



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

**TEST REPORT**

**For**

**GPS controller (GPS Receiver)**

**Model: S SERIES**

**Trade Name: BAP**

*Issued to*

**BAP Precision Ltd.**

**1F., No. 5, Ln. 147, Chengzhang 1st St., Zhongli City,  
Taoyuan County 320, Taiwan, R.O.C.**

*Issued by*

**Compliance Certification Services Inc.**

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**Issued Date: May 10, 2011**



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**Revision History**

Rev.		Issue Date		Revisions	Effect Page	Revised By
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## 1. TEST RESULT CERTIFICATION

**Applicant:** BAP Precision Ltd.  
1F., No. 5, Ln. 147, Chengzhang 1st St., Zhongli City,  
Taoyuan County 320, Taiwan, R.O.C.

**Equipment Under Test:** GPS controller (GPS Receiver)

**Trade Name:** BAP

**Model Number:** S SERIES

**Date of Test:** April 28 ~ May 5, 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:*

*Reviewed by:*

Rex Lai  
Section Manager  
Compliance Certification Services Inc.

Gina Lo  
Section Manager  
Compliance Certification Services Inc.



## 2. EUT DESCRIPTION

<b>Product</b>	GPS controller (GPS Receiver)
<b>Trade Name</b>	BAP
<b>Model Number</b>	S SERIES
<b>Model Discrepancy</b>	N/A
<b>Received Date</b>	April 14, 2011
<b>Power Supply</b>	1. Power from Power Adapter ENG / 3A-182WP05 I/P: AC 100-240V, 50-60Hz, 0.5A O/P: DC 5V, 3.0A 2. Power from Battery Model: BA-1405206 Rating: DC 3.7V, 2600mAh, 9.6W/hr 3. Power from host device via USB Cable
<b>Frequency Range</b>	GPRS / EDGE: 850: 824.2 ~ 848.8 MHz GPRS / EDGE: 1900: 1850.2 ~ 1909.8 MHz WCDMA / HSDPA Band II: 1852.4 ~ 1907.6 MHz WCDMA / HSDPA Band V: 826.4 ~ 846.6MHz
<b>Transmit Power (ERP &amp; EIRP Power)</b>	GPRS 850: 27.82 dBm GPRS 1900: 29.92 dBm EDGE 850: 23.56 dBm EDGE 1900: 28.54 dBm WCDMA Band II: 25.21 dBm HSDPA Band II: 25.39 dBm WCDMA Band V: 23.61dBm HSDPA Band V: 23.80 dBm
<b>Cellular Phone Protocol</b>	GPRS: GMSK EDGE: 8PSK WCDMA: Quadrature Phase Shift Keying (QPSK) with Root-raised cosine pulse shaping filters (roll off = 0.22)
<b>Type of Emission</b>	GPRS 850: 252KGXW--- GPRS 1900: 251KGXW--- EDGE 850: 248KG7W--- EDGE 1900: 247KG7W--- WCDMA Band II: 4M17F9W--- WCDMA Band V: 4M16F9W--- WCDMA HSDPA Band II: 4M16F9W--- WCDMA HSDPA Band V: 4M17F9W---



Antenna Gain	GPRS / EDGE 850: 0.83 dBi GPRS / EDGE 1900: 2.35 dBi WCDMA band II: 2.35 dBi WCDMA band V: 0.83 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: **ZK7SSERIES** filing to comply with Part 22 and Part 24 of the FCC 47 CFR Rules.
3. GPS controller is  
GPS Receiver: when GPS signal is not as sensitive, this S SERIES unit will be the GPS receiver. (sub-meter to 2 meters accuracy)



### **3. TEST METHODOLOGY**

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

#### **3.1 EUT CONFIGURATION**

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

#### **3.2 EUT EXERCISE**

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

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

##### **Conducted Emissions**

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

##### **Radiated Emissions**

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



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

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

EUT staying in continuous transmitting mode was programmed.

**GPRS / EDGE 850:**

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

**GPRS / EDGE 1900:**

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

**WCDMA Band II:**

Channel Low (CH9262), Channel Mid (CH9400) and Channel High (CH9538) were chosen for full testing.

**WCDMA Band V:**

Channel Low (CH4132), Channel Mid (CH4182) and Channel High (CH4233) were chosen for full testing.

**WCDMA / HSDPA Band II:**

Channel Low (CH9262), Channel Mid (CH9400) and Channel High (CH9538) were chosen for full testing.

**WCDMA / HSDPA Band V:**

Channel Low (CH4132), Channel Mid (CH4182) and Channel High (CH4233) 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, GPRS 850 / GPRS1900 / EDGE 850 / EDGE 1900 / WCDMA Band II / WCDMA Band V / HSDPA Band II / HSDPA Band V were determined to be the worst-case scenario for all tests.

The worst emission was found:

in lie-down (X axis) for / GPRS1900 / EDGE 1900 / HSDPA Band II and GPRS 850 / EDGE 850 / WCDMA Band II / WCDMA Band V / HSDPA Band V in lie-down (Y axis) .





## **4. INSTRUMENT CALIBRATION**

### **4.1 MEASURING INSTRUMENT CALIBRATION**

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



## 4.2 MEASUREMENT EQUIPMENT USED

### Equipment Used for Emissions Measurement

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

Conducted Emissions Test Site				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY43360131	03/02/2012
Power Meter	Anritsu	ML2495A	1012009	03/27/2012
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-Circuits	ZFL-1000LN	SF350700823	01/12/2012
Pre-Amplifier	MITEQ	AFS44-00102650-42-10P-44	1415367	11/19/2011
Bilog Antenna	Sunol Sciences	JB3	A030105	10/06/2011
Bilog Antenna	Sunol Sciences	JB3	A030205	09/10/2011
Horn Antenna	EMCO	3117	00055165	01/12/2012
Horn Antenna	EMCO	3117	00055167	12/06/2011
Loop Antenna	EMCO	6502	8905/2356	06/10/2013
Turn Table	CCS	CC-T-1F	N/A	N.C.R
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R
Site NSA	CCS	N/A	N/A	12/26/2011
Test S/W	EZ-EMC (CCS-3A1RE)			

Conducted Emission room # A				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI Test Receiver	R&S	ESHS10	843743/015	03/24/2012
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."

**5.3 TABLE OF ACCREDITATIONS AND LISTINGS**

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

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



## 6. SETUP OF EQUIPMENT UNDER TEST

### 6.1 SETUP CONFIGURATION OF EUT

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

### 6.2 SUPPORT EQUIPMENT

No.	Device Type	Brand	Model	FCC ID	Series No.	Data Cable	Power Cord
1.	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.	Notebook PC	HP	dv6-1332TX	CNF9491GLJ	PD9112BNHU	N/A	AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.8m with a core
4.	LCD Monitor	DELL	3008WFP	CN-0XK290-71618-8 46-169L	FCC DoC	Unshielded, 1.8m	shielded, 1.8m
5.	USB Mouse	DELL	MO56UO	408031121	FCC DoC	Shielded, 1.8m	N/A
6.	GPS Antenna	N/A	N/A	N/A	N/A	N/A	N/A
7.	Earphone	N/A	N/A	N/A	N/A	N/A	N/A
8.	8960 Series 10 Wireless Communication test set (Remote)	Agilent	E5515C	GB44051665	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.



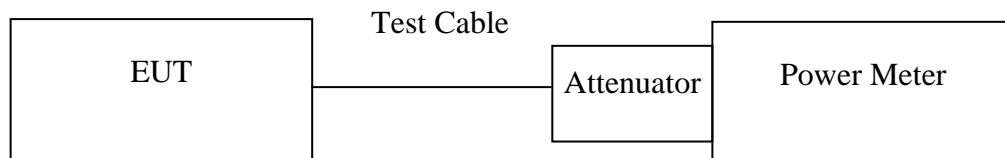
## 7. FCC PART 22 & 24 REQUIREMENTS

### 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
GPRS 850	128	824.20	30.80	1.20226
	190	836.60	30.80	1.20226
	251	848.80	30.70	1.17490
EDGE 850	128	824.20	27.40	0.54954
	190	836.60	27.30	0.53703
	251	848.80	27.30	0.53703

Test Mode	CH	Frequency (MHz)	Peak Power (dBm)	Output Power W
GPRS 1900	512	1850.20	28.40	0.69183
	661	1880.00	28.40	0.69183
	810	1909.80	28.20	0.66069
EDGE 1900	512	1850.20	26.70	0.46774
	661	1880.00	26.70	0.46774
	810	1909.80	26.50	0.44668

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





Test Mode	CH	Frequency (MHz)	Peak Power (dBm)	Output Power W
WCDMA (BAND II)	9262	1852.40	26.96	0.49659
	9400	1880.00	27.24	0.52966
	9538	1907.60	26.78	0.47643
WCDMA (BAND V)	4132	826.40	27.12	0.51523
	4182	836.40	27.30	0.53703
	4233	846.60	27.59	0.57412

Test Mode	CH	Frequency (MHz)	Peak Power (dBm)	Output Power W
WCDMA / HSDPA (BAND II)	9262	1852.40	26.94	0.49431
	9400	1880.00	27.11	0.51404
	9538	1907.60	26.98	0.49888
WCDMA / HSDPA (BAND V)	4132	826.40	27.17	0.52119
	4182	836.40	27.15	0.51880
	4233	846.60	27.49	0.56105

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

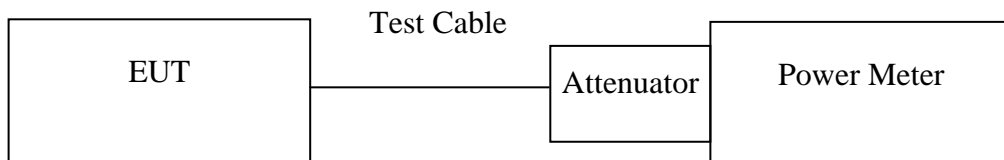


## 7.2 AVERAGE POWER

### LIMIT

For reporting purposes only.

### Test Configuration



*Remark: Measurement setup for testing on Antenna connector*

### TEST PROCEDURE

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

### TEST RESULTS

*No non-compliance noted.*



## **TEST RESULTS**

*No non-compliance noted.*

### **Test Data**

Test Mode	CH	Frequency (MHz)	AVG Power (dBm)	Output Power W
GPRS 850	128	824.20	24.78	0.30057
	190	836.60	24.78	0.30057
	251	848.80	24.68	0.29372
EDGE 850	128	824.20	21.38	0.13739
	190	836.60	21.28	0.13426
	251	848.80	21.28	0.13426

Test Mode	CH	Frequency (MHz)	AVG Power (dBm)	Output Power W
GPRS 1900	512	1850.20	22.38	0.17296
	661	1880.00	22.38	0.17296
	810	1909.80	22.18	0.16517
EDGE 1900	512	1850.20	20.68	0.11693
	661	1880.00	20.68	0.11693
	810	1909.80	20.48	0.11167

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



Test Mode	CH	Frequency (MHz)	AVG Power (dBm)	Output Power W
WCDMA (BAND II)	9262	1852.40	23.45	0.22131
	9400	1880.00	23.74	0.23659
	9538	1907.60	23.37	0.21727
WCDMA (BAND V)	4132	826.40	23.69	0.23388
	4182	836.40	23.86	0.24322
	4233	846.60	24.10	0.25704

Test Mode	CH	Frequency (MHz)	AVG Power (dBm)	Output Power W
WCDMA / HSDPA (BAND II)	9262	1852.40	22.96	0.19770
	9400	1880.00	23.12	0.20512
	9538	1907.60	22.83	0.19187
WCDMA / HSDPA (BAND V)	4132	826.40	23.16	0.20701
	4182	836.40	23.17	0.20749
	4233	846.60	23.56	0.22699

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



## 7.3 ERP & EIRP MEASUREMENT

### LIMIT

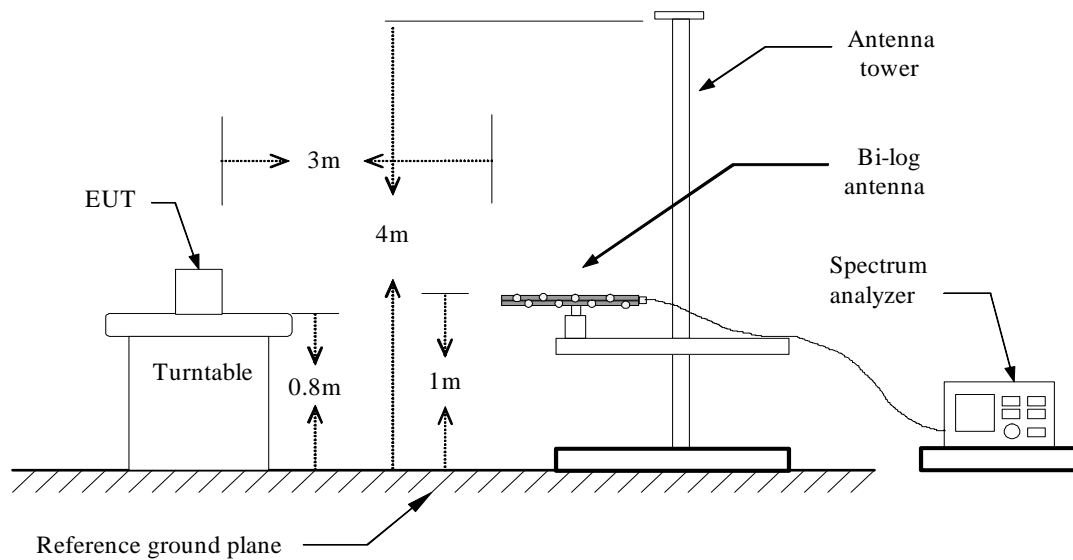
According to FCC §2.1046

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

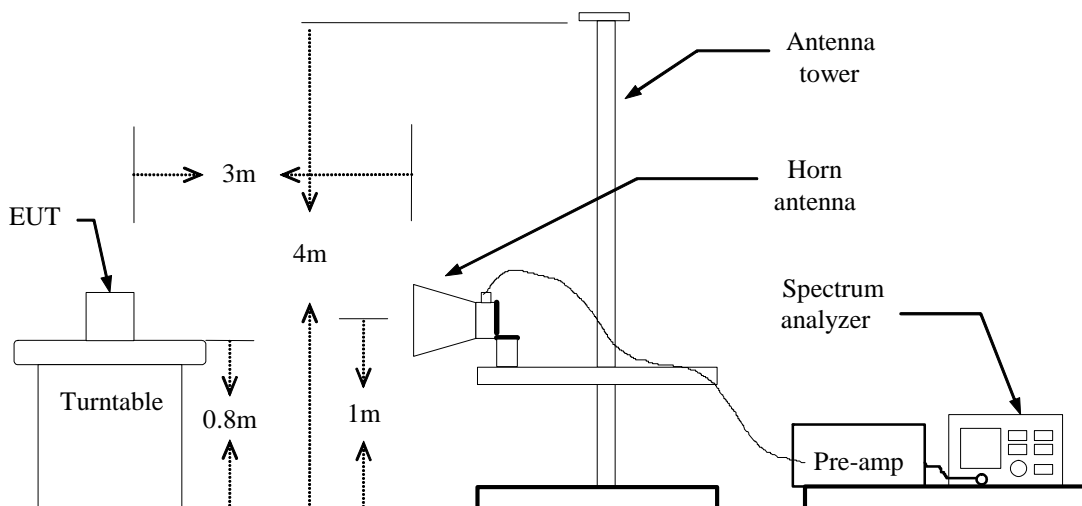
FCC 24.232(b): The equivalent Isotropic Radiated Power (EIRP) must not exceed 2 Watts.

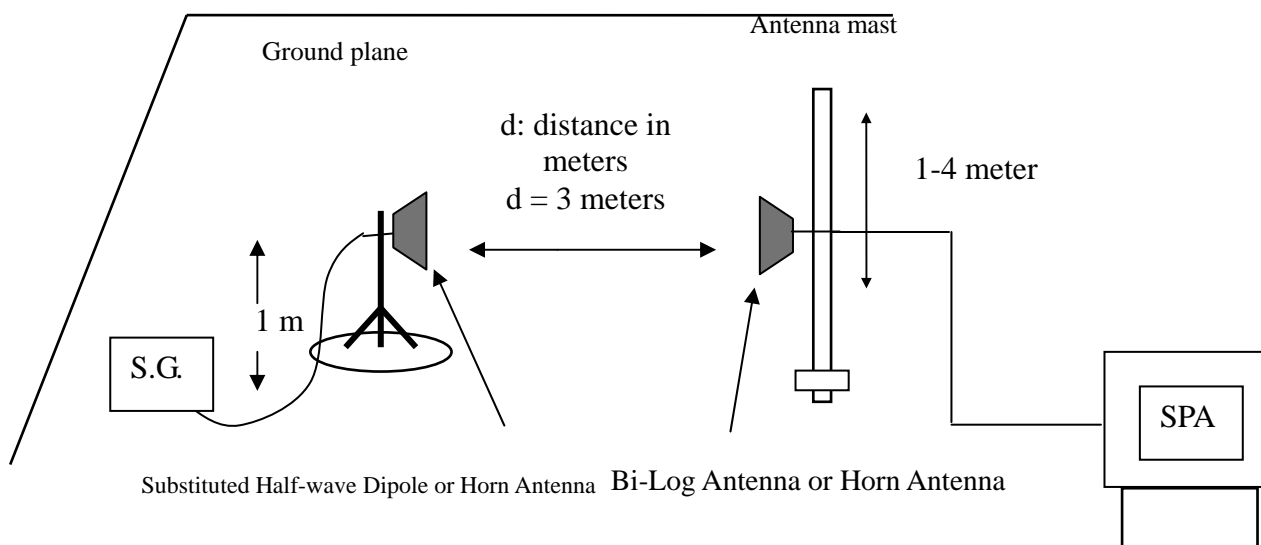
### Test Configuration

#### Below 1 GHz



#### Above 1 GHz



**For Substituted Method Test Set-UP****TEST PROCEDURE**

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

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

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

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

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

**TEST RESULTS**

*No non-compliance noted.*

**GPRS 850 TEST DATA**

EUT Pol.	Channel	Frequency (MHz)	Antenna Pol.	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
X	128	824.20	V	16.81	3.39	6.24	19.66	38.45	-18.79
		824.20	H	21.09	3.39	6.24	23.94	38.45	-14.51
	190	836.60	V	21.36	3.4	6.37	24.33	38.45	-14.12
		836.60	H	24.01	3.4	6.37	26.98	38.45	-11.47
	251	848.80	V	19.89	3.4	6.4	22.89	38.45	-15.56
		848.80	H	24.82	3.4	6.4	<b>*27.82</b>	38.45	-10.63
Y	128	824.20	V	20.06	3.39	6.24	22.91	38.45	-15.54
		824.20	H	17.13	3.39	6.24	19.98	38.45	-18.47
	190	836.60	V	20.96	3.4	6.37	23.93	38.45	-14.52
		836.60	H	21.68	3.4	6.37	24.65	38.45	-13.8
	251	848.80	V	20.83	3.4	6.4	23.83	38.45	-14.62
		848.80	H	24.65	3.4	6.4	27.65	38.45	-10.8
Z	128	824.20	V	21.91	3.39	6.24	24.76	38.45	-13.69
		824.20	H	14.35	3.39	6.24	17.20	38.45	-21.25
	190	836.60	V	23.87	3.4	6.37	26.84	38.45	-11.61
		836.60	H	15.57	3.4	6.37	18.54	38.45	-19.91
	251	848.80	V	24.16	3.4	6.4	27.16	38.45	-11.29
		848.80	H	16.92	3.4	6.4	19.92	38.45	-18.53

**GPRS 1900 TEST DATA**

EUT Pol.	Channel	Frequency (MHz)	Antenna Pol.	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
X	512	1850.20	V	22.72	5.37	5.67	23.02	33.00	-9.98
		1850.20	H	29.21	5.37	5.67	29.51	33.00	-3.49
	661	1880.00	V	20.72	5.42	5.62	20.92	33.00	-12.08
		1880.00	H	28.94	5.42	5.62	29.14	33.00	-3.86
	810	1909.80	V	21.13	5.48	5.56	21.21	33.00	-11.79
		1909.80	H	29.84	5.48	5.56	<b>*29.92</b>	33.00	-3.08
Y	512	1850.20	V	26.57	5.37	5.67	26.87	33.00	-6.13
		1850.20	H	25.68	5.37	5.67	25.98	33.00	-7.02
	661	1880.00	V	27.07	5.42	5.62	27.27	33.00	-5.73
		1880.00	H	25.96	5.42	5.62	26.16	33.00	-6.84
	810	1909.80	V	26.13	5.48	5.56	26.21	33.00	-6.79
		1909.80	H	25.76	5.48	5.56	25.84	33.00	-7.16
Z	512	1850.20	V	22.54	5.37	5.67	22.84	33.00	-10.16
		1850.20	H	21.42	5.37	5.67	21.72	33.00	-11.28
	661	1880.00	V	22.65	5.42	5.62	22.85	33.00	-10.15
		1880.00	H	22.53	5.42	5.62	22.73	33.00	-10.27
	810	1909.80	V	22.59	5.48	5.56	22.67	33.00	-10.33
		1909.80	H	22.59	5.48	5.56	22.67	33.00	-10.33

**EDGE 850 Test Data**

EUT Pol.	Channel	Frequency (MHz)	Antenna Pol.	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
X	128	824.20	V	11.22	3.39	6.24	14.07	38.45	-24.38
		824.20	H	16.92	3.39	6.24	19.77	38.45	-18.68
	190	836.60	V	12.6	3.4	6.36	15.56	38.45	-22.89
		836.60	H	17.96	3.4	6.37	20.93	38.45	-17.52
	251	848.80	V	13.29	3.4	6.4	16.29	38.45	-22.16
		848.80	H	20.2	3.4	6.4	23.20	38.45	-15.25
Y	128	824.20	V	13.31	3.39	6.24	16.16	38.45	-22.29
		824.20	H	17.07	3.39	6.24	19.92	38.45	-18.53
	190	836.60	V	13.31	3.4	6.36	16.27	38.45	-22.18
		836.60	H	18.64	3.4	6.37	21.61	38.45	-16.84
	251	848.80	V	17.08	3.4	6.4	20.08	38.45	-18.37
		848.80	H	20.56	3.4	6.4	<b>*23.56</b>	38.45	-14.89
Z	128	824.20	V	16.6	3.39	6.24	19.45	38.45	-19
		824.20	H	9.19	3.39	6.24	12.04	38.45	-26.41
	190	836.60	V	17.91	3.4	6.37	20.88	38.45	-17.57
		836.60	H	9.33	3.4	6.36	12.29	38.45	-26.16
	251	848.80	V	19.55	3.4	6.4	22.55	38.45	-15.9
		848.80	H	11.7	3.4	6.4	14.70	38.45	-23.75

**EDGE 1900 Test Data**

EUT Pol.	Channel	Frequency (MHz)	Antenna Pol.	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
X	512	1850.20	V	20.34	5.37	5.67	20.64	33.00	-12.36
		1850.20	H	27.34	5.37	5.67	27.64	33.00	-5.36
	661	1880.00	V	20.62	5.42	5.62	20.82	33.00	-12.18
		1880.00	H	27.85	5.42	5.62	28.05	33.00	-4.95
	810	1909.80	V	19.62	5.48	5.56	19.70	33.00	-13.30
		1909.80	H	28.46	5.48	5.56	<b>*28.54</b>	33.00	-4.46
Y	512	1850.20	V	22.41	5.37	5.67	22.71	33.00	-10.29
		1850.20	H	21.5	5.37	5.67	21.80	33.00	-11.20
	661	1880.00	V	23.07	5.42	5.62	23.27	33.00	-9.73
		1880.00	H	22.08	5.42	5.62	22.28	33.00	-10.72
	810	1909.80	V	22.43	5.48	5.56	22.51	33.00	-10.49
		1909.80	H	22.34	5.48	5.56	22.42	33.00	-10.58
Z	512	1850.20	V	18.24	5.37	5.67	18.54	33.00	-14.46
		1850.20	H	17.95	5.37	5.67	18.25	33.00	-14.75
	661	1880.00	V	18.16	5.42	5.62	18.36	33.00	-14.64
		1880.00	H	18.26	5.42	5.62	18.46	33.00	-14.54
	810	1909.80	V	17.88	5.48	5.56	17.96	33.00	-15.04
		1909.80	H	17.95	5.48	5.56	18.03	33.00	-14.97



**WCDMA Test Data (BAND II)**

EUT Pol.	Channel	Frequency (MHz)	Antenna Pol.	Reading level (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
X	9262	1852.40	V	-22.86	41.18	18.31	33.00	-14.69
		1852.40	H	-16.25	40.82	24.57	33.00	-8.43
	9400	1880.00	V	-24.44	41.23	16.79	33.00	-16.21
		1880.00	H	-15.95	41.15	25.20	33.00	-7.80
	9538	1907.60	V	-24.86	41.29	16.44	33.00	-16.56
		1907.60	H	-16.17	41.38	<b>*25.21</b>	33.00	-7.79
Y	9262	1852.40	V	-15.98	41.18	25.19	33.00	-7.81
		1852.40	H	-17.80	40.82	23.03	33.00	-9.97
	9400	1880.00	V	-16.49	41.23	24.74	33.00	-8.26
		1880.00	H	-18.39	41.15	22.76	33.00	-10.24
	9538	1907.60	V	-18.24	41.29	23.05	33.00	-9.95
		1907.60	H	-19.24	41.38	22.14	33.00	-10.86
Z	9262	1852.40	V	-21.40	41.18	19.77	33.00	-13.23
		1852.40	H	-20.56	40.82	20.26	33.00	-12.74
	9400	1880.00	V	-20.88	41.23	20.35	33.00	-12.65
		1880.00	H	-21.03	41.15	20.12	33.00	-12.88
	9538	1907.60	V	-21.16	41.30	20.13	33.00	-12.87
		1907.60	H	-20.53	41.38	20.85	33.00	-12.15

**WCDMA Test Data (BAND V)**

EUT Pol.	Channel	Frequency (MHz)	Antenna Pol.	Reading level (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
X	4132	826.40	V	-16.28	35.41	19.14	38.50	-19.36
		826.40	H	-13.64	35.26	21.63	38.50	-16.87
	4182	836.40	V	-15.85	35.46	19.61	38.50	-18.89
		836.40	H	-13.48	35.52	22.04	38.50	-16.46
	4233	846.60	V	-12.73	35.57	22.85	38.50	-15.65
		846.60	H	-12.71	35.74	23.04	38.50	-15.46
Y	4132	826.40	V	-15.47	35.41	19.95	38.50	-18.55
		826.40	H	-13.35	35.26	21.91	38.50	-16.59
	4182	836.40	V	-15.96	35.46	19.50	38.50	-19.00
		836.40	H	-12.12	35.52	23.40	38.50	-15.10
	4233	846.60	V	-14.75	35.57	20.82	38.50	-17.68
		846.60	H	-12.49	35.74	23.25	38.50	-15.25
Z	4132	826.40	V	-14.60	35.41	20.82	38.50	-17.68
		826.40	H	-21.50	35.26	13.76	38.50	-24.74
	4182	836.40	V	-14.51	35.46	20.95	38.50	-17.55
		836.40	H	-20.79	35.51	14.71	38.50	-23.79
	4233	846.60	V	-11.97	35.57	<b>*23.61</b>	38.50	-14.89
		846.60	H	-20.20	35.74	15.54	38.50	-22.96

**WCDMA / HSDPA BAND II Test Data**

EUT Pol.	Channel	Frequency (MHz)	Antenna Pol.	Reading level (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
X	9262	1852.40	V	-23.46	41.18	17.71	33.00	-15.29
		1852.40	H	-16.00	40.84	24.83	33.00	-8.17
	9400	1880.00	V	-24.26	41.23	16.98	33.00	-16.02
		1880.00	H	-15.89	41.15	25.26	33.00	-7.74
	9538	1907.60	V	-24.95	41.29	16.34	33.00	-16.66
		1907.60	H	-15.99	41.38	<b>*25.39</b>	33.00	-7.61
Y	9262	1852.40	V	-16.86	41.18	24.32	33.00	-8.68
		1852.40	H	-18.67	40.83	22.16	33.00	-10.84
	9400	1880.00	V	-16.24	41.23	24.99	33.00	-8.01
		1880.00	H	-19.33	41.14	21.81	33.00	-11.19
	9538	1907.60	V	-17.95	41.29	23.34	33.00	-9.66
		1907.60	H	-18.87	41.38	22.51	33.00	-10.49
Z	9262	1852.40	V	-20.77	41.18	20.41	33.00	-12.59
		1852.40	H	-20.79	40.83	20.04	33.00	-12.96
	9400	1880.00	V	-21.22	41.23	20.01	33.00	-12.99
		1880.00	H	-20.95	41.16	20.21	33.00	-12.79
	9538	1907.60	V	-20.65	41.29	20.64	33.00	-12.36
		1907.60	H	-20.04	41.38	21.34	33.00	-11.66

**WCDMA / HSDPA BAND V Test Data**

EUT Pol.	Channel	Frequency (MHz)	Antenna Pol.	Reading level (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
X	4132	826.40	V	-17.37	35.41	18.04	38.50	-20.46
		826.40	H	-13.78	35.24	21.45	38.50	-17.05
	4182	836.40	V	-15.63	35.45	19.82	38.50	-18.68
		836.40	H	-13.74	35.50	21.76	38.50	-16.74
	4233	846.60	V	-14.99	35.58	20.60	38.50	-17.90
		846.60	H	-11.94	35.74	<b>*23.80</b>	38.50	-14.70
Y	4132	826.40	V	-19.09	35.41	16.32	38.50	-22.18
		826.40	H	-13.05	35.28	22.22	38.50	-16.28
	4182	836.40	V	-19.88	35.46	15.57	38.50	-22.93
		836.40	H	-12.98	35.48	22.50	38.50	-16.00
	4233	846.60	V	-18.04	35.59	17.54	38.50	-20.96
		846.60	H	-12.31	35.76	23.45	38.50	-15.05
Z	4132	826.40	V	-14.24	35.41	21.17	38.50	-17.33
		826.40	H	-26.96	35.25	8.29	38.50	-30.21
	4182	836.40	V	-14.64	35.46	20.82	38.50	-17.68
		836.40	H	-23.85	35.55	11.70	38.50	-26.80
	4233	846.60	V	-12.51	35.58	23.07	38.50	-15.43
		846.60	H	-18.51	35.75	17.24	38.50	-21.26

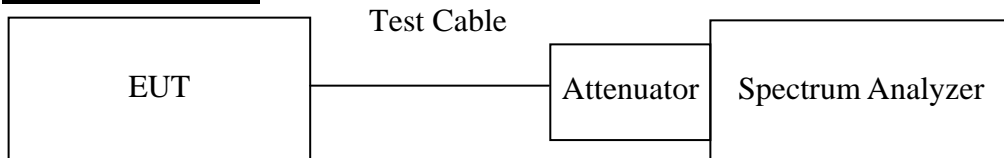


## 7.4 OCCUPIED BANDWIDTH MEASUREMENT

### 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)
GPRS 850	128	824.20	252.4899
	190	836.60	246.1691
	251	848.80	243.6301
EDGE 850	128	824.20	248.6937
	190	836.60	239.6519
	251	848.80	239.1788

Test Mode	CH	Frequency (MHz)	99% Bandwidth (kHz)
GPRS 1900	512	1850.20	248.1627
	661	1880.00	243.1897
	810	1909.80	251.2129
EDGE 1900	512	1850.20	241.4179
	661	1880.00	247.4035
	810	1909.80	243.4437



Test Mode	CH	Frequency (MHz)	99% Bandwidth (MHz)
WCDMA (Band II)	9262	1852.40	4.1511
	9400	1880.00	4.1423
	9538	1907.60	4.1724
WCDMA (Band V)	4132	826.40	4.1640
	4182	836.40	4.1562
	4233	846.60	4.1620
WCDMA / HSDPA (BAND II)	9262	1852.40	4.1600
	9400	1880.00	4.1521
	9538	1907.60	4.1585
WCDMA / HSDPA (BAND V)	4132	826.40	4.1668
	4182	836.40	4.1724
	4233	846.60	4.1726

