

# FCC REPORT (Mobile Phone)

**Applicant:** ABBA INNOVATIONS.A.S

**Address of Applicant:** Calle 76 No. 52-40 Local 1 Alto Prado Barranquilla Colombia

**Equipment Under Test (EUT)**

Product Name: Mobile Phone

Trade Mark: Taxcel, yaddas, airus, tellme

Model No.: i8S, i8, i5S,T5,Q7,Q10,Z4,Q3,Q5,W100,C9,S999

**FCC ID:** Z87ABBAI8S

FCC CFR Title 47 Part 2: 2011

**Applicable standards:** FCC CFR Title 47 Part22 Subpart H: 2011  
FCC CFR Title 47 Part24 Subpart E: 2011

**Date of sample receipt:** 17 Jan., 2013

**Date of Test:** 22-30 Jan., 2013

**Date of report issued:** 31 Jan., 2013

**Test Result :** PASS \*

\* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

A circular logo for CCIS (China Certification & Inspection Services Co., Ltd.) is visible. The logo contains the text 'CHINA CERTIFICATION & INSPECTION SERVICES CO., LTD.' around the perimeter and 'CCIS' in the center. Overlaid on the logo is a handwritten signature in blue ink, which appears to read 'Bruce Zhang'. Below the signature, the date '2013-1-31' is handwritten.

Bruce Zhang  
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the CCIS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

## 2 Version

Version No.	Date	Description
00	31 Jan., 2013	Original

**Prepared by:**

*Lisa chen*

**Report Clerk**

**Date:**

31 Jan., 2013

**Reviewed by:**

*Wimer Zhang*

**Project Engineer**

**Date:**

31 Jan., 2013

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## 4 Test Summary

Test Item	Section in CFR 47	Result
RF Exposure (SAR)	Part 1.1307 Part 2.1093	Passed* (Please refer to SAR Report)
RF Output Power	Part 2.1046 Part 22.913 (a)(2) Part 24.232 (c)	Pass
Modulation Characteristics	Part 2.1047	Pass
99% & -26 dB Occupied Bandwidth	Part 2.1049 Part 22.917 Part 24.238	Pass
Spurious Emissions at Antenna Terminal	Part 2.1051 Part 22.917 (a) Part 24.238 (a)	Pass
Field Strength of Spurious Radiation	Part 2.1053 Part 22.917 (a) Part 24.238 (a)	Pass
Out of band emission, Band Edge	Part 22.917 (a) Part 24.238 (a)	Pass
Frequency stability vs. temperature	Part 2.1055(a)(1)(b)	Pass
Frequency stability vs. voltage	Part 2.1055(d)(1)(2)	Pass

*Pass: The EUT complies with the essential requirements in the standard.*

## 5 General Information

### 5.1 Client Information

Applicant:	ABBA INNOVATIONS.A.S
Address of Applicant:	Calle 76 No. 52-40 Local 1 Alto Prado Barranquilla Colombia
Manufacturer/ Factory:	MOVICOM TECHNOLOGY CO., LIMITED.
Address of Manufacturer/ Factory:	B, Xingheshiji Bldg. 3069, Caitian Rd., Futian District, Shenzhen, China

### 5.2 General Description of E.U.T.

Product Name:	Mobile Phone
Trade Mark:	Taxcel, yaddas, airus, tellme
Model No.:	i8S, i8, i5S,T5,Q7,Q10,Z4,Q3,Q5,W100,C9,S999
Operation Frequency range:	GSM/GPRS 850: 824.20MHz-848.80MHz PCS1900: 1850.20MHz-1909.80MHz
Type of Emission:	250KGXW
IMEI:	IMEI 1:352500054000081 IMEI 2:352500054000099
Software Version:	7219_10H_RZ_L03_BT_FM_ATV_SC_DUAL_220X176_3216_V3 10_130115_1550
Hardware Version:	7219-MB-V1.0
Antenna type:	Internal Antenna
Antenna gain:	GSM850: 0.5dBi PCS1900: 0.8dBi
AC adapter:	Input:100-240V AC,50/60Hz 0.2A Output:5V DC MAX500mA
Power supply:	Rechargeable Li-ion Battery DC3.7V/800mAh
Remarks:	Only test the Model No.: i8S, The Model : i8, i5S,T5,Q7,Q10,Z4, Q3,Q5,W100,C9,S999 and i8S identical inside, electrical circuit design, PCB layout, components used and internal wiring ,the difference being the Color of appearance.

**Operation Frequency List:**

GSM 850		PCS1900	
Channel:	Frequency (MHz)	Channel:	Frequency (MHz)
128	824.20	512	1850.20
129	824.40	513	1850.40
....	....	....	....
189	836.40	660	1879.80
190	836.60	661	1880.00
191	836.80	662	1880.20
...	...	...	...
250	848.60	809	1909.60
251	848.80	810	1909.80

Regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

GSM850			PCS1900		
	Channel	Frequency(MHz)		Channel	Frequency(MHz)
Lowest channel	128	824.20	Lowest channel	512	1850.20
Middle channel	190	836.60	Middle channel	661	1880.00
Highest channel	251	848.80	Highest channel	810	1909.80

### 5.3 Test mode:

Communicate mode (GSM850)	Keep the EUT in communicating mode on GSM850 band.
Communicate mode (PCS1900)	Keep the EUT in communicating mode on PCS1900 band.
Communicate mode (GPRS850)	Keep the EUT in communicating mode on GPRS850 band.
Communicate mode (GPRS1900)	Keep the EUT in communicating mode on GPRS1900 band.
Remark	Base on the section 6.2 conducted output power; we selected the GSM850 and PCS1900 mode as the worst case mode.

### 5.4 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is filing to comply with Section Part 22 subpart H and Part 24 subpart E of the FCC CFR 47 Rules.

### 5.5 Test Methodology

Both conducted and radiated testing were performed according to the procedures document on TIA/EIA 603 and FCC CFR 47.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055 and 2.1057.

### 5.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

● **FCC —Registration No.:** 817957

China Certification & Inspection Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 817957, February 27, 2012

● **Industry Canada (IC)**

The 3m Semi-anechoic chamber of China Certification & Inspection Services Co., Ltd. Has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

### 5.7 Test Location

All tests were performed at:

China Certification & Inspection Services Co., Ltd.

