



47 CFR PART 15B, 22 H

# TEST REPORT

of

## CDMA 1X digital mobile phone

Model Name: ZTE C310  
Trade Name: ZTE  
Report No.: SZ08010040E01  
FCC ID: Q78-ZTEC310

*prepared for*

**ZTE CORPORATION**

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## TABLE OF CONTENTS

<b>1.</b>	<b>TEST RESULT CERTIFICATION .....</b>	<b>4</b>
<b>2.</b>	<b>GENERAL INFORMATION .....</b>	<b>5</b>
<b>2.1</b>	<b>Equipment under Test (EUT) Description .....</b>	<b>5</b>
<b>2.2</b>	<b>Test Standards and Results .....</b>	<b>6</b>
<b>2.3</b>	<b>Facilities and Accreditations .....</b>	<b>7</b>
2.3.1	Facilities .....	7
2.3.2	Test Equipments .....	7
2.3.3	Test Environment Conditions .....	8
<b>3.</b>	<b>47 CFR PART 15B REQUIREMENTS .....</b>	<b>9</b>
<b>3.1</b>	<b>General Information.....</b>	<b>9</b>
3.1.1	Test Mode.....	9
3.1.2	Test Setup .....	10
<b>3.2</b>	<b>Conducted Emission .....</b>	<b>12</b>
3.2.1	Requirement .....	12
3.2.2	Test Procedure .....	12
3.2.3	Test Result .....	13
<b>3.3</b>	<b>Radiated Emission .....</b>	<b>15</b>
3.3.1	Requirement .....	15
3.3.2	Test Procedure .....	15
3.3.3	Test Result .....	16
<b>4.</b>	<b>47 CFR PART 2, PART 22H REQUIREMENTS .....</b>	<b>18</b>
<b>4.1</b>	<b>General Information.....</b>	<b>18</b>
4.1.1	Conducted Related Tests .....	18
4.1.2	Radiated Power and Spurious Emission Tests .....	19
4.1.3	Frequency Stability Test.....	20
<b>4.2</b>	<b>Frequencies.....</b>	<b>21</b>
4.2.1	Requirement .....	21
4.2.2	Test Procedure .....	21
4.2.3	Test Result .....	21
<b>4.3</b>	<b>Conducted RF Output Power .....</b>	<b>23</b>

4.3.1	Requirement .....	23
4.3.2	Test Procedure .....	23
4.3.3	Test Result .....	23
<b>4.4</b>	<b>Occupied Bandwidth .....</b>	<b>26</b>
4.4.1	Occupied Bandwidth Definition .....	26
4.4.2	Test Procedure .....	26
4.4.3	Test Result .....	26
<b>4.5</b>	<b>Conducted Spurious Emission.....</b>	<b>29</b>
4.5.1	Requirement .....	29
4.5.2	Test Procedure .....	29
4.5.3	Test Result .....	30
<b>4.6</b>	<b>Transmitter Radiated Power (EIRP/ERP).....</b>	<b>35</b>
4.6.1	Requirement .....	35
4.6.2	Test Procedure .....	35
4.6.3	Test Result .....	35
<b>4.7</b>	<b>Radiated Spurious Emission.....</b>	<b>38</b>
4.7.1	Requirement .....	38
4.7.2	Test Procedure .....	38
4.7.3	Test Result .....	38
<b>4.8</b>	<b>Frequency Stability .....</b>	<b>40</b>
4.8.1	Frequency Stability Requirement.....	40
4.8.2	Test Procedure .....	40
4.8.3	Test Result .....	41
<b>I</b>	<b>PHOTOGRAPH OF THE TEST SETUP .....</b>	<b>42</b>
<b>II</b>	<b>PHOTOGRAPH OF THE EUT .....</b>	<b>44</b>

## 1. Test Result Certification

Equipment under Test: CDMA 1X digital mobile phone

Trade Name: ZTE  
Model Name: ZTE C310  
FCC ID: Q78-ZTEC310

Applicant: ZTE CORPORATION  
ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China

Manufacturer: ZTE CORPORATION  
ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China

Test Standards: 47 CFR Part 2  
47 CFR Part 15 Subpart B  
47 CFR Part 22 Subpart H

Test Result: PASS

### \* We Hereby Certify That:

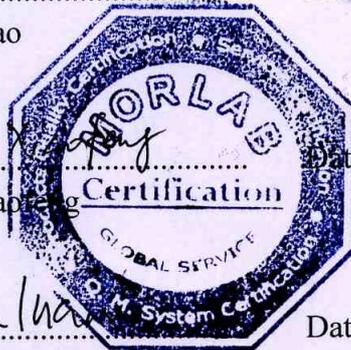
The equipment under test was tested by Shenzhen Morlab Communications Technology Co., Ltd. The test data, data evaluation, test procedures and equipment configurations shown in this report were made in accordance with the requirement of related FCC rules.

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: Luo Biao Dated: 2008.01.25  
Luo Biao

Reviewed by: Yao Xiaoping Dated: 2008.01.25  
Yao Xiaoping

Approved by: Shu Luan Dated: 2008.01.25  
Shu Luan



## 2. General Information

### 2.1 Equipment under Test (EUT) Description

Description .....: CDMA 1X Digital Mobile Phone  
Model Name .....: ZTE C310  
Serial No.....: N/A  
ESN.....: HEX 0X0071E609  
Hardware Version .....: ch1B  
Software Version .....: STDEN\_C310\_RBTN02NV1.0.0B04  
Emission Designator.....: 1M25F9W  
Modulation .....: CDMA 1X  
Frequency .....: Tx: 825.25-847.75MHz; Rx: 870.25-892.75MHz  
Power Supply: .....: Battery  
Brand name: ZTE  
Model Name: Li3710T42P3h553762-H  
Capacitance: 1000mAh  
Rated voltage: 3.7V  
Charge limited: 4.2V  
Manufacturer: ZTE CORPORATION  
Accessory Equipment:..... AC Adapter (Charger for Battery)  
Brand Name: ZTE  
Model Name: STC-A22o50U8-C  
Rated Input: ~ 100V-240V, 0.2A, 50/60Hz  
Rated Output: = 5V, 0.7A,  
Manufacturer: Shenzhen Ruide Electronic Industrial Co. Ltd.  
Wire Length: 190cm

#### NOTE:

1. The EUT is a model of CDMA 1X mobile station operating in Cellular band.
2. The normal configuration for the EUT is the Mobile Phone (MS) associated with ancillary equipments e.g. the Battery and/or the AC Adapter (Charger).
3. For detailed features about the EUT, please see user manual supplied by the applicant.



## 2.2 Test Standards and Results

The objective of the report is to perform tests according to 47 CFR Part 2, Part 15 Part 22 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 15 (10-1-05 Edition)	Radio Frequency Devices
3	47 CFR Part 22 (10-1-05 Edition)	Public Mobile Services

Test detailed items and the results are as below:

No.	Rules	Test Type	Result	Date of Test
FCC Part 15 Requirement				
1	§15.107	Conducted Emissions	PASS	2008-1-19
2	§15.109	Radiated Emissions	PASS	2008-1-19
FCC Part 22 Requirement				
1	§2.106 §22.905	Frequencies	PASS	2008-1-24
2	§2.1046	Conducted RF Output Power at Antenna Terminal	PASS	2008-1-24
3	§2.1049	Occupied Bandwidth	PASS	2008-1-24
4	§2.1051 §2.1057 §22.917	Conducted Spurious Emission at Antenna Terminal	PASS	2008-1-24
5	§22.913	Transmitter Radiated Power (EIPR/ERP)	PASS	2008-1-24
6	§2.1053 §2.1057 §22.917	Radiated Spurious Emission	PASS	2008-1-24
7	§2.1055 §22.355	Frequency Stability	PASS	2008-1-24

## 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 Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is CNAS L1659.

All measurement facilities used to collect the measurement data are located at Electronic Testing Building, Shahe Road, Xili, Nanshan District, Shenzhen, P. R. China. The site was 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 Equipments

No.	Description	Specification	Cal. Date	Cal. Due
1	System Simulator	Manufacturer: Agilent Model No.: E5515C Serial No.: GB43130131	2007.06	1year
2	Spectrum Analyzer	Manufacturer: Agilent Model No.: E7405A Serial No.: US44210471	2007.07	1year
3	Telecommunication Antenna	Manufacturer: European Antennas Model No.: PSA-45010R/356 Serial No.: 403688-001	2007.07	1year
4	Trilogy Antenna	Manufacturer: Schwarzbeck Model No.: VULB 9163 Serial No.: 9163-274	2007.07	1year
5	Horn Antenna	Manufacturer: Schwarzbeck Model No.: BBHA 9120C Serial No.: 9120C-384	2007.07	1year
6	Power Splitter	Manufacturer: WEINSCHTEL Model No.: 1506A Serial No.: NW521	2007.07	1year
7	Anechoic Chamber	Manufacturer: Albatross Projects GmbH	2006.08	2year
8	DC Power Supply	Manufacturer: Good Will Instrument Co., Ltd.	2007.07	1year
9	Temperature Chamber	Manufacturer: Chongqing YinHe Experimental Equip. Co., Ltd.	2007.07	1year

NOTE:

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

### 2.3.3 Test Environment Conditions

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

Temperature:	20 - 25°C
Relative Humidity:	40 - 50%
Atmospheric Pressure:	86-106kPa

### **3. 47 CFR Part 15B Requirements**

#### **3.1 General Information**

##### **3.1.1 Test Mode**

The test modes of the EUT are showed as below:

(1) Call Mode:

The EUT configuration of the emission tests was MS + Battery + Charger.

Before the measurement, the lithium battery was completely discharge.

During the measurement, the lithium battery was installed into the MS, and the charger was connected to the MS. A communication link was established between the MS and a System Simulator (SS).

(2) Idle Mode:

The EUT configuration of the emission tests was MS + Battery + Charger.

Before the measurement, the lithium battery was completely discharge.

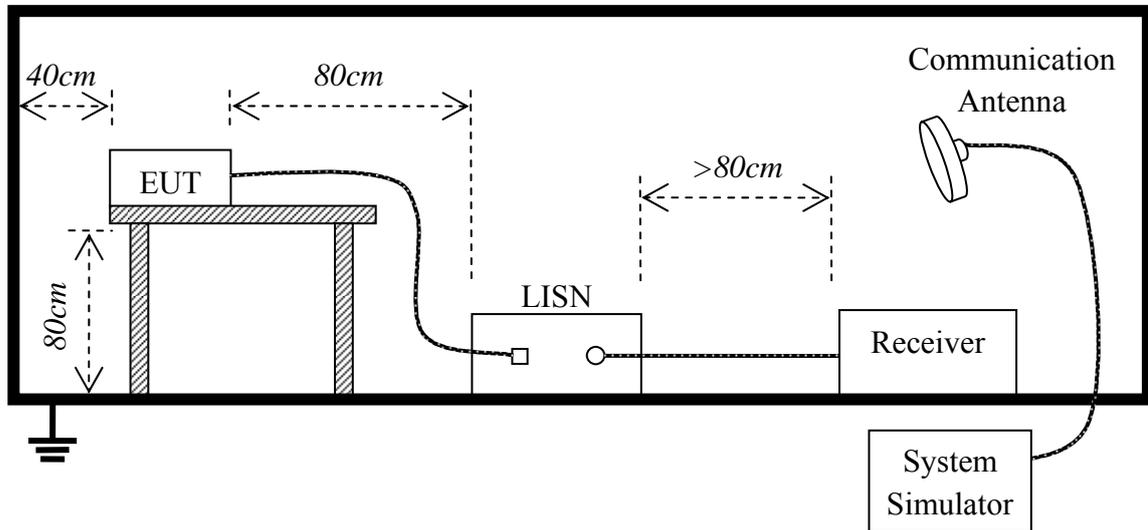
The MS was registered to the base station simulator but no call was set up.