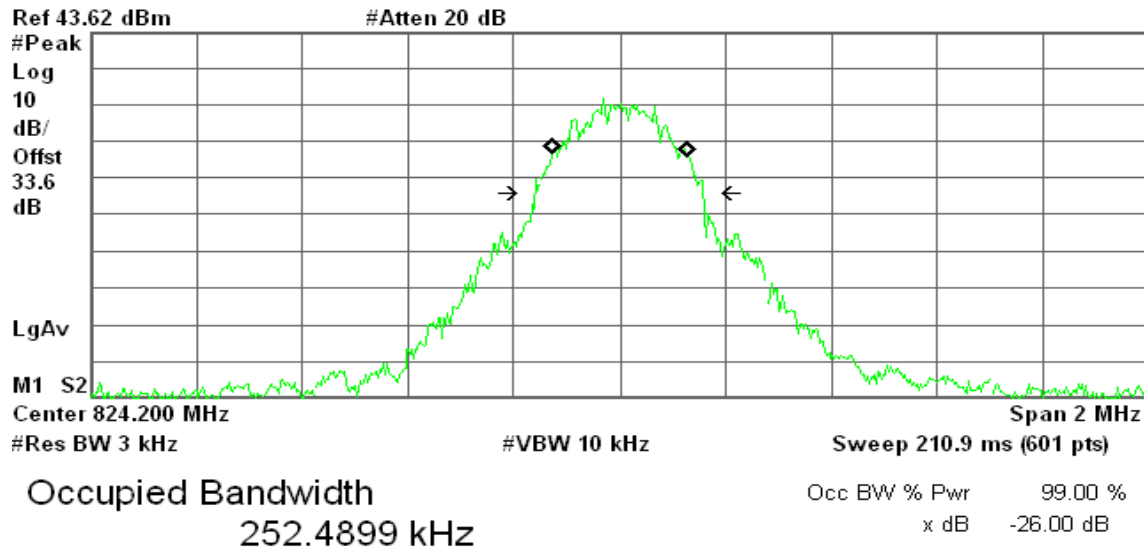


## Test Plot

### GPRS 850 (CH Low)

Agilent 23:43:12 Apr 29, 2011

R T

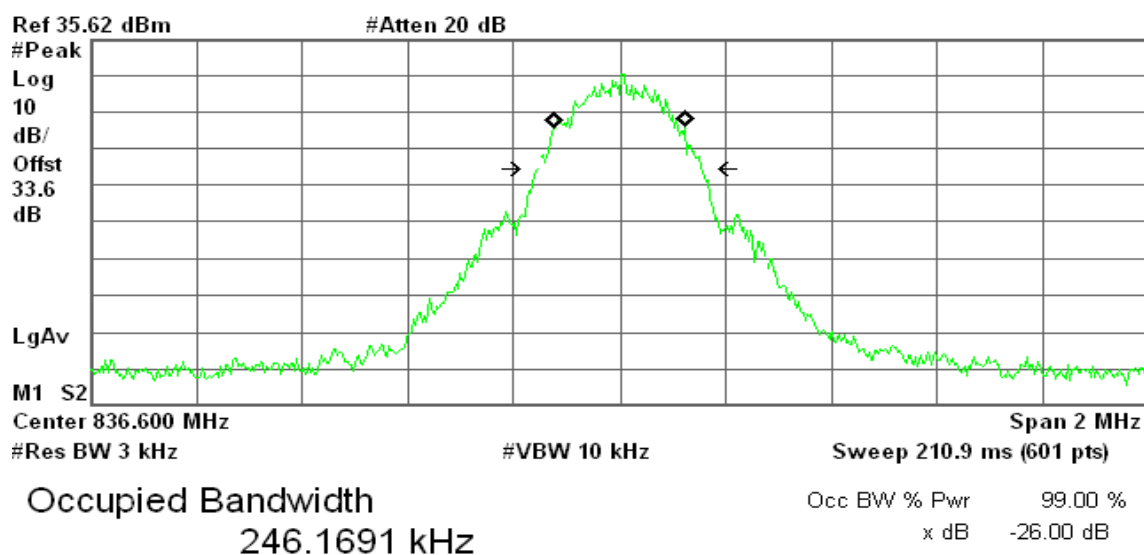


Transmit Freq Error 826.973 Hz  
x dB Bandwidth 317.437 kHz

### GPRS 850 (CH Mid)

Agilent 23:44:19 Apr 29, 2011

R T



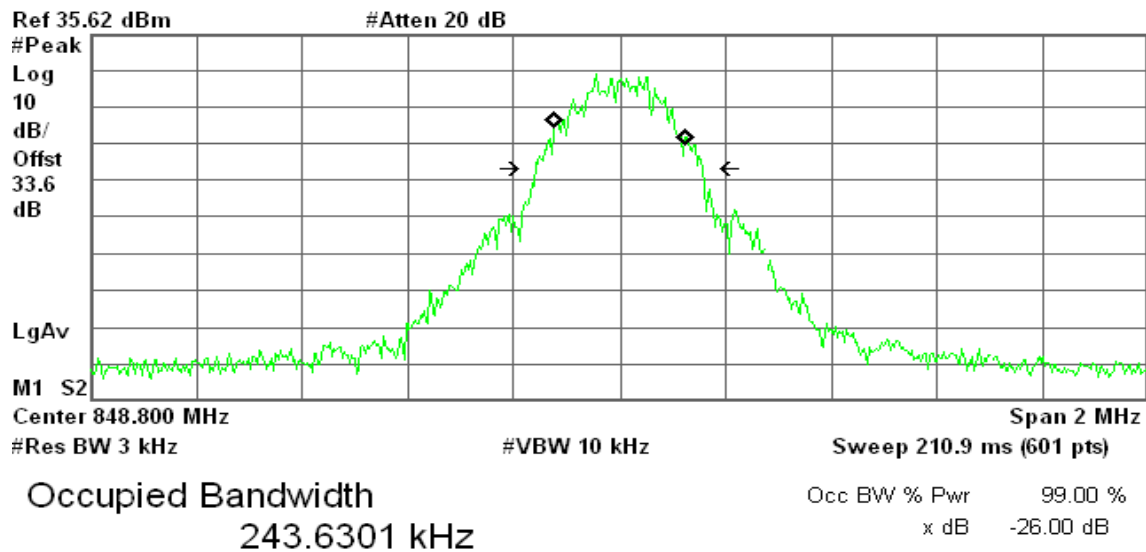
Transmit Freq Error -240.429 Hz  
x dB Bandwidth 308.621 kHz



## GPRS 850 (CH High)

Agilent 23:45:16 Apr 29, 2011

R T

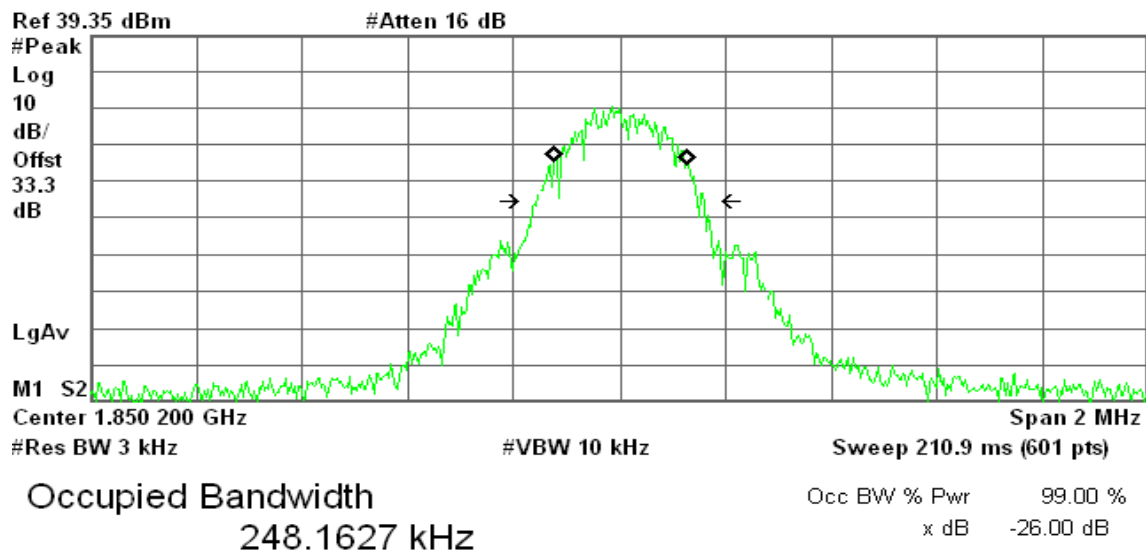


Transmit Freq Error 46.703 Hz  
x dB Bandwidth 315.247 kHz

## GPRS 1900 (CH Low)

Agilent 15:23:21 Apr 29, 2011

R T



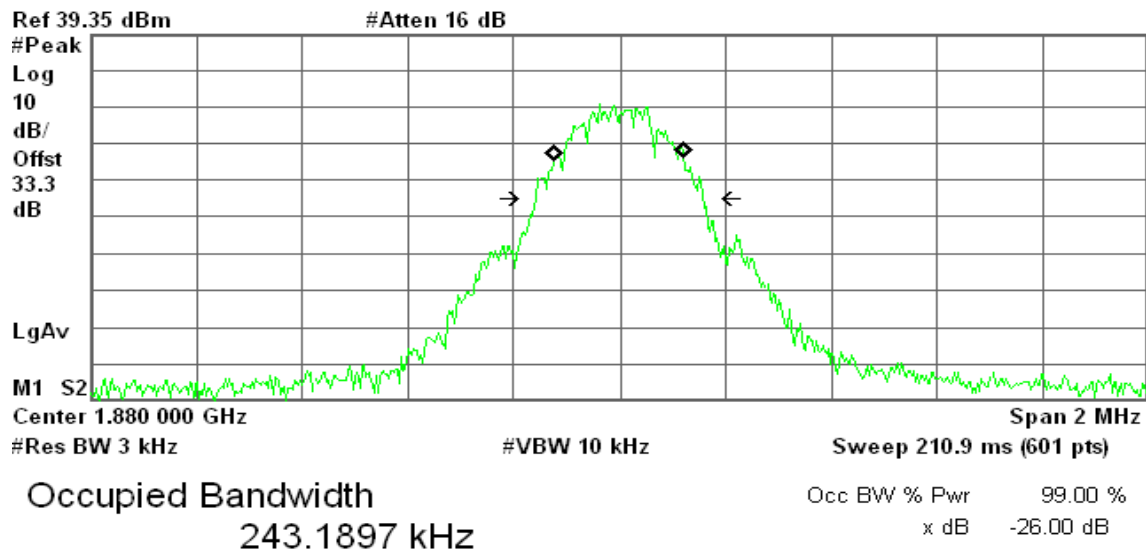
Transmit Freq Error 1.147 kHz  
x dB Bandwidth 314.816 kHz



## GPRS 1900 (CH Mid)

Agilent 15:24:12 Apr 29, 2011

R T

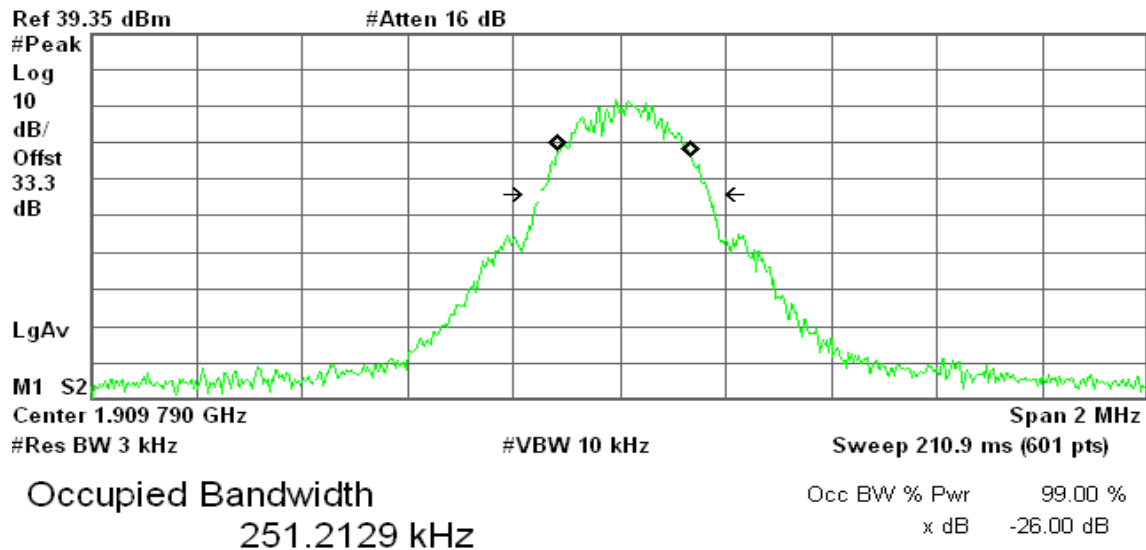


Transmit Freq Error -492.590 Hz  
x dB Bandwidth 315.052 kHz

## GPRS 1900 (CH High)

Agilent 15:56:31 Apr 29, 2011

R T



Transmit Freq Error 8.901 kHz  
x dB Bandwidth 316.792 kHz

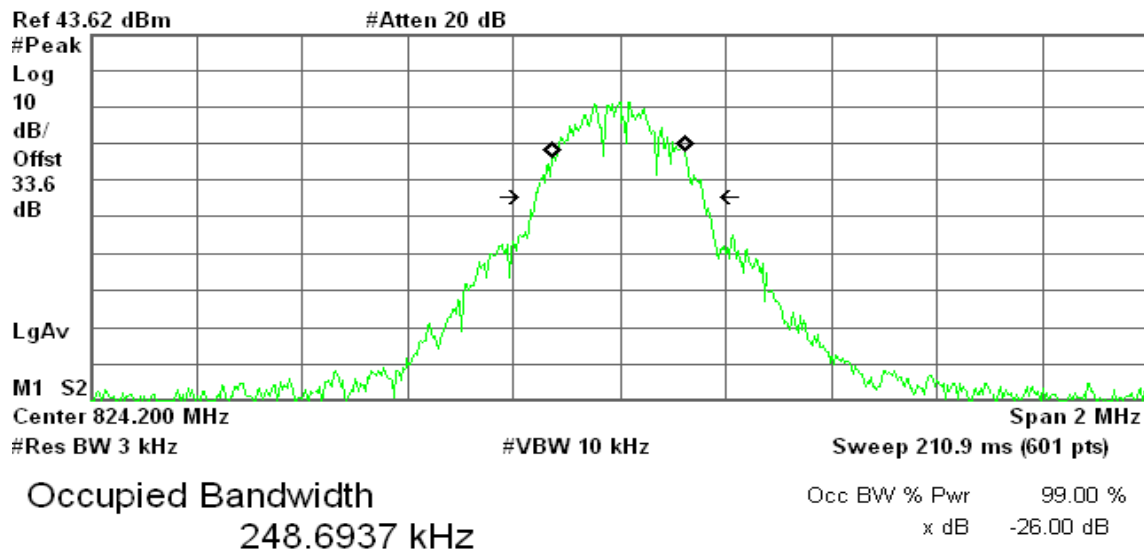




## EDGE 850 (CH Low)

Agilent 23:43:30 Apr 29, 2011

R T

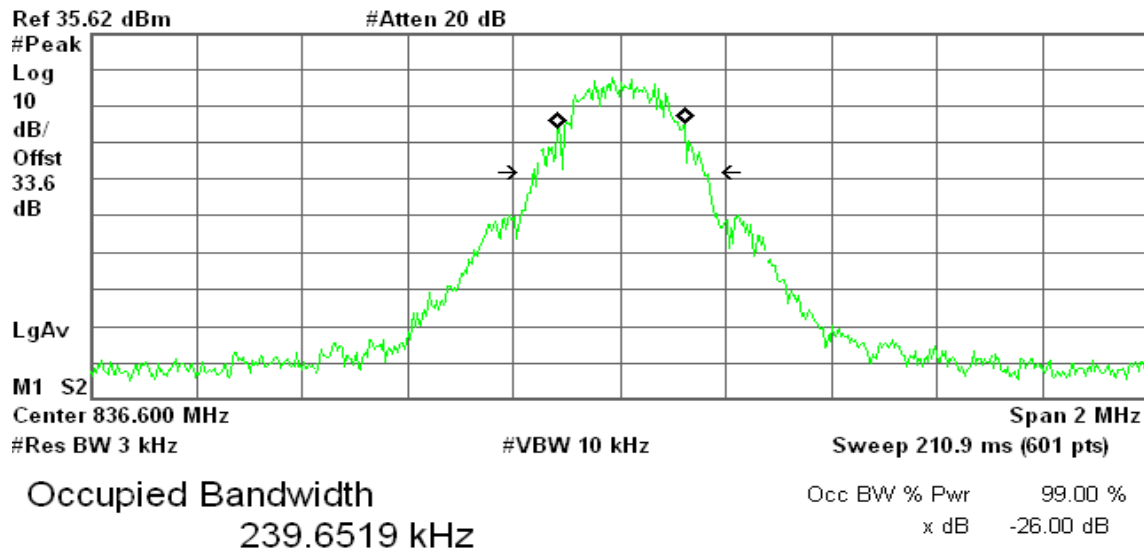


Transmit Freq Error -1.067 kHz  
x dB Bandwidth 314.985 kHz

## EDGE 850 (CH Mid)

Agilent 23:44:07 Apr 29, 2011

R T



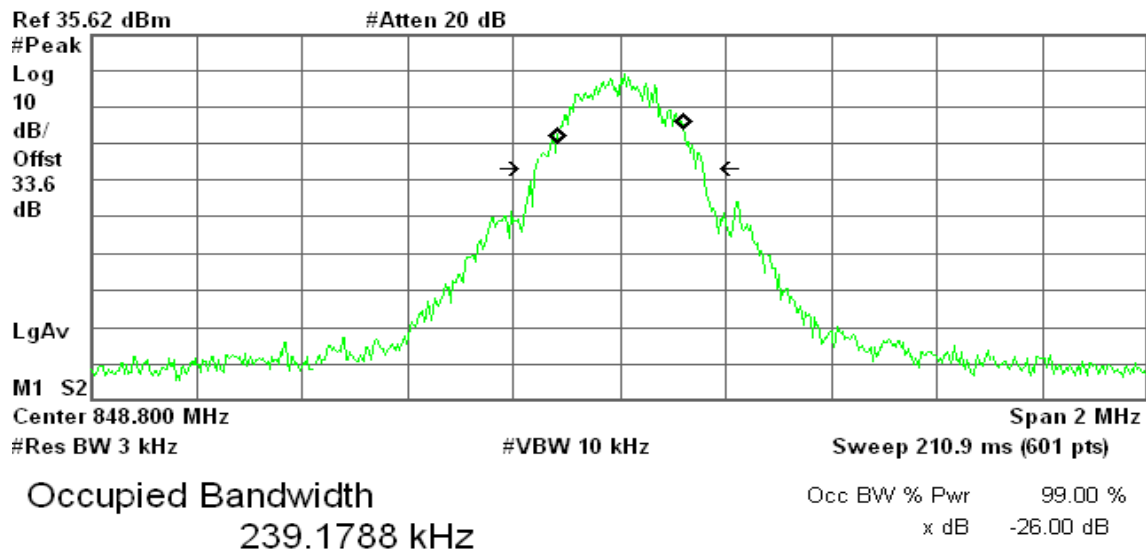
Transmit Freq Error 3.795 kHz  
x dB Bandwidth 320.165 kHz



## EDGE 850 (CH High)

Agilent 23:45:32 Apr 29, 2011

R T

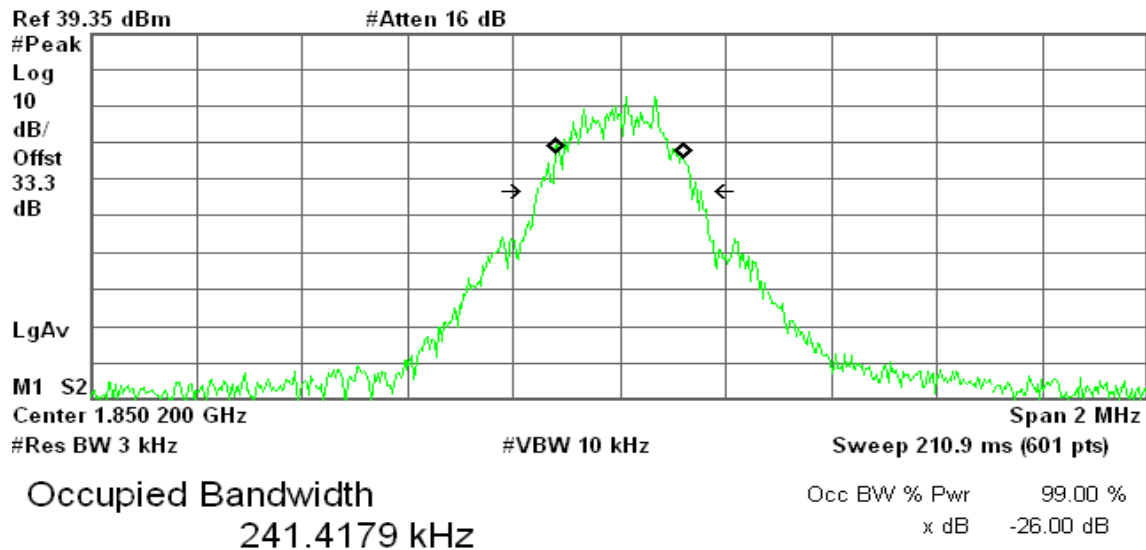


Transmit Freq Error 1.468 kHz  
x dB Bandwidth 316.118 kHz

## EDGE 1900 (CH Low)

Agilent 15:23:33 Apr 29, 2011

R T



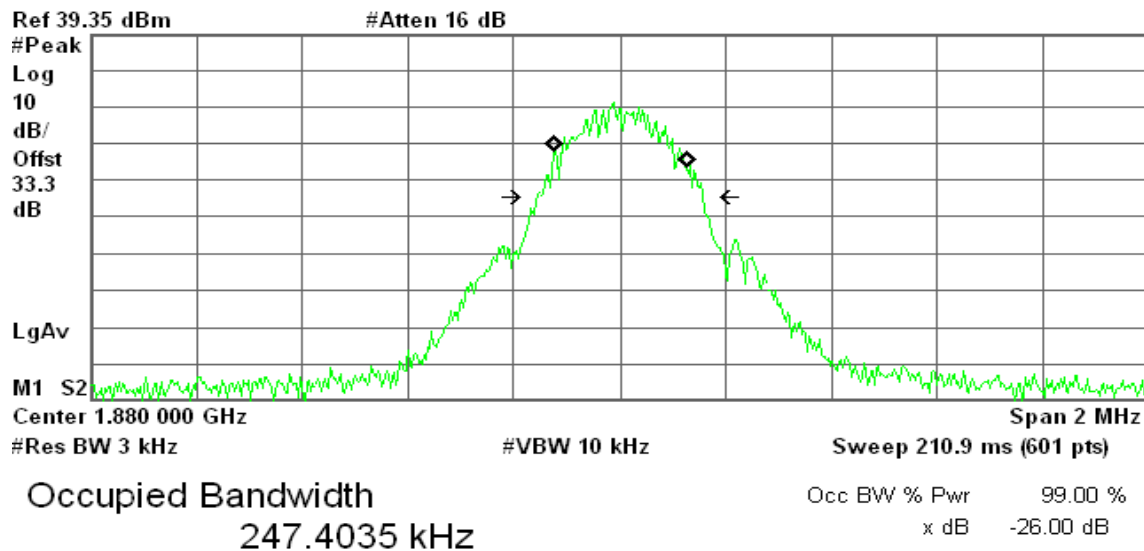
Transmit Freq Error 77.475 Hz  
x dB Bandwidth 299.588 kHz



## EDGE 1900 (CH Mid)

Agilent 15:23:55 Apr 29, 2011

R T

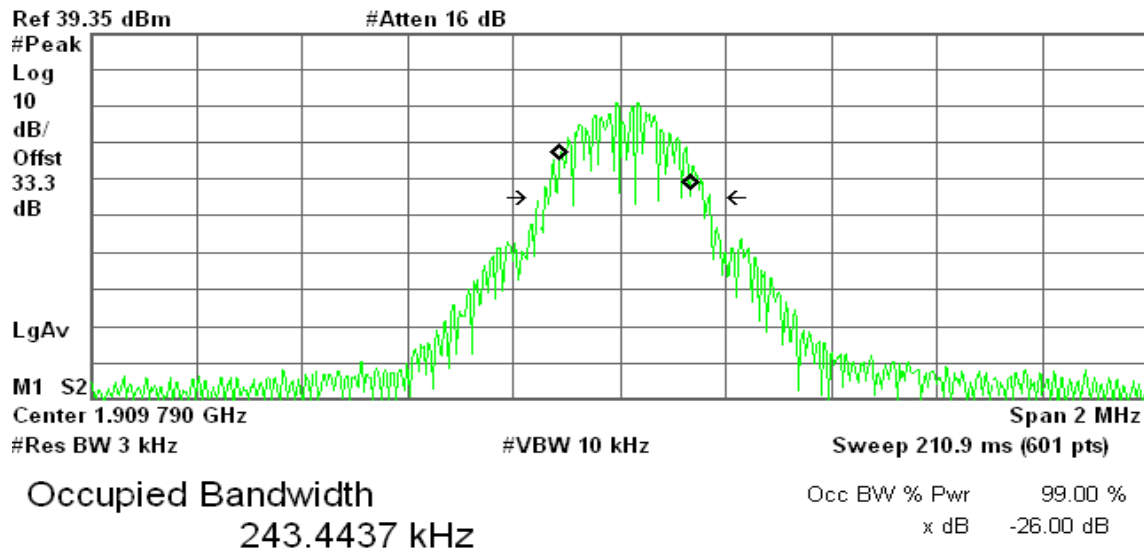


Transmit Freq Error 1.486 kHz  
x dB Bandwidth 311.975 kHz

## EDGE 1900 (CH High)

Agilent 15:56:44 Apr 29, 2011

R T



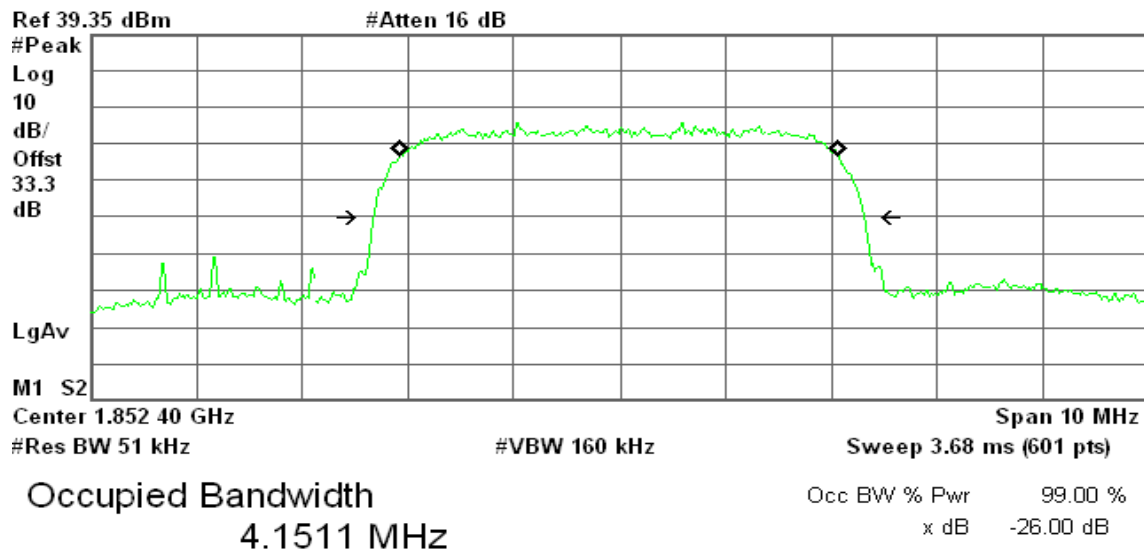
Transmit Freq Error 10.051 kHz  
x dB Bandwidth 312.535 kHz



## WCDMA Band II (CH Low)

Agilent 14:51:29 Apr 29, 2011

R T

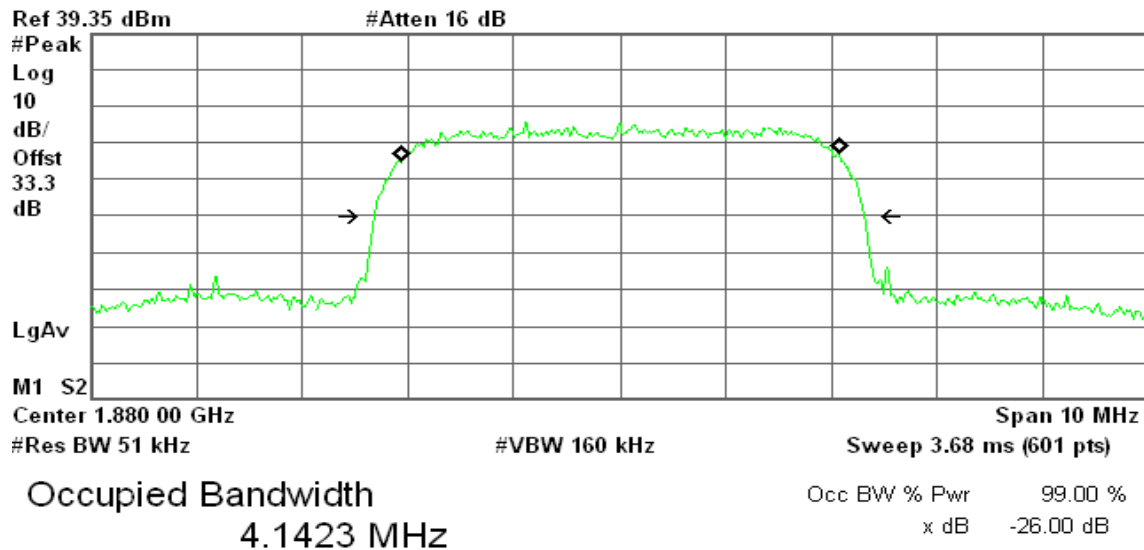


Transmit Freq Error -8.443 kHz  
x dB Bandwidth 4.648 MHz

## WCDMA Band II (CH Mid)

Agilent 14:51:51 Apr 29, 2011

R T

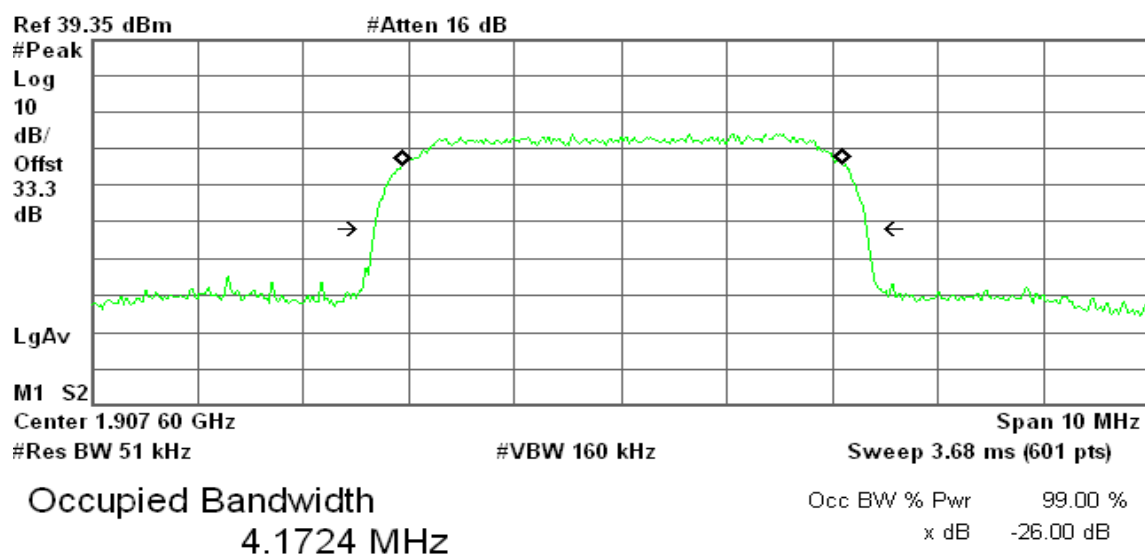


Transmit Freq Error 11.379 kHz  
x dB Bandwidth 4.642 MHz

## WCDMA Band II (CH High)

Agilent 14:53:04 Apr 29, 2011

R T

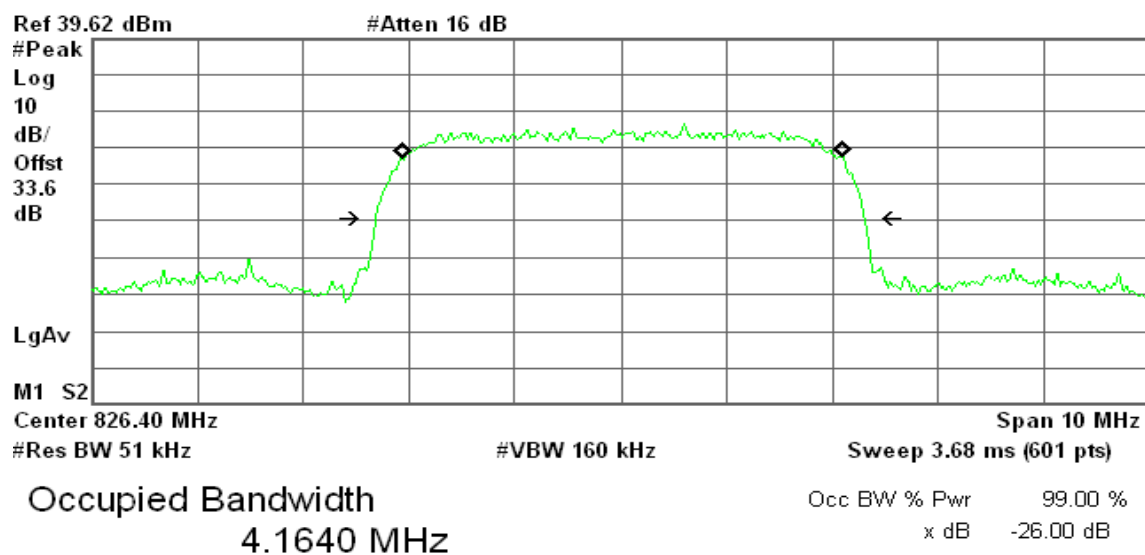


Transmit Freq Error	15.082 kHz
x dB Bandwidth	4.659 MHz

### WCDMA Band V (CH Low)

Agilent 14:40:53 Apr 29, 2011

R T



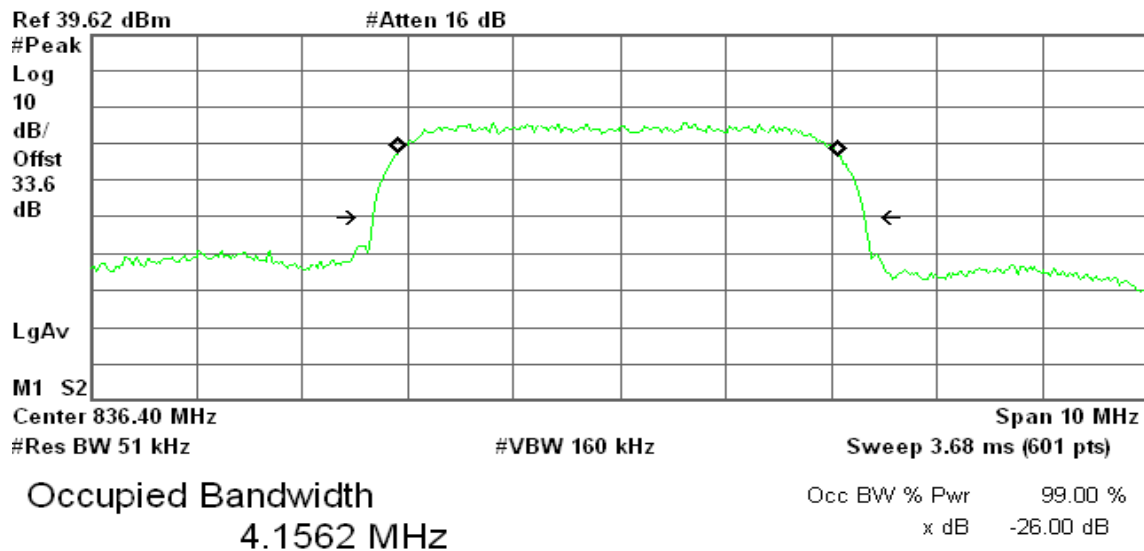
Transmit Freq Error	11.909 kHz
x dB Bandwidth	4.629 MHz



