0ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 22 SUBPART H, PART 24 SUBPART E

OF

Product Name:	**HSDPA PCI Express mini card module**
Brand Name:	**N/A**
Model Name:	**H18T**
Model Difference:	**N/A**
FCC ID:	**VRSH18T**
Report No.:	**EH/2010/30058**
Issue Date:	**Apr. 09, 2010**
FCC Rule Part:	**2 , 22H, 24E**
Prepared for:	**Qisda Corporation** **157, Shan-Ying Road , GueiShan Taoyuan 333, Taiwan**
Prepared by:	**SGS Taiwan Ltd.** **Electronics & Communication Laboratory** **No. 134, Wu Kung Rd., Wuku Industrial Zone, Taipei County, Taiwan.**

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VERIFICATION OF COMPLIANCE

Applicant:	Qisda Corporation 157, Shan-Ying Road , GueiShan Taoyuan 333, Taiwan
Product Name:	HSDPA PCI Express mini card module
FCC ID:	VRSH18T
Brand Name:	N/A
Model No.:	H18T
Model Difference:	N/A
File Number:	EH/2010/30058
Date of test:	Mar. 24, 2010 ~ Apr. 02, 2010
Date of EUT Received:	Mar. 24, 2010

We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. Electronics & Communication Laboratory 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 PART 22 subpart H, PART 24 subpart E.

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

Test By:	Brian Chang	***Date:***	Apr. 09, 2010
	Brian Chang / Engineer		
Prepared By:	Tiffany Kao	***Date:***	Apr. 09, 2010
	Tiffany Kao / Clerk		
Approved By:	Vincent Su	***Date:***	Apr. 09, 2010
	Vincent Su / Manager		

Version

Version No.	Date	Description
00	Apr. 09, 2010	Initial creation of document

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1 GENERAL INFORMATION

General:

Product Name	HSDPA PCI Express mini card module
Brand Name	N/A
Model Name	H18T
Model Difference	N/A
Power Supply	3.3 Vdc

GSM and WCDMA:

	Operating Frequency		Rated Power
Cellular Phone Standards Frequency Range and Power	GSM/GPRS 850 Class 12	824.2 MHz– 848.8 MHz	33 dBm
	GSM/GPRS 1900 Class 12	1850.2MHz – 1909.8MHz	30 dBm
	EDGE 850 Class 12	824.2 MHz– 848.8 MHz	27 dBm
	EDGE 1900 Class 12	1850.2MHz – 1909.8MHz	26 dBm
	WCDMA/HSDPA Band I	1922.4MHz – 1977.6MHz	24 dBm
	WCDMA/HSDPA Band II	1852.4MHz – 1907.6MHz	24 dBm
	WCDMA/HSDPA Band V	826.4MHz –846.6MHz	24 dBm
Type of Emission	GSM/GPRS 850: 245KGXW, GSM/GPRS 1900: 247GXW EDGE 850: 250KG7W, EDGE 1900:245KG7W WCDMA Band II: 4M16F9W WCDMA Band V: 4M15F9W		
IMEI	01230000000059		
Hardware Version:	N/A		
Software Version	N/A		

Final Amplifier Voltage and Current Information:

Test Mode	DC voltage (V)	DC current (mA)
GPRS 850	3.3V	660
GPRS 1900	3.3V	490
GPRS EDGE 850	3.3V	640
GPRS EDGE 1900	3.3V	460
WCDMA Band 2	3.3V	550
HSDDA Band 2	3.3V	670
WCDMA Band 5	3.3V	530
HSDPA Band 5	3.3V	520

This test report applies for GSM/GPRS/EDGE 850/1900 MHz and WCDMA/HSDPA Bands II and V.

1.1 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for **FCC ID: VRSH18T** filing to comply with Section Part 22 subpart H, Part 24 subpart E.

1.2 Test Methodology

Both conducted and radiated testing were performed according to the procedures document on TIA/EIA-603C and FCC 47 CFR 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057.

1.3 Test Facility

The measurement facilities used to collect the 3m Radiated Emission and AC power line conducted data are located on the address of SGS Taiwan Ltd. Electronics & Communication Laboratory No. 134, Wu Kung Rd., Wuku Industrial Zone, Taipei Country, Taiwan which are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4: 2003. FCC Registration Number are: 990257 and 236194, Canada Registration Number: 4620A-1

The 10 m Open Area Test Sites located on the address of SGS Taiwan Ltd. Electronics & Communication Laboratory No. 29, Pau-Tou-Tsuo Valley Chia-Pau Tsuen, Linkou Hsiang, Taipei county, which is constructed and calibrated to meet the CISPR 22/EN 55022 requirements. SGS Site No. 1(3 &10 meters) and FCC Registration Number: 94644.

1.4 Special Accessories

Not available for this EUT intended for grant.

1.5 Equipment Modifications

Not available for this EUT intended for grant.

2 SYSTEM TEST CONFIGURATION

2.1. EUT Configuration

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

2.2. EUT Exercise

The EUT (Transmitter) was operated in the engineering mode to fix the Tx frequency which was for the purpose of the measurements.

2.3. Test Procedure

2.3.1 Conducted Measurement at Antenna Port:

According to measurement procured TIA/EIA 603C, the EUT is placed on a turn table which is 0.8 m above ground plane. A low loss of RF cable was used to connect the antenna port of EUT to measurement equipment.

2.3.2 Radiated Emissions (ERP/EIRP):

According to measurement procured TIA/EIA 603C and TIA/EIA IS-98 for Mobile stations. The EUT is placed on a turn table which is 0.8 m above ground plane. The turn table 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 max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes according to the requirements.

A standard antenna was used to replace the EUT and connect to the SG. Adjust the SG output level to reach the max emission level which were measured above.

2.4. Measurement Equipment Used:

Conducted Emission Test Site					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
Spectrum Analyzer	Agilent	E4446A	MY43360126	04/19/2008	04/18/2010
Spectrum Analyzer	Agilent	E4440A	US41160416	01/25/2010	01/24/2011
Radio Communication Analyzer	R&S	CMU200	102189	05/13/2008	05/13/2010
800 – 1000MHz Filter	Micro-Tronics	BRM13462	001	01/05/2010	01/04/2011
1800 – 2000MHz Filter	Micro-Tronics	BRM13463	001	01/05/2010	01/04/2011
Temperature Chamber	TERCHY	MHG-120LF	911009	04/14/2008	04/13/2010
Temperature Chamber	GIANT FORCE	GTH-150-40-CP-AR	MAA0512-018	02/05/2010	02/04/2012
DC Block	Agilent	BLK-18	155452	07/05/2009	07/04/2010
Attenuator	Mini-Circuit	BW-S20W5	N/A	07/05/2009	07/04/2010
Attenuator	Mini-Circuit	BW-S10W5	N/A	07/05/2009	07/04/2010
Attenuator	Mini-Circuit	BW-S6W5	N/A	07/05/2009	07/04/2010
Splitter	Agilent	11636B	N/A	07/05/2009	07/04/2010
DC Power Supply	HP	6038A	2929A-07548	06/27/2009	06/26/2011
DC Power Supply	Topward	3303D	981327	10/26/2008	10/25/2010

ERP, EIRP MEASUREMENT EQUIPMENT List 966 Chamber					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
Spectrum Analyzer	R&S	FSP 40	100034	02/12/2010	02/11/2011
Bilog Antenna	SCHWAZBECK	VULB9160	9160-3136	11/19/2009	11/18/2010
Dipole Antenna	SCHWAZBECK	VHAP	908/909	07/10/2008	07/09/2010
Dipole Antenna	SCHWAZBECK	UHAP	891/892	07/10/2008	07/09/2010
Hor.n antenna	SCHWAZBECK	BBHA 9120D	309	05/09/2008	05/10/2010
Horn antenna	SCHWAZBECK	BBHA 9120D	9120D-673	05/09/2008	05/08/2010
Signal Generator	R&S	SMR40	100210	02/10/2010	02/09/2012
Signal Generator	Agilent	E4438C	MY45093613	05/22/2009	05/21/2010
Pre-Amplifier	Agilent	8447D	1937A02834	11/28/2009	11/27/2010
Pre-Amplifier	Agilent	8449B	3008A01973	01/05/2010	01/04/2011
Attenuator	Mini-Circuit	BW-S20W5	001	07/05/2009	07/04/2010
Attenuator	Mini-Circuit	BW-S10W5	001	07/05/2009	07/04/2010
Attenuator	Mini-Circuit	BW-S6W5	001	07/05/2009	07/04/2010
Radio Communication Analyzer	R&S	CMU200	102189	05/13/2008	05/13/2010
Turn Table	HD	DT420	N/A	N.C.R	N.C.R
Antenna Tower	HD	MA240-N	240/657	N.C.R	N.C.R
Controller	HD	HD100	N/A	N.C.R	N.C.R
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-10M	10m	01/05/2010	01/04/2011
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-3M	3m	01/05/2010	01/04/2011
3m Site	SGS	966 chamber	N/A	11/08/2009	11/09/2010

2.5. Configuration of Tested System

Fig. 2-1 Configuration of Tested System (Fixed Channel)

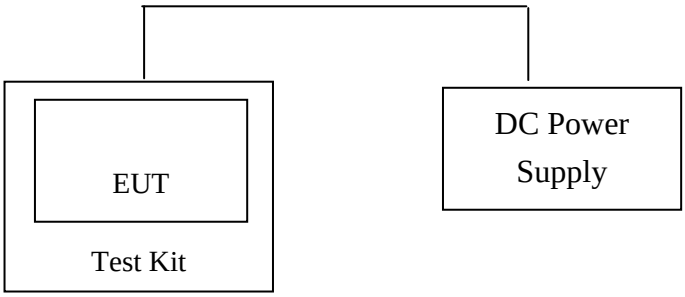


Fig. 2-2 Configuration of Tested System (Remote Side)

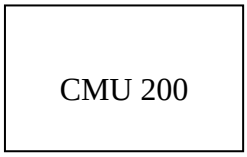


Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.
1.	Radio Communi-cation Analyzer	R&S	CMU200	N/A	102189
2.	DC Power Supply	Chroma	41901	N/A	777188

3 SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§2.1046(a) §22.913(a) §24.232(c)	RF Conducted Power Output	Compliant
§2.1046(a) §22.913(a) §24.232(c)	ERP/EIRP measurement	Compliant
§2.1049(h)	99% Occupied Bandwidth	Compliant
§2.1051 §22.917(a) §24.238(a)	Out of Band Emissions at Antenna Terminals	Compliant
§2.1053 §22.917(a) §24.238(a)	Field Strength of Spurious Radiation (TX)	Compliant
§2.1055(a)(1) §22.355 §24.235	Frequency Stability vs. Temperature	Compliant
§2.1055(d)(2) §22.355 §24.235	Frequency Stability vs. Voltage	Compliant

4 DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition.

EUT staying in continuous transmitting mode. Channel Low, Mid and High for each band with rated data rate were chosen for full testing.

Max ERP/EIRP measurement result:

	dBm		W
GSM 850 Band	32.03	ERP	1.596
GSM 1900 Band	25.15	EIRP	0.327
EDGE 850 Band	28.61	ERP	0.726
EDGE 1900 Band	24.90	EIRP	0.309
WCDMA Band II	25.38	EIRP	0.345
HSDPA Band II	22.66	EIRP	0.185
WCDMA Band V	27.73	ERP	0.593
HSDPA Band V	26.15	ERP	0.412

5 RF POWER OUTPUT MEASUREMENT

5.1 Standard Applicable

According to FCC §2.1046.

FCC 22.913(a) Mobile station are limited to 7W.

FCC 24.232(c) Peak Power Measurement.

3GPP Power limitation for HSDPA and HSUPA

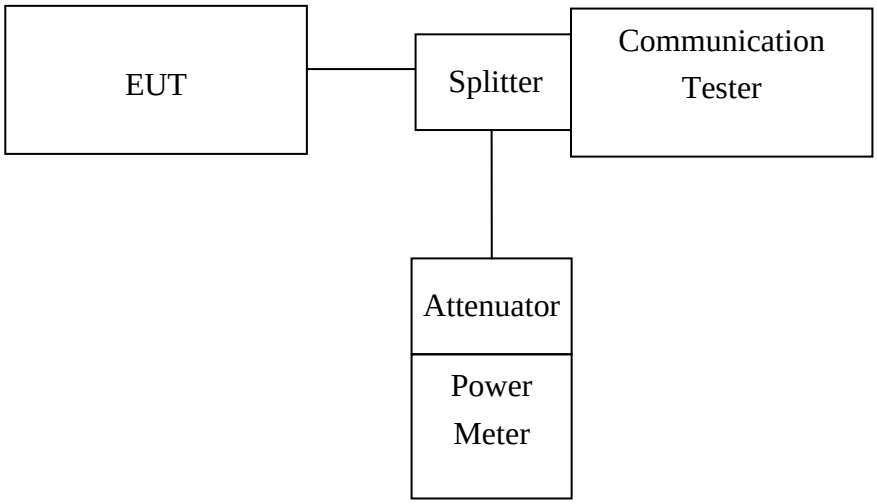
Maximum Output Powers for HSDPA

Sub-test in table C.10.1.4	Power Class 3		Power Class 4	
	Power (dBm)	Tol (dB)	Power (dBm)	Tol (dB)
1	+24	+1.7/-3.7	+21	+2.7/-2.7
2	+24	+1.7/-3.7	+21	+2.7/-2.7
3	+23.5	+2.2/-3.7	+20.5	+3.2/-2.7
4	+23.5	+2.2/-3.7	+20.5	+3.2/-2.7

Maximum Output Powers for HSUPA

Sub-test in table C.11.1.3	Power Class 3		Power Class 4	
	Power (dBm)	Tol (dB)	Power (dBm)	Tol (dB)
1	+24	+1.7/-6.7	+21	+2.7/-5.7
2	+22	+3.7/-5.2	+19	+4.7/-4.2
3	+23	+2.7/-5.2	+20	+3.7/-4.2
4	+22	+3.7/-5.2	+19	+4.7/-4.2
5	+24	+1.7/-6.7	+21	+2.7/-5.7

5.2 Test Set-up:



Note: *Measurement setup for testing on Antenna connector*

5.3 Measurement 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. The Procedure of KDB941225(SAR Measurement Procedures for 3G devices, WCDMA/HSDPA) was used for EUT and Base station setting.RMC 12.2kps is used for this testing

5.4 Measurement Equipment Used:

Refer to section 2.4 in this report

5.5 Measurement Result:

5.5.1 RF Conducted Output Power

5.5.1.1.: GSM/EDGE (GMSK; 8-PSK)

EUT Mode	Frequency (MHz)	CH	Peak Power (1TS) (dBm)	Peak Power (2TS) (dBm)	Peak Power (3TS) (dBm)	Peak Power (4TS) (dBm)
GPRS 850	824.2	128	33.30	33.20	31.40	29.40
	836.6	190	33.40	33.30	31.50	29.50
	848.8	251	33.40	33.30	31.60	29.50

EUT Mode	Frequency (MHz)	CH	Average Power (1TS) (dBm)	Average Power (2TS) (dBm)	Average Power (3TS) (dBm)	Average Power (4TS) (dBm)
GPRS 850	824.2	128	33.10	33.10	31.30	29.20
	836.6	190	33.20	33.10	31.40	29.30
	848.8	251	33.30	33.20	31.50	29.40

EUT Mode	Frequency (MHz)	CH	Peak Power (1TS) (dBm)	Peak Power (2TS) (dBm)	Peak Power (3TS) (dBm)	Peak Power (4TS) (dBm)
EDGE 850	824.2	128	30.30	30.20	28.70	26.70
	836.6	190	30.40	30.40	28.80	26.80
	848.8	251	30.50	30.50	28.90	26.80

EUT Mode	Frequency (MHz)	CH	Average Power (1TS) (dBm)	Average Power (2TS) (dBm)	Average Power (3TS) (dBm)	Average Power (4TS) (dBm)
EDGE 850	824.2	128	27.10	27.00	25.50	23.40
	836.6	190	27.20	27.10	25.60	23.50
	848.8	251	27.30	27.20	25.70	23.60

EUT Mode	Frequency (MHz)	CH	Peak Power (1TS) (dBm)	Peak Power (2TS) (dBm)	Peak Power (3TS) (dBm)	Peak Power (4TS) (dBm)
GPRS 1900	1850.2	512	30.80	30.70	28.80	26.60
	1880.0	661	30.60	30.50	28.40	26.40
	1909.8	810	30.20	30.10	28.30	26.30

EUT Mode	Frequency (MHz)	CH	Average Power (1TS) (dBm)	Average Power (2TS) (dBm)	Average Power (3TS) (dBm)	Average Power (4TS) (dBm)
GPRS 1900	1850.2	512	30.70	30.50	28.60	26.50
	1880.0	661	30.50	30.40	28.20	26.20
	1909.8	810	30.10	21.90	28.20	26.20

EUT Mode	Frequency (MHz)	CH	Peak Power (1TS) (dBm)	Peak Power (2TS) (dBm)	Peak Power (3TS) (dBm)	Peak Power (4TS) (dBm)
EDGE 1900	1850.2	512	29.80	29.70	28.10	26.00
	1880.0	661	29.50	29.40	27.70	25.70
	1909.8	810	29.40	29.30	27.60	25.60

EUT Mode	Frequency (MHz)	CH	Average Power (1TS) (dBm)	Average Power (2TS) (dBm)	Average Power (3TS) (dBm)	Average Power (4TS) (dBm)
EDGE 1900	1850.2	512	26.50	26.40	24.90	22.70
	1880.0	661	26.20	26.10	24.50	22.50
	1909.8	810	26.10	26.10	24.50	22.40

5.5.1.2 WCDMA Mode:

The following tests were completed according to the test requirements outlined in section 5.2 of the 3GPP TS34.121-1 V8.4.0 specification. The EUT supports power Class 3, which has a nominal maximum output power of 24 dBm (+1.7/-3.7). RMC 12.2kps is used for this testing.

EUT Mode	Frequency (MHz)	CH	Peak Power (dBm)	Avg. Power (dBm)
WCDMA Band II	1852.4	9262	26.09	23.09
	1880.0	9400	26.03	23.15
	1907.6	9538	25.73	23.16

EUT Mode	Frequency (MHz)	CH	Peak Power (dBm)	Avg. Power (dBm)
WCDMA Band V	826.4	4132	26.57	23.40
	836.6	4183	26.27	23.28
	846.6	4233	26.53	23.27

Note: The results above reflect max power with all up bits.

