



## 47 CFR PART 24 SUBPART E

# TEST REPORT

of

### Ellipse Mobile Phone

Model Name: Ellipse  
Brand Name: Neo  
Report No.: SZ08090119E05  
FCC ID: WWF-NEOELLIPSE

*prepared for*

### Neo DWC-LLC

Dubai Media City, Building #4, Office #314 Dubai, UAE P.O.Box-502266



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## TABLE OF CONTENTS

<b>2.1</b>	<b>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 Environment Conditions .....	7
<b>3.1</b>	<b>Frequencies .....</b>	<b>8</b>
3.1.1	Requirement .....	8
3.1.2	Test Description.....	8
3.1.3	Test Result .....	9
<b>3.2</b>	<b>Conducted RF Output Power.....</b>	<b>11</b>
3.2.1	Requirement .....	11
3.2.2	Test Description.....	11
3.2.3	Test Result .....	11
<b>3.3</b>	<b>20dB Occupied Bandwidth.....</b>	<b>13</b>
3.3.1	Definition.....	13
3.3.2	Test Description.....	13
3.3.3	Test Verdict.....	13
<b>3.4</b>	<b>Frequency Stability .....</b>	<b>16</b>
3.4.1	Requirement .....	16
3.4.2	Test Description.....	16
3.4.3	Test Verdict.....	16
<b>3.5</b>	<b>Conducted Out of Band Emissions.....</b>	<b>18</b>
3.5.1	Requirement .....	18
3.5.2	Test Description.....	18
3.5.3	Test Result .....	18
<b>3.6</b>	<b>Band Edge .....</b>	<b>21</b>
3.6.1	Requirement .....	21
3.6.2	Test Description.....	21
3.6.3	Test Result .....	21
<b>3.7</b>	<b>Transmitter Radiated Power (EIRP).....</b>	<b>23</b>
3.7.1	Requirement .....	23

3.7.2	Test Description.....	23
3.7.3	Test Result .....	24
<b>3.8</b>	<b>Radiated Out of Band Emissions .....</b>	<b>25</b>
3.8.1	Requirement .....	25
3.8.2	Test Description.....	25
3.8.3	Test Result .....	25





## 1. TEST CERTIFICATION

Equipment under Test: Ellipse Mobile Phone

Brand Name: Neo

Model Name: Ellipse

FCC ID: WWF-NEOELLIPSE

Applicant: Neo DWC-LLC  
Dubai Media City, Building #4, Office #314 Dubai, UAE  
P.O.Box-502266

Manufacturer: Aplustec Limit  
Zheng Tian District, Jiekou Village, ChangAn Town, DongGuan  
City, China 523883

Test Standards: 47 CFR Part 2  
47 CFR Part 24 Subpart E

Test Date(s): November 13, 2008 – November 27, 2008

Test Result: PASS

### \* We Hereby Certify That:

The equipment under test was tested by Shenzhen Electronic Product Quality Testing Center Morlab Laboratory. 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: Ni Yong 2008.11.28  
Ni Yong

Reviewed by: Wei Yanquan  
Wei Yanquan

Approved by: Shu Luan Dated: 2008.11.28  
Shu Luan



## 2. GENERAL INFORMATION

### 2.1 EUT Description

EUT Type ..... Ellipse Mobile Phone  
Model Name..... Ellipse  
Serial No. .... (n.a, marked #1 by test site)  
IMEI ..... IMEI:135790246811220 IMEISV:87  
Hardware Version..... 819main 080807-00  
Software Version ..... EL\_JAV\_AGEF\_GO\_OV\_SP\_V1\_27  
Frequency Range..... GSM 1900MHz:  
Tx: 1850.20 - 1909.80MHz (at intervals of 200kHz);  
Rx: 1930.20 - 1989.80MHz (at intervals of 200kHz)  
Modulation Type ..... GMSK  
Emission Designators..... 300KGXW  
Power Supply ..... Battery  
Brand Name: TONGDA  
Model No.: 363443  
Serial No.: (n.a. marked #1 by test site)  
Capacitance: 500mAh  
Rated Voltage: 3.7V  
Charge Limit: 4.2V  
Manufacturer: SHENZHEN TONGDA ELECTRONICS CO., LTD.  
Ancillary Equipments .... AC Adapter (Charger for Battery)  
Brand Name: Neo 808i USB Charger  
Model Name: EU001  
Serial No.: (n.a. marked #1 by test site)  
Rated Input: ~ 100-200V, 0.2A, 50/60Hz  
Rated Output: = 5.5V, 500mA  
Manufacturer: Aplustec Limit  
Wire Length: 115cm

*Note 1:* The transmitter (Tx) frequency arrangement of the PCS 1900MHz band used by the EUT can be represented with the formula  $F(n)=1850.2+0.2*(n-512)$ ,  $512 \leq n \leq 810$ ; the lowest, middle and highest channel numbers (ARFCHs) used and tested in this report are separately 512 (1850.2MHz), 661 (1880.0MHz) and 810 (1909.8MHz).

*Note 2:* For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

## 2.2 Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 2 and Part 24 for the EUT 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 24 (10-1-05 Edition)	Personal Communications Services

Test detailed items/section required by FCC rules and results are as below:

No.	Section	Description	Result
1	2.106 24.229	Frequencies	PASS
2	2.1046	Conducted RF Output Power	PASS
3	2.1049	20dB Occupied Bandwidth	PASS
4	2.1055 24.235	Frequency Stability	PASS
5	2.1051 2.1057 24.238	Conducted Out of Band Emissions	PASS
6	2.1051 2.1057 24.238	Band Edge	PASS
7	24.232	Transmitter Radiated Power (EIPR/ERP)	PASS
8	2.1053 2.1057 24.238	Radiated Out of Band Emissions	PASS

## **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 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 (°C):	20 - 25
Relative Humidity (%):	40 - 60
Atmospheric Pressure (kPa):	96

### 3. 47 CFR PART 2, PART 24E REQUIREMENTS

#### 3.1 Frequencies

##### 3.1.1 Requirement

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;

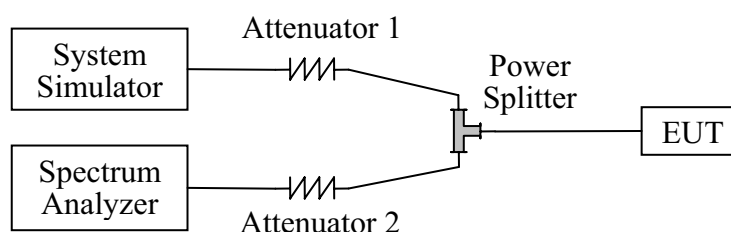
Block D: 1865 - 1870 MHz paired with 1945 - 1950MHz;

Block E: 1885 - 1890 MHz paired with 1965 - 1970MHz;

Block F: 1890 - 1895 MHz paired with 1970 - 1975MHz.

##### 3.1.2 Test Description

1. Test Setup:



The EUT, which is powered by the Battery, is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power i.e. Power Control Level (PCL) = 0 and Power Class = 1. A call is established between the EUT and the SS.

2. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
System Simulator	Agilent	E5515C	GB43130131	2008.09	1year
Spectrum Analyzer	Agilent	E7405A	US44210471	2008.09	1year
Power Splitter	Weinschel	1506A	NW521	(n.a.)	(n.a.)



Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Attenuator 1	Resnet	20dB	(n.a.)	(n.a.)	(n.a.)
Attenuator 2	Resnet	3dB	(n.a.)	(n.a.)	(n.a.)

