



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

**TEST REPORT**

**For**

**Mobile phone**

**Model: SH0037D**

**Trade Name: SHARP**

*Issued to*

**SHARP CORPORATION**

**22-22 Nagaike-cho, Abeno-ku CS Promotion Group,  
Product Safety Promotion Ctr. Osaka, Japan**

*Issued by*

**Compliance Certification Services Inc.**

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# 1. TEST RESULT CERTIFICATION

**Applicant:** SHARP CORPORATION  
 22-22 Nagaike-cho, Abeno-ku CS Promotion Group,  
 Product Safety Promotion Ctr. Osaka, Japan

**Equipment Under Test:** Mobile phone

**Trade Name:** SHARP

**Model Number:** SH0037D

**Date of Test:** July 30 ~ September 28, 2010

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:

Reviewed by:

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Rex Lai  
 Section Manager  
 Compliance Certification Services Inc.

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Gina Lo  
 Section Manager  
 Compliance Certification Services Inc.



## 2. EUT DESCRIPTION

<b>Product</b>	Mobile phone
<b>Trade Name</b>	SHARP
<b>Model Number</b>	SH0037D
<b>Model Discrepancy</b>	N/A
<b>Power Supply</b>	1. Power Adapter: Model: 3205G2 I/P: 100-240V, 150mA, 50-60Hz O/P: 5.0V, 700mA 2. Li-ion Battery: Model: H11NT007A Rating: DC 3.7V, 1010mAh, 3.737Wh
<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: 25.77dBm GSM 1900: 29.35 dBm GPRS 850: 25.80 dBm GPRS 1900: 29.28 dBm
<b>Modulation Technique</b>	GSM: GMSK GPRS: GMSK
<b>Type of Emission</b>	GSM 850: 248KGXW--- GSM 1900: 246KGXW--- GPRS 850: 252KGXW--- GPRS 1900: 248KGXW---
<b>Antenna Gain</b>	GSM / GPRS 850: -0.5 dBi GSM / GPRS 1900: 1.6 dBi
<b>Antenna Type</b>	Embedded inverted-F antenna
<b>Note.</b>	All the above models are identical except the difference of color for its external appearance. Please refer to the external photos for reference.

**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: APYNAR0073 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: SH0037D) 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.

Based on the above results from the different modulations, GSM850 / GSM1900 / GPRS 850 / GPRS1900 were determined to be the worst-case scenario for all tests.

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	03/03/2011
Power Meter	Agilent	E4416A	GB41291611	06/27/2011
Power Sensor	Agilent	E9327A	US40441097	06/27/2011
Temp. / Humidity Chamber	Terchy	MHG-150LF	930619	09/14/2011
DC Power Source	Agilent	E3640A	MY40001774	01/08/2011

3M Semi Anechoic Chamber				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	US42510252	10/26/2010
EMI Test Receiver	R&S	ESCI	100064	02/04/2011
Pre-Amplifier	Mini-Circuits	ZFL-1000LN	SF350700823	01/13/2011
Pre-Amplifier	MITEQ	AFS44-00102650-42-10P-44	1415367	11/20/2010
Bilog Antenna	Sunol Sciences	JB3	A030105	09/10/2011
Horn Antenna	EMCO	3117	00055165	12/07/2010
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	12/31/2010
Test S/W	EZ-EMC (CCS-3A1RE)			

Powerline Conducted Emissions Test Site				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI Test Receiver	R&S	ESHS30	828144/003	12/06/2010
LISN	EMCO	3825/2	9106-1809	05/02/2011
LISN	SCHAFFNER	NNB 41	03/10013	12/03/2010
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	A2LA	CFR 47, FCC Part15/18, CISPR 22, EN 55022, ICES-003, AS/NZS CISPR 22, VCCI V-3, EN 55011, CISPR 11, IEC/EN 61000-4-2/3/4/5/6/8/11, EN 61000-6-1/2/3/4, EN 55024, CISPR 24, AS/NZS CISPR 24, AS/NZS 61000.6.2, EN 55014-1/-2, ETSI EN 300 386 v1.3.2/v1.3.3, IEC/EN 61000-3-2, AS/NZS 61000.3.2, IEC/EN 61000-3-3, AS/NZS 61000.3.3	
USA	FCC MRA	3/10 meter Open Area Test Sites to perform FCC Part 15/18 measurements	
Japan	VCCI	3/10 meter Open Area Test Sites and conducted test sites to perform radiated/conducted measurements	 R-2882/2541/2798/725/1868 C-402/747/912 T-321/325
Taiwan	TAF	EN 55014-1, CISPR 14, CNS 13781-1, EN 55013, CISPR 13, CNS 13439, EN 55011, CISPR 11, CNS 13803, PLMN09, IS2045-0, LP0002 FCC Part 27/90, Part 15B/C/D/E, RSS-192/193/210/310 ETSI EN 300 328/ 300 220-1/ 300 220-2/ 301 893/ 301 489-01/ 301 489-03/ 301 489-07 / 301 489-17/ 300 440-1/ 300 440-2 AS/NZS 4268, AS/NZS 4771 CISPR 22, EN 55022, CNS 13438, AS/NZS CISPR 22, VCCI, IEC/EN 61000-4-2/3/4/5/6/8/11, CNS 14676-2/3/4/5/6/8, CNS 14934-2/3, CNS 13783-1, CNS 13439, CNS 13803	
Taiwan	BSMI	CNS 13438, CNS 13783-1, CNS 13439, CNS 14115	SL2-IS-E-0014 / IN-E-0014 /A1-E-0014 /R1-E-0014 /R2-E-0014 /L1-E-0014
Canada	Industry Canada	RSS212, Issue 1	

\* 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.	Universal Radio Communication Tester (Remote)	R&S	CMU200	101245	N/A	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.



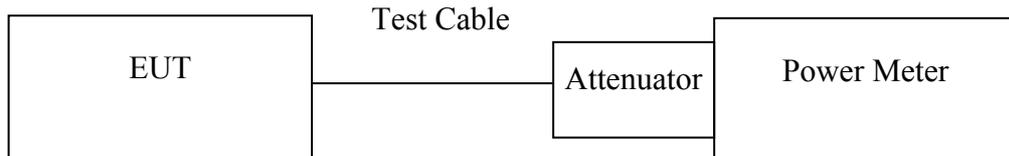
## 7. FCC PART 22 & 24 REQUIREMENTS

### 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	32.80	1.90546
	190	836.60	32.60	1.81970
	251	848.80	32.50	1.77828
GPRS 850 (Class 10)	128	824.20	32.80	1.90546
	190	836.60	32.60	1.81970
	251	848.80	32.40	1.73780

Test Mode	CH	Frequency (MHz)	Peak Power (dBm)	Output Power W
GSM 1900	512	1850.20	29.70	0.93325
	661	1880.00	29.80	0.95499
	810	1909.80	29.60	0.91201
GPRS 1900 (Class 10)	512	1850.20	28.60	0.72444
	661	1880.00	28.70	0.74131
	810	1909.80	28.50	0.70795

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

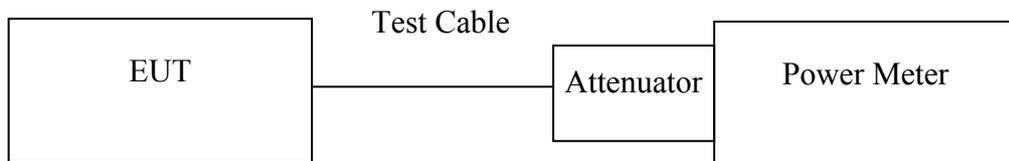


## 7.2 AVERAGE POWER

### 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	23.77	0.23818
	190	836.60	23.57	0.22746
	251	848.80	23.47	0.22228
GPRS 850 (Class 10)	128	824.20	26.78	0.47637
	190	836.60	26.58	0.45493
	251	848.80	26.38	0.43445

Test Mode	CH	Frequency (MHz)	AVG Power (dBm)	Output Power W
GSM 1900	512	1850.20	20.67	0.11666
	661	1880.00	20.77	0.11937
	810	1909.80	20.57	0.11400
GPRS 1900 (Class 10)	512	1850.20	22.58	0.18111
	661	1880.00	22.68	0.18533
	810	1909.80	22.48	0.17699

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



## 7.3 ERP & EIRP MEASUREMENT

### LIMIT

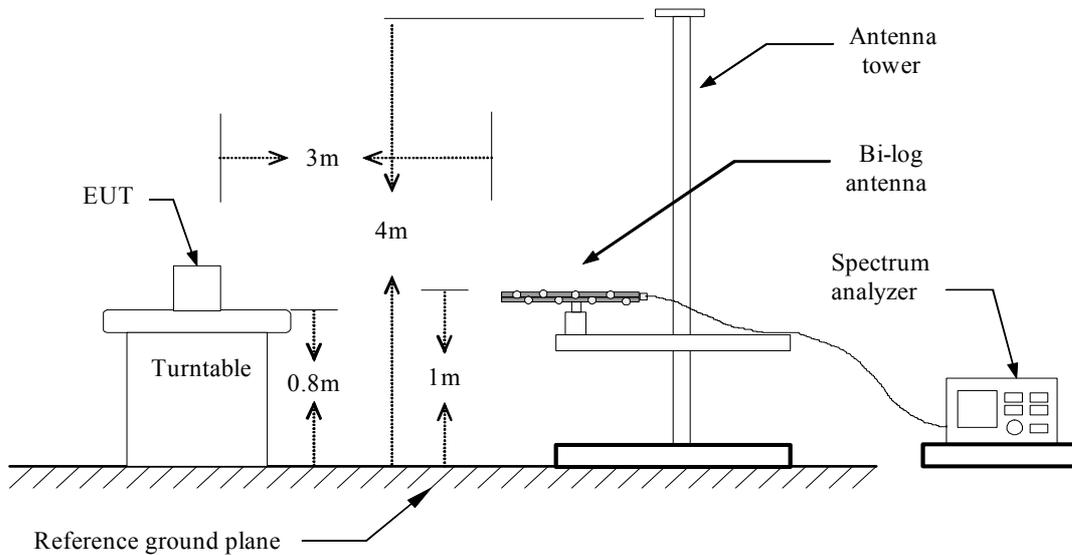
According to FCC §2.1046

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

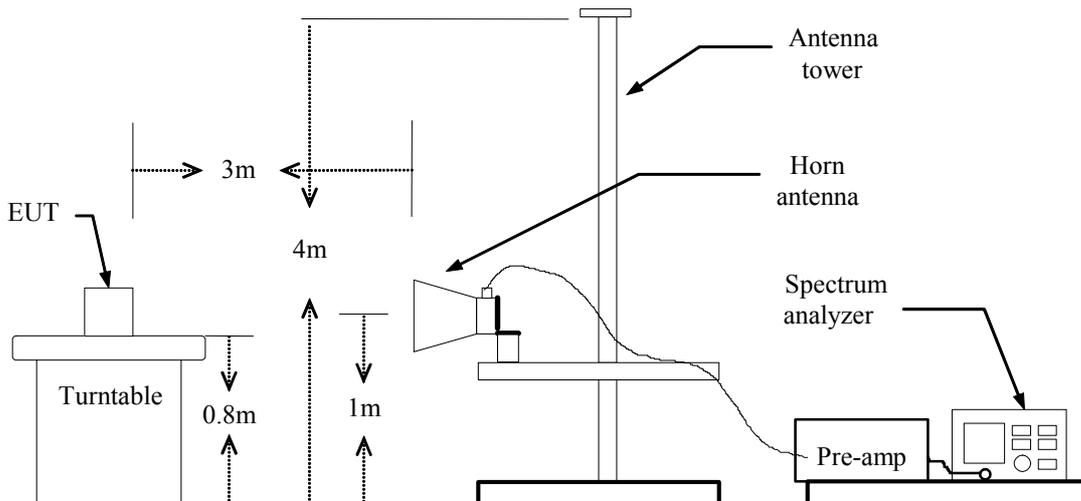
FCC 24.232(b): The equivalent Isotropic Radiated Power (EIRP) must not exceed 2 Watts.

### Test Configuration

#### Below 1 GHz

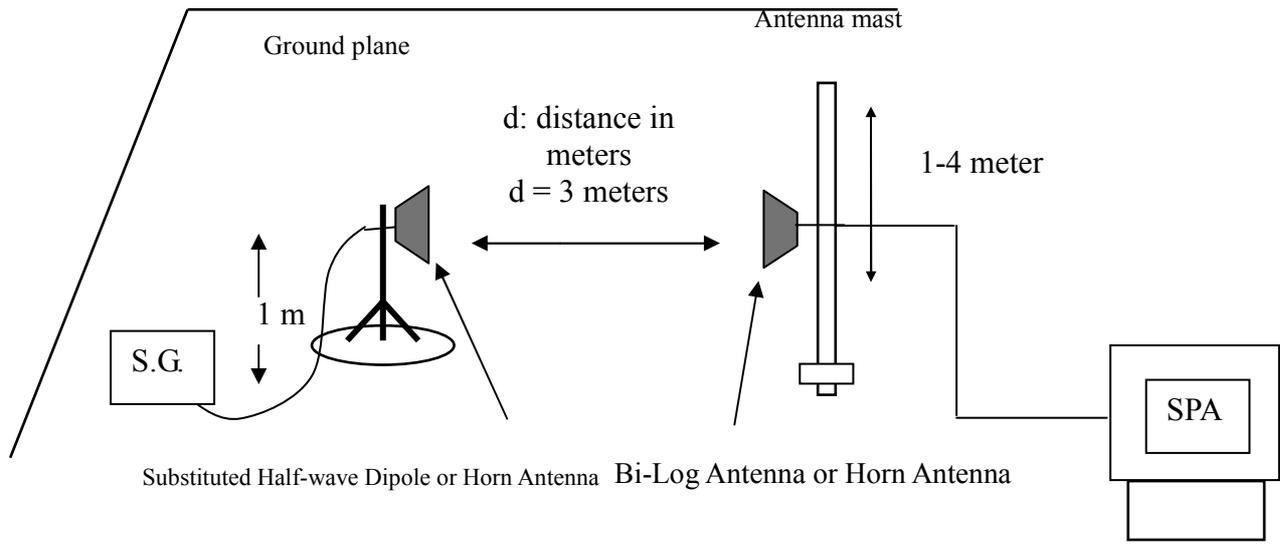


#### Above 1 GHz





### For Substituted Method Test Set-UP



### TEST PROCEDURE

The EUT was placed on 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.

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:

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

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

### 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	-24.39	34.62	10.23	38.50	-28.27
		824.20	H	-10.90	34.65	23.75	38.50	-14.75
	190	836.66	V	-22.82	34.53	11.70	38.50	-26.80
		836.66	H	-9.79	34.63	24.84	38.50	-13.66
	251	848.84	V	-22.54	34.64	12.10	38.50	-26.40
		848.84	H	-8.97	34.75	<b>*25.77</b>	38.50	-12.73
Y	128	824.20	V	-22.82	34.62	11.80	38.50	-26.70
		824.20	H	-10.79	34.65	23.86	38.50	-14.64
	190	836.66	V	-23.74	34.53	10.78	38.50	-27.72
		836.66	H	-9.55	34.63	25.08	38.50	-13.42
	251	848.84	V	-22.44	34.63	12.19	38.50	-26.31
		848.84	H	-9.19	34.75	25.56	38.50	-12.94
Z	128	824.20	V	-11.01	34.62	23.61	38.50	-14.89
		824.20	H	-28.94	34.65	5.71	38.50	-32.79
	190	836.66	V	-9.91	34.52	24.61	38.50	-13.89
		836.66	H	-27.32	34.63	7.32	38.50	-31.18
	251	848.84	V	-9.06	34.64	25.57	38.50	-12.93
		848.84	H	-27.07	34.75	7.68	38.50	-30.82



**GPRS 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	-24.30	34.62	10.32	38.50	-28.18
		824.20	H	-11.03	34.65	23.62	38.50	-14.88
	190	836.66	V	-22.74	34.53	11.79	38.50	-26.71
		836.66	H	-9.74	34.63	24.90	38.50	-13.60
	251	848.84	V	-22.37	34.64	12.26	38.50	-26.24
		848.84	H	-8.95	34.75	<b>*25.80</b>	38.50	-12.70
Y	128	824.20	V	-23.07	34.62	11.54	38.50	-26.96
		824.20	H	-10.82	34.65	23.82	38.50	-14.68
	190	836.66	V	-23.72	34.53	10.81	38.50	-27.69
		836.66	H	-9.58	34.63	25.06	38.50	-13.44
	251	848.84	V	-22.05	34.64	12.59	38.50	-25.91
		848.84	H	-9.17	34.75	25.58	38.50	-12.92
Z	128	824.20	V	-11.16	34.62	23.45	38.50	-15.05
		824.20	H	-28.96	34.65	5.69	38.50	-32.81
	190	836.66	V	-10.05	34.53	24.47	38.50	-14.03
		836.66	H	-27.36	34.63	7.28	38.50	-31.22
	251	848.84	V	-9.08	34.64	25.55	38.50	-12.95
		848.84	H	-27.10	34.75	7.65	38.50	-30.85



