



## 47 CFR PART 22 SUBPART H & 24 SUBPART E

# TEST REPORT

CDMA EVDO USB MODEM

Model Name: OT-X080C  
Trade Name: ALCATEL  
Report No.: SH11030015R01  
FCC ID: R5CX080C

*prepared for*

**Huizhou TCL Mobile Communication Co.,Ltd**  
NO.23 Zone, ZhongKai High-Technology Development Zone

**Shenzhen Electronic Product Quality Testing Center**  
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**CTIA Authorized Test Lab**  
LAB CODE 20081223-00

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## 1. Test Result Certification

Equipment under Test: CDMA EVDO USB MODEM

Trade Name: ALCATEL

Model Name: OT-X080C

FCC ID: R5CX080C

Applicant: Huizhou TCL Mobile Communication Co.,Ltd

NO.23 Zone, ZhongKai High-Technology Development Zone

Manufacturer: Huizhou TCL Mobile Communication Co.,Ltd

NO.23 Zone, ZhongKai High-Technology Development Zone

Test Standards: 47 CFR Part 2

47 CFR Part 22 Subpart H

Test Data(s): Mar 15, 2011 – Mar 23, 2011

Test Result: PASS

### \* We Hereby Certify That:

The equipment under test was tested by Shenzhen Morlab Communications Technology Co., Ltd. The test data, data evaluation, test procedures and equipment configurations shown in this report were made in accordance with the requirement of related FCC rules.

The test results of this report only apply for the tested sample equipment identified above. The test report shall be invalid without all the signatures of the test engineer, the reviewer and the approver.

Tested by: ..... Yang Jie ..... Dated: 2011.3.29

Yang Jie

Reviewed by: ..... Zhang Jun ..... Dated: 2011.3.29

Zhang Jun

Approved by: ..... Wei Bei ..... Dated: 2011.3.29

Wei Bei



## 2. General Information

### 2.1 Equipment under Test (EUT) Description

EUT Type ..... : CDMA EVDO USB MODEM  
Brand Name ..... : ALCATEL  
Model Name ..... : OT-X080C  
Frequency Range ..... : CDMA2000 Cellular:  
Tx: 824 MHz ~ 849 MHz; Rx: 869 MHz ~ 894 MHz  
Max ERP/EIRP Power ..... : Cellular: **0.20324W** for 1x EV-DO Rev.0 RTAP\_153.6Kbps  
Modulation Type ..... : BPSK、8PSK、QPSK、HPSK、16QAM、OQPSK  
Emission Designators ..... : 1M43F9W  
Hardware Version ..... : PCB\_V1.1  
Software Version ..... : MDM\_V1.00.22T  
Manufacturer ..... : Huizhou TCL Mobile Communication Co.,Ltd  
NO.23 Zone, ZhongKai High-Technology Development Zone

#### NOTE:

1. The EUT is a CDMA EVDO USB MODEM operating in Cellular 800MHz band.
2. The normal configuration for the EUT is connected with the PC via the USB port.
3. For more detailed features about the EUT, please see user manual.

## 2.2 Test Standards and Results

The objective of the report is to perform tests according to 47 CFR Part 2, Part 22 and Part 24 for FCC ID Certification:

No.	Identity	Document Title
1	47 CFR Part 2 (10-1-05 Edition)	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
2	47 CFR Part 22 (10-1-05 Edition)	Public Mobile Services
3	47 CFR Part 24 (10-1-05 Edition)	Personal Communications Services
4	ANSI/TIA/EIA-603-C (2004)	Land Mobile FM or PM - Communications Equipment - Measurement and Performance Standards

Test detailed items and the results are as below:

No.	Rules	Test Type	Result	Date of Test
1	§2.106 §22.905 24.229	Frequencies	PASS	08.31
2	§2.1046	Conducted RF Output Power	PASS	09.01
3	§2.1049	Occupied Bandwidth	PASS	09.01
4	§2.1057 §22.917 §24.238	Band Edge	PASS	09.01
5	§2.1051 §2.1057 §22.917	Conducted Spurious Emission at Antenna Terminal	PASS	09.01
6	§22.913 §24.232	Transmitter Radiated Power (EIPR/ERP)	PASS	09.01
7	§2.1053 §2.1057 §22.917	Radiated Spurious Emission	PASS	09.01
8	§2.1055 §22.355	Frequency Stability	PASS	08.30

## 2.3 Facilities and Accreditations

### 2.3.1 Facilities

Shenzhen Electronic Product Quality Testing Center Morlab Laboratory is a testing organization accredited by China National Accreditation Board for Laboratories (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L1659.

All measurement facilities used to collect the measurement data are located at Electronic Testing Building, Shahe Road, Xili, Nanshan District, Shenzhen 518055 CHINA. The test site is constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22; the FCC registration number is 741109.

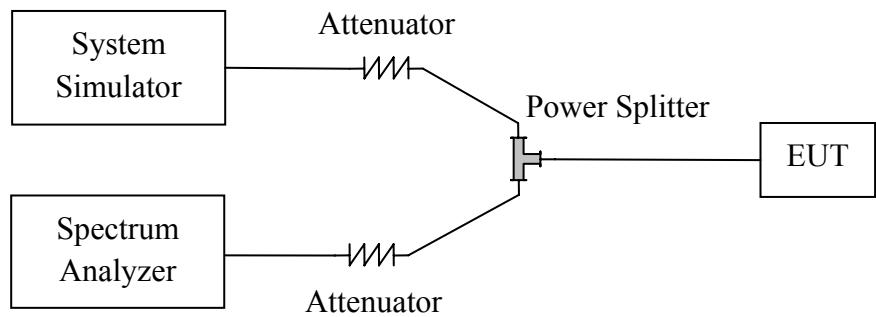
### 2.3.2 Test Environment Conditions

During the measurement, the environmental conditions were within the listed ranges:

Temperature:	20 - 25°C
Relative Humidity:	40 - 50%
Atmospheric Pressure:	96kPa

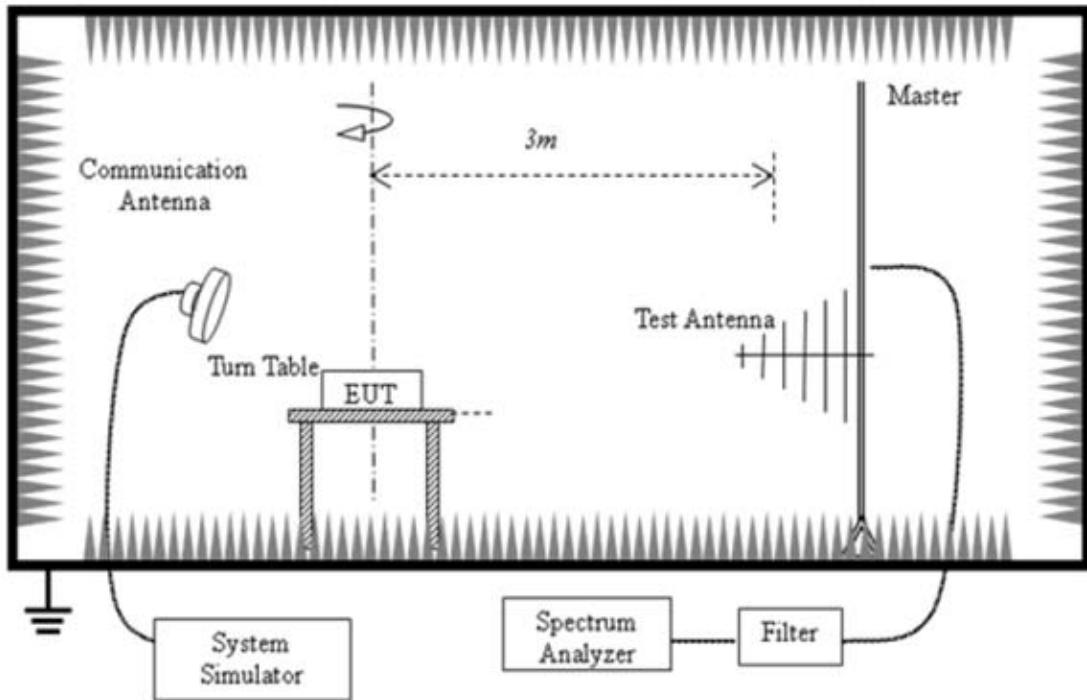
## 2.4 47 CFR Part 2, Part 22H ,Part 24E Requirements

