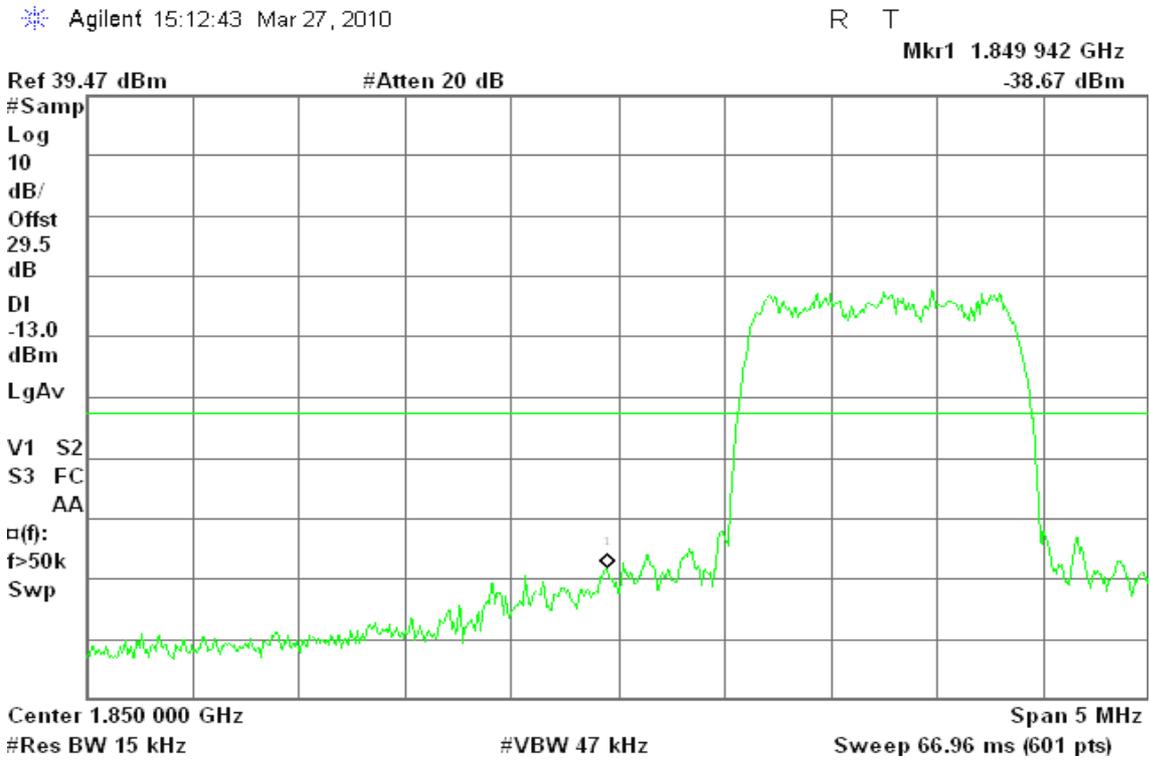
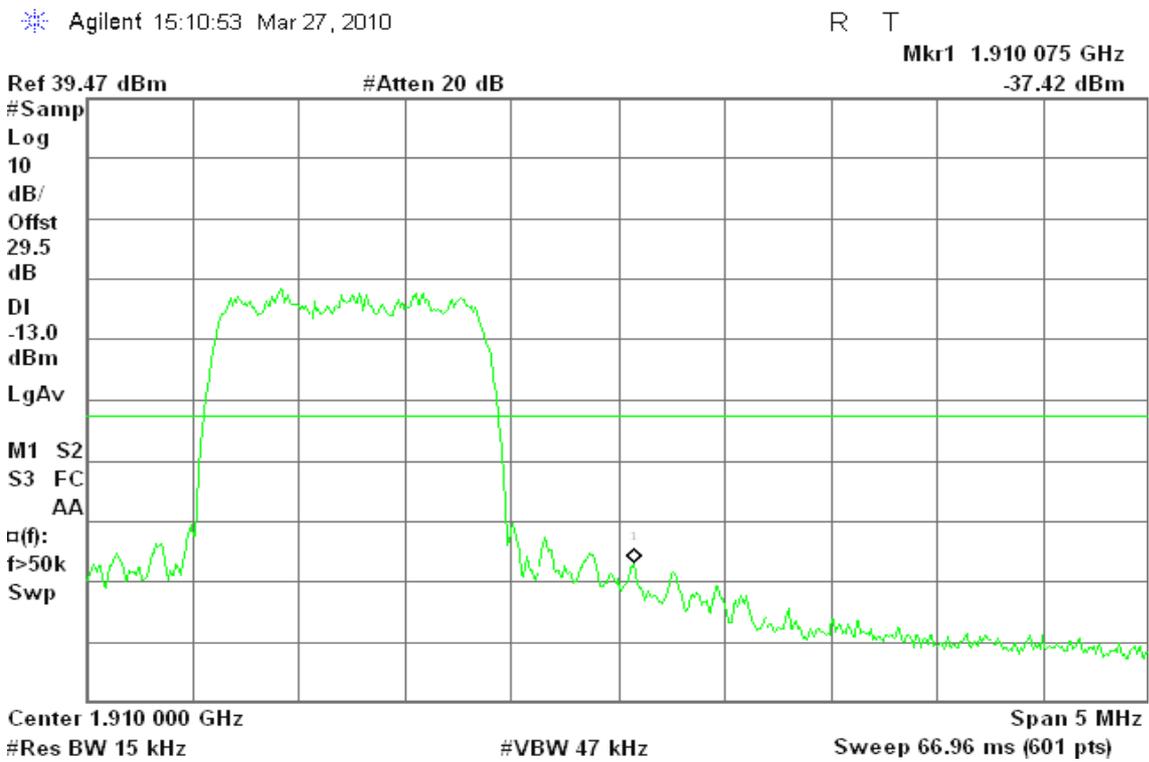


