



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

**TEST REPORT**

**For**

**GSM Tracker**

**Model: MU-201**

**Trade Name: SANAV**

*Issued to*

**SAN JOSE TECHNOLOGY, INC.**  
11F.,No.2,Sec.4, Jhongyang Rd. ,Tucheng Dist.,  
New Taipei City 236, Taiwan (R.O.C.)

*Issued by*



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## 1. TEST RESULT CERTIFICATION

**Applicant:** SAN JOSE TECHNOLOGY, INC.  
11F.,No.2,Sec.4, Jhongyang Rd. ,Tucheng Dist.,  
New Taipei City 236, Taiwan (R.O.C.)

**Equipment Under Test:** GSM Tracker

**Trade Name:** SANAV

**Model Number:** MU-201

**Date of Test:** February 25 ~ March 10, 2011

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC 47 CFR Part 22 Subpart H & Part 24 Subpart E	No non-compliance noted

### We hereby certify that:

The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in TIA/EIA-603-C: 2004 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rule FCC PART 22 Subpart H and PART 24 Subpart E.

The test results of this report relate only to the tested sample identified in this report.

*Approved by:*

Rex Lai  
Section Manager  
Compliance Certification Services Inc.

*Reviewed by:*

Gina Lo  
Section Manager  
Compliance Certification Services Inc.



## 2. EUT DESCRIPTION

<b>Product</b>	GSM Tracker
<b>Trade Name</b>	SANAV
<b>Model Number</b>	MU-201
<b>Model Discrepancy</b>	N/A
<b>Power Supply</b>	<ol style="list-style-type: none"><li>1. Powered by Power Adapter Model: SA01-6USG05R-A I/P: 100-240V, 50-60Hz, 0.2A O/P: 5V, 1.2A</li><li>2. Battery Model: H503042 Rating: 650mAh</li></ol>
<b>Frequency Range</b>	GSM / GPRS: 850: 824.2 ~ 848.8 MHz GSM / GPRS: 1900: 1850.2 ~ 1909.8 MHz
<b>Transmit Power (ERP &amp; EIRP Power)</b>	GSM 850: 30.66dBm GSM 1900: 29.96 dBm GPRS 850: 32.16 dBm GPRS 1900: 28.95 dBm
<b>Modulation Technique</b>	GSM: GMSK GPRS: GMSK
<b>Type of Emission</b>	GSM 850: 248KGXW--- GSM 1900: 250KGXW--- GPRS 850: 249KGXW--- GPRS 1900: 250KGXW---
<b>Antenna Gain</b>	GSM / GPRS 850: -2.3 dBi GSM / GPRS 1900: 3.34 dBi
<b>Antenna Type</b>	PIFA Antenna

**Remark:**

1. *The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.*
2. *This submittal(s) (test report) is intended for FCC ID: **RUU-MU201888** filing to comply with Part 22 and Part 24 of the FCC 47 CFR Rules.*



### **3. TEST METHODOLOGY**

Both conducted and radiated testing were performed according to the procedures document on chapter 13 of ANSI C63.4: 2003, TIA/EIA-603-C: 2004 and FCC CFR 47, Part 2, PART 22 SUBPART H AND PART 24 SUBPART E

#### **3.1 EUT CONFIGURATION**

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

#### **3.2 EUT EXERCISE**

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

#### **3.3 GENERAL TEST PROCEDURES**

##### **Conducted Emissions**

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4: 2003. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

##### **Radiated Emissions**

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4: 2003.



### **3.4 DESCRIPTION OF TEST MODES**

The EUT (model: MU-201) had been tested under operating condition.

EUT staying in continuous transmitting mode was programmed.

**GSM / GPRS 850:**

Channel Low (CH128), Channel Mid (CH190) and Channel High (CH251) were chosen for full testing.

**GSM / GPRS 1900:**

Channel Low (CH512), Channel Mid (CH661) and Channel High (CH810) were chosen for full testing.

After verification, all tests were carried out with the worst case test modes as shown below except radiated spurious emission below 1GHz and power line conducted emissions below 30MHz, which worst case was in normal link mode only.

The field strength of spurious emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in lie-down position (X axis) and the worst case was recorded.



## **4. INSTRUMENT CALIBRATION**

### **4.1 MEASURING INSTRUMENT CALIBRATION**

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.



## 4.2 MEASUREMENT EQUIPMENT USED

### Equipment Used for Emissions Measurement

**Remark:** Each piece of equipment is scheduled for calibration once a year and Loop Antenna is scheduled for calibration once three years.

Conducted Emissions Test Site				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY43360131	03/02/2012
Power Meter	Anritsu	ML2495A	1012009	03/28/2011
Power Sensor	Anritsu	MA2411B	0917072	03/08/2012
Temp. / Humidity Chamber	Terchy	MHG-150LF	930619	09/14/2011
DC Power Source	Agilent	E3640A	MY40001774	01/07/2012

Wugu 966 Chamber A				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	US42510252	11/03/2011
EMI Test Receiver	R&S	ESCI	100064	02/03/2012
Pre-Amplifier	Mini-Circuits	ZFL-1000LN	SF350700823	01/12/2012
Pre-Amplifier	MITEQ	AFS44-00102650-42-10P-44	1415367	11/19/2011
Bilog Antenna	Sunol Sciences	JB3	A030105	10/06/2011
Bilog Antenna	Sunol Sciences	JB3	A030205	09/10/2011
Horn Antenna	EMCO	3117	00055165	01/12/2012
Horn Antenna	EMCO	3117	00055167	12/06/2011
Loop Antenna	EMCO	6502	8905/2356	06/10/2013
Turn Table	CCS	CC-T-1F	N/A	N.C.R
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R
Site NSA	CCS	N/A	N/A	12/26/2011
Test S/W	EZ-EMC (CCS-3A1RE)			

Conducted Emission room # A				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI Test Receiver	R&S	ESHS10	843743/015	03/25/2011
LISN	SCHWARZBECK	NSLK 8127	8127-541	12/18/2011
LISN	SCHAFFNER	NNB 41	03/10013	N.C.R.
Test S/W	CCS-3A1-CE			



### 4.3 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
Powerline Conducted Emission	+/- 1.6202
3M Semi Anechoic Chamber / 30M~200M	+/- 4.0606
3M Semi Anechoic Chamber / 200M~1000M	+/- 3.9979
3M Semi Anechoic Chamber / 1G~8G	+/- 2.5790
3M Semi Anechoic Chamber / 8G~18G	+/- 2.5928
3M Semi Anechoic Chamber / 18G~26G	+/- 2.7212
3M Semi Anechoic Chamber / 26G~40G	+/- 2.9520

*Remark: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.*



## **5. FACILITIES AND ACCREDITATIONS**

### **5.1 FACILITIES**

No.199, Chunghsen Road, Hsintien City, Taipei Hsien, Taiwan, R.O.C.

Tel: 886-2-2217-0894 / Fax: 886-2-2217-1029

No.11, Wugong 6th Rd., Wugu Industrial Park, Taipei Hsien 248, Taiwan

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

No.81-1, Lane 210, Bade 2nd Rd., Luchu Hsiang, Taoyuan Hsien 338, Taiwan

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

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

### **5.2 EQUIPMENT**

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."



### 5.3 TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	FCC	3M Semi Anechoic Chamber (FCC MRA: TW1039) to perform FCC Part 15 measurements	 FCC MRA: TW1039
Taiwan	TAF	LP0002, RTTE01, FCC Method-47 CFR Part 15 Subpart C, D, E, RSS-210, RSS-310 IDA TS SRD, AS/NZS 4268, AS/NZS 4771, TS 12.1 & 12.2, ETSI EN 300 440-1, ETSI EN 300 440-2, ETSI EN 300 328, ETSI EN 300 220-1, ETSI EN 300 220-2, ETSI EN 301 893, ETSI EN 301 489-1/3/7/17 FCC OET Bulletin 65 + Supplement C, EN 50360, EN 50361, EN 50371, RSS 102, EN 50383, EN 50385, EN 50392, IEC 62209, CNS 14958-1, CNS 14959 FCC Method -47 CFR Part 15 Subpart B IEC / EN 61000-3-2, IEC / EN 61000-3-3, IEC / EN 61000-4-2/3/4/5/6/8/11	 Testing Laboratory 1309
Canada	Industry Canada	3M Semi Anechoic Chamber (IC 2324G-1 / IC 2324G-2) to perform	 IC 2324G-1 IC 2324G-2

*\*No part of this report may be used to claim or imply product endorsement by A2LA or any agency of the US Government.*



## **6. SETUP OF EQUIPMENT UNDER TEST**

### **6.1 SETUP CONFIGURATION OF EUT**

See test photographs attached in Appendix I for the actual connections between EUT and support equipment.

### **6.2 SUPPORT EQUIPMENT**

No.	Device Type	Brand	Model	FCC ID	Series No.	Data Cable	Power Cord
1.	Power Supply (Remote)	ABM	8301HD	FCC DoC	D011531	N/A	Shielded, 1.5m
2.	8960 Series 10 Wireless Communication test set (Remote)	Agilent	E5515C	N/A	GB44051665	N/A	Unshielded, 1.8m

***Remark:***

- 1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.*
- 2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.*



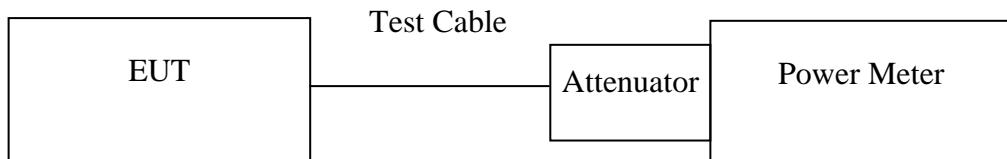
## 7. FCC PART 22 & 24 REQUIREMENTS

### 7.1 PEAK POWER

#### LIMIT

According to FCC §2.1046.

#### Test Configuration



*Remark: Measurement setup for testing on Antenna connector*

#### TEST PROCEDURE

The transmitter output was connected to a calibrated attenuator, the other end of which was connected to a power meter. Transmitter output was read off the power meter in dBm. The power output at the transmitter antenna port was determined by adding the value of the attenuator to the power meter reading.

#### TEST RESULTS

*No non-compliance noted.*

**Test Data**

Test Mode	CH	Frequency (MHz)	Peak Power (dBm)	Output Power W
GSM 850	128	824.20	33.60	2.29087
	190	836.60	33.30	2.13796
	251	848.80	33.10	2.04174
GPRS 850 (Class 10)	128	824.20	33.60	2.29087
	190	836.60	33.20	2.08930
	251	848.80	33.00	1.99526

Test Mode	CH	Frequency (MHz)	Peak Power (dBm)	Output Power W
GSM 1900	512	1850.20	30.40	1.09648
	661	1880.00	30.30	1.07152
	810	1909.80	30.00	1.00000
GPRS 1900 (Class 10)	512	1850.20	30.30	1.07152
	661	1880.00	30.20	1.04713
	810	1909.80	29.90	0.97724

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

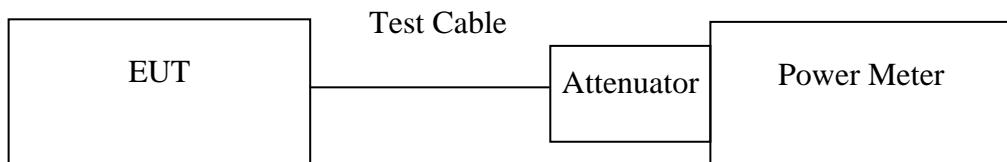


## 7.2 AVERAGE POWER

### LIMIT

For reporting purposes only.

### Test Configuration



*Remark: Measurement setup for testing on Antenna connector*

### TEST PROCEDURE

The transmitter output was connected to a calibrated attenuator, the other end of which was connected to a power meter. Transmitter output was read off the power meter in dBm. The power output at the transmitter antenna port was determined by adding the value of the attenuator to the power meter reading.

### TEST RESULTS

*No non-compliance noted.*



## **TEST RESULTS**

*No non-compliance noted.*

### **Test Data**

Test Mode	CH	Frequency (MHz)	AVG Power (dBm)	Output Power W
GSM 850	128	824.20	33.50	2.23872
	190	836.60	33.10	2.04174
	251	848.80	33.00	1.99526
GPRS 850 (Class 10)	128	824.20	30.59	1.14543
	190	836.60	30.19	1.04465
	251	848.80	29.99	0.99763

Test Mode	CH	Frequency (MHz)	AVG Power (dBm)	Output Power W
GSM 1900	512	1850.20	30.20	1.04713
	661	1880.00	30.10	1.02329
	810	1909.80	29.80	0.95499
GPRS 1900 (Class 10)	512	1850.20	27.29	0.53576
	661	1880.00	27.19	0.52356
	810	1909.80	26.89	0.48862

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

## 7.3 ERP & EIRP MEASUREMENT

### LIMIT

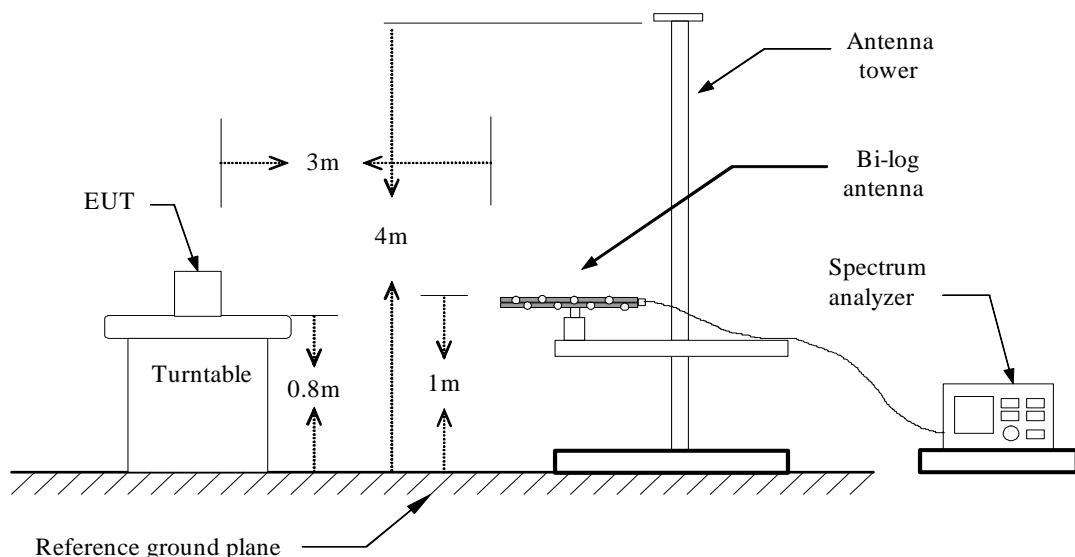
According to FCC §2.1046

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

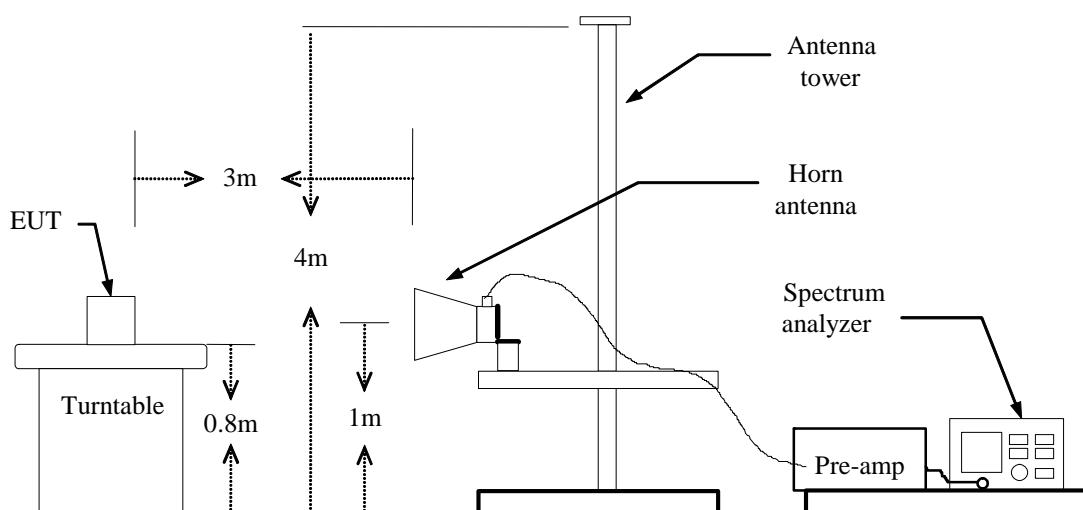
FCC 24.232(b): The equivalent Isotropic Radiated Power (EIRP) must not exceed 2 Watts.

### Test Configuration

#### Below 1 GHz

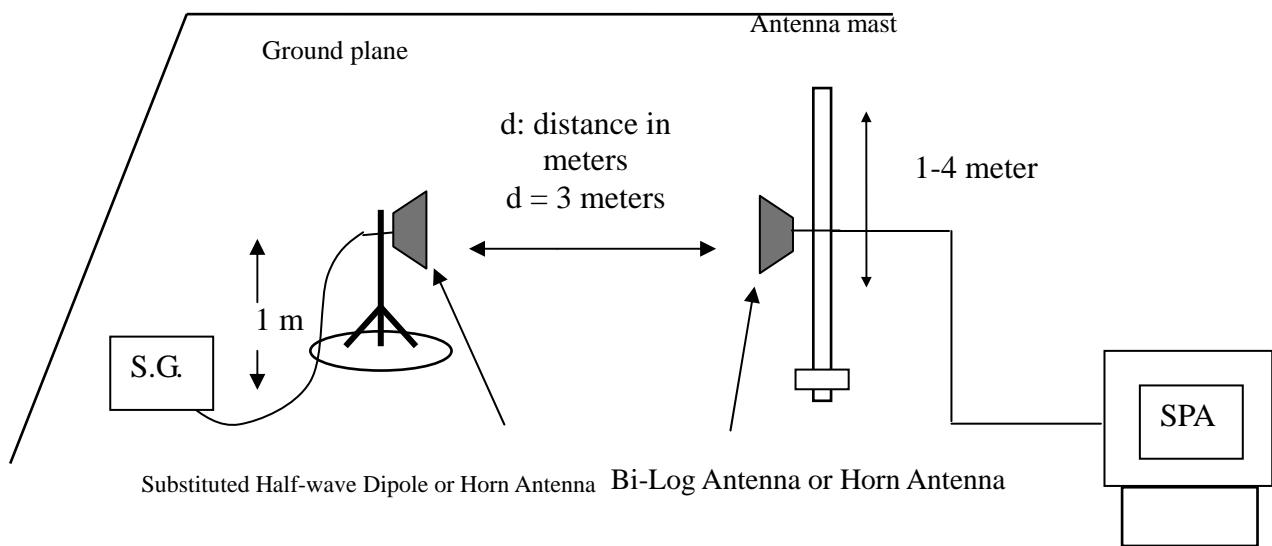


#### Above 1 GHz





## For Substituted Method Test Set-UP



## TEST PROCEDURE

The EUT was placed on a non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer.

During the measurement of the EUT, the resolution bandwidth was set to 3MHz and the average bandwidth was set to 3MHz. The highest emission was recorded with the rotation of the turntable and the lowering of the test antenna. The reading was recorded and the field strength (E in dBuV/m) was calculated.

