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

TEST REPORT

For

Mobile Computer

Model: CP30

Trade Name: CIPHERLAB

Issued to

Cipherlab Co., Ltd.
12F, 333 Dunhua S. Rd., Sec.2, Taipei, Taiwan R.O.C.

Issued by

Compliance Certification Services Inc.
No. 11, Wu-Gong 6th Rd., Wugu Industrial Park,
Taipei Hsien 248, Taiwan (R.O.C.)
http://www.ccsrf.com
service@ccsrf.com
Issued Date: May 30, 2011

Testing Laboratory
1309

Revision History

Rev.		Issue Date		Revisions	Effect Page	Revised By
00		May 30, 2011		Initial Issue	ALL	Sandy Lin

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1. TEST RESULT CERTIFICATION

Applicant: Cipherlab Co., Ltd.
12F, 333 Dunhua S. Rd., Sec.2, Taipei, Taiwan R.O.C.

Equipment Under Test: Mobile Computer

Trade Name: CIPHERLAB

Model Number: CP30

Date of Test: May 10 ~ 22, 2011

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

We hereby certify that:

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

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

Approved by:

Rex Lai
Section Manager
Compliance Certification Services Inc.

Reviewed by:

Gina Lo
Section Manager
Compliance Certification Services Inc.

2. EUT DESCRIPTION

Product	Mobile Computer
Trade Name	CIPHERLAB
Model Number	CP30
Model Discrepancy	N/A
Received Date	April 13, 2011
Power Supply	1. Power from Power Adapter AK II / A05K11-05MU I/P: 100-240V, 47-63Hz, 0.3A O/P: 5V, 1.0A 2. Power from Battery CIPHER LAB / BA-0032A2 Rating: 3.7V, 2200mAh, 8.14Wh 3. Power from host device via USB Cable
Frequency Range	TX: 824.2 ~ 848.8 MHz / 1850.2 ~ 1909.8 MHz RX: 869 ~ 894 MHz / 1930 ~ 1989.8 MHz GSM / GPRS / EDGE: 850: 824.2 ~ 848.8 MHz GSM / GPRS / EDGE: 1900: 1850.2 ~ 1909.8 MHz
Transmit Power (ERP & EIRP Power)	GSM 850: 22.52 dBm GSM 1900: 28.21 dBm GPRS 850: 19.87 dBm GPRS 1900: 25.93 dBm EDGE 850: 16.30 dBm EDGE 1900: 23.48 dBm
Cellular Phone Protocol	GSM: GMSK GPRS: GMSK EDGE: 8PSK
Type of Emission	GSM 850 MHz: 246KGXW--- GSM 1900 MHz: 246KGXW--- GPRS 850 MHz: 246KGXW--- GPRS 1900 MHz: 244KGXW--- EDGE 850 MHz: 244KG7W--- EDGE 1900 MHz: 245KG7W---

Antenna Gain	GSM / GPRS / EDGE 850 MHz: -2.90 dBi GSM / GPRS / EDGE 1900 MHz: 2.17 dBi
Antenna Type	PCB 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: **Q3N-CP30** 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

3.1EUT 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.

3.2EUT EXERCISE

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

3.3GENERAL 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.

3.4DESCRIPTION OF TEST MODES

The EUT (model: CP30) had been tested under operating condition.

EUT staying in continuous transmitting mode was programmed.

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

GSM / GPRS / EDGE 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 / EDGE 850 / EDGE 1900 were determined to be the worst-case scenario for all tests.

The worst emission was found:

in lie-down (Y axis) for GSM850 / GSM1900 / GPRS1900 / EDGE 1900 mode and in stand-up (Z axis) for GPRS 850 / EDGE 850 mode.

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.

4.2MEASUREMENT EQUIPMENT USED

Equipment Used for Emissions Measurement

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

Conducted Emissions Test Site				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Agilent	E4446A	MY43360131	03/02/2012
Power Meter	Anritsu	ML2495A	1012009	03/27/2012
Power Sensor	Anritsu	MA2411B	0917072	03/08/2012
Temp. / Humidity Chamber	Terchy	MHG-150LF	930619	09/14/2011
DC Power Source	Agilent	E3640A	MY40001774	01/07/2012

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

Conducted Emission room # A				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
EMI Test Receiver	R&S	ESHS10	843743/015	03/24/2012
LISN	SCHWARZBECK	NSLK 8127	8127-541	12/18/2011
LISN	SCHAFFNER	NNB 41	03/10013	N.C.R.
Test S/W	CCS-3A1-CE			

4.3 MEASUREMENT UNCERTAINTY

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

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

5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

☐ No.199, Chunghsen Road, Hsintien City, Taipei Hsien, Taiwan, R.O.C.
Tel: 886-2-2217-0894 / Fax: 886-2-2217-1029

☒ No.11, Wugong 6th Rd., Wugu Industrial Park, Taipei Hsien 248, Taiwan
Tel: 886-2-2299-9720 / Fax: 886-2-2298-4045

☐ No.81-1, Lane 210, Bade 2nd Rd., Luchu Hsiang, Taoyuan Hsien 338, Taiwan
Tel: 886-3-324-0332 / Fax: 886-3-324-5235

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

5.2 EQUIPMENT

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

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

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

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

5.3TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	FCC	3M Semi Anechoic Chamber (FCC MRA: TW1039) to perform FCC Part 15 measurements	FCC MRA: TW1039
Taiwan	TAF	LP0002, RTTE01, FCC Method-47 CFR Part 15 Subpart C, D, E, RSS-210, RSS-310 IDA TS SRD, AS/NZS 4268, AS/NZS 4771, TS 12.1 & 12,2, ETSI EN 300 440-1, ETSI EN 300 440-2, ETSI EN 300 328, ETSI EN 300 220-1, ETSI EN 300 220-2, ETSI EN 301 893, ETSI EN 301 489-1/3/7/17 FCC OET Bulletin 65 + Supplement C, EN 50360, EN 50361, EN 50371, RSS 102, EN 50383, EN 50385, EN 50392, IEC 62209, CNS 14958-1, CNS 14959 FCC Method –47 CFR Part 15 Subpart B IEC / EN 61000-3-2, IEC / EN 61000-3-3, IEC / EN 61000-4-2/3/4/5/6/8/11	TAF Testing Laboratory 1309
Canada	Industry Canada	3M Semi Anechoic Chamber (IC 2324G-1 / IC 2324G-2) to perform	Canada IC 2324G-1 IC 2324G-2

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

6. SETUP OF EQUIPMENT UNDER TEST

6.1 SETUP CONFIGURATION OF EUT

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

6.2 SUPPORT EQUIPMENT

No.	Device Type	Brand	Model	FCC ID	Series No.	Data Cable	Power Cord
1.	Sim card	N/A	N/A	N/A	N/A	N/A	N/A
2.	SD card	N/A	N/A	N/A	N/A	N/A	N/A
3	Earphone	N/A	N/A	N/A	N/A	N/A	N/A
4	Notebook PC (Remote)	HP	dv6-1332TX	CNF9491GLJ	PD9112BNHU	N/A	AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.8m with a core
5	Wireless Router (Remote)	ASUS	WL-500g	471GA12838	MSQWL500G	N/A	Unshielded, 1.8m
6	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.*

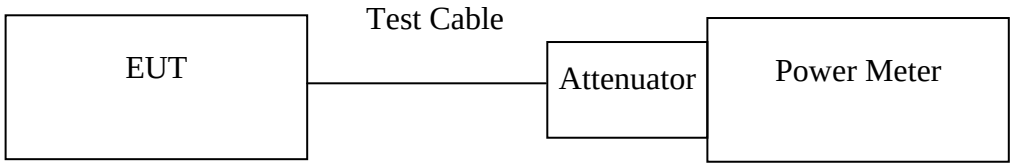
7. FCC PART 22 & 24 REQUIREMENTS

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	32.90	1.94984
	190	836.60	33.00	1.99526
	251	848.80	32.90	1.94984
GPRS 850	128	824.20	29.20	0.83176
	190	836.60	29.40	0.87096
	251	848.80	29.30	0.85114
EDGE 850	128	824.20	26.60	0.45709
	190	836.60	26.80	0.47863
	251	848.80	26.70	0.46774

Test Mode	CH	Frequency (MHz)	Peak Power (dBm)	Output Power W
GSM 1900	512	1850.20	29.30	0.85114
	661	1880.00	29.40	0.87096
	810	1909.80	29.20	0.83176
GPRS 1900	512	1850.20	25.80	0.38019
	661	1880.00	26.00	0.39811
	810	1909.80	25.80	0.38019
EDGE 1900	512	1850.20	25.00	0.31623
	661	1880.00	25.20	0.33113
	810	1909.80	25.00	0.31623

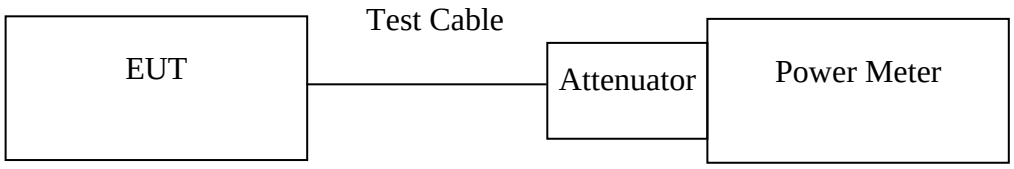
Remark: *The value of factor includes both the loss of cable and external attenuator*

7.2AVERAGE 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	32.80	1.90546
	190	836.60	32.90	1.94984
	251	848.80	32.80	1.90546
GPRS 850	128	824.20	26.19	0.41588
	190	836.60	26.39	0.43548
	251	848.80	26.29	0.42557
EDGE 850	128	824.20	23.59	0.22854
	190	836.60	23.79	0.23932
	251	848.80	23.69	0.23387

Test Mode	CH	Frequency (MHz)	AVG Power (dBm)	Output Power W
GSM 1900	512	1850.20	29.20	0.83176
	661	1880.00	29.30	0.85114
	810	1909.80	29.00	0.79433
GPRS 1900	512	1850.20	22.79	0.19009
	661	1880.00	22.99	0.19905
	810	1909.80	22.79	0.19009
EDGE 1900	512	1850.20	21.99	0.15811
	661	1880.00	22.19	0.16557
	810	1909.80	21.99	0.15811

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

7.3ERP & EIRP MEASUREMENT

LIMIT

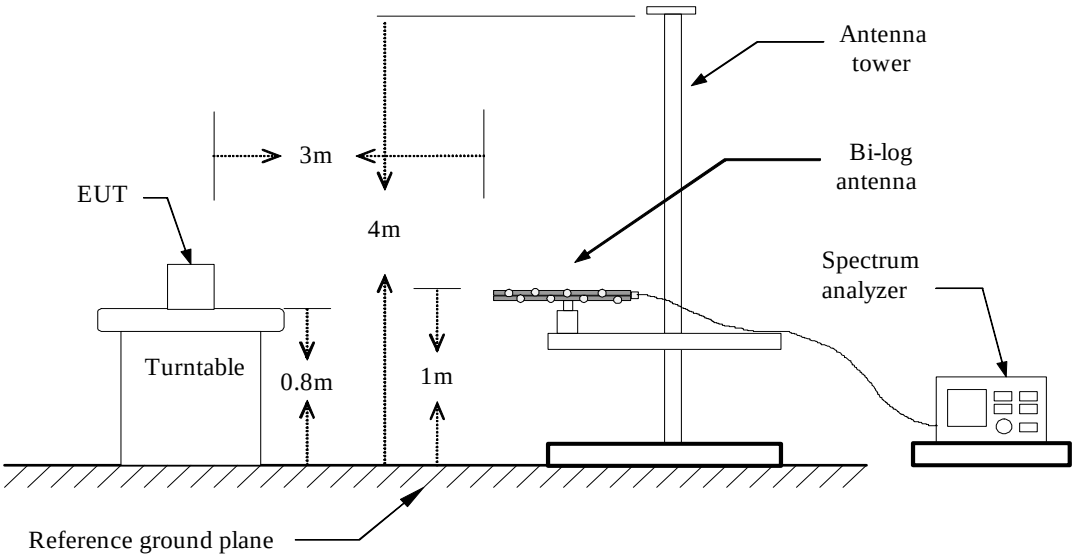
According to FCC §2.1046

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

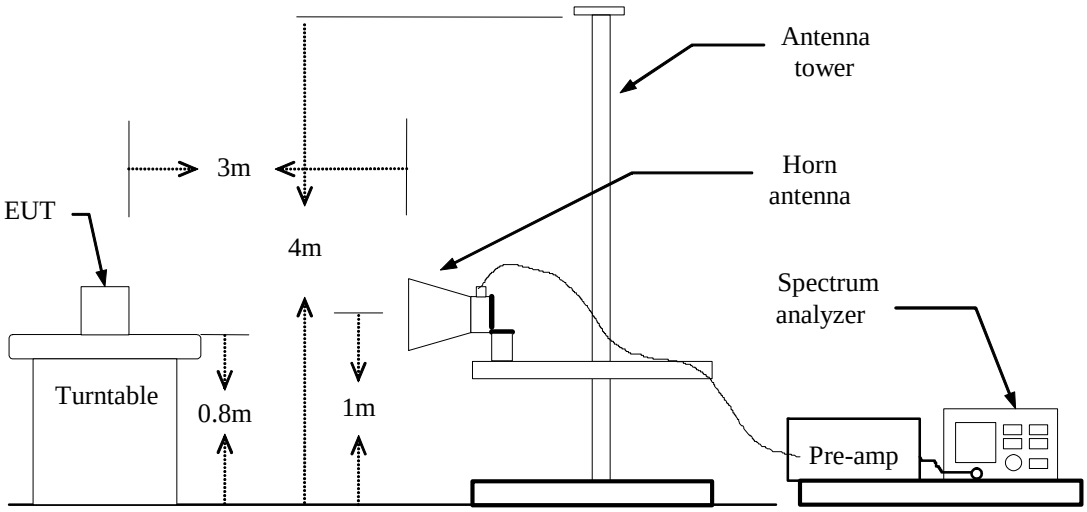
FCC 24.232(b): The equivalent Isotropic Radiated Power (EIRP) must not exceed 2 Watts.

Test Configuration

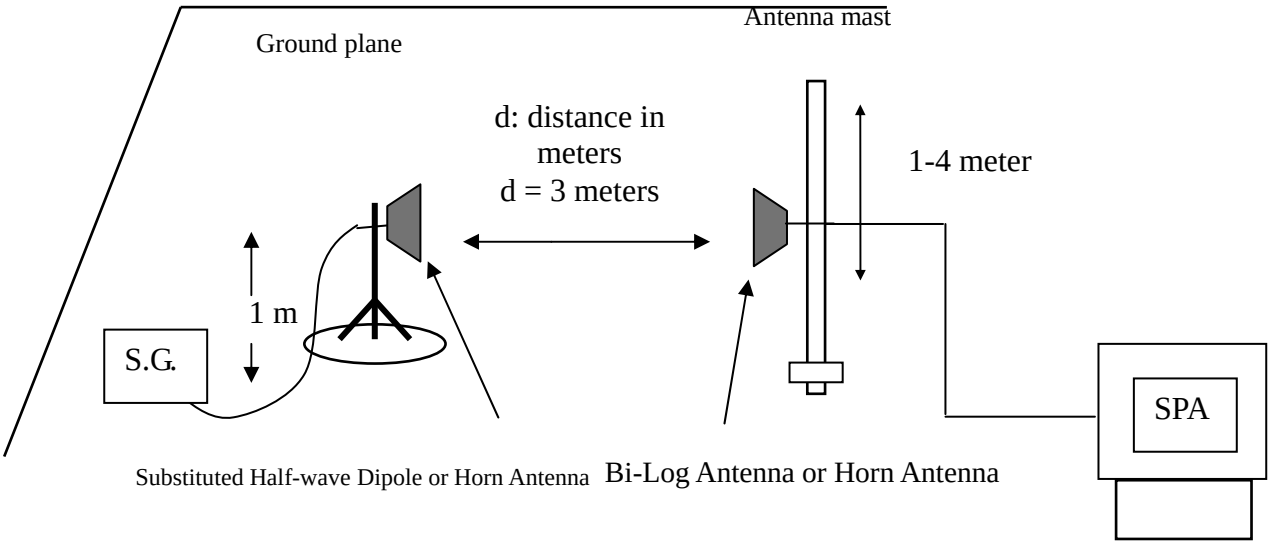
Below 1 GHz



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:

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

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	-17.00	35.41	18.40	38.45	-20.05
		824.20	H	-17.90	35.21	17.31	38.45	-21.14
	190	836.60	V	-18.81	35.46	16.65	38.45	-21.8
		836.60	H	-14.40	35.52	21.11	38.45	-17.34
	251	848.80	V	-18.58	35.61	17.03	38.45	-21.42
		848.80	H	-13.27	35.79	***22.52**	38.45	-15.93
Y	128	824.20	V	-15.23	35.40	20.18	38.45	-18.27
		824.20	H	-20.79	35.20	14.41	38.45	-24.04
	190	836.60	V	-14.96	35.46	20.50	38.45	-17.95
		836.60	H	-18.16	35.53	17.36	38.45	-21.09
	251	848.80	V	-14.96	35.61	20.65	38.45	-17.8
		848.80	H	-17.33	35.79	18.46	38.45	-19.99
Z	128	824.20	V	-17.88	35.40	17.53	38.45	-20.92
		824.20	H	-19.58	35.20	15.62	38.45	-22.83
	190	836.60	V	-17.30	35.46	18.16	38.45	-20.29
		836.60	H	-18.53	35.51	16.99	38.45	-21.46
	251	848.80	V	-15.50	35.61	20.11	38.45	-18.34
		848.80	H	-17.70	35.79	18.10	38.45	-20.35

GSM 1900 TEST DATA

EUT Pol.	Channel	Frequency (MHz)	Antenna Pol.	Reading level (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
X	512	1850.20	V	-17.95	41.17	23.22	33.00	-9.78
		1850.20	H	-16.22	40.80	24.58	33.00	-8.42
	661	1880.00	V	-17.76	41.23	23.47	33.00	-9.53
		1880.00	H	-15.86	41.15	25.29	33.00	-7.71
	810	1909.80	V	-19.02	41.30	22.28	33.00	-10.72
		1909.80	H	-16.17	41.37	25.20	33.00	-7.80
Y	512	1850.20	V	-14.13	41.17	27.04	33.00	-5.96
		1850.20	H	-12.58	40.79	***28.21**	33.00	-4.79
	661	1880.00	V	-14.70	41.23	26.53	33.00	-6.47
		1880.00	H	-13.27	41.14	27.88	33.00	-5.12
	810	1909.80	V	-15.25	41.30	26.06	33.00	-6.94
		1909.80	H	-14.36	41.38	27.01	33.00	-5.99
Z	512	1850.20	V	-13.94	41.17	27.24	33.00	-5.76
		1850.20	H	-14.83	40.79	25.96	33.00	-7.04
	661	1880.00	V	-14.19	41.23	27.04	33.00	-5.96
		1880.00	H	-16.12	41.15	25.02	33.00	-7.98
	810	1909.80	V	-14.29	41.30	27.01	33.00	-5.99
		1909.80	H	-17.96	41.37	23.41	33.00	-9.59

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	-18.30	35.40	17.10	38.45	-21.35
		824.20	H	-17.23	35.20	17.96	38.45	-20.49
	190	836.60	V	-16.64	35.46	18.82	38.45	-19.63
		836.60	H	-17.42	35.53	18.11	38.45	-20.34
	251	848.80	V	-15.89	35.60	19.71	38.45	-18.74
		848.80	H	-16.21	35.79	19.58	38.45	-18.87
Y	128	824.20	V	-17.18	35.40	18.22	38.45	-20.23
		824.20	H	-21.86	35.20	13.33	38.45	-25.12
	190	836.60	V	-17.05	35.46	18.41	38.45	-20.04
		836.60	H	-22.64	35.52	12.89	38.45	-25.56
	251	848.80	V	-15.74	35.61	***19.87**	38.45	-18.58
		848.80	H	-19.78	35.79	16.01	38.45	-22.44
Z	128	824.20	V	-16.58	35.41	18.83	38.45	-19.62
		824.20	H	-19.90	35.21	15.31	38.45	-23.14
	190	836.60	V	-17.11	35.46	18.35	38.45	-20.1
		836.60	H	-20.23	35.52	15.30	38.45	-23.15
	251	848.80	V	-16.41	35.61	19.20	38.45	-19.25
		848.80	H	-17.76	35.79	18.03	38.45	-20.42

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	-17.43	41.17	23.74	33.00	-9.26
		1850.20	H	-17.43	41.17	23.74	33.00	-9.26
	661	1880.00	V	-17.97	40.79	22.82	33.00	-10.18
		1880.00	H	-17.84	41.23	23.39	33.00	-9.61
	810	1909.80	V	-17.03	41.14	24.11	33.00	-8.89
		1909.80	H	-18.43	41.30	22.88	33.00	-10.12
Y	512	1850.20	V	-16.66	41.38	24.71	33.00	-8.29
		1850.20	H	-16.66	41.17	24.51	33.00	-8.49
	661	1880.00	V	-17.49	41.23	23.74	33.00	-9.26
		1880.00	H	-15.22	41.15	***25.93**	33.00	-7.07
	810	1909.80	V	-18.39	41.30	22.92	33.00	-10.08
		1909.80	H	-16.08	41.38	25.29	33.00	-7.71
Z	512	1850.20	V	-15.41	41.17	25.75	33.00	-7.25
		1850.20	H	-15.36	40.79	25.43	33.00	-7.57
	661	1880.00	V	-16.10	41.23	25.13	33.00	-7.87
		1880.00	H	-16.27	41.14	24.87	33.00	-8.13
	810	1909.80	V	-16.82	41.30	24.48	33.00	-8.52
		1909.80	H	-17.27	41.38	24.11	33.00	-8.89

EDGE 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	-25.52	35.41	9.89	38.50	-28.61
		824.20	H	-22.89	35.21	12.32	38.50	-26.18
	190	836.60	V	-21.86	35.46	13.59	38.50	-24.91
		836.60	H	-23.68	35.52	11.84	38.50	-26.66
	251	848.80	V	-21.23	35.60	14.37	38.50	-24.13
		848.80	H	-21.63	35.79	14.16	38.50	-24.34
Y	128	824.20	V	-24.70	35.41	10.70	38.50	-27.8
		824.20	H	-26.94	35.21	8.27	38.50	-30.23
	190	836.60	V	-20.90	35.46	14.56	38.50	-23.94
		836.60	H	-27.47	35.52	8.05	38.50	-30.45
	251	848.80	V	-19.30	35.61	***16.30**	38.50	-22.2
		848.80	H	-25.95	35.79	9.84	38.50	-28.66
Z	128	824.20	V	-22.71	35.40	12.70	38.50	-25.8
		824.20	H	-24.52	35.20	10.68	38.50	-27.82
	190	836.60	V	-21.54	35.46	13.92	38.50	-24.58
		836.60	H	-24.10	35.52	11.42	38.50	-27.08
	251	848.80	V	-19.80	35.61	15.80	38.50	-22.7
		848.80	H	-23.21	35.79	12.58	38.50	-25.92

EDGE 1900 Test Data

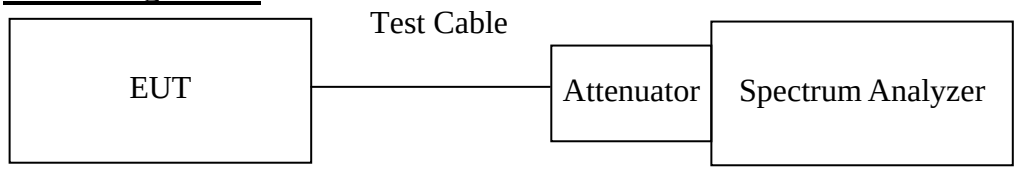
EUT Pol.	Channel	Frequency (MHz)	Antenna Pol.	Reading level (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
X	512	1850.20	V	-19.71	41.17	21.46	33.00	-11.54
		1850.20	H	-21.02	40.79	19.77	33.00	-13.23
	661	1880.00	V	-21.52	41.23	19.71	33.00	-13.29
		1880.00	H	-20.21	41.15	20.94	33.00	-12.06
	810	1909.80	V	-20.68	41.30	20.63	33.00	-12.37
		1909.80	H	-19.89	41.38	21.48	33.00	-11.52
Y	512	1850.20	V	-20.22	41.17	20.95	33.00	-12.05
		1850.20	H	-17.32	40.79	***23.48**	33.00	-9.52
	661	1880.00	V	-20.89	41.23	20.34	33.00	-12.66
		1880.00	H	-17.78	41.15	23.37	33.00	-9.63
	810	1909.80	V	-21.05	41.30	20.25	33.00	-12.75
		1909.80	H	-18.24	41.38	23.14	33.00	-9.86
Z	512	1850.20	V	-19.84	41.17	21.33	33.00	-11.67
		1850.20	H	-17.75	40.79	23.05	33.00	-9.95
	661	1880.00	V	-19.89	41.23	21.33	33.00	-11.67
		1880.00	H	-18.97	41.14	22.17	33.00	-10.83
	810	1909.80	V	-19.52	41.30	21.78	33.00	-11.22
		1909.80	H	-20.08	41.38	21.30	33.00	-11.70

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

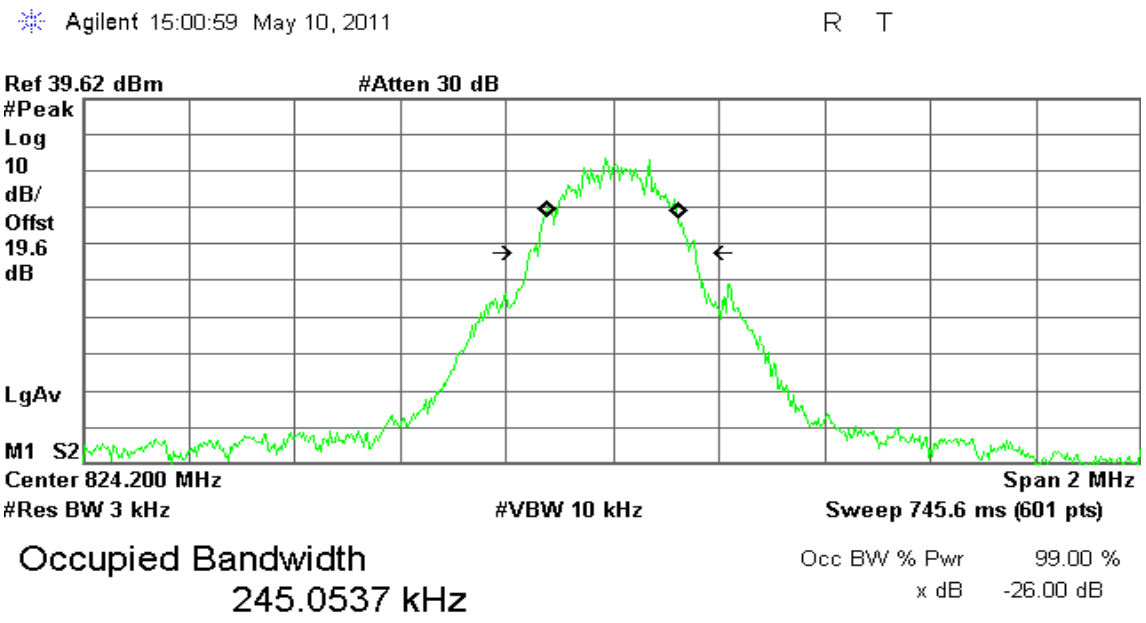
Test Data

Test Mode	CH	Frequency (MHz)	99% Bandwidth (kHz or MHz)
GSM 850	128	824.20	245.0537
	190	836.60	237.4675
	251	848.80	***246.7535**
GPRS 850 (Class 12)	128	824.20	244.9104
	190	836.60	243.0800
	251	848.80	***246.2933**
EDGE 850 (Class 12)	128	824.20	***244.1497**
	190	836.60	241.8542
	251	848.80	244.1467

