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

TEST REPORT

For

Smart Phone (Quad band)

Model: M1

Trade Name: TATUNG

Issued to

TATUNG CO.
22 Chungshan N. Rd., 3rd Sec.
Taipei, Taiwan, 104, R.O.C.

Issued by

Compliance Certification Services Inc.
No. 81-1, Lane 210, Bade Rd. 2, Luchu Hsiang,
Taoyuan Hsien, (338) Taiwan, R.O.C.
TEL: 886-3-324-0332
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1. TEST RESULT CERTIFICATION

Applicant: TATUNG CO.
22 Chungshan N. Rd., 3rd Sec.
Taipei, Taiwan, 104, R.O.C.

Equipment Under Test: Smart Phone (Quad band)

Trade Name: TATUNG

Model Number: M1

Date of Test: December 9, 2005 ~ January 17, 2006

APPLICABLE STANDARDS	
STANDARD	**TEST RESULT**
FCC 47 CFR PART 22 SUBPART H AND 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 ANSI/TIA/EIA-603-A-2001 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:

Gavin Lim
Section Manager
Compliance Certification Services Inc.

Reviewed by:

Amanda Wu
Section Manager
Compliance Certification Services Inc.

2. EUT DESCRIPTION

Product	Smart Phone (Quad band)
Trade Name	TATUNG
Model Number	M1
Model Discrepancy	N/A
Power Supply	Adapter: Model:ADP-5FH B I/P:100-240V, 0.2A, 50-60Hz O/P: 5V, 1A LPS Battery: 3.7 V (minimum)
Frequency Range	824 ~ 849 MHz / 1850 ~ 1910 MHz
Transmit Power (ERP & EIRP Power)	GSM 850: 32.73 dBm GPRS 850: 32.52 dBm GSM 1900: 30.98 dBm GPRS 1900: 30.88 dBm
Cellular Phone Protocol	GSM 850, GSM1900: Class B GPRS 850, GPRS1900: Class 10
Type of Emission	997KGXW--
Antenna Gain	850 MHz: -1.46 dBi 1900 MHz: 1.34 dBi
Antenna Type	Wire 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: BJM-M1filing 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 and FCC CFR 47, 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055 and 2.1057.

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.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.

3.4 DESCRIPTION OF TEST MODES

The EUT had been tested under operating condition.

EUT staying in continuous transmitting mode was programmed.

GSM850, GPRS 850: Channel Low (CH128), Channel Mid (CH190) and Channel High (CH251) were chosen for full testing.

GSM1900, GPRS 1900: Channel Low (CH512), Channel Mid (CH661) and Channel High (CH810) were chosen for full testing.

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 (Y 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.*

Conducted Emissions Test Site				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Agilent	E4446A	MY43360131	01/10/2007
Power Meter	Agilent	E4416A	GB41291611	06/02/2006
Power Sensor	Agilent	E9327A	US40441097	06/02/2006
Temp. / Humidity Chamber	TERCHY	MHG-150LF	930619	07/26/2006
DC Power Source	Agilent	E3640A	MY40001774	01/12/2007

3M Semi Anechoic Chamber				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Agilent	E4446A	US42510252	07/25/2006
Test Receiver	Rohde&Schwarz	ESCI	100064	06/28/2006
Switch Controller	TRC	Switch Controller	SC94050010	05/05/2006
4 Port Switch	TRC	4 Port Switch	SC94050020	05/05/2006
Horn-Antenna	TRC	HA-0502	06	06/02/2006
Horn-Antenna	TRC	HA-0801	04	05/05/2006
Bilog- Antenna	Sunol Sciences	JB3	A030205	03/09/2006
Turn Table	Max-Full	MFT-120S	T120S940302	N.C.R.
Antenna Tower	Max-Full	MFA-430	A440940302	N.C.R.
Controller	Max-Full	MF-CM886	CC-C-1F-13	N.C.R.
Site NSA	CCS	N/A	FCC: 965860 IC: IC 6106	09/26/2008
Reject Filter	Micro-Tronics	HPM13194	003	04/27/2006
S.G.	HP	83630B	3844A01022	01/14/2007
Substituted Dipole	SCHWAZBECK	VHAP/UHAP	998 +999/ 981+982	06/12/2006
Substituted Horn	EMCO	3115	00022257	12/12/2006
Test S/W	LABVIEW (V 6.1)			

Remark: *The measurement uncertainty is less than +/-2.0065dB (30MHz ~ 1GHz), +/-3.0958dB (Above 1GHz) which is evaluated as per the NAMAS NIS 81 and CISPR/A/291/CDV..*

Powerline Conducted Emissions Test Site				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
EMI TEST RECEIVER 9kHz-30MHz	ROHDE & SCHWARZ	ESHS30	828144/003	09/24/2006
TWO-LINE V-NETWORK 9kHz-30MHz	SCHAFFNER	NNB41	03/10013	06/11/2006
LISN 10kHz-100MHz	EMCO	3825/2	9106-1809	02/17/2006
Test S/W	LABVIEW (V 6.1)			

Remark: *The measurement uncertainty is less than +/- 2.81dB, which is evaluated as per the NAMAS NIS 81 and CISPR/A/291/CDV.*

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 LABORATORY ACCREDITATIONS AND LISTING

The test facilities used to perform radiated and conducted emissions tests are accredited by National Voluntary Laboratory Accreditation Program for the specific scope of accreditation under Lab Code: 200600-0 to perform Electromagnetic Interference tests according to FCC PART 15 AND CISPR 22 requirements. No part of this report may be used to claim or imply product endorsement by NVLAP or any agency of the US Government. In addition, the test facilities are listed with Federal Communications Commission (Registration no: 93105 and 90471).

5.4 TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	NVLAP*	EN 55011, EN 55014-1, AS/NZS 1044, CNS 13783-1, EN 55022, CNS 13438, EN 61000-3-2, EN 61000-3-3, ANSI C63.4, FCC OST/MP-5, AS/NZS CISPR 22, IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8, IEC 61000-4-11	NVLAP 200600-0
USA	FCC	3/10 meter Open Area Test Sites (93105, 90471) / 3M Semi Anechoic Chamber (965860) to perform FCC Part 15/18 measurements	FC 93105, 90471 965860
Japan	VCCI	3/10 meter Open Area Test Sites to perform conducted/radiated measurements	VCCI R-393/1066/725/879 C-402/747/912
Norway	NEMKO	EN 50081-1/2, EN 50082-1/2, IEC 61000-6-1/2, EN 50091-2, EN 50130-4, EN 55011, EN 55013, EN 55014-1/2, EN 55015, EN 55022, EN 55024, EN 61000-3-2/3, EN 61326-1, IEC 61000-4-2/3/4/5/6/8/11, EN 60601-1-2, EN 300 328-2, EN 300 422-2, EN 301 419-1, EN 301 489-01/03/07/08/09/17, EN 301 419-2/3, EN 300 454-2, EN 301 357-2	N ELA 124a ELA 124b ELA 124c
Taiwan	CNLA	EN 300 328-1/2, EN 300 220-1/2/3, EN 300 440-1/2, EN 61000-3-2, EN 61000-3-3, 47 CFR FCC Part 15 Subpart C/D/E, EN 55013, CNS 13439, EN 55014-1, CNS 13783-1, EN 55022, CNS 13438, CISPR 22, AS/NZS 3548, EN 61000-4-2/3/4/5/6/8/11, ENV 50204, IEEE Std 1528, FCC OET Bulletin, 65+Supplement C, EN50360, EN50361, EN50371, RSS102	CNLA 0363 ILAC MRA
Taiwan	BSMI	CNS 13438, CNS 13783-1, CNS 13439, CNS 14115	SL2-IS-E-0014 SL2-IN-E-0014 SL2-A1-E-0014 SL2-R1-E-0014 SL2-R2-E-0014 SL2-L1-E-0014
Canada	Industry Canada	3/10 meter Open Area Test Sites (IC 3991-3, IC 3991-4) / 3M Semi Anechoic Chamber (IC 6106) to perform RSS 212 Issue 1	Canada IC 3991-3 IC 3991-4 IC 6106

** No part of this report may be used to claim or imply product endorsement by NVLAP or any agency of the US Government.*
** Australia: MRA of NVLAP AS/NZS 4771 &AS/NZS 4268.*

6. SETUP OF EQUIPMENT UNDER TEST

6.1 SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix 1 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.	8960 Series 10 Wireless Comm test set	Agilent	E5515C	N/A	GB44051665	N/A	N/A

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.*

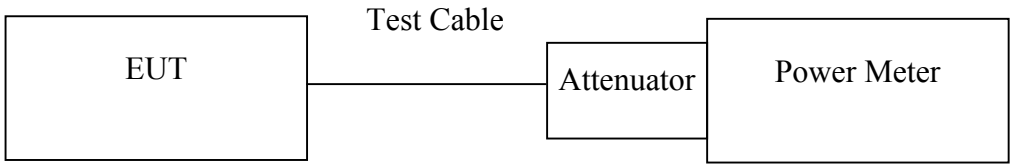
7. FCC PART 22 & 24 REQUIREMENTS

7.1 AVERAGE 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)	Power Meter Reading (dBm)	Attenuator (dB)	Average Power (dBm)
GSM 850 (Class B)	128	824.20	16.13	16.60	32.73
	190	836.60	15.57		32.17
	251	848.80	15.11		31.71
GPRS 850 (Class 10)	128	824.20	15.92		32.52
	190	836.60	15.39		31.99
	251	848.80	14.94		31.54

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

Test Mode	CH	Frequency (MHz)	Power Meter Reading (dBm)	Attenuator (dB)	Average Power (dBm)
GSM 1900 (Class B)	512	1850.20	14.26	16.60	30.86
	661	1880.00	14.38		30.98
	810	1910.00	12.88		29.48
GPRS 1900 (Class 10)	512	1850.20	14.18		30.78
	661	1880.00	14.28		30.88
	810	1910.00	12.78		29.38

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

7.2 ERP & EIRP MEASUREMENT

LIMIT

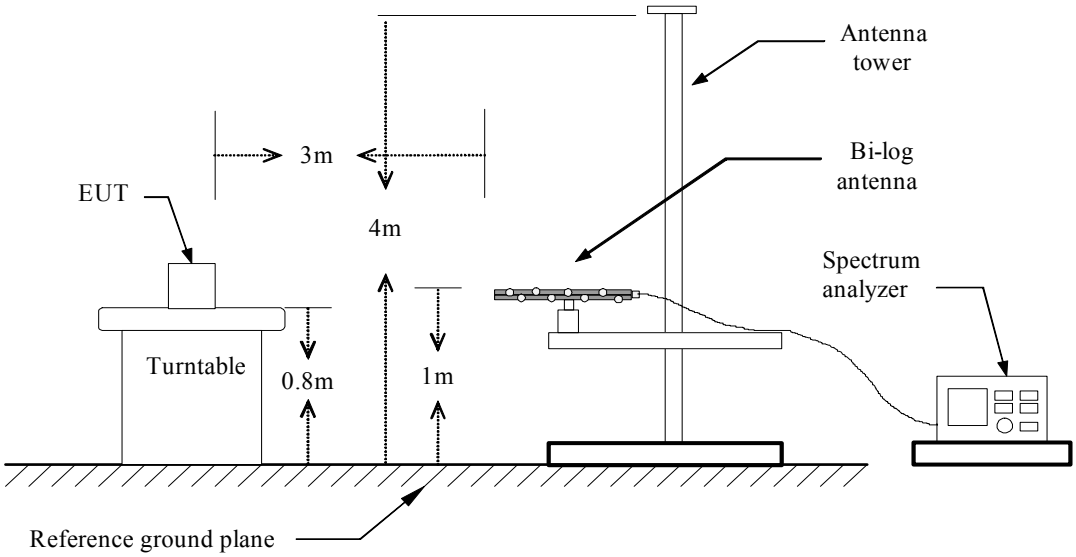
According to FCC §2.1046

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

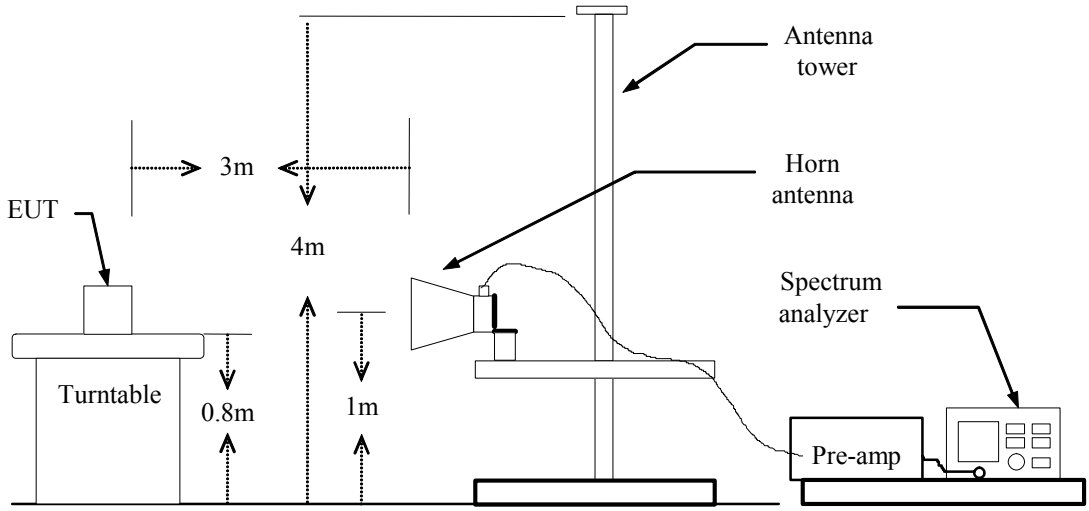
FCC 24.232(b): The equivalent Isotropic Radiated Power (EIRP) must not exceed 2 Watts.

TEST CONFIGURATION

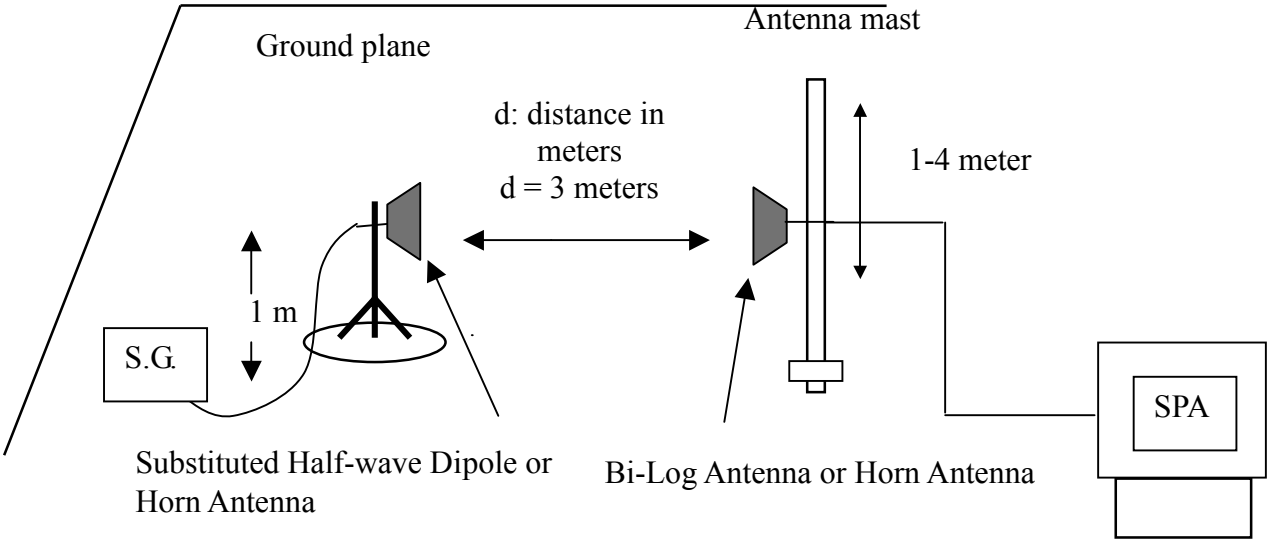
Below 1 GHz



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:

ERP = S.G. output (dBm) + Antenna Gain (dBd) – Cable (dB)
EIRP = S.G. output (dBm) + Antenna Gain (dBi) – Cable (dB)

TEST RESULTS

No non-compliance noted.

GSM 850 Test Data (Class B)

EUT Pol.	Channel	Frequency (MHz)	Reading level (dBuV)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Pol.
X	128	824.10	23.77	-1.37	22.40	38.50	-16.10	V
		824.00	30.16	-0.26	29.90	38.50	-8.60	H
	190	836.50	22.15	-1.37	20.78	38.50	-17.72	V
		836.60	30.11	-0.26	29.85	38.50	-8.65	H
	251	848.60	21.32	-1.37	19.95	38.50	-18.55	V
		848.70	30.17	-0.26	29.91	38.50	-8.59	H
Y	128	823.90	26.87	-1.37	25.50	38.50	-13.00	V
		824.10	32.51	-0.26	32.25	38.50	-6.25	H
	190	836.50	26.98	-1.37	25.61	38.50	-12.89	V
		836.40	32.63	-0.26	32.37	38.50	-6.13	H
	251	848.60	26.56	-1.37	25.19	38.50	-13.31	V
		848.60	33.06	-0.26	32.80	38.50	-5.70	H
Z	128	824.00	33.09	-1.37	31.72	38.50	-6.78	V
		824.00	27.03	-0.26	26.77	38.50	-11.73	H
	190	836.50	32.64	-1.37	31.27	38.50	-7.23	V
		836.50	26.41	-0.26	26.15	38.50	-12.35	H
	251	848.60	31.66	-1.37	30.29	38.50	-8.21	V
		848.90	25.71	-0.26	25.45	38.50	-13.05	H

GPRS 850 Test Data (Class 10)

EUT Pol.	Channel	Frequency (MHz)	Reading level (dBuV)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Pol.
X	128	824.40	24.80	-1.37	23.43	38.50	-15.07	V
		824.00	33.04	-0.26	32.78	38.50	-5.72	H
	190	836.50	23.93	-1.37	22.56	38.50	-15.94	V
		836.40	32.06	-0.26	31.80	38.50	-6.70	H
	251	848.70	21.07	-1.37	19.70	38.50	-18.80	V
		848.60	31.48	-0.26	31.23	38.50	-7.27	H
Y	128	824.10	25.68	-1.37	24.31	38.50	-14.19	V
		824.00	33.40	-0.26	33.14	38.50	-5.36	H
	190	836.40	25.36	-1.37	23.98	38.50	-14.52	V
		836.50	32.69	-0.26	32.43	38.50	-6.07	H
	251	848.60	25.00	-1.37	23.63	38.50	-14.87	V
		848.60	31.76	-0.26	31.50	38.50	-7.00	H
Z	128	824.10	32.90	-1.37	31.53	38.50	-6.97	V
		824.10	26.48	-0.26	26.22	38.50	-12.28	H
	190	836.50	32.19	-1.37	30.82	38.50	-7.68	V
		836.50	25.83	-0.26	25.57	38.50	-12.93	H
	251	848.60	31.32	-1.37	29.95	38.50	-8.55	V
		848.70	24.50	-0.26	24.24	38.50	-14.26	H

GSM 1900 Test Data (Class B)

EUT Pol.	Channel	Frequency (MHz)	Reading level (dBuV)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Pol.
X	512	1850.20	22.68	0.73	23.42	33.00	-9.58	V
		1850.30	27.66	1.31	28.97	33.00	-4.03	H
	661	1879.90	20.65	0.73	21.38	33.00	-11.62	V
		1879.90	27.96	1.27	29.22	33.00	-3.78	H
	810	1910.10	20.21	0.73	20.94	33.00	-12.06	V
		1909.60	26.93	1.23	28.15	33.00	-4.85	H
Y	512	1850.10	28.85	0.73	29.58	33.00	-3.42	V
		1850.30	29.17	1.31	30.48	33.00	-2.52	H
	661	1879.90	27.67	0.73	28.40	33.00	-4.60	V
		1879.90	28.07	1.27	29.33	33.00	-3.67	H
	810	1909.70	26.30	0.73	27.03	33.00	-5.97	V
		1909.80	26.13	1.23	27.35	33.00	-5.65	H
Z	512	1850.10	27.87	0.73	28.60	33.00	-4.40	V
		1850.20	26.85	1.31	28.16	33.00	-4.84	H
	661	1879.80	27.58	0.73	28.31	33.00	-4.69	V
		1879.80	26.12	1.27	27.39	33.00	-5.61	H
	810	1909.70	26.47	0.73	27.20	33.00	-5.80	V
		1909.70	24.95	1.23	26.18	33.00	-6.82	H

GPRS 1900 Test Data (Class 10)

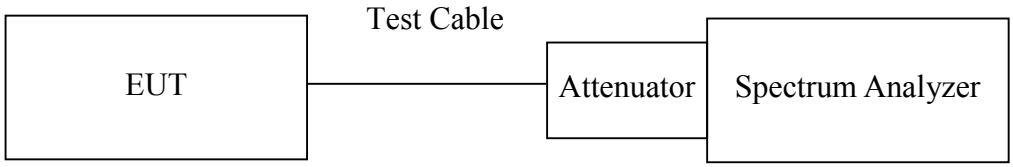
EUT Pol.	Channel	Frequency (MHz)	Reading level (dBuV)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Pol.
X	512	1850.00	19.18	0.73	19.91	33.00	-13.09	V
		1850.10	26.34	1.31	27.65	33.00	-5.35	H
	661	1879.90	18.26	0.73	18.99	33.00	-14.01	V
		1879.90	26.79	1.27	28.05	33.00	-4.95	H
	810	1909.70	14.63	0.73	15.36	33.00	-17.64	V
		1909.70	25.52	1.23	26.74	33.00	-6.26	H
Y	512	1850.10	27.73	0.73	28.46	33.00	-4.54	V
		1850.00	28.99	1.31	30.30	33.00	-2.70	H
	661	1879.90	26.69	0.73	27.42	33.00	-5.58	V
		1879.90	28.12	1.27	29.39	33.00	-3.61	H
	810	1909.60	25.38	0.73	26.11	33.00	-6.89	V
		1909.60	26.30	1.23	27.53	33.00	-5.47	H
Z	512	1850.20	27.88	0.73	28.61	33.00	-4.39	V
		1850.00	27.07	1.31	28.38	33.00	-4.62	H
	661	1879.90	27.58	0.73	28.31	33.00	-4.69	V
		1879.90	25.18	1.27	26.45	33.00	-6.55	H
	810	1909.70	26.09	0.73	26.82	33.00	-6.18	V
		1909.60	24.36	1.23	25.59	33.00	-7.41	H