## WCDMA Band V (CH Mid)

Agilent 14:47:04 Apr 29, 2011

R T

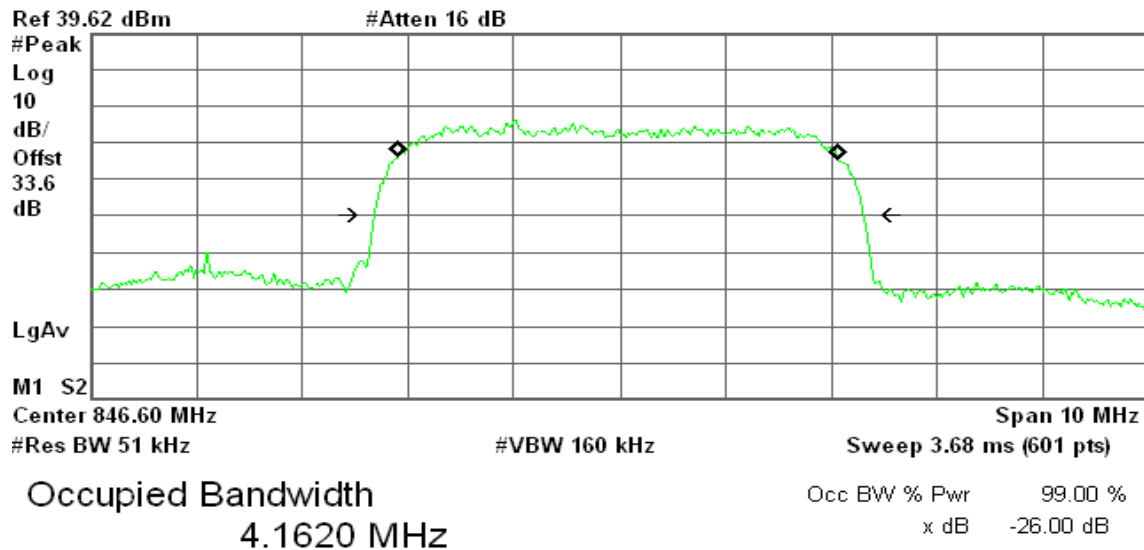


Transmit Freq Error -17.148 kHz  
x dB Bandwidth 4.653 MHz

## WCDMA Band V (CH High)

Agilent 14:42:35 Apr 29, 2011

R T



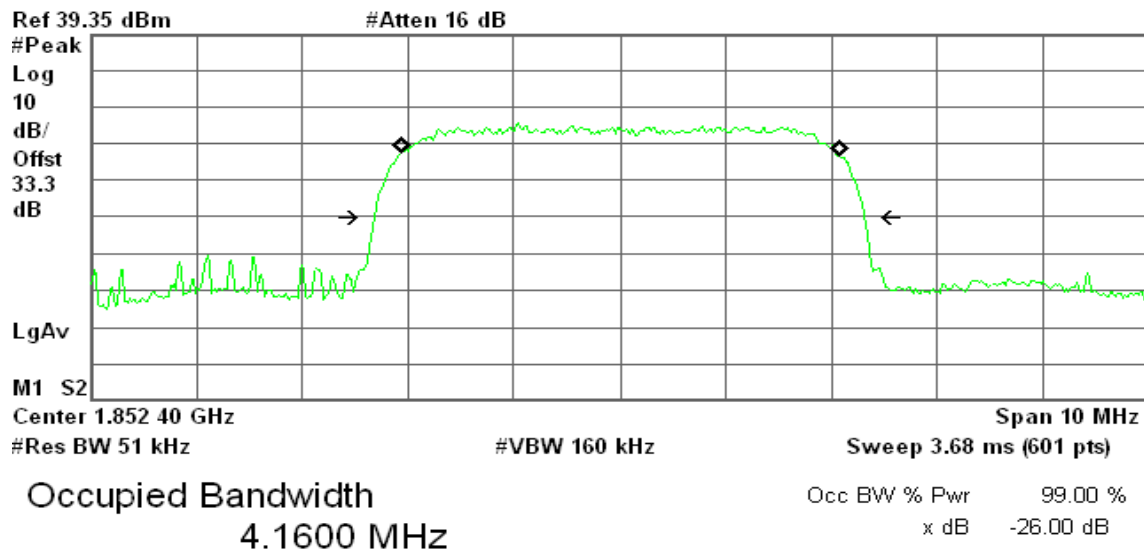
Transmit Freq Error -11.048 kHz  
x dB Bandwidth 4.632 MHz



## WCDMA / HSDPA Band II (CH Low)

Agilent 14:51:05 Apr 29, 2011

R T

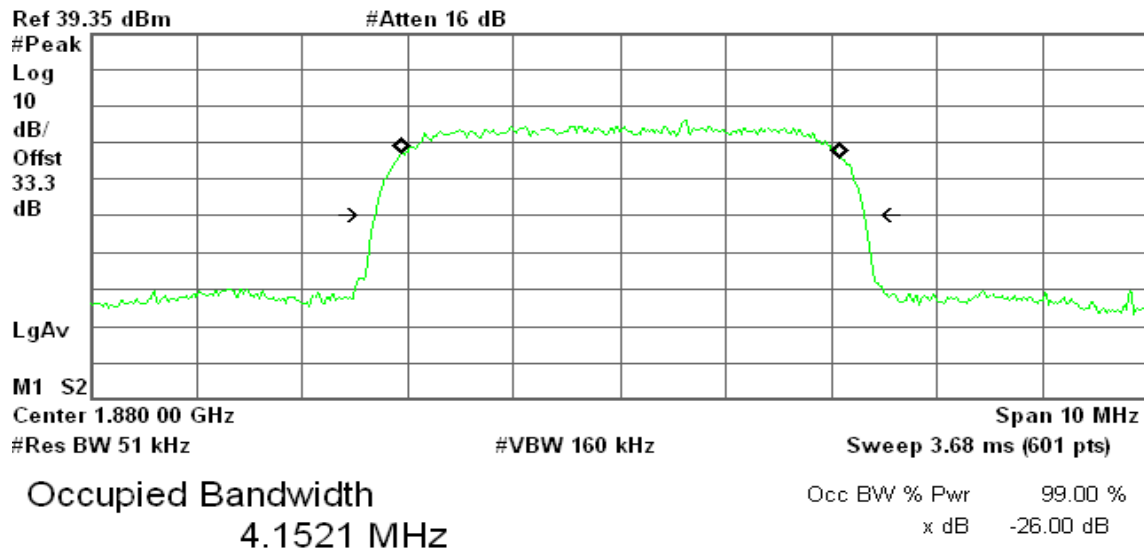


Transmit Freq Error 6.397 kHz  
x dB Bandwidth 4.639 MHz

## WCDMA / HSDPA Band II (CH Mid)

Agilent 14:52:16 Apr 29, 2011

R T



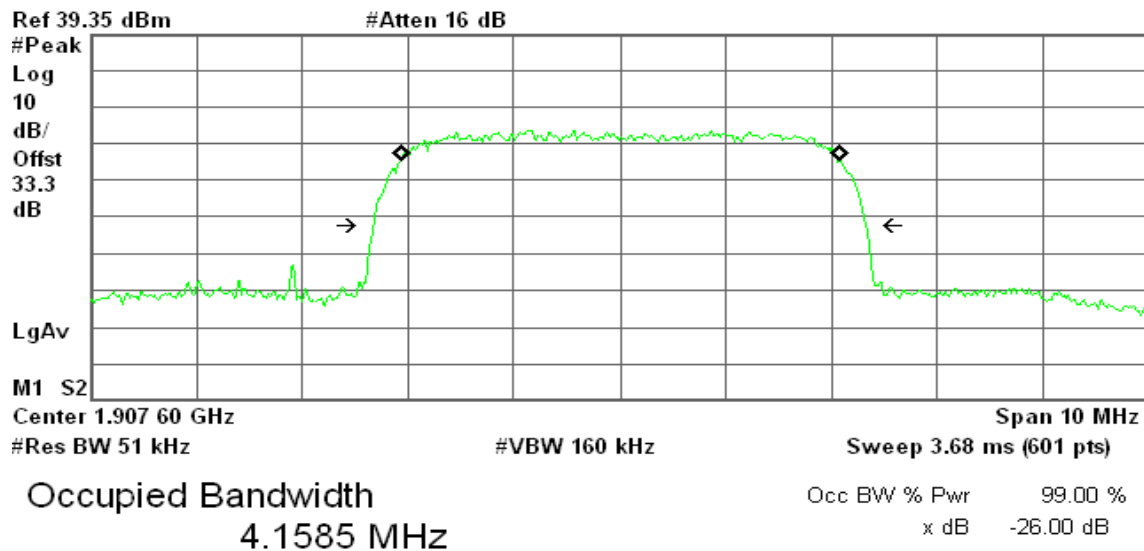
Transmit Freq Error 7.466 kHz  
x dB Bandwidth 4.629 MHz



## WCDMA / HSDPA Band II (CH High)

Agilent 14:52:37 Apr 29, 2011

R T

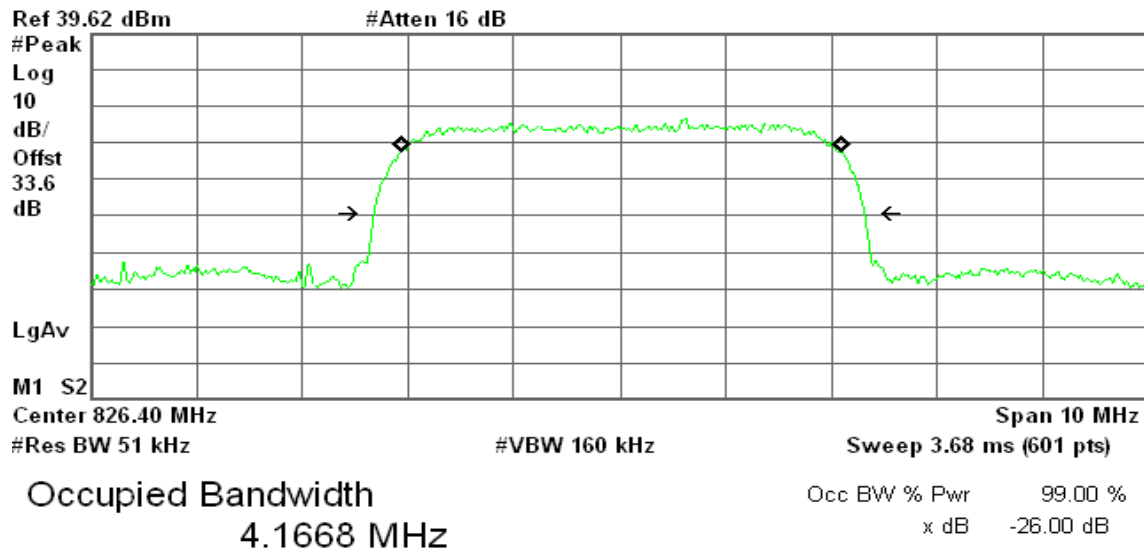


Transmit Freq Error 9.144 kHz  
x dB Bandwidth 4.661 MHz

## WCDMA / HSDPA Band V (CH Low)

Agilent 14:40:29 Apr 29, 2011

R T



Transmit Freq Error 11.999 kHz  
x dB Bandwidth 4.646 MHz

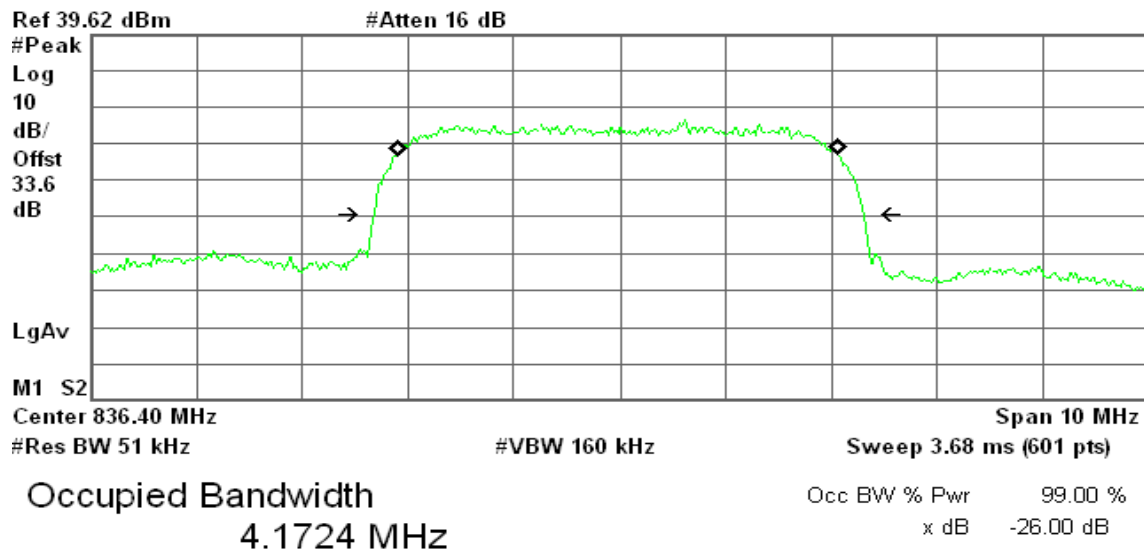




## WCDMA / HSDPA Band V (CH Mid)

Agilent 14:47:31 Apr 29, 2011

R T

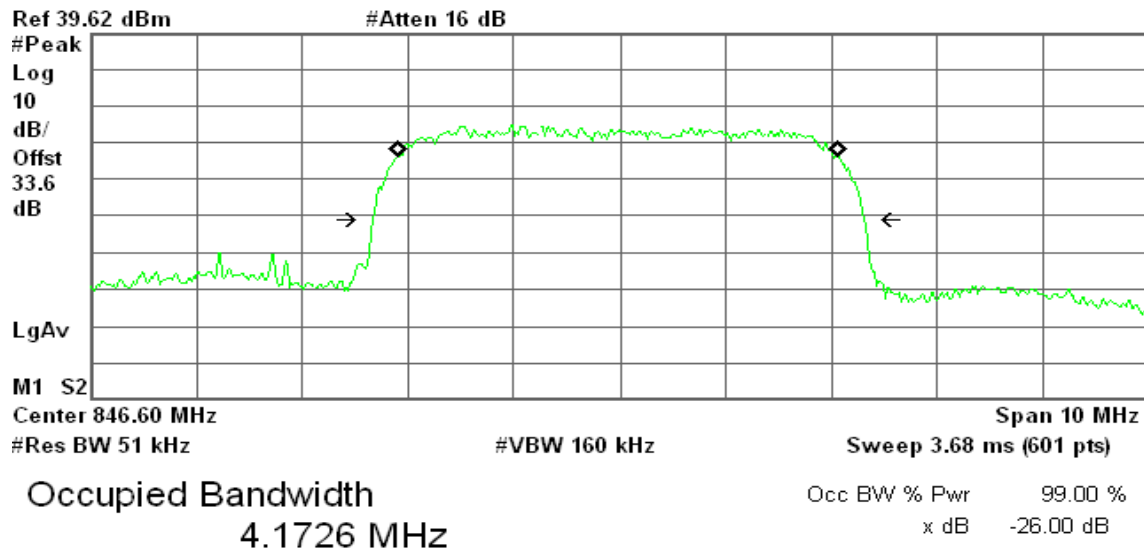


Transmit Freq Error -15.522 kHz  
x dB Bandwidth 4.634 MHz

## WCDMA / HSDPA Band V (CH High)

Agilent 14:42:12 Apr 29, 2011

R T



Transmit Freq Error -12.583 kHz  
x dB Bandwidth 4.659 MHz



## 7.5 OUT OF BAND EMISSION AT ANTENNA TERMINALS

### LIMIT

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

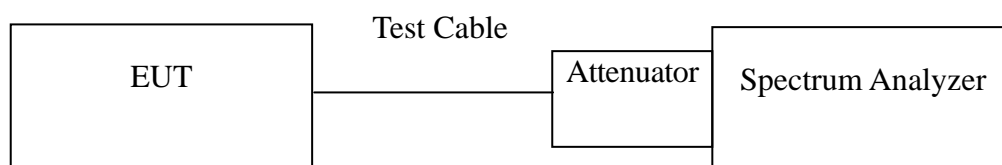
**Out of Band Emissions:** The mean power of emission must be attenuated below the mean power of the non-modulated carrier (P) on any frequency twice or more than twice the fundamental frequency by at least  $43 + 10 \log P$  dB.

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

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

### Test Configuration

Out of band emission at antenna terminals:



### TEST PROCEDURE

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

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

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,  $-13$ dBm.

### TEST RESULTS

*No non-compliance noted.*

**Test Data**

Mode	CH	Location	Description
GPRS 850	128	Figure 8-1	Conducted spurious emissions, 30MHz - 20GHz
	190	Figure 8-2	Conducted spurious emissions, 30MHz - 20GHz
	251	Figure 8-3	Conducted spurious emissions, 30MHz - 20GHz

Mode	CH	Location	Description
GPRS 1900	512	Figure 10-1	Conducted spurious emissions, 30MHz - 20GHz
	661	Figure 10-2	Conducted spurious emissions, 30MHz - 20GHz
	810	Figure 10-3	Conducted spurious emissions, 30MHz - 20GHz

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

Mode	CH	Location	Description
GPRS 1900	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



Mode	CH	Location	Description
WCDMA (Band II)	9262	Figure 19-1	Conducted spurious emissions, 30MHz - 20GHz
	9400	Figure 19-2	Conducted spurious emissions, 30MHz - 20GHz
	9538	Figure 19-3	Conducted spurious emissions, 30MHz - 20GHz
WCDMA (Band V)	4132	Figure 20-1	Conducted spurious emissions, 30MHz - 20GHz
	4182	Figure 20-2	Conducted spurious emissions, 30MHz - 20GHz
	4233	Figure 20-3	Conducted spurious emissions, 30MHz - 20GHz

Mode	CH	Location	Description
WCDMA (Band II)	9262	Figure 21-1	Band Edge emissions
	9538	Figure 21-2	Band Edge emissions
WCDMA (Band V)	4132	Figure 22-1	Band Edge emissions
	4233	Figure 22-2	Band Edge emissions

Mode	CH	Location	Description
HSDPA WCDMA (Band II)	9262	Figure 23-1	Conducted spurious emissions, 30MHz - 20GHz
	9400	Figure 23-2	Conducted spurious emissions, 30MHz - 20GHz
	9538	Figure 23-3	Conducted spurious emissions, 30MHz - 20GHz
HSDPA WCDMA (Band V)	4132	Figure 24-1	Conducted spurious emissions, 30MHz - 20GHz
	4182	Figure 24-2	Conducted spurious emissions, 30MHz - 20GHz
	4233	Figure 24-3	Conducted spurious emissions, 30MHz - 20GHz

Mode	CH	Location	Description
HSDPA WCDMA (Band II)	9262	Figure 25-1	Band Edge emissions
	9538	Figure 25-2	Band Edge emissions
HSDPA WCDMA (Band V)	4132	Figure 26-1	Band Edge emissions
	4233	Figure 26-2	Band Edge emissions



## Test Plot

### GPRS 850

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

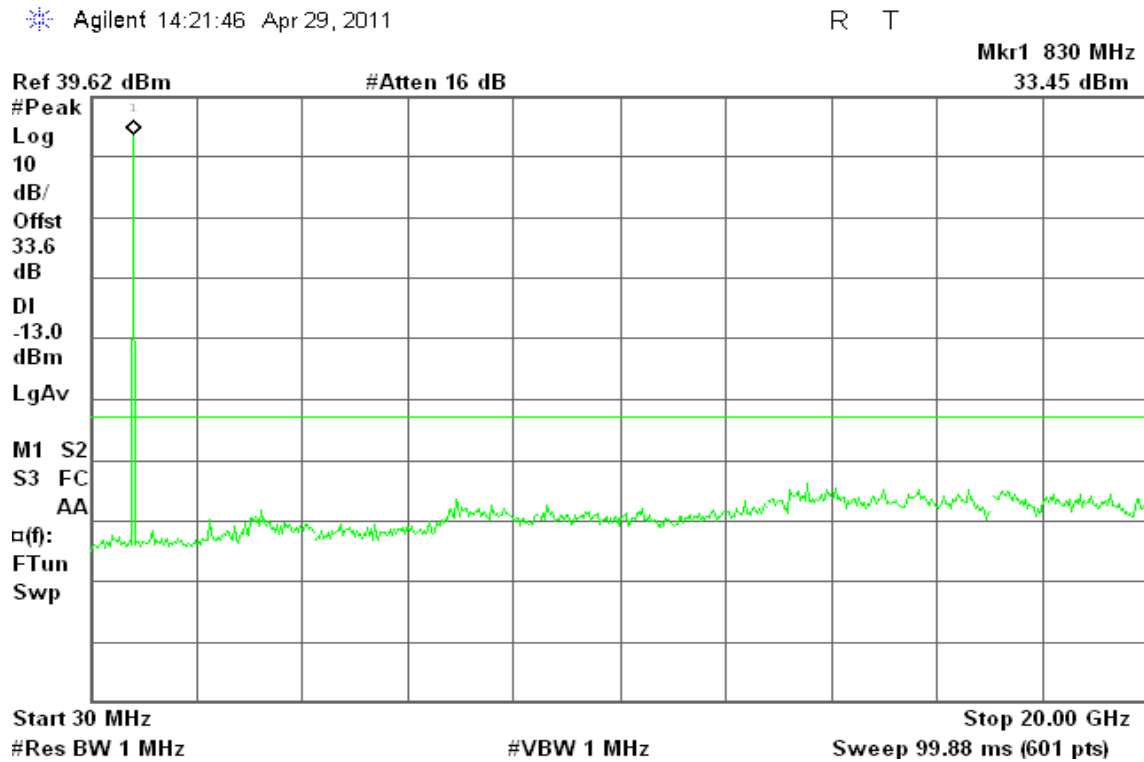


Figure 8-2: Out of Band emission at antenna terminals – GSM CH Mid

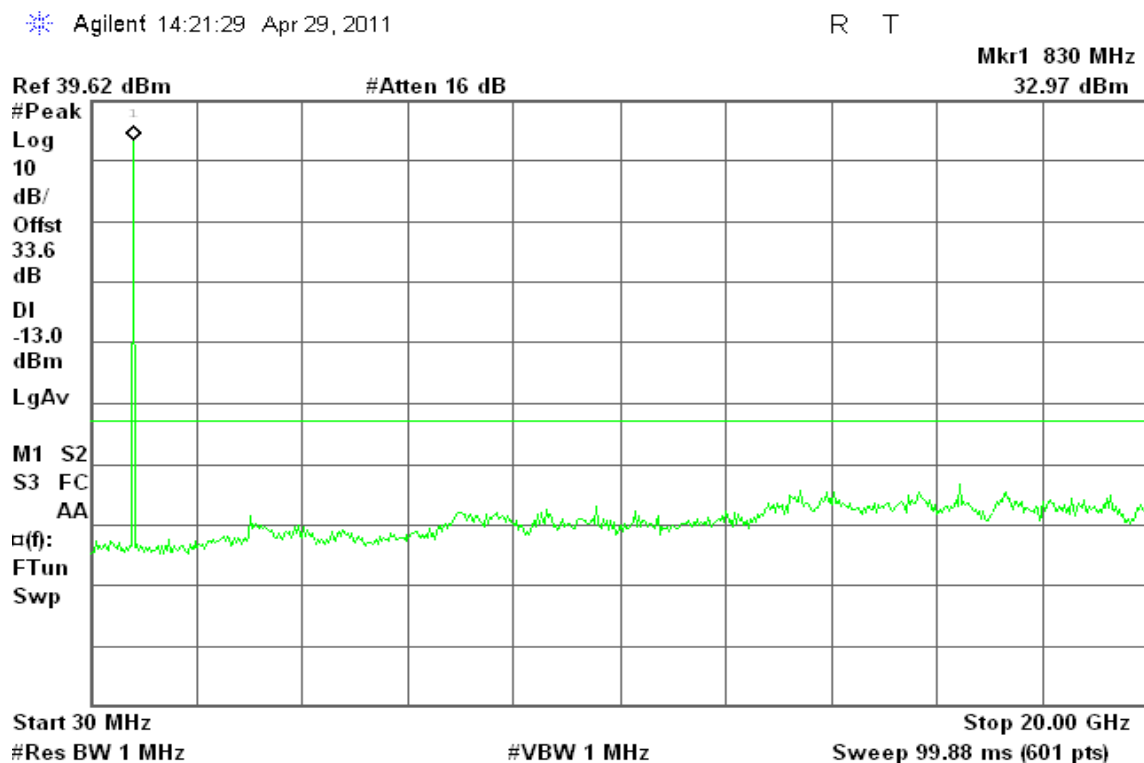
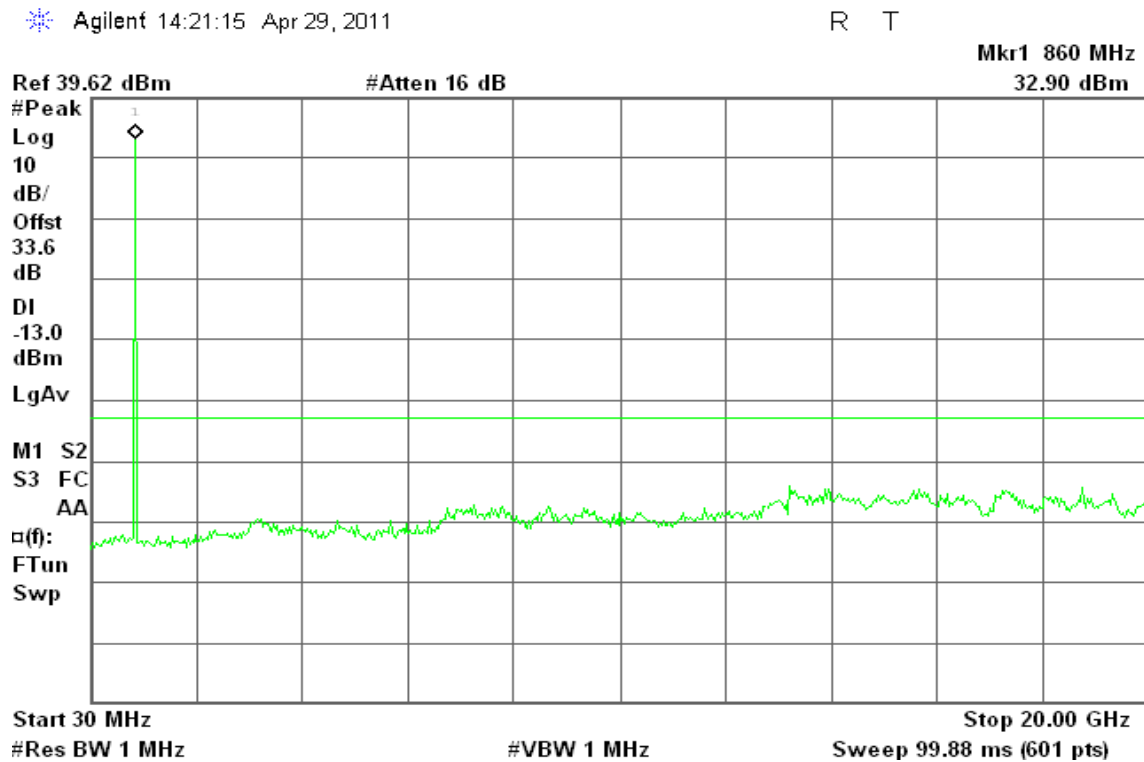