Test Mode	CH	Frequency (MHz)	99% Bandwidth (kHz or MHz)
GSM 1900	512	1850.20	245.3858
	661	1880.00	***246.6472**
	810	1909.80	245.7577
GPRS 1900 (Class 12)	512	1850.20	242.4850
	661	1880.00	***244.8753**
	810	1909.80	242.5630
EDGE 1900 (Class 12)	512	1850.20	242.6828
	661	1880.00	242.0478
	810	1909.80	***245.3579**

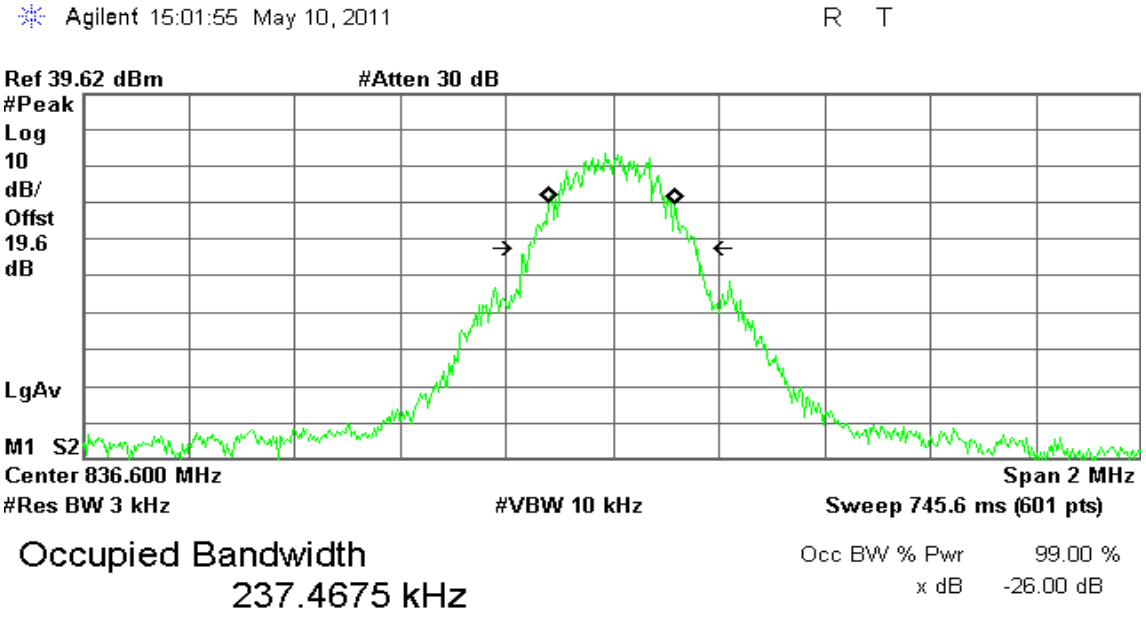
Test Plot

GSM 850 (CH Low)



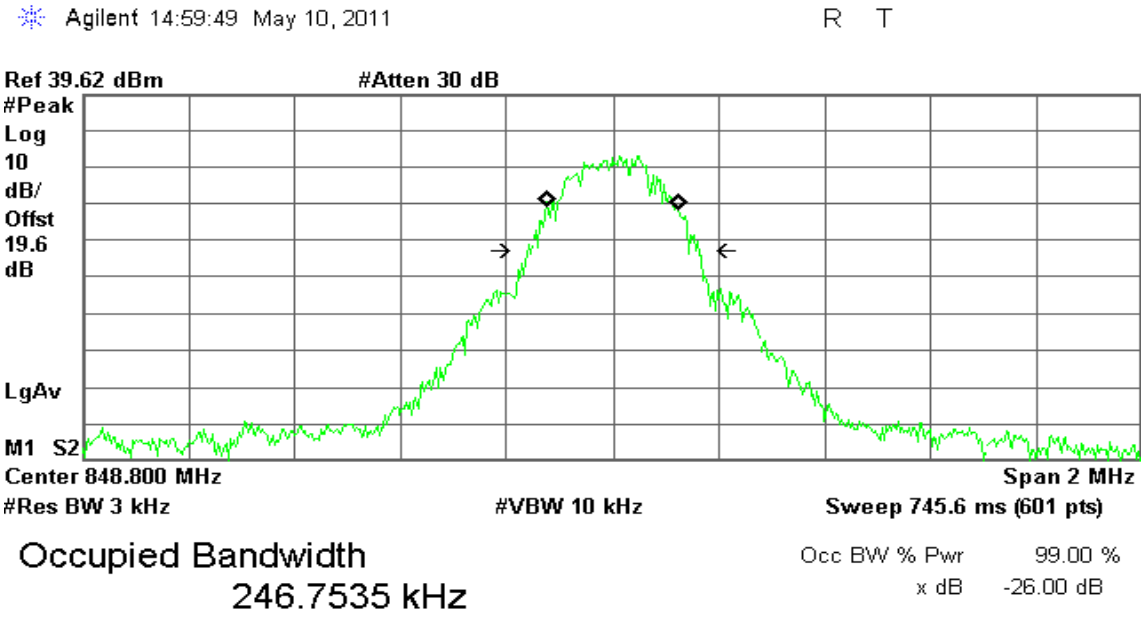
Transmit Freq Error	-702.680 Hz
x dB Bandwidth	312.056 kHz

GSM 850 (CH Mid)



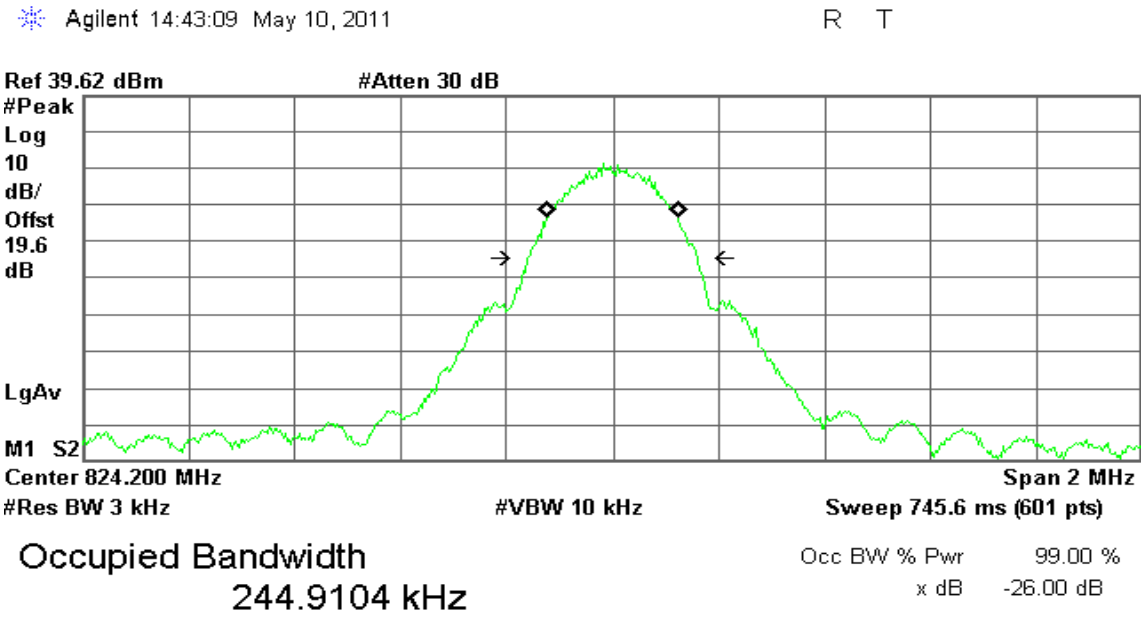
Transmit Freq Error	-1.287 kHz
x dB Bandwidth	312.936 kHz

GSM 850 (CH High)



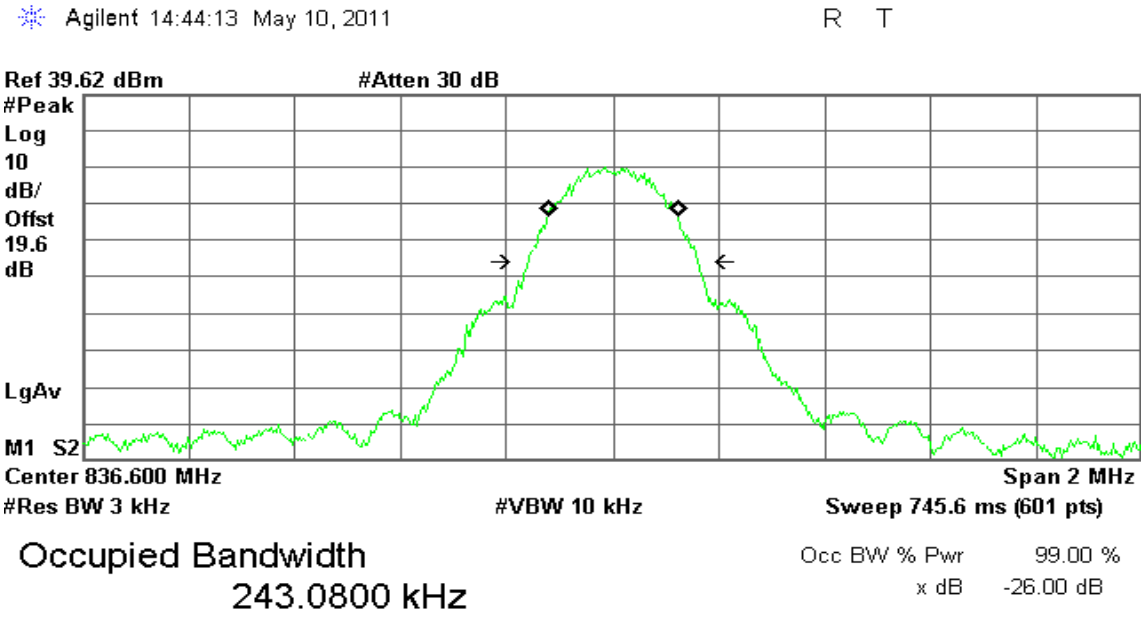
Transmit Freq Error	1.119 kHz
x dB Bandwidth	321.610 kHz

GPRS 850 (CH Low)



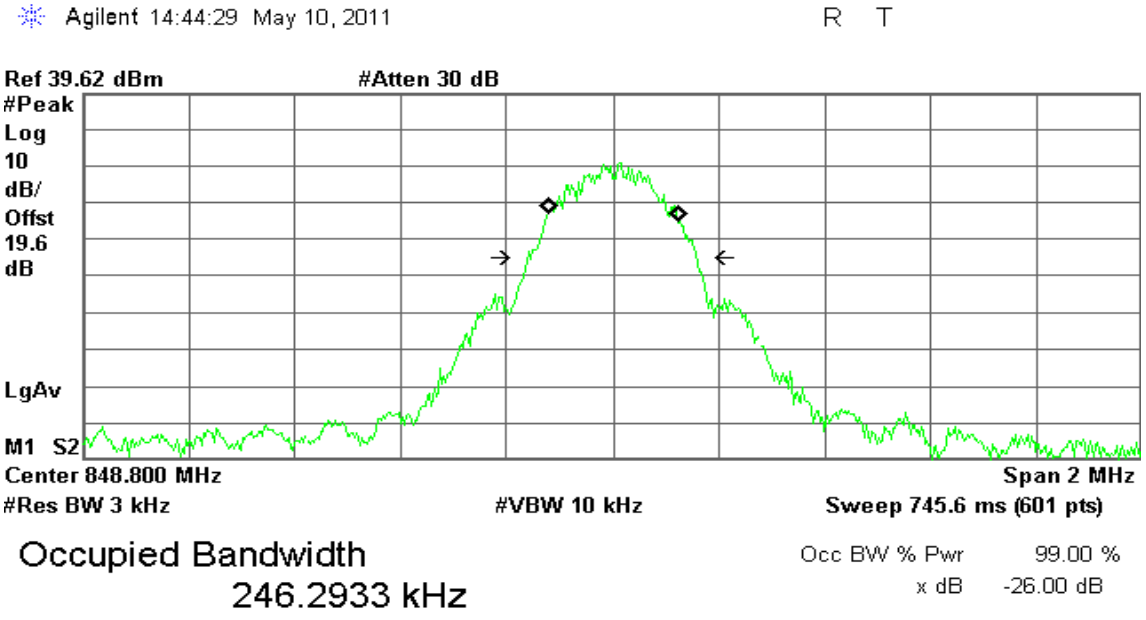
Transmit Freq Error	-210.065 Hz
x dB Bandwidth	318.662 kHz

GPRS 850 (CH Mid)



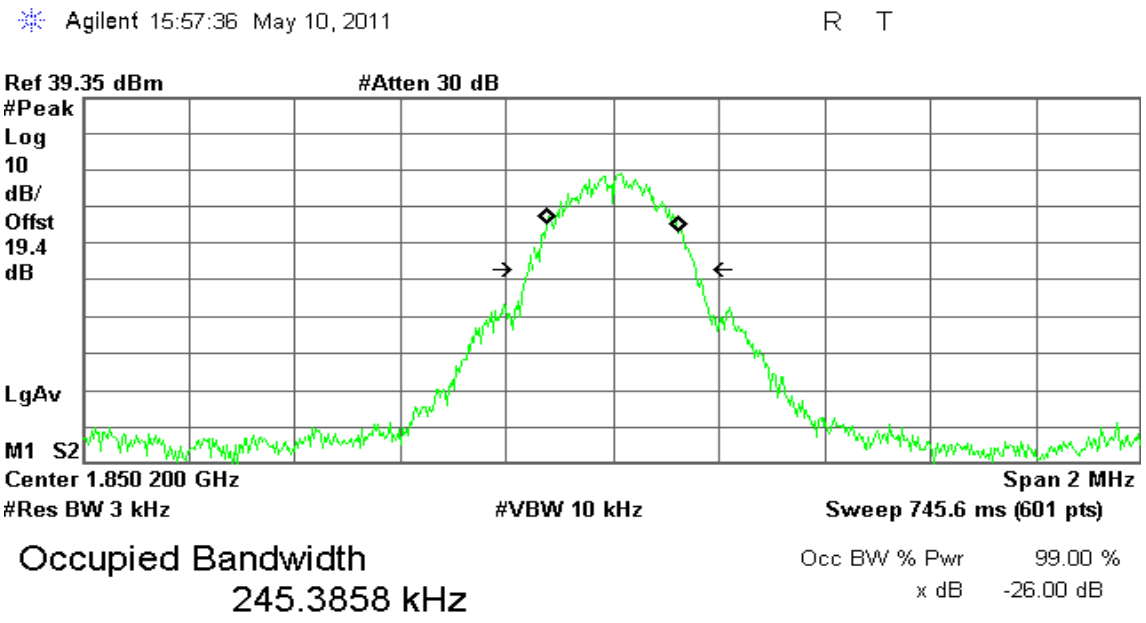
Transmit Freq Error	478.589 Hz
x dB Bandwidth	318.845 kHz

GPRS 850(CH High)



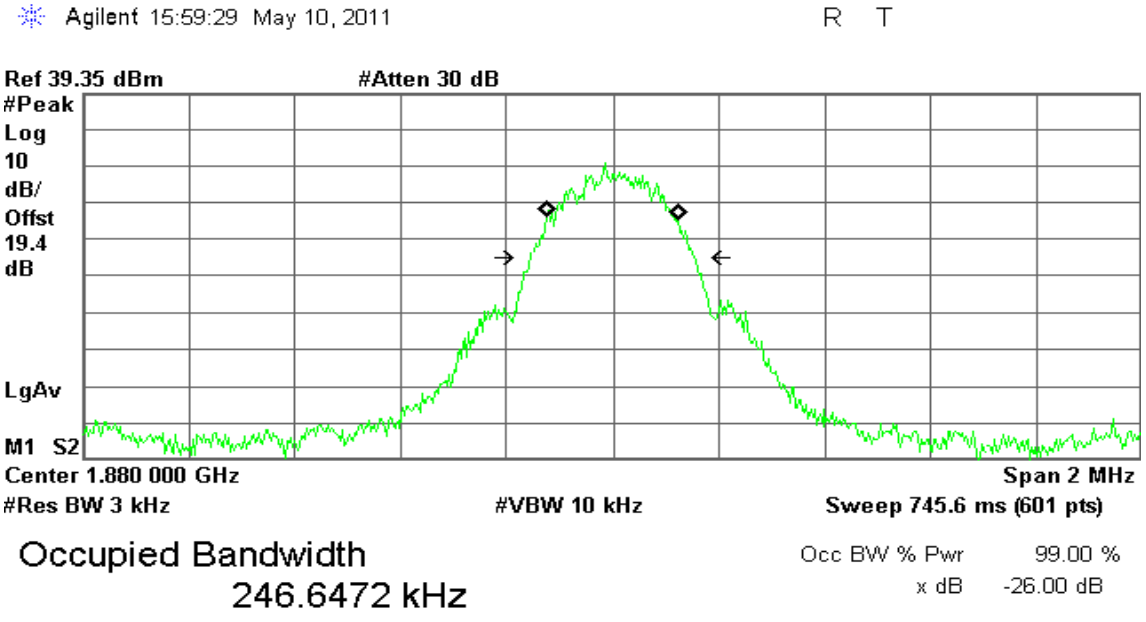
Transmit Freq Error	1.605 kHz
x dB Bandwidth	316.936 kHz

GSM 1900 (CH Low)



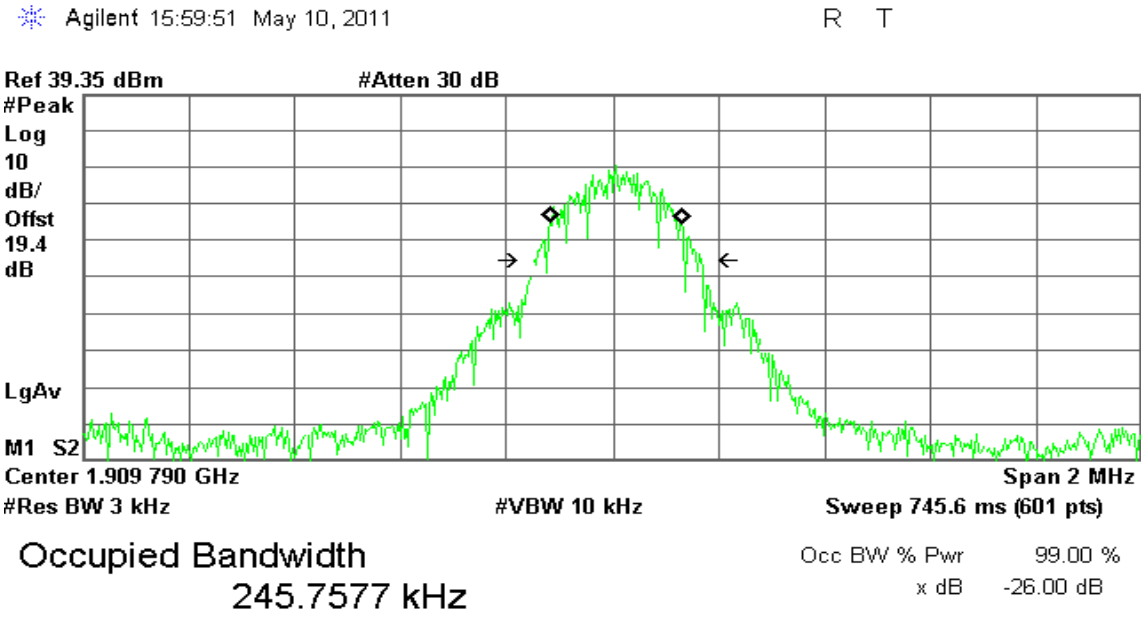
Transmit Freq Error	-140.468 Hz
x dB Bandwidth	313.066 kHz

GSM 1900 (CH Mid)



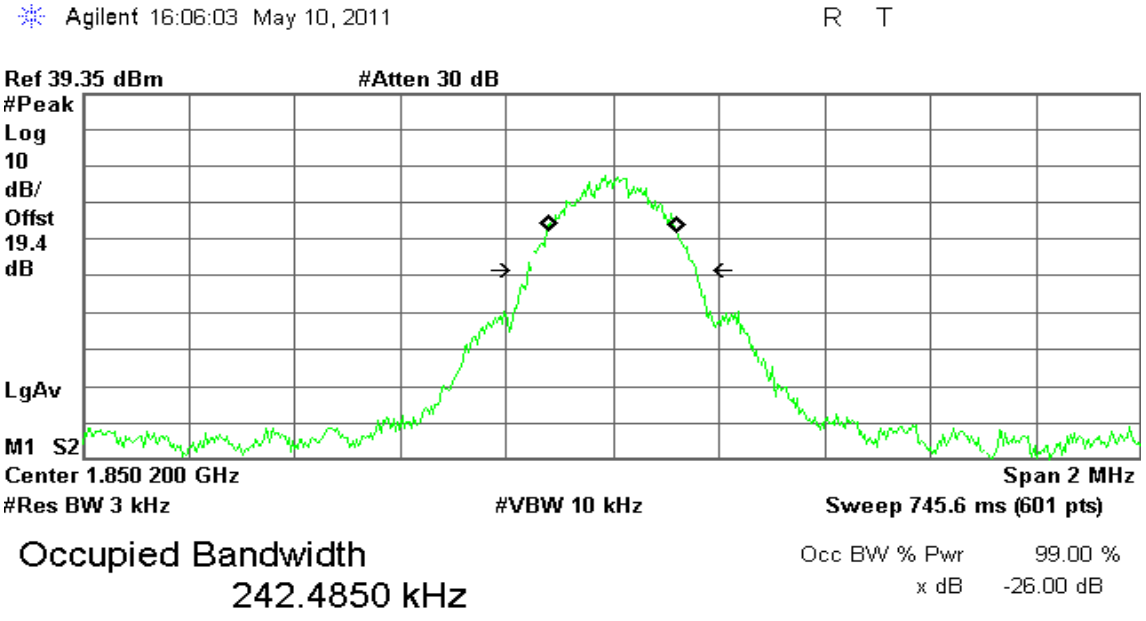
Transmit Freq Error	755.275 Hz
x dB Bandwidth	309.127 kHz

GSM 1900 (CH High)



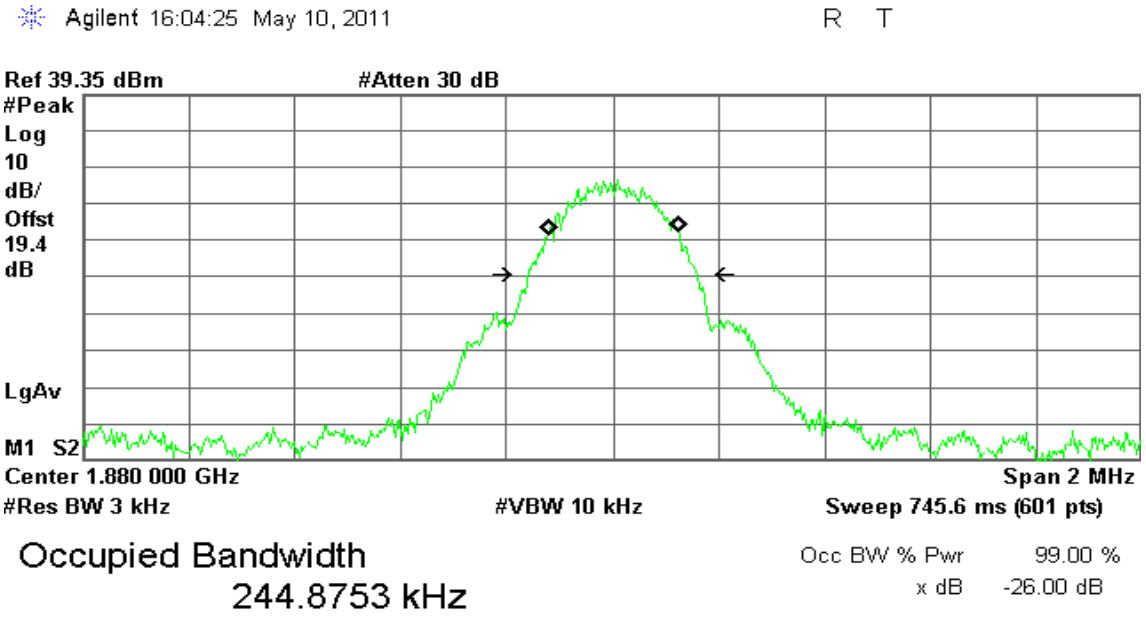
Transmit Freq Error	7.315 kHz
x dB Bandwidth	313.481 kHz

GPRS 1900 (CH Low)