7.3 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

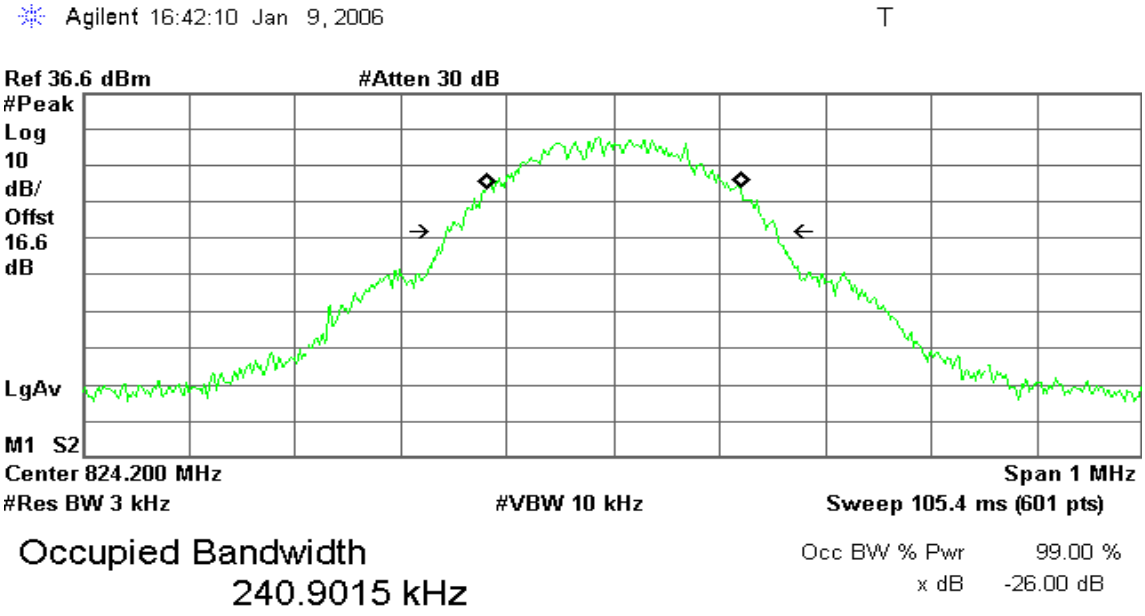
Test Data

Test Mode	CH	Frequency (MHz)	Bandwidth (kHz)
GSM 850 (Class B)	128	824.20	240.90
	190	836.60	240.39
	251	848.80	238.28
GPRS 850 (Class 10)	128	824.20	236.35
	190	836.60	235.59
	251	848.80	235.63

Test Mode	CH	Frequency (MHz)	Bandwidth (kHz)
GSM 1900 (Class B)	512	1850.20	238.54
	661	1880.00	240.29
	810	1909.80	238.08
GPRS 1900 (Class 10)	512	1850.20	233.47
	661	1880.00	232.11
	810	1909.80	236.73

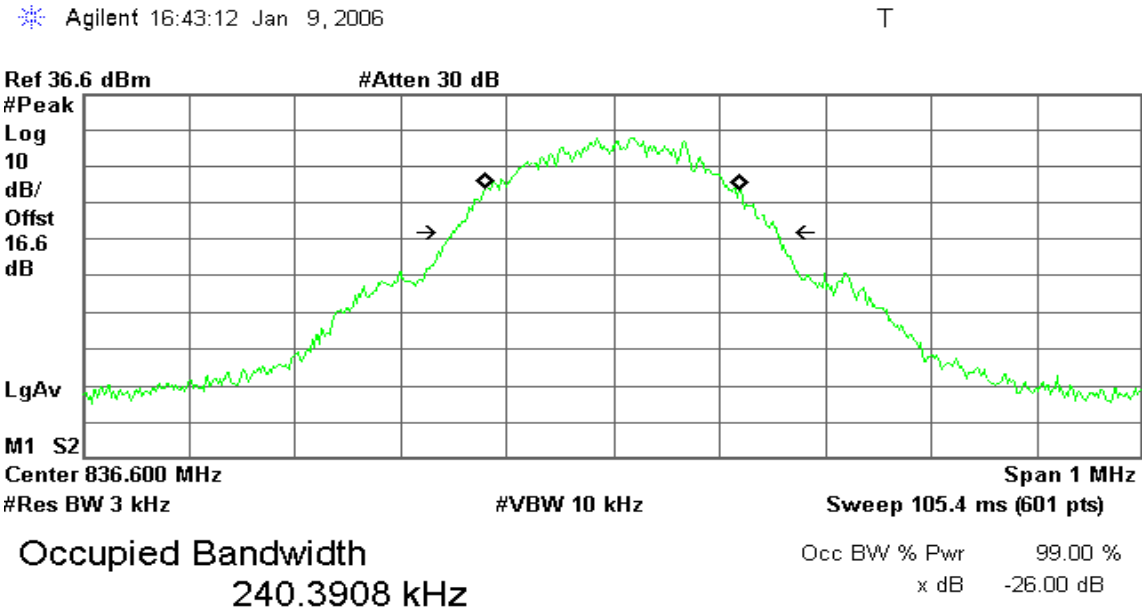
Test Plot

GSM 850 (CH Low)



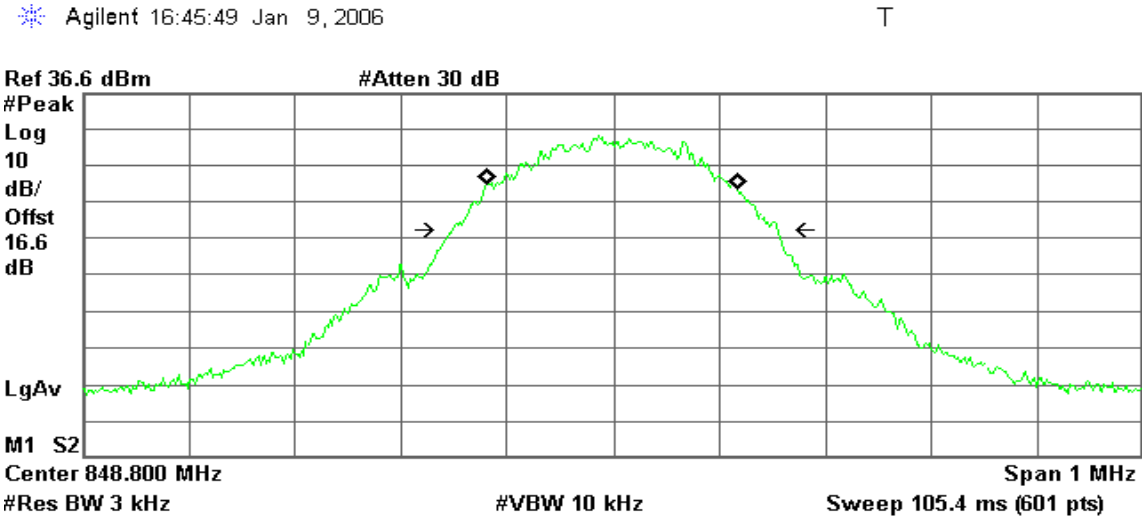
Transmit Freq Error	238.195 Hz
x dB Bandwidth	313.639 kHz

GSM 850 (CH Mid)



Transmit Freq Error	-522.068 Hz
x dB Bandwidth	308.399 kHz

GSM 850 (CH High)

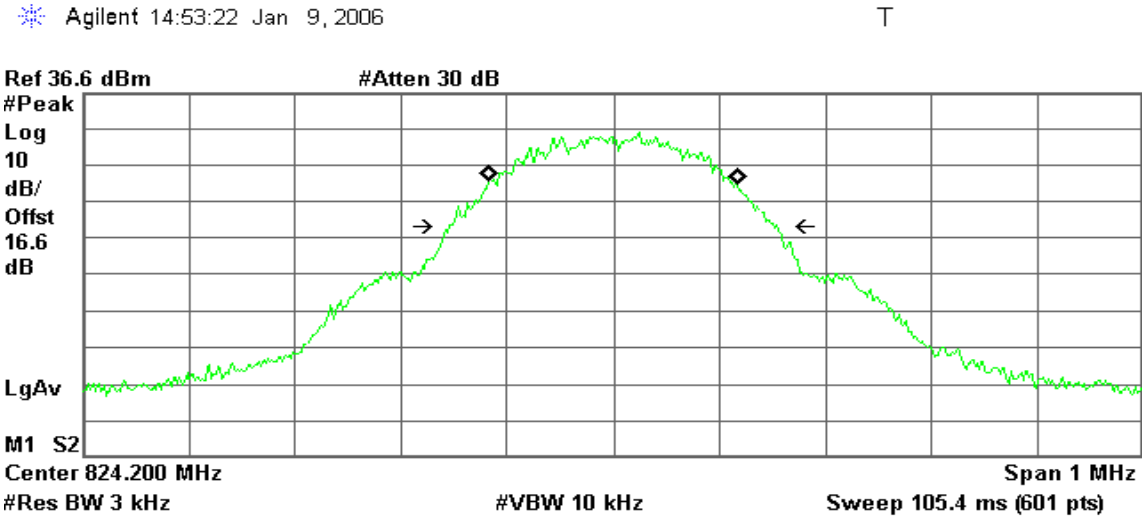


Occupied Bandwidth
238.2784 kHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -393.179 Hz
x dB Bandwidth 309.809 kHz

GPRS 850 (CH Low)

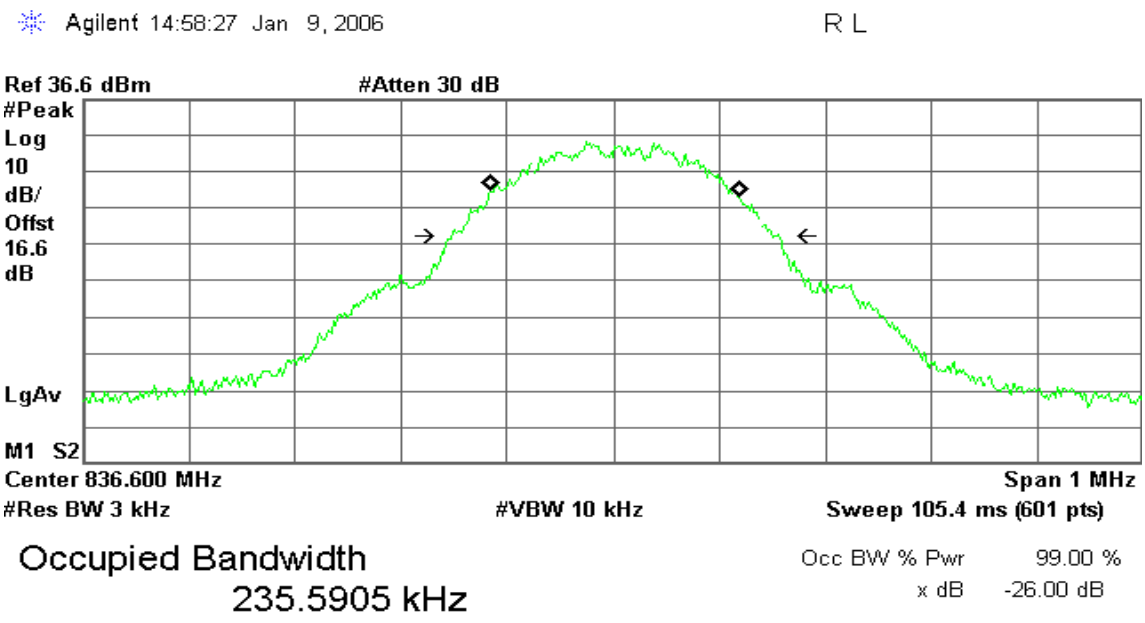


Occupied Bandwidth
236.3486 kHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

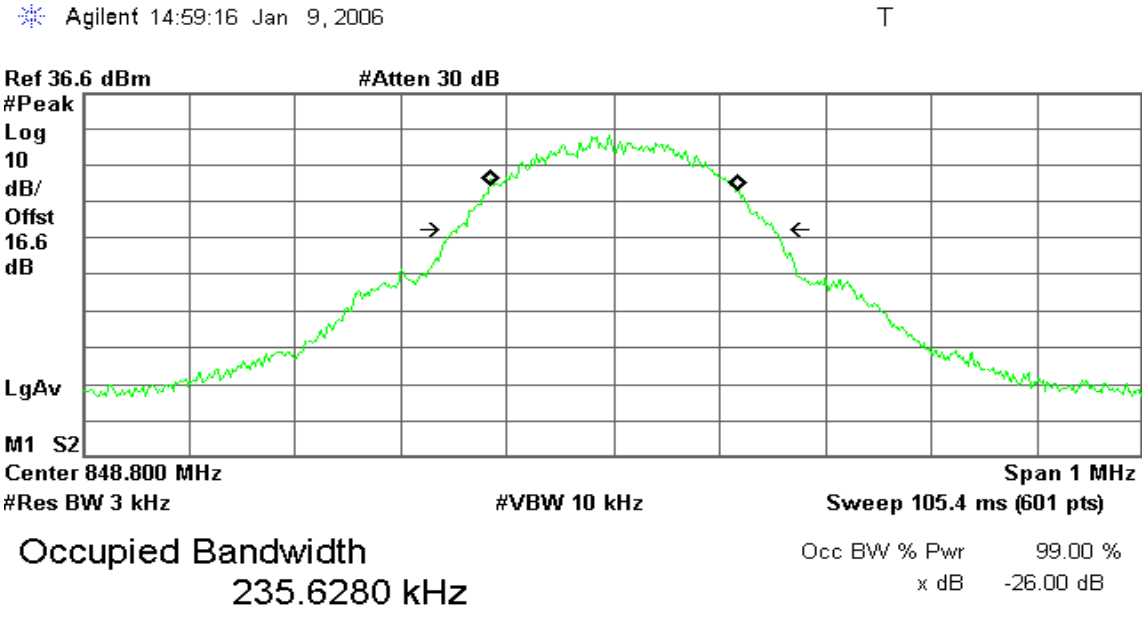
Transmit Freq Error 58.807 Hz
x dB Bandwidth 311.807 kHz

GPRS 850 (CH Mid)



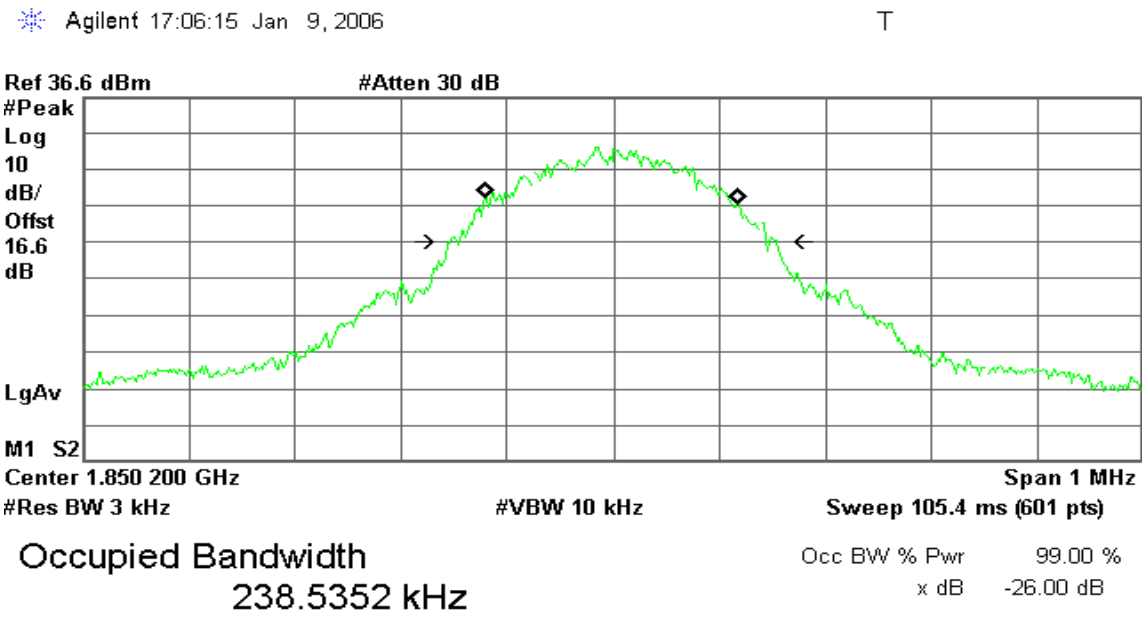
Transmit Freq Error	1.349 kHz
x dB Bandwidth	310.632 kHz

GPRS 850(CH High)



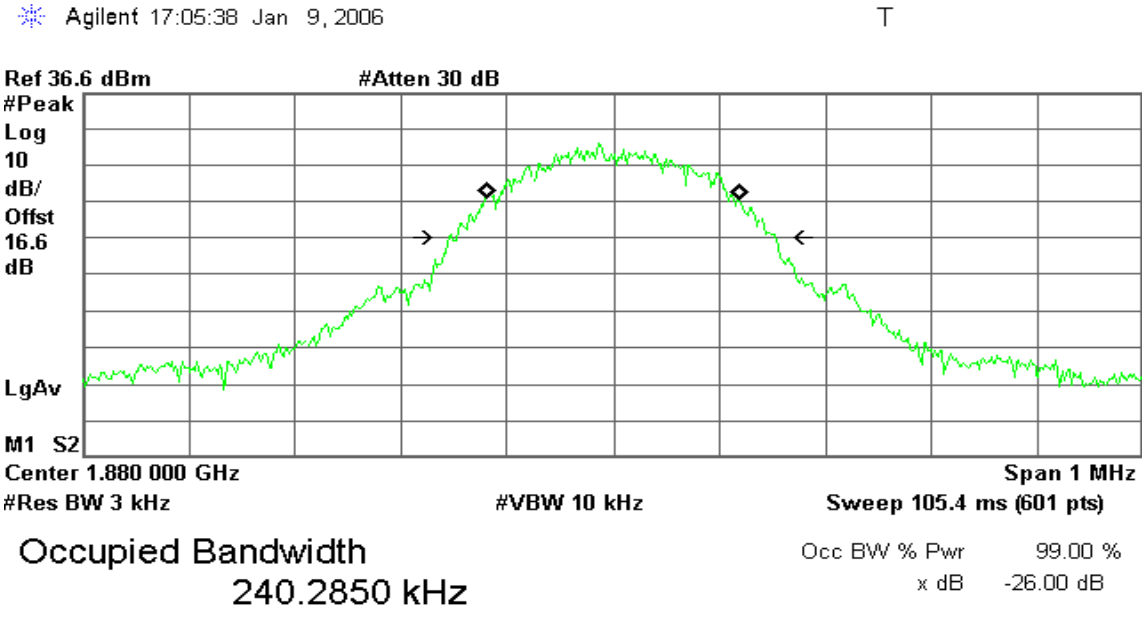
Transmit Freq Error	499.634 Hz
x dB Bandwidth	300.905 kHz

GSM 1900 (CH Low)



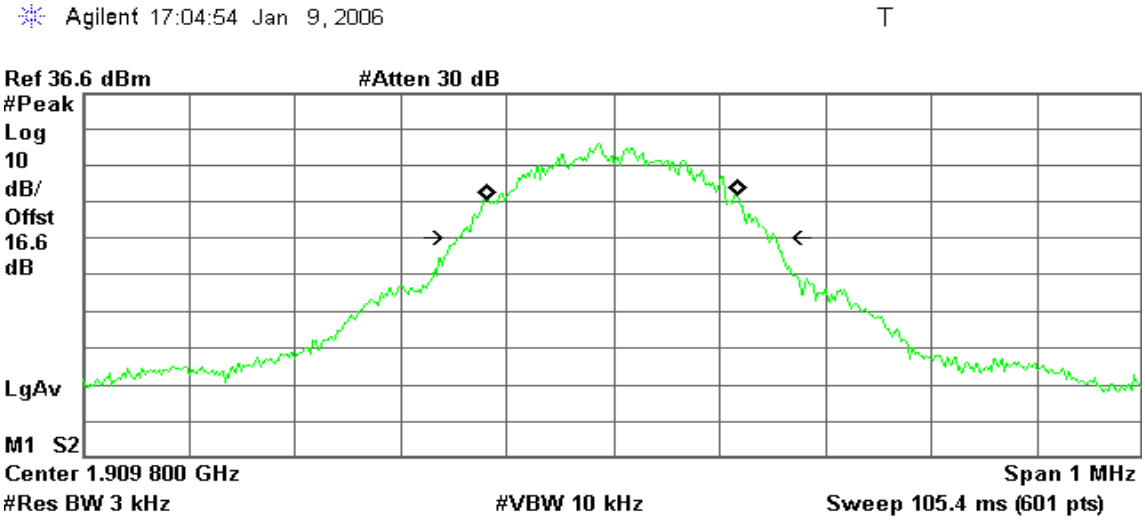
Transmit Freq Error	-1.747 kHz
x dB Bandwidth	309.653 kHz

GSM 1900 (CH Mid)



Transmit Freq Error	45.502 Hz
x dB Bandwidth	309.806 kHz

GSM 1900 (CH High)

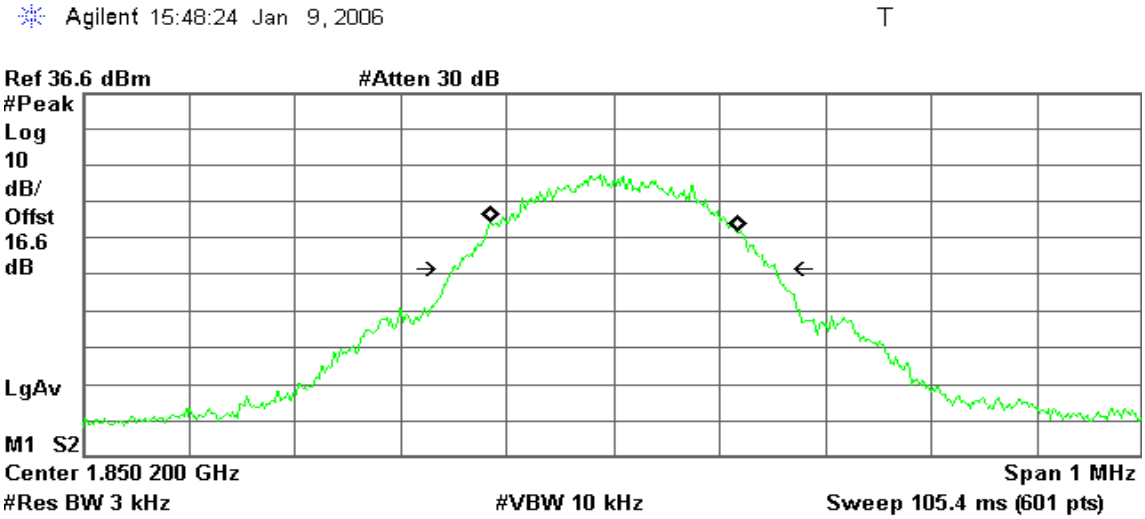


Occupied Bandwidth
238.0785 kHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -393.445 Hz
x dB Bandwidth 299.430 kHz

GPRS 1900 (CH Low)