### 2.4.1 Conducted Related Tests



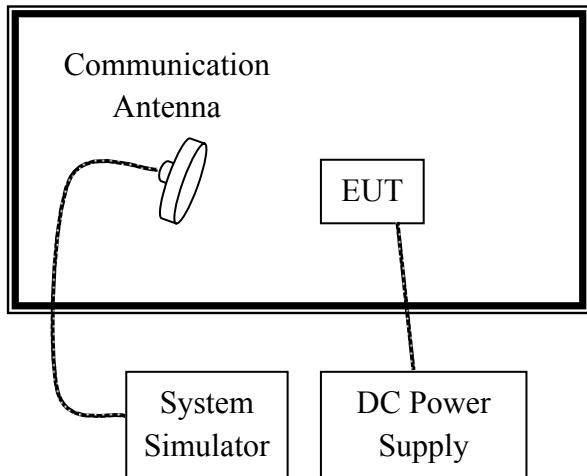
1. The EUT is coupled to the Spectrum Analyzer and the System Simulator with the suitable Attenuators through the Power Splitter; the path loss is calibrated to correct the reading.
2. The EUT is configured here as EUT + PC.
3. The EUT is commanded via the System Simulator (SS) to operate at the maximum output power . A communication link is established between the EUT and the SS.
4. The Spectrum Analyzer is set to max-peak detector function and maximum hold mode.

## 2.4.2 Radiated Power and Spurious Emission Tests



1. The test is performed in a full-Anechoic Chamber; the air loss of the site and the factors of the test system are pre-calibrated using the substitution method.
2. The EUT is configured as EUT + PC.
3. The EUT is placed on the vertical axis of a Turn Table.
4. The Test Antenna is a bi-log one or a horn one, and the Test Antenna is at the same height as the EUT.
5. The EUT is commanded via the System Simulator (SS) to operate at the maximum output power. A communication link is established between the EUT and the SS.
6. The Spectrum Analyzer is set to max-peak detector function and maximum hold mode.

### 2.4.3 Frequency Stability Test



1. The test is performed in a Temperature Chamber.
2. The EUT is configured as EUT + DC Power Supply.

### 2.4.4 Test Mode

During all testing, EUT is in link mode with base station emulator at maximum power level. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT is rotated on three test planes to find out the worst emission.

Frequency range investigated for radiated emission is as follows:

1. 30 MHz to 10000 MHz for CDMA2000 Cellular.

Test Modes		
Band	Radiated Test	Conducted Test
<b>CDMA2000 Cellular</b>	<ul style="list-style-type: none"> <li>■ 1xEV-DO Rev.0 Link Mode_CH1013</li> <li>■ 1xEV-DO Rev.0 Link Mode_CH384</li> <li>■ 1xEV-DO Rev.0 Link Mode_CH777</li> </ul>	<ul style="list-style-type: none"> <li>■ 1xRTT Link Mode</li> <li>■ 1xEV-DO Rev.0 Link Mode</li> <li>■ 1xEV-DO Rev.A Link Mode</li> </ul>

*Note:*

1. For CDMA2000 Cellular, the maximum RF output power mode is 1x EV-DO Rev.0 RTAP\_153.6Kbps which was used for ERP and RSE testing.

## 2.5 Frequencies

### 2.5.1 Requirement

According to FCC §22.905, the frequencies blocks assignment for the Cellular Radio telephone Service are listed as below.

- (a) Channel Block A:
  - Mobile 824 - 835MHz, Base 869 - 880MHz;
  - Mobile 845 - 846.5MHz, Base 890 - 891.5MHz
- (b) Channel Block B:
  - Mobile 835 - 845 MHz, Base 880 - 890MHz;
  - Mobile 846.5 - 849 MHz, Base 891.5 - 894MHz

According to FCC section 24.229, the frequencies available in the Broadband PCS services are listed as below, in accordance with the frequency allocations table of FCC section 2.106.

- (a) The following frequency blocks are available for assignment on an MTA basis:
  - Block A: 1850 - 1865MHz paired with 1930 - 1945MHz;
  - Block B: 1870 - 1885MHz paired with 1950 - 1965MHz.
- (b) The following frequency blocks are available for assignment on a BTA basis:
  - Block C: 1895 - 1910 MHz paired with 1975 - 1990MHz;
  - Block D: 1865 - 1870 MHz paired with 1945 - 1950MHz;
  - Block E: 1885 - 1890 MHz paired with 1965 - 1970MHz;
  - Block F: 1890 - 1895 MHz paired with 1970 - 1975MHz.

### 2.5.2 Procedure

1. Perform test system setup as section 2.4.1.
2. The resolution bandwidth (RBW) of the Spectrum Analyzer was set to at least 1% of the emission bandwidth of the fundamental emission of the transmitter, e.g. for GSM modulated signal (here used): RBW=VBW=3kHz, for CDMA modulated signal: RBW=VBW=30kHz.
3. The lowest and the highest channel were selected to perform tests respectively. Channel No.1013(lowest) and 777(highest) for cellular band;
4. The MS operated at the maximum output power. Set the Spectrum Analyzer suitably to capture the waveform, search peak and mark, and then record the plot.

### 2.5.3 Test Results

Test Mode	Channel	Frequency (MHz)	Result
CDMA 2000 1xRTT	1013 (Low)	824.89	PASS
	777 (High)	848.36	PASS
Test Mode	Channel	Frequency (MHz)	Result
CDMA 2000 1x EV-DO Rev.A	1013 (Low)	824.89	PASS
	777 (High)	848.36	PASS
Test Mode	Channel	Frequency (MHz)	Result
CDMA 2000 1x EV-DO Rev.0	1013 (Low)	824.89	PASS
	777 (High)	848.36	PASS

Note:

The frequencies of the lowest channel and the highest channel are measured.

## 2.6 Conducted RF Output Power

### 2.6.1 Requirement

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

### 2.6.2 Test Procedure

1. Perform test system setup as section 2.4.1 (the radio frequency load attached to the EUT antenna terminal is  $50\Omega$ ).
2. The resolution bandwidth of the Spectrum Analyzer is set to be comparable to the emission bandwidth of the transmitter, e.g. for GSM modulated signal (here used):  $RBW=VBW=1\text{MHz}$ , for CDMA modulated signal:  $RBW=VBW=3\text{MHz}$ .
3. The lowest and the highest channel were selected to perform tests respectively. Channel No.1013(lowest) 384(middle )and 777(highest) for cellular band.
4. Set the frequency range of the Spectrum Analyzer suitably to capture the waveform; search peak and mark it; finally record the peak and the plot.