### 3.1.3 Test Result

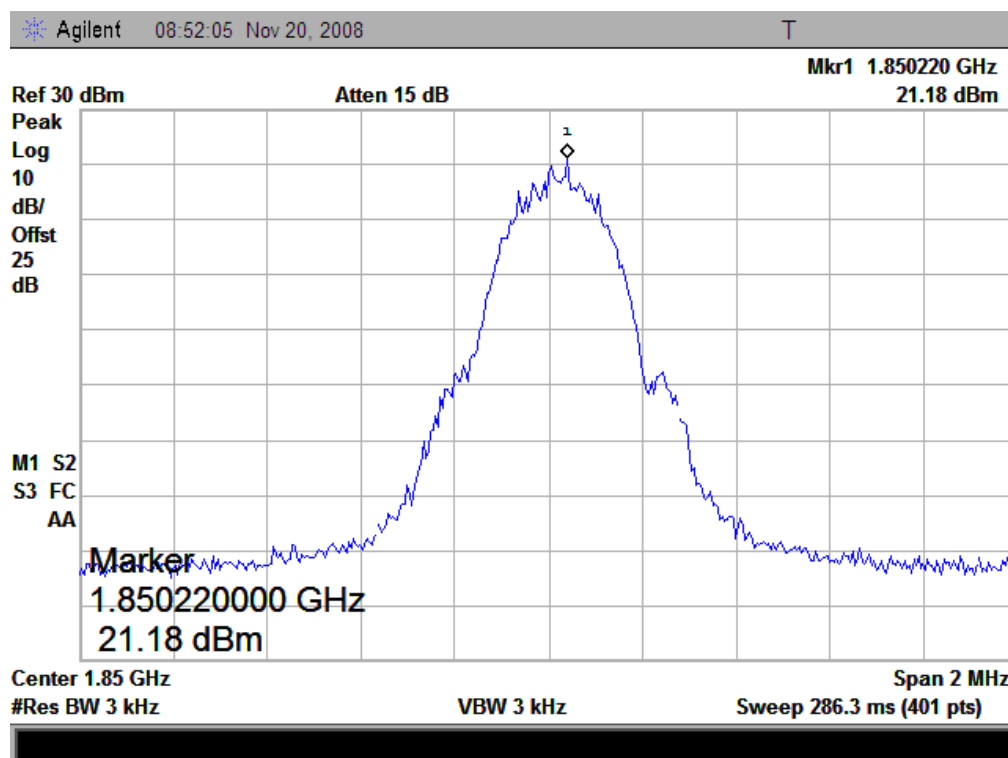
The Tx frequency arrangement of the Cellular PCS 1900MHz band employed by the EUT should be from 1850.2MHz to 1909.8MHz (the corresponding frequency block is from 1850MHz to 1910MHz). Here the lowest and highest channels are tested to verify the EUT's using the frequency block required.

#### 1. Test Verdict:

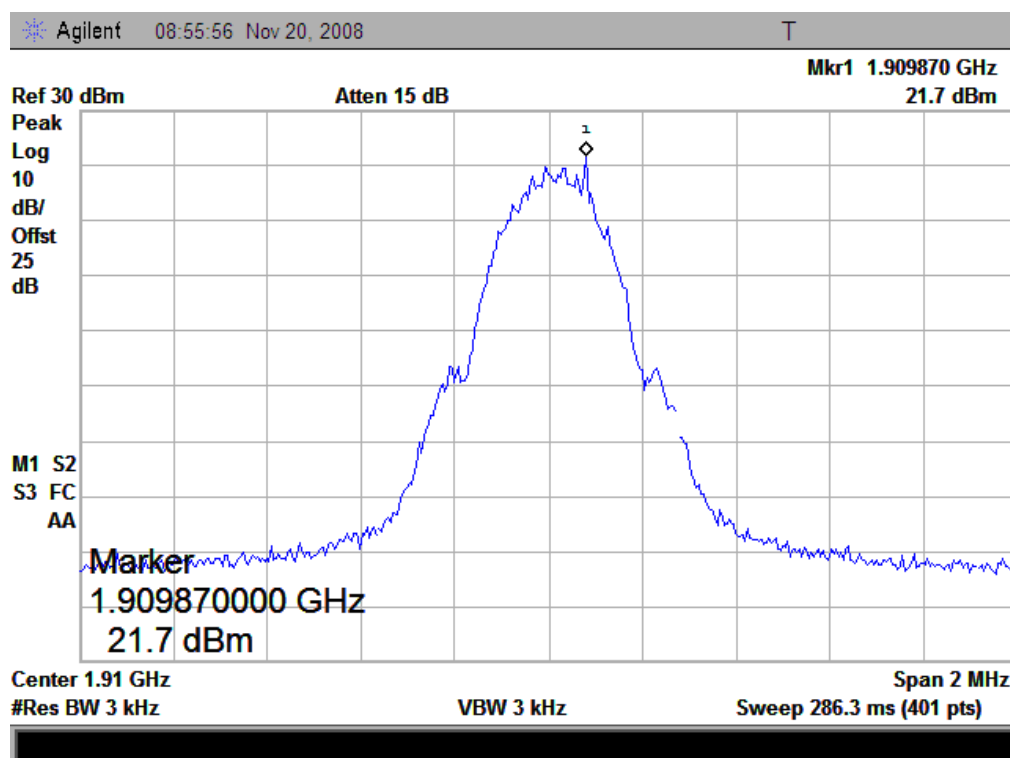
The required frequency block is employed legally, the verdict is PASS.

Band	Channel	Frequency (MHz)	Measured Carrier (dBm)	Refer to Plot
GSM	512	1850.2	21.18	Plot A
1900MHz	810	1909.8	21.7	Plot B

#### 2. Test Plot:



(Plot A: GSM 1900MHz Channel = 512)



(Plot B: GSM 1900MHz Channel = 810)

## 3.2 Conducted RF Output Power

### 3.2.1 Requirement

According to FCC section 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 FCC section 2.1033(c)(8).

### 3.2.2 Test Description

See section 3.1.2 of this report.

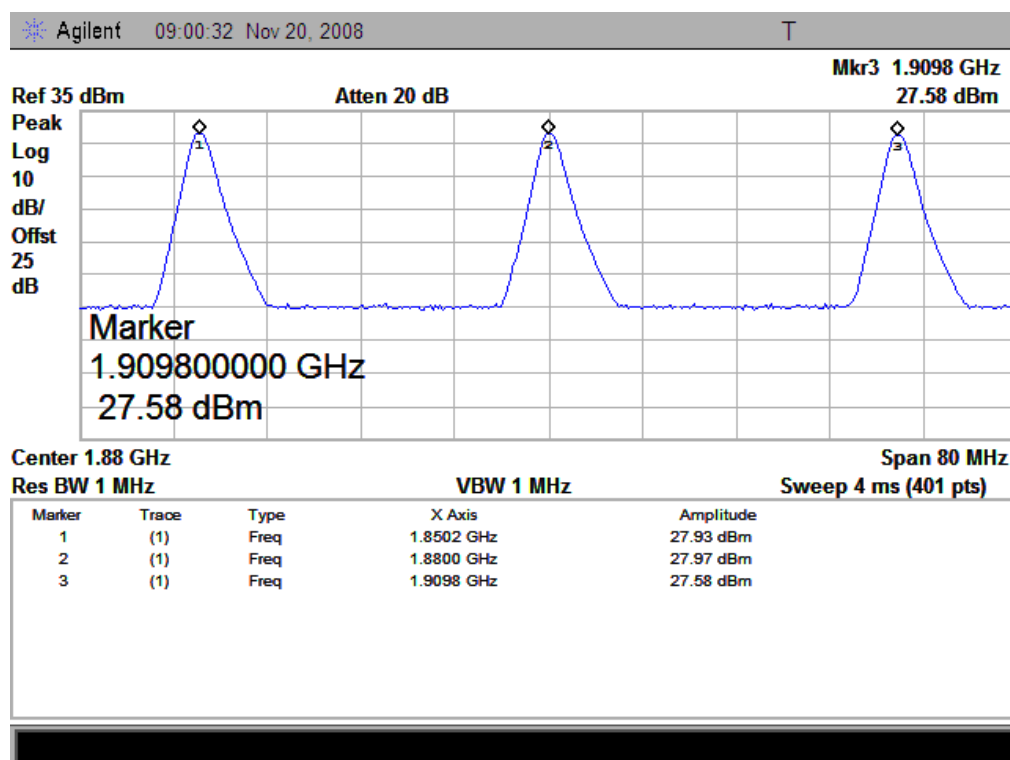
### 3.2.3 Test Result

Here the lowest, middle and highest channels are selected to perform testing to verify the conducted RF output power of the EUT. For the GSM 1900MHz operates at PCL=0 (where Power Class is 1), the rated conducted RF output power is 30dBm within the tolerance of  $\pm 3$ dB.