NOTE:

1. All test modes are performed, only the worst cases are recorded in this report.

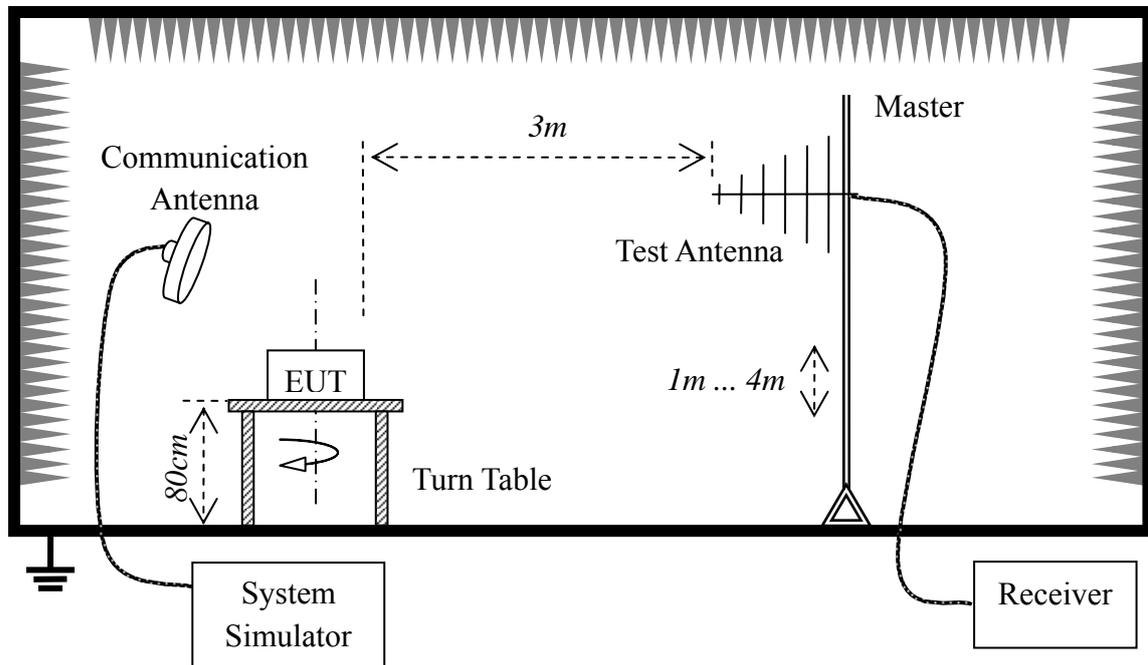
### 3.1.2 Test Setup

#### 3.1.2.1 Conducted Emission Test



1. The test is performed in a Shield Room; the factors of the test system are calibrated to correct the reading.
2. The EUT is placed on a 0.8 meters high insulating table and keeps 0.4 meters away from the conducting wall of the Shield Room.
3. The EUT is connected to the power mains through a Line Impedance Stabilization Network (LISN). The LISN provides  $50\Omega/50\mu\text{H}$  of coupling impedance for the measuring instrument.

### 3.1.2.2 Radiated Emission Test



1. The test is performed in a Semi-anechoic Chamber; the factors of the test system are calibrated to correct the reading.
2. The EUT is placed on a 0.8 meters high insulating table and keeps 3 meters away from the tri-axial Test Antenna, which is mounted on the top of a variable-height antenna Master tower.

## 3.2 Conducted Emission

### 3.2.1 Requirement

According to FCC §15.107, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50 $\mu$ H/50 $\Omega$  line impedance stabilization network (LISN).

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

NOTE:

1. The limit subjects to the Class B digital device.
2. The lower limit shall apply at the band edges.
3. The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.

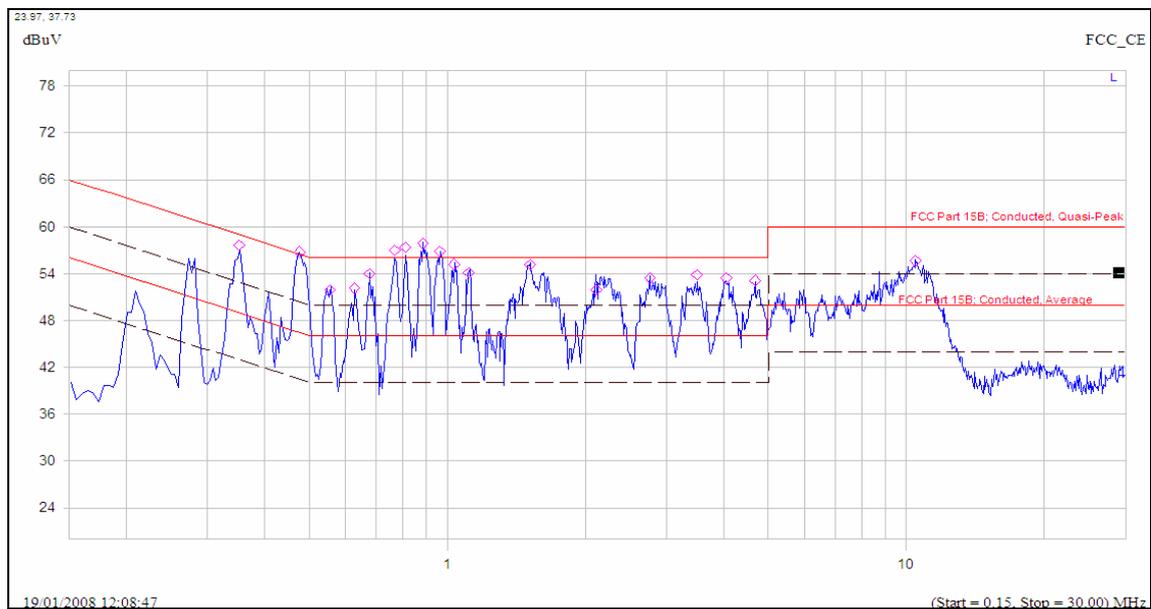
### 3.2.2 Test Procedure

1. Perform test setup as described in section 3.1.2.1.
2. Each test mode in section 3.1.1 should be applied. At each test mode, the frequency range from 150 kHz to 30MHz is searched using the CISPR Quasi-Peak and/or the Average detector of the Receiver. If the emission levels measured with Quasi-Peak detector are lower than the Average Limit, it's not necessary to measure with Average detector.
3. The emission levels at both L phase and N phase should be tested.
4. Record the test result plot and distinct points.
5. In the test report show the worst test data.

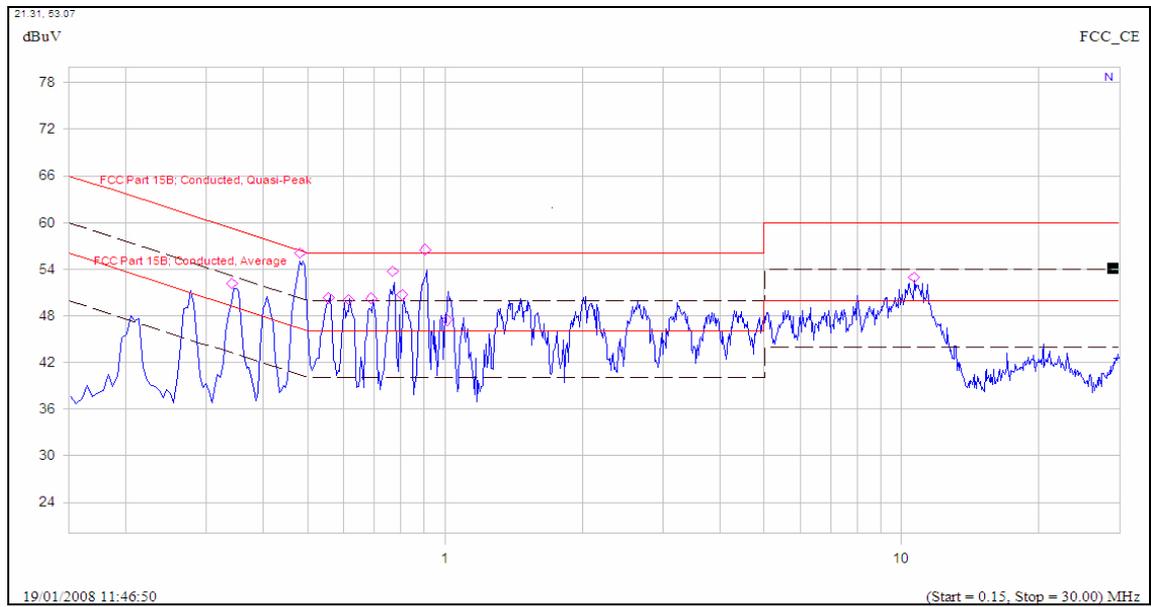
### 3.2.3 Test Result

No.	@Frequency (MHz)	Measured Emission Level (dBμV)				Limit (dBμV)		Verdict
		PK	QP	AV	Phase	QP	AV	
1	0.476	56.7	53.6	45.3	L	56.4	46.4	PASS
2	0.768	57.0	52.5	42.2	L	56.0	46.0	PASS
3	0.809	57.4	54.0	39.0	L	56.0	46.0	PASS
4	0.884	57.8	54.6	43.8	L	56.0	46.0	PASS
5	0.961	56.9	54.1	41.3	L	56.0	46.0	PASS
6	1.034	55.2	51.3	41.7	L	56.0	46.0	PASS
7	0.555	50.3	47.7	37.8	N	56.0	46.0	PASS
8	0.690	50.2	47.1	36.8	N	56.0	46.0	PASS
9	0.767	53.7	50.6	39.7	N	56.0	46.0	PASS
10	0.904	56.5	52.9	41.9	N	56.0	46.0	PASS
11	1.012	47.4	42.8	32.9	N	56.0	46.0	PASS
12	10.653	52.9	47.8	38.6	N	60.0	50.0	PASS

1. Plot for L Phase:



2. Plot for N Phase:



### 3.3 Radiated Emission

#### 3.3.1 Requirement

According to FCC §15.109, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency range (MHz)	Field Strength	
	$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

NOTE:

1. Field Strength ( $\text{dB}\mu\text{V/m}$ ) =  $20 \cdot \log[\text{Field Strength } (\mu\text{V/m})]$ .
2. In the emission tables above, the tighter limit applies at the band edges.