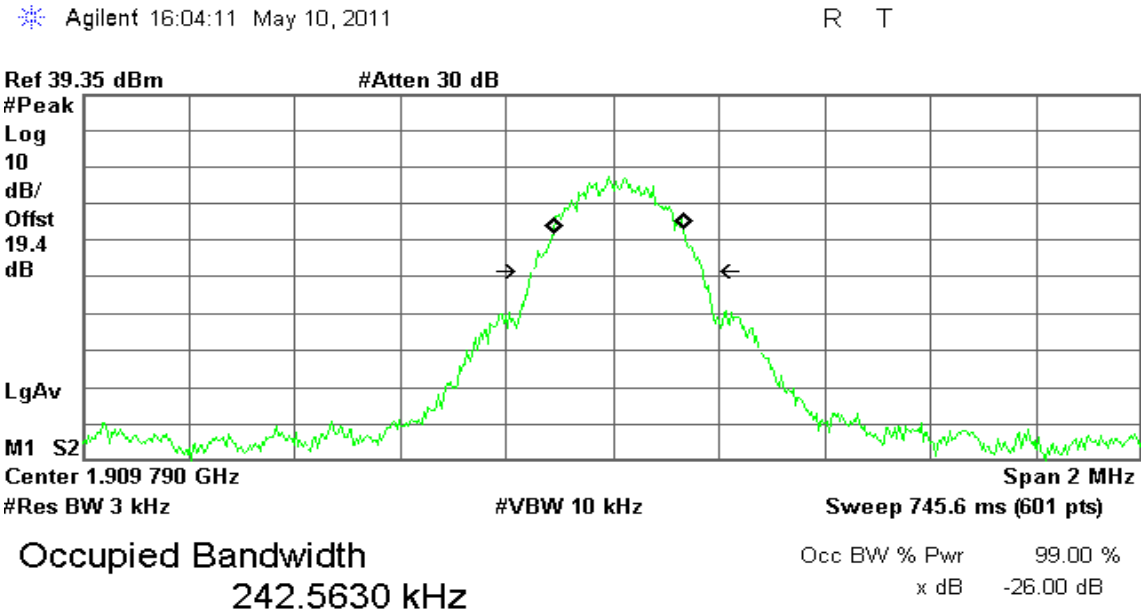
Transmit Freq Error	99.669 Hz
x dB Bandwidth	316.390 kHz

GPRS 1900 (CH Mid)



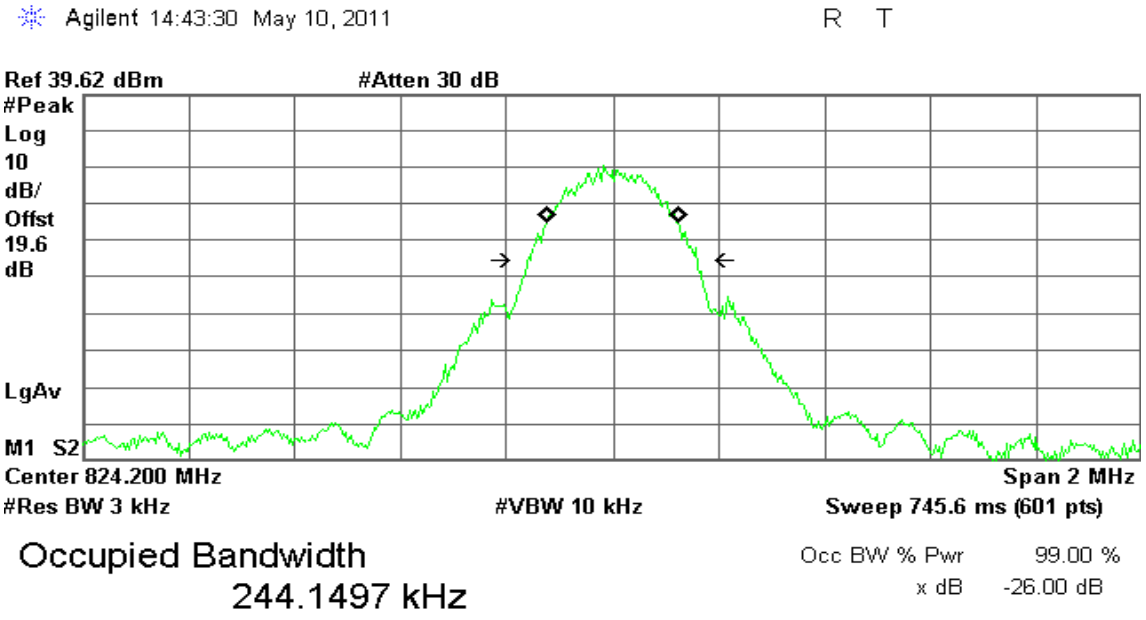
Transmit Freq Error	1.683 kHz
x dB Bandwidth	317.163 kHz

GPRS 1900 (CH High)



Transmit Freq Error	11.479 kHz
Occupied Bandwidth	321.221 kHz

EDGE 850 (CH Low)

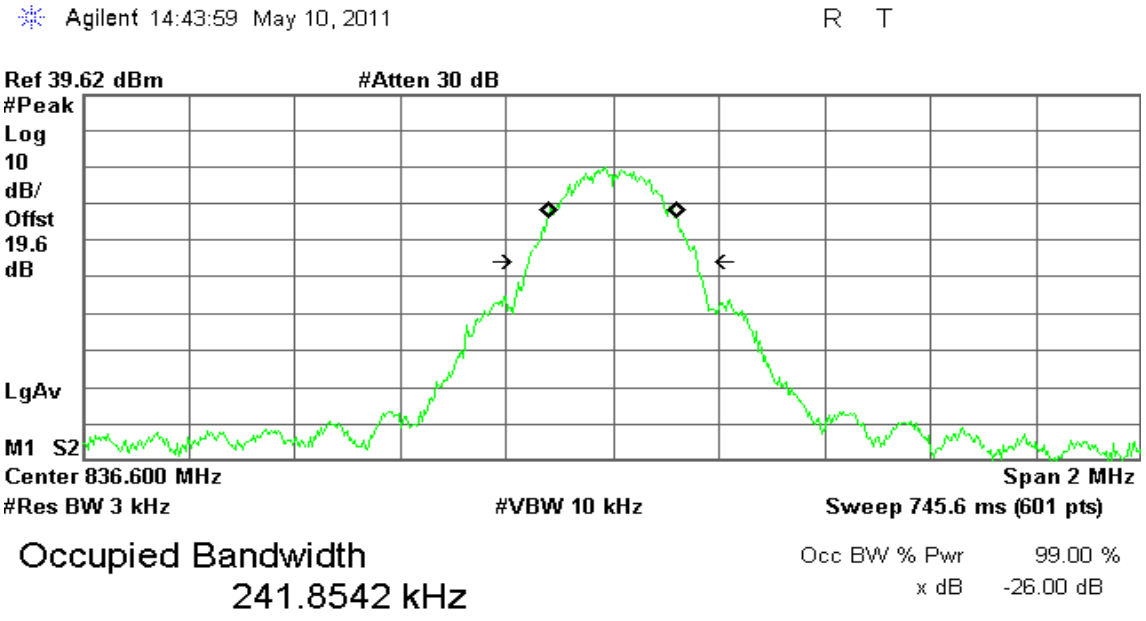


Occupied Bandwidth
244.1497 kHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error	28.622 Hz
x dB Bandwidth	317.715 kHz

EDGE 850 (CH Mid)

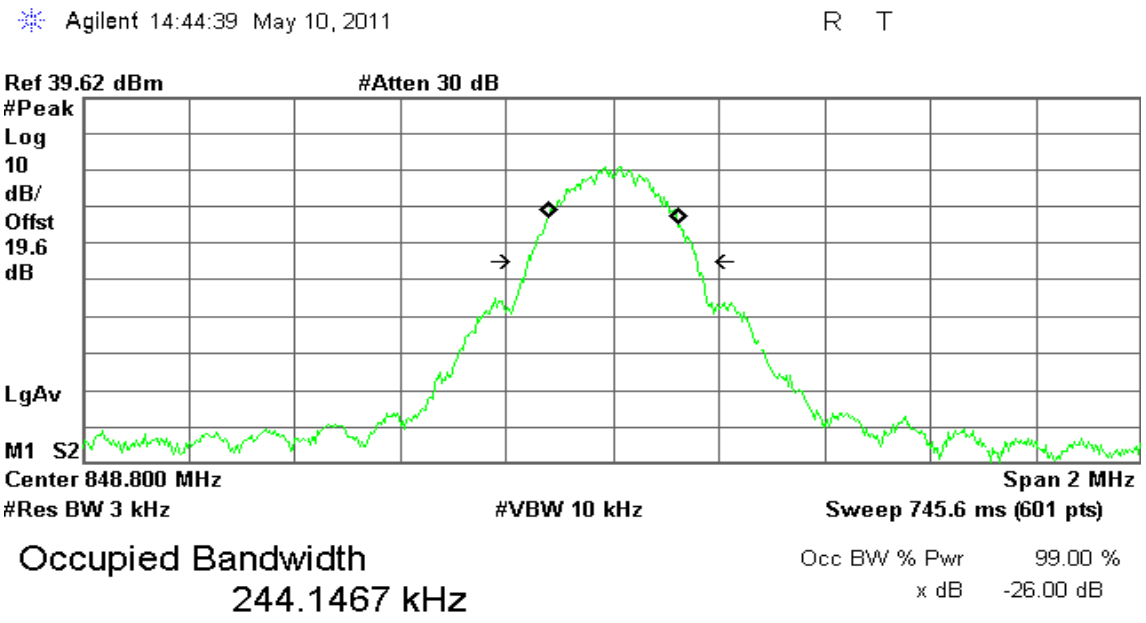


Occupied Bandwidth
241.8542 kHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

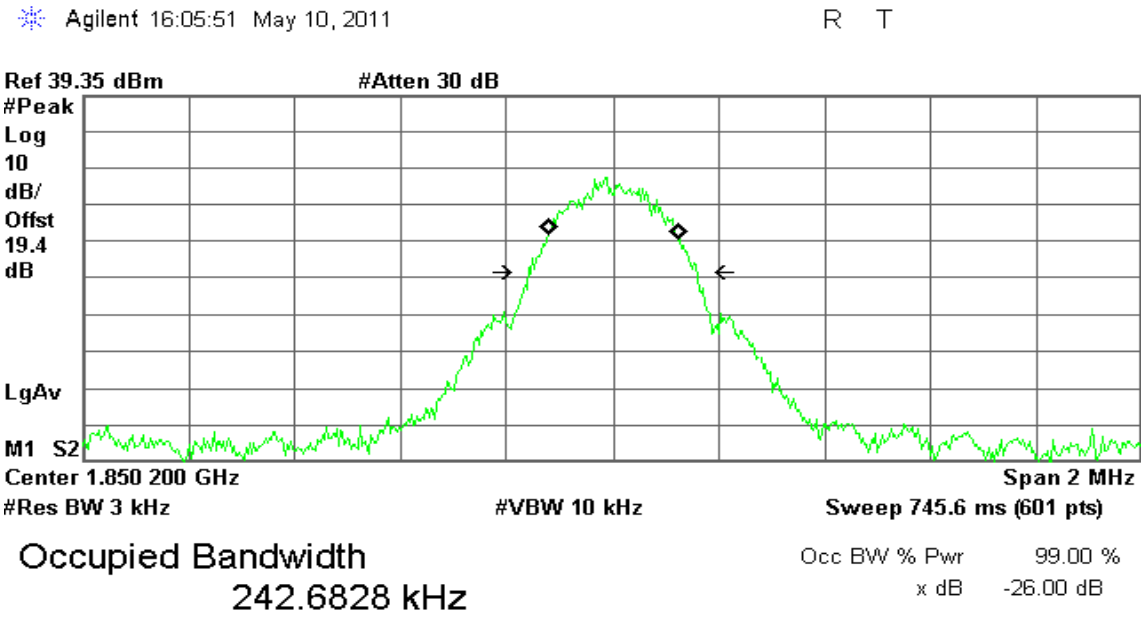
Transmit Freq Error	57.634 Hz
x dB Bandwidth	316.746 kHz

EDGE 850 (CH High)



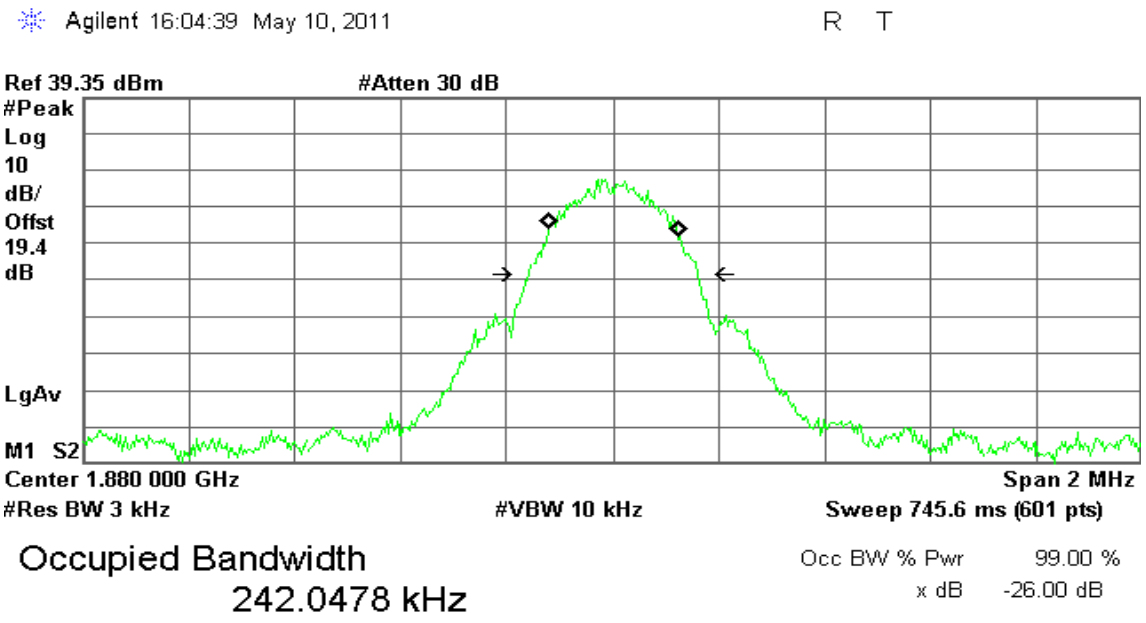
Transmit Freq Error	512.416 Hz
x dB Bandwidth	317.206 kHz

EDGE 1900 (CH Low)



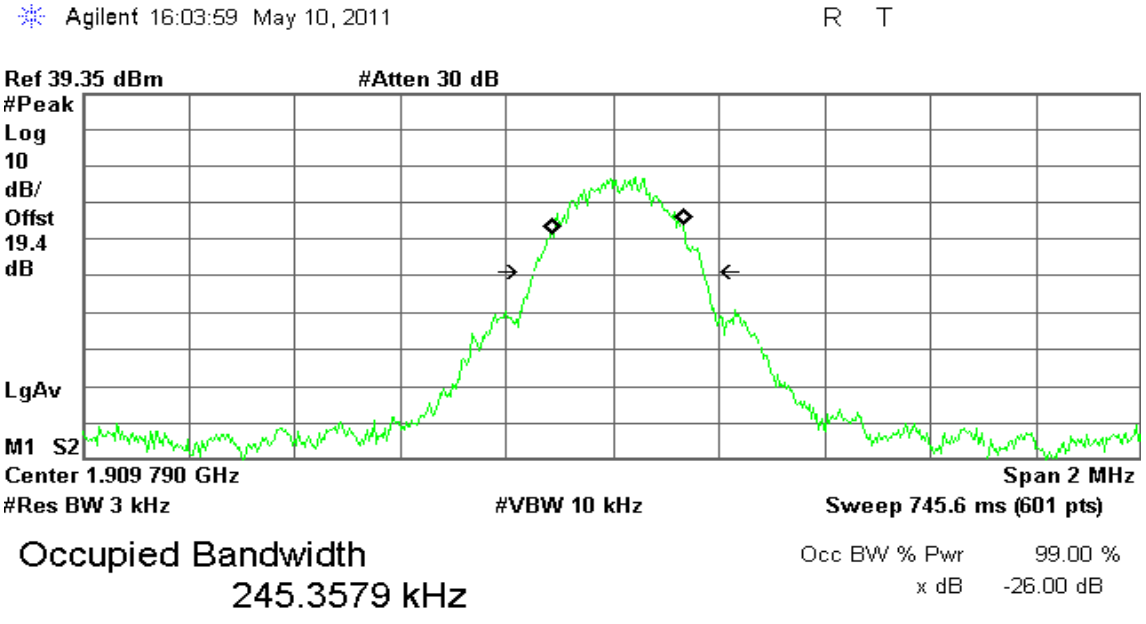
Transmit Freq Error	1.226 kHz
x dB Bandwidth	316.450 kHz

EDGE 1900 (CH Mid)



Transmit Freq Error	1.529 kHz
x dB Bandwidth	316.367 kHz

EDGE 1900 (CH High)



Transmit Freq Error	10.761 kHz
x dB Bandwidth	317.785 kHz

7.5OUT OF BAND EMISSION AT ANTENNA TERMINALS

LIMIT

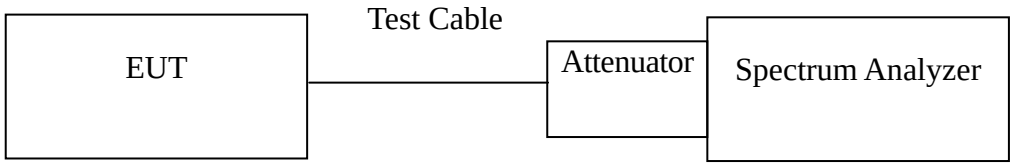
According to FCC §2.1051, FCC §22.917, FCC §24.238(a).

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	128	Figure 7-1	Conducted spurious emissions, 30MHz - 20GHz
	190	Figure 7-2	Conducted spurious emissions, 30MHz - 20GHz
	251	Figure 7-3	Conducted spurious emissions, 30MHz - 20GHz
GPRS 850 (Class 12)	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 (Class 12)	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 (Class 12)	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 (Class 12)	512	Figure 14-1	Band Edge emissions
	810	Figure 14-2	Band Edge emissions

Mode	CH	Location	Description
EDGE 850	128	Figure 15-1	Conducted spurious emissions, 30MHz - 20GHz
	190	Figure 15-2	Conducted spurious emissions, 30MHz - 20GHz
	251	Figure 15-3	Conducted spurious emissions, 30MHz - 20GHz
EDGE 1900	512	Figure 16-1	Conducted spurious emissions, 30MHz - 20GHz
	661	Figure 16-2	Conducted spurious emissions, 30MHz - 20GHz
	810	Figure 16-3	Conducted spurious emissions, 30MHz - 20GHz

Mode	CH	Location	Description
EDGE 850	128	Figure 17-1	Band Edge emissions
	251	Figure 17-2	Band Edge emissions
EDGE 1900	512	Figure 18-1	Band Edge emissions
	810	Figure 18-2	Band Edge emissions

Test Plot

GSM 850

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

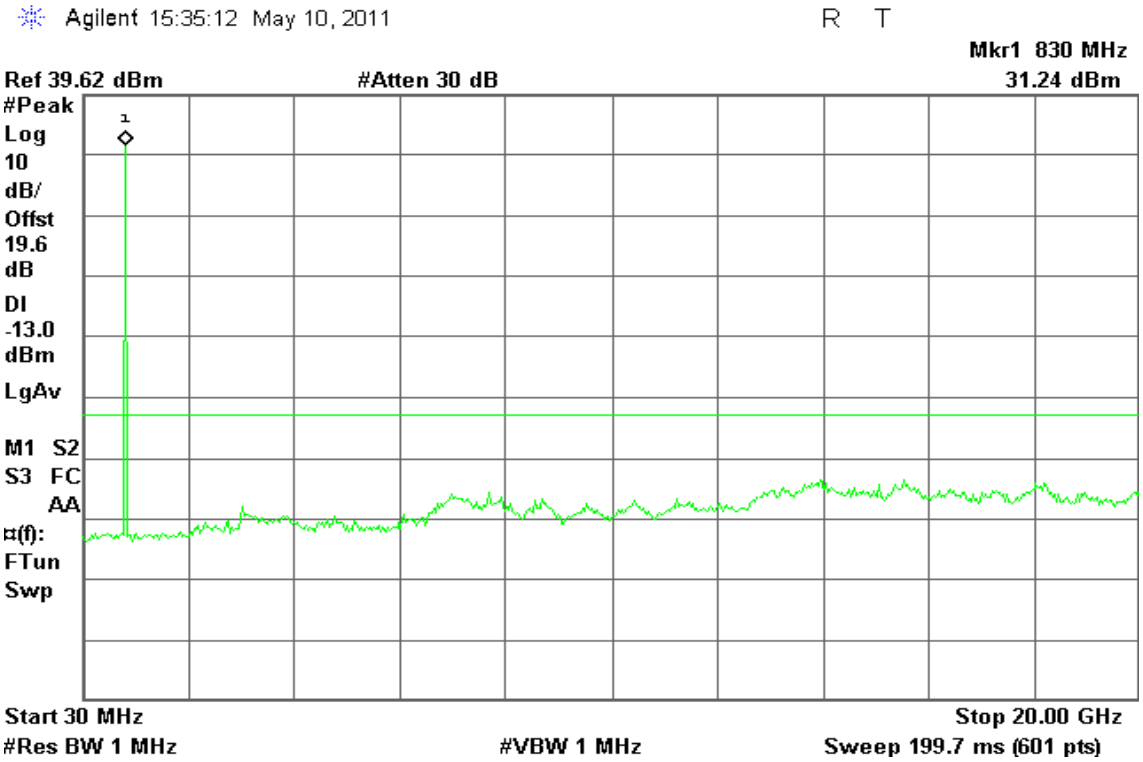


Figure 7-2: Out of Band emission at antenna terminals – GSM CH Mid

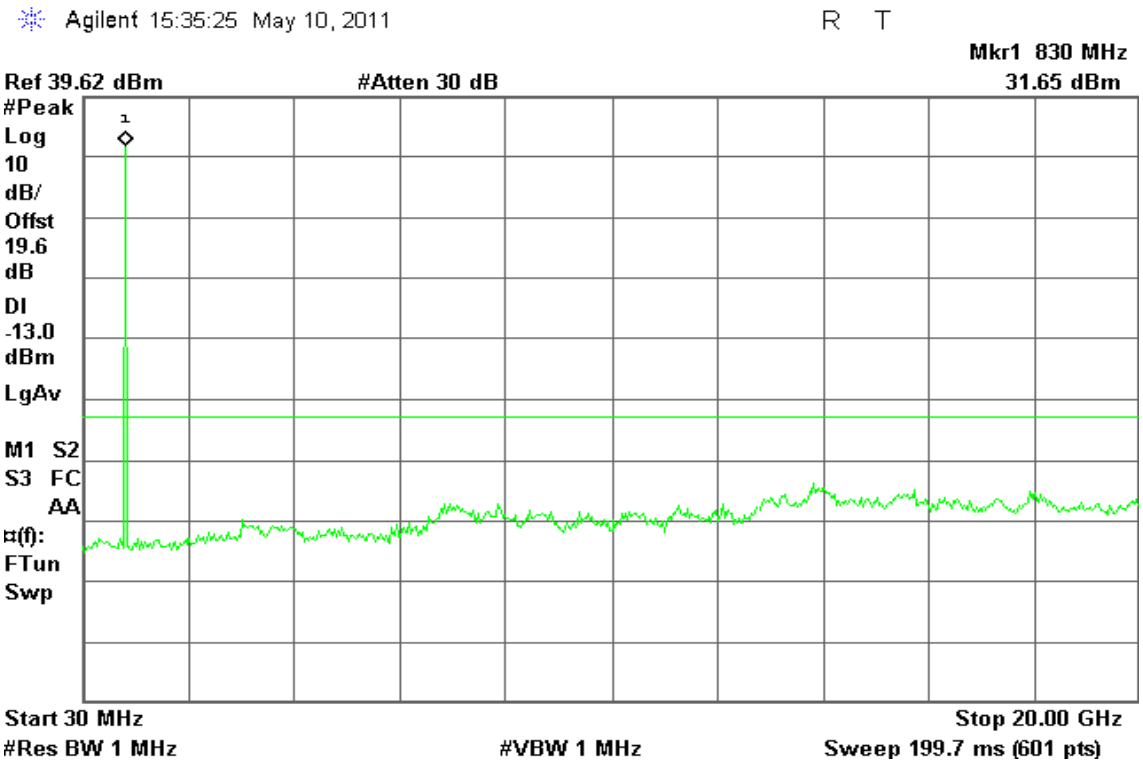
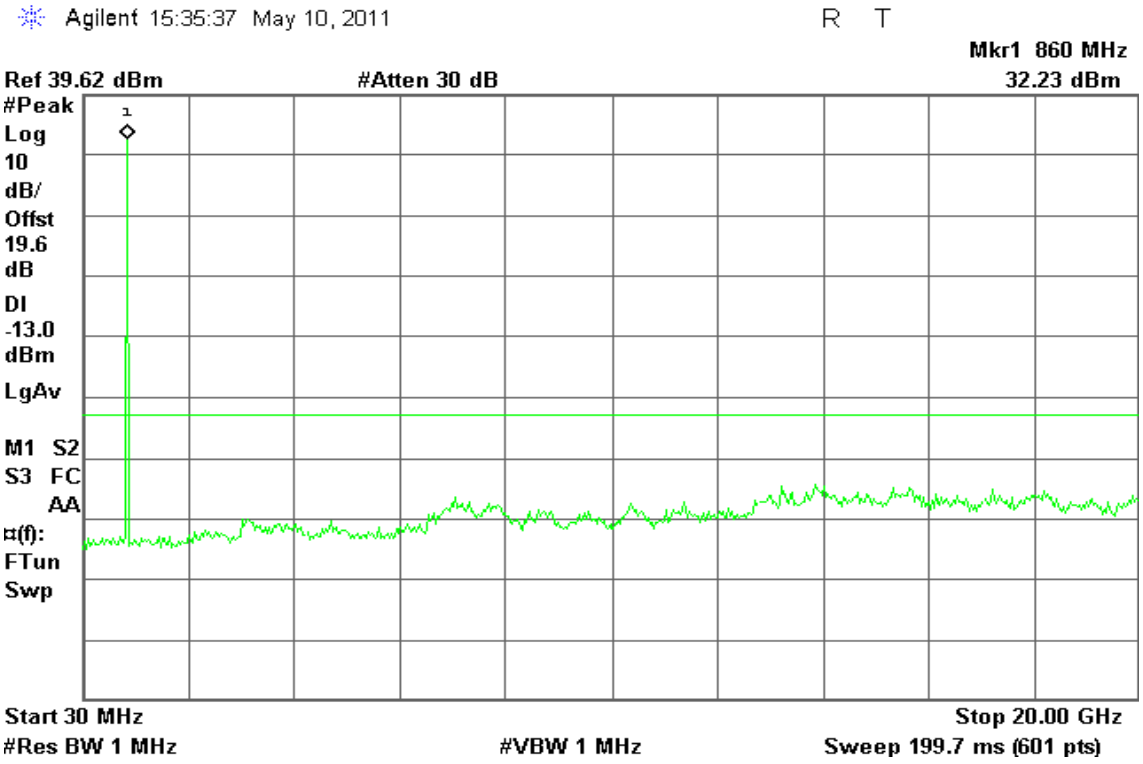