#### 1. Test Verdict:

Band	Channel	Frequency (MHz)	Measured Output Power		Rated Output Power		Verdict
			dBm	Refer to Plot	dBm	Tolerance (dB)	
GSM 1900MHz	512	1850.2	27.93	Plot A	30	$\pm 3$	PASS
	661	1880.0	27.97				PASS
	810	1909.8	28.58				PASS

#### 2. Test Plot:



(Plot A: GSM 1900MHz Channel = 512, 661, 810)

### 3.3 20dB Occupied Bandwidth

#### 3.3.1 Definition

According to FCC section 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, or 20dB bandwidth ( $10 \cdot \log 1\% = 20\text{dB}$ ) taking the total RF output power as reference.

#### 3.3.2 Test Description

See section 3.1.2 of this report.

#### 3.3.3 Test Verdict

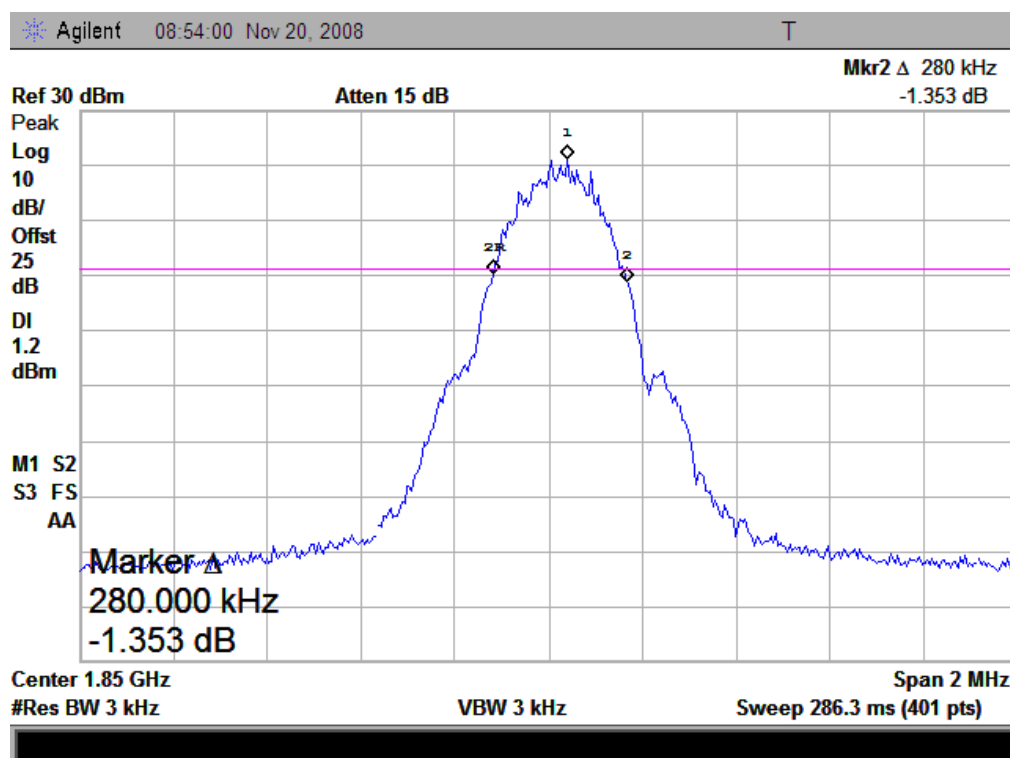
Here the lowest, middle and highest channels are tested to record the 20dB occupied bandwidth, it's about 300kHz.

1. Test Verdict:

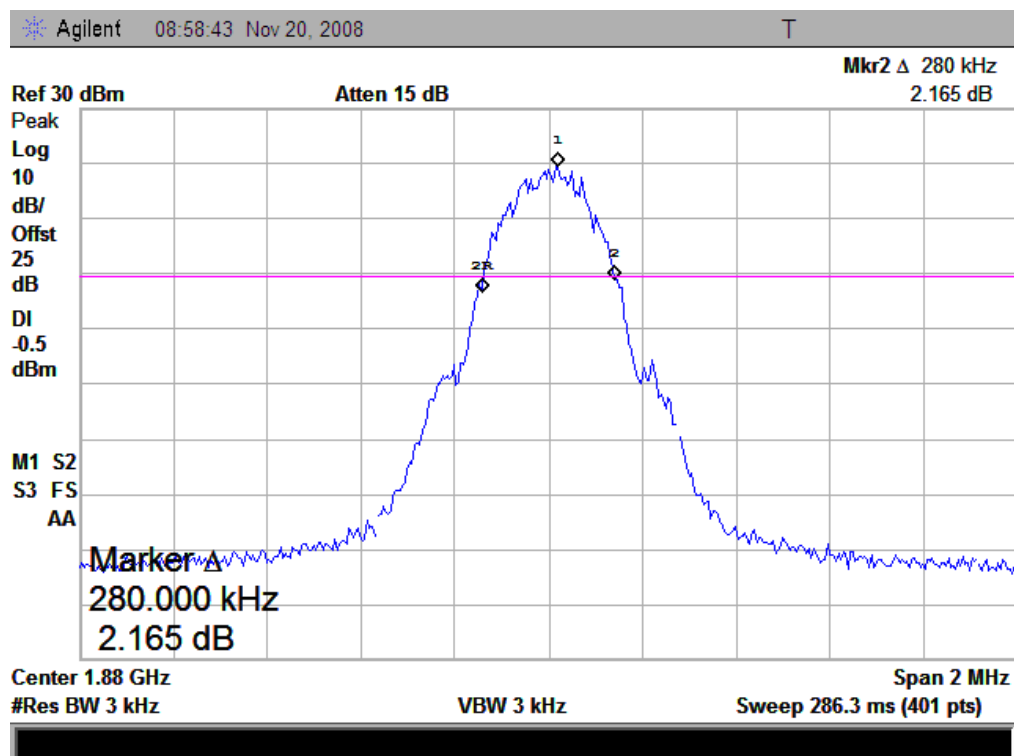
Band	Channel	Frequency (MHz)	Measured 20dB Occupied Bandwidth (kHz)	Refer to Plot
GSM 1900MHz	512	1850.2	280	Plot A
	661	1880.0	280	Plot B
	810	1909.8	270	Plot C

2. Test Plot:

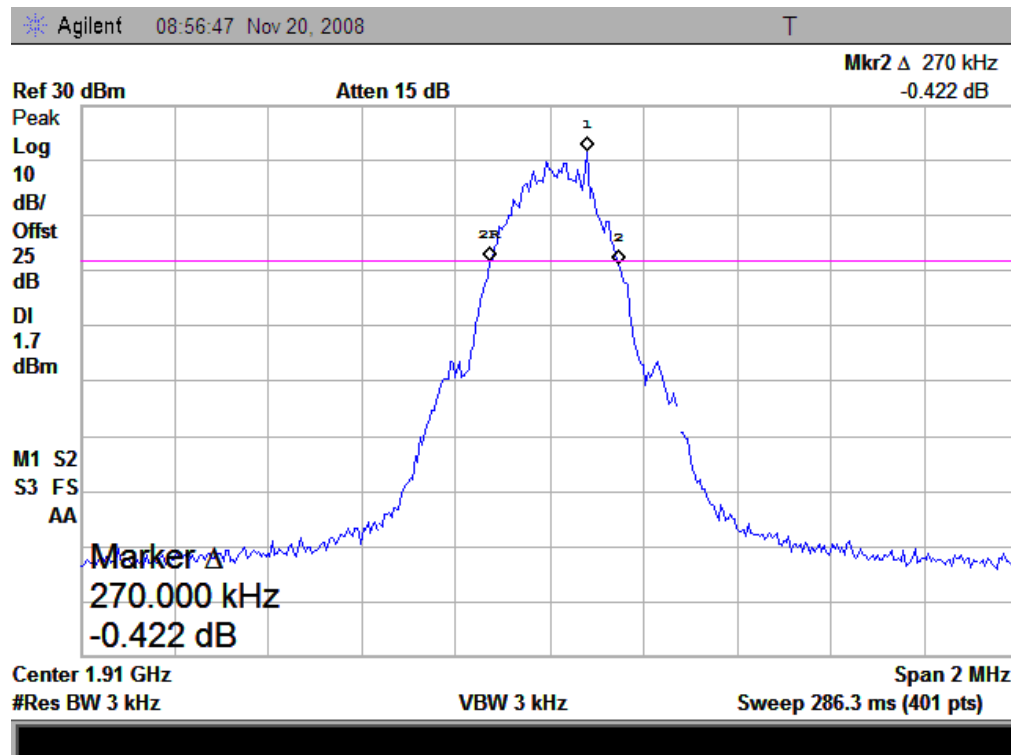




(Plot A: GSM 1900MHz Channel = 512)