5.5.1.3 HSDPA Release 6 Mode:

The following 4 Sub-Tests were completed according to the test requirements outlined in section 5.2A of the 3GPP TS34.121-1 V8.4.0 specification. All TX power requirements for Power Class 3 were met according to table 5.2AA.5 and 5.2B.5 All UE channels and power ratio's are set according to table C10.1.4 & C11.1.3 in the 3GPP TS34.121-1 V8.4.0. RMC 12.2kps is used for this testing

HSDPA SUB-TEST Setting

Table C.10.1.4: β values for transmitter characteristics tests with HS-DPCCH(FOR HSDPA)

Sub-test	β_c	β_d	β_d *(SF)*	β_c/β_d	β_{HS} (*Note1, Note 2*)	CM (dB) *(Note 3)*	MPR (dB) *(Note 3)*	RMC (Kbps)
1	2/15	15/15	64	2/15	4/15	0.0	0.0	12.2
2	12/15 *(Note 4)*	15/15 *(Note 4)*	64	12/15 *(Note 4)*	24/15	1.0	0.0	12.2
3	15/15	8/15	64	15/8	30/15	1.5	0.5	12.2
4	15/15	4/15	64	15/4	30/15	1.5	0.5	12.2

Note: The recommended HSDPA MPRs are implemented as per following sub-tests.

Results:

Mode	Sub-test	Transmitter Power (dBm) Channel			Power Class 3 Limitation (dBm)	Comments
		9262	9400	9538		
HSDPA(B2)	1	23.26	23.04	23.02	20.3dBm – 25.7dBm	Pass
	2	22.97	23.01	23.01	20.3dBm – 25.7dBm	Pass
	3	22.78	22.59	22.49	19.8dBm – 25.7dBm	Pass
	4	22.85	22.60	22.61	19.8dBm – 25.7dBm	Pass

Results:

Mode	Sub-test	Transmitter Power (dBm) Channel			Power Class 3 Limitation (dBm)	Comments
		4132	4183	4233		
HSDPA(B5)	1	23.36	23.29	23.59	20.3dBm – 25.7dBm	Pass
	2	23.50	23.32	23.34	20.3dBm – 25.7dBm	Pass
	3	22.90	22.81	23.10	19.8dBm – 25.7dBm	Pass
	4	22.95	22.85	23.16	19.8dBm – 25.7dBm	Pass

5.5.1.3 HSPA (HSDPA & HSUPA) Release 6 mode

The following 5 Sub-Tests were completed according to the test requirements outlined in section 5.2A of the 3GPP TS34.121-1 V8.4.0 specification. All TX power requirements for Power Class 3 were met according to table 5.2AA.5 and 5.2B.5 All UE channels and power ratio's are set according to table C11.1.3 in the 3GPP TS34.121-1 V8.4.0. RMC 12.2kps is used for this testing

HSPA SUB-TEST Setting

Table C.11.1.3: β values for transmitter characteristics tests with HS-DPCCH and E-DCH(FOR HSUPA)

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS}	β_{ec}	β_{ed}	β_{ed} (SF)	β_{ed} (Codes)	CM (dB)	MPR (dB)	AG Index	E-TFCI	RMC (Kbps)
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/225	1309/225	4	1	1.0	0.0	20	75	12.2
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67	12.2
3	15/15	9/15	64	15/9	30/15	30/15	$\beta_{ed}1$: 47/15 $\beta_{ed}2$: 47/15	4 4	2	2.0	1.0	15	92	12.2
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71	12.2
5	15/15 (Note 4)	15/15 (Note 4)	64	15/15 (Note 4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81	12.2

Note: The recommended HSUPA are implemented as per following sub-tests.

Results:

N/A, EUT does not support HSUPA.

5.5.2 Maximum Power Reduction: PCS1900 band

PCL	0	1	2	3	4	5	6	7	8	
Output power (dBm)	30.7	30.7	30.7	30.7	28.9	26.3	24.8	22.8	20.8	
PCL	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**
Output power (dBm)	18.8	16.8	14.8	12.8	10.8	8.8	6.8	4.9	2.9	0.8

Note: The EUT output power was controlled by simulator. Set Communication Tester CMU200 PCL as above, and get the mobile phone output power reading.

WCDMA/HSDPA band II, V

The EUT output power was controlled by simulator. Set Communication Tester CMU200 function key "UE Power Control" and enter max rated power 24dBm. The EUT is going to be set to max output power to 24dBm. then record the read(see page 19 for measurement data) . The min. power was measures by a function key "minimum power" then record the read. It is -52.5dBm. The power variation can be 0.1dB step by setting.

6 ERP, EIRP MEASUREMENT

6.1 Standard Applicable

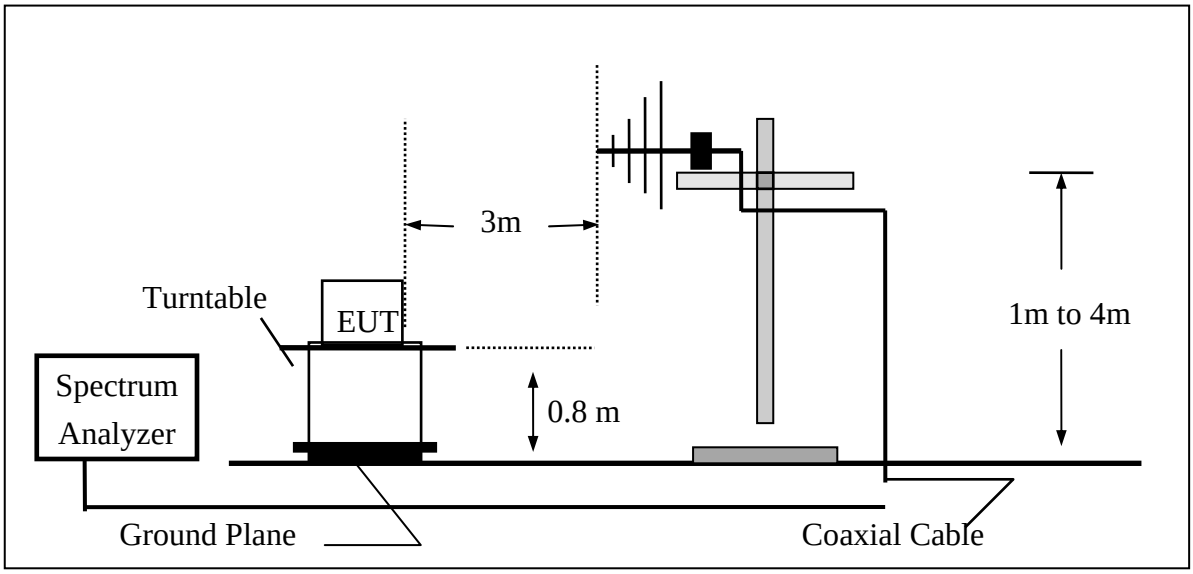
According to FCC §2.1046

FCC 22.913(a) Mobile station are limited to 7W ERP.

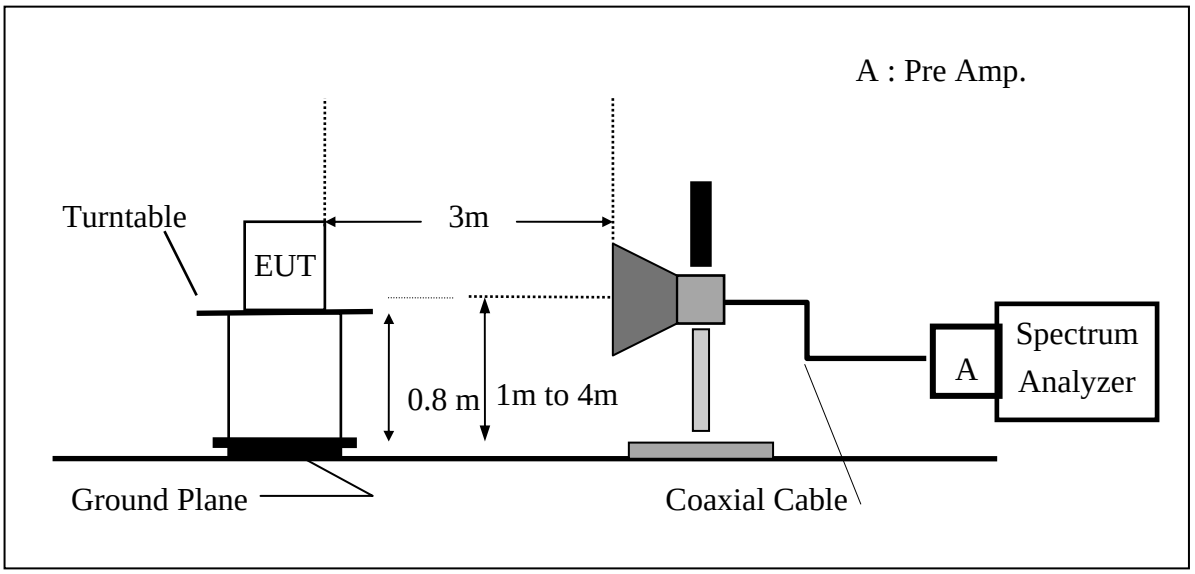
FCC 24.232(b) Mobile station are limited to 2W EIRP.

6.2 Test SET-UP (Block Diagram of Configuration)

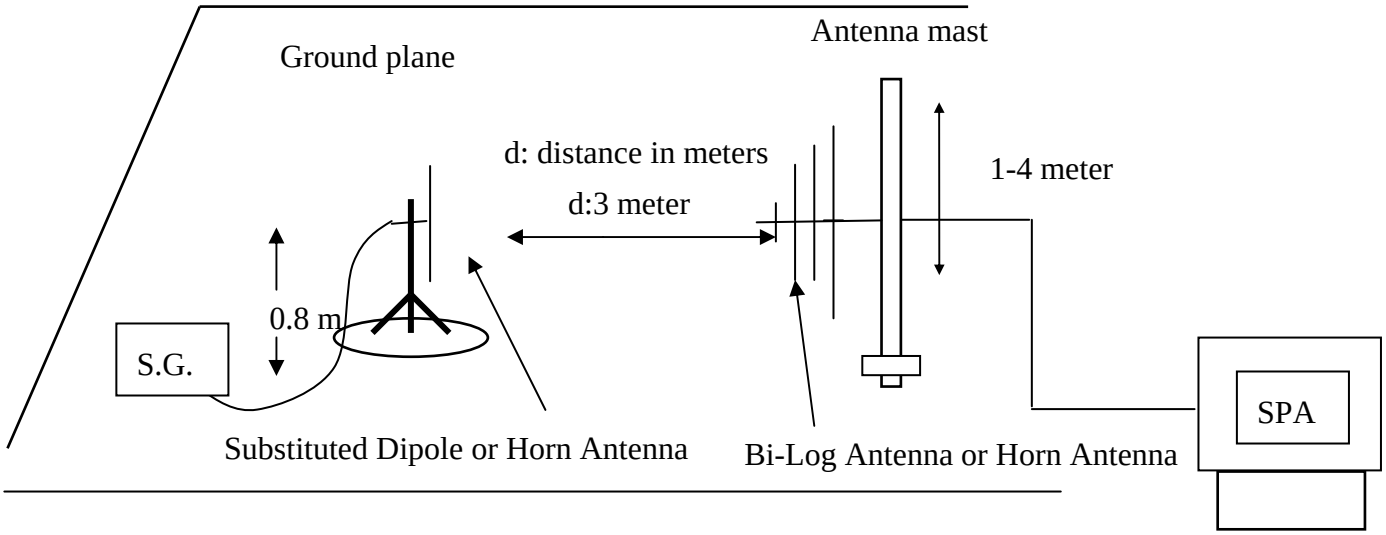
(A) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(B) Radiated Emission Test Set-UP Frequency Over 1 GHz



(C) Substituted Method Test Set-UP



6.3 Measurement 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, the EUT was communication with the station. The highest emission was recorded with the rotation of the turntable and the lowering of the test antenna from 4m to 1m. The reading was recorded and the field strength (E in dBuV/m) was calculated.

ERP in frequency band 824 –850 MHz were measured using a substitution method. The EUT was replaced by dipole antenna connected, the S.G. output was recorded and ERP was calculated as follows:

EIRP in frequency band 1710-1755MHz and 1850 –1910MHz were measured using a substitution method. The EUT was replaced by a horn antenna connected, the S.G. output was recorded and EIRP was calculated as follows:

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

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

6.4 Measurement Equipment Used:

Refer to section 2.4 in this report

6.5 Measurement Result

EUT Mode	Frequency (MHz)	CH	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)
GSM 850 (1TS)	824.20	128	V	120.33	33.94	-7.87	3.62	22.44	38.45
			H	129.62	43.35	-7.87	3.62	31.85	38.45
	836.60	190	V	121.76	35.51	-7.88	3.65	23.98	38.45
			H	129.55	43.32	-7.88	3.65	31.79	38.45
	848.80	251	V	122.56	36.44	-7.88	3.68	24.88	38.45
			H	129.78	43.59	-7.88	3.68	32.03	38.45

Remark：

(1) The RBW,VBW of SPA for frequency

RBW=300 KHz, VBW=1MHz,

EUT Mode	Frequency (MHz)	CH	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
GSM 1900 (1TS)	1850.20	512	V	113.70	9.31	9.90	5.56	13.65	33.00
			H	124.99	20.81	9.90	5.56	25.15	33.00
	1880.00	661	V	113.19	8.83	9.99	5.61	13.21	33.00
			H	124.64	20.50	9.99	5.61	24.87	33.00
	1909.80	810	V	115.85	11.52	10.08	5.66	15.94	33.00
			H	124.73	20.62	10.08	5.66	25.04	33.00

Remark：

(1) The RBW,VBW of SPA for frequency

RBW=300 KHz, VBW=1MHz,

Measurement Result:

EUT Mode	Frequency (MHz)	CH	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)
EDGE 850 (1TS)	824.20	128	V	117.54	31.15	-7.87	3.62	19.65	38.45
			H	126.20	39.93	-7.87	3.62	28.43	38.45
	836.60	190	V	118.08	31.83	-7.88	3.65	20.30	38.45
			H	126.11	39.88	-7.88	3.65	28.35	38.45
	848.80	251	V	116.13	30.01	-7.88	3.68	18.45	38.45
			H	126.36	40.17	-7.88	3.68	28.61	38.45

Remark：

(1) The RBW,VBW of SPA for frequency

RBW=300 KHz, VBW=1MHz,

EUT Mode	Frequency (MHz)	CH	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
EDGE 1900 (1TS)	1850.20	512	V	111.44	7.05	9.90	5.56	11.39	33.00
			H	124.74	20.56	9.90	5.56	24.90	33.00
	1880.00	661	V	110.72	6.36	9.99	5.61	10.74	33.00
			H	124.26	20.12	9.99	5.61	24.49	33.00
	1909.80	810	V	111.59	7.26	10.08	5.66	11.68	33.00
			H	124.42	20.31	10.08	5.66	24.73	33.00

Remark：

(1) The RBW,VBW of SPA for frequency

RBW=300 KHz, VBW=1MHz,

Measurement Result:

EUT Mode	Frequency (MHz)	CH	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
WCDMA II	1852.40	9262	V	112.49	7.97	9.48	5.33	12.11	33.00
			H	125.57	21.24	9.48	5.33	25.38	33.00
	1880.00	9400	V	110.90	6.40	9.54	5.36	10.57	33.00
			H	123.59	19.28	9.54	5.36	23.45	33.00
	1907.60	9538	V	110.63	6.15	9.61	5.40	10.35	33.00
			H	124.67	20.38	9.61	5.40	24.59	33.00

Remark:

(1) The RBW,VBW of SPA for frequency

RBW= 5MHz , VBW= 8MHz

EUT Mode	Frequency (MHz)	CH	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)
WCDMA V	826.40	4132	V	115.27	28.91	-7.88	3.63	17.40	38.45
			H	125.49	39.23	-7.88	3.63	27.73	38.45
	836.60	4183	V	114.05	27.79	-7.88	3.65	16.26	38.45
			H	123.93	37.70	-7.88	3.65	26.17	38.45
	846.60	4233	V	115.18	29.03	-7.88	3.67	17.48	38.45
			H	124.81	38.61	-7.88	3.67	27.06	38.45

Remark:

(1) The RBW,VBW of SPA for frequency

RBW= 5MHz , VBW= 8MHz

Measurement Result:

EUT Mode	Frequency (MHz)	CH	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
HSDPA II	1852.40	9262	V	106.28	1.90	9.90	5.56	6.23	33.00
			H	121.82	17.64	9.90	5.56	21.98	33.00
	1880.00	9400	V	108.68	4.32	9.99	5.61	8.70	33.00
			H	121.07	16.93	9.99	5.61	21.30	33.00
	1907.60	9538	V	108.68	4.35	10.07	5.66	8.76	33.00
			H	122.36	18.25	10.07	5.66	22.66	33.00

Remark:

(1) The RBW,VBW of SPA for frequency

RBW= 5MHz , VBW= 8MHz

EUT Mode	Frequency (MHz)	CH	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)
HSDPA V	826.40	4132	V	114.43	28.07	-7.88	3.63	16.56	38.45
			H	123.91	37.65	-7.88	3.63	26.15	38.45
	836.60	4183	V	113.69	27.43	-7.88	3.65	15.90	38.45
			H	122.98	36.75	-7.88	3.65	25.22	38.45
	846.60	4233	V	114.42	28.27	-7.88	3.67	16.72	38.45
			H	123.44	37.24	-7.88	3.67	25.69	38.45

Remark:

(1) The RBW,VBW of SPA for frequency

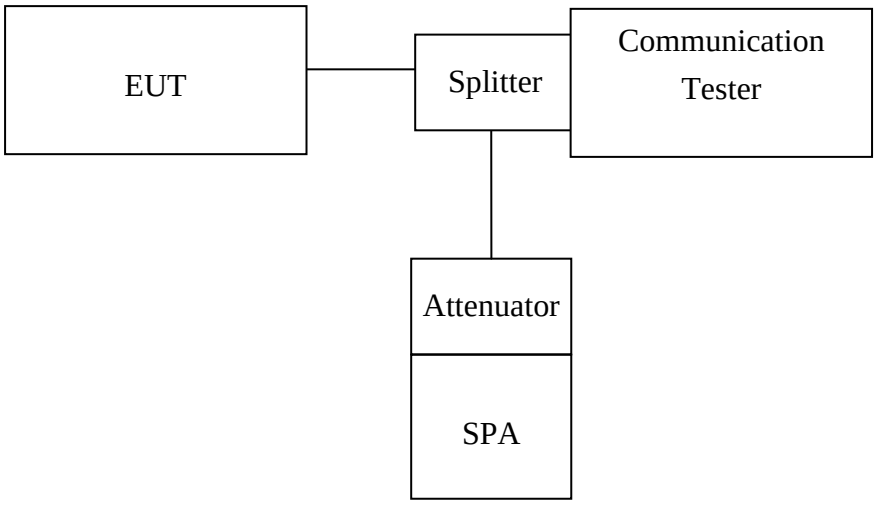
RBW= 5MHz , VBW= 8MHz

7 99% OCCUPIED BANDWIDTH MEASUREMENT

7.1 Standard Applicable

According to FCC§2.1049(h).