### 2.6.3 Test Results

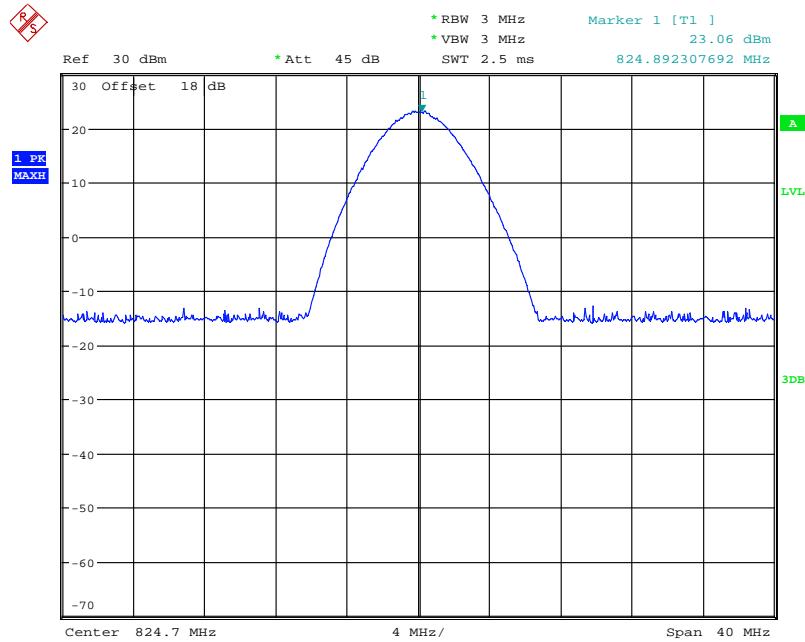
CDMA2000 Cellular					
Test Mode	Test Status	Channel	Frequency (MHz)	Conducted power(dBm)	Conducted power(watts)
CDMA 2000 1xRTT	FCH_RC1	1013 (Low)	824.89	22.93	0.19634
		384 (Mid)	836.60	22.90	0.19498
		777 (High)	848.36	22.95	0.19724
	FCH_RC3	1013 (Low)	824.89	22.94	0.19679
		384 (Mid)	836.60	22.91	0.19543
		777 (High)	848.36	22.96	0.19770
	FCH+SCH_RC3	1013 (Low)	824.89	22.95	0.19724
		384 (Mid)	836.60	22.94	0.19679
		777 (High)	848.36	22.97	0.19815
CDMA 2000 1x EV-DO Rev.A	RETAP_128Kbps	1013 (Low)	824.89	23.05	0.20184
		384 (Mid)	836.60	22.98	0.19861
		777 (High)	848.36	23.07	0.20277
	RETAP_2048Kbps	1013 (Low)	824.89	23.06	0.20230
		384 (Mid)	836.60	23.03	0.20091
		777 (High)	848.36	23.06	0.20230
	RETAP_12288Kbps	1013 (Low)	824.89	23.04	0.20137
		384 (Mid)	836.60	23.02	0.20045
		777 (High)	848.36	23.06	0.20230
CDMA 2000 1x EV-DO Rev.0	RTAP_9.6Kbps	1013 (Low)	824.89	23.00	0.19953
		384 (Mid)	836.60	22.99	0.19907
		777 (High)	848.36	23.03	0.20091
	RTAP_38.4Kbps	1013 (Low)	824.89	23.01	0.19999
		384 (Mid)	836.60	23.02	0.20045
		777 (High)	848.36	23.06	0.20230
	RTAP_153.6Kbps	1013 (Low)	824.89	<b>23.06</b>	<b>0.20230</b>
		384 (Mid)	836.60	<b>23.04</b>	<b>0.20137</b>
		777 (High)	848.36	<b>23.08</b>	<b>0.20324</b>

Note:

This report only show the worst results with plots of Cellular CDMA2000 1x EV-DO Rev.0 RTAP\_153.6Kbps mode.

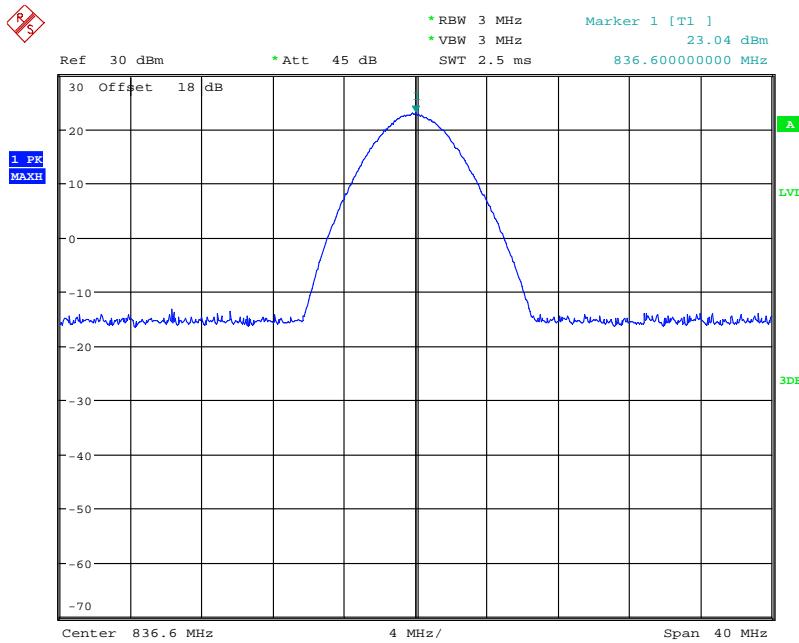
## 2.6.4 Test Plots

### 1 CDMA2000 1x EV-DO Rev.0 RTAP\_153.6Kbps Channel 1013



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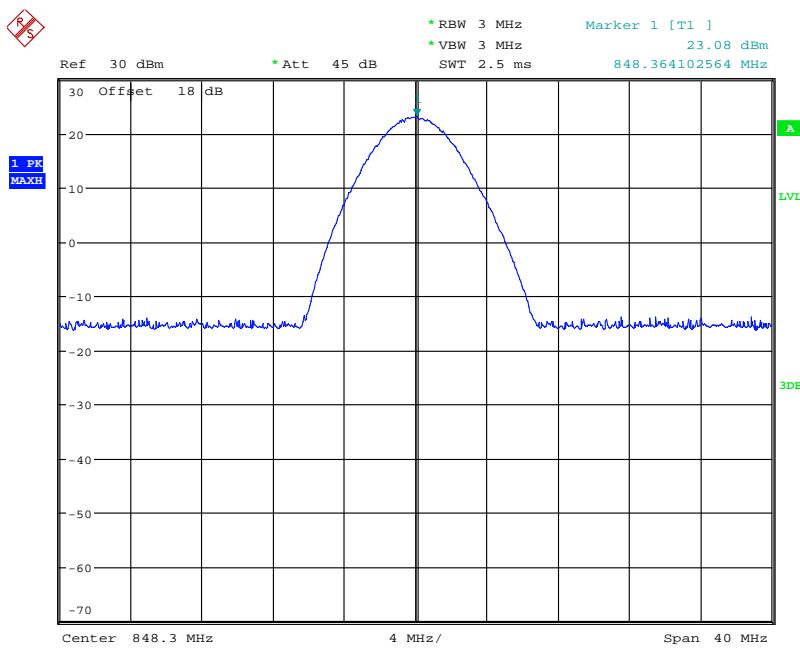
### 2 CDMA2000 1x EV-DO Rev.0 RTAP\_153.6Kbps Channel 384



1 Date: 15.MAR.2011 15:31:58

0

### 3 CDMA2000 1x EV-DO Rev.0 RTAP\_153.6Kbps Channel 777



Date: 15.MAR.2011 15:32:47

## 2.7 Occupied Bandwidth

### 2.7.1 Occupied Bandwidth Definition

According to FCC §2.1049, the occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.

Occupied bandwidth is also known as the 99% emission bandwidth. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26dB below the transmitter power.

### 2.7.2 Test Procedure

- 1 Perform test system setup as section 2.4.1 (the radio frequency load attached to the EUT antenna terminal is  $50\Omega$ ).
- 2 The resolution bandwidth of the Spectrum Analyzer is set to be comparable to the emission bandwidth of the transmitter, for CDMA modulated signal:  $RBW=VBW=30\text{KHz}$ .
- 3 The lowest and the highest channel were selected to perform tests respectively. Channel No.1013(lowest) 384(middle )and 777(highest) for cellular band.
- 4 Set the frequency range of the Spectrum Analyzer suitably to capture the waveform; search peak and mark it; finally record the peak and the plot.