Address: 1st Floor, Block No.2, Laodong Industrial Zone, Xixiang Road Baoan District, Shenzhen, China

Tel: 0755-23118282

Fax: 0755-23116366

## 5.8 Test Instruments list

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (dd-mm-yy)	Cal.Due date (dd-mm-yy)
1	3m Semi- Anechoic Chamber	SAEMC	9(L)*6(W)* 6(H)	CCIS0001	June 09 2012	June 08 2013
2	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	CCIS0005	June 04 2012	June 03 2013
3	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	CCIS0006	May 30 2012	May 29 2013
4	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
5	Coaxial Cable	CCIS	N/A	CCIS0016	Apr. 01 2012	Mar. 31 2013
6	Coaxial Cable	CCIS	N/A	CCIS0017	Apr. 01 2012	Mar. 31 2013
7	Coaxial cable	CCIS	N/A	CCIS0018	Apr. 01 2012	Mar. 31 2013
8	Coaxial Cable	CCIS	N/A	CCIS0019	Apr. 01 2012	Mar. 31 2013
9	Coaxial Cable	CCIS	N/A	CCIS0087	Apr. 01 2012	Mar. 31 2013
10	Amplifier(10kHz-1.3GHz)	HP	8447D	CCIS0003	Apr. 01 2012	Mar. 31 2013
11	Amplifier(1GHz-18GHz)	Compliance Direction Systems Inc.	PAP-1G18	CCIS0011	June 09 2012	June 08 2013
12	Pre-amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	Apr. 01 2012	Mar. 31 2013
13	Horn Antenna	ETS-LINDGREN	3160	GTS217	Mar. 30 2012	Mar. 29 2013
14	Printer	HP	HP LaserJet P1007	N/A	N/A	N/A
15	Positioning Controller	UC	UC3000	CCIS0015	N/A	N/A
16	Spectrum analyzer 9k-30GHz	Rohde & Schwarz	FSP	CCIS0023	May. 29 2012	May. 28 2013
17	EMI Test Receiver	Rohde & Schwarz	ESPI	CCIS0022	Apr 01 2012	Mar. 31 2013
18	Loop antenna	Laplace instrument	RF300	EMC0701	Aug. 12 2012	Aug. 11 2013
19	CMU200	Rhode & Schwarz	1100.0008.02	CCIS0069	May. 29 2012	May. 28 2013



## 6 System test configuration

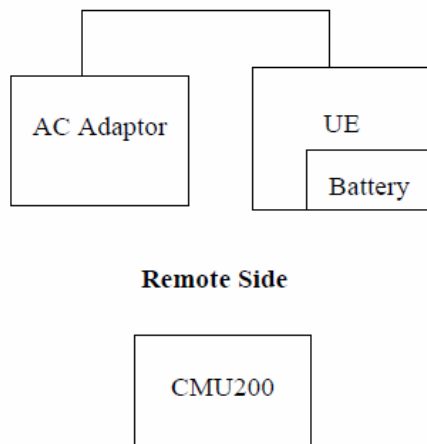
### 6.1 EUT Configuration

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

### 6.2 EUT Exercise

The EUT (Transmitter) was operated in the engineering mode to fix the Tx frequency which was for the purpose of the measurements.

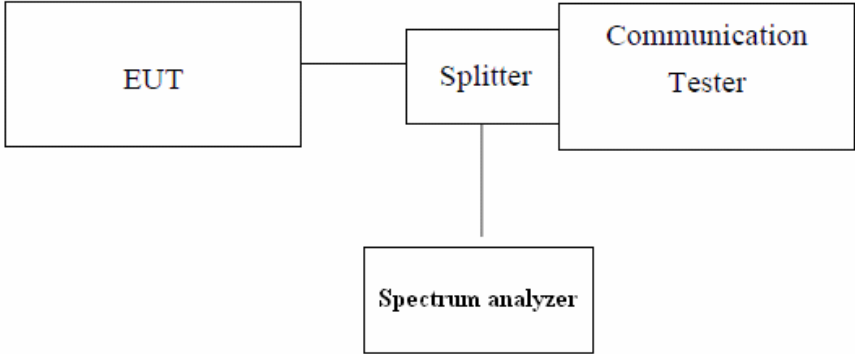
### 6.3 Configuration of Tested System



### 6.4 DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition.  
EUT staying in continuous transmitting mode. Channel Low, Mid and High for each type band with rated data rate were chosen for full testing.  
The field strength of spurious radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for both GSM/PCS with power adaptors, earphone and Data cable. The worst-case H mode for GSM 850 band, PCS1900 band.

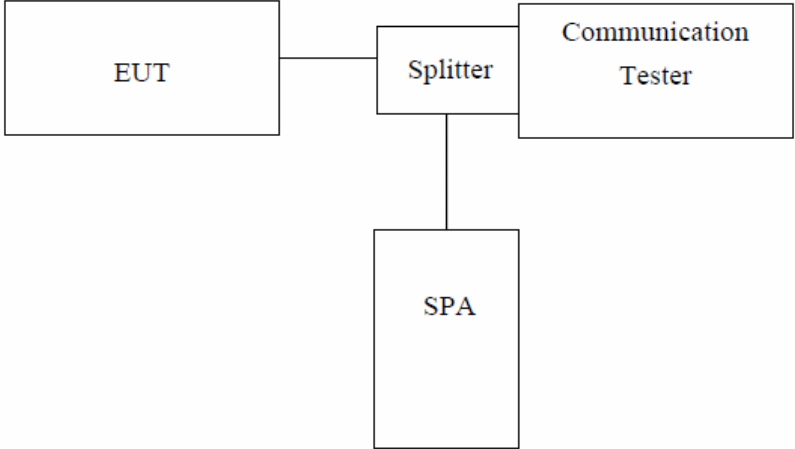
## 6.5 Conducted Output Power

Test Requirement:	FCC part22.913(a) and FCC part24.232(b)
Test Method:	FCC part2.1046
Limit:	GSM850 7W ERP PCS1900 2W EIRP
Test setup:	 <p><i>Note: Measurement setup for testing on Antenna connector</i></p>
Test Procedure:	The transmitter output was connected to a calibrated attenuator, the other end of which was connected to the spectrum analyzer. Transmitter output was read off the spectrum analyzer in dBm.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

### Measurement Data

EUT Mode	Channel	Frequency (MHz)	PK power (dBm)	Limit(dBm)	Result
GSM 850	128	824.20	31.56	38.45	Pass
	190	836.60	31.50		
	251	848.80	31.44		
PCS 1900	512	1850.20	28.97	33.00	Pass
	661	1880.00	28.65		
	810	1909.80	28.36		
GPRS 850 (1 Uplink slot)	128	824.20	31.52	38.45	Pass
	190	836.60	31.47		
	251	848.80	31.40		
GPRS 1900 (1 Uplink slot)	512	1850.20	28.93	33.00	Pass
	661	1880.00	28.64		
	810	1909.80	28.25		
GPRS 850 (2 Uplink slots)	128	824.20	31.34	38.45	Pass
	190	836.60	31.31		
	251	848.80	31.25		
GPRS 1900 (2 Uplink slots)	512	1850.20	28.84	33.00	Pass
	661	1880.00	28.54		
	810	1909.80	28.19		

## 6.6 Occupy Bandwidth

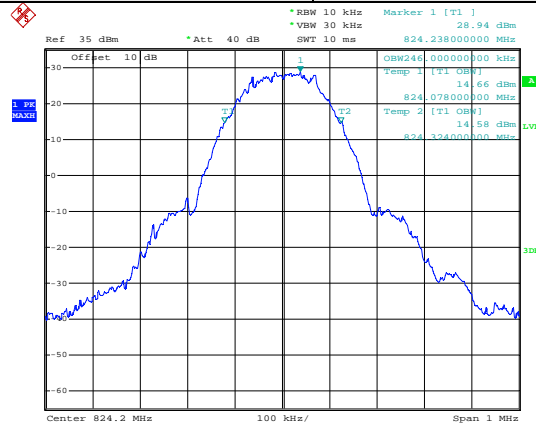
Test Requirement:	FCC part22.913(a) and FCC part24.232(b)
Test Method:	FCC part2.1049
Test setup:	 <p><i>Note: Measurement setup for testing on Antenna connector</i></p>
Test Procedure:	<ol style="list-style-type: none"> <li>1. The EUT's output RF connector was connected with a short cable to the spectrum analyzer</li> <li>2. RBW was set to about 1% of emission BW, VBW= 3 times RBW.</li> <li>3. -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.</li> </ol>
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