Figure 13-2: Band Edge emissions – CDMA2000 1xRTT / CH High





### CDMA2000 1xEVDO PCS

Figure 14-1: Band Edge emissions – CDMA2000 1xEVDO / CH Low

Agilent 15:12:27 Mar 27, 2010

R T

Mkr1 1.849 942 GHz  
-38.15 dBm

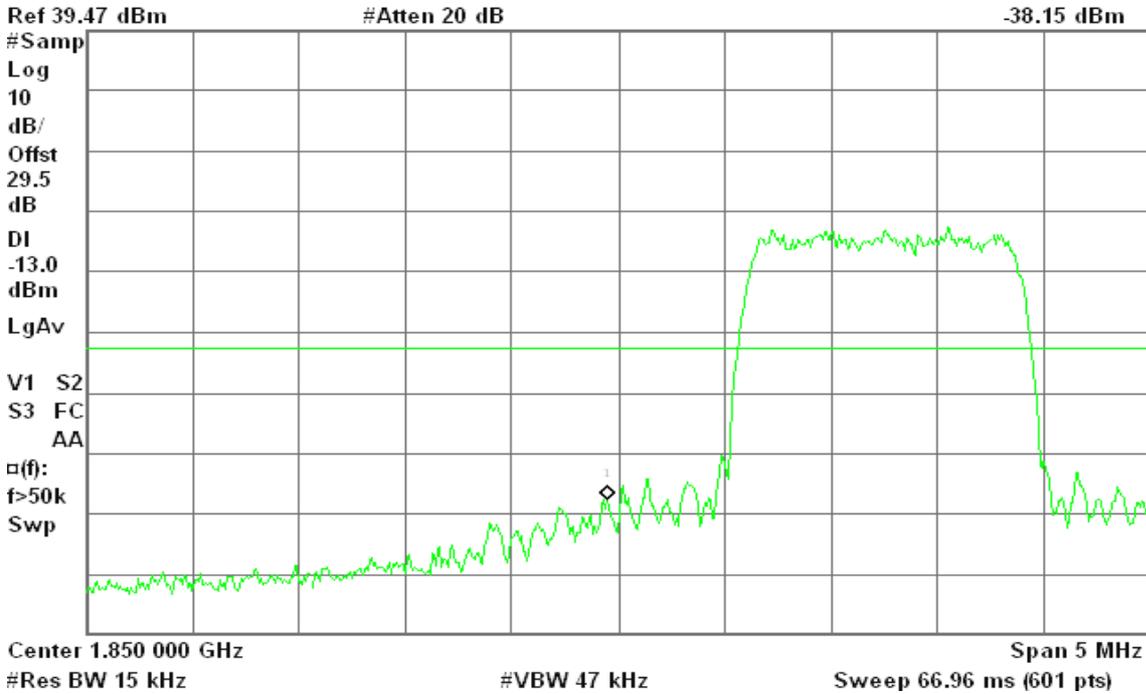
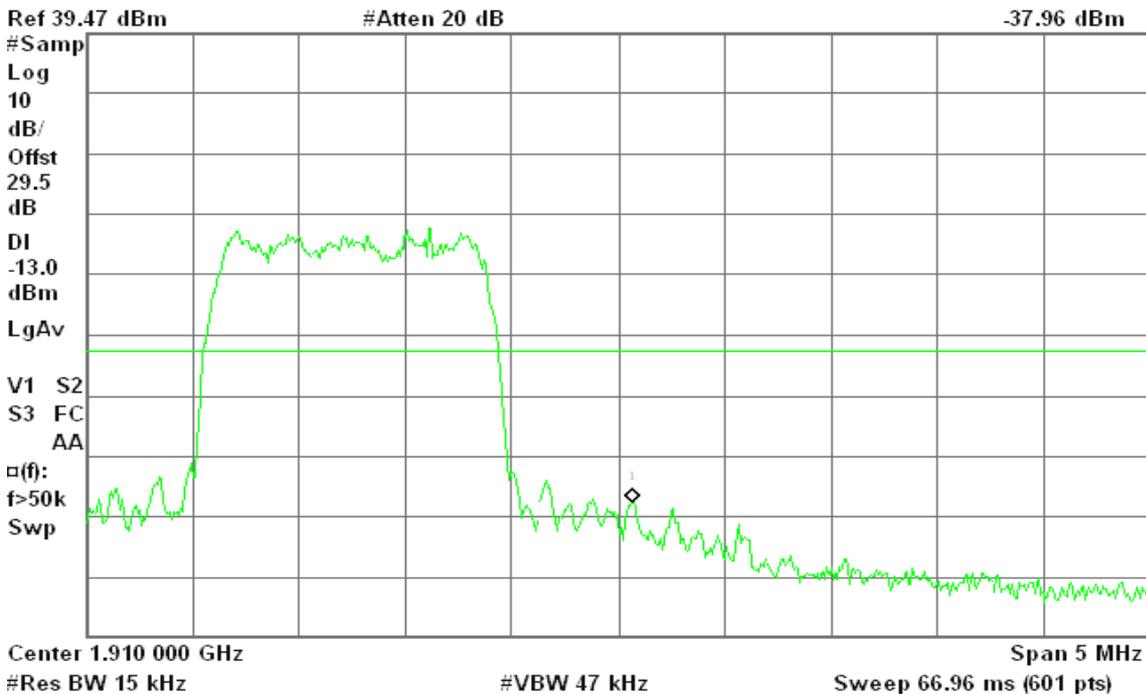