Figure 8-3: Out of Band emission at antenna terminals – GSM CH High



## GPRS 1900

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

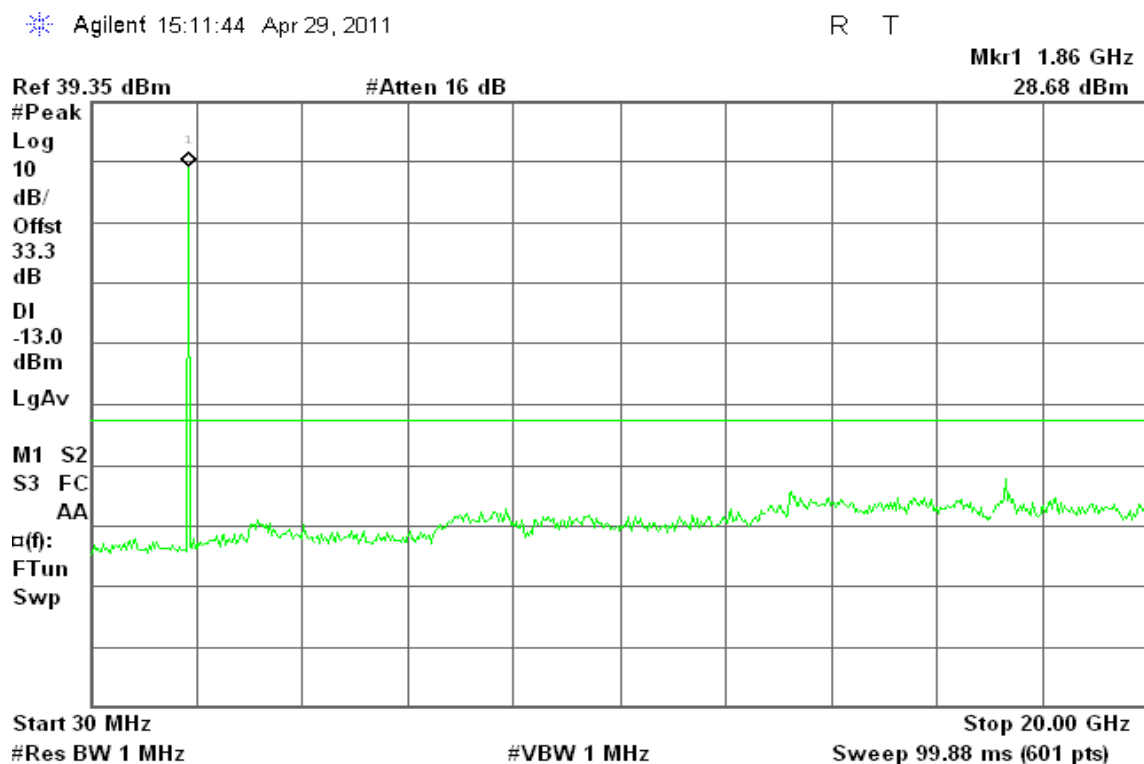




Figure 10-2: Out of Band emission at antenna terminals – GSM CH Mid

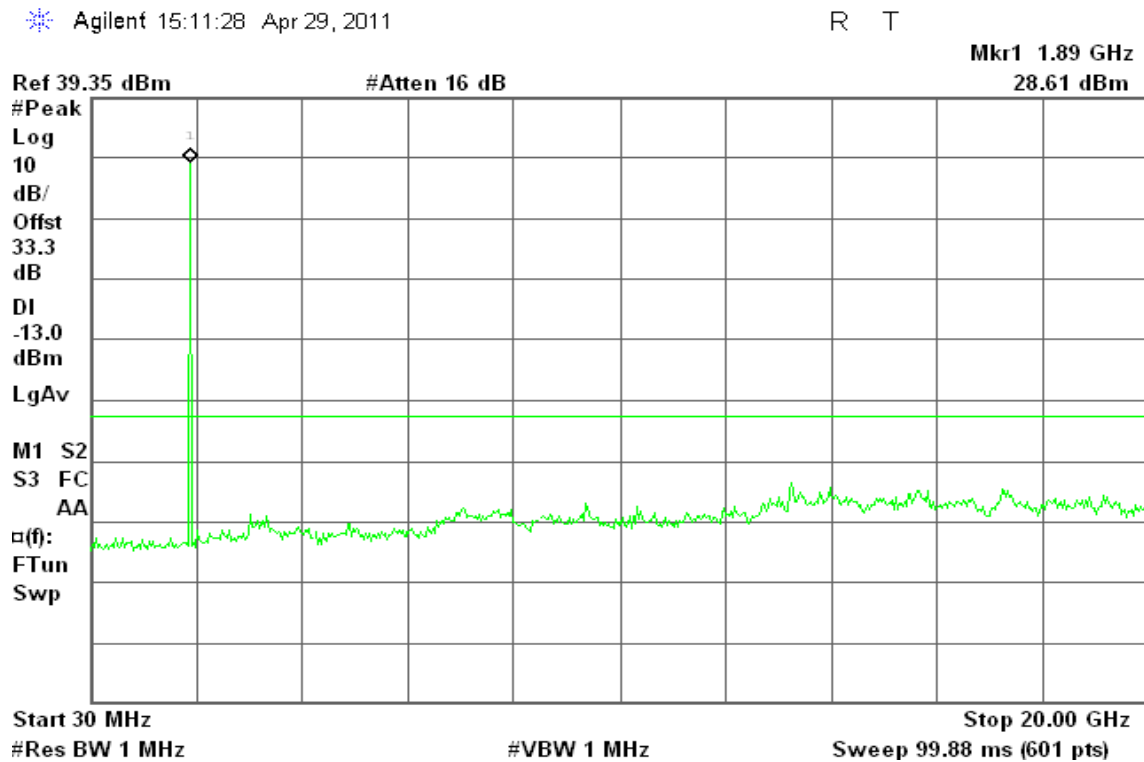
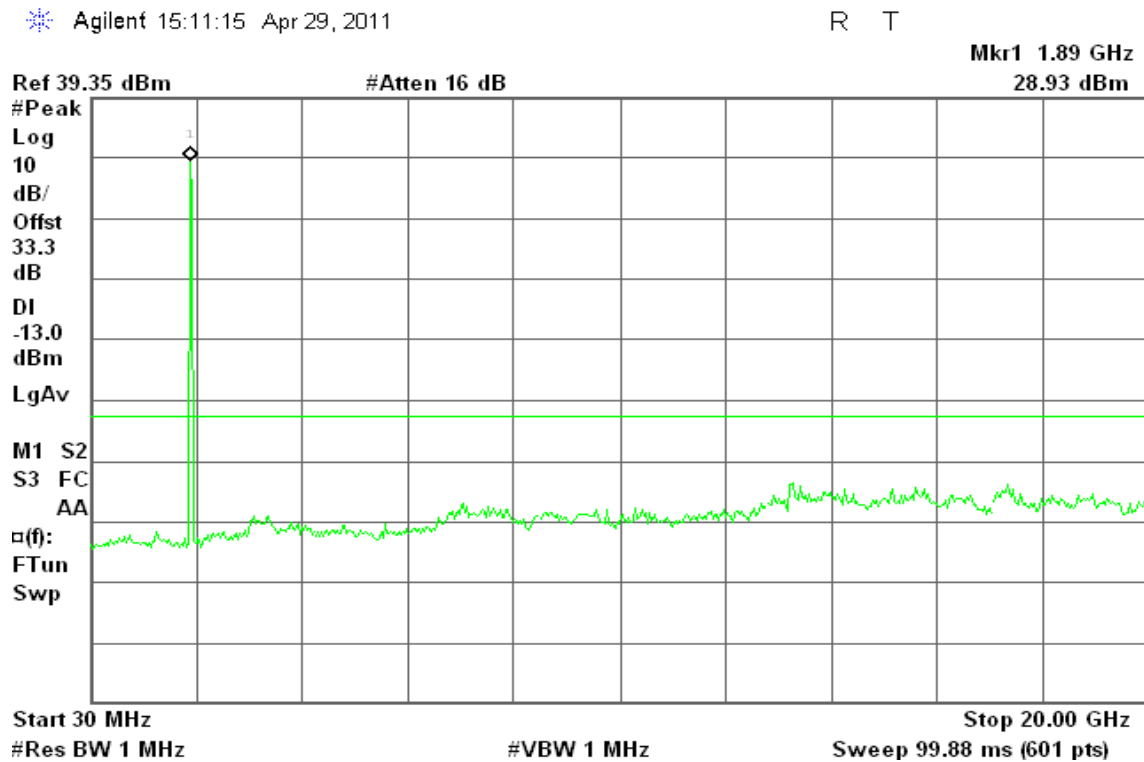


Figure 10-3: Out of Band emission at antenna terminals – GSM CH High







## GPRS 850

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

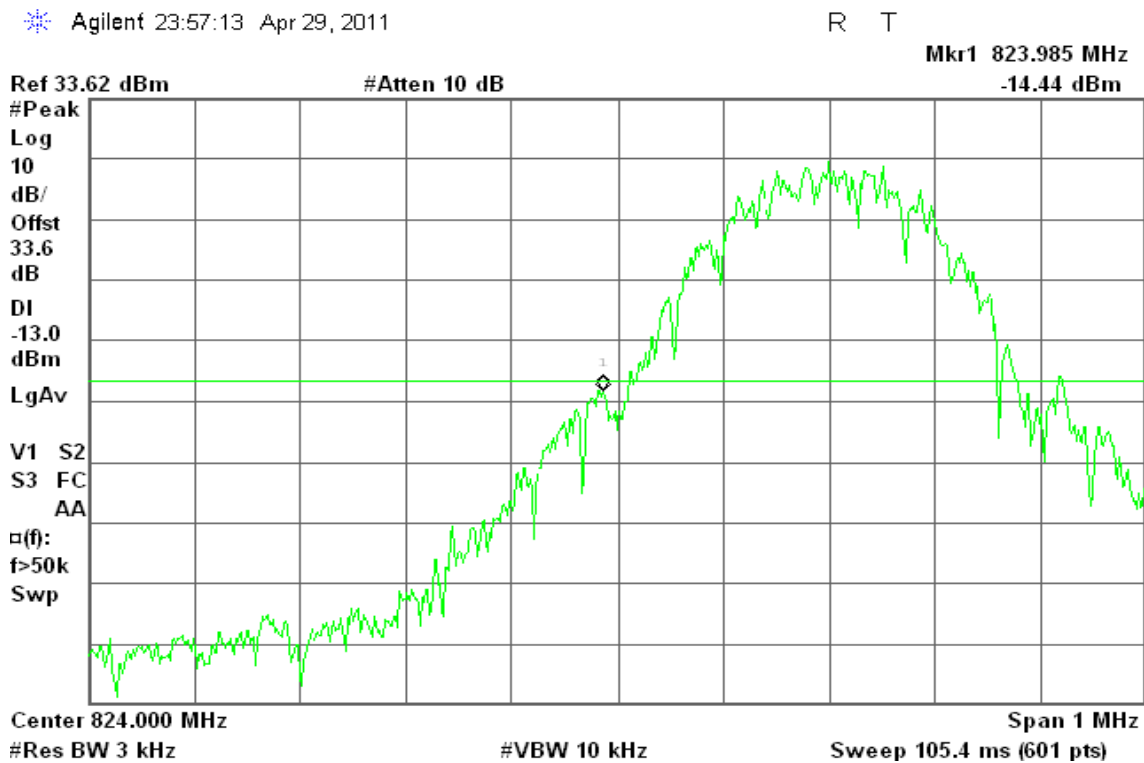
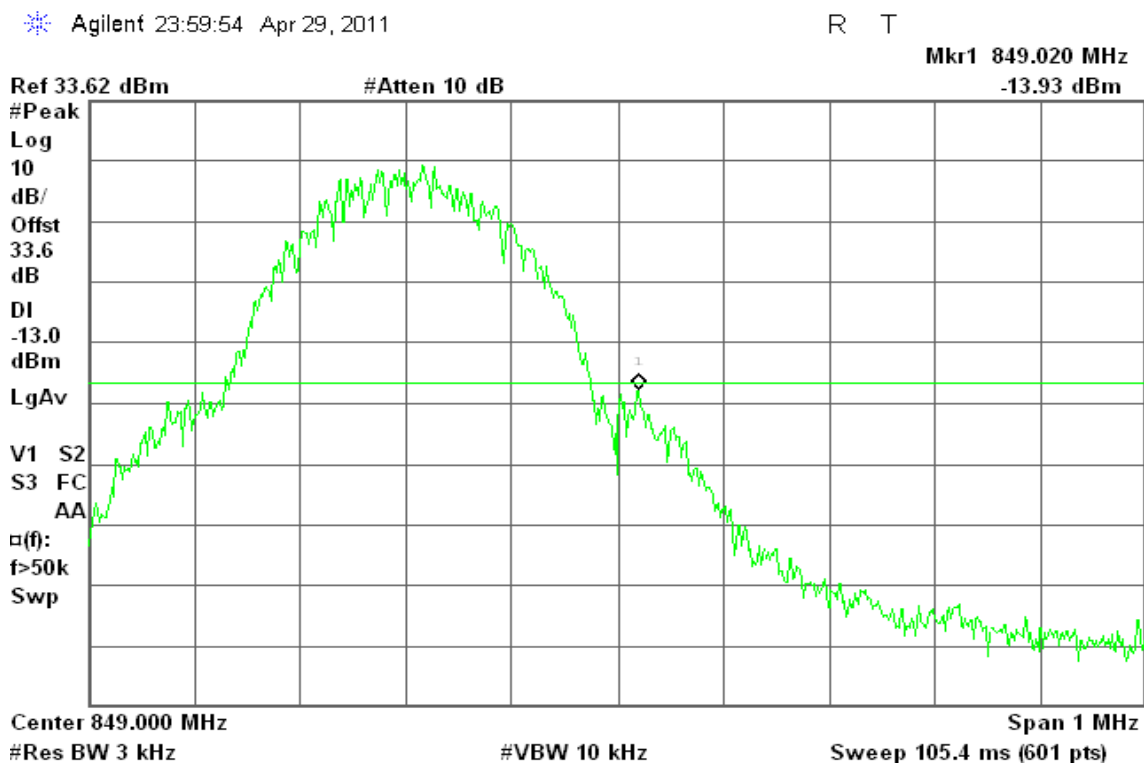


Figure 12-2: Band Edge emissions –GPRS CH High





## GPRS 1900

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

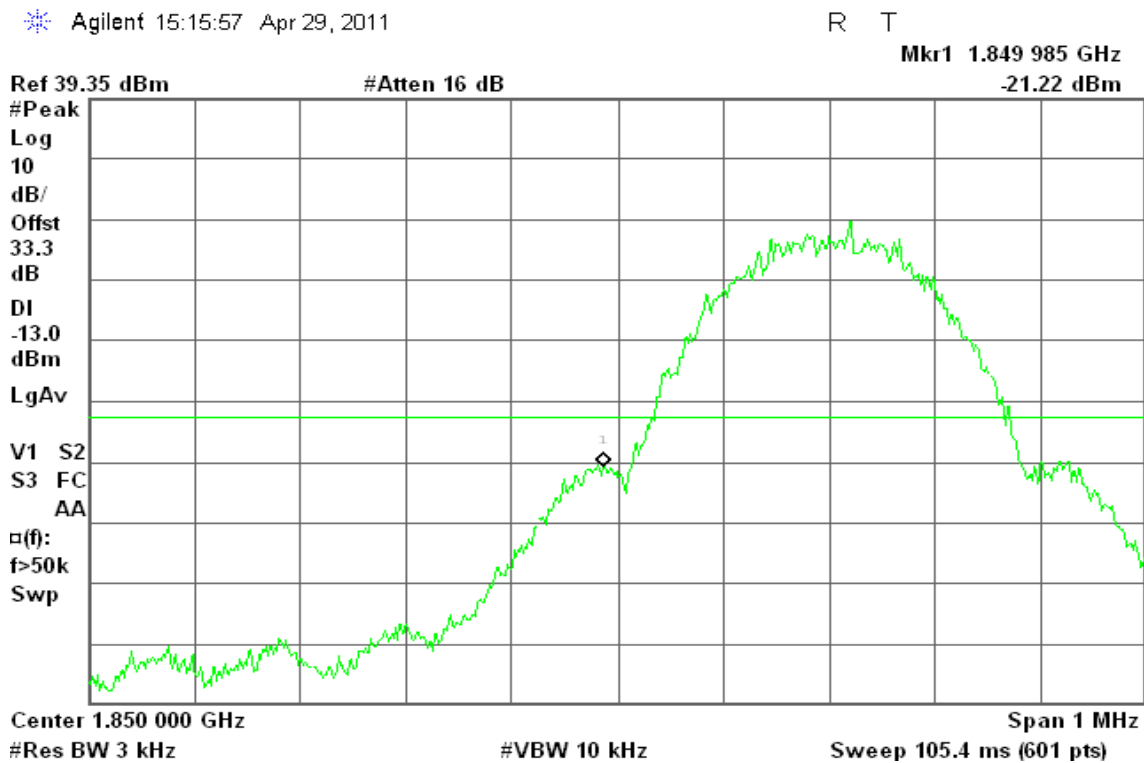
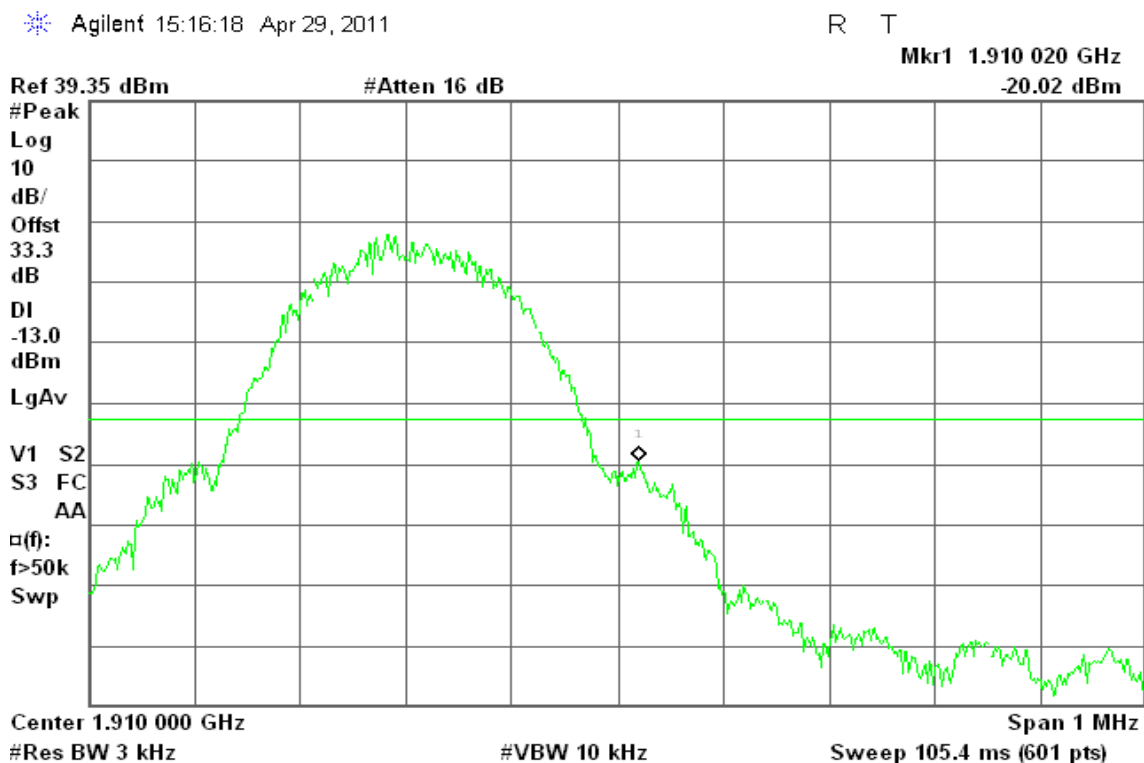


Figure 14-2: Band Edge emissions – GPRS CH High





## EDGE 850

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

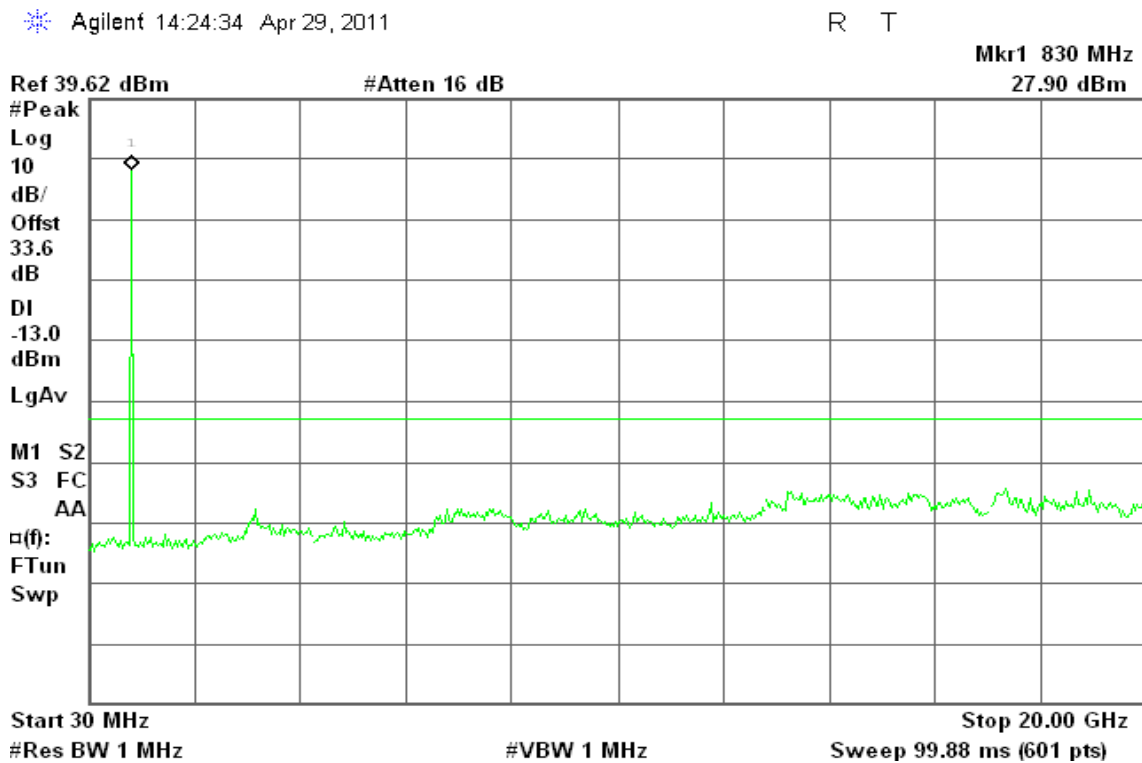


Figure 15-2: Out of Band emission at antenna terminals –EDGE CH Mid

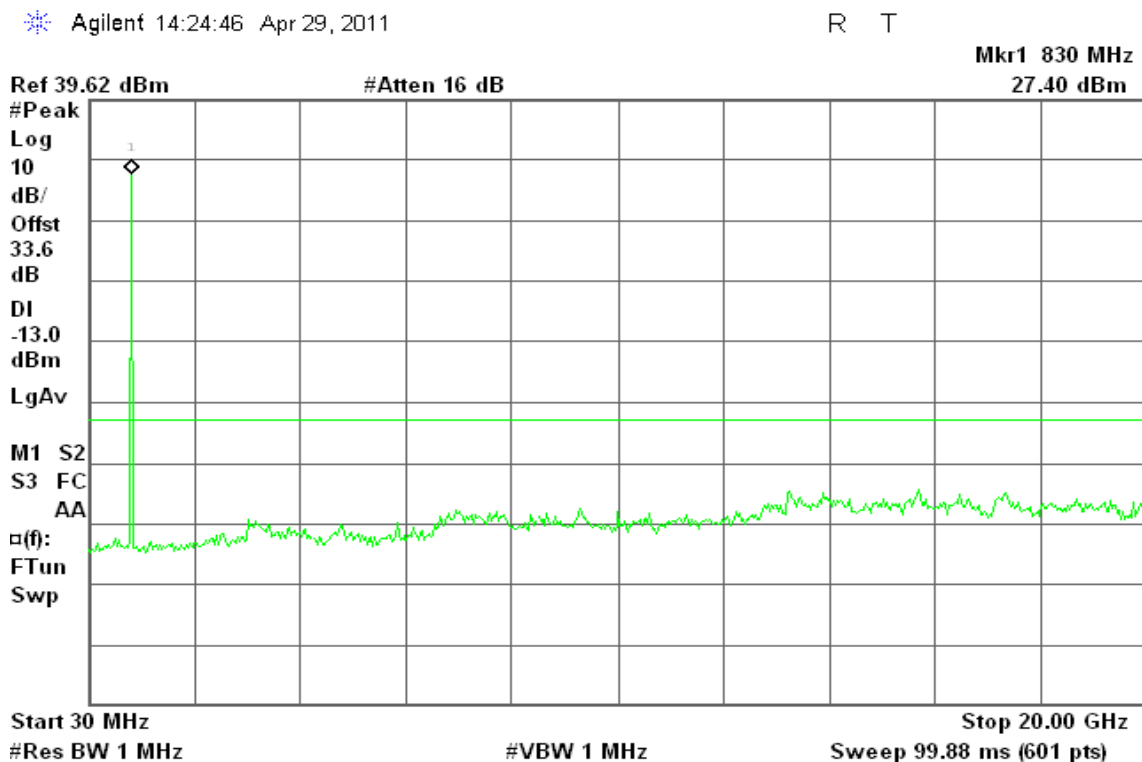
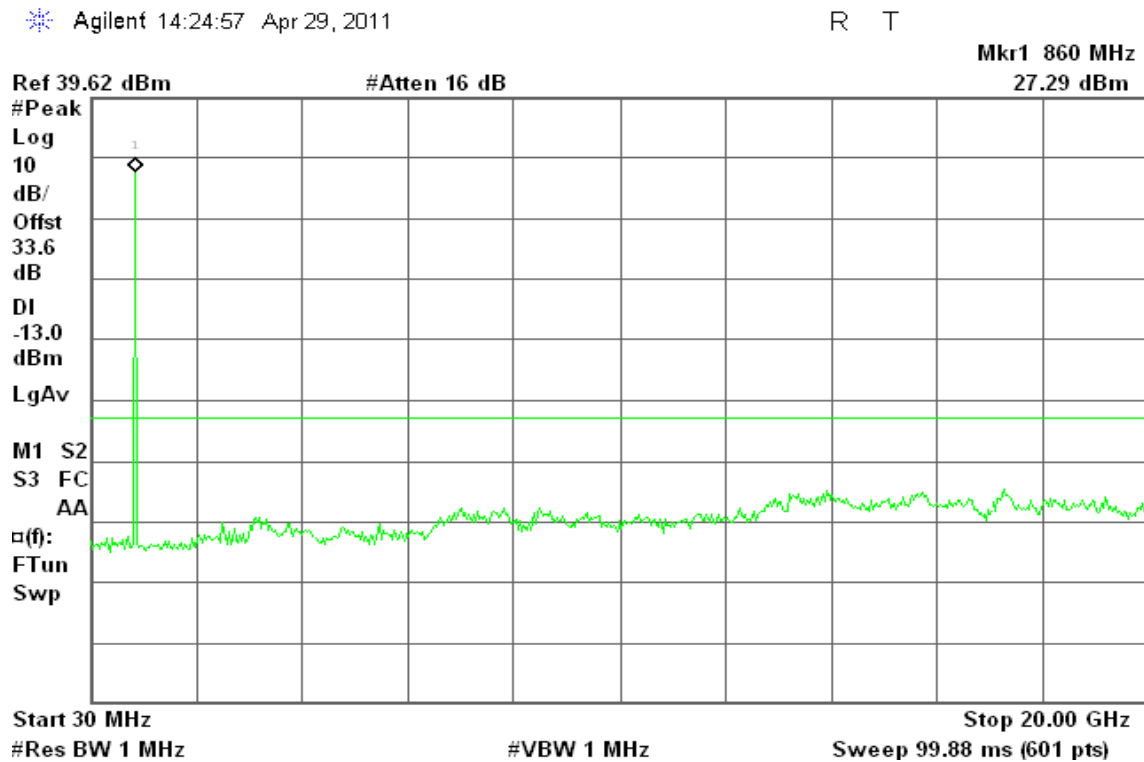




Figure 15-3: Out of Band emission at antenna terminals –EDGE CH High



## EDGE 1900

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

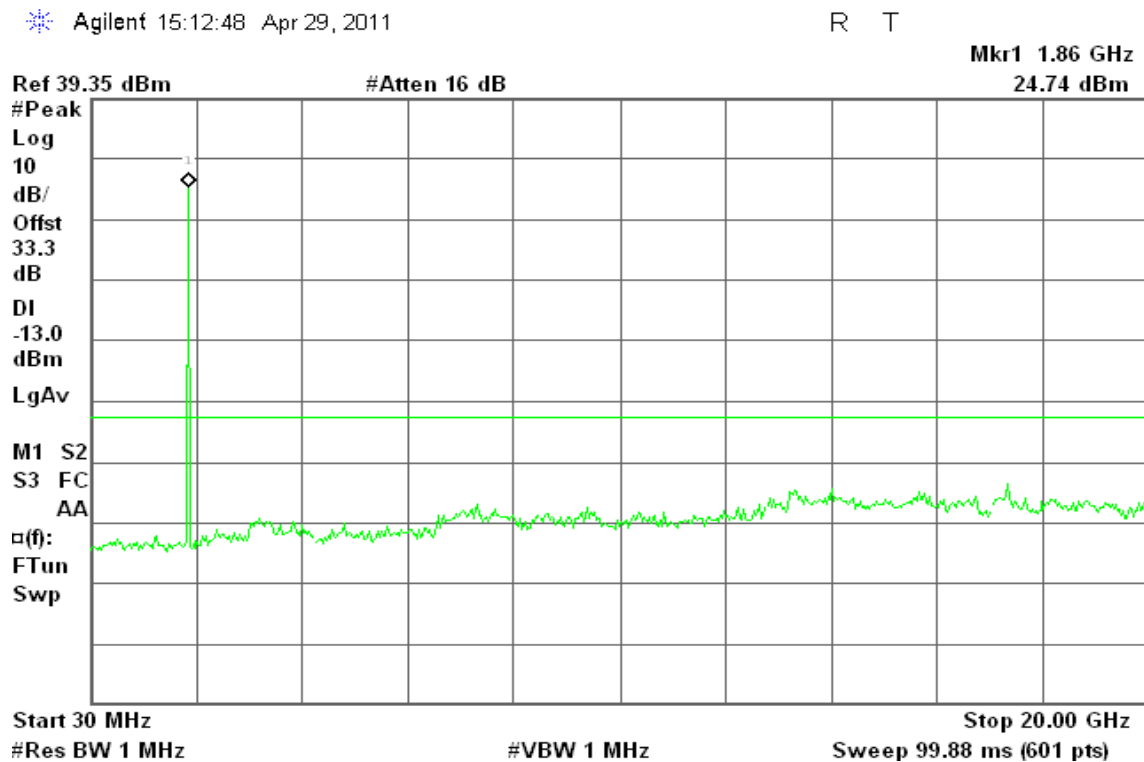




Figure 16-2: Out of Band emission at antenna terminals –EDGE CH Mid

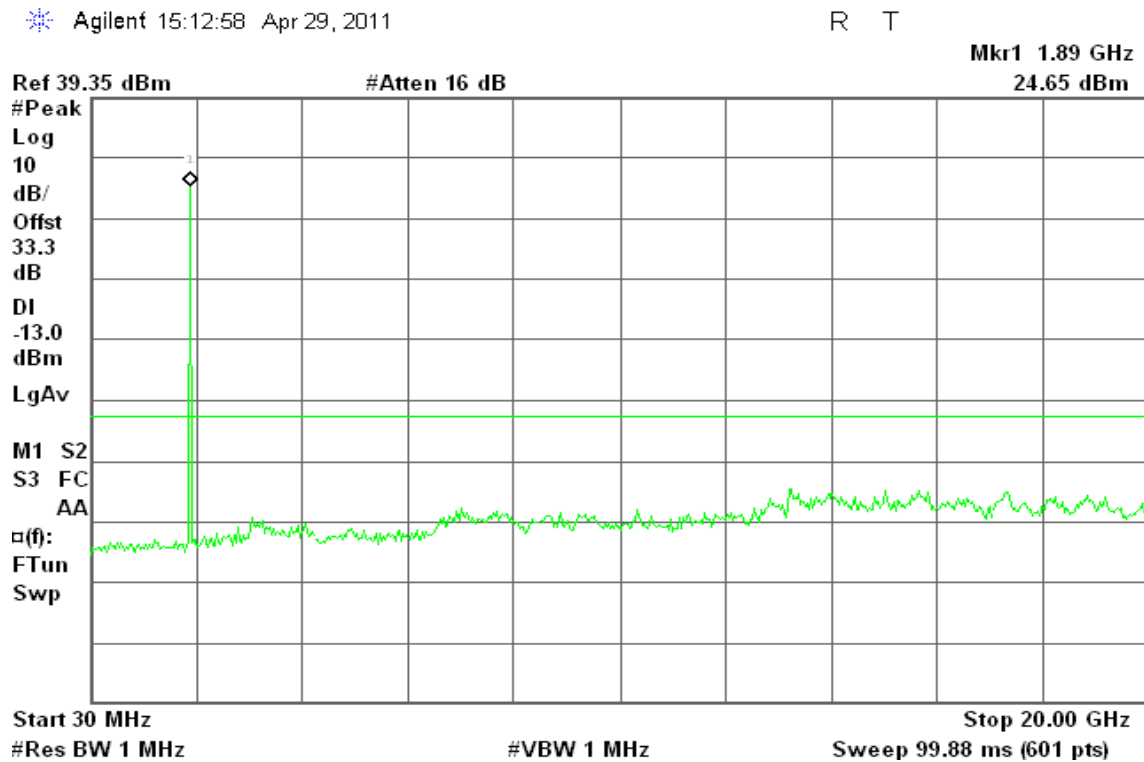
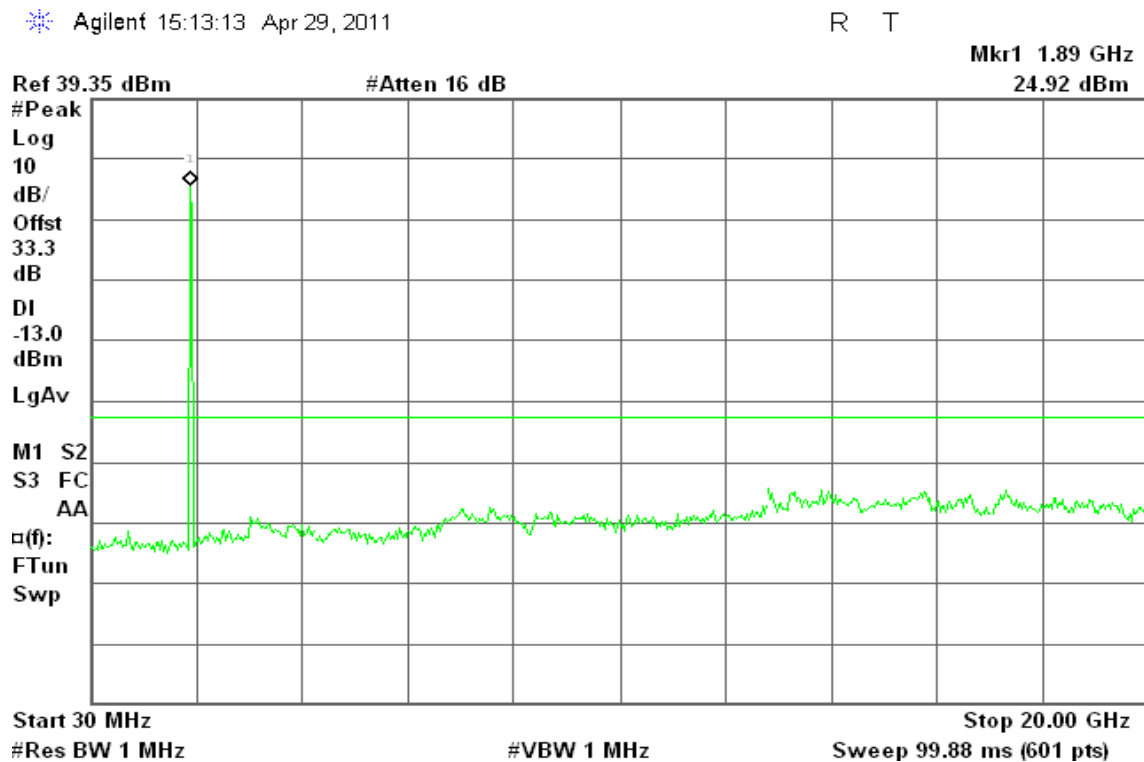