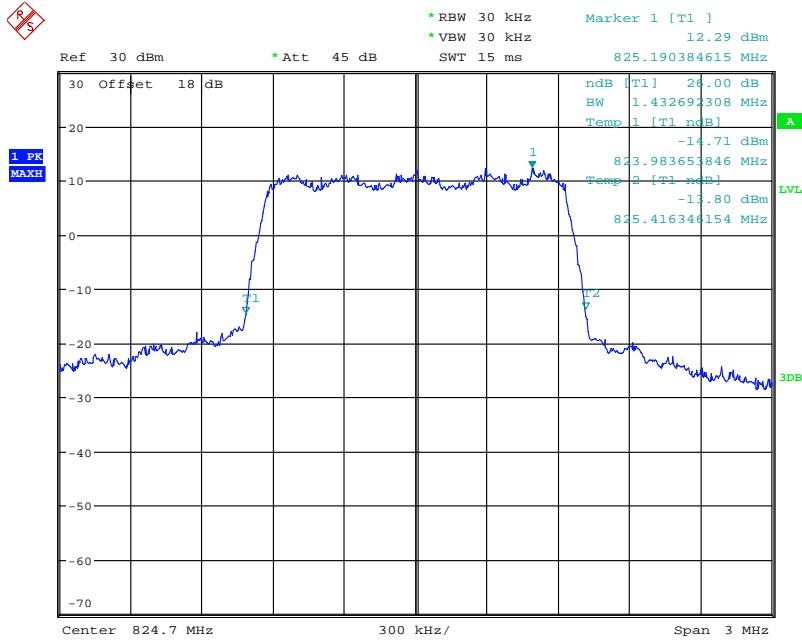
### 2.7.3 Test Result

CDMA2000 Cellular

Test Mode	Channel	Measured Bandwidth (MHz)	Result	Plots
CDMA 2000 1x EV-DO Rev.0	1013 (Low)	1.433	Pass	1
	384 (Mid)	1.428	Pass	2
	777 (High)	1.433	Pass	3

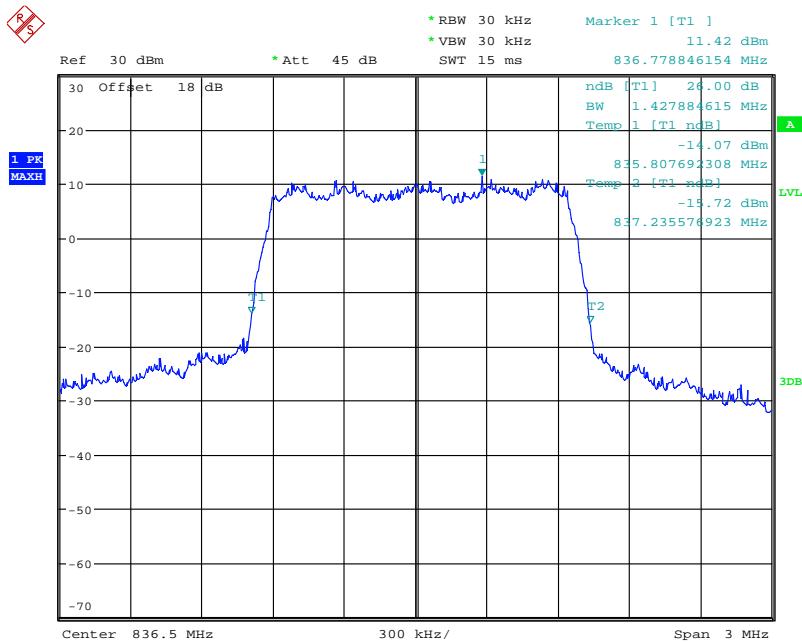
## 2.7.4 Test plots

### 1 CDMA2000 1x EV-DO Rev.0 RTAP\_153.6Kbps Channel 1013



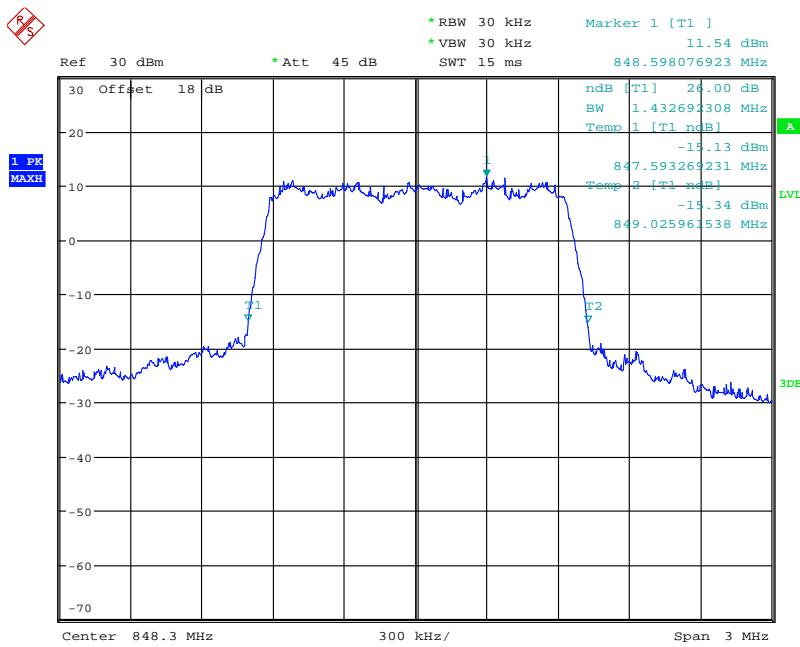
Date: 15.MAR.2011 14:13:08

### 2 CDMA2000 1x EV-DO Rev.0 RTAP\_153.6Kbps Channel 384



Date: 15.MAR.2011 14:14:47

### 3 CDMA2000 1x EV-DO Rev.0 RTAP\_153.6Kbps Channel 777



Date: 15.MAR.2011 14:16:12

## 2.8 Band-edge

### 2.8.1 Requirement

According to FCC section 22.717(b) and FCC section 24.235(b), in the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth (26dB emission bandwidth) of the fundamental emission of the transmitter may be employed.

### 2.8.2 Test Description

See section 2.4.1 of this report.

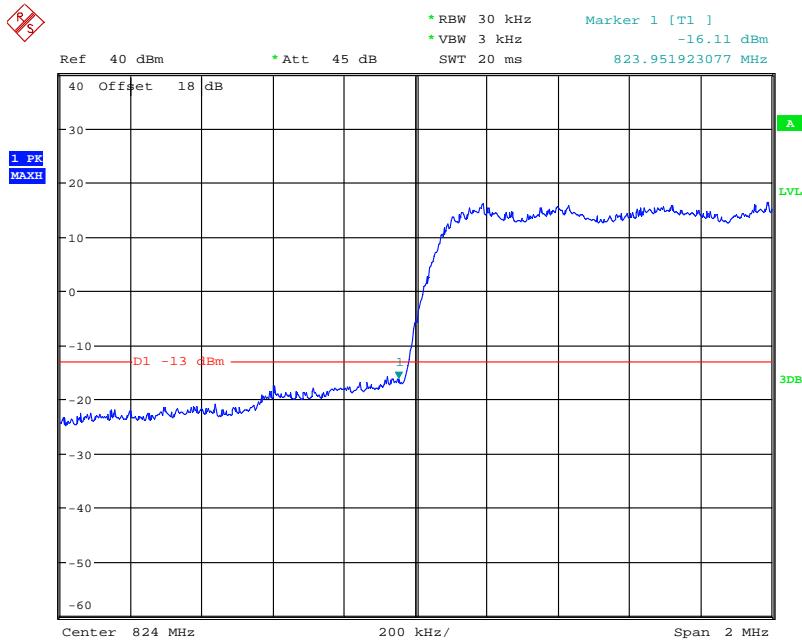
### 2.8.3 Test Result

The lowest and highest channels are tested to verify the band edge emissions.