(Plot B: GSM 1900MHz Channel = 661)



(Plot C: GSM 1900MHz Channel = 810)

### 3.4 Frequency Stability

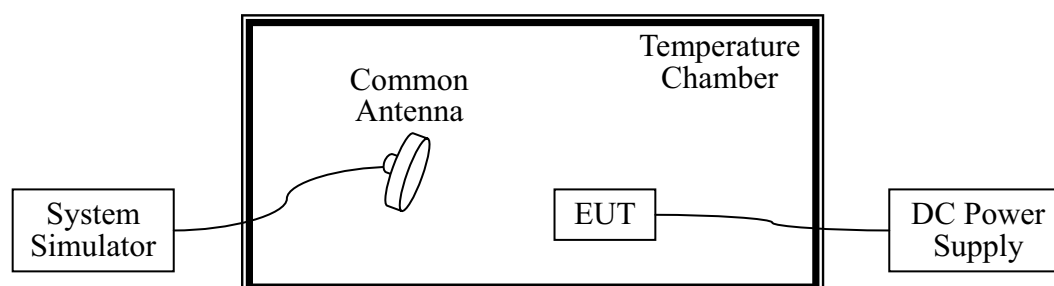
#### 3.4.1 Requirement

According to FCC section 24.235, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. According to FCC section 2.1055, the test conditions are:

- (a) 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) 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.

#### 3.4.2 Test Description

##### 1. Test Setup:



The EUT, which is powered by the DC Power Supply directly, is located in the Temperature Chamber. The EUT is commanded by the System Simulator (SS) to operate at the maximum output power i.e. Power Control Level (PCL) = 0 and Power Class = 1. A call is established between the EUT and the SS via a Common Antenna.

##### 2. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
System Simulator	Agilent	E5515C	GB43130131	2008.09	1year
DC Power Supply	Good Will	GPS-3030DD	EF920938	2008.09	2year
Temperature Chamber	YinHe Experimental Equip.	HL4003T	(n.a.)	2008.03	1year

#### 3.4.3 Test Verdict

The nominal, highest and lowest extreme voltages are separately 3.7VDC, 4.2VDC and 3.6VDC, which are specified by the applicant; the normal temperature here used is  $25^{\circ}\text{C}$ . The frequency

deviation limit of and GSM 1900MHz is  $\pm 1\text{ppm}$

Band	Test Conditions		Frequency Deviation						Verdict
	Power (VDC)	Temperature (°C)	Channel = 512 (1850.2MHz)		Channel = 661 (1880.0MHz)		Channel = 810 (1909.8MHz)		
			Hz	Limits	Hz	Limits	Hz	Limits	
GSM 1900MHz	3.7	-30	28.33	±1850.2	14.45	±1880.0	25.26	±1909.8	PASS
		-20	29.55		-13.55		37.32		
		-10	-12.35		-6.36		-30.21		
		0	13.45		-16.36		23.57		
		+10	-15.79		-39.08		-29.68		
		+20	18.47		13.45		-24.45		
		+30	-28.79		15.68		34.22		
		+40	-35.36		30.65		13.76		
		+50	15.98		-13.44		-16.49		
	4.2	+25	-26.83	19.23	15.24				
	3.6	+25	21.04	26.38	-13.19				

### 3.5 Conducted Out of Band Emissions

#### 3.5.1 Requirement

According to FCC section 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.

#### 3.5.2 Test Description

See section 3.1.2 of this report.

#### 3.5.3 Test Result

The measurement frequency range is from 30MHz to the 10<sup>th</sup> harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the out of band emissions.

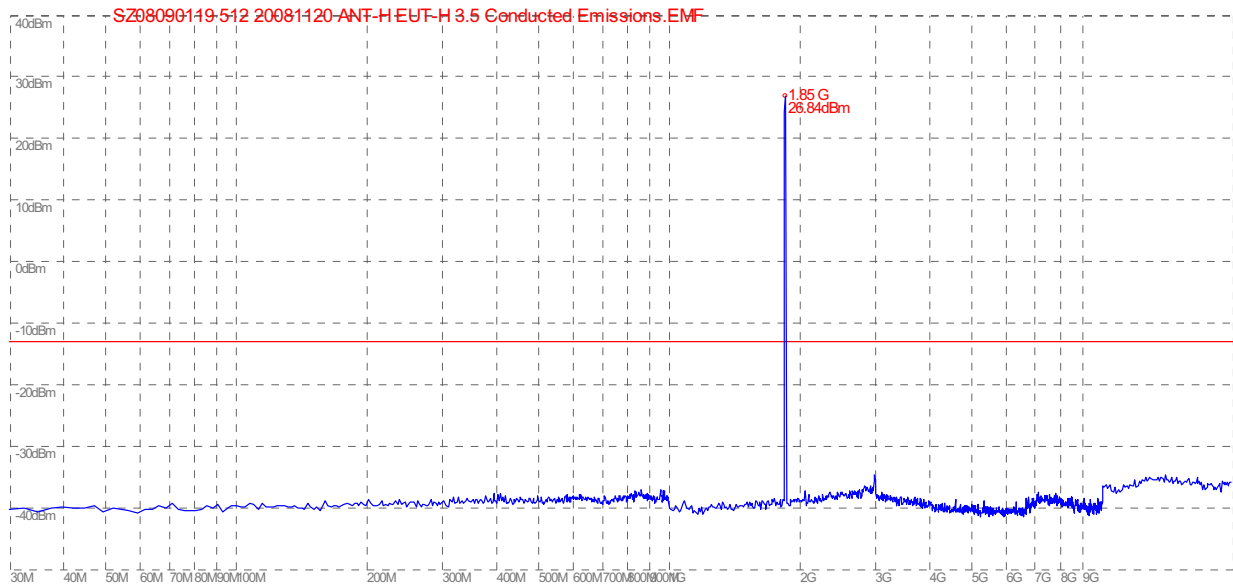
##### 1. Test Verdict:

Band	Channel	Frequency (MHz)	Measured Spurious Emission (dBm)	Max. Emission	Refer to Plot	Limit (dBm)	Verdict
GSM 1900MHz	512	1850.2	---		Plot A	-13	PASS
	661	1880.0	---		Plot B		PASS
	810	1909.8	---		Plot C		PASS

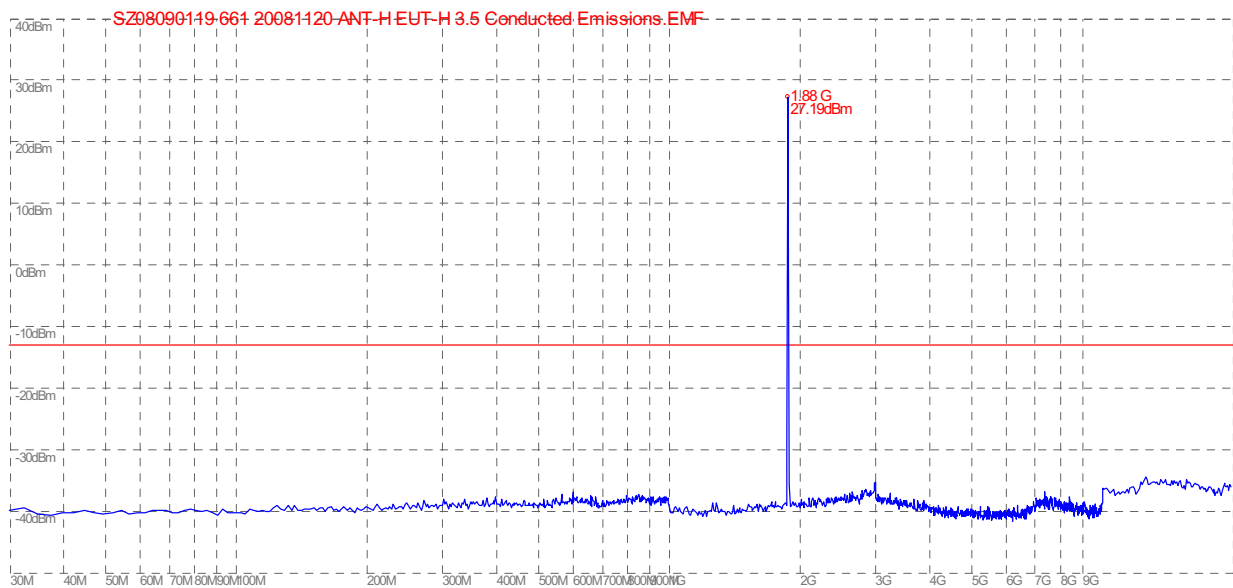
##### 2. Test Plot for the Whole Measurement Frequency Range:

Note: the power of the EUT transmitting frequency should be ignored.