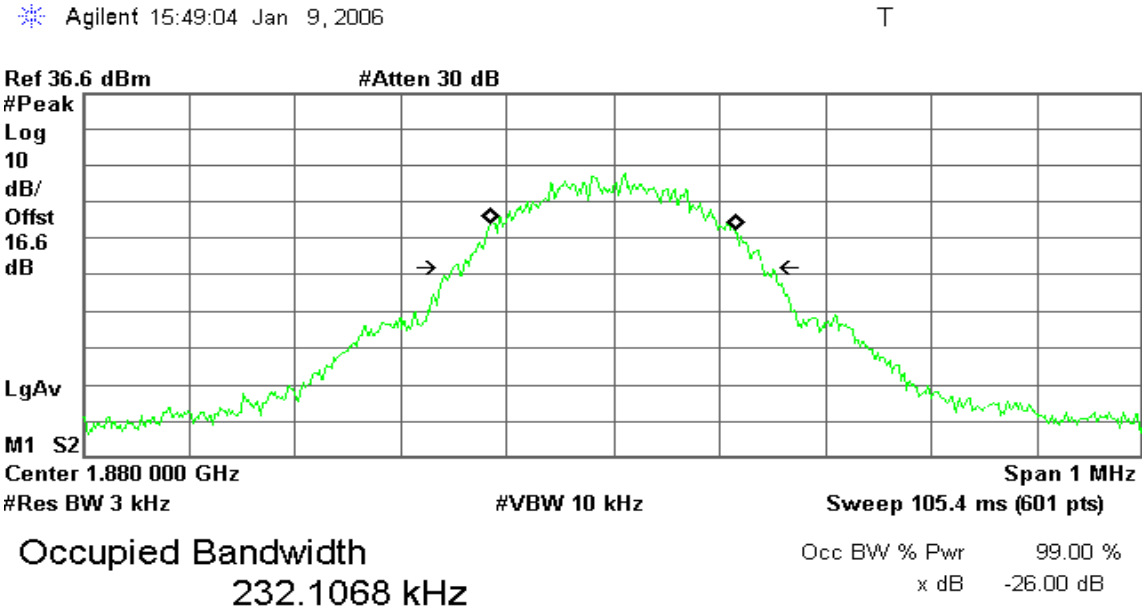


Occupied Bandwidth
233.4654 kHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

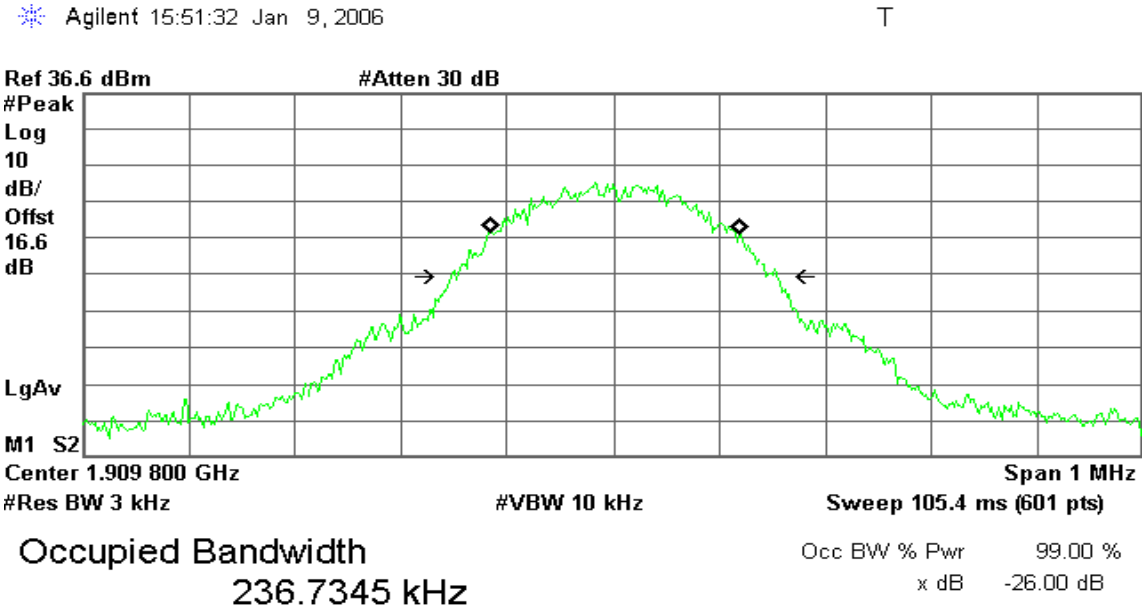
Transmit Freq Error 628.661 Hz
x dB Bandwidth 306.474 kHz

GPRS 1900 (CH Mid)



Transmit Freq Error	-443.453 Hz
x dB Bandwidth	293.491 kHz

GPRS 1900 (CH High)



Transmit Freq Error	1.304 kHz
x dB Bandwidth	310.245 kHz

7.4 OUT OF BAND EMISSION AT ANTENNA TERMINALS

LIMIT

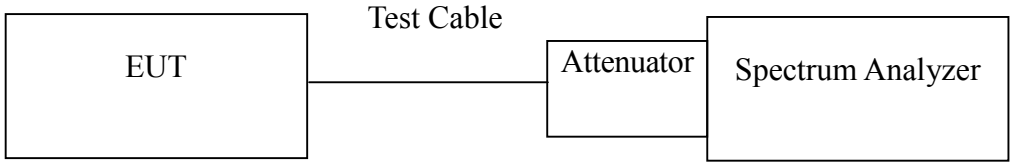
According to FCC §2.1051, FCC §22.917, FCC §24.238(a).

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 lease 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 lease 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 (Class B)	128	Figure 7-1	Conducted spurious emissions, 30MHz - 2.5GHz
		Figure 7-2	Conducted spurious emissions, 2.5GHz - 20GHz
	190	Figure 7-3	Conducted spurious emissions, 30MHz - 2.5GHz
		Figure 7-4	Conducted spurious emissions, 2.5GHz - 20GHz
	251	Figure 7-5	Conducted spurious emissions, 30MHz - 2.5GHz
		Figure 7-6	Conducted spurious emissions, 2.5GHz - 20GHz
GPRS 850 (Class 10)	128	Figure 7-7	Conducted spurious emissions, 30MHz - 2.5GHz
		Figure 7-8	Conducted spurious emissions, 2.5GHz - 20GHz
	190	Figure 7-9	Conducted spurious emissions, 30MHz - 2.5GHz
		Figure 7-10	Conducted spurious emissions, 2.5GHz - 20GHz
	251	Figure 7-11	Conducted spurious emissions, 30MHz - 2.5GHz
		Figure 7-12	Conducted spurious emissions, 2.5GHz - 20GHz

Mode	CH	Location	Description
GSM 1900 (Class B)	512	Figure 8-1	Conducted spurious emissions, 30MHz - 2.5GHz
		Figure 8-2	Conducted spurious emissions, 2.5GHz - 20GHz
	661	Figure 8-3	Conducted spurious emissions, 30MHz - 2.5GHz
		Figure 8-4	Conducted spurious emissions, 2.5GHz - 20GHz
	810	Figure 8-5	Conducted spurious emissions, 30MHz - 2.5GHz
		Figure 8-6	Conducted spurious emissions, 2.5GHz - 20GHz
GPRS 1900 (Class 10)	512	Figure 8-7	Conducted spurious emissions, 30MHz - 2.5GHz
		Figure 8-8	Conducted spurious emissions, 2.5GHz - 20GHz
	661	Figure 8-9	Conducted spurious emissions, 30MHz - 2.5GHz
		Figure 8-10	Conducted spurious emissions, 2.5GHz - 20GHz
	810	Figure 8-11	Conducted spurious emissions, 30MHz - 2.5GHz
		Figure 8-12	Conducted spurious emissions, 2.5GHz - 20GHz

Mode	CH	Location	Description
GSM 850 (Class B)	128	Figure 9-1	Band Edge emissions
	251	Figure 9-2	Band Edge emissions
GPRS 850 (Class 10)	128	Figure 9-3	Band Edge emissions
	251	Figure 9-4	Band Edge emissions

Mode	CH	Location	Description
GSM 1900 (Class B)	512	Figure 10-1	Band Edge emissions
	810	Figure 10-2	Band Edge emissions
GPRS 1900 (Class 10)	512	Figure 10-3	Band Edge emissions
	810	Figure 10-4	Band Edge emissions

Test Plot

GSM 850

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

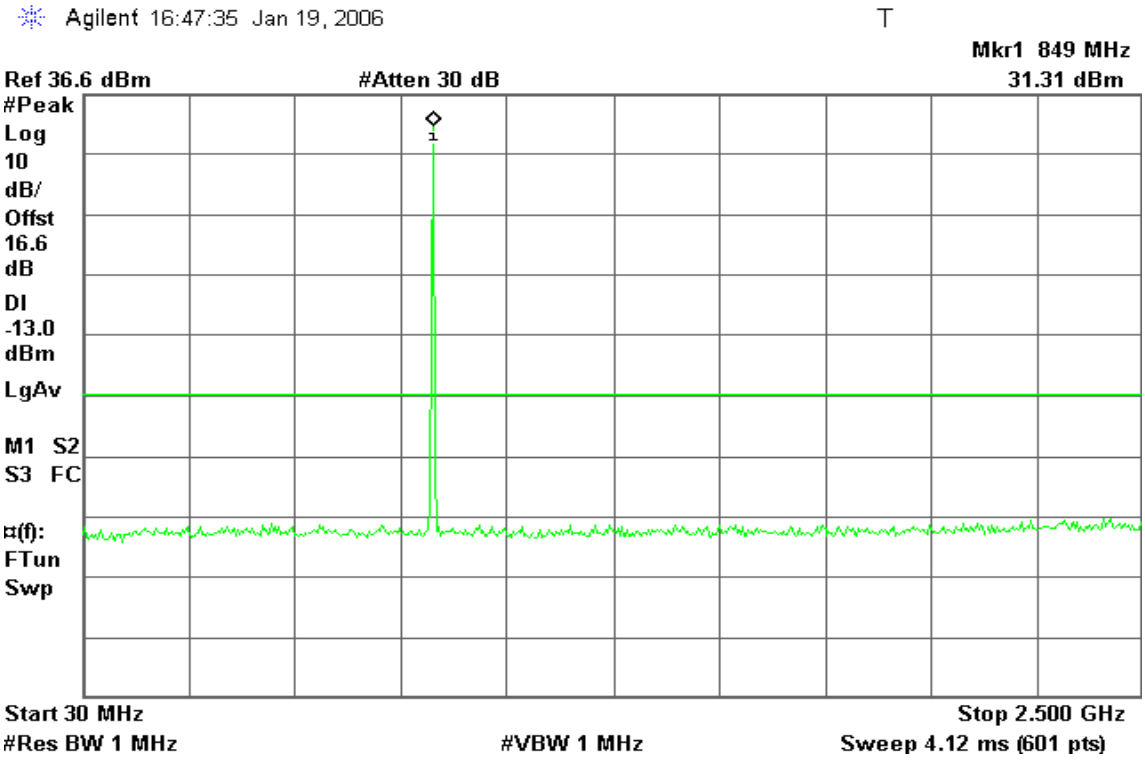


Figure 7-2: Out of Band emission at antenna terminals – GSM CH Low

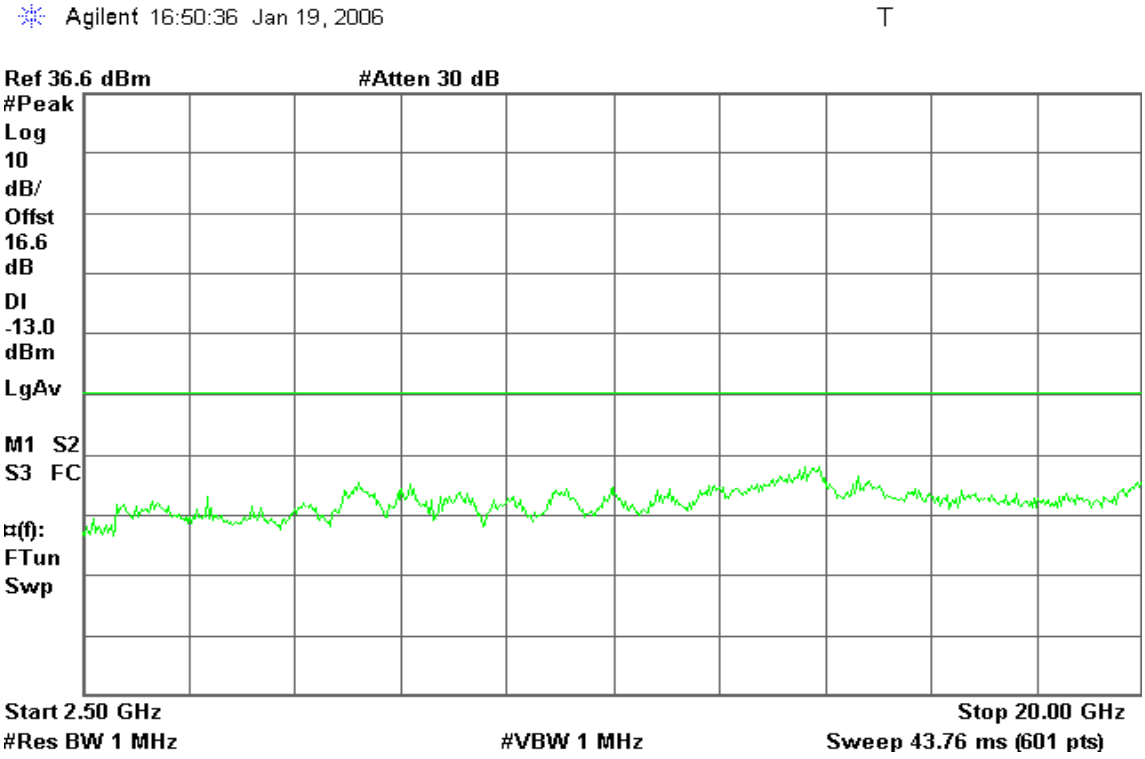


Figure 7-3: Out of Band emission at antenna terminals – GSM CH Mid

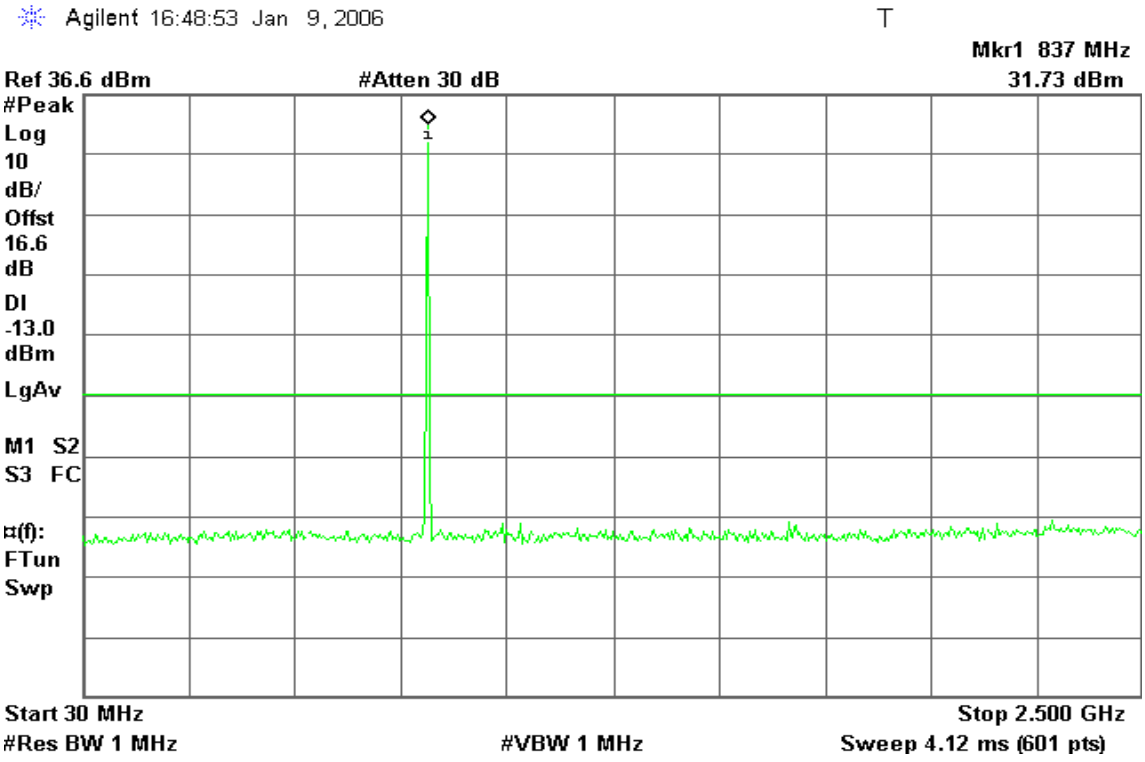


Figure 7-4: Out of Band emission at antenna terminals – GSM CH Mid

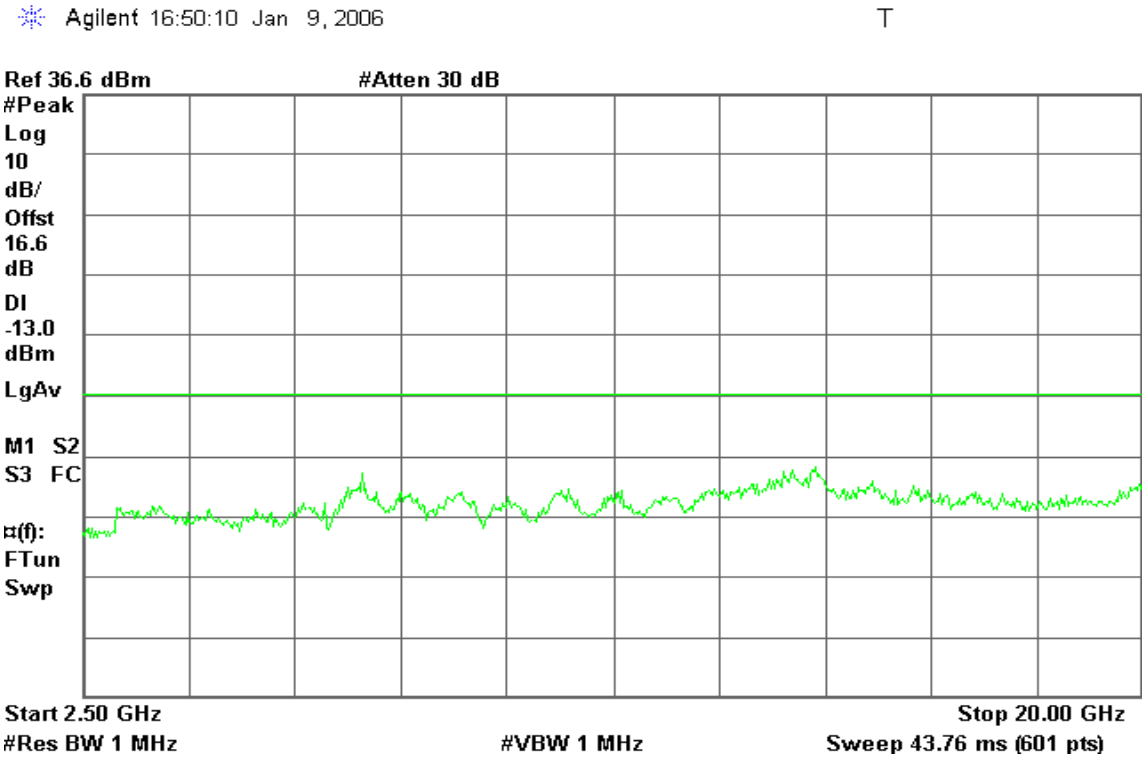


Figure 7-5: Out of Band emission at antenna terminals – GSM CH High

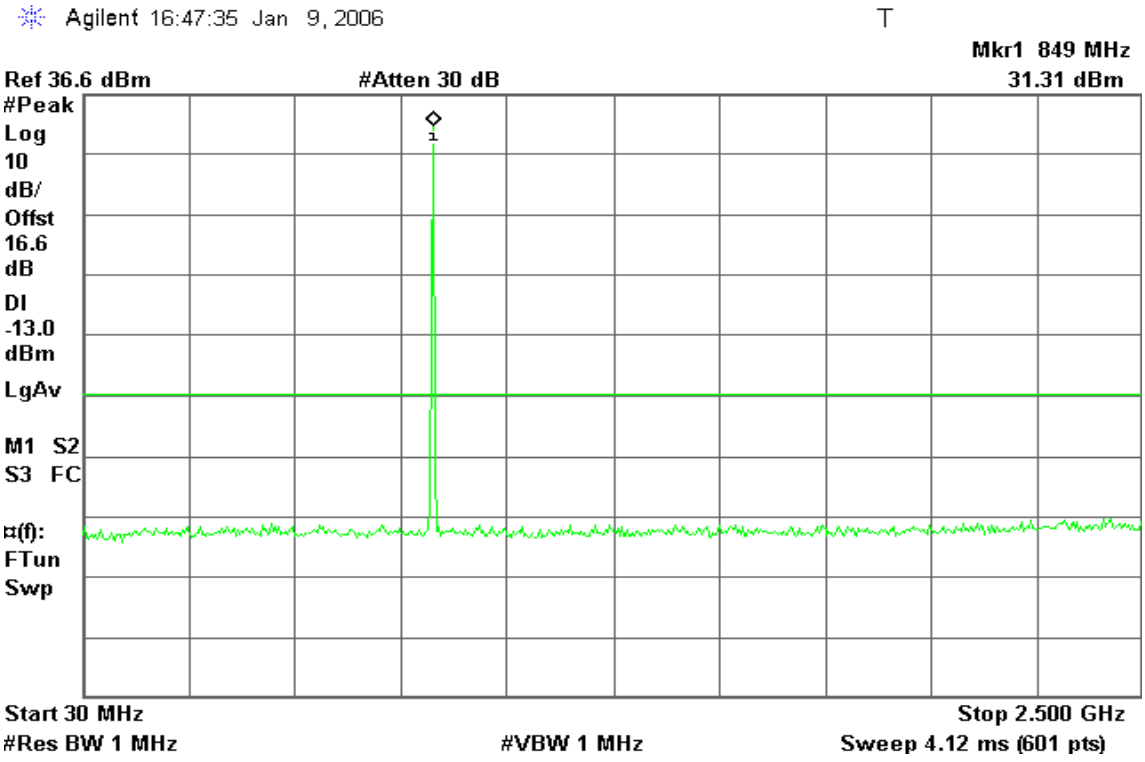
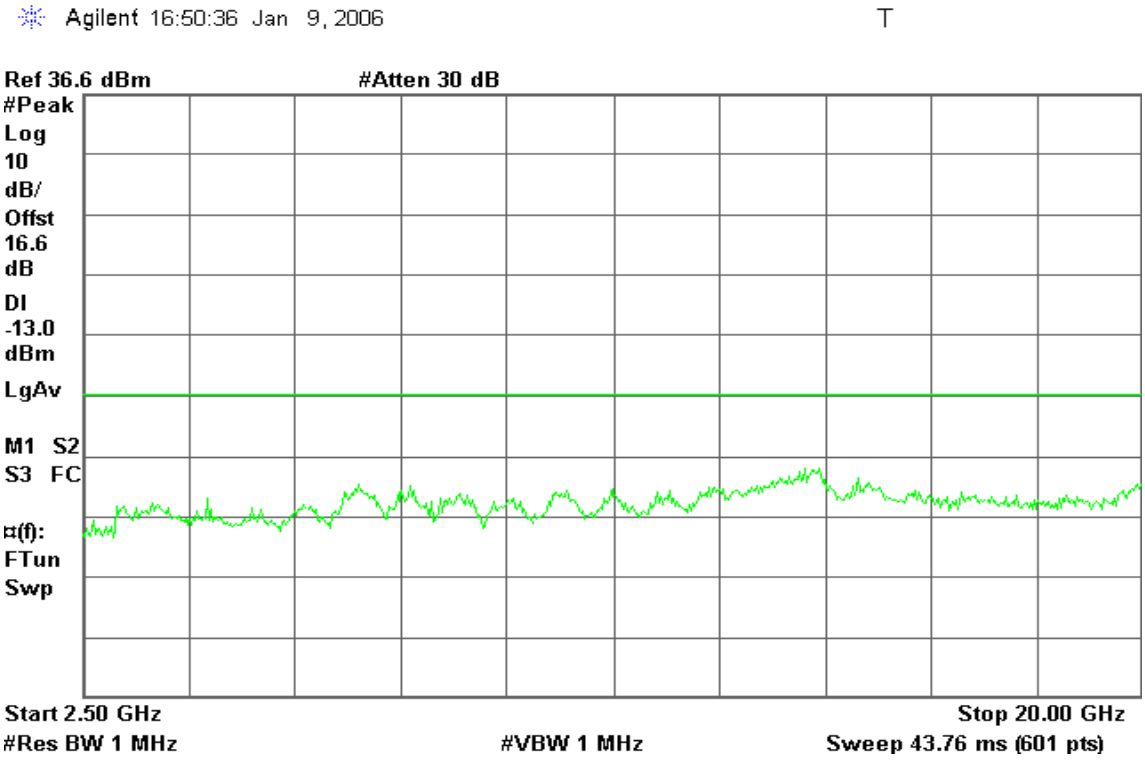


