



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

TEST REPORT

For

Computer

Trade Name: ADVANTECH

Model: TREK-510XXXXXXXXXXXX(X = 0 ~ 9 or A ~ Z or blank)

Issued to

Advantech Co., Ltd.

**No.1, Alley 20, Lane 26, Rueiguang Road,
Neihu District, Taipei 114, Taiwan, R.O.C.**

Issued by

Compliance Certification Services Inc.

**No.11, Wu-Gong 6th Rd., Wugu Industrial Park,
New Taipei City 248, Taiwan (R.O.C.)**

<http://www.ccsrf.com>

service@ccsrf.com

Issued Date: July 8, 2011



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Revision History

| Rev. | Issue Date | Revisions | Effect Page | Revised By |
|------|--------------|---------------|-------------|-------------|
| 00 | July 8, 2011 | Initial Issue | ALL | Angel Cheng |



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1. TEST RESULT CERTIFICATION

Applicant: Advantech Co., Ltd.
 No.1, Alley 20, Lane 26, Rueiguang Road,
 Neihu District, Taipei 114, Taiwan, R.O.C.

Equipment Under Test: Computer

Trade Name: ADVANTECH

Model: TREK-510XXXXXXXXXXXX(X = 0 ~ 9 or A ~ Z or blank)

Date of Test: June 14 ~ 22, 2011

| 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:

Jason Lin
 Section Manager
 Compliance Certification Services Inc.

Reviewed by:

Gina Lo
 Section Manager
 Compliance Certification Services Inc.



2. EUT DESCRIPTION

| | |
|--|--|
| Product | Computer |
| Trade Name | ADVANTECH |
| Model Number | TREK-510XXXXXXXXXXXX(X = 0 ~ 9 or A ~ Z or blank) |
| Model Discrepancy | All the specification and layout are identical except they come with different model numbers. The suffix of (X= a-z / 0-9 or blank) on model number is just for marketing purpose only. |
| Received Date | April 22, 2011 |
| Power Supply | DC 12V / 24V |
| Frequency Range | TX: 824.7 ~ 848.31 MHz / 1851.25 ~ 1908.75 MHz RX: 869.7 ~ 893.31 MHz / 1931.25 ~ 1988.75 MHz |
| Transmit Power (ERP & EIRP Power) | CDMA2000 1xRTT 850 MHz: 18.21 dBm 1900 MHz: 28.79 dBm CDMA2000 1xEVDO 850 MHz: 17.92 dBm 1900 MHz: 28.68 dBm |
| Cellular Phone Protocol | CDMA2000 1xRTT CDMA2000 1xEVDO |
| Type of Emission | CDMA2000 1xRTT: 824.7 ~ 848.31 MHz: 1M28F9W--- 1851.25 ~ 1908.75 MHz: 1M28F9W--- CDMA2000 1xEVDO 824.7 ~ 848.31 MHz: 1M28F9W--- 1851.25 ~ 1908.75 MHz: 1M28F9W--- |
| Antenna Gain | 850 MHz: -2.5dBi 1900 MHz: 2.62dBi |
| Antenna Type | Dipole Antenna |

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: **M82-TREK-510** 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: TREK-510) had been tested under operating condition.

The module MC5728 was the only transmitter that was tested.

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:

| RC/TAP (REV) | SO/TAP (REV) | CDMA 850 / Cellular band | | | CDMA 1900 / PCS band | | |
|--------------|--------------|--------------------------|------|------|----------------------|------|------|
| | | 1013 | 384 | 777 | 25 | 600 | 1175 |
| RC1 | SO2 | 22.8 | 22.7 | 23.1 | 23.1 | 23.2 | 23.2 |
| RC1 | SO55 | 23.5 | 23.4 | 23.6 | 23.4 | 23.1 | 23.2 |
| RC2 | SO9 | 22.4 | 22.9 | 22.6 | 22.7 | 22.7 | 22.6 |
| RC2 | SO55 | 23.4 | 23.6 | 23.5 | 23.2 | 23.1 | 23.2 |
| RC3 | SO55 | 23.6 | 23.7 | 23.8 | 23.6 | 23.4 | 23.4 |
| RC3 | SO32 | 23.3 | 23.5 | 23.4 | 23.3 | 23.2 | 23.3 |
| 1xEvDO Rev.0 | (FTAP) (dBm) | 23.4 | 23.5 | 23.7 | 23.4 | 23.2 | 23.1 |
| 1xEvDO Rev.A | (FTAP) (dBm) | 23.3 | 23.6 | 23.5 | 23.2 | 23.3 | 23.3 |

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 and Loop Antenna is scheduled for calibration once three years.

| Conducted Emissions Test Site | | | | |
|-------------------------------|--------------|---------|---------------|-----------------|
| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
| Spectrum Analyzer | Agilent | E4446A | MY43360131 | 03/02/2012 |
| Power Meter | Anritsu | ML2495A | 1012009 | 04/27/2012 |
| Power Sensor | Anritsu | MA2411B | 0917072 | 04/27/2012 |

| Wugu 966 Chamber A | | | | |
|--------------------|--------------------|--------------------------|---------------|-----------------|
| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
| Spectrum Analyzer | Agilent | E4446A | US42510252 | 11/03/2011 |
| EMI Test Receiver | R&S | ESCI | 100064 | 02/17/2012 |
| Pre-Amplifier | Mini-Circuits | ZFL-1000LN | SF350700823 | 01/13/2011 |
| Pre-Amplifier | MITEQ | AFS44-00102650-42-10P-44 | 1415367 | 11/19/2011 |
| Bilog Antenna | Sunol Sciences | JB3 | A030105 | 10/05/2012 |
| Horn Antenna | EMCO | 3117 | 00055165 | 01/12/2012 |
| Horn Antenna | EMCO | 3116 | 00026370 | 10/17/2012 |
| Loop Antenna | EMCO | 6502 | 8905/2356 | 06/10/2013 |
| Turn Table | CCS | CC-T-1F | N/A | N.C.R |
| Antenna Tower | CCS | CC-A-1F | N/A | N.C.R |
| Controller | CCS | CC-C-1F | N/A | N.C.R |
| Site NSA | CCS | N/A | N/A | 12/26/2011 |
| Test S/W | EZ-EMC (CCS-3A1RE) | | | |

| Conducted Emission Room # 3 | | | | |
|-----------------------------|--------------|-------------------------|---------------|-----------------|
| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
| EMI Test Receiver | R&S | ESCS30 | 845552/030 | 05/28/2012 |
| LISN | R&S | ENV216 | 100069 | 06/18/2012 |
| LISN | FCC | FCC-LISN-50/250-16-2-07 | 06013 | 11/20/2012 |
| ISN | FCC | FCC-TLISN-T2-02 | 20587 | 07/13/2012 |
| ISN | FCC | FCC-TLISN-T8-02 | 20148 | 05/12/2012 |
| Current Probe | FCC | F-35 | 506 | 06/17/2012 |
| ISN | FCC | FCC-TLISN-T4-02 | 20396 | 06/23/2012 |
| Test S/W | EZ-EMC | | | |



4.3 MEASUREMENT UNCERTAINTY

| PARAMETER | UNCERTAINTY |
|---------------------------------------|-------------|
| Powerline Conducted Emission | +/- 2.0878 |
| 3M Semi Anechoic Chamber / 30M~200M | +/- 4.0606 |
| 3M Semi Anechoic Chamber / 200M~1000M | +/- 3.9979 |
| 3M Semi Anechoic Chamber / 1G~8G | +/- 2.5790 |
| 3M Semi Anechoic Chamber / 8G~18G | +/- 2.5928 |
| 3M Semi Anechoic Chamber / 18G~26G | +/- 2.7212 |
| 3M Semi Anechoic Chamber / 26G~40G | +/- 2.9520 |

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, Wu-Gong 6th Rd., Wugu Industrial Park, New Taipei City 248, Taiwan (R.O.C.)

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

No.81-1, Lane 210, Bade 2nd Rd., Lujhu Township, Taoyuan County 33841, TAIWAN, R.O.C.

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

Remark: *The Powerline Conducted Emissions was tested at Compliance Certification Services. (Linko Lab.)
The test equipments were listed in page 9 and the test data were recorded in page 71-72.*

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. | Equipment | Model No. | Serial No. | FCC ID | Trade Name | Data Cable | Power Cord |
|-----|---|-----------|------------|--------|------------|------------|------------------|
| 1 | Universal Radio Communication Tester (Remote) | CMU200 | 101245 | N/A | R&S | 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.



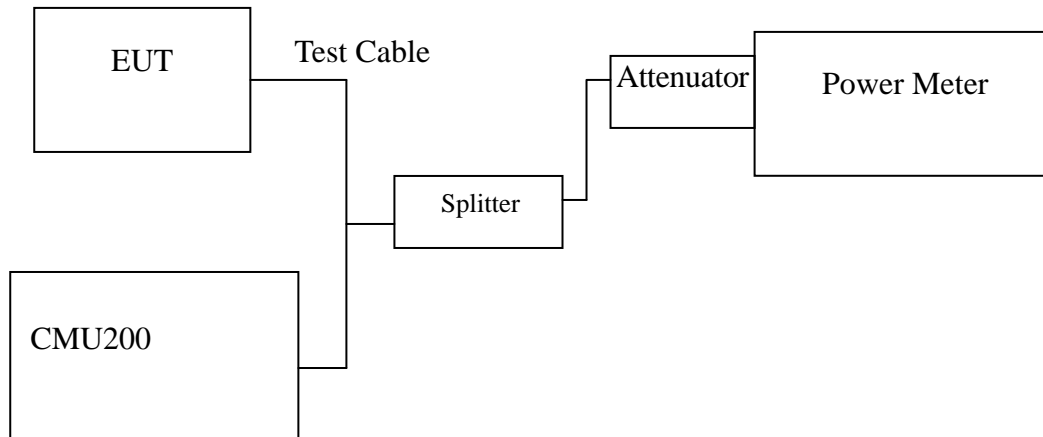
7. FCC PART 22 & 24 REQUIREMENTS

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

Peak Power

| Test Mode | CH | Frequency (MHz) | Peak Power (dBm) |
|--------------------------|------|-----------------|------------------|
| CDMA2000 1xRTT Cellular | 1013 | 824.70 | 25.6 |
| | 384 | 836.52 | 25.8 |
| | 777 | 848.31 | 25.7 |
| CDMA2000 1xEVDO Cellular | 1013 | 824.70 | 25.5 |
| | 384 | 836.52 | 25.6 |
| | 777 | 848.31 | 25.5 |

| Test Mode | CH | Frequency (MHz) | Peak Power (dBm) |
|---------------------|------|-----------------|------------------|
| CDMA2000 1xRTT PCS | 25 | 1851.25 | 25.4 |
| | 600 | 1880.00 | 25.3 |
| | 1175 | 1908.75 | 25.5 |
| CDMA2000 1xEVDO PCS | 25 | 1851.25 | 25.3 |
| | 600 | 1880.00 | 25.2 |
| | 1175 | 1908.75 | 25.4 |

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



7.2 ERP & EIRP MEASUREMENT

LIMIT

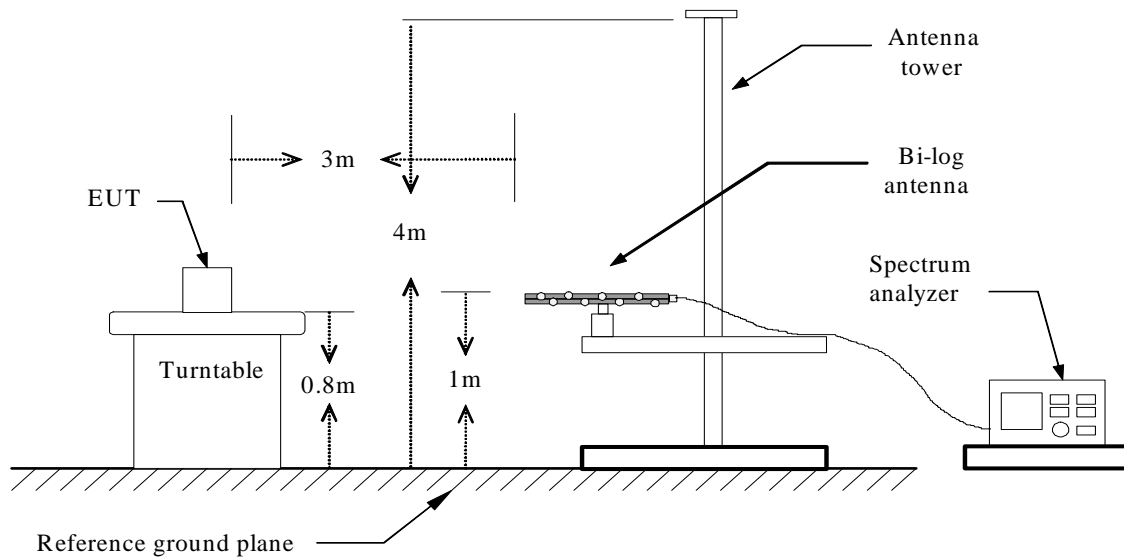
According to FCC §2.1046

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

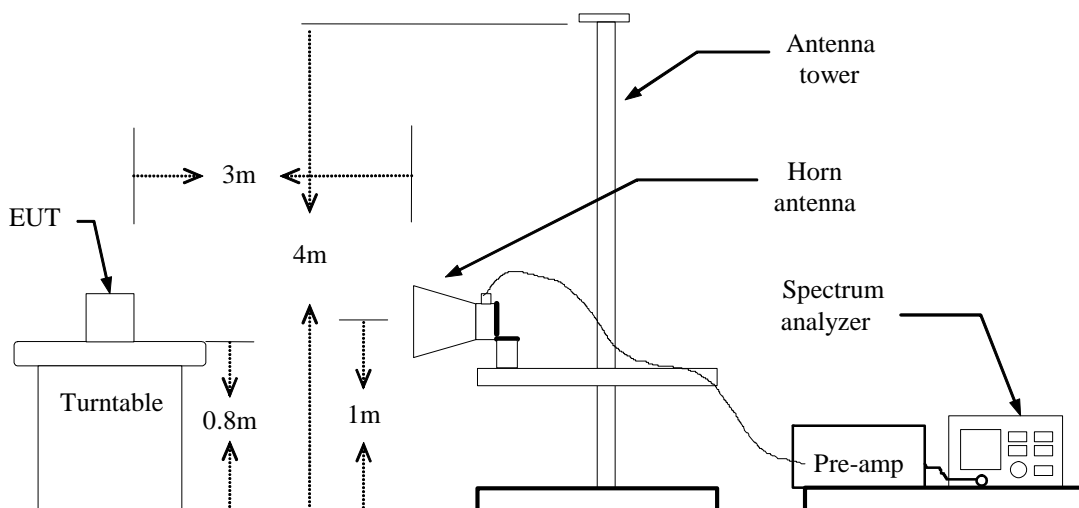
FCC 24.232(b): The equivalent Isotropic Radiated Power (EIRP) must not exceed 2 Watts.

TEST CONFIGURATION

Below 1 GHz

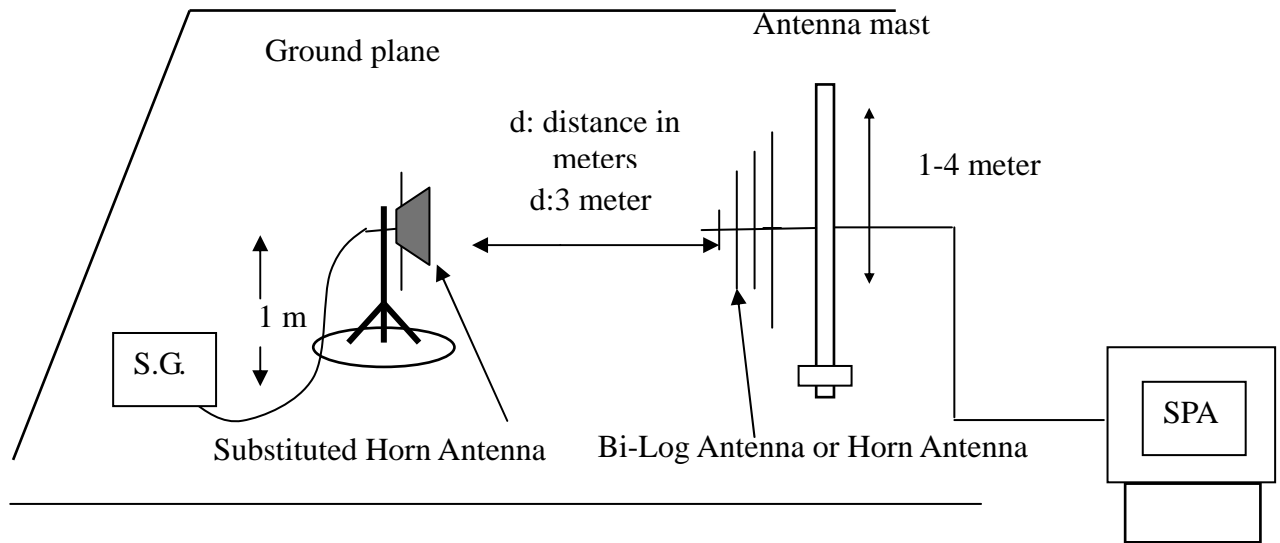


Above 1 GHz





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:

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

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

**TEST RESULTS***No non-compliance noted.***CDMA2000 1xRTT Cellular Test Data**

| Channel | Frequency (MHz) | Antenna Pol. | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) |
|---------|-----------------|--------------|------------|-----------------|----------------|----------------------|-------------|-------------|
| 1013 | 824.80 | V | 10.88 | 3.4 | 6.36 | 13.84 | 38.45 | -24.61 |
| | 824.80 | H | 13.59 | 3.4 | 6.36 | 16.55 | 38.45 | -21.9 |
| 384 | 836.50 | V | 9.91 | 3.4 | 6.4 | 12.91 | 38.45 | -25.54 |
| | 836.50 | H | 15.21 | 3.4 | 6.4 | *18.21 | 38.45 | -20.24 |
| 777 | 848.40 | V | 10.52 | 3.39 | 6.24 | 13.37 | 38.45 | -25.08 |
| | 848.30 | H | 15.05 | 3.39 | 6.24 | 17.9 | 38.45 | -20.55 |