ERP in frequency band 824-849MHz, and EIRP in frequency band 1851.25 –1910MHz were measured using a substitution method. The EUT was replaced by half-wave dipole (824-849MHz) or horn antenna (1851.25-1910MHz) connected to a signal generator. The spectrum analyzer reading was recorded and ERP/EIRP was calculated as follows:

$$\begin{aligned} \text{ERP} &= \text{S.G. output (dBm)} + \text{Antenna Gain (dBd)} - \text{Cable (dB)} \\ \text{EIRP} &= \text{S.G. output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable (dB)} \end{aligned}$$

## TEST RESULTS

*No non-compliance noted.*

**GSM 850 TEST DATA**

EUT Pol.	Channel	Frequency (MHz)	Antenna Pol.	Reading level (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
X	128	824.20	V	-8.63	34.62	25.99	38.50	-12.51
		824.20	H	-4.73	34.65	29.92	38.50	-8.58
	190	836.60	V	-8.91	34.52	25.62	38.50	-12.88
		836.60	H	-5.53	34.63	29.11	38.50	-9.39
	251	848.80	V	-8.83	34.64	25.81	38.50	-12.69
		848.80	H	-4.10	34.75	30.66	38.50	-7.84
Y	128	824.20	V	-10.12	34.62	24.50	38.50	-14.00
		824.20	H	-4.53	34.65	30.12	38.50	-8.38
	190	836.60	V	-10.70	34.52	23.82	38.50	-14.68
		836.60	H	-5.30	34.63	29.33	38.50	-9.17
	251	848.80	V	-8.83	34.64	25.81	38.50	-12.69
		848.80	H	-4.10	34.75	<b>*30.66</b>	38.50	-7.84
Z	128	824.20	V	-8.65	34.62	25.96	38.50	-12.54
		824.20	H	-5.12	34.65	29.53	38.50	-8.97
	190	836.60	V	-8.94	34.53	25.59	38.50	-12.91
		836.60	H	-5.25	34.63	29.38	38.50	-9.12
	251	848.80	V	-7.04	34.64	27.60	38.50	-10.90
		848.80	H	-4.17	34.75	30.59	38.50	-7.91

**GPRS 850 TEST DATA (CLASS 10)**

EUT Pol.	Channel	Frequency (MHz)	Antenna Pol.	Reading level (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
X	128	824.20	V	-9.27	34.62	25.35	38.50	-13.15
		824.20	H	-5.15	34.65	29.50	38.50	-9.00
	190	836.60	V	-8.80	34.52	25.72	38.50	-12.78
		836.60	H	-5.85	34.63	28.78	38.50	-9.72
	251	848.80	V	-7.19	34.64	27.45	38.50	-11.05
		848.80	H	-5.02	34.75	29.73	38.50	-8.77
Y	128	824.20	V	-7.58	34.62	27.03	38.50	-11.47
		824.20	H	-4.12	34.65	30.53	38.50	-7.97
	190	836.60	V	-8.06	34.53	26.47	38.50	-12.03
		836.60	H	-4.00	34.63	30.64	38.50	-7.86
	251	848.80	V	-7.67	34.64	26.97	38.50	-11.53
		848.80	H	-2.60	34.76	<b>*32.16</b>	38.50	-6.34
Z	128	824.20	V	-8.14	34.62	26.47	38.50	-12.03
		824.20	H	-5.23	34.65	29.42	38.50	-9.08
	190	836.60	V	-7.75	34.52	26.77	38.50	-11.73
		836.60	H	-5.66	34.63	28.98	38.50	-9.52
	251	848.80	V	-6.06	34.64	28.59	38.50	-9.91
		848.80	H	-4.18	34.76	30.58	38.50	-7.92

**GSM 1900 TEST DATA**

EUT Pol.	Channel	Frequency (MHz)	Antenna Pol.	Reading level (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
X	512	1850.20	V	-17.82	41.17	23.35	33.00	-9.65
		1850.20	H	-11.76	40.79	29.03	33.00	-3.97
	661	1880.00	V	-17.89	41.23	23.34	33.00	-9.66
		1880.00	H	-13.29	41.15	27.86	33.00	-5.14
	810	1909.80	V	-19.67	41.30	21.63	33.00	-11.37
		1909.80	H	-14.65	41.38	26.73	33.00	-6.27
Y	512	1850.20	V	-20.37	41.17	20.80	33.00	-12.20
		1850.20	H	-11.24	40.79	29.55	33.00	-3.45
	661	1880.00	V	-20.99	41.23	20.24	33.00	-12.76
		1880.00	H	-12.13	41.14	29.01	33.00	-3.99
	810	1909.80	V	-23.76	41.30	17.55	33.00	-15.45
		1909.80	H	-13.61	41.38	27.77	33.00	-5.23
Z	512	1850.20	V	-11.21	41.17	<b>*29.96</b>	33.00	-3.04
		1850.20	H	-17.81	40.79	22.98	33.00	-10.02
	661	1880.00	V	-12.39	41.23	28.84	33.00	-4.16
		1880.00	H	-18.70	41.15	22.44	33.00	-10.56
	810	1909.80	V	-14.06	41.30	27.25	33.00	-5.75
		1909.80	H	-20.66	41.37	20.71	33.00	-12.29



**GPRS 1900 TEST DATA (CLASS 10)**

EUT Pol.	Channel	Frequency (MHz)	Antenna Pol.	Reading level (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
X	512	1850.20	V	-16.78	41.17	24.39	33.00	-8.61
		1850.20	H	-12.39	40.80	28.40	33.00	-4.60
	661	1880.00	V	-17.87	41.23	23.36	33.00	-9.64
		1880.00	H	-13.26	41.15	27.89	33.00	-5.11
	810	1909.80	V	-18.58	41.30	22.72	33.00	-10.28
		1909.80	H	-14.58	41.37	26.80	33.00	-6.20
Y	512	1850.20	V	-21.18	41.23	20.05	33.00	-12.95
		1850.20	H	-19.11	41.14	22.03	33.00	-10.97
	661	1880.00	V	-20.92	41.23	20.31	33.00	-12.69
		1880.00	H	-19.03	41.14	22.11	33.00	-10.89
	810	1909.80	V	-22.69	41.30	18.61	33.00	-14.39
		1909.80	H	-20.81	41.38	20.56	33.00	-12.44
Z	512	1850.20	V	-12.35	41.23	28.89	33.00	-4.11
		1850.20	H	-12.19	41.14	<b>*28.95</b>	33.00	-4.05
	661	1880.00	V	-12.45	41.23	28.78	33.00	-4.22
		1880.00	H	-12.19	41.14	28.95	33.00	-4.05
	810	1909.80	V	-14.23	41.30	27.08	33.00	-5.92
		1909.80	H	-13.77	41.38	27.61	33.00	-5.39

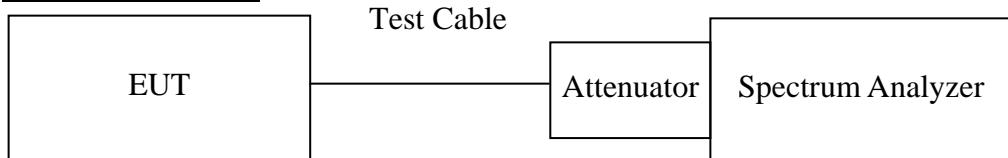


## 7.4 OCCUPIED BANDWIDTH MEASUREMENT

### LIMIT

According to §FCC 2.1049.

#### Test Configuration



*Remark: Measurement setup for testing on Antenna connector*

### TEST PROCEDURE

The EUT's output RF connector was connected with a short cable to the spectrum analyzer, RBW was set to about 1% of emission BW, VBW is set to 3 times the RBW, -26dBc display line was placed on the screen (or 99% bandwidth), the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace.

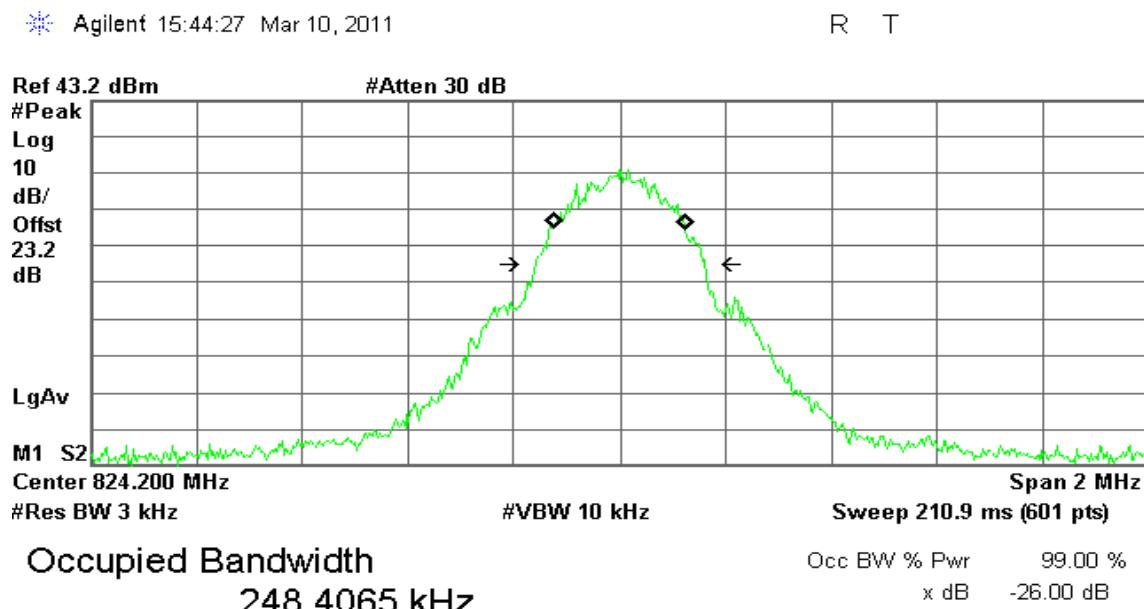
### TEST RESULTS

*No non-compliance noted*

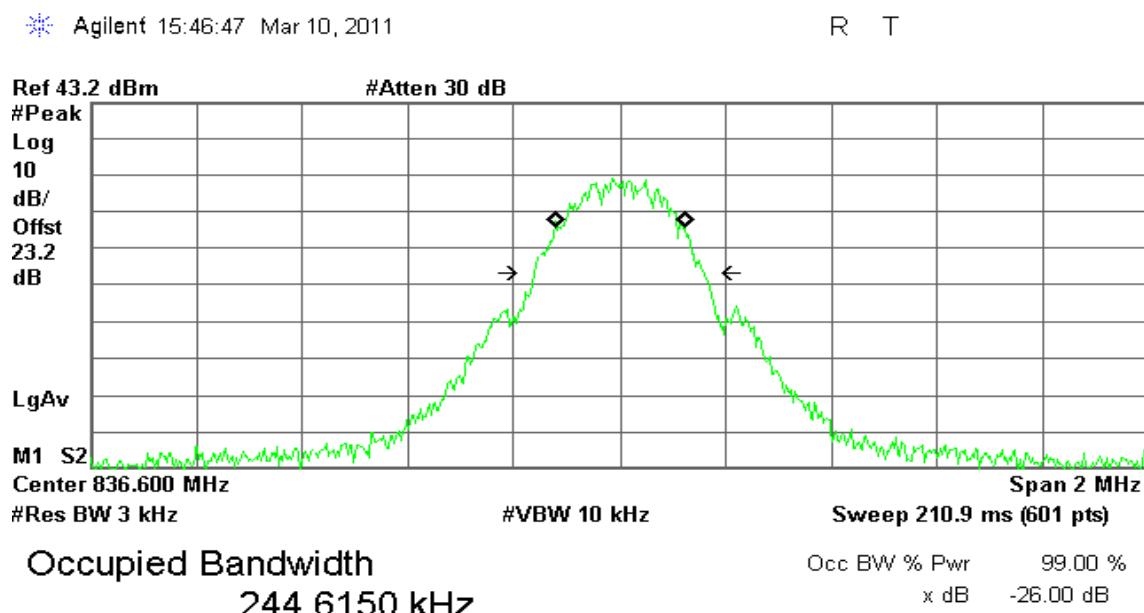
**Test Data**

<b>Test Mode</b>	<b>CH</b>	<b>Frequency (MHz)</b>	<b>99% Bandwidth (kHz)</b>
GSM 850	128	824.200	248.4065
	190	836.600	244.6150
	251	848.800	246.8174
GPRS 850 (Class 10)	128	824.200	249.7144
	190	836.600	250.2760
	251	848.800	248.7516

<b>Test Mode</b>	<b>CH</b>	<b>Frequency (MHz)</b>	<b>99% Bandwidth (kHz)</b>
GSM 1900	512	1850.200	249.3457
	661	1880.000	247.3967
	810	1909.800	247.6113
GPRS 1900 (Class 10)	512	1850.200	249.4050
	661	1880.000	247.7563
	810	1909.800	250.2129