Figure 14-2: Band Edge emissions – CDMA2000 1xEVDO / CH High

Agilent 15:11:10 Mar 27, 2010

R T

Mkr1 1.910 067 GHz  
-37.96 dBm



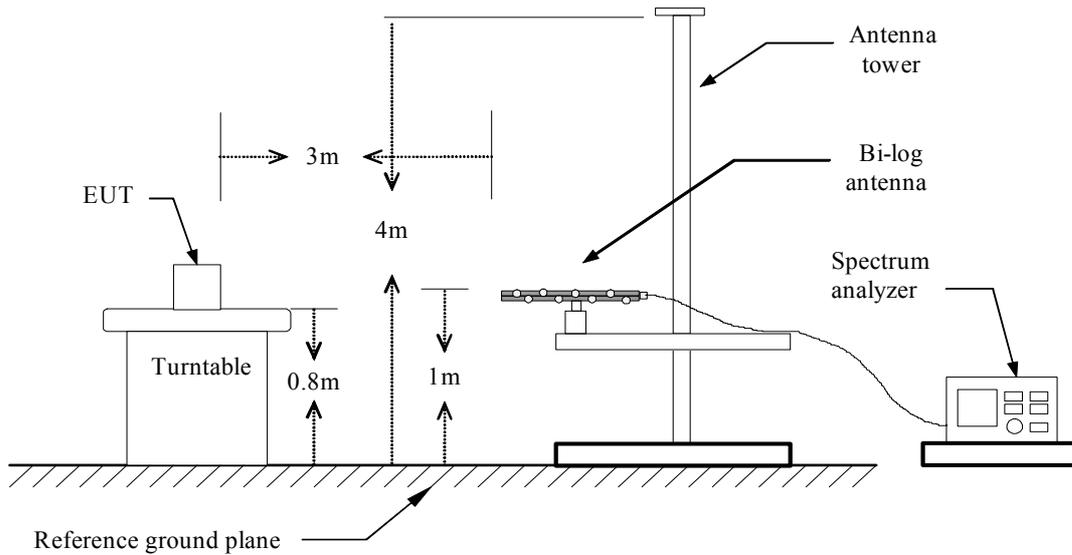
## 7.5 FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT

### LIMIT

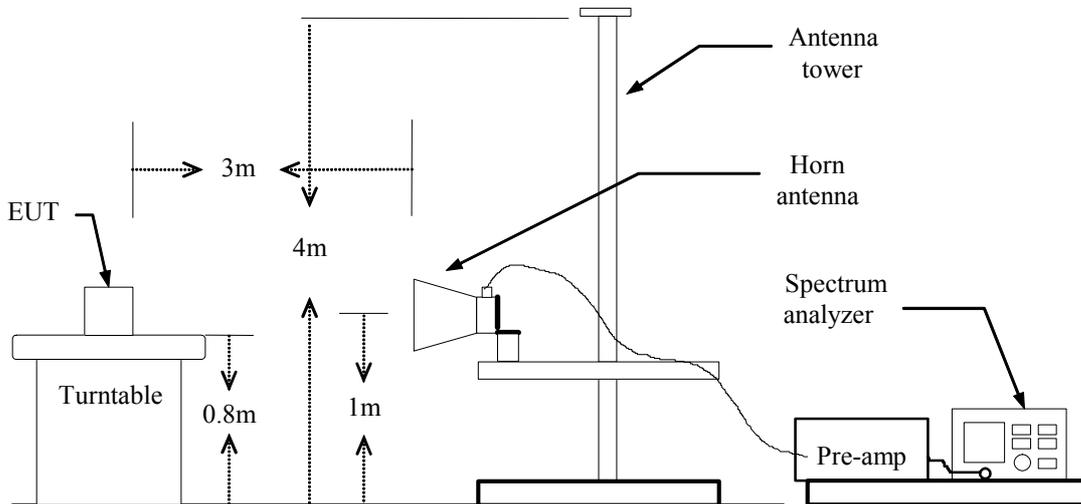
According to FCC §2.1053

### Test Configuration

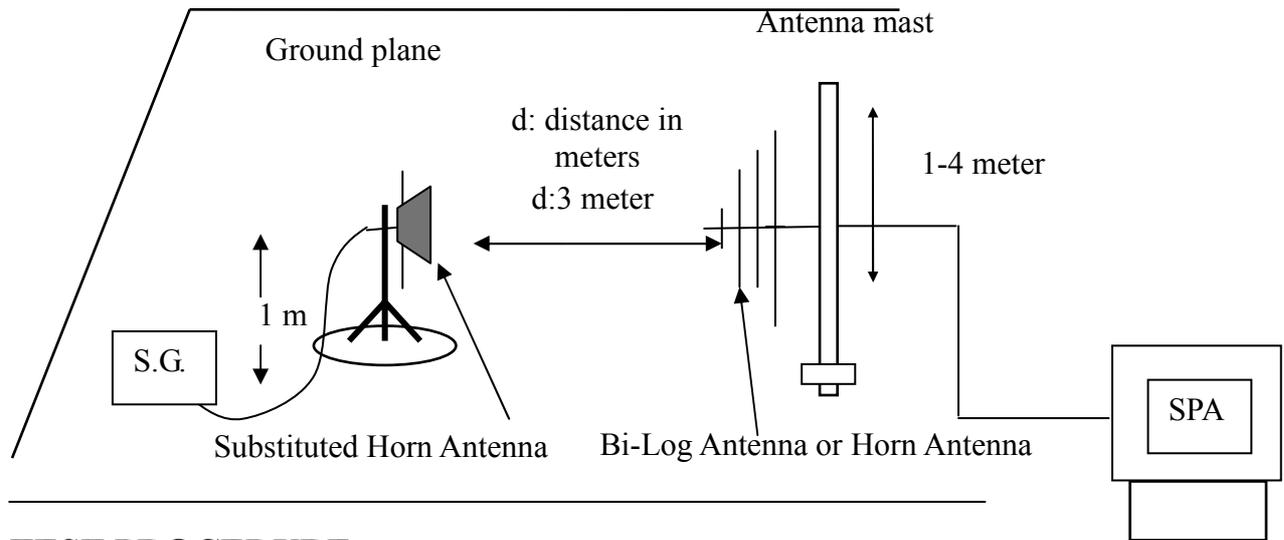
#### Below 1 GHz



#### Above 1 GHz



**Substituted Method Test Set-up**



**TEST PROCEDURE**

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 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.