CDMA2000 1xEVDO Cellular Test Data

| Channel | Frequency (MHz) | Antenna Pol. | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) |
|---------|-----------------|--------------|------------|-----------------|----------------|----------------------|-------------|-------------|
| 1013 | 824.80 | V | 9.53 | 3.4 | 6.36 | 12.49 | 38.45 | -25.96 |
| | 824.80 | H | 14.19 | 3.4 | 6.36 | 17.15 | 38.45 | -21.3 |
| 384 | 836.50 | V | 10.08 | 3.4 | 6.4 | 13.08 | 38.45 | -25.37 |
| | 836.50 | H | 14.92 | 3.4 | 6.4 | *17.92 | 38.45 | -20.53 |
| 777 | 848.40 | V | 9.5 | 3.39 | 6.24 | 12.35 | 38.45 | -26.1 |
| | 848.30 | H | 13.84 | 3.39 | 6.24 | 16.69 | 38.45 | -21.76 |

CDMA2000 1xRTT PCS Test Data

| Channel | Frequency (MHz) | Antenna Pol. | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) |
|---------|-----------------|--------------|------------|-----------------|----------------|----------------------|-------------|-------------|
| 25 | 1851.15 | V | 28.49 | 5.37 | 5.67 | *28.79 | 33 | -4.21 |
| | 1851.15 | H | 18.3 | 5.37 | 5.67 | 18.6 | 33 | -14.4 |
| 600 | 1879.95 | V | 28.05 | 5.38 | 5.65 | 28.32 | 33 | -4.68 |
| | 1879.95 | H | 18.55 | 5.38 | 5.65 | 18.82 | 33 | -14.18 |
| 1175 | 1908.90 | V | 27.58 | 5.42 | 5.62 | 27.78 | 33 | -5.22 |
| | 1908.90 | H | 18.11 | 5.42 | 5.62 | 18.31 | 33 | -14.69 |

CDMA2000 1xEVDO PCS Test Data

| Channel | Frequency (MHz) | Antenna Pol. | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) |
|---------|-----------------|--------------|------------|-----------------|----------------|----------------------|-------------|-------------|
| 25 | 1851.15 | V | 27.91 | 5.37 | 5.67 | 28.21 | 33 | -4.79 |
| | 1851.15 | H | 17.77 | 5.37 | 5.67 | 18.07 | 33 | -14.93 |
| 600 | 1879.95 | V | 28.41 | 5.38 | 5.65 | *28.68 | 33 | -4.32 |
| | 1879.95 | H | 18.6 | 5.38 | 5.65 | 18.87 | 33 | -14.13 |
| 1175 | 1908.90 | V | 27.33 | 5.42 | 5.62 | 27.53 | 33 | -5.47 |
| | 1908.90 | H | 17.94 | 5.42 | 5.62 | 18.14 | 33 | -14.86 |

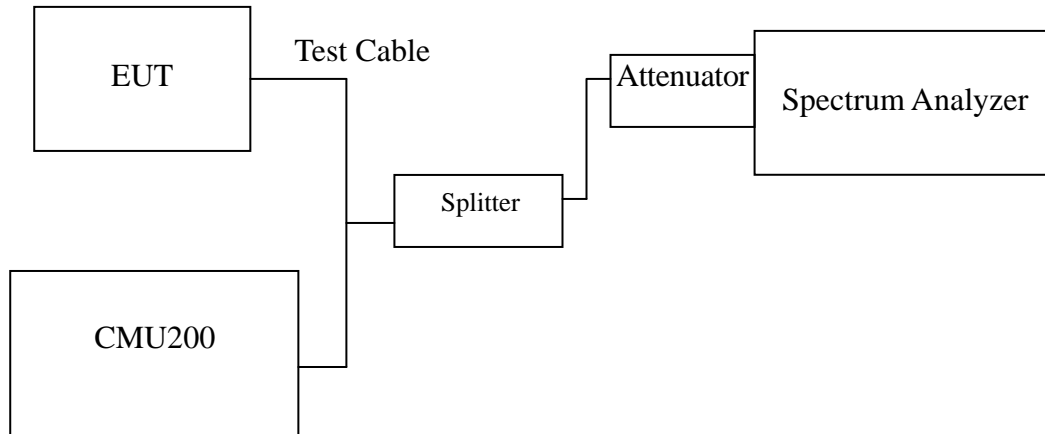


7.3 OCCUPIED BANDWIDTH MEASUREMENT

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 | 824.70 | 1.2771 |
| | 384 | 836.52 | 1.2801 |
| | 777 | 848.31 | 1.2758 |
| CDMA2000 1xEVDO Cellular | 1013 | 824.70 | 1.2816 |
| | 384 | 836.52 | 1.2803 |
| | 777 | 848.31 | 1.2782 |

| Test Mode | CH | Frequency (MHz) | Bandwidth (MHz) |
|---------------------|-----------|------------------------|------------------------|
| CDMA2000 1xRTT PCS | 25 | 1851.25 | 1.2863 |
| | 600 | 1880.00 | 1.2825 |
| | 1175 | 1908.75 | 1.2819 |
| CDMA2000 1xEVDO PCS | 25 | 1851.25 | 1.2893 |
| | 600 | 1880.00 | 1.2798 |
| | 1175 | 1908.75 | 1.2864 |

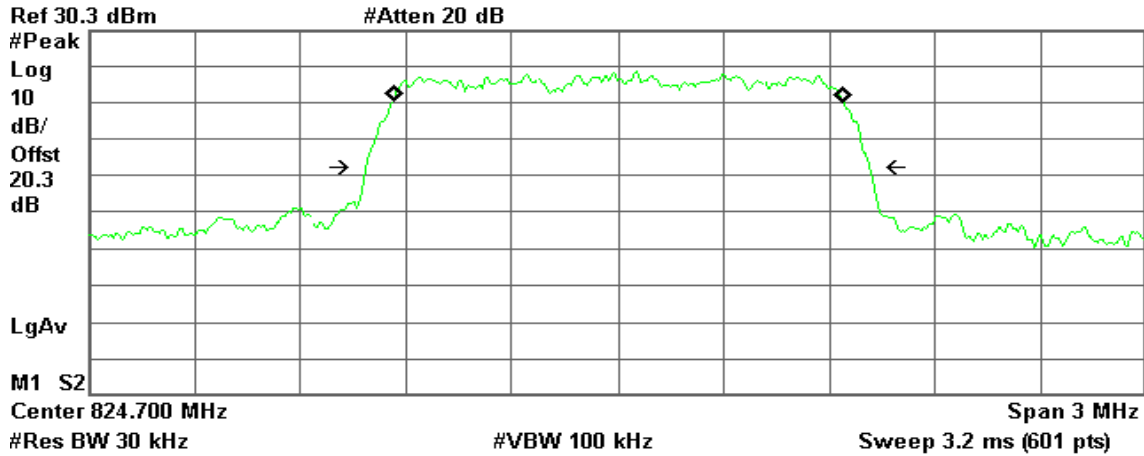


Test Plot

CDMA2000 1xRTT Cellular / CH Low

Agilent 12:22:49 Jun 22, 2011

R T



Occupied Bandwidth
1.2771 MHz

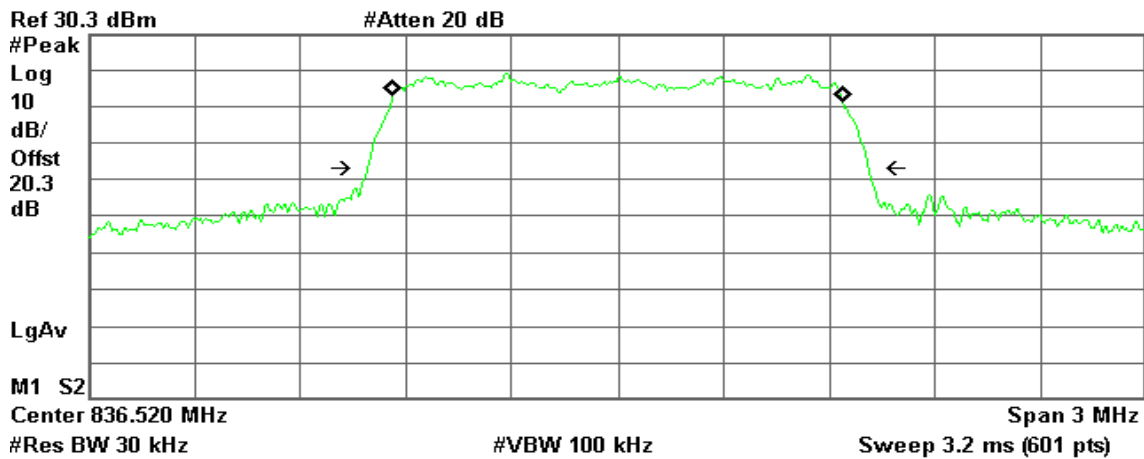
Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 2.845 kHz
x dB Bandwidth 1.430 MHz

CDMA2000 1xRTT Cellular / CH Mid

Agilent 11:48:39 Jun 22, 2011

R T



Occupied Bandwidth
1.2801 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

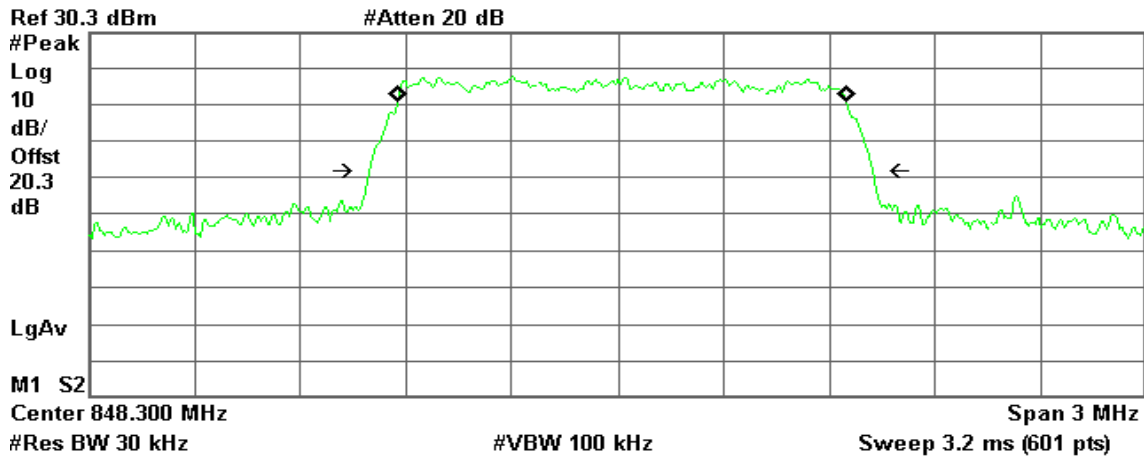
Transmit Freq Error 1.426 kHz
x dB Bandwidth 1.423 MHz



CDMA2000 1xRTT Cellular / CH High

Agilent 11:49:28 Jun 22, 2011

R T



Occupied Bandwidth
1.2758 MHz

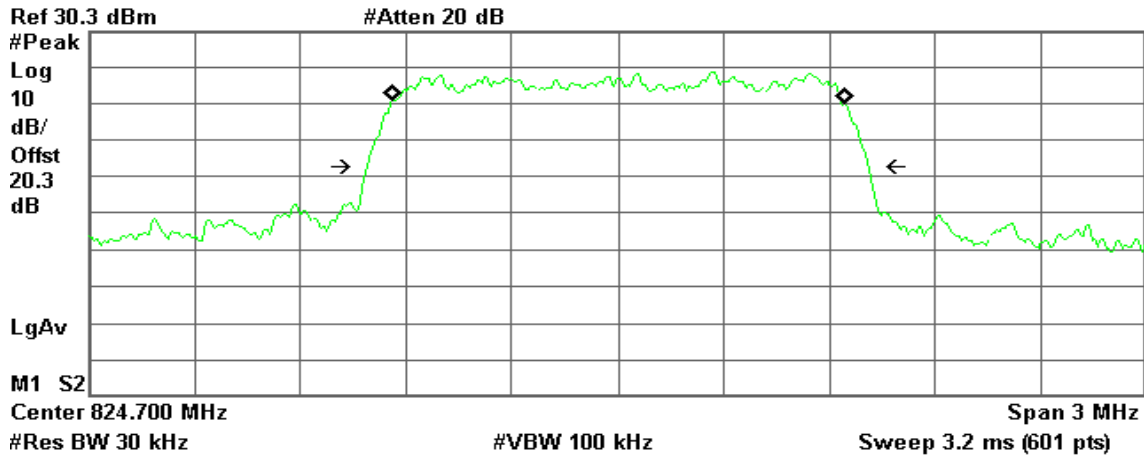
Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 12.879 kHz
x dB Bandwidth 1.431 MHz

CDMA2000 1xEVDO Cellular / CH Low

Agilent 12:23:51 Jun 22, 2011

R T



Occupied Bandwidth
1.2816 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

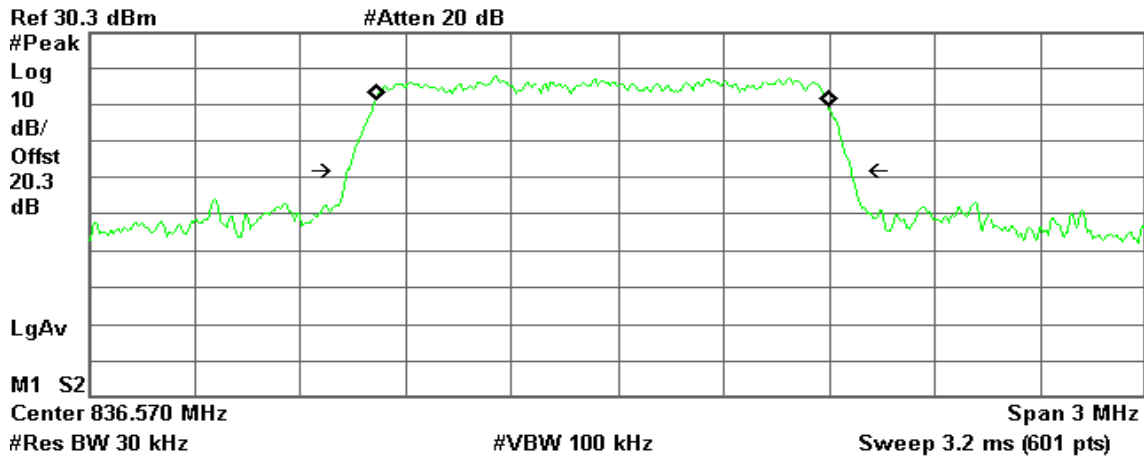
Transmit Freq Error 2.312 kHz
x dB Bandwidth 1.423 MHz



CDMA2000 1xEVDO Cellular / CH Mid

Agilent 12:25:21 Jun 22, 2011

R T



Occupied Bandwidth
1.2803 MHz

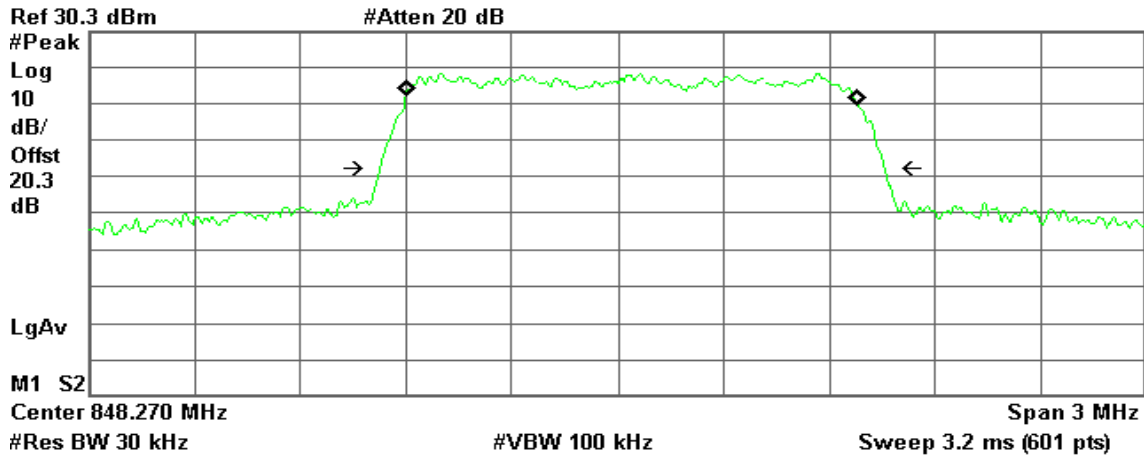
Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -46.504 kHz
x dB Bandwidth 1.431 MHz

CDMA2000 1xEVDO Cellular / CH High

Agilent 12:24:41 Jun 22, 2011

R T



Occupied Bandwidth
1.2782 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

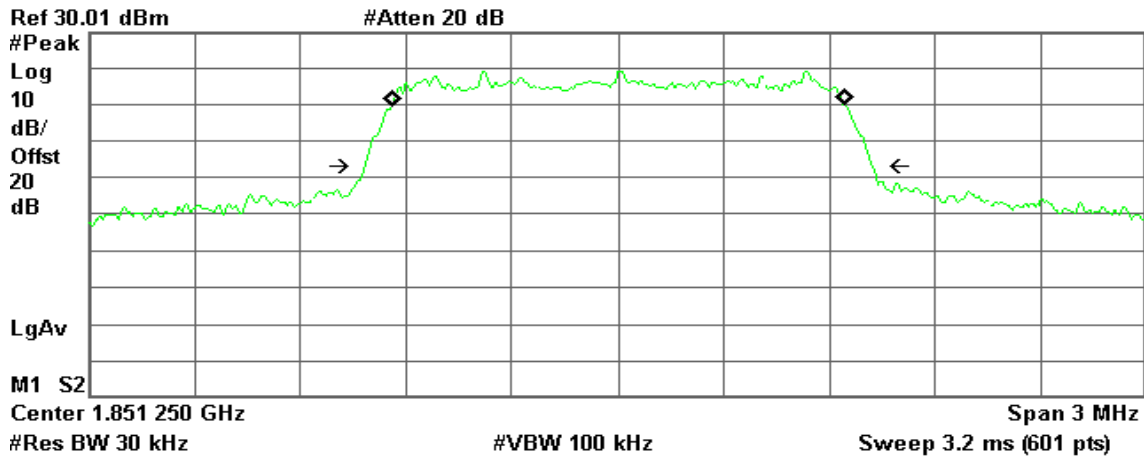
Transmit Freq Error 41.635 kHz
x dB Bandwidth 1.433 MHz