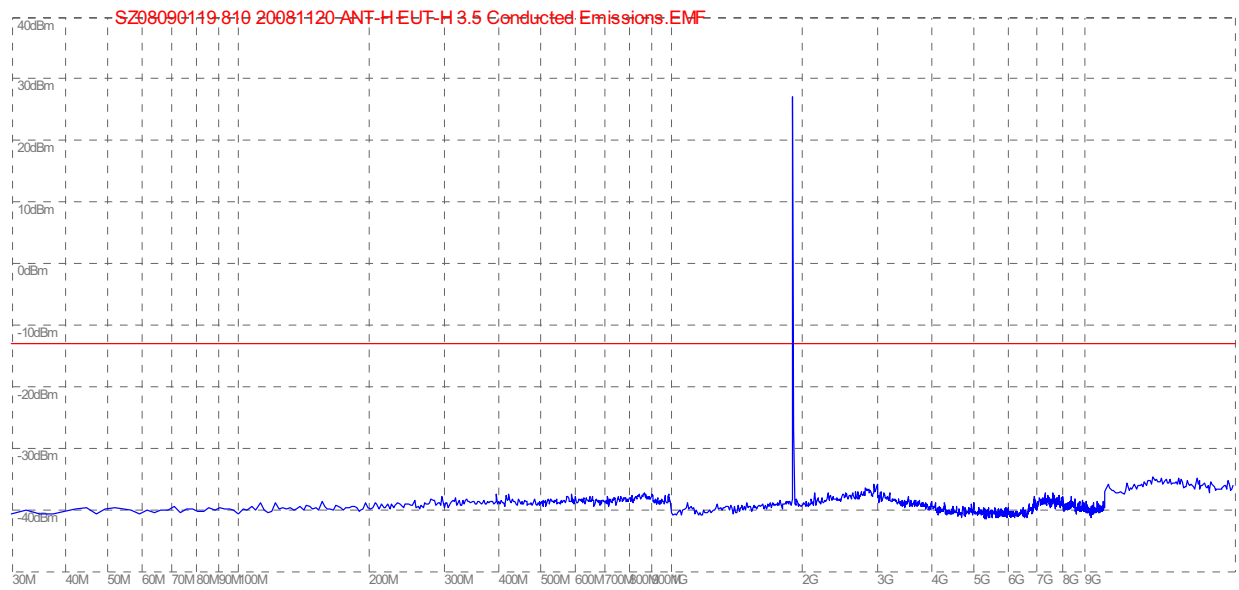




(Plot A: GSM 1900MHz Channel = 512, 30MHz to 20GHz)



(Plot B: GSM 1900MHz Channel = 661, 30MHz to 20GHz)



(Plot C: GSM 1900MHz Channel = 810, 30MHz to 20GHz)

## 3.6 Band Edge

### 3.6.1 Requirement

According to FCC section 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 (26dB emission bandwidth) of the fundamental emission of the transmitter may be employed.

### 3.6.2 Test Description

See section 3.1.2 of this report.