Figure 7-6: Out of Band emission at antenna terminals – GSM CH High



GPRS 850

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

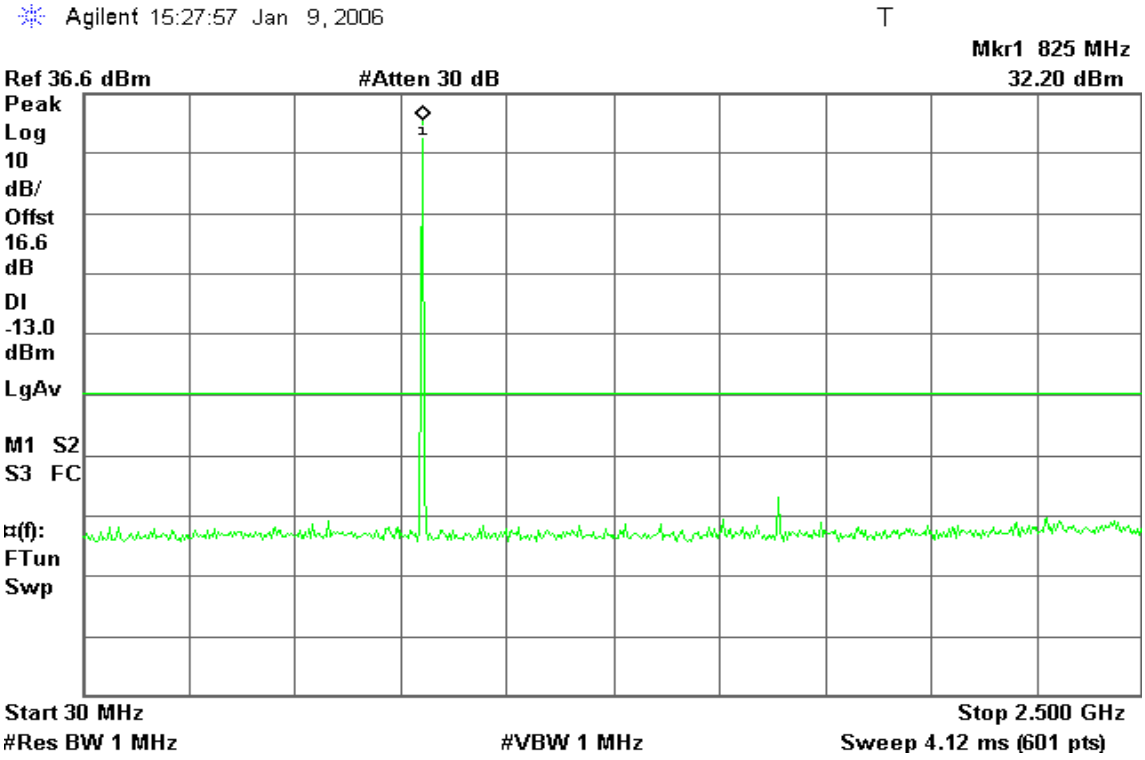


Figure 7-8: Out of Band emission at antenna terminals – GPRS CH Low

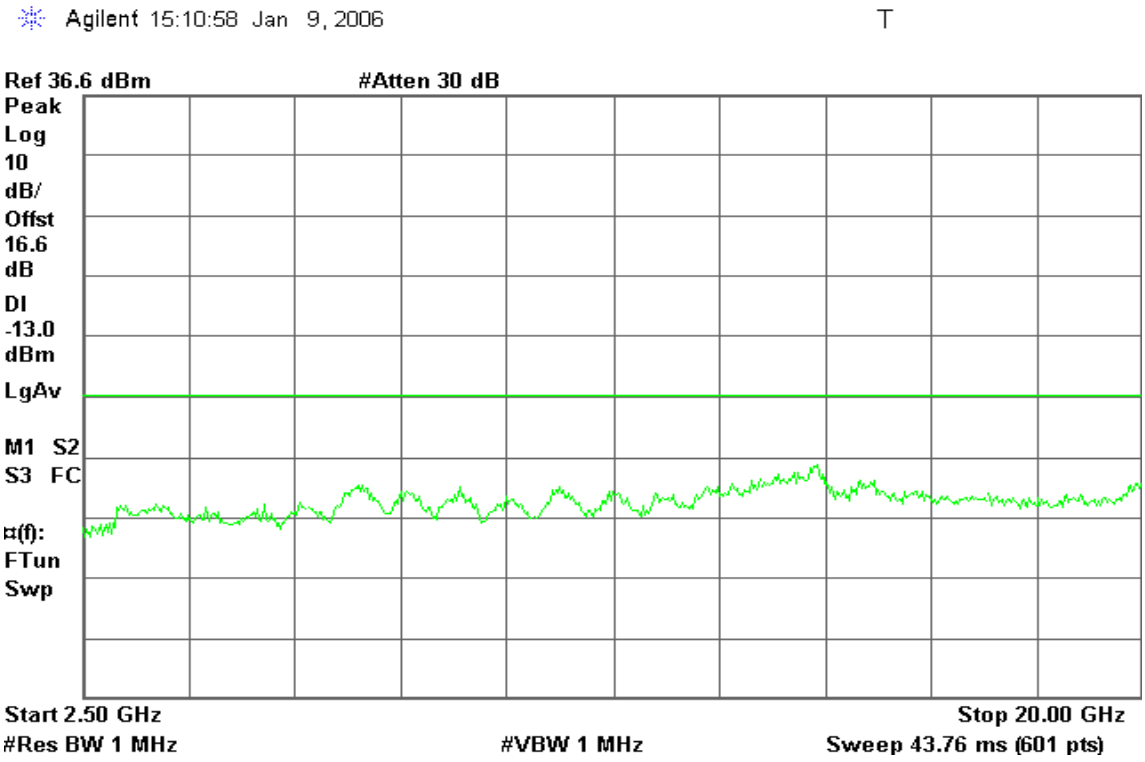


Figure 7-9: Out of Band emission at antenna terminals – GPRS CH Mid

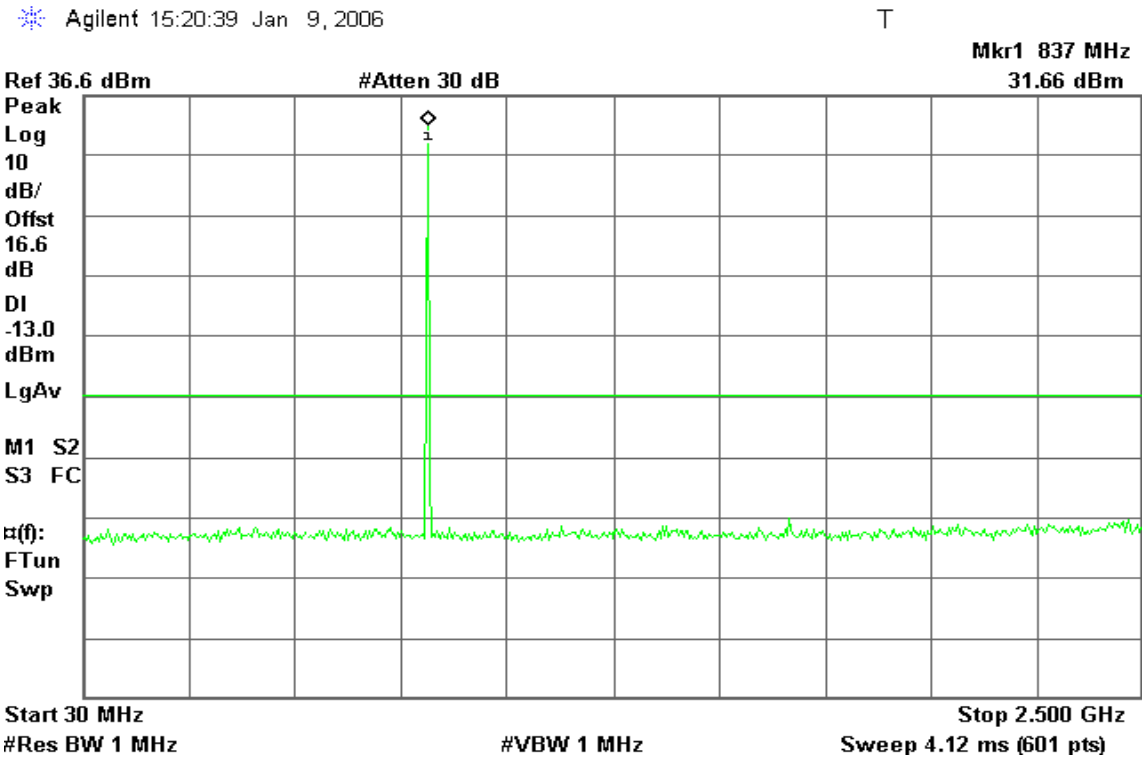


Figure 7-10: Out of Band emission at antenna terminals – GPRS CH Mid

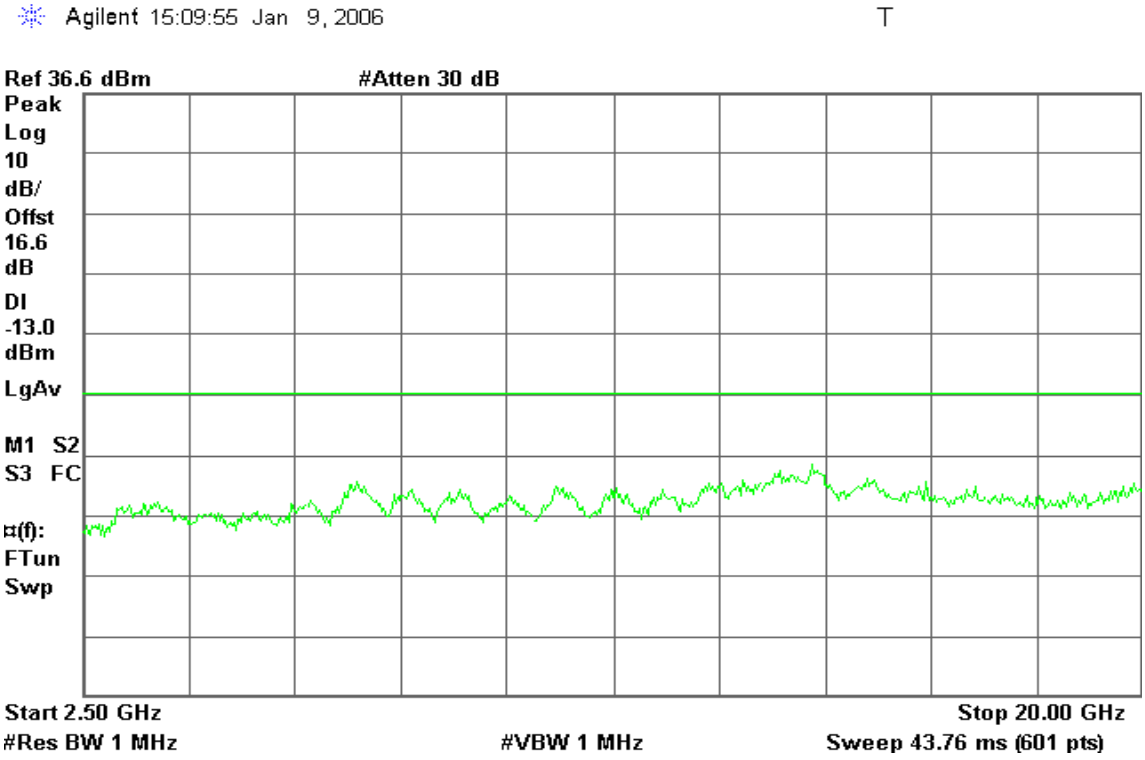


Figure 7-11: Out of Band emission at antenna terminals – GPRS CH High

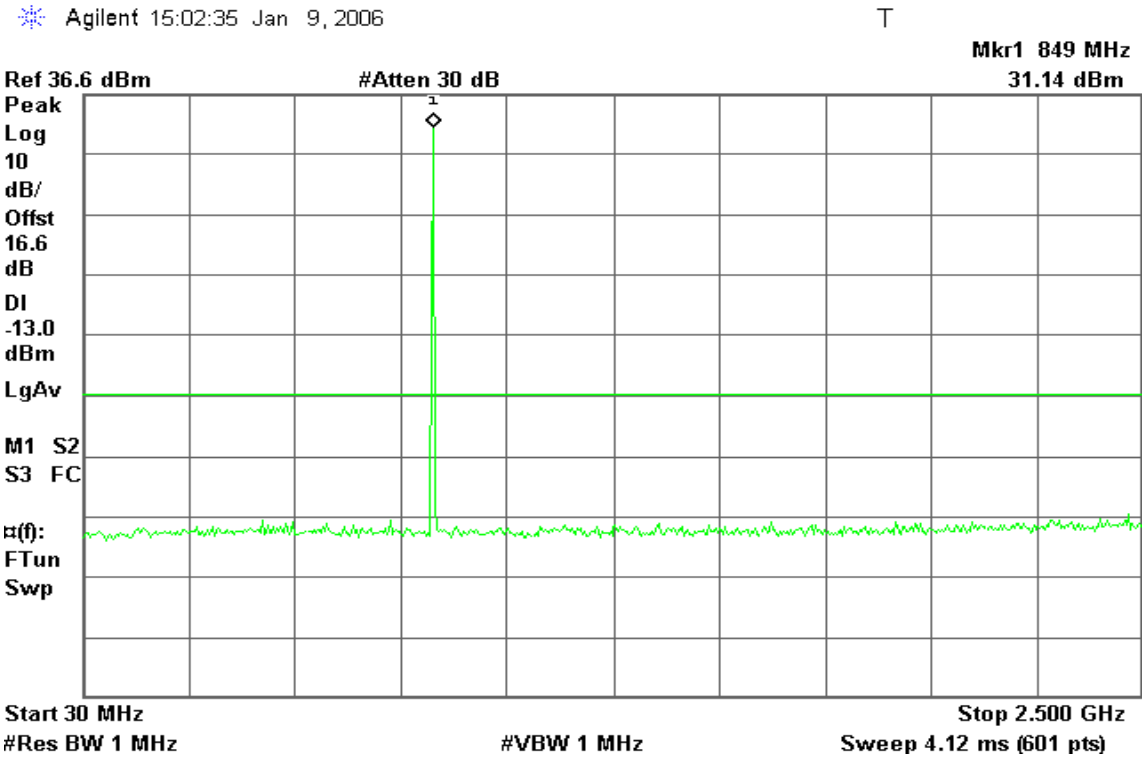
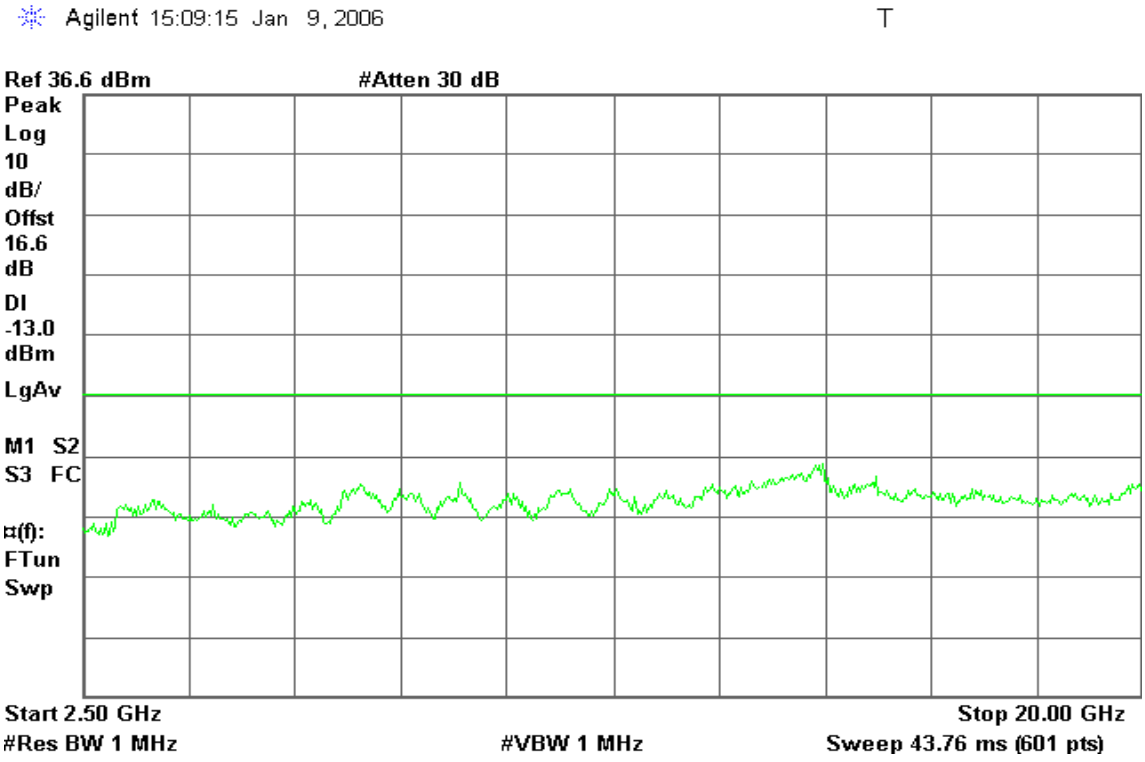