Figure 16-3: Out of Band emission at antenna terminals –EDGE CH High





## EDGE 850

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

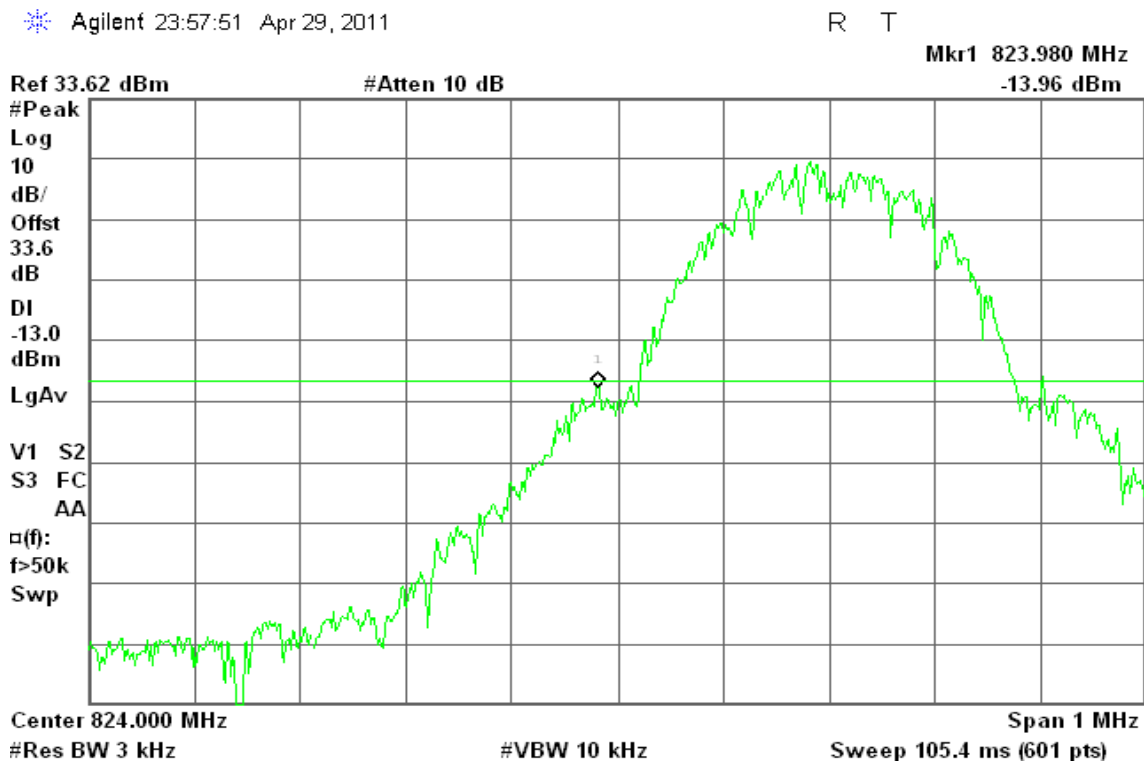
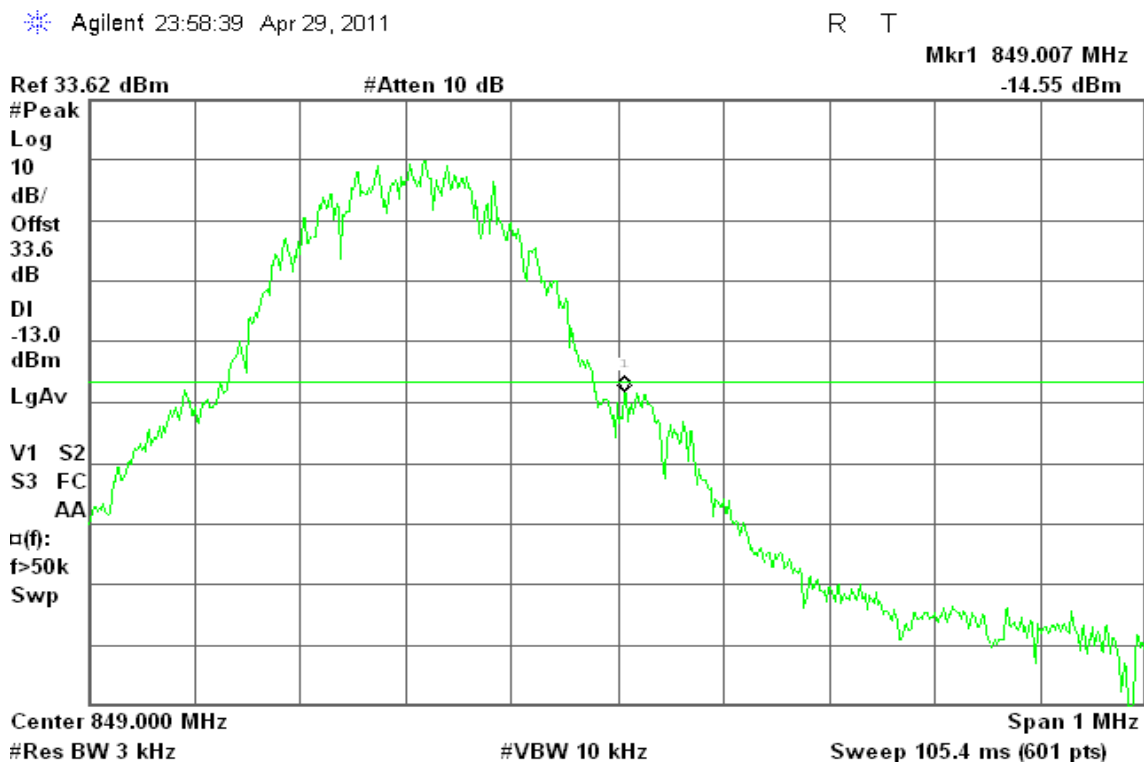


Figure 17-2: Band Edge emissions – EDGE CH High





## EDGE 1900

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

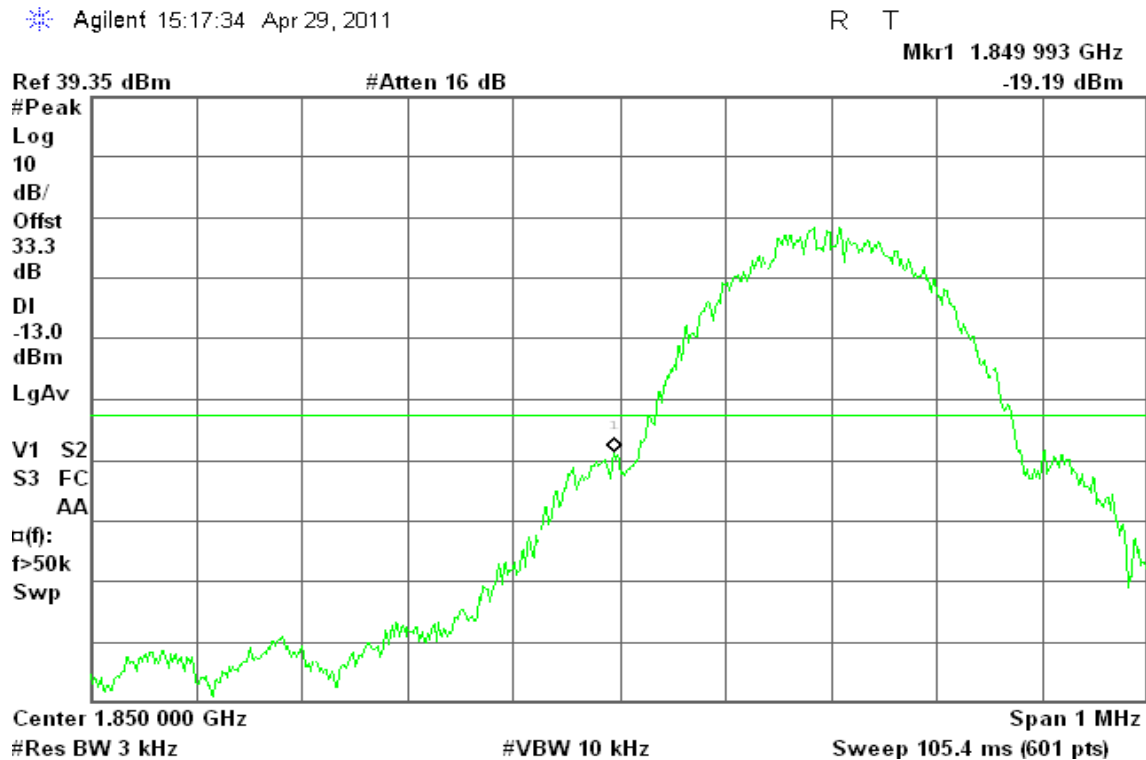
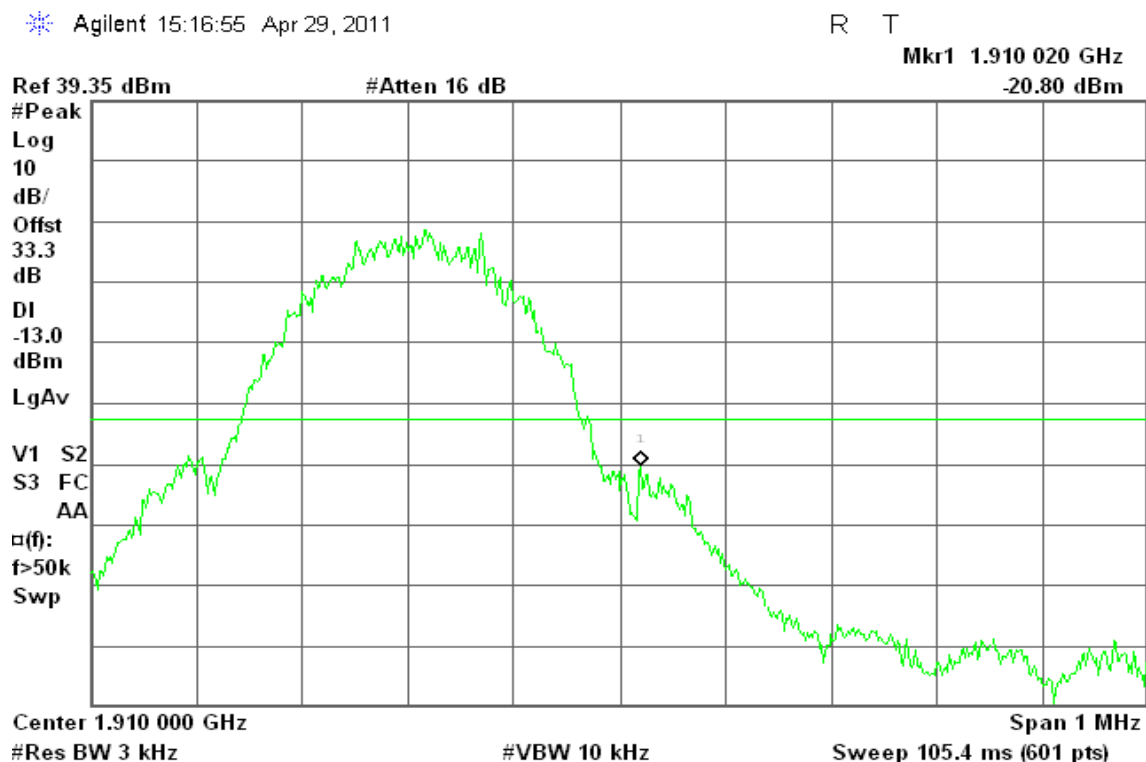


Figure 18-2: Band Edge emissions – EDGE CH High





## WCDMA Band II

Figure 19-1: Out of Band emission at antenna terminals – WCDMA CH Low

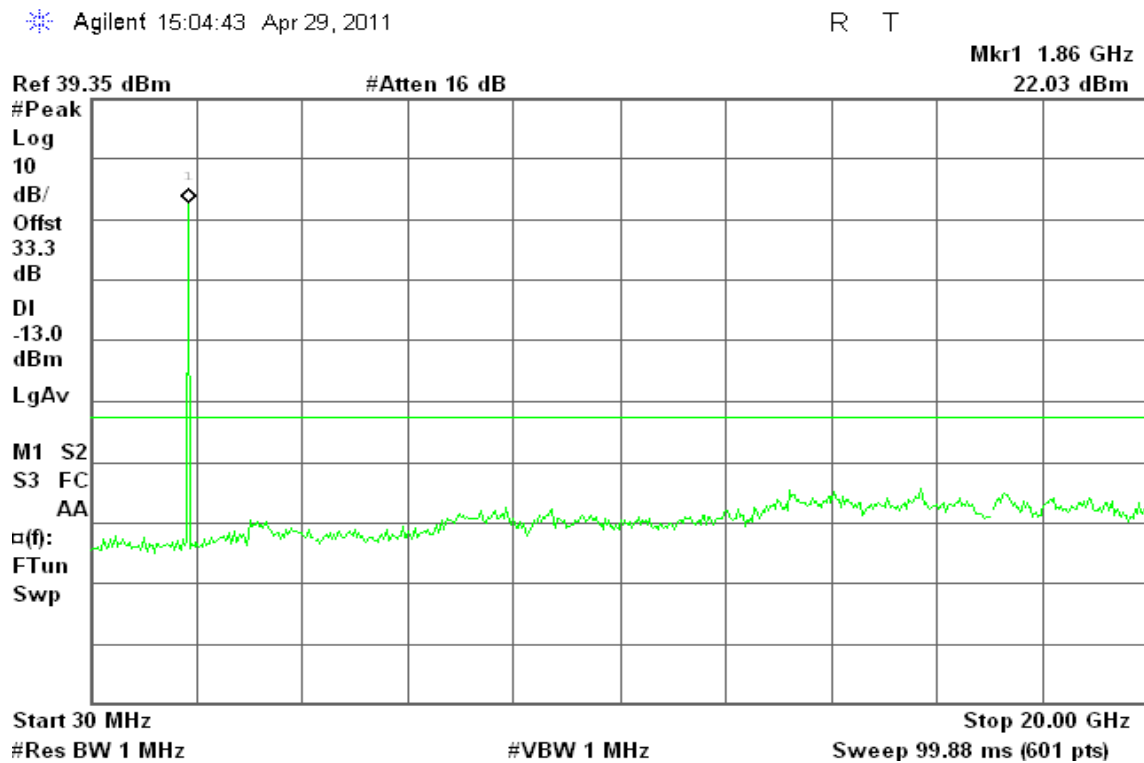


Figure 19-2: Out of Band emission at antenna terminals – WCDMA CH Mid

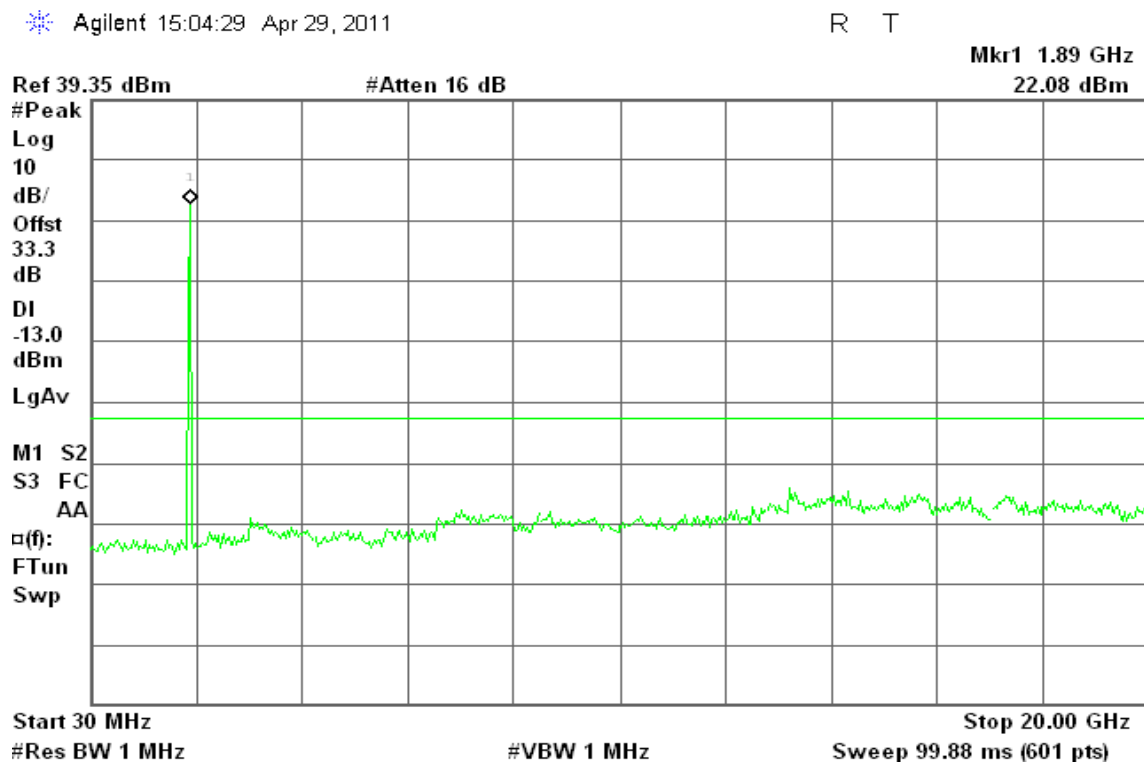
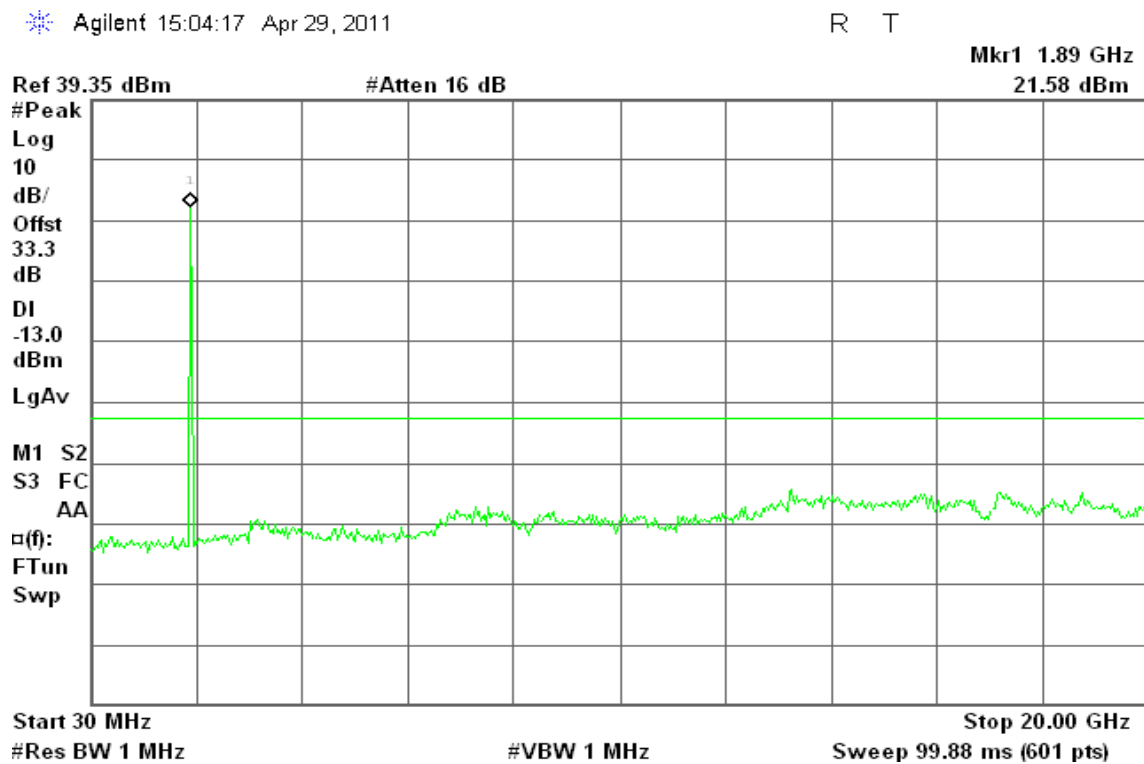






Figure 19-3: Out of Band emission at antenna terminals – WCDMA CH High



## WCDMA Band V

Figure 20-1: Out of Band emission at antenna terminals – WCDMA CH Low

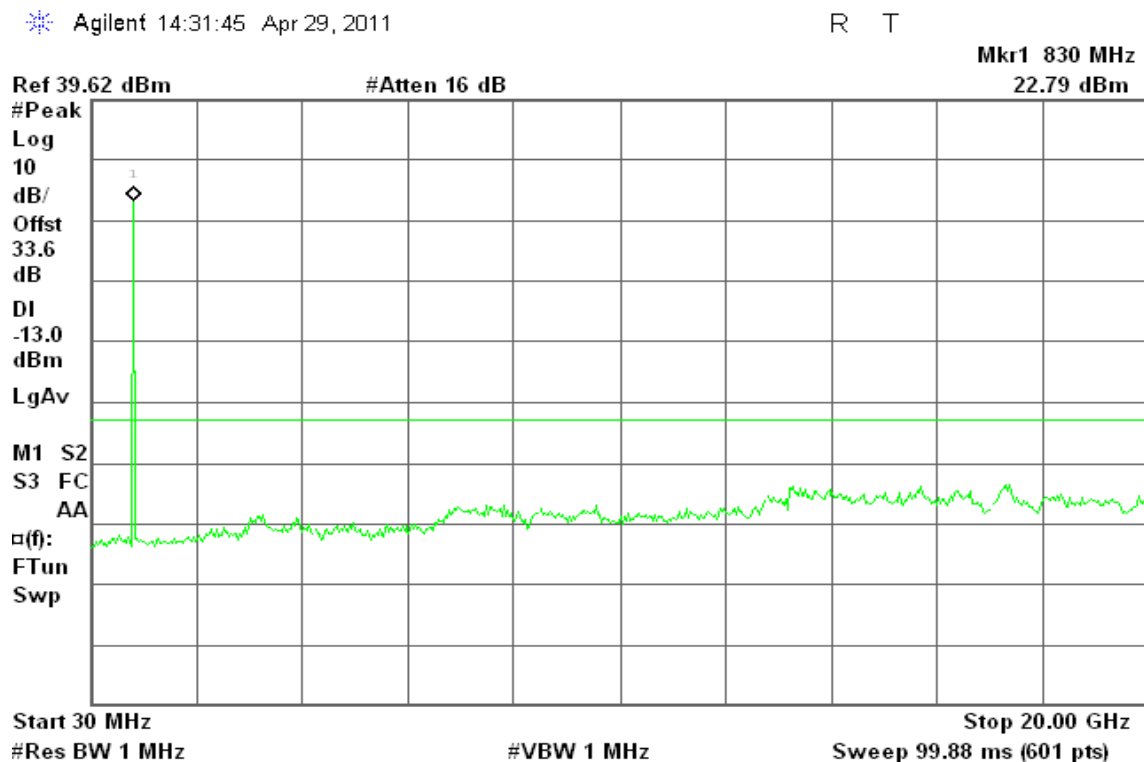




Figure 20-2: Out of Band emission at antenna terminals – WCDMA CH Mid

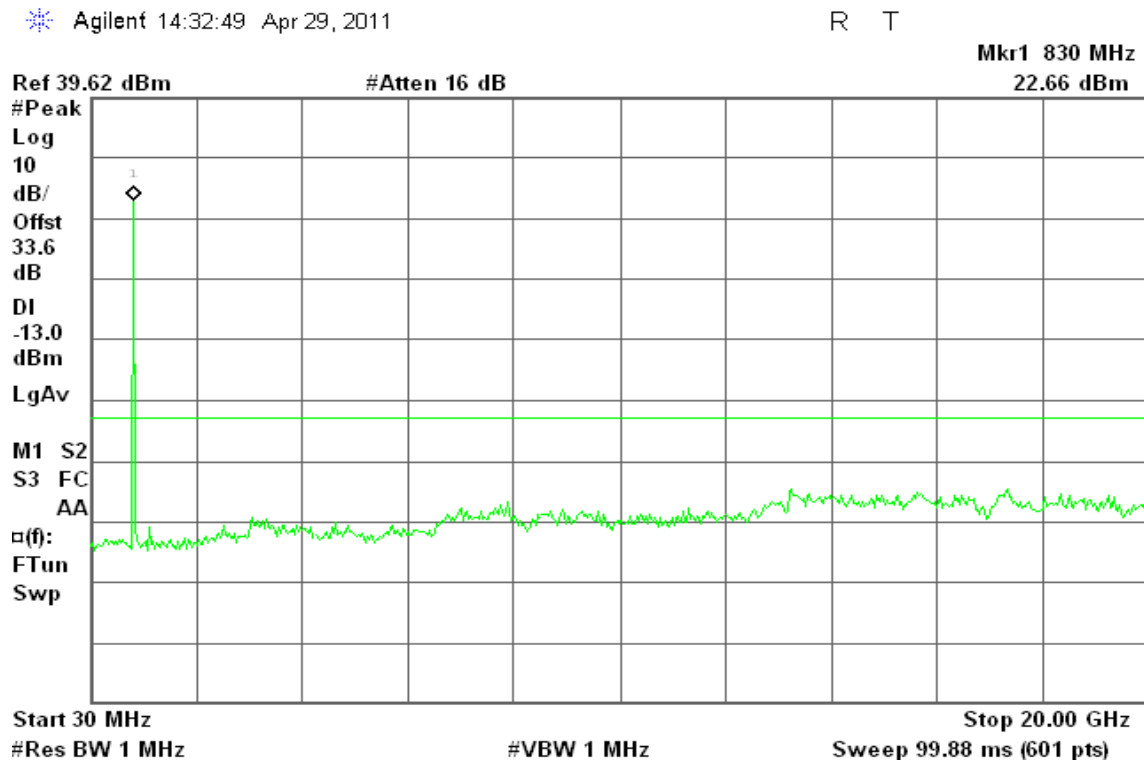
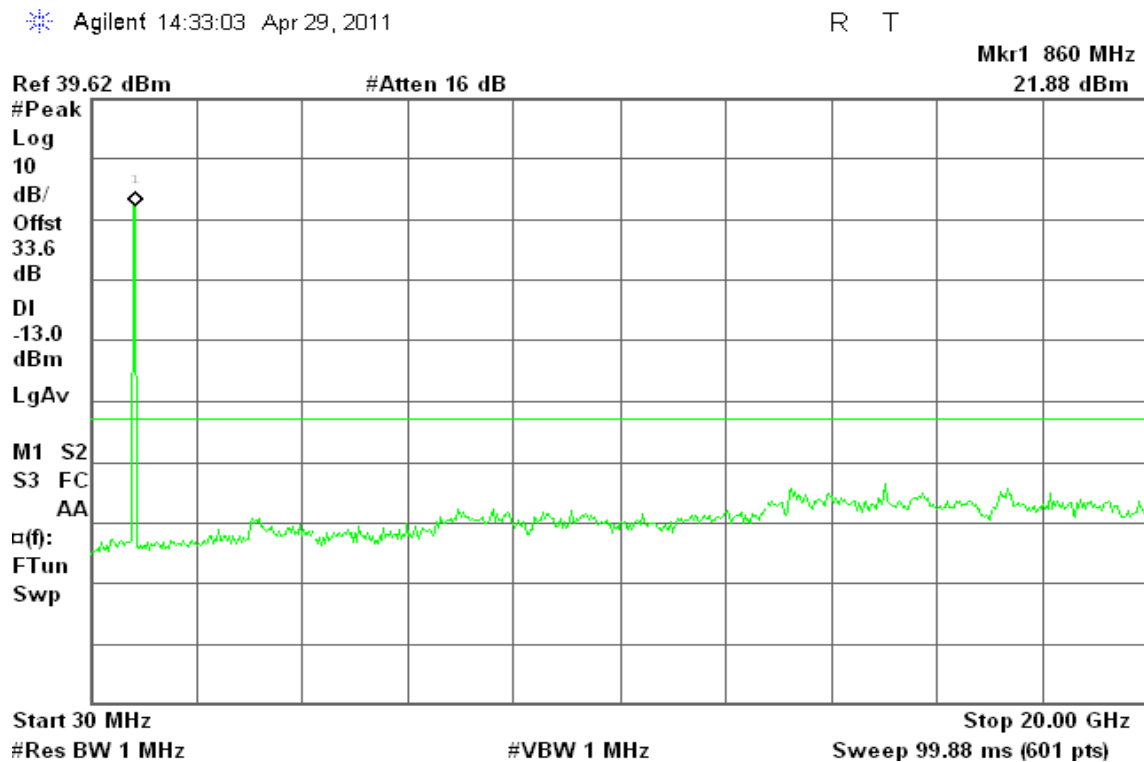