7.2 Test Set-up:



Note: *Measurement setup for testing on Antenna connector*

7.3 Measurement Procedure

The EUT's output RF connector was connected with a short cable to the spectrum analyzer, RBW (10KHz) was set to about 1% of emission BW, VBW= 3 times RBW(30KHz) for GSM, WCDMA RBW (47KHz) was set to about 1% of emission BW, VBW= 3 times RBW(150KHz), -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.

7.4 Measurement Equipment Used:

Refer to section 2.4 in this report

7.5 Measurement Result:

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
GSM 850	824.20	128	0.2453
	836.60	190	0.2420
	848.80	251	0.2457

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
EDGE 850	824.20	128	0.2479
	836.60	190	0.2469
	848.80	251	0.2503

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
PCS 1900	1850.20	512	0.2464
	1880.00	661	0.2476
	1909.80	810	0.2455

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
EDGE 1900	1850.20	512	0.2450
	1880.00	661	0.2425
	1909.80	810	0.2451

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
WCDMA II	1852.4	9262	4.1605
	1880.0	9400	4.1509
	1907.6	9538	4.1567

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
HSDPA II	1852.4	9296	4.1638
	1880.0	9400	4.1432
	1907.6	9538	4.1747

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
WCDMA V	826.4	4132	4.1589
	836.6	4183	4.1530
	846.6	4233	4.1497

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
HSDPA V	826.40	4132	4.1576
	836.60	4183	4.1739
	846.60	4233	4.1554