**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	1850.10	V	-26.24	41.17	14.93	33.00	-18.07
		1850.20	H	-13.03	40.79	27.76	33.00	-5.24
	661	1880.00	V	-25.79	41.23	15.44	33.00	-17.56
		1879.80	H	-12.79	41.14	28.35	33.00	-4.65
	810	1909.70	V	-25.41	41.30	15.89	33.00	-17.11
		1909.90	H	-12.03	41.38	<b>*29.35</b>	33.00	-3.65
Y	512	1850.10	V	-12.95	41.17	28.22	33.00	-4.78
		1850.00	H	-19.69	40.79	21.11	33.00	-11.89
	661	1880.00	V	-13.20	41.23	28.03	33.00	-4.97
		1879.80	H	-19.80	41.14	21.35	33.00	-11.65
	810	1909.90	V	-13.46	41.30	27.84	33.00	-5.16
		1909.90	H	-19.41	41.38	21.96	33.00	-11.04
Z	512	1850.10	V	-13.94	41.17	27.23	33.00	-5.77
		1850.10	H	-15.31	40.79	25.48	33.00	-7.52
	661	1880.00	V	-13.56	41.23	27.67	33.00	-5.33
		1880.00	H	-15.26	41.14	25.89	33.00	-7.11
	810	1909.70	V	-13.63	41.30	27.68	33.00	-5.32
		1909.70	H	-15.28	41.38	26.09	33.00	-6.91



**GPRS 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	-25.51	41.30	15.79	33.00	-17.21
		1850.10	H	-12.09	41.38	<b>*29.28</b>	33.00	-3.72
	661	1879.80	V	-26.19	41.17	14.98	33.00	-18.02
		1879.80	H	-13.28	40.79	27.51	33.00	-5.49
	810	1909.90	V	-26.31	41.23	14.92	33.00	-18.08
		1909.60	H	-12.83	41.14	28.31	33.00	-4.69
Y	512	1850.10	V	-12.99	41.17	28.18	33.00	-4.82
		1850.10	H	-19.62	40.79	21.18	33.00	-11.82
	661	1880.10	V	-13.22	41.23	28.01	33.00	-4.99
		1880.10	H	-20.01	41.15	21.14	33.00	-11.86
	810	1909.70	V	-13.40	41.30	27.90	33.00	-5.10
		1909.60	H	-19.62	41.38	21.75	33.00	-11.25
Z	512	1850.20	V	-13.90	41.17	27.27	33.00	-5.73
		1850.20	H	-15.70	40.80	25.10	33.00	-7.90
	661	1879.80	V	-13.53	41.23	27.70	33.00	-5.30
		1879.80	H	-15.24	41.14	25.91	33.00	-7.09
	810	1909.70	V	-13.67	41.30	27.63	33.00	-5.37
		1909.70	H	-15.37	41.38	26.00	33.00	-7.00

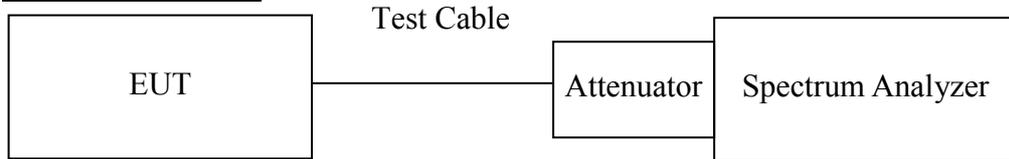


## 7.4 OCCUPIED BANDWIDTH MEASUREMENT

### 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	824.190	247.6042
	190	836.580	241.9979
	251	848.780	248.6108
GPRS 850	128	824.190	252.9059
	190	836.580	246.9293
	251	848.780	248.6500

<b>Test Mode</b>	<b>CH</b>	<b>Frequency (MHz)</b>	<b>99% Bandwidth (kHz)</b>
GSM 1900	512	1850.200	244.5575
	661	1880.000	246.3755
	810	1909.790	245.8108
GPRS 1900	512	1850.200	243.1641
	661	1880.000	248.8480
	810	1909.790	243.2156

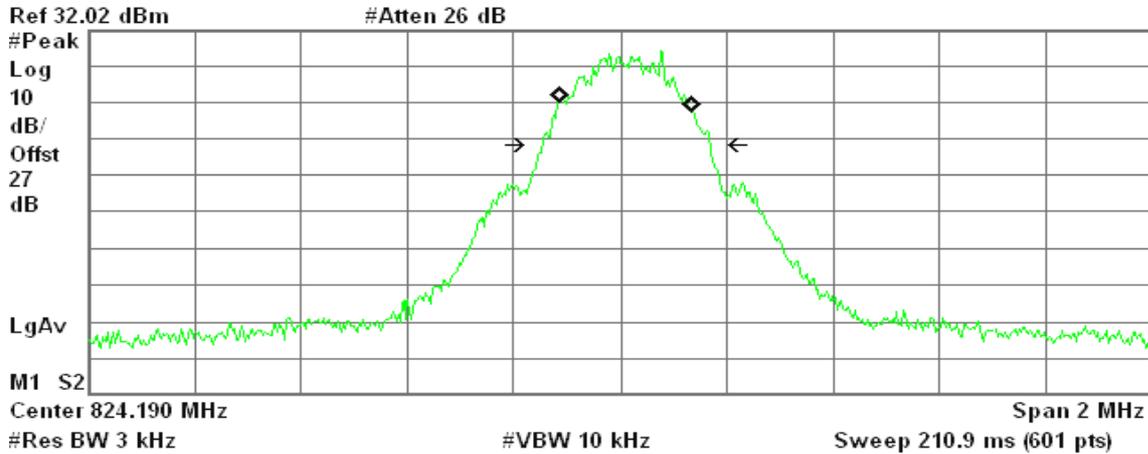


**Test Plot**

**GSM 850 (CH Low)**

Agilent 15:09:48 Aug 4, 2010

R T



Occupied Bandwidth  
247.6042 kHz

Occ BW % Pwr 99.00 %  
x dB -26.00 dB

Transmit Freq Error 8.918 kHz  
x dB Bandwidth 314.730 kHz

**GSM 850 (CH Mid)**

Agilent 15:10:53 Aug 4, 2010

R T



Occupied Bandwidth  
241.9979 kHz

Occ BW % Pwr 99.00 %  
x dB -26.00 dB

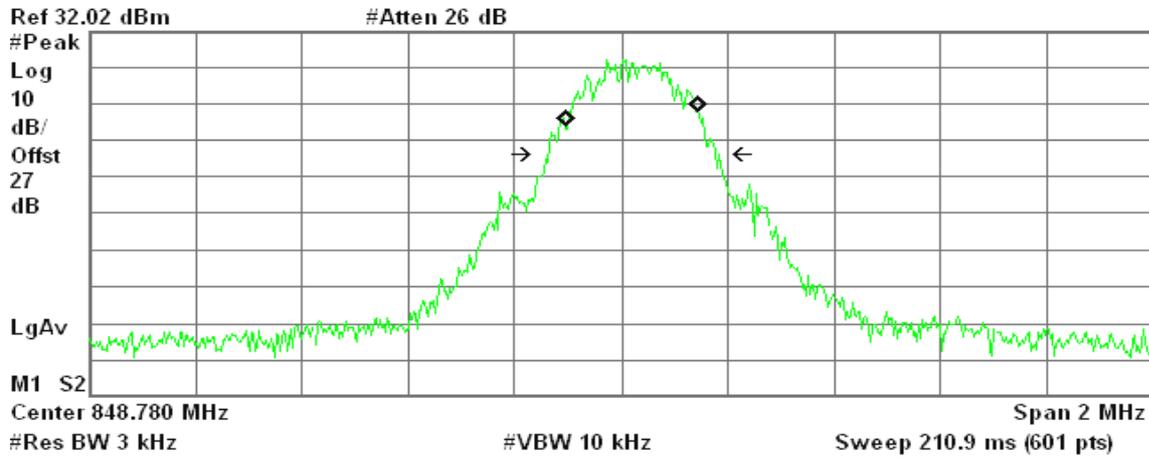
Transmit Freq Error 20.755 kHz  
x dB Bandwidth 318.496 kHz



### GSM 850 (CH High)

Agilent 15:11:10 Aug 4, 2010

R T



Occupied Bandwidth  
248.6108 kHz

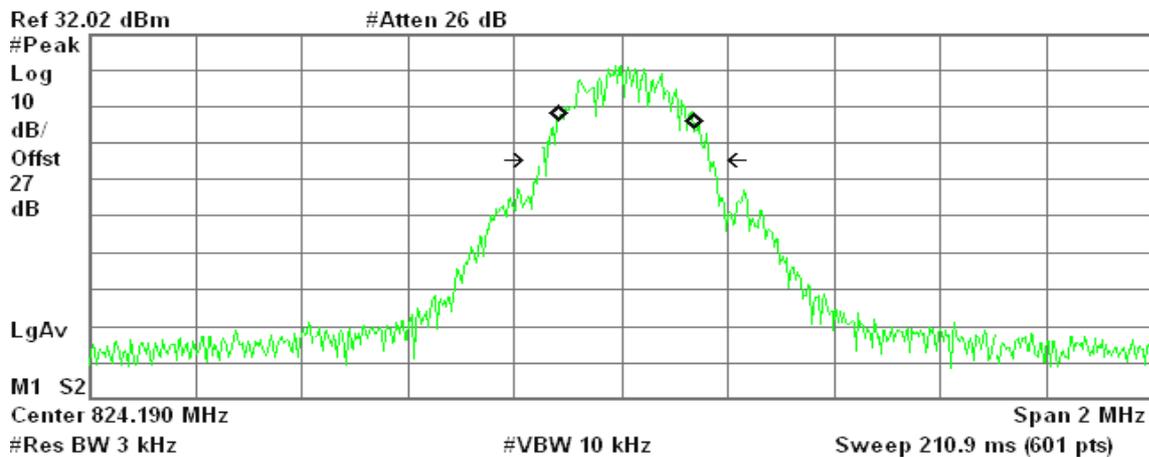
Occ BW % Pwr 99.00 %  
x dB -26.00 dB

Transmit Freq Error 19.817 kHz  
x dB Bandwidth 313.273 kHz

### GPRS 850 (CH Low)

Agilent 15:10:00 Aug 4, 2010

R T



Occupied Bandwidth  
252.9059 kHz

Occ BW % Pwr 99.00 %  
x dB -26.00 dB

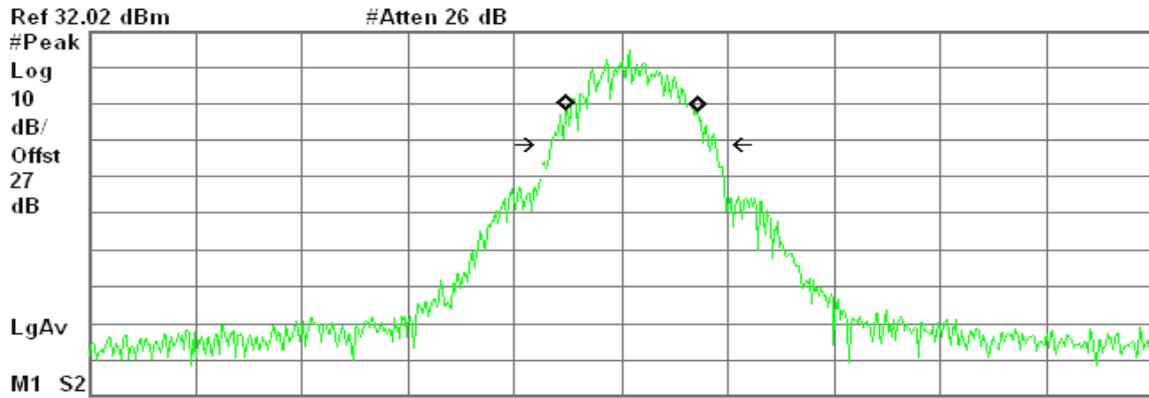
Transmit Freq Error 9.706 kHz  
x dB Bandwidth 314.865 kHz



### GPRS 850 (CH Mid)

Agilent 15:10:42 Aug 4, 2010

R T



Ref 32.02 dBm #Atten 26 dB  
Center 836.580 MHz Span 2 MHz  
#Res BW 3 kHz #VBW 10 kHz Sweep 210.9 ms (601 pts)

Occupied Bandwidth  
246.9293 kHz

Occ BW % Pwr 99.00 %  
x dB -26.00 dB

Transmit Freq Error 20.613 kHz  
x dB Bandwidth 308.990 kHz

### GPRS 850(CH High)

Agilent 15:11:22 Aug 4, 2010

R T



Ref 32.02 dBm #Atten 26 dB  
Center 848.780 MHz Span 2 MHz  
#Res BW 3 kHz #VBW 10 kHz Sweep 210.9 ms (601 pts)

Occupied Bandwidth  
248.6500 kHz

Occ BW % Pwr 99.00 %  
x dB -26.00 dB

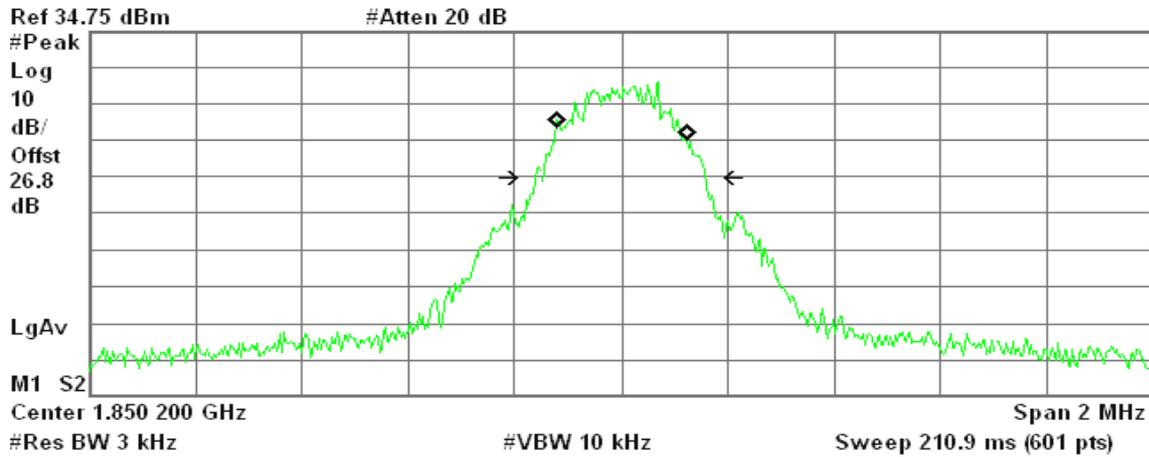
Transmit Freq Error 21.117 kHz  
x dB Bandwidth 313.827 kHz



### GSM 1900 (CH Low)

Agilent 15:54:14 Aug 4, 2010

R T



Occupied Bandwidth  
244.5575 kHz

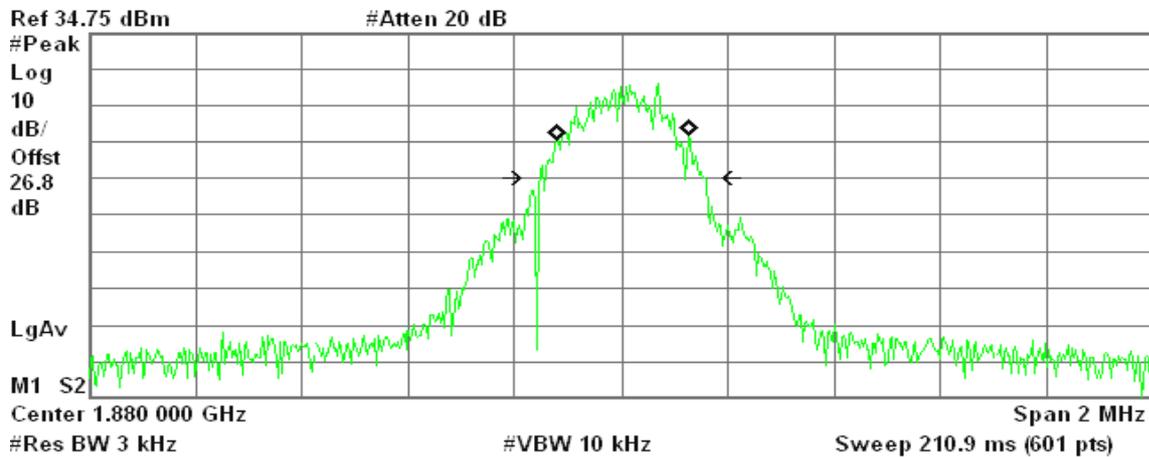
Occ BW % Pwr 99.00 %  
x dB -26.00 dB

Transmit Freq Error 1.033 kHz  
x dB Bandwidth 317.893 kHz

### GSM 1900 (CH Mid)

Agilent 15:55:17 Aug 4, 2010

R T



Occupied Bandwidth  
246.3755 kHz

Occ BW % Pwr 99.00 %  
x dB -26.00 dB

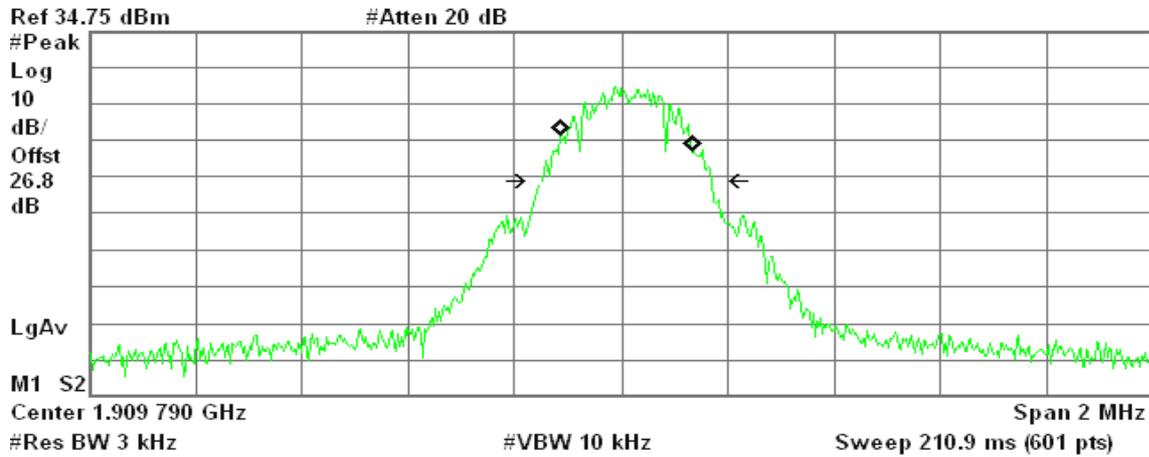
Transmit Freq Error 3.516 kHz  
x dB Bandwidth 309.615 kHz