Figure 20-3: Out of Band emission at antenna terminals – WCDMA CH High





## WCDMA Band II

Figure 21-1: Band Edge emissions – WCDMA CH Low

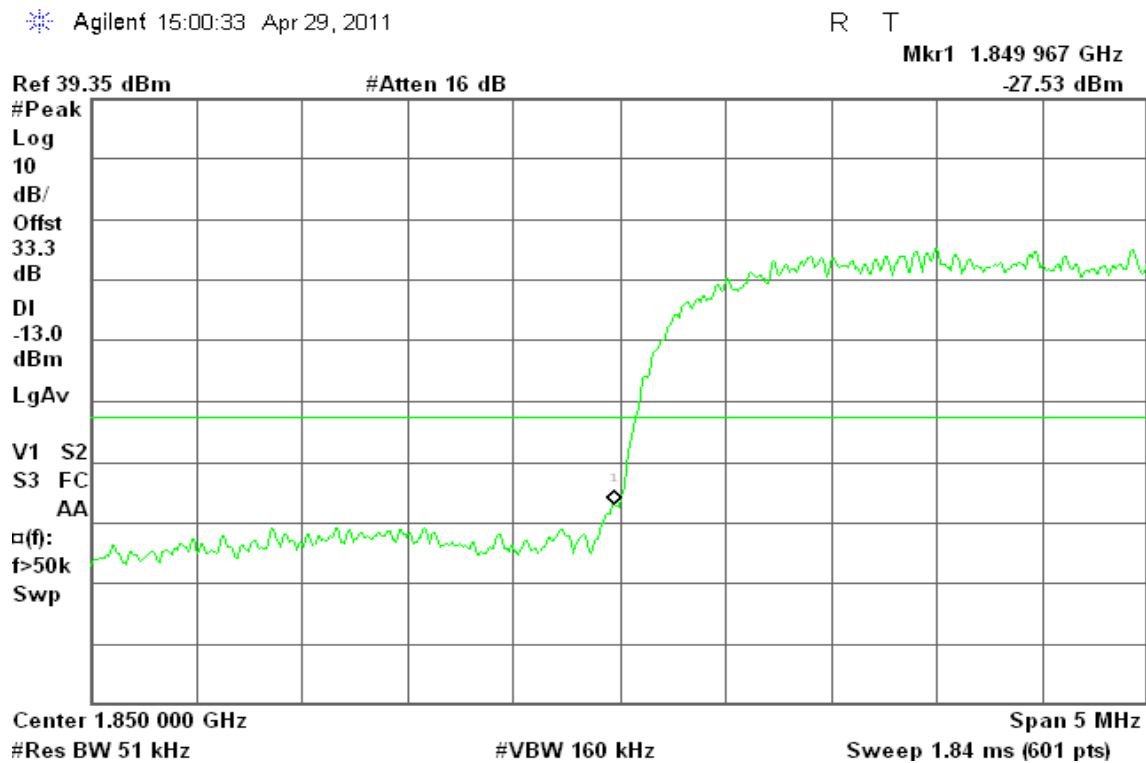
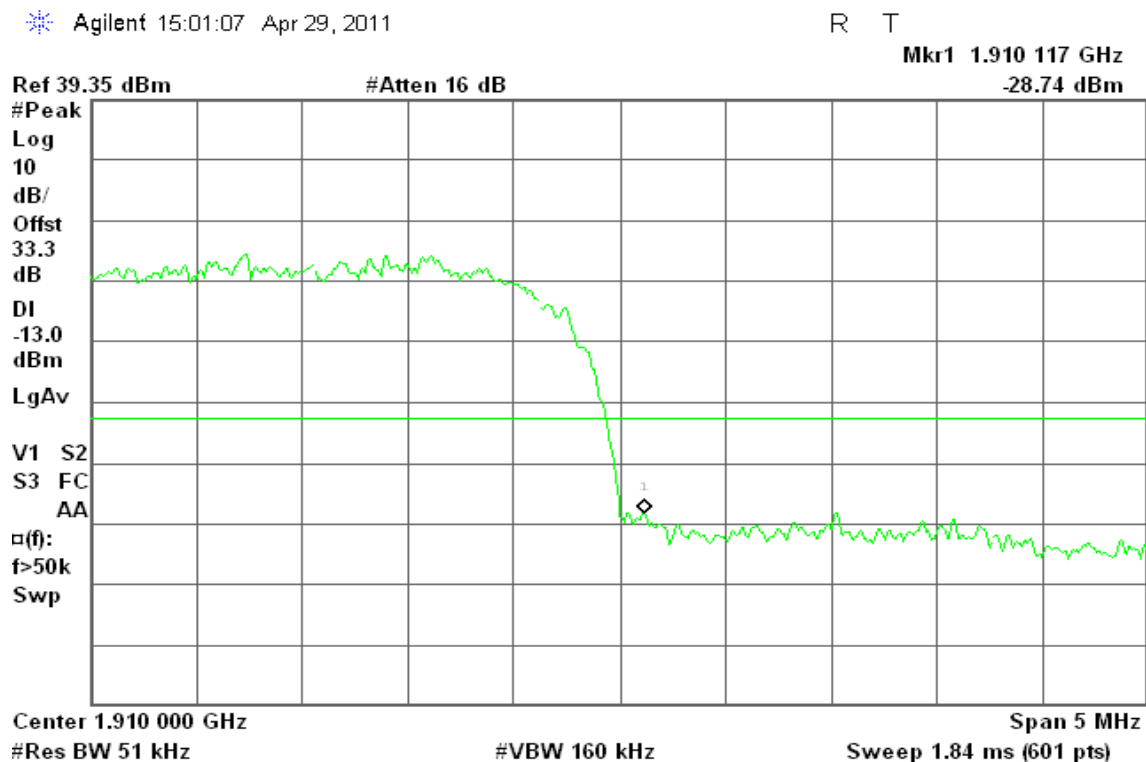


Figure 21-2: Band Edge emissions –WCDMA CH High





## WCDMA Band V

Figure 22-1: Band Edge emissions –WCDMA CH Low

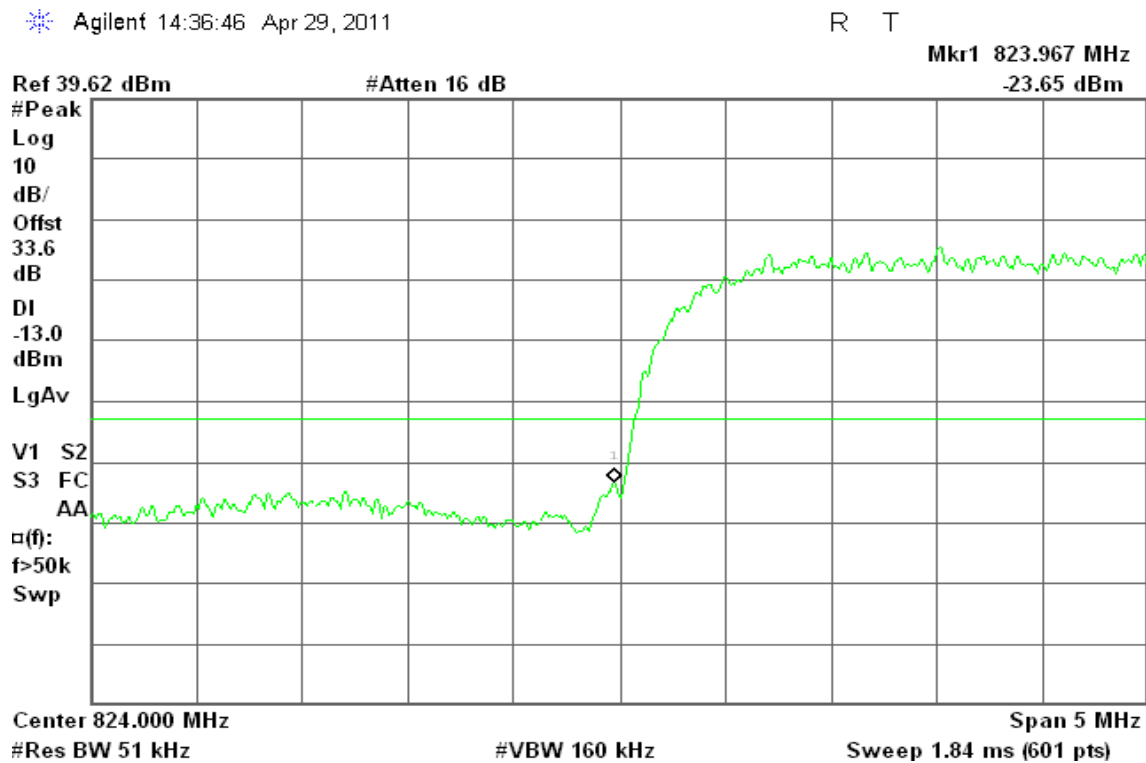
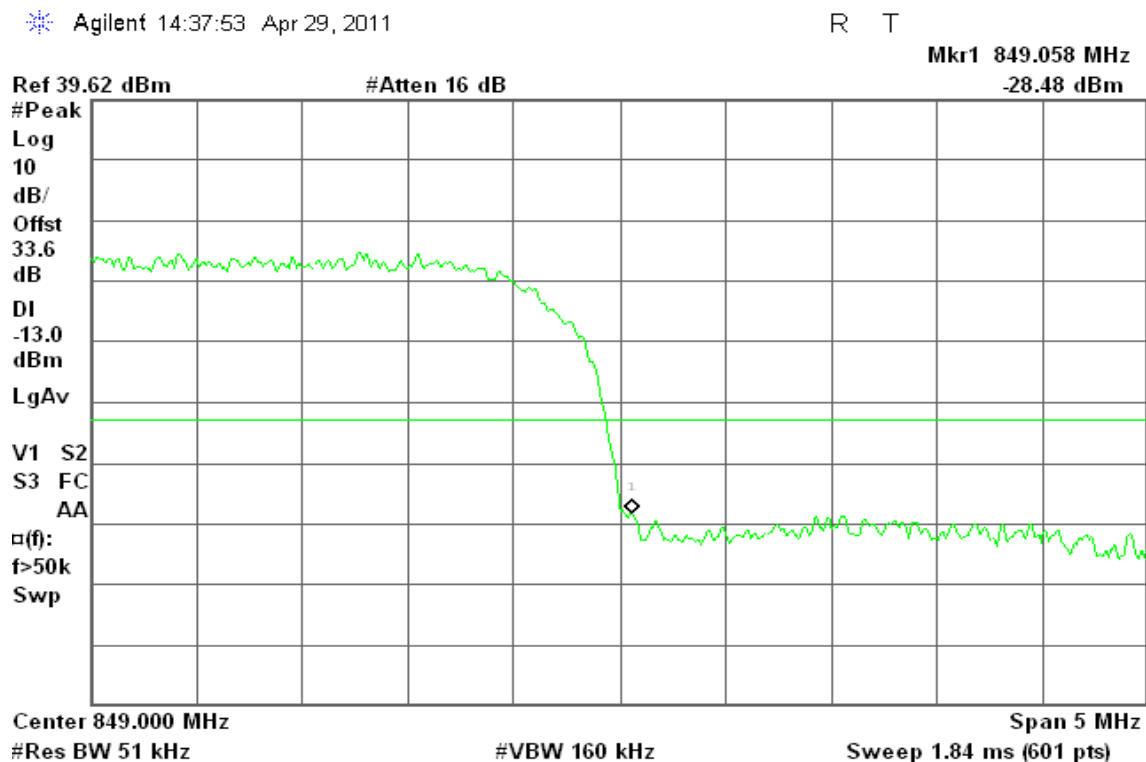


Figure 22-2: Band Edge emissions –WCDMA CH High





## WCDMA / HSDPA Band II

Figure 23-1: Out of Band emission at antenna terminals – HSDPA CH Low

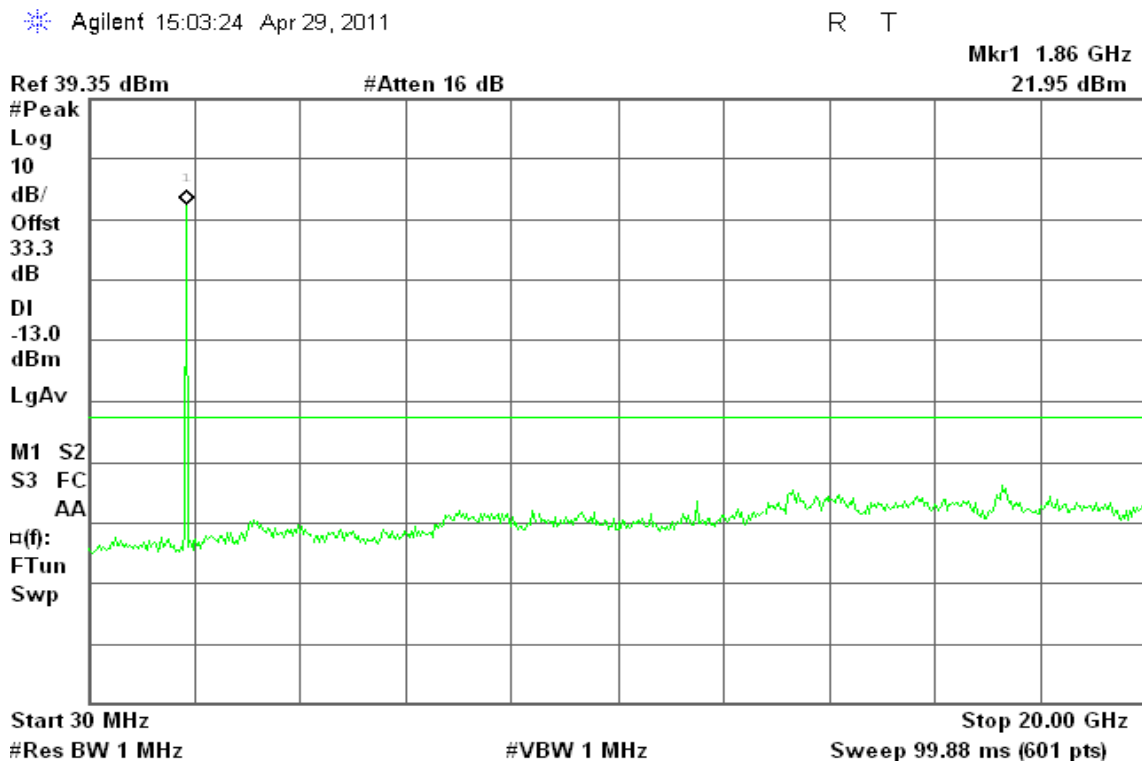


Figure 23-2: Out of Band emission at antenna terminals – HSDPA CH Mid

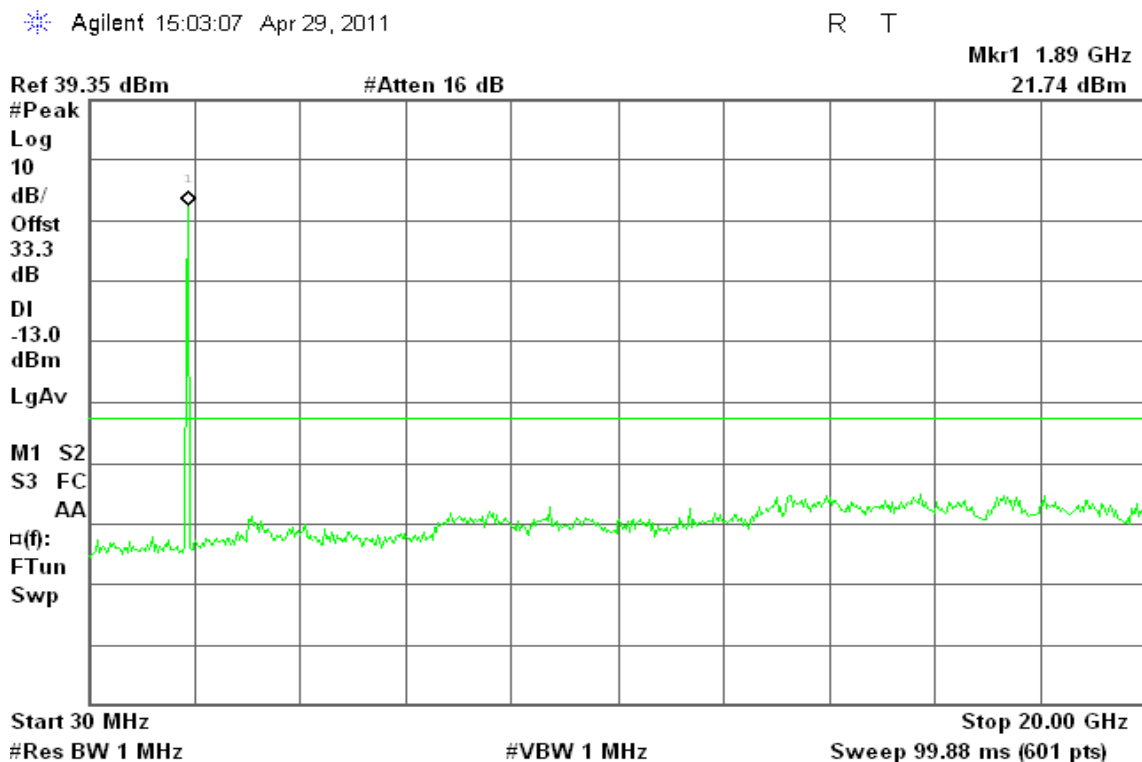
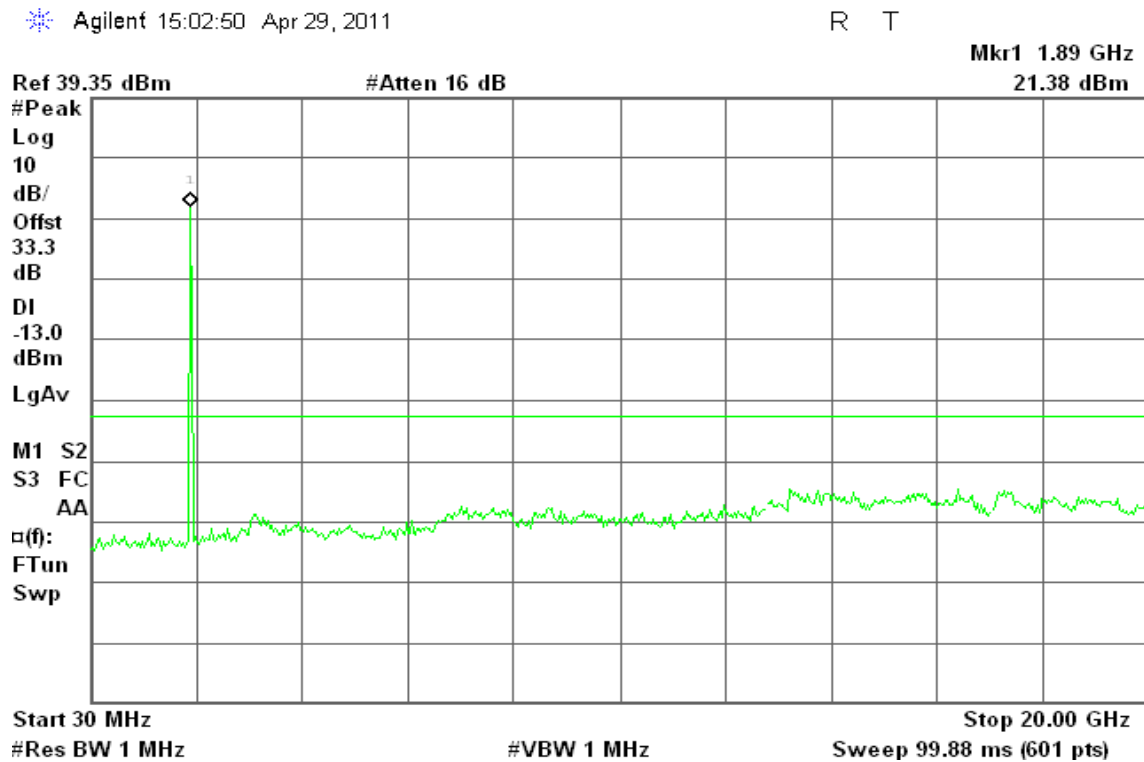




Figure 23-3: Out of Band emission at antenna terminals – HSDPA CH High



## WCDMA / HSDPA Band V

Figure 24-1: Out of Band emission at antenna terminals – HSDPA CH Low

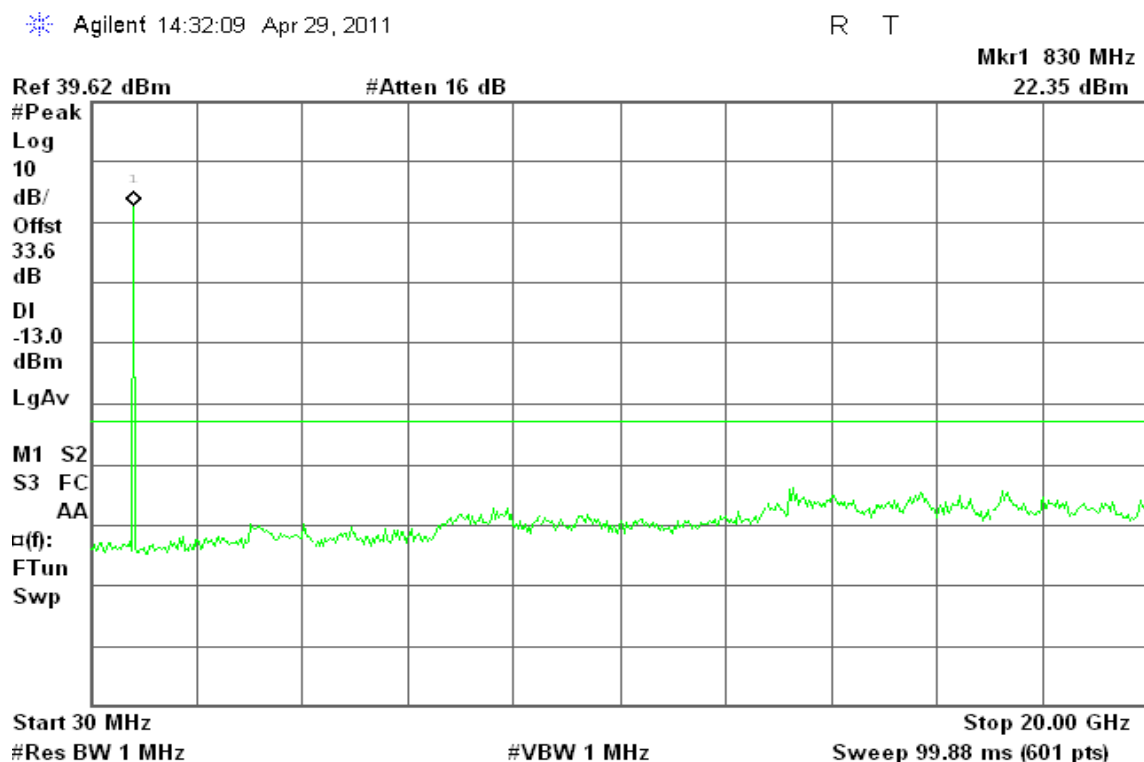




Figure 24-2: Out of Band emission at antenna terminals – HSDPA CH Mid

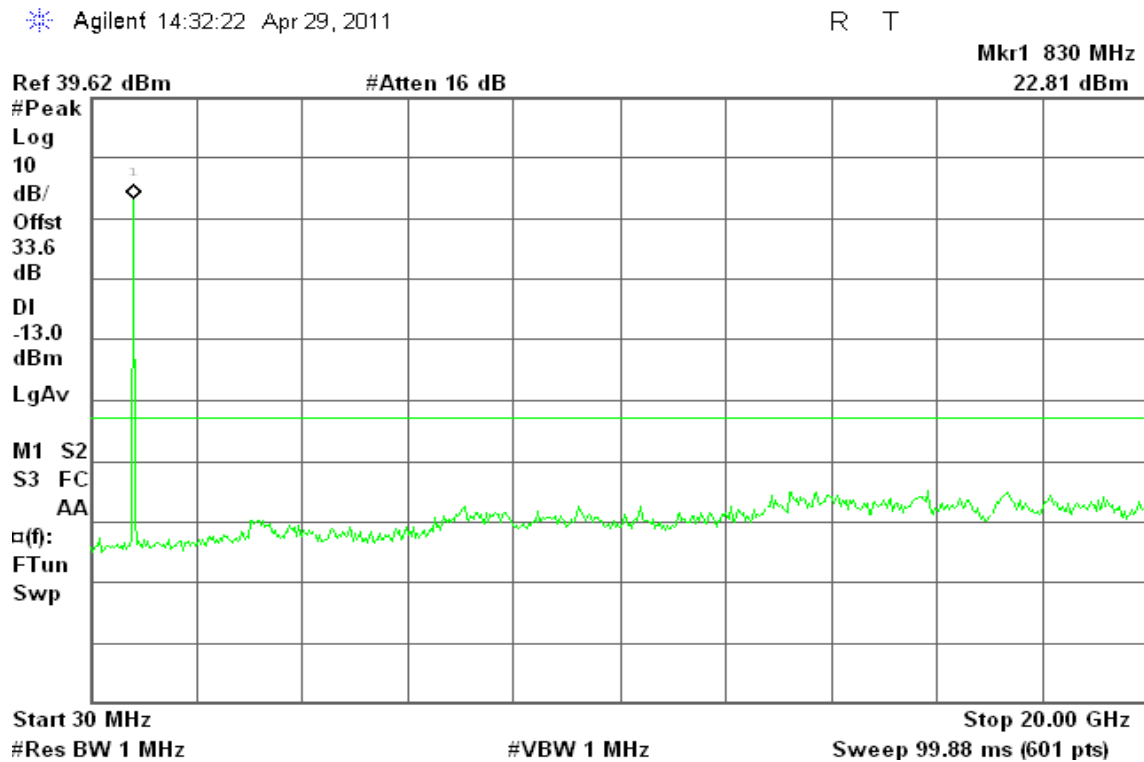
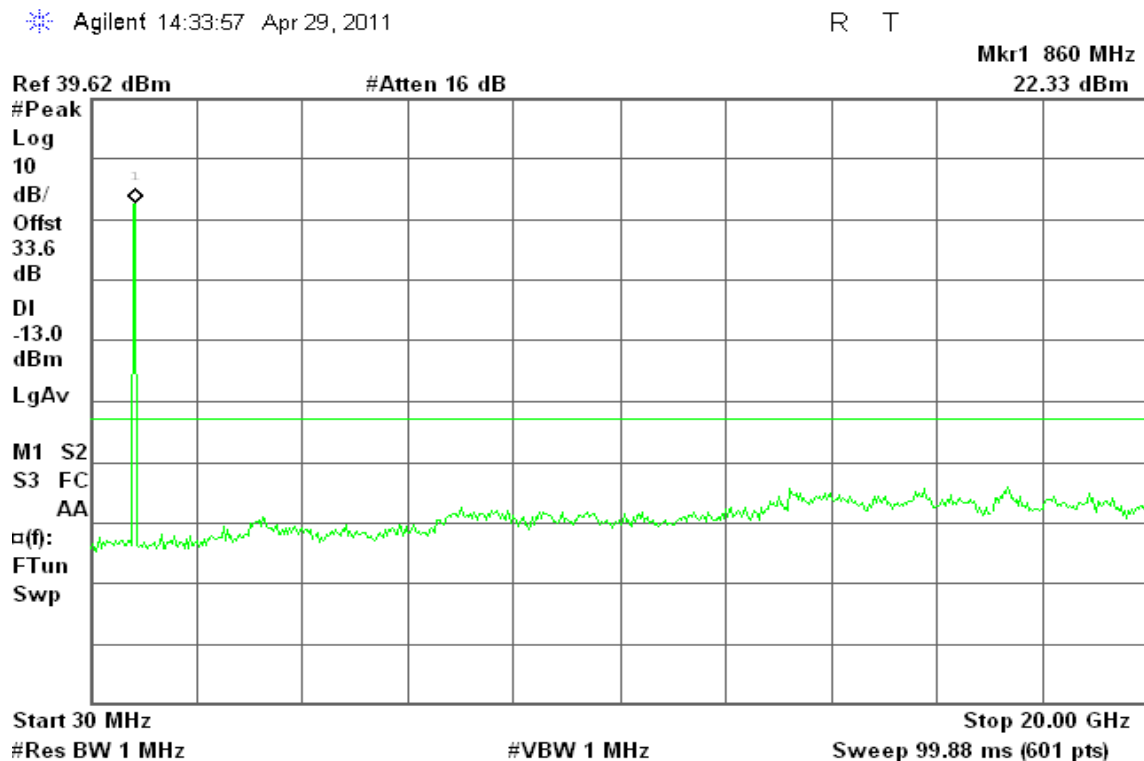


Figure 24-3: Out of Band emission at antenna terminals – HSDPA CH High





## WCDMA / HSDPA Band II

Figure 25-1: Band Edge emissions – HSDPA CH Low

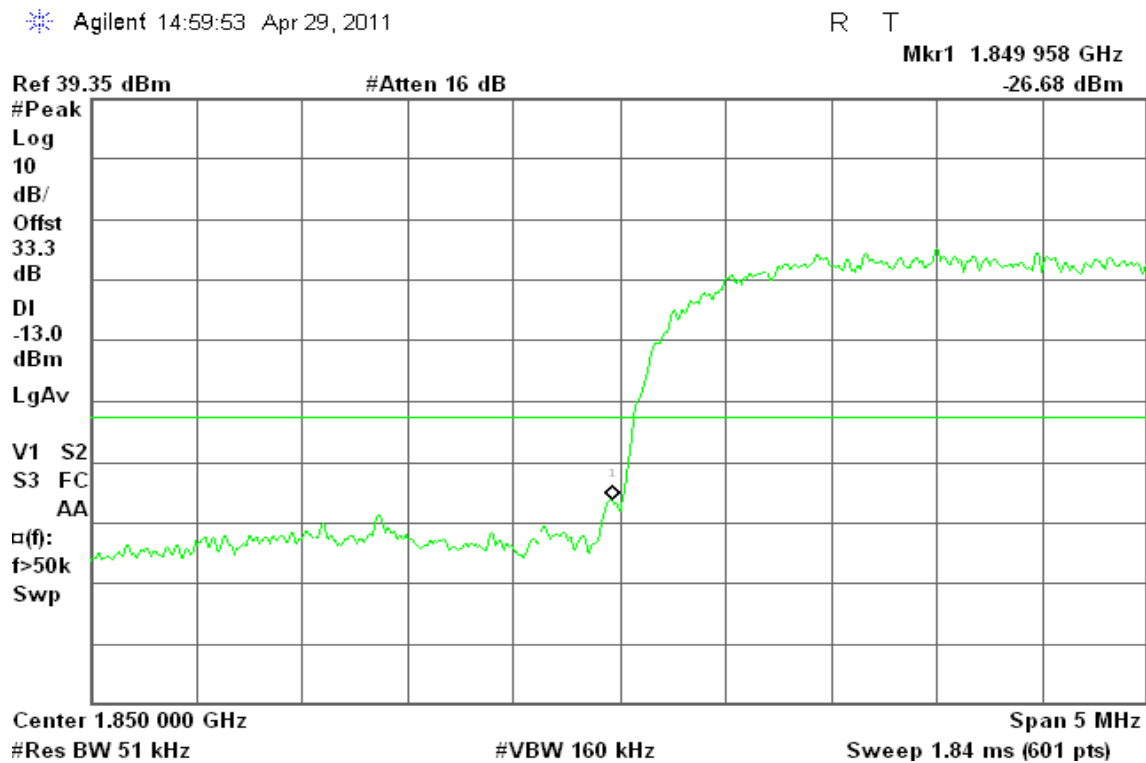
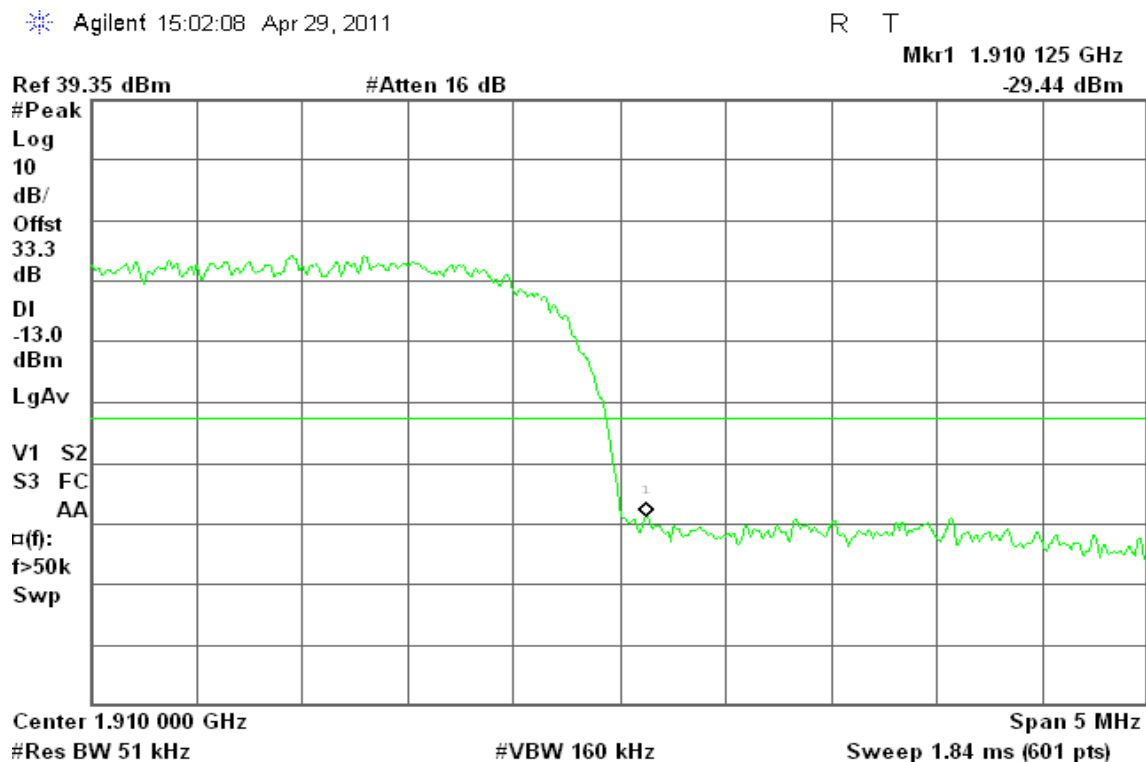