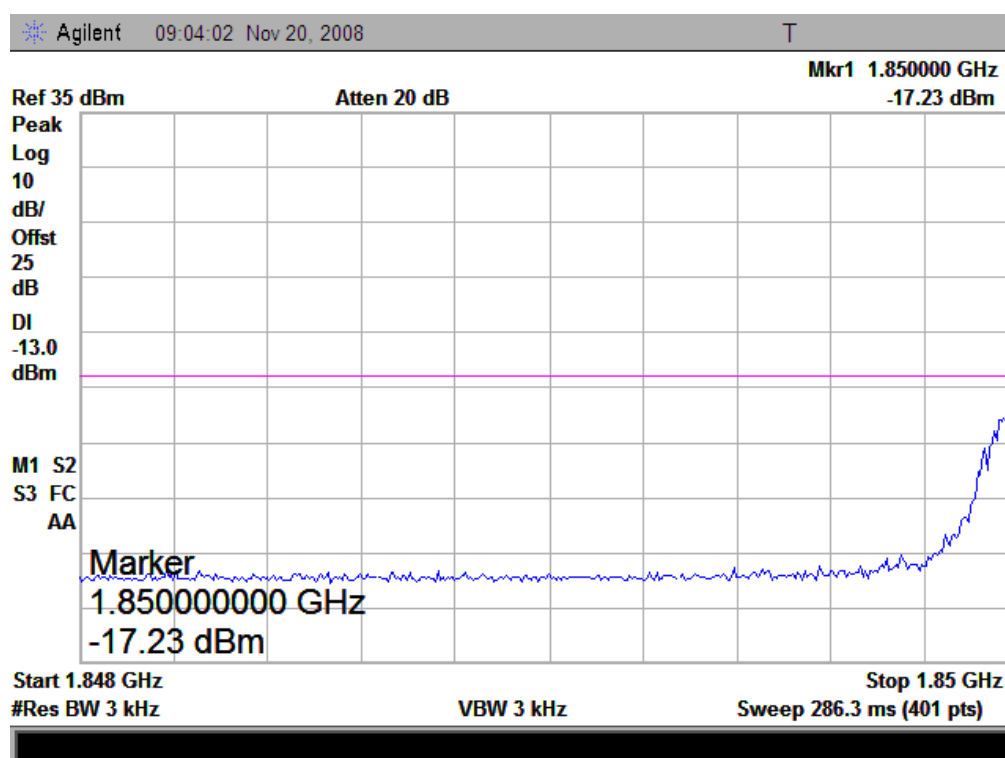
### 3.6.3 Test Result

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

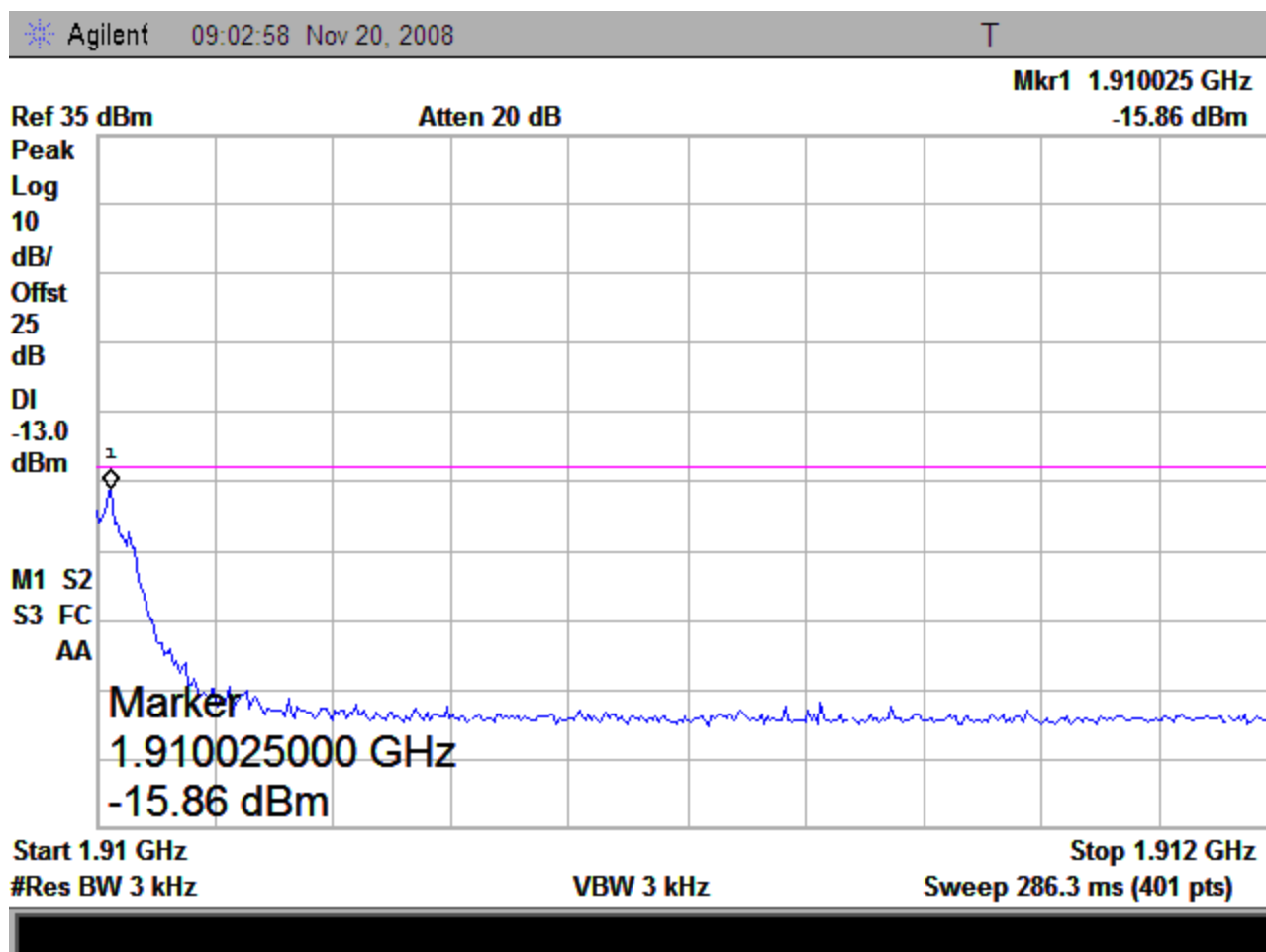
1. Test Verdict:

Band	Channel	Frequency (MHz)	Measured Max. Band Edge Emission (dBm)	Refer to Plot	Limit (dBm)	Verdict
GSM	512	1850.2	-17.23	Plot A	-13	PASS
1900MHz	810	1909.8	-15.86	Plot B		PASS

2. Test Plot:



(Plot A: Channel = 512)



(Plot B: Channel = 810)

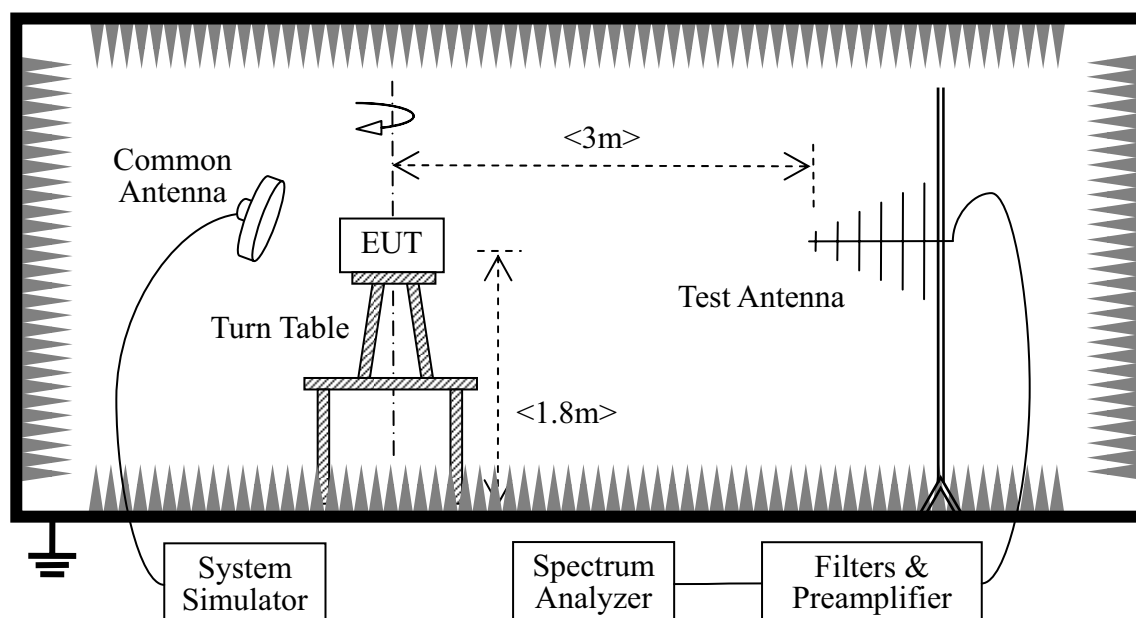
### 3.7 Transmitter Radiated Power (EIRP)

#### 3.7.1 Requirement

According to FCC section 24.232, the broadband PCS mobile station is limited to 2Watts e.i.r.p. peak power.

#### 3.7.2 Test Description

##### 1. Test Setup:



The EUT, which is powered by the Battery charged with the AC Adapter, is located in a 3m Full-Anechoic Chamber; the cable loss, air loss and so on of the site as factors are pre-calibrated using the "Substitution" method, and calculated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power i.e. GSM1900MHz band Power Control Level (PCL) = 0 and Power Class = 1. A call is established between the EUT and the SS via a Common Antenna.

The Test Antenna is a Bi-Log one (used for 30MHz to 1GHz) or a Horn one (used for above 3GHz), and it's located at the same height as the EUT. The Filters consists of Notch Filters and High Pass Filter.

##### 2. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
System Simulator	Agilent	E5515C	GB43130131	2008.09	1year
Spectrum Analyzer	Agilent	E7405A	US44210471	2008.09	1year
Full-Anechoic Chamber	Albatross	9m*6m*6m	(n.a.)	2008.08	2year



Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Test Antenna - Bi-Log	Schwarzbeck	VULB 9163	9163-274	2008.08	1year
Test Antenna - Horn	Schwarzbeck	BBHA 9120C	9120C-384	2008.08	1year

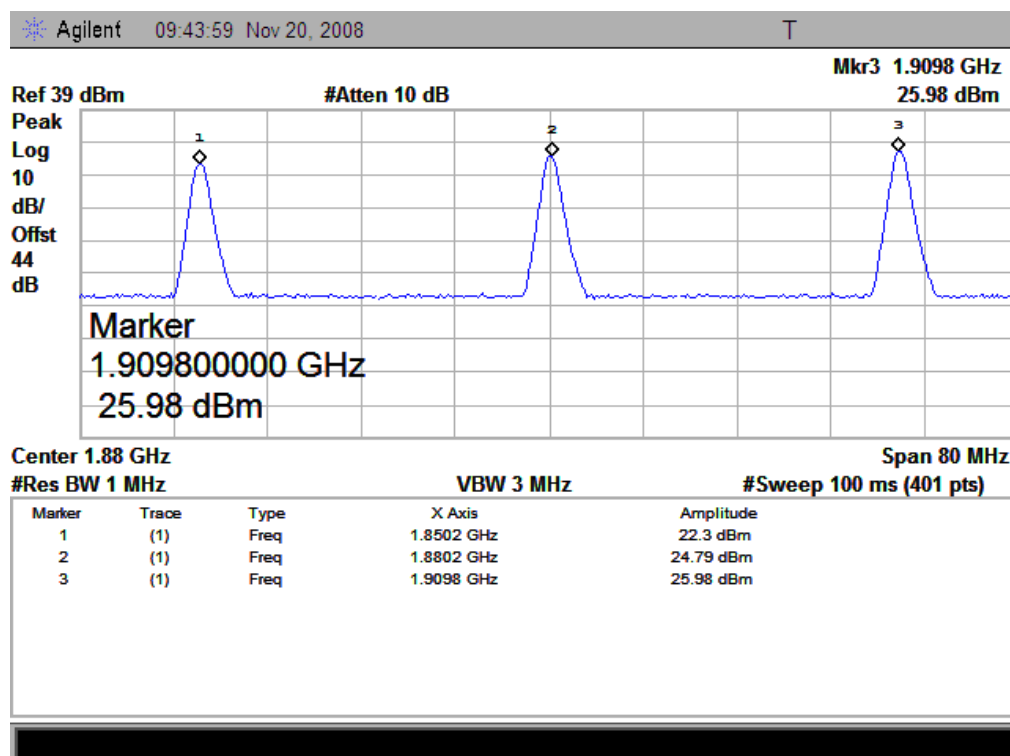
### 3.7.3 Test Result

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.