Figure 7-12: Out of Band emission at antenna terminals – GPRS CH High



GSM 1900

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

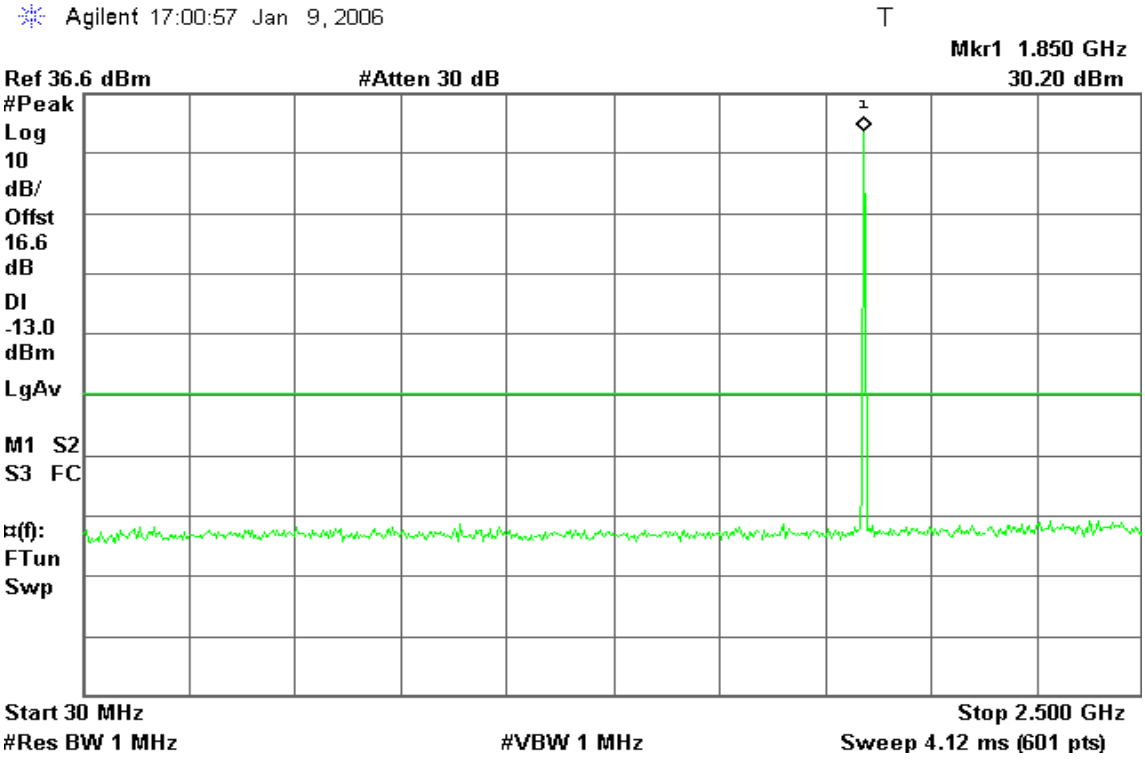


Figure 8-2: Out of Band emission at antenna terminals – GSM CH Low

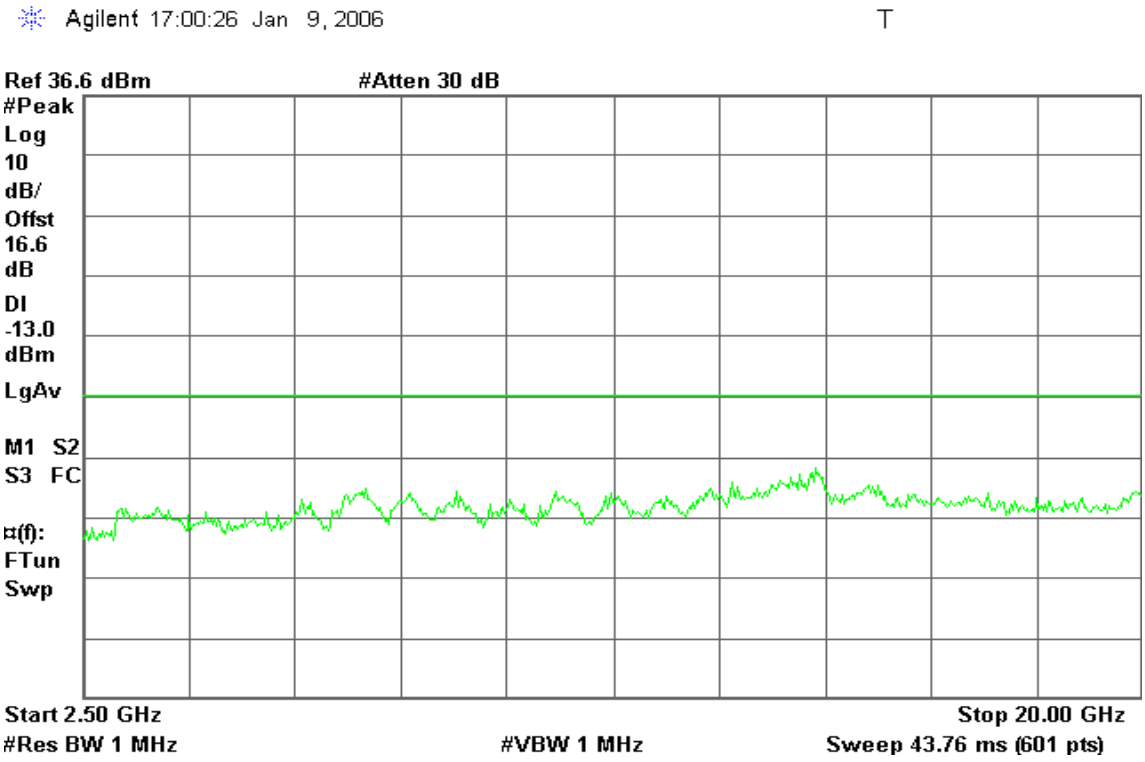


Figure 8-3: Out of Band emission at antenna terminals – GSM CH Mid

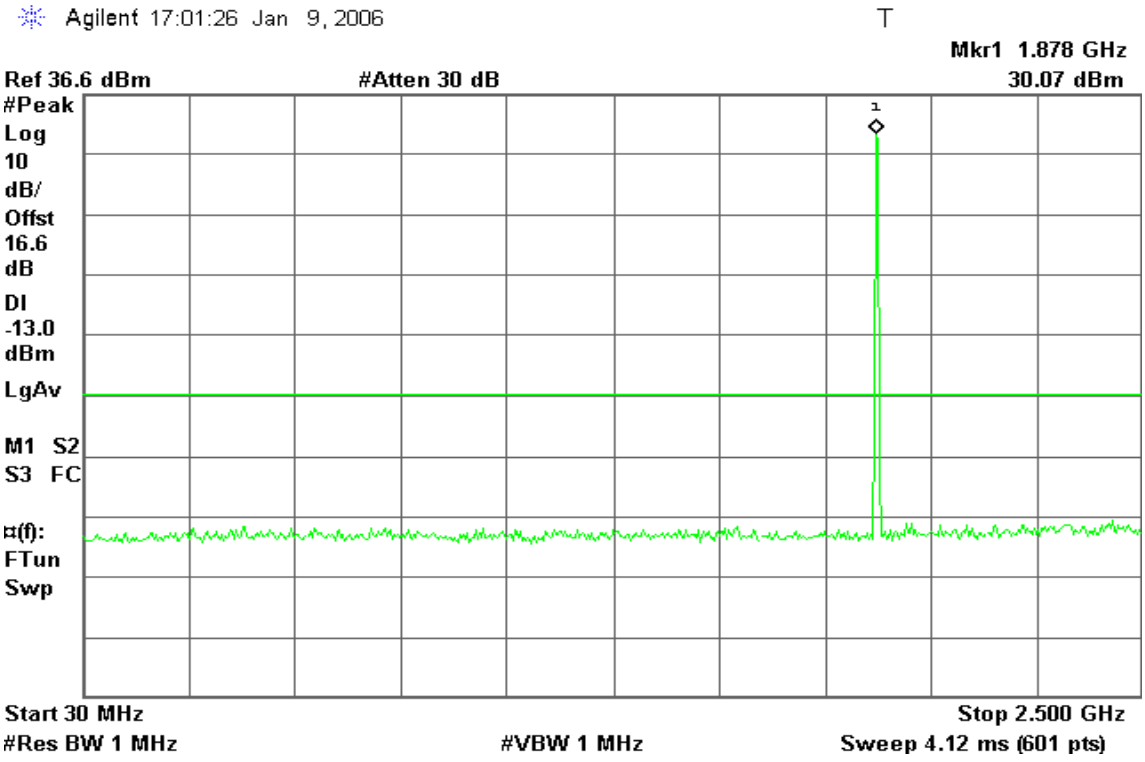


Figure 8-4: Out of Band emission at antenna terminals – GSM CH Mid

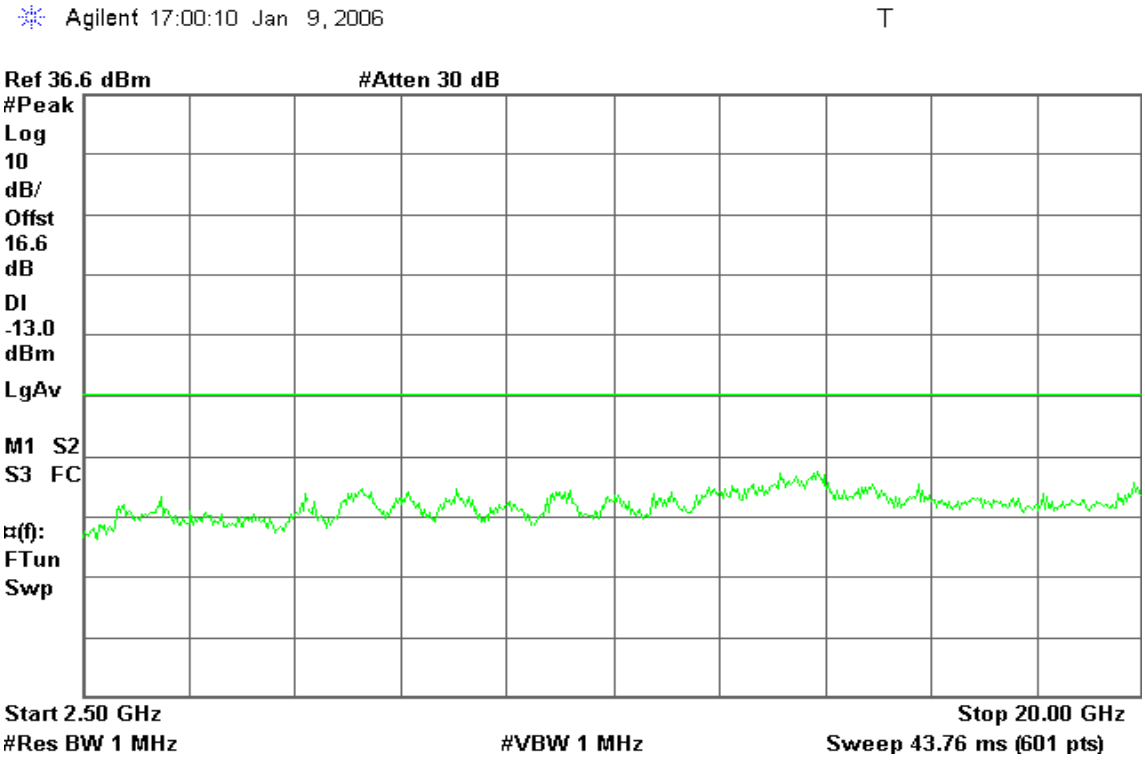


Figure 8-5: Out of Band emission at antenna terminals – GSM CH High

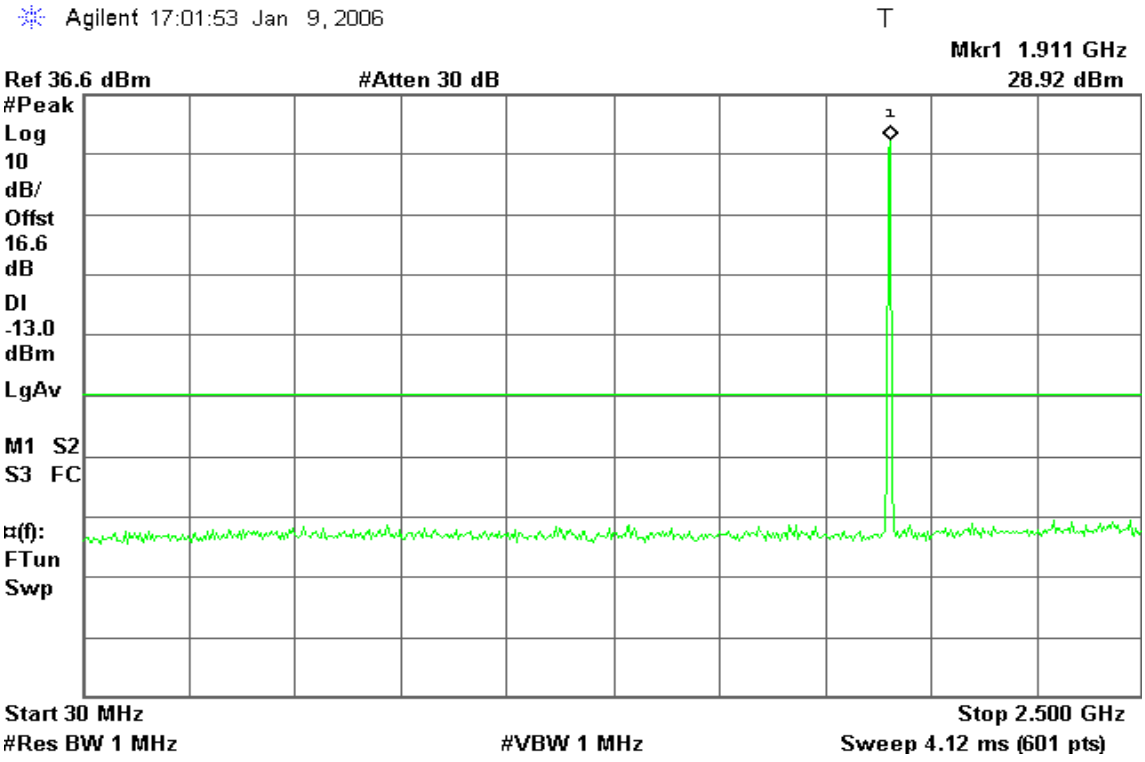
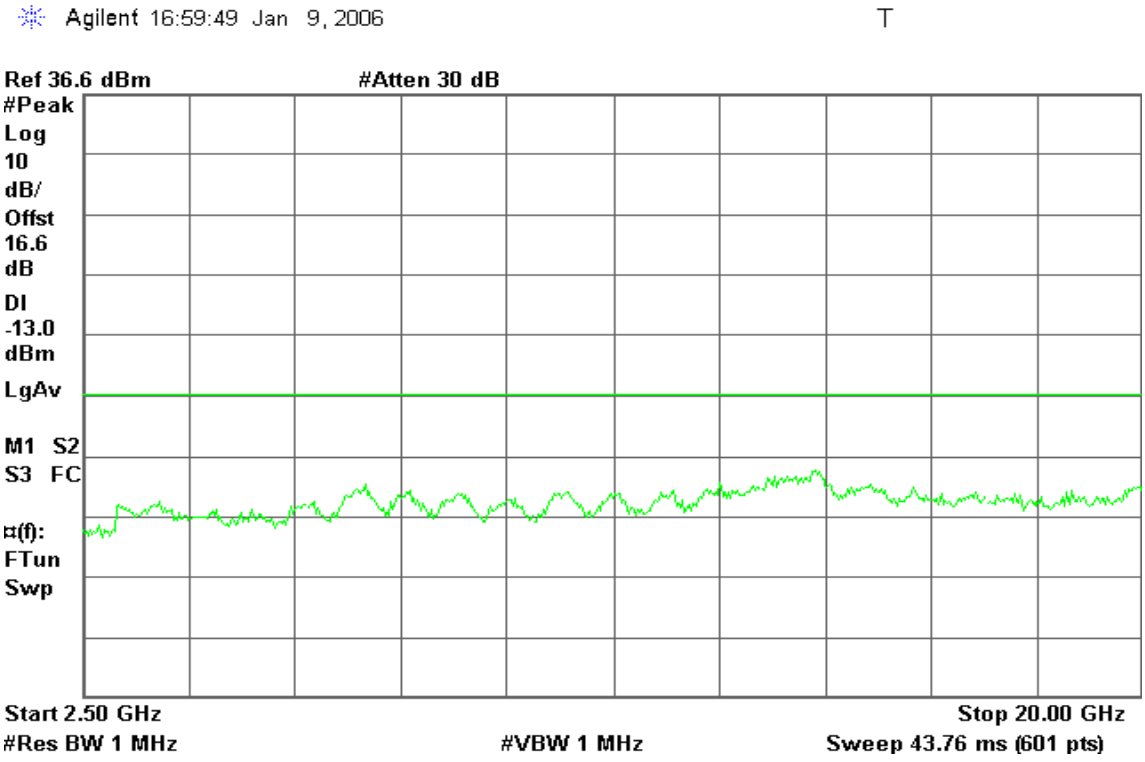