### Measurement Data

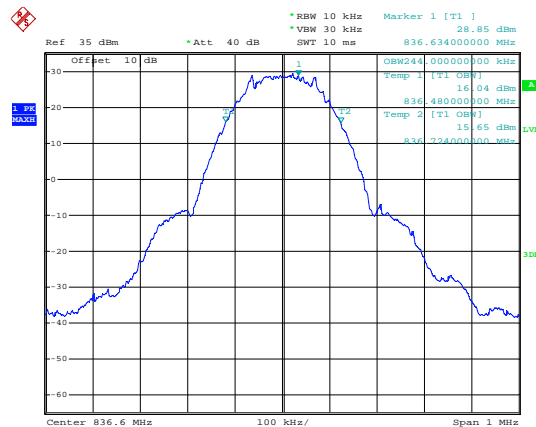
EUT Mode	Channel	Frequency (MHz)	99% Occupy bandwidth (kHz)	-26dB bandwidth (kHz)
GSM 850	128	824.20	246	316
	190	836.60	244	320
	251	848.80	244	322
PCS 1900	512	1850.20	244	322
	661	1880.00	242	318
	810	1909.80	244	328

Test plot as follows:

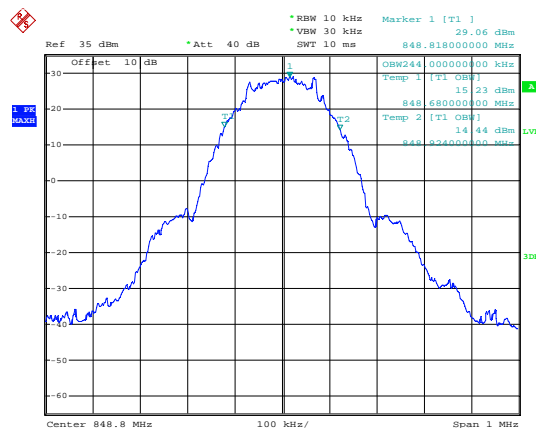
Test Item:	99% Occupy bandwidth	Test Mode:	GSM850
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Lowest channel

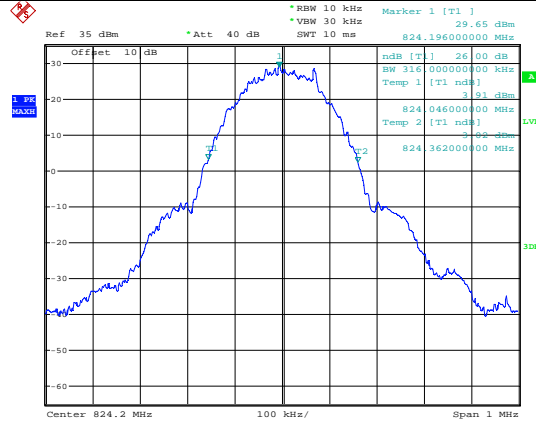


Middle channel

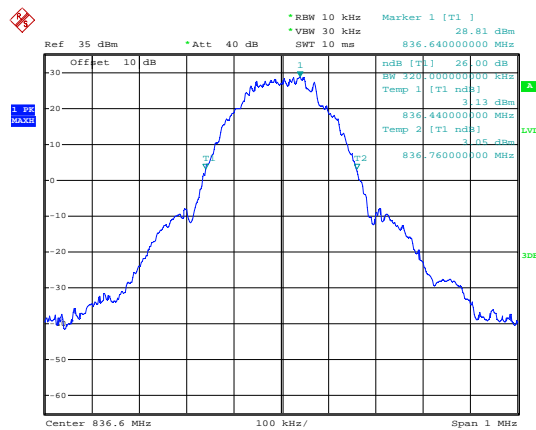


Highest channel

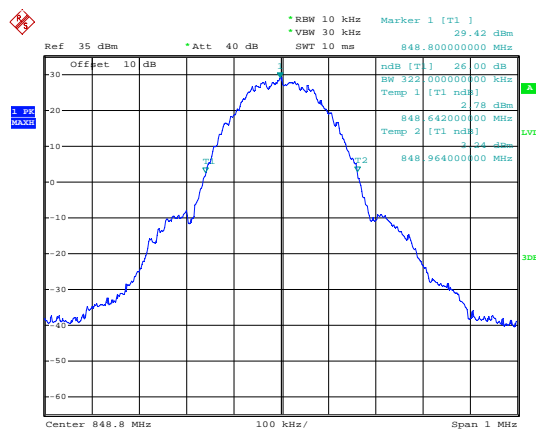
Test Item:	-26dB bandwidth	Test Mode:	GSM850
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Lowest channel

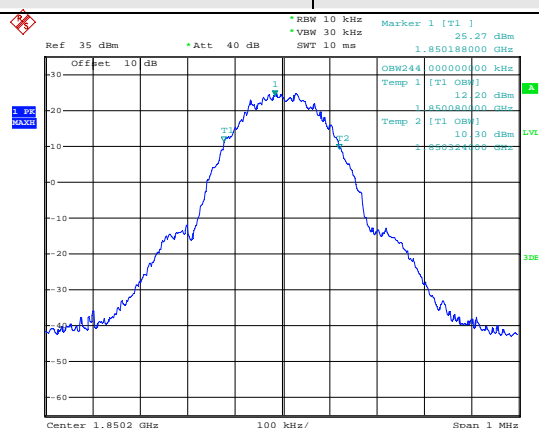


Middle channel

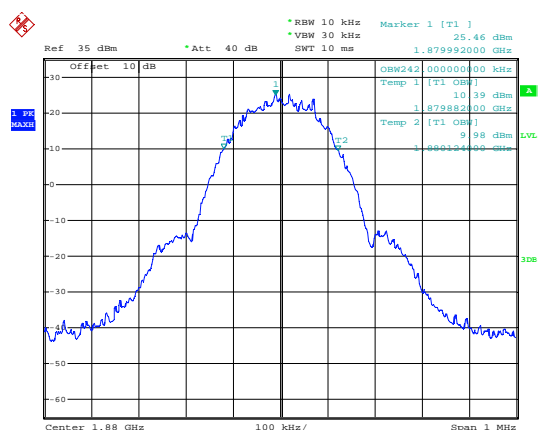


Highest channel

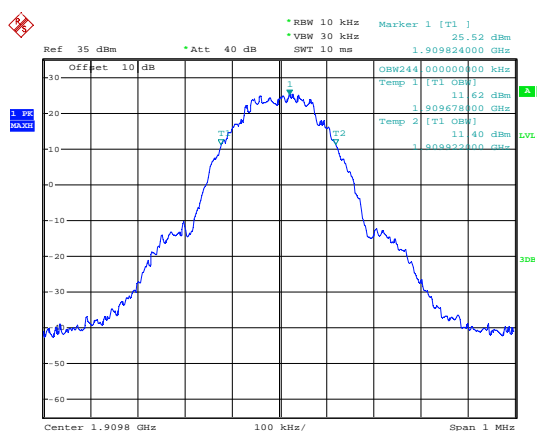
Test Item:	99% Occupy bandwidth	Test Mode:	PCS 1900
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Lowest channel