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

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

**TEST RESULTS**

*Refer to the attached tabular data sheets.*



**Radiated Spurious Emission Measurement Result**

**Below 1GHz**

**Operation Mode:** CDMA2000 / 850 / TX / CH 384

**Test Date:** March 22, 2010

**Temperature:** 25°C

**Tested by:** Mark Yang

**Humidity:** 50 % RH

**Polarity:** Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
35.82	V	-45.34	-14.95	-60.29	-13.00	-47.29
132.82	V	-59.69	-12.93	-72.62	-13.00	-59.62
180.35	V	-60.75	-15.28	-76.03	-13.00	-63.03
345.25	V	-57.36	-13.46	-70.82	-13.00	-57.82
397.63	V	-57.70	-12.19	-69.89	-13.00	-56.89
433.52	V	-62.25	-10.45	-72.70	-13.00	-59.70
35.82	H	-57.34	-14.34	-71.67	-13.00	-58.67
126.03	H	-61.56	-14.06	-75.62	-13.00	-62.62
197.81	H	-62.12	-13.57	-75.69	-13.00	-62.69
246.31	H	-59.47	-14.30	-73.77	-13.00	-60.77
379.20	H	-61.93	-12.08	-74.01	-13.00	-61.01
440.31	H	-63.77	-10.34	-74.11	-13.00	-61.11

**Remark:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.*



Operation Mode: CDMA2000 / 850 / TX / CH 777

Test Date: March 22, 2010

Temperature: 25°C

Tested by: Mark Yang

Humidity: 50 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
35.82	V	-46.45	-14.95	-61.40	-13.00	-48.40
130.88	V	-60.13	-12.79	-72.91	-13.00	-59.91
180.35	V	-62.32	-15.28	-77.60	-13.00	-64.60
345.25	V	-57.56	-13.46	-71.02	-13.00	-58.02
433.52	V	-63.05	-10.45	-73.50	-13.00	-60.50
517.91	V	-65.89	-8.46	-74.34	-13.00	-61.34
37.76	H	-59.48	-13.09	-72.57	-13.00	-59.57
97.90	H	-59.06	-18.67	-77.72	-13.00	-64.72
129.91	H	-63.07	-14.09	-77.16	-13.00	-64.16
251.16	H	-60.10	-14.76	-74.86	-13.00	-61.86
345.25	H	-61.50	-13.61	-75.11	-13.00	-62.11
380.17	H	-62.00	-12.04	-74.04	-13.00	-61.04

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.



Operation Mode: CDMA2000 / 850 / TX / CH 1013

Test Date: March 22, 2010

Temperature: 25°C

Tested by: Mark Yang

Humidity: 50 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
35.82	V	-47.44	-14.95	-62.39	-13.00	-49.39
131.85	V	-61.26	-12.86	-74.12	-13.00	-61.12
345.25	V	-58.35	-13.46	-71.81	-13.00	-58.81
366.59	V	-63.35	-13.02	-76.37	-13.00	-63.37
433.52	V	-63.45	-10.45	-73.90	-13.00	-60.90
517.91	V	-67.24	-8.46	-75.70	-13.00	-62.70
37.76	H	-59.98	-13.09	-73.07	-13.00	-60.07
130.88	H	-63.09	-14.14	-77.24	-13.00	-64.24
206.54	H	-62.33	-14.57	-76.90	-13.00	-63.90
266.68	H	-61.35	-14.29	-75.64	-13.00	-62.64
555.74	H	-66.65	-7.89	-74.54	-13.00	-61.54
637.22	H	-68.47	-6.65	-75.12	-13.00	-62.12

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.



Operation Mode: CDMA2000 / 1900 / TX / CH 25

Test Date: March 22, 2010

Temperature: 25°C

Tested by: Mark Yang

Humidity: 50 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
35.82	V	-47.35	-14.95	-62.30	-13.00	-49.30
135.73	V	-62.32	-13.16	-75.47	-13.00	-62.47
299.66	V	-64.93	-13.59	-78.52	-13.00	-65.52
345.25	V	-63.46	-13.46	-76.92	-13.00	-63.92
433.52	V	-64.79	-10.45	-75.24	-13.00	-62.24
598.42	V	-66.70	-7.71	-74.41	-13.00	-61.41
39.70	H	-59.95	-11.85	-71.81	-13.00	-58.81
136.70	H	-64.08	-14.51	-78.59	-13.00	-65.59
255.04	H	-62.78	-14.95	-77.73	-13.00	-64.73
302.57	H	-63.52	-14.25	-77.77	-13.00	-64.77
451.95	H	-67.02	-9.90	-76.92	-13.00	-63.92
598.42	H	-67.08	-7.75	-74.83	-13.00	-61.83

**Remark:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.*



Operation Mode: CDMA2000 / 1900 / TX / CH 600

Test Date: March 22, 2010

Temperature: 25°C

Tested by: Mark Yang

Humidity: 50 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
35.82	V	-47.36	-14.95	-62.31	-13.00	-49.31
136.70	V	-61.65	-13.23	-74.88	-13.00	-61.88
299.66	V	-64.10	-13.59	-77.69	-13.00	-64.69
345.25	V	-64.02	-13.46	-77.48	-13.00	-64.48
433.52	V	-64.11	-10.45	-74.56	-13.00	-61.56
532.46	V	-67.18	-8.32	-75.50	-13.00	-62.50
50.37	H	-58.19	-15.17	-73.36	-13.00	-60.36
130.88	H	-64.18	-14.14	-78.32	-13.00	-65.32
249.22	H	-63.10	-14.62	-77.72	-13.00	-64.72
535.37	H	-67.73	-8.36	-76.08	-13.00	-63.08
599.39	H	-66.77	-7.74	-74.52	-13.00	-61.52
758.47	H	-68.03	-5.62	-73.65	-13.00	-60.65

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser; with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.