CDMA2000 1xRTT PCS / CH Low

Agilent 14:13:08 Jun 22, 2011

R T



Occupied Bandwidth
1.2863 MHz

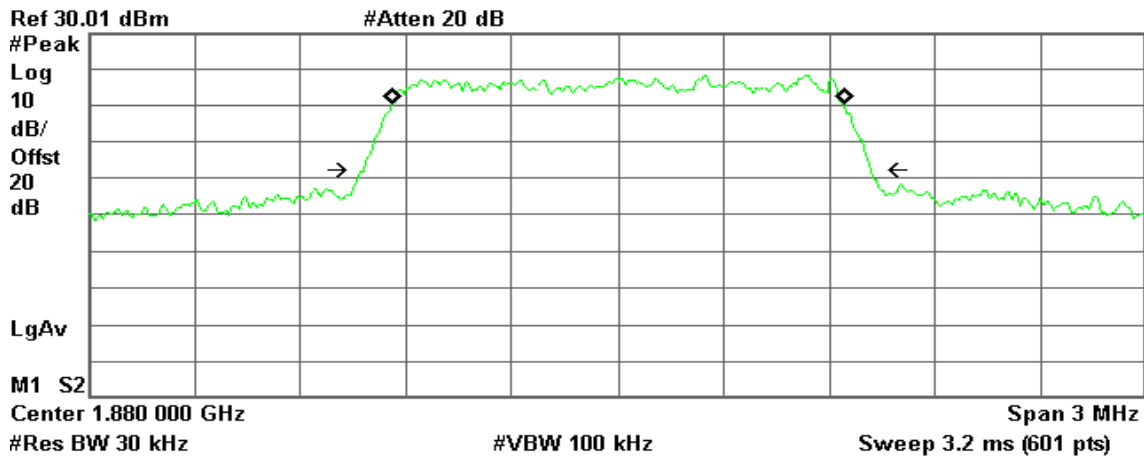
Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 3.309 kHz
x dB Bandwidth 1.439 MHz

CDMA2000 1xRTT PCS / CH Mid

Agilent 14:14:50 Jun 22, 2011

R T



Occupied Bandwidth
1.2825 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

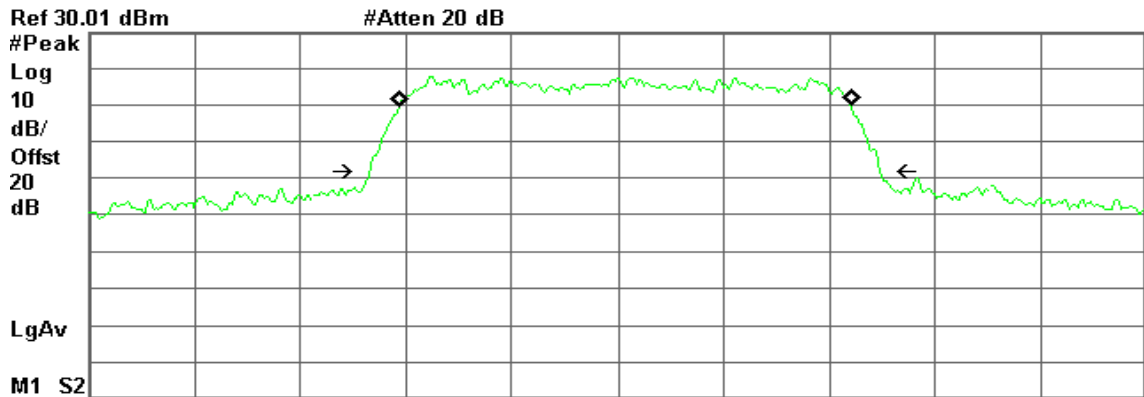
Transmit Freq Error 1.447 kHz
x dB Bandwidth 1.440 MHz



CDMA2000 1xRTT PCS / CH High

Agilent 14:15:19 Jun 22, 2011

R T



Center 1.908 750 GHz Span 3 MHz
#Res BW 30 kHz #VBW 100 kHz Sweep 3.2 ms (601 pts)

Occupied Bandwidth
1.2819 MHz

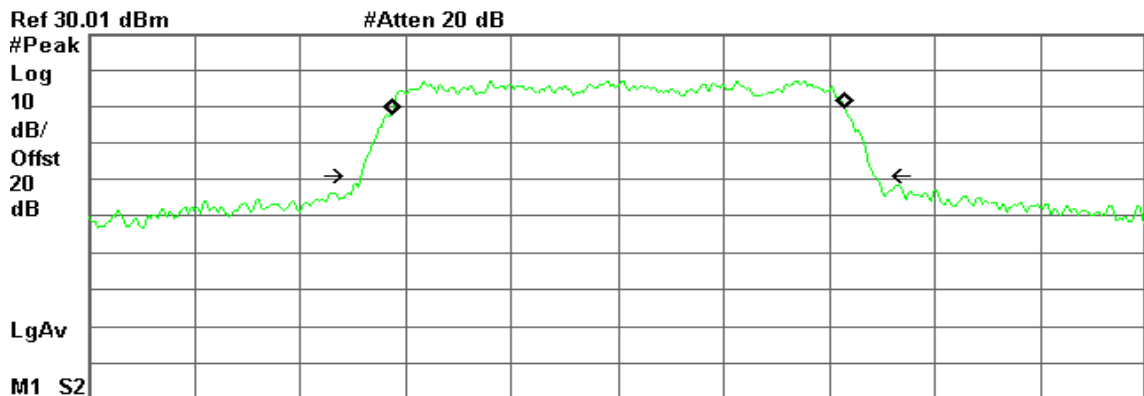
Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 21.902 kHz
x dB Bandwidth 1.449 MHz

CDMA2000 1xEVDO PCS / CH Low

Agilent 14:13:44 Jun 22, 2011

R T



Center 1.851 250 GHz Span 3 MHz
#Res BW 30 kHz #VBW 100 kHz Sweep 3.2 ms (601 pts)

Occupied Bandwidth
1.2893 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

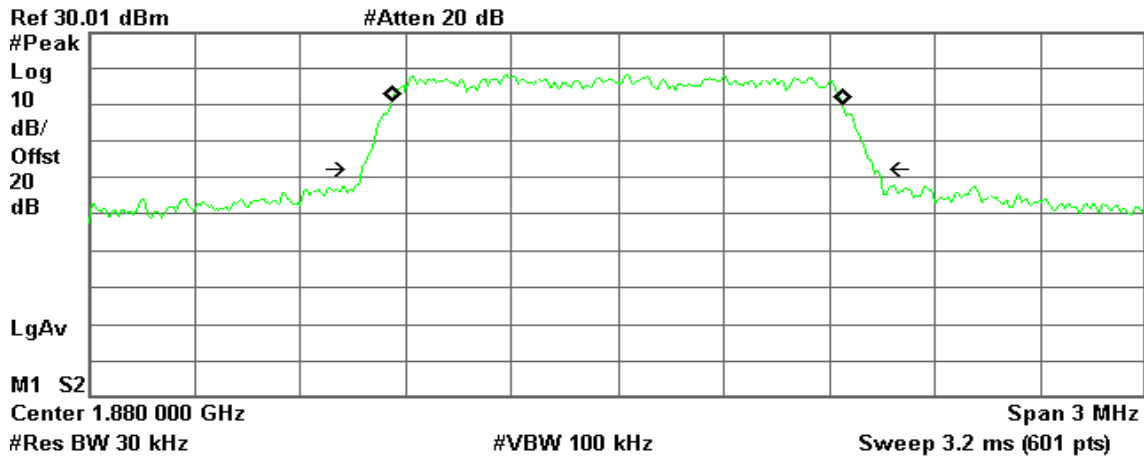
Transmit Freq Error 2.194 kHz
x dB Bandwidth 1.458 MHz



CDMA2000 1xEVDO PCS / CH Mid

Agilent 14:14:08 Jun 22, 2011

R T



Occupied Bandwidth
1.2798 MHz

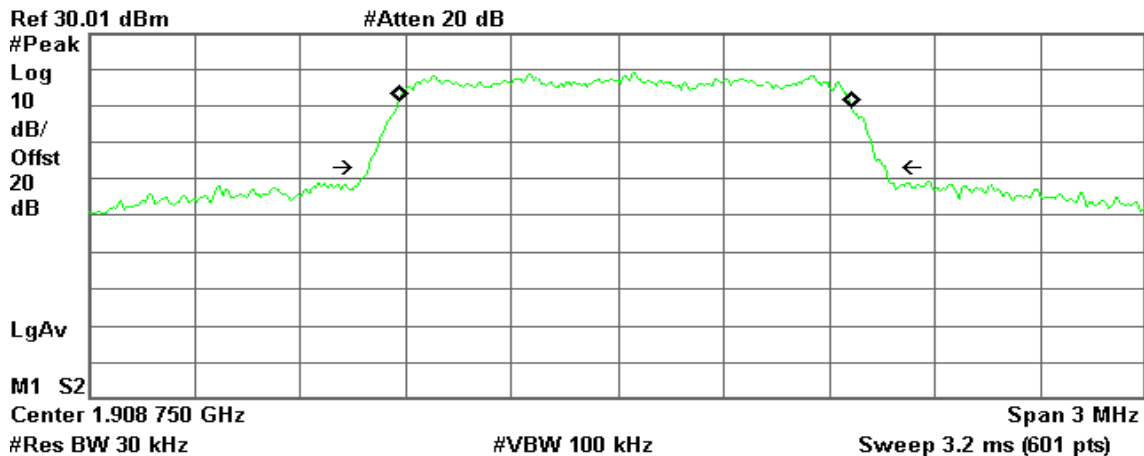
Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -1.336 kHz
x dB Bandwidth 1.453 MHz

CDMA2000 1xEVDO PCS / CH High

Agilent 14:16:18 Jun 22, 2011

R T



Occupied Bandwidth
1.2864 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 21.670 kHz
x dB Bandwidth 1.466 MHz



7.4 OUT OF BAND EMISSION AT ANTENNA TERMINALS

LIMIT

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

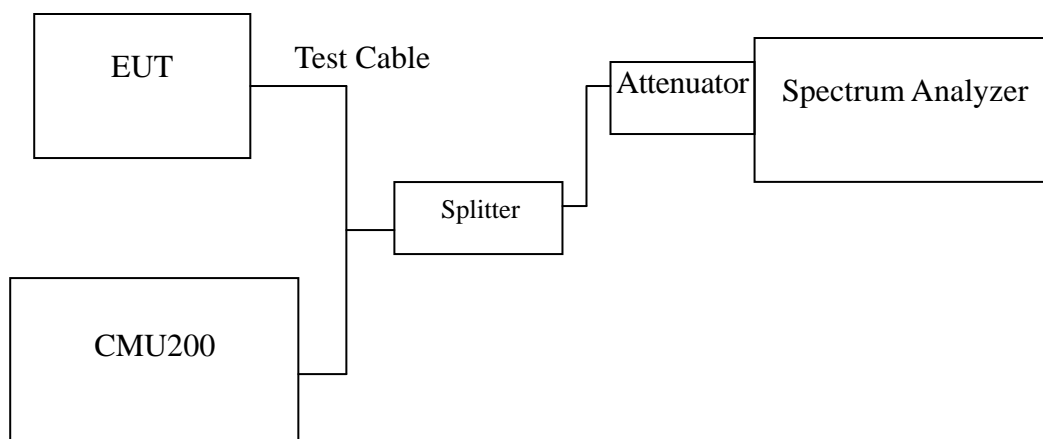
Out of Band Emissions: The mean power of emission must be attenuated below the mean power of the non-modulated carrier (P) on any frequency twice or more than twice the fundamental frequency by at least $43 + 10 \log P$ dB.

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 |
| | 384 | Figure 7-2 | Conducted spurious emissions, 30MHz - 20GHz |
| | 777 | Figure 7-3 | Conducted spurious emissions, 30MHz - 20GHz |
| Mode | CH | Location | Description |
| CDMA2000 1xEVDO Cellular | 1013 | Figure 8-1 | Conducted spurious emissions, 30MHz - 20GHz |
| | 384 | Figure 8-2 | Conducted spurious emissions, 30MHz - 20GHz |
| | 777 | 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 12:37:17 Jun 22, 2011

R T

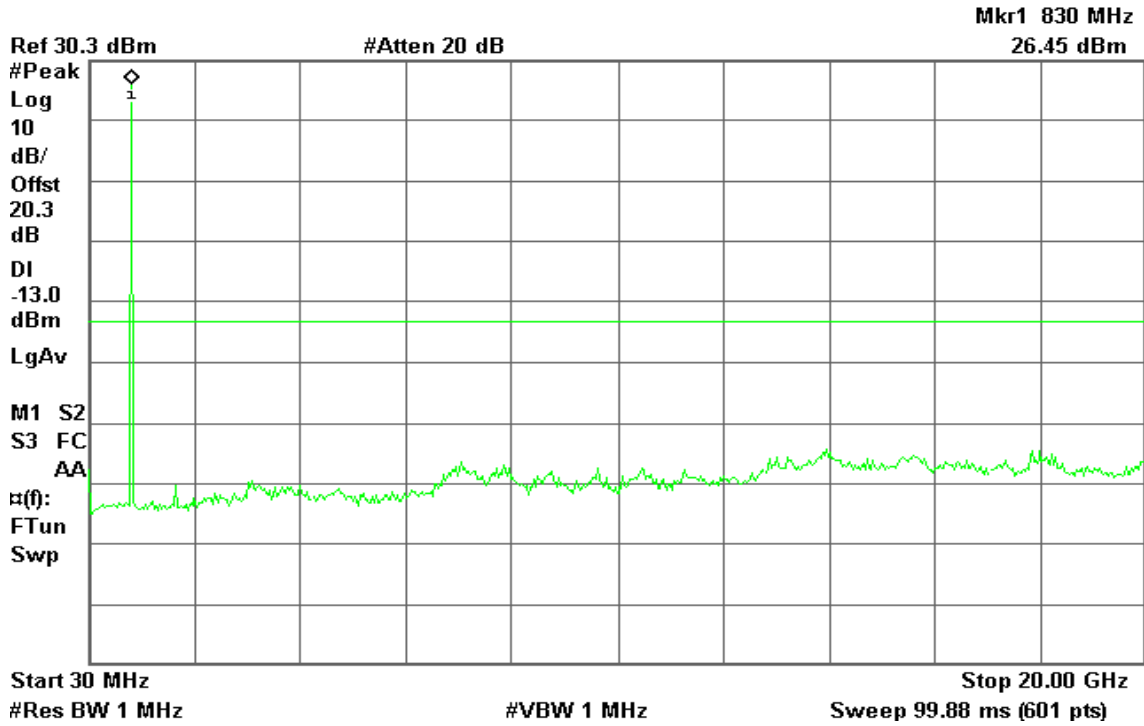


Figure 7-2: Out of Band emission at antenna terminals – CDMA2000 1xRTT / CH Mid

Agilent 12:37:55 Jun 22, 2011

R T

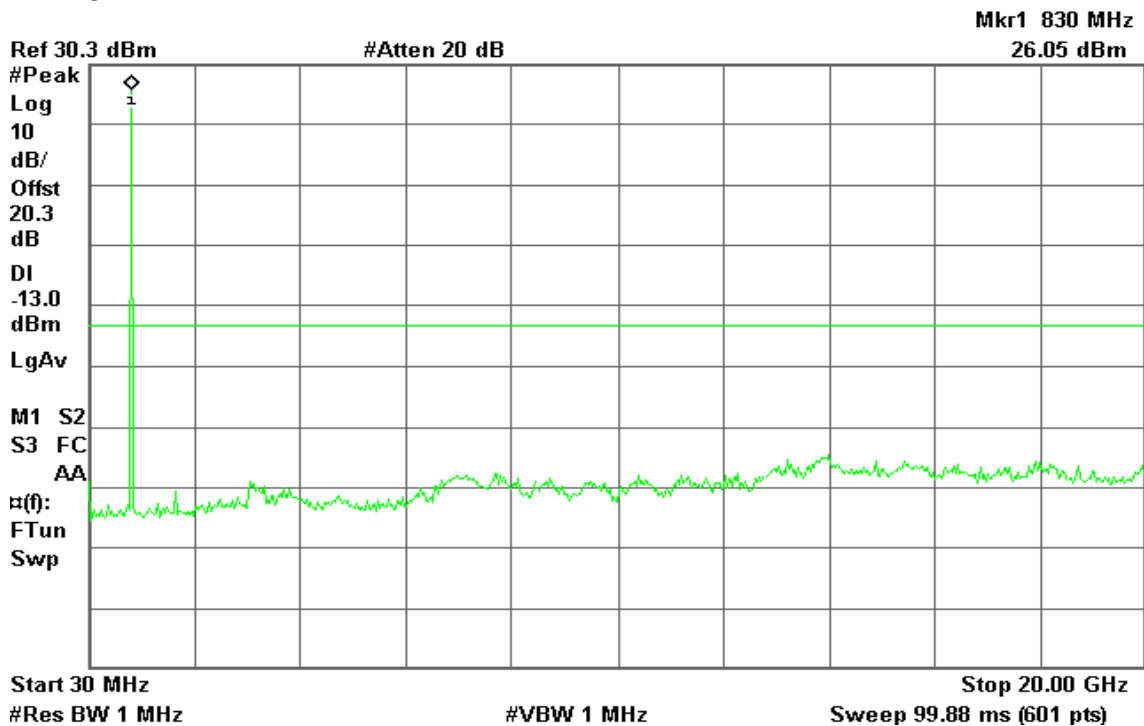
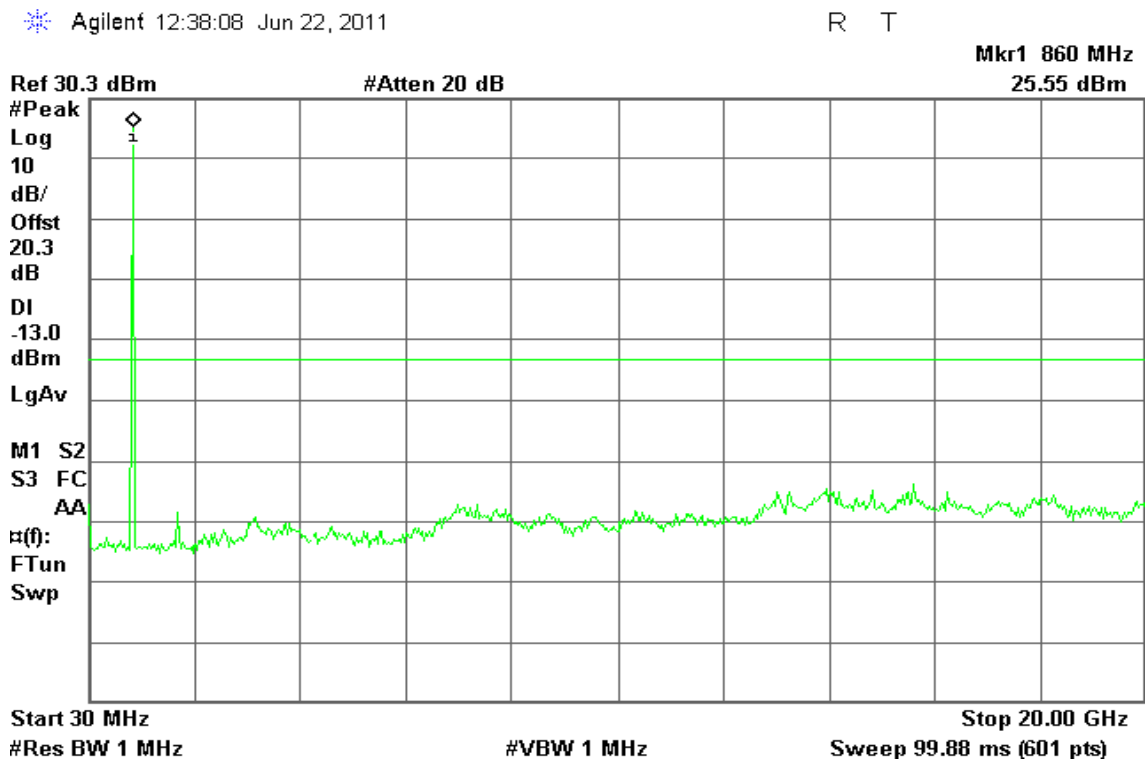