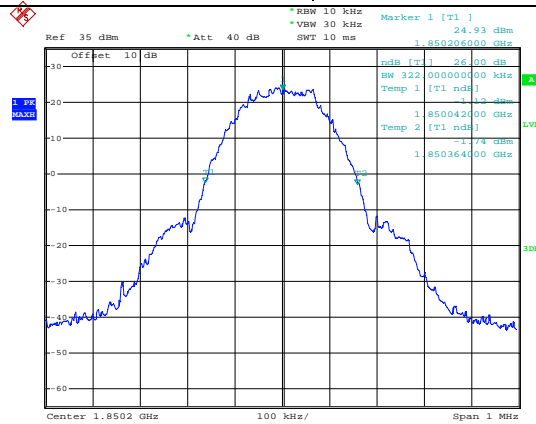


Middle channel

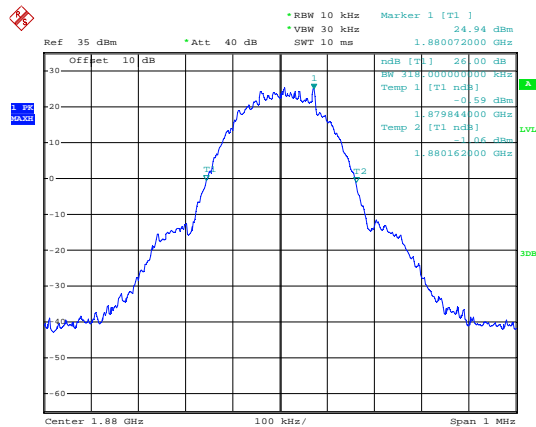


Highest channel

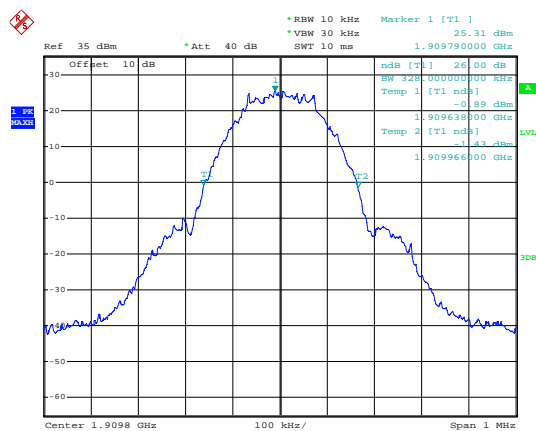
Test Item:	-26dB bandwidth	Test Mode:	PCS 1900
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Lowest channel



Middle channel



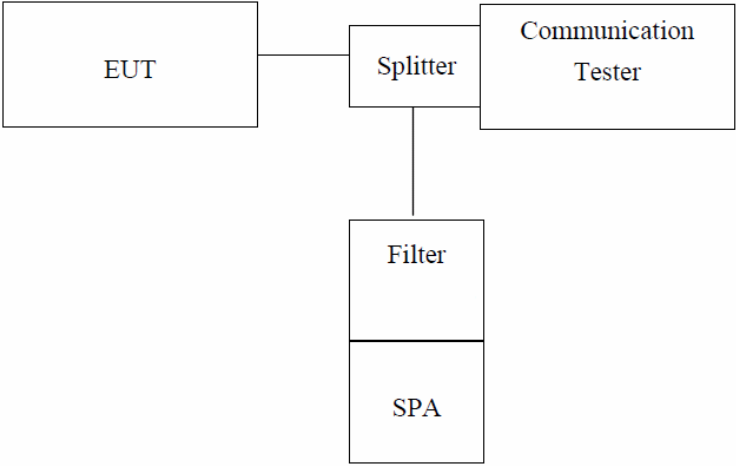
Highest channel



## 6.7 MODULATION CHARACTERISTIC

According to FCC § 2.1047(d), Part 22H & 24E there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

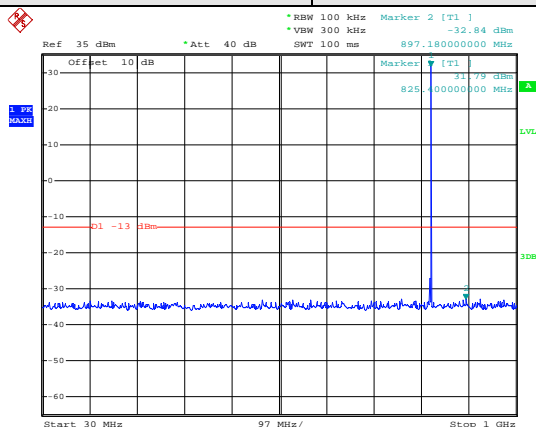
## 6.8 Out of band emission at antenna terminals

Test Requirement:	FCC part22.917(a) and FCC part24.238(a)
Test Method:	FCC part2.1051
Limit:	-13dBm
Test setup:	 <p><i>Note: Measurement setup for testing on Antenna connector</i></p>
Test Procedure:	<ol style="list-style-type: none"> <li>1 The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation.</li> <li>2 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.</li> <li>3 For the out of band: Set the RBW, VBW = 1MHz, Start=30MHz, Stop= 10th harmonic.</li> <li>4 Band Edge Requirements: 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.</li> </ol>
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

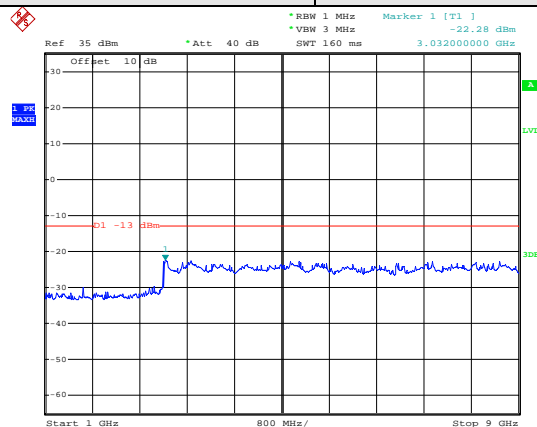
Test plot as follows:

## Spurious emission

Test Mode:	GSM850	Test Channel:	Lowest channel
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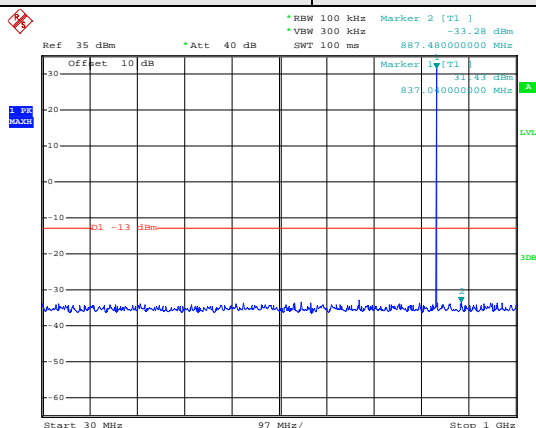