Operation Mode: CDMA2000 / 1900 / TX / CH 1175

Test Date: March 22, 2010

Temperature: 25°C

Tested by: Mark Yang

Humidity: 50 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
35.82	V	-46.70	-14.95	-61.65	-13.00	-48.65
137.67	V	-62.77	-13.30	-76.07	-13.00	-63.07
299.66	V	-65.55	-13.59	-79.14	-13.00	-66.14
345.25	V	-61.02	-13.46	-74.48	-13.00	-61.48
366.59	V	-65.28	-13.02	-78.29	-13.00	-65.29
433.52	V	-64.45	-10.45	-74.90	-13.00	-61.90
40.67	H	-61.69	-11.67	-73.36	-13.00	-60.36
127.00	H	-63.98	-14.07	-78.05	-13.00	-65.05
255.04	H	-62.36	-14.95	-77.31	-13.00	-64.31
440.31	H	-66.44	-10.34	-76.78	-13.00	-63.78
603.27	H	-67.73	-7.60	-75.33	-13.00	-62.33
673.11	H	-67.81	-6.60	-74.41	-13.00	-61.41

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser; with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.



Operation Mode: EVDO / 850 / TX / CH 384

Test Date: March 22, 2010

Temperature: 25°C

Tested by: Mark Yang

Humidity: 50 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
34.85	V	-47.34	-15.50	-62.84	-13.00	-49.84
134.76	V	-62.42	-13.08	-75.50	-13.00	-62.50
345.25	V	-60.98	-13.46	-74.44	-13.00	-61.44
433.52	V	-65.20	-10.45	-75.65	-13.00	-62.65
534.40	V	-68.18	-8.30	-76.48	-13.00	-63.48
612.97	V	-68.09	-7.20	-75.29	-13.00	-62.29
39.70	H	-60.36	-11.85	-72.22	-13.00	-59.22
116.33	H	-62.25	-14.83	-77.08	-13.00	-64.08
245.34	H	-61.71	-14.20	-75.90	-13.00	-62.90
382.11	H	-65.11	-12.01	-77.11	-13.00	-64.11
602.30	H	-67.18	-7.64	-74.82	-13.00	-61.82
725.49	H	-68.86	-6.18	-75.03	-13.00	-62.03

**Remark:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser; with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.*



Operation Mode: EVDO / 850 / TX / CH 777

Test Date: March 22, 2010

Temperature: 25°C

Tested by: Mark Yang

Humidity: 50 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
35.82	V	-47.83	-14.95	-62.78	-13.00	-49.78
133.79	V	-62.29	-13.01	-75.30	-13.00	-62.30
299.66	V	-64.94	-13.59	-78.53	-13.00	-65.53
345.25	V	-60.63	-13.46	-74.09	-13.00	-61.09
433.52	V	-64.91	-10.45	-75.36	-13.00	-62.36
526.64	V	-68.52	-8.37	-76.89	-13.00	-63.89
40.67	H	-59.47	-11.67	-71.14	-13.00	-58.14
131.85	H	-63.03	-14.20	-77.23	-13.00	-64.23
245.34	H	-62.38	-14.20	-76.58	-13.00	-63.58
381.14	H	-65.56	-12.02	-77.58	-13.00	-64.58
524.70	H	-67.90	-8.49	-76.39	-13.00	-63.39
603.27	H	-66.77	-7.60	-74.37	-13.00	-61.37

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.



Operation Mode: EVDO / 850 / TX / CH 1013

Test Date: March 22, 2010

Temperature: 25°C

Tested by: Mark Yang

Humidity: 50 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
34.85	V	-46.57	-15.50	-62.07	-13.00	-49.07
129.91	V	-62.29	-12.73	-75.02	-13.00	-62.02
345.25	V	-60.78	-13.46	-74.24	-13.00	-61.24
433.52	V	-63.55	-10.45	-74.00	-13.00	-61.00
741.98	V	-68.45	-5.90	-74.35	-13.00	-61.35
824.43	V	-67.81	-4.71	-72.52	-13.00	-59.52
39.70	H	-60.03	-11.85	-71.88	-13.00	-58.88
116.33	H	-62.78	-14.83	-77.62	-13.00	-64.62
261.83	H	-62.17	-14.94	-77.11	-13.00	-64.11
433.52	H	-66.71	-10.41	-77.13	-13.00	-64.13
612.00	H	-66.20	-7.21	-73.42	-13.00	-60.42
825.40	H	-64.61	-4.80	-69.41	-13.00	-56.41

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.



Operation Mode: EVDO / 1900 / TX / CH 25

Test Date: March 22, 2010

Temperature: 25°C

Tested by: Mark Yang

Humidity: 50 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
35.82	V	-46.95	-14.95	-61.90	-13.00	-48.90
136.70	V	-62.38	-13.23	-75.61	-13.00	-62.61
345.25	V	-59.43	-13.46	-72.89	-13.00	-59.89
433.52	V	-63.58	-10.45	-74.03	-13.00	-61.03
475.23	V	-67.49	-9.17	-76.66	-13.00	-63.66
529.55	V	-68.01	-8.34	-76.35	-13.00	-63.35
39.70	H	-60.66	-11.85	-72.52	-13.00	-59.52
134.76	H	-62.99	-14.39	-77.38	-13.00	-64.38
255.04	H	-62.20	-14.95	-77.14	-13.00	-64.14
300.63	H	-63.06	-14.26	-77.31	-13.00	-64.31
345.25	H	-63.90	-13.61	-77.50	-13.00	-64.50
399.57	H	-62.50	-11.72	-74.21	-13.00	-61.21

**Remark:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.*



Operation Mode: EVDO / 1900 / TX / CH 600

Test Date: March 22, 2010

Temperature: 25°C

Tested by: Mark Yang

Humidity: 50 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
35.82	V	-46.90	-14.95	-61.85	-13.00	-48.85
135.73	V	-62.67	-13.16	-75.83	-13.00	-62.83
345.25	V	-59.29	-13.46	-72.75	-13.00	-59.75
433.52	V	-65.71	-10.45	-76.16	-13.00	-63.16
535.37	V	-67.35	-8.29	-75.64	-13.00	-62.64
601.33	V	-67.80	-7.64	-75.44	-13.00	-62.44
38.73	H	-60.71	-12.47	-73.18	-13.00	-60.18
100.81	H	-61.05	-17.85	-78.89	-13.00	-65.89
120.21	H	-64.88	-14.02	-78.90	-13.00	-65.90
254.07	H	-62.09	-14.90	-76.98	-13.00	-63.98
524.70	H	-67.00	-8.49	-75.49	-13.00	-62.49
601.33	H	-67.58	-7.68	-75.27	-13.00	-62.27

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser; with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.