Figure 7-1: GSM Channel Low

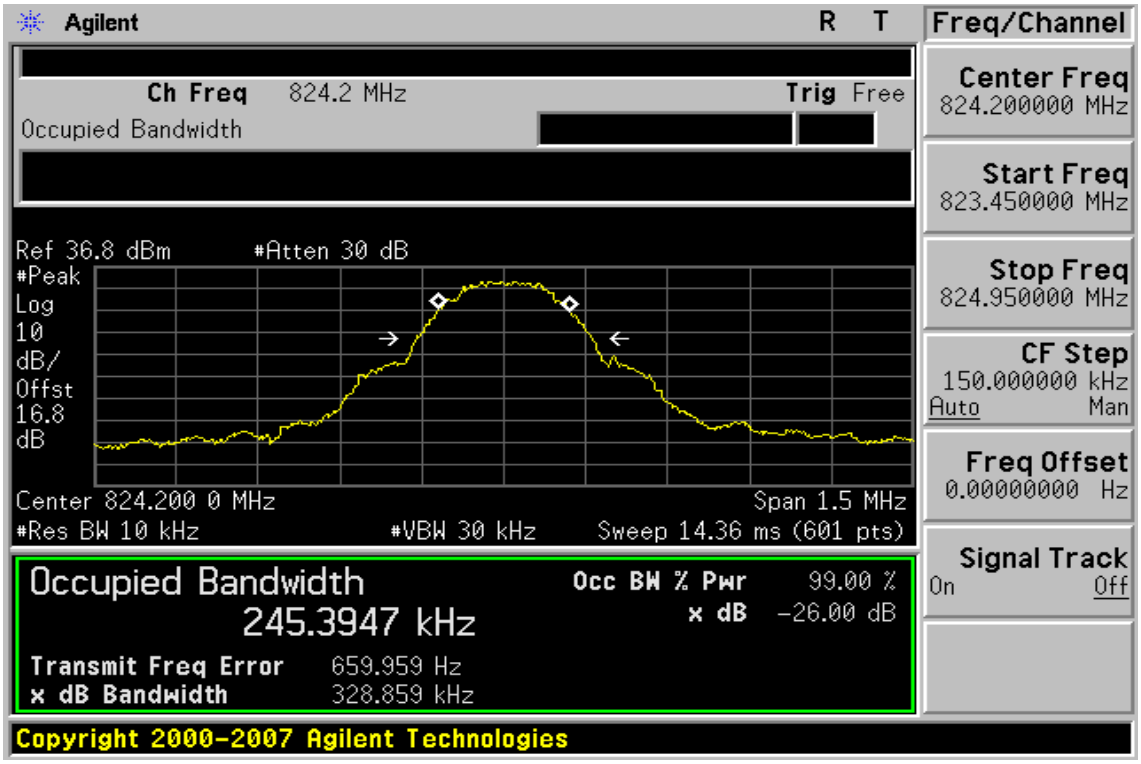


Figure 7-2 GSM Channel Mid

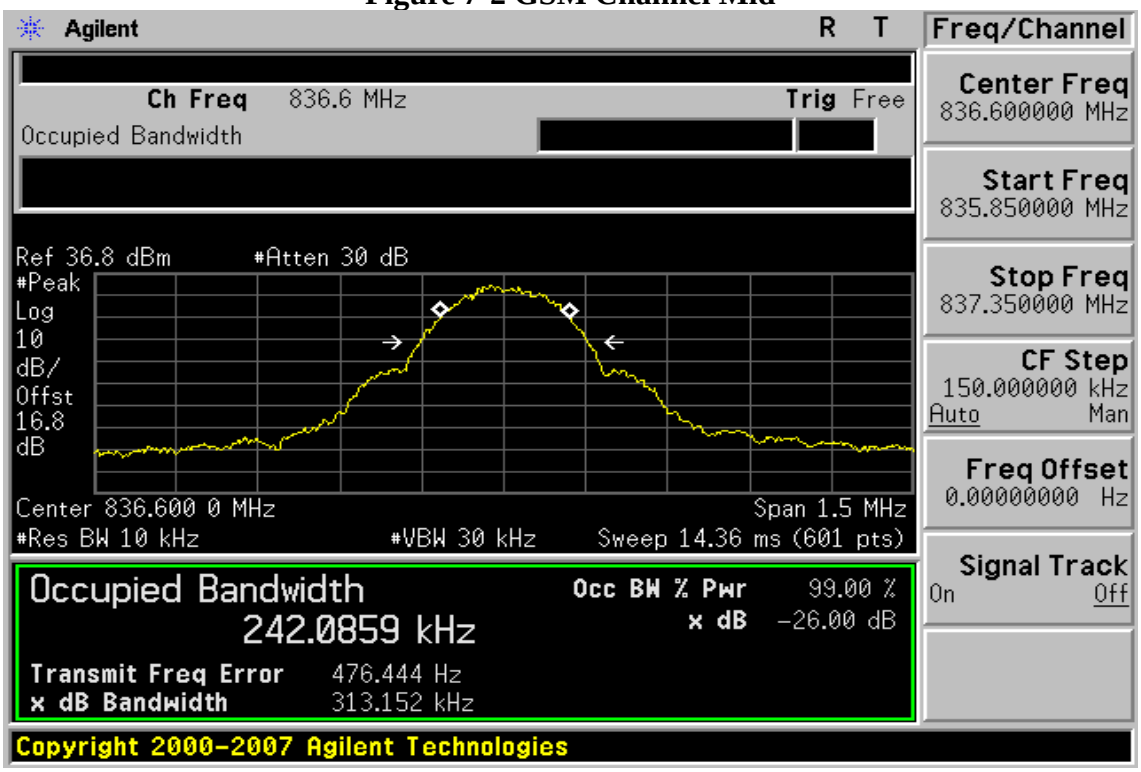


Figure 7-3: GSM Channel High

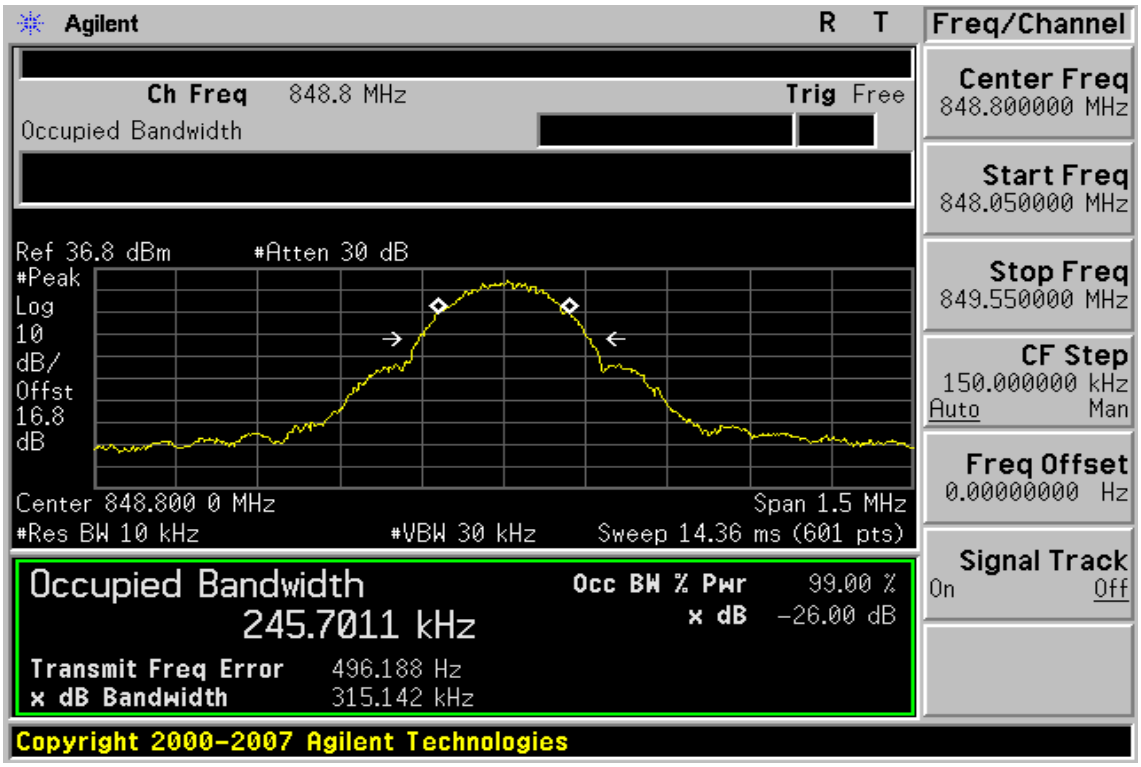


Figure 7-4: PCS Channel Low

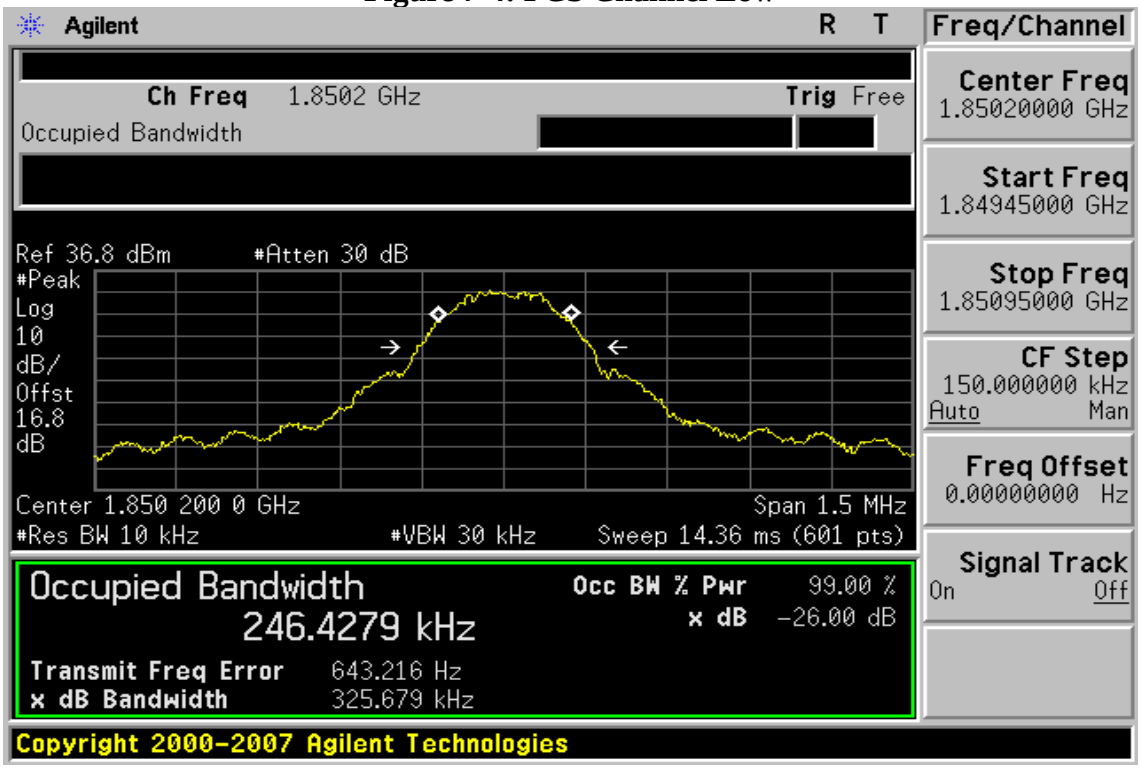


Figure 7-5 PCS Channel Mid

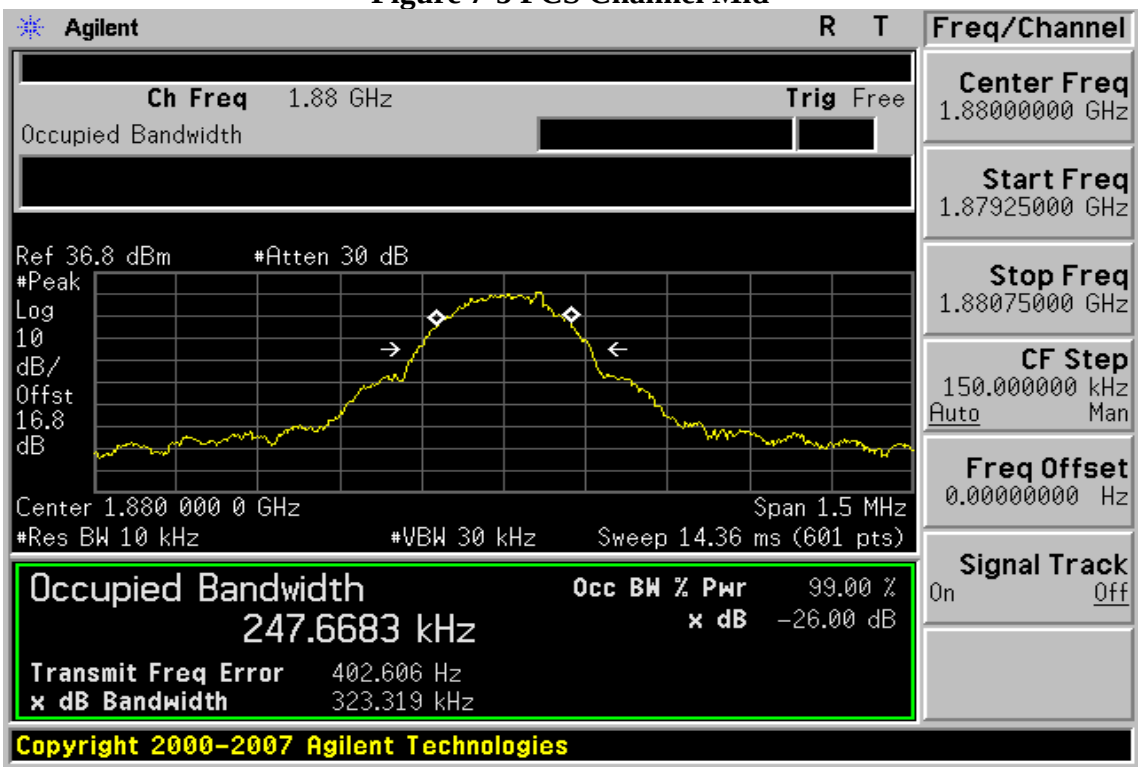


Figure 7-6: PCS Channel High

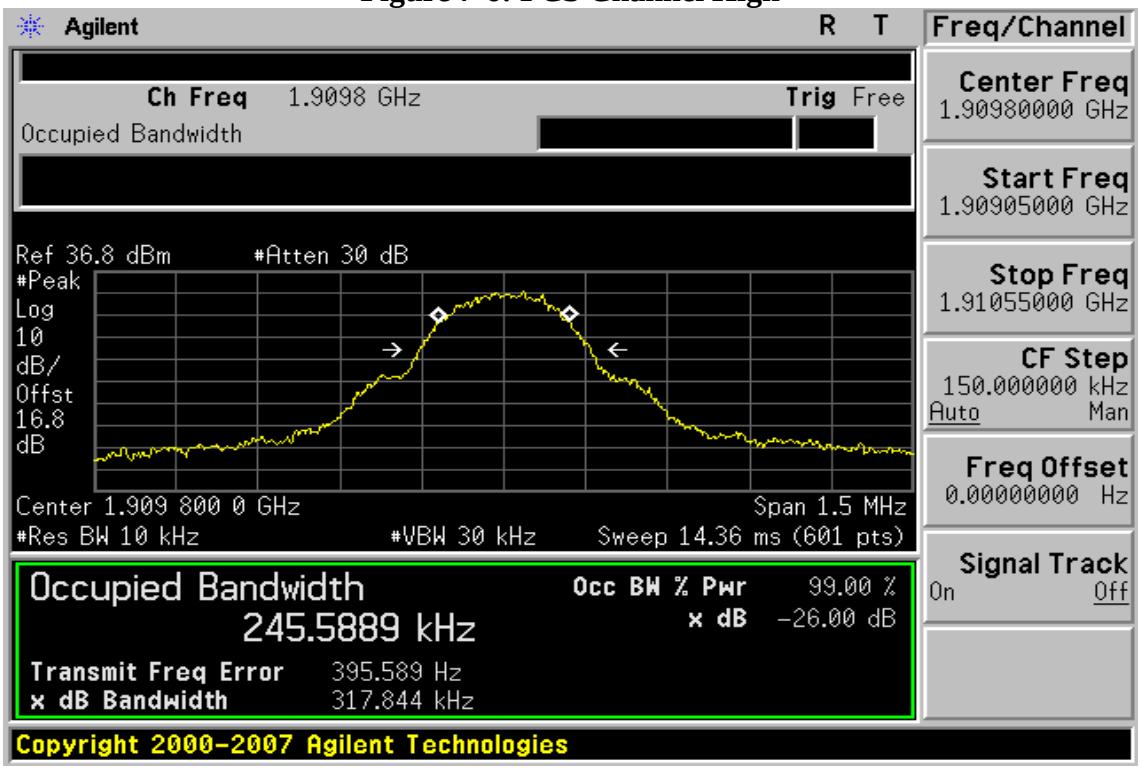


Figure 7-7: EDGE 850 Channel Low

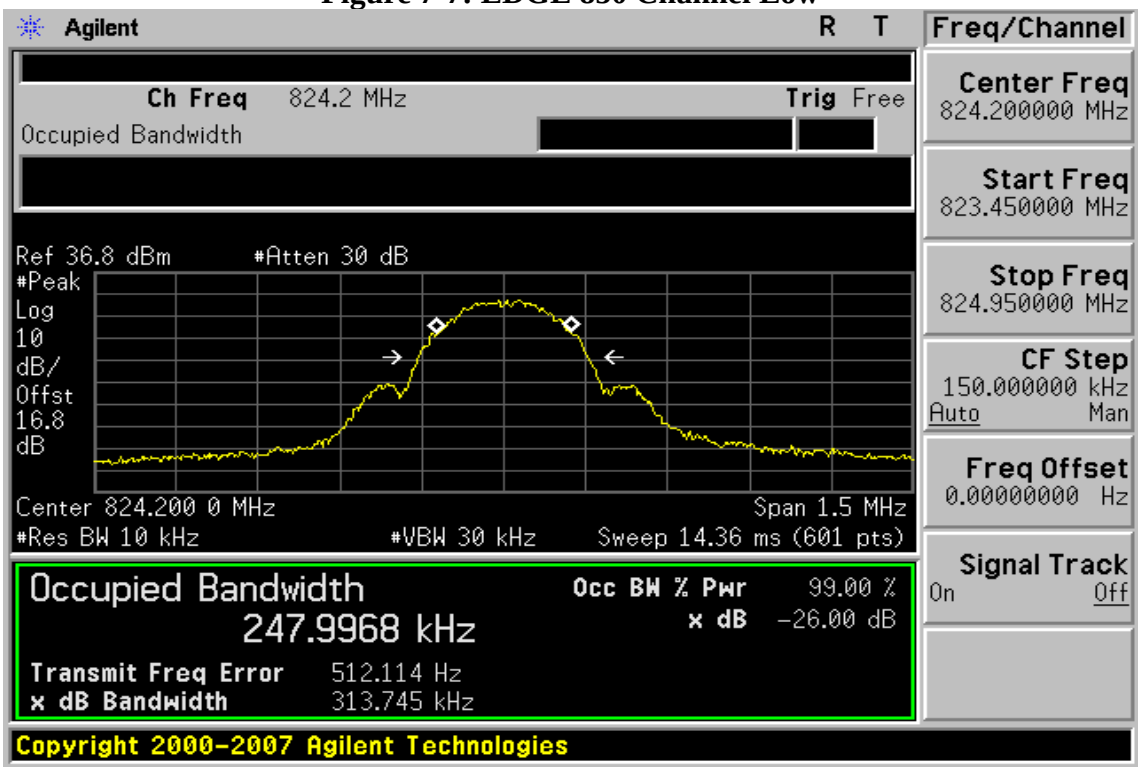


Figure 7-8 EDGE 850 Channel Mid

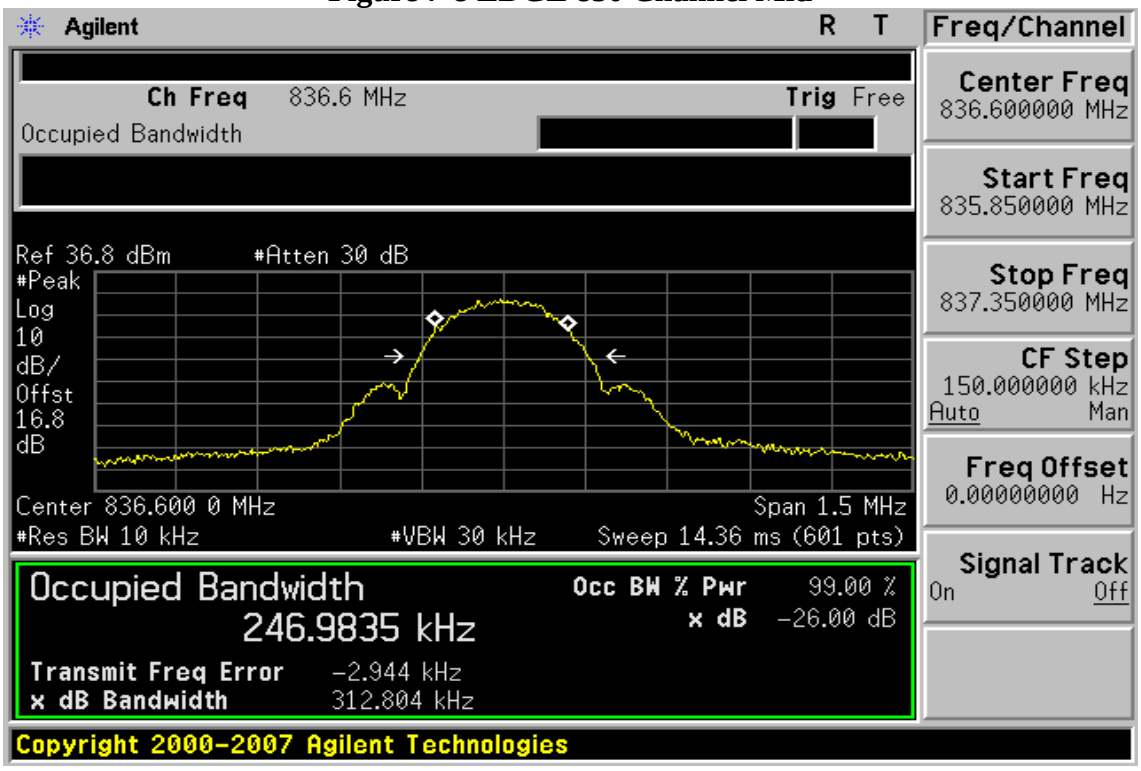


Figure 7-9 EDGE 850 Channel High

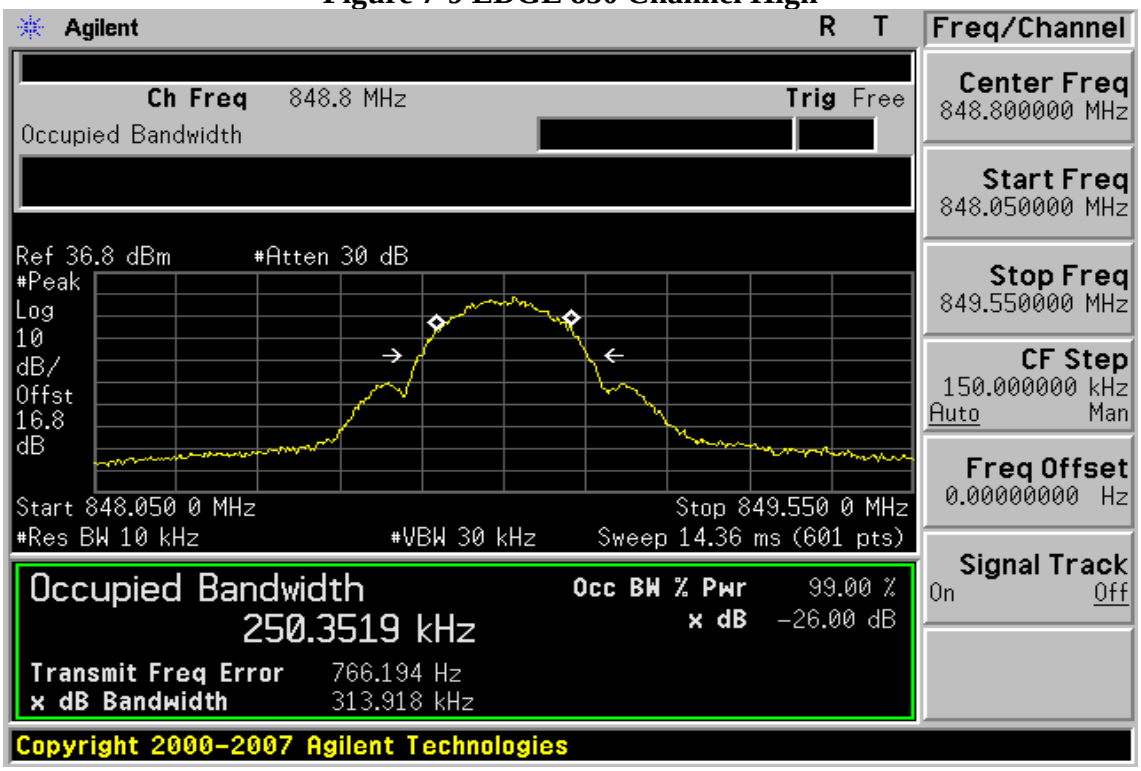


Figure 7-10 EDGE 1900 Channel Low

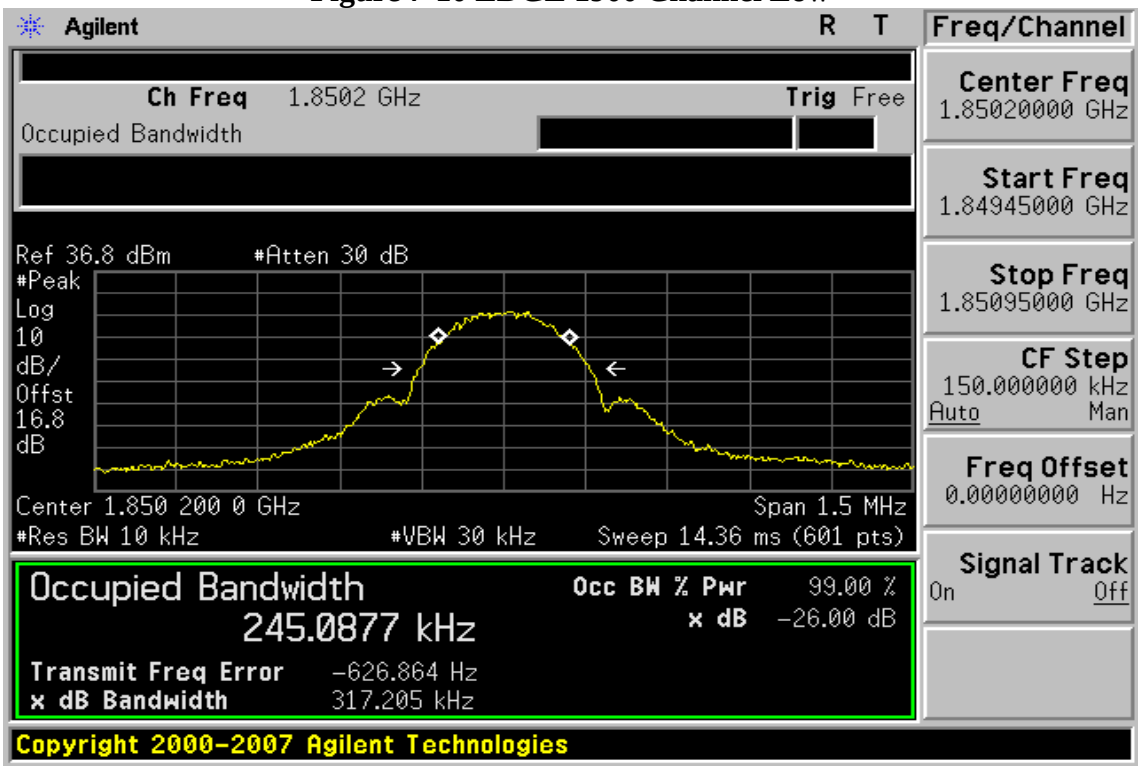


Figure 7-11 EDGE 1900 Channel Mid

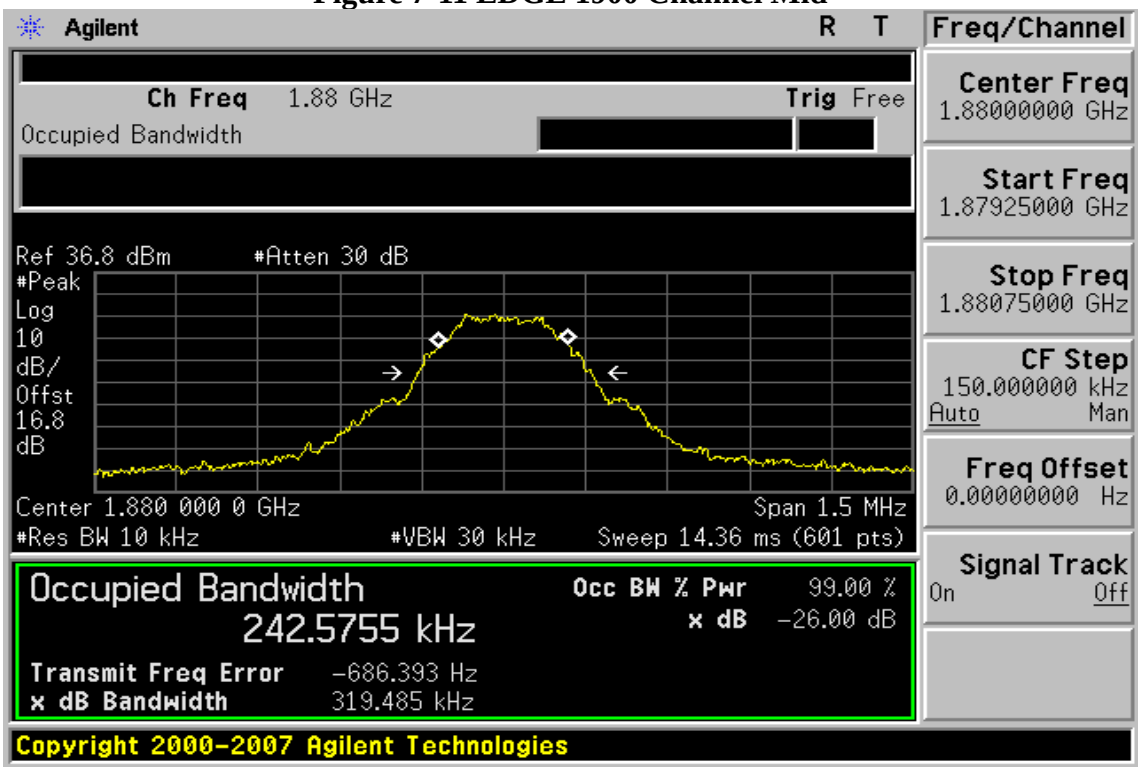


Figure 7-12 EDGE 1900 Channel High