30MHz~1GHz

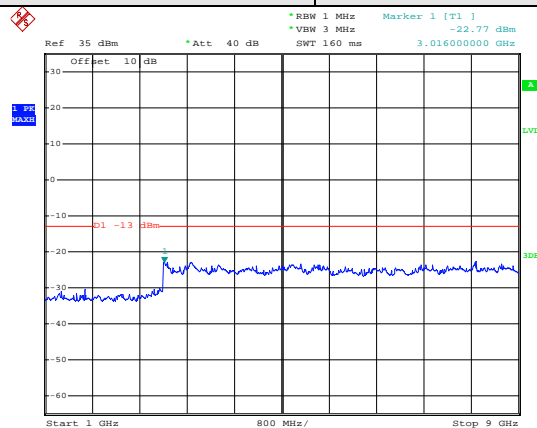


1GHz~10GHz

Test Mode:	GSM850	Test Channel:	Middle channel
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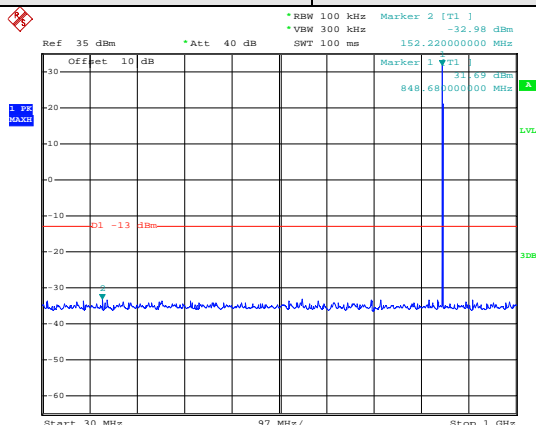


30MHz~1GHz

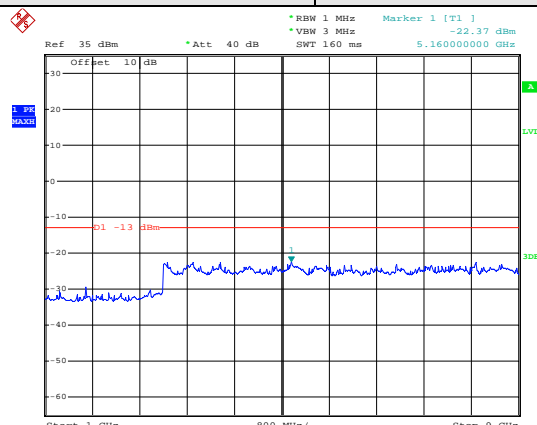


1GHz~10GHz

Test Mode:	GSM850	Test Channel:	Highest channel
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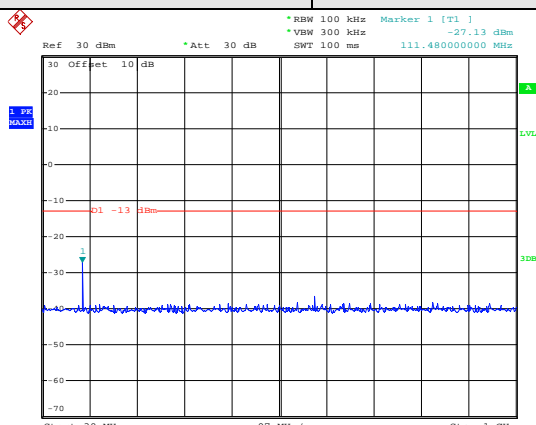


30MHz~1GHz

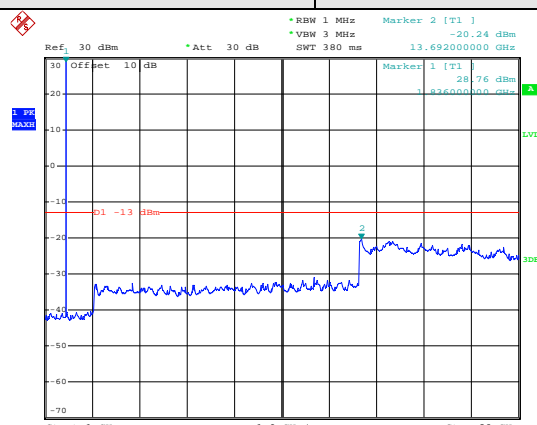


1GHz~10GHz

Test Mode:	PCS1900	Test Channel:	Lowest channel
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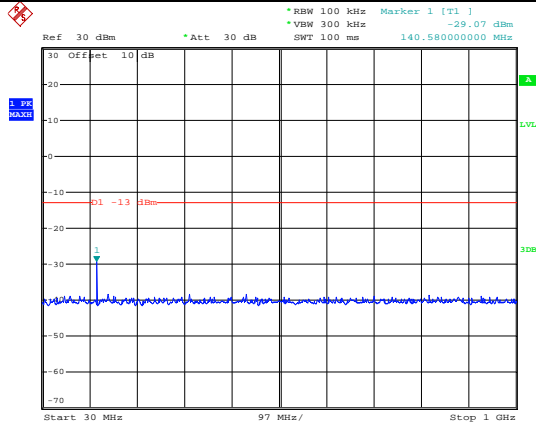


30MHz~1GHz

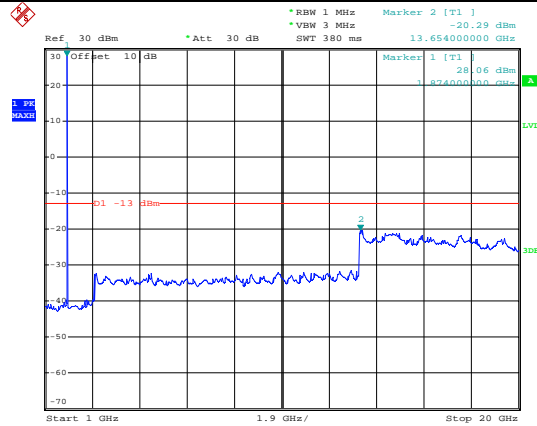


1GHz~20GHz

Test Mode:	PCS1900	Test Channel:	Middle channel
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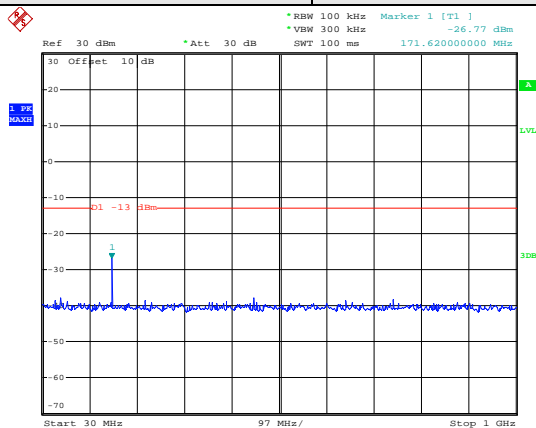