**Test Plot****GSM 850 (CH Low)**

Transmit Freq Error -420.881 Hz  
x dB Bandwidth 318.545 kHz

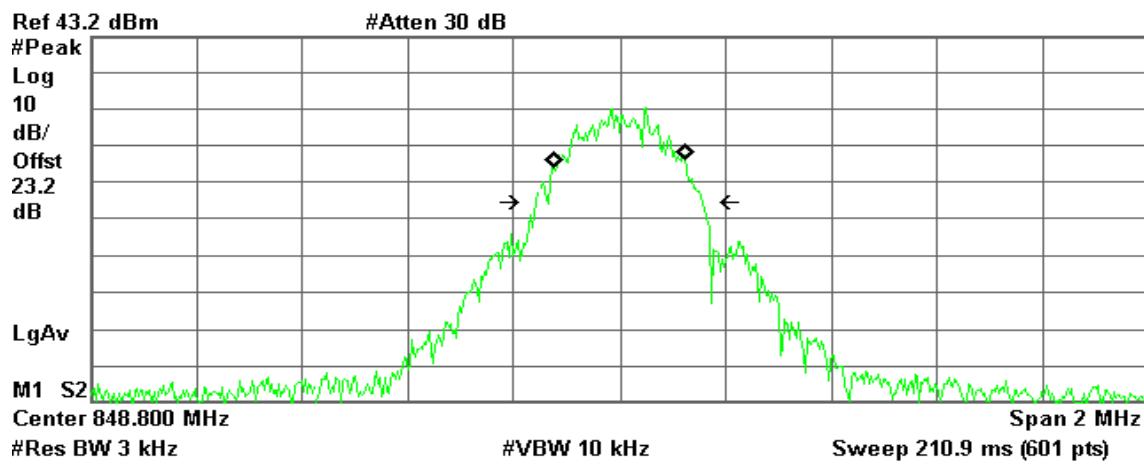
**GSM 850 (CH Mid)**

Transmit Freq Error 1.100 kHz  
x dB Bandwidth 318.984 kHz

**GSM 850 (CH High)**

Agilent 15:47:08 Mar 10, 2011

R T

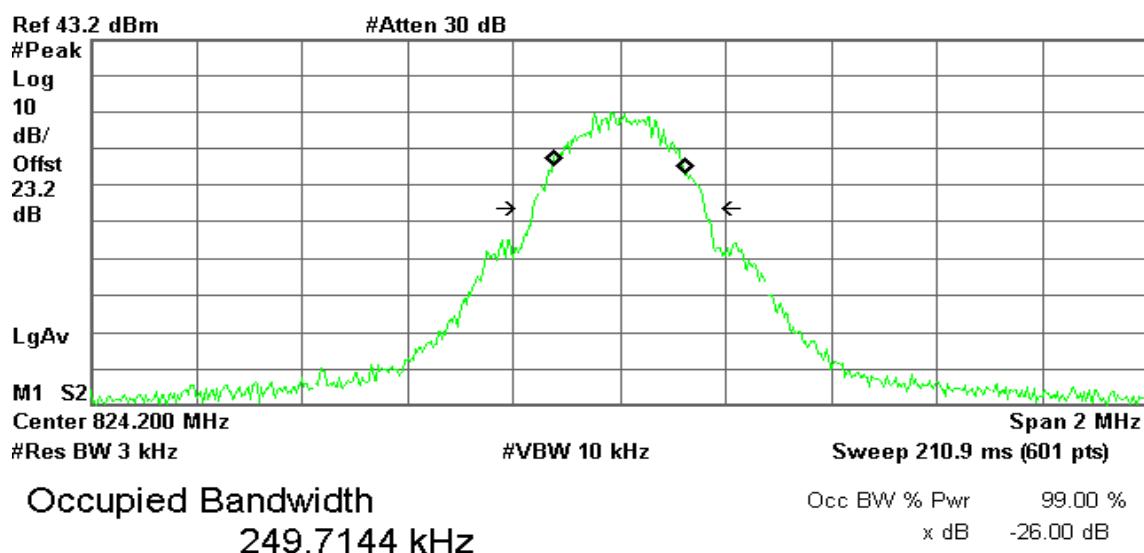


Transmit Freq Error 794.432 Hz  
x dB Bandwidth 312.605 kHz

**GPRS 850 (CH Low)**

Agilent 15:45:15 Mar 10, 2011

R T

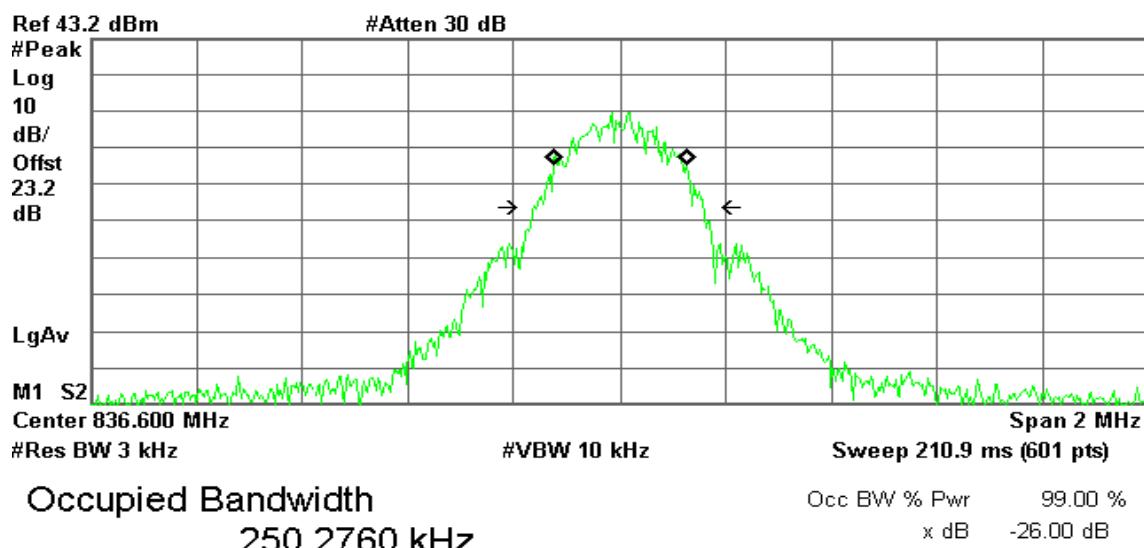


Transmit Freq Error -104.813 Hz  
x dB Bandwidth 322.220 kHz

**GPRS 850 (CH Mid)**

Agilent 15:46:27 Mar 10, 2011

R T

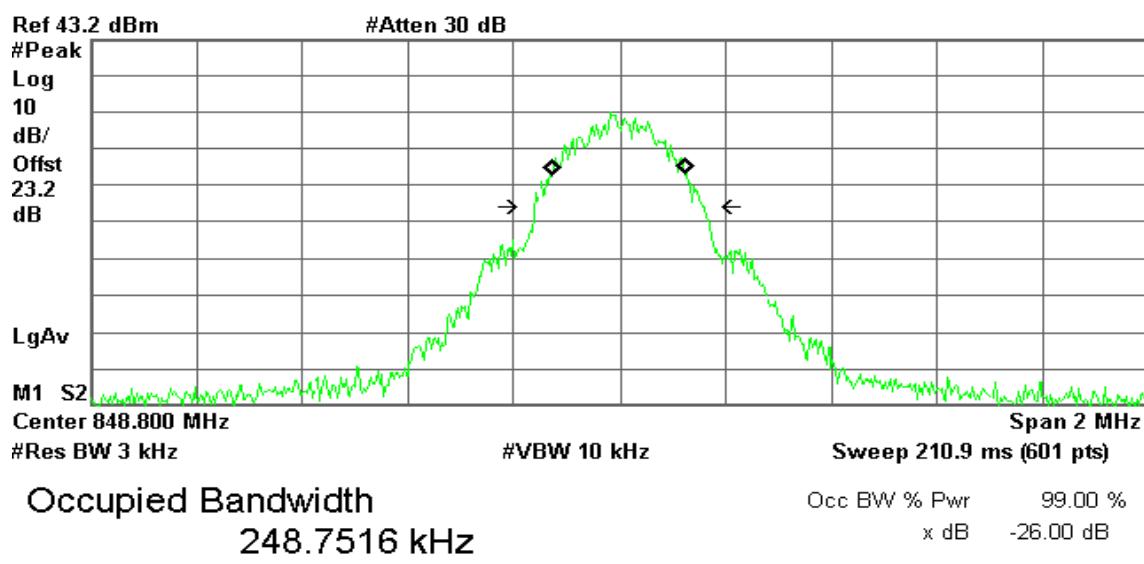


Transmit Freq Error      1.071 kHz  
x dB Bandwidth      320.018 kHz

**GPRS 850(CH High)**

Agilent 15:47:23 Mar 10, 2011

R T

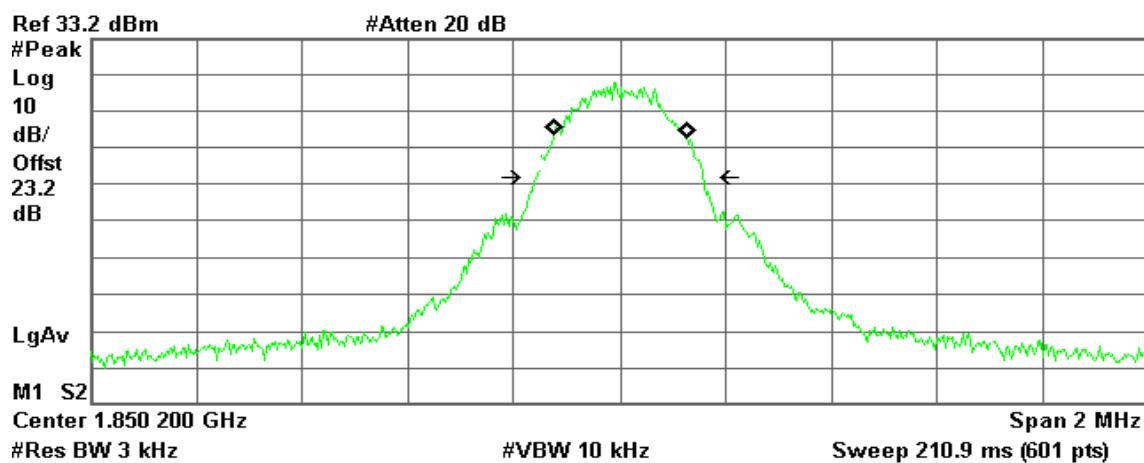


Transmit Freq Error      -1.619 kHz  
x dB Bandwidth      319.715 kHz

**GSM 1900 (CH Low)**

Agilent 16:49:56 Mar 10, 2011

R T

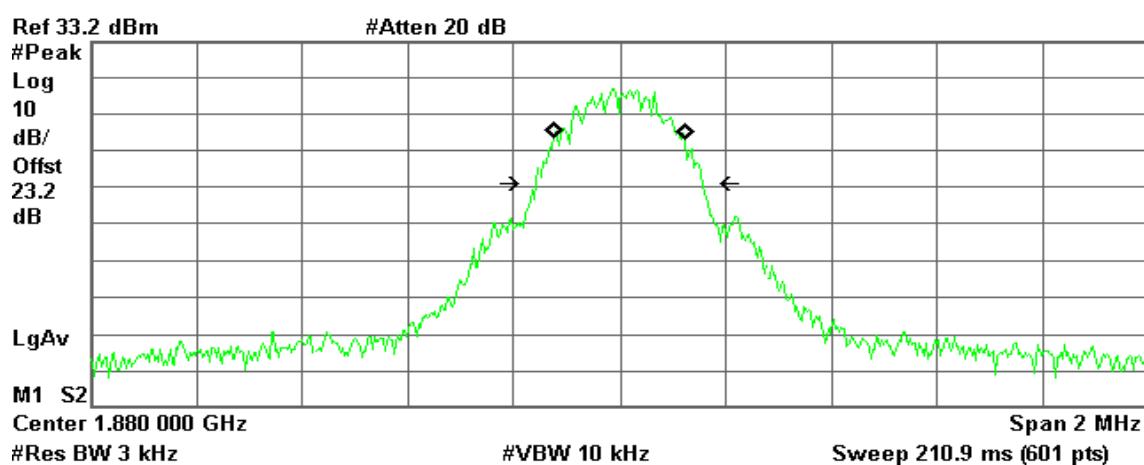


Transmit Freq Error      2.425 kHz  
x dB Bandwidth      312.396 kHz

**GSM 1900 (CH Mid)**

Agilent 16:50:52 Mar 10, 2011

R T

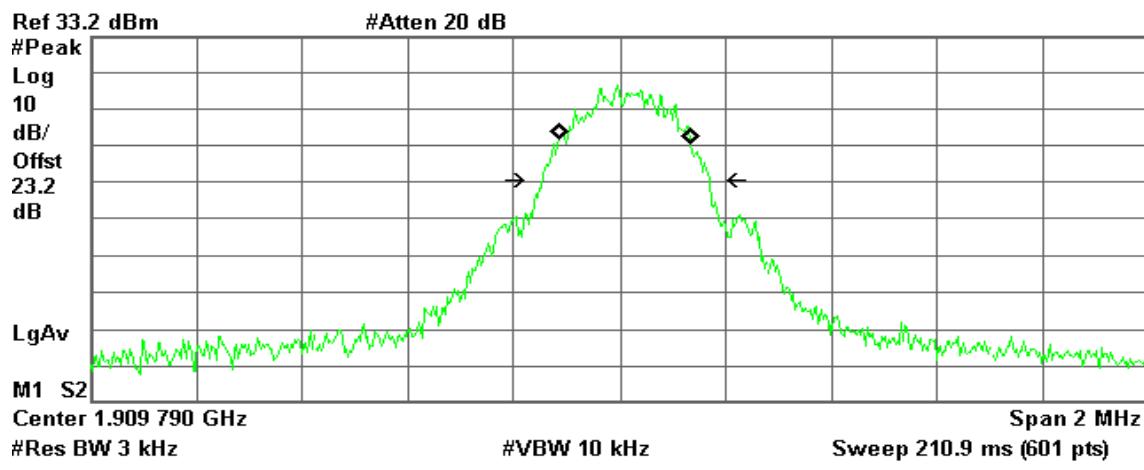


Transmit Freq Error      -340.429 Hz  
x dB Bandwidth      313.526 kHz

**GSM 1900 (CH High)**

Agilent 16:51:24 Mar 10, 2011

R T

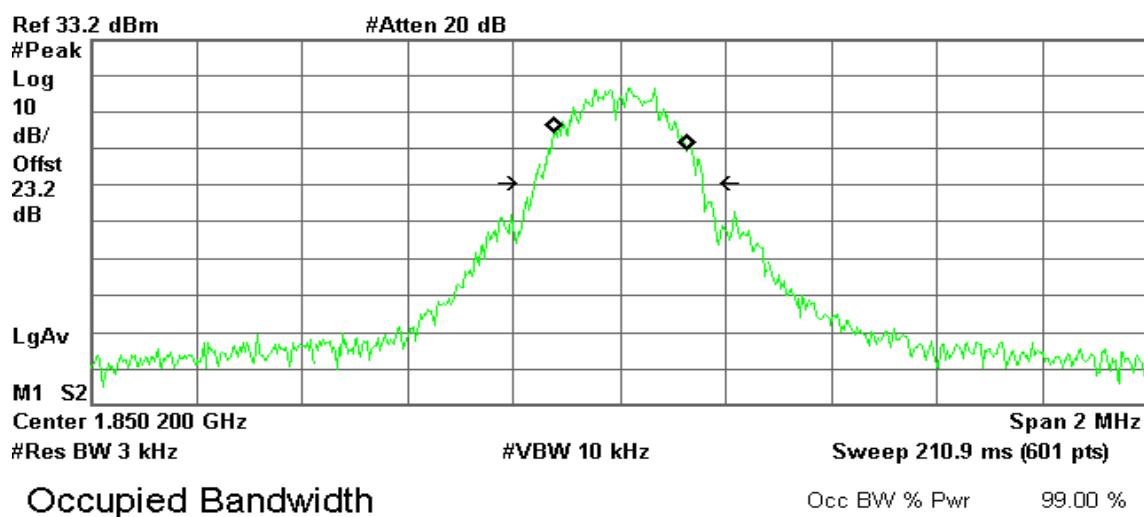


Transmit Freq Error      9.358 kHz  
x dB Bandwidth      315.730 kHz

**GPRS 1900 (CH Low)**

Agilent 16:50:13 Mar 10, 2011

R T

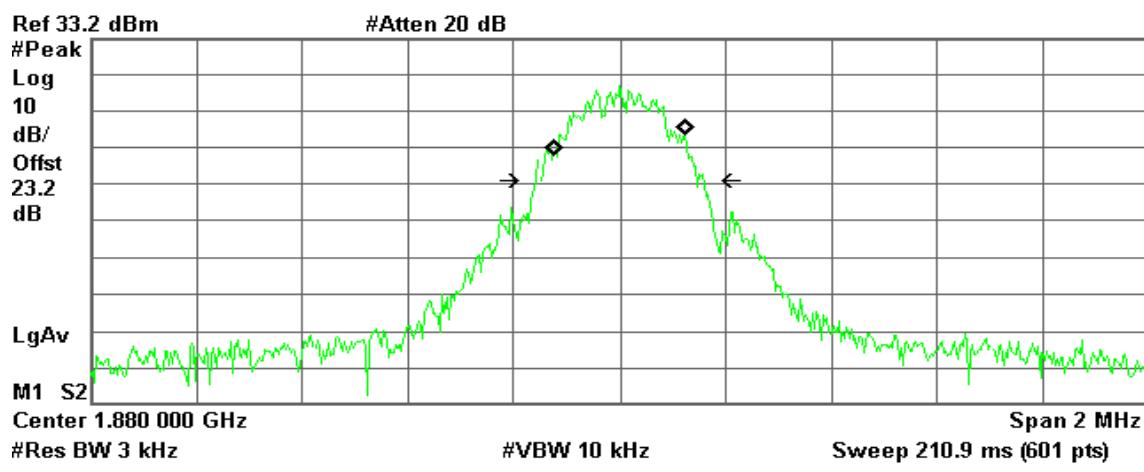


Transmit Freq Error      1.174 kHz  
x dB Bandwidth      317.072 kHz

**GPRS 1900 (CH Mid)**

Agilent 16:50:30 Mar 10, 2011

R T

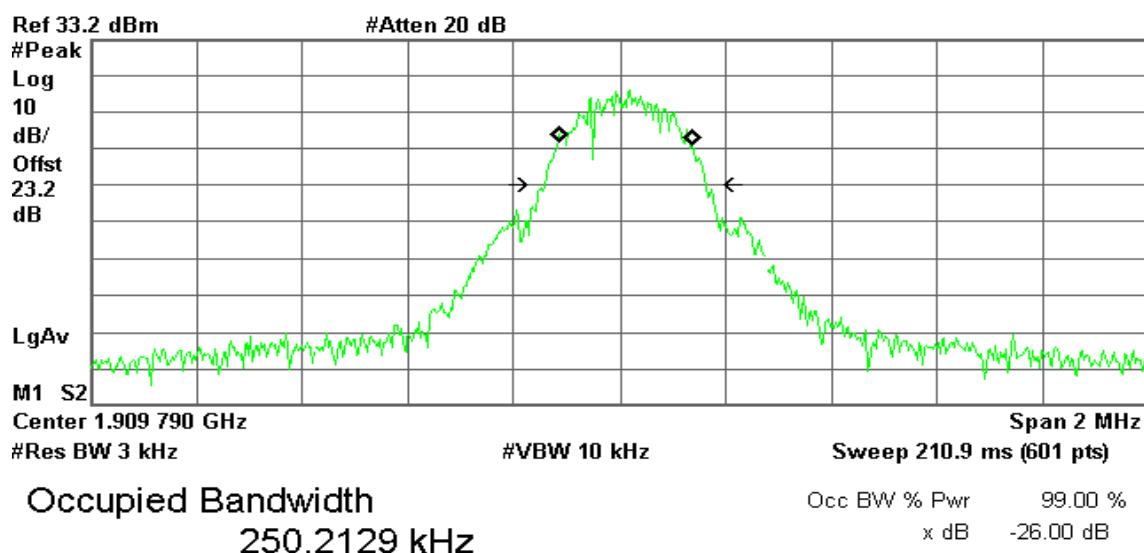


Transmit Freq Error      -38.361 Hz  
x dB Bandwidth      316.775 kHz

**GPRS 1900 (CH High)**

Agilent 16:51:40 Mar 10, 2011

R T



Transmit Freq Error      10.538 kHz  
x dB Bandwidth      302.063 kHz



## 7.5 OUT OF BAND EMISSION AT ANTENNA TERMINALS

### LIMIT

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

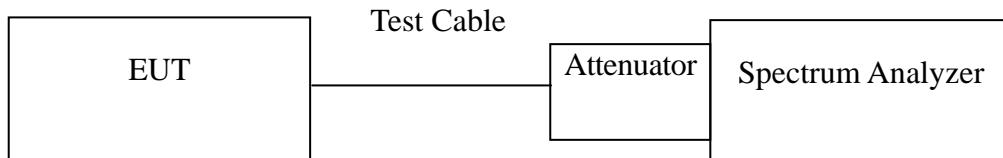
**Out of Band Emissions:** The mean power of emission must be attenuated below the mean power of the non-modulated carrier (P) on any frequency twice or more than twice the fundamental frequency by at least  $43 + 10 \log P$  dB.

**Mobile Emissions in Base Frequency Range:** The mean power of any emissions appearing in the base station frequency range from cellular mobile transmitters operated must be attenuated to a level not exceed -80 dBm at the transmit antenna connector.

**Band Edge Requirements:** In the 1MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1% of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the Out of band Emission

### Test Configuration

**Out of band emission at antenna terminals:**



### TEST PROCEDURE

The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 1MHz, sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic.

For the out of band: Set the RBW, VBW = 1MHz, Start=30MHz, Stop= 10 th harmonic. Limit = -13dBm

**Band Edge Requirements (824 MHz and 849 MHz /1850MHz and 1910MHz):** In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions. Limit, -13dBm.

### TEST RESULTS

*No non-compliance noted.*

**Test Data**

<b>Mode</b>	<b>CH</b>	<b>Location</b>	<b>Description</b>
GSM 850	128	Figure 7-1	Conducted spurious emissions, 30MHz - 20GHz
	190	Figure 7-2	Conducted spurious emissions, 30MHz - 20GHz
	251	Figure 7-3	Conducted spurious emissions, 30MHz - 20GHz
GPRS 850 (Class 10)	128	Figure 8-1	Conducted spurious emissions, 30MHz - 20GHz
	190	Figure 8-2	Conducted spurious emissions, 30MHz - 20GHz
	251	Figure 8-3	Conducted spurious emissions, 30MHz - 20GHz

<b>Mode</b>	<b>CH</b>	<b>Location</b>	<b>Description</b>
GSM 1900	512	Figure 9-1	Conducted spurious emissions, 30MHz - 20GHz
	661	Figure 9-2	Conducted spurious emissions, 30MHz - 20GHz
	810	Figure 9-3	Conducted spurious emissions, 30MHz - 20GHz
GPRS 1900 (Class 10)	512	Figure 10-1	Conducted spurious emissions, 30MHz - 20GHz
	661	Figure 10-2	Conducted spurious emissions, 30MHz - 20GHz
	810	Figure 10-3	Conducted spurious emissions, 30MHz - 20GHz

<b>Mode</b>	<b>CH</b>	<b>Location</b>	<b>Description</b>
GSM 850	128	Figure 11-1	Band Edge emissions
	251	Figure 11-2	Band Edge emissions
GPRS 850 (Class 10)	128	Figure 12-1	Band Edge emissions
	251	Figure 12-2	Band Edge emissions

<b>Mode</b>	<b>CH</b>	<b>Location</b>	<b>Description</b>
GSM 1900	512	Figure 13-1	Band Edge emissions
	810	Figure 13-2	Band Edge emissions
GPRS 1900 (Class 10)	512	Figure 14-1	Band Edge emissions
	810	Figure 14-2	Band Edge emissions