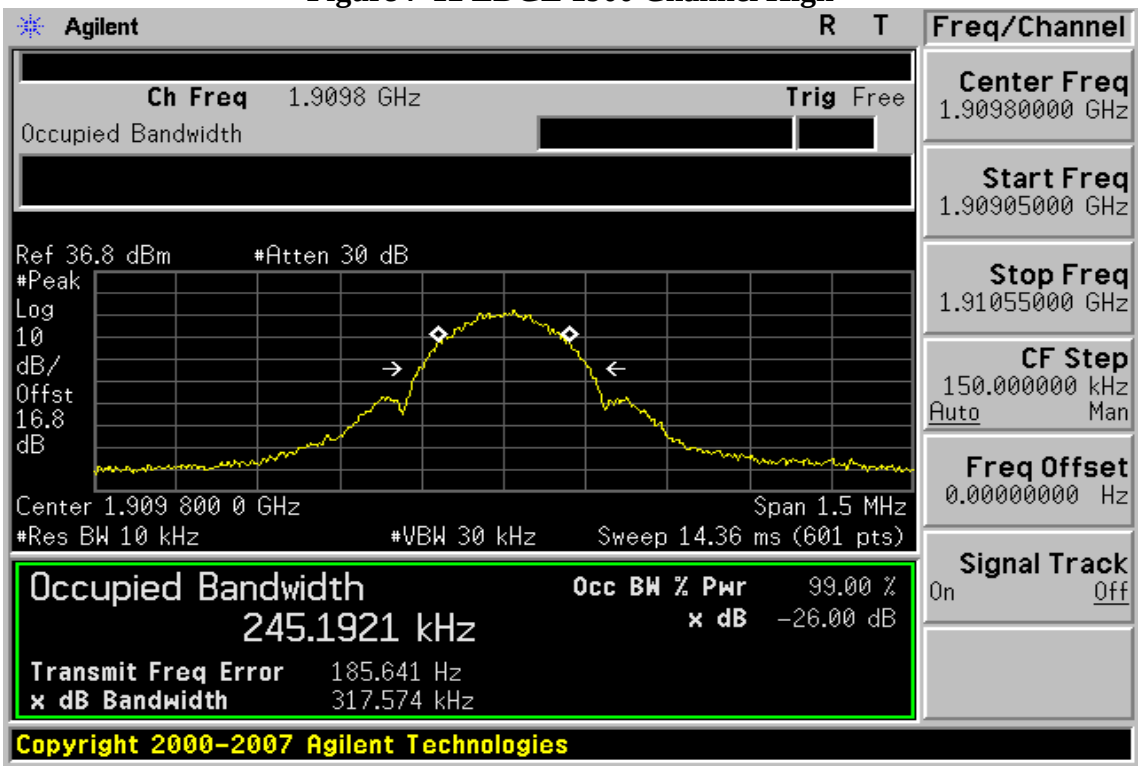


Figure 7-13 WCDMA II Channel Low

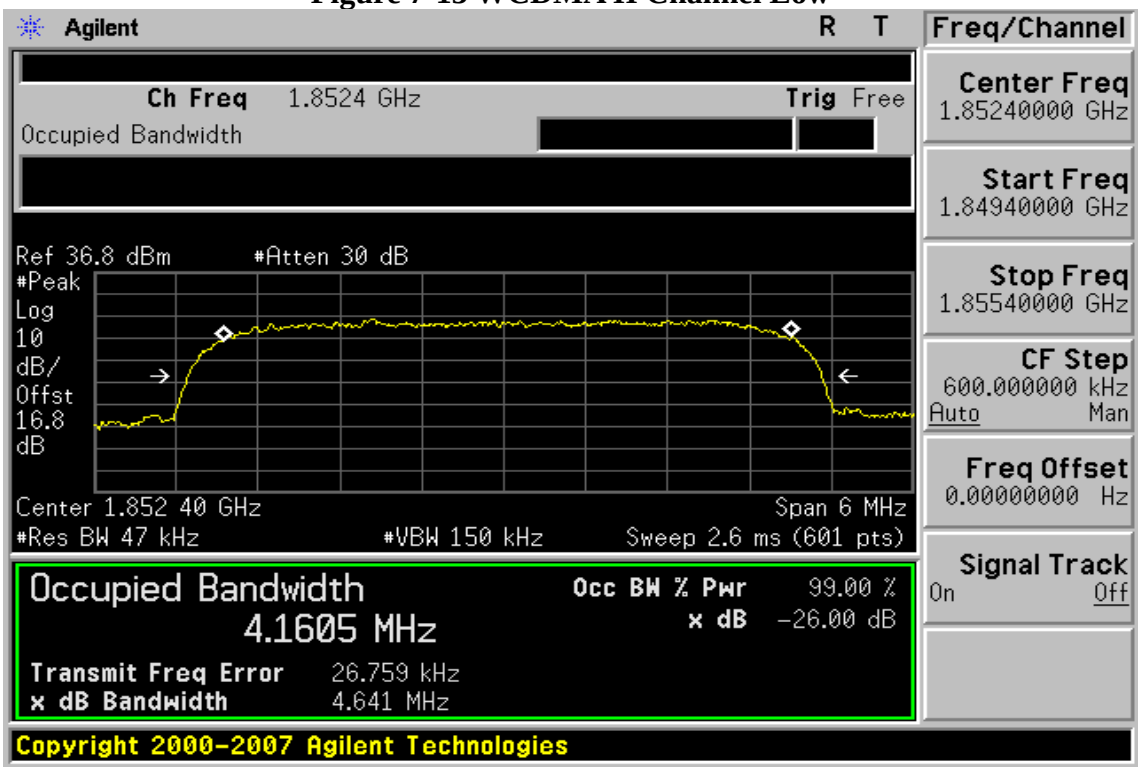


Figure 7-14 WCDMA II Channel Mid

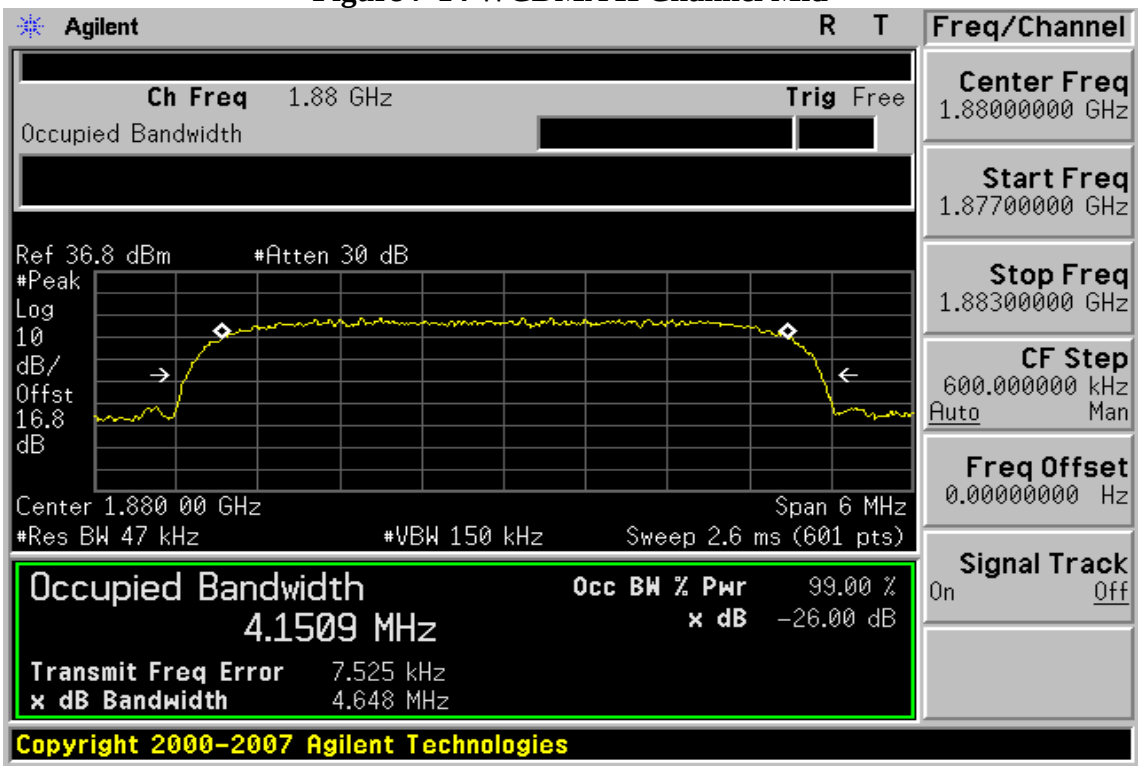


Figure 7-15 WCDMA II Channel High

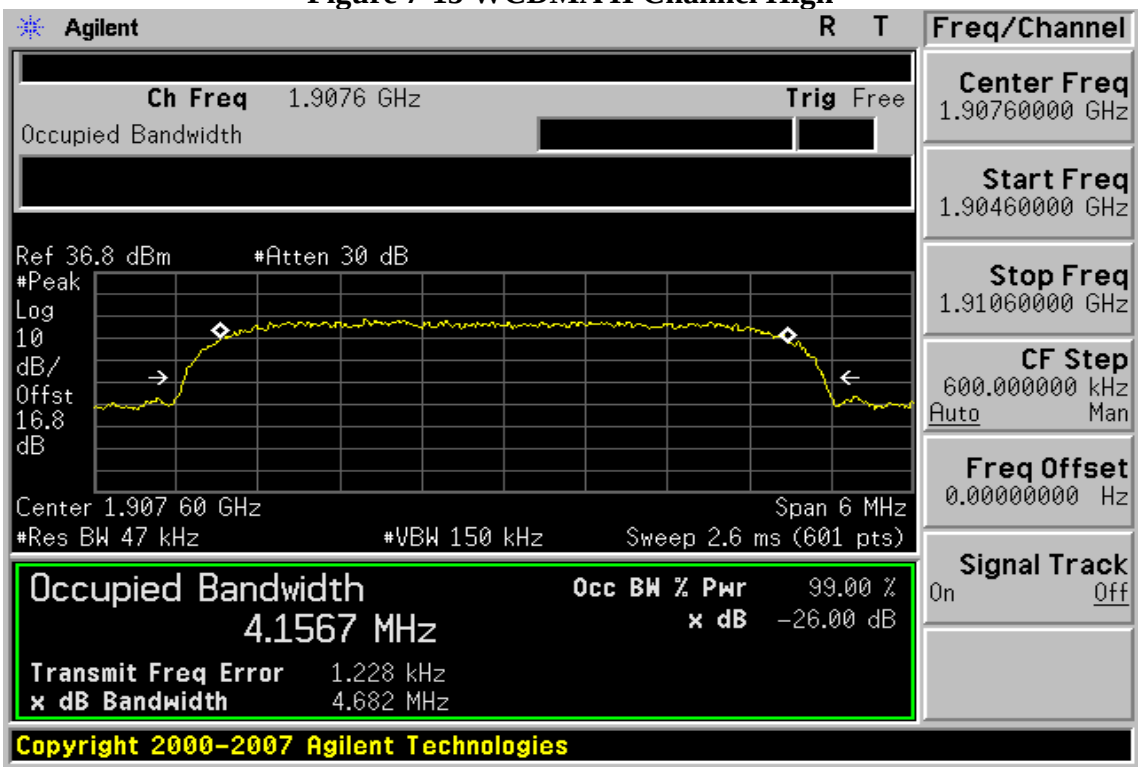


Figure 7-19 WCDMA V Channel Low

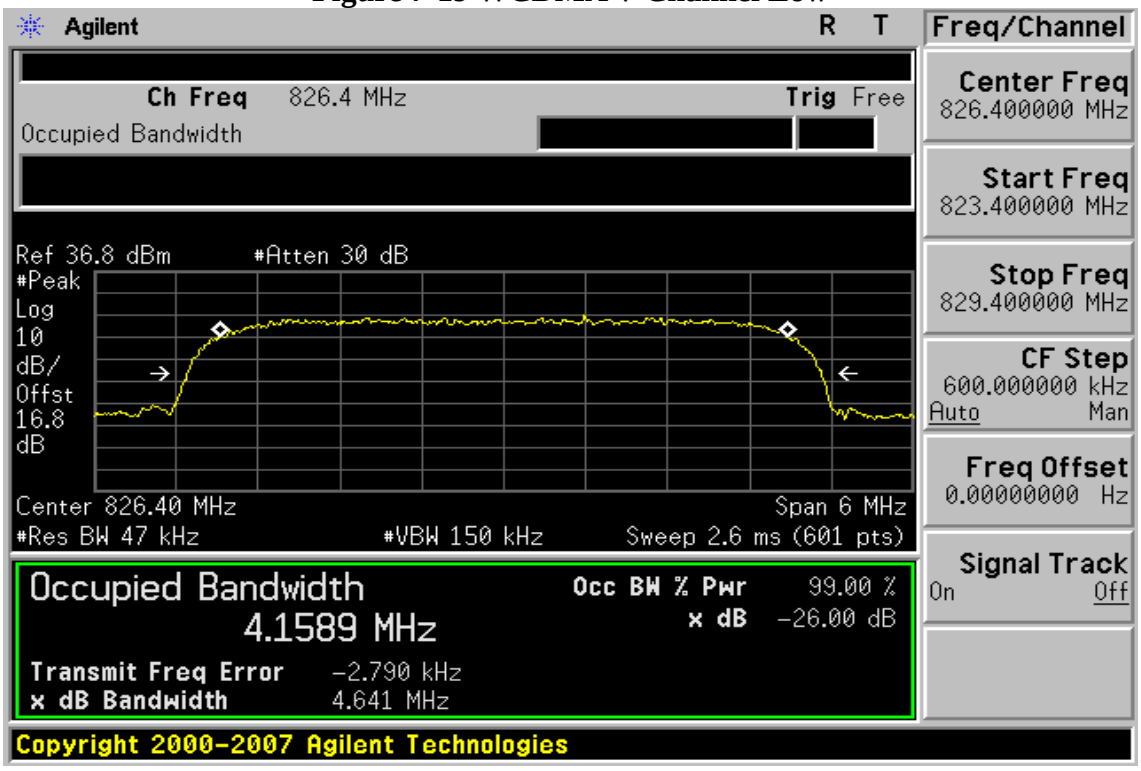


Figure 7-20 WCDMA V Channel Mid

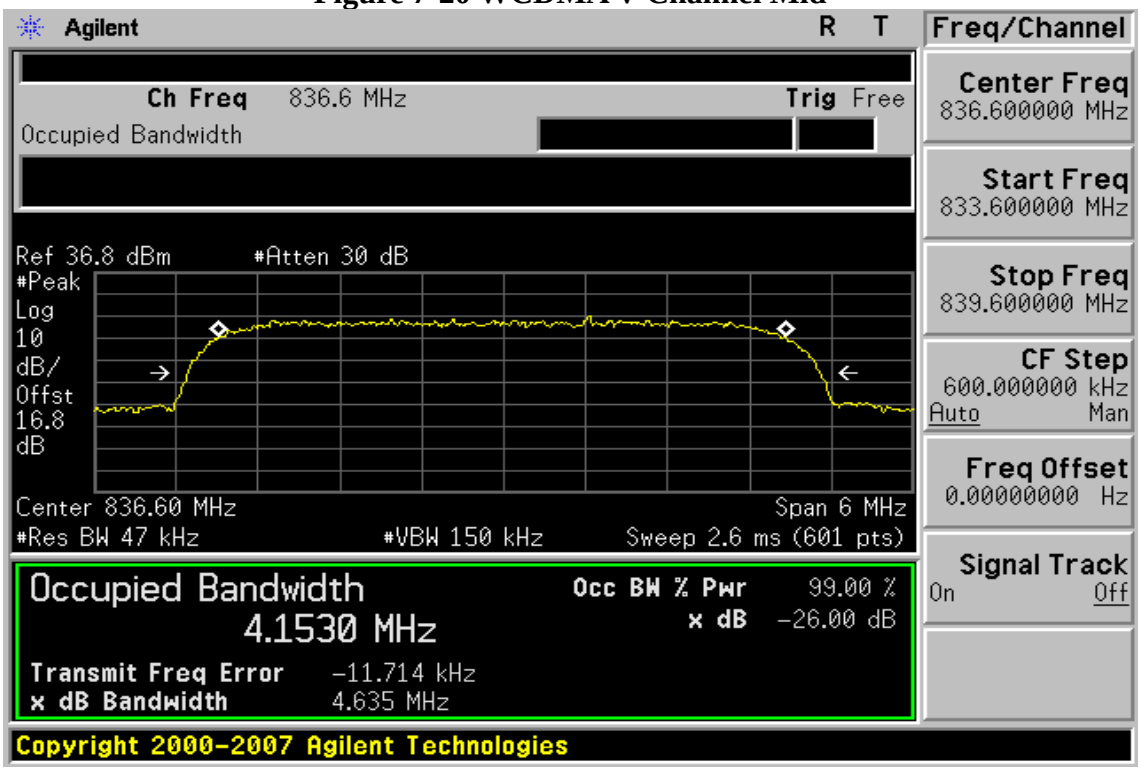


Figure 7-21 WCDMA V Channel High

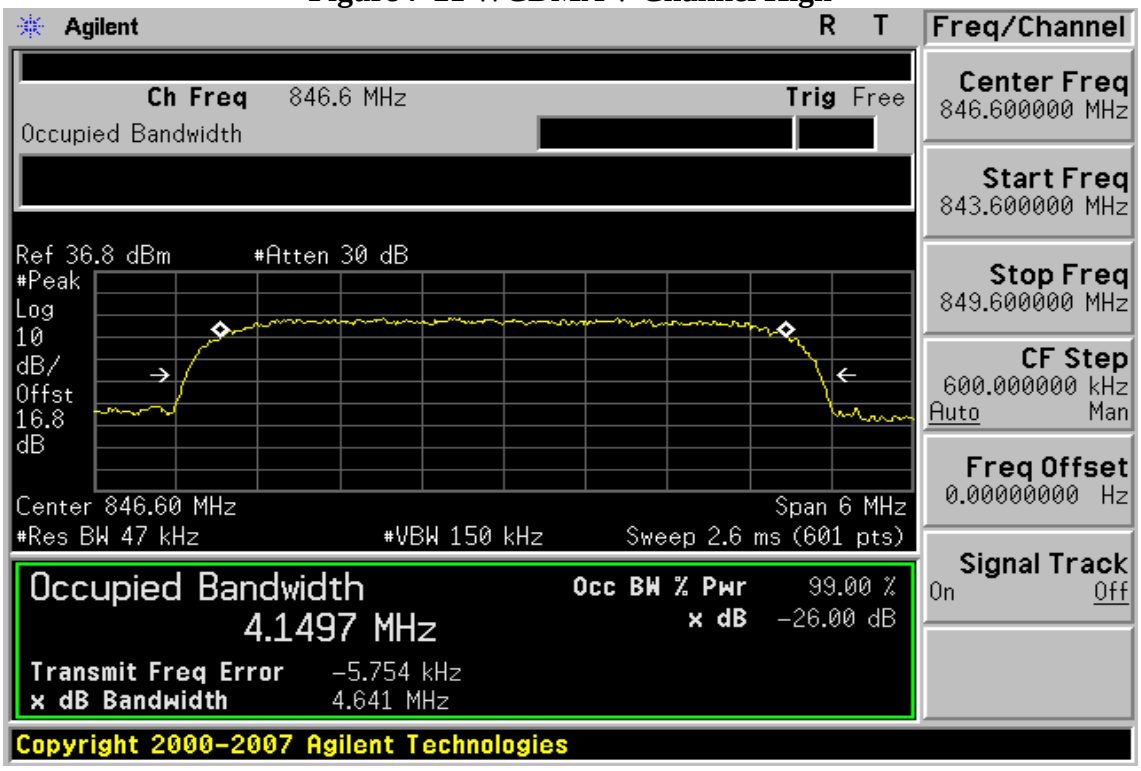


Figure 7-13 HSDPA II Channel Low

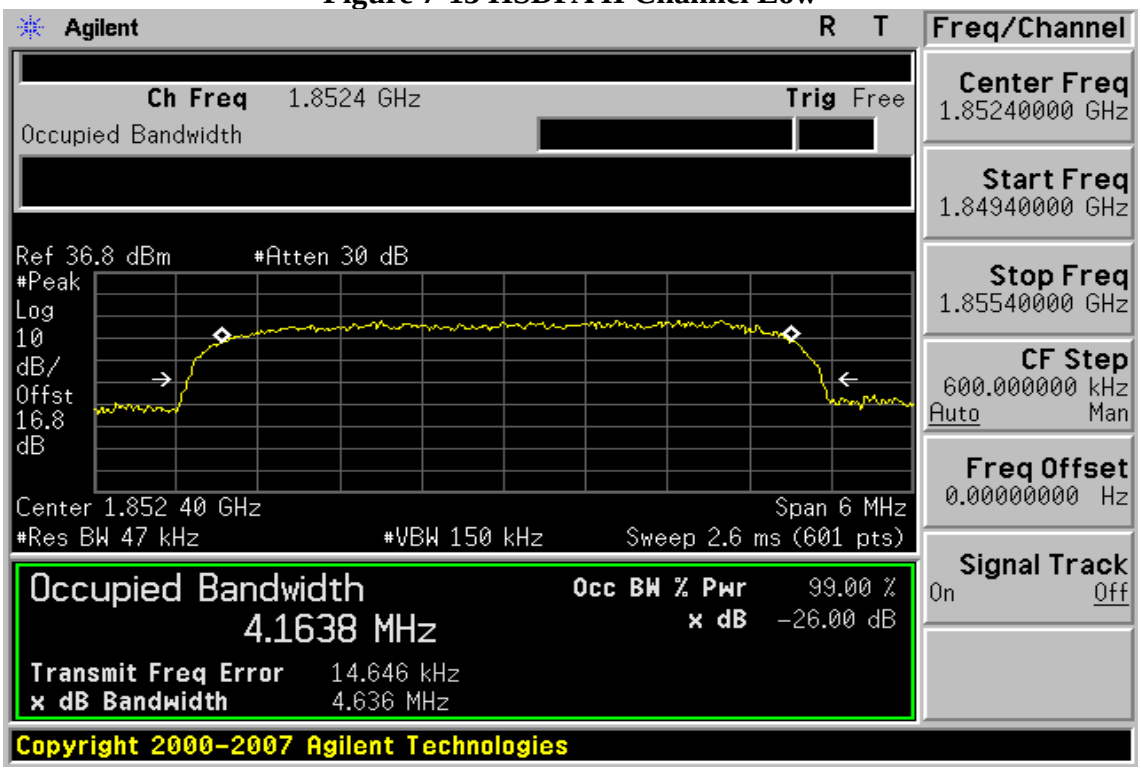


Figure 7-14 HSDPA II Channel Mid

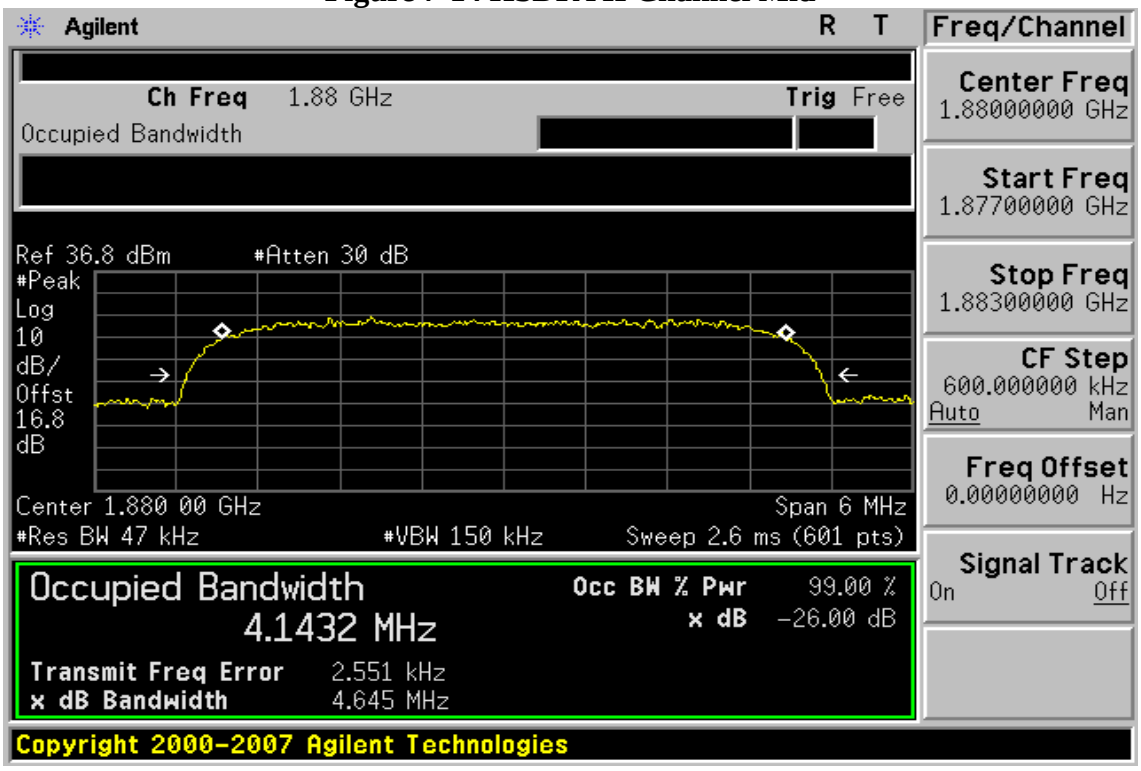


Figure 7-15 HSDPA II Channel High

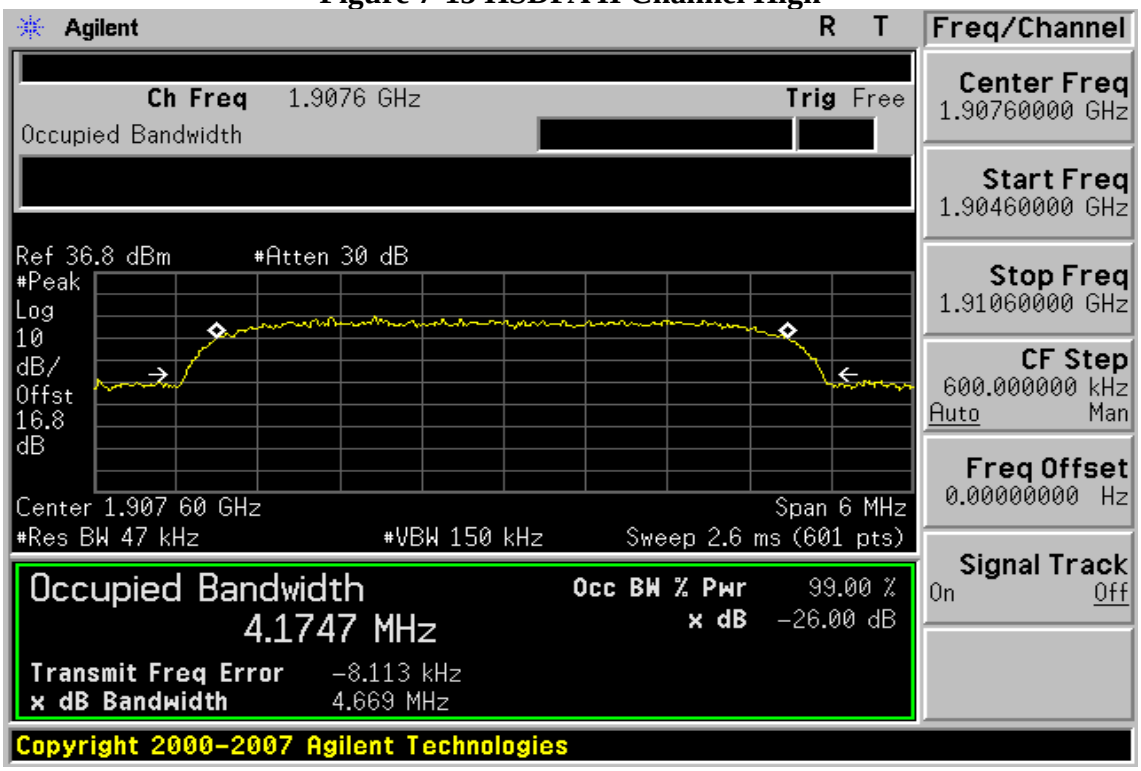


Figure 7-19 HSDPA V Channel Low

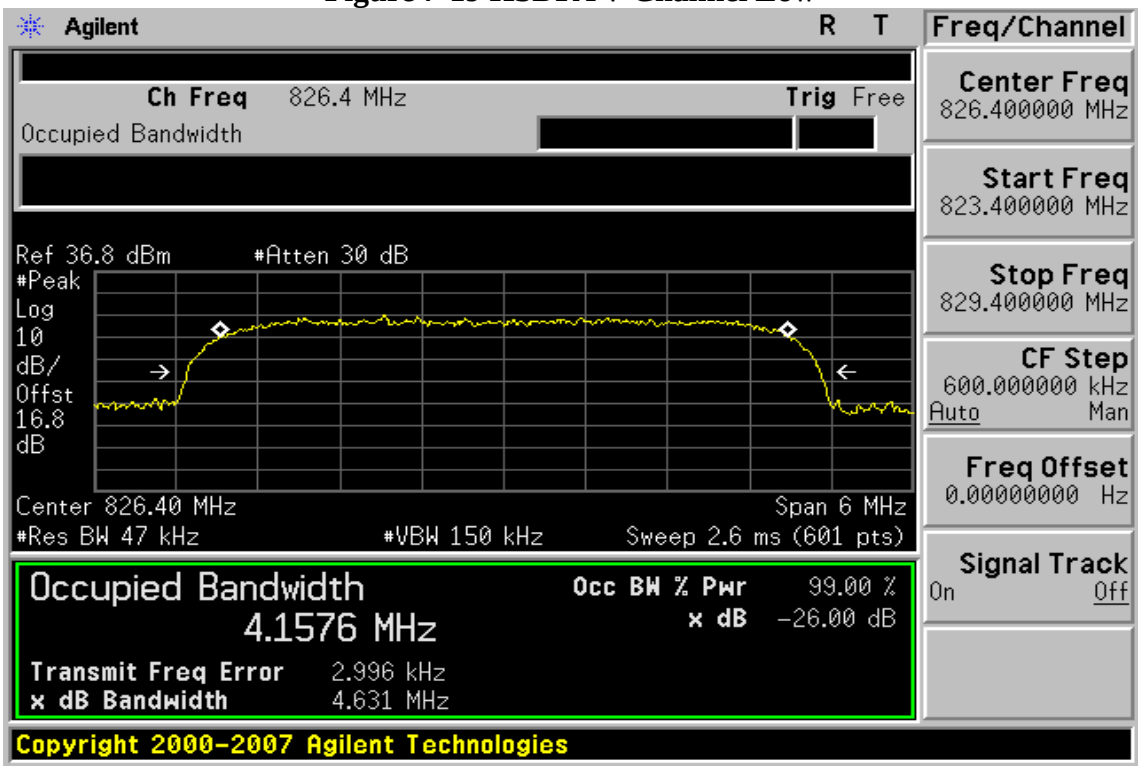


Figure 7-20 HSDPA V Channel Mid

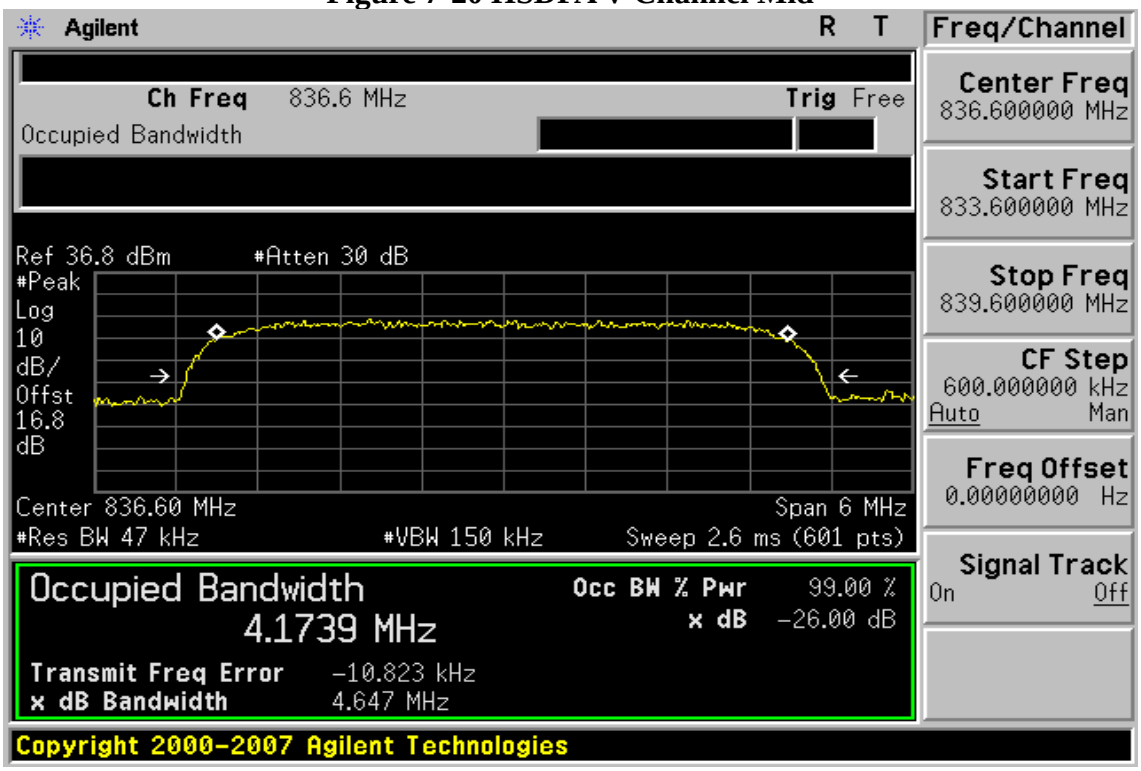