Figure 7-3: Out of Band emission at antenna terminals – CDMA2000 1xRTT / CH High



1xEVDO Cellular

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

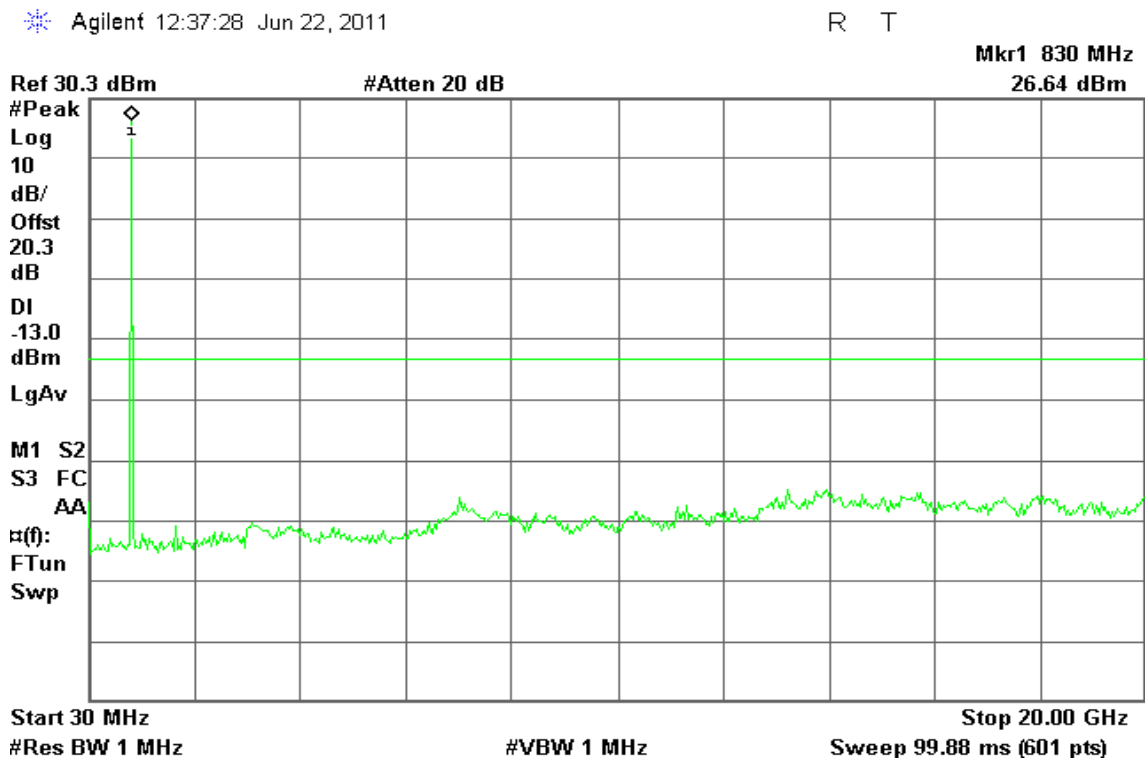




Figure 8-2: Out of Band emission at antenna terminals – CDMA2000 1xEVDO / CH Mid

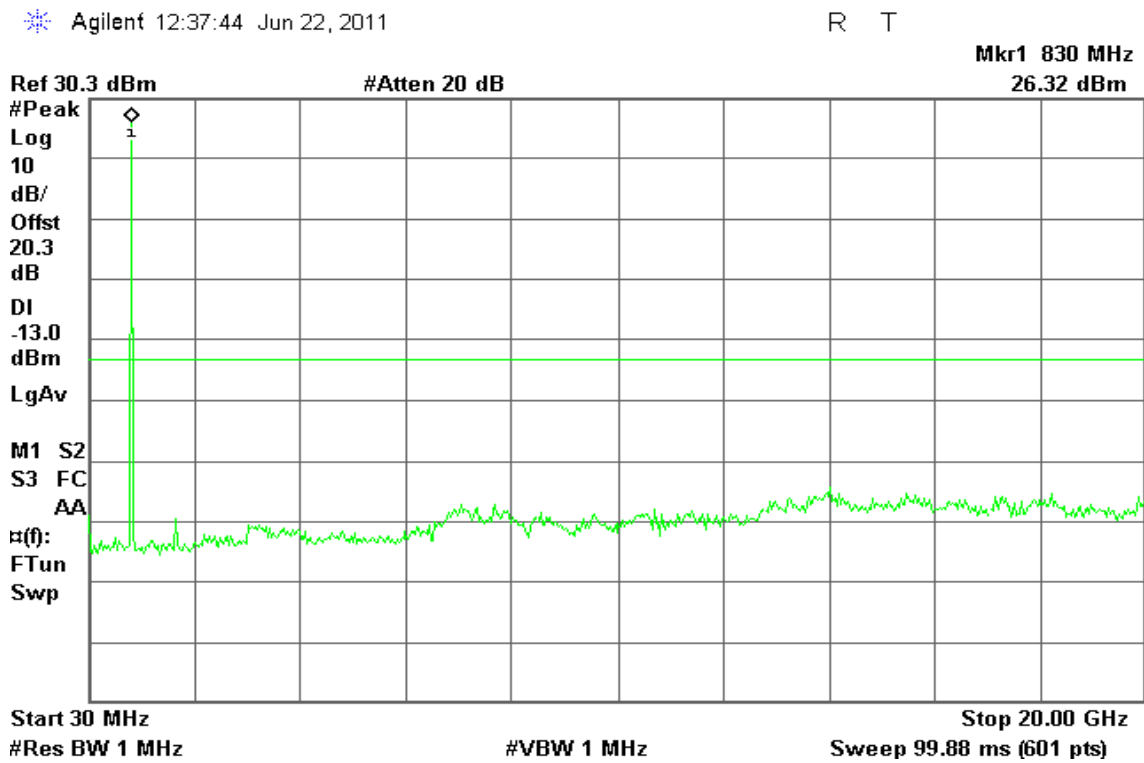
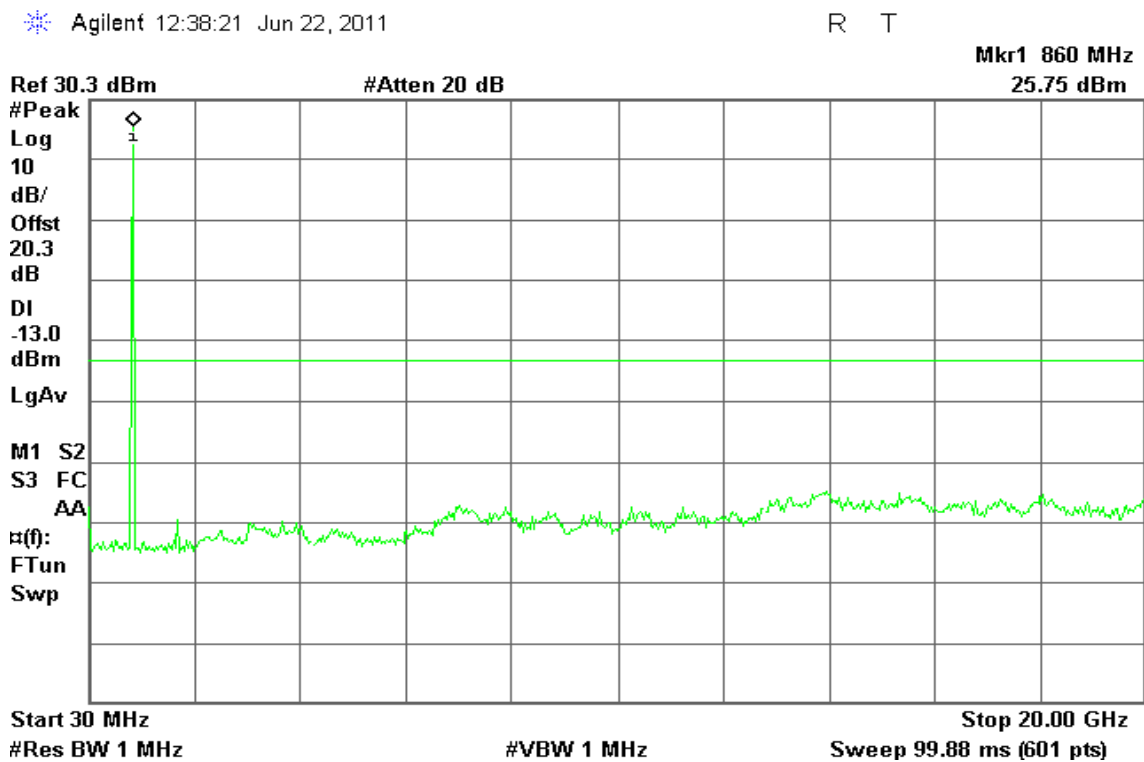


Figure 8-3: Out of Band emission at antenna terminals – CDMA2000 1xEVDO / CH High





CDMA2000 1xRTT PCS

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

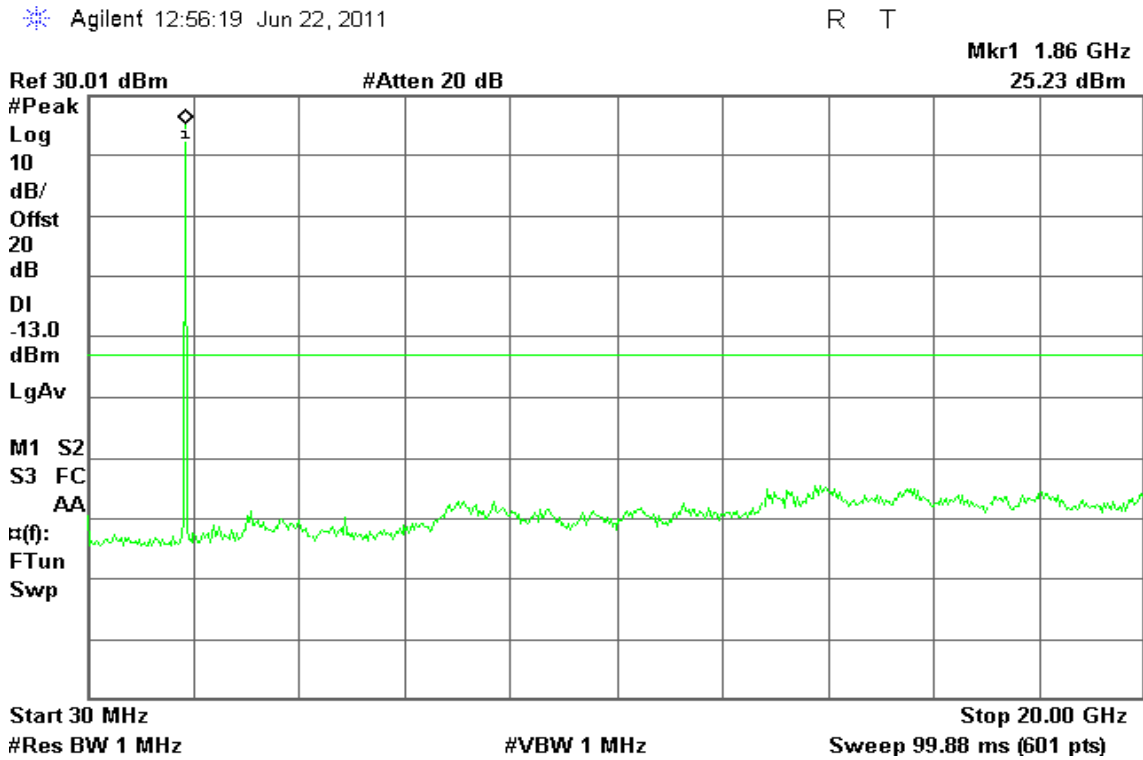


Figure 9-2: Out of Band emission at antenna terminals – CDMA2000 1xRTT / CH Mid

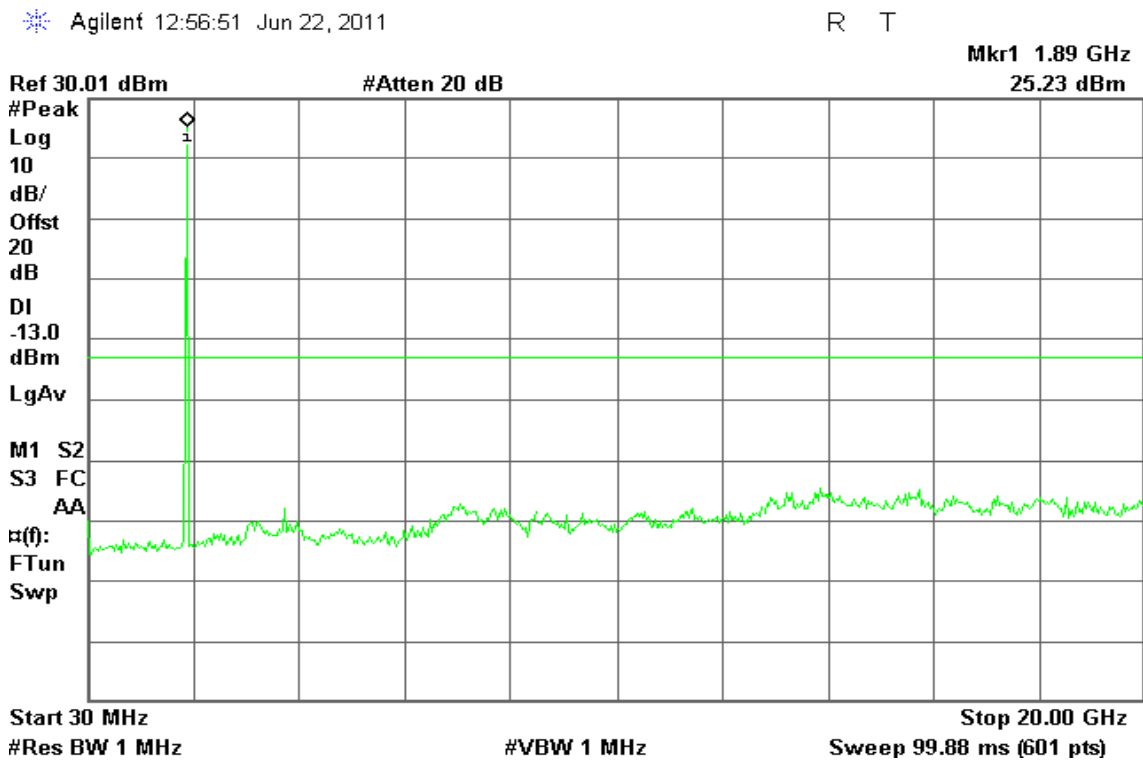
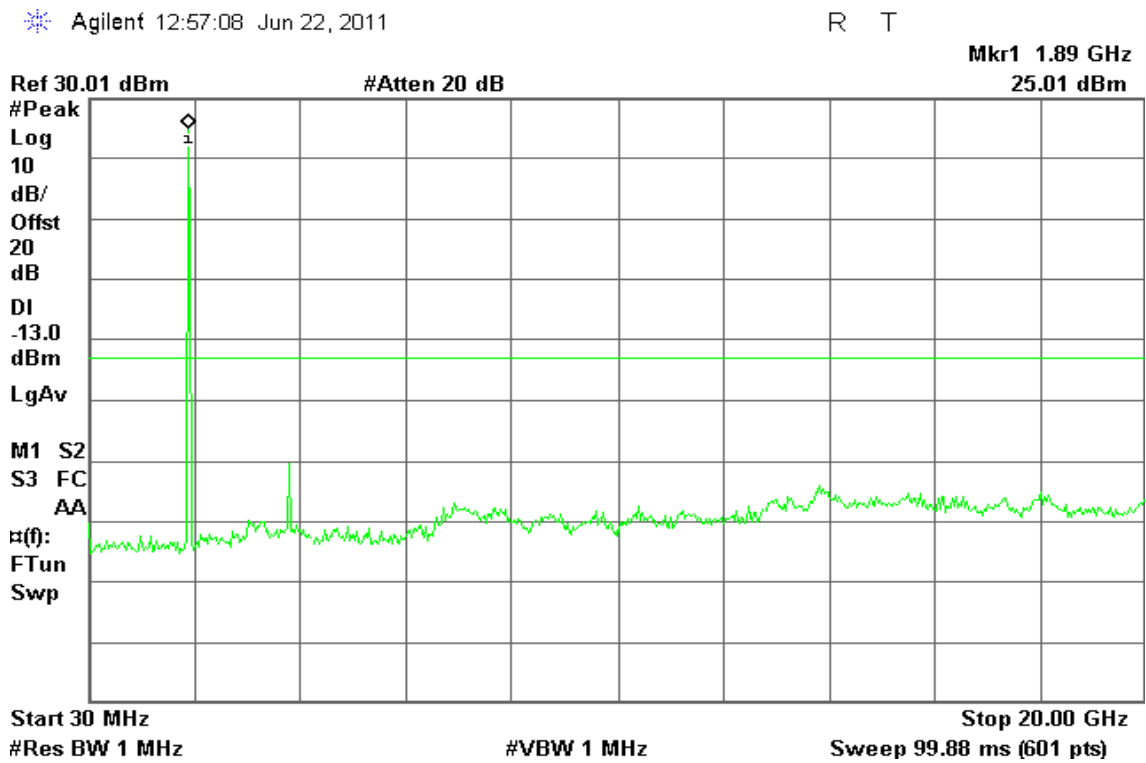