Figure 7-3: Out of Band emission at antenna terminals – GSM CH High



GPRS 850

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

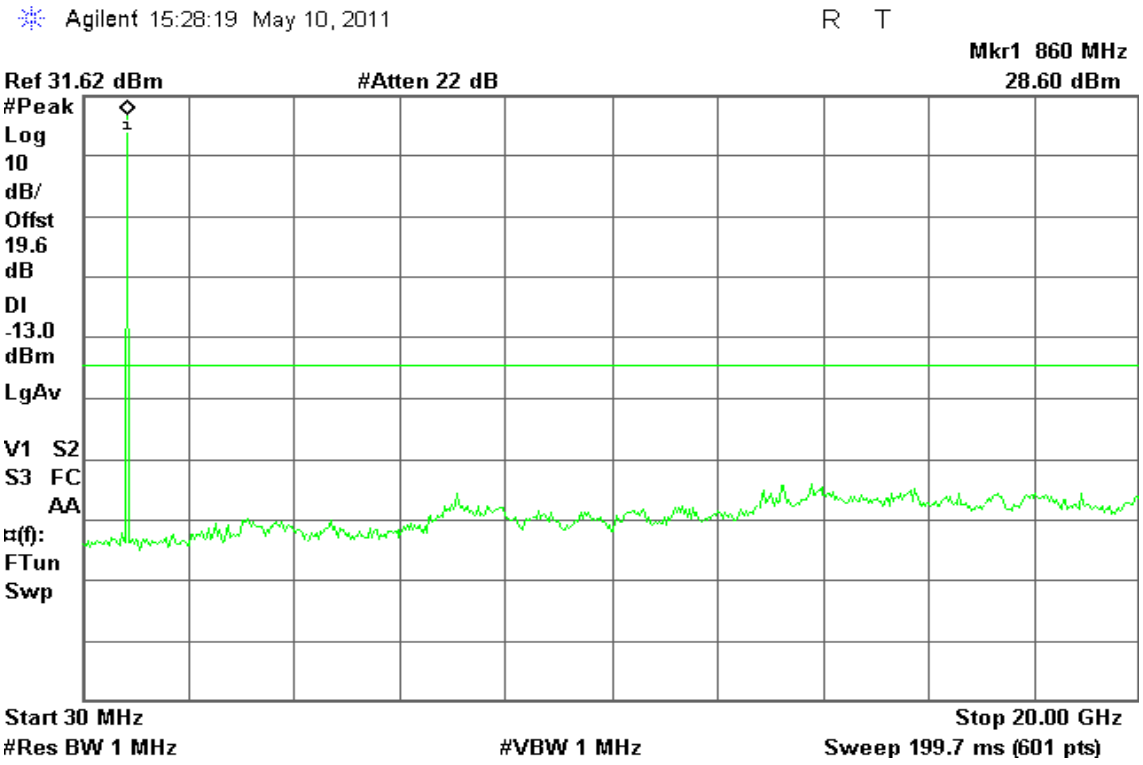


Figure 8-2: Out of Band emission at antenna terminals – GPRS CH Mid

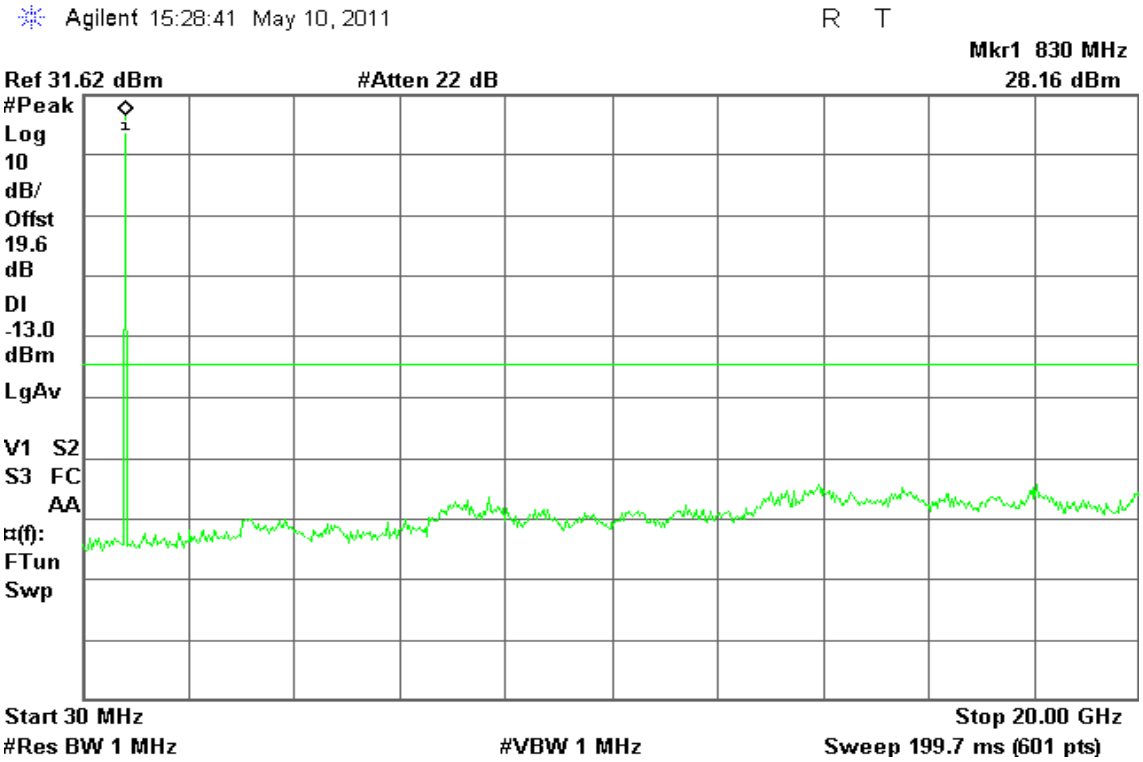
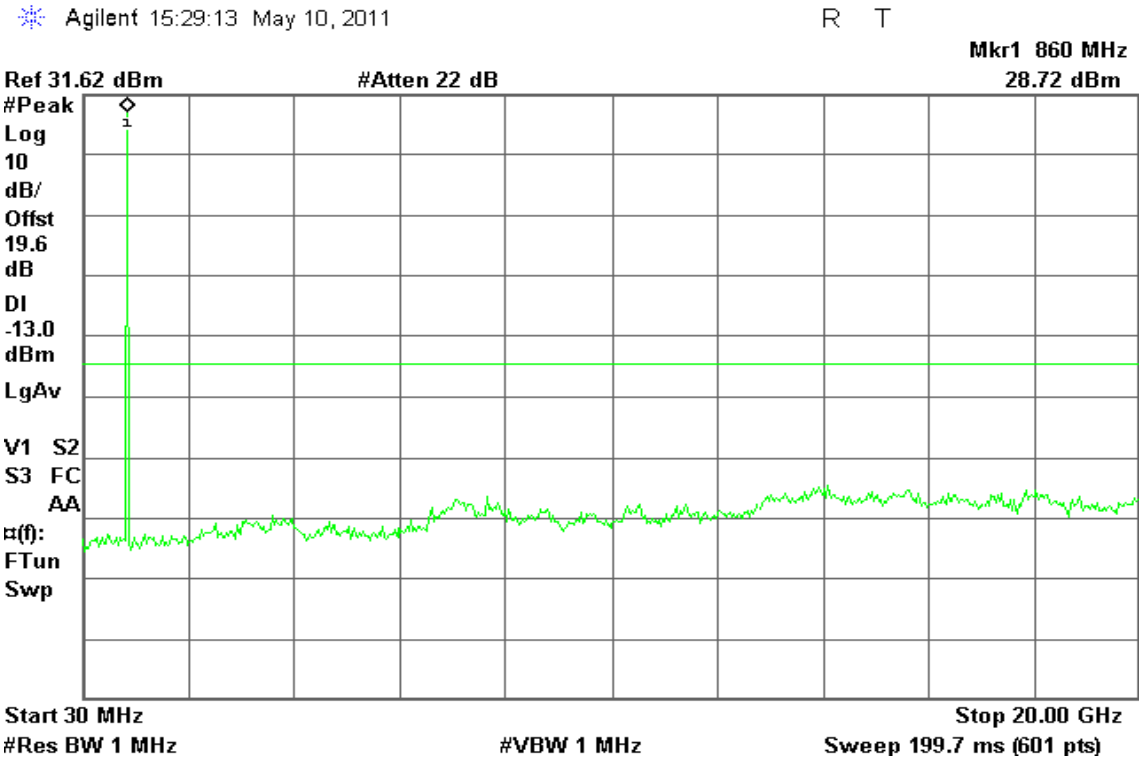


Figure 8-3: Out of Band emission at antenna terminals –GPRS CH High



GSM 1900

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

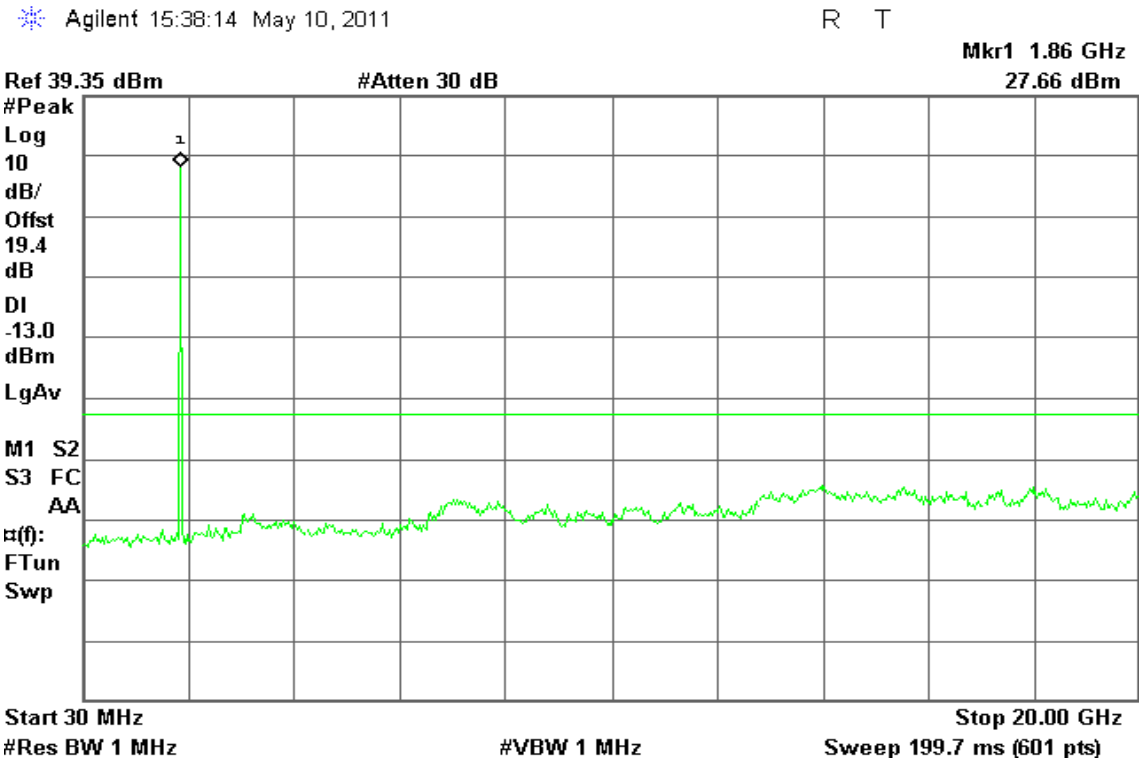


Figure 9-2: Out of Band emission at antenna terminals – GSM CH Mid

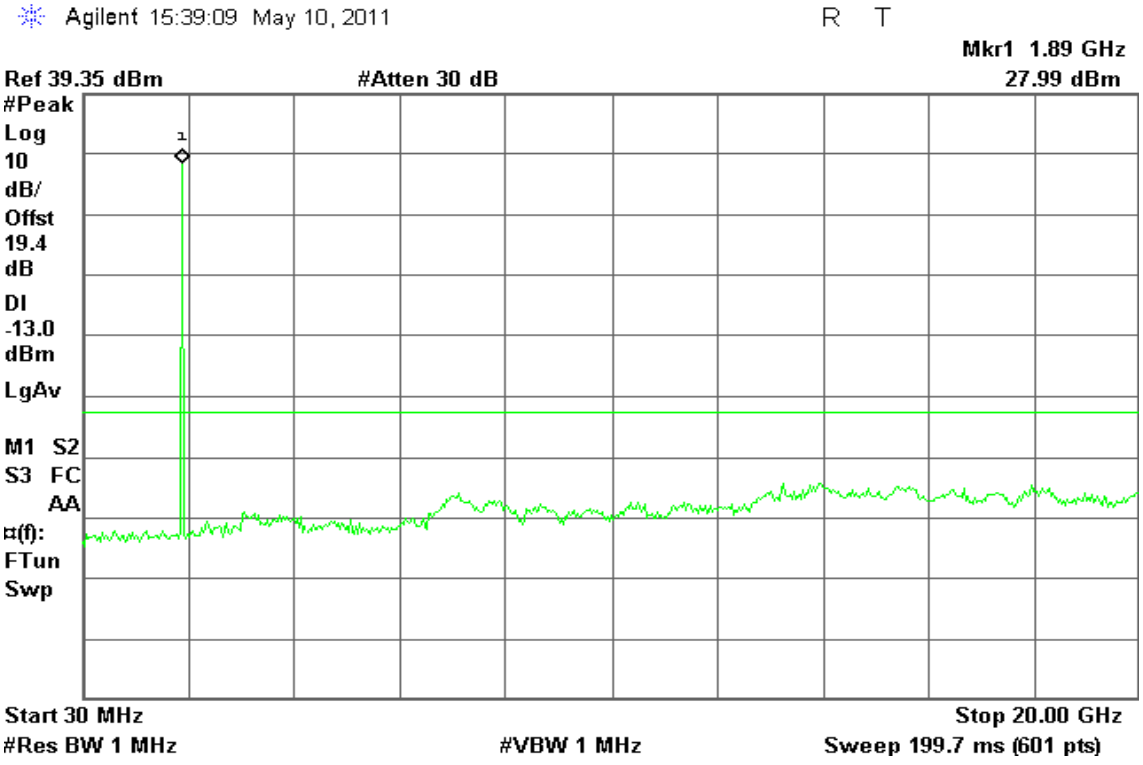
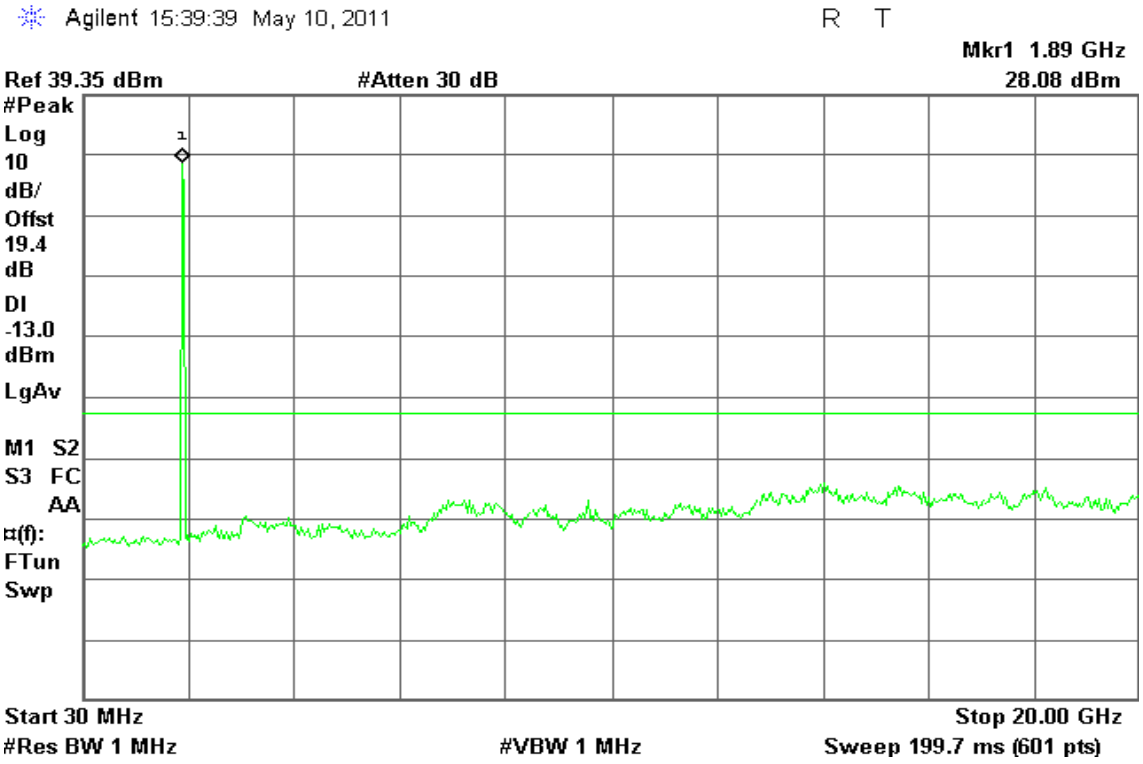


Figure 9-3: Out of Band emission at antenna terminals – GSM CH High



GPRS 1900

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

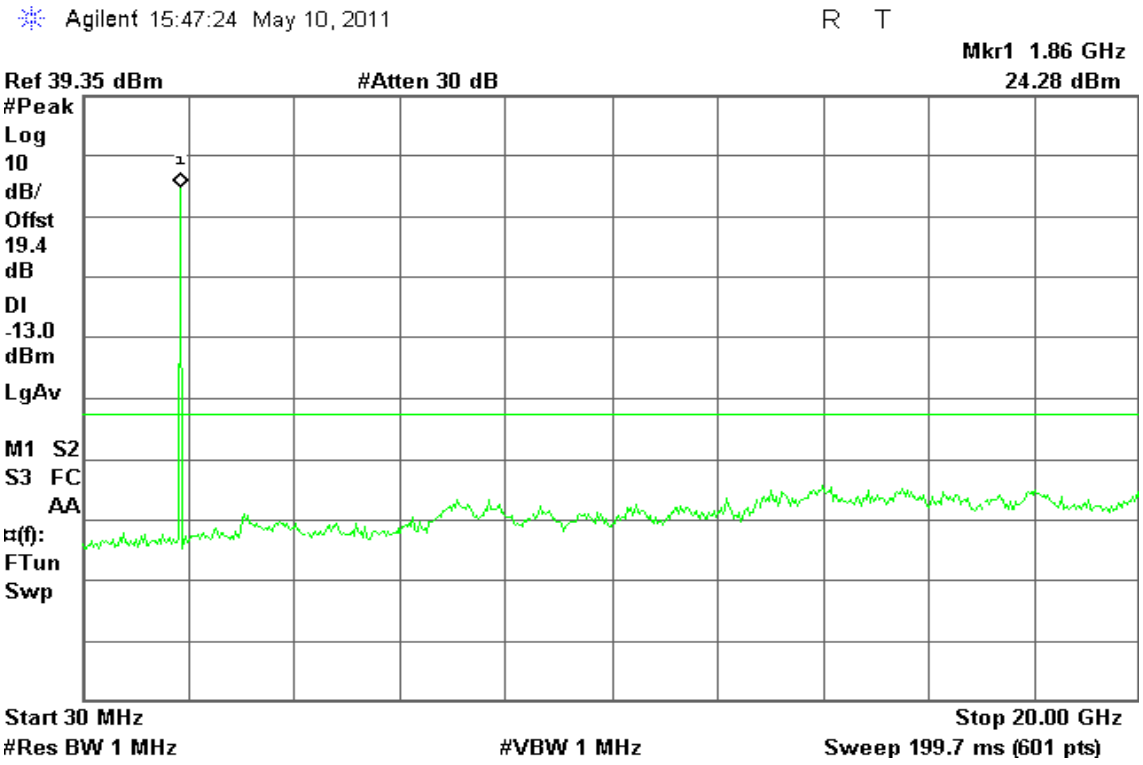


Figure 10-2: Out of Band emission at antenna terminals – GSM CH Mid

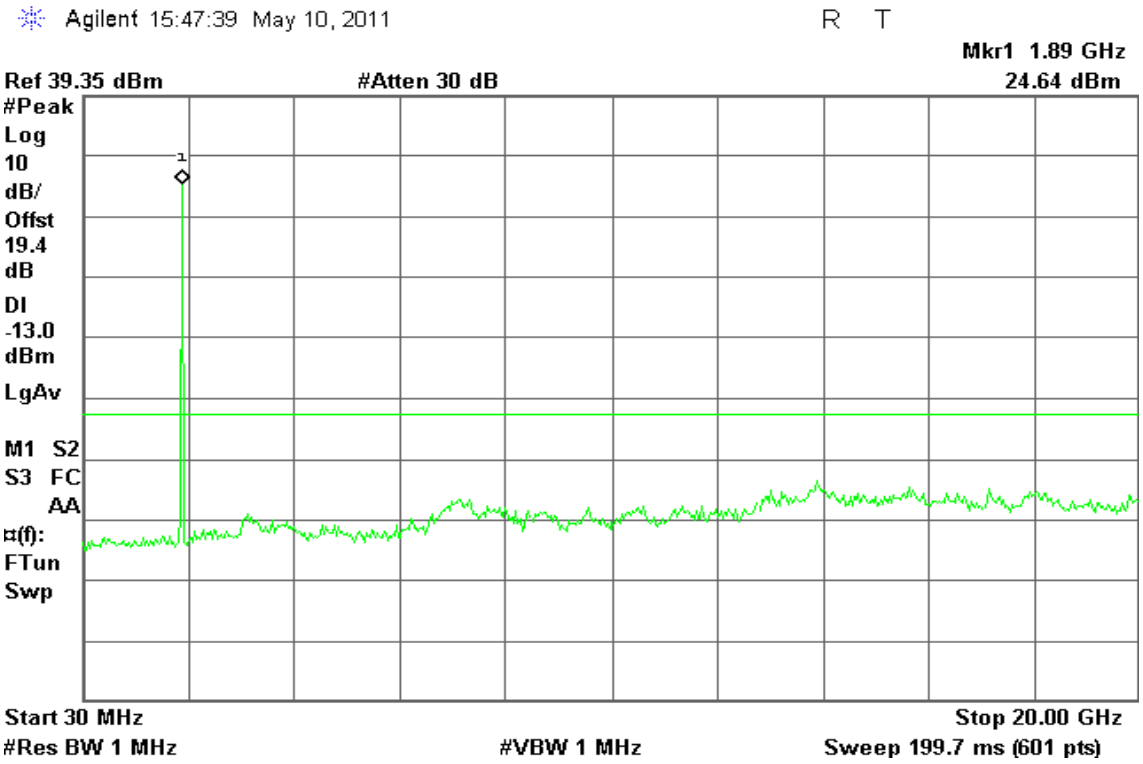
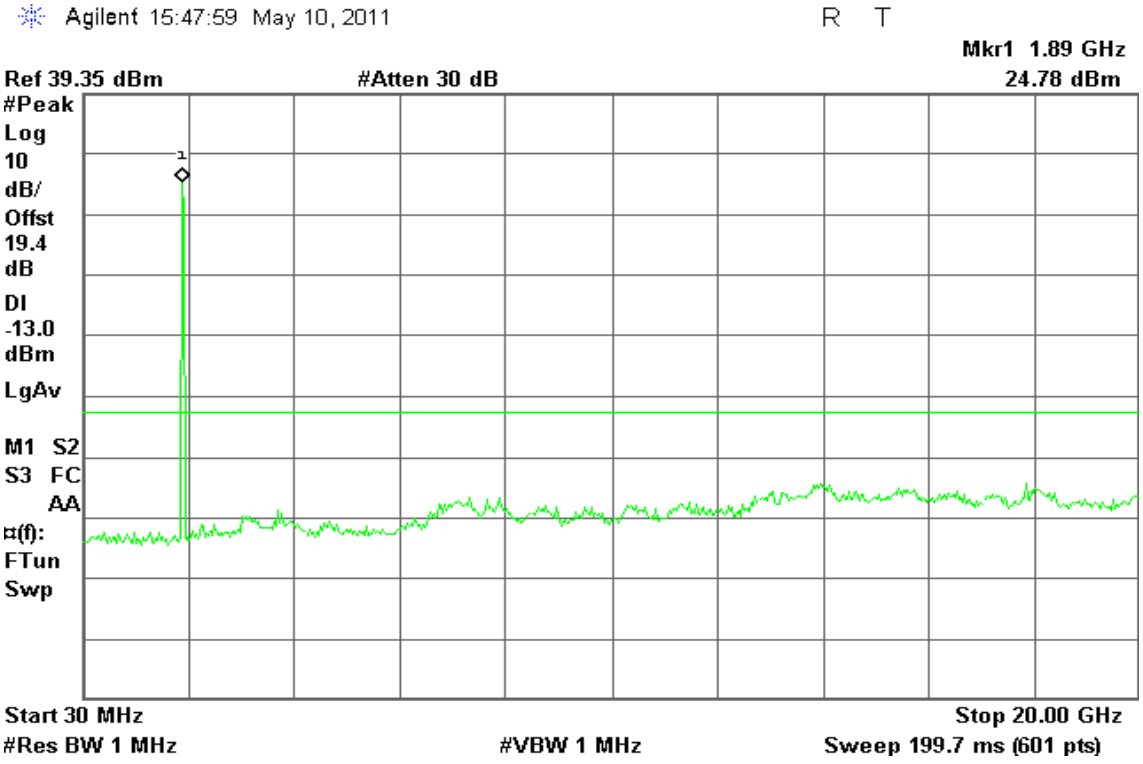