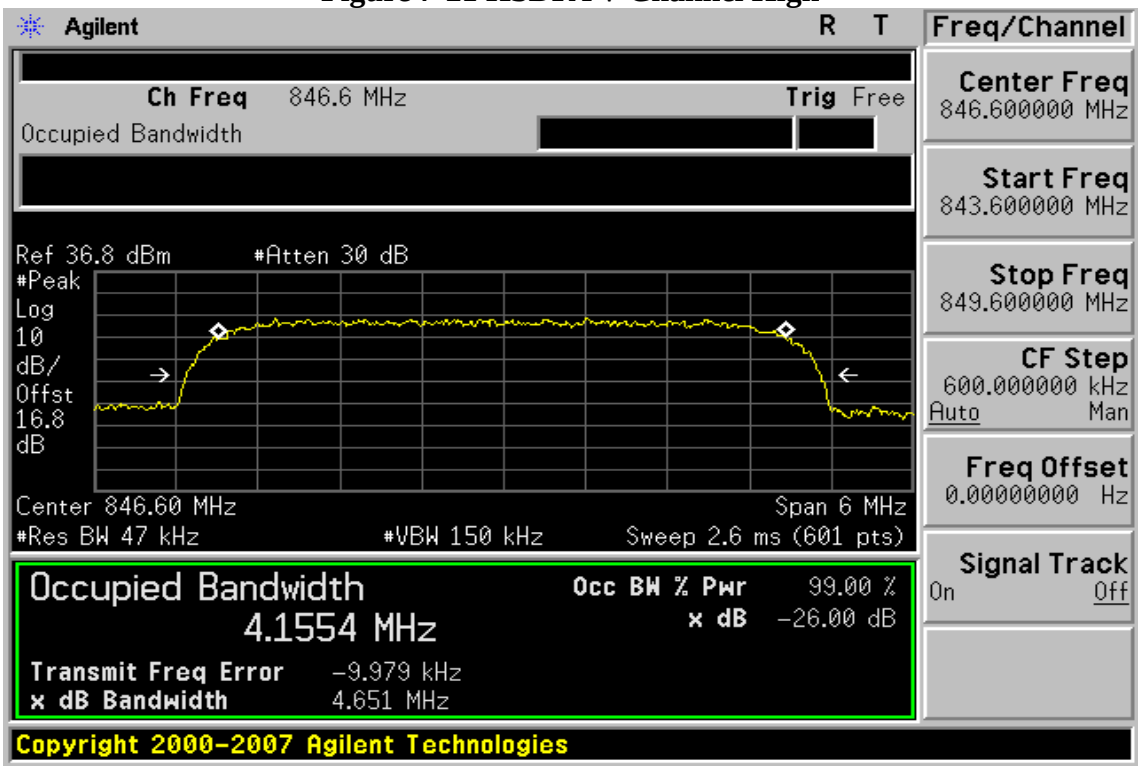


Figure 7-21 HSDPA V Channel High



8 OUT OF BAND EMISSION AT ANTENNA TERMINALS

8.1 Standard Applicable

According to FCC §2.1051.

FCC §22.917(a), §24.238(a) the magnitude of each spurious and harmonic emission that can be detected when the equipment is operated under the conditions specified in the instruction manual and/ or alignment procedure, shall not be less than 43 + 10 log (mean output power in watts) dBc below the mean power output outside a license's frequency block (-13dBm)

8.2 Test SET-UP

Refer to section 7.2 in this report

8.3 Measurement Procedure

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

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

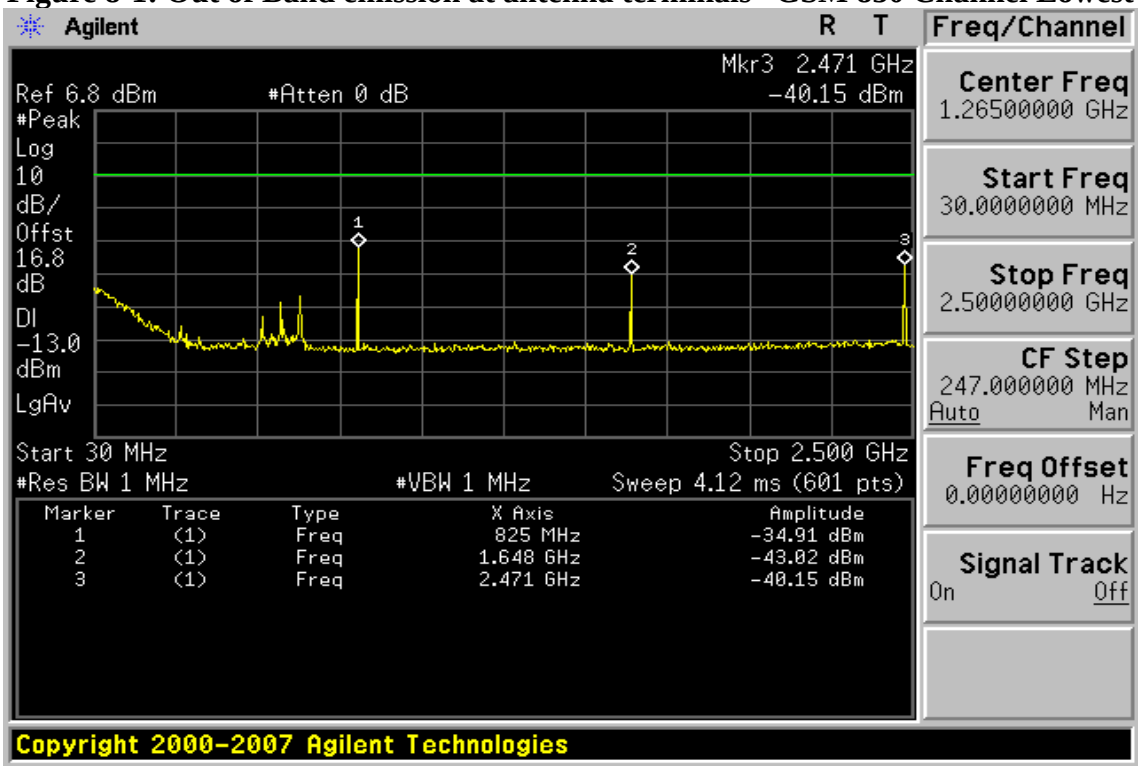
Band Edge Requirements: In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions. Limit, -13dBm.