Figure 9-3: Out of Band emission at antenna terminals – CDMA2000 1xRTT / CH High



CDMA2000 1xEVDO PCS

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

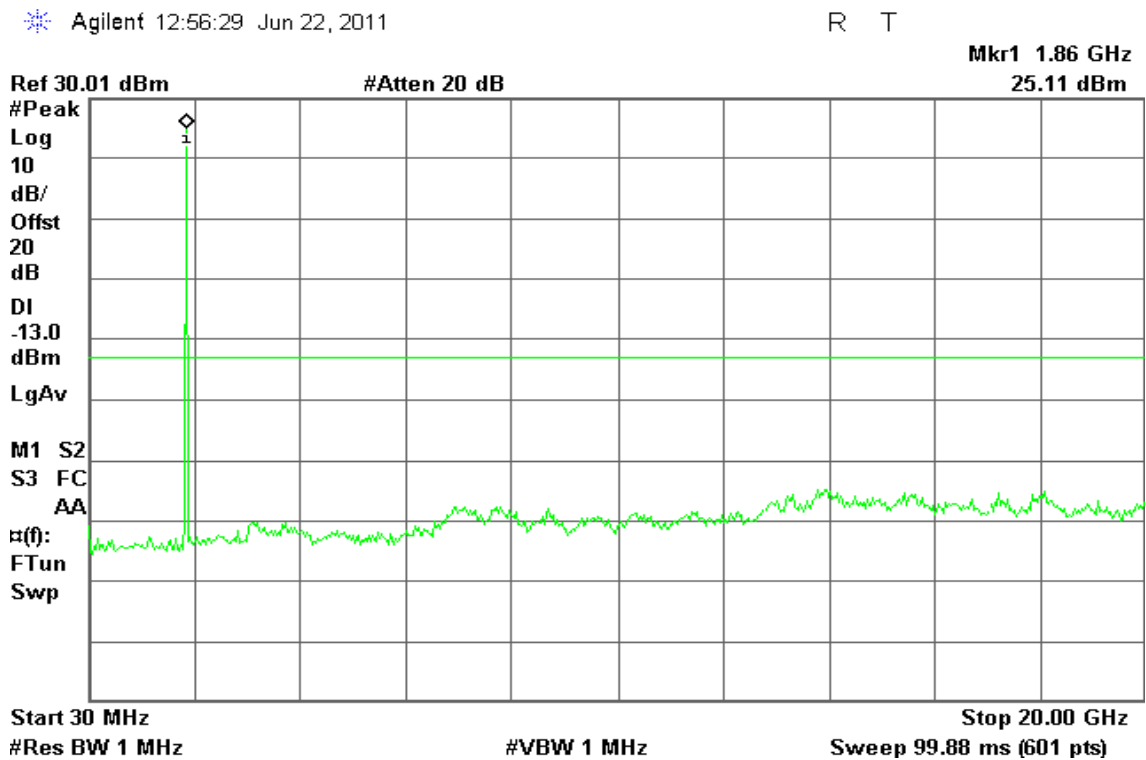




Figure 10-2: Out of Band emission at antenna terminals – CDMA2000 1xEVDO / CH Mid

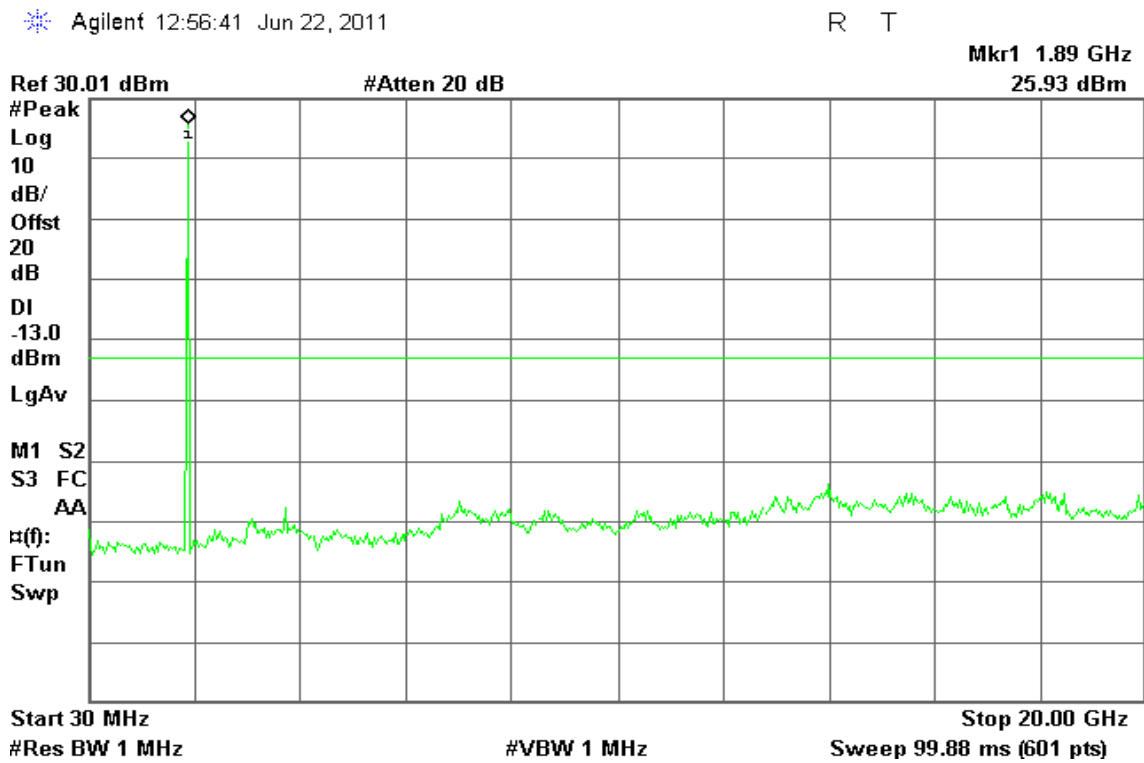
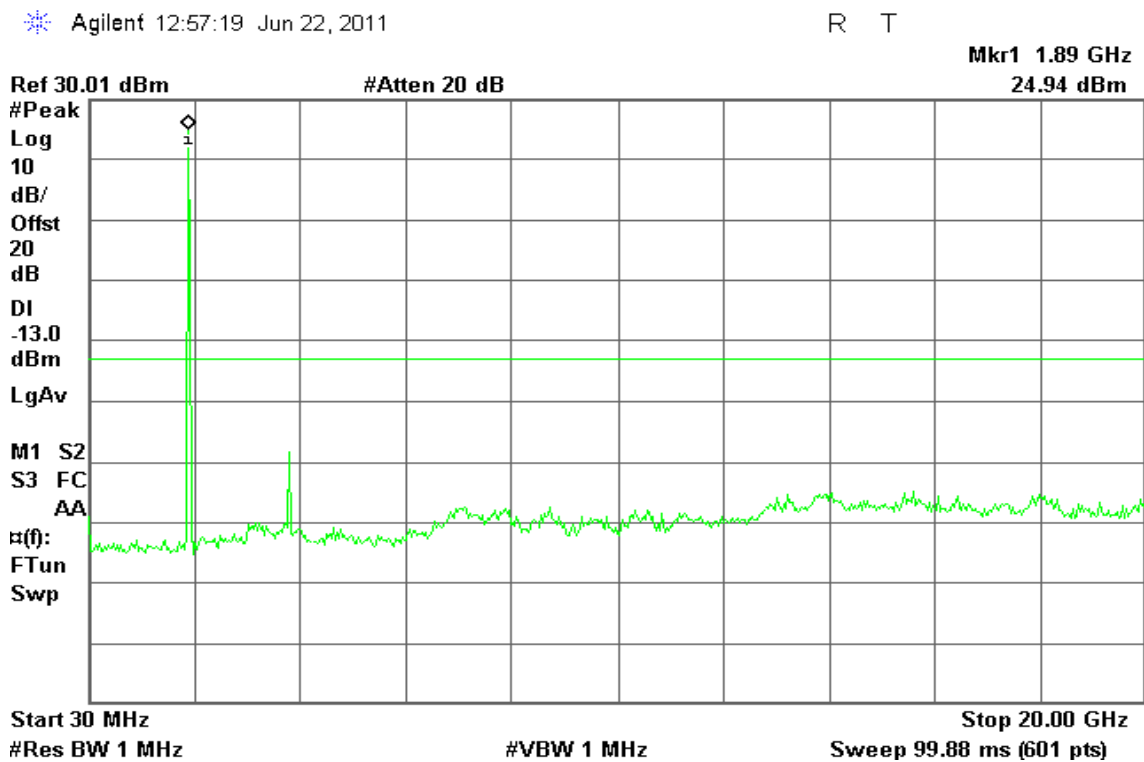


Figure 10-3: Out of Band emission at antenna terminals – CDMA2000 1xEVDO / CH High





CDMA2000 1xRTT Cellular

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

Agilent 12:36:02 Jun 22, 2011

R T

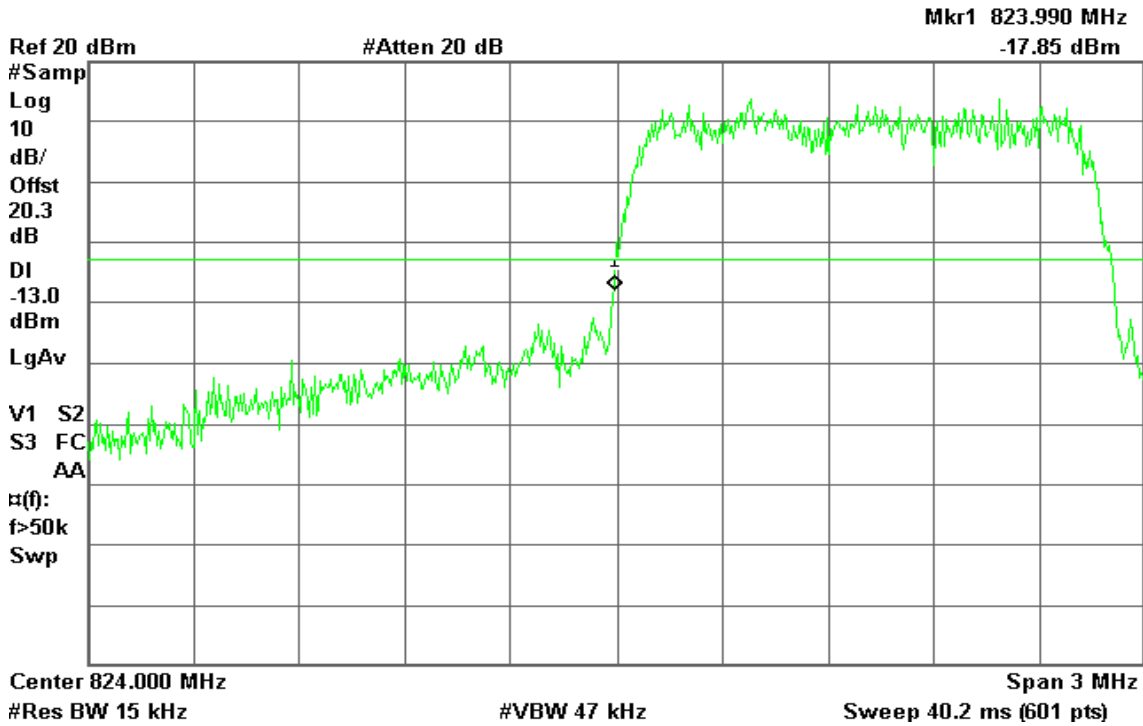
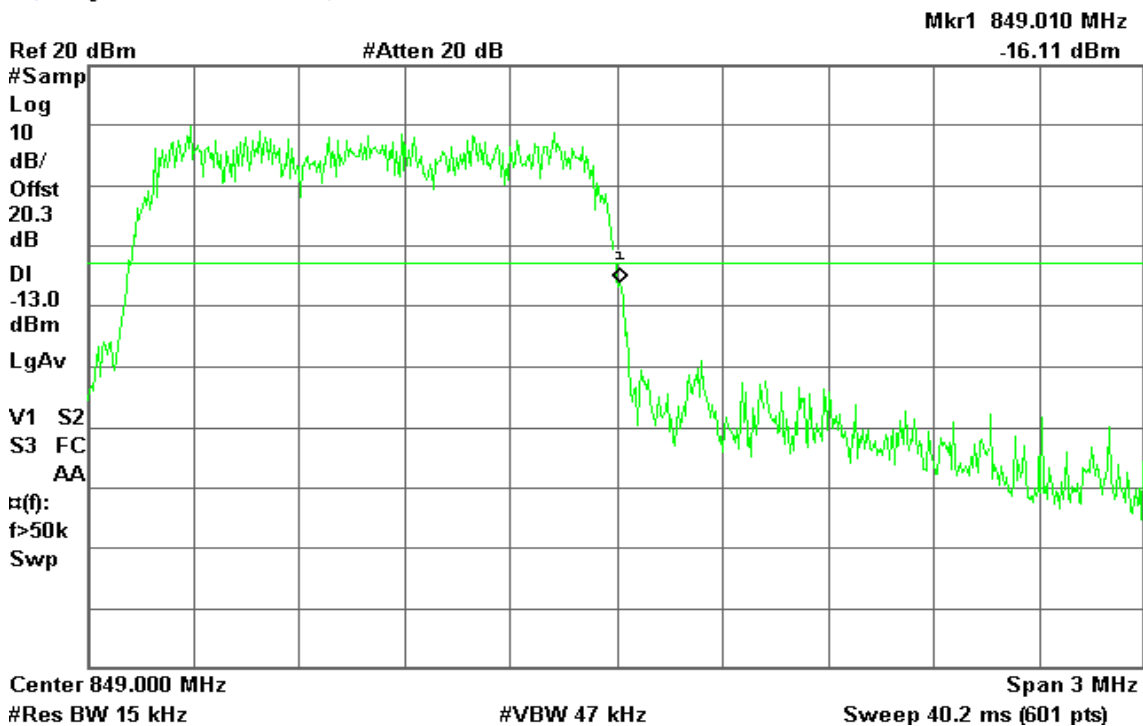


Figure 11-2: Band Edge emissions – CDMA2000 1xRTT / CH High

Agilent 12:35:24 Jun 22, 2011

R T





CDMA2000 1xEVDO Cellular

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

Agilent 12:36:17 Jun 22, 2011

R T

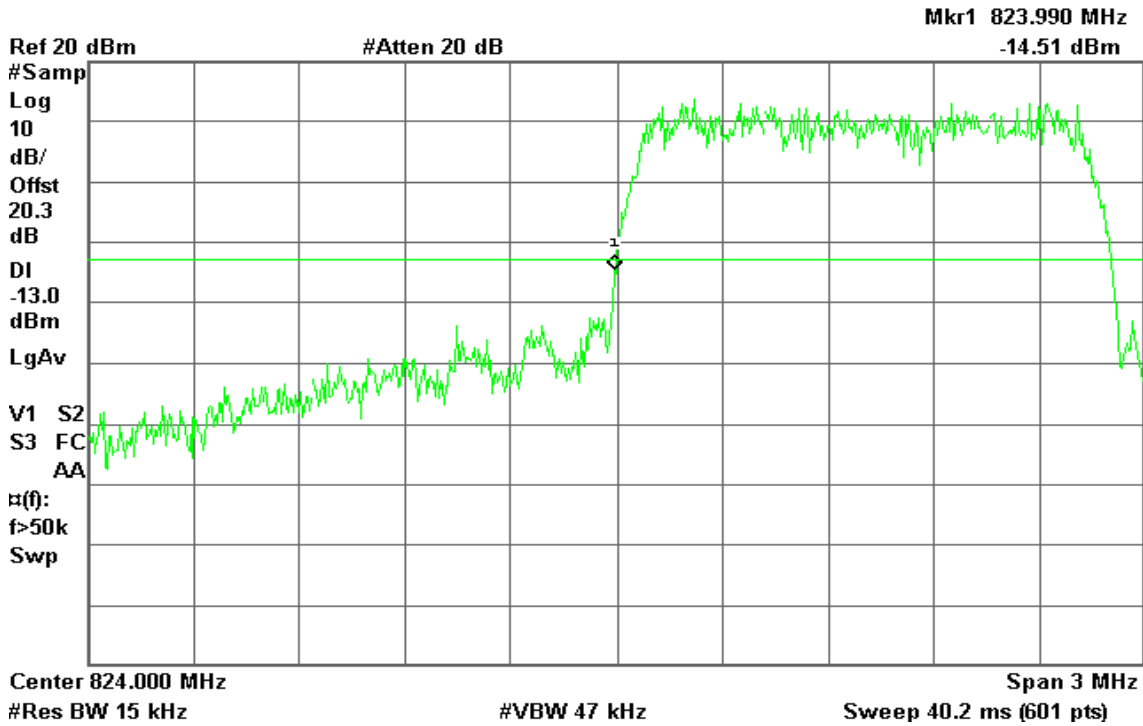
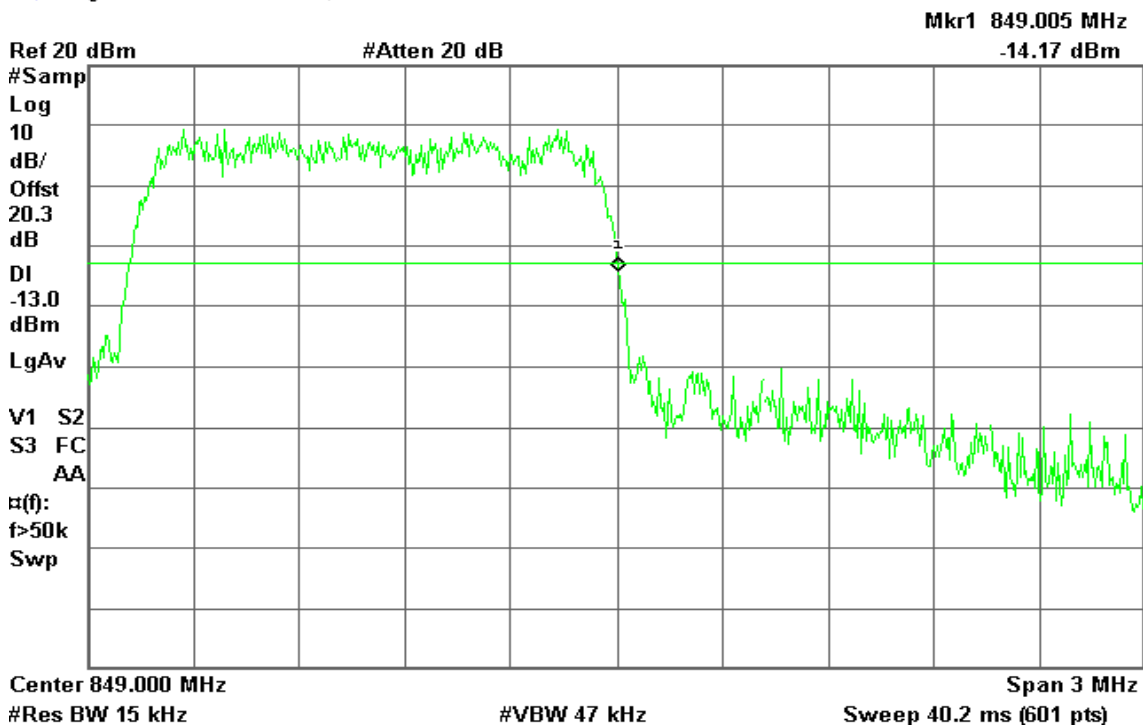