Figure 10-3: Out of Band emission at antenna terminals – GSM CH High



GSM 850

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

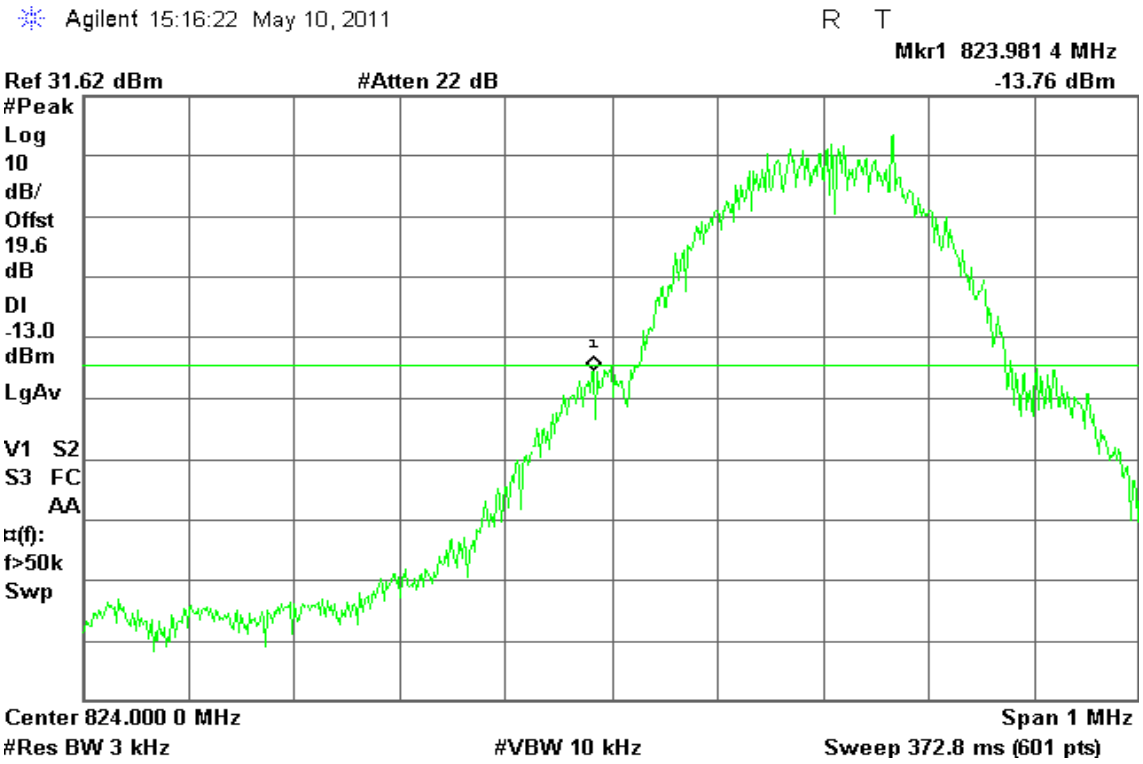
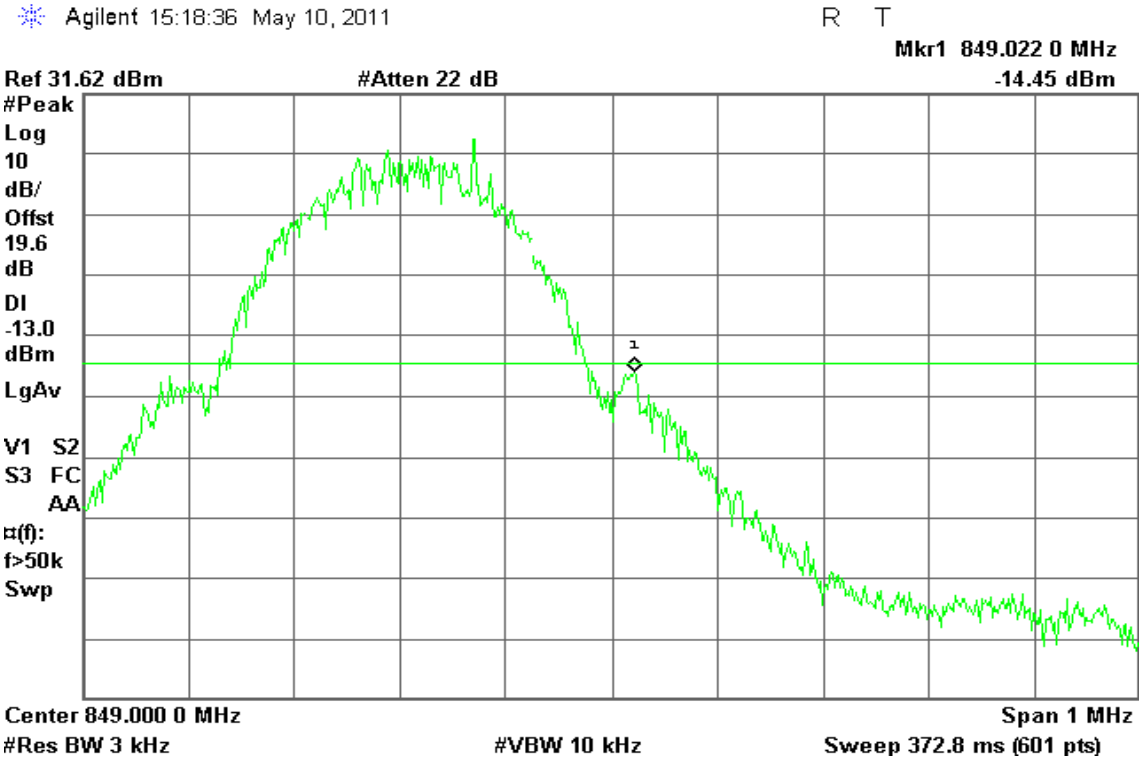


Figure 11-2: Band Edge emissions – GSM CH High



GPRS 850

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

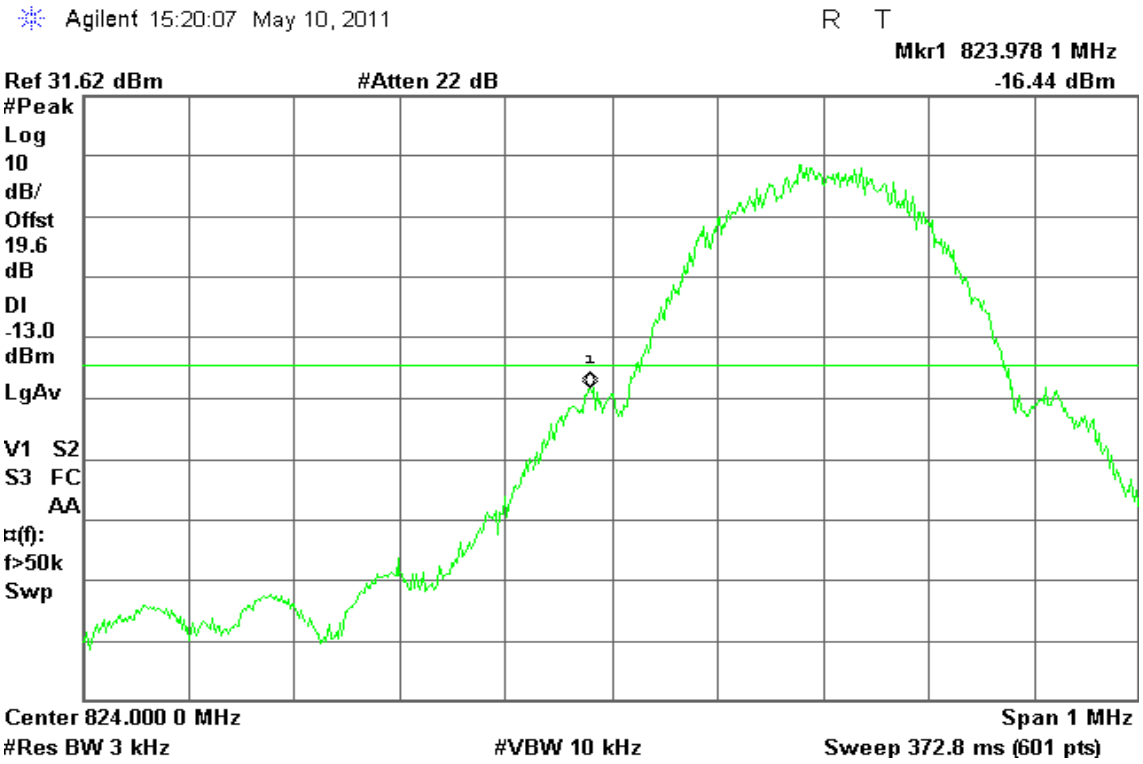
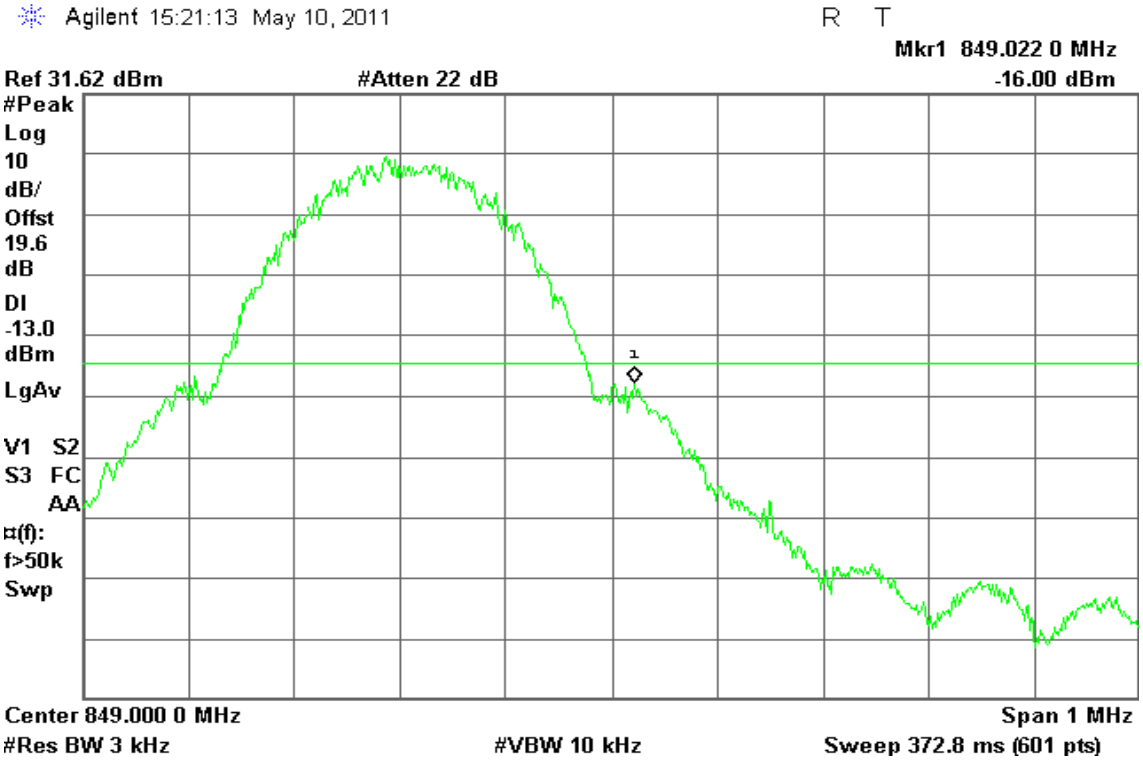


Figure 12-2: Band Edge emissions –GPRS CH High



GSM 1900

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

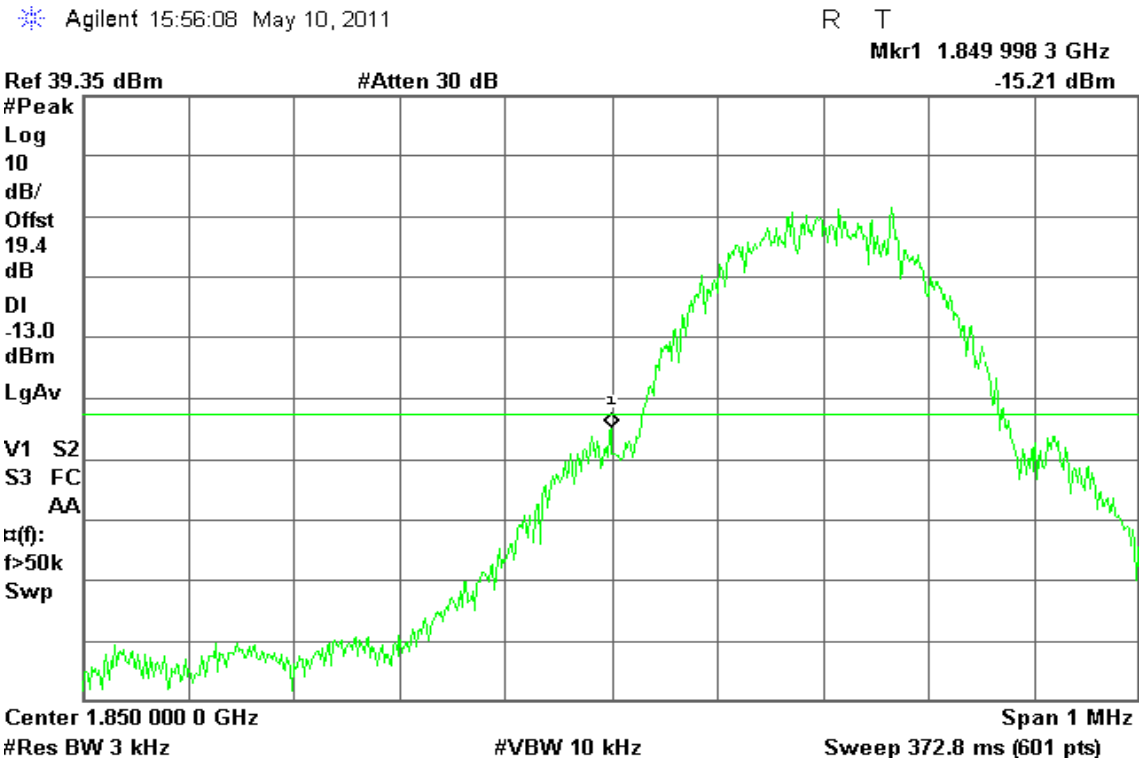
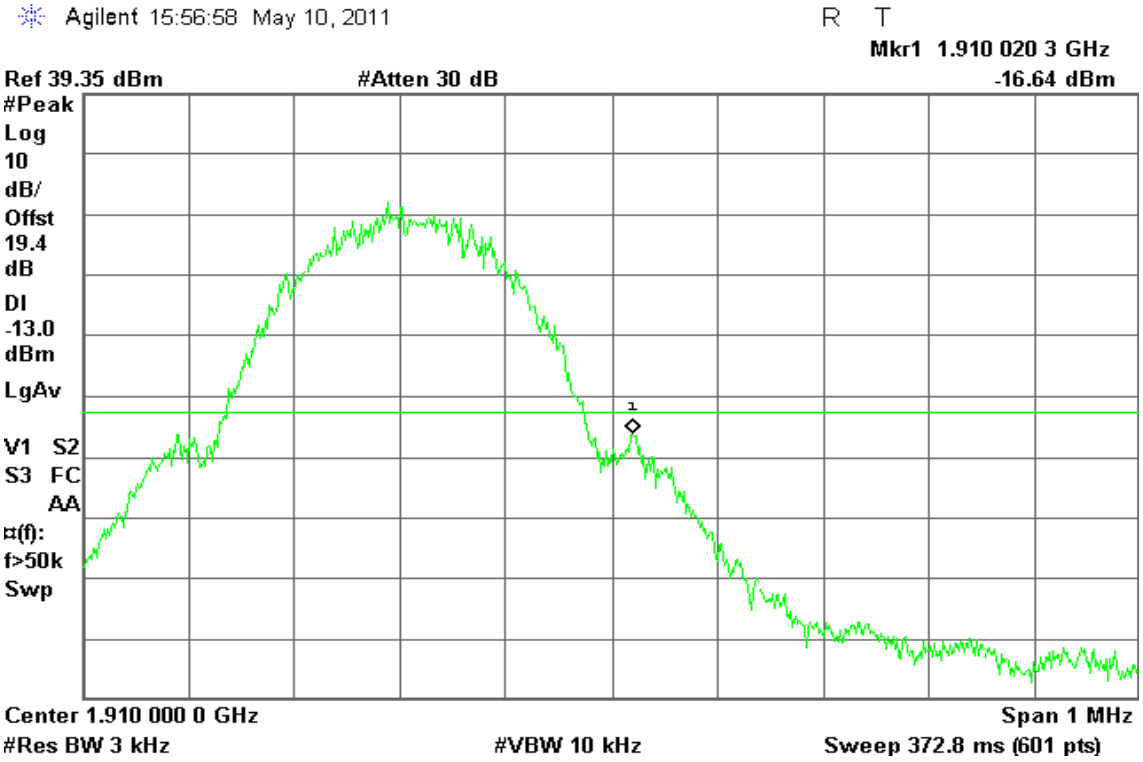


Figure 13-2: Band Edge emissions – GSM CH High



GPRS 1900

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

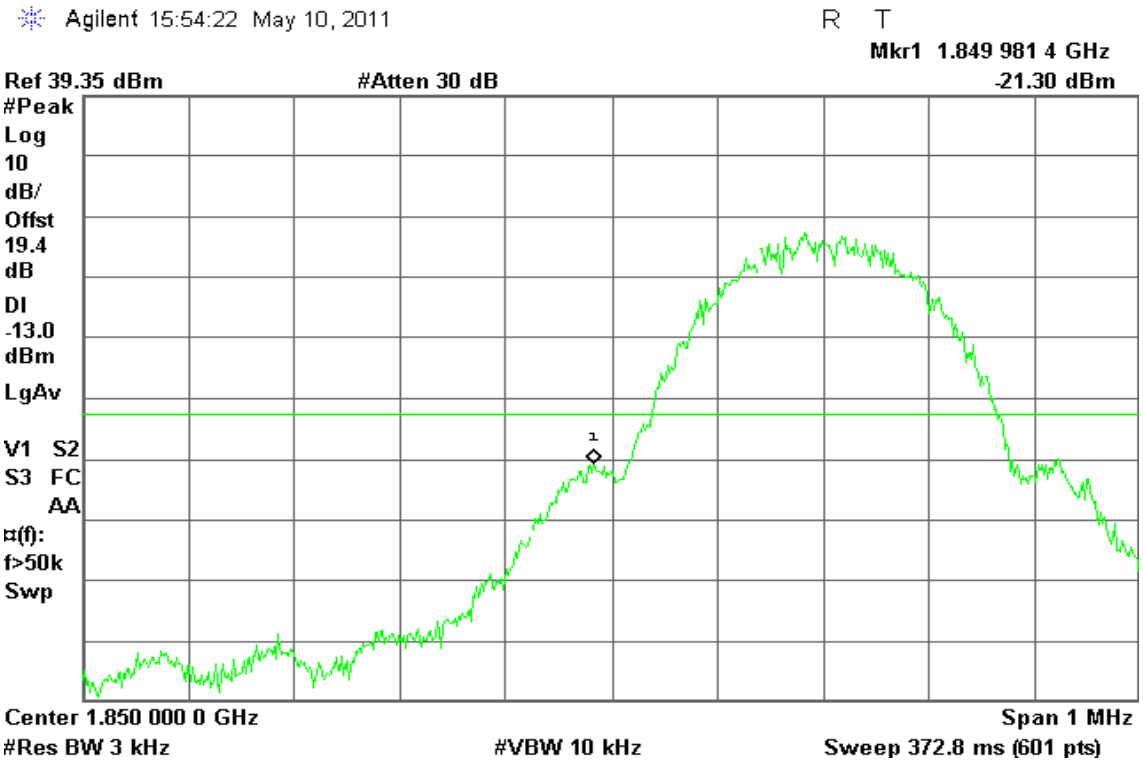
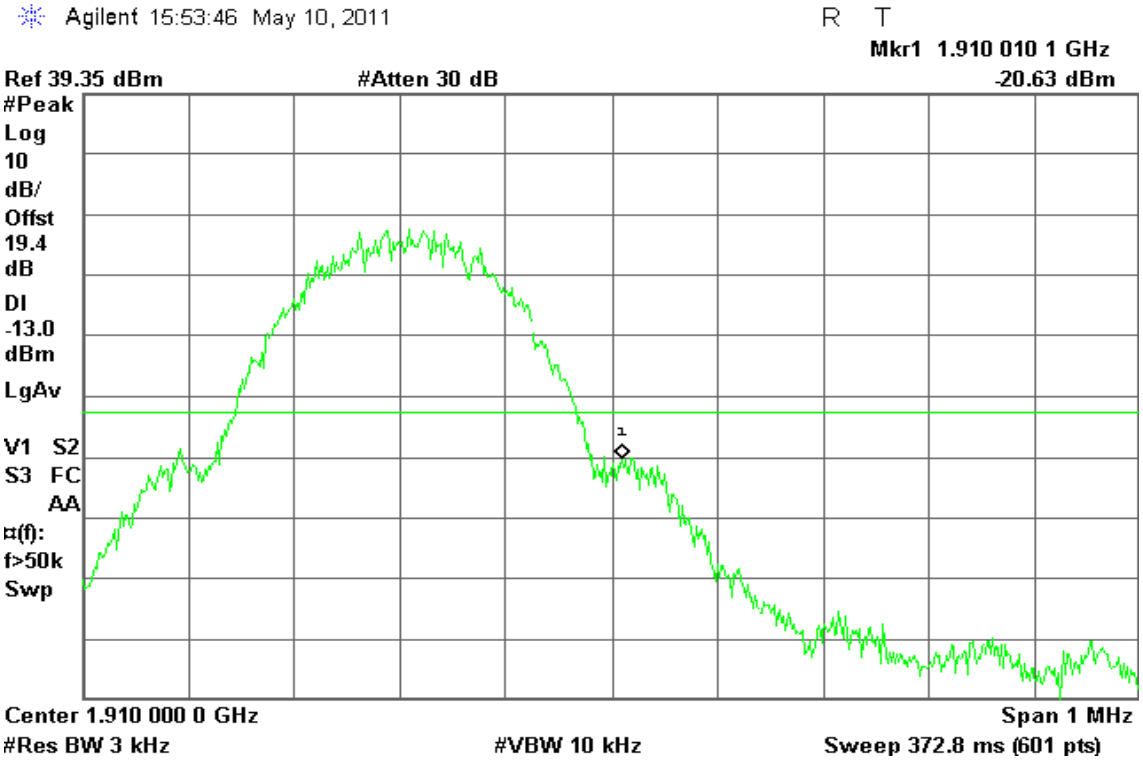


Figure 14-2: Band Edge emissions – GPRS CH High



EDGE 850

Figure 15-1: Out of Band emission at antenna terminals –EDGE CH Low

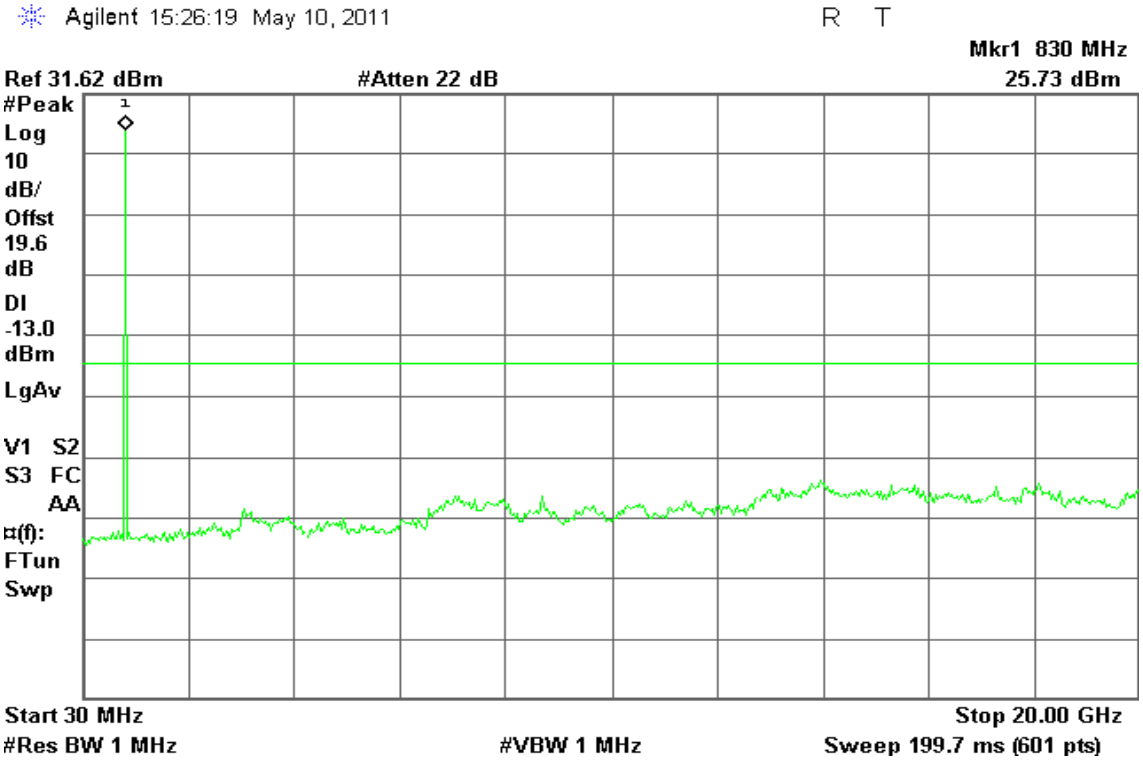


Figure 15-2: Out of Band emission at antenna terminals –EDGE CH Mid

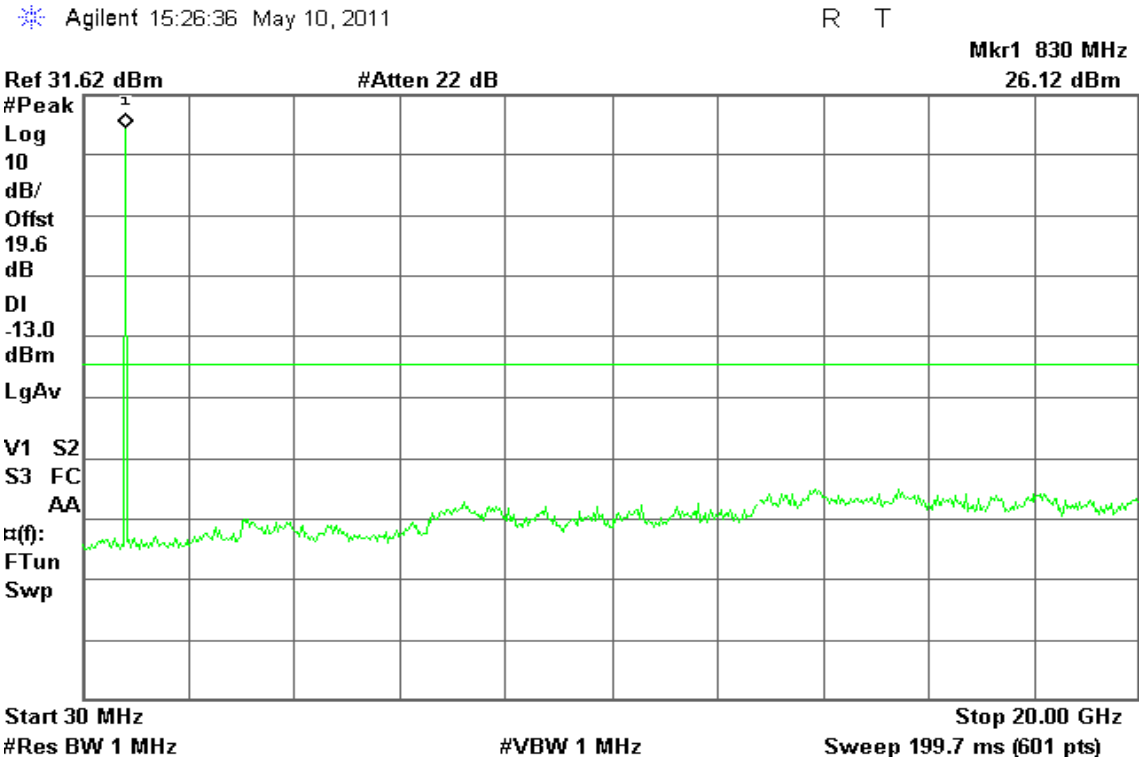
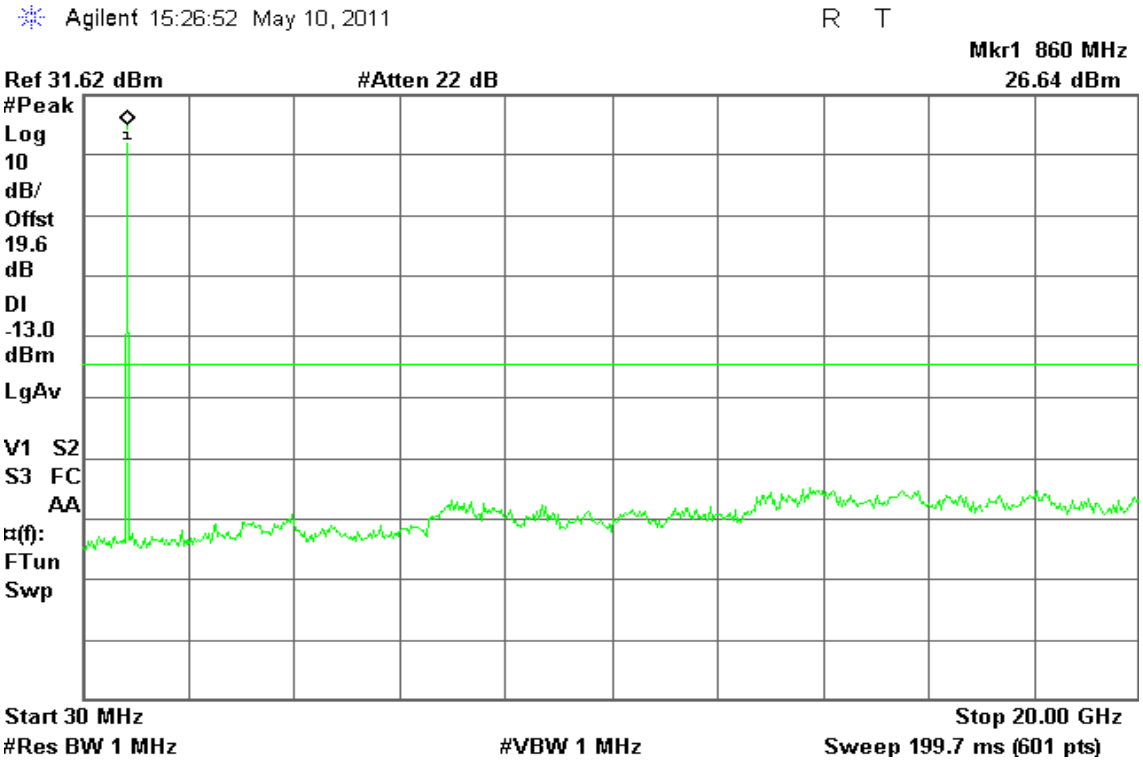