30MHz~1GHz

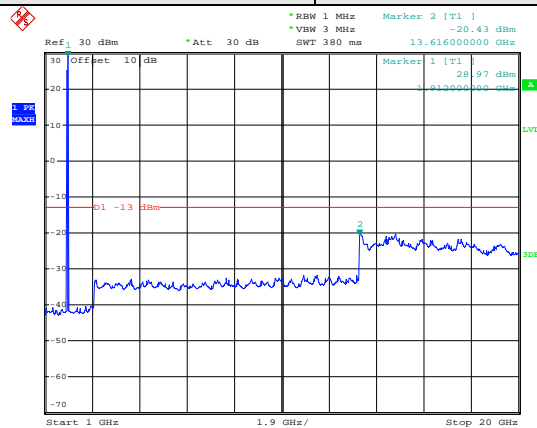


1GHz~20GHz

Test Mode:	PCS1900	Test Channel:	Highest channel
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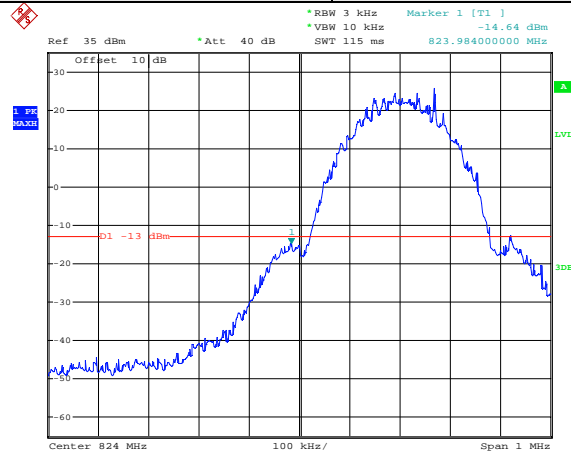
30MHz~1GHz



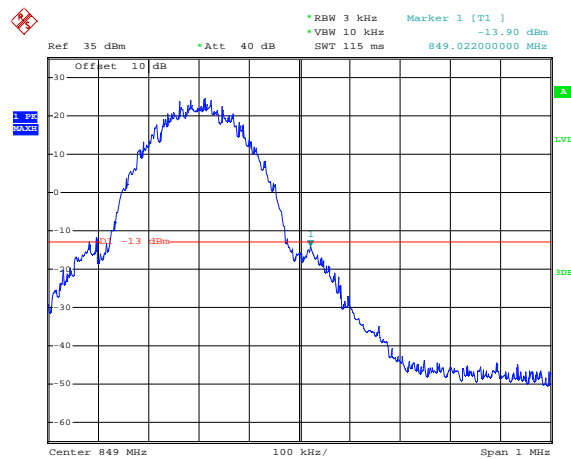
1GHz~20GHz

## Band edge emission:

Test Mode:	GSM850
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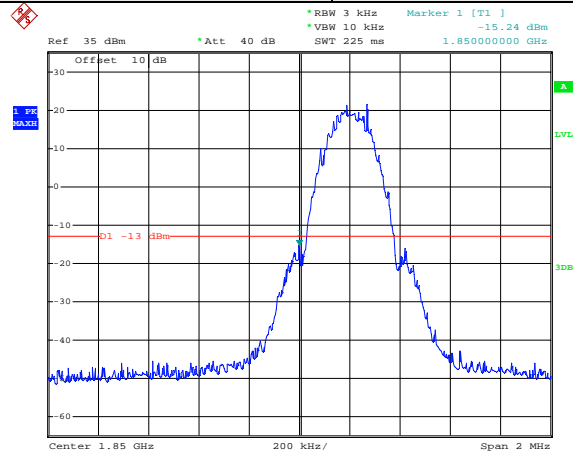


## Lowest channel

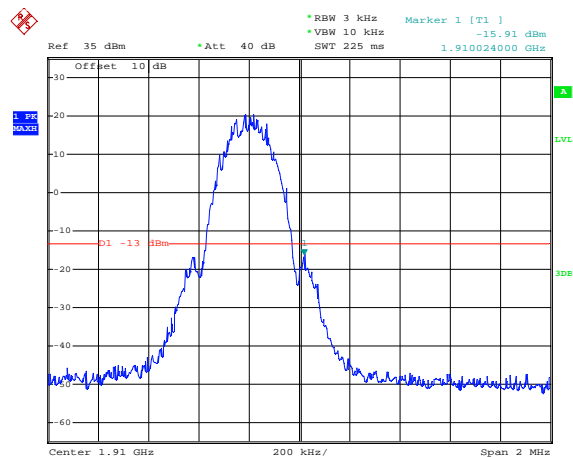


## Highest channel

Test Mode:	PCS1900
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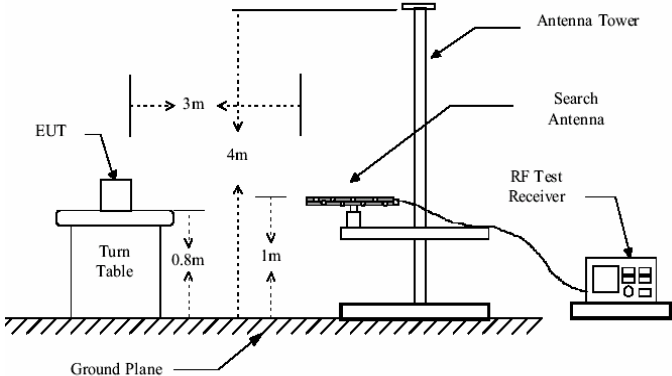
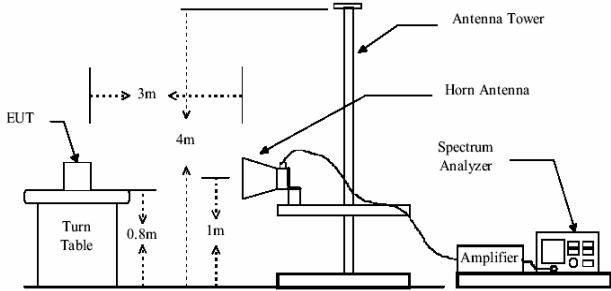
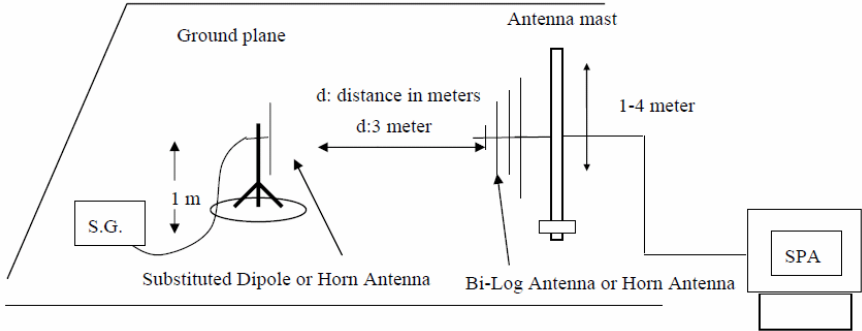


Lowest channel



Highest channel

## 6.9 ERP, EIRP Measurement

Test Requirement:	FCC part22.913(a) and FCC part24.232(b)
Test Method:	FCC part2.1046
Limit:	GSM850 7W ERP PCS1900 2W EIRP
Test setup:	<p>Below 1GHz</p>  <p>Above 1GHz</p>  <p>Substituted method:</p> 