#### 3.3.2 Test Procedure

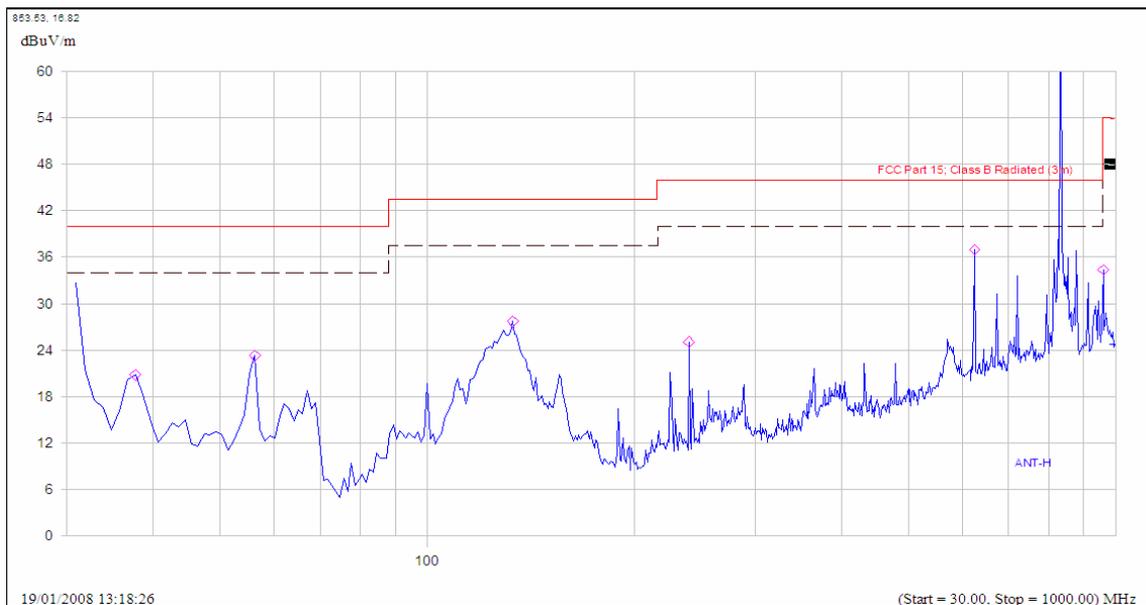
1. Perform test setup as described in section 3.1.2.2.
2. Each test mode in section 3.1.1 should be applied. At each test mode, the Turn Table turns from 0 degrees to 360 degrees to find the maximum reading; for the suspected points, the Test Antenna varies from 1 meter to 4 meters to determine the maximum value of the field strength.
3. The Receiver is set to Peak Detector function and specified bandwidth with maximum hold mode. If the emission level of the EUT in peak mode is 6dB lower than the limit specified, then testing could be stopped and the peak values would be reported; otherwise the emission less than 6dB margins would be retested one by one using the quasi-peak method.
4. The emission levels at both horizontal and vertical polarizations should be tested.
5. Record the test result plot and distinct points.
6. In the test report show the worst test data.

### 3.3.3 Test Result

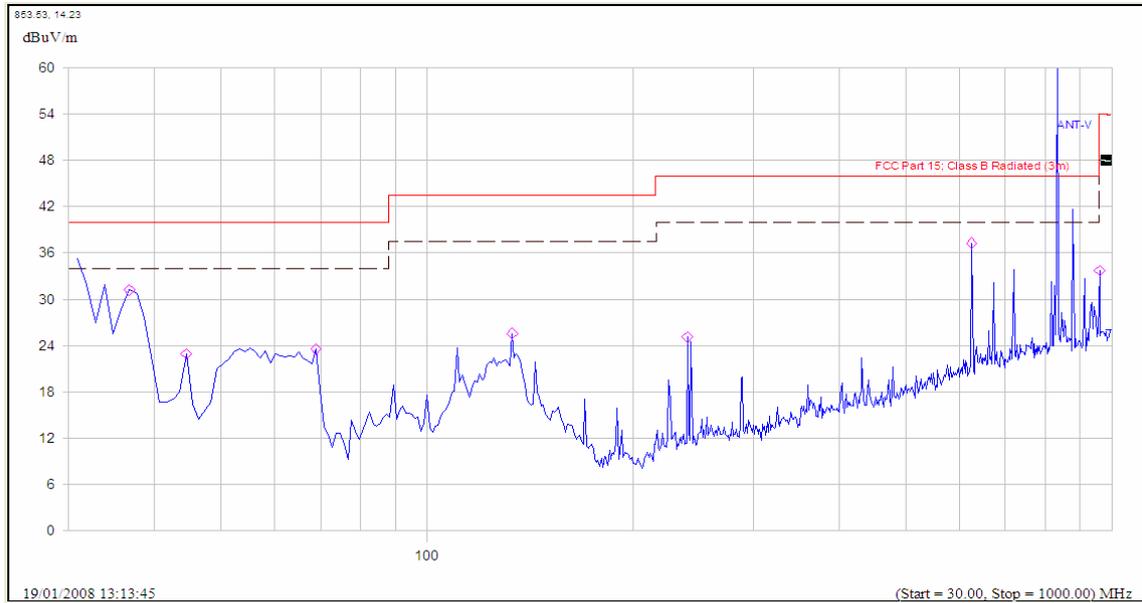
No.	Frequency (MHz)	Emission Level (dB $\mu$ V/m)			Quasi-Peak Limit (dB $\mu$ V/m)	Result
		Peak	Quasi-Peak	Antenna Polarization		
1	36.766	31.2	--	Vertical	< 40.0	PASS
2	133.192	25.6	--	Vertical	< 43.5	PASS
3	625.062	37.2	--	Vertical	< 46.0	PASS
4	56.246	23.3	--	Horizontal	< 40.0	PASS
5	133.192	27.7	--	Horizontal	< 43.5	PASS
6	240.332	25.0	--	Horizontal	< 46.0	PASS
7	625.062	37.0	--	Horizontal	< 46.0	PASS

Following is the plots for emission measurement; please note that marked spikes with circle should be ignored because they are MS and SS carrier frequency.

- Plot when Test Antenna at Horizontal Polarization:



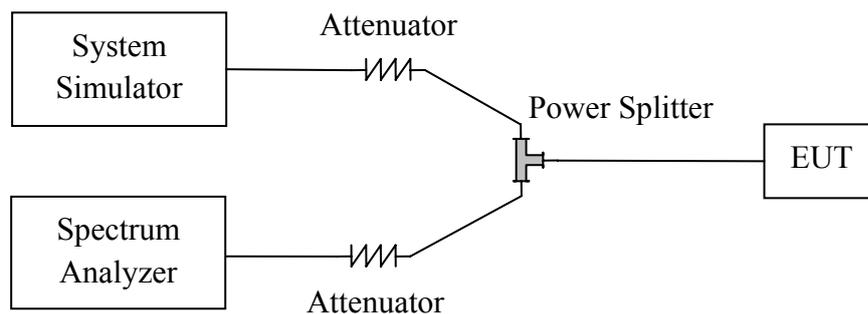
2. Plot when Test Antenna at Vertical Polarization:



## 4. 47 CFR Part 2, Part 22H Requirements

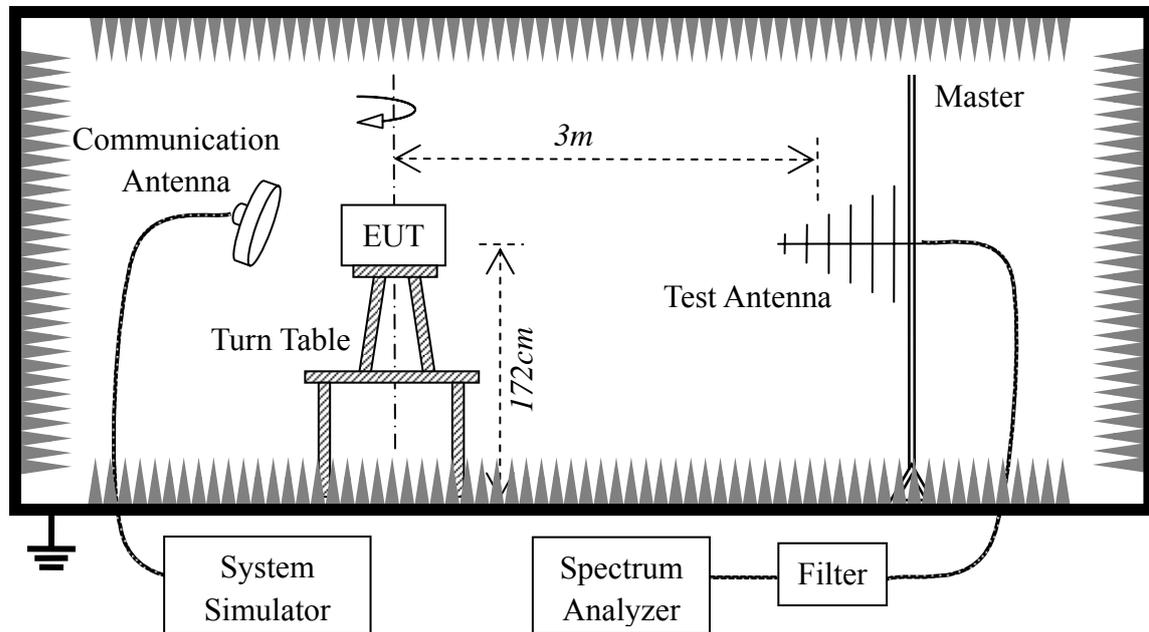
### 4.1 General Information

#### 4.1.1 Conducted Related Tests



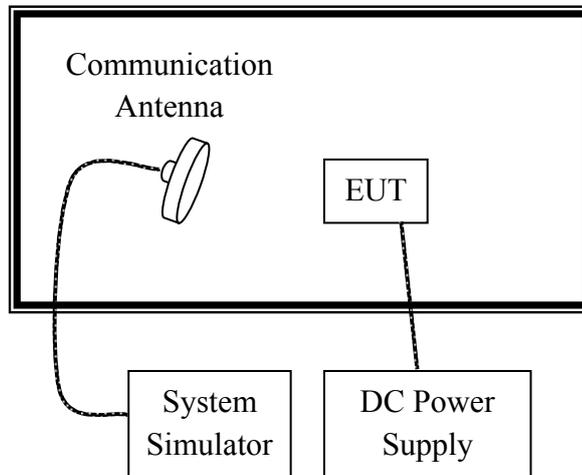
1. The EUT is coupled to the Spectrum Analyzer and the System Simulator with the suitable Attenuators through the Power Splitter; the path loss is calibrated to correct the reading.
2. The EUT is configured here as MS + Battery.
3. The EUT is commanded via the System Simulator (SS) to operate at the 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.

#### 4.1.2 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 MS + Battery.
3. The EUT is placed on the vertical axis of a Turn Table 1.72 meters above the ground.
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.

### 4.1.3 Frequency Stability Test



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

## 4.2 Frequencies

### 4.2.1 Requirement

According to FCC §22.905, the frequencies blocks assignment for the Cellular Radiotelephone 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

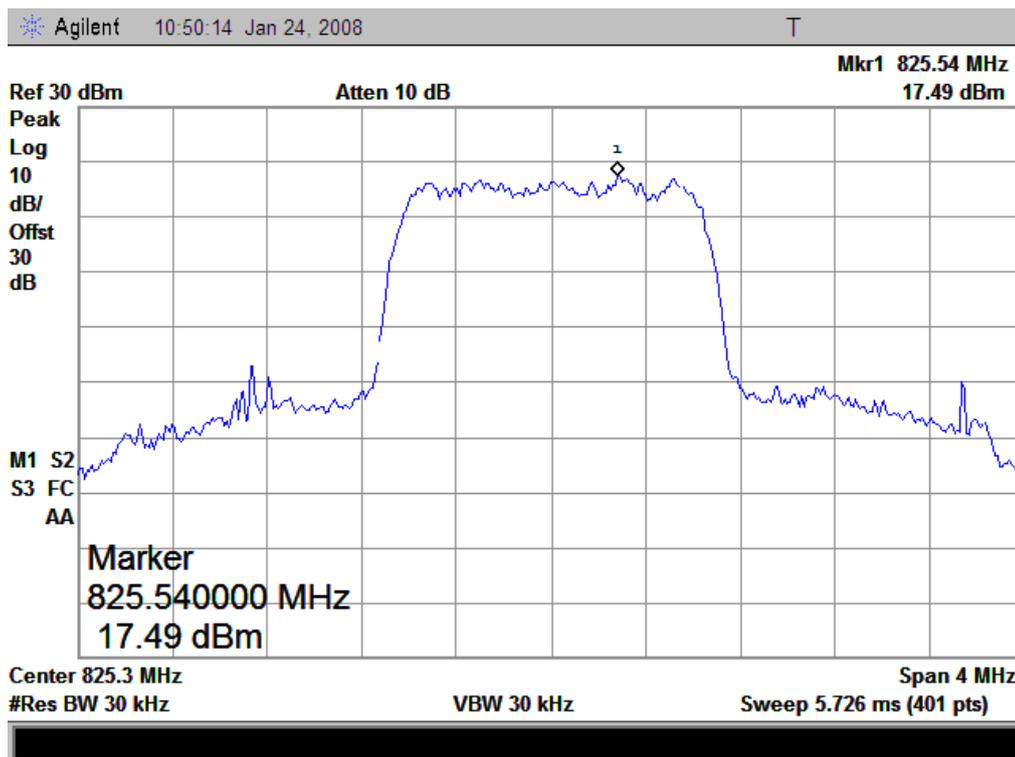
### 4.2.2 Test Procedure

1. Perform test system setup as section 4.1.1.
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 transmitter frequency arrangement of the Cellular 850MHz band employed by the EUT should be from 825.27MHz to 847.74MHz. The lowest and the highest channel were selected to perform tests respectively. Set the TCH number to 9.
4. Set the Spectrum Analyzer suitably to capture the waveform, search peak and mark, and then record the plot.
5. Set the TCH number to 758, then repeat step 5.