Figure 8-6: Out of Band emission at antenna terminals – GSM CH High



GPRS 1900

Figure 8-7: Out of Band emission at antenna terminals – GPRS CH Low

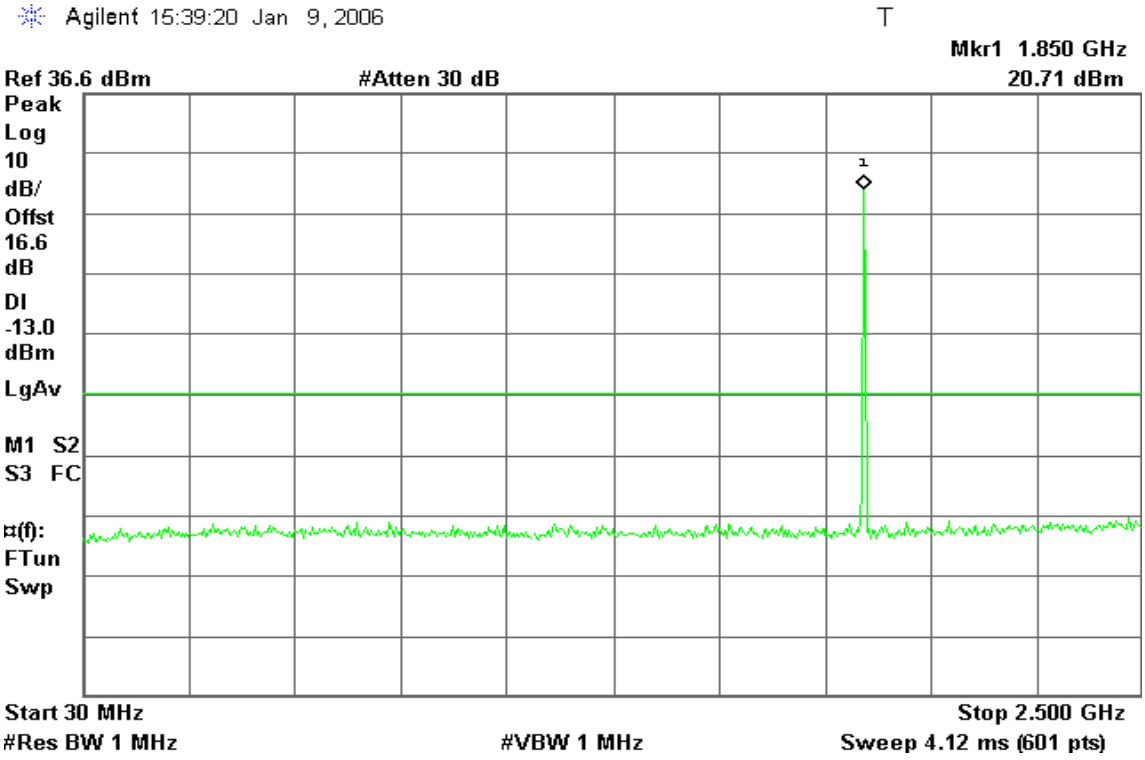


Figure 8-8: Out of Band emission at antenna terminals – GPRS CH Low

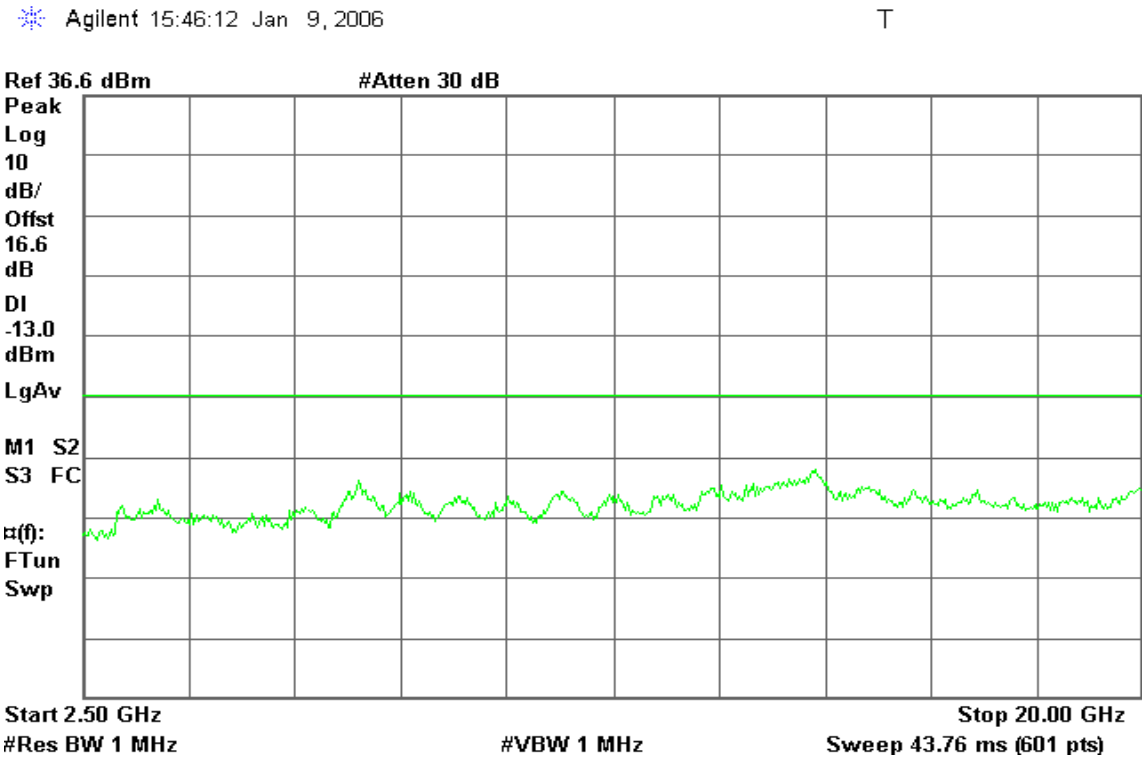


Figure 8-9: Out of Band emission at antenna terminals – GPRS CH Mid

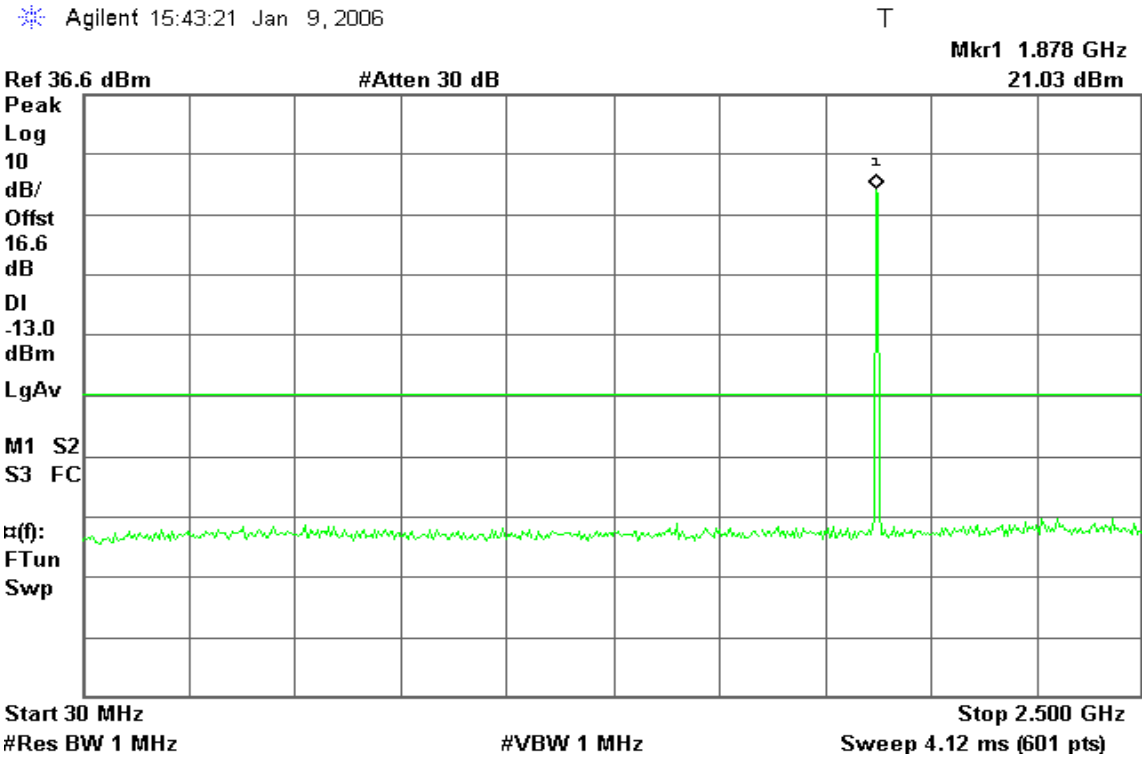


Figure 8-10: Out of Band emission at antenna terminals – GPRS CH Mid

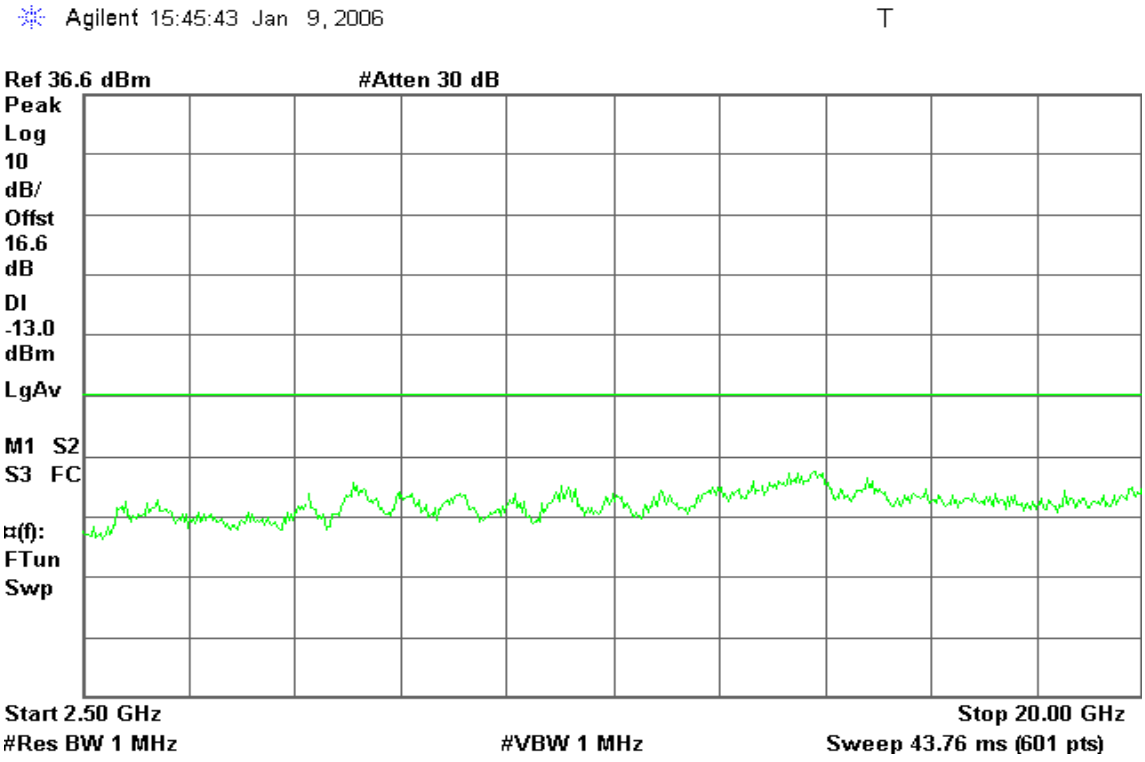


Figure 8-11: Out of Band emission at antenna terminals – GPRS CH High

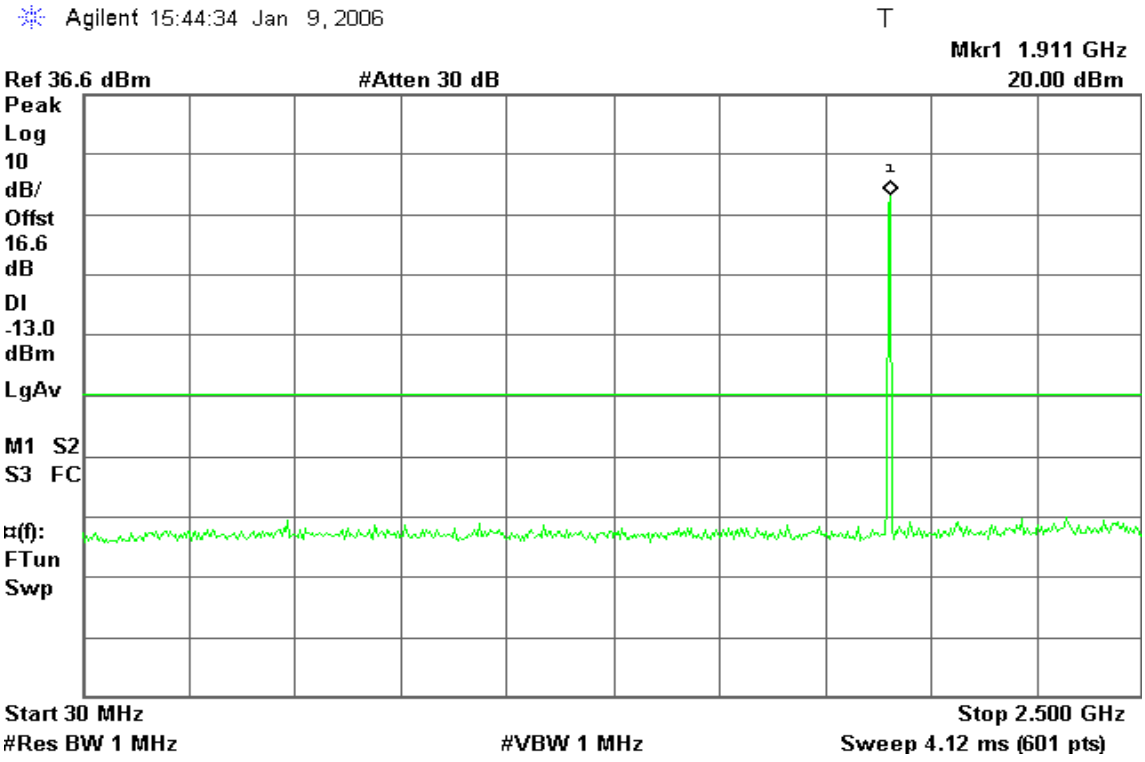
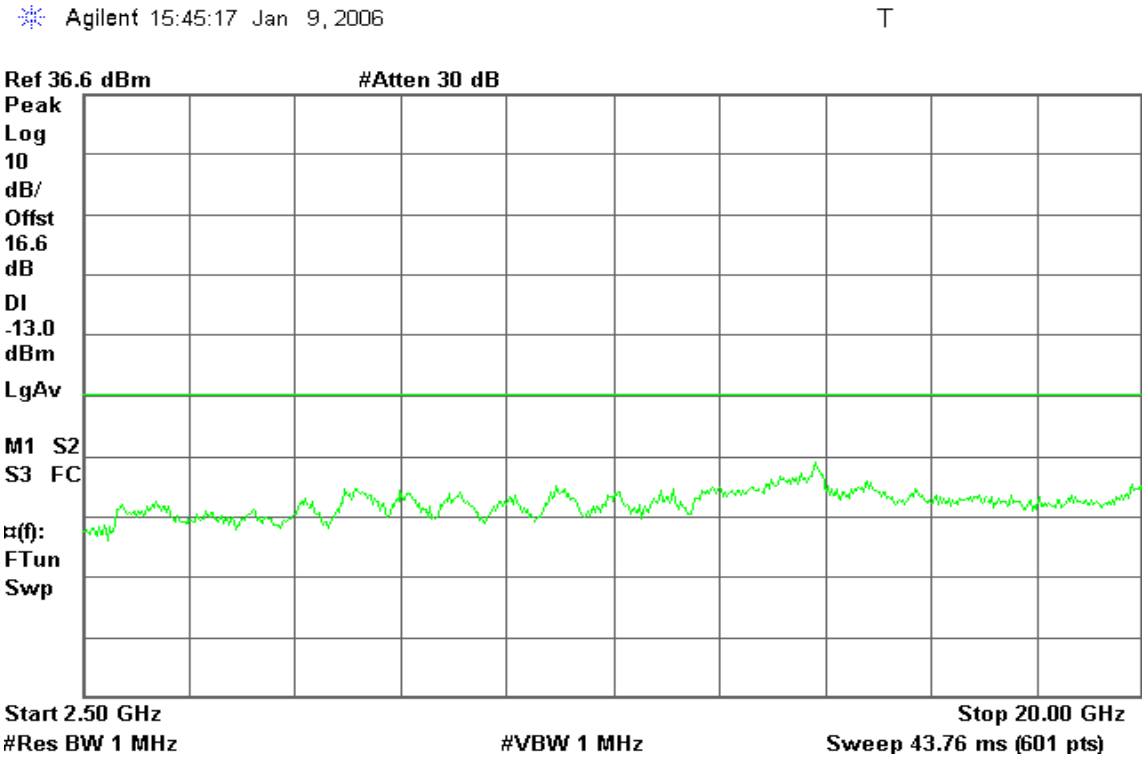


Figure 8-12: Out of Band emission at antenna terminals – GPRS CH High



GSM 850

Figure 9-1: Band Edge emissions – GSM CH Low

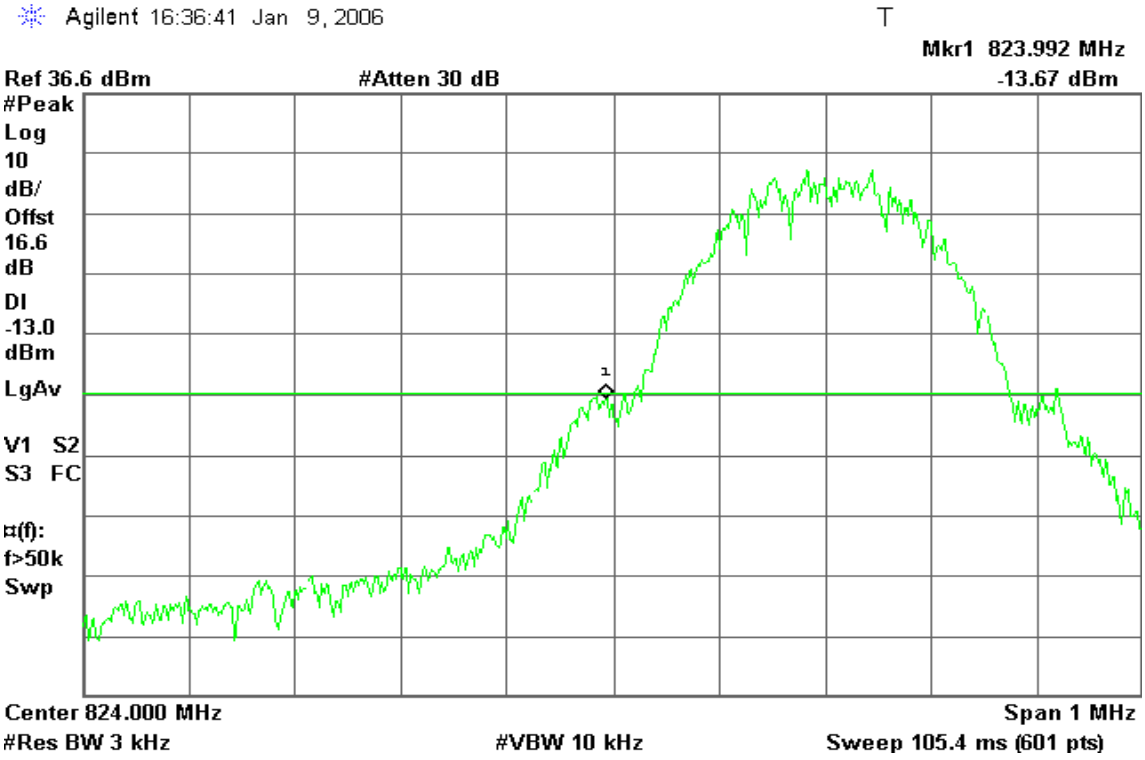
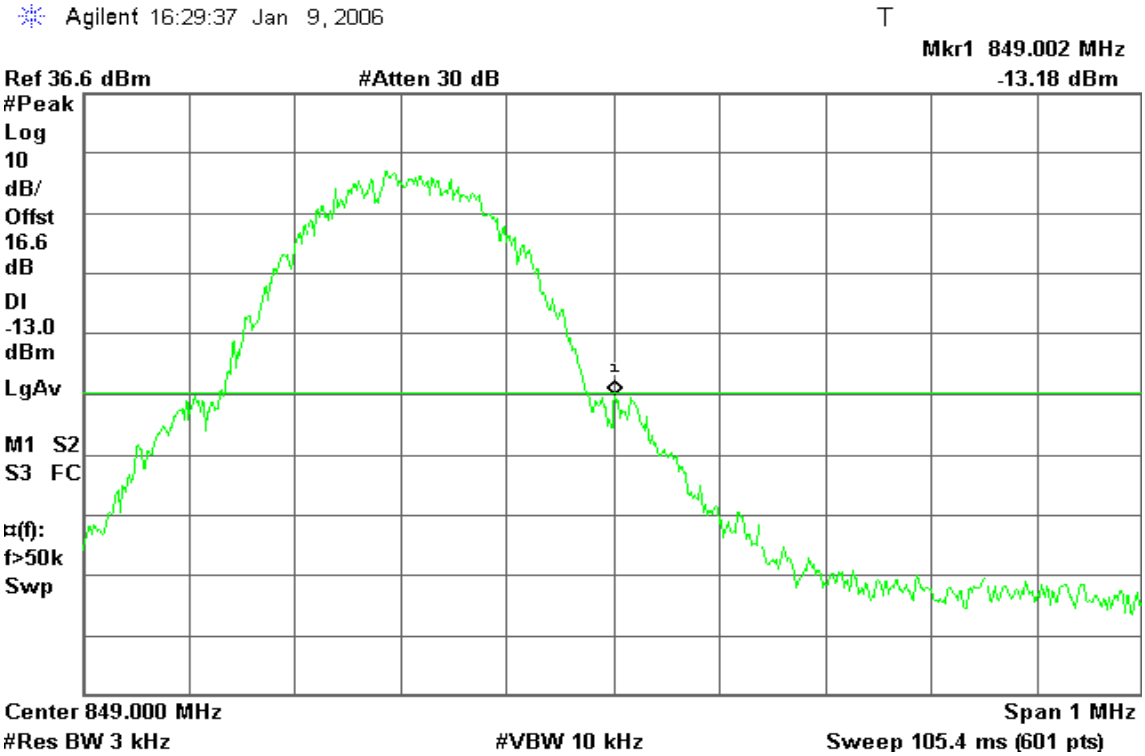


Figure 9-2: Band Edge emissions – GSM CH High



GPRS 850

Figure 9-3: Band Edge emissions – GPRS CH Low

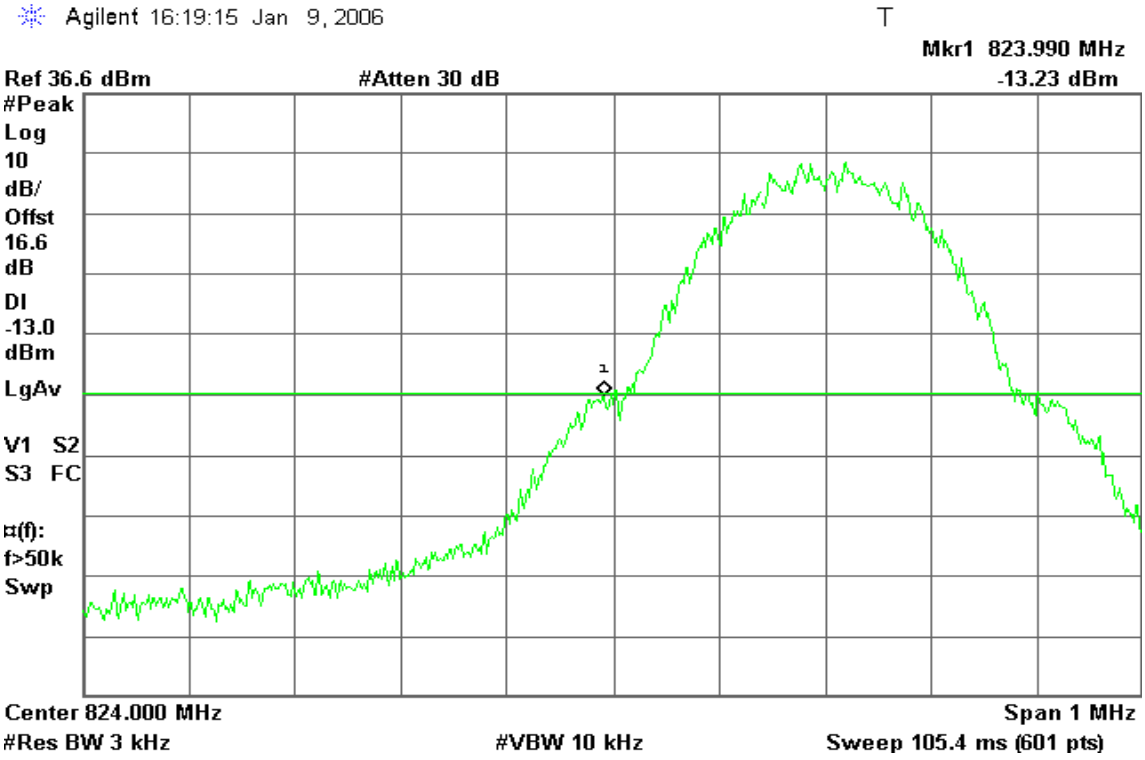
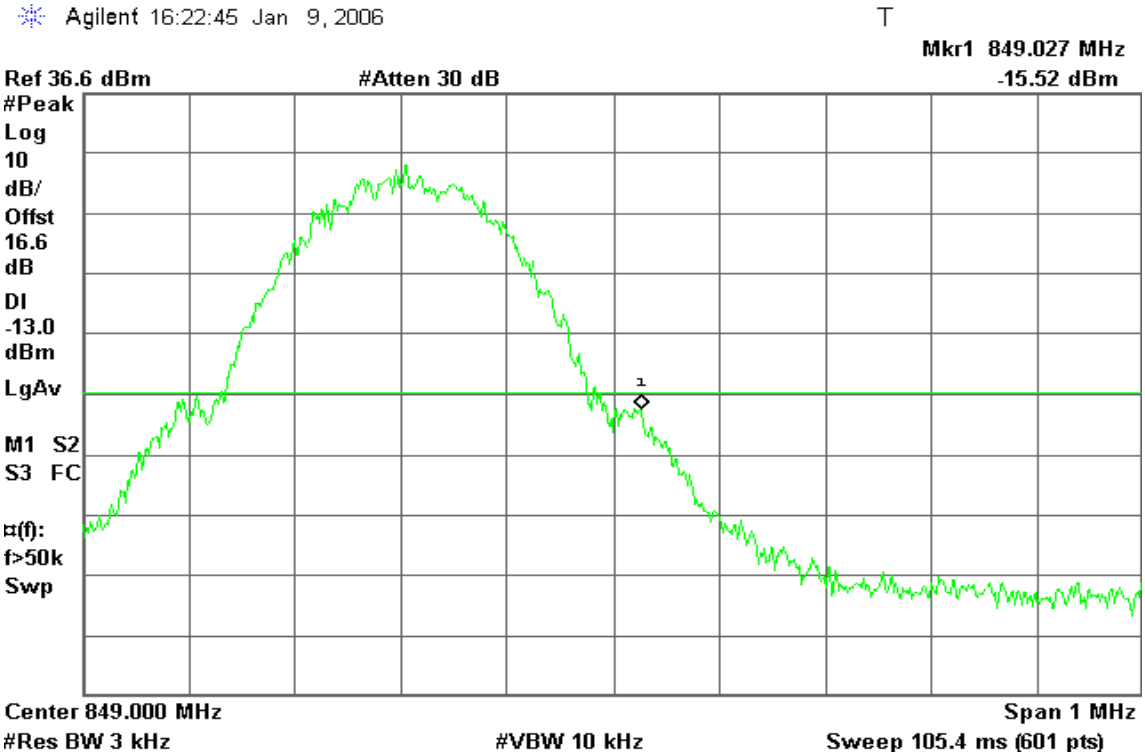


Figure 9-4: Band Edge emissions –GPRS CH High



GSM 1900

Figure 10-1: Band Edge emissions – GSM CH Low

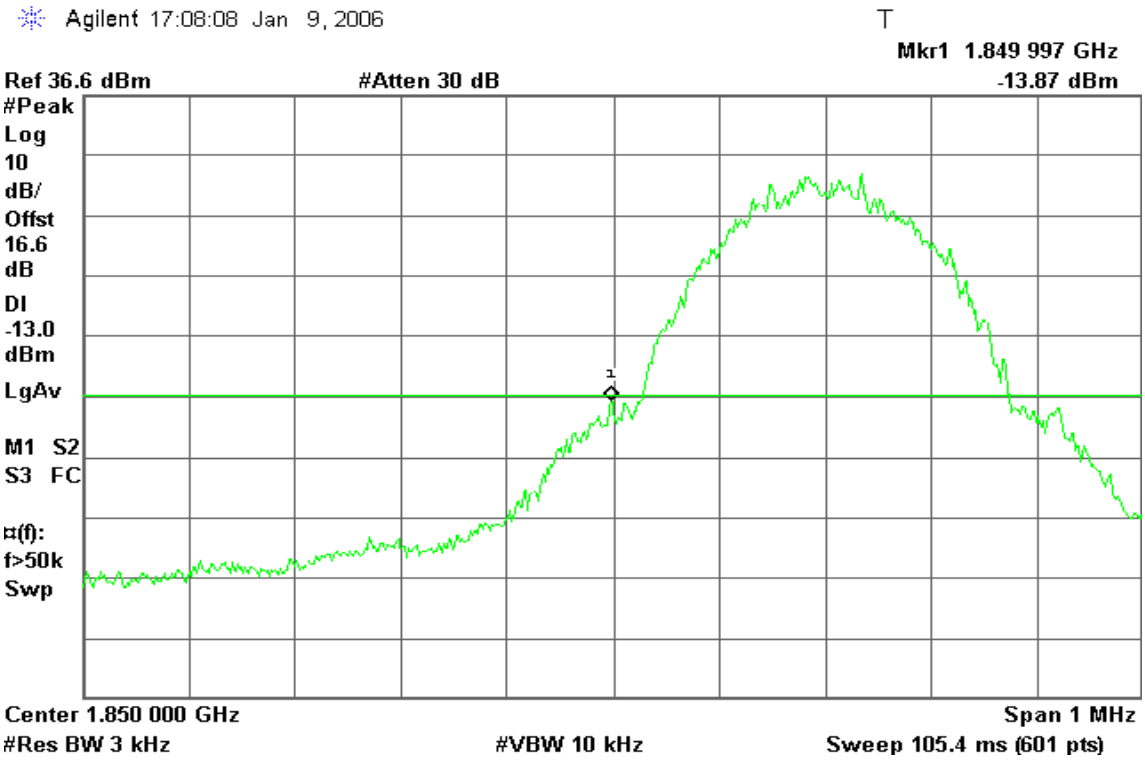
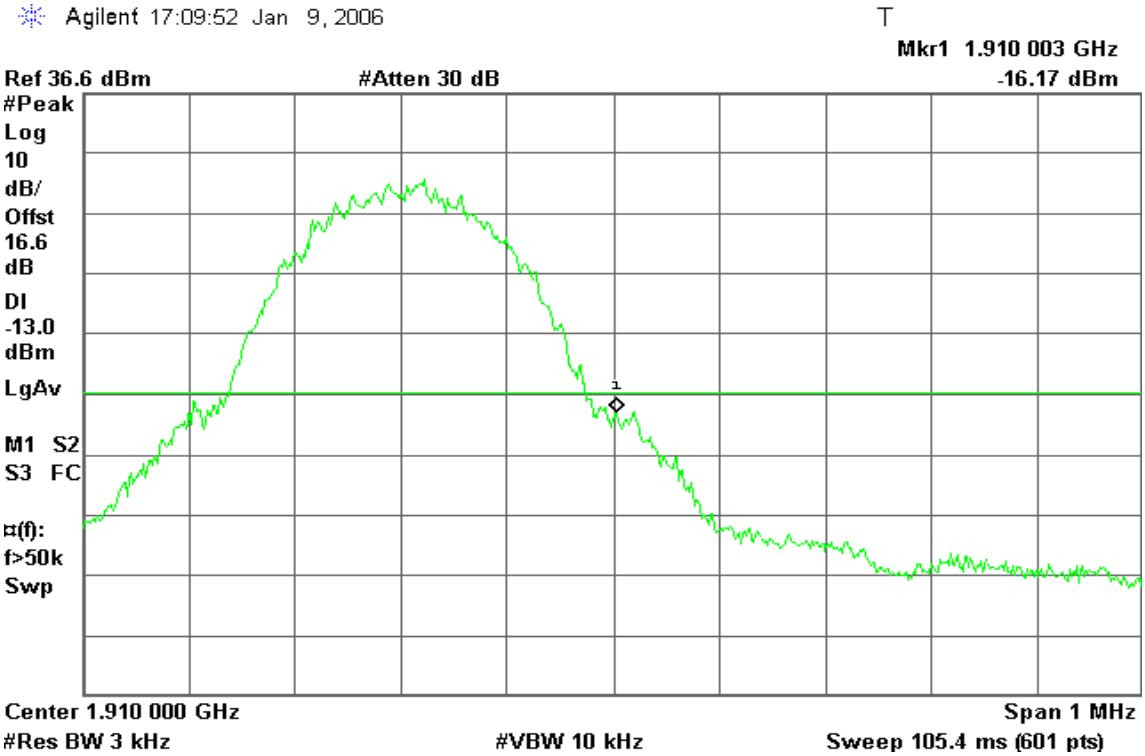