Figure 15-3: Out of Band emission at antenna terminals –EDGE CH High



EDGE 1900

Figure 16-1: Out of Band emission at antenna terminals –EDGE CH Low

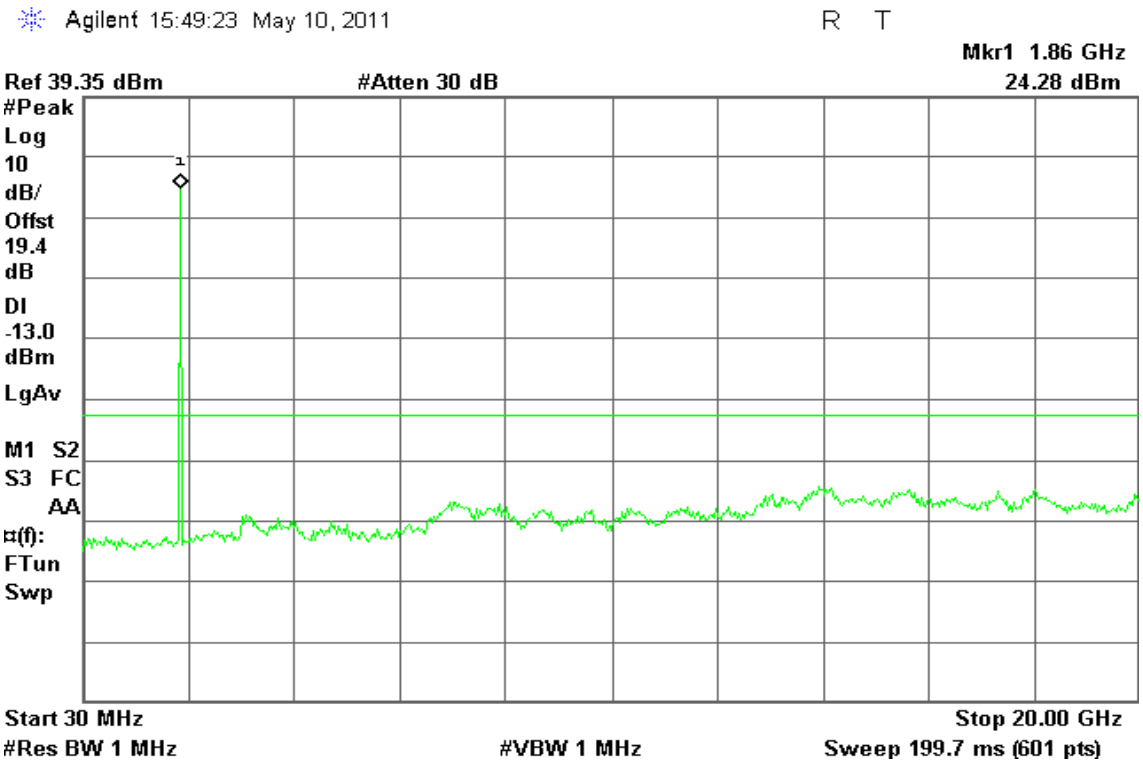


Figure 16-2: Out of Band emission at antenna terminals –EDGE CH Mid

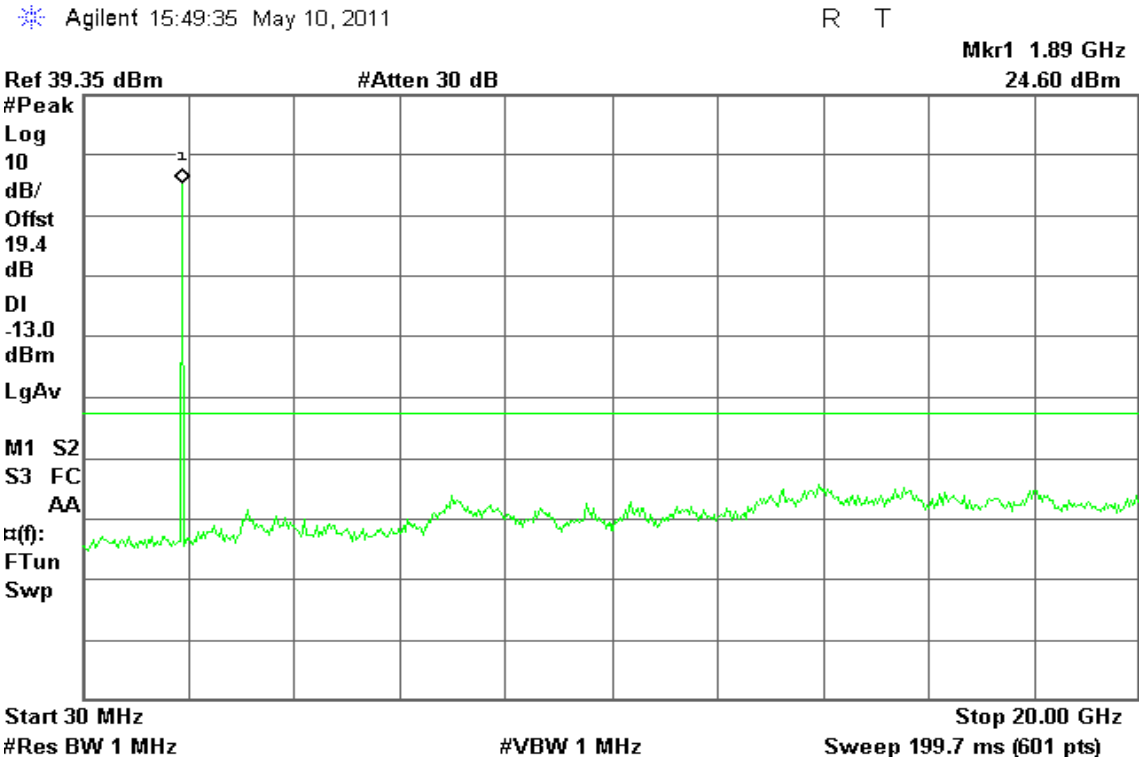
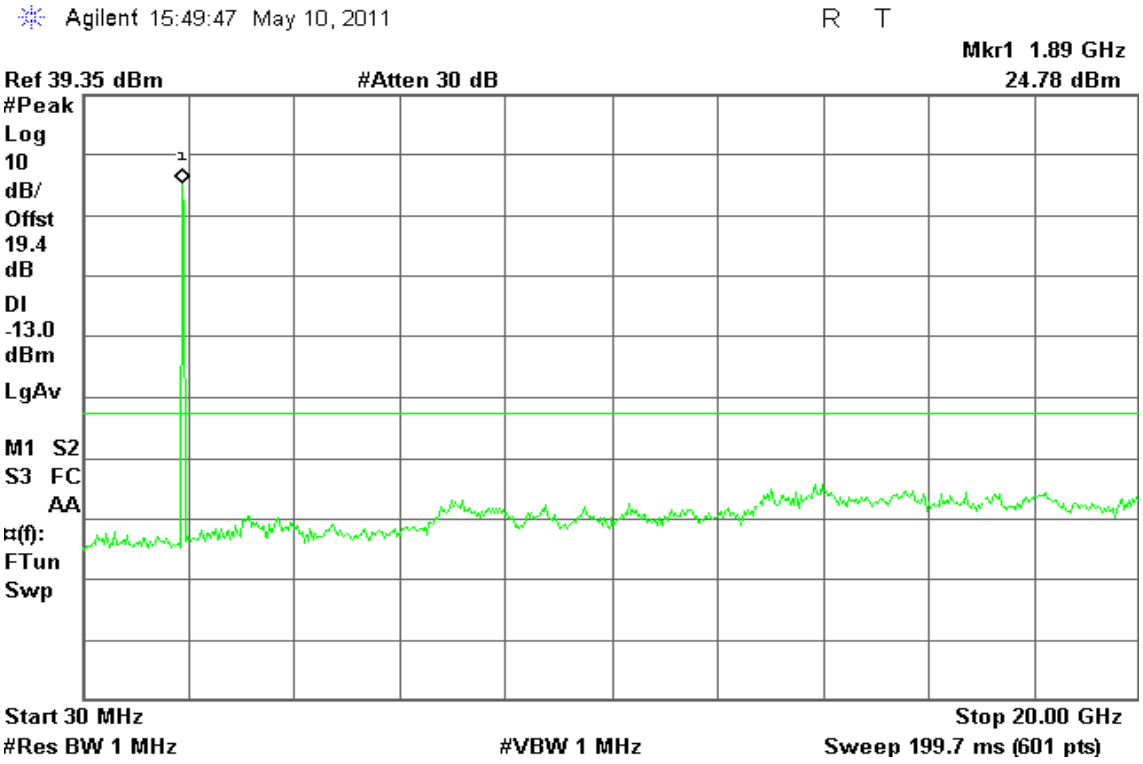


Figure 16-3: Out of Band emission at antenna terminals –EDGE CH High



EDGE 850

Figure 17-1: Band Edge emissions – EDGE CH Low

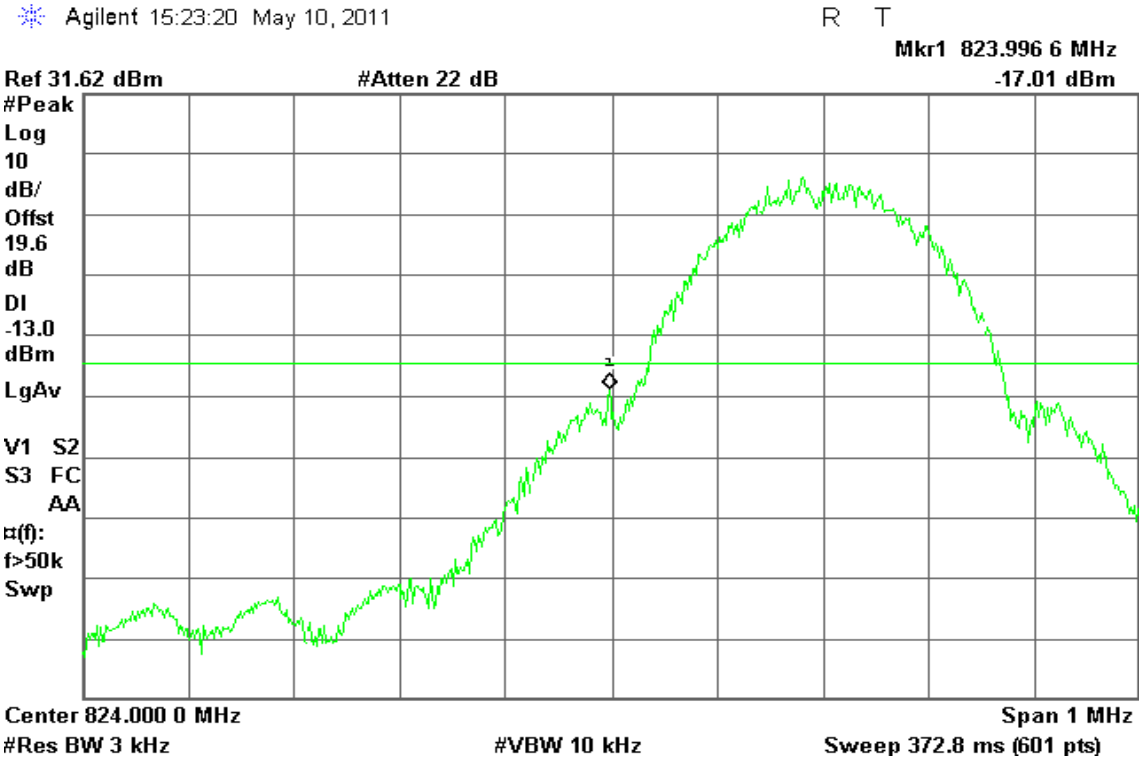
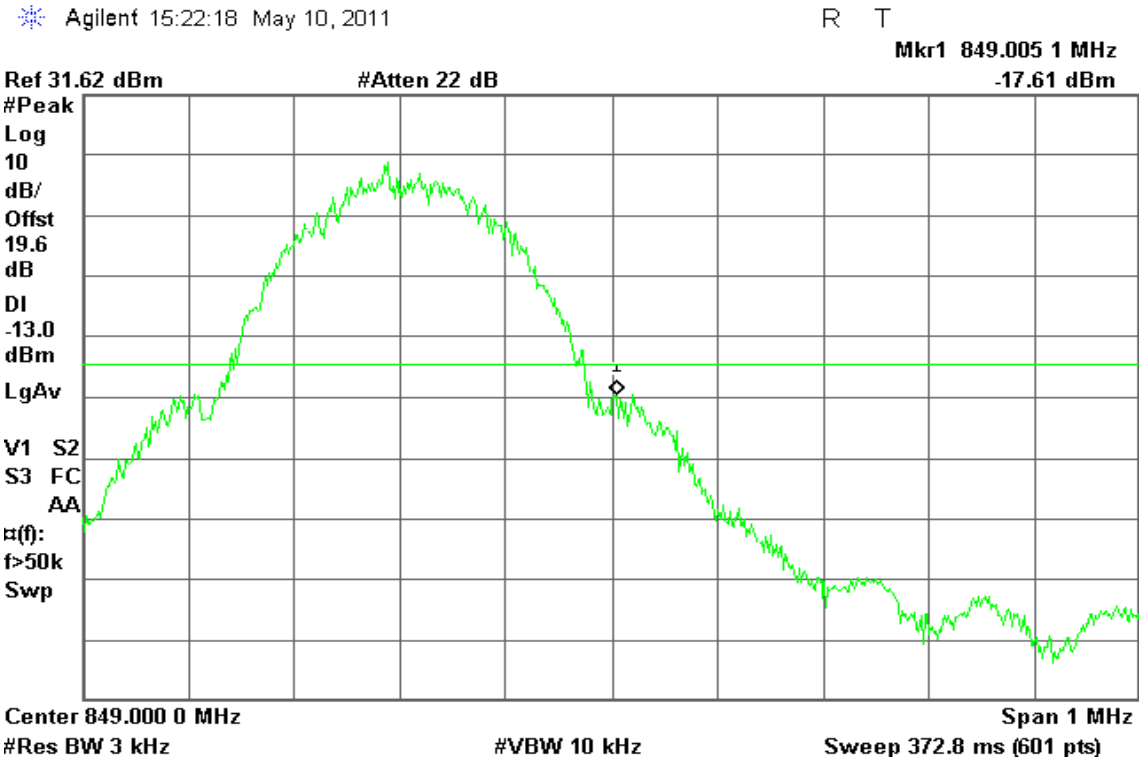


Figure 17-2: Band Edge emissions – EDGE CH High



EDGE 1900

Figure 18-1: Band Edge emissions – EDGE CH Low

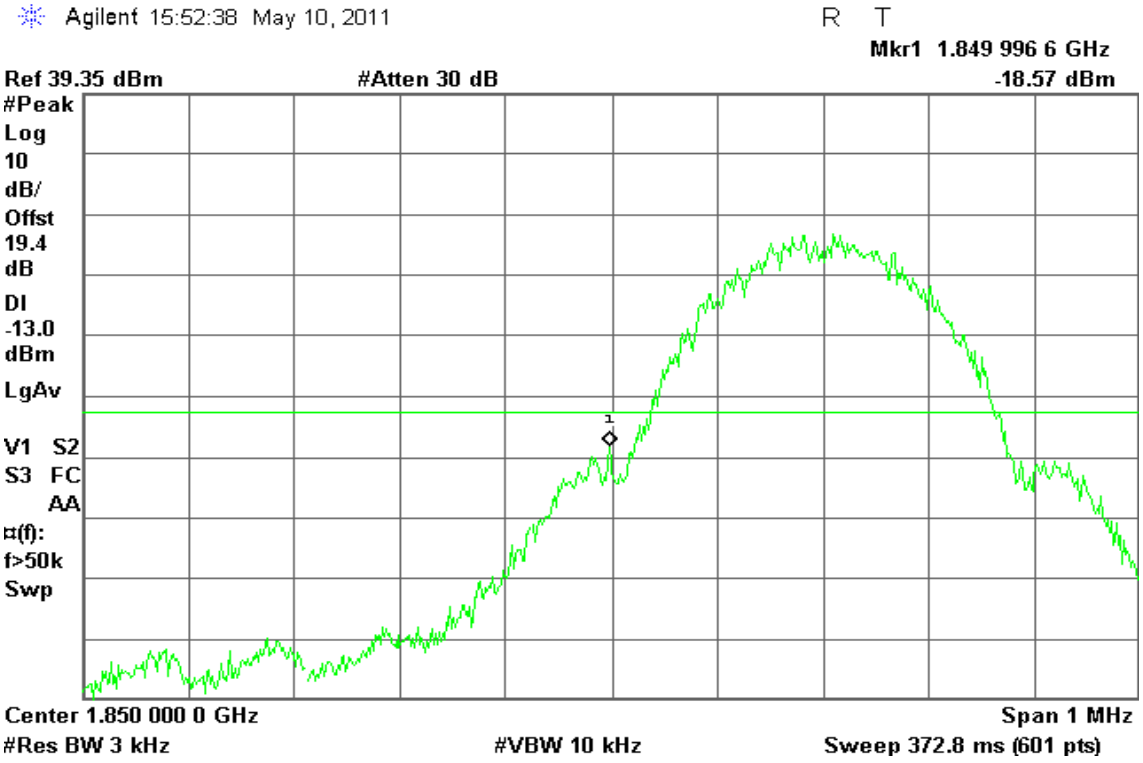
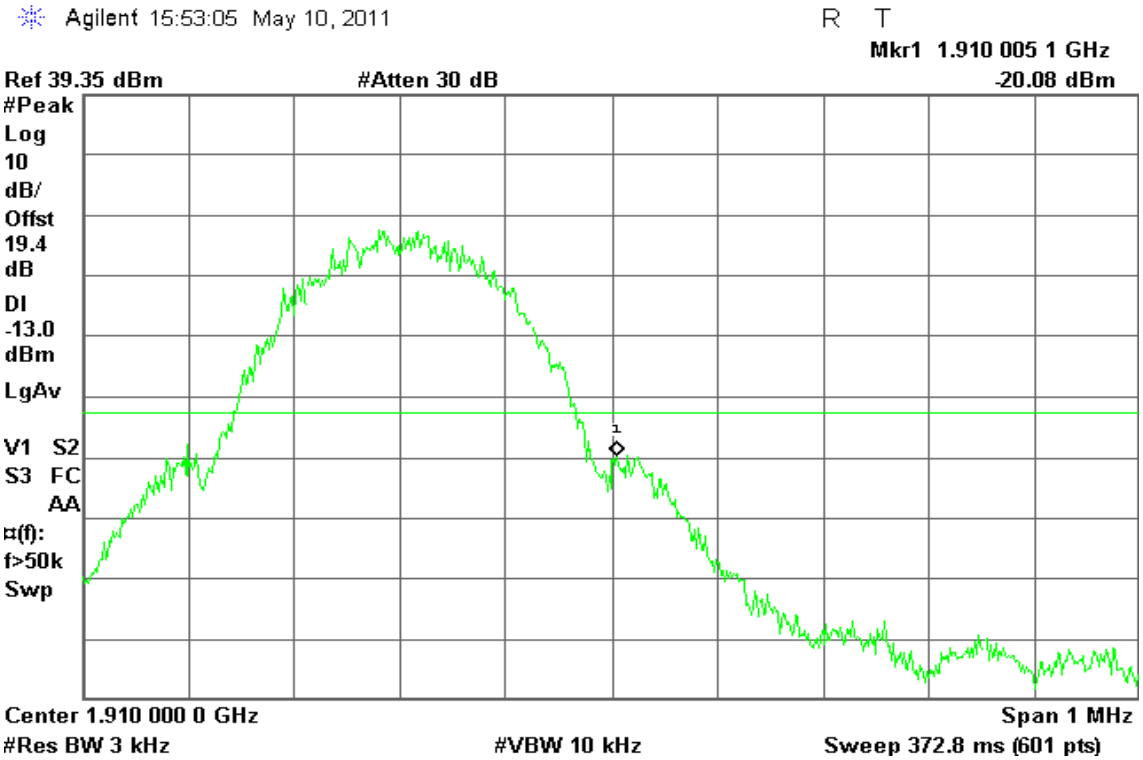


Figure 18-2: Band Edge emissions – EDGE CH High



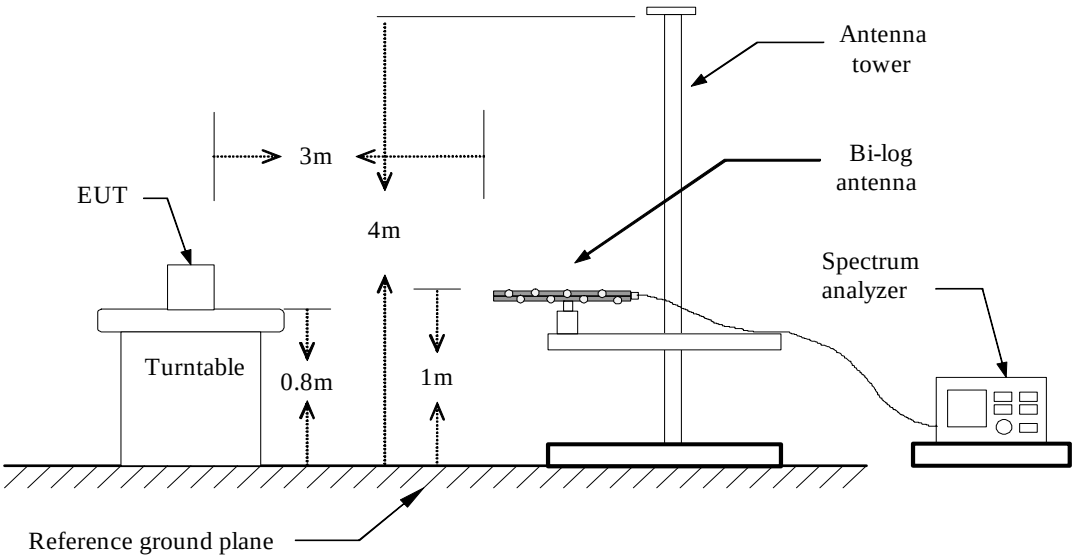
7.6FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT

LIMIT

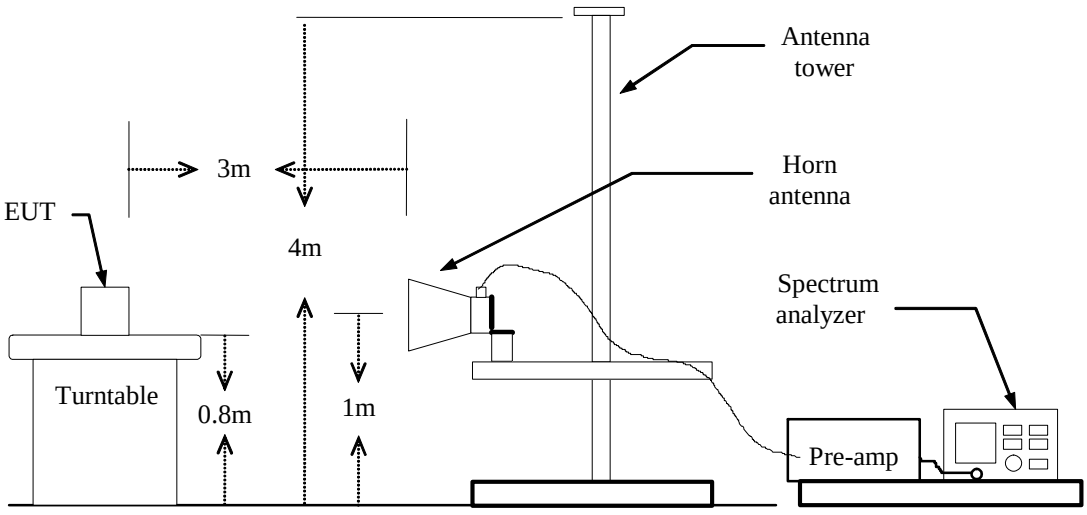
According to FCC §2.1053

Test Configuration

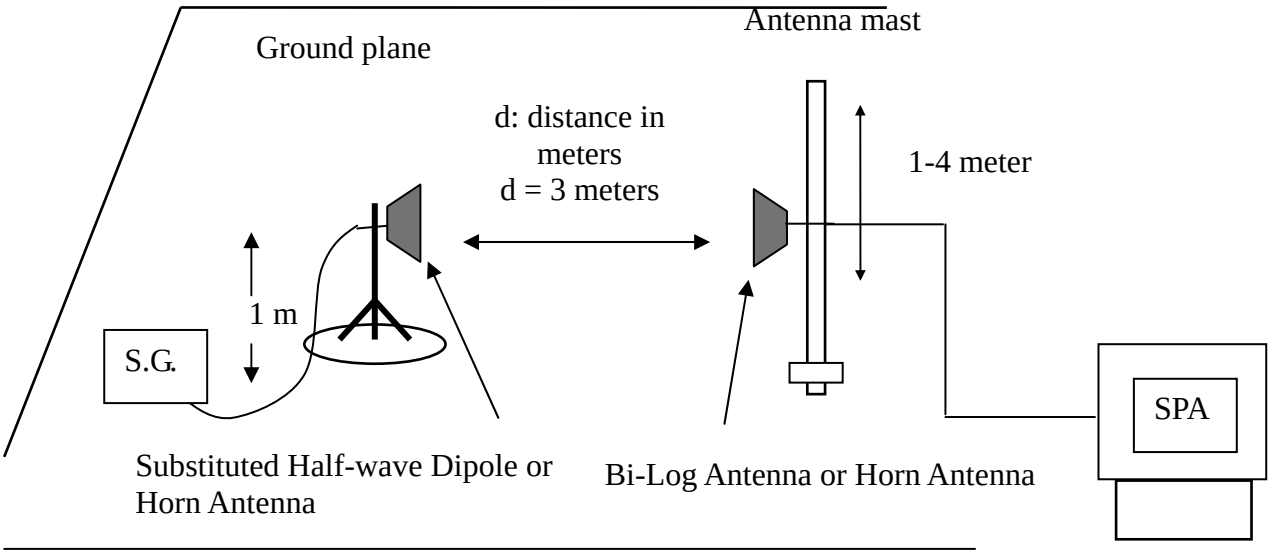
Below 1 GHz



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:** May 10, 2011

Temperature: 26℃ **Tested by:** Edward Lin

Humidity: 50 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
39.7000	-63.51	0.72	-12.6	-76.83	-13.00	-63.83	V
73.6500	-75.58	0.99	-1.28	-77.85	-13.00	-64.85	V
158.5250	-81.87	1.48	1.33	-82.02	-13.00	-69.02	V
267.6500	-85.54	1.96	5.22	-82.28	-13.00	-69.28	V
413.1500	-85.28	2.45	5.88	-81.85	-13.00	-68.85	V
461.6500	-84.3	2.6	5.86	-81.04	-13.00	-68.04	V
49.4000	-65.89	0.8	-5.08	-71.77	-13.00	-58.77	H
122.1500	-71.24	1.29	-1.93	-74.46	-13.00	-61.46	H
197.3250	-77.23	1.63	3.21	-75.65	-13.00	-62.65	H
257.9500	-81.58	1.89	5.61	-77.86	-13.00	-64.86	H
454.3750	-78.26	2.59	5.79	-75.06	-13.00	-62.06	H
512.5750	-77.09	2.69	6.03	-73.75	-13.00	-60.75	H

Remark:

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

Operation Mode: GSM 850 / TX / CH 190 **Test Date:** May 10, 2011

Temperature: 26℃ **Tested by:** Edward Lin

Humidity: 50 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
46.9750	-68.93	0.78	-6.96	-76.67	-13.00	-63.67	V
76.0750	-75.62	1.01	-0.85	-77.48	-13.00	-64.48	V
136.7000	-76.76	1.38	-0.61	-78.75	-13.00	-65.75	V
187.6250	-79.08	1.62	3.9	-76.80	-13.00	-63.80	V
512.5750	-82.84	2.69	6.03	-79.50	-13.00	-66.50	V
762.3500	-81.36	3.23	6.32	-78.27	-13.00	-65.27	V
49.4000	-67.16	0.8	-5.08	-73.04	-13.00	-60.04	H
122.1500	-72.68	1.29	-1.93	-75.90	-13.00	-62.90	H
199.7500	-79.87	1.63	2.94	-78.56	-13.00	-65.56	H
352.5250	-81.73	2.24	5.78	-78.19	-13.00	-65.19	H
454.3750	-78.84	2.59	5.79	-75.64	-13.00	-62.64	H
512.5750	-74.77	2.69	6.03	-71.43	-13.00	-58.43	H

Remark:

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

Operation Mode: GSM 850 / TX / CH 251 **Test Date:** May 10, 2011

Temperature: 26℃ **Tested by:** Edward Lin

Humidity: 50 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
39.7000	-63.33	0.72	-12.6	-76.65	-13.00	-63.65	V
76.0750	-76.12	1.01	-0.85	-77.98	-13.00	-64.98	V
148.8250	-82.09	1.42	0.58	-82.93	-13.00	-69.93	V
257.9500	-87.24	1.89	5.61	-83.52	-13.00	-70.52	V
461.6500	-82.86	2.6	5.86	-79.60	-13.00	-66.60	V
565.9250	-83.52	2.86	6.05	-80.33	-13.00	-67.33	V
49.4000	-67.39	0.8	-5.08	-73.27	-13.00	-60.27	H
122.1500	-71.93	1.29	-1.93	-75.15	-13.00	-62.15	H
226.4250	-80.81	1.78	5.37	-77.22	-13.00	-64.22	H
277.3500	-79.32	2	5.25	-76.07	-13.00	-63.07	H
512.5750	-77.19	2.69	6.03	-73.85	-13.00	-60.85	H
638.6750	-78.01	3	6.14	-74.87	-13.00	-61.87	H

Remark:

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

Operation Mode: GPRS 850 / TX / CH 128 **Test Date:** May 10, 2011

Temperature: 26°C **Tested by:** Edward Lin

Humidity: 50 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
30.0000	-51.49	0.64	-22.4	-74.53	-13.00	-61.53	V
42.1250	-65.86	0.74	-10.72	-77.32	-13.00	-64.32	V
151.2500	-82.41	1.43	0.8	-83.04	-13.00	-70.04	V
357.3750	-86.31	2.26	5.73	-82.84	-13.00	-69.84	V
493.1750	-82.69	2.68	5.83	-79.54	-13.00	-66.54	V
648.3750	-82.88	3.02	6.26	-79.64	-13.00	-66.64	V
46.9750	-67.51	0.78	-6.96	-75.25	-13.00	-62.25	H
148.8250	-78.5	1.42	0.58	-79.34	-13.00	-66.34	H
345.2500	-84.25	2.2	5.8	-80.65	-13.00	-67.65	H
243.4000	-83.66	1.82	5.43	-80.05	-13.00	-67.05	H
468.9250	-80.87	2.62	5.8	-77.69	-13.00	-64.69	H
687.1750	-78.53	3.12	6.5	-75.15	-13.00	-62.15	H

Remark:

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

Operation Mode: GPRS 850 / TX / CH 190 **Test Date:** May 10, 2011

Temperature: 26℃ **Tested by:** Edward Lin

Humidity: 50 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
30.0000	-50.2	0.64	-22.4	-73.24	-13.00	-60.24	V
76.0750	-80.48	1.01	-0.85	-82.34	-13.00	-69.34	V
493.1750	-80.74	2.68	5.83	-77.59	-13.00	-64.59	V
156.1000	-82.85	1.46	1.15	-83.16	-13.00	-70.16	V
689.6000	-82.84	3.13	6.5	-79.47	-13.00	-66.47	V
272.5000	-87.75	1.99	5.15	-84.59	-13.00	-71.59	V
42.1250	-62.54	0.74	-10.72	-74.00	-13.00	-61.00	H
127.0000	-75.81	1.32	-1.63	-78.76	-13.00	-65.76	H
199.7500	-80.95	1.63	2.94	-79.64	-13.00	-66.64	H
413.1500	-81.29	2.45	5.88	-77.86	-13.00	-64.86	H
287.0500	-82.99	2.01	5.37	-79.63	-13.00	-66.63	H
597.4500	-79.98	2.9	6.35	-76.53	-13.00	-63.53	H

Remark:

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

Operation Mode: GPRS 850 / TX / CH 251 **Test Date:** May 10, 2011

Temperature: 26℃ **Tested by:** Edward Lin

Humidity: 50 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
30.0000	-50.61	0.64	-22.4	-73.65	-13.00	-60.65	V
42.1250	-63.58	0.74	-10.72	-75.04	-13.00	-62.04	V
73.6500	-81.67	0.99	-1.28	-83.94	-13.00	-70.94	V
151.2500	-82.75	1.43	0.8	-83.38	-13.00	-70.38	V
493.1750	-81.75	2.68	5.83	-78.60	-13.00	-65.60	V
706.5750	-82.33	3.13	6.32	-79.14	-13.00	-66.14	V
30.0000	-47.64	0.64	-22.4	-70.68	-13.00	-57.68	H
44.5500	-65.7	0.76	-8.84	-75.30	-13.00	-62.30	H
119.7250	-75.41	1.27	-2.09	-78.77	-13.00	-65.77	H
371.9250	-81.82	2.3	5.85	-78.27	-13.00	-65.27	H
262.8000	-83.44	1.93	5.46	-79.91	-13.00	-66.91	H
151.2500	-78.81	1.43	0.8	-79.44	-13.00	-66.44	H

Remark:

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

Operation Mode: GSM 1900 / TX / CH 512 **Test Date:** May 10, 2011

Temperature: 26℃ **Tested by:** Edward Lin

Humidity: 50 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
44.5500	-60.69	0.76	-8.84	-70.29	-13.00	-57.29	V
73.6500	-69.66	0.99	-1.28	-71.93	-13.00	-58.93	V
127.0000	-63.76	1.32	-1.63	-66.71	-13.00	-53.71	V
257.9500	-82.21	1.89	5.61	-78.49	-13.00	-65.49	V
352.5250	-84.44	2.24	5.78	-80.90	-13.00	-67.90	V
512.5750	-81.6	2.69	6.03	-78.26	-13.00	-65.26	V
32.4250	-50.47	0.66	-19.95	-71.08	-13.00	-58.08	H
127.0000	-71.41	1.32	-1.63	-74.36	-13.00	-61.36	H
192.4750	-80.86	1.62	3.74	-78.74	-13.00	-65.74	H
257.9500	-82.15	1.89	5.61	-78.43	-13.00	-65.43	H
454.3750	-78.34	2.59	5.79	-75.14	-13.00	-62.14	H
512.5750	-77.56	2.69	6.03	-74.22	-13.00	-61.22	H

Remark:

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

Operation Mode: GSM 1900 / TX / CH 661 **Test Date:** May 10, 2011

Temperature: 26℃ **Tested by:** Edward Lin

Humidity: 50 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
44.5500	-61.28	0.76	-8.84	-70.88	-13.00	-57.88	V
76.0750	-71.46	1.01	-0.85	-73.32	-13.00	-60.32	V
146.4000	-81.72	1.41	0.35	-82.78	-13.00	-69.78	V
257.9500	-84.7	1.89	5.61	-80.98	-13.00	-67.98	V
454.3750	-83.13	2.59	5.79	-79.93	-13.00	-66.93	V
512.5750	-83.32	2.69	6.03	-79.98	-13.00	-66.98	V
30.0000	-46.32	0.64	-22.4	-69.36	-13.00	-56.36	H
124.5750	-67.65	1.31	-1.78	-70.74	-13.00	-57.74	H
187.6250	-74.51	1.62	3.9	-72.23	-13.00	-59.23	H
454.3750	-77.33	2.59	5.79	-74.13	-13.00	-61.13	H
512.5750	-76.19	2.69	6.03	-72.85	-13.00	-59.85	H
641.1000	-77.15	3.01	6.12	-74.04	-13.00	-61.04	H

Remark:

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

Operation Mode: GSM 1900 / TX / CH 810 **Test Date:** May 10, 2011

Temperature: 26℃ **Tested by:** Edward Lin

Humidity: 50 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
44.5500	-61.97	0.76	-8.84	-71.57	-13.00	-58.57	V
76.0750	-71.5	1.01	-0.85	-73.36	-13.00	-60.36	V
124.5750	-69.57	1.31	-1.78	-72.66	-13.00	-59.66	V
207.0250	-80.02	1.67	4.82	-76.87	-13.00	-63.87	V
279.7750	-78.06	2	5.3	-74.76	-13.00	-61.76	V
512.5750	-83.56	2.69	6.03	-80.22	-13.00	-67.22	V
32.4250	-49.8	0.66	-19.95	-70.41	-13.00	-57.41	H
119.7250	-70.2	1.27	-2.09	-73.56	-13.00	-60.56	H
257.9500	-82.73	1.89	5.61	-79.01	-13.00	-66.01	H
454.3750	-77.97	2.59	5.79	-74.77	-13.00	-61.77	H
512.5750	-76.75	2.69	6.03	-73.41	-13.00	-60.41	H
667.7750	-77.91	3.07	6.3	-74.68	-13.00	-61.68	H

Remark:

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

Operation Mode: GPRS 1900 / TX / CH 512 **Test Date:** May 10, 2011

Temperature: 26℃ **Tested by:** Edward Lin

Humidity: 50 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
32.4250	-47.85	0.66	-19.95	-68.46	-13.00	-55.46	V
76.0750	-80.95	1.01	-0.85	-82.81	-13.00	-69.81	V
153.6750	-82.4	1.45	0.98	-82.87	-13.00	-69.87	V
381.6250	-86.59	2.31	5.99	-82.91	-13.00	-69.91	V
473.7750	-84.28	2.63	5.69	-81.22	-13.00	-68.22	V
839.9500	-80.49	3.41	6.4	-77.50	-13.00	-64.50	V
54.2500	-68.26	0.83	-3.66	-72.75	-13.00	-59.75	H
76.0750	-75.33	1.01	-0.85	-77.19	-13.00	-64.19	H
127.0000	-73.12	1.32	-1.63	-76.07	-13.00	-63.07	H
245.8250	-79.14	1.82	5.52	-75.44	-13.00	-62.44	H
493.1750	-77.72	2.68	5.83	-74.57	-13.00	-61.57	H
633.8250	-77.65	2.99	6.18	-74.46	-13.00	-61.46	H

Remark:

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

Operation Mode: GPRS 1900 / TX / CH 661 **Test Date:** May 10, 2011

Temperature: 26℃ **Tested by:** Edward Lin

Humidity: 50 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
32.4250	-46.79	0.66	-19.95	-67.40	-13.00	-54.40	V
56.6750	-73.89	0.85	-2.94	-77.68	-13.00	-64.68	V
76.0750	-79.06	1.01	-0.85	-80.92	-13.00	-67.92	V
245.8250	-86.2	1.82	5.52	-82.50	-13.00	-69.50	V
163.3750	-83.96	1.51	1.77	-83.70	-13.00	-70.70	V
713.8500	-81.25	3.15	6.38	-78.02	-13.00	-65.02	V
44.5500	-65.28	0.76	-8.84	-74.88	-13.00	-61.88	H
124.5750	-75.29	1.31	-1.78	-78.38	-13.00	-65.38	H
160.9500	-79.7	1.49	1.5	-79.69	-13.00	-66.69	H
199.7500	-80.91	1.63	2.94	-79.60	-13.00	-66.60	H
257.9500	-83.86	1.89	5.61	-80.14	-13.00	-67.14	H
573.2000	-78.92	2.88	6.08	-75.72	-13.00	-62.72	H

Remark:

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

Operation Mode: GPRS 1900 / TX / CH 810 **Test Date:** May 10, 2011

Temperature: 26℃ **Tested by:** Edward Lin

Humidity: 50 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
32.4250	-49.16	0.66	-19.95	-69.77	-13.00	-56.77	V
136.7000	-76.96	1.38	-0.61	-78.95	-13.00	-65.95	V
287.0500	-85.34	2.01	5.37	-81.98	-13.00	-68.98	V
490.7500	-84.37	2.67	5.8	-81.24	-13.00	-68.24	V
565.9250	-83.37	2.86	6.05	-80.18	-13.00	-67.18	V
102.7500	-81.35	1.16	-0.76	-83.27	-13.00	-70.27	V
46.9750	-67.49	0.78	-6.96	-75.23	-13.00	-62.23	H
119.7250	-75.45	1.27	-2.09	-78.81	-13.00	-65.81	H
175.5000	-81.17	1.59	3.1	-79.66	-13.00	-66.66	H
464.0750	-80.66	2.61	5.84	-77.43	-13.00	-64.43	H
551.3750	-80.08	2.81	6.17	-76.72	-13.00	-63.72	H
660.5000	-78.47	3.06	6.3	-75.23	-13.00	-62.23	H

Remark:

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

Operation Mode: EDGE 850 / TX / CH 128 **Test Date:** May 10, 2011

Temperature: 26℃ **Tested by:** Edward Lin

Humidity: 50 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
44.5500	-61.57	0.76	-8.84	-71.17	-13.00	-58.17	V
73.6500	-74.09	0.99	-1.28	-76.36	-13.00	-63.36	V
236.1250	-84.7	1.81	5.37	-81.14	-13.00	-68.14	V
461.6500	-82.11	2.6	5.86	-78.85	-13.00	-65.85	V
493.1750	-78.88	2.68	5.83	-75.73	-13.00	-62.73	V
119.7250	-79.21	1.27	-2.09	-82.57	-13.00	-69.57	V
32.4250	-42.91	0.66	-19.95	-63.52	-13.00	-50.52	H
44.5500	-63.55	0.76	-8.84	-73.15	-13.00	-60.15	H
73.6500	-74	0.99	-1.28	-76.27	-13.00	-63.27	H
127.0000	-73.23	1.32	-1.63	-76.18	-13.00	-63.18	H
245.8250	-78.97	1.82	5.52	-75.27	-13.00	-62.27	H
369.5000	-80.25	2.3	5.8	-76.75	-13.00	-63.75	H

Remark:

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

Operation Mode: EDGE 850 / TX / CH 190 **Test Date:** May 10, 2011

Temperature: 26℃ **Tested by:** Edward Lin

Humidity: 50 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
46.9750	-64.08	0.78	-6.96	-71.82	-13.00	-58.82	V
76.0750	-74.59	1.01	-0.85	-76.45	-13.00	-63.45	V
199.7500	-77.93	1.63	2.94	-76.62	-13.00	-63.62	V
245.8250	-86.03	1.82	5.52	-82.33	-13.00	-69.33	V
493.1750	-79.09	2.68	5.83	-75.94	-13.00	-62.94	V
131.8500	-80.12	1.35	-1.18	-82.65	-13.00	-69.65	V
32.4250	-48.55	0.66	-19.95	-69.16	-13.00	-56.16	H
119.7250	-75.41	1.27	-2.09	-78.77	-13.00	-65.77	H
197.3250	-81.57	1.63	3.21	-79.99	-13.00	-66.99	H
354.9500	-82.29	2.25	5.75	-78.79	-13.00	-65.79	H
551.3750	-79.72	2.81	6.17	-76.36	-13.00	-63.36	H
624.1250	-78.98	2.96	6.15	-75.79	-13.00	-62.79	H

Remark:

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

Operation Mode: EDGE 850 / TX / CH 251 **Test Date:** May 10, 2011

Temperature: 26℃ **Tested by:** Edward Lin

Humidity: 50 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
37.2750	-57.01	0.7	-15.05	-72.76	-13.00	-59.76	V
44.5500	-63.9	0.76	-8.84	-73.50	-13.00	-60.50	V
76.0750	-80.82	1.01	-0.85	-82.68	-13.00	-69.68	V
493.1750	-81.93	2.68	5.83	-78.78	-13.00	-65.78	V
151.2500	-82	1.43	0.8	-82.63	-13.00	-69.63	V
245.8250	-87.55	1.82	5.52	-83.85	-13.00	-70.85	V
46.9750	-67.26	0.78	-6.96	-75.00	-13.00	-62.00	H
114.8750	-75.6	1.24	-1.9	-78.74	-13.00	-65.74	H
165.8000	-79.2	1.53	2.05	-78.68	-13.00	-65.68	H
369.5000	-82.34	2.3	5.8	-78.84	-13.00	-65.84	H
551.3750	-79.59	2.81	6.17	-76.23	-13.00	-63.23	H
645.9500	-78.46	3.02	6.21	-75.27	-13.00	-62.27	H

Remark:

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

Operation Mode: EDGE 1900 / TX / CH 512 **Test Date:** May 10, 2011

Temperature: 26℃ **Tested by:** Edward Lin

Humidity: 50 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
32.4250	-47.59	0.66	-19.95	-68.20	-13.00	-55.20	V
56.6750	-73.98	0.85	-2.94	-77.77	-13.00	-64.77	V
76.0750	-78.42	1.01	-0.85	-80.28	-13.00	-67.28	V
245.8250	-85.42	1.82	5.52	-81.72	-13.00	-68.72	V
148.8250	-81.75	1.42	0.58	-82.59	-13.00	-69.59	V
534.4000	-83.87	2.76	6.13	-80.50	-13.00	-67.50	V
49.4000	-68.84	0.8	-5.08	-74.72	-13.00	-61.72	H
129.4250	-75.9	1.34	-1.47	-78.71	-13.00	-65.71	H
156.1000	-78.64	1.46	1.15	-78.95	-13.00	-65.95	H
699.3000	-78.81	3.11	6.4	-75.52	-13.00	-62.52	H
561.0750	-78.99	2.85	6	-75.84	-13.00	-62.84	H
357.3750	-82.25	2.26	5.73	-78.78	-13.00	-65.78	H

Remark:

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

Operation Mode: EDGE 1900 / TX / CH 661 **Test Date:** May 10, 2011

Temperature: 26℃ **Tested by:** Edward Lin

Humidity: 50 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
30.0000	-43.37	0.64	-22.4	-66.41	-13.00	-53.41	V
134.2750	-69.71	1.36	-0.9	-71.97	-13.00	-58.97	V
88.2000	-78.07	1.09	0.84	-78.32	-13.00	-65.32	V
197.3250	-83.03	1.63	3.21	-81.45	-13.00	-68.45	V
245.8250	-85.8	1.82	5.52	-82.10	-13.00	-69.10	V
628.9750	-82.16	2.97	6.18	-78.95	-13.00	-65.95	V
44.5500	-65.82	0.76	-8.84	-75.42	-13.00	-62.42	H
129.4250	-75.55	1.34	-1.47	-78.36	-13.00	-65.36	H
345.2500	-83.86	2.2	5.8	-80.26	-13.00	-67.26	H
405.8750	-81.78	2.42	5.94	-78.26	-13.00	-65.26	H
529.5500	-80.03	2.75	6	-76.78	-13.00	-63.78	H
667.7750	-78.51	3.07	6.3	-75.28	-13.00	-62.28	H

Remark:

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

Operation Mode: EDGE 1900 / TX / CH 810 **Test Date:** May 10, 2011

Temperature: 26℃ **Tested by:** Edward Lin

Humidity: 50 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
32.4250	-49.1	0.66	-19.95	-69.71	-13.00	-56.71	V
76.0750	-78.01	1.01	-0.85	-79.87	-13.00	-66.87	V
245.8250	-86.75	1.82	5.52	-83.05	-13.00	-70.05	V
151.2500	-82.24	1.43	0.8	-82.87	-13.00	-69.87	V
660.5000	-82.39	3.06	6.3	-79.15	-13.00	-66.15	V
798.7250	-80.98	3.33	6.48	-77.83	-13.00	-64.83	V
44.5500	-66.46	0.76	-8.84	-76.06	-13.00	-63.06	H
122.1500	-75.92	1.29	-1.93	-79.14	-13.00	-66.14	H
160.9500	-79.74	1.49	1.5	-79.73	-13.00	-66.73	H
573.2000	-79.37	2.88	6.08	-76.17	-13.00	-63.17	H
658.0750	-78.36	3.05	6.3	-75.11	-13.00	-62.11	H
784.1750	-77.03	3.31	6.15	-74.19	-13.00	-61.19	H

Remark:

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

Above 1GHz

Operation Mode: GSM 850 / TX / CH 128 **Test Date:** May 10, 2011

Temperature: 26℃ **Tested by:** Edward Lin

Humidity: 50 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1647.500	-38.22	5.04	6.03	-37.23	-13.00	-24.23	V
2470.000	-33.27	6.3	6.06	-33.51	-13.00	-20.51	V
3310.000	-45.43	7.47	8.33	-44.57	-13.00	-31.57	V
6600.000	-46.13	11.23	11.42	-45.94	-13.00	-32.94	V
N/A							
1647.500	-40.16	5.04	6.03	-39.17	-13.00	-26.17	H
2470.000	-40.1	6.3	6.06	-40.34	-13.00	-27.34	H
3310.000	-48.9	7.47	8.33	-48.04	-13.00	-35.04	H
6600.000	-46.08	11.23	11.42	-45.89	-13.00	-32.89	H
N/A							

Remark:

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

Operation Mode: GSM 850 / TX / CH 190 **Test Date:** May 10, 2011

Temperature: 26℃ **Tested by:** Edward Lin

Humidity: 50 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1682.500	-38.09	5.09	5.97	-37.21	-13.00	-24.21	V
2522.500	-33.67	6.38	6.16	-33.89	-13.00	-20.89	V
3345.000	-52.62	7.51	8.44	-51.69	-13.00	-38.69	V
4185.000	-51.43	8.49	9.55	-50.37	-13.00	-37.37	V
5865.000	-51.99	10.41	10.87	-51.53	-13.00	-38.53	V
N/A							
1682.500	-38.29	5.09	5.97	-37.41	-13.00	-24.41	H
2522.500	-41.21	6.38	6.16	-41.43	-13.00	-28.43	H
3345.000	-52.59	7.51	8.44	-51.66	-13.00	-38.66	H
5865.000	-51.07	10.41	10.87	-50.61	-13.00	-37.61	H
N/A							

Remark:

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

Operation Mode: GSM 850 / TX / CH 251 **Test Date:** May 10, 2011

Temperature: 26℃ **Tested by:** Edward Lin

Humidity: 50 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1700.000	-40.29	5.11	5.94	-39.46	-13.00	-26.46	V
2557.500	-36.11	6.43	6.25	-36.29	-13.00	-23.29	V
3397.500	-51.96	7.57	8.59	-50.94	-13.00	-37.94	V
5952.500	-47.01	10.63	10.89	-46.75	-13.00	-33.75	V
N/A							
1700.000	-40.91	5.11	5.94	-40.08	-13.00	-27.08	H
2557.500	-42.43	6.43	6.25	-42.61	-13.00	-29.61	H
3397.500	-51.48	7.57	8.59	-50.46	-13.00	-37.46	H
4255.000	-51.12	8.55	9.6	-50.07	-13.00	-37.07	H
5952.500	-48.94	10.63	10.89	-48.68	-13.00	-35.68	H
N/A							