### GSM 1900 (CH High)

Agilent 15:55:37 Aug 4, 2010

R T



Occupied Bandwidth  
245.8108 kHz

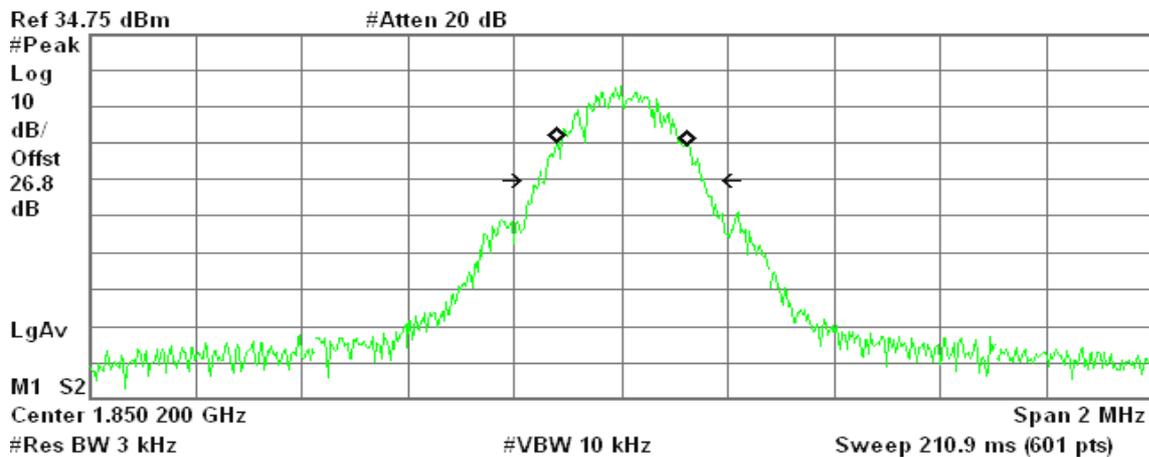
Occ BW % Pwr 99.00 %  
x dB -26.00 dB

Transmit Freq Error 9.432 kHz  
x dB Bandwidth 317.014 kHz

### GPRS 1900 (CH Low)

Agilent 15:54:29 Aug 4, 2010

R T



Occupied Bandwidth  
243.1641 kHz

Occ BW % Pwr 99.00 %  
x dB -26.00 dB

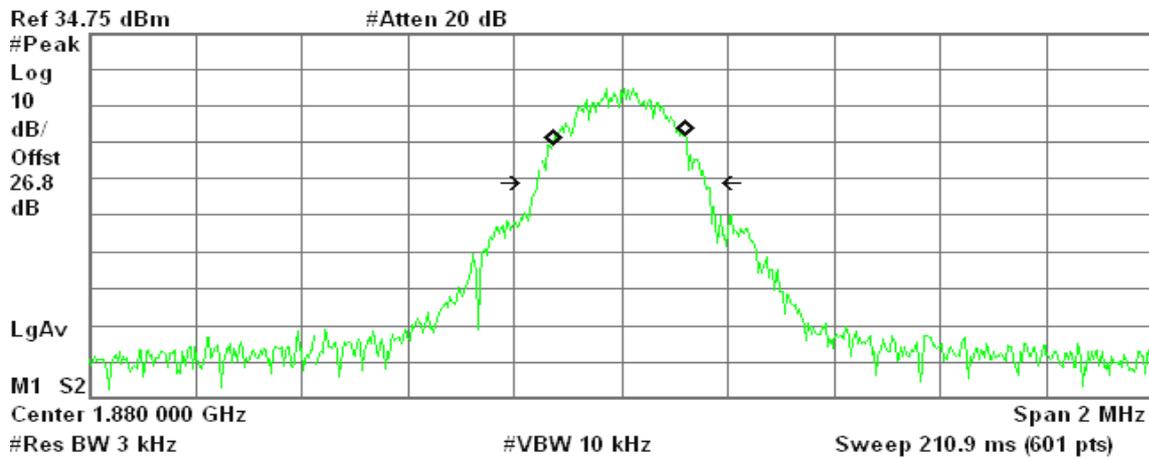
Transmit Freq Error 2.170 kHz  
x dB Bandwidth 308.269 kHz



### GPRS 1900 (CH Mid)

Agilent 15:58:15 Aug 4, 2010

R T



Occupied Bandwidth  
248.8480 kHz

Occ BW % Pwr 99.00 %  
x dB -26.00 dB

Transmit Freq Error -2.903 kHz  
x dB Bandwidth 312.998 kHz

### GPRS 1900 (CH High)

Agilent 15:57:36 Aug 4, 2010

R T



Occupied Bandwidth  
243.2156 kHz

Occ BW % Pwr 99.00 %  
x dB -26.00 dB

Transmit Freq Error 9.157 kHz  
x dB Bandwidth 310.385 kHz



## 7.5 OUT OF BAND EMISSION AT ANTENNA TERMINALS

### LIMIT

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

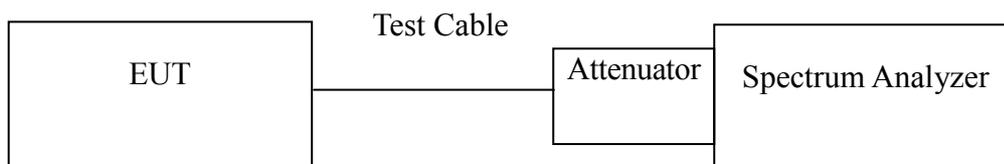
**Out of Band Emissions:** The mean power of emission must be attenuated below the mean power of the non-modulated carrier (P) on any frequency twice or more than twice the fundamental frequency by at least  $43 + 10 \log P$  dB.

**Mobile phone 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**

Mode	CH	Location	Description
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	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

Mode	CH	Location	Description
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	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

Mode	CH	Location	Description
GSM 850	128	Figure 11-1	Band Edge emissions
	251	Figure 11-2	Band Edge emissions
GPRS 850	128	Figure 12-1	Band Edge emissions
	251	Figure 12-2	Band Edge emissions

Mode	CH	Location	Description
GSM 1900	512	Figure 13-1	Band Edge emissions
	810	Figure 13-2	Band Edge emissions
GPRS 1900	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

Agilent 15:29:23 Aug 4, 2010

R T

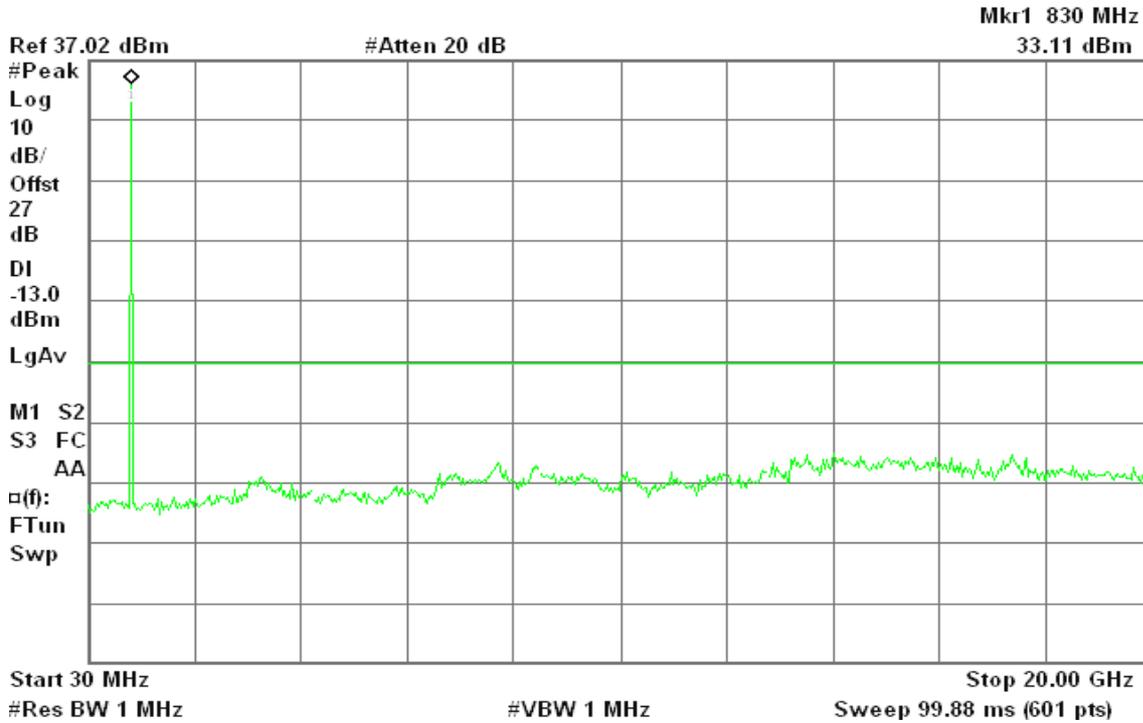


Figure 7-2: Out of Band emission at antenna terminals – GSM CH Mid

Agilent 15:29:11 Aug 4, 2010

R T

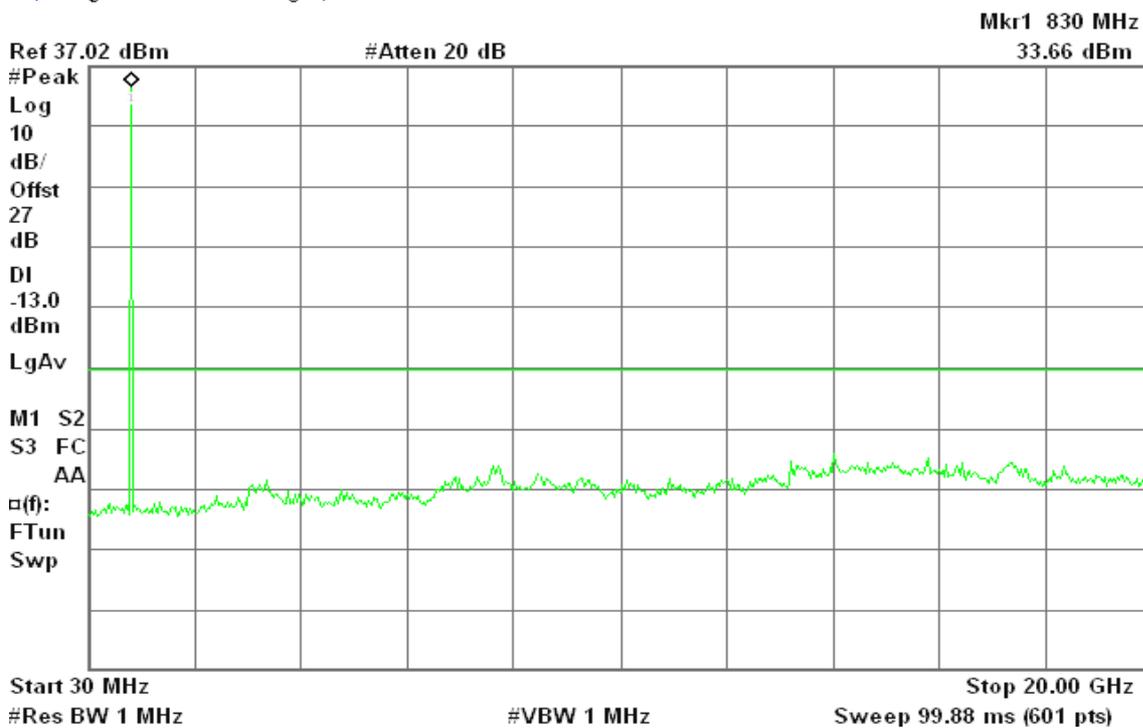
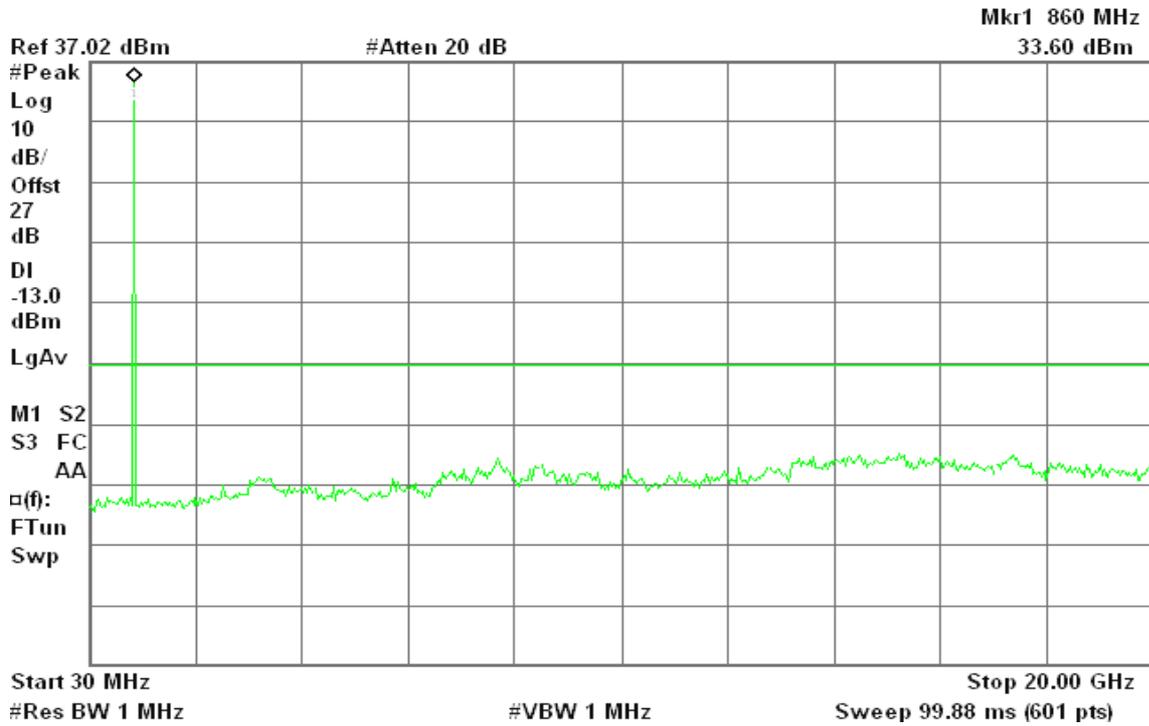