Figure 25-2: Band Edge emissions – HSDPA CH High







## WCDMA / HSDPA Band V

Figure 26-1: Band Edge emissions – HSDPA CH Low

Agilent 14:35:43 Apr 29, 2011

R T

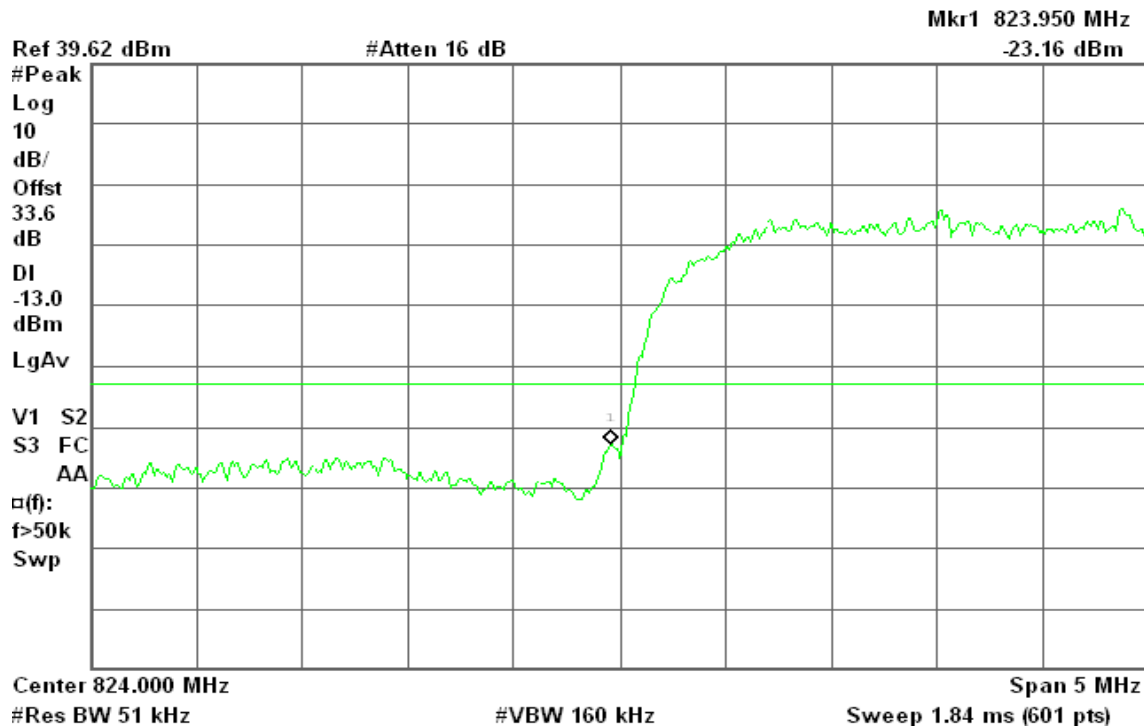
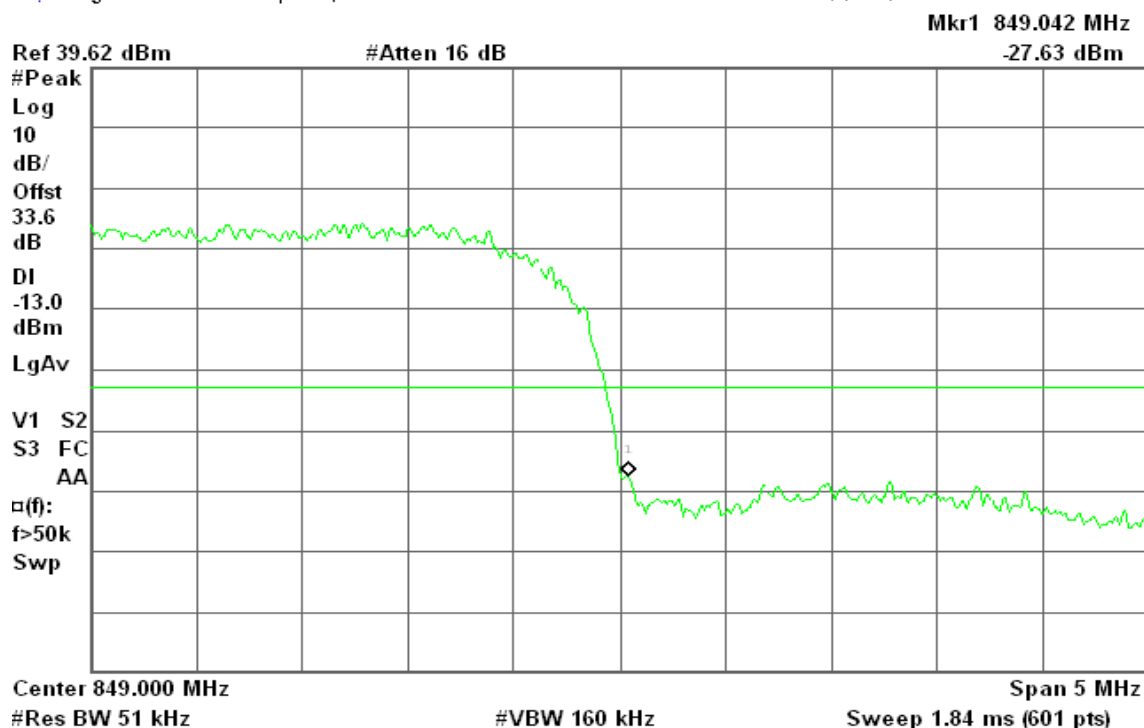


Figure 26-2: Band Edge emissions – HSDPA CH High

Agilent 14:38:39 Apr 29, 2011

R T





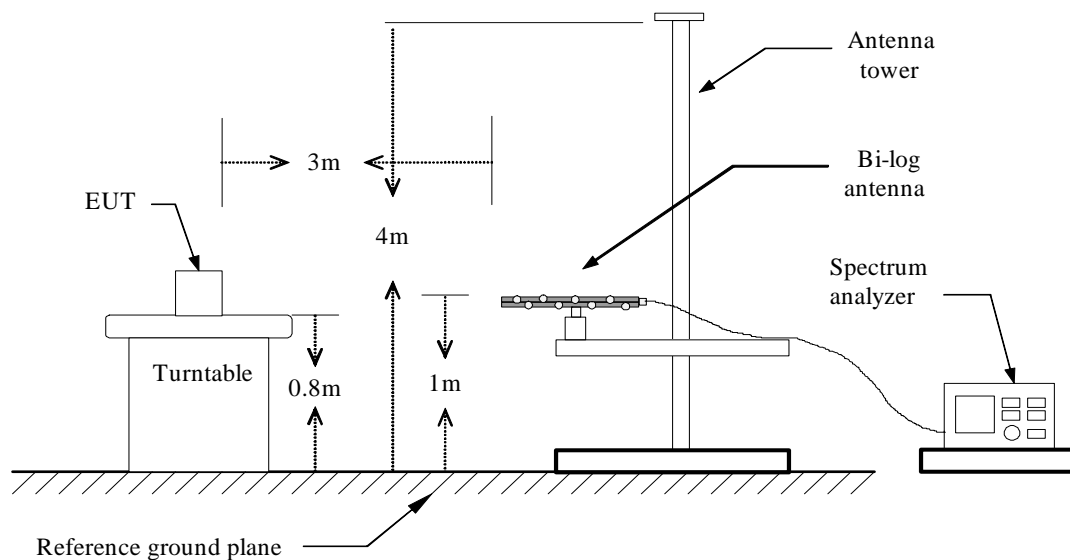
## 7.6 FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT

### LIMIT

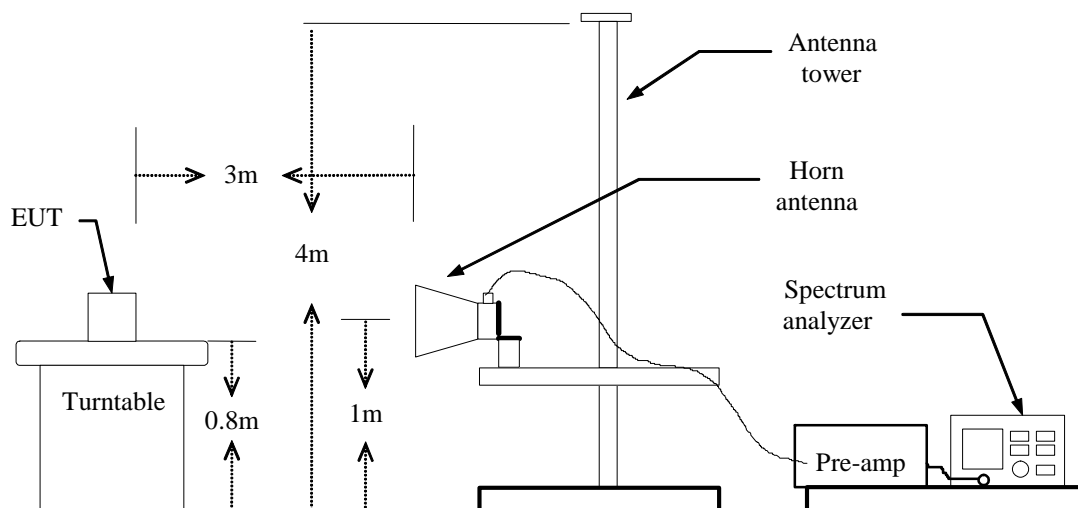
According to FCC §2.1053

### Test Configuration

#### Below 1 GHz

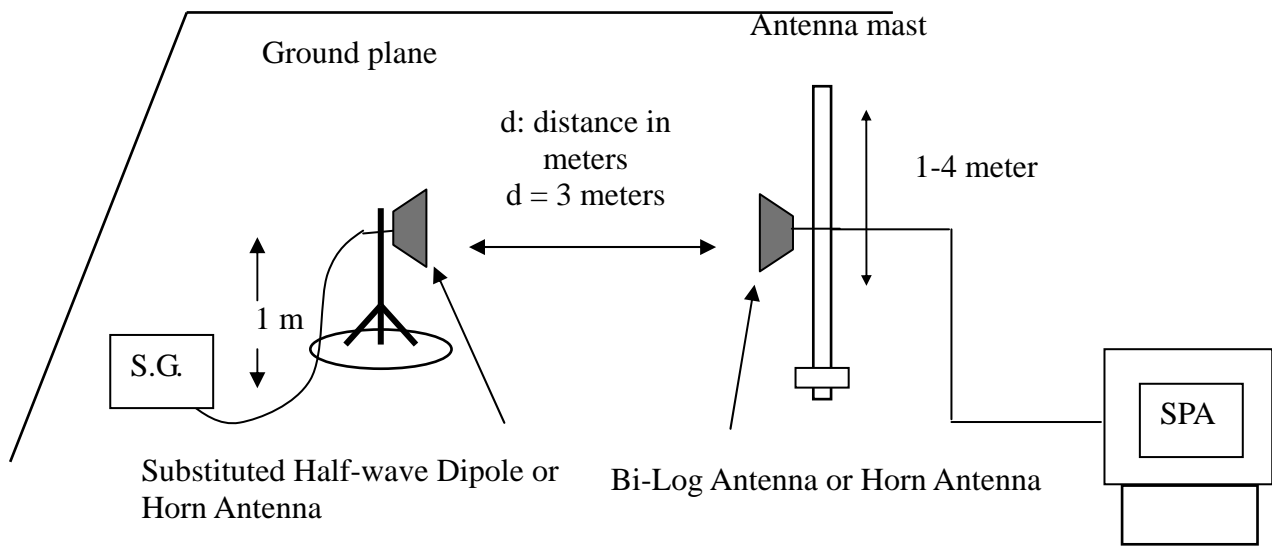


#### Above 1 GHz





## Substituted Method Test Set-up



## TEST PROCEDURE

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

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

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

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

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

## TEST RESULTS

*Refer to the attached tabular data sheets.*

**Radiated Spurious Emission Measurement Result / Below 1GHz****Operation Mode:** GPRS 850 / TX / CH 128**Test Date:** May 5, 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)
68.8000	-70.13	0.95	-1.81	-72.89	-13.00	-59.89	V
119.7250	-68.93	1.27	-2.09	-72.29	-13.00	-59.29	V
185.2000	-80.14	1.61	3.81	-77.94	-13.00	-64.94	V
267.6500	-86.29	1.96	5.22	-83.03	-13.00	-70.03	V
461.6500	-76.02	2.6	5.86	-72.76	-13.00	-59.76	V
602.3000	-83.46	2.91	6.38	-79.99	-13.00	-66.99	V
68.8000	-66.93	0.95	-1.81	-69.69	-13.00	-56.69	H
114.8750	-65.22	1.24	-1.9	-68.36	-13.00	-55.36	H
192.4750	-75.16	1.62	3.74	-73.04	-13.00	-60.04	H
257.9500	-83.01	1.89	5.61	-79.29	-13.00	-66.29	H
471.3500	-73.8	2.62	5.74	-70.68	-13.00	-57.68	H
636.2500	-79.03	3	6.16	-75.87	-13.00	-62.87	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 190**Test Date:** May 5, 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)
68.8000	-70.41	0.95	-1.81	-73.17	-13.00	-60.17	V
85.7750	-70.61	1.08	0.56	-71.13	-13.00	-58.13	V
124.5750	-68.3	1.31	-1.78	-71.39	-13.00	-58.39	V
163.3750	-73.73	1.51	1.77	-73.47	-13.00	-60.47	V
250.6750	-81.83	1.84	5.7	-77.97	-13.00	-64.97	V
468.9250	-76.94	2.62	5.8	-73.76	-13.00	-60.76	V
42.1250	-64.52	0.74	-10.72	-75.98	-13.00	-62.98	H
68.8000	-66.64	0.95	-1.81	-69.40	-13.00	-56.40	H
131.8500	-67.03	1.35	-1.18	-69.56	-13.00	-56.56	H
180.3500	-74.4	1.61	3.62	-72.39	-13.00	-59.39	H
464.0750	-74.21	2.61	5.84	-70.98	-13.00	-57.98	H
679.9000	-79.62	3.09	6.5	-76.21	-13.00	-63.21	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 5, 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)
68.8000	-70.42	0.95	-1.81	-73.18	-13.00	-60.18	V
119.7250	-66.99	1.27	-2.09	-70.35	-13.00	-57.35	V
180.3500	-80.67	1.61	3.62	-78.66	-13.00	-65.66	V
267.6500	-85.25	1.96	5.22	-81.99	-13.00	-68.99	V
464.0750	-76.39	2.61	5.84	-73.16	-13.00	-60.16	V
621.7000	-82.78	2.95	6.13	-79.60	-13.00	-66.60	V
68.8000	-66.86	0.95	-1.81	-69.62	-13.00	-56.62	H
119.7250	-66.22	1.27	-2.09	-69.58	-13.00	-56.58	H
185.2000	-75.47	1.61	3.81	-73.27	-13.00	-60.27	H
279.7750	-82.32	2	5.3	-79.02	-13.00	-66.02	H
464.0750	-74.15	2.61	5.84	-70.92	-13.00	-57.92	H
641.1000	-79.33	3.01	6.12	-76.22	-13.00	-63.22	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 1900 / TX / CH 512**Test Date:** May 5, 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)
68.8000	-69.74	0.95	-1.81	-72.50	-13.00	-59.50	V
122.1500	-69.8	1.29	-1.93	-73.02	-13.00	-60.02	V
187.6250	-79.15	1.62	3.9	-76.87	-13.00	-63.87	V
289.4750	-84.77	2.02	5.4	-81.39	-13.00	-68.39	V
468.9250	-75.35	2.62	5.8	-72.17	-13.00	-59.17	V
689.6000	-81.56	3.13	6.5	-78.19	-13.00	-65.19	V
68.8000	-65.02	0.95	-1.81	-67.78	-13.00	-54.78	H
124.5750	-65.57	1.31	-1.78	-68.66	-13.00	-55.66	H
185.2000	-74.49	1.61	3.81	-72.29	-13.00	-59.29	H
289.4750	-78.36	2.02	5.4	-74.98	-13.00	-61.98	H
473.7750	-72.73	2.63	5.69	-69.67	-13.00	-56.67	H
772.0500	-77.23	3.28	6.32	-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.*

**Operation Mode:** GPRS 1900 / TX / CH 661**Test Date:** May 5, 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)
44.5500	-62.23	0.76	-8.84	-71.83	-13.00	-58.83	V
119.7250	-69.5	1.27	-2.09	-72.86	-13.00	-59.86	V
187.6250	-80.19	1.62	3.9	-77.91	-13.00	-64.91	V
321.0000	-82.1	2.18	5.7	-78.58	-13.00	-65.58	V
473.7750	-76.27	2.63	5.69	-73.21	-13.00	-60.21	V
682.3250	-81.35	3.1	6.5	-77.95	-13.00	-64.95	V
49.4000	-69.99	0.8	-5.08	-75.87	-13.00	-62.87	H
112.4500	-74.41	1.22	-1.8	-77.43	-13.00	-64.43	H
173.0750	-80.44	1.58	2.85	-79.17	-13.00	-66.17	H
481.0500	-77.01	2.64	5.52	-74.13	-13.00	-61.13	H
619.2750	-79.73	2.94	6.11	-76.56	-13.00	-63.56	H
808.4250	-76.8	3.34	6.29	-73.85	-13.00	-60.85	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 1900 / TX / CH 810**Test Date:** May 5, 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)
68.8000	-70.28	0.95	-1.81	-73.04	-13.00	-60.04	V
122.1500	-70.44	1.29	-1.93	-73.66	-13.00	-60.66	V
190.0500	-81.5	1.62	4	-79.12	-13.00	-66.12	V
267.6500	-86.38	1.96	5.22	-83.12	-13.00	-70.12	V
471.3500	-76.59	2.62	5.74	-73.47	-13.00	-60.47	V
648.3750	-83.05	3.02	6.26	-79.81	-13.00	-66.81	V
44.5500	-66.04	0.76	-8.84	-75.64	-13.00	-62.64	H
127.0000	-75.31	1.32	-1.63	-78.26	-13.00	-65.26	H
291.9000	-78.83	2.04	5.44	-75.43	-13.00	-62.43	H
485.9000	-77.2	2.65	5.66	-74.19	-13.00	-61.19	H
556.2250	-79.5	2.83	6.09	-76.24	-13.00	-63.24	H
798.7250	-77.93	3.33	6.48	-74.78	-13.00	-61.78	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 850 / TX / CH 128**Test Date:** May 5, 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)
68.8000	-71.13	0.95	-1.81	-73.89	-13.00	-60.89	V
119.7250	-71.18	1.27	-2.09	-74.54	-13.00	-61.54	V
168.2250	-70.78	1.55	2.32	-70.01	-13.00	-57.01	V
248.2500	-83.09	1.83	5.61	-79.31	-13.00	-66.31	V
476.2000	-76.06	2.63	5.63	-73.06	-13.00	-60.06	V
643.5250	-83.12	3.01	6.16	-79.97	-13.00	-66.97	V
68.8000	-65.21	0.95	-1.81	-67.97	-13.00	-54.97	H
119.7250	-63.82	1.27	-2.09	-67.18	-13.00	-54.18	H
177.9250	-73.27	1.6	3.36	-71.51	-13.00	-58.51	H
308.8750	-81.19	2.13	5.78	-77.54	-13.00	-64.54	H
468.9250	-71.84	2.62	5.8	-68.66	-13.00	-55.66	H
636.2500	-77.57	3	6.16	-74.41	-13.00	-61.41	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 5, 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)
68.8000	-70.94	0.95	-1.81	-73.70	-13.00	-60.70	V
127.0000	-71.23	1.32	-1.63	-74.18	-13.00	-61.18	V
194.9000	-80.39	1.63	3.47	-78.55	-13.00	-65.55	V
267.6500	-85.72	1.96	5.22	-82.46	-13.00	-69.46	V
459.2250	-77.41	2.6	5.88	-74.13	-13.00	-61.13	V
672.6250	-83.35	3.07	6.35	-80.07	-13.00	-67.07	V
68.8000	-66.94	0.95	-1.81	-69.70	-13.00	-56.70	H
114.8750	-65.87	1.24	-1.9	-69.01	-13.00	-56.01	H
177.9250	-75.84	1.6	3.36	-74.08	-13.00	-61.08	H
289.4750	-83.3	2.02	5.4	-79.92	-13.00	-66.92	H
468.9250	-74.01	2.62	5.8	-70.83	-13.00	-57.83	H
624.1250	-79.63	2.96	6.15	-76.44	-13.00	-63.44	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 5, 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)
68.8000	-70.8	0.95	-1.81	-73.56	-13.00	-60.56	V
119.7250	-69.99	1.27	-2.09	-73.35	-13.00	-60.35	V
182.7750	-80.87	1.61	3.72	-78.76	-13.00	-65.76	V
267.6500	-85.32	1.96	5.22	-82.06	-13.00	-69.06	V
473.7750	-76.76	2.63	5.69	-73.70	-13.00	-60.70	V
711.4250	-82.41	3.15	6.34	-79.22	-13.00	-66.22	V
68.8000	-66.42	0.95	-1.81	-69.18	-13.00	-56.18	H
114.8750	-66.56	1.24	-1.9	-69.70	-13.00	-56.70	H
199.7500	-74.46	1.63	2.94	-73.15	-13.00	-60.15	H
299.1750	-83.15	2.09	5.58	-79.66	-13.00	-66.66	H
473.7750	-74.19	2.63	5.69	-71.13	-13.00	-58.13	H
730.8250	-79.5	3.18	6.38	-76.30	-13.00	-63.30	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 5, 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)
68.8000	-70.75	0.95	-1.81	-73.51	-13.00	-60.51	V
124.5750	-70.18	1.31	-1.78	-73.27	-13.00	-60.27	V
187.6250	-81.07	1.62	3.9	-78.79	-13.00	-65.79	V
267.6500	-86.29	1.96	5.22	-83.03	-13.00	-70.03	V
473.7750	-77.02	2.63	5.69	-73.96	-13.00	-60.96	V
684.7500	-82.33	3.11	6.5	-78.94	-13.00	-65.94	V
68.8000	-66.61	0.95	-1.81	-69.37	-13.00	-56.37	H
114.8750	-66.79	1.24	-1.9	-69.93	-13.00	-56.93	H
182.7750	-76.37	1.61	3.72	-74.26	-13.00	-61.26	H
381.6250	-81.1	2.31	5.99	-77.42	-13.00	-64.42	H
473.7750	-73.76	2.63	5.69	-70.70	-13.00	-57.70	H
767.2000	-77.33	3.26	6.37	-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:** EDGE 1900 / TX / CH 661**Test Date:** May 5, 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)
68.8000	-70.13	0.95	-1.81	-72.89	-13.00	-59.89	V
124.5750	-70.34	1.31	-1.78	-73.43	-13.00	-60.43	V
187.6250	-79.21	1.62	3.9	-76.93	-13.00	-63.93	V
267.6500	-85.85	1.96	5.22	-82.59	-13.00	-69.59	V
461.6500	-77.02	2.6	5.86	-73.76	-13.00	-60.76	V
696.8750	-81.91	3.11	6.42	-78.60	-13.00	-65.60	V
68.8000	-67.02	0.95	-1.81	-69.78	-13.00	-56.78	H
122.1500	-66.36	1.29	-1.93	-69.58	-13.00	-56.58	H
182.7750	-76.08	1.61	3.72	-73.97	-13.00	-60.97	H
289.4750	-82.61	2.02	5.4	-79.23	-13.00	-66.23	H
471.3500	-73.45	2.62	5.74	-70.33	-13.00	-57.33	H
733.2500	-78.41	3.19	6.31	-75.29	-13.00	-62.29	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 5, 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)
56.6750	-69.07	0.85	-2.94	-72.86	-13.00	-59.86	V
122.1500	-70.1	1.29	-1.93	-73.32	-13.00	-60.32	V
187.6250	-79.95	1.62	3.9	-77.67	-13.00	-64.67	V
274.9250	-76	1.99	5.2	-72.79	-13.00	-59.79	V
473.7750	-76.45	2.63	5.69	-73.39	-13.00	-60.39	V
670.2000	-82.37	3.07	6.3	-79.14	-13.00	-66.14	V
68.8000	-67.81	0.95	-1.81	-70.57	-13.00	-57.57	H
122.1500	-66.81	1.29	-1.93	-70.03	-13.00	-57.03	H
185.2000	-76.56	1.61	3.81	-74.36	-13.00	-61.36	H
473.7750	-73.74	2.63	5.69	-70.68	-13.00	-57.68	H
658.0750	-78.61	3.05	6.3	-75.36	-13.00	-62.36	H
769.6250	-77.73	3.27	6.39	-74.61	-13.00	-61.61	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:** WCDMA Band II / TX / CH 9262**Test Date:** May 5, 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)
54.2500	-66.95	0.83	-3.66	-71.44	-13.00	-58.44	V
114.8750	-66.74	1.24	-1.9	-69.88	-13.00	-56.88	V
199.7500	-82.17	1.63	2.94	-80.86	-13.00	-67.86	V
267.6500	-86.44	1.96	5.22	-83.18	-13.00	-70.18	V
333.1250	-87.47	2.16	5.73	-83.90	-13.00	-70.90	V
573.2000	-83.83	2.88	6.08	-80.63	-13.00	-67.63	V
46.9750	-68.1	0.78	-6.96	-75.84	-13.00	-62.84	H
112.4500	-72.22	1.22	-1.8	-75.24	-13.00	-62.24	H
199.7500	-80.34	1.63	2.94	-79.03	-13.00	-66.03	H
415.5750	-82.31	2.45	5.85	-78.91	-13.00	-65.91	H
616.8500	-79.95	2.94	6.16	-76.73	-13.00	-63.73	H
769.6250	-78.29	3.27	6.39	-75.17	-13.00	-62.17	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:** WCDMA Band II / TX / CH 9400**Test Date:** May 5, 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)
68.8000	-71.2	0.95	-1.81	-73.96	-13.00	-60.96	V
114.8750	-66.97	1.24	-1.9	-70.11	-13.00	-57.11	V
199.7500	-82.75	1.63	2.94	-81.44	-13.00	-68.44	V
267.6500	-86.36	1.96	5.22	-83.10	-13.00	-70.10	V
413.1500	-86.67	2.45	5.88	-83.24	-13.00	-70.24	V
582.9000	-83.99	2.89	6.06	-80.82	-13.00	-67.82	V
49.4000	-70.69	0.8	-5.08	-76.57	-13.00	-63.57	H
110.0250	-71.92	1.21	-1.7	-74.83	-13.00	-61.83	H
202.1750	-80.64	1.64	3.57	-78.71	-13.00	-65.71	H
284.6250	-83.04	2.01	5.35	-79.70	-13.00	-66.70	H
439.8250	-81.66	2.53	5.9	-78.29	-13.00	-65.29	H
519.8500	-80.6	2.7	6.1	-77.20	-13.00	-64.20	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:** WCDMA Band II / TX / CH 9538**Test Date:** May 5, 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)
68.8000	-71.06	0.95	-1.81	-73.82	-13.00	-60.82	V
114.8750	-66.7	1.24	-1.9	-69.84	-13.00	-56.84	V
199.7500	-81.85	1.63	2.94	-80.54	-13.00	-67.54	V
267.6500	-86.63	1.96	5.22	-83.37	-13.00	-70.37	V
352.5250	-86.67	2.24	5.78	-83.13	-13.00	-70.13	V
471.3500	-85.12	2.62	5.74	-82.00	-13.00	-69.00	V
46.9750	-68.69	0.78	-6.96	-76.43	-13.00	-63.43	H
112.4500	-72.72	1.22	-1.8	-75.74	-13.00	-62.74	H
197.3250	-80.41	1.63	3.21	-78.83	-13.00	-65.83	H
403.4500	-83.37	2.41	5.96	-79.82	-13.00	-66.82	H
531.9750	-80.63	2.76	6.07	-77.32	-13.00	-64.32	H
660.5000	-79.34	3.06	6.3	-76.10	-13.00	-63.10	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:** WCDMA Band V / TX / CH 4132**Test Date:** May 5, 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)
68.8000	-69.92	0.95	-1.81	-72.68	-13.00	-59.68	V
114.8750	-67.2	1.24	-1.9	-70.34	-13.00	-57.34	V
199.7500	-81.1	1.63	2.94	-79.79	-13.00	-66.79	V
267.6500	-86.58	1.96	5.22	-83.32	-13.00	-70.32	V
442.2500	-85.05	2.55	5.85	-81.75	-13.00	-68.75	V
679.9000	-83.26	3.09	6.5	-79.85	-13.00	-66.85	V
42.1250	-63.8	0.74	-10.72	-75.26	-13.00	-62.26	H
110.0250	-73.2	1.21	-1.7	-76.11	-13.00	-63.11	H
199.7500	-81.32	1.63	2.94	-80.01	-13.00	-67.01	H
265.2250	-84.09	1.95	5.34	-80.70	-13.00	-67.70	H
551.3750	-80.58	2.81	6.17	-77.22	-13.00	-64.22	H
607.1500	-80.46	2.93	6.33	-77.06	-13.00	-64.06	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:** WCDMA Band V / TX / CH 4182**Test Date:** May 5, 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)
68.8000	-71	0.95	-1.81	-73.76	-13.00	-60.76	V
117.3000	-66.86	1.26	-1.99	-70.11	-13.00	-57.11	V
194.9000	-82.04	1.63	3.47	-80.20	-13.00	-67.20	V
267.6500	-85.51	1.96	5.22	-82.25	-13.00	-69.25	V
352.5250	-85.41	2.24	5.78	-81.87	-13.00	-68.87	V
531.9750	-83.9	2.76	6.07	-80.59	-13.00	-67.59	V
49.4000	-69.68	0.8	-5.08	-75.56	-13.00	-62.56	H
112.4500	-73.55	1.22	-1.8	-76.57	-13.00	-63.57	H
197.3250	-81.4	1.63	3.21	-79.82	-13.00	-66.82	H
265.2250	-83.19	1.95	5.34	-79.80	-13.00	-66.80	H
439.8250	-82.02	2.53	5.9	-78.65	-13.00	-65.65	H
551.3750	-80.28	2.81	6.17	-76.92	-13.00	-63.92	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:** WCDMA Band V / TX / CH 4233**Test Date:** May 5, 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)
68.8000	-70.98	0.95	-1.81	-73.74	-13.00	-60.74	V
114.8750	-66.68	1.24	-1.9	-69.82	-13.00	-56.82	V
194.9000	-81.4	1.63	3.47	-79.56	-13.00	-66.56	V
352.5250	-86.96	2.24	5.78	-83.42	-13.00	-70.42	V
531.9750	-83.91	2.76	6.07	-80.60	-13.00	-67.60	V
670.2000	-83.11	3.07	6.3	-79.88	-13.00	-66.88	V
42.1250	-63.84	0.74	-10.72	-75.30	-13.00	-62.30	H
114.8750	-73.19	1.24	-1.9	-76.33	-13.00	-63.33	H
272.5000	-83.21	1.99	5.15	-80.05	-13.00	-67.05	H
357.3750	-82.98	2.26	5.73	-79.51	-13.00	-66.51	H
464.0750	-81.38	2.61	5.84	-78.15	-13.00	-65.15	H
612.0000	-79.46	2.94	6.25	-76.15	-13.00	-63.15	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:** WCDMA / HSDPA Band II /  
TX / CH 9262**Test Date:** May 5, 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)
68.8000	-71.72	0.95	-1.81	-74.48	-13.00	-61.48	V
117.3000	-67.03	1.26	-1.99	-70.28	-13.00	-57.28	V
197.3250	-81.86	1.63	3.21	-80.28	-13.00	-67.28	V
267.6500	-86.88	1.96	5.22	-83.62	-13.00	-70.62	V
352.5250	-85.96	2.24	5.78	-82.42	-13.00	-69.42	V
675.0500	-83.48	3.08	6.4	-80.16	-13.00	-67.16	V
44.5500	-66.35	0.76	-8.84	-75.95	-13.00	-62.95	H
110.0250	-72.96	1.21	-1.7	-75.87	-13.00	-62.87	H
197.3250	-81.18	1.63	3.21	-79.60	-13.00	-66.60	H
403.4500	-81.74	2.41	5.96	-78.19	-13.00	-65.19	H
565.9250	-80.35	2.86	6.05	-77.16	-13.00	-64.16	H
667.7750	-79.17	3.07	6.3	-75.94	-13.00	-62.94	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:** WCDMA / HSDPA Band II /  
TX / CH 9400**Test Date:** May 5, 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)
68.8000	-71.4	0.95	-1.81	-74.16	-13.00	-61.16	V
117.3000	-66.9	1.26	-1.99	-70.15	-13.00	-57.15	V
194.9000	-82.15	1.63	3.47	-80.31	-13.00	-67.31	V
374.3500	-85.69	2.31	5.89	-82.11	-13.00	-69.11	V
575.6250	-83.78	2.88	6.05	-80.61	-13.00	-67.61	V
684.7500	-83.16	3.11	6.5	-79.77	-13.00	-66.77	V
46.9750	-68.16	0.78	-6.96	-75.90	-13.00	-62.90	H
112.4500	-72.64	1.22	-1.8	-75.66	-13.00	-62.66	H
199.7500	-80.9	1.63	2.94	-79.59	-13.00	-66.59	H
364.6500	-83.08	2.28	5.75	-79.61	-13.00	-66.61	H
439.8250	-82.08	2.53	5.9	-78.71	-13.00	-65.71	H
531.9750	-80.4	2.76	6.07	-77.09	-13.00	-64.09	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:** WCDMA / HSDPA Band II /  
TX / CH 9538**Test Date:** May 5, 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)
68.8000	-71.34	0.95	-1.81	-74.10	-13.00	-61.10	V
117.3000	-66.91	1.26	-1.99	-70.16	-13.00	-57.16	V
192.4750	-83.43	1.62	3.74	-81.31	-13.00	-68.31	V
267.6500	-85.94	1.96	5.22	-82.68	-13.00	-69.68	V
352.5250	-86.25	2.24	5.78	-82.71	-13.00	-69.71	V
725.9750	-82.17	3.17	6.44	-78.90	-13.00	-65.90	V
46.9750	-67.84	0.78	-6.96	-75.58	-13.00	-62.58	H
110.0250	-72.87	1.21	-1.7	-75.78	-13.00	-62.78	H
199.7500	-80.88	1.63	2.94	-79.57	-13.00	-66.57	H
347.6750	-84.03	2.21	5.8	-80.44	-13.00	-67.44	H
461.6500	-81.06	2.6	5.86	-77.80	-13.00	-64.80	H
658.0750	-79.16	3.05	6.3	-75.91	-13.00	-62.91	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:** WCDMA / HSDPA Band V /  
TX / CH 4132