Remark:

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

Operation Mode: GPRS 850 / TX / CH 128 **Test Date:** May 10, 2011

Temperature: 26℃ **Tested by:** Edward Lin

Humidity: 50 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1647.500	-36.92	5.04	6.03	-35.93	-13.00	-22.93	V
2470.000	-43.11	6.3	6.06	-43.35	-13.00	-30.35	V
3310.000	-45.97	7.47	8.33	-45.11	-13.00	-32.11	V
N/A							
1647.500	-42.24	5.04	6.03	-41.25	-13.00	-28.25	H
2470.000	-43.56	6.3	6.06	-43.80	-13.00	-30.80	H
3310.000	-44.44	7.47	8.33	-43.58	-13.00	-30.58	H
4132.500	-50.43	8.47	9.51	-49.39	-13.00	-36.39	H
5270.000	-52.01	9.62	10.71	-50.92	-13.00	-37.92	H
6057.500	-50.32	10.71	10.95	-50.08	-13.00	-37.08	H
6600.000	-46.04	11.23	11.42	-45.85	-13.00	-32.85	H

Remark:

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

Operation Mode: GPRS 850 / TX / CH 190 **Test Date:** May 10, 2011

Temperature: 26℃ **Tested by:** Edward Lin

Humidity: 50 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1682.500	-38.92	5.09	5.97	-38.04	-13.00	-25.04	V
2522.500	-45.79	6.38	6.16	-46.01	-13.00	-33.01	V
3345.000	-48.6	7.51	8.44	-47.67	-13.00	-34.67	V
N/A							
1682.500	-40.12	5.09	5.97	-39.24	-13.00	-26.24	H
2522.500	-42.65	6.38	6.16	-42.87	-13.00	-29.87	H
3345.000	-49.27	7.51	8.44	-48.34	-13.00	-35.34	H
5865.000	-50.01	10.41	10.87	-49.55	-13.00	-36.55	H
N/A							

Remark:

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

Operation Mode: GPRS 850 / TX / CH 251 **Test Date:** May 10, 2011

Temperature: 26℃ **Tested by:** Edward Lin

Humidity: 50 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1700.000	-38.48	5.11	5.94	-37.65	-13.00	-24.65	V
2557.500	-45.08	6.43	6.25	-45.26	-13.00	-32.26	V
3397.500	-53.41	7.57	8.59	-52.39	-13.00	-39.39	V
4255.000	-50.23	8.55	9.6	-49.18	-13.00	-36.18	V
N/A							
1700.000	-40.24	5.11	5.94	-39.41	-13.00	-26.41	H
2557.500	-43.06	6.43	6.25	-43.24	-13.00	-30.24	H
3397.500	-51.47	7.57	8.59	-50.45	-13.00	-37.45	H
4255.000	-48.27	8.55	9.6	-47.22	-13.00	-34.22	H
5952.500	-49.53	10.63	10.89	-49.27	-13.00	-36.27	H
N/A							

Remark:

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

Operation Mode: GSM 1900 / TX / CH 512 **Test Date:** May 10, 2011

Temperature: 26℃ **Tested by:** Edward Lin

Humidity: 50 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3765.000	-44.97	8.24	9.16	-44.05	-13.00	-31.05	V
5637.500	-48.83	10.18	10.83	-48.18	-13.00	-35.18	V
N/A							
3765.000	-39.02	8.24	9.16	-38.10	-13.00	-25.10	H
5637.500	-46.7	10.18	10.83	-46.05	-13.00	-33.05	H
N/A							

Remark:

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

Operation Mode: GSM 1900 / TX / CH 661 **Test Date:** May 10, 2011

Temperature: 26℃ **Tested by:** Edward Lin

Humidity: 50 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3765.000	-46.13	8.24	9.16	-45.21	-13.00	-32.21	V
5637.500	-46.76	10.18	10.83	-46.11	-13.00	-33.11	V
N/A							
3765.000	-42.78	8.24	9.16	-41.86	-13.00	-28.86	H
5637.500	-47.89	10.18	10.83	-47.24	-13.00	-34.24	H
N/A							

Remark:

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

Operation Mode: GSM 1900 / TX / CH 810 **Test Date:** May 10, 2011

Temperature: 26℃ **Tested by:** Edward Lin

Humidity: 50 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3817.500	-46.82	8.28	9.22	-45.88	-13.00	-32.88	V
5742.500	-49.24	10.27	10.85	-48.66	-13.00	-35.66	V
N/A							
3817.500	-41.13	8.28	9.22	-40.19	-13.00	-27.19	H
5742.500	-51.22	10.27	10.85	-50.64	-13.00	-37.64	H
N/A							

Remark:

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

Operation Mode: GPRS 1900 / TX / CH 512 **Test Date:** May 10, 2011

Temperature: 26℃ **Tested by:** Edward Lin

Humidity: 50 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3712.500	-42.23	8.21	9.11	-41.33	-13.00	-28.33	V
5550.000	-41.13	10.06	10.81	-40.38	-13.00	-27.38	V
N/A							
3712.500	-41.84	8.21	9.11	-40.94	-13.00	-27.94	H
5550.000	-44.86	10.06	10.81	-44.11	-13.00	-31.11	H
N/A							

Remark:

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

Operation Mode: GPRS 1900 / TX / CH 661 **Test Date:** May 10, 2011

Temperature: 26℃ **Tested by:** Edward Lin

Humidity: 50 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3765.000	-45.69	8.24	9.16	-44.77	-13.00	-31.77	V
5637.500	-44.92	10.18	10.83	-44.27	-13.00	-31.27	V
N/A							
3765.000	-39.1	8.24	9.16	-38.18	-13.00	-25.18	H
5637.500	-48.28	10.18	10.83	-47.63	-13.00	-34.63	H
N/A							

Remark:

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

Operation Mode: GPRS 1900 / TX / CH 810 **Test Date:** May 10, 2011

Temperature: 26℃ **Tested by:** Edward Lin

Humidity: 50 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3817.500	-47.02	8.28	9.22	-46.08	-13.00	-33.08	V
5742.500	-47.1	10.27	10.85	-46.52	-13.00	-33.52	V
N/A							
3817.500	-40.29	8.28	9.22	-39.35	-13.00	-26.35	H
5742.500	-50.04	10.27	10.85	-49.46	-13.00	-36.46	H
N/A							

Remark:

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

Operation Mode: EDGE 850 / TX / CH 128 **Test Date:** May 10, 2011

Temperature: 26℃ **Tested by:** Edward Lin

Humidity: 50 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1647.500	-46.58	5.04	6.03	-45.59	-13.00	-32.59	V
2487.500	-52.9	6.33	6.08	-53.15	-13.00	-40.15	V
N/A							
1647.500	-52.49	5.04	6.03	-51.50	-13.00	-38.50	H
2487.500	-51.41	6.33	6.08	-51.66	-13.00	-38.66	H
N/A							

Remark:

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

Operation Mode: EDGE 850 / TX / CH 190 **Test Date:** May 10, 2011

Temperature: 26℃ **Tested by:** Edward Lin

Humidity: 50 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1682.500	-46.92	5.09	5.97	-46.04	-13.00	-33.04	V
2522.500	-51.52	6.38	6.16	-51.74	-13.00	-38.74	V
N/A							
1682.500	-52.64	5.09	5.97	-51.76	-13.00	-38.76	H
2522.500	-50.58	6.38	6.16	-50.80	-13.00	-37.80	H
5865.000	-50.26	10.41	10.87	-49.80	-13.00	-36.80	H
N/A							

Remark:

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

Operation Mode: EDGE 850 / TX / CH 251 **Test Date:** May 10, 2011

Temperature: 26℃ **Tested by:** Edward Lin

Humidity: 50 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1700.000	-49.6	5.11	5.94	-48.77	-13.00	-35.77	V
2557.500	-50.06	6.43	6.25	-50.24	-13.00	-37.24	V
N/A							
1700.000	-53.02	5.11	5.94	-52.19	-13.00	-39.19	H
2557.500	-51.51	6.43	6.25	-51.69	-13.00	-38.69	H
N/A							

Remark:

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

Operation Mode: EDGE 1900 / TX / CH 512 **Test Date:** May 10, 2011

Temperature: 26℃ **Tested by:** Edward Lin

Humidity: 50 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3712.500	-51.03	8.21	9.11	-50.13	-13.00	-37.13	V
5550.000	-45.95	10.06	10.81	-45.20	-13.00	-32.20	V
N/A							
3712.500	-47.69	8.21	9.11	-46.79	-13.00	-33.79	H
5550.000	-48.24	10.06	10.81	-47.49	-13.00	-34.49	H
N/A							

Remark:

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

Operation Mode: EDGE 1900 / TX / CH 661 **Test Date:** May 10, 2011

Temperature: 26℃ **Tested by:** Edward Lin

Humidity: 50 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3765.000	-50.57	8.24	9.16	-49.65	-13.00	-36.65	V
5637.500	-47.85	10.18	10.83	-47.20	-13.00	-34.20	V
N/A							
3765.000	-43.89	8.24	9.16	-42.97	-13.00	-29.97	H
5637.500	-50.27	10.18	10.83	-49.62	-13.00	-36.62	H
N/A							

Remark:

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

Operation Mode: EDGE 1900 / TX / CH 810 **Test Date:** May 10, 2011

Temperature: 26℃ **Tested by:** Edward Lin

Humidity: 50 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3817.500	-50.16	8.28	9.22	-49.22	-13.00	-36.22	V
5742.500	-49.12	10.27	10.85	-48.54	-13.00	-35.54	V
N/A							
3817.500	-46.35	8.28	9.22	-45.41	-13.00	-32.41	H
5742.500	-50.85	10.27	10.85	-50.27	-13.00	-37.27	H
N/A							

Remark:

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

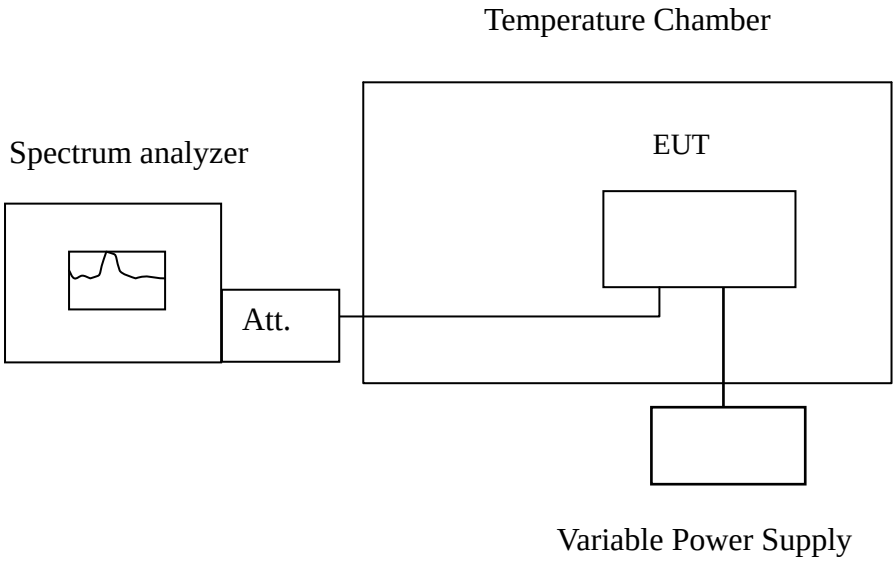
7.7FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT

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.

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)
3.7	50	836600077	151	2090
	40	836600076	150	
	30	836600083	157	
	20	836599926	0	
	10	836600074	148	
	0	836600069	143	
	-10	836600073	147	
	-20	836600081	155	
	-30	836600075	149	

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)
3.7	50	1880000053	115	4700
	40	1880000056	118	
	30	1880000051	113	
	20	1879999938	0	
	10	1880000046	108	
	0	1880000060	122	
	-10	1880000059	121	
	-20	1880000053	115	
	-30	1880000051	113	

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	836600054	115	2090
	40	836600064	125	
	30	836600060	121	
	20	836599939	0	
	10	836600049	110	
	0	836600048	109	
	-10	836600057	118	
	-20	836600055	116	
	-30	836600059	120	

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	1880000055	104	4700
	40	1880000049	98	
	30	1880000053	102	
	20	1879999951	0	
	10	1880000060	109	
	0	1880000061	110	
	-10	1880000065	114	
	-20	1880000053	102	
	-30	1880000047	96	

Reference Frequency: EDGE 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	836600027	-5	2090
	40	836599975	-57	
	30	836599974	-58	
	20	836600032	0	
	10	836599968	-64	
	0	836599964	-68	
	-10	836599978	-54	
	-20	836599980	-52	
	-30	836599968	-64	

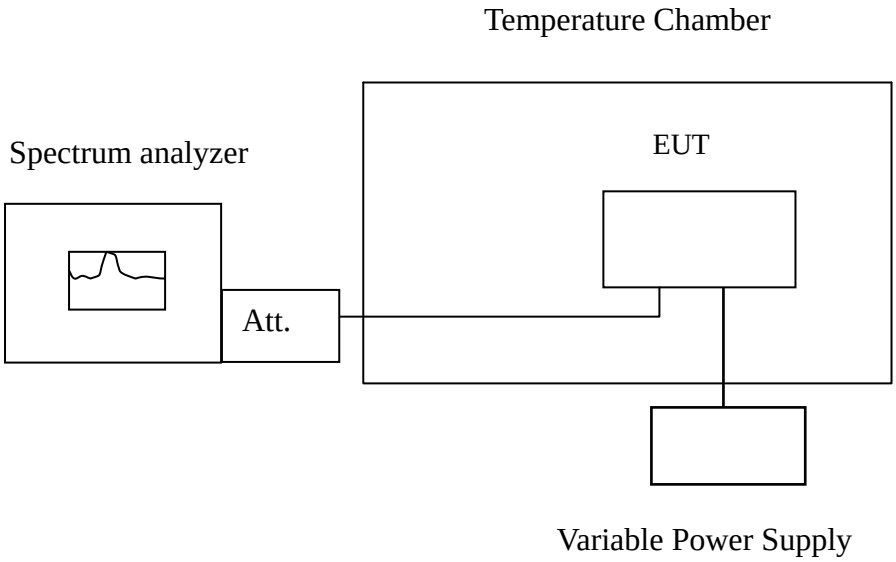
Reference Frequency: EDGE Mid Channel 1880 MHz @ 20°C				
Limit: ± 2.5 ppm = 4700 Hz				
Power Supply Vdc	Environment Temperature (°C)	Frequency (Hz)	Delta (Hz)	Limit (Hz)
3.7	50	1879999984	-37	4700
	40	1879999982	-39	
	30	1879999981	-40	
	20	1880000021	0	
	10	1879999986	-35	
	0	1879999980	-41	
	-10	1879999985	-36	
	-20	1879999980	-41	
	-30	1879999978	-43	

7.8FREQUENCY 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	836599924	-2	2090
3.7		836599926	0	
3.5		836599919	-7	
3.5 END		836599862	-64	

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	1879999941	3	4700
3.7		1879999938	0	
3.5		1879999940	2	
3.5 END		1879999888	-50	

Reference Frequency: GPRS 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	836599947	8	2090
3.7		836599939	0	
3.5		836599942	3	
3.5 END		836599939	0	

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)
4.255	20	1879999952	1	4700
3.7		1879999951	0	
3.5		1879999939	-12	
3.5 END		1879999903	-48	

Reference Frequency: EDGE 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	836600033	1	2090
3.7		836600032	0	
3.5		836600029	-3	
3.5 END		836600076	44	

Reference Frequency: EDGE 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	1880000013	-8	4700
3.7		1880000021	0	
3.5		1880000026	5	
3.5 END		1880000084	63	

7.9POWERLINE 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 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:**	May 22, 2011
Temperature:	26°C	**Tested by:**	David Shi
Humidity:	60% RH		

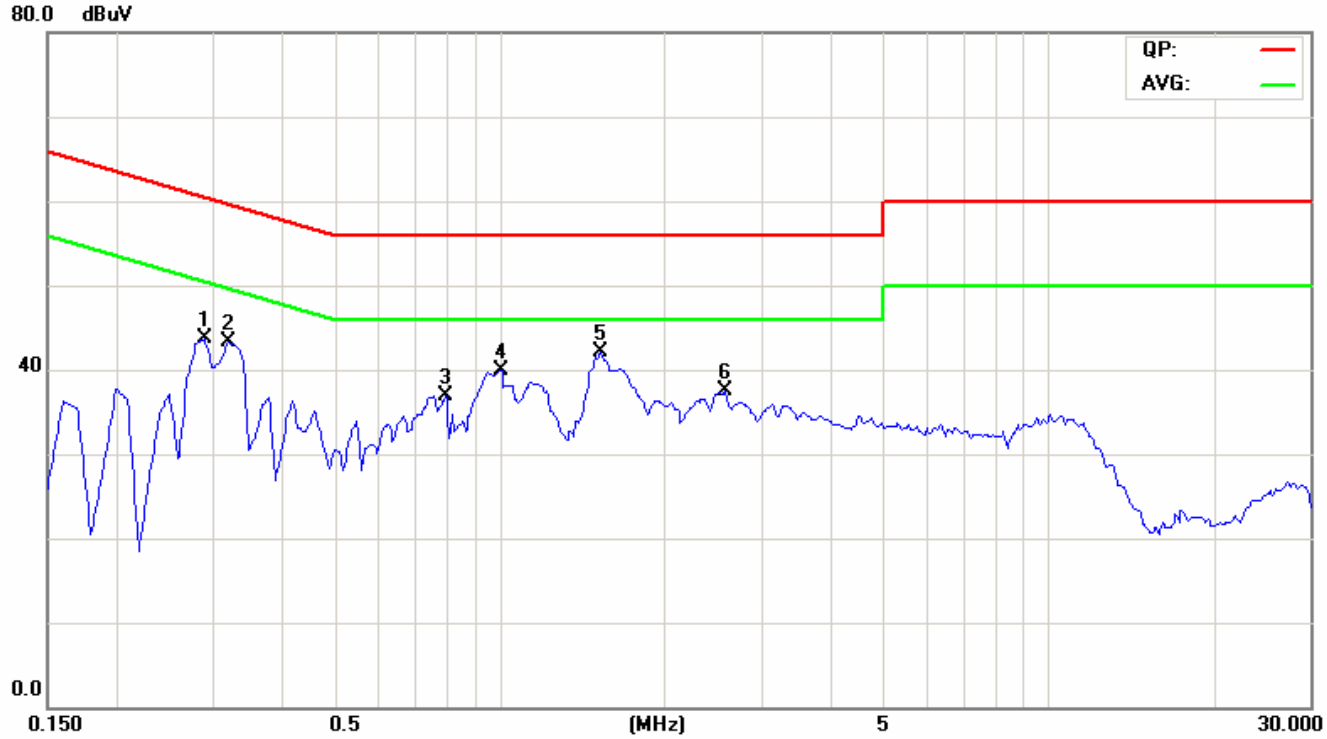
Frequency (MHz)	QP Reading (dBuV)	AV Reading (dBuV)	Corr. factor (dB)	QP Result (dBuV)	AV Result (dBuV)	QP Limit (dBuV)	AV Limit (dBuV)	QP Margin (dB)	AV Margin (dB)	Note
0.2900	42.24	32.74	0.16	42.40	32.90	60.52	50.52	-18.12	-17.62	L1
0.3200	41.94	34.54	0.16	42.10	34.70	59.71	49.71	-17.61	-15.01	L1
0.8000	31.53	18.63	0.17	31.70	18.80	56.00	46.00	-24.30	-27.20	L1
1.0100	35.23	23.83	0.17	35.40	24.00	56.00	46.00	-20.60	-22.00	L1
1.5300	37.61	28.01	0.19	37.80	28.20	56.00	46.00	-18.20	-17.80	L1
2.5800	32.38	24.68	0.22	32.60	24.90	56.00	46.00	-23.40	-21.10	L1
0.2900	41.15	31.85	0.25	41.40	32.10	60.52	50.52	-19.12	-18.42	L2
0.3200	41.45	34.75	0.25	41.70	35.00	59.71	49.71	-18.01	-14.71	L2
0.6700	34.45	22.95	0.25	34.70	23.20	56.00	46.00	-21.30	-22.80	L2
1.0100	33.94	22.04	0.26	34.20	22.30	56.00	46.00	-21.80	-23.70	L2
1.5700	35.73	26.03	0.27	36.00	26.30	56.00	46.00	-20.00	-19.70	L2
2.5300	30.72	23.72	0.28	31.00	24.00	56.00	46.00	-25.00	-22.00	L2

Remark:

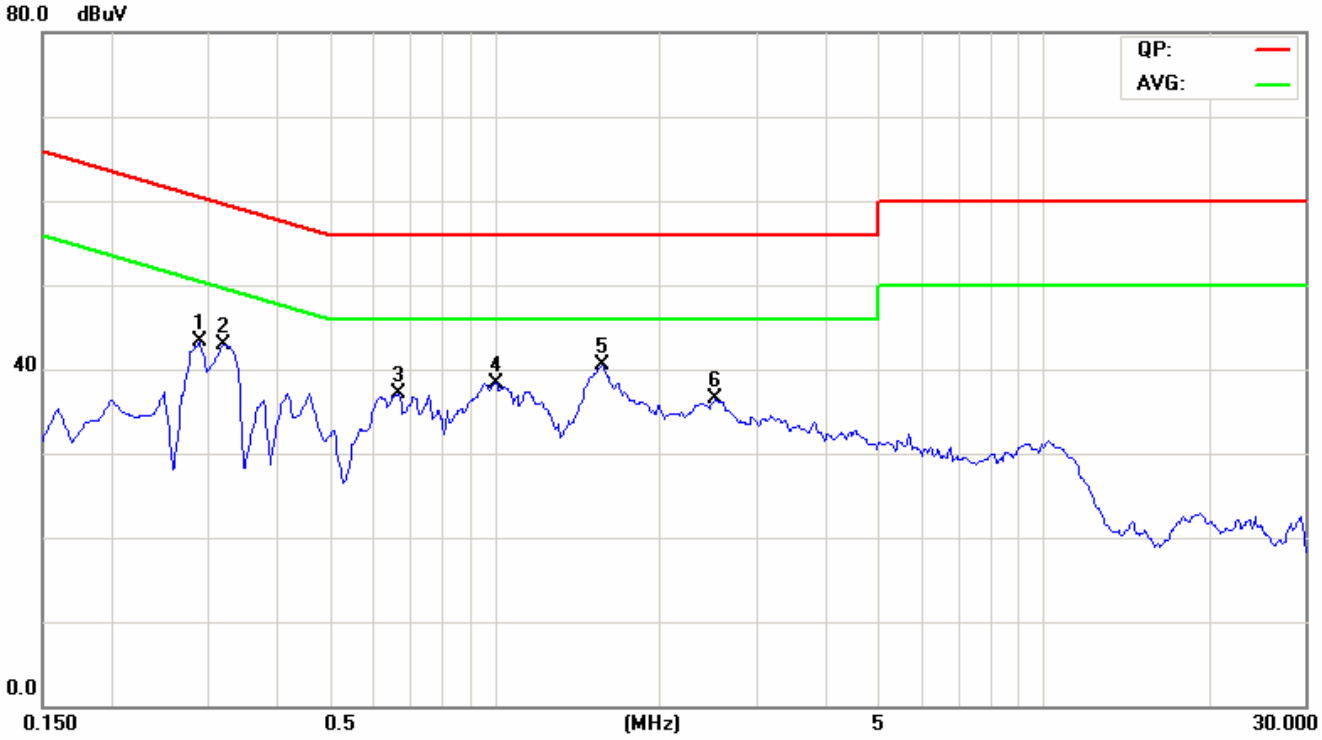
1. *Measuring frequencies from 0.15 MHz to 30MHz.*
2. *The emissions measured in frequency range from 0.15 MHz to 30MHz were made with an instrument using Quasi-peak detector and average detector.*
3. *The IF bandwidth of SPA between 0.15MHz to 30MHz was 10kHz; the IF bandwidth of Test Receiver between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

Test Plots

Conducted emissions (Line 1)



Conducted emissions (Line 2)



APPENDIX I
RADIO FREQUENCY EXPOSURE

LIMIT

EUT Specification

EUT	Mobile Computer
Frequency band (Operating)	☐ WLAN: 2.412GHz ~ 2.462GHz ☐ WLAN: 5.18GHz ~ 5.32GHz / 5.50GHz ~ 5.70GHz ☐ WLAN: 5.745GHz ~ 5.825GHz ☒ Others: 824 ~ 849 MHz
Device category	☒ Portable (<20cm separation) ☐ Mobile (>20cm separation) ☐ Others
Exposure classification	☐ Occupational/Controlled exposure (S = 5mW/cm^2) ☒ General Population/Uncontrolled exposure (S=1mW/cm^2)
Antenna diversity	☒ Single antenna ☐ Multiple antennas ☐ Tx diversity ☐ Rx diversity ☐ Tx/Rx diversity
Max. output power	22.52 dBm (178.64876 mW)
Antenna gain (Max)	-2.90 dBi (Numeric gain: 0.51)
Evaluation applied	☐ MPE Evaluation ☒ SAR Evaluation ☐ N/A
Remark: *The maximum output power is 22.52dBm (178.64876mW) at 848.80MHz (with 0.51 numeric antenna gain.)*	

TEST RESULTS

No non-compliance noted.

Not applicable, Please refers to the SAR test report.

EUT Specification

EUT	Mobile Computer
Frequency band (Operating)	☐ WLAN: 2.412GHz ~ 2.462GHz ☐ WLAN: 5.18GHz ~ 5.32GHz / 5.50GHz ~ 5.70GHz ☐ WLAN: 5.745GHz ~ 5.825GHz ☒ Others: 1850 ~ 1910 MHz
Device category	☒ Portable (<20cm separation) ☐ Mobile (>20cm separation) ☐ Others
Exposure classification	☐ Occupational/Controlled exposure (S = 5mW/cm^2) ☒ General Population/Uncontrolled exposure (S=1mW/cm^2)
Antenna diversity	☒ Single antenna ☐ Multiple antennas ☐ Tx diversity ☐ Rx diversity ☐ Tx/Rx diversity
Max. output power	28.21 dBm(662.21650 mW)
Antenna gain (Max)	2.17 dBi (Numeric gain: 1.65)
Evaluation applied	☐ MPE Evaluation ☒ SAR Evaluation ☐ N/A
Remark: *The maximum output power is 28.21dBm (662.21650mW) at 1850.20MHz (with 1.65numeric antenna gain.)*	

TEST RESULTS

No non-compliance noted.

Not applicable, Please refers to the SAR test report.