#### 1. Test Verdict:

Band	Channel	Frequency (MHz)	Measured EIRP			Limit		Verdict
			dBm	W	Refer to Plot	dBm	W	
GSM 1900MHz	512	1850.2	22.30	0.17	Plot A	33	2	PASS
	661	1880.0	24.79	0.30				PASS
	810	1909.8	25.98	0.40				PASS

#### 2. Test Plot:



(Plot A: GSM 1900MHz Channel = 512, 661, 810)

### 3.8 Radiated Out of Band Emissions

#### 3.8.1 Requirement

According to FCC section 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.

#### 3.8.2 Test Description

See section 3.7.2 of this report.

#### 3.8.3 Test Result

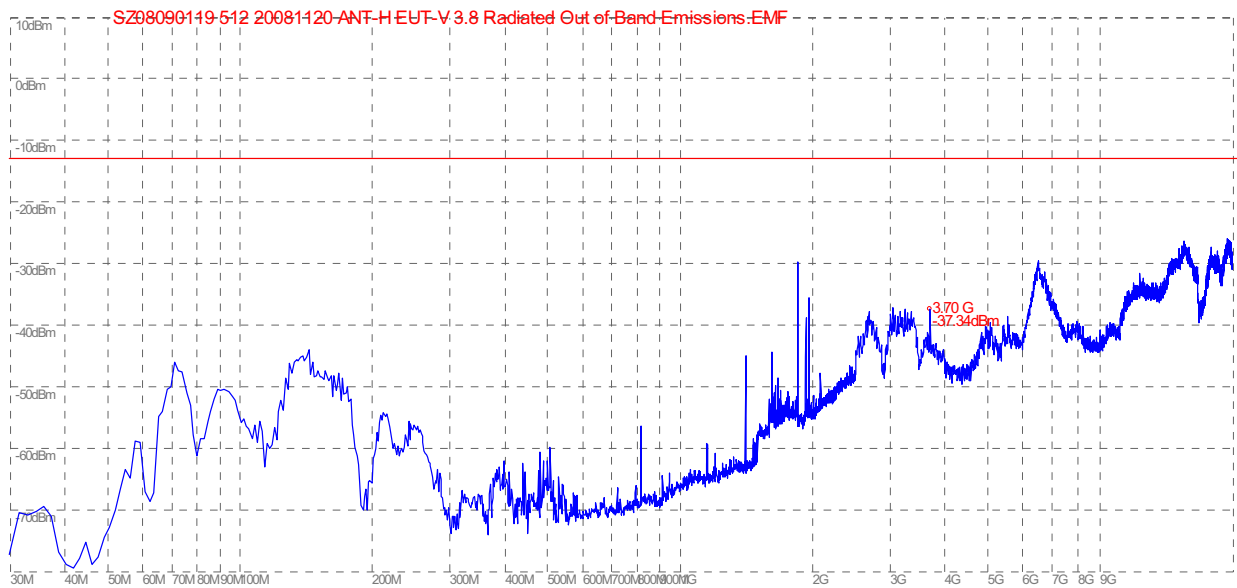
The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. The lowest, middle and highest channels are tested to verify the out of band emissions.

##### 1. Test Verdict:

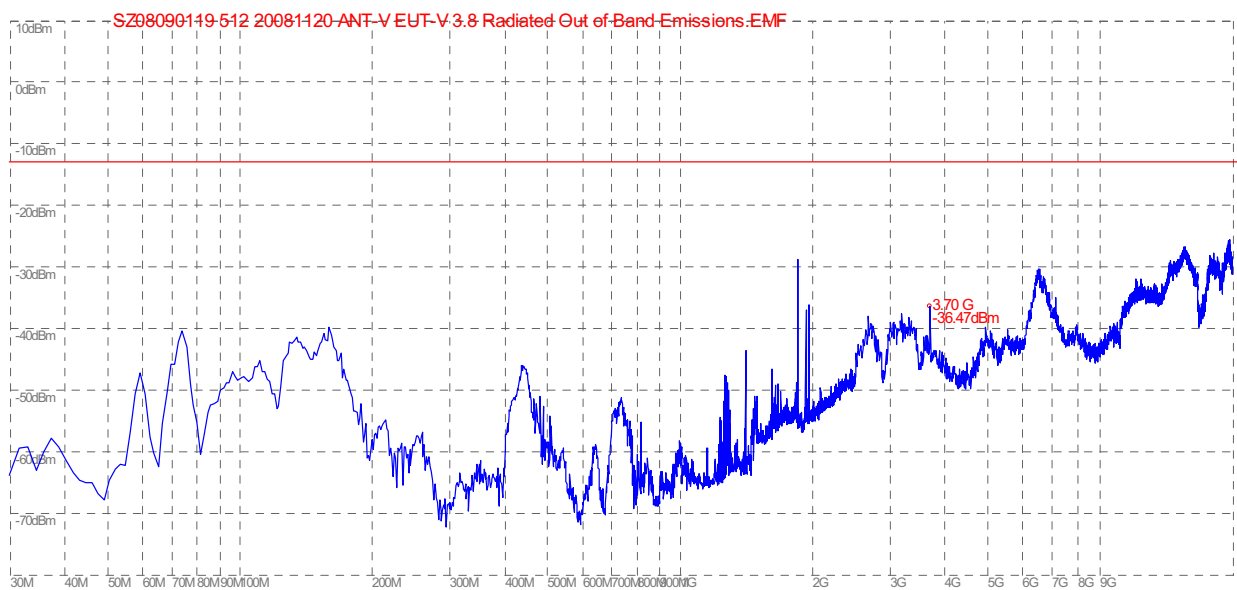
Band	Channel	Frequency (MHz)	Measured Max. Spurious Emission (dBm)		Refer to Plot	Limit (dBm)	Verdict
			Test Antenna Horizontal	Test Antenna Vertical			
GSM 1900MHz	512	1850.2	< -25	< -25	Plot A, B	-13	PASS
	661	1880.0	< -25	< -25	Plot C, D		PASS
	810	1909.8	< -25	< -25	Plot E, F		PASS

##### 2. Test Plot for the Whole Measurement Frequency Range:

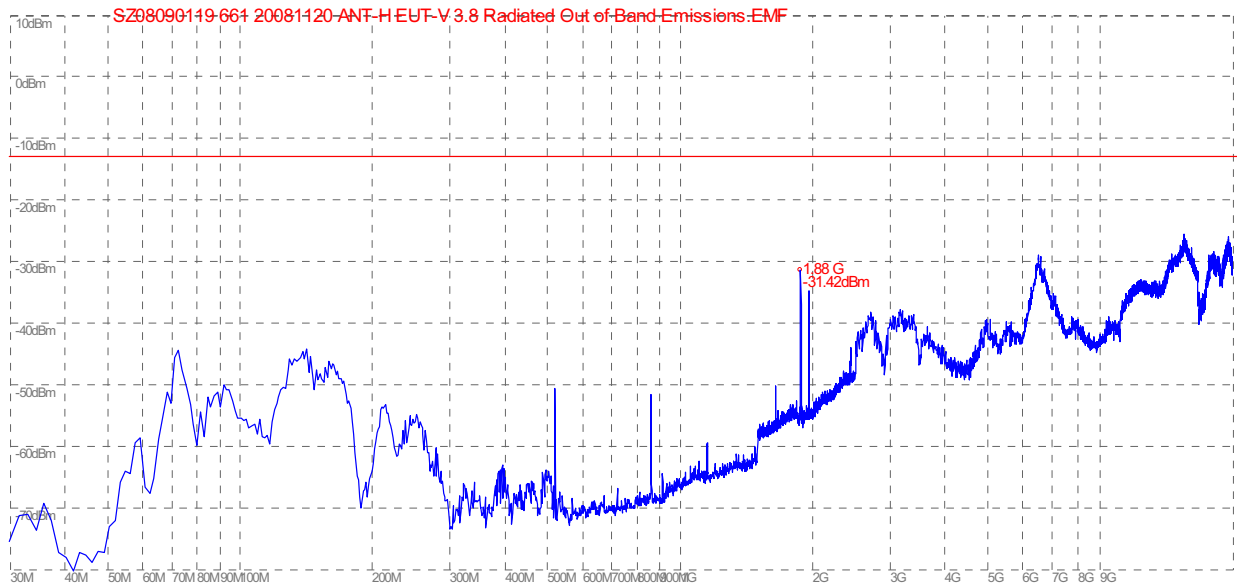
Note: the power of the EUT transmitting frequency should be ignored.