Figure 7-3: Out of Band emission at antenna terminals – GSM CH High

Agilent 15:28:56 Aug 4, 2010

R T



## GPRS 850

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

Agilent 15:29:36 Aug 4, 2010

R T

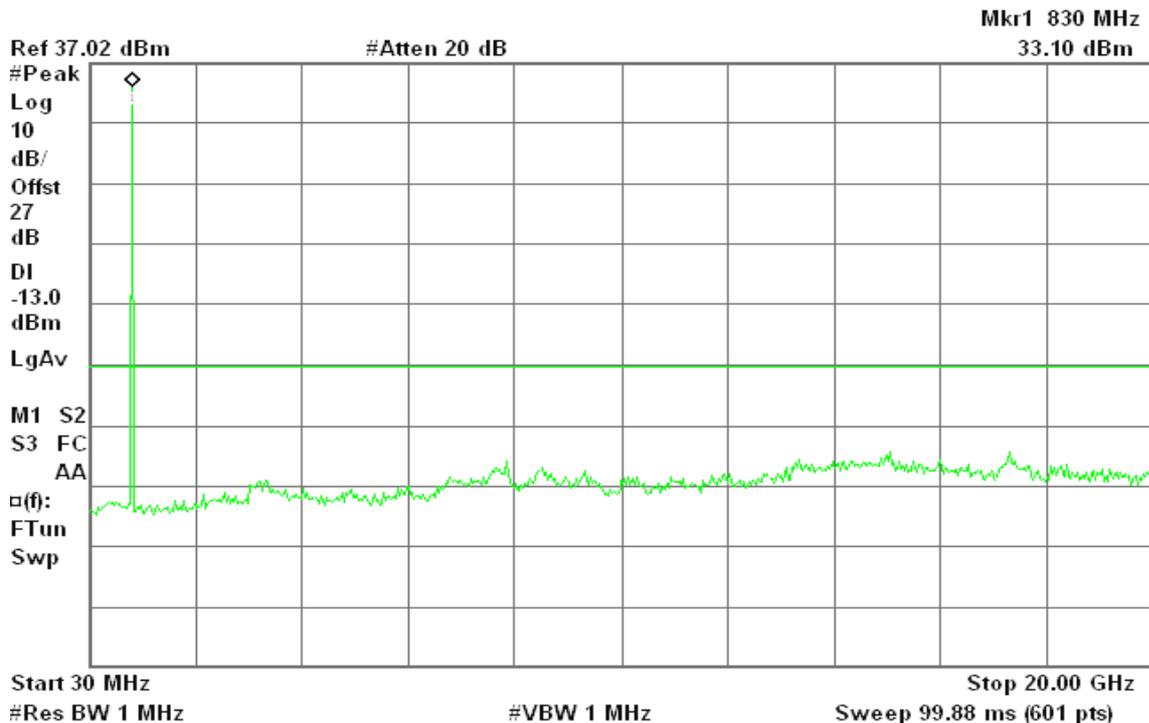




Figure 8-2: Out of Band emission at antenna terminals – GPRS CH Mid

Agilent 15:29:57 Aug 4, 2010

R T

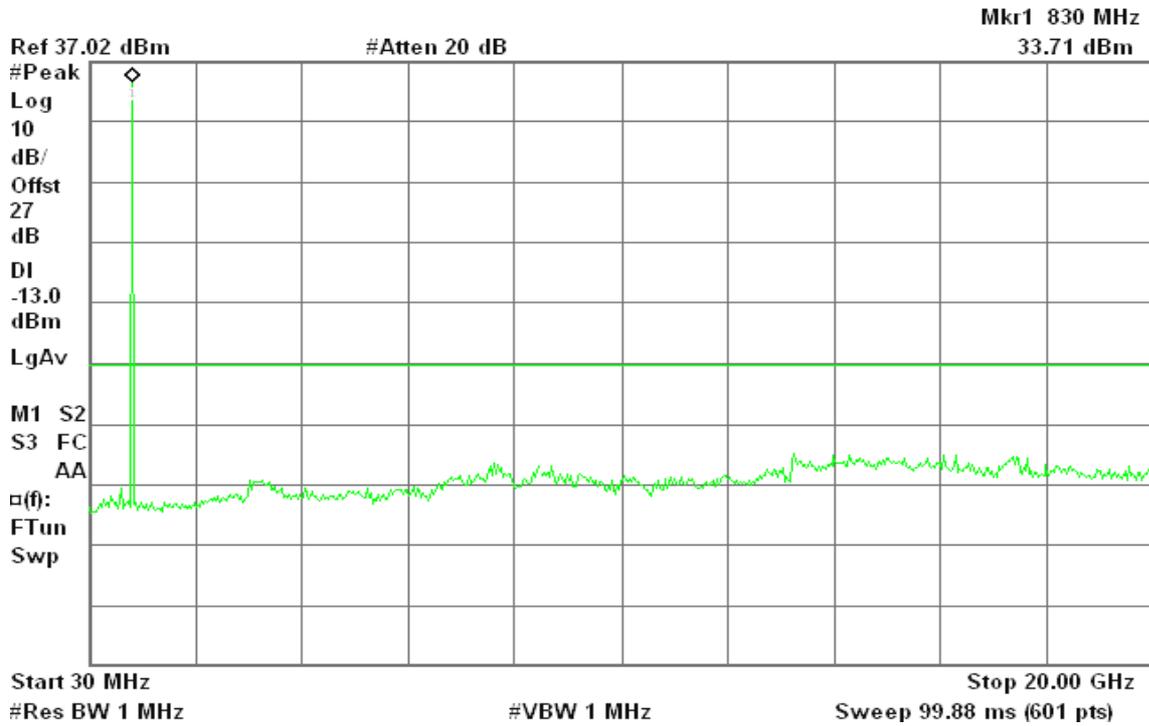
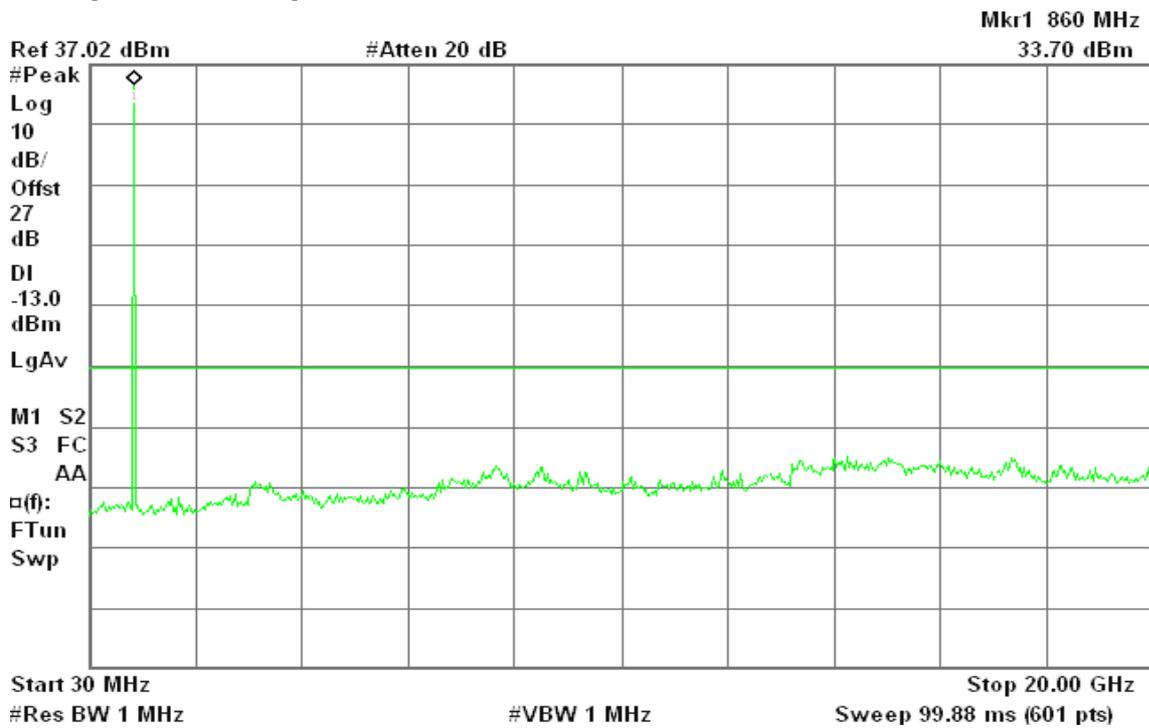


Figure 8-3: Out of Band emission at antenna terminals – GPRS CH High

Agilent 15:30:17 Aug 4, 2010

R T





## GSM 1900

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

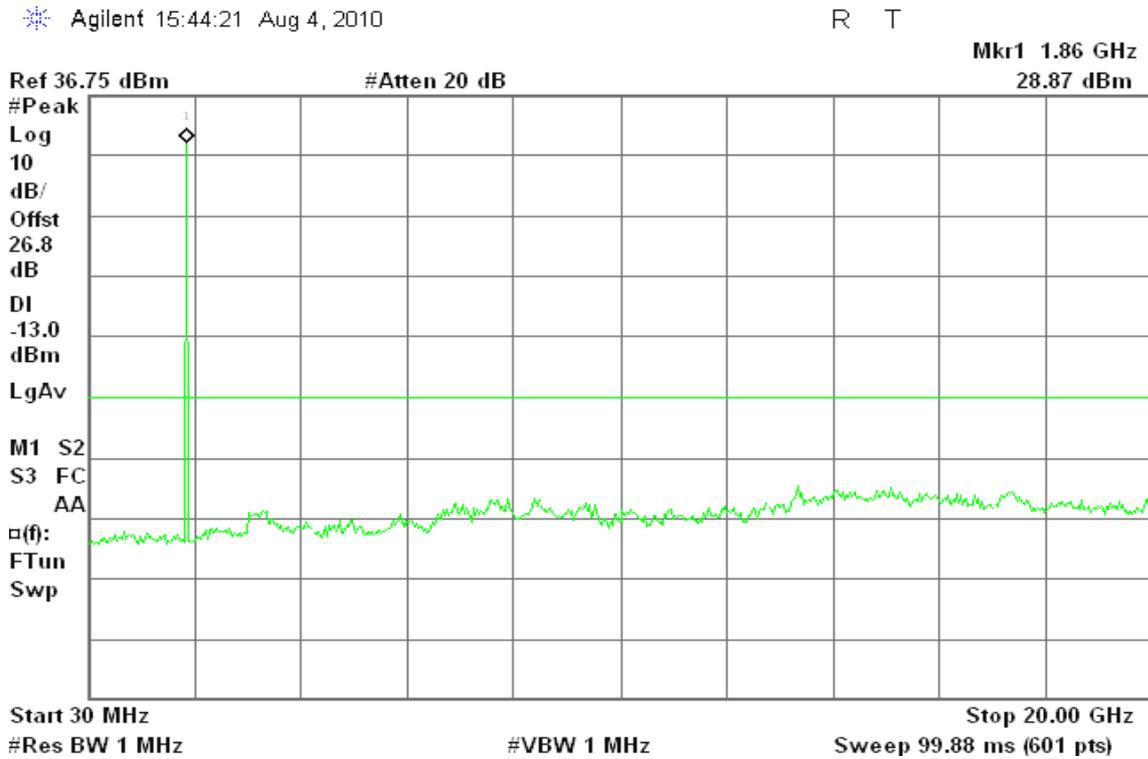


Figure 9-2: Out of Band emission at antenna terminals – GSM CH Mid

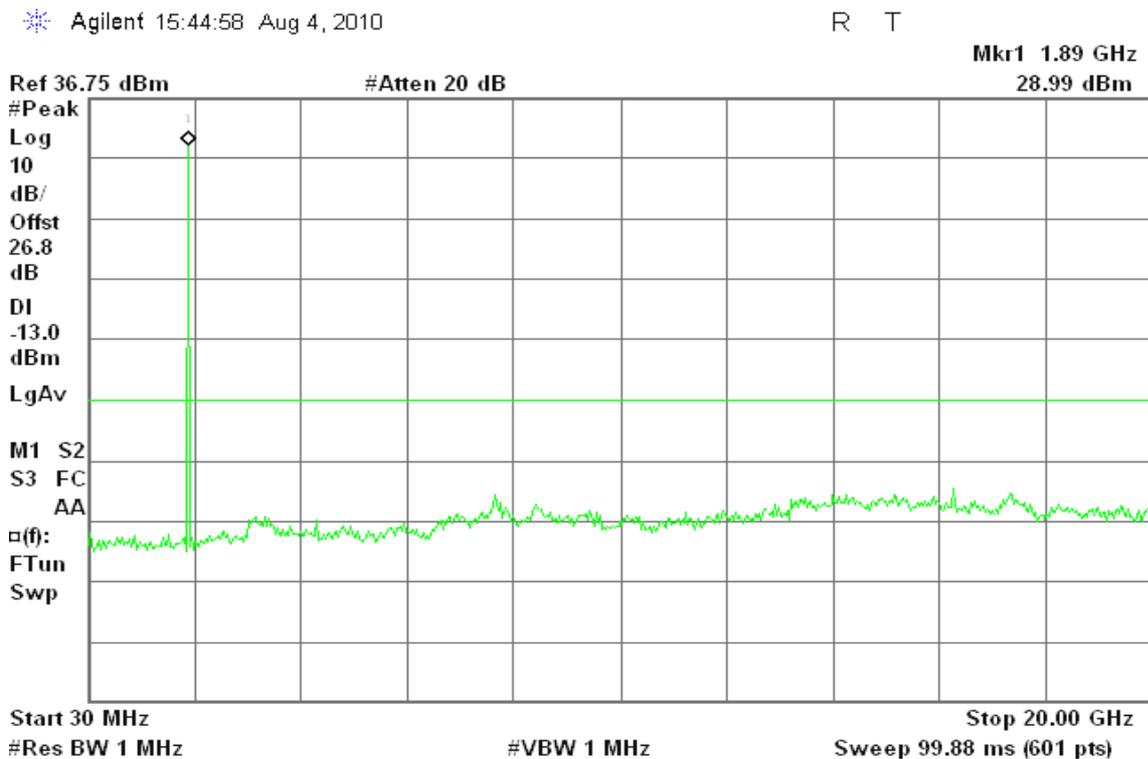
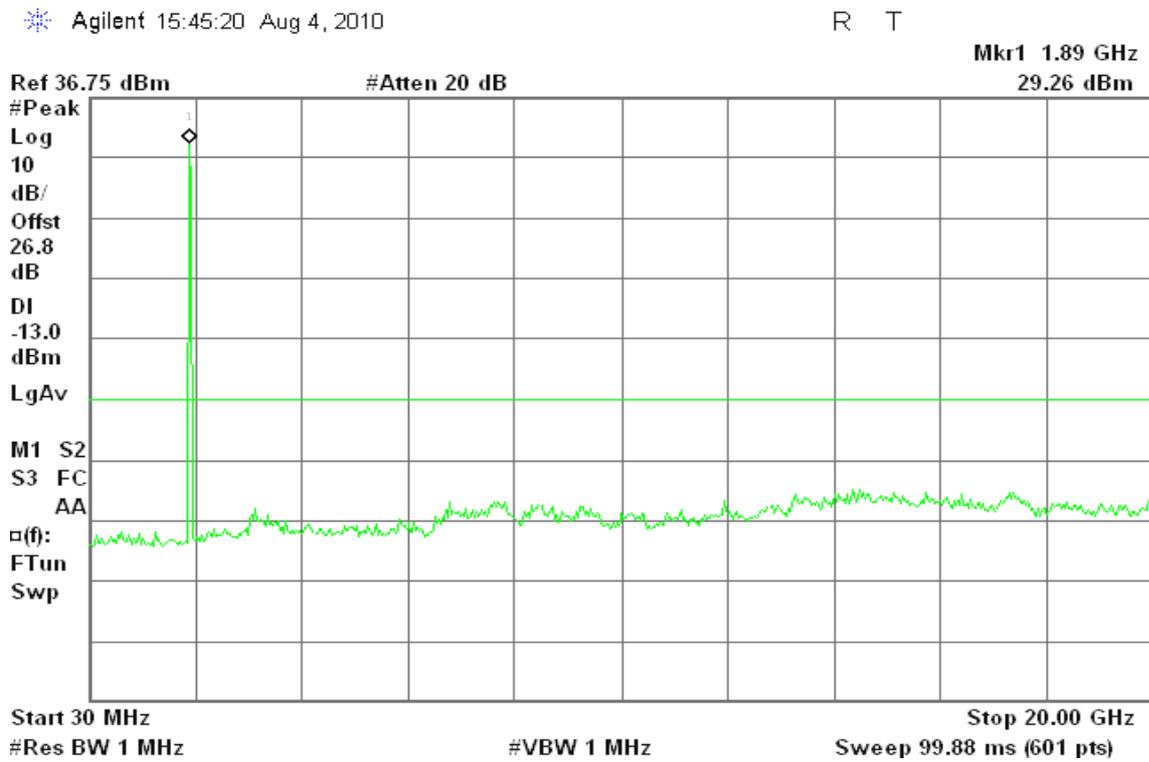