CDMA2000 Cellular					
Test Mode	Channel	Frequency(MHz)	Measured Max Band Edge Emission(dBm)	Result	Plots
CDMA 2000 1x EV-DO Rev.0	1013 (Low)	823.952	-16.11	Pass	1
	777 (High)	849.077	-19.95	Pass	2

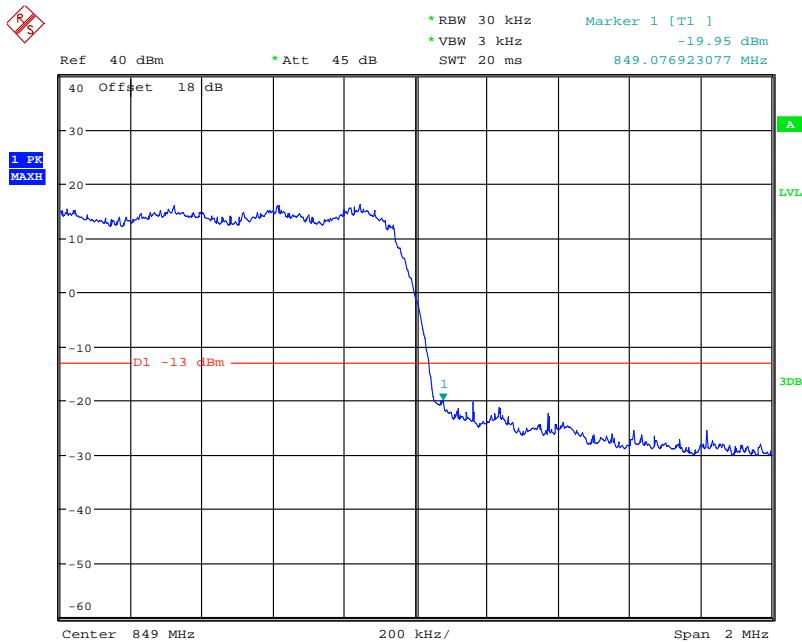
## 2.8.4 Test plots

### 1 CDMA2000 1x EV-DO Rev.0 RTAP\_153.6Kbps Channel 1013



Date: 15.MAR.2011 15:18:27

### 2 CDMA2000 1x EV-DO Rev.0 RTAP\_153.6Kbps Channel 777



Date: 15.MAR.2011 15:19:34

## 2.9 Conducted Spurious Emission

### 2.9.1 Requirement

According to FCC §22.917(a) and §24.238(a), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB. This calculated to be -13dBm.

According to FCC §22.917 (b) and §24.238(b), in the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. Thus the 26dB emission bandwidth is measurement for showing compliance at the band-edge.

### 2.9.2 Test Procedure

Perform test system setup as section 2.4.1.

Make a limit line whose value is -13dBm on the Spectrum Analyzer.

The lowest and the highest channel were selected to perform tests respectively. Channel No.1013(lowest) 384(middle) and 777(highest) for cellular band.

Set the RBW of the Spectrum Analyzer to 1MHz, and the measuring frequency range from 9kHz to 10<sup>th</sup> harmonic of the fundamental frequency (here used 26.5GHz); mark the fundamental frequency and the harmonics thereof; finally record the harmonics and the plot. Note, the measuring frequency range can be divided into several parts to perform tests.

In the 1MHz bands immediately outside and adjacent to the frequency black, the RBW of the Spectrum Analyzer was set to at least one percent of the emission bandwidth of the fundamental emission of the transmitter, e.g. for GSM modulated signal (here used): RBW=3kHz, for CDMA modulated signal: RBW=1MHz.

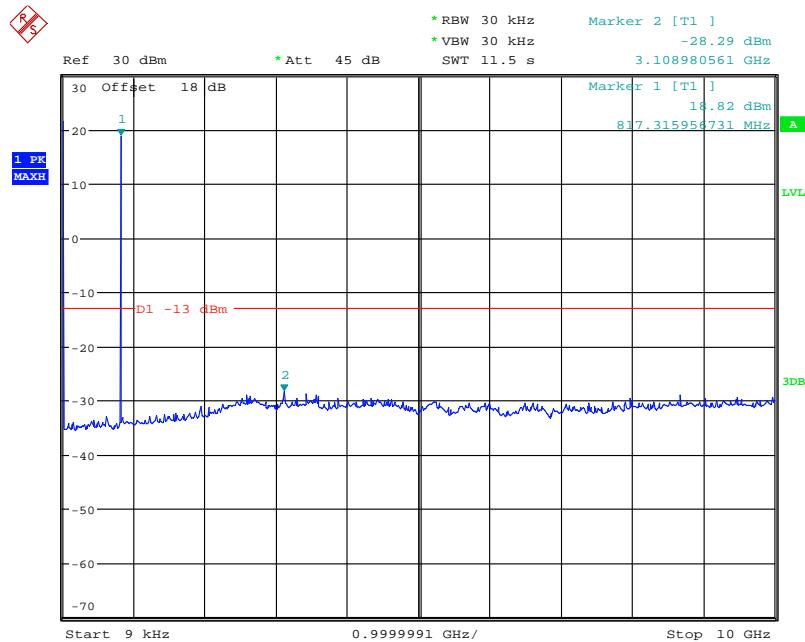
Set the frequency range of the Spectrum Analyzer suitably to capture the waveform; search peak and mark it; finally record the peak and the plot.

### 2.9.3 Test Results

CDMA2000 Cellular				
Test Mode	Channel	Measured Max. Spurious Emission (dBm)	Result	Plots
CDMA 2000 1x EV-DO Rev.0	1013 (Low)	-28.29	Pass	1
	384 (Mid)	-29.33	Pass	2
	777 (High)	-29.43	Pass	3