Figure 10-2: Band Edge emissions – GSM CH High



GPRS 1900

Figure 10-3: Band Edge emissions – GPRS CH Low

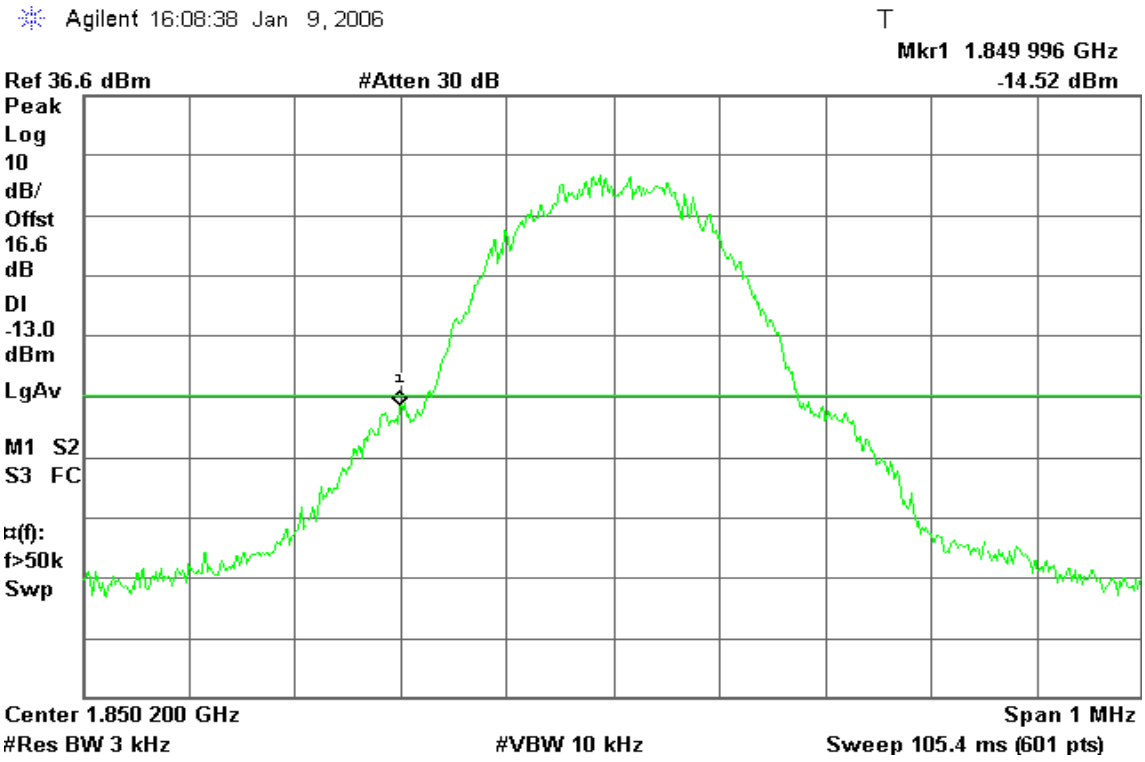
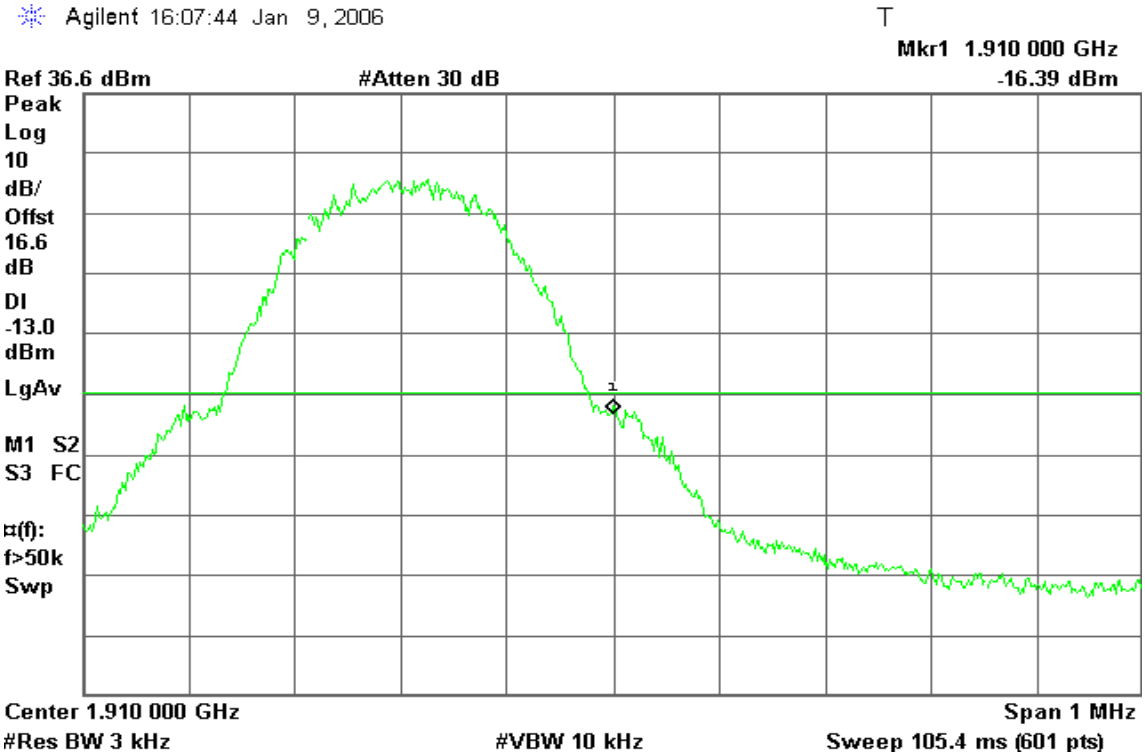


Figure 10-4: Band Edge emissions – GPRS CH High



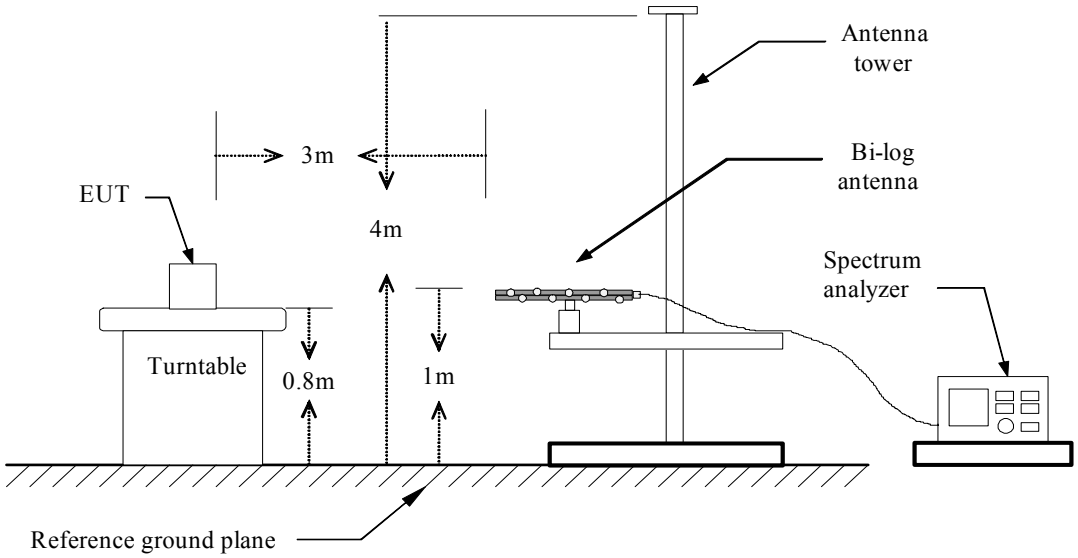
7.5 FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT

LIMIT

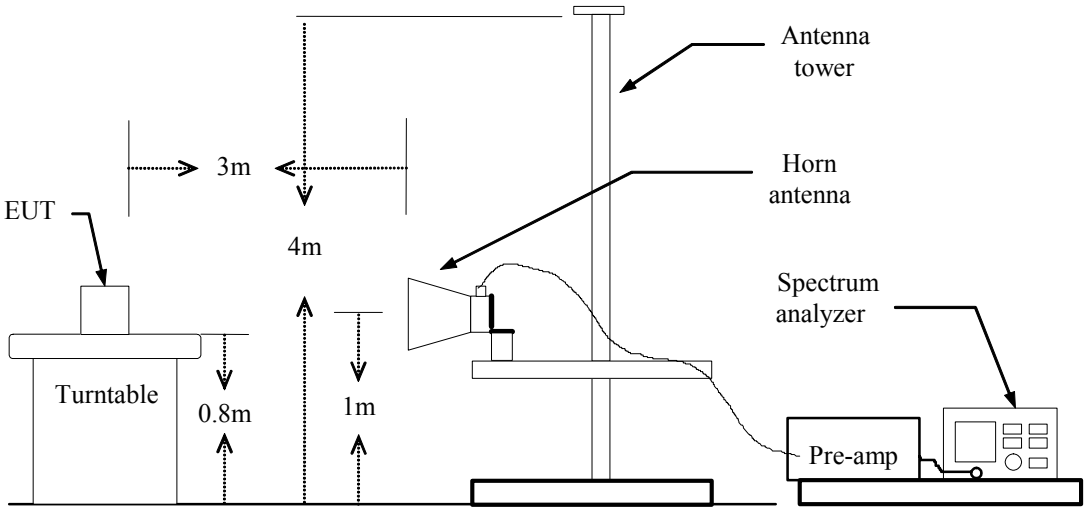
According to FCC §2.1053

Test Configuration

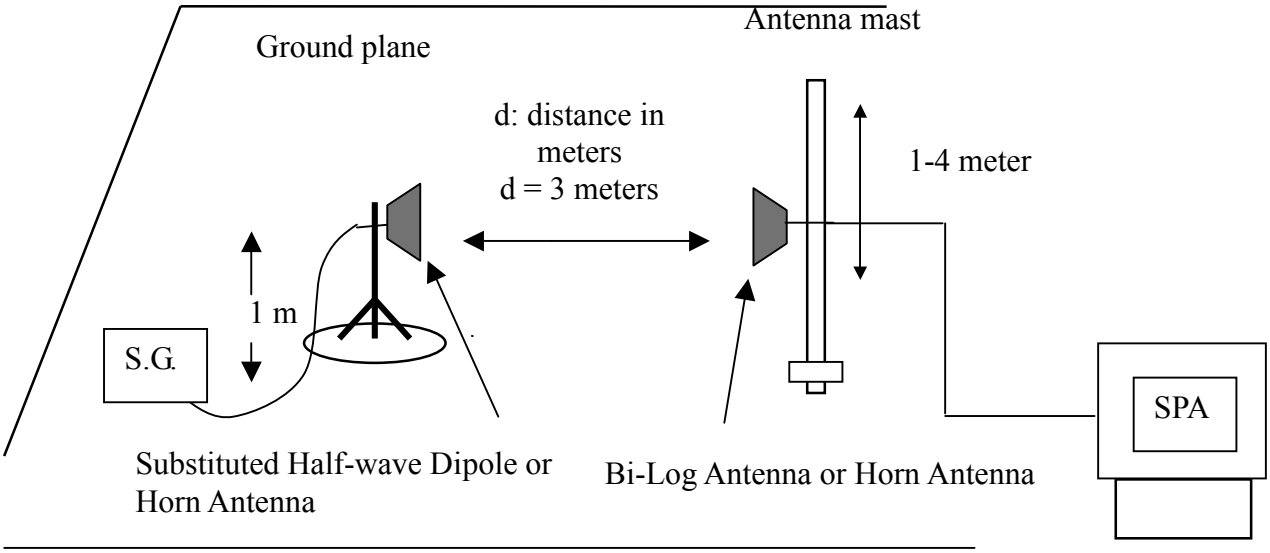
Below 1 GHz



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.

ERP = S.G. output (dBm) + Antenna Gain (dBd) – Cable (dB)

EIRP = S.G. output (dBm) + Antenna Gain (dBi) – 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:** December 7, 2005

Temperature: 25°C **Tested by:** Jason Lin

Humidity: 60 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Reading level (dBuV)	Antenna Polarization	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
33.88	-55.00	V	-16.63	-71.62	-13.00	-58.62
42.61	-61.11	V	-12.86	-73.97	-13.00	-60.97
54.25	-56.63	V	-15.04	-71.67	-13.00	-58.67
143.49	-63.25	V	-11.93	-75.18	-13.00	-62.18
228.85	-63.42	V	-14.28	-77.70	-13.00	-64.70
341.37	-61.62	V	-13.59	-75.21	-13.00	-62.21
41.64	-62.85	H	-12.18	-75.03	-13.00	-62.03
127.00	-59.45	H	-14.69	-74.13	-13.00	-61.13
143.49	-60.17	H	-13.70	-73.87	-13.00	-60.87
155.13	-61.76	H	-13.17	-74.92	-13.00	-61.92
349.13	-61.23	H	-13.58	-74.81	-13.00	-61.81
689.60	-64.35	H	-6.04	-70.39	-13.00	-57.39

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:** December 7, 2005

Temperature: 25°C **Tested by:** Jason Lin

Humidity: 60 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Reading level (dBuV)	Antenna Polarization	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
32.91	-54.21	V	-17.33	-71.54	-13.00	-58.54
56.19	-56.81	V	-14.86	-71.67	-13.00	-58.67
143.49	-62.98	V	-11.93	-74.91	-13.00	-61.91
230.79	-63.08	V	-14.21	-77.29	-13.00	-64.29
351.07	-61.83	V	-13.44	-75.27	-13.00	-62.27
714.82	-64.55	V	-5.76	-70.30	-13.00	-57.30
43.58	-61.72	H	-12.79	-74.51	-13.00	-61.51
127.00	-58.35	H	-14.69	-73.04	-13.00	-60.04
155.13	-60.67	H	-13.17	-73.84	-13.00	-60.84
224.00	-61.65	H	-13.36	-75.01	-13.00	-62.01
346.22	-61.31	H	-13.63	-74.94	-13.00	-61.94
393.75	-63.37	H	-11.11	-74.48	-13.00	-61.48

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: GSM 850 / TX / CH 251 **Test Date:** December 7, 2005

Temperature: 25°C **Tested by:** Jason Lin

Humidity: 60 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Reading level (dBuV)	Antenna Polarization	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
56.19	-56.09	V	-14.86	-70.94	-13.00	-57.94
127.97	-61.26	V	-13.18	-74.44	-13.00	-61.44
231.76	-62.55	V	-14.19	-76.73	-13.00	-63.73
349.13	-61.43	V	-13.49	-74.92	-13.00	-61.92
546.04	-64.33	V	-7.92	-72.25	-13.00	-59.25
874.87	-64.55	V	-3.88	-68.43	-13.00	-55.43
42.61	-62.77	H	-12.49	-75.26	-13.00	-62.26
125.06	-59.87	H	-14.61	-74.48	-13.00	-61.48
155.13	-60.33	H	-13.17	-73.50	-13.00	-60.50
277.35	-62.62	H	-13.64	-76.26	-13.00	-63.26
343.31	-61.69	H	-13.68	-75.37	-13.00	-62.37
435.46	-63.92	H	-10.39	-74.31	-13.00	-61.31

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:** December 7, 2005

Temperature: 25°C **Tested by:** Jason Lin

Humidity: 60 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Reading level (dBuV)	Antenna Polarization	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
33.88	-54.28	V	-16.63	-70.91	-13.00	-57.91
44.55	-60.40	V	-12.46	-72.87	-13.00	-59.87
54.25	-57.02	V	-15.04	-72.06	-13.00	-59.06
232.73	-61.90	V	-14.16	-76.06	-13.00	-63.06
349.13	-62.04	V	-13.49	-75.53	-13.00	-62.53
N/A						
40.67	-63.00	H	-11.88	-74.88	-13.00	-61.88
125.06	-59.73	H	-14.61	-74.34	-13.00	-61.34
143.49	-60.81	H	-13.70	-74.52	-13.00	-61.52
155.13	-60.06	H	-13.17	-73.23	-13.00	-60.23
221.09	-62.93	H	-13.52	-76.45	-13.00	-63.45
346.22	-61.91	H	-13.63	-75.54	-13.00	-62.54

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:** December 7, 2005

Temperature: 25°C **Tested by:** Jason Lin

Humidity: 60% RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Reading level (dBuV)	Antenna Polarization	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
54.25	-56.10	V	-15.04	-71.14	-13.00	-58.14
127.97	-61.35	V	-13.18	-74.54	-13.00	-61.54
143.49	-62.78	V	-11.93	-74.71	-13.00	-61.71
200.72	-63.89	V	-12.59	-76.49	-13.00	-63.49
230.79	-61.88	V	-14.21	-76.09	-13.00	-63.09
344.28	-61.58	V	-13.55	-75.13	-13.00	-62.13
41.64	-62.26	H	-12.18	-74.45	-13.00	-61.45
125.06	-59.30	H	-14.61	-73.91	-13.00	-60.91
143.49	-58.58	H	-13.70	-72.28	-13.00	-59.28
155.13	-60.54	H	-13.17	-73.71	-13.00	-60.71
281.23	-62.66	H	-13.59	-76.25	-13.00	-63.25
342.34	-61.56	H	-13.70	-75.25	-13.00	-62.25

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:** December 7, 2005

Temperature: 25°C **Tested by:** Jason Lin

Humidity: 60 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Reading level (dBuV)	Antenna Polarization	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
42.61	-60.63	V	-12.86	-73.49	-13.00	-60.49
55.22	-56.35	V	-14.95	-71.30	-13.00	-58.30
165.80	-63.19	V	-12.49	-75.68	-13.00	-62.68
198.78	-62.72	V	-12.62	-75.34	-13.00	-62.34
287.05	-63.00	V	-13.45	-76.45	-13.00	-63.45
349.13	-61.25	V	-13.49	-74.74	-13.00	-61.74
44.55	-62.17	H	-13.10	-75.27	-13.00	-62.27
80.44	-59.12	H	-18.29	-77.41	-13.00	-64.41
126.03	-59.76	H	-14.65	-74.40	-13.00	-61.40
155.13	-58.46	H	-13.17	-71.63	-13.00	-58.63
234.67	-63.09	H	-12.93	-76.02	-13.00	-63.02
373.38	-59.22	H	-12.80	-72.03	-13.00	-59.03

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:** December 7, 2005

Temperature: 25°C **Tested by:** Jason Lin

Humidity: 60 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Reading level (dBuV)	Antenna Polarization	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
1651.00	-32.00	V	0.73	-31.27	-13.00	-18.27
1931.00	-37.55	V	0.73	-36.82	-13.00	-23.82
2470.00	-47.42	V	3.32	-44.11	-13.00	-31.11
3296.00	-48.02	V	4.82	-43.20	-13.00	-30.20
4122.00	-51.45	V	5.76	-45.69	-13.00	-32.69
5767.00	-52.44	V	6.57	-45.87	-13.00	-32.87
1651.00	-28.54	H	1.59	-26.96	-13.00	-13.96
1931.00	-29.68	H	1.20	-28.48	-13.00	-15.48
2470.00	-46.43	H	3.58	-42.85	-13.00	-29.85
3296.00	-51.64	H	5.47	-46.17	-13.00	-33.17
4122.00	-52.91	H	6.17	-46.74	-13.00	-33.74
6593.00	-53.74	H	10.19	-43.55	-13.00	-30.55

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:** December 7, 2005

Temperature: 25°C **Tested by:** Jason Lin

Humidity: 60 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Reading level (dBuV)	Antenna Polarization	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
1672.00	-35.88	V	0.73	-35.15	-13.00	-22.15
1931.00	-37.42	V	0.73	-36.69	-13.00	-23.69
2512.00	-52.43	V	3.51	-48.92	-13.00	-35.92
3345.00	-47.97	V	4.83	-43.13	-13.00	-30.13
4185.00	-49.98	V	5.81	-44.17	-13.00	-31.17
6691.00	-54.67	V	9.90	-44.77	-13.00	-31.77
1672.00	-32.34	H	1.56	-30.78	-13.00	-17.78
1931.00	-29.97	H	1.20	-28.77	-13.00	-15.77
2512.00	-45.91	H	3.78	-42.13	-13.00	-29.13
3345.00	-50.43	H	5.46	-44.97	-13.00	-31.97
4185.00	-48.52	H	6.24	-42.28	-13.00	-29.28
5858.00	-50.55	H	7.34	-43.20	-13.00	-30.20

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: GSM 850 / TX / CH 251 **Test Date:** December 7, 2005

Temperature: 25°C **Tested by:** Jason Lin

Humidity: 60 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Reading level (dBuV)	Antenna Polarization	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
1700.00	-37.49	V	0.73	-36.76	-13.00	-23.76
1931.00	-37.40	V	0.73	-36.67	-13.00	-23.67
2547.00	-49.33	V	3.60	-45.73	-13.00	-32.73
3394.00	-50.94	V	4.85	-46.09	-13.00	-33.09
4248.00	-51.03	V	5.87	-45.16	-13.00	-32.16
5942.00	-46.00	V	6.85	-39.15	-13.00	-26.15
1700.00	-34.88	H	1.52	-33.36	-13.00	-20.36
1931.00	-30.08	H	1.20	-28.88	-13.00	-15.88
2547.00	-52.16	H	3.91	-48.25	-13.00	-35.25
3394.00	-47.67	H	5.45	-42.23	-13.00	-29.23
4248.00	-47.93	H	6.31	-41.62	-13.00	-28.62
5942.00	-49.23	H	7.51	-41.72	-13.00	-28.72