Figure 9-3: Out of Band emission at antenna terminals – GSM CH High



### GPRS 1900

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

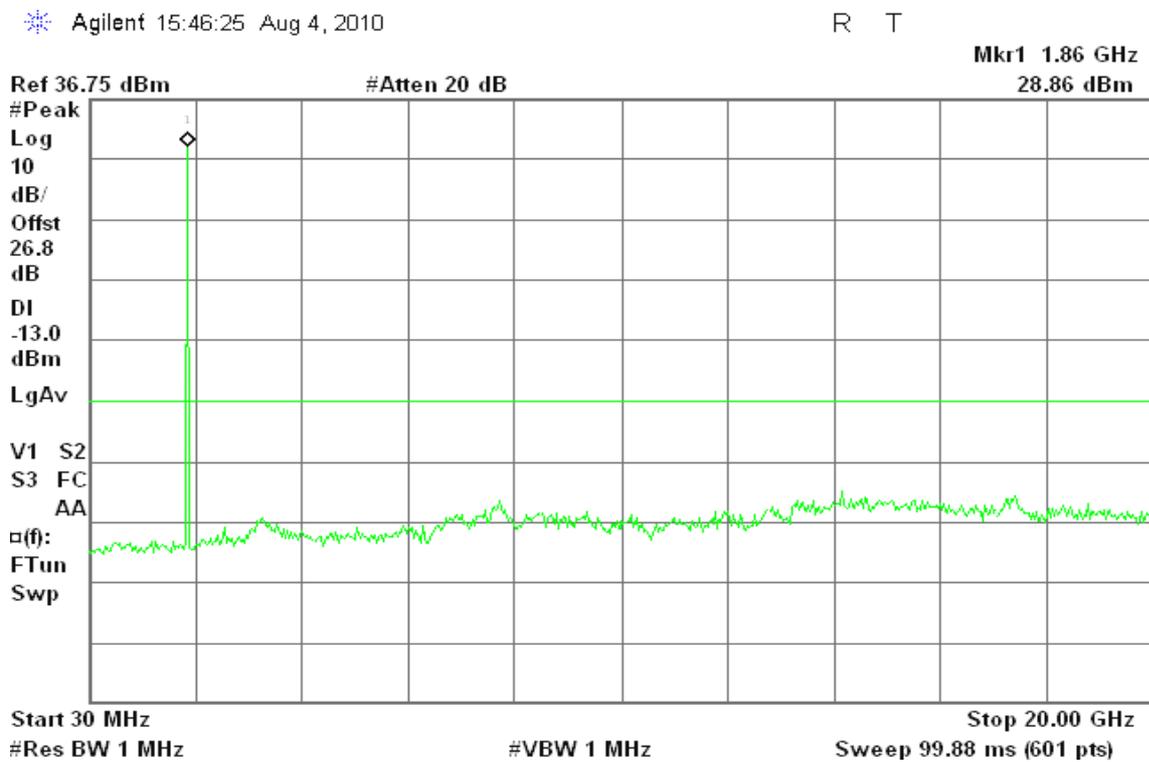




Figure 10-2: Out of Band emission at antenna terminals – GPRS CH Mid

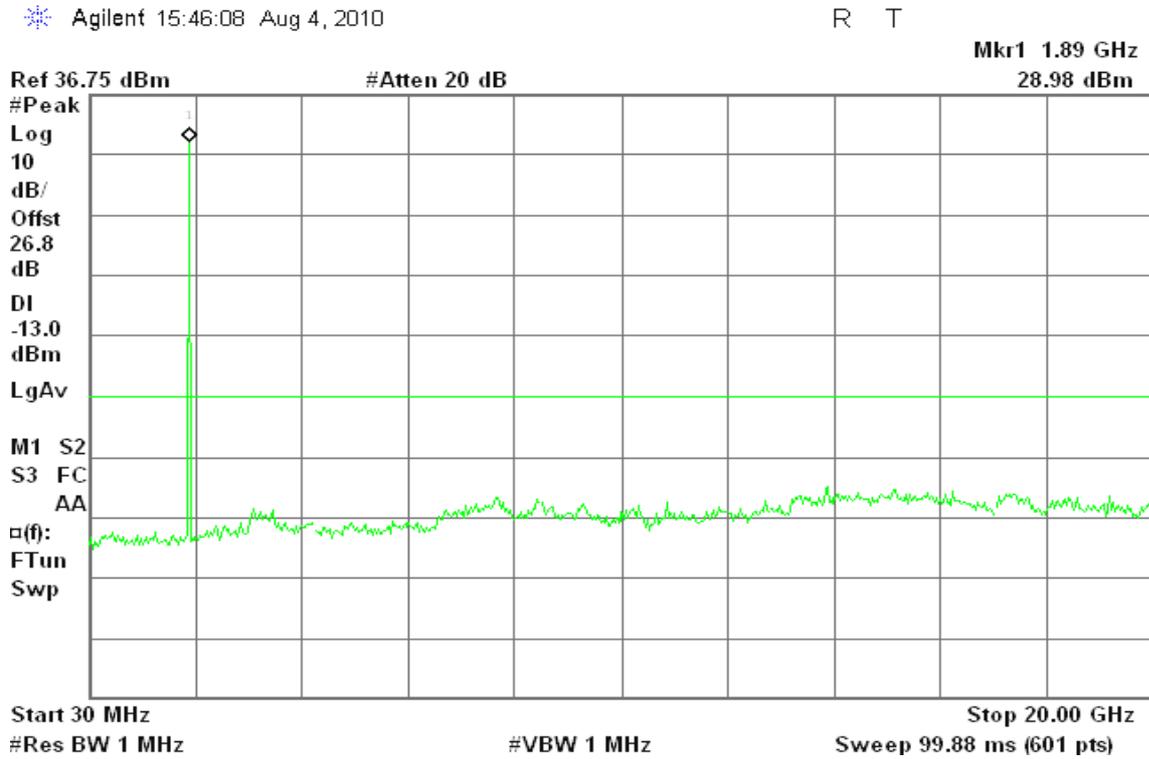
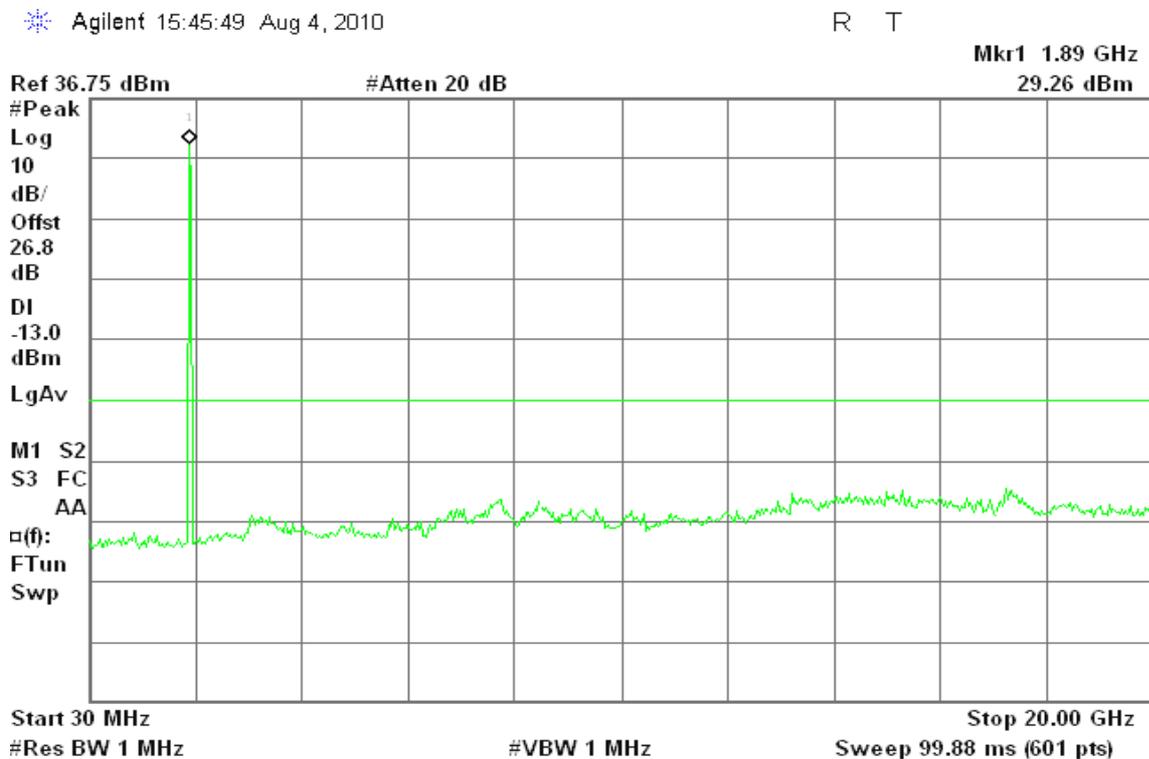


Figure 10-3: Out of Band emission at antenna terminals – GPRS CH High





### GSM 850

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

Agilent 15:21:00 Aug 4, 2010

R T

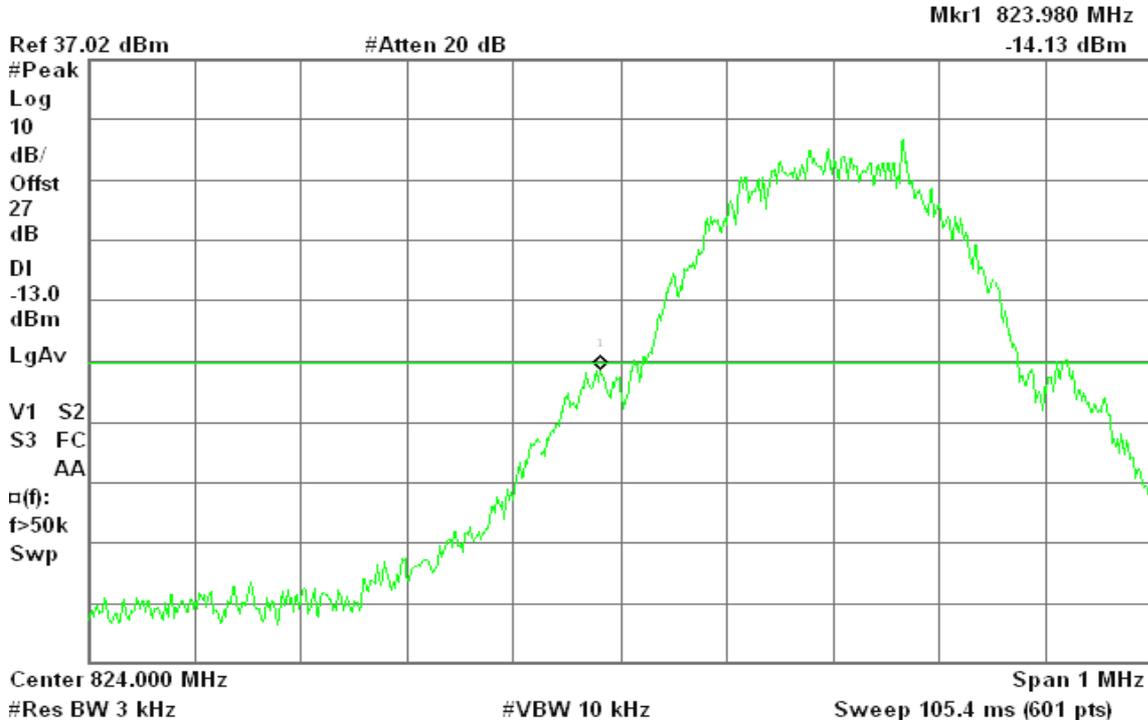
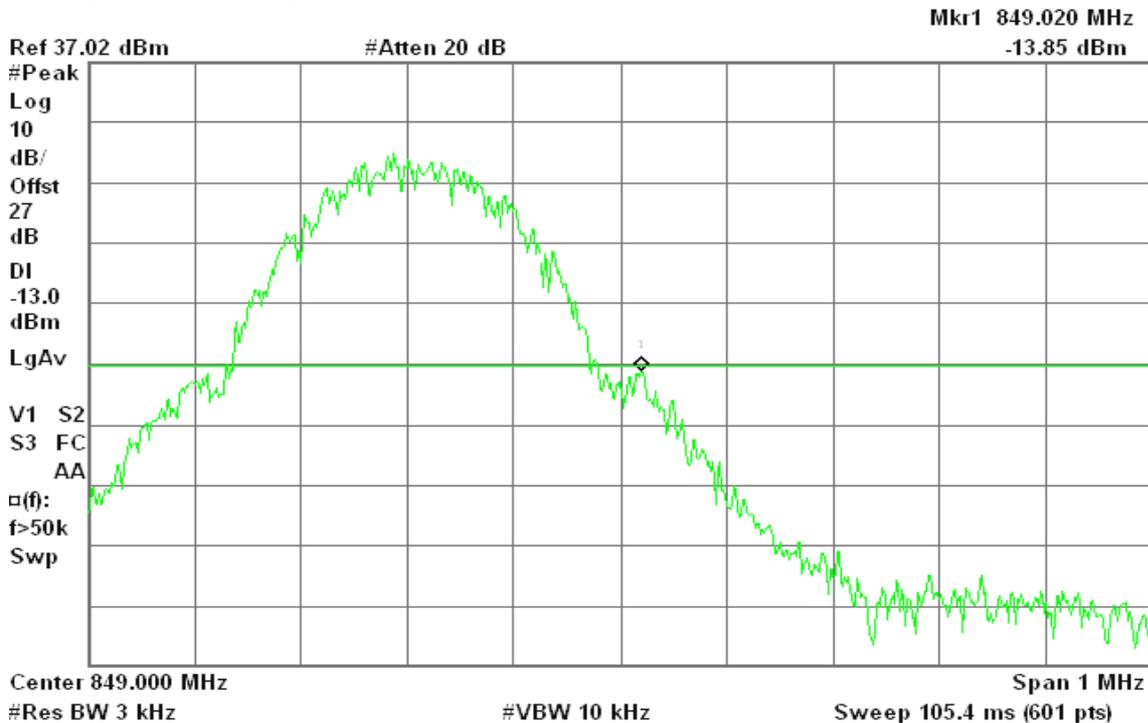


Figure 11-2: Band Edge emissions – GSM CH High

Agilent 15:27:19 Aug 4, 2010

R T





### GPRS 850

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

Agilent 15:22:36 Aug 4, 2010

R T

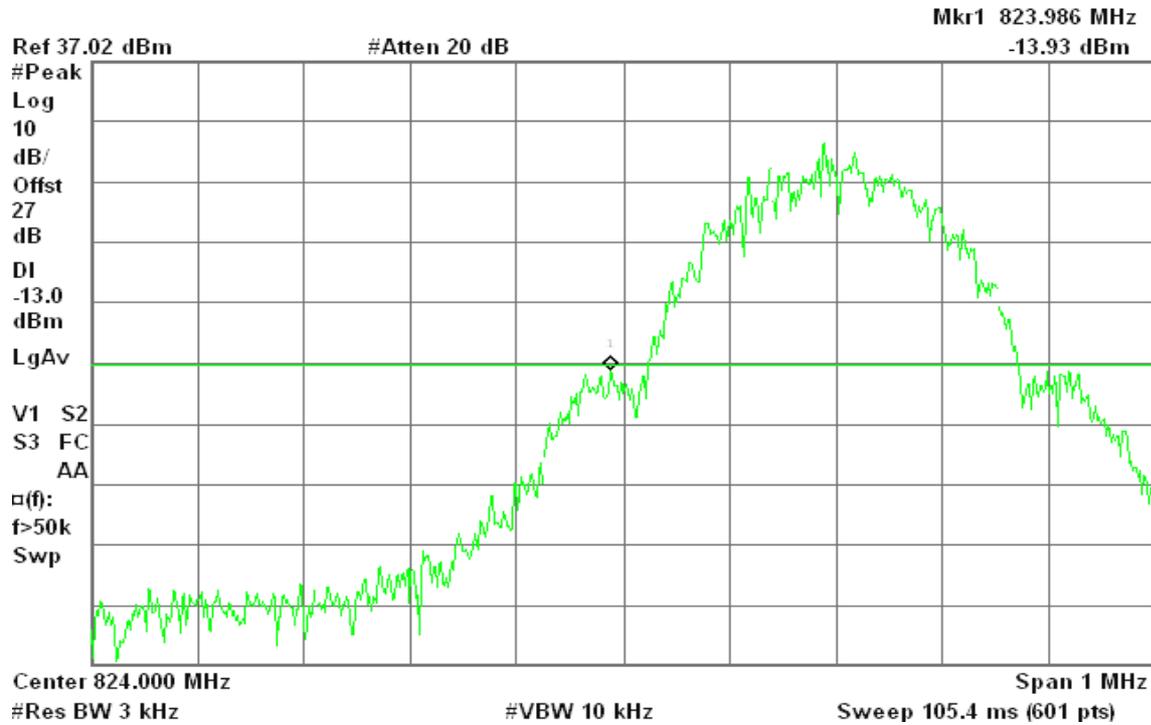
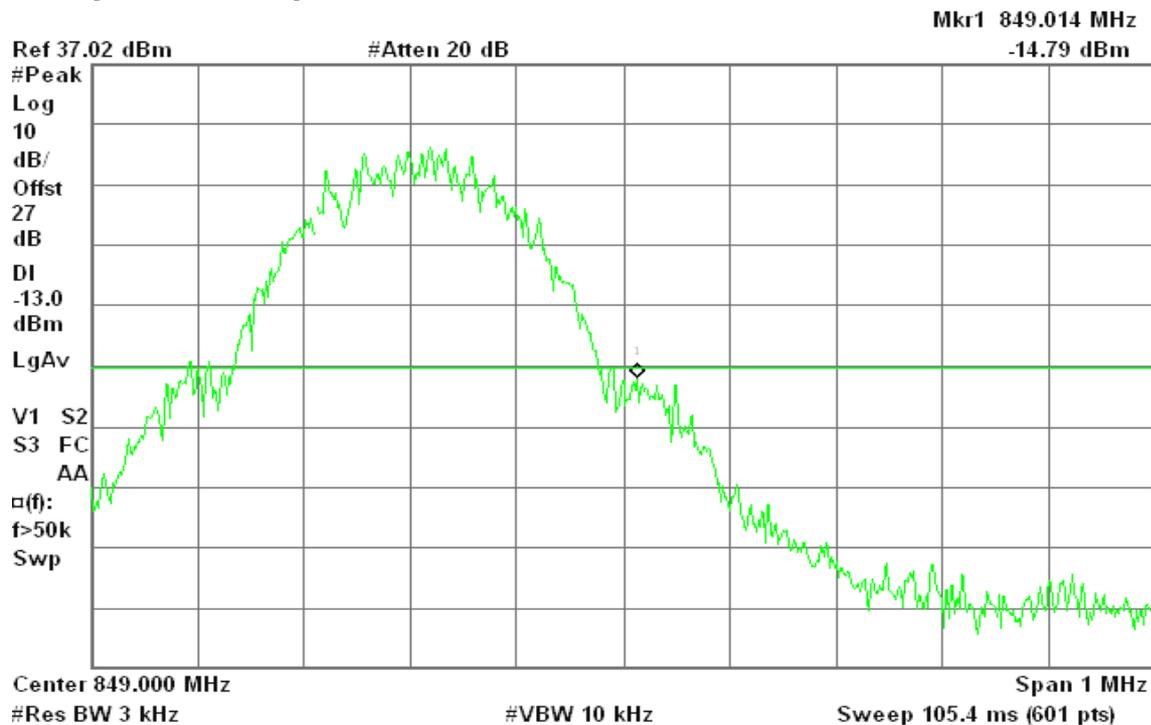