## Test Plot

### GSM 850

Figure 7-1: Out of Band emission at antenna terminals – GSM CH Low

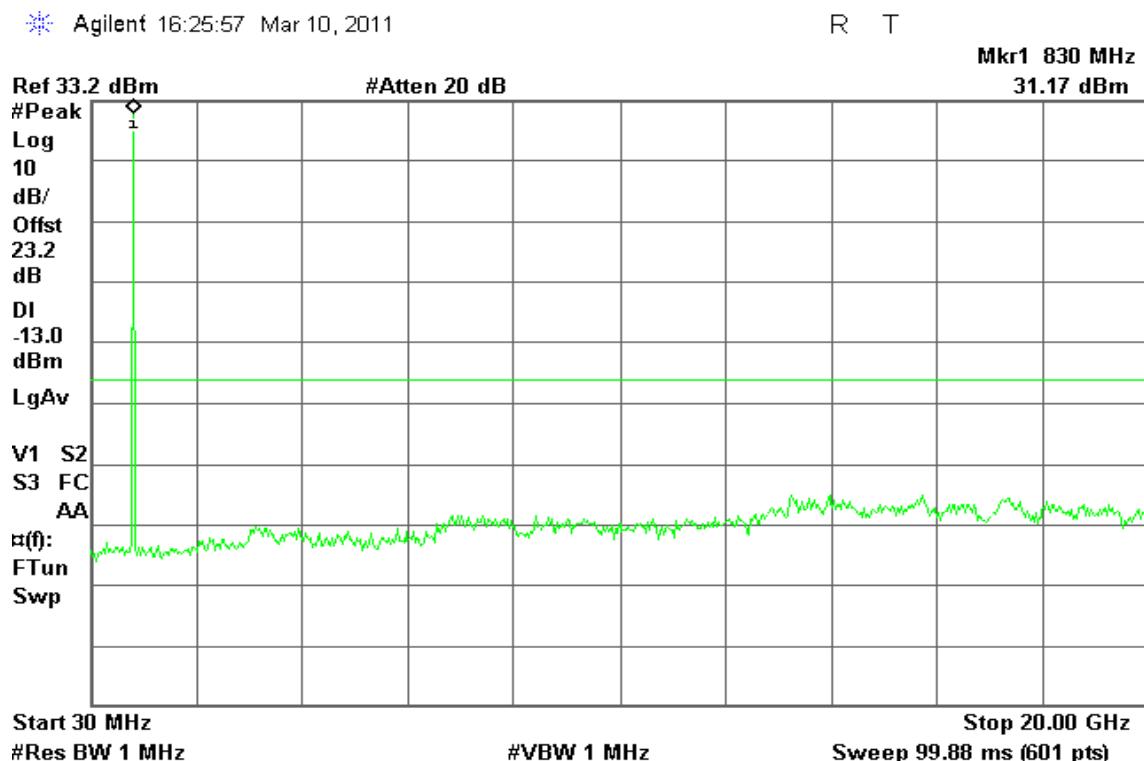


Figure 7-2: Out of Band emission at antenna terminals – GSM CH Mid

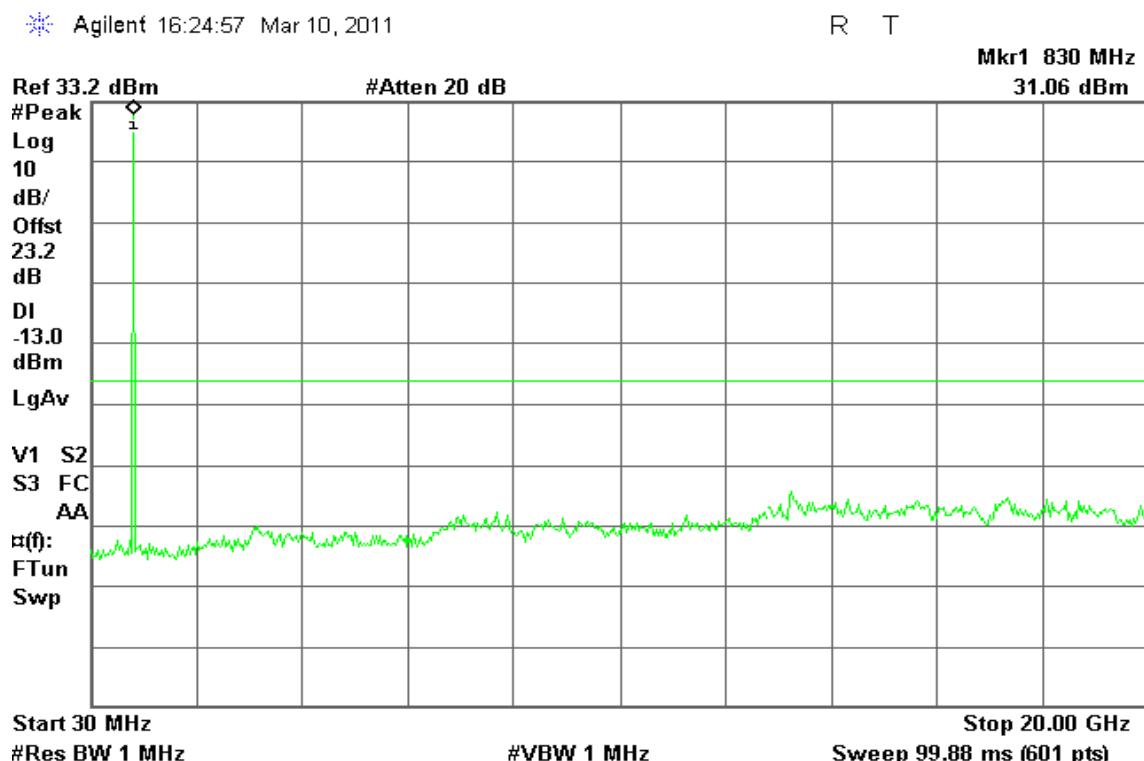
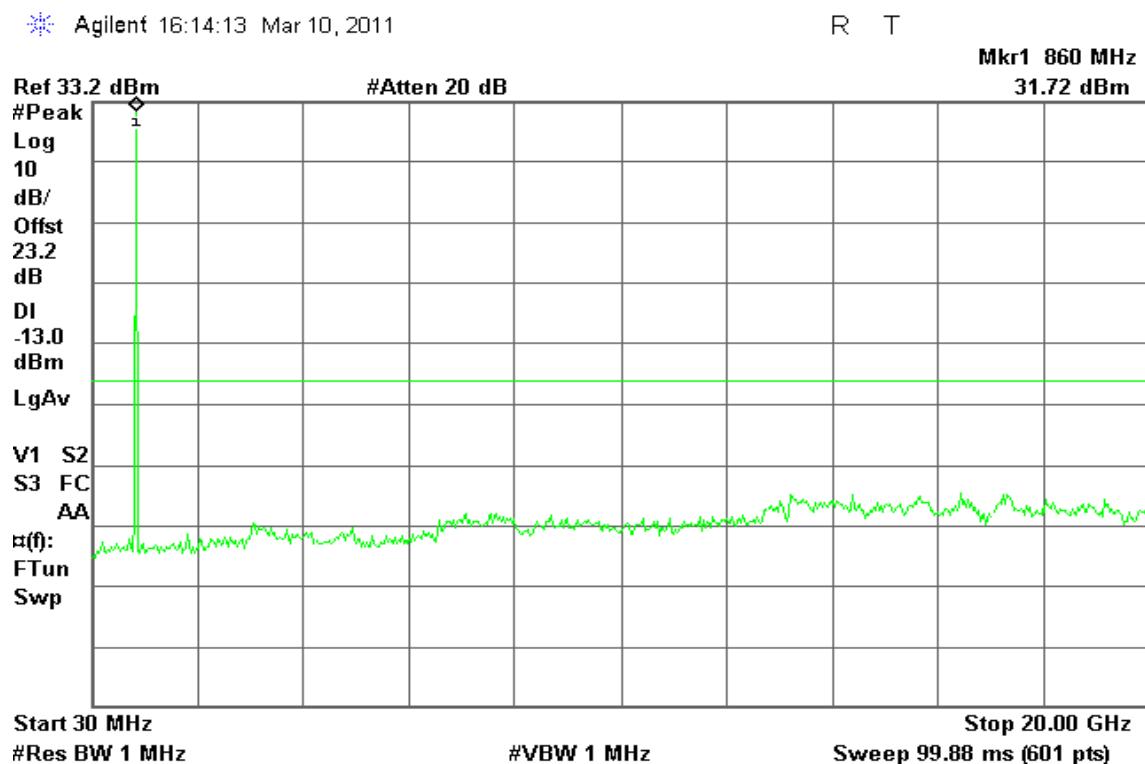




Figure 7-3: Out of Band emission at antenna terminals – GSM CH High



## GPRS 850

Figure 8-1: Out of Band emission at antenna terminals – GSM CH Low

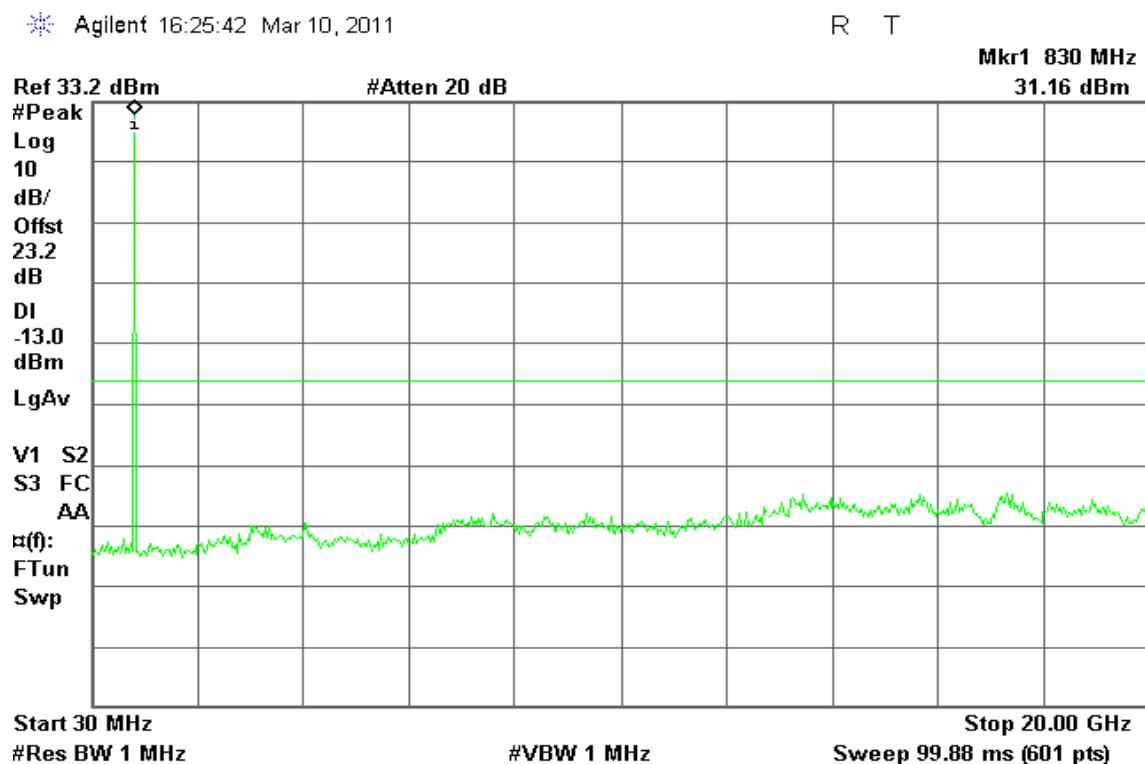




Figure 8-2: Out of Band emission at antenna terminals – GSM CH Mid

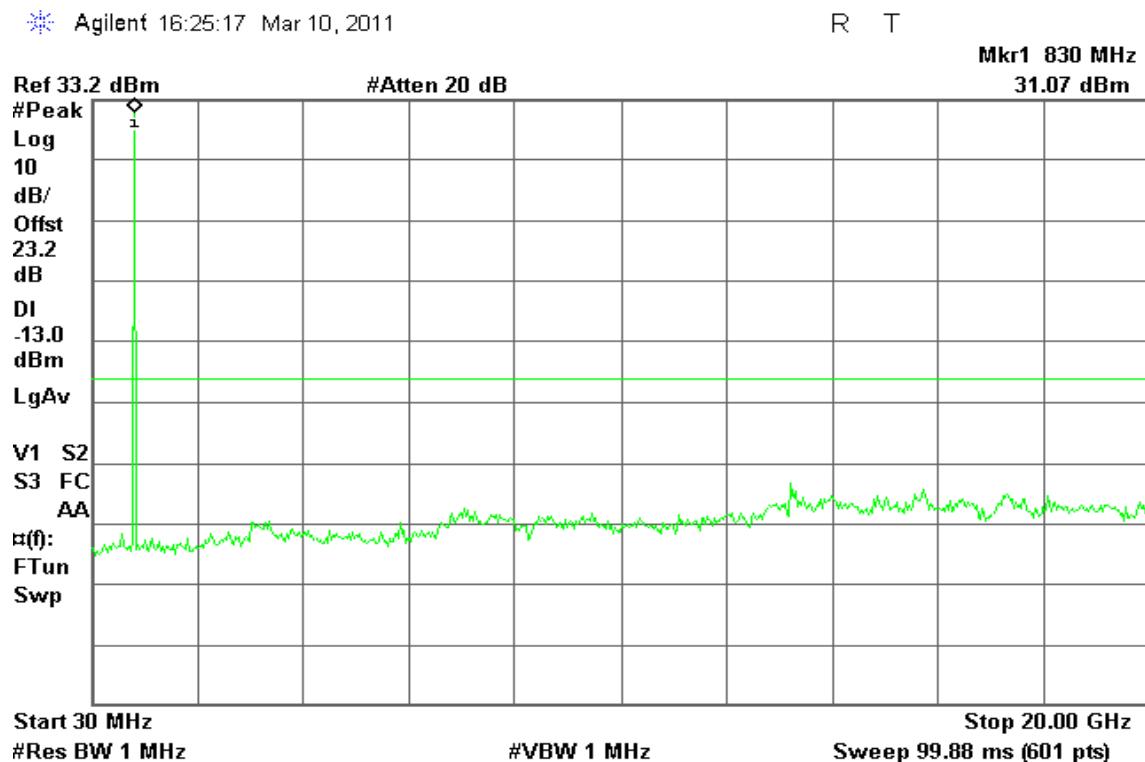
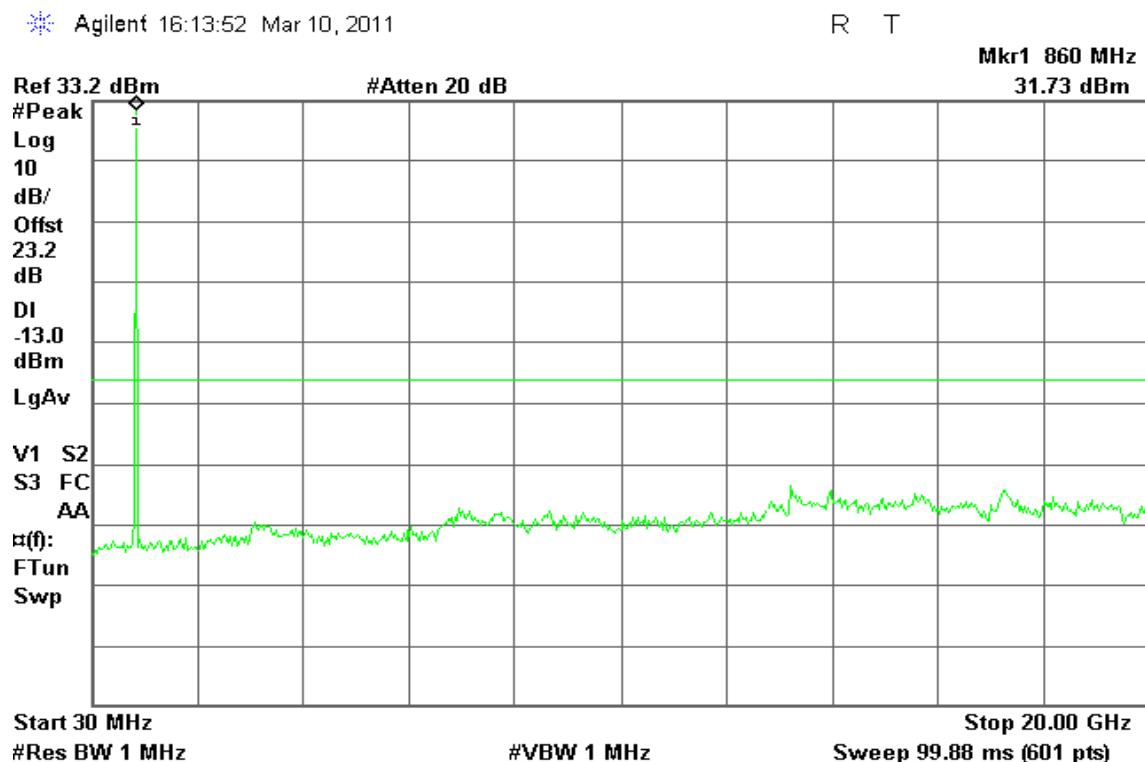