8.4 Measurement Equipment Used:

Refer to section 2.4 in this report

8.5 Measurement Result

Figure 8-1: Out of Band emission at antenna terminals– GSM 850 Channel Lowest



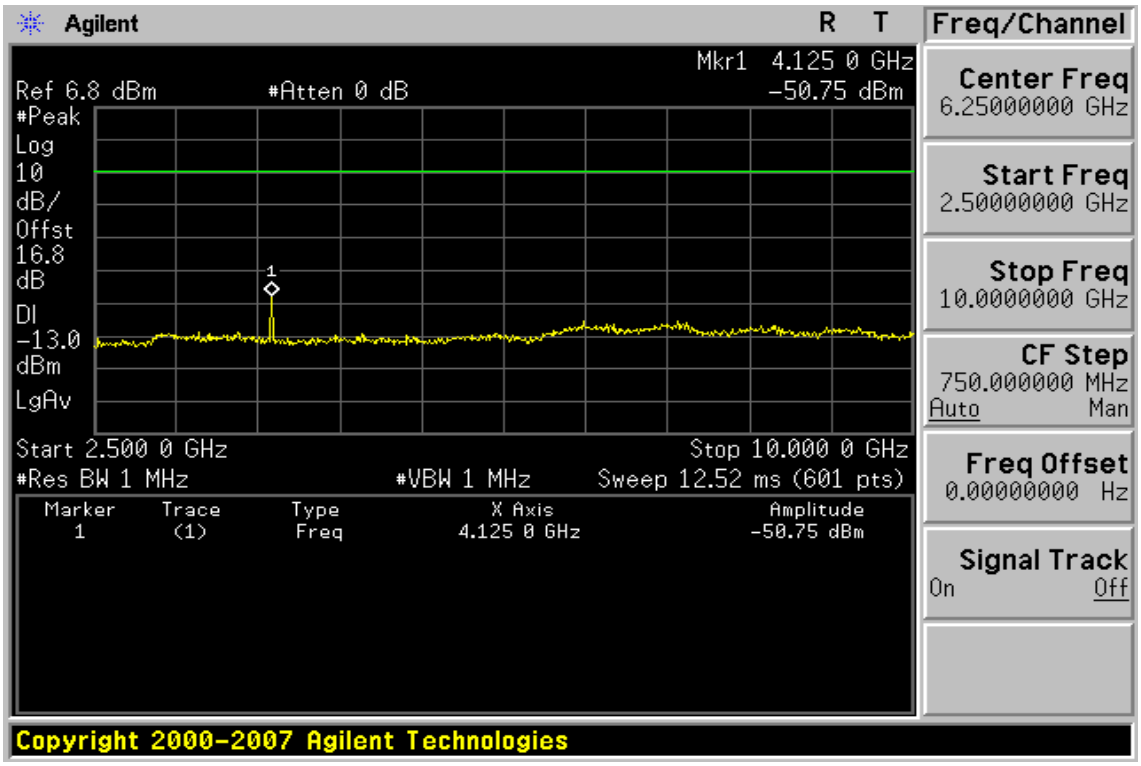
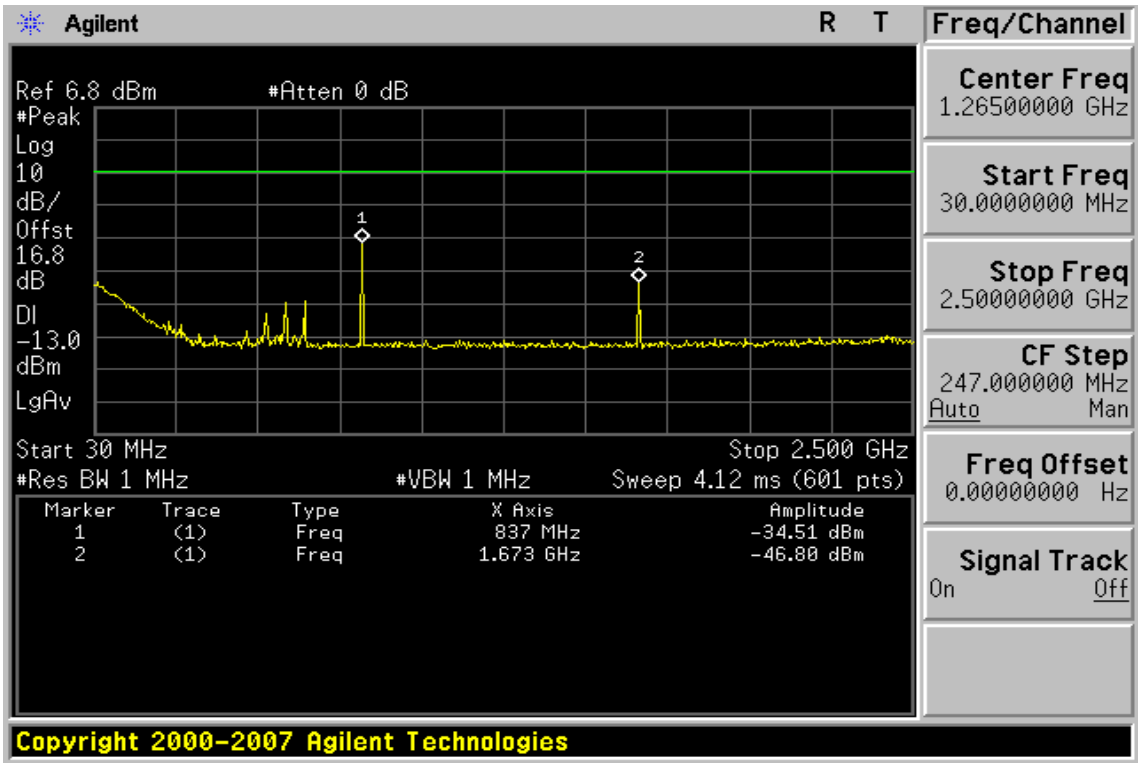


Figure 8-2: Out of Band emission at antenna terminals –GSM 850 Channel Mid



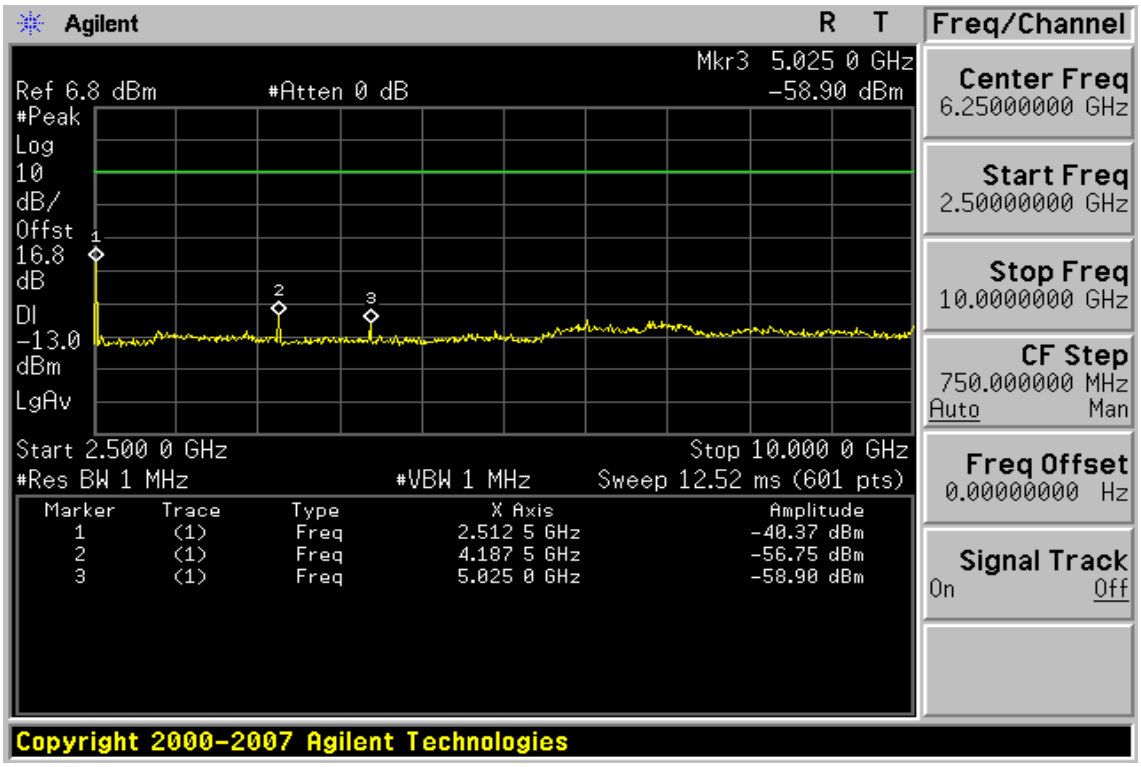
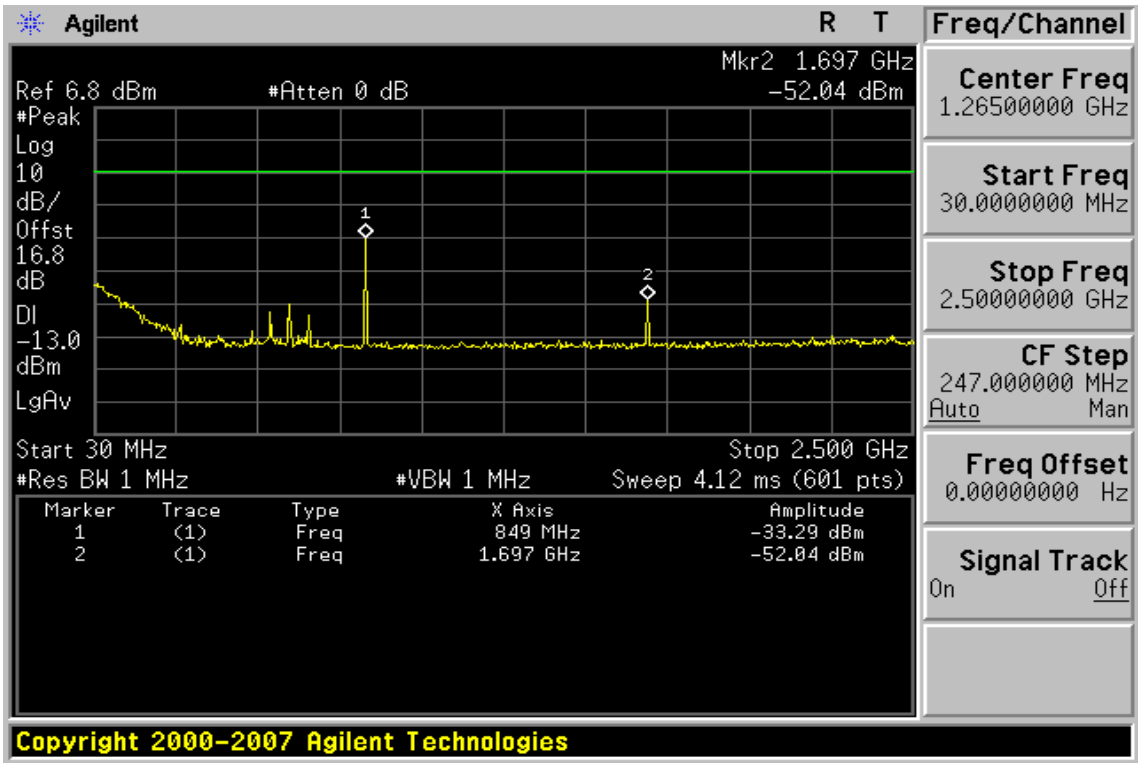


Figure 8-3: Out of Band emission at antenna terminals–GSM 850 Channel Highest



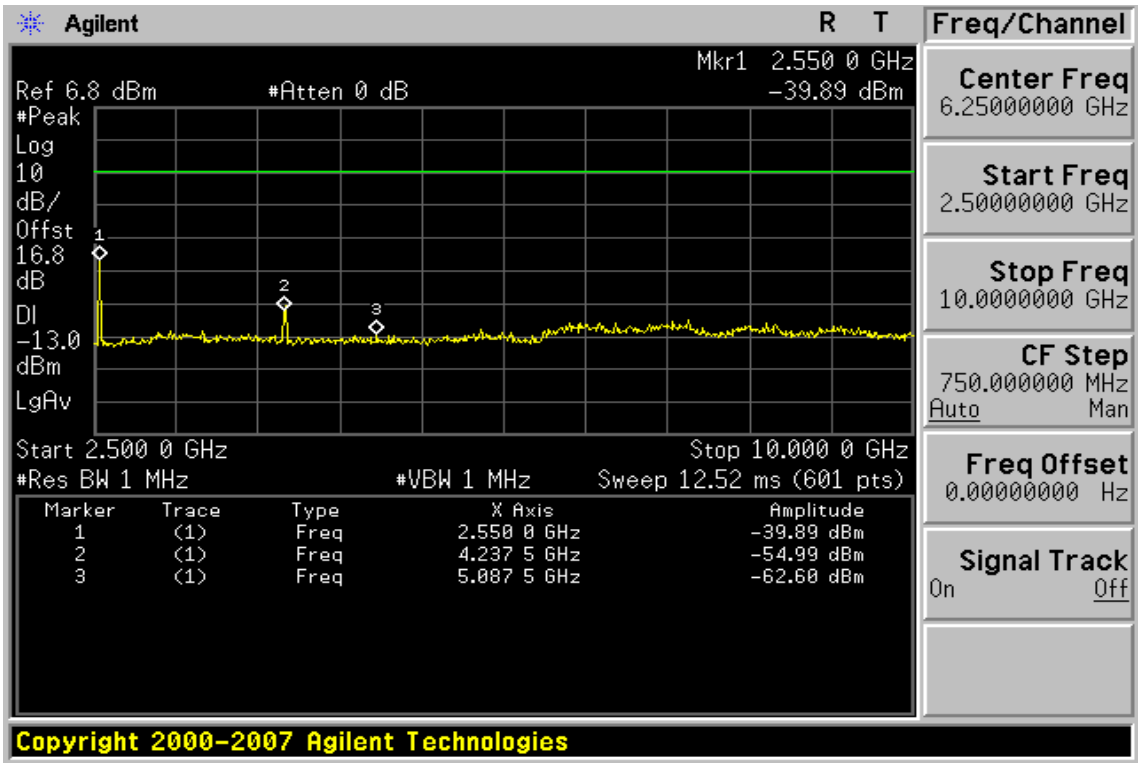


Figure 8-4: Band edge emission at antenna terminals – GSM 850 Channel Lowest

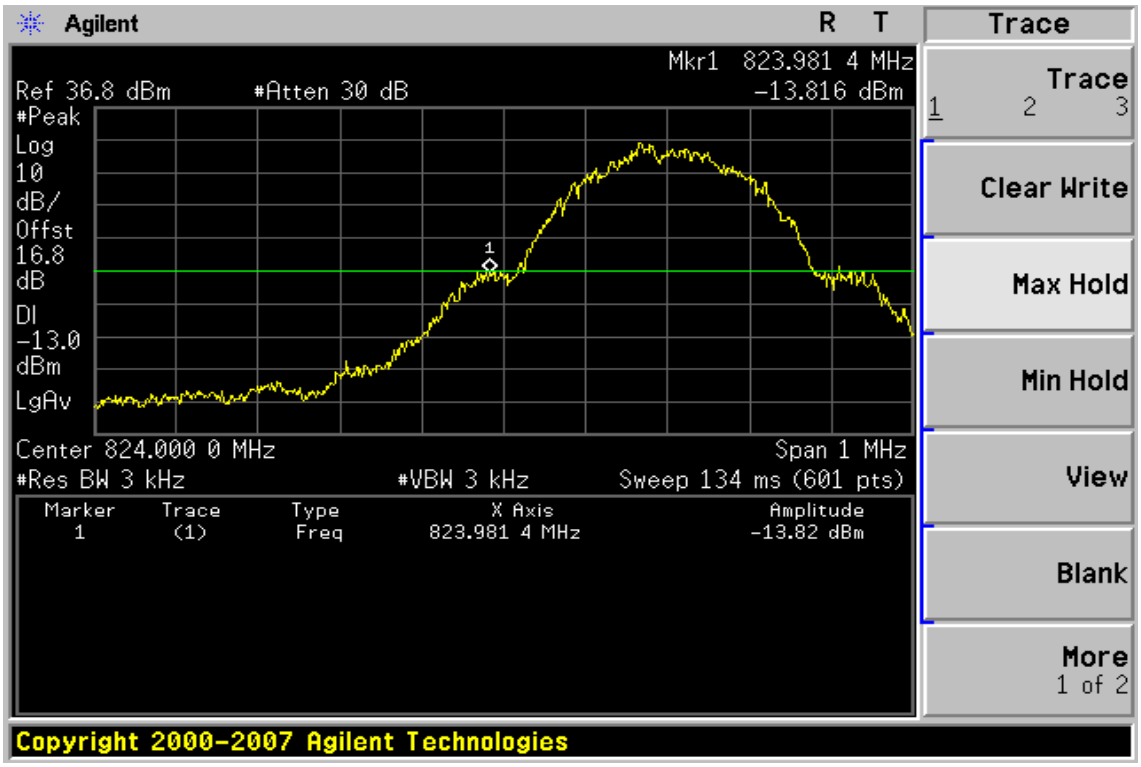


Figure 8-5: Band edge emission at antenna terminals – GSM 850 Channel Highest

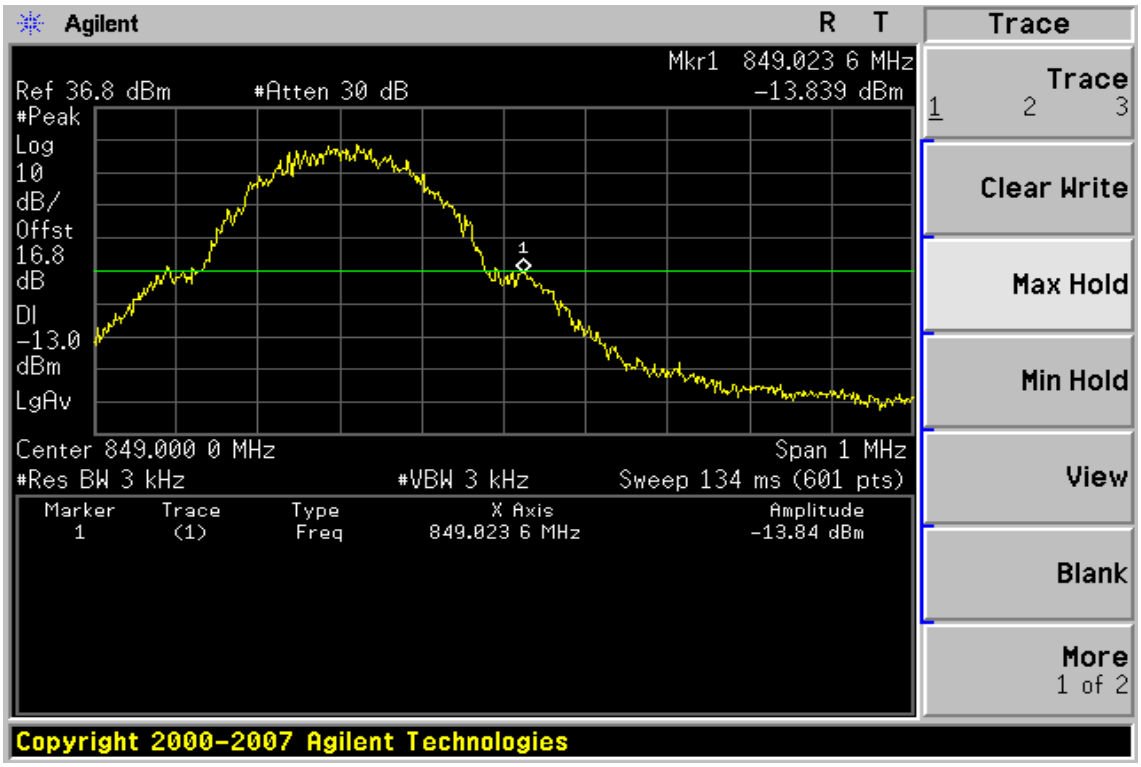
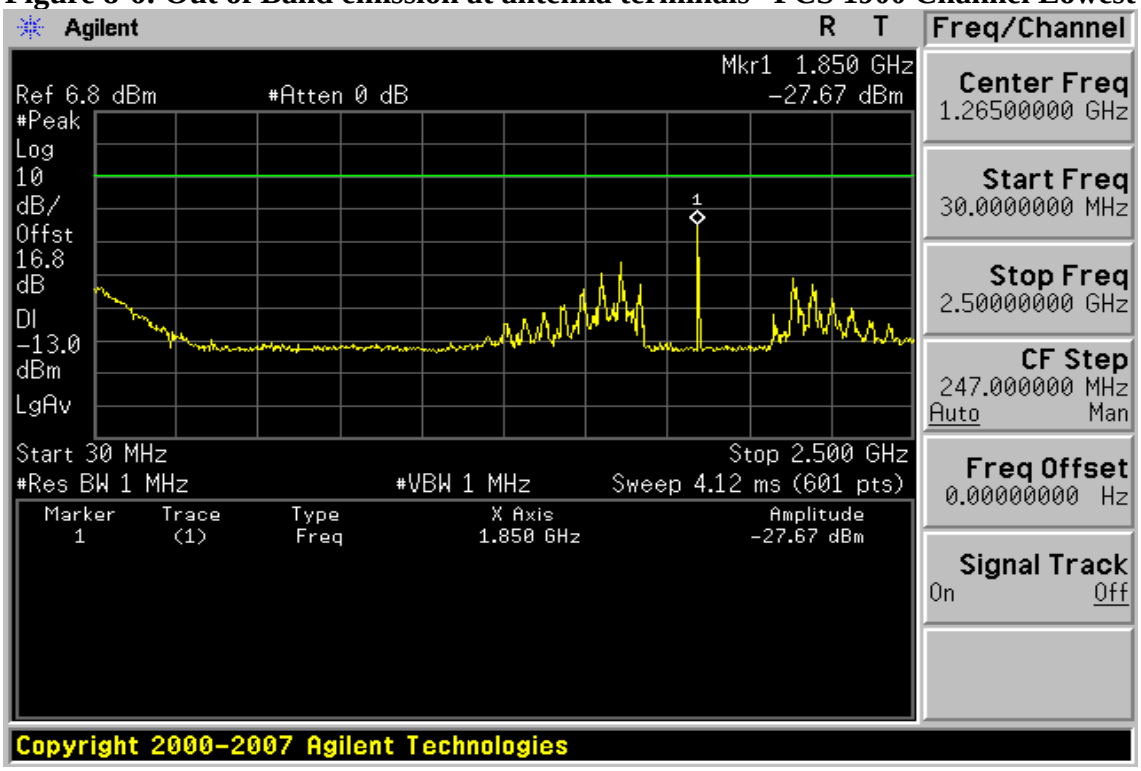