Figure 12-2: Band Edge emissions –GPRS CH High

Agilent 15:25:41 Aug 4, 2010

R T





### GSM 1900

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

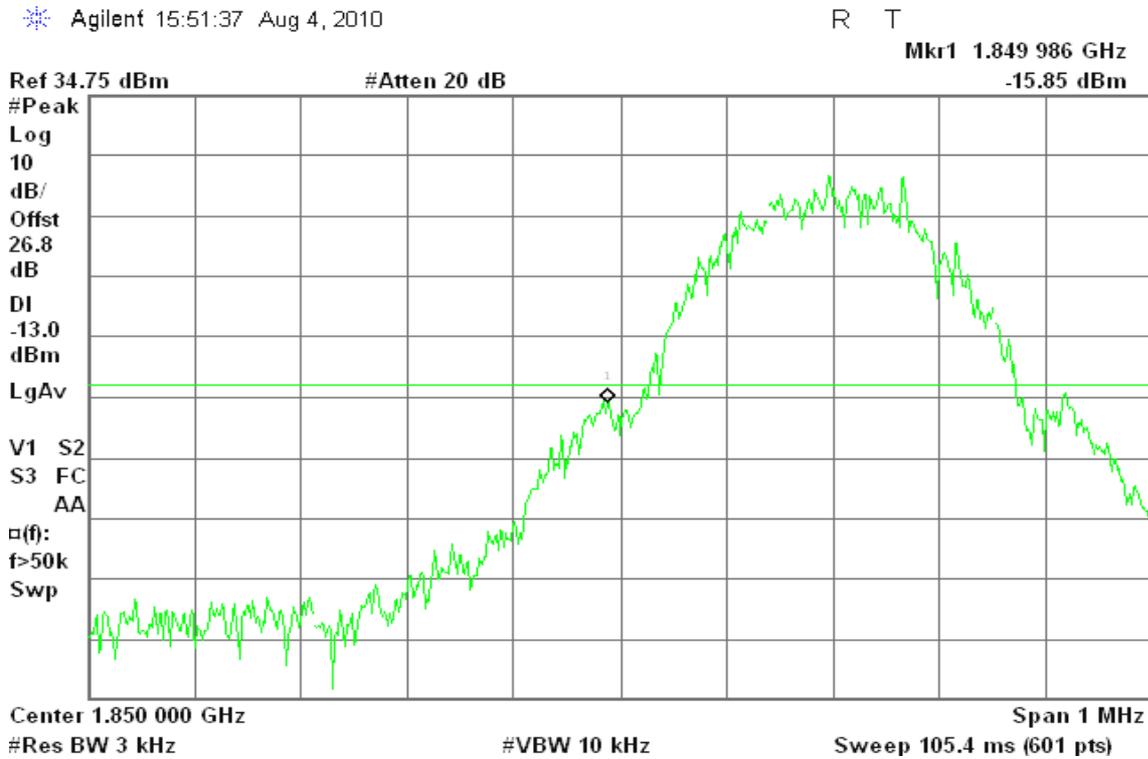
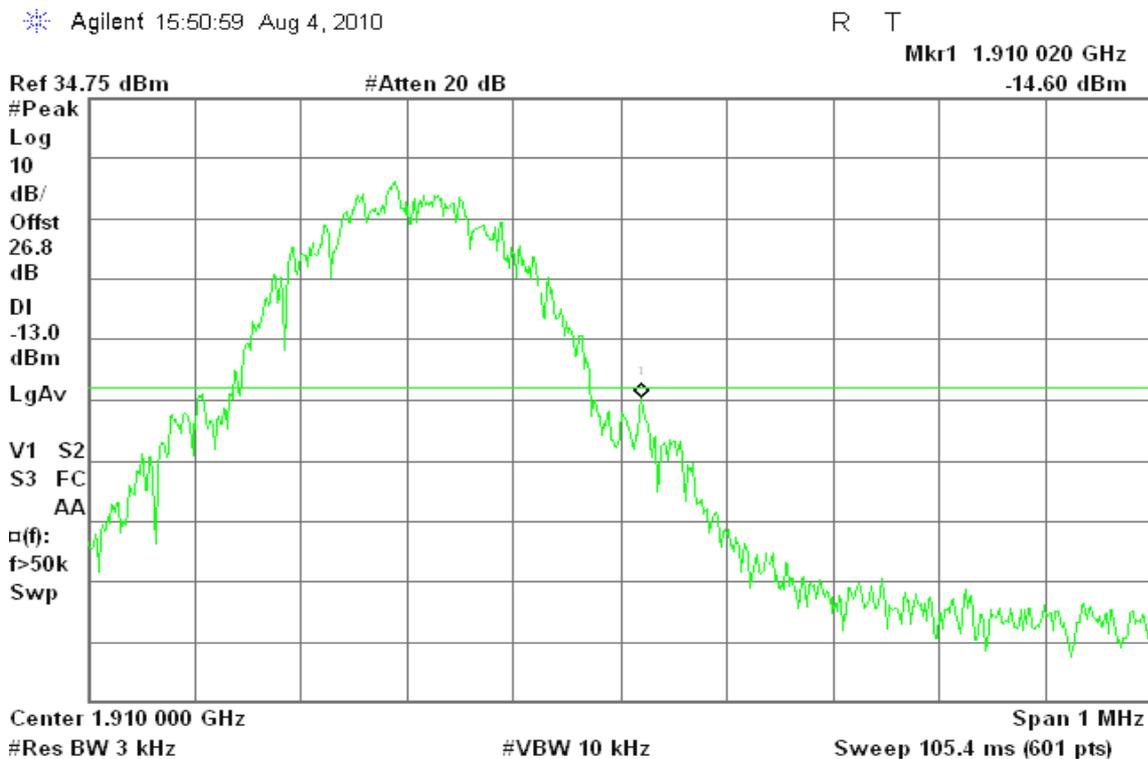


Figure 13-2: Band Edge emissions – GSM CH High





### GPRS 1900

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

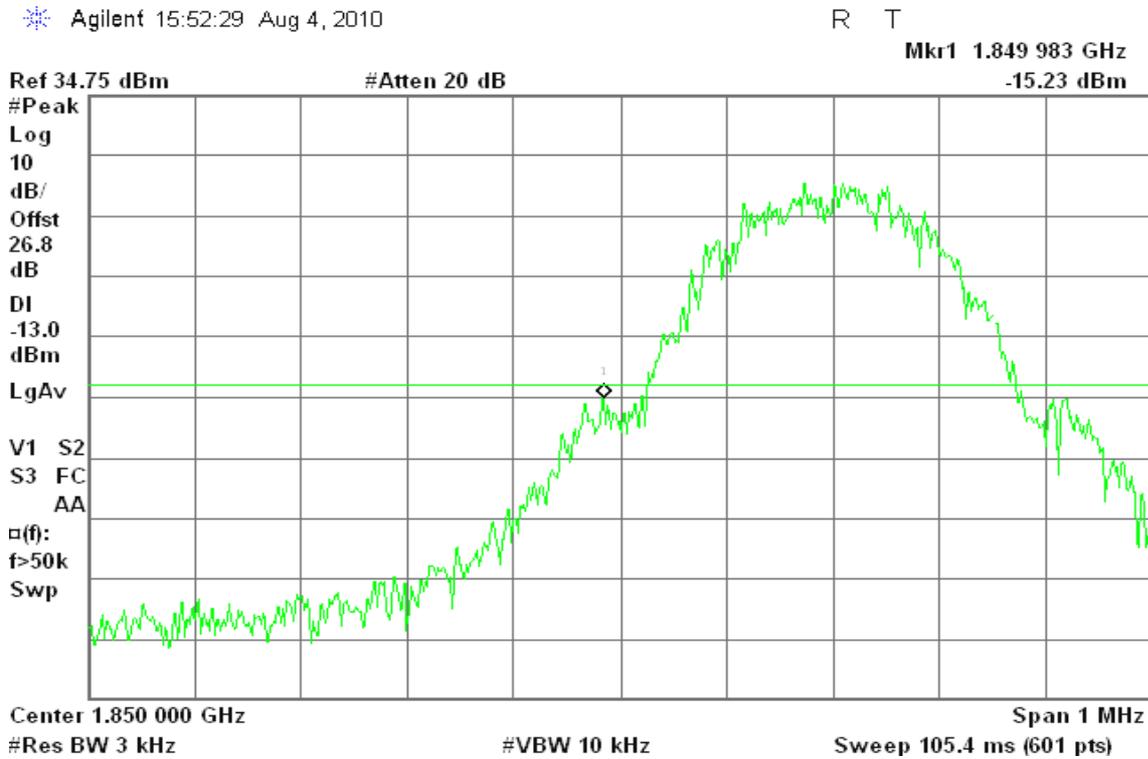
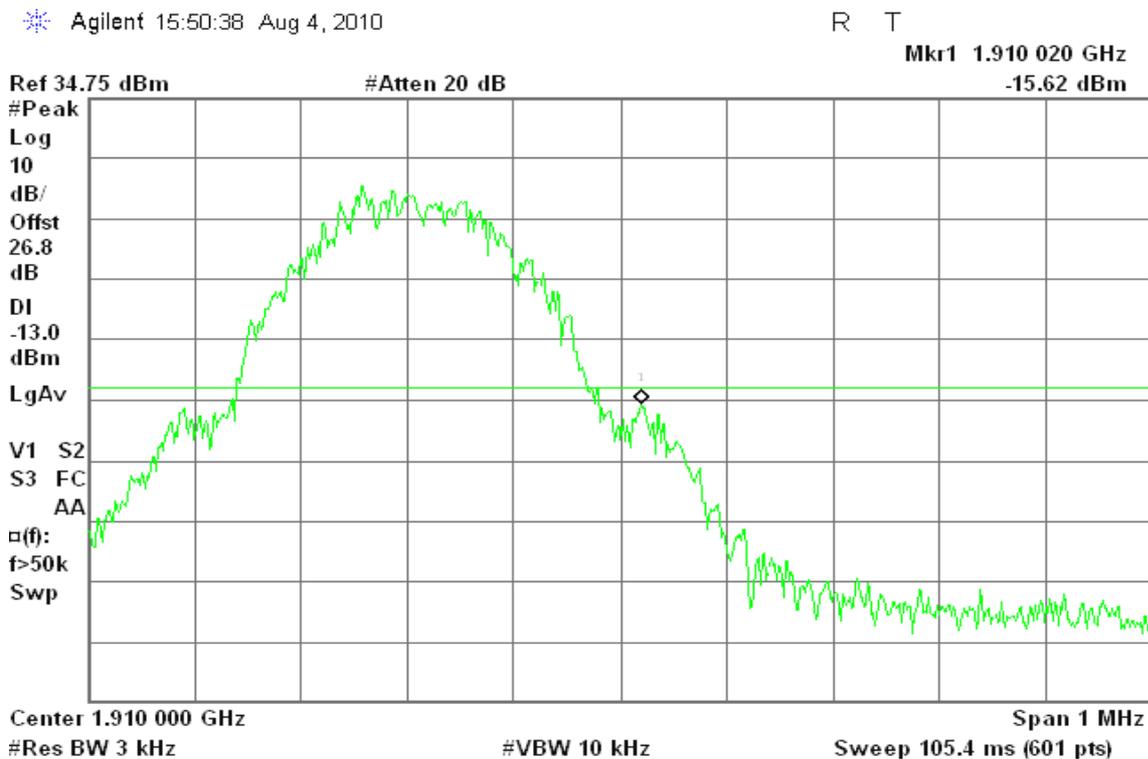


Figure 14-2: Band Edge emissions – GPRS CH High





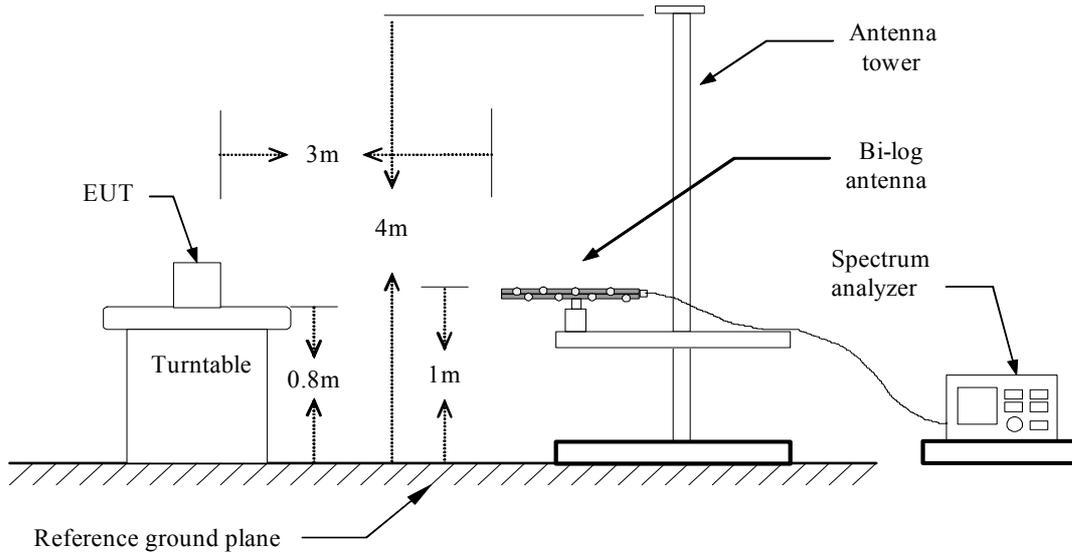
## 7.6 FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT

### LIMIT

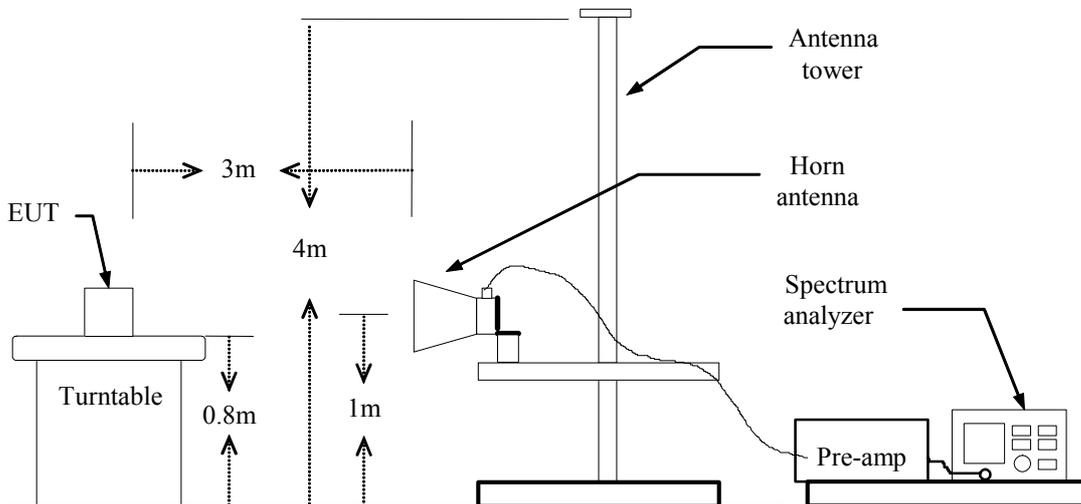
According to FCC §2.1053

### Test Configuration

#### Below 1 GHz

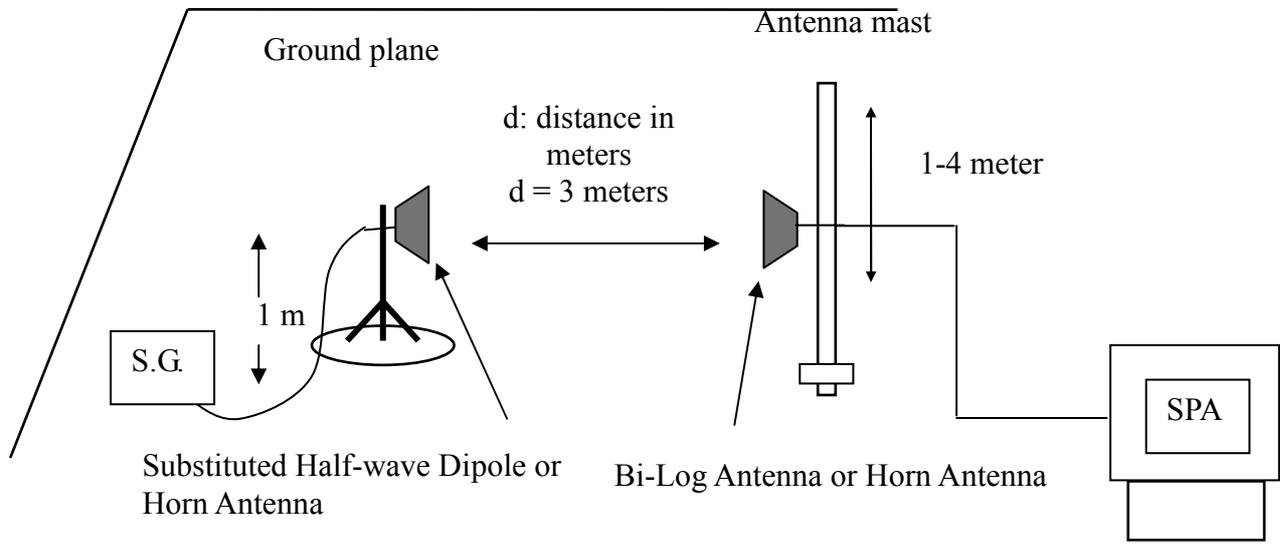


#### Above 1 GHz





## 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.

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

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

## 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:** August 1, 2010

**Temperature:** 25°C

**Tested by:** Tom Jen

**Humidity:** 53 % RH

**Polarity:** Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
99.84	V	-49.10	-18.10	-67.19	-13.00	-54.19
132.82	V	-60.35	-12.93	-73.29	-13.00	-60.29
399.57	V	-57.06	-12.10	-69.16	-13.00	-56.16
407.33	V	-59.13	-11.62	-70.75	-13.00	-57.75
512.09	V	-59.66	-8.54	-68.20	-13.00	-55.20
676.02	V	-68.14	-6.64	-74.78	-13.00	-61.78
99.84	H	-45.63	-18.04	-63.67	-13.00	-50.67
132.82	H	-59.30	-14.26	-73.57	-13.00	-60.57
398.60	H	-55.60	-11.73	-67.33	-13.00	-54.33
408.30	H	-53.93	-11.22	-65.15	-13.00	-52.15
512.09	H	-60.89	-8.65	-69.55	-13.00	-56.55
682.81	H	-61.41	-6.57	-67.97	-13.00	-54.97