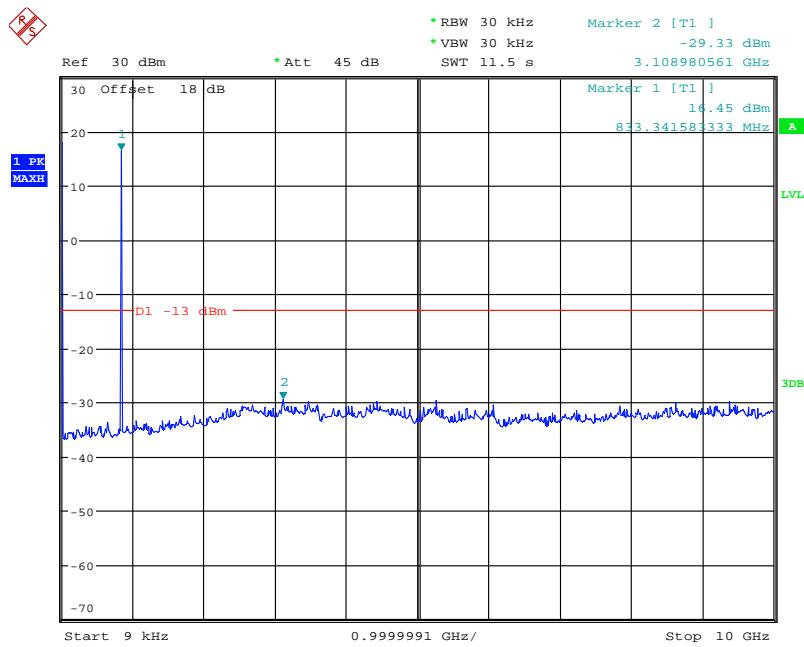
### 2.9.4 Test Plots

#### 1 CDMA2000 1x EV-DO Rev.0 RTAP\_153.6Kbps Channel 1013



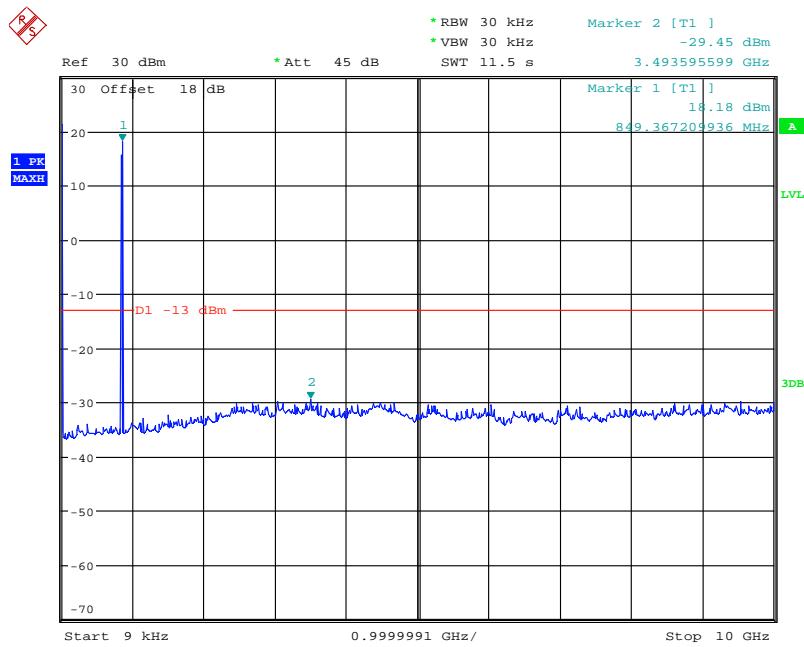
Date: 15.MAR.2011 14:51:42

## 2 CDMA2000 1x EV-DO Rev.0 RTAP\_153.6Kbps Channel 384



Date: 15.MAR.2011 15:12:46

## 3 CDMA2000 1x EV-DO Rev.0 RTAP\_153.6Kbps Channel 777



Date: 15.MAR.2011 15:15:55

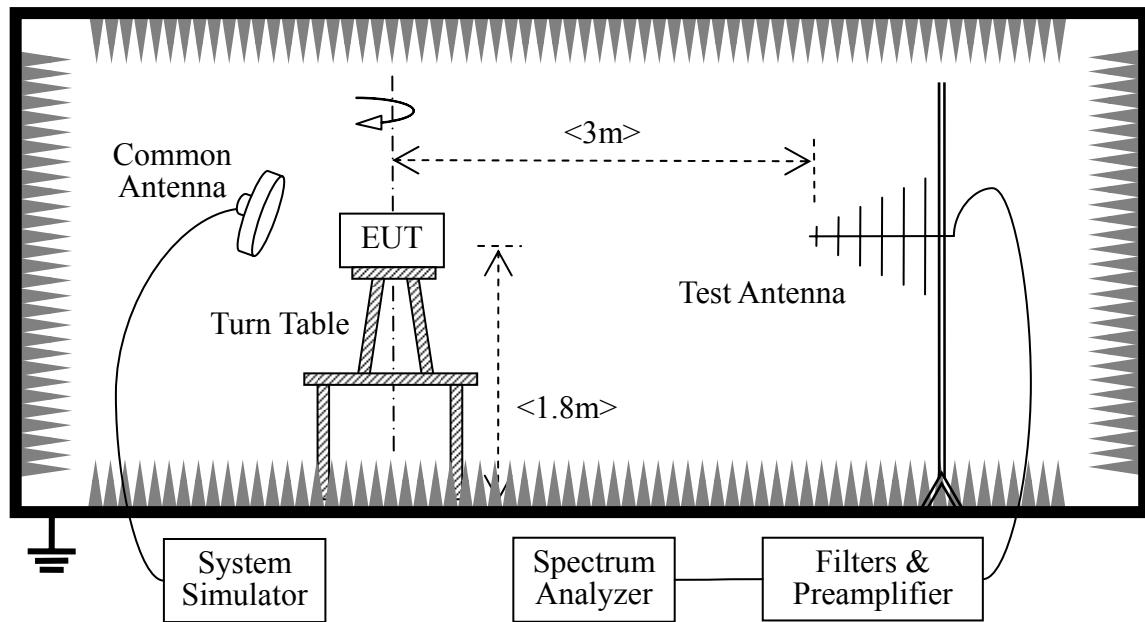
## 2.10 Transmitter Radiated Power (EIRP/ERP)

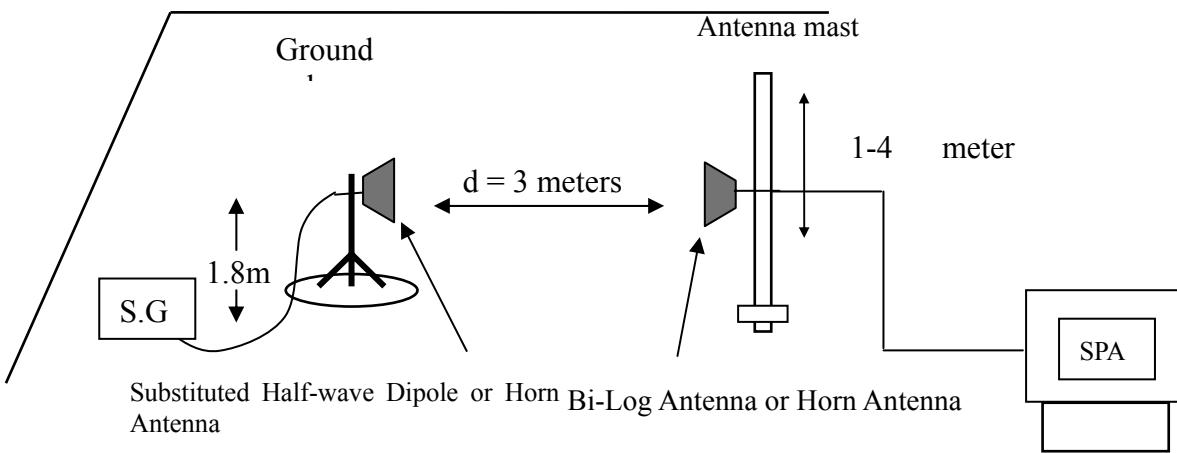
### 2.10.1 Requirement

According to FCC section 22.913, the Effective Radiated Power (ERP) of mobile transmitters and auxiliary test transmitters must not exceed 7Watts, and FCC section 24.232, the broadband PCS mobile station is limited to 2 Watts e.i.r.p. peak power.

### 2.10.2 Test Procedure

#### 2.10.2.1 Test Setup:





The measurements procedures in TIA-603C-2004 are used.

1. EUT was placed on a 1.8 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.8m. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in three channels (High, Middle, Low) were measured with peak detector.
2. The EUT is then put into continuously transmitting mode at its maximum power level during the test. And the maximum value of the receiver should be recorded as ( $P_r$ ).
3. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power ( $P_{Mea}$ ) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded ( $P_r$ ). The power of signal source ( $P_{Mea}$ ) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
4. The cable loss ( $P_{cl}$ ) between the Signal Source with the Substitution Antenna and the Substitution Antenna Gain ( $G_a$ ) should be recorded after test. The measurement results are obtained as described below:  

$$\text{Power(EIRP)} = P_{Mea} + P_{cl} + G_a$$
5. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.
6. ERP can be calculated from EIRP by subtracting the gain of the dipole,  $\text{ERP} = \text{EIRP} - 2.15 \text{ dBi}$ .

### 2.10.2.2 Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
SS	Agilent	E5515C	GB46040102	2010.9	1year
Spectrum Analyzer	Agilent	E4440A	MY46187763	2010.9	1year
Spectrum Analyzer	R&S	FSP30	101020	2010.9	1year
Full-Anechoic Chamber	Albatross	9m*6m*6m	(n.a.)	2009.10	2year
Test Antenna - Bi-Log	Rohde&Schwarz	HL562	100385	2010.9	1year
Test Antenna - Horn	Rohde&Schwarz	HF906	100565	2010.9	1year

### 2.10.3 Test Result

The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. The lowest, middle and highest channels are tested. All modes are tested, including (CDMA2000 Cellular).

Limits:

		Burst Peak ERP (dBm)
CDMA2000 Cellular		≤38.5dBm (7W)

Measurement result

CDMA2000 Cellular 1x EV-DO Rev.0 RTAP\_153.6Kbps

Channel	Peak ERP (dBm)	P <sub>cl</sub> Cable Loss (dB)	G <sub>a</sub> Antenna Gain(dB)	Correction (dBm)	P <sub>Mea</sub> (dBm)	Polarization
1013	19.43	10.01	5.05	2.15	1.52	Horizontal
384	19.14	10.03	5.07	2.15	1.19	Horizontal
777	18.50	10.05	5.11	2.15	0.49	Horizontal
1013	18.57	10.01	5.05	2.15	0.66	Vertical
384	18.23	10.03	5.07	2.15	0.28	Vertical
777	17.10	10.05	5.11	2.15	-0.91	Vertical

Remark:

$$\text{ERP(dBm)} = \text{P}_{\text{Mea}} + \text{P}_{\text{cl}} + \text{G}_a - 2.15$$

## 2.11 Radiated Spurious Emission

### 2.11.1 Requirement

According to FCC §22.917(a) and §24.238(a), ANSI / TIA /EIA-603-C-2004, the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43+10*\log(P)$ dB. This calculated to be -13dBm.