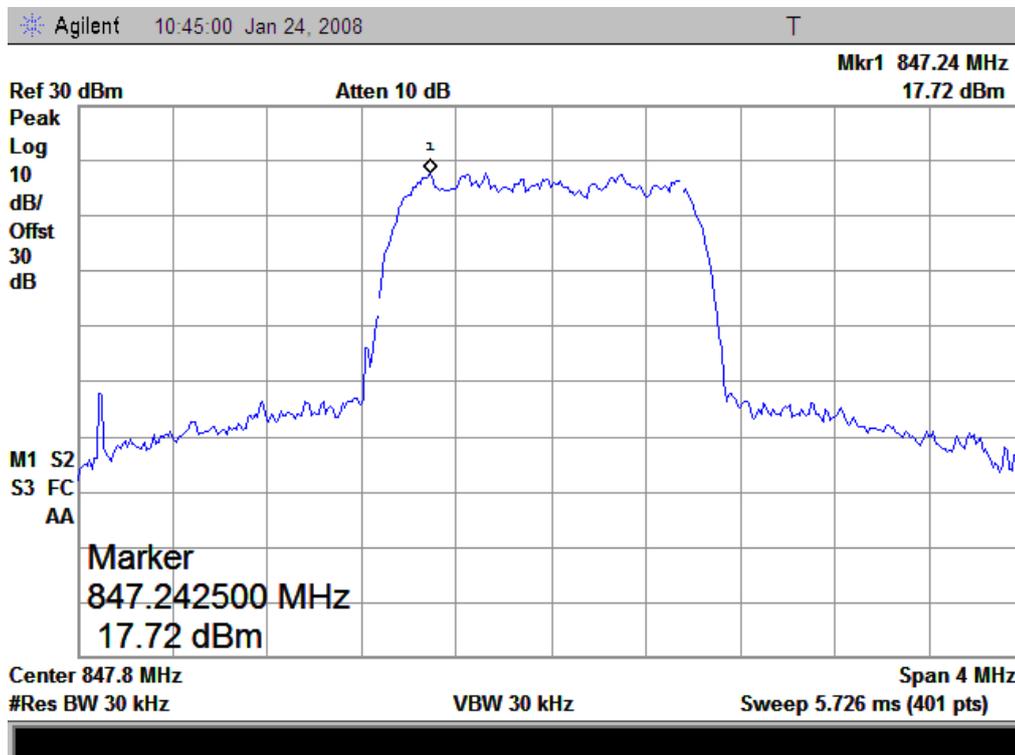
### 4.2.3 Test Result

The frequencies of the lowest channel and the highest channel are as the following figures.

1. Plot when the TCH number set to 9:



2. Plot when the TCH number set to 758:



### 4.3 Conducted RF Output Power

#### 4.3.1 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.

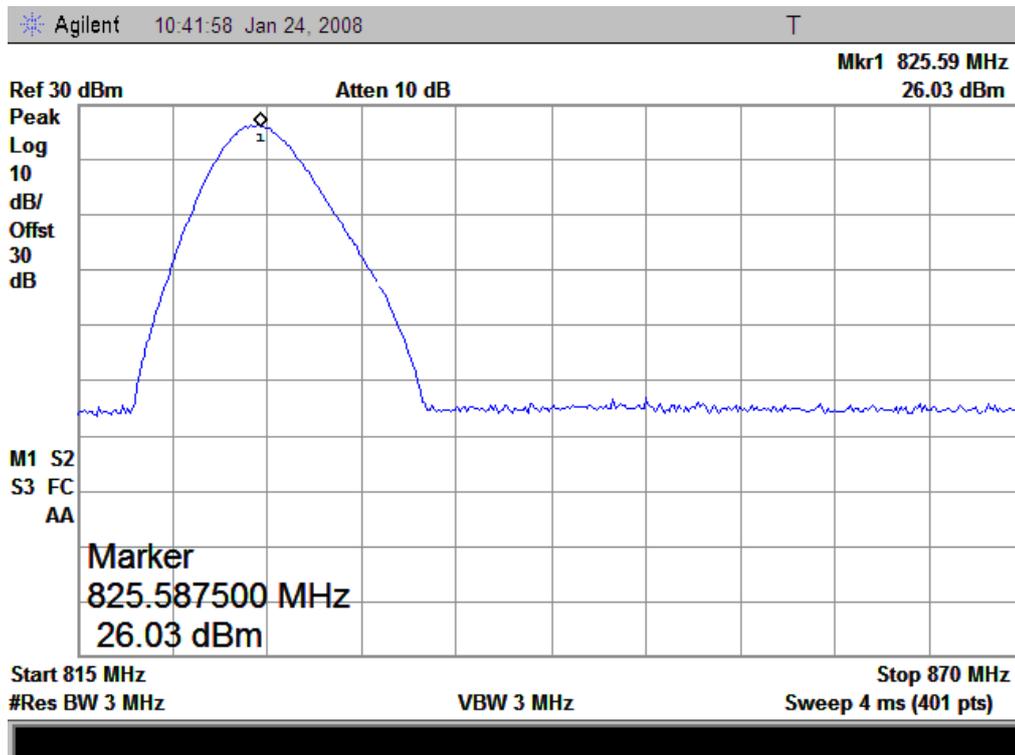
#### 4.3.2 Test Procedure

1. Perform test system setup as section 4.1.1 (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):  $RBW=VBW=1MHz$ , for CDMA modulated signal:  $RBW=VBW=3MHz$ .
3. The low, middle and the high channels are selected to perform tests respectively. Set the TCH number to 9 as the low channel.
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.
5. Set the TCH number to 384 as the middle channel, then repeat step 4.
6. Set the TCH number to 758 as the high channel, then repeat step 4.

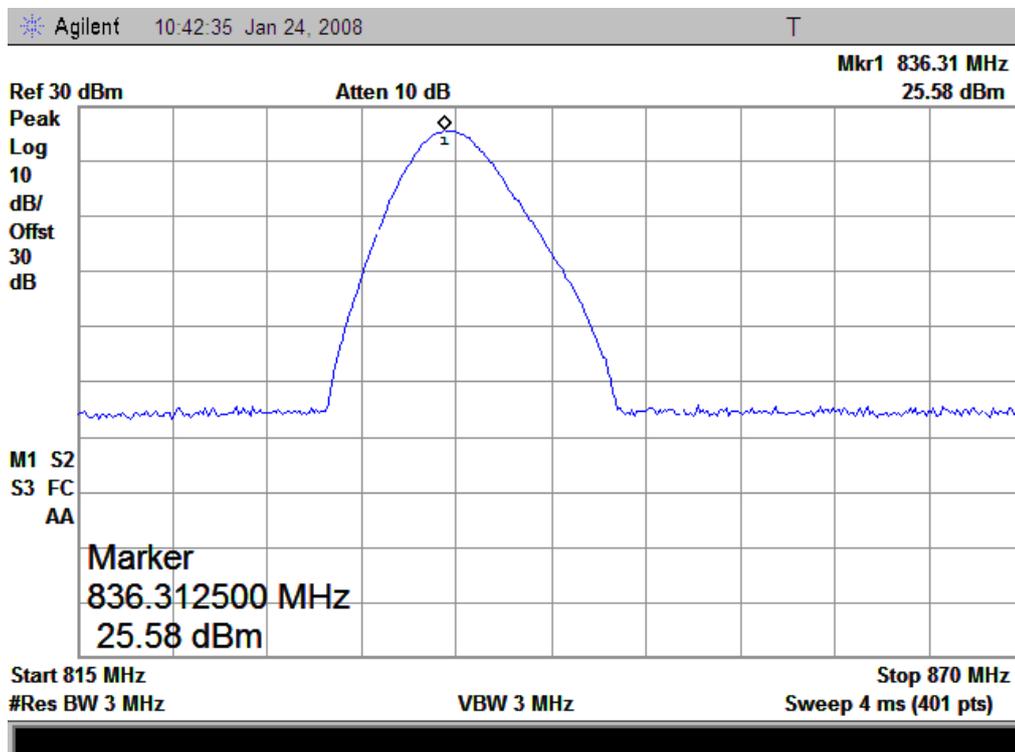
#### 4.3.3 Test Result

No.	Channel Number	Frequency (MHz)	Measured Power		Rated Power	
			dBm	W	dBm	W
1	9	825.27	26.03	0.401	33	2
2	384	836.52	25.58	0.361	33	2
3	758	847.74	26.15	0.412	33	2

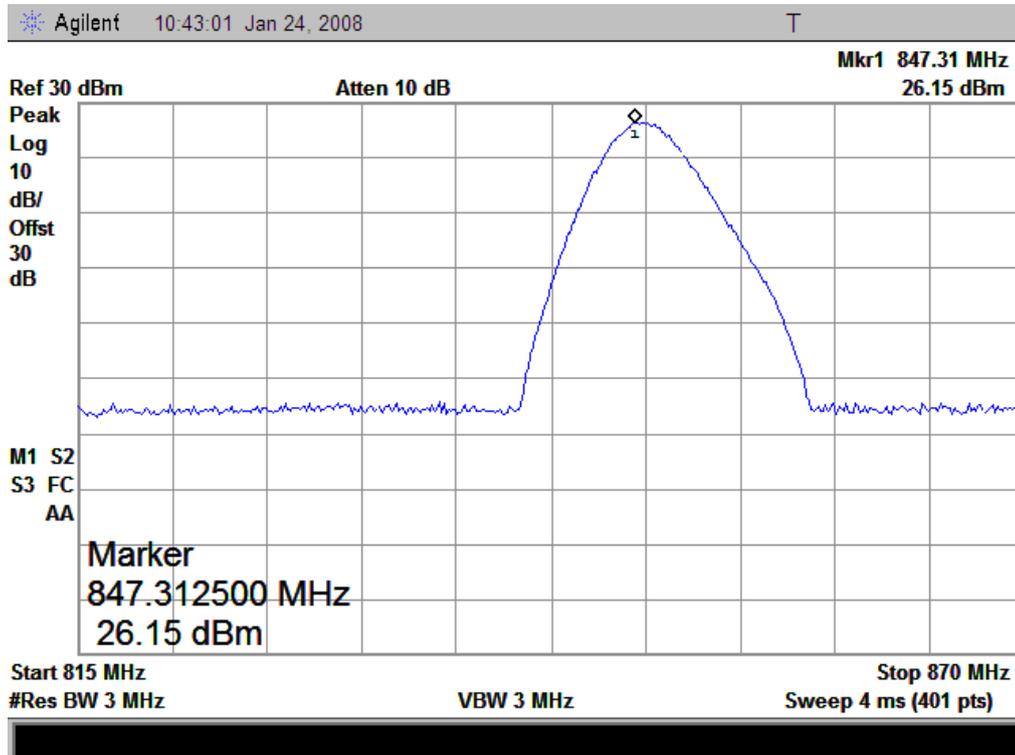
1. Plot when the TCH number set to 9:



2. Plot when the TCH number set to 384:



3. Plot when the TCH number set to 758:



## 4.4 Occupied Bandwidth

### 4.4.1 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.

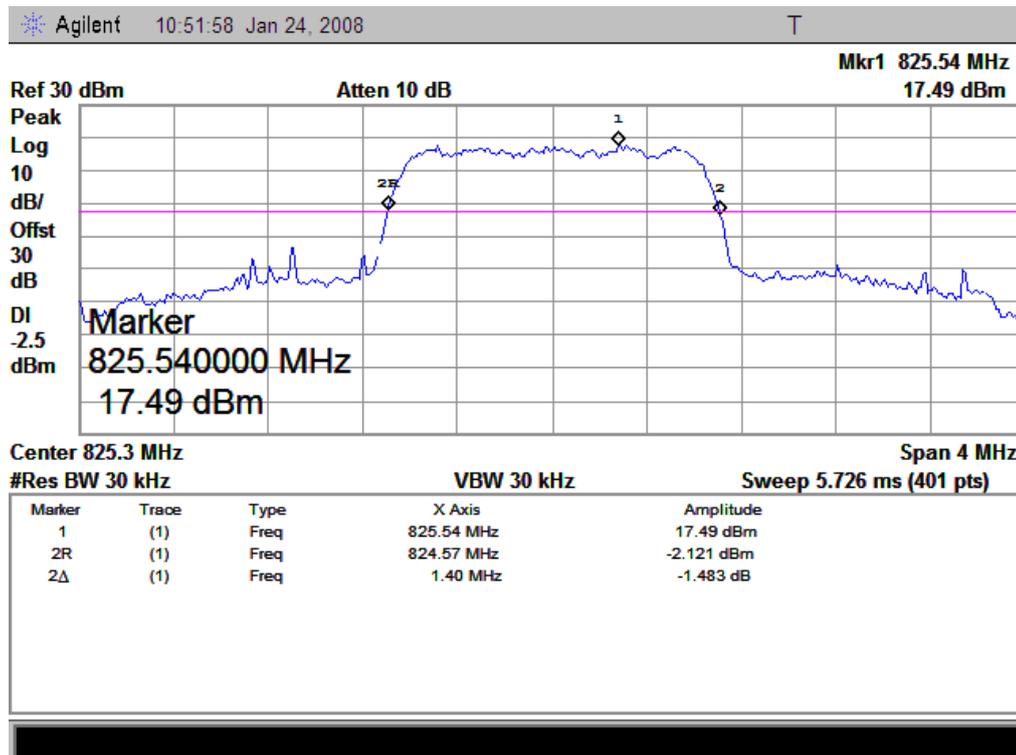
### 4.4.2 Test Procedure

1. Perform test system setup as section 4.1.1.
2. The resolution bandwidth of the Spectrum Analyzer is set to at least one percent of the emission bandwidth, e.g. for GSM modulated signal (here used):  $RBW=VBW=3kHz$ , for CDMA modulated signal:  $RBW=VBW=30kHz$ .
3. The low, middle and the high channels are selected to perform tests respectively. Set the TCH number to 9 as the low channel.
4. Set the frequency range of the Spectrum Analyzer suitably to capture the waveform; search peak; make a line whose value is 26dB lower than the peak; mark two points which the line intersected the waveform at; finally record the delta of the two points as the occupied bandwidth and the plot.
5. Set the TCH number to 384 as middle channel, then repeat step 4.
6. Set the TCH number to 758 as high channel, then repeat step 4.

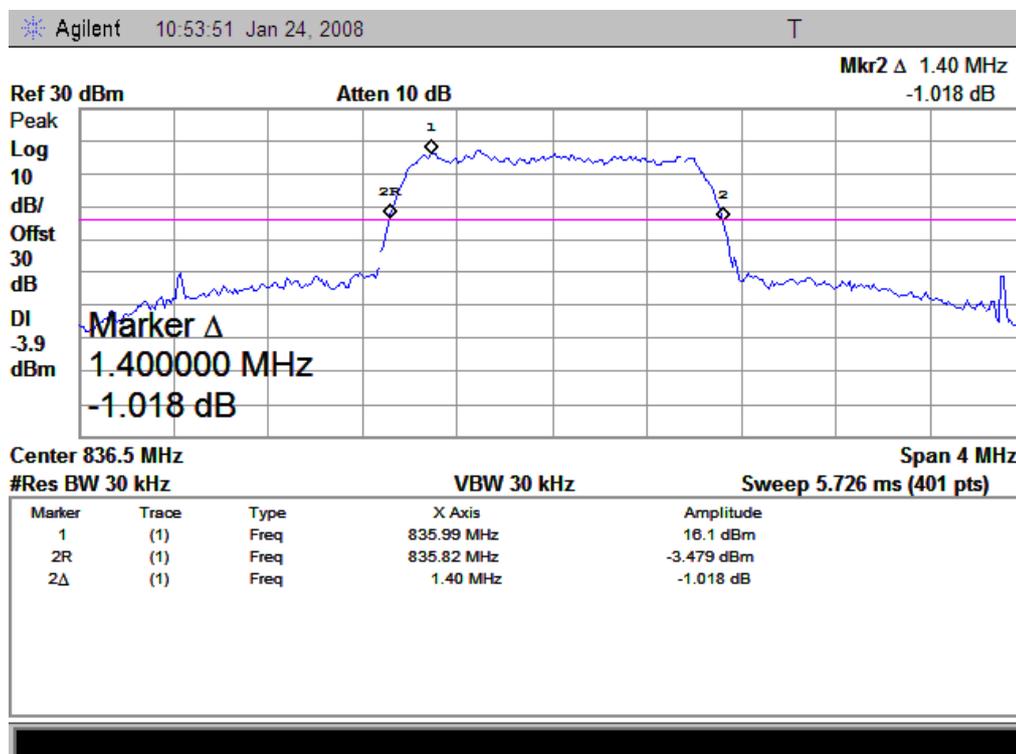
### 4.4.3 Test Result

No.	Channel Number	Frequency (MHz)	Measured Occupied Bandwidth (MHz)
1	9	825.27	1.40
2	384	836.52	1.40
3	758	847.74	1.40

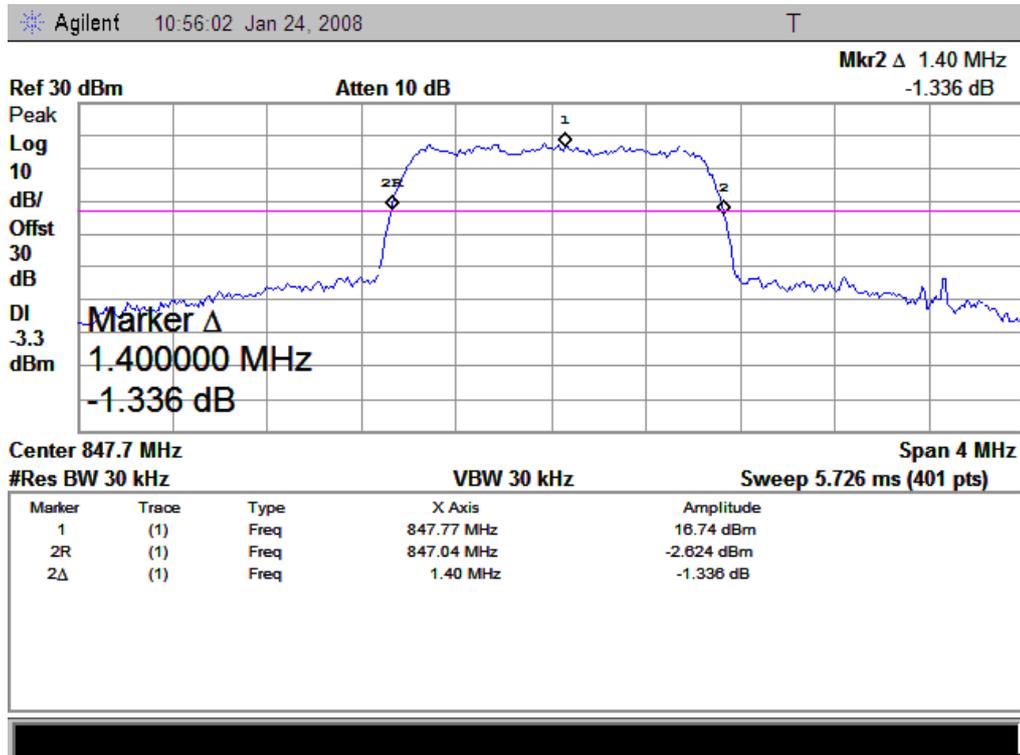
1. Plot when the TCH number set to 9:



2. Plot when the TCH number set to 384:



3. Plot when the TCH number set to 758:



## **4.5 Conducted Spurious Emission**

### **4.5.1 Requirement**

According to FCC §22.917(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 (a), 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.

### **4.5.2 Test Procedure**

1. Perform test system setup as section 4.1.1.
2. Make a limit line whose value is -13dBm on the Spectrum Analyzer.
3. The lowest, middle and the highest channels are selected to perform tests respectively. Set the TCH number to 9 as the lowest channel.
4. 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.
5. 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=30kHz.
6. Set the TCH number to 384 as the middle channel, then repeat step 4.
7. Set the TCH number to 758 as the highest channel, then repeat step 4 and 5.