**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:** August 1, 2010

**Temperature:** 25°C

**Tested by:** Tom Jen

**Humidity:** 53 % RH

**Polarity:** Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
130.88	V	-49.27	-12.79	-62.05	-13.00	-49.05
154.16	V	-65.42	-13.57	-78.99	-13.00	-65.99
412.18	V	-66.65	-11.31	-77.97	-13.00	-64.97
452.92	V	-61.85	-9.95	-71.81	-13.00	-58.81
522.76	V	-64.69	-8.41	-73.09	-13.00	-60.09
548.95	V	-67.34	-8.11	-75.45	-13.00	-62.45
130.88	H	-45.90	-14.14	-60.05	-13.00	-47.05
211.39	H	-64.52	-15.23	-79.75	-13.00	-66.75
452.92	H	-54.22	-9.87	-64.08	-13.00	-51.08
522.76	H	-59.53	-8.52	-68.04	-13.00	-55.04
624.61	H	-67.86	-6.80	-74.66	-13.00	-61.66
732.28	H	-67.53	-5.93	-73.46	-13.00	-60.46

**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:** August 1, 2010

**Temperature:** 25°C

**Tested by:** Tom Jen

**Humidity:** 53 % RH

**Polarity:** Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
118.27	V	-65.88	-14.14	-80.02	-13.00	-67.02
160.95	V	-51.00	-14.31	-65.31	-13.00	-52.31
428.67	V	-67.04	-10.58	-77.62	-13.00	-64.62
498.51	V	-64.70	-8.72	-73.42	-13.00	-60.42
585.81	V	-63.86	-7.87	-71.73	-13.00	-58.73
645.95	V	-62.54	-6.69	-69.22	-13.00	-56.22
126.03	H	-65.13	-14.06	-79.19	-13.00	-66.19
161.92	H	-47.93	-14.30	-62.23	-13.00	-49.23
498.51	H	-61.47	-8.82	-70.29	-13.00	-57.29
585.81	H	-59.86	-7.83	-67.69	-13.00	-54.69
644.98	H	-60.25	-6.63	-66.88	-13.00	-53.88
728.40	H	-66.03	-6.07	-72.10	-13.00	-59.10

**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:** August 1, 2010

**Temperature:** 25°C

**Tested by:** Tom Jen

**Humidity:** 53 % RH

**Polarity:** Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
99.84	V	-48.66	-18.10	-66.76	-13.00	-53.76
132.82	V	-63.87	-12.93	-76.80	-13.00	-63.80
398.60	V	-56.69	-12.15	-68.84	-13.00	-55.84
408.30	V	-59.46	-11.56	-71.02	-13.00	-58.02
512.09	V	-61.05	-8.54	-69.59	-13.00	-56.59
682.81	V	-66.33	-6.57	-72.91	-13.00	-59.91
99.84	H	-46.63	-18.04	-64.68	-13.00	-51.68
132.82	H	-59.23	-14.26	-73.49	-13.00	-60.49
201.69	H	-63.61	-13.66	-77.27	-13.00	-64.27
408.30	H	-53.03	-11.22	-64.25	-13.00	-51.25
512.09	H	-62.30	-8.65	-70.96	-13.00	-57.96
682.81	H	-60.61	-6.57	-67.18	-13.00	-54.18

**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:** August 1, 2010

**Temperature:** 25°C

**Tested by:** Tom Jen

**Humidity:** 53 % RH

**Polarity:** Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
130.88	V	-48.01	-12.79	-60.80	-13.00	-47.80
282.20	V	-66.97	-12.12	-79.09	-13.00	-66.09
453.89	V	-61.40	-9.93	-71.33	-13.00	-58.33
522.76	V	-63.47	-8.41	-71.87	-13.00	-58.87
566.41	V	-67.18	-7.94	-75.12	-13.00	-62.12
718.70	V	-68.33	-6.12	-74.46	-13.00	-61.46
130.88	H	-46.22	-14.14	-60.37	-13.00	-47.37
224.97	H	-61.24	-14.93	-76.17	-13.00	-63.17
291.90	H	-67.09	-13.34	-80.43	-13.00	-67.43
453.89	H	-55.57	-9.83	-65.40	-13.00	-52.40
522.76	H	-60.36	-8.52	-68.88	-13.00	-55.88
630.43	H	-68.77	-6.73	-75.51	-13.00	-62.51

**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:** August 1, 2010

**Temperature:** 25°C

**Tested by:** Tom Jen

**Humidity:** 53 % RH

**Polarity:** Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
160.95	V	-51.87	-14.31	-66.18	-13.00	-53.18
267.65	V	-66.69	-13.19	-79.88	-13.00	-66.88
498.51	V	-65.91	-8.72	-74.63	-13.00	-61.63
585.81	V	-64.06	-7.87	-71.94	-13.00	-58.94
644.98	V	-62.06	-6.67	-68.74	-13.00	-55.74
730.34	V	-67.54	-6.01	-73.54	-13.00	-60.54
160.95	H	-47.15	-14.37	-61.52	-13.00	-48.52
199.75	H	-61.21	-13.37	-74.58	-13.00	-61.58
418.97	H	-67.39	-10.60	-78.00	-13.00	-65.00
498.51	H	-57.82	-8.82	-66.64	-13.00	-53.64
585.81	H	-59.51	-7.83	-67.34	-13.00	-54.34
644.98	H	-60.74	-6.63	-67.37	-13.00	-54.37

**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:** August 1, 2010

**Temperature:** 25°C

**Tested by:** Tom Jen

**Humidity:** 53 % RH

**Polarity:** Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
148.34	V	-66.45	-13.14	-79.58	-13.00	-66.58
280.26	V	-67.54	-12.13	-79.67	-13.00	-66.67
337.49	V	-66.29	-13.62	-79.90	-13.00	-66.90
469.41	V	-64.34	-9.40	-73.74	-13.00	-60.74
714.82	V	-67.45	-6.20	-73.65	-13.00	-60.65
814.73	V	-67.32	-4.82	-72.14	-13.00	-59.14
126.03	H	-63.41	-14.06	-77.47	-13.00	-64.47
197.81	H	-63.32	-13.57	-76.88	-13.00	-63.88
329.73	H	-65.72	-14.02	-79.74	-13.00	-66.74
469.41	H	-54.58	-9.30	-63.88	-13.00	-50.88
814.73	H	-63.73	-4.92	-68.66	-13.00	-55.66
875.84	H	-65.14	-3.94	-69.08	-13.00	-56.08

**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: August 1, 2010

Temperature: 25°C

Tested by: Tom Jen

Humidity: 53 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
116.33	V	-64.38	-14.58	-78.95	-13.00	-65.95
288.02	V	-66.39	-12.08	-78.48	-13.00	-65.48
395.69	V	-65.38	-12.28	-77.67	-13.00	-64.67
434.49	V	-64.38	-10.42	-74.80	-13.00	-61.80
518.88	V	-66.67	-8.45	-75.12	-13.00	-62.12
859.35	V	-63.09	-4.45	-67.53	-13.00	-54.53
194.90	H	-63.60	-13.85	-77.46	-13.00	-64.46
427.70	H	-66.31	-10.47	-76.77	-13.00	-63.77
447.10	H	-66.69	-10.08	-76.78	-13.00	-63.78
475.23	H	-68.08	-9.11	-77.19	-13.00	-64.19
518.88	H	-52.76	-8.56	-61.32	-13.00	-48.32
859.35	H	-56.73	-4.43	-61.16	-13.00	-48.16

**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: August 1, 2010

Temperature: 25°C

Tested by: Tom Jen

Humidity: 53 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
118.27	V	-66.01	-14.14	-80.15	-13.00	-67.15
149.31	V	-65.70	-13.10	-78.80	-13.00	-65.80
346.22	V	-66.14	-13.43	-79.57	-13.00	-66.57
406.36	V	-65.78	-11.68	-77.45	-13.00	-64.45
600.36	V	-68.05	-7.68	-75.72	-13.00	-62.72
903.97	V	-58.39	-3.83	-62.22	-13.00	-49.22
194.90	H	-64.25	-13.85	-78.10	-13.00	-65.10
206.54	H	-63.38	-14.57	-77.95	-13.00	-64.95
231.76	H	-65.05	-14.35	-79.40	-13.00	-66.40
277.35	H	-66.62	-13.27	-79.89	-13.00	-66.89
568.35	H	-64.66	-7.82	-72.48	-13.00	-59.48
903.97	H	-53.45	-3.75	-57.20	-13.00	-44.20

**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:** August 1, 2010

**Temperature:** 25°C

**Tested by:** Tom Jen

**Humidity:** 53 % RH

**Polarity:** Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
151.25	V	-66.86	-13.22	-80.08	-13.00	-67.08
220.12	V	-65.69	-16.09	-81.77	-13.00	-68.77
282.20	V	-67.34	-12.12	-79.46	-13.00	-66.46
309.36	V	-66.18	-13.62	-79.80	-13.00	-66.80
469.41	V	-66.33	-9.40	-75.73	-13.00	-62.73
814.73	V	-64.27	-4.82	-69.09	-13.00	-56.09
126.03	H	-65.20	-14.06	-79.26	-13.00	-66.26
194.90	H	-62.90	-13.85	-76.75	-13.00	-63.75
224.97	H	-62.91	-14.93	-77.84	-13.00	-64.84
288.99	H	-66.56	-13.11	-79.67	-13.00	-66.67
469.41	H	-54.08	-9.30	-63.37	-13.00	-50.37
814.73	H	-63.55	-4.92	-68.48	-13.00	-55.48

**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:** August 1, 2010

**Temperature:** 25°C

**Tested by:** Tom Jen

**Humidity:** 53 % RH

**Polarity:** Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
130.88	V	-65.09	-12.79	-77.87	-13.00	-64.87
166.77	V	-65.85	-14.49	-80.34	-13.00	-67.34
277.35	V	-67.28	-12.31	-79.60	-13.00	-66.60
419.94	V	-66.67	-10.82	-77.49	-13.00	-64.49
518.88	V	-64.88	-8.45	-73.33	-13.00	-60.33
859.35	V	-63.87	-4.45	-68.31	-13.00	-55.31
126.03	H	-65.66	-14.06	-79.72	-13.00	-66.72
193.93	H	-64.17	-13.95	-78.12	-13.00	-65.12
214.30	H	-63.54	-15.27	-78.81	-13.00	-65.81
235.64	H	-65.45	-14.01	-79.45	-13.00	-66.45
518.88	H	-52.35	-8.56	-60.91	-13.00	-47.91
859.35	H	-58.04	-4.43	-62.47	-13.00	-49.47

**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: August 1, 2010

Temperature: 25°C

Tested by: Tom Jen

Humidity: 53 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
45.52	V	-63.59	-13.35	-76.94	-13.00	-63.94
132.82	V	-66.61	-12.93	-79.55	-13.00	-66.55
288.02	V	-66.95	-12.08	-79.03	-13.00	-66.03
431.58	V	-66.78	-10.50	-77.28	-13.00	-64.28
613.94	V	-67.25	-7.16	-74.42	-13.00	-61.42
903.97	V	-58.30	-3.83	-62.14	-13.00	-49.14
126.03	H	-64.57	-14.06	-78.63	-13.00	-65.63
203.63	H	-64.29	-14.03	-78.32	-13.00	-65.32
217.21	H	-62.85	-15.31	-78.16	-13.00	-65.16
234.67	H	-64.85	-14.09	-78.95	-13.00	-65.95
569.32	H	-62.46	-7.82	-70.28	-13.00	-57.28
903.97	H	-53.39	-3.75	-57.13	-13.00	-44.13

**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:** July 30, 2010

**Temperature:** 24°C

**Tested by:** Tom Jen

**Humidity:** 46 % RH

**Polarity:** Ver. / Hor.

Frequency (MHz)	Antenna Polarization	Reading level (dBuV)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
1651.00	V	-46.54	2.68	-43.86	-13.00	-30.86
N/A						
1651.00	H	-34.71	2.75	-31.96	-13.00	-18.96
2470.00	H	-54.67	5.31	-49.35	-13.00	-36.35
5767.00	H	-54.24	10.36	-43.88	-13.00	-30.88
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:** July 30, 2010

**Temperature:** 24°C

**Tested by:** Tom Jen

**Humidity:** 46 % RH

**Polarity:** Ver. / Hor.

Frequency (MHz)	Antenna Polarization	Reading level (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
1672.00	V	-45.08	2.72	-42.35	-13.00	-29.35
N/A						
1672.00	H	-37.53	2.79	-34.75	-13.00	-21.75
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: July 30, 2010

Temperature: 23°C

Tested by: Tom Jen

Humidity: 46 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Antenna Polarization	Reading level (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
1700.00	V	-46.18	2.78	-43.39	-13.00	-30.39
N/A						
1700.00	H	-38.28	2.83	-35.44	-13.00	-22.44
2547.00	H	-52.40	5.58	-46.82	-13.00	-33.82
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: August 1, 2010

Temperature: 25°C

Tested by: Tom Jen

Humidity: 53 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Antenna Polarization	Reading level (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
1651.00	V	-46.34	2.68	-43.66	-13.00	-30.66
2449.00	V	-56.97	5.22	-51.74	-13.00	-38.74
5767.00	V	-55.87	10.26	-45.60	-13.00	-32.60
N/A						
1651.00	H	-35.78	2.75	-33.03	-13.00	-20.03
2470.00	H	-52.59	5.31	-47.28	-13.00	-34.28
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:** August 1, 2010

**Temperature:** 25°C

**Tested by:** Tom Jen

**Humidity:** 53 % RH

**Polarity:** Ver. / Hor.

Frequency (MHz)	Antenna Polarization	Reading level (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
1672.00	V	-48.08	2.72	-45.36	-13.00	-32.36
N/A						
1672.00	H	-39.85	2.79	-37.06	-13.00	-24.06
2512.00	H	-54.77	5.48	-49.30	-13.00	-36.30
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:** August 1, 2010

**Temperature:** 25°C

**Tested by:** Tom Jen

**Humidity:** 53 % RH

**Polarity:** Ver. / Hor.

Frequency (MHz)	Antenna Polarization	Reading level (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
1700.00	V	-49.04	2.78	-46.26	-13.00	-33.26
N/A						
1700.00	H	-41.02	2.83	-38.18	-13.00	-25.18
2547.00	H	-53.98	5.58	-48.40	-13.00	-35.40
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: August 1, 2010

Temperature: 25°C

Tested by: Tom Jen

Humidity: 53 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Antenna Polarization	Reading level (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
5550.00	V	-59.61	9.93	-49.69	-13.00	-36.69
N/A						
5550.00	H	-57.90	9.95	-47.95	-13.00	-34.95
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: August 1, 2010

Temperature: 25°C

Tested by: Tom Jen

Humidity: 53 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Antenna Polarization	Reading level (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
5641.00	V	-57.02	10.07	-46.95	-13.00	-33.95
7524.00	V	-57.40	16.98	-40.41	-13.00	-27.41
N/A						
5641.00	H	-56.08	10.12	-45.96	-13.00	-32.96
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: August 1, 2010

Temperature: 23°C

Tested by: Tom Jen

Humidity: 53 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Antenna Polarization	Reading level (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
5732.00	V	-52.90	10.21	-42.69	-13.00	-29.69
N/A						
5732.00	H	-55.03	10.29	-44.74	-13.00	-31.74
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:** August 1, 2010

**Temperature:** 23°C

**Tested by:** Tom Jen

**Humidity:** 53 % RH

**Polarity:** Ver. / Hor.

Frequency (MHz)	Antenna Polarization	Reading level (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
7398.00	V	-59.15	16.47	-42.68	-13.00	-29.68
N/A						
3709.00	H	-61.69	7.84	-53.85	-13.00	-40.85
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: August 1, 2010

Temperature: 23°C

Tested by: Tom Jen

Humidity: 53 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Antenna Polarization	Reading level (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
5641.00	V	-56.50	10.07	-46.43	-13.00	-33.43
N/A						
5641.00	H	-54.82	10.12	-44.70	-13.00	-31.70
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: August 1, 2010

Temperature: 23°C

Tested by: Tom Jen

Humidity: 53 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Antenna Polarization	Reading level (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
5732.00	V	-55.10	10.21	-44.89	-13.00	-31.89
NA/						
5732.00	H	-54.30	10.29	-44.01	-13.00	-31.01
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.