Figure 8-3: Out of Band emission at antenna terminals – GSM CH High





## GSM 1900

Figure 9-1: Out of Band emission at antenna terminals – GSM CH Low

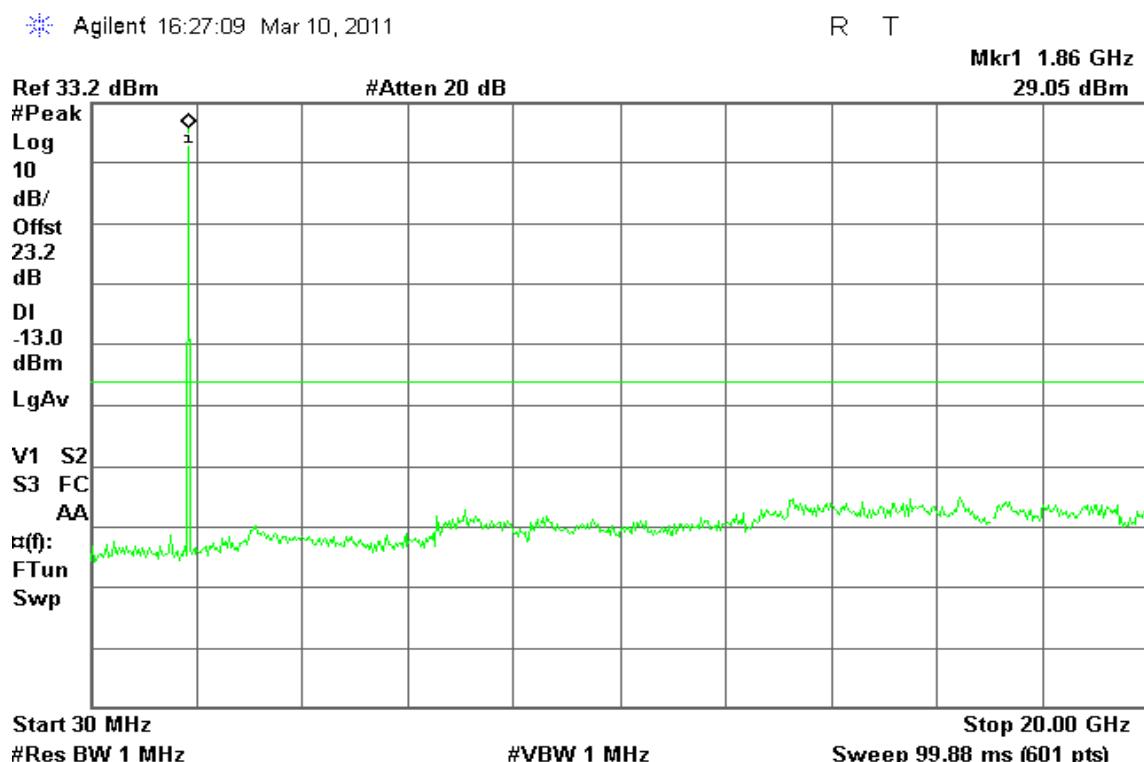


Figure 9-2: Out of Band emission at antenna terminals – GSM CH Mid

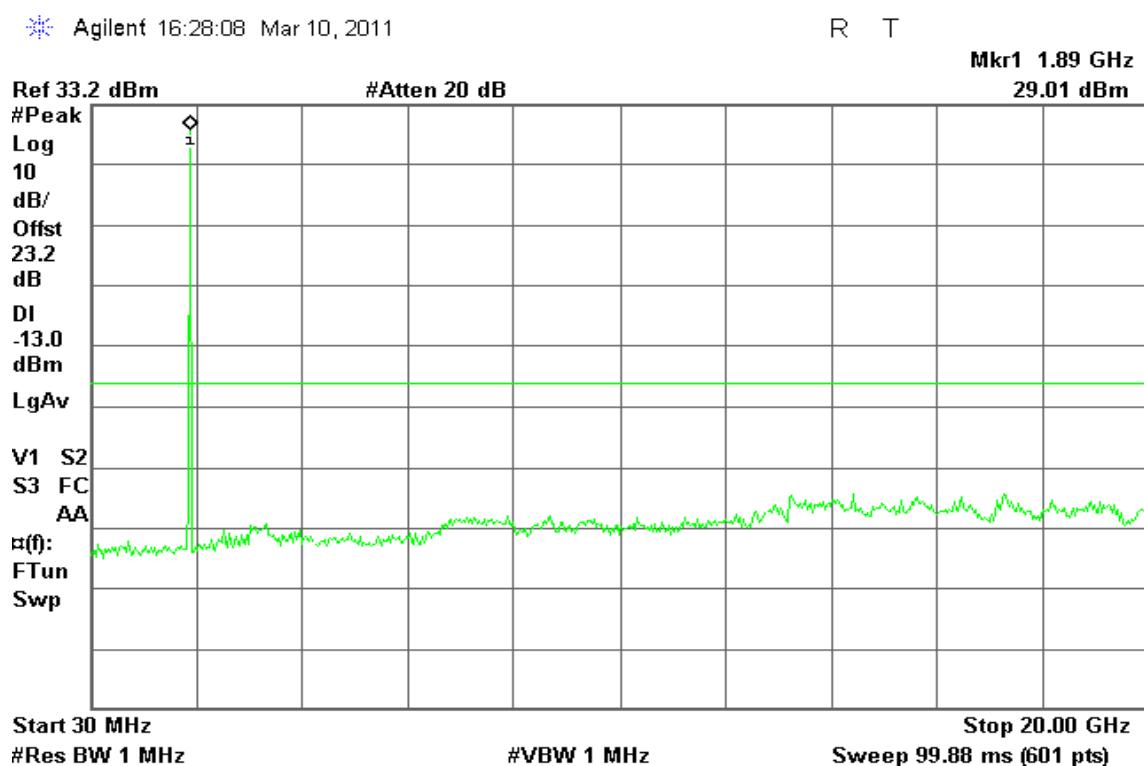
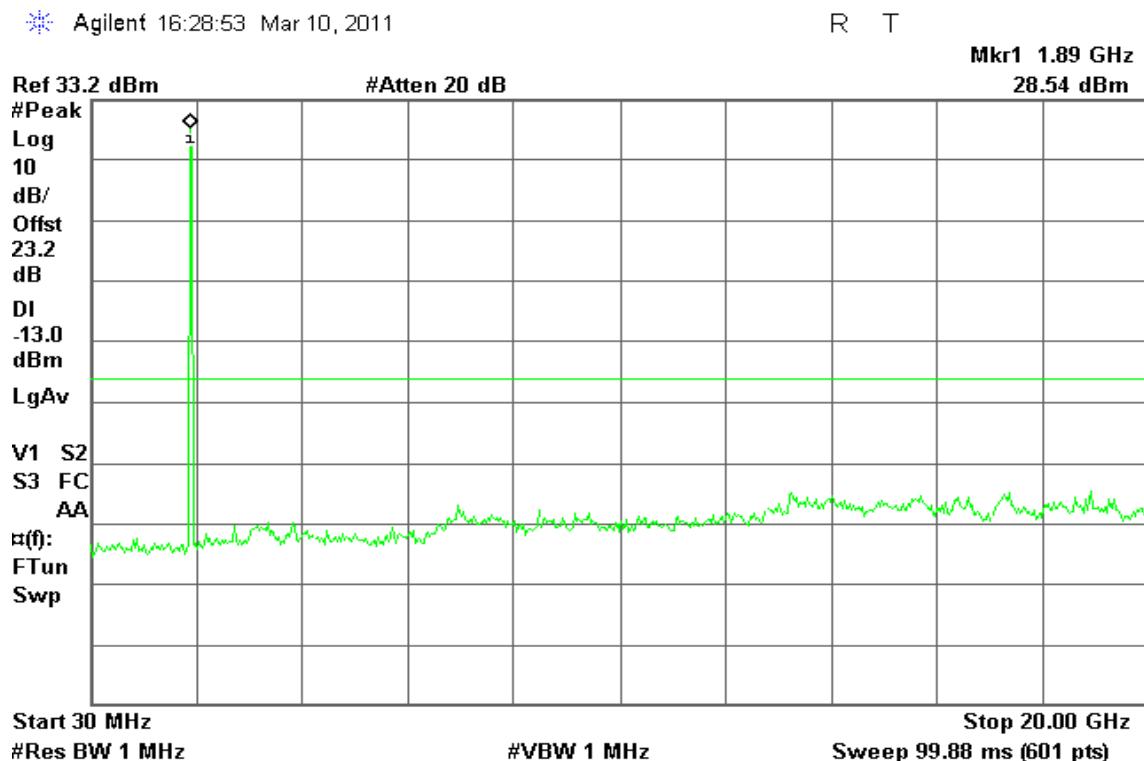




Figure 9-3: Out of Band emission at antenna terminals – GSM CH High



## GPRS 1900

Figure 10-1: Out of Band emission at antenna terminals – GSM CH Low

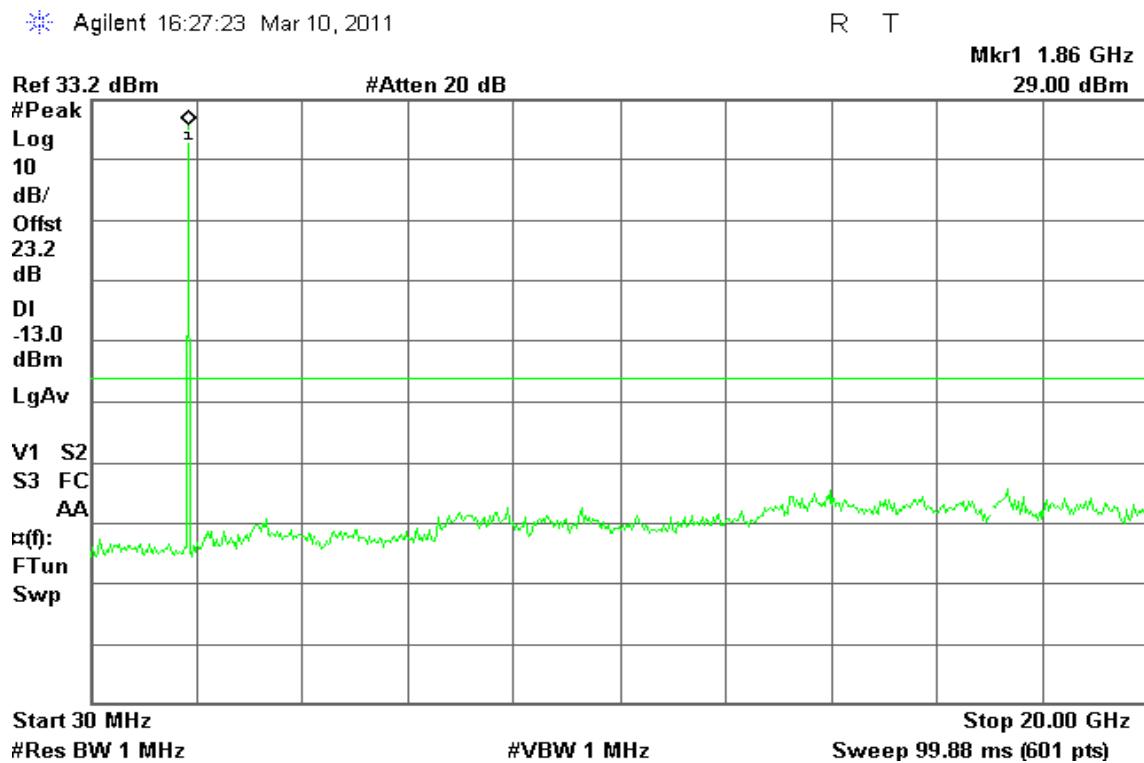




Figure 10-2: Out of Band emission at antenna terminals – GSM CH Mid

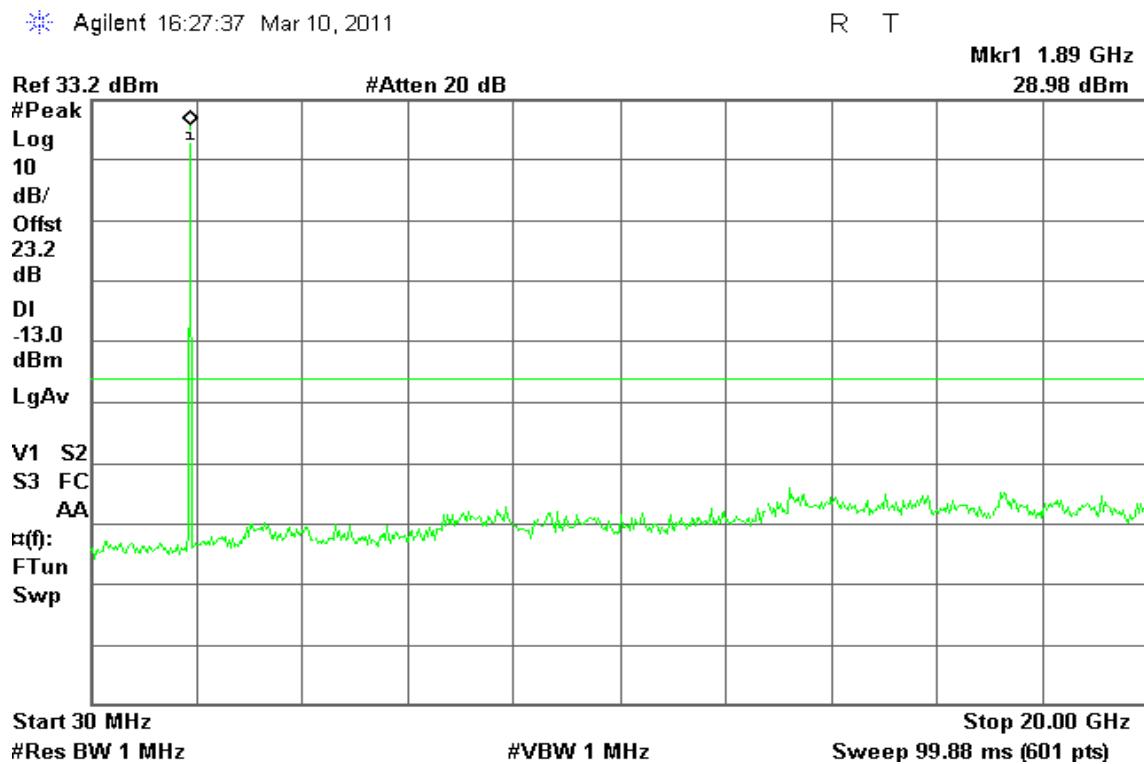
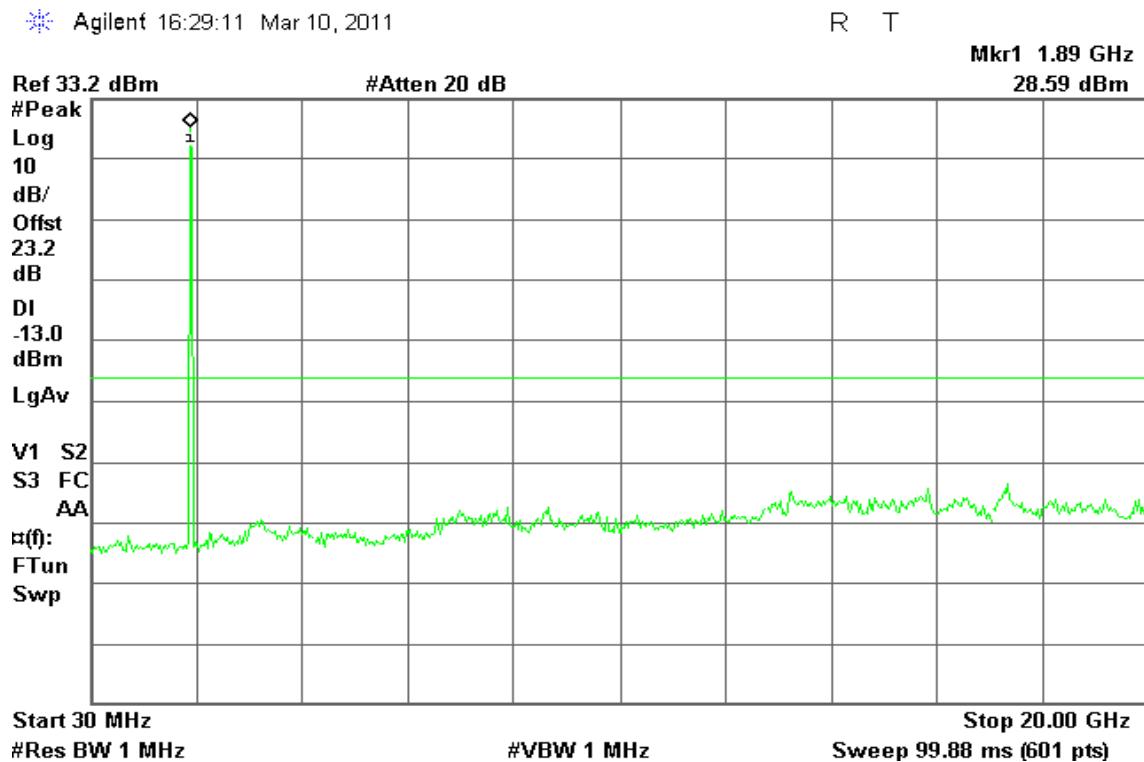


Figure 10-3: Out of Band emission at antenna terminals – GSM CH High





## GSM 850

Figure 11-1: Band Edge emissions – GSM CH Low

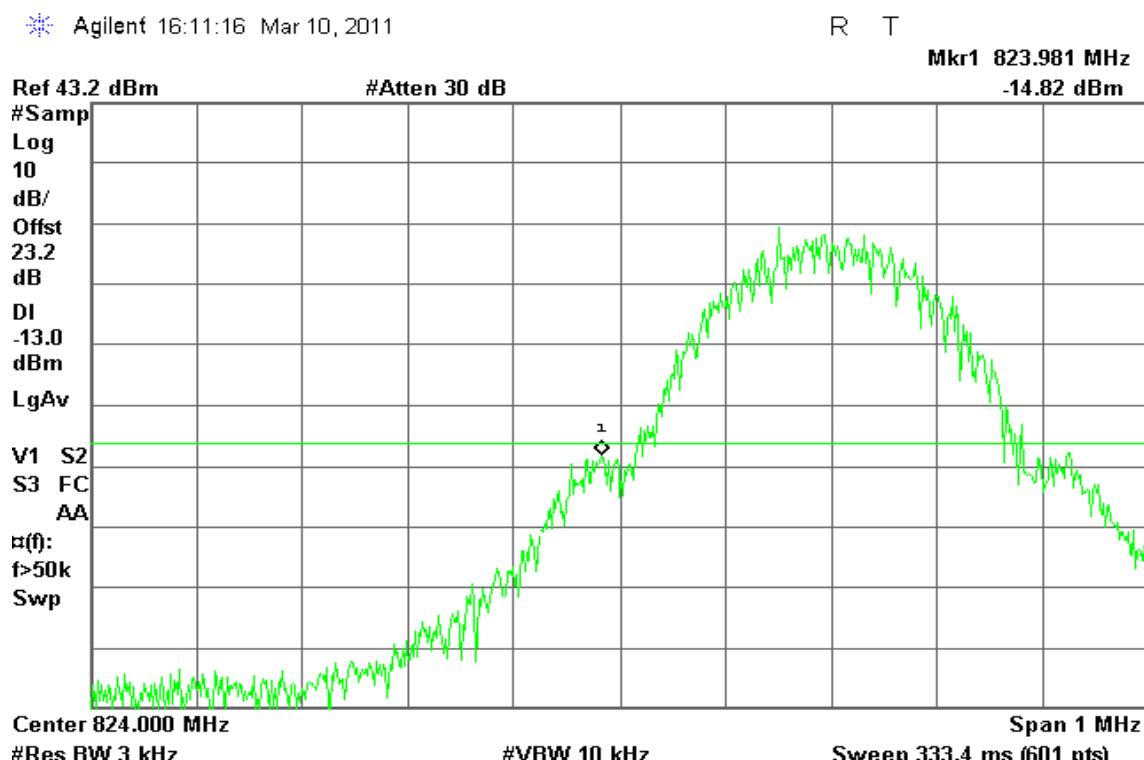
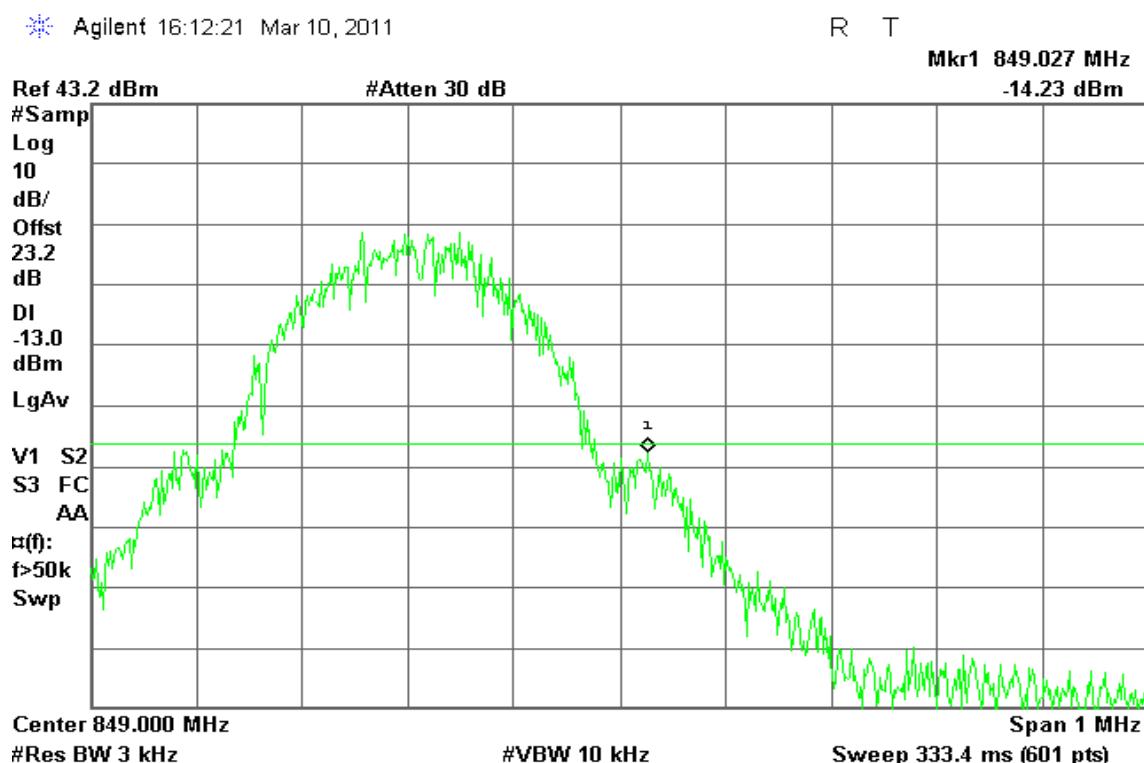