### 4.5.3 Test Result

#### 4.5.3.1 Table for the Harmonics and Plots for the Spurious Emission

1. Table for the Harmonics:

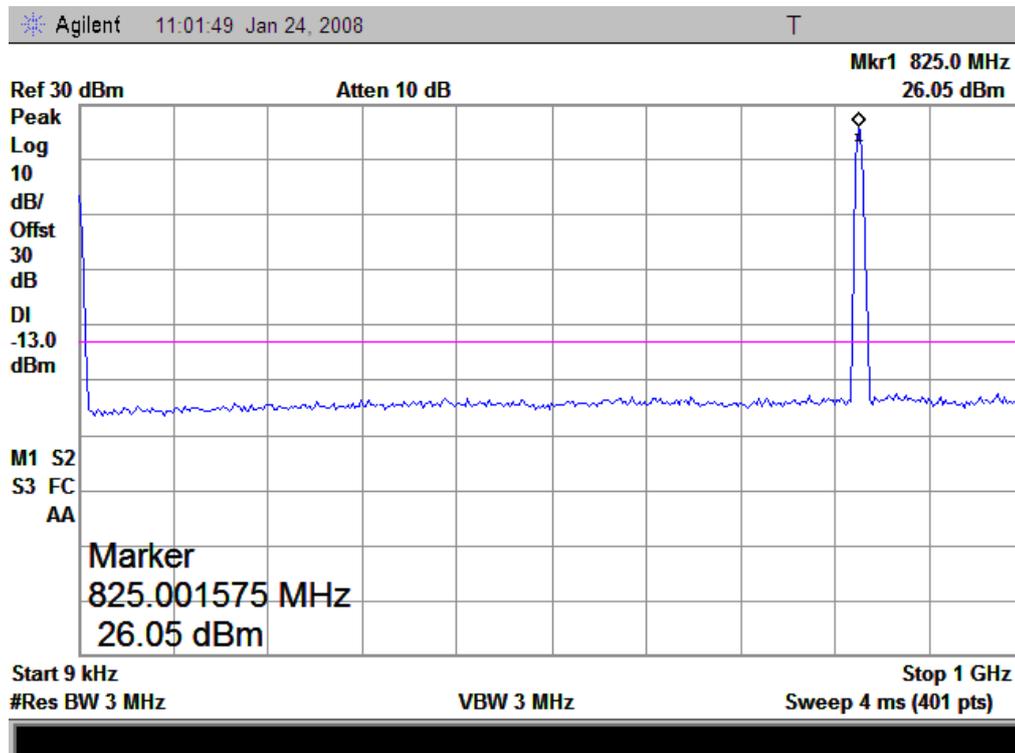
No.	Channel	Frequency(MHz )	Measured Max Spurious Emission(dBm)	Limit(dBm)
1.	9	825.27	<-20	-13
2.	384	836.52	<-20	-13
3.	758	847.74	<-20	-13

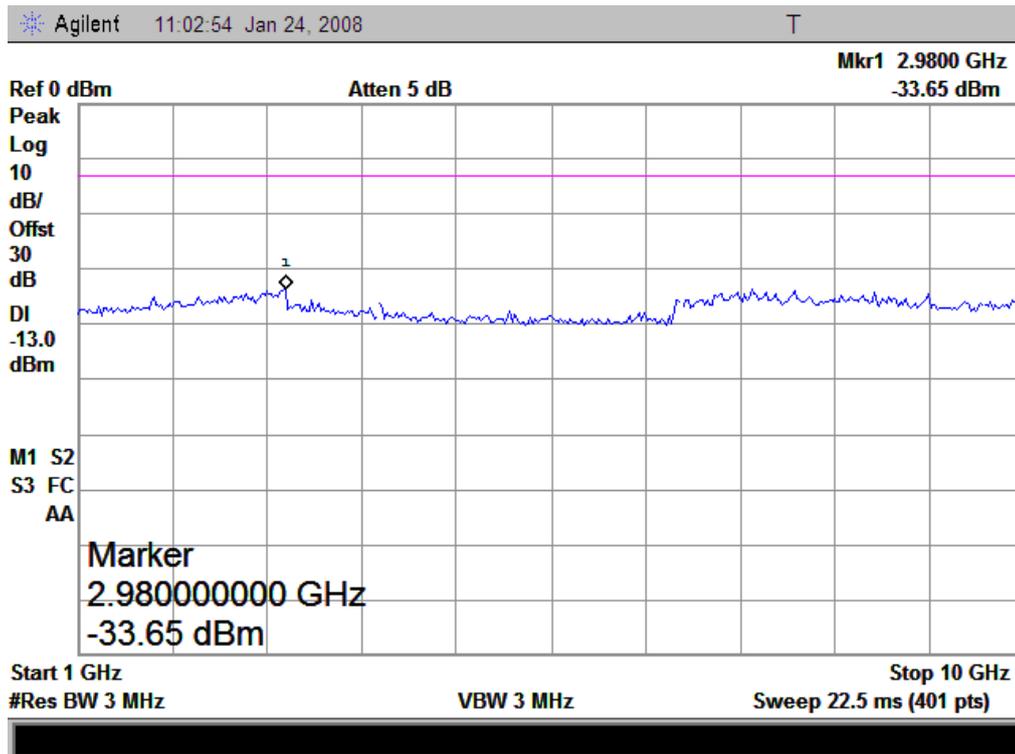
2. Plot for Spurious Emission:

The measuring frequency range was from 9kHz to 10GHz.

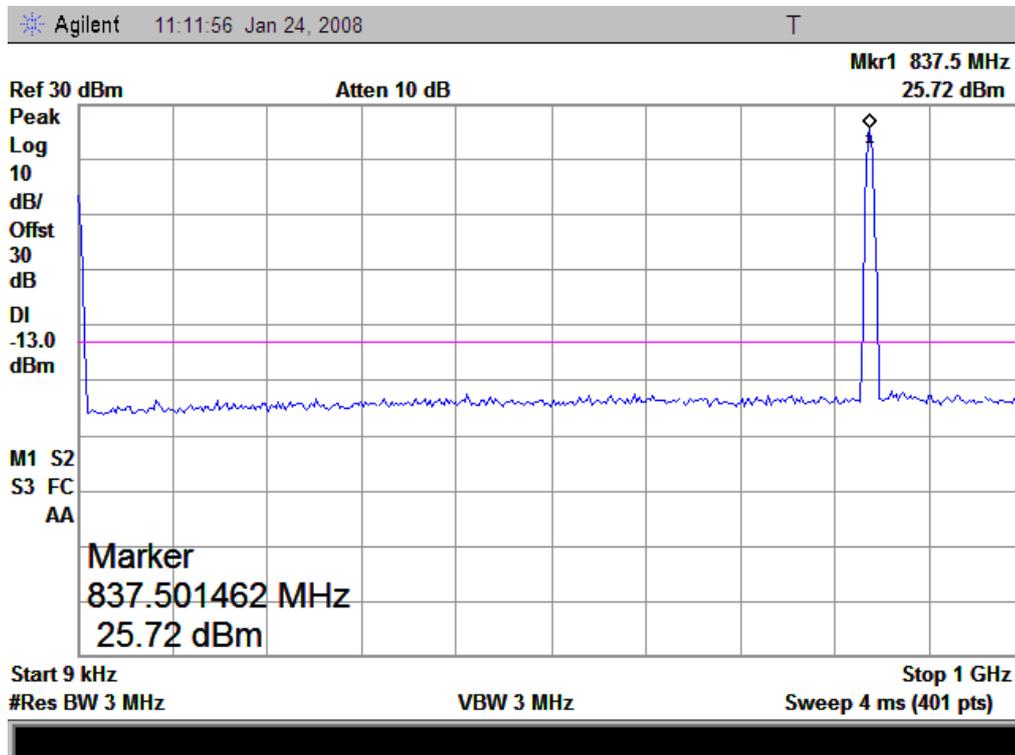
NOTE: The marker points are the Mobile Phone and/or System Simulator transmitting frequencies which should be ignored.

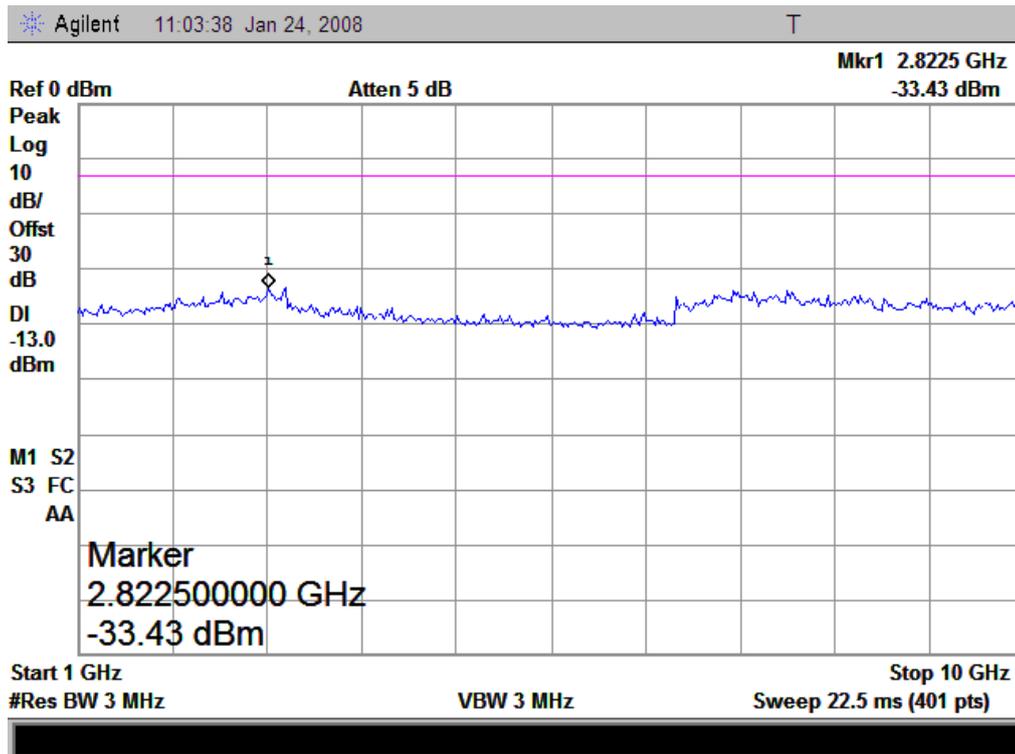
2.1 Plot when the TCH number set to 9:



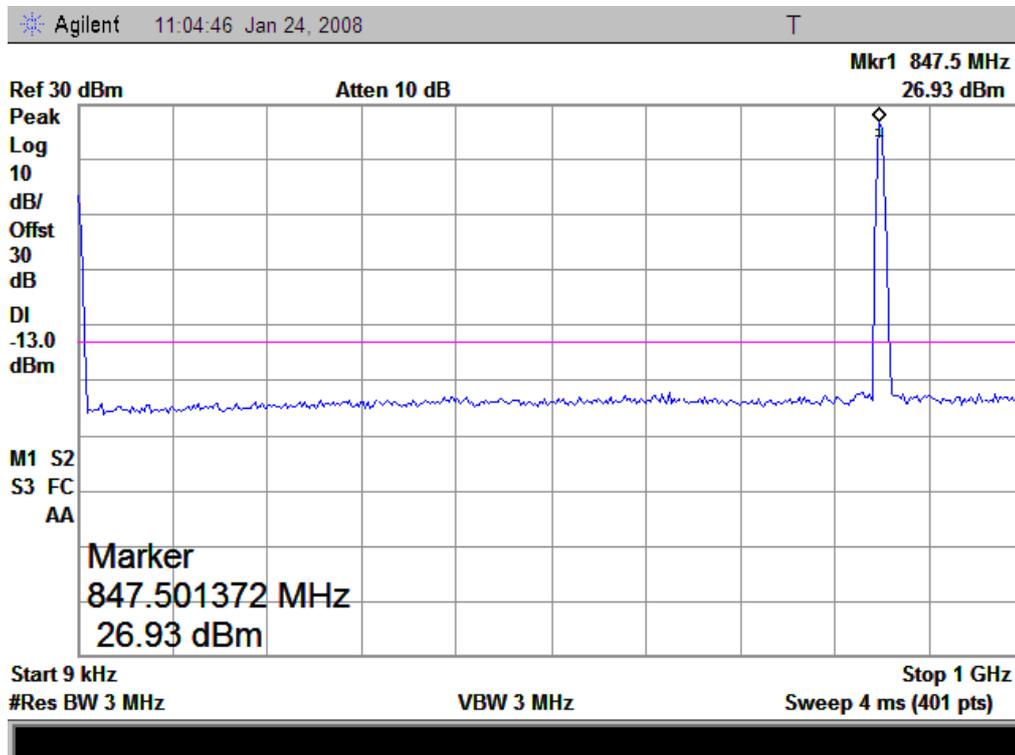


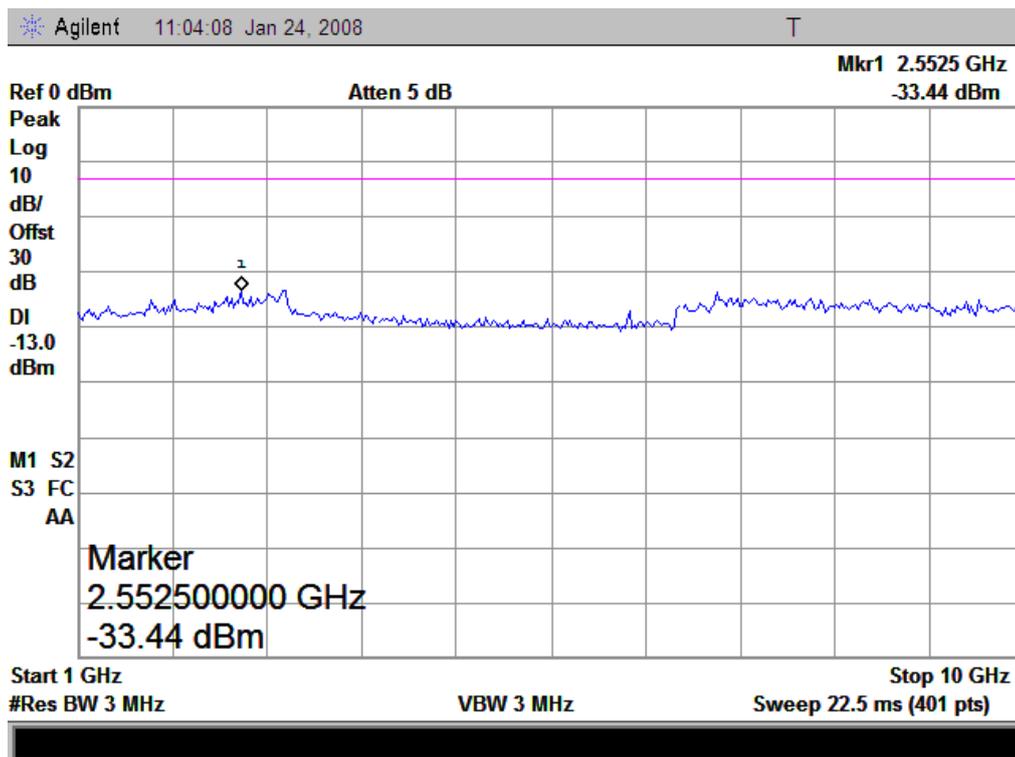
2.2 Plot when the TCH number set to 384:





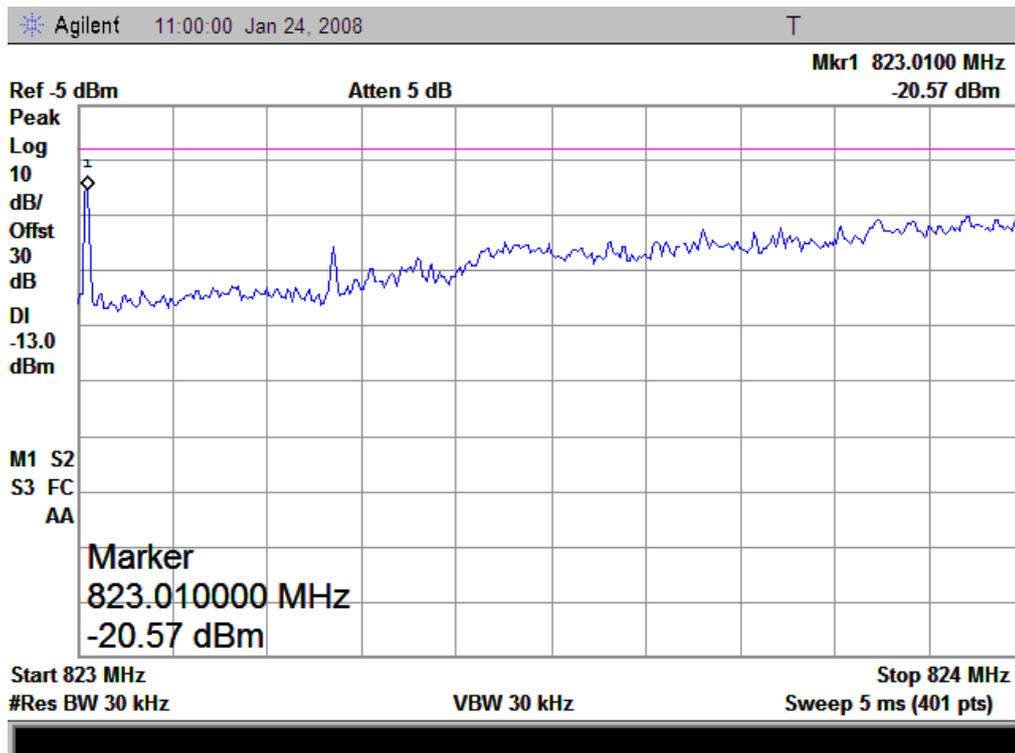
2.3 Plot when the TCH number set to 758:



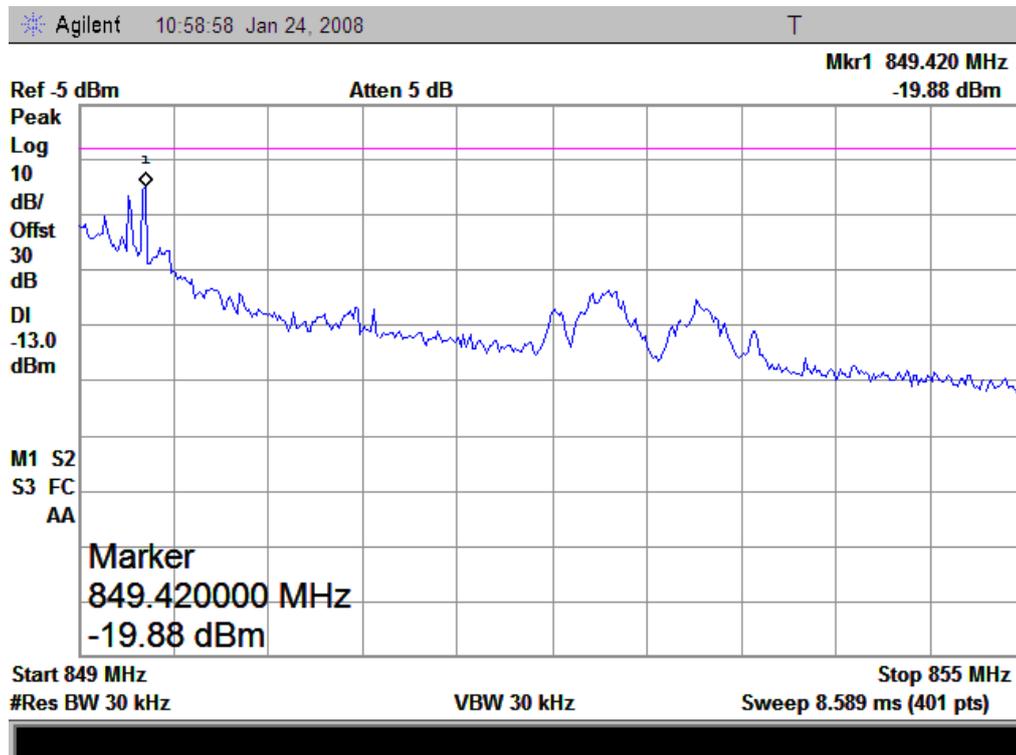


#### 4.5.3.2 Plot for Band-edge

1. Plot when the TCH number set to 9:



2. Plot when the TCH number set to 758:



## 4.6 Transmitter Radiated Power (EIRP/ERP)

### 4.6.1 Requirement

According to FCC §22.913, the ERP of Cellular mobile transmitters must not exceed 7 Watts (38.5dBm).

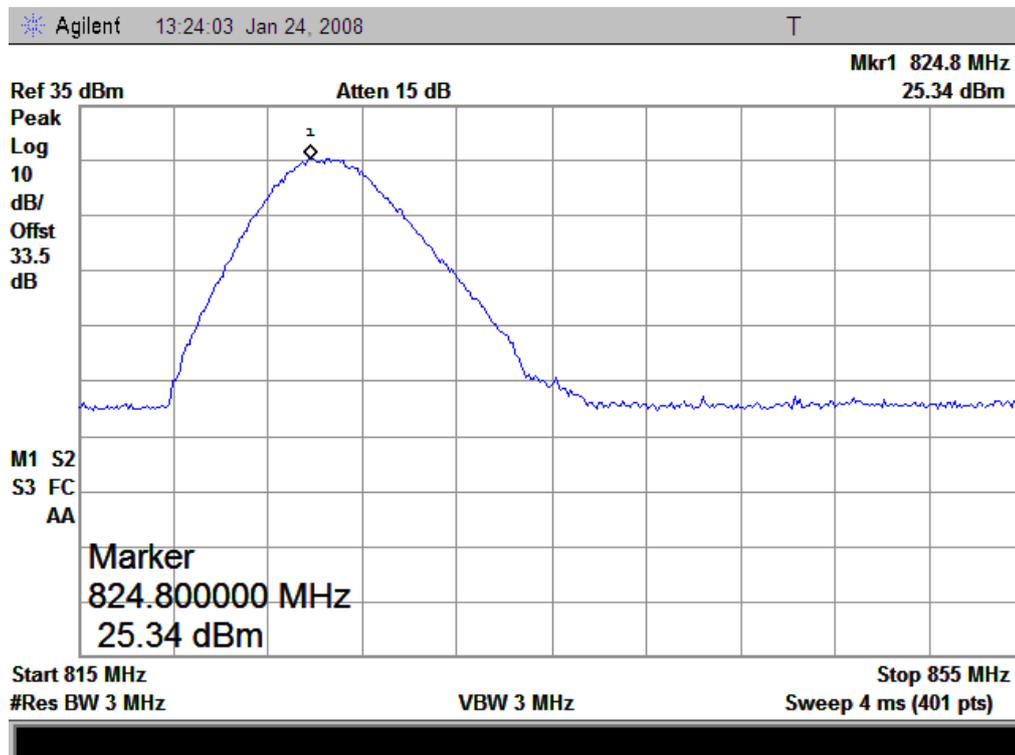
### 4.6.2 Test Procedure

1. Perform test system setup as section 4.1.2.
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=1MHz, for CDMA modulated signal: RBW=VBW=3MHz.
3. The low, middle and the high channels are selected to perform tests respectively. Set the TCH number to 9 as the low channel.
4. Employ the bi-log Test Antenna as the test system receiving antenna; set the polarization of the Test Antenna to be the same as that of the EUT transmitting antenna.
5. Set the frequency range of the Spectrum Analyzer suitably to capture the waveform; actuate the Turn Table to turn from 0 degrees to 360 degrees to find the maximum reading via the Spectrum Analyzer, mark the peak; finally record the peak and the plot.
6. Set the TCH number to 384 as the middle channel, then repeat step 5.
7. Set the TCH number to 758 as the high channel, then repeat step 5.