Operation Mode: EVDO / 1900 / TX / CH 1175

Test Date: March 22, 2010

Temperature: 25°C

Tested by: Mark Yang

Humidity: 50 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
34.85	V	-46.85	-15.50	-62.34	-13.00	-49.34
134.76	V	-62.47	-13.08	-75.55	-13.00	-62.55
299.66	V	-63.90	-13.59	-77.49	-13.00	-64.49
345.25	V	-59.57	-13.46	-73.03	-13.00	-60.03
377.26	V	-63.97	-13.03	-77.00	-13.00	-64.00
433.52	V	-64.44	-10.45	-74.89	-13.00	-61.89
39.70	H	-61.78	-11.85	-73.63	-13.00	-60.63
135.73	H	-64.00	-14.45	-78.45	-13.00	-65.45
247.28	H	-62.73	-14.41	-77.14	-13.00	-64.14
280.26	H	-64.82	-13.07	-77.89	-13.00	-64.89
366.59	H	-64.98	-12.73	-77.71	-13.00	-64.71
533.43	H	-67.91	-8.38	-76.29	-13.00	-63.29

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser; with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.



**Above 1GHz**

**Operation Mode:** CDMA2000 / 850 / TX / CH 384

**Test Date:** March 22, 2010

**Temperature:** 25°C

**Tested by:** Mark Yang

**Humidity:** 50 % RH

**Polarity:** Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
1672.00	V	-59.32	1.63	-57.69	-13.00	-44.69
4185.00	V	-60.48	8.72	-51.76	-13.00	-38.76
5018.00	V	-52.39	10.42	-41.97	-13.00	-28.97
5858.00	V	-58.12	10.60	-47.53	-13.00	-34.53
N/A						
1252.00	H	-59.88	0.95	-58.93	-13.00	-45.93
1672.00	H	-59.03	1.40	-57.63	-13.00	-44.63
4185.00	H	-59.15	8.49	-50.66	-13.00	-37.66
5018.00	H	-56.33	10.14	-46.19	-13.00	-33.19
N/A						

**Remark:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser; with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.*



Operation Mode: CDMA2000 / 850 / TX / CH 777

Test Date: March 22, 2010

Temperature: 25°C

Tested by: Mark Yang

Humidity: 50 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
1700.00	V	-45.85	1.64	-44.20	-13.00	-31.20
5088.00	V	-57.09	10.40	-46.69	-13.00	-33.69
5935.00	V	-56.34	10.66	-45.68	-13.00	-32.68
N/A						
1700.00	H	-46.46	1.38	-45.08	-13.00	-32.08
4241.00	H	-60.72	8.58	-52.14	-13.00	-39.14
N/A						

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.



Operation Mode: CDMA2000 / 850 / TX / CH 1013

Test Date: March 22, 2010

Temperature: 25°C

Tested by: Mark Yang

Humidity: 50 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
1651.00	V	-59.59	1.61	-57.98	-13.00	-44.98
4948.00	V	-53.22	10.31	-42.91	-13.00	-29.91
5774.00	V	-53.69	10.52	-43.17	-13.00	-30.17
N/A						
1651.00	H	-59.22	1.42	-57.80	-13.00	-44.80
4948.00	H	-58.83	10.02	-48.81	-13.00	-35.81
5774.00	H	-56.38	10.37	-46.01	-13.00	-33.01
N/A						

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.



Operation Mode: CDMA2000 / 1900 / TX / CH 25

Test Date: March 22, 2010

Temperature: 25°C

Tested by: Mark Yang

Humidity: 50 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
3702.00	V	-46.59	9.11	-37.49	-13.00	-24.49
5557.00	V	-57.05	10.33	-46.72	-13.00	-33.72
N/A						
3702.00	H	-45.30	8.89	-36.41	-13.00	-23.41
N/A						

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.



Operation Mode: CDMA2000 / 1900 / TX / CH 600

Test Date: March 22, 2010

Temperature: 25°C

Tested by: Mark Yang

Humidity: 50 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
3758.00	V	-51.45	8.98	-42.48	-13.00	-29.48
5641.00	V	-58.66	10.40	-48.26	-13.00	-35.26
7517.00	V	-57.30	17.04	-40.26	-13.00	-27.26
N/A						
3758.00	H	-46.22	8.76	-37.46	-13.00	-24.46
5641.00	H	-59.89	10.23	-49.67	-13.00	-36.67
7524.00	H	-58.99	16.93	-42.07	-13.00	-29.07
N/A						

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser; with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.



Operation Mode: CDMA2000 / 1900 / TX / CH 1175

Test Date: March 22, 2010

Temperature: 25°C

Tested by: Mark Yang

Humidity: 50 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
3821.00	V	-41.40	8.83	-32.56	-13.00	-19.56
5725.00	V	-55.55	10.48	-45.07	-13.00	-32.07
7636.00	V	-56.93	17.37	-39.56	-13.00	-26.56
N/A						
3821.00	H	-39.89	8.62	-31.27	-13.00	-18.27
5725.00	H	-58.87	10.32	-48.55	-13.00	-35.55
7636.00	H	-59.52	17.23	-42.29	-13.00	-29.29
N/A						

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser; with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.



Operation Mode: EVDO / 850 / TX / CH 384

Test Date: March 22, 2010

Temperature: 25°C

Tested by: Mark Yang

Humidity: 50 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
1672.00	V	-57.59	1.63	-55.97	-13.00	-42.97
4185.00	V	-58.57	8.72	-49.85	-13.00	-36.85
5018.00	V	-50.83	10.42	-40.41	-13.00	-27.41
5858.00	V	-55.66	10.60	-45.07	-13.00	-32.07
N/A						
1672.00	H	-58.95	1.40	-57.54	-13.00	-44.54
4185.00	H	-59.47	8.49	-50.97	-13.00	-37.97
5018.00	H	-55.40	10.14	-45.26	-13.00	-32.26
5858.00	H	-60.28	10.46	-49.81	-13.00	-36.81
N/A						

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser; with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.