Figure 11-2: Band Edge emissions – GSM CH High





## GPRS 850

Figure 12-1: Band Edge emissions – GPRS CH Low

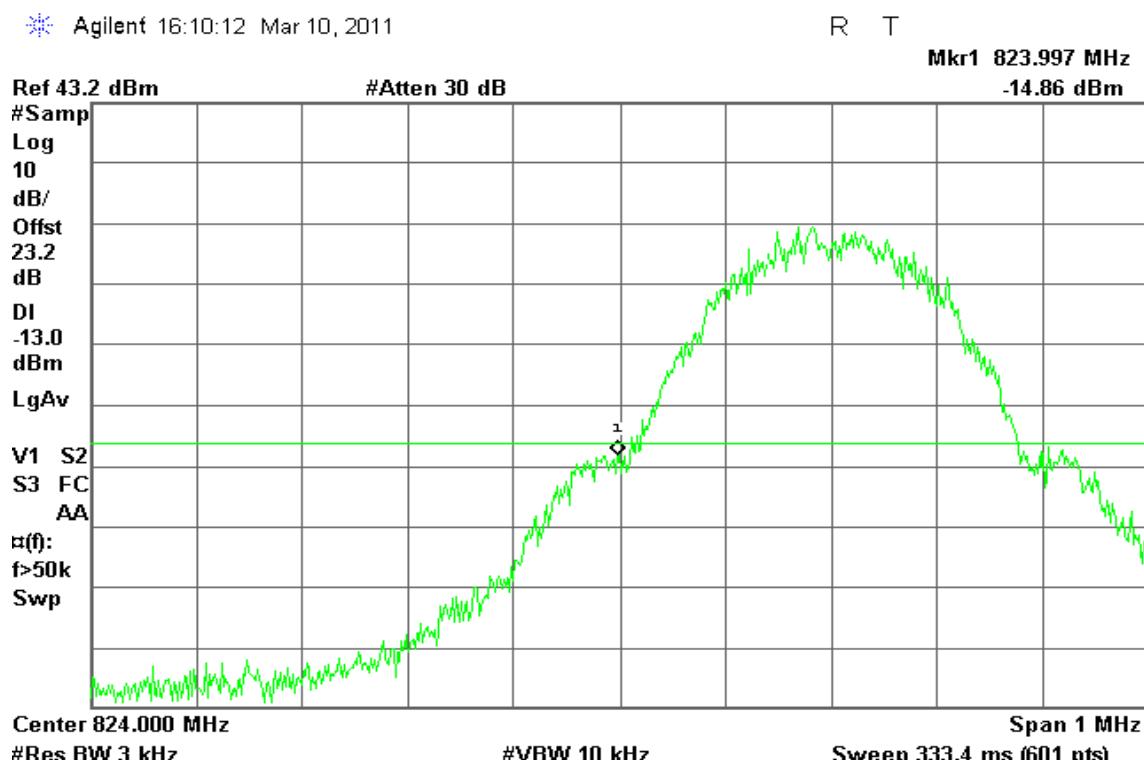
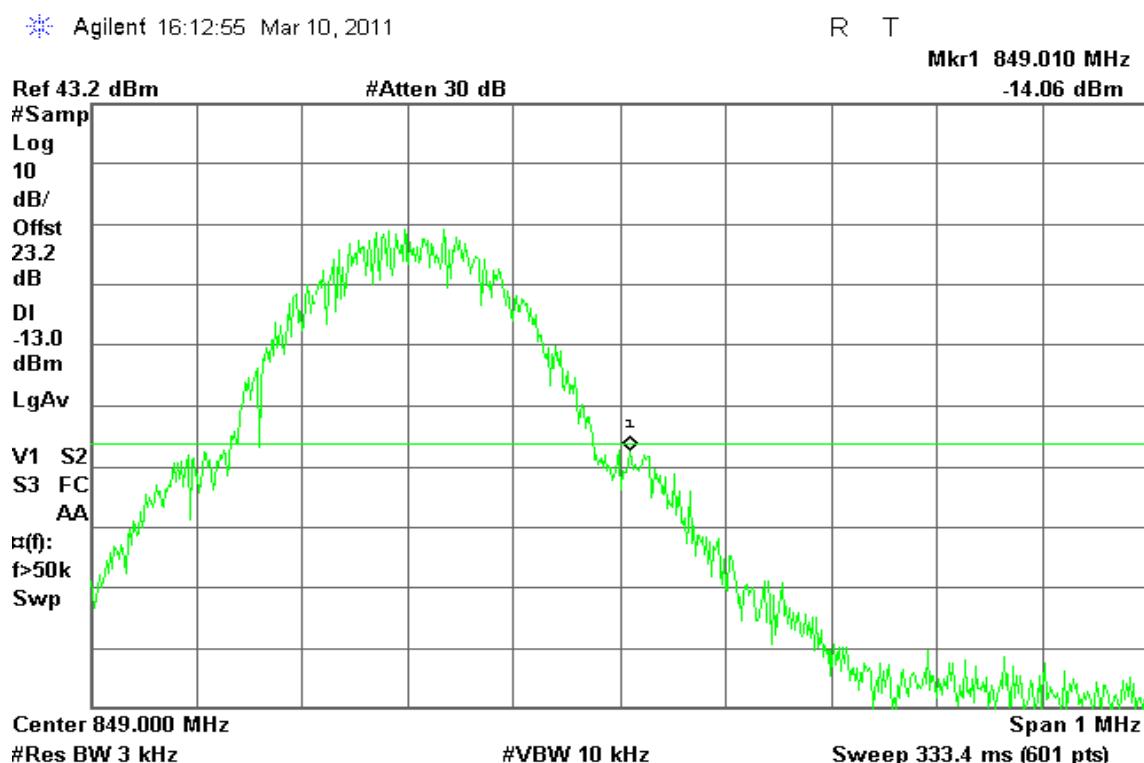


Figure 12-2: Band Edge emissions – GPRS CH High





## GSM 1900

Figure 13-1: Band Edge emissions – GSM CH Low

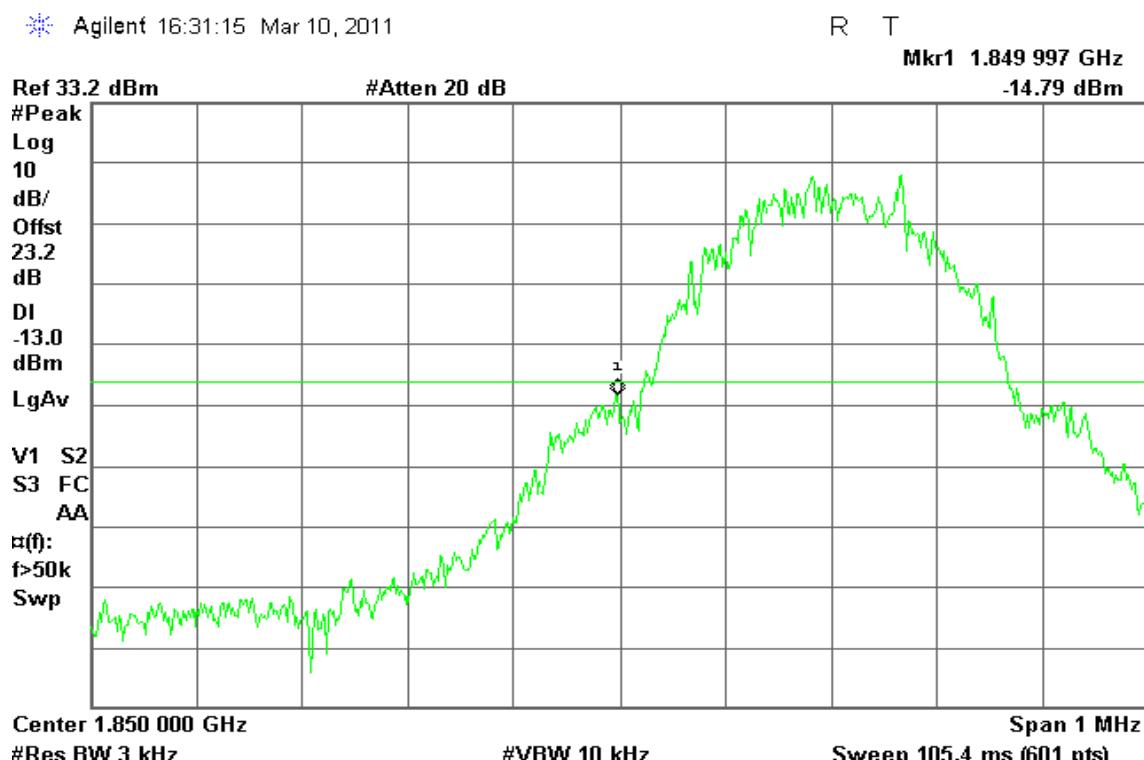
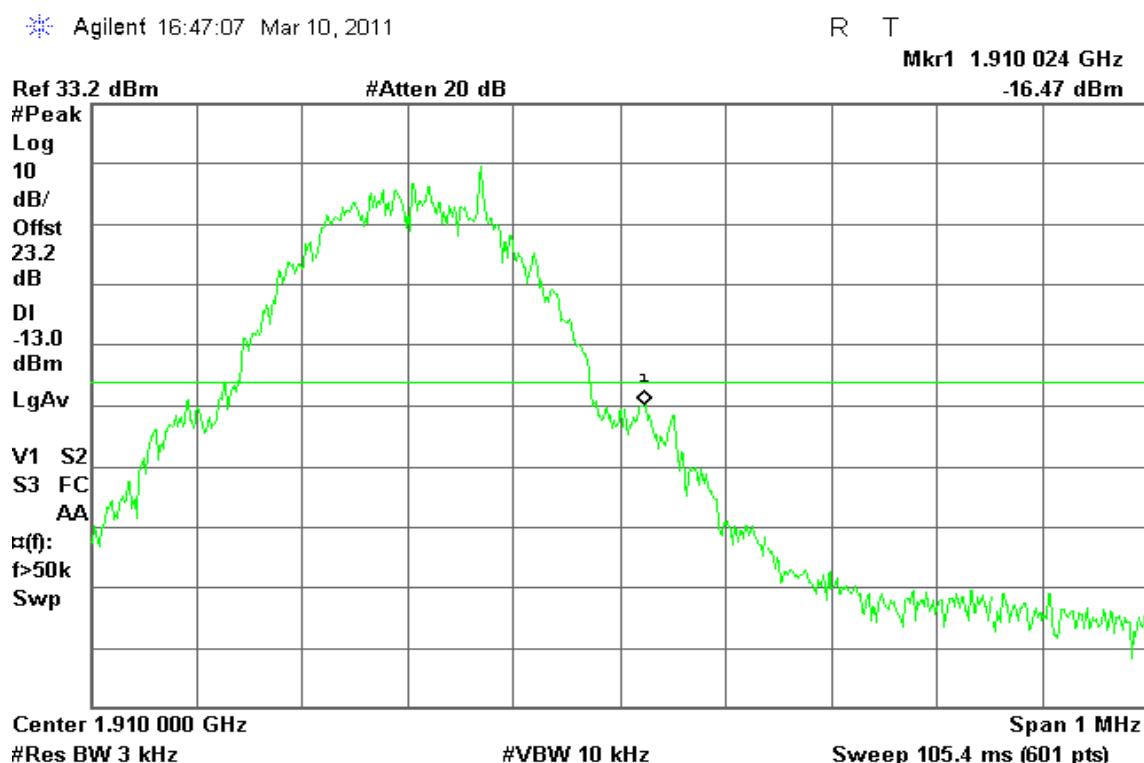


Figure 13-2: Band Edge emissions – GSM CH High





## GPRS 1900

Figure 14-1: Band Edge emissions – GPRS CH Low

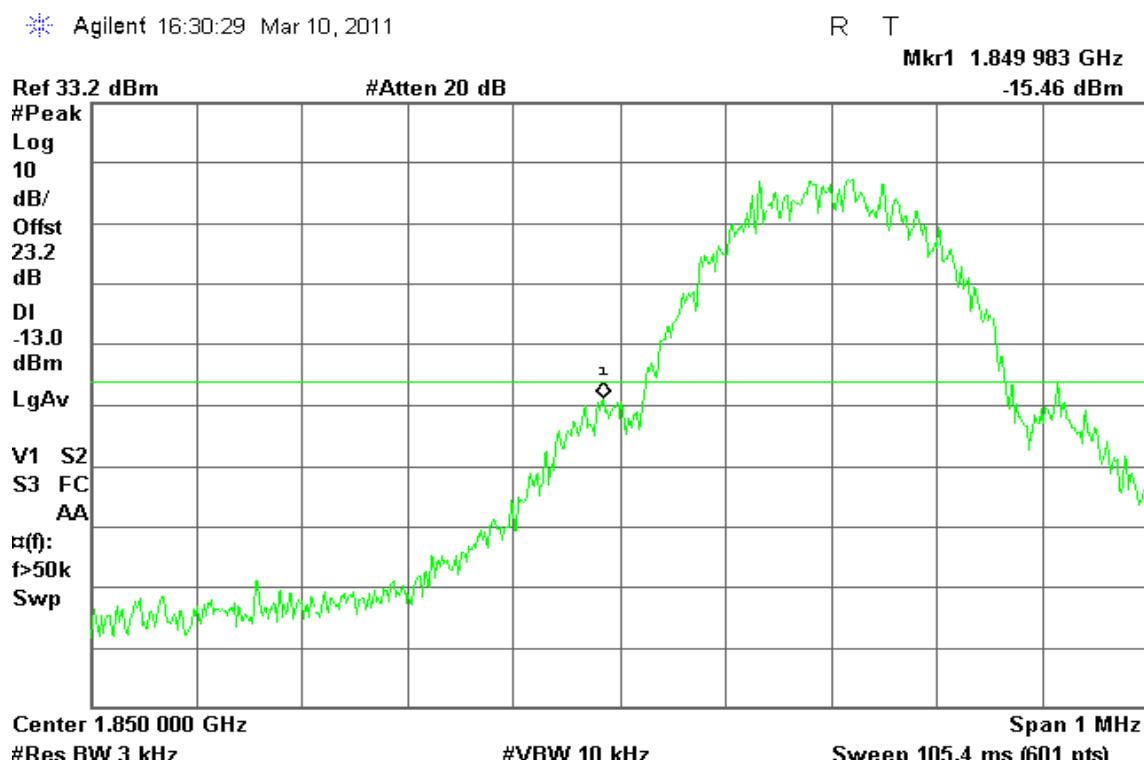
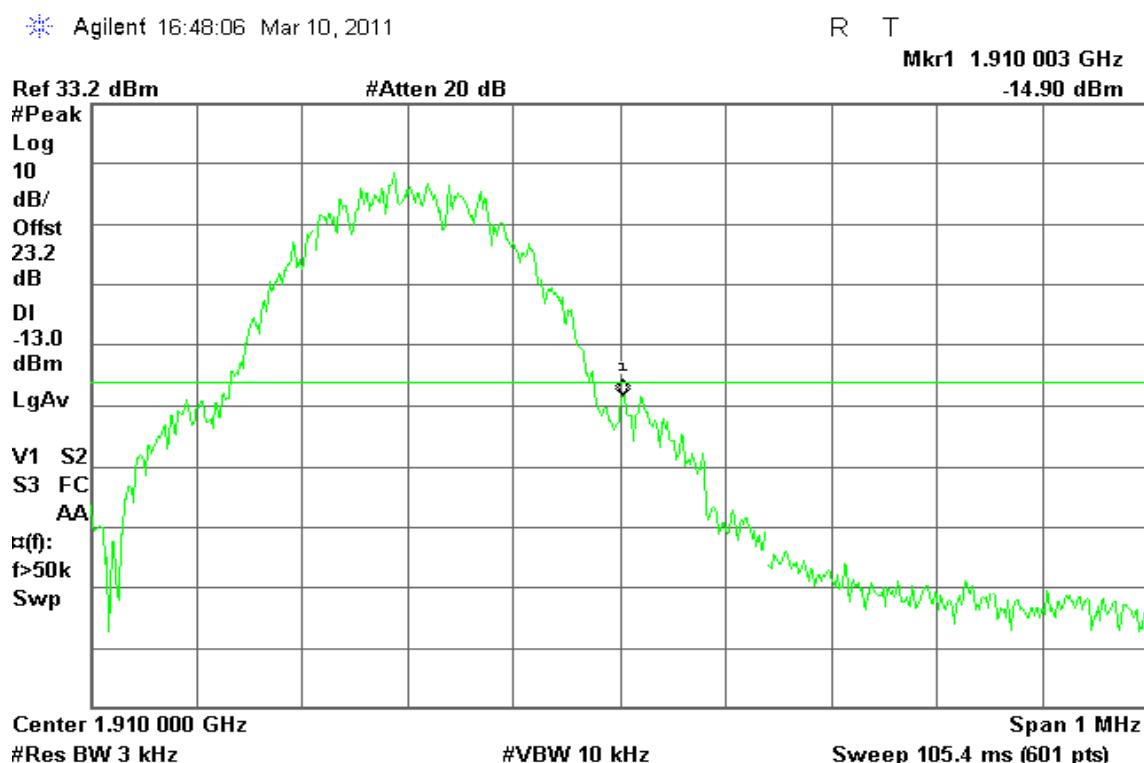


Figure 14-2: Band Edge emissions – GPRS CH High



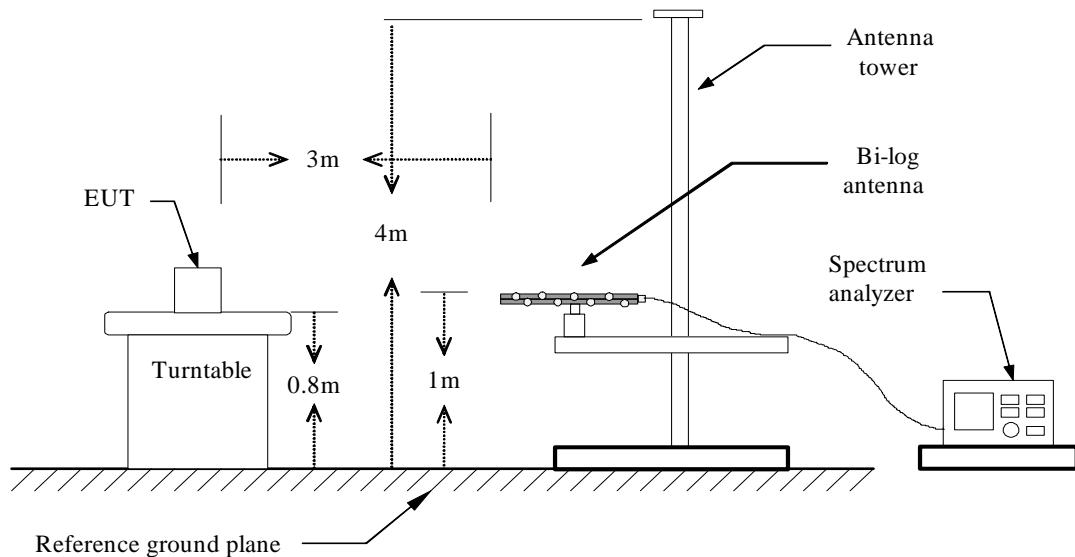
## 7.6 FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT

### LIMIT

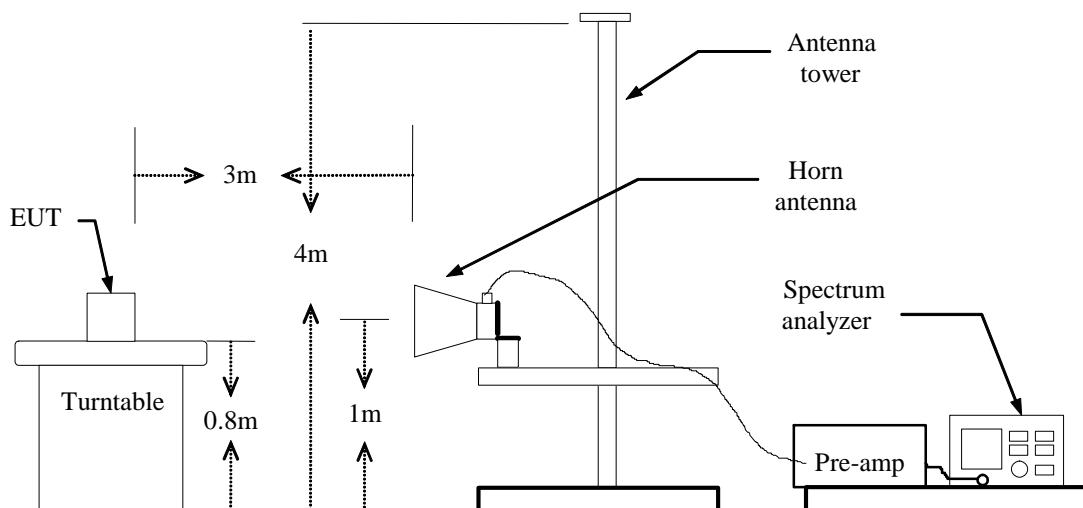
According to FCC §2.1053

#### Test Configuration

##### **Below 1 GHz**

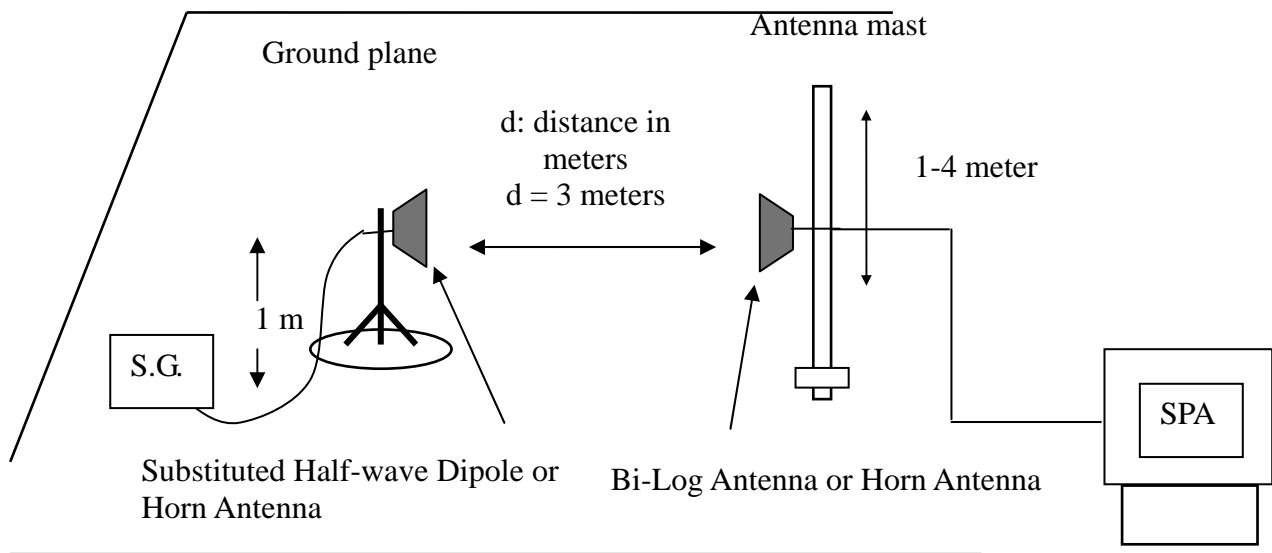


##### **Above 1 GHz**





## Substituted Method Test Set-up



## TEST PROCEDURE

The EUT was placed on a non-conductive, the measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

The frequency range up to tenth harmonic was investigated for each of three fundamental frequency (low, middle and high channels). Once spurious emission were identified, the power of the emission was determined using the substitution method.

The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency.

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

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

## TEST RESULTS

*Refer to the attached tabular data sheets.*

**Radiated Spurious Emission Measurement Result / Below 1GHz****Operation Mode:** GSM 850 / TX / CH 128**Test Date:** February 25, 2011**Temperature:** 25°C**Tested by:** David Lee**Humidity:** 45 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
30.97	-55.39	-17.74	-73.13	-13.00	-60.13	V
129.91	-65.90	-12.73	-78.63	-13.00	-65.63	V
287.05	-67.54	-12.09	-79.63	-13.00	-66.63	V
466.50	-67.50	-9.52	-77.02	-13.00	-64.02	V
566.41	-68.32	-7.94	-76.27	-13.00	-63.27	V
714.82	-68.94	-6.20	-75.14	-13.00	-62.14	V
41.64	-62.64	-11.68	-74.32	-13.00	-61.32	H
191.99	-65.30	-14.14	-79.44	-13.00	-66.44	H
286.08	-67.30	-13.10	-80.40	-13.00	-67.40	H
415.09	-67.47	-10.83	-78.30	-13.00	-65.30	H
452.92	-65.15	-9.87	-75.01	-13.00	-62.01	H
894.27	-58.60	-3.78	-62.38	-13.00	-49.38	H

***Remark:***

1. *The emission behaviour belongs to narrowband spurious emission.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.*

**Operation Mode:** GSM 850 / TX / CH 190**Test Date:** February 25, 2011**Temperature:** 25°C**Tested by:** David Lee**Humidity:** 45 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
35.82	-52.35	-14.95	-67.30	-13.00	-54.30	V
138.64	-65.61	-13.38	-78.98	-13.00	-65.98	V
194.90	-65.58	-14.79	-80.36	-13.00	-67.36	V
264.74	-66.07	-13.65	-79.72	-13.00	-66.72	V
494.63	-67.89	-8.78	-76.66	-13.00	-63.66	V
646.92	-68.55	-6.70	-75.24	-13.00	-62.24	V
<hr/>						
30.00	-53.84	-18.94	-72.78	-13.00	-59.78	H
123.12	-65.47	-14.04	-79.51	-13.00	-66.51	H
198.78	-65.26	-13.47	-78.73	-13.00	-65.73	H
288.02	-66.33	-13.11	-79.44	-13.00	-66.44	H
381.14	-65.91	-12.02	-77.93	-13.00	-64.93	H
452.92	-66.12	-9.87	-75.99	-13.00	-62.99	H

**Remark:**

1. The emission behaviour belongs to narrowband spurious emission.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with "N/A" remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.

**Operation Mode:** GSM 850 / TX / CH 251**Test Date:** February 25, 2011**Temperature:** 25°C**Tested by:** David Lee**Humidity:** 45 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
44.55	-59.39	-12.92	-72.31	-13.00	-59.31	V
68.80	-62.56	-15.67	-78.24	-13.00	-65.24	V
128.94	-64.69	-12.83	-77.52	-13.00	-64.52	V
278.32	-65.70	-12.25	-77.95	-13.00	-64.95	V
452.92	-65.17	-9.95	-75.12	-13.00	-62.12	V
688.63	-66.33	-6.54	-72.87	-13.00	-59.87	V
31.94	-53.08	-17.36	-70.43	-13.00	-57.43	H
143.49	-63.98	-14.41	-78.39	-13.00	-65.39	H
195.87	-64.81	-13.76	-78.56	-13.00	-65.56	H
288.02	-65.76	-13.11	-78.87	-13.00	-65.87	H
452.92	-65.12	-9.87	-74.98	-13.00	-61.98	H
529.55	-67.10	-8.43	-75.53	-13.00	-62.53	H

**Remark:**

1. The emission behaviour belongs to narrowband spurious emission.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with "N/A" remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.

**Operation Mode:** GPRS 850 / TX / CH 128**Test Date:** March 9, 2011**Temperature:** 25°C**Tested by:** David Lee**Humidity:** 45 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
43.58	-64.42	-12.85	-77.27	-13.00	-64.27	V
70.74	-65.84	-15.92	-81.76	-13.00	-68.76	V
127.97	-66.72	-12.93	-79.65	-13.00	-66.65	V
286.08	-68.36	-12.09	-80.45	-13.00	-67.45	V
438.37	-68.23	-10.31	-78.55	-13.00	-65.55	V
773.99	-68.71	-5.38	-74.09	-13.00	-61.09	V
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43.58	-65.04	-11.71	-76.75	-13.00	-63.75	H
126.03	-67.05	-14.06	-81.11	-13.00	-68.11	H
200.72	-67.72	-13.48	-81.20	-13.00	-68.20	H
389.87	-67.54	-11.88	-79.42	-13.00	-66.42	H
710.94	-69.33	-6.45	-75.77	-13.00	-62.77	H
986.42	-70.03	-2.91	-72.94	-13.00	-59.94	H

**Remark:**

1. The emission behaviour belongs to narrowband spurious emission.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with "N/A" remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.

**Operation Mode:** GPRS 850 / TX / CH 190**Test Date:** March 9, 2011**Temperature:** 25°C**Tested by:** David Lee**Humidity:** 45 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
43.58	-64.17	-12.85	-77.03	-13.00	-64.03	V
72.68	-65.95	-16.72	-82.68	-13.00	-69.68	V
128.94	-65.86	-12.83	-78.69	-13.00	-65.69	V
277.35	-67.63	-12.31	-79.94	-13.00	-66.94	V
621.70	-68.13	-6.90	-75.03	-13.00	-62.03	V
690.57	-69.69	-6.53	-76.22	-13.00	-63.22	V
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43.58	-64.76	-11.71	-76.47	-13.00	-63.47	H
121.18	-66.77	-14.03	-80.80	-13.00	-67.80	H
200.72	-67.17	-13.48	-80.66	-13.00	-67.66	H
556.71	-69.45	-7.87	-77.32	-13.00	-64.32	H
621.70	-68.84	-6.84	-75.68	-13.00	-62.68	H
691.54	-69.02	-6.55	-75.57	-13.00	-62.57	H

**Remark:**

1. The emission behaviour belongs to narrowband spurious emission.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with "N/A" remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.

**Operation Mode:** GPRS 850 / TX / CH 251**Test Date:** March 9, 2011**Temperature:** 25°C**Tested by:** David Lee**Humidity:** 45 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
43.58	-63.68	-12.85	-76.54	-13.00	-63.54	V
56.19	-64.11	-16.33	-80.44	-13.00	-67.44	V
133.79	-67.17	-13.01	-80.18	-13.00	-67.18	V
194.90	-66.21	-14.79	-81.00	-13.00	-68.00	V
288.02	-68.19	-12.08	-80.27	-13.00	-67.27	V
786.60	-68.84	-5.19	-74.03	-13.00	-61.03	V
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43.58	-64.75	-11.71	-76.46	-13.00	-63.46	H
114.39	-66.20	-15.26	-81.46	-13.00	-68.46	H
191.99	-67.07	-14.14	-81.21	-13.00	-68.21	H
237.58	-67.86	-13.84	-81.69	-13.00	-68.69	H
381.14	-67.12	-12.02	-79.14	-13.00	-66.14	H
624.61	-68.94	-6.80	-75.74	-13.00	-62.74	H

**Remark:**

1. The emission behaviour belongs to narrowband spurious emission.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

**Operation Mode:** GSM 1900 / TX / CH 512**Test Date:** February 25, 2011**Temperature:** 25°C**Tested by:** David Lee**Humidity:** 45 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
30.97	-49.90	-17.74	-67.63	-13.00	-54.63	V
133.79	-66.42	-13.01	-79.42	-13.00	-66.42	V
315.18	-66.52	-13.60	-80.12	-13.00	-67.12	V
357.86	-66.01	-13.08	-79.09	-13.00	-66.09	V
542.16	-68.52	-8.22	-76.74	-13.00	-63.74	V
876.81	-66.90	-4.01	-70.91	-13.00	-57.91	V
45.52	-62.42	-12.08	-74.50	-13.00	-61.50	H
143.49	-65.09	-14.41	-79.50	-13.00	-66.50	H
178.41	-65.95	-14.18	-80.12	-13.00	-67.12	H
354.95	-66.32	-13.25	-79.57	-13.00	-66.57	H
452.92	-66.39	-9.87	-76.25	-13.00	-63.25	H
876.81	-56.97	-3.91	-60.88	-13.00	-47.88	H

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

**Operation Mode:** GSM 1900 / TX / CH 661**Test Date:** February 25, 2011**Temperature:** 25°C**Tested by:** David Lee**Humidity:** 45 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
41.64	-62.82	-12.72	-75.54	-13.00	-62.54	V
68.80	-64.44	-15.67	-80.11	-13.00	-67.11	V
124.09	-66.65	-13.33	-79.98	-13.00	-66.98	V
286.08	-67.70	-12.09	-79.79	-13.00	-66.79	V
561.56	-68.09	-7.94	-76.04	-13.00	-63.04	V
722.58	-68.60	-6.08	-74.68	-13.00	-61.68	V
30.00	-52.23	-18.94	-71.17	-13.00	-58.17	H
113.42	-64.70	-15.47	-80.17	-13.00	-67.17	H
194.90	-66.66	-13.85	-80.52	-13.00	-67.52	H
452.92	-66.15	-9.87	-76.02	-13.00	-63.02	H
890.39	-57.26	-3.79	-61.05	-13.00	-48.05	H
989.33	-66.70	-2.84	-69.54	-13.00	-56.54	H

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

**Operation Mode:** GSM 1900 / TX / CH 810**Test Date:** February 25, 2011**Temperature:** 25°C**Tested by:** David Lee**Humidity:** 45 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
41.64	-64.05	-12.72	-76.77	-13.00	-63.77	V
147.37	-66.28	-13.18	-79.45	-13.00	-66.45	V
287.05	-68.28	-12.09	-80.37	-13.00	-67.37	V
439.34	-67.75	-10.29	-78.03	-13.00	-65.03	V
622.67	-67.84	-6.89	-74.73	-13.00	-61.73	V
912.70	-68.84	-3.75	-72.59	-13.00	-59.59	V
30.00	-53.19	-18.94	-72.13	-13.00	-59.13	H
143.49	-66.34	-14.41	-80.75	-13.00	-67.75	H
195.87	-65.99	-13.76	-79.75	-13.00	-66.75	H
416.06	-67.91	-10.77	-78.68	-13.00	-65.68	H
452.92	-66.21	-9.87	-76.07	-13.00	-63.07	H
904.94	-62.16	-3.74	-65.90	-13.00	-52.90	H

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

**Operation Mode:** GPRS 1900 / TX / CH 512**Test Date:** March 9, 2011**Temperature:** 25°C**Tested by:** David Lee**Humidity:** 45 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
42.61	-63.81	-12.79	-76.60	-13.00	-63.60	V
68.80	-65.56	-15.67	-81.23	-13.00	-68.23	V
127.97	-67.04	-12.93	-79.97	-13.00	-66.97	V
191.02	-66.03	-15.25	-81.28	-13.00	-68.28	V
275.41	-68.14	-12.45	-80.59	-13.00	-67.59	V
876.81	-69.19	-4.01	-73.20	-13.00	-60.20	V
41.64	-64.18	-11.68	-75.86	-13.00	-62.86	H
56.19	-63.79	-16.02	-79.81	-13.00	-66.81	H
143.49	-65.42	-14.41	-79.83	-13.00	-66.83	H
435.46	-67.80	-10.39	-78.19	-13.00	-65.19	H
876.81	-55.42	-3.91	-59.33	-13.00	-46.33	H
979.63	-68.77	-3.07	-71.84	-13.00	-58.84	H

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

**Operation Mode:** GPRS 1900 / TX / CH 661**Test Date:** March 9, 2011**Temperature:** 25°C**Tested by:** David Lee**Humidity:** 45 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
44.55	-63.88	-12.92	-76.80	-13.00	-63.80	V
70.74	-65.23	-15.92	-81.15	-13.00	-68.15	V
136.70	-66.57	-13.23	-79.80	-13.00	-66.80	V
283.17	-68.36	-12.11	-80.48	-13.00	-67.48	V
418.00	-67.80	-10.95	-78.74	-13.00	-65.74	V
890.39	-63.82	-3.90	-67.72	-13.00	-54.72	V
42.61	-64.41	-11.70	-76.11	-13.00	-63.11	H
124.09	-66.72	-14.05	-80.77	-13.00	-67.77	H
241.46	-67.70	-13.78	-81.48	-13.00	-68.48	H
285.11	-68.10	-13.10	-81.19	-13.00	-68.19	H
758.47	-69.04	-5.62	-74.66	-13.00	-61.66	H
890.39	-57.75	-3.79	-61.54	-13.00	-48.54	H

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

**Operation Mode:** GPRS 1900 / TX / CH 810**Test Date:** March 9, 2011**Temperature:** 25°C**Tested by:** David Lee**Humidity:** 45 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
41.64	-64.04	-12.72	-76.76	-13.00	-63.76	V
56.19	-64.63	-16.33	-80.96	-13.00	-67.96	V
127.00	-67.20	-13.03	-80.23	-13.00	-67.23	V
191.99	-65.95	-15.13	-81.08	-13.00	-68.08	V
288.99	-68.08	-12.08	-80.16	-13.00	-67.16	V
904.94	-66.93	-3.82	-70.76	-13.00	-57.76	V
43.58	-64.08	-11.71	-75.79	-13.00	-62.79	H
127.00	-66.67	-14.07	-80.74	-13.00	-67.74	H
197.81	-67.09	-13.57	-80.66	-13.00	-67.66	H
288.99	-67.76	-13.11	-80.88	-13.00	-67.88	H
770.11	-68.39	-5.47	-73.86	-13.00	-60.86	H
904.94	-62.15	-3.74	-65.89	-13.00	-52.89	H

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

**Above 1GHz****Operation Mode:** GSM 850 / TX / CH 128**Test Date:** February 25, 2011**Temperature:** 25°C**Tested by:** David Lee**Humidity:** 45 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading level (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization
1651.00	-54.32	1.61	-52.70	-13.00	-39.70	V
5767.00	-55.25	10.51	-44.74	-13.00	-31.74	V
N/A						
1651.00	-48.87	1.42	-47.46	-13.00	-34.46	H
1763.00	-46.41	1.34	-45.08	-13.00	-32.08	H
2470.00	-50.82	4.43	-46.39	-13.00	-33.39	H
3296.00	-59.59	8.22	-51.36	-13.00	-38.36	H
5767.00	-56.29	10.36	-45.93	-13.00	-32.93	H
N/A						

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

**Operation Mode:** GSM 850 / TX / CH 190**Test Date:** February 25, 2011**Temperature:** 25°C**Tested by:** David Lee**Humidity:** 45 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading level (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization
1672.00	-55.45	1.63	-53.82	-13.00	-40.82	V
5858.00	-58.93	10.60	-48.33	-13.00	-35.33	V
6691.00	-56.83	13.85	-42.97	-13.00	-29.97	V
N/A						
1672.00	-50.05	1.40	-48.64	-13.00	-35.64	H
2512.00	-56.84	4.69	-52.15	-13.00	-39.15	H
5858.00	-57.23	10.46	-46.76	-13.00	-33.76	H
6691.00	-52.49	13.78	-38.71	-13.00	-25.71	H
N/A						

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

**Operation Mode:** GSM 850 / TX / CH 251**Test Date:** February 25, 2011**Temperature:** 25°C**Tested by:** David Lee**Humidity:** 45 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading level (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization
1700.00	-55.28	1.64	-53.63	-13.00	-40.63	V
5942.00	-58.15	10.67	-47.48	-13.00	-34.48	V
6789.00	-55.42	14.23	-41.19	-13.00	-28.19	V
N/A						
1700.00	-51.72	1.38	-50.34	-13.00	-37.34	H
2547.00	-59.04	4.82	-54.22	-13.00	-41.22	H
5942.00	-57.12	10.56	-46.57	-13.00	-33.57	H
6789.00	-52.08	14.20	-37.88	-13.00	-24.88	H
N/A						