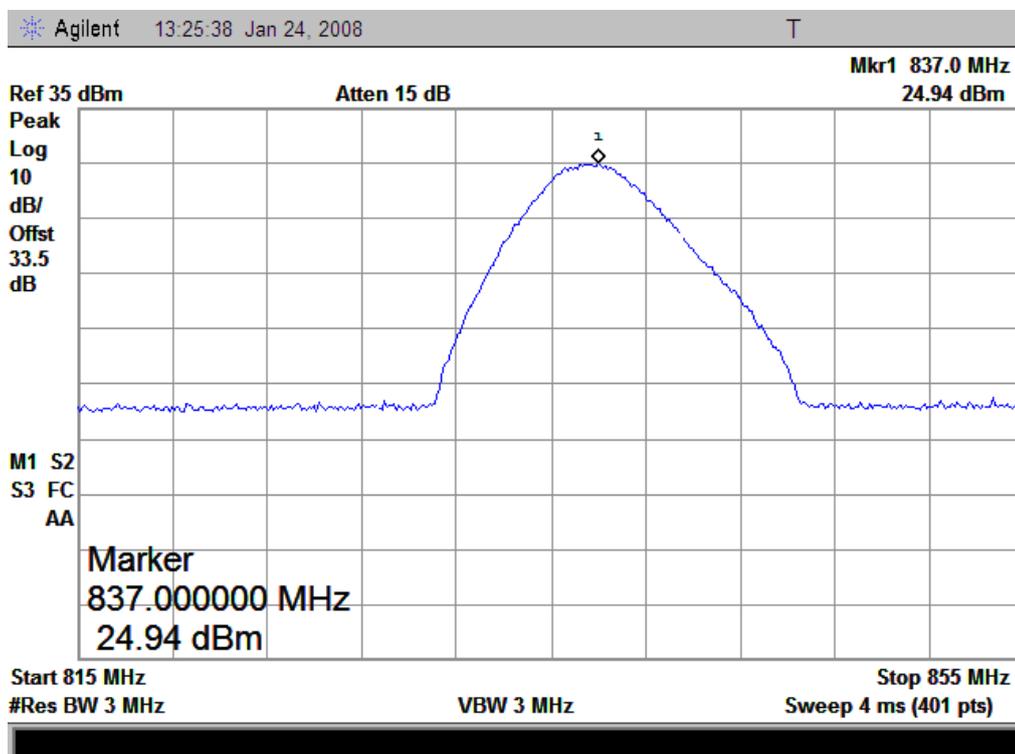
### 4.6.3 Test Result

No.	Channel	Frequency (MHz)	Measured ERP		Limit ERP	
			dBm	W	dBm	W
1	9	825.27	25.34	0.342	< 38.5	< 7
2	384	836.52	24.94	0.312	< 38.5	< 7
3	758	847.74	25.32	0.340	< 38.5	< 7

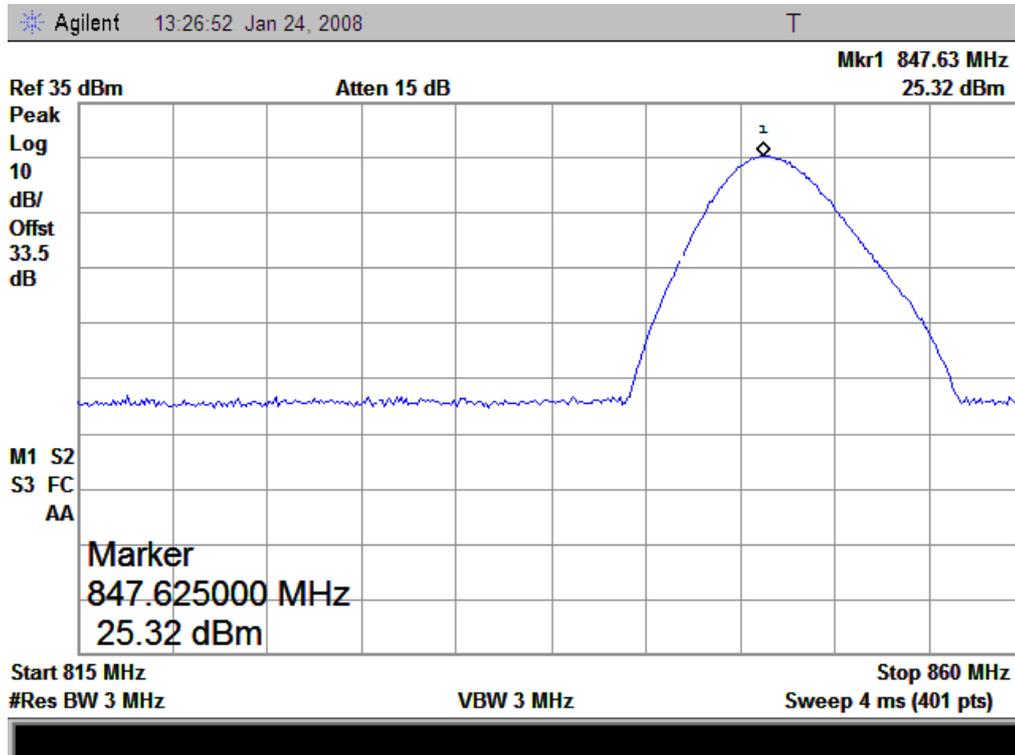
1. Plot when the TCH number set to 9:



2. Plot when the TCH number set to 384:



3. Plot when the TCH number set to 758:



## **4.7 Radiated Spurious Emission**

### **4.7.1 Requirement**

According to FCC §22.917(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.

### **4.7.2 Test Procedure**

1. Perform test system setup as section 4.1.2.
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 low, middle and the high channels are selected to perform tests respectively. Set the TCH number to 9 as the low channel.
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 (here used 10GHz), then repeat step 5 to 7.
9. Set the TCH number to 384 as the middle channel, then repeat step 4 to 8.
10. Set the TCH number to 758 as the high channel, then repeat step 4 to 8.

### **4.7.3 Test Result**

#### **4.7.3.1 Table for the Harmonics**

NOTE: “---” in the table following means that the emission power was too small to be measured and was at least 12dB below the limit.



No.	Frequency (MHz)	Emission Power (dBm)		Limit (dBm)
		Test Antenna Vertical	Test Antenna Horizontal	
TCH number set to 9 (825.27MHz)				
1	1650.54	-41.44	-43.18	-13
2	2475.81	---	---	-13
3	3301.08	---	---	-13
4	4126.35	---	---	-13
5	4951.62	---	---	-13
6	5776.89	---	---	-13
7	6602.16	---	---	-13
8	7427.43	---	---	-13
9	8252.70	---	---	-13
TCH number set to 384 (836.52MHz)				
10	1673.04	-41.36	-43.67	-13
11	2509.56	---	---	-13
12	2509.56	---	---	-13
13	3346.08	---	---	-13
14	4182.6	---	---	-13
15	5855.64	---	---	-13
16	6692.16	---	---	-13
17	7528.68	---	---	-13
18	8365.20	---	---	-13
TCH number set to 758 (847.74MHz)				
19	1695.48	-42.01	-43.77	-13
20	2543.22	---	---	-13
21	3390.96	---	---	-13
22	4238.70	---	---	-13
23	5086.44	---	---	-13
24	5934.18	---	---	-13
25	6781.92	---	---	-13
26	7629.66	---	---	-13
27	8477.40	---	---	-13

## 4.8 Frequency Stability

### 4.8.1 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  $-30^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$  at intervals of not more than  $10^{\circ}\text{C}$ .
- (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 manufacture. 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.

### 4.8.2 Test Procedure

1. Perform test system setup as section 4.1.3.
2. Set the voltage of the DC Power Supply to normal supply voltage (here used 3.7V) and the temperature of the Temperature Chamber to vary from  $-30^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$  at intervals of  $10^{\circ}\text{C}$ .
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 low, middle and the high channels are selected to perform tests respectively. Set the TCH number to 9 as the low channel.
5. The frequency deviation is measured (directly read from the SS, which can report the parameter) within three minutes.
6. Set the TCH number to 384 as the middle channel, then repeat step 5.
7. Set the TCH number to 758 as the high channel, then repeat step 5.
8. Adjust the temperature of the Temperature Chamber as specified in step 2, then repeat step 3 to 7.
9. Set the voltage of the DC Power Supply to high extreme supply voltage (here used 4.2V) and the temperature of the Temperature Chamber to normal (here used  $+22^{\circ}\text{C}$ ), then repeat step 3 to 8.
10. Set the voltage of the DC Power Supply to low extreme supply voltage (here used 3.4V) and the temperature of the Temperature Chamber to normal (here used  $+22^{\circ}\text{C}$ ), then repeat step 3 to 8.

### 4.8.3 Test Result

No.	Test Conditions		Frequency Deviation (Hz) at Channels Used			
	Voltage	Temperature	128	190	251	Limit
1	3.7V	-30°C	-8.25	8.51	7.37	±300Hz
2		-20°C	-9.17	-5.20	7.52	
3		-10°C	-10.27	7.22	8.74	
4		0°C	7.81	8.17	7.85	
5		+10°C	4.67	5.18	4.58	
6		+20°C	9.15	5.25	2.05	
7		+30°C	9.02	6.41	2.96	
8		+40°C	10.14	-4.19	2.18	
9		+50°C	10.55	5.20	2.45	
10	4.2V	+22°C	5.39	8.57	8.37	
11	3.4V	+22°C	5.61	4.71	5.08	

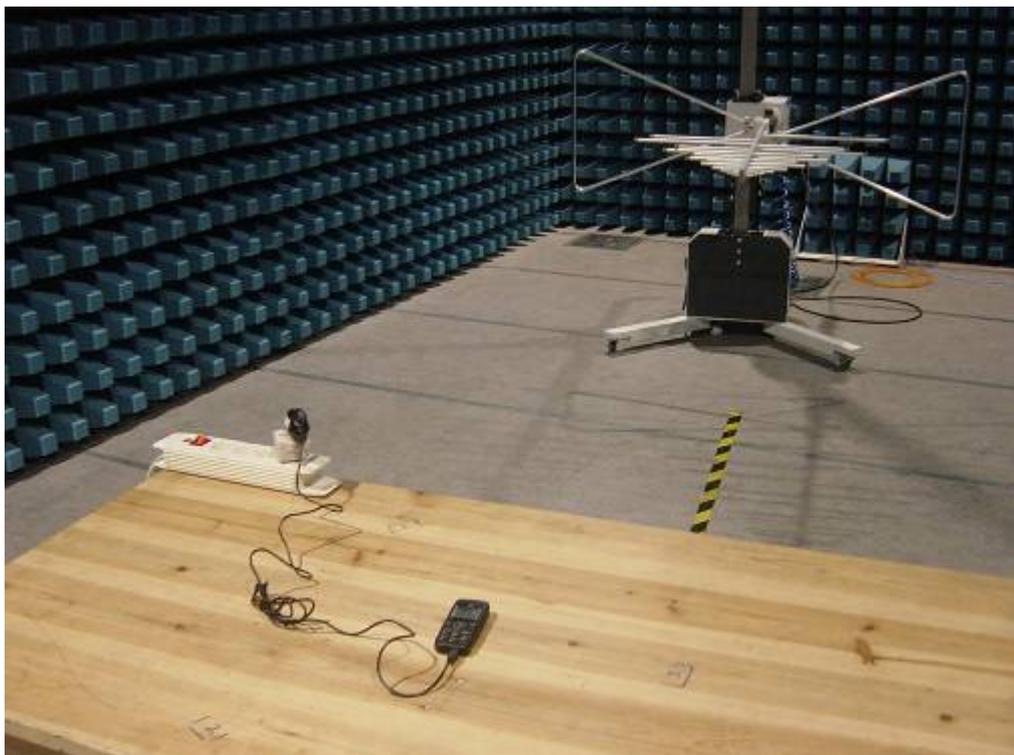
Result: PASS

## I Photograph of the test setup

### 1. Conducted Emission Measurement



### 2. Radiated Emission Measurement



### 3. Conducted Emission at Antenna Port



### 4. EIRP/ERP and Spurious Radiation Measurement



## II Photograph of the EUT

### 1. Appearance of the EUT







### 3. Inside of the EUT