**Temperature:** 26°C

**Humidity:** 50 % RH

**Test Date:** May 5, 2011

**Tested by:** Edward Lin

**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)
68.8000	-69.84	0.95	-1.81	-72.60	-13.00	-59.60	V
114.8750	-66.53	1.24	-1.9	-69.67	-13.00	-56.67	V
197.3250	-82.61	1.63	3.21	-81.03	-13.00	-68.03	V
311.3000	-86.42	2.14	5.76	-82.80	-13.00	-69.80	V
454.3750	-80.72	2.59	5.79	-77.52	-13.00	-64.52	V
745.3750	-82.22	3.21	6.1	-79.33	-13.00	-66.33	V
68.8000	-68.32	0.95	-1.81	-71.08	-13.00	-58.08	H
114.8750	-59.84	1.24	-1.9	-62.98	-13.00	-49.98	H
187.6250	-75.25	1.62	3.9	-72.97	-13.00	-59.97	H
236.1250	-78.73	1.81	5.37	-75.17	-13.00	-62.17	H
325.8500	-82.11	2.17	5.71	-78.57	-13.00	-65.57	H
466.5000	-78.73	2.61	5.82	-75.52	-13.00	-62.52	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:** WCDMA / HSDPA Band V /  
TX / CH 4182**Test Date:** May 5, 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)
68.8000	-69.97	0.95	-1.81	-72.73	-13.00	-59.73	V
114.8750	-66.29	1.24	-1.9	-69.43	-13.00	-56.43	V
194.9000	-82.85	1.63	3.47	-81.01	-13.00	-68.01	V
296.7500	-85.15	2.07	5.53	-81.69	-13.00	-68.69	V
381.6250	-86.15	2.31	5.99	-82.47	-13.00	-69.47	V
553.8000	-84.41	2.82	6.13	-81.10	-13.00	-68.10	V
68.8000	-68.1	0.95	-1.81	-70.86	-13.00	-57.86	H
114.8750	-60.13	1.24	-1.9	-63.27	-13.00	-50.27	H
192.4750	-74.85	1.62	3.74	-72.73	-13.00	-59.73	H
369.5000	-82.81	2.3	5.8	-79.31	-13.00	-66.31	H
454.3750	-80.62	2.59	5.79	-77.42	-13.00	-64.42	H
612.0000	-79.78	2.94	6.25	-76.47	-13.00	-63.47	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:** WCDMA / HSDPA Band V /  
TX / CH 4233**Test Date:** May 5, 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)
68.8000	-70.57	0.95	-1.81	-73.33	-13.00	-60.33	V
114.8750	-66.08	1.24	-1.9	-69.22	-13.00	-56.22	V
194.9000	-82.43	1.63	3.47	-80.59	-13.00	-67.59	V
267.6500	-86.44	1.96	5.22	-83.18	-13.00	-70.18	V
333.1250	-87.11	2.16	5.73	-83.54	-13.00	-70.54	V
531.9750	-84.37	2.76	6.07	-81.06	-13.00	-68.06	V
68.8000	-68.22	0.95	-1.81	-70.98	-13.00	-57.98	H
114.8750	-60.81	1.24	-1.9	-63.95	-13.00	-50.95	H
180.3500	-76.04	1.61	3.62	-74.03	-13.00	-61.03	H
323.4250	-83.19	2.18	5.7	-79.67	-13.00	-66.67	H
529.5500	-80.12	2.75	6	-76.87	-13.00	-63.87	H
733.2500	-77.52	3.19	6.31	-74.40	-13.00	-61.40	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:** GPRS 850 / TX / CH 128

**Test Date:** May 5, 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)
1647.500	-59.41	5.04	6.03	-58.42	-13.00	-45.42	V
2470.000	-51.26	6.3	6.06	-51.50	-13.00	-38.50	V
N/A							
1647.500	-58.19	5.04	6.03	-57.20	-13.00	-44.20	H
2470.000	-48.01	6.3	6.06	-48.25	-13.00	-35.25	H
N/A							

**Remark:**

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

**Operation Mode:** GPRS 850 / TX / CH 190**Test Date:** May 5, 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)
1682.500	-57.42	5.09	5.97	-56.54	-13.00	-43.54	V
2522.500	-52.14	6.38	6.16	-52.36	-13.00	-39.36	V
N/A							
1682.500	-54.41	5.09	5.97	-53.53	-13.00	-40.53	H
2522.500	-52.74	6.38	6.16	-52.96	-13.00	-39.96	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 5, 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)
1700.000	-54.1	5.11	5.94	-53.27	-13.00	-40.27	V
2557.500	-47.91	6.43	6.25	-48.09	-13.00	-35.09	V
N/A							
1700.000	-51.04	5.11	5.94	-50.21	-13.00	-37.21	H
2557.500	-52.95	6.43	6.25	-53.13	-13.00	-40.13	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 5, 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)
4395.000	-54.06	8.64	9.72	-52.98	-13.00	-39.98	V
N/A							
5550.000	-51.35	10.06	10.81	-50.60	-13.00	-37.60	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 5, 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)
3765.000	-54.22	8.24	9.16	-53.30	-13.00	-40.30	V
N/A							
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:** GPRS 1900 / TX / CH 810**Test Date:** May 5, 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)
5742.500	-52.32	10.27	10.85	-51.74	-13.00	-38.74	V
N/A							
1315.000	-59.34	4.54	4.97	-58.91	-13.00	-45.91	H
N/A							

**Remark:**

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

**Operation Mode:** EDGE 850 / TX / CH 128**Test Date:** May 5, 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)
2505.000	-58.15	6.36	6.11	-58.40	-13.00	-45.40	V
N/A							
1857.500	-59.6	5.38	5.66	-59.32	-13.00	-46.32	H
2470.000	-56.7	6.3	6.06	-56.94	-13.00	-43.94	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 5, 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)
2522.500	-56.15	6.38	6.16	-56.37	-13.00	-43.37	V
N/A							
2190.000	-56.64	5.93	5.67	-56.90	-13.00	-43.90	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 5, 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)
1700.000	-60.03	5.11	5.94	-59.20	-13.00	-46.20	V
2557.500	-56.12	6.43	6.25	-56.30	-13.00	-43.30	V
N/A							
1700.000	-59.2	5.11	5.94	-58.37	-13.00	-45.37	H
2750.000	-56.25	6.77	6.75	-56.27	-13.00	-43.27	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:** EDGE 1900 / TX / CH 512**Test Date:** May 5, 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)
4342.500	-53.73	8.62	9.67	-52.68	-13.00	-39.68	V
N/A							
3572.500	-55.83	8.04	8.97	-54.90	-13.00	-41.90	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 5, 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)
4325.000	-54.2	8.61	9.66	-53.15	-13.00	-40.15	V
N/A							
4395.000	-53.27	8.64	9.72	-52.19	-13.00	-39.19	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 5, 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)
3992.500	-55.27	8.35	9.39	-54.23	-13.00	-41.23	V
N/A							
3712.500	-54.52	8.21	9.11	-53.62	-13.00	-40.62	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:** WCDMA Band II / TX / CH 9262**Test Date:** May 5, 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)
3852.500	-52.64	8.33	9.25	-51.72	-13.00	-38.72	V
N/A							
2802.500	-55.31	6.82	6.89	-55.24	-13.00	-42.24	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:** WCDMA Band II / TX / CH 9400**Test Date:** May 5, 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)
2977.500	-56.5	7.04	7.34	-56.20	-13.00	-43.20	V
N/A							
3677.500	-54.8	8.18	9.08	-53.90	-13.00	-40.90	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:** WCDMA Band II / TX / CH 9538**Test Date:** May 5, 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)
3992.500	-54.43	8.35	9.39	-53.39	-13.00	-40.39	V
N/A							
3817.500	-51.8	8.28	9.22	-50.86	-13.00	-37.86	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:** WCDMA Band V / TX / CH 4132**Test Date:** May 5, 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)
1770.000	-61.29	5.24	5.81	-60.72	-13.00	-47.72	V
N/A							
1665.000	-60	5.06	6	-59.06	-13.00	-46.06	H
3677.500	-54.7	8.18	9.08	-53.80	-13.00	-40.80	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:** WCDMA Band V / TX / CH 4182**Test Date:** May 5, 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)
1682.500	-60.3	5.09	5.97	-59.42	-13.00	-46.42	V
3940.000	-54.04	8.37	9.34	-53.07	-13.00	-40.07	V
N/A							
1682.500	-59.55	5.09	5.97	-58.67	-13.00	-45.67	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:** WCDMA Band V / TX / CH 4233**Test Date:** May 5, 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)
1700.000	-54.58	5.11	5.94	-53.75	-13.00	-40.75	V
N/A							
1700.000	-54.38	5.11	5.94	-53.55	-13.00	-40.55	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:** WCDMA / HSDPA Band II /  
TX / CH 9262**Test Date:** May 5, 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)
3712.500	-52.63	8.21	9.11	-51.73	-13.00	-38.73	V
N/A							
3870.000	-54.16	8.35	9.27	-53.24	-13.00	-40.24	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:** WCDMA / HSDPA Band II /  
TX / CH 9400**Test Date:** May 5, 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)
3765.000	-53.66	8.24	9.16	-52.74	-13.00	-39.74	V
N/A							
4342.500	-53.02	8.62	9.67	-51.97	-13.00	-38.97	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:** WCDMA / HSDPA Band II /  
TX / CH 9538**Test Date:** May 5, 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)
3992.500	-54.28	8.35	9.39	-53.24	-13.00	-40.24	V
N/A							
3817.500	-51.82	8.28	9.22	-50.88	-13.00	-37.88	H
N/A							

**Remark:**

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



**Operation Mode:** WCDMA / HSDPA Band V /  
TX / CH 4132**Test Date:** May 5, 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)
3747.500	-55	8.23	9.15	-54.08	-13.00	-41.08	V
N/A							
2190.000	-57.74	5.93	5.67	-58.00	-13.00	-45.00	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:** WCDMA / HSDPA Band V /  
TX / CH 4182

**Temperature:** 26°C

**Humidity:** 50 % RH

**Test Date:** May 5, 2011

**Tested by:** Edward Lin

**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	-61.46	5.09	5.97	-60.58	-13.00	-47.58	V
N/A							
2960.000	-55.5	7.07	7.3	-55.27	-13.00	-42.27	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:** WCDMA / HSDPA Band V /  
TX / CH 4233**Test Date:** May 5, 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)
1700.000	-56.32	5.11	5.94	-55.49	-13.00	-42.49	V
N/A							
1700.000	-57.55	5.11	5.94	-56.72	-13.00	-43.72	H
N/A							

**Remark:**

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



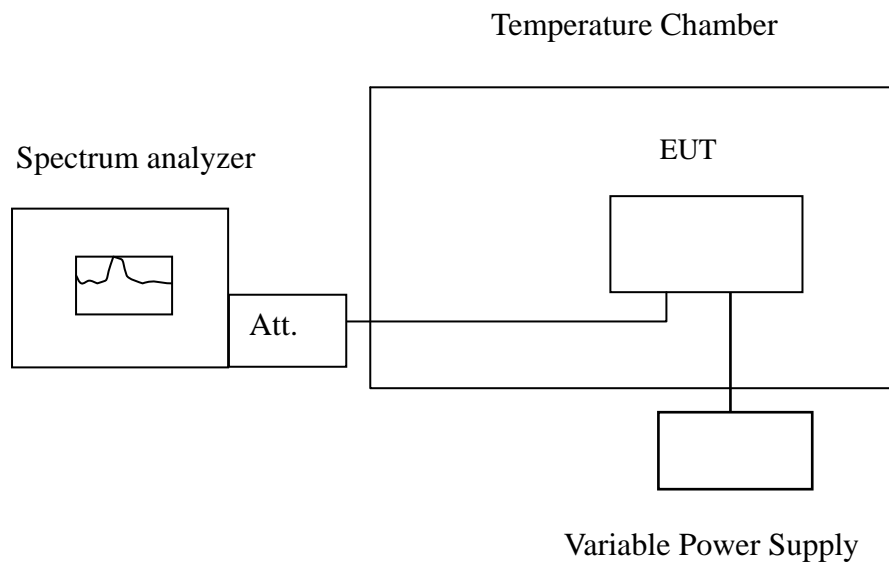
## 7.7 FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT

### LIMIT

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

Frequency Tolerance: 2.5 ppm

### Test Configuration



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



## TEST PROCEDURE

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

## TEST RESULTS

*No non-compliance noted.*

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	



Reference Frequency: WCDMA Band II Mid Channel 1880 MHz @ 20°C				
Limit: $\pm 2.5$ ppm = 4700 Hz				
Power Supply Vdc	Environment Temperature (°C)	Frequency (Hz)	Delta (Hz)	Limit (Hz)
3.7	50	1880000001	-2	4700
	40	1879999998	-5	
	30	1880000000	-3	
	20	1880000003	0	
	10	1879999997	-6	
	0	1879999995	-8	
	-10	1880000001	-2	
	-20	1880000000	-3	
	-30	1879999998	-5	

Reference Frequency: WCDMA Band V Mid Channel 836.6 MHz @ 20°C				
Limit: $\pm 2.5$ ppm = 2090 Hz				
Power Supply Vdc	Environment Temperature (°C)	Frequency (Hz)	Delta (Hz)	Limit (Hz)
3.7	50	836399997	-8	2090
	40	836399999	-6	
	30	836399998	-7	
	20	836400005	0	
	10	836399991	-14	
	0	836399999	-6	
	-10	836400000	-5	
	-20	836399998	-7	
	-30	836399999	-6	



Reference Frequency: WCDMA / HSDPA Band II Mid Channel 1880 MHz @ 20°C				
Limit: $\pm 2.5$ ppm = 4700 Hz				
Power Supply Vdc	Environment Temperature (°C)	Frequency (Hz)	Delta (Hz)	Limit (Hz)
3.7	50	1879999999	-4	4700
	40	1879999998	-5	
	30	1879999995	-8	
	20	1880000003	0	
	10	1879999997	-6	
	0	1879999989	-14	
	-10	1879999998	-5	
	-20	1879999997	-6	
	-30	1879999992	-11	

Reference Frequency: WCDMA / HSDPA Band V Mid Channel 836.6 MHz @ 20°C				
Limit: $\pm 2.5$ ppm = 2090 Hz				
Power Supply Vdc	Environment Temperature (°C)	Frequency (Hz)	Delta (Hz)	Limit (Hz)
3.7	50	836399999	4	2090
	40	836399997	2	
	30	836399999	4	
	20	836399995	0	
	10	836399998	3	
	0	836399994	-1	
	-10	836399999	4	
	-20	836399998	3	
	-30	836399996	1	



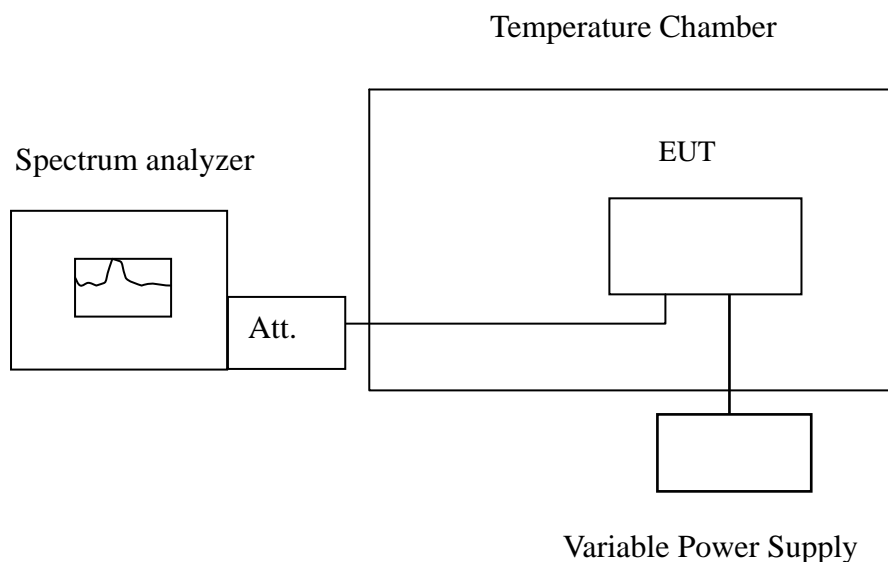


## 7.8 FREQUENCY STABILITY V.S. VOLTAGE MEASUREMENT

### LIMIT

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

### Test Configuration



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



## **TEST PROCEDURE**

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

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

## **TEST RESULTS**

*No non-compliance noted.*

<b>Reference Frequency: GPRS Mid Channel 836.6 MHz @ 20°C</b>				
Limit: $\pm 2.5$ ppm = 2090Hz				
Power Supply Vdc	Environment Temperature (°C)	Frequency (Hz)	Delta (Hz)	Limit (Hz)
4.07	20	836599947	8	2090
3.7		836599939	0	
3.33		836599942	3	
3.1END		836599939	0	

<b>Reference Frequency: GPRS Mid Channel 1880 MHz @ 20°C</b>				
Limit: $\pm 2.5$ ppm = 4700 Hz				
Power Supply Vdc	Environment Temperature (°C)	Frequency (Hz)	Delta (Hz)	Limit (Hz)
4.07	20	1879999952	1	4700
3.7		1879999951	0	
3.33		1879999939	-12	
2.9		1879999903	-48	



Reference Frequency: EDGE Mid Channel 836.6 MHz @ 20°C				
Limit: $\pm 2.5$ ppm = 2090Hz				
Power Supply Vdc	Environment Temperature (°C)	Frequency (Hz)	Delta (Hz)	Limit (Hz)
4.07	20	836600033	1	2090
3.7		836600032	0	
3.33		836600029	-3	
3		836600076	44	

Reference Frequency: EDGE Mid Channel 1880 MHz @ 20°C				
Limit: $\pm 2.5$ ppm = 4700 Hz				
Power Supply Vdc	Environment Temperature (°C)	Frequency (Hz)	Delta (Hz)	Limit (Hz)
4.07	20	1880000013	-8	4700
3.7		1880000021	0	
3.33		1880000026	5	
3.1		1880000084	63	



Reference Frequency: WCDMA Band II Mid Channel 1880 MHz @ 20°C				
Limit: $\pm 2.5$ ppm = 4700 Hz				
Power Supply Vdc	Environment Temperature (°C)	Frequency (Hz)	Delta (Hz)	Limit (Hz)
4	20	1880000001	-2	4700
3.7		1880000003	0	
3.3		1880000004	1	
3.1		1880000034	31	

Reference Frequency: WCDMA Band V Mid Channel 836.6 MHz @ 20°C				
Limit: $\pm 2.5$ ppm = 2090Hz				
Power Supply Vdc	Environment Temperature (°C)	Frequency (Hz)	Delta (Hz)	Limit (Hz)
4	20	836399999	-6	2090
3.7		836400005	0	
3.3		836400002	-3	
3.1		836400016	11	



Reference Frequency: WCDMA HSDPA Band II Mid Channel 1880 MHz @ 20°C				
Limit: $\pm 2.5$ ppm = 4700 Hz				
Power Supply Vdc	Environment Temperature (°C)	Frequency (Hz)	Delta (Hz)	Limit (Hz)
4	20	1880000001	-2	4700
3.7		1880000003	0	
3.3		1880000004	1	
3		1880000084	81	

Reference Frequency: WCDMA HSDPA Band V Mid Channel 836.6 MHz @ 20°C				
Limit: $\pm 2.5$ ppm = 2090Hz				
Power Supply Vdc	Environment Temperature (°C)	Frequency (Hz)	Delta (Hz)	Limit (Hz)
4	20	836399999	4	2090
3.7		836399995	0	
3.3		836400002	7	
3.1		836400043	48	



## 7.9 POWERLINE CONDUCTED EMISSIONS

### **LIMIT**

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

Frequency Range (MHz)	Limits (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:** April 28, 2011  
**Temperature:** 26°C      **Tested by:** Kevin Chang  
**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
0.1819	38.64	19.94	0.00	38.64	19.94	64.40	54.40	-25.76	-34.46	L1
0.4536	24.22	14.33	0.00	24.22	14.33	56.81	46.81	-32.59	-32.48	L1
0.5660	27.46	18.38	0.00	27.46	18.38	56.00	46.00	-28.54	-27.62	L1
0.6492	27.48	15.80	0.00	27.48	15.80	56.00	46.00	-28.52	-30.20	L1
0.7549	26.79	16.54	0.00	26.79	16.54	56.00	46.00	-29.21	-29.46	L1
0.9870	25.84	14.78	0.00	25.84	14.78	56.00	46.00	-30.16	-31.22	L1
0.1747	39.16	26.48	0.00	39.16	26.48	64.73	54.73	-25.57	-28.25	L2
0.6510	30.16	21.24	0.00	30.16	21.24	56.00	46.00	-25.84	-24.76	L2
1.1353	28.75	18.93	0.00	28.75	18.93	56.00	46.00	-27.25	-27.07	L2
2.5508	28.16	17.61	0.00	28.16	17.61	56.00	46.00	-27.84	-28.39	L2
3.6061	23.95	14.07	0.00	23.95	14.07	56.00	46.00	-32.05	-31.93	L2
20.3383	19.46	13.68	0.00	19.46	13.68	60.00	50.00	-40.54	-36.32	L2

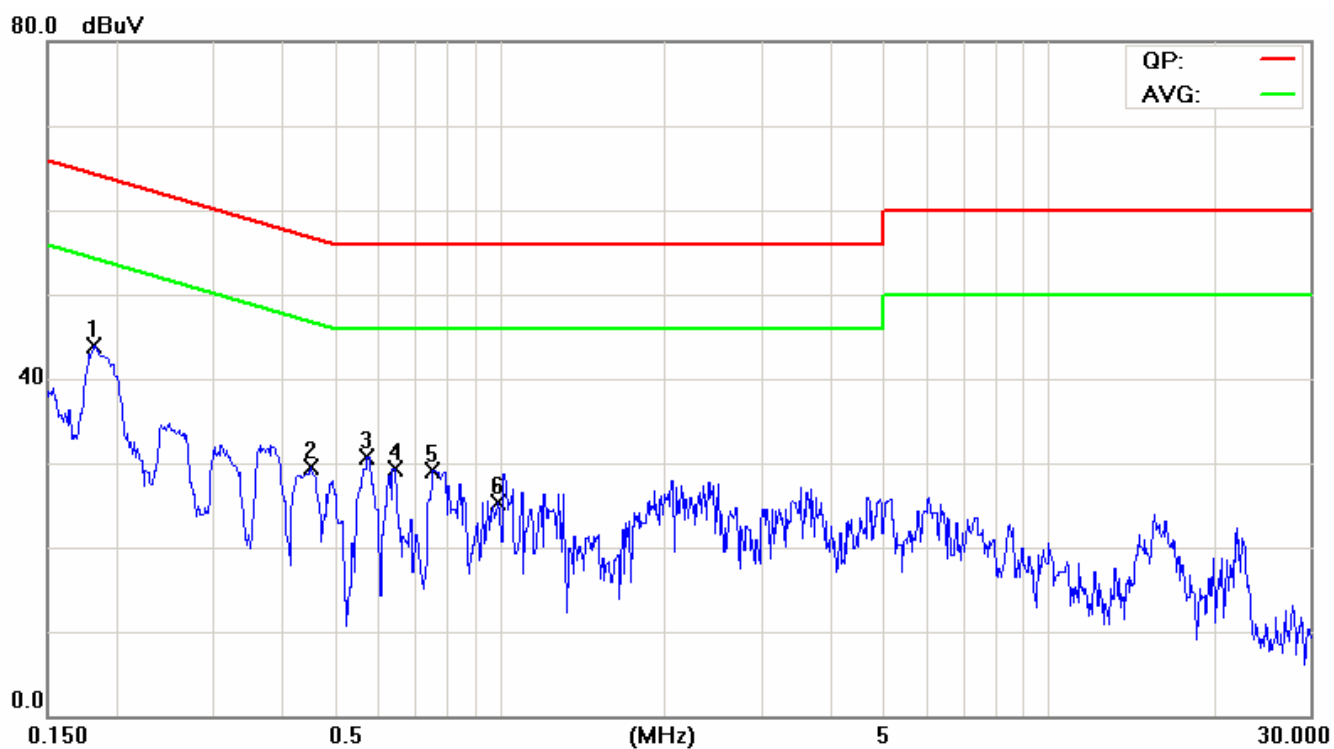
### Remark:

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.

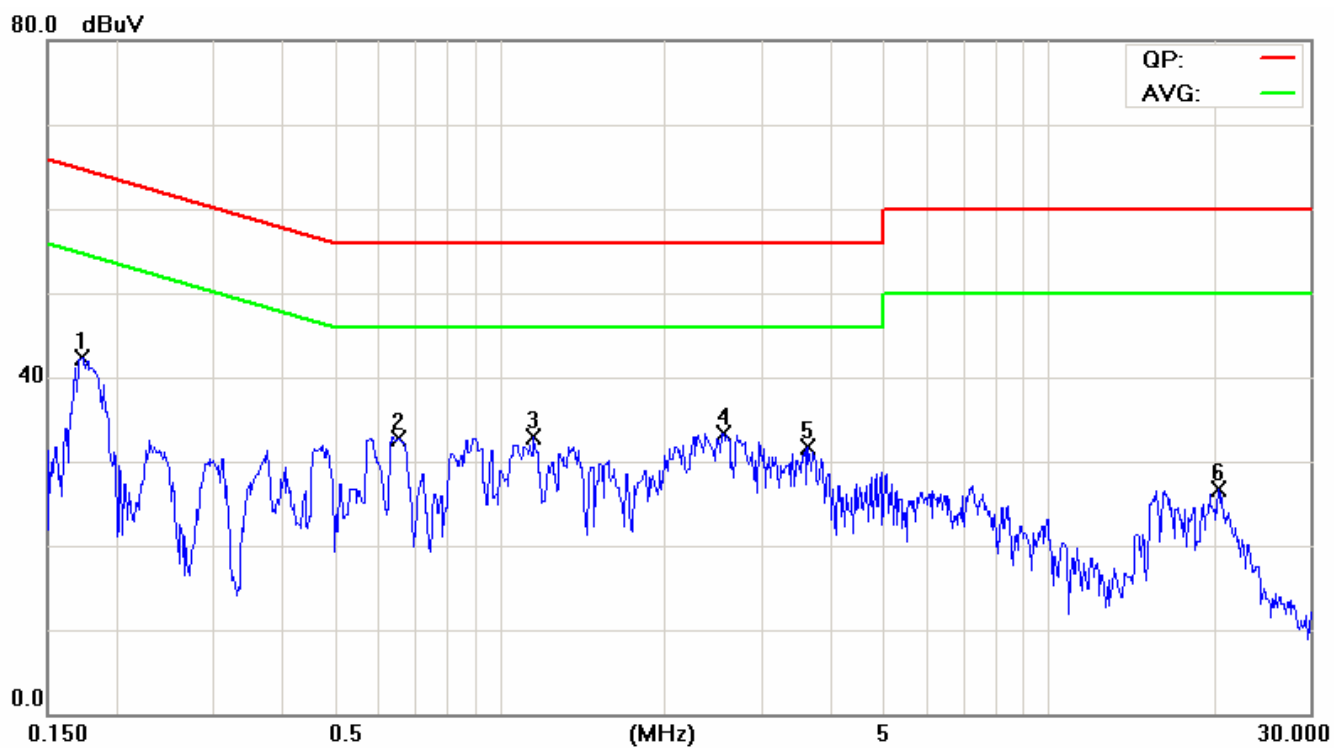


## Test Plots

### Conducted emissions (Line 1)



### Conducted emissions (Line 2)







## APPENDIX I

### RADIO FREQUENCY EXPOSURE

#### LIMIT

##### EUT Specification

<b>EUT</b>	GPS controller (GPS Receiver)
<b>Frequency band (Operating)</b>	<input type="checkbox"/> WLAN: 2.412GHz ~ 2.462GHz <input type="checkbox"/> WLAN: 5.18GHz ~ 5.32GHz / 5.50GHz ~ 5.70GHz <input type="checkbox"/> WLAN: 5.745GHz ~ 5.825GHz <input checked="" type="checkbox"/> Others: 824 ~ 849 MHz
<b>Device category</b>	<input checked="" type="checkbox"/> Portable (<20cm separation) <input type="checkbox"/> Mobile (>20cm separation) <input type="checkbox"/> Others
<b>Exposure classification</b>	<input type="checkbox"/> Occupational/Controlled exposure ( $S = 5\text{mW}/\text{cm}^2$ ) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure ( $S=1\text{mW}/\text{cm}^2$ )
<b>Antenna diversity</b>	<input checked="" type="checkbox"/> Single antenna <input type="checkbox"/> Multiple antennas <input type="checkbox"/> Tx diversity <input type="checkbox"/> Rx diversity <input type="checkbox"/> Tx/Rx diversity
<b>Max. output power</b>	27.82 dBm (605.34087 mW)
<b>Antenna gain (Max)</b>	0.83 dBi (Numeric gain: 1.21)
<b>Evaluation applied</b>	<input type="checkbox"/> MPE Evaluation <input checked="" type="checkbox"/> SAR Evaluation <input type="checkbox"/> N/A

**Remark:**

The maximum output power is 27.82dBm (605.34087mW) at 848.80MHz (with 1.21 numeric antenna gain.)

#### TEST RESULTS

No non-compliance noted.

Not applicable, Please refers to the SAR test report.

**EUT Specification**

<b>EUT</b>	GPS controller (GPS Receiver)
<b>Frequency band (Operating)</b>	<input type="checkbox"/> WLAN: 2.412GHz ~ 2.462GHz <input type="checkbox"/> WLAN: 5.18GHz ~ 5.32GHz / 5.50GHz ~ 5.70GHz <input type="checkbox"/> WLAN: 5.745GHz ~ 5.825GHz <input checked="" type="checkbox"/> Others: 1850 ~ 1910 MHz
<b>Device category</b>	<input checked="" type="checkbox"/> Portable (<20cm separation) <input type="checkbox"/> Mobile (>20cm separation) <input type="checkbox"/> Others
<b>Exposure classification</b>	<input type="checkbox"/> Occupational/Controlled exposure ( $S = 5\text{mW}/\text{cm}^2$ ) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure ( $S=1\text{mW}/\text{cm}^2$ )
<b>Antenna diversity</b>	<input checked="" type="checkbox"/> Single antenna <input type="checkbox"/> Multiple antennas <input type="checkbox"/> Tx diversity <input type="checkbox"/> Rx diversity <input type="checkbox"/> Tx/Rx diversity
<b>Max. output power</b>	29.92 dBm(981.74794 mW)
<b>Antenna gain (Max)</b>	2.35 dBi (Numeric gain: 1.72)
<b>Evaluation applied</b>	<input type="checkbox"/> MPE Evaluation <input checked="" type="checkbox"/> SAR Evaluation <input type="checkbox"/> N/A

**Remark:**

*The maximum output power is 29.92dBm (981.74794mW) at 1909.80MHz (with 1.72numeric antenna gain.)*

**TEST RESULTS**

*No non-compliance noted.*

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