Operation Mode: EVDO / 850 / TX / CH 777

Test Date: March 22, 2010

Temperature: 25°C

Tested by: Mark Yang

Humidity: 50 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
1420.00	V	-58.06	1.39	-56.67	-13.00	-43.67
1700.00	V	-44.91	1.64	-43.27	-13.00	-30.27
4241.00	V	-60.54	8.81	-51.73	-13.00	-38.73
5095.00	V	-57.20	10.40	-46.80	-13.00	-33.80
5942.00	V	-54.97	10.67	-44.30	-13.00	-31.30
N/A						
1420.00	H	-60.55	1.34	-59.20	-13.00	-46.20
1700.00	H	-44.21	1.38	-42.83	-13.00	-29.83
4241.00	H	-61.17	8.58	-52.60	-13.00	-39.60
5095.00	H	-59.80	10.13	-49.67	-13.00	-36.67
N/A						

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.



Operation Mode: EVDO / 850 / TX / CH 1013

Test Date: March 22, 2010

Temperature: 25°C

Tested by: Mark Yang

Humidity: 50 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
1651.00	V	-58.52	1.61	-56.90	-13.00	-43.90
4948.00	V	-53.16	10.31	-42.86	-13.00	-29.86
5774.00	V	-52.77	10.52	-42.25	-13.00	-29.25
N/A						
1651.00	H	-58.32	1.42	-56.90	-13.00	-43.90
2792.00	H	-60.59	5.78	-54.82	-13.00	-41.82
4948.00	H	-57.40	10.02	-47.38	-13.00	-34.38
5774.00	H	-57.46	10.37	-47.09	-13.00	-34.09
N/A						

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.



Operation Mode: EVDO / 1900 / TX / CH 25

Test Date: March 22, 2010

Temperature: 25°C

Tested by: Mark Yang

Humidity: 50 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
3702.00	V	-44.92	9.11	-35.82	-13.00	-22.82
5557.00	V	-56.89	10.33	-46.56	-13.00	-33.56
7405.00	V	-60.75	16.62	-44.13	-13.00	-31.13
N/A						
3702.00	H	-42.40	8.89	-33.51	-13.00	-20.51
5557.00	H	-61.30	10.13	-51.17	-13.00	-38.17
7405.00	H	-61.25	16.53	-44.72	-13.00	-31.72
N/A						

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser; with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.



Operation Mode: EVDO / 1900 / TX / CH 600

Test Date: March 22, 2010

Temperature: 25°C

Tested by: Mark Yang

Humidity: 50 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
3758.00	V	-49.95	8.98	-40.98	-13.00	-27.98
5641.00	V	-57.85	10.40	-47.45	-13.00	-34.45
7517.00	V	-53.74	17.04	-36.71	-13.00	-23.71
N/A						
3758.00	H	-44.13	8.76	-35.37	-13.00	-22.37
7524.00	H	-57.27	16.93	-40.35	-13.00	-27.35
N/A						

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser; with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.



Operation Mode: EVDO / 1900 / TX / CH 1175

Test Date: March 22, 2010

Temperature: 25°C

Tested by: Mark Yang

Humidity: 50 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
3821.00	V	-39.52	8.83	-30.68	-13.00	-17.68
5725.00	V	-54.82	10.48	-44.34	-13.00	-31.34
7636.00	V	-51.27	17.37	-33.90	-13.00	-20.90
N/A						
3821.00	H	-36.79	8.62	-28.17	-13.00	-15.17
5725.00	H	-58.10	10.32	-47.79	-13.00	-34.79
7636.00	H	-54.18	17.23	-36.95	-13.00	-23.95
N/A						

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser; with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.

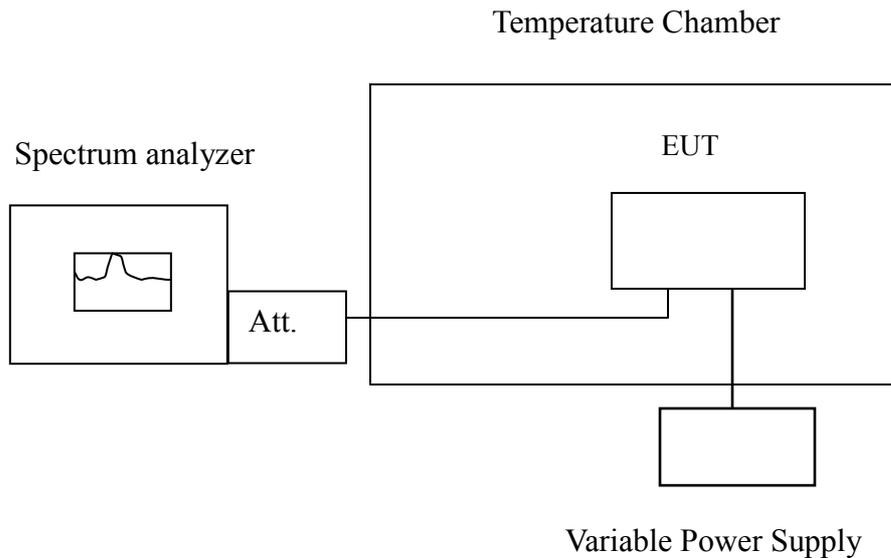
## 7.6 FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT

### LIMIT

According to FCC §2.1055, FCC §24.235.