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

**Operation Mode:** GPRS 850 / TX / CH 128**Test Date:** March 9, 2011**Temperature:** 25°C**Tested by:** David Lee**Humidity:** 45 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading level (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization
1651.00	-53.25	1.61	-51.64	-13.00	-38.64	V
4948.00	-58.86	10.31	-48.56	-13.00	-35.56	V
5767.00	-56.95	10.51	-46.43	-13.00	-33.43	V
6593.00	-59.44	13.48	-45.96	-13.00	-32.96	V
N/A						
1651.00	-49.44	1.42	-48.02	-13.00	-35.02	H
2470.00	-52.20	4.43	-47.77	-13.00	-34.77	H
5767.00	-55.98	10.36	-45.61	-13.00	-32.61	H
6593.00	-58.59	13.35	-45.24	-13.00	-32.24	H
N/A						

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

**Operation Mode:** GPRS 850 / TX / CH 190**Test Date:** March 9, 2011**Temperature:** 25°C**Tested by:** David Lee**Humidity:** 45 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading level (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization
1672.00	-54.60	1.63	-52.98	-13.00	-39.98	V
5858.00	-59.16	10.60	-48.56	-13.00	-35.56	V
6691.00	-55.85	13.85	-41.99	-13.00	-28.99	V
N/A						
1672.00	-49.85	1.40	-48.44	-13.00	-35.44	H
5858.00	-59.38	10.46	-48.92	-13.00	-35.92	H
6691.00	-53.71	13.78	-39.93	-13.00	-26.93	H
N/A						

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

**Operation Mode:** GPRS 850 / TX / CH 251**Test Date:** March 9, 2011**Temperature:** 25°C**Tested by:** David Lee**Humidity:** 45 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading level (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization
1700.00	-55.24	1.64	-53.59	-13.00	-40.59	V
1952.00	-53.64	1.80	-51.84	-13.00	-38.84	V
5942.00	-56.97	10.67	-46.30	-13.00	-33.30	V
6789.00	-55.04	14.23	-40.81	-13.00	-27.81	V
N/A						
1700.00	-51.87	1.38	-50.49	-13.00	-37.49	H
1952.00	-55.74	1.20	-54.55	-13.00	-41.55	H
2547.00	-59.24	4.82	-54.41	-13.00	-41.41	H
6789.00	-52.98	14.20	-38.77	-13.00	-25.77	H
N/A						

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

**Operation Mode:** GSM 1900 / TX / CH 512**Test Date:** February 25, 2011**Temperature:** 25°C**Tested by:** David Lee**Humidity:** 45 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading level (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization
3702.00	-56.77	9.11	-47.67	-13.00	-34.67	V
5550.00	-49.82	10.32	-39.50	-13.00	-26.50	V
7398.00	-56.80	16.59	-40.21	-13.00	-27.21	V
N/A						
3702.00	-55.99	8.89	-47.11	-13.00	-34.11	H
5550.00	-51.85	10.12	-41.73	-13.00	-28.73	H
7398.00	-57.25	16.51	-40.75	-13.00	-27.75	H
N/A						

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

**Operation Mode:** GSM 1900 / TX / CH 661**Test Date:** February 25, 2011**Temperature:** 25°C**Tested by:** David Lee**Humidity:** 45 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading level (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization
3758.00	-58.88	8.98	-49.90	-13.00	-36.90	V
5641.00	-47.83	10.40	-37.42	-13.00	-24.42	V
N/A						
3758.00	-56.00	8.76	-47.24	-13.00	-34.24	H
5641.00	-49.86	10.23	-39.64	-13.00	-26.64	H
7524.00	-60.09	16.93	-43.17	-13.00	-30.17	H
N/A						

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

**Operation Mode:** GSM 1900 / TX / CH 810**Test Date:** February 25, 2011**Temperature:** 25°C**Tested by:** David Lee**Humidity:** 45 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading level (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization
3821.00	-57.62	8.83	-48.79	-13.00	-35.79	V
5732.00	-47.53	10.48	-37.04	-13.00	-24.04	V
N/A						
3821.00	-56.12	8.62	-47.50	-13.00	-34.50	H
5732.00	-50.16	10.33	-39.83	-13.00	-26.83	H
N/A						

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

**Operation Mode:** GPRS 1900 / TX / CH 512**Test Date:** March 9, 2011**Temperature:** 25°C**Tested by:** David Lee**Humidity:** 45 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading level (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization
3702.00	-57.41	9.11	-48.30	-13.00	-35.30	V
5550.00	-49.59	10.32	-39.26	-13.00	-26.26	V
N/A						
3702.00	-58.40	8.89	-49.51	-13.00	-36.51	H
5550.00	-52.88	10.12	-42.76	-13.00	-29.76	H
N/A						

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

**Operation Mode:** GPRS 1900 / TX / CH 661**Test Date:** March 9, 2011**Temperature:** 25°C**Tested by:** David Lee**Humidity:** 45 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading level (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization
3758.00	-56.16	8.98	-47.19	-13.00	-34.19	V
5641.00	-48.00	10.40	-37.59	-13.00	-24.59	V
7174.00	-60.74	15.72	-45.02	-13.00	-32.02	V
N/A						
3758.00	-58.50	8.76	-49.74	-13.00	-36.74	H
5641.00	-52.65	10.23	-42.43	-13.00	-29.43	H
N/A						

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

**Operation Mode:** GPRS 1900 / TX / CH 810**Test Date:** March 9, 2011**Temperature:** 25°C**Tested by:** David Lee**Humidity:** 45 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading level (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization
3821.00	-55.03	8.83	-46.20	-13.00	-33.20	V
5732.00	-48.39	10.48	-37.91	-13.00	-24.91	V
7643.00	-60.89	17.38	-43.50	-13.00	-30.50	V
N/A						
3821.00	-54.65	8.62	-46.03	-13.00	-33.03	H
5732.00	-51.53	10.33	-41.21	-13.00	-28.21	H
7643.00	-60.16	17.25	-42.91	-13.00	-29.91	H
N/A						

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.



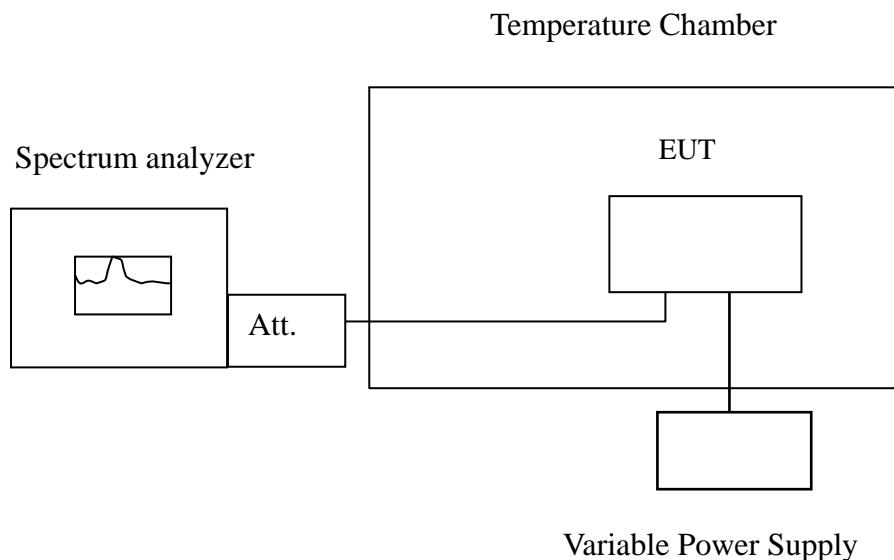
## 7.7 FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT

### LIMIT

According to FCC §2.1055, FCC §22.355, FCC §24.235.

Frequency Tolerance: 2.5 ppm

### Test Configuration



**Remark:** Measurement setup for testing on Antenna connector



## **TEST PROCEDURE**

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

## **TEST RESULTS**

*No non-compliance noted.*

<b>Reference Frequency: GSM Mid Channel 836.6 MHz @ 20°C</b>				
Limit: $\pm 2.5$ ppm = 2090 Hz				
Power Supply Vdc	Environment Temperature (°C)	Frequency (Hz)	Delta (Hz)	Limit (Hz)
3.7	50	836600023	40	2090
	40	836600016	33	
	30	836600010	27	
	20	836599983	0	
	10	836600026	43	
	0	836600000	17	
	-10	836600031	48	
	-20	836600030	47	
	-30	836600034	51	

<b>Reference Frequency: GSM Mid Channel 1880 MHz @ 20°C</b>				
Limit: $\pm 2.5$ ppm = 4700 Hz				
Power Supply Vdc	Environment Temperature (°C)	Frequency (Hz)	Delta (Hz)	Limit (Hz)
3.7	50	1880000011	14	4700
	40	1880000032	35	
	30	1880000020	23	
	20	1879999997	0	
	10	1880000001	4	
	0	1879999995	-2	
	-10	1880000016	19	
	-20	1880000021	24	
	-30	1880000016	19	



<b>Reference Frequency: GPRS Mid Channel 836.6 MHz @ 20°C</b>				
Limit: +/- 2.5 ppm = 2090 Hz				
Power Supply Vdc	Environment Temperature (°C)	Frequency (Hz)	Delta (Hz)	Limit (Hz)
3.7	50	836600031	46	2090
	40	836600033	48	
	30	836600029	44	
	20	836599985	0	
	10	836600005	20	
	0	836600006	21	
	-10	836600032	47	
	-20	836600029	44	
	-30	836600026	41	

<b>Reference Frequency: GPRS Mid Channel 1880 MHz @ 20°C</b>				
Limit: ± 2.5 ppm = 4700 Hz				
Power Supply Vdc	Environment Temperature (°C)	Frequency (Hz)	Delta (Hz)	Limit (Hz)
3.7	50	1880000016	14	4700
	40	1880000013	11	
	30	1880000002	0	
	20	1880000002	0	
	10	1879999998	-4	
	0	1879999995	-7	
	-10	1880000001	-1	
	-20	1880000008	6	
	-30	1880000010	8	

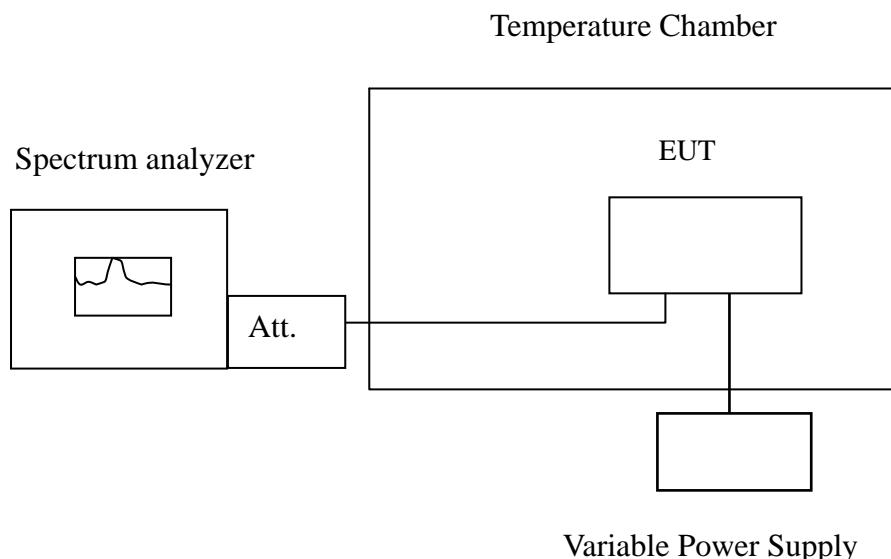


## 7.8 FREQUENCY STABILITY V.S. VOLTAGE MEASUREMENT

### LIMIT

According to FCC §2.1055, FCC §22.355, FCC §24.235,

### Test Configuration



*Remark: Measurement setup for testing on Antenna connector.*



## **TEST PROCEDURE**

Set chamber temperature to 20°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation ( $\pm 15\%$ ) and endpoint, record the maximum frequency change.

## **TEST RESULTS**

*No non-compliance noted.*

<b>Reference Frequency: GSM Mid Channel 836.6 MHz @ 20°C</b>				
Limit: $\pm 2.5$ ppm = 2090Hz				
Power Supply Vdc	Environment Temperature (°C)	Frequency (Hz)	Delta (Hz)	Limit (Hz)
4.255	20	836599985	2	2090
3.7		836599983	0	
3.145		836599980	-3	
3.5 (End Point)		836599875	-108	

<b>Reference Frequency: GSM Mid Channel 1880 MHz @ 20°C</b>				
Limit: $\pm 2.5$ ppm = 4700 Hz				
Power Supply Vdc	Environment Temperature (°C)	Frequency (Hz)	Delta (Hz)	Limit (Hz)
4.255	20	1879999978	-19	4700
3.7		1879999997	0	
3.145		1879999979	-18	
3.5 (End Point)		1879999902	-95	



<b>Reference Frequency: GPRS Mid Channel 836.6 MHz @ 20°C</b>				
Limit: ± 2.5 ppm = 2090Hz				
Power Supply Vdc	Environment Temperature (°C)	Frequency (Hz)	Delta (Hz)	Limit (Hz)
4.255	20	836599978	-7	2090
3.7		836599985	0	
3.145		836599982	-3	
3.5 (End Point)		836599916	-69	

<b>Reference Frequency: GPRS Mid Channel 1880 MHz @ 20°C</b>				
Limit: ± 2.5 ppm = 4700 Hz				
Power Supply Vdc	Environment Temperature (°C)	Frequency (Hz)	Delta (Hz)	Limit (Hz)
4.255	20	1880000005	3	4700
3.7		1880000002	0	
3.145		1879999999	-3	
3.5 (End Point)		1879999913	-89	



## 7.9 POWERLINE CONDUCTED EMISSIONS

### LIMIT

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

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

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

### Test Configuration

See test photographs attached in Appendix I for the actual connections between EUT and support equipment.

### TEST PROCEDURE

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.



## **TEST RESULTS**

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

**Operation Mode:** Power Adapter Mode

**Test Date:** March 9, 2011

**Temperature:** 26°C

**Tested by:** Shawn Wu

**Humidity:** 60% RH

Freq. (MHz)	QP Reading (dBuV)	AV Reading (dBuV)	Corr. factor (dB)	QP Result (dBuV)	AV Result (dBuV)	QP Limit (dBuV)	AV Limit (dBuV)	QP Margin (dB)	AV Margin (dB)	Note
0.2000	34.85	6.45	0.25	35.10	6.70	63.61	53.61	-28.51	-46.91	L1
0.5600	42.35	26.15	0.25	42.60	26.40	56.00	46.00	-13.40	-19.60	L1
3.0600	36.81	20.71	0.29	37.10	21.00	56.00	46.00	-18.90	-25.00	L1
3.4700	36.50	17.40	0.30	36.80	17.70	56.00	46.00	-19.20	-28.30	L1
3.9500	34.29	17.99	0.31	34.60	18.30	56.00	46.00	-21.40	-27.70	L1
4.4000	37.98	19.38	0.32	38.30	19.70	56.00	46.00	-17.70	-26.30	L1
0.1800	23.55	13.25	0.25	23.80	13.50	64.49	54.49	-40.69	-40.99	L2
0.2400	25.85	3.45	0.25	26.10	3.70	62.10	52.10	-36.00	-48.40	L2
0.5400	24.65	8.35	0.25	24.90	8.60	56.00	46.00	-31.10	-37.40	L2
0.9800	17.74	1.24	0.26	18.00	1.50	56.00	46.00	-38.00	-44.50	L2
1.6600	18.53	1.93	0.27	18.80	2.20	56.00	46.00	-37.20	-43.80	L2
3.5200	16.70	1.00	0.30	17.00	1.30	56.00	46.00	-39.00	-44.70	L2

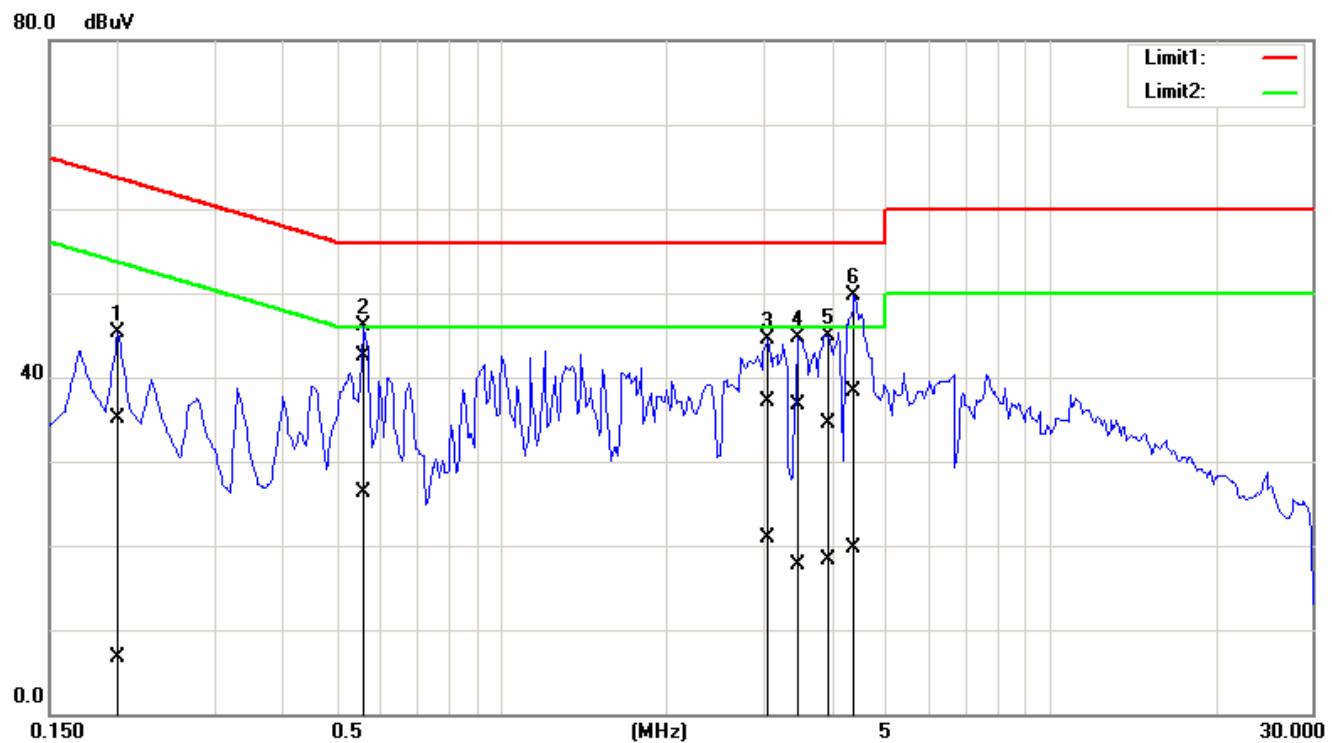
**Remark:**

1. Measuring frequencies from 0.15 MHz to 30MHz.
2. The emissions measured in frequency range from 0.15 MHz to 30MHz were made with an instrument using Quasi-peak detector and average detector.
3. The IF bandwidth of SPA between 0.15MHz and 30MHz was 10kHz; the IF bandwidth of Test Receiver between 0.15MHz and 30MHz was 9kHz;
4. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line)



## Test Plots

### *Conducted emissions (Line 1)*



### *Conducted emissions (Line 2)*