Figure 12-2: Band Edge emissions – CDMA2000 1xEVDO / CH High

Agilent 12:34:57 Jun 22, 2011

R L





CDMA2000 1xRTT PCS

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

Agilent 12:58:52 Jun 22, 2011

R L

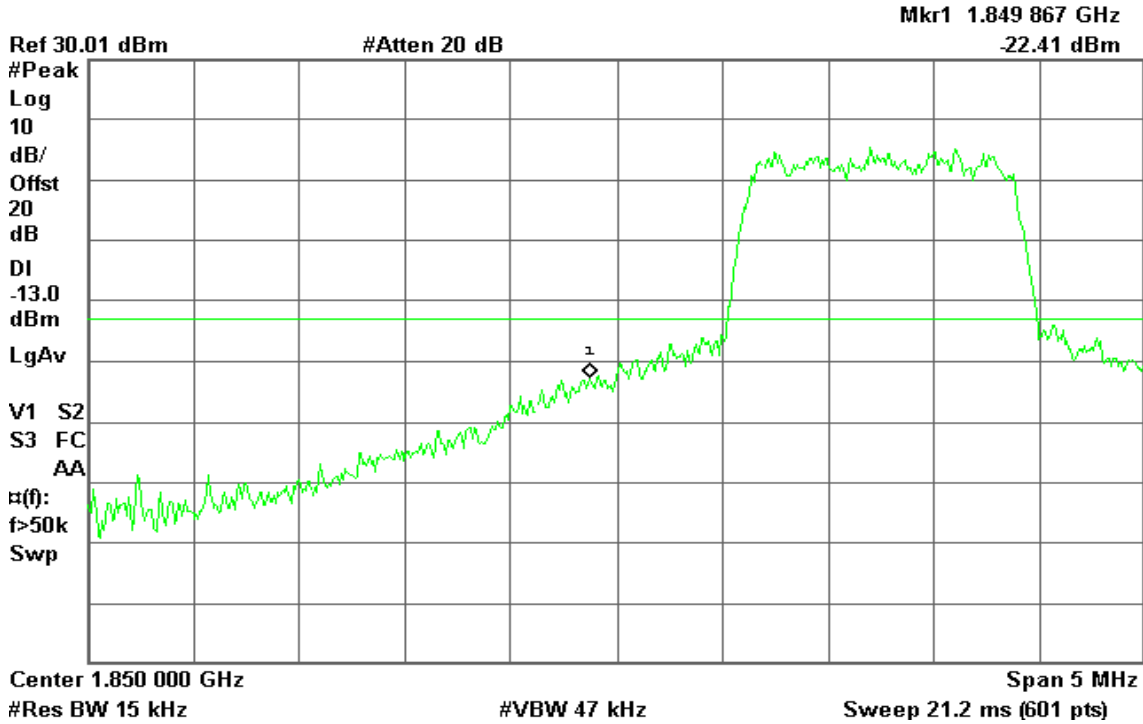
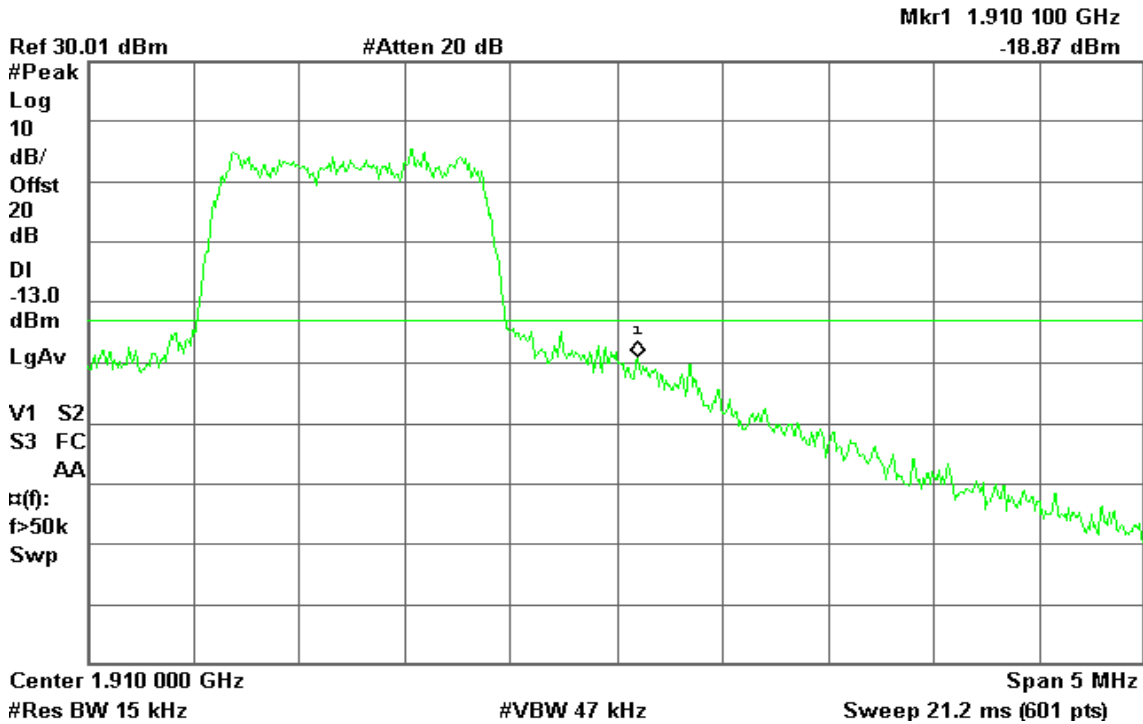


Figure 13-2: Band Edge emissions – CDMA2000 1xRTT / CH High

Agilent 13:00:22 Jun 22, 2011

R T





CDMA2000 1xEVDO PCS

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

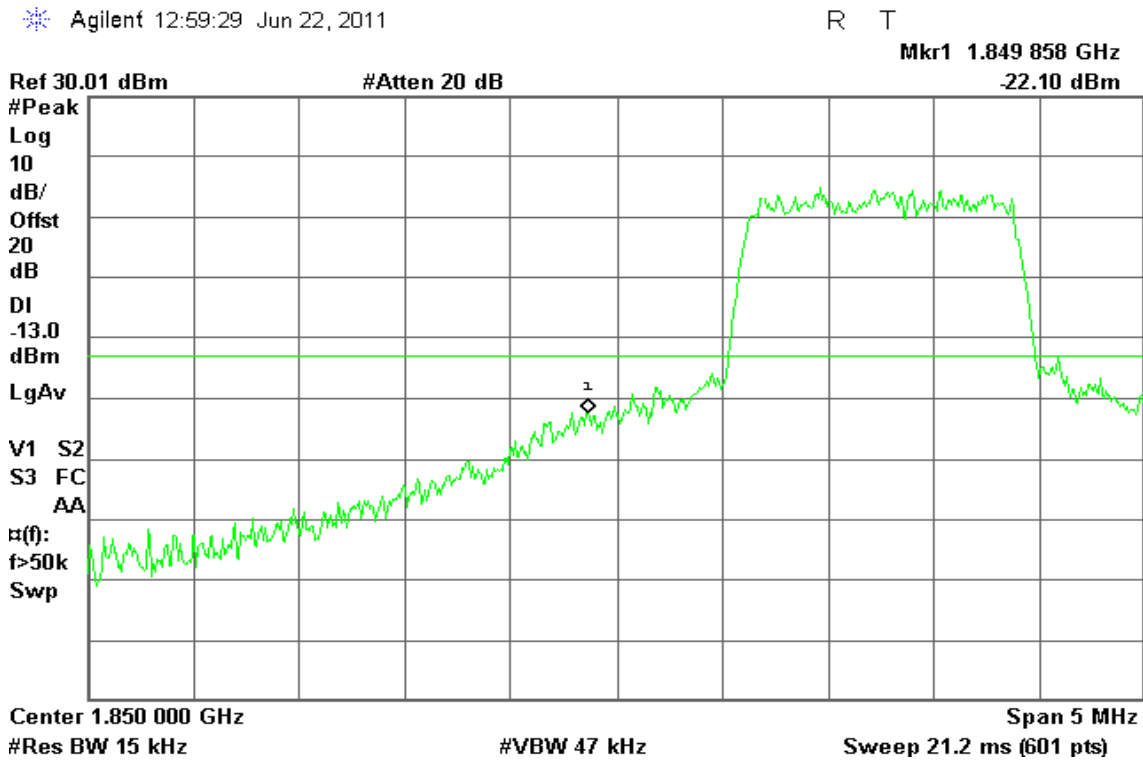
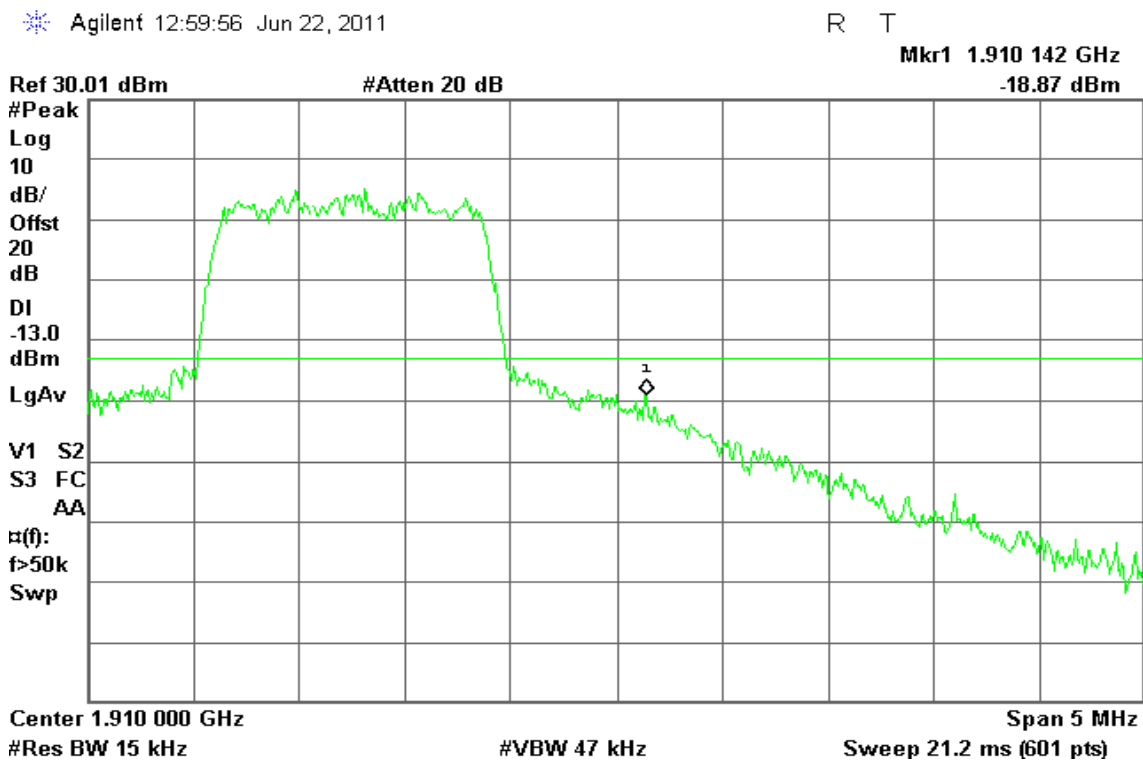


Figure 14-2: Band Edge emissions – CDMA2000 1xEVDO / CH High





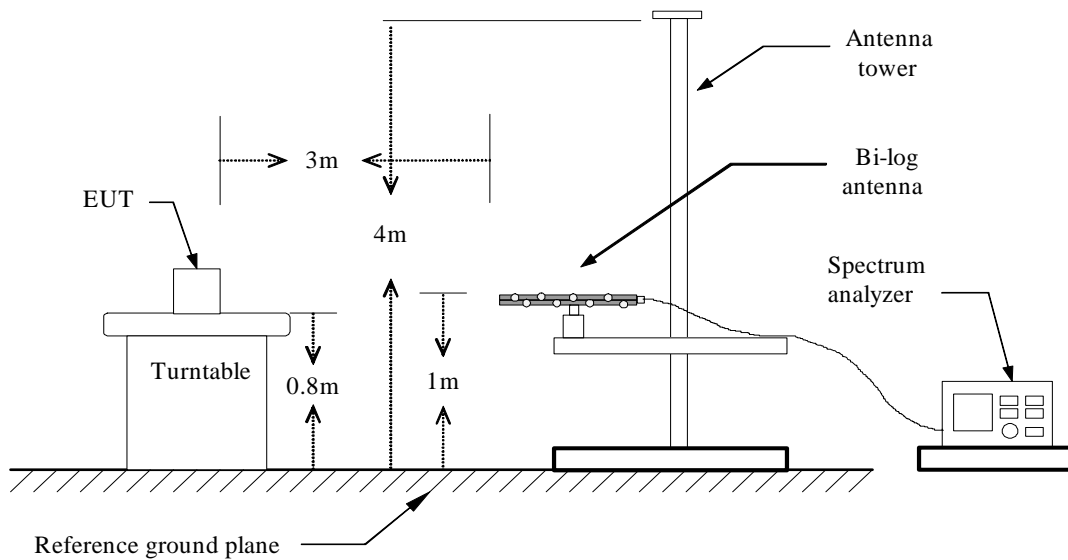
7.5 FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT

LIMIT

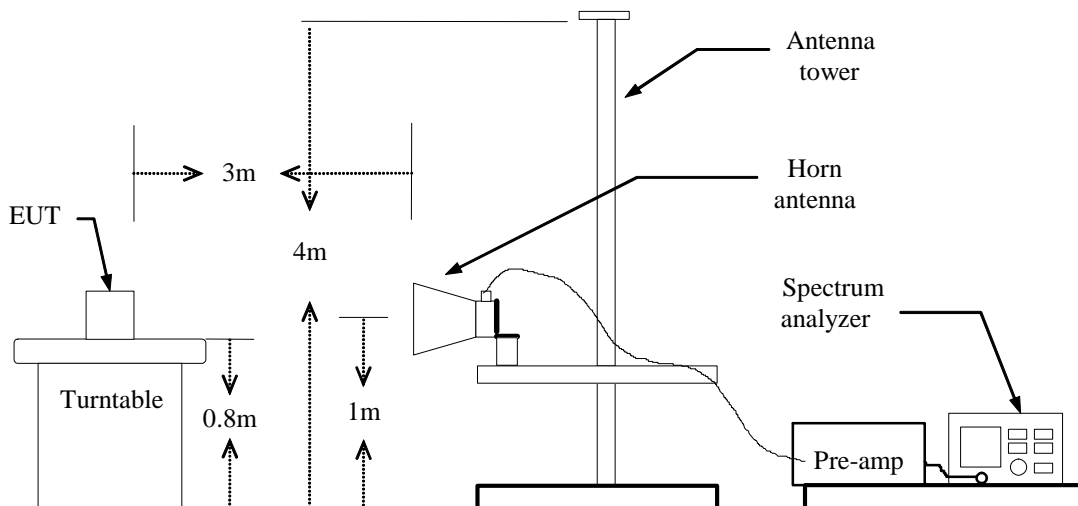
According to FCC §2.1053

Test Configuration

Below 1 GHz

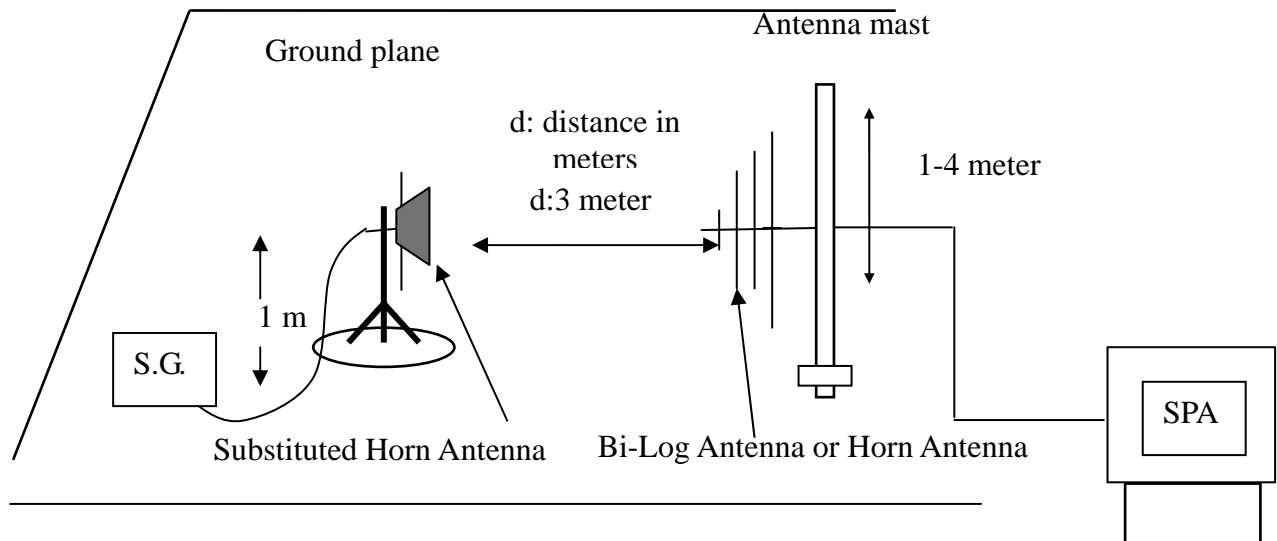


Above 1 GHz





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.