Frequency Tolerance: 2.5 ppm

### Test Configuration



*Remark: Measurement setup for testing on Antenna connector*



**TEST PROCEDURE**

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

**TEST RESULTS**

*No non-compliance noted.*

<b>Reference Frequency: CDMA2000 Mid Channel 836.52MHz @ 20°C</b>				
<b>Limit: +/- 2.5 ppm = 2091 Hz</b>				
<b>Power Supply VAC</b>	<b>Environment Temperature (°C)</b>	<b>Frequency (Hz)</b>	<b>Delta (Hz)</b>	<b>Limit (Hz)</b>
120	50	83600000	0	2090
	40	83599999	-1	
	30	83599997	-3	
	20	83600000	0	
	10	83600001	1	
	0	83600002	2	
	-10	83599999	-1	
	-20	83600002	2	
	-30	83599997	-3	

<b>Reference Frequency: CDMA2000 Mid Channel 1880MHz @ 20°C</b>				
<b>Limit: +/- 2.5 ppm = 4700 Hz</b>				
<b>Power Supply VAC</b>	<b>Environment Temperature (°C)</b>	<b>Frequency (Hz)</b>	<b>Delta (Hz)</b>	<b>Limit (Hz)</b>
120	50	1879999999	-3	4700
	40	1880000000	-2	
	30	1880000002	0	
	20	1880000002	0	
	10	1880000000	-2	
	0	1879999999	-3	
	-10	1880000001	-1	
	-20	1880000001	-1	
	-30	1880000000	-2	



Reference Frequency: EVDO Mid Channel 836.52MHz @ 20°C				
Limit: +/- 2.5 ppm = 2091 Hz				
Power Supply VAC	Environment Temperature (°C)	Frequency (Hz)	Delta (Hz)	Limit (Hz)
120	50	83599999	-3	2090
	40	83599997	-5	
	30	83600002	0	
	20	83600002	0	
	10	83599999	-3	
	0	83600003	1	
	-10	83599998	-4	
	-20	83600001	-1	
	-30	83599998	-4	

Reference Frequency: EVDO Mid Channel 1880MHz @ 20°C				
Limit: +/- 2.5 ppm = 4700 Hz				
Power Supply VAC	Environment Temperature (°C)	Frequency (Hz)	Delta (Hz)	Limit (Hz)
120	50	1879999999	-2	4700
	40	1879999997	-4	
	30	1879999998	-3	
	20	1880000001	0	
	10	1879999994	-7	
	0	1880000002	1	
	-10	1879999999	-2	
	-20	1879999996	-5	
	-30	1879999997	-4	

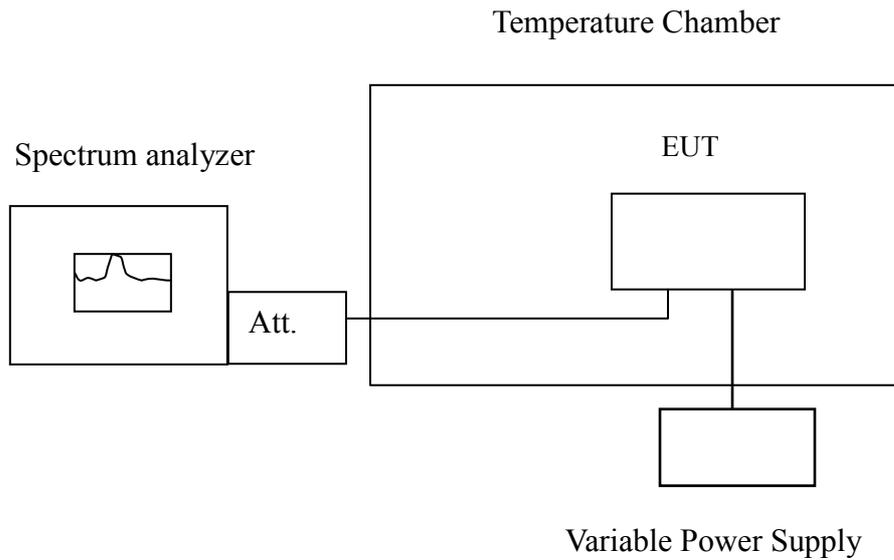
## 7.7 FREQUENCY STABILITY V.S. VOLTAGE MEASUREMENT

### LIMIT

According to FCC §2.1055, FCC §24.235,

Frequency Tolerance: 2.5 ppm.

### Test Configuration



*Remark: Measurement setup for testing on Antenna connector.*



**TEST PROCEDURE**

Set chamber temperature to 20°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation ( $\pm 15\%$ ) and endpoint, record the maximum frequency change.

**TEST RESULTS**

*No non-compliance noted.*

Reference Frequency: CDMA2000 Mid Channel 836.52MHz @ 20°C				
Limit: +/- 2.5 ppm = 2091 Hz				
Power Supply VAC	Environment Temperature (°C)	Frequency (Hz)	Delta (Hz)	Limit (Hz)
132	20	83600001	1	2090
120		83600000	0	
108		83600002	2	
98END		83600068	66	

Reference Frequency: CDMA2000 Mid Channel 1880MHz @ 20°C				
Limit: $\pm 2.5$ ppm = 4700 Hz				
Power Supply VAC	Environment Temperature (°C)	Frequency (Hz)	Delta (Hz)	Limit (Hz)
132	20	1880000003	1	4700
120		1880000002	0	
108		1880000004	2	
98END		1880000058	56	



Reference Frequency: EVDO Mid Channel 836.52MHz @ 20°C				
Limit: +/- 2.5 ppm = 2091 Hz				
Power Supply VAC	Environment Temperature (°C)	Frequency (Hz)	Delta (Hz)	Limit (Hz)
132	20	83600003	1	2090
120		83600002	0	
108		83599999	-3	
98END		83599942	-57	

Reference Frequency: EVDO Mid Channel 1880MHz @ 20°C				
Limit: ± 2.5 ppm = 4700 Hz				
Power Supply VAC	Environment Temperature (°C)	Frequency (Hz)	Delta (Hz)	Limit (Hz)
132	20	1879999998	-3	4700
120		1880000001	0	
108		1880000006	5	
98END		1880000049	48	



## 7.8 POWERLINE CONDUCTED EMISSIONS

### LIMIT

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

Frequency Range (MHz)	Limits (dB $\mu$ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

### Test Configuration

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

### TEST PROCEDURE

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.