Test Procedure:	<ol style="list-style-type: none"><li>1. The EUT was placed on an 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.</li><li>2. During the measurement, the EUT was communication with the station. The highest emission was recorded with the rotation of the turntable and the lowering of the test antenna from 4m to 1m. The reading was recorded and the field strength (E in dBuV/m) was calculated.</li><li>3. ERP in frequency band 824.2 –848.80MHz were measured using a substitution method. The EUT was replaced by dipole antenna connected, the S.G. output was recorded and ERP was calculated asfollows: <math display="block">\text{ERP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBd)} - \text{Cable Loss (dB)}</math></li><li>4. EIRP in frequency band 1850.2 –1909.8MHz were measured using a substitution method. The EUT was replaced by or horn antenna connected, the S.G. output was recorded and EIRP was calculated as follows: <math display="block">\text{EIRP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable Loss (dB)}</math></li><li>5. The worse case was relating to the conducted output power.</li></ol>
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

## Measurement Data



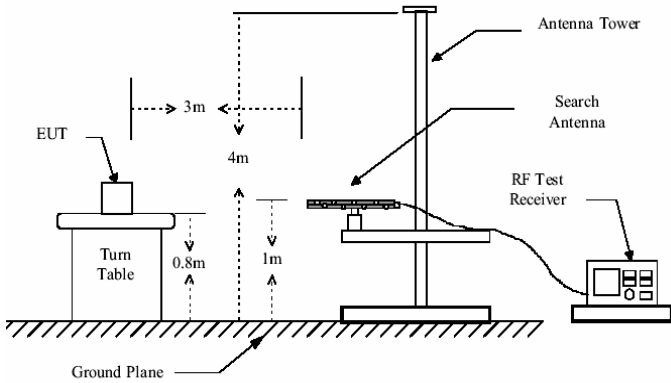
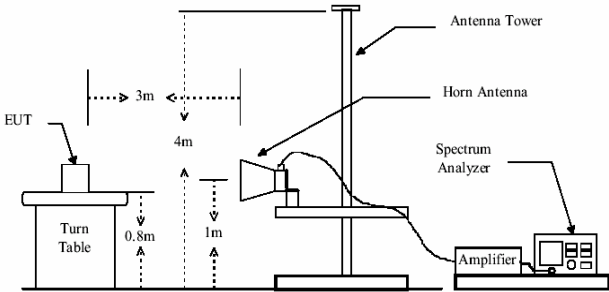
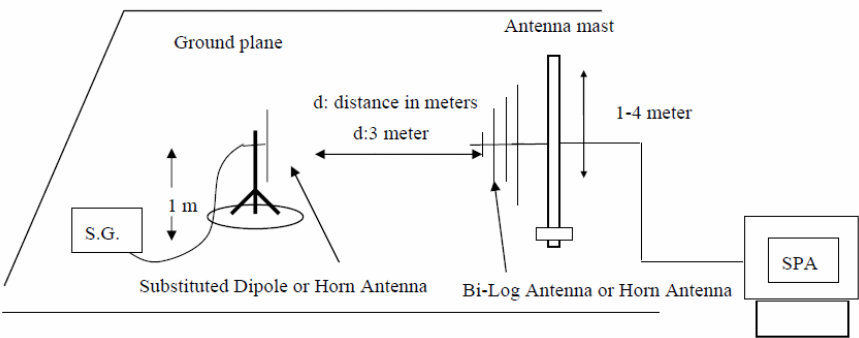
**GSM850**

EUT mode	Channel	EUT Pol.	Antenna Pol.	ERP(dBm)	Limit (dBm)	Result
GSM850	128	H	V	24.12	33.00	Pass
			H	24.59		
		E1	V	24.08		
			H	24.46		
		E2	V	23.97		
			H	24.19		

**PCS1900**

EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
PCS1900	512	H	V	21.28	33.00	Pass
			H	20.64		
		E1	V	21.16		
			H	20.43		
		E2	V	21.09		
			H	20.31		

## 6.10 Field strength of spurious radiation measurement

Test Requirement:	FCC part22.917(a) and FCC part24.238(a)
Test Method:	FCC part2.1053
Limit:	-13dBm
Test setup:	<p>Below 1GHz</p>  <p>Above 1GHz</p>  <p>Substituted method:</p> 

Test Procedure:	<ol style="list-style-type: none"><li>1. The EUT was placed on an 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.</li><li>2. 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.</li><li>3. The frequency range up to tenth harmonic was investigated for each of three fundamental frequency (low, middle and high channels). Once spurious emission was identified, the power of the emission was determined using the substitution method.</li><li>4. The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency. <math display="block">\text{ERP / EIRP} = \text{S.G. output (dBm)} + \text{Antenna Gain(dB/dBi)} - \text{Cable Loss (dB)}</math></li></ol>
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data

Test mode:	GSM850		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1648.40	Vertical	-43.12	-13.00	Pass
2472.60	V	-52.64		
3296.80	V	-54.62		
4121.00	V	-56.78		
4945.20	V	---		
5769.40	V	---		
1648.40	Horizontal	-43.64	-13.00	Pass
2472.60	H	-51.65		
3296.80	H	-54.35		
4121.00	H	-57.15		
4945.20	H	---		
5769.40	H	---		
Test mode:	GSM850		Test channel:	Middle
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1673.20	Vertical	-42.52	-13.00	Pass
2509.80	V	-51.64		
3346.40	V	-53.75		
4183.00	V	-56.37		
5019.60	V	---		
5856.20	V	---		
1673.20	Horizontal	-42.97	-13.00	Pass
2509.80	H	-51.63		
3346.40	H	-53.64		
4183.00	H	-56.13		
5019.60	H	---		
5856.20	H	---		

Remark :

1. The emission behaviour belongs to narrowband spurious emission.
2. Remark"---" means that the emission level is too low to be measured
3. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

Test mode:	GSM850		Test channel:	Highest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1697.60	Vertical	-42.64	-13.00	Pass
2546.40	V	-51.22		
3395.20	V	-54.66		
4244.00	V	-56.97		
5092.80	V	---		
5941.60	V	---		
1697.60	Horizontal	-43.51	-13.00	Pass
2546.40	H	-51.64		
3395.20	H	-53.97		
4244.00	H	-56.56		
5092.80	H	---		
5941.60	H	---		
Test mode:	PCS1900		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3700.40	Vertical	-46.54	-13.00	Pass
5550.60	V	-53.45		
7400.80	V	-55.97		
9251.00	V	-56.87		
11101.20	V	---		
12951.40	V	---		
3700.40	Horizontal	-45.65	-13.00	Pass
5550.60	H	-53.64		
7400.80	H	-55.26		
9251.00	H	-56.79		
11101.20	H	---		
12951.40	H	---		

Remark :