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

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

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: June 14, 2011

Temperature: 25°C

Tested by: Edward Lin

Humidity: 50 % RH

Polarity: Ver. / Hor.

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|-----------------|------------|-----------------|----------------|----------------------|-------------|-------------|----------------------------|
| 71.2250 | -71.47 | 0.97 | -1.7 | -74.14 | -13.00 | -61.14 | V |
| 112.4500 | -66.97 | 1.22 | -1.8 | -69.99 | -13.00 | -56.99 | V |
| 163.3750 | -70.37 | 1.51 | 1.77 | -70.11 | -13.00 | -57.11 | V |
| 325.8500 | -76.05 | 2.17 | 5.71 | -72.51 | -13.00 | -59.51 | V |
| 442.2500 | -79.08 | 2.55 | 5.85 | -75.78 | -13.00 | -62.78 | V |
| 553.8000 | -76.27 | 2.82 | 6.13 | -72.96 | -13.00 | -59.96 | V |
| 112.4500 | -57.48 | 1.22 | -1.8 | -60.50 | -13.00 | -47.50 | H |
| 197.3250 | -69.13 | 1.63 | 3.21 | -67.55 | -13.00 | -54.55 | H |
| 231.2750 | -72.59 | 1.8 | 5.4 | -68.99 | -13.00 | -55.99 | H |
| 347.6750 | -67.36 | 2.21 | 5.8 | -63.77 | -13.00 | -50.77 | H |
| 553.8000 | -71.53 | 2.82 | 6.13 | -68.22 | -13.00 | -55.22 | H |
| 624.1250 | -71.73 | 2.96 | 6.15 | -68.54 | -13.00 | -55.54 | H |

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: June 14, 2011

Temperature: 25°C

Tested by: Edward Lin

Humidity: 50 % RH

Polarity: Ver. / Hor.

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|-----------------|------------|-----------------|----------------|----------------------|-------------|-------------|----------------------------|
| 71.2250 | -71.44 | 0.97 | -1.7 | -74.11 | -13.00 | -61.11 | V |
| 112.4500 | -67.24 | 1.22 | -1.8 | -70.26 | -13.00 | -57.26 | V |
| 163.3750 | -69.9 | 1.51 | 1.77 | -69.64 | -13.00 | -56.64 | V |
| 328.2750 | -75.7 | 2.17 | 5.71 | -72.16 | -13.00 | -59.16 | V |
| 442.2500 | -78.89 | 2.55 | 5.85 | -75.59 | -13.00 | -62.59 | V |
| 604.7250 | -76.23 | 2.92 | 6.35 | -72.80 | -13.00 | -59.80 | V |
| 112.4500 | -58.74 | 1.22 | -1.8 | -61.76 | -13.00 | -48.76 | H |
| 197.3250 | -69.41 | 1.63 | 3.21 | -67.83 | -13.00 | -54.83 | H |
| 347.6750 | -68.27 | 2.21 | 5.8 | -64.68 | -13.00 | -51.68 | H |
| 442.2500 | -74.11 | 2.55 | 5.85 | -70.81 | -13.00 | -57.81 | H |
| 553.8000 | -71.32 | 2.82 | 6.13 | -68.01 | -13.00 | -55.01 | H |
| 624.1250 | -72.76 | 2.96 | 6.15 | -69.57 | -13.00 | -56.57 | H |

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: June 14, 2011

Temperature: 25°C

Tested by: Edward Lin

Humidity: 50 % RH

Polarity: Ver. / Hor.

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|-----------------|------------|-----------------|----------------|----------------------|-------------|-------------|----------------------------|
| 71.2250 | -69.32 | 0.97 | -1.7 | -71.99 | -13.00 | -58.99 | V |
| 112.4500 | -66.89 | 1.22 | -1.8 | -69.91 | -13.00 | -56.91 | V |
| 163.3750 | -70.06 | 1.51 | 1.77 | -69.80 | -13.00 | -56.80 | V |
| 231.2750 | -75.88 | 1.8 | 5.4 | -72.28 | -13.00 | -59.28 | V |
| 328.2750 | -76.75 | 2.17 | 5.71 | -73.21 | -13.00 | -60.21 | V |
| 442.2500 | -78.75 | 2.55 | 5.85 | -75.45 | -13.00 | -62.45 | V |
| 112.4500 | -58.55 | 1.22 | -1.8 | -61.57 | -13.00 | -48.57 | H |
| 197.3250 | -68.6 | 1.63 | 3.21 | -67.02 | -13.00 | -54.02 | H |
| 231.2750 | -71.77 | 1.8 | 5.4 | -68.17 | -13.00 | -55.17 | H |
| 347.6750 | -67.93 | 2.21 | 5.8 | -64.34 | -13.00 | -51.34 | H |
| 442.2500 | -74.66 | 2.55 | 5.85 | -71.36 | -13.00 | -58.36 | H |
| 553.8000 | -71.26 | 2.82 | 6.13 | -67.95 | -13.00 | -54.95 | H |

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: June 14, 2011

Temperature: 25°C

Tested by: Edward Lin

Humidity: 50 % RH

Polarity: Ver. / Hor.

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|-----------------|------------|-----------------|----------------|----------------------|-------------|-------------|----------------------------|
| 34.8500 | -55.76 | 0.68 | -17.5 | -73.94 | -13.00 | -60.94 | V |
| 170.6500 | -72.7 | 1.57 | 2.59 | -71.68 | -13.00 | -58.68 | V |
| 325.8500 | -77.1 | 2.17 | 5.71 | -73.56 | -13.00 | -60.56 | V |
| 442.2500 | -78.6 | 2.55 | 5.85 | -75.30 | -13.00 | -62.30 | V |
| 604.7250 | -75.57 | 2.92 | 6.35 | -72.14 | -13.00 | -59.14 | V |
| 648.3750 | -73.88 | 3.02 | 6.26 | -70.64 | -13.00 | -57.64 | V |
| 110.0250 | -68.07 | 1.21 | -1.7 | -70.98 | -13.00 | -57.98 | H |
| 197.3250 | -73.61 | 1.63 | 3.21 | -72.03 | -13.00 | -59.03 | H |
| 347.6750 | -72.2 | 2.21 | 5.8 | -68.61 | -13.00 | -55.61 | H |
| 553.8000 | -73.25 | 2.82 | 6.13 | -69.94 | -13.00 | -56.94 | H |
| 650.8000 | -69.06 | 3.03 | 6.3 | -65.79 | -13.00 | -52.79 | H |
| 696.8750 | -72.36 | 3.11 | 6.42 | -69.05 | -13.00 | -56.05 | H |

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: June 14, 2011

Temperature: 25°C

Tested by: Edward Lin

Humidity: 50 % RH

Polarity: Ver. / Hor.

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|-----------------|------------|-----------------|----------------|----------------------|-------------|-------------|----------------------------|
| 112.4500 | -67.69 | 1.22 | -1.8 | -70.71 | -13.00 | -57.71 | V |
| 170.6500 | -72.38 | 1.57 | 2.59 | -71.36 | -13.00 | -58.36 | V |
| 231.2750 | -75.93 | 1.8 | 5.4 | -72.33 | -13.00 | -59.33 | V |
| 328.2750 | -75.41 | 2.17 | 5.71 | -71.87 | -13.00 | -58.87 | V |
| 442.2500 | -77.87 | 2.55 | 5.85 | -74.57 | -13.00 | -61.57 | V |
| 650.8000 | -74.04 | 3.03 | 6.3 | -70.77 | -13.00 | -57.77 | V |
| 110.0250 | -68.63 | 1.21 | -1.7 | -71.54 | -13.00 | -58.54 | H |
| 197.3250 | -73.53 | 1.63 | 3.21 | -71.95 | -13.00 | -58.95 | H |
| 347.6750 | -71.6 | 2.21 | 5.8 | -68.01 | -13.00 | -55.01 | H |
| 553.8000 | -74.33 | 2.82 | 6.13 | -71.02 | -13.00 | -58.02 | H |
| 650.8000 | -69.2 | 3.03 | 6.3 | -65.93 | -13.00 | -52.93 | H |
| 696.8750 | -72.92 | 3.11 | 6.42 | -69.61 | -13.00 | -56.61 | H |

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: June 14, 2011

Temperature: 25°C

Tested by: Edward Lin

Humidity: 50 % RH

Polarity: Ver. / Hor.

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|-----------------|------------|-----------------|----------------|----------------------|-------------|-------------|----------------------------|
| 110.0250 | -77.32 | 1.21 | -1.7 | -80.23 | -13.00 | -67.23 | V |
| 170.6500 | -78.17 | 1.57 | 2.59 | -77.15 | -13.00 | -64.15 | V |
| 199.7500 | -81.03 | 1.63 | 2.94 | -79.72 | -13.00 | -66.72 | V |
| 325.8500 | -82.48 | 2.17 | 5.71 | -78.94 | -13.00 | -65.94 | V |
| 442.2500 | -82.02 | 2.55 | 5.85 | -78.72 | -13.00 | -65.72 | V |
| 650.8000 | -77.27 | 3.03 | 6.3 | -74.00 | -13.00 | -61.00 | V |
| 110.0250 | -68.47 | 1.21 | -1.7 | -71.38 | -13.00 | -58.38 | H |
| 197.3250 | -73.41 | 1.63 | 3.21 | -71.83 | -13.00 | -58.83 | H |
| 347.6750 | -72.29 | 2.21 | 5.8 | -68.70 | -13.00 | -55.70 | H |
| 553.8000 | -73.93 | 2.82 | 6.13 | -70.62 | -13.00 | -57.62 | H |
| 648.3750 | -69.79 | 3.02 | 6.26 | -66.55 | -13.00 | -53.55 | H |
| 769.6250 | -75.65 | 3.27 | 6.39 | -72.53 | -13.00 | -59.53 | H |

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: June 14, 2011

Temperature: 25°C

Tested by: Edward Lin

Humidity: 50 % RH

Polarity: Ver. / Hor.

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|-----------------|------------|-----------------|----------------|----------------------|-------------|-------------|----------------------------|
| 112.4500 | -67.67 | 1.22 | -1.8 | -70.69 | -13.00 | -57.69 | V |
| 197.3250 | -72.1 | 1.63 | 3.21 | -70.52 | -13.00 | -57.52 | V |
| 328.2750 | -76.39 | 2.17 | 5.71 | -72.85 | -13.00 | -59.85 | V |
| 442.2500 | -78.3 | 2.55 | 5.85 | -75.00 | -13.00 | -62.00 | V |
| 553.8000 | -76.36 | 2.82 | 6.13 | -73.05 | -13.00 | -60.05 | V |
| 604.7250 | -75.38 | 2.92 | 6.35 | -71.95 | -13.00 | -58.95 | V |
| 112.4500 | -59.5 | 1.22 | -1.8 | -62.52 | -13.00 | -49.52 | H |
| 197.3250 | -69.03 | 1.63 | 3.21 | -67.45 | -13.00 | -54.45 | H |
| 347.6750 | -68.09 | 2.21 | 5.8 | -64.50 | -13.00 | -51.50 | H |
| 442.2500 | -74.86 | 2.55 | 5.85 | -71.56 | -13.00 | -58.56 | H |
| 553.8000 | -71.68 | 2.82 | 6.13 | -68.37 | -13.00 | -55.37 | H |
| 650.8000 | -74.09 | 3.03 | 6.3 | -70.82 | -13.00 | -57.82 | H |

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: June 14, 2011

Temperature: 25°C

Tested by: Edward Lin

Humidity: 50 % RH

Polarity: Ver. / Hor.

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|-----------------|------------|-----------------|----------------|----------------------|-------------|-------------|----------------------------|
| 112.4500 | -66.98 | 1.22 | -1.8 | -70.00 | -13.00 | -57.00 | V |
| 197.3250 | -72.3 | 1.63 | 3.21 | -70.72 | -13.00 | -57.72 | V |
| 325.8500 | -77.07 | 2.17 | 5.71 | -73.53 | -13.00 | -60.53 | V |
| 442.2500 | -77.96 | 2.55 | 5.85 | -74.66 | -13.00 | -61.66 | V |
| 553.8000 | -76.4 | 2.82 | 6.13 | -73.09 | -13.00 | -60.09 | V |
| 604.7250 | -76.81 | 2.92 | 6.35 | -73.38 | -13.00 | -60.38 | V |
| 112.4500 | -58.71 | 1.22 | -1.8 | -61.73 | -13.00 | -48.73 | H |
| 197.3250 | -69.05 | 1.63 | 3.21 | -67.47 | -13.00 | -54.47 | H |
| 231.2750 | -72.78 | 1.8 | 5.4 | -69.18 | -13.00 | -56.18 | H |
| 347.6750 | -68.72 | 2.21 | 5.8 | -65.13 | -13.00 | -52.13 | H |
| 442.2500 | -74.71 | 2.55 | 5.85 | -71.41 | -13.00 | -58.41 | H |
| 553.8000 | -71.81 | 2.82 | 6.13 | -68.50 | -13.00 | -55.50 | H |

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: June 14, 2011

Temperature: 25°C

Tested by: Edward Lin

Humidity: 50 % RH

Polarity: Ver. / Hor.

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|-----------------|------------|-----------------|----------------|----------------------|-------------|-------------|----------------------------|
| 112.4500 | -66.19 | 1.22 | -1.8 | -69.21 | -13.00 | -56.21 | V |
| 165.8000 | -71.37 | 1.53 | 2.05 | -70.85 | -13.00 | -57.85 | V |
| 197.3250 | -72.35 | 1.63 | 3.21 | -70.77 | -13.00 | -57.77 | V |
| 328.2750 | -76.37 | 2.17 | 5.71 | -72.83 | -13.00 | -59.83 | V |
| 442.2500 | -78.47 | 2.55 | 5.85 | -75.17 | -13.00 | -62.17 | V |
| 553.8000 | -76.03 | 2.82 | 6.13 | -72.72 | -13.00 | -59.72 | V |
| 112.4500 | -58.75 | 1.22 | -1.8 | -61.77 | -13.00 | -48.77 | H |
| 197.3250 | -69 | 1.63 | 3.21 | -67.42 | -13.00 | -54.42 | H |
| 231.2750 | -72.29 | 1.8 | 5.4 | -68.69 | -13.00 | -55.69 | H |
| 347.6750 | -67.94 | 2.21 | 5.8 | -64.35 | -13.00 | -51.35 | H |
| 553.8000 | -72.46 | 2.82 | 6.13 | -69.15 | -13.00 | -56.15 | H |
| 624.1250 | -72.62 | 2.96 | 6.15 | -69.43 | -13.00 | -56.43 | H |

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: June 14, 2011

Temperature: 25°C

Tested by: Edward Lin

Humidity: 50 % RH

Polarity: Ver. / Hor.

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|-----------------|------------|-----------------|----------------|----------------------|-------------|-------------|----------------------------|
| 112.4500 | -67.08 | 1.22 | -1.8 | -70.10 | -13.00 | -57.10 | V |
| 170.6500 | -71.18 | 1.57 | 2.59 | -70.16 | -13.00 | -57.16 | V |
| 328.2750 | -74.46 | 2.17 | 5.71 | -70.92 | -13.00 | -57.92 | V |
| 442.2500 | -77.3 | 2.55 | 5.85 | -74.00 | -13.00 | -61.00 | V |
| 553.8000 | -74.95 | 2.82 | 6.13 | -71.64 | -13.00 | -58.64 | V |
| 648.3750 | -73.32 | 3.02 | 6.26 | -70.08 | -13.00 | -57.08 | V |
| 110.0250 | -67.56 | 1.21 | -1.7 | -70.47 | -13.00 | -57.47 | H |
| 197.3250 | -72.97 | 1.63 | 3.21 | -71.39 | -13.00 | -58.39 | H |
| 347.6750 | -70.95 | 2.21 | 5.8 | -67.36 | -13.00 | -54.36 | H |
| 553.8000 | -72.95 | 2.82 | 6.13 | -69.64 | -13.00 | -56.64 | H |
| 650.8000 | -68.45 | 3.03 | 6.3 | -65.18 | -13.00 | -52.18 | H |
| 696.8750 | -71.98 | 3.11 | 6.42 | -68.67 | -13.00 | -55.67 | H |

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: June 14, 2011

Temperature: 25°C

Tested by: Edward Lin

Humidity: 50 % RH

Polarity: Ver. / Hor.

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|-----------------|------------|-----------------|----------------|----------------------|-------------|-------------|----------------------------|
| 110.0250 | -68.92 | 1.21 | -1.7 | -71.83 | -13.00 | -58.83 | V |
| 165.8000 | -71.57 | 1.53 | 2.05 | -71.05 | -13.00 | -58.05 | V |
| 231.2750 | -75.58 | 1.8 | 5.4 | -71.98 | -13.00 | -58.98 | V |
| 325.8500 | -76.42 | 2.17 | 5.71 | -72.88 | -13.00 | -59.88 | V |
| 442.2500 | -78.56 | 2.55 | 5.85 | -75.26 | -13.00 | -62.26 | V |
| 648.3750 | -73.98 | 3.02 | 6.26 | -70.74 | -13.00 | -57.74 | V |
| 110.0250 | -67.77 | 1.21 | -1.7 | -70.68 | -13.00 | -57.68 | H |
| 175.5000 | -73.09 | 1.59 | 3.1 | -71.58 | -13.00 | -58.58 | H |
| 347.6750 | -72.6 | 2.21 | 5.8 | -69.01 | -13.00 | -56.01 | H |
| 553.8000 | -74.27 | 2.82 | 6.13 | -70.96 | -13.00 | -57.96 | H |
| 650.8000 | -69.39 | 3.03 | 6.3 | -66.12 | -13.00 | -53.12 | H |
| 696.8750 | -72.71 | 3.11 | 6.42 | -69.40 | -13.00 | -56.40 | H |

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: June 14, 2011

Temperature: 25°C

Tested by: Edward Lin

Humidity: 50 % RH

Polarity: Ver. / Hor.