### 2.11.2 Test Procedure

1. Perform test system setup as section 2.4.2
2. Make a limit line whose value is -13dBm on the Spectrum Analyzer, and set the RBW of the Spectrum Analyzer to 1MHz.
3. The two worst case channel were selected to perform tests respectively.
4. Employ the bi-log Test Antenna as the test system receiving antenna and set the frequency range of the Spectrum Analyzer from 30MHz to 3GHz.
5. The measurement is performed with the Test Antenna at both horizontal and vertical polarization respectively. Set the polarization of the Test Antenna to be horizontal.
6. Actuate the Turn Table to turn from 0 degrees to 360 degrees to find the maximum reading via the Spectrum Analyzer, mark the fundamental frequency and the harmonics thereof, after then record the harmonics and the plot.
7. Set the polarization of the Test Antenna to be vertical, then repeat step 6.
8. Employ the horn Test Antenna as the test system receiving antenna and set the frequency range of the Spectrum Analyzer from 3GHz to 10<sup>th</sup> harmonic of the fundamental frequency, then repeat step 5 to 7.
9. Set the frequency range of the Spectrum Analyzer suitably to capture the waveform; search peak and mark it; finally record the peak and the plot.

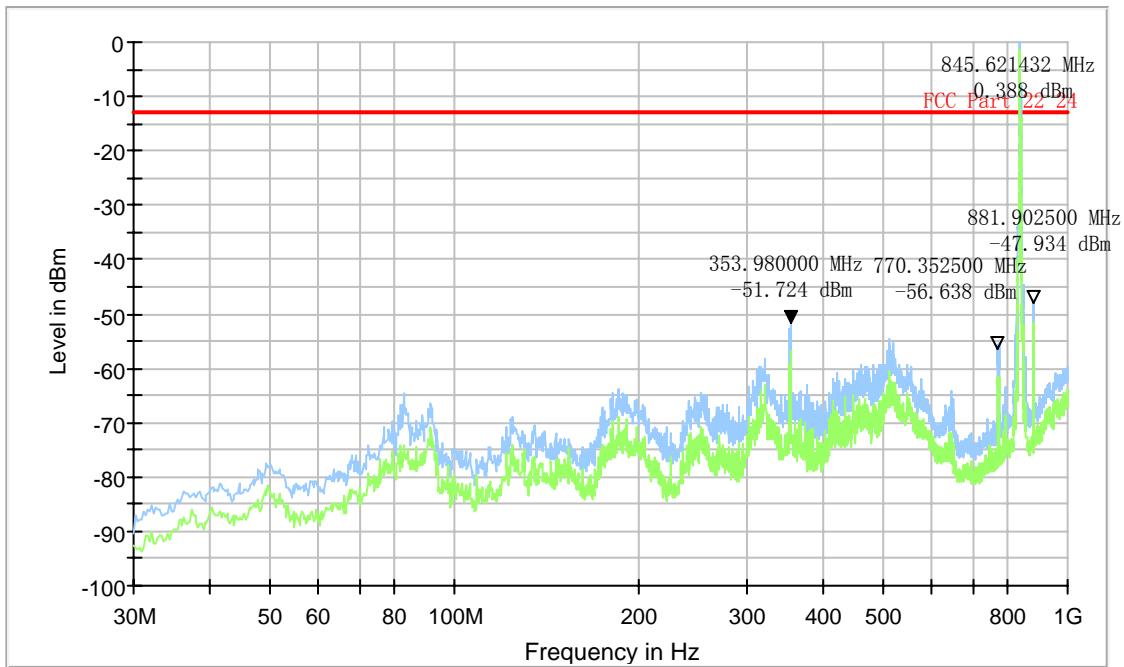
### 2.11.3 Test Result and plots

Test Mode	Frequency (GHz)	Max Spurious Emission (dBm)	Polarity	Limit (dBm)	Result
Cellular CDMA2000 1x EV-DO Rev.0	0.35398	-51.724	H	-13	Pass
	0.77035	-56.638	H	-13	Pass
	0.84562	0.3880	H	-13	Pass
	0.88190	-47.934	H	-13	Pass
	1.59400	-42.227	H	-13	Pass
	1.99450	-44.523	H	-13	Pass
	0.74707	-58.067	V	-13	Pass
	0.83583	-4.0220	V	-13	Pass
	0.88118	-39.363	V	-13	Pass
	1.19350	-43.391	V	-13	Pass
	1.80775	-45.509	V	-13	Pass
	1.99225	-39.842	V	-13	Pass