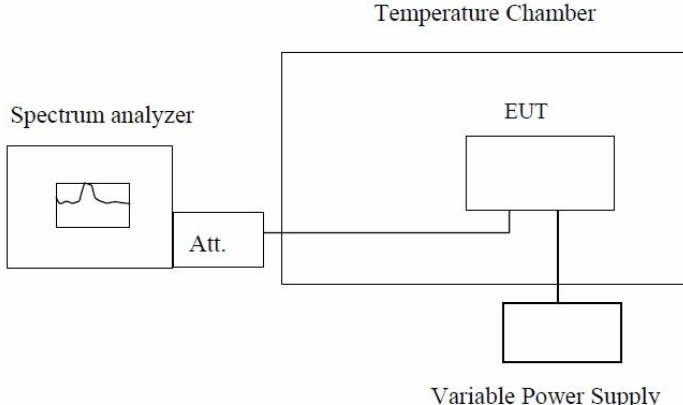
1. The emission behaviour belongs to narrowband spurious emission.
2. Remark"---" means that the emission level is too low to be measured
3. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

Test mode:	PCS1900		Test channel:	Middle
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3760.00	Vertical	-47.84	-13.00	Pass
5640.00	V	-53.64		
7520.00	V	-54.97		
9400.00	V	-55.89		
11280.00	V	---		
13160.00	V	---		
3760.00	Horizontal	-46.97	-13.00	Pass
5640.00	H	-53.69		
7520.00	H	-55.46		
9400.00	H	-56.13		
11280.00	H	---		
13160.00	H	---		
Test mode:	PCS1900		Test channel:	Highest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3819.60	Vertical	-46.55	-13.00	Pass
5729.40	V	-53.16		
7639.20	V	-54.66		
9549.00	V	-56.97		
11458.80	V	---		
13368.60	V	---		
3819.60	Horizontal	-48.67	-13.00	Pass
5729.40	H	-54.85		
7639.20	H	-55.26		
9549.00	H	-56.72		
11458.80	H	---		
13368.60	H	---		

Remark :

1. The emission behaviour belongs to narrowband spurious emission.
2. Remark"---" means that the emission level is too low to be measured
3. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

## 6.11 Frequency stability V.S. Temperature measurement

Test Requirement:	FCC Part2.1055(a)(1)(b)
Test Method:	FCC Part2.1055(a)(1)(b)
Limit:	2.5ppm
Test setup:	 <p><b>Note :</b> Measurement setup for testing on Antenna connector</p>
Test procedure:	<ol style="list-style-type: none"> <li>1. The equipment under test was connected to an external DC power supply and input rated voltage.</li> <li>2. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators.</li> <li>3. The EUT was placed inside the temperature chamber.</li> <li>4. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25°C operating frequency as reference frequency.</li> <li>5. Turn EUT off and set the chamber temperature to -30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency.</li> <li>6. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached</li> </ol>
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

### Measurement Data

Reference Frequency: GSM850 Lowest channel=128 channel=824.2MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error			Result
		Hz	ppm		
3.70	-30	35	0.043594	2.5	Pass
	-20	43	0.053156		
	-10	40	0.046425		
	0	43	0.053156		
	10	35	0.046135		
	20	36	0.043964		
	30	46	0.056844		
	40	47	0.055123		
	50	42	0.0481528		

Reference Frequency: GSM850 Middle channel=190 channel=836.6MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error			Result
		Hz	ppm		
3.70	-30	43	0.048853	2.5	Pass
	-20	36	0.036103		
	-10	35	0.046512		
	0	43	0.056132		
	10	42	0.053156		
	20	55	0.066420		
	30	57	0.076541		
	40	56	0.069642		
	50	46	0.059431		



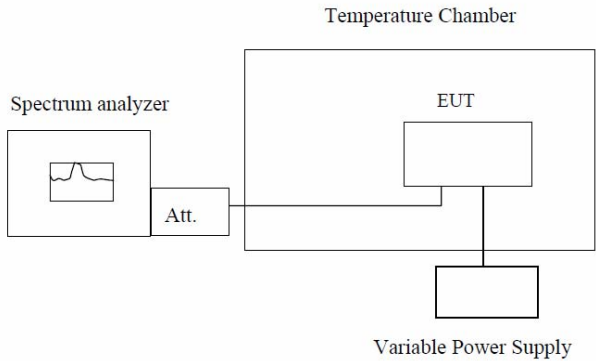
Reference Frequency: GSM850 Highest channel=251 channel=848.8 MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error			Result
		Hz	ppm		
3.70	-30	48	0.05655	2.5	Pass
	-20	43	0.045515		
	-10	39	0.038559		
	0	48	0.049248		
	10	45	0.053016		
	20	49	0.057728		
	30	33	0.032515		
	40	32	0.046415		
	50	46	0.053281		

Reference Frequency: PCS1900 Lowest channel=512 channel=1850.2MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error			Result
		Hz	ppm		
3.70	-30	38	0.016313	2.5	Pass
	-20	36	0.014364		
	-10	35	0.013315		
	0	38	0.017510		
	10	46	0.021314		
	20	43	0.024651		
	30	32	0.019433		
	40	47	0.023632		
	50	57	0.026534		

Reference Frequency: PCS1900 Middle channel=661 channel=1880MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error			Result
		Hz	ppm		
3.70	-30	38	0.023545	2.5	Pass
	-20	46	0.013694		
	-10	46	0.023981		
	0	52	0.023943		
	10	49	0.023496		
	20	43	0.023946		
	30	48	0.023245		
	40	47	0.023364		
	50	42	0.023943		

Reference Frequency: PCS1900 Highest channel=810 channel=1909.8MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error			Result
		Hz	ppm		
3.70	-30	41	0.016463	2.5	Pass
	-20	46	0.014643		
	-10	48	0.025945		
	0	41	0.026644		
	10	48	0.025652		
	20	43	0.026452		
	30	46	0.086953		
	40	42	0.026425		
	50	37	0.016425		

## 6.12 Frequency stability V.S. Voltage measurement

Test Requirement:	FCC Part2.1055(d)(1)(2)
Test Method:	FCC Part2.1055(d)(1)(2)
Limit:	2.5ppm
Test setup:	 <p>Note : Measurement setup for testing on Antenna connector</p>
Test procedure:	<ol style="list-style-type: none"> <li>1. Set chamber temperature to 25°C. Use a variable DC power source to power the EUT and set the voltage to rated voltage.</li> <li>2. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.</li> <li>3. Reduce the input voltage to specified extreme voltage variation (+/- 15%) and endpoint, record the maximum frequency change.</li> </ol>
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

### Measurement Data

Reference Frequency: GSM850 Lowest channel=128 channel=824.2MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.25	59	0.026542	2.5	Pass
	3.70	48	0.033546		
	3.40	45	0.029342		

Reference Frequency: GSM850 Middle channel=190 channel=836.6MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.25	41	0.046658	2.5	Pass
	3.70	46	0.043642		
	3.40	49	0.051653		

Reference Frequency: GSM850 Highest channel=251 channel=848.8MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.25	38	0.052642	2.5	Pass
	3.70	45	0.033684		
	3.40	40	0.054642		

Reference Frequency: PCS1900 Lowest channel=512 channel=1850.2MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.25	59	0.026542	2.5	Pass
	3.70	48	0.033546		
	3.40	45	0.029342		

Reference Frequency: PCS1900 Middle channel=661 channel=1880MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.25	46	0.019354	2.5	Pass
	3.70	43	0.023356		
	3.40	48	0.023654		

Reference Frequency: PCS1900 Highest channel=810 channel=1909.8MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.25	45	0.016842	2.5	Pass
	3.70	38	0.026565		
	3.40	37	0.022432		