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:** December 7, 2005

Temperature: 25°C **Tested by:** Jason Lin

Humidity: 60 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Reading level (dBuV)	Antenna Polarization	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
1651.00	-35.14	V	0.73	-34.41	-13.00	-21.41
2470.00	-47.74	V	3.32	-44.42	-13.00	-31.42
3296.00	-50.61	V	4.82	-45.79	-13.00	-32.79
4122.00	-53.51	V	5.76	-47.75	-13.00	-34.75
5767.00	-49.06	V	6.57	-42.49	-13.00	-29.49
6593.00	-55.59	V	9.63	-45.96	-13.00	-32.96
1651.00	-31.45	H	1.59	-29.86	-13.00	-16.86
2470.00	-48.78	H	3.58	-45.20	-13.00	-32.20
3296.00	-52.98	H	5.47	-47.51	-13.00	-34.51
4122.00	-53.86	H	6.17	-47.69	-13.00	-34.69
5767.00	-54.00	H	7.17	-46.84	-13.00	-33.84
6593.00	-54.98	H	10.19	-44.79	-13.00	-31.79

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:** December 7, 2005

Temperature: 25°C **Tested by:** Jason Lin

Humidity: 60% RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Reading level (dBuV)	Antenna Polarization	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
1672.00	-37.91	V	0.73	-37.18	-13.00	-24.18
2512.00	-51.99	V	3.51	-48.48	-13.00	-35.48
3345.00	-50.70	V	4.83	-45.87	-13.00	-32.87
4185.00	-49.50	V	5.81	-43.69	-13.00	-30.69
5018.00	-53.20	V	6.43	-46.77	-13.00	-33.77
6691.00	-56.09	V	9.90	-46.19	-13.00	-33.19
1672.00	-34.33	H	1.56	-32.77	-13.00	-19.77
2512.00	-46.75	H	3.78	-42.96	-13.00	-29.96
3345.00	-50.48	H	5.46	-45.02	-13.00	-32.02
4185.00	-50.57	H	6.24	-44.33	-13.00	-31.33
5018.00	-53.33	H	7.22	-46.11	-13.00	-33.11
6691.00	-54.86	H	10.46	-44.41	-13.00	-31.41

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:** December 7, 2005

Temperature: 25°C **Tested by:** Jason Lin

Humidity: 60 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Reading level (dBuV)	Antenna Polarization	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
1700.00	-39.08	V	0.73	-38.35	-13.00	-25.35
2547.00	-51.22	V	3.60	-47.62	-13.00	-34.62
3394.00	-51.97	V	4.85	-47.12	-13.00	-34.12
4248.00	-48.62	V	5.87	-42.76	-13.00	-29.76
5095.00	-51.95	V	6.38	-45.56	-13.00	-32.56
5942.00	-44.54	V	6.85	-37.69	-13.00	-24.69
1700.00	-37.06	H	1.52	-35.54	-13.00	-22.54
2547.00	-48.17	H	3.91	-44.26	-13.00	-31.26
3394.00	-48.18	H	5.45	-42.74	-13.00	-29.74
4248.00	-48.50	H	6.31	-42.19	-13.00	-29.19
5095.00	-50.00	H	7.13	-42.88	-13.00	-29.88
5942.00	-52.41	H	7.51	-44.91	-13.00	-31.91

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.*

Below 1GHz

Operation Mode: GSM 1900 / TX / CH 512 **Test Date:** December 7, 2005

Temperature: 25°C **Tested by:** Jason Lin

Humidity: 60 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Reading level (dBuV)	Antenna Polarization	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
43.58	-30.84	V	-12.66	-43.50	-13.00	-30.50
56.19	-34.97	V	-14.86	-49.82	-13.00	-36.82
127.00	-37.91	V	-13.27	-51.18	-13.00	-38.18
204.60	-41.58	V	-13.52	-55.10	-13.00	-42.10
279.29	-49.72	V	-13.41	-63.13	-13.00	-50.13
348.16	-47.45	V	-13.50	-60.95	-13.00	-47.95
62.01	-44.21	H	-15.88	-60.09	-13.00	-47.09
127.00	-35.55	H	-14.69	-50.23	-13.00	-37.23
206.54	-40.73	H	-13.88	-54.62	-13.00	-41.62
225.94	-40.22	H	-13.26	-53.48	-13.00	-40.48
278.32	-49.20	H	-13.62	-62.81	-13.00	-49.81
338.46	-44.58	H	-13.77	-58.35	-13.00	-45.35

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:** December 7, 2005

Temperature: 25°C **Tested by:** Jason Lin

Humidity: 60% RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Reading level (dBuV)	Antenna Polarization	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
56.19	-35.69	V	-14.86	-50.55	-13.00	-37.55
130.88	-36.99	V	-12.94	-49.94	-13.00	-36.94
177.44	-48.71	V	-13.05	-61.76	-13.00	-48.76
201.69	-41.56	V	-12.83	-54.39	-13.00	-41.39
276.38	-49.63	V	-13.51	-63.14	-13.00	-50.14
341.37	-46.84	V	-13.59	-60.43	-13.00	-47.43
62.01	-44.68	H	-15.88	-60.56	-13.00	-47.56
126.03	-35.07	H	-14.65	-49.72	-13.00	-36.72
187.14	-46.43	H	-14.32	-60.75	-13.00	-47.75
214.30	-42.19	H	-14.06	-56.25	-13.00	-43.25
273.47	-48.65	H	-13.75	-62.40	-13.00	-49.40
346.22	-47.01	H	-13.63	-60.64	-13.00	-47.64

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:** December 7, 2005

Temperature: 25°C **Tested by:** Jason Lin

Humidity: 60 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Reading level (dBuV)	Antenna Polarization	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
57.16	-36.31	V	-14.76	-51.07	-13.00	-38.07
126.03	-37.01	V	-13.36	-50.37	-13.00	-37.37
187.14	-44.59	V	-13.82	-58.42	-13.00	-45.42
226.91	-42.05	V	-14.37	-56.42	-13.00	-43.42
273.47	-50.41	V	-13.60	-64.01	-13.00	-51.01
344.28	-46.98	V	-13.55	-60.53	-13.00	-47.53
53.28	-44.54	H	-16.00	-60.54	-13.00	-47.54
127.00	-36.06	H	-14.69	-50.75	-13.00	-37.75
208.48	-41.34	H	-14.18	-55.53	-13.00	-42.53
230.79	-44.20	H	-13.02	-57.22	-13.00	-44.22
276.38	-49.37	H	-13.67	-63.04	-13.00	-50.04
344.28	-46.95	H	-13.66	-60.61	-13.00	-47.61

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:** December 7, 2005

Temperature: 25°C **Tested by:** Jason Lin

Humidity: 60 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Reading level (dBuV)	Antenna Polarization	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
33.88	-36.97	V	-16.63	-53.59	-13.00	-40.59
62.98	-39.44	V	-14.90	-54.34	-13.00	-41.34
132.82	-41.10	V	-12.81	-53.92	-13.00	-40.92
226.91	-44.34	V	-14.37	-58.70	-13.00	-45.70
282.20	-49.66	V	-13.41	-63.07	-13.00	-50.07
344.28	-47.41	V	-13.55	-60.96	-13.00	-47.96
62.98	-45.53	H	-16.05	-61.58	-13.00	-48.58
85.29	-43.97	H	-18.97	-62.94	-13.00	-49.94
127.00	-34.14	H	-14.69	-48.82	-13.00	-35.82
200.72	-43.30	H	-12.97	-56.27	-13.00	-43.27
209.45	-40.90	H	-14.33	-55.23	-13.00	-42.23
345.25	-46.84	H	-13.65	-60.48	-13.00	-47.48

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:** December 7, 2005

Temperature: 25°C **Tested by:** Jason Lin

Humidity: 60 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Reading level (dBuV)	Antenna Polarization	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
32.91	-35.86	V	-17.33	-53.19	-13.00	-40.19
55.22	-35.18	V	-14.95	-50.13	-13.00	-37.13
127.00	-37.54	V	-13.27	-50.81	-13.00	-37.81
212.36	-40.57	V	-14.78	-55.35	-13.00	-42.35
278.32	-49.83	V	-13.44	-63.27	-13.00	-50.27
353.98	-48.18	V	-13.33	-61.50	-13.00	-48.50
62.98	-45.55	H	-16.05	-61.60	-13.00	-48.60
124.09	-33.49	H	-14.58	-48.07	-13.00	-35.07
200.72	-42.12	H	-12.97	-55.09	-13.00	-42.09
217.21	-40.41	H	-13.81	-54.22	-13.00	-41.22
281.23	-49.24	H	-13.59	-62.83	-13.00	-49.83
349.13	-47.89	H	-13.58	-61.47	-13.00	-48.47

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:** December 7, 2005

Temperature: 25°C **Tested by:** Jason Lin

Humidity: 60 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Reading level (dBuV)	Antenna Polarization	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
62.01	-35.41	V	-14.77	-50.18	-13.00	-37.18
131.85	-40.23	V	-12.88	-53.11	-13.00	-40.11
205.57	-40.99	V	-13.76	-54.75	-13.00	-41.75
222.06	-42.27	V	-14.58	-56.85	-13.00	-43.85
282.20	-50.44	V	-13.41	-63.85	-13.00	-50.85
347.19	-46.69	V	-13.51	-60.20	-13.00	-47.20
127.97	-35.22	H	-14.72	-49.95	-13.00	-36.95
212.36	-39.16	H	-14.22	-53.38	-13.00	-40.38
223.03	-40.81	H	-13.42	-54.22	-13.00	-41.22
240.49	-47.25	H	-12.85	-60.10	-13.00	-47.10
278.32	-49.53	H	-13.62	-63.15	-13.00	-50.15
350.10	-48.05	H	-13.56	-61.61	-13.00	-48.61

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 1900 / TX / CH 512 **Test Date:** December 7, 2005

Temperature: 25°C **Tested by:** Jason Lin

Humidity: 60 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Reading level (dBuV)	Antenna Polarization	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
3704.00	-50.12	V	5.19	-44.93	-13.00	-31.93
5552.00	-50.80	V	6.23	-44.56	-13.00	-31.56
7400.00	-52.07	V	12.74	-39.33	-13.00	-26.33
N/A						
3704.00	-45.87	H	5.67	-40.20	-13.00	-27.20
5552.00	-49.53	H	6.75	-42.78	-13.00	-29.78
7400.00	-50.74	H	13.20	-37.53	-13.00	-24.53
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:** December 7, 2005

Temperature: 25°C **Tested by:** Jason Lin

Humidity: 60% RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Reading level (dBuV)	Antenna Polarization	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
3760.00	-50.20	V	5.28	-44.92	-13.00	-31.92
5640.00	-50.94	V	6.37	-44.57	-13.00	-31.57
7520.00	-53.37	V	13.26	-40.10	-13.00	-27.10
N/A						
3760.00	-47.09	H	5.74	-41.35	-13.00	-28.35
5640.00	-50.85	H	6.92	-43.93	-13.00	-30.93
7520.00	-47.70	H	13.70	-34.00	-13.00	-21.00
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:** December 7, 2005

Temperature: 25°C **Tested by:** Jason Lin

Humidity: 60 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Reading level (dBuV)	Antenna Polarization	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
3824.00	-49.45	V	5.38	-44.07	-13.00	-31.07
5728.00	-51.44	V	6.51	-44.93	-13.00	-31.93
7640.00	-50.15	V	13.47	-36.69	-13.00	-23.69
N/A						
3824.00	-46.24	H	5.82	-40.42	-13.00	-27.42
5728.00	-50.48	H	7.09	-43.39	-13.00	-30.39
7640.00	-45.58	H	13.84	-31.74	-13.00	-18.74
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:** December 7, 2005

Temperature: 25°C **Tested by:** Jason Lin

Humidity: 60 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Reading level (dBuV)	Antenna Polarization	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
3704.00	-50.07	V	5.19	-44.88	-13.00	-31.88
5552.00	-51.34	V	6.23	-45.10	-13.00	-32.10
7400.00	-55.98	V	12.74	-43.24	-13.00	-30.24
N/A						
3704.00	-46.05	H	5.67	-40.38	-13.00	-27.38
5552.00	-49.99	H	6.75	-43.24	-13.00	-30.24
7400.00	-50.12	H	13.20	-36.91	-13.00	-23.91
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:** December 7, 2005

Temperature: 25°C **Tested by:** Jason Lin

Humidity: 60 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Reading level (dBuV)	Antenna Polarization	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
3760.00	-49.70	V	5.28	-44.42	-13.00	-31.42
5640.00	-50.67	V	6.37	-44.30	-13.00	-31.30
7520.00	-53.60	V	13.26	-40.34	-13.00	-27.34
N/A						
3760.00	-46.39	H	5.74	-40.66	-13.00	-27.66
5640.00	-50.32	H	6.92	-43.40	-13.00	-30.40
7520.00	-47.11	H	13.70	-33.40	-13.00	-20.40
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: GPRS 1900 / TX / CH 810 **Test Date:** December 7, 2005

Temperature: 25°C **Tested by:** Jason Lin

Humidity: 60 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Reading level (dBuV)	Antenna Polarization	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
3824.00	-48.82	V	5.38	-43.44	-13.00	-30.44
5728.00	-49.16	V	6.51	-42.65	-13.00	-29.65
7640.00	-53.54	V	13.47	-40.07	-13.00	-27.07
N/A						
3824.00	-45.35	H	5.82	-39.53	-13.00	-26.53
5728.00	-49.40	H	7.09	-42.31	-13.00	-29.31
7640.00	-46.25	H	13.84	-32.41	-13.00	-19.41
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.*

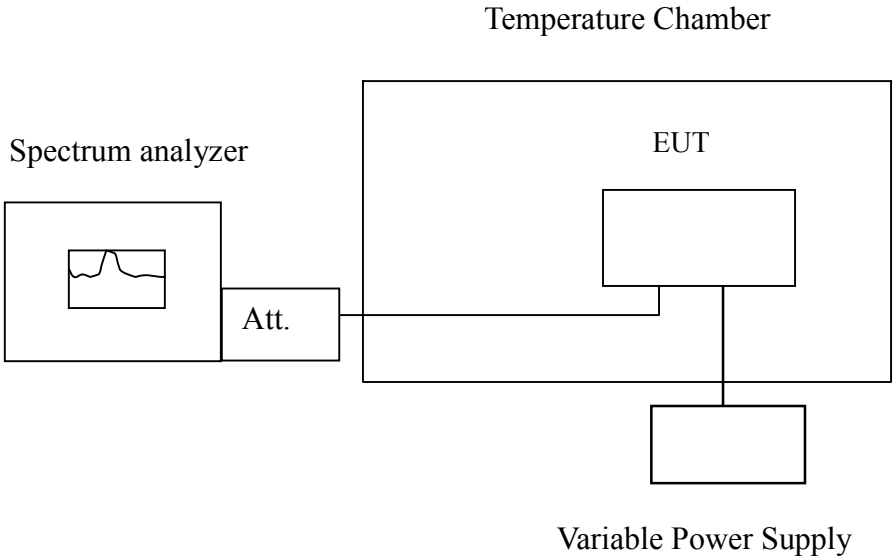
7.6 FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT

LIMIT

According to FCC §2.1055, 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.

Reference Frequency: GSM 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)
4.2	50	83600036	59	2090
	40	83600023	46	
	30	83600021	44	
	20	83599977	0	
	10	83600032	55	
	0	83600020	43	
	-10	83600032	55	
	-20	83600017	40	
	-30	83600023	46	

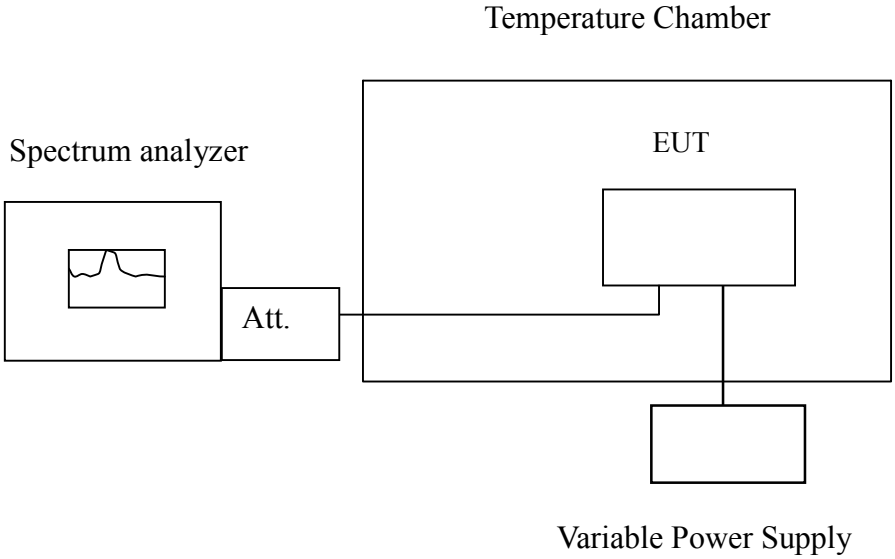
Reference Frequency: GSM Mid Channel 1880 MHz @ 20°C				
Limit: ± 2.5 ppm = 4700 Hz				
Power Supply Vdc	Environment Temperature (°C)	Frequency (Hz)	Delta (Hz)	Limit (Hz)
4.2	50	1880000065	107	4700
	40	1880000064	106	
	30	1880000057	99	
	20	1879999958	0	
	10	1880000056	98	
	0	1880000043	85	
	-10	1880000044	86	
	-20	1880000045	87	
	-30	1880000053	95	

7.7 FREQUENCY STABILITY V.S. VOLTAGE MEASUREMENT

LIMIT

According to FCC §2.1055, FCC §24.235,
Frequency Tolerance: 2.5 ppm.

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)
4.6	20	83599979	2	2090
4.2		83599977	0	
3.8		83599978	1	
3.6 (End Point)		83599978	0	

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)
4.6	20	1879999952	-6	4700
4.2		1879999958	0	
3.8		1879999959	1	
3.6 (End Point)		1879999732	-226	

7.8 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 (dBμV)	
	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 1 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:**	December 9, 2005
Temperature:	25°C	**Tested by:**	Steven Yang
Humidity:	55% RH		

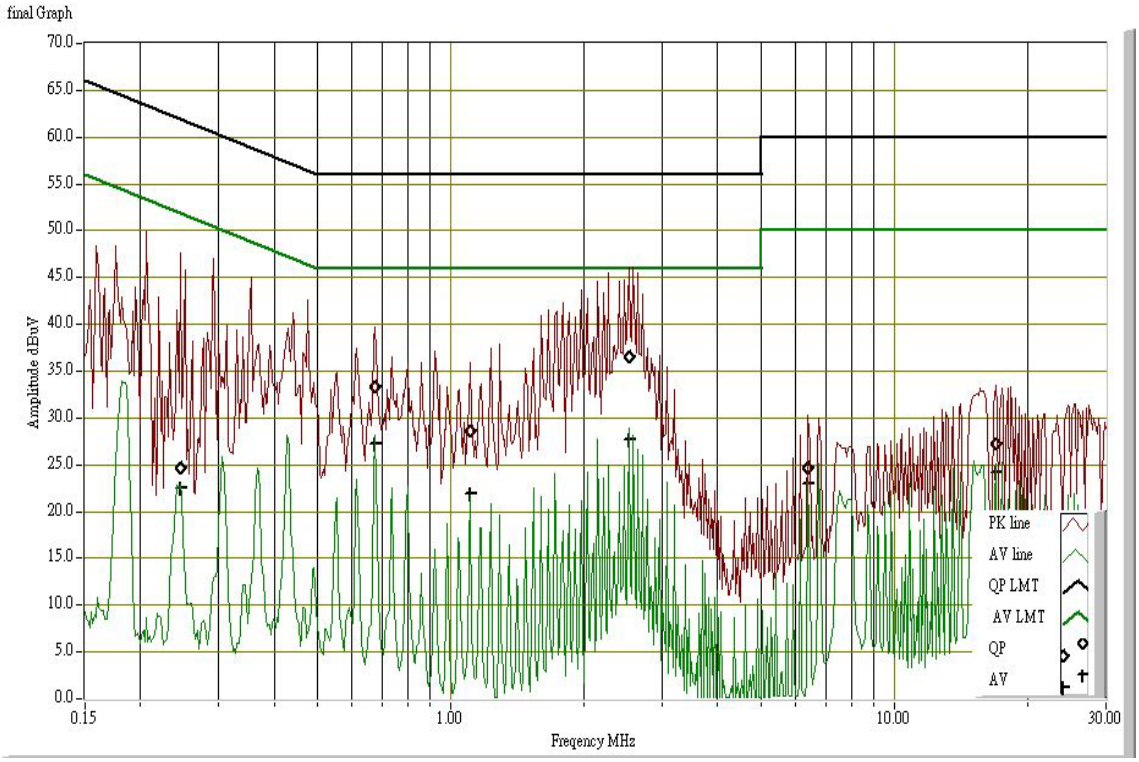
Freq. (MHz)	QP Reading	AV Reading	Corr. factor	QP Result	AV Result	QP Limit	AV Limit	QP Margin	AV Margin	Note
0.246	24.670	22.480	0.100	24.770	22.580	61.891	51.891	-37.121	-29.311	L1
0.676	33.360	27.280	0.100	33.460	27.380	56.000	46.000	-22.540	-18.620	L1
1.108	28.590	21.940	0.100	28.690	22.040	56.000	46.000	-27.310	-23.960	L1
2.518	36.510	27.650	0.100	36.610	27.750	56.000	46.000	-19.390	-18.250	L1
6.397	24.670	22.910	0.340	25.010	23.250	60.000	50.000	-34.990	-26.750	L1
16.912	27.210	24.250	0.953	28.163	25.203	60.000	50.000	-31.837	-24.797	L1
0.426	28.790	26.220	0.100	28.890	26.320	57.330	47.330	-28.440	-21.010	L2
0.676	29.290	26.410	0.100	29.390	26.510	56.000	46.000	-26.610	-19.490	L2
1.108	24.550	20.770	0.100	24.650	20.870	56.000	46.000	-31.350	-25.130	L2
1.718	29.090	23.120	0.100	29.190	23.220	56.000	46.000	-26.810	-22.780	L2
6.397	24.690	23.120	0.340	25.030	23.460	60.000	50.000	-34.970	-26.540	L2
17.459	29.730	26.470	0.997	30.727	27.467	60.000	50.000	-29.273	-22.533	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 to 30MHz was 10kHz; the IF bandwidth of Test Receiver between 0.15MHz to 30MHz was 9kHz;*
4. *L1 = Line One (Live Line) / L2 = Line Two (Neutral Line)*

Test Plots

Conducted emissions (Line 1)



Conducted emissions (Line 2)