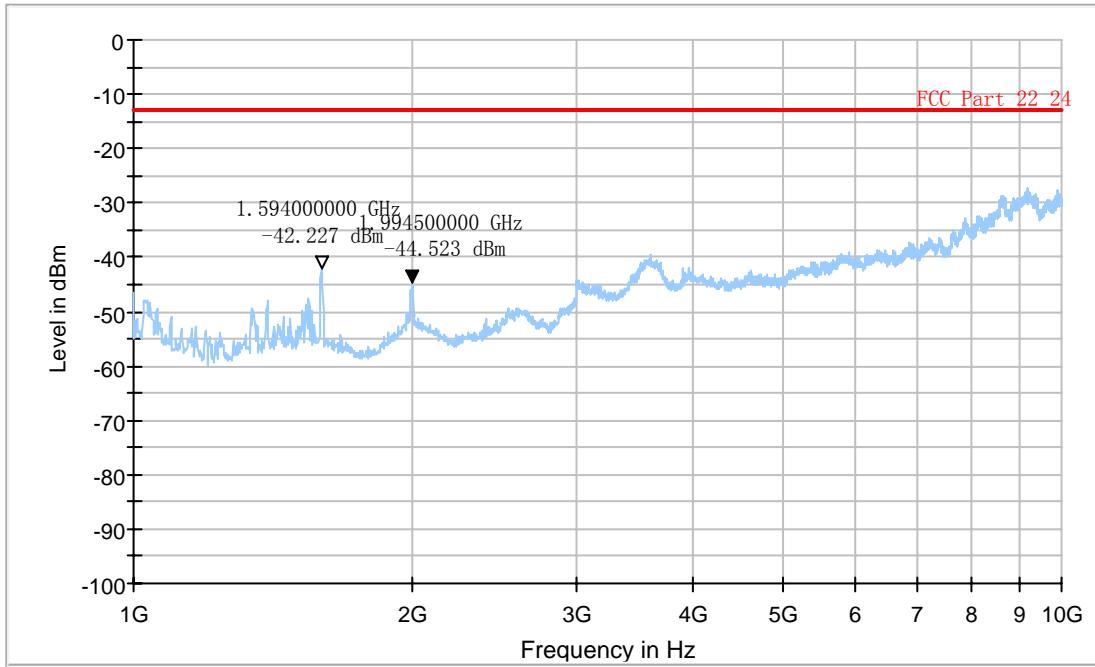
## 2.11.4 Test plots

### 1 Cellular CDMA2000 1x EV-DO Rev.0 (Horizontal)

FCC 22H 24E 30M~1G

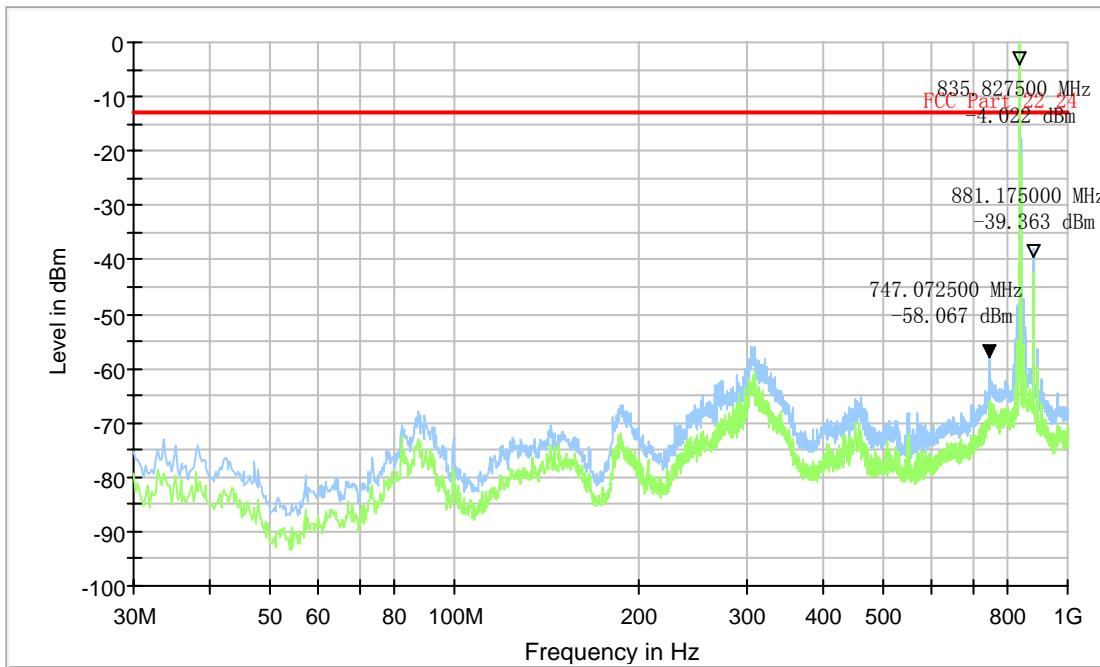


FCC Part 22H 24E 1-18G

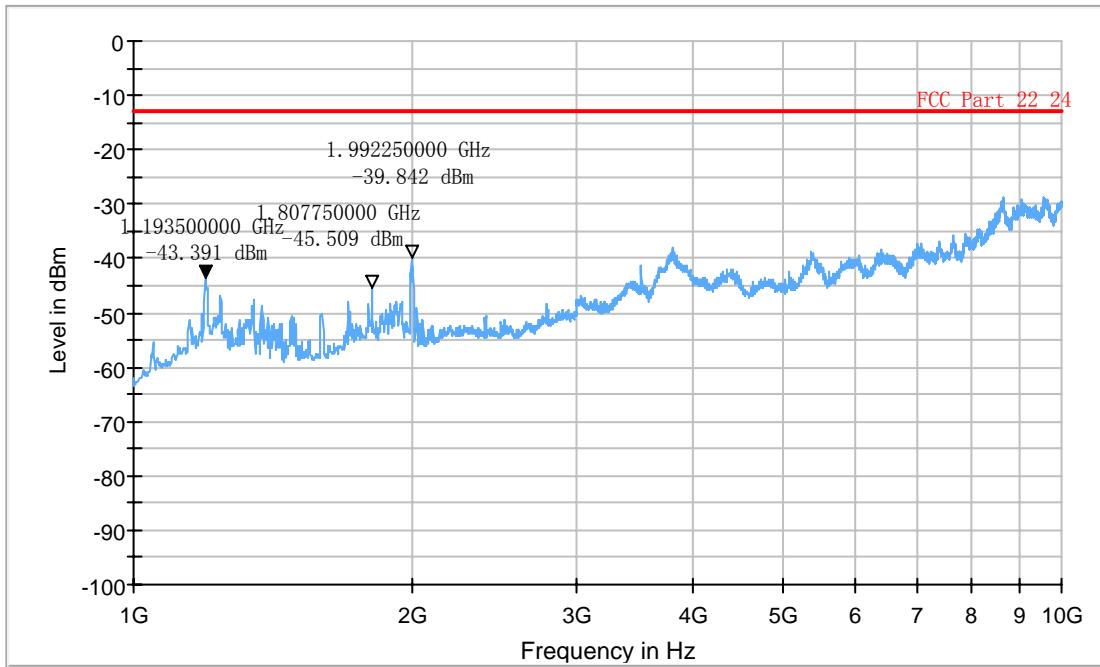


## 2 Cellular CDMA2000 1x EV-DO Rev.0 (Vertical)

FCC 22H 24E 30M~1G



FCC Part 22H 24E 1-18G



## 2.12 Frequency Stability

### 2.12.1 Frequency Stability Requirement

According to FCC §22.355, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

According to FCC §2.1055, the test conditions are:

- (a) Temperature:  
The temperature is varied from -30°C to +50°C at intervals of not more than 10°C.
- (b) Primary Supply Voltage:  
For hand carried battery powered equipment, the primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer. The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided.

### 2.12.2 Test Procedure

1. Perform test system setup as section 2.4.3.
2. Set the voltage of the DC Power Supply to normal supply voltage (here used 3.3V) and the temperature of the Temperature Chamber to vary from -30°C to +50°C at intervals of 10°C.
3. At each temperature level, the EUT is powered off and kept in the Temperature Chamber for two hours. After sufficient stabilization, turn on the EUT, command it via the System Simulator (SS) to operate at the maximum output power i.e. A communication link is established between the EUT and the SS.
4. The frequency deviation is measured (directly read from the SS, which can report the parameter) within three minutes.
5. Set the frequency range of the Spectrum Analyzer suitably to capture the waveform; search peak and mark it; finally record the peak and the plot.
6. Adjust the temperature of the Temperature Chamber as specified in step 2, then repeat step 3 to 7.
7. Set the voltage of the DC Power Supply to high extreme supply voltage (here used 3.6V) and the temperature of the Temperature Chamber to normal (here used +25°C), then repeat step 3 to 8.
8. Set the voltage of the DC Power Supply to low extreme supply voltage (here used 3.0V) and the temperature of the Temperature Chamber to normal (here used +25°C), then repeat step 3 to 8.

### 2.12.3 Test results

Band & Channel	Mode	Voltage (Volt)	Temperature (°C)	Dev. Freq. (Hz)	Deviation (ppm)	Limit (ppm)	Result
CDMA2000 Cellular CH384	1x EV-DO Rev.0 RTAP_153.6Kbps	3.7	-30	---	---	2.5	PASS
			-20	+3	0.00		
			-10	+1	0.00		
			0	-4	0.00		
			+10	+5	0.00		
			+20	-3	0.00		
			+30	-2	0.00		
			+40	-3	0.00		
			+50	+2	0.00		
			4.2	+25	-1		
			3.6	+25	+1		

**Note:**

1. The EUT stops transmitting at temperatures -30°C.
2. The manufacturer declared that the EUT could work properly between temperatures -20°C~55°C.

### 3. Test Equipments

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
System Simulator	Rohde&Schwarz	CMU200	105571	2009.11	1year
System Simulator	Anritsu	MT8820A	BE07218	2009.10	1year
System Simulator	Agilent	E5515C	GB46040102	2009.10	1year
Spectrum Analyzer	Rohde&Schwarz	FSU26	/	2009.10	1year
Spectrum Analyzer	Rohde&Schwarz	FSP30	101020	2009.10	1year
<i>EMI Test Receiver</i>	Rohde&Schwarz	<i>ESCI3</i>	100666	2009.10	1year
<i>Bi-Log Antenna</i>	Rohde&Schwarz	<i>HL562</i>	100385	2009.10	1year
<i>Horn Antenna</i>	Rohde&Schwarz	<i>HF906</i>	100565	2009.10	1year
Power Splitter	Weinschel	1506A	NW521	(n.a.)	(n.a.)
Power Splitter	HP	11667B	00164	(n.a.)	(n.a.)
Attenuator 1	Resnet	20dB	(n.a.)	(n.a.)	(n.a.)
Attenuator 2	Resnet	3dB	(n.a.)	(n.a.)	(n.a.)
Anechoic Chamber	ETS	9m*6m*6m	(n.a.)	(n.a.)	(n.a.)
Turn Table	ETS·LINDGREN	2188	(n.a.)	(n.a.)	(n.a.)
Antenna Tower	ETS·LINDGREN	2175	(n.a.)	(n.a.)	(n.a.)
Personal Computer	Lenovo	(n.a.)	(n.a.)	(n.a.)	(n.a.)
EMC Software	Rohde&Schwarz	EMC32	(n.a.)	(n.a.)	(n.a.)

NOTE:

1. Equipments listed above have been calibrated and are in the period of validation.

\*\* END OF REPORT \*\*