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|-----------------|------------|-----------------|----------------|----------------------|-------------|-------------|----------------------------|
| 110.0250 | -76.9 | 1.21 | -1.7 | -79.81 | -13.00 | -66.81 | V |
| 170.6500 | -78.59 | 1.57 | 2.59 | -77.57 | -13.00 | -64.57 | V |
| 325.8500 | -81.53 | 2.17 | 5.71 | -77.99 | -13.00 | -64.99 | V |
| 495.6000 | -81.13 | 2.69 | 5.85 | -77.97 | -13.00 | -64.97 | V |
| 604.7250 | -77.31 | 2.92 | 6.35 | -73.88 | -13.00 | -60.88 | V |
| 650.8000 | -77.56 | 3.03 | 6.3 | -74.29 | -13.00 | -61.29 | V |
| 110.0250 | -68.26 | 1.21 | -1.7 | -71.17 | -13.00 | -58.17 | H |
| 197.3250 | -73.81 | 1.63 | 3.21 | -72.23 | -13.00 | -59.23 | H |
| 347.6750 | -71.15 | 2.21 | 5.8 | -67.56 | -13.00 | -54.56 | H |
| 553.8000 | -73.92 | 2.82 | 6.13 | -70.61 | -13.00 | -57.61 | H |
| 650.8000 | -68.79 | 3.03 | 6.3 | -65.52 | -13.00 | -52.52 | H |
| 696.8750 | -72.82 | 3.11 | 6.42 | -69.51 | -13.00 | -56.51 | H |

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: June 14, 2011

Temperature: 25°C

Tested by: Edward Lin

Humidity: 50 % RH

Polarity: Ver. / Hor.

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|-----------------|------------|-----------------|----------------|----------------------|-------------|-------------|----------------------------|
| 1682.500 | -45.38 | 5.09 | 5.97 | -44.50 | -13.00 | -31.50 | V |
| 2522.500 | -43.35 | 6.38 | 6.16 | -43.57 | -13.00 | -30.57 | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1682.500 | -49.94 | 5.09 | 5.97 | -49.06 | -13.00 | -36.06 | H |
| 2522.500 | -45.2 | 6.38 | 6.16 | -45.42 | -13.00 | -32.42 | H |
| N/A | | | | | | | |
| | | | | | | | |
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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: June 14, 2011

Temperature: 25°C

Tested by: Edward Lin

Humidity: 50 % RH

Polarity: Ver. / Hor.

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|-----------------|------------|-----------------|----------------|----------------------|-------------|-------------|----------------------------|
| 1700.000 | -40.95 | 5.11 | 5.94 | -40.12 | -13.00 | -27.12 | V |
| 2557.500 | -41.76 | 6.43 | 6.25 | -41.94 | -13.00 | -28.94 | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1700.000 | -47.45 | 5.11 | 5.94 | -46.62 | -13.00 | -33.62 | H |
| 2557.500 | -44.92 | 6.43 | 6.25 | -45.10 | -13.00 | -32.10 | H |
| N/A | | | | | | | |
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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: June 14, 2011

Temperature: 25°C

Tested by: Edward Lin

Humidity: 50 % RH

Polarity: Ver. / Hor.

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|-----------------|------------|-----------------|----------------|----------------------|-------------|-------------|----------------------------|
| 1647.500 | -39.71 | 5.04 | 6.03 | -38.72 | -13.00 | -25.72 | V |
| 2487.500 | -40.01 | 6.33 | 6.08 | -40.26 | -13.00 | -27.26 | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1647.500 | -46.28 | 5.04 | 6.03 | -45.29 | -13.00 | -32.29 | H |
| 2487.500 | -44.23 | 6.33 | 6.08 | -44.48 | -13.00 | -31.48 | H |
| N/A | | | | | | | |
| | | | | | | | |
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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: June 14, 2011

Temperature: 25°C

Tested by: Edward Lin

Humidity: 50 % RH

Polarity: Ver. / Hor.

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|-----------------|------------|-----------------|----------------|----------------------|-------------|-------------|----------------------------|
| 3712.500 | -45.82 | 8.21 | 9.11 | -44.92 | -13.00 | -31.92 | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 3712.500 | -50.12 | 8.21 | 9.11 | -49.22 | -13.00 | -36.22 | H |
| N/A | | | | | | | |
| | | | | | | | |
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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: June 14, 2011

Temperature: 25°C

Tested by: Edward Lin

Humidity: 50 % RH

Polarity: Ver. / Hor.

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|-----------------|------------|-----------------|----------------|----------------------|-------------|-------------|----------------------------|
| 3765.000 | -40.86 | 8.24 | 9.16 | -39.94 | -13.00 | -26.94 | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 3765.000 | -43.6 | 8.24 | 9.16 | -42.68 | -13.00 | -29.68 | H |
| 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: June 14, 2011

Temperature: 25°C

Tested by: Edward Lin

Humidity: 50 % RH

Polarity: Ver. / Hor.

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|-----------------|------------|-----------------|----------------|----------------------|-------------|-------------|----------------------------|
| 3730.000 | -45.02 | 8.22 | 9.13 | -44.11 | -13.00 | -31.11 | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 3730.000 | -48.83 | 8.22 | 9.13 | -47.92 | -13.00 | -34.92 | H |
| N/A | | | | | | | |
| | | | | | | | |
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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: June 14, 2011

Temperature: 25°C

Tested by: Edward Lin

Humidity: 50 % RH

Polarity: Ver. / Hor.

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|-----------------|------------|-----------------|----------------|----------------------|-------------|-------------|----------------------------|
| 1682.500 | -45.07 | 5.09 | 5.97 | -44.19 | -13.00 | -31.19 | V |
| 2522.500 | -44.76 | 6.38 | 6.16 | -44.98 | -13.00 | -31.98 | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1682.500 | -49.63 | 5.09 | 5.97 | -48.75 | -13.00 | -35.75 | H |
| 2522.500 | -46.79 | 6.38 | 6.16 | -47.01 | -13.00 | -34.01 | H |
| N/A | | | | | | | |
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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: June 14, 2011

Temperature: 25°C

Tested by: Edward Lin

Humidity: 50 % RH

Polarity: Ver. / Hor.

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|-----------------|------------|-----------------|----------------|----------------------|-------------|-------------|----------------------------|
| 1700.000 | -37.1 | 5.11 | 5.94 | -36.27 | -13.00 | -23.27 | V |
| 2557.500 | -40.66 | 6.43 | 6.25 | -40.84 | -13.00 | -27.84 | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1700.000 | -45.32 | 5.11 | 5.94 | -44.49 | -13.00 | -31.49 | H |
| 2557.500 | -44.83 | 6.43 | 6.25 | -45.01 | -13.00 | -32.01 | H |
| N/A | | | | | | | |
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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: June 14, 2011

Temperature: 25°C

Tested by: Edward Lin

Humidity: 50 % RH

Polarity: Ver. / Hor.

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|-----------------|------------|-----------------|----------------|----------------------|-------------|-------------|----------------------------|
| 1665.000 | -41.63 | 5.06 | 6 | -40.69 | -13.00 | -27.69 | V |
| 2487.500 | -41.85 | 6.33 | 6.08 | -42.10 | -13.00 | -29.10 | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1647.500 | -46.36 | 5.04 | 6.03 | -45.37 | -13.00 | -32.37 | H |
| 2487.500 | -47.49 | 6.33 | 6.08 | -47.74 | -13.00 | -34.74 | H |
| N/A | | | | | | | |
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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: June 14, 2011

Temperature: 25°C

Tested by: Edward Lin

Humidity: 50 % RH

Polarity: Ver. / Hor.

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|-----------------|------------|-----------------|----------------|----------------------|-------------|-------------|----------------------------|
| 3712.500 | -49.22 | 8.21 | 9.11 | -48.32 | -13.00 | -35.32 | V |
| N/A | | | | | | | |
| | | | | | | | |
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| | | | | | | | |
| | | | | | | | |
| 3712.500 | -51.71 | 8.21 | 9.11 | -50.81 | -13.00 | -37.81 | H |
| N/A | | | | | | | |
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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: June 14, 2011

Temperature: 25°C

Tested by: Edward Lin

Humidity: 50 % RH

Polarity: Ver. / Hor.

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|-----------------|------------|-----------------|----------------|----------------------|-------------|-------------|----------------------------|
| 3765.000 | -41.5 | 8.24 | 9.16 | -40.58 | -13.00 | -27.58 | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 3765.000 | -44.84 | 8.24 | 9.16 | -43.92 | -13.00 | -30.92 | H |
| N/A | | | | | | | |
| | | | | | | | |
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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: June 14, 2011

Temperature: 25°C

Tested by: Edward Lin

Humidity: 50 % RH

Polarity: Ver. / Hor.

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|-----------------|------------|-----------------|----------------|----------------------|-------------|-------------|----------------------------|
| 3730.000 | -45.55 | 8.22 | 9.13 | -44.64 | -13.00 | -31.64 | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 3730.000 | -48.87 | 8.22 | 9.13 | -47.96 | -13.00 | -34.96 | H |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
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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.*



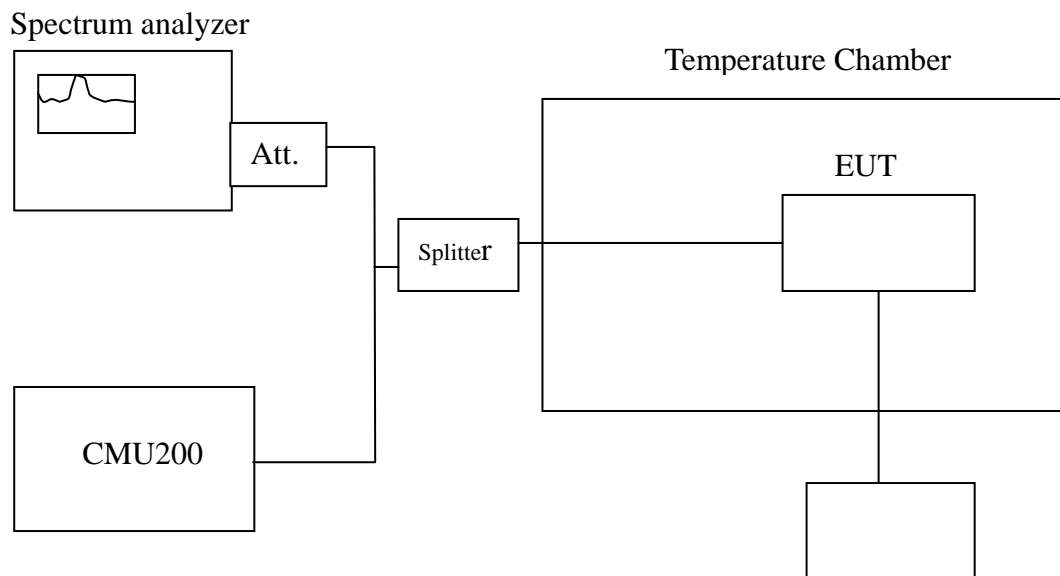
7.6 FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT

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.

| Reference Frequency: CDMA2000 Mid Channel 836.52MHz @ 20°C | | | | |
|---|-------------------------------------|-----------------------|-------------------|-------------------|
| Limit: +/- 2.5 ppm = 2091 Hz | | | | |
| Power Supply Vdc | Environment Temperature (°C) | Frequency (Hz) | Delta (Hz) | Limit (Hz) |
| 12 | 50 | 836599998 | -1 | 2091 |
| | 40 | 836599999 | 0 | |
| | 30 | 836599996 | -3 | |
| | 20 | 836599999 | 0 | |
| | 10 | 836600001 | 2 | |
| | 0 | 836600004 | 5 | |
| | -10 | 836600001 | 2 | |
| | -20 | 836599998 | -1 | |
| | -30 | 836600000 | 1 | |

| Reference Frequency: CDMA2000 Mid Channel 1880MHz @ 20°C | | | | |
|---|-------------------------------------|-----------------------|-------------------|-------------------|
| Limit: +/- 2.5 ppm = 4700 Hz | | | | |
| Power Supply Vdc | Environment Temperature (°C) | Frequency (Hz) | Delta (Hz) | Limit (Hz) |
| 12 | 50 | 1879999999 | 0 | 4700 |
| | 40 | 1880000004 | 5 | |
| | 30 | 1880000002 | 3 | |
| | 20 | 1879999999 | 0 | |
| | 10 | 1880000001 | 2 | |
| | 0 | 1880000003 | 4 | |
| | -10 | 1880000006 | 7 | |
| | -20 | 1880000008 | 9 | |
| | -30 | 1880000007 | 8 | |



| Reference Frequency: EVDO Mid Channel 836.52MHz @ 20°C | | | | |
|--|------------------------------|----------------|------------|------------|
| Limit: +/- 2.5 ppm = 2091 Hz | | | | |
| Power Supply Vdc | Environment Temperature (°C) | Frequency (Hz) | Delta (Hz) | Limit (Hz) |
| 12 | 50 | 836599999 | -2 | 2091 |
| | 40 | 836599997 | -4 | |
| | 30 | 836600000 | -1 | |
| | 20 | 836600001 | 0 | |
| | 10 | 836600002 | 1 | |
| | 0 | 836600005 | 4 | |
| | -10 | 836599996 | -5 | |
| | -20 | 836599994 | -7 | |
| | -30 | 836599993 | -8 | |

| Reference Frequency: EVDO Mid Channel 1880MHz @ 20°C | | | | |
|--|------------------------------|----------------|------------|------------|
| Limit: +/- 2.5 ppm = 4700 Hz | | | | |
| Power Supply Vdc | Environment Temperature (°C) | Frequency (Hz) | Delta (Hz) | Limit (Hz) |
| 12 | 50 | 1880000004 | 8 | 4700 |
| | 40 | 1880000001 | 5 | |
| | 30 | 1880000003 | 7 | |
| | 20 | 1879999996 | 0 | |
| | 10 | 1879999998 | 2 | |
| | 0 | 1879999999 | 3 | |
| | -10 | 1879999995 | -1 | |
| | -20 | 1879999994 | -2 | |
| | -30 | 1880000007 | 11 | |



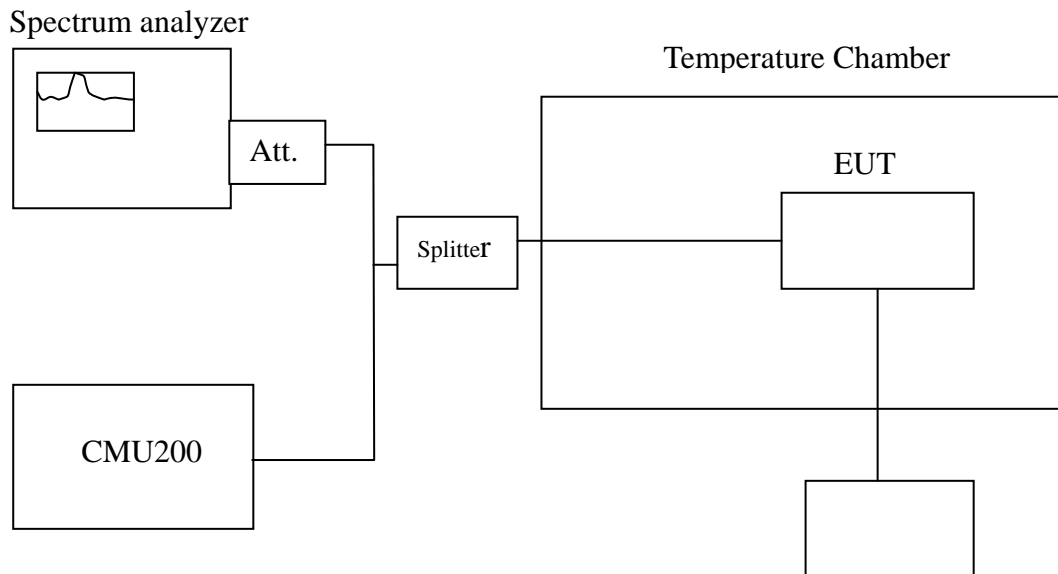
7.7 FREQUENCY STABILITY V.S. VOLTAGE MEASUREMENT

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 Vdc | Environment Temperature (°C) | Frequency (Hz) | Delta (Hz) | Limit (Hz) |
| 13.8 | 20 | 836599995 | -4 | 2091 |
| 12 | | 836599999 | 0 | |
| 10.2 | | 836599993 | -6 | |
| 5.5END | | 836599916 | -83 | |

| Reference Frequency: CDMA2000 Mid Channel 1880MHz @ 20°C | | | | |
|--|------------------------------|----------------|------------|------------|
| Limit: ± 2.5 ppm = 4700 Hz | | | | |
| Power Supply Vdc | Environment Temperature (°C) | Frequency (Hz) | Delta (Hz) | Limit (Hz) |
| 13.8 | 20 | 1880000000 | 1 | 4700 |
| 12 | | 1879999999 | 0 | |
| 10.2 | | 1879999998 | 3 | |
| 5.5END | | 1879999927 | -1 | |



| Reference Frequency: EVDO Mid Channel 836.52MHz @ 20°C | | | | |
|--|------------------------------|----------------|------------|------------|
| Limit: +/- 2.5 ppm = 2091 Hz | | | | |
| Power Supply Vdc | Environment Temperature (°C) | Frequency (Hz) | Delta (Hz) | Limit (Hz) |
| 13.8 | 20 | 836599996 | 0 | 2091 |
| 12 | | 836600001 | 0 | |
| 10.2 | | 836600002 | -3 | |
| 5.5END | | 836600066 | -1 | |

| Reference Frequency: EVDO Mid Channel 1880MHz @ 20°C | | | | |
|--|------------------------------|----------------|------------|------------|
| Limit: ± 2.5 ppm = 4700 Hz | | | | |
| Power Supply Vdc | Environment Temperature (°C) | Frequency (Hz) | Delta (Hz) | Limit (Hz) |
| 13.8 | 20 | 1879999997 | -2 | 4700 |
| 12 | | 1879999996 | 0 | |
| 10.2 | | 1880000002 | -1 | |
| 5.5END | | 1880000073 | 4 | |