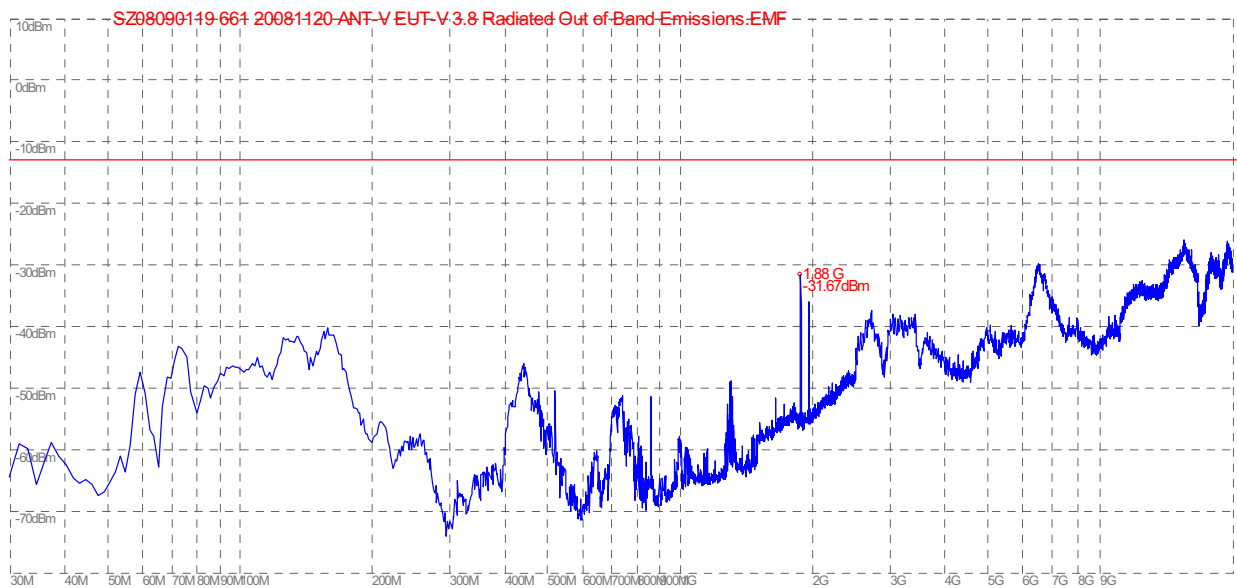
(Plot A: GSM 1900MHz Channel = 512, Test Antenna Horizontal)



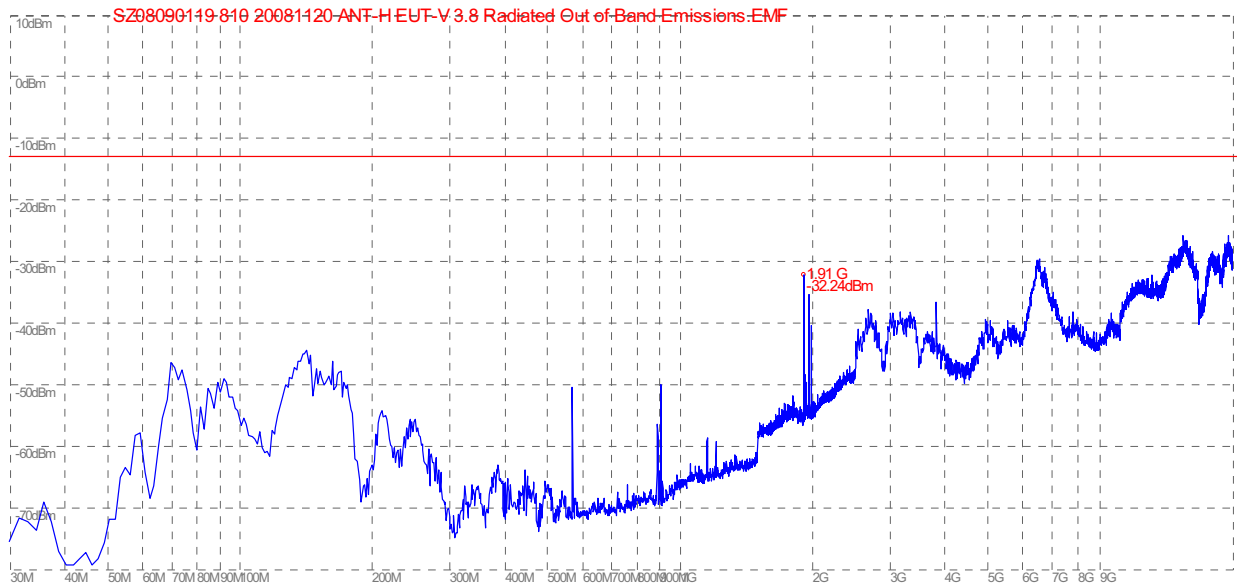
(Plot B: GSM 1900MHz Channel = 512, Test Antenna Vertical)



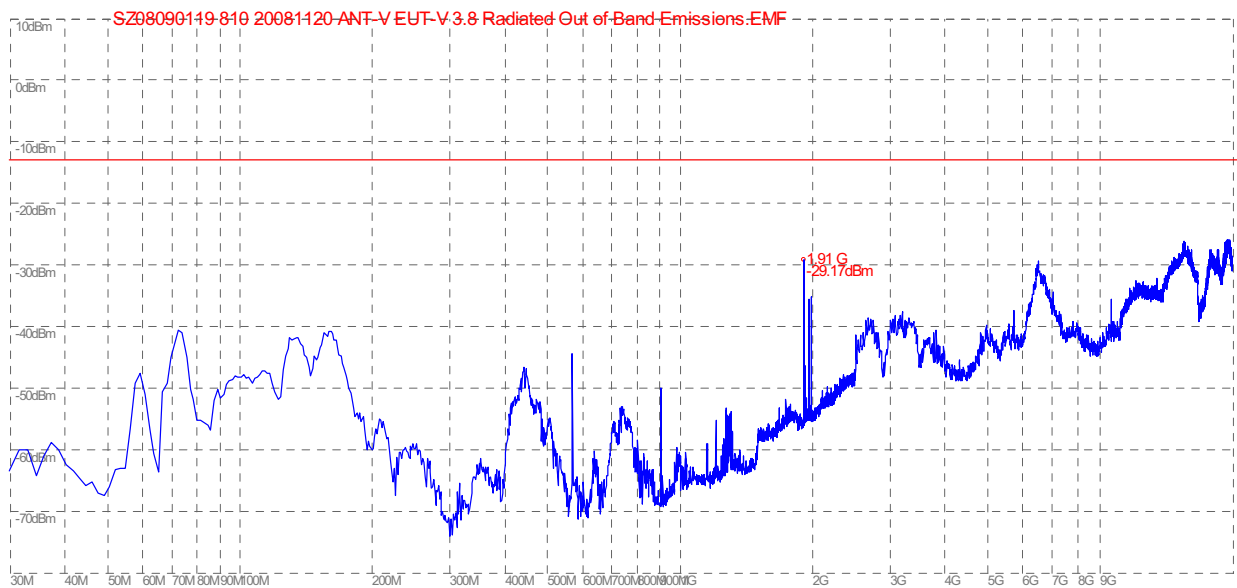
(Plot C: GSM 1900MHz Channel = 661, Test Antenna Horizontal)



(Plot D: GSM 1900MHz Channel = 661, Test Antenna Vertical)



(Plot E: GSM 1900MHz Channel = 810, Test Antenna Horizontal)



(Plot F: GSM 1900MHz Channel = 810, Test Antenna Vertical)

**\*\* END OF REPORT \*\***