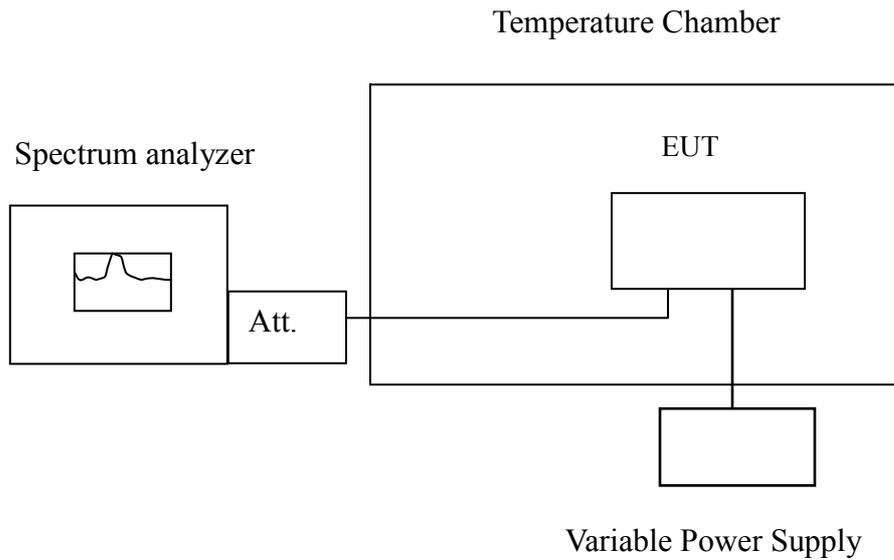
## 7.7 FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT

### 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: ± 2.5 ppm = 2090 Hz				
Power Supply Vdc	Environment Temperature (°C)	Frequency (Hz)	Delta (Hz)	Limit (Hz)
3.7	50	836600001	2	2090
	40	836600000	1	
	30	836599999	0	
	20	836599999	0	
	10	836600004	5	
	0	836599999	0	
	-10	836599996	-3	
	-20	836599997	-2	
	-30	836600009	10	

<b>Reference Frequency: GSM 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	1879999996	-8	4700
	40	1879999992	-12	
	30	1880000025	21	
	20	1880000004	0	
	10	1880000004	0	
	0	1880000001	-3	
	-10	1879999998	-6	
	-20	1879999997	-7	
	-30	1880000005	1	



Reference Frequency: GPRS Mid Channel 836.6 MHz @ 20°C				
Limit: +/- 2.5 ppm = 2090 Hz				
Power Supply Vdc	Environment Temperature (°C)	Frequency (Hz)	Delta (Hz)	Limit (Hz)
3.7	50	836600004	13	2090
	40	836600010	19	
	30	836600002	11	
	20	836599991	0	
	10	836600002	11	
	0	836599987	-4	
	-10	836600010	19	
	-20	836600009	18	
	-30	836600008	17	

Reference Frequency: GPRS Mid Channel 1880 MHz @ 20°C				
Limit: ± 2.5 ppm = 4700 Hz				
Power Supply Vdc	Environment Temperature (°C)	Frequency (Hz)	Delta (Hz)	Limit (Hz)
3.7	50	1880000021	27	4700
	40	1879999998	4	
	30	1879999997	3	
	20	1879999994	0	
	10	1879999995	1	
	0	1879999994	0	
	-10	1880000005	11	
	-20	1880000008	14	
	-30	1880000011	17	

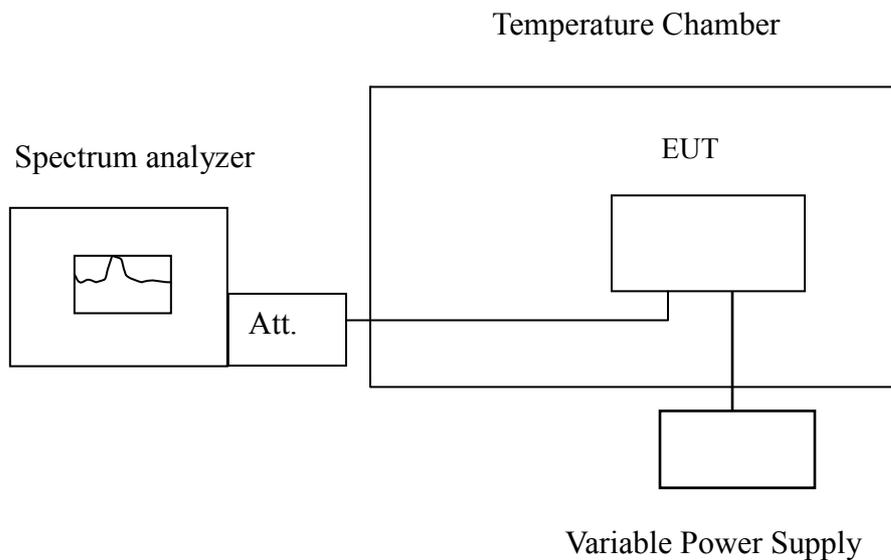


## 7.8 FREQUENCY STABILITY V.S. VOLTAGE MEASUREMENT

### 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 (± 15%) and endpoint, record the maximum frequency change.

**TEST RESULTS**

*No non-compliance noted.*

Reference Frequency: GSM Mid Channel 836.6 MHz @ 20°C				
Limit: ± 2.5 ppm = 2090Hz				
Power Supply Vdc	Environment Temperature (°C)	Frequency (Hz)	Delta (Hz)	Limit (Hz)
4.255	20	836599995	-4	2090
3.7		836599999	0	
3.145		836599997	-2	
3.1 (End Point)		836599879	-120	

Reference Frequency: GSM Mid Channel 1880 MHz @ 20°C				
Limit: ± 2.5 ppm = 4700 Hz				
Power Supply Vdc	Environment Temperature (°C)	Frequency (Hz)	Delta (Hz)	Limit (Hz)
4.255	20	1879999989	-15	4700
3.7		1880000004	0	
3.145		1880000006	2	
3.1 (End Point)		1880000214	210	



<b>Reference Frequency: GPRS 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	836599999	8	2090
3.7		836599991	0	
3.145		836599989	-2	
3.1 (End Point)		836599782	-209	

<b>Reference Frequency: GPRS 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	1879999995	1	4700
3.7		1879999994	0	
3.145		1879999976	-18	
3.1 (End Point)		1880000095	101	



## 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:** Normal Link

**Test Date:** September 28, 2010

**Temperature:** 26°C

**Tested by:** Edward Chen

**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
0.1500	37.56	15.56	0.14	37.70	15.70	66.00	56.00	-28.30	-40.30	L1
0.4500	29.36	21.56	0.14	29.50	21.70	56.88	46.88	-27.38	-25.18	L1
1.6200	25.50	14.80	0.10	25.60	14.90	56.00	46.00	-30.40	-31.10	L1
3.5700	26.12	16.52	0.08	26.20	16.60	56.00	46.00	-29.80	-29.40	L1
5.7900	26.55	18.55	0.15	26.70	18.70	60.00	50.00	-33.30	-31.30	L1
11.2200	29.89	22.09	0.31	30.20	22.40	60.00	50.00	-29.80	-27.60	L1
0.1800	36.50	17.00	0.10	36.60	17.10	64.48	54.49	-27.88	-37.39	L2
0.2400	40.30	29.40	0.10	40.40	29.50	62.09	52.10	-21.69	-22.60	L2
0.6900	28.20	21.70	0.10	28.30	21.80	56.00	46.00	-27.70	-24.20	L2
3.6000	24.20	16.00	0.00	24.20	16.00	56.00	46.00	-31.80	-30.00	L2
5.9100	25.47	18.07	0.03	25.50	18.10	60.00	50.00	-34.50	-31.90	L2
10.7400	23.10	11.40	0.10	23.20	11.50	60.00	50.00	-36.80	-38.50	L2

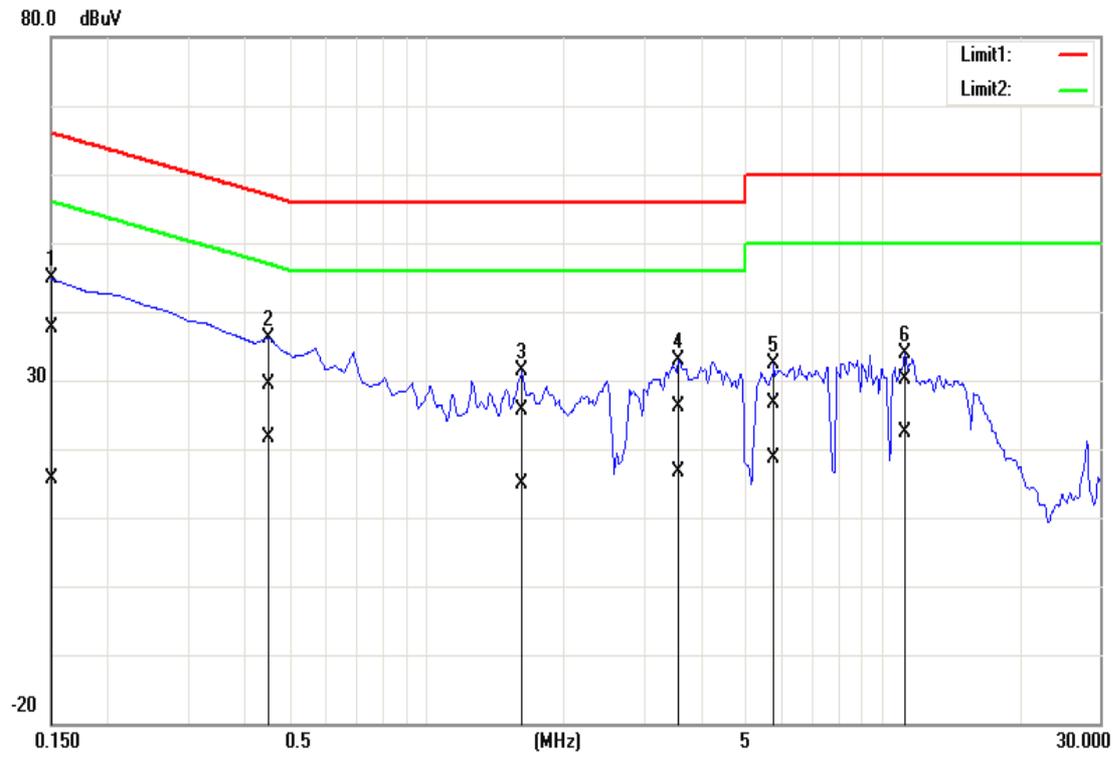
**Remark:**

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)

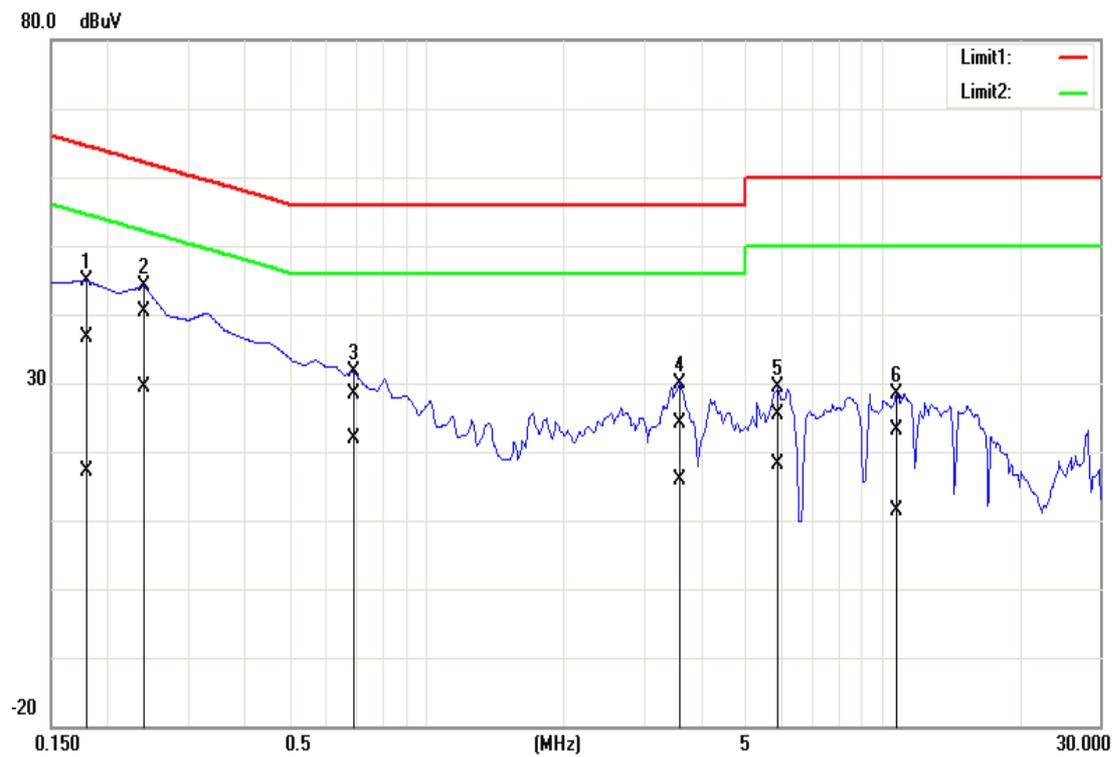


**Test Plots**

**Conducted emissions (Line 1)**



**Conducted emissions (Line 2)**





# APPENDIX I RADIO FREQUENCY EXPOSURE

## LIMIT

### EUT Specification

<b>EUT</b>	Mobile phone
<b>Frequency band (Operating)</b>	<input type="checkbox"/> WLAN: 2.412GHz ~ 2.462GHz <input type="checkbox"/> WLAN: 5.18GHz ~ 5.32GHz / 5.50GHz ~ 5.70GHz <input type="checkbox"/> WLAN: 5.745GHz ~ 5.825GHz <input checked="" type="checkbox"/> Others: GSM / GPRS 850MHz: 824.2 ~ 848.8 MHz
<b>Device category</b>	<input checked="" type="checkbox"/> Portable (<20cm separation) <input type="checkbox"/> Mobile phone (>20cm separation) <input type="checkbox"/> Others _____
<b>Exposure classification</b>	<input type="checkbox"/> Occupational/Controlled exposure (S = 5mW/cm <sup>2</sup> ) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm <sup>2</sup> )
<b>Antenna diversity</b>	<input checked="" type="checkbox"/> Single antenna <input type="checkbox"/> Multiple antennas <input type="checkbox"/> Tx diversity <input type="checkbox"/> Rx diversity <input type="checkbox"/> Tx/Rx diversity
<b>Max. output power</b>	ERP: 25.80 dBm (380.18 mW)
<b>Antenna gain (Max)</b>	-0.5 dBi (Numeric gain: 0.89)
<b>Evaluation applied</b>	<input type="checkbox"/> MPE Evaluation <input checked="" type="checkbox"/> SAR Evaluation* <input type="checkbox"/> N/A

### **Remark:**

- The maximum output power is 25.80 dBm (380.18mW) at 848.84MHz (with 0.89 numeric antenna gain.)*
- DTS device is not subject to routine RF evaluation; MPE estimate is used to justify the compliance.*

## TEST RESULTS

*No non-compliance noted.*

*Not applicable, Please refers to the SAR test report.*



**EUT Specification**

<b>EUT</b>	Mobile phone Phone
<b>Frequency band (Operating)</b>	<input type="checkbox"/> WLAN: 2.412GHz ~ 2.462GHz <input type="checkbox"/> WLAN: 5.725GHz ~ 5.850GHz <input type="checkbox"/> WLAN: 5.15GHz ~ 5.35GHz <input checked="" type="checkbox"/> Others: GSM / GPRS: 1900: 1850.2 ~ 1909.8 MHz
<b>Device category</b>	<input checked="" type="checkbox"/> Portable (<20cm separation) <input type="checkbox"/> Mobile phone (>20cm separation) <input type="checkbox"/> Others
<b>Exposure classification</b>	<input type="checkbox"/> Occupational/Controlled exposure (S = 5mW/cm2) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm2)
<b>Antenna diversity</b>	<input checked="" type="checkbox"/> Single antenna <input type="checkbox"/> Multiple antennas <input type="checkbox"/> Tx diversity <input type="checkbox"/> Rx diversity <input type="checkbox"/> Tx/Rx diversity
<b>Max. output power</b>	ERP: 29.35 dBm (860.99mW)
<b>Antenna gain (Max)</b>	1.6 dBi (Numeric gain: 1.44)
<b>Evaluation applied</b>	<input type="checkbox"/> MPE Evaluation <input checked="" type="checkbox"/> SAR Evaluation* <input type="checkbox"/> N/A
<b>Remark:</b>	
1. The maximum output power is <u>29.35 dBm (860.99mW)</u> at <u>1909.90MHz</u> (with <u>1.44 numeric antenna gain.</u> ) 2. DTS device is not subject to routine RF evaluation; MPE estimate is used to justify the compliance.	

**TEST RESULTS**

No non-compliance noted.

Not applicable, Please refers to the SAR test report.