Figure 8-6: Out of Band emission at antenna terminals– PCS 1900 Channel Lowest



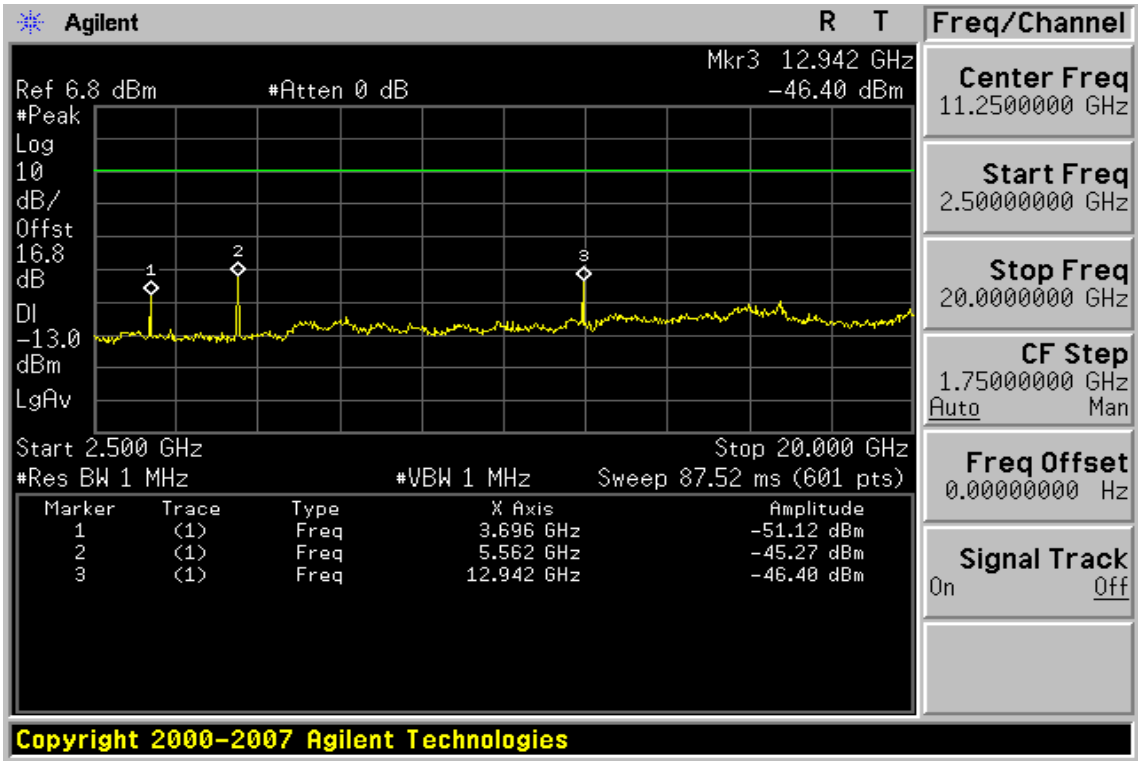
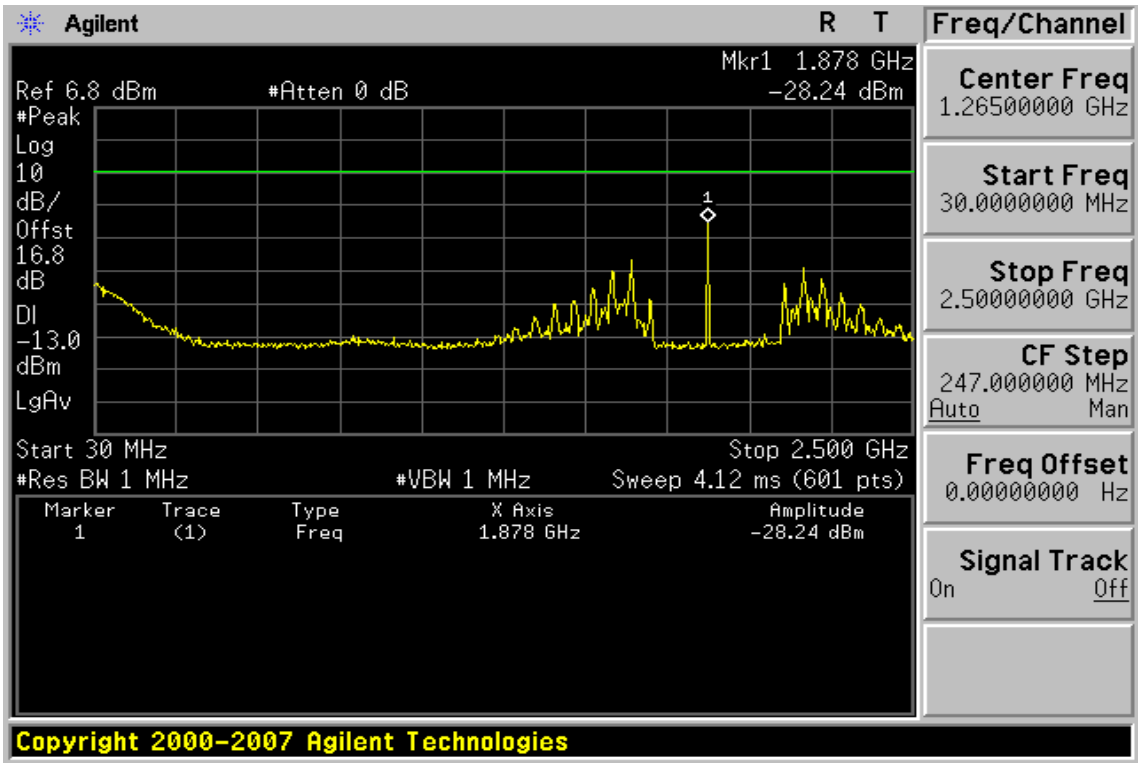


Figure 8-7: Out of Band emission at antenna terminals –PCS 1900 Channel Mid



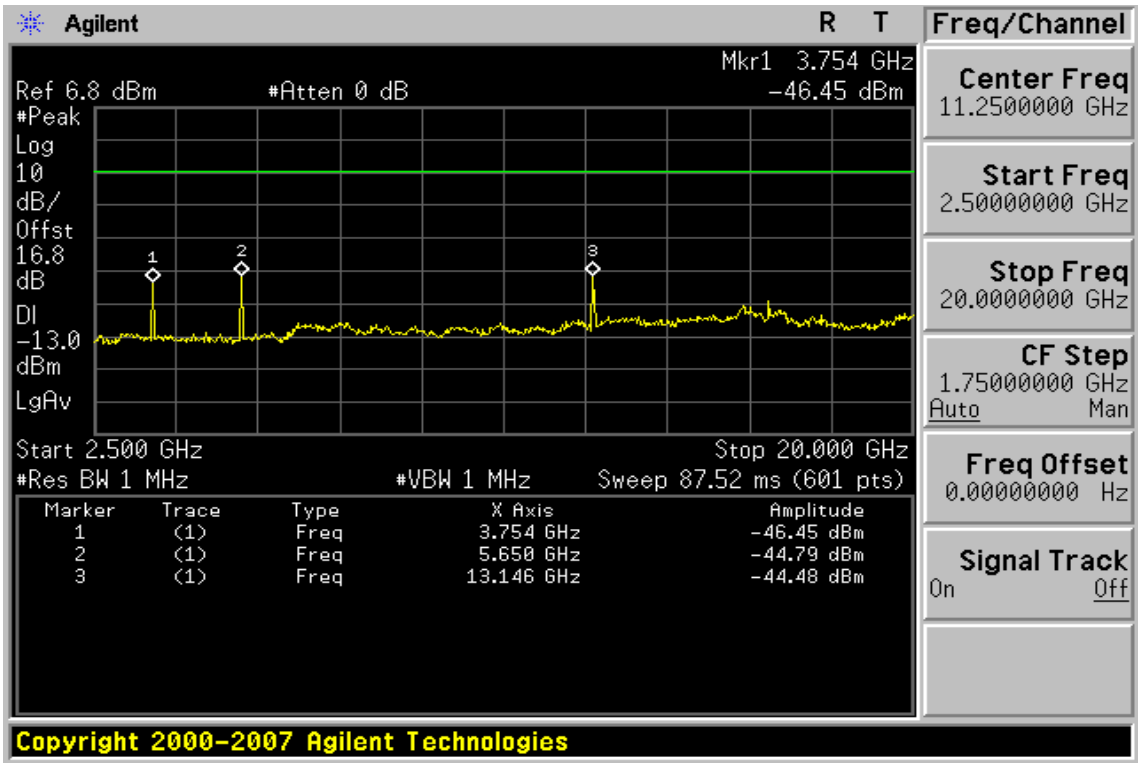
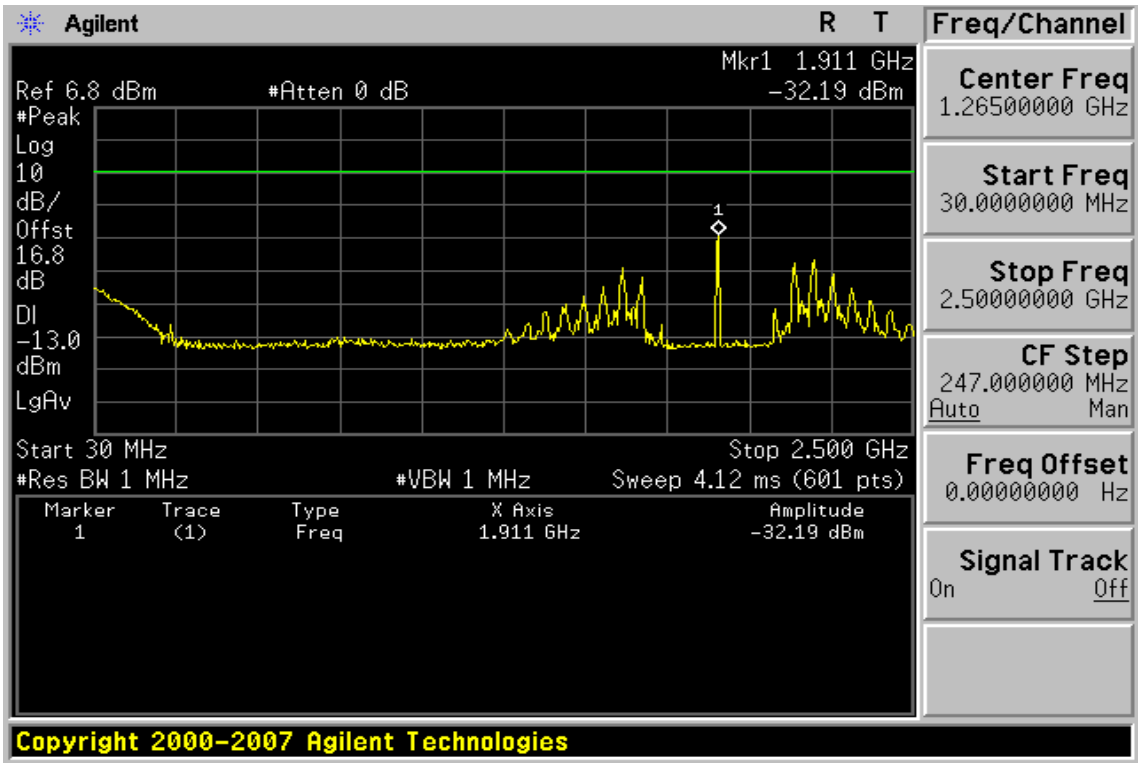


Figure 8-8: Out of Band emission at antenna terminals–PCS 1900 Channel Highest



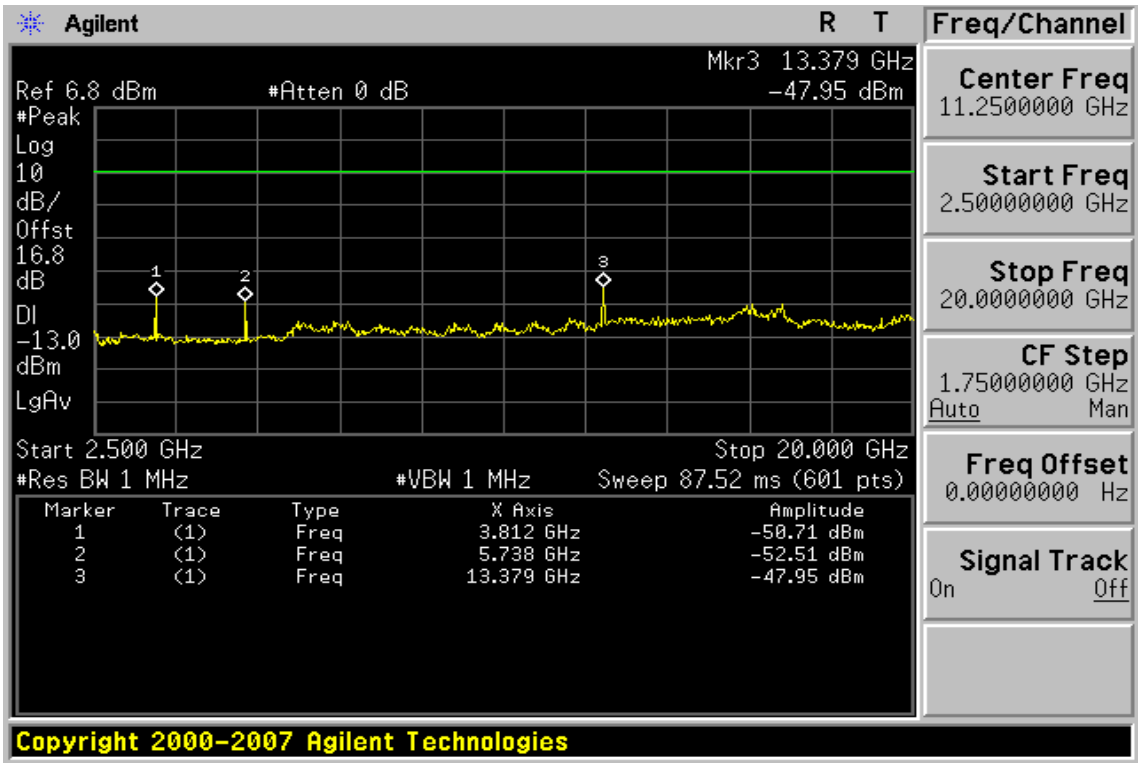


Figure 8-9: Bad edge emission at antenna terminals – PCS 1900 Channel Lowest

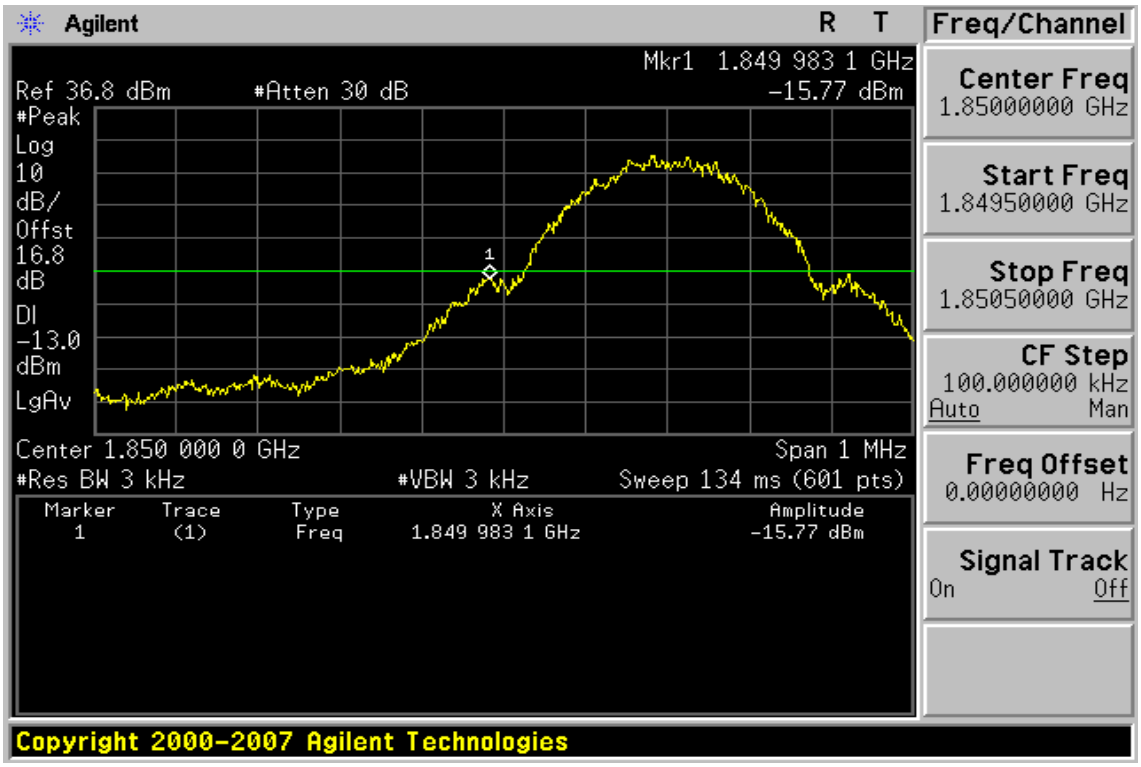


Figure 8-10: Band edge emission at antenna terminals – PCS 1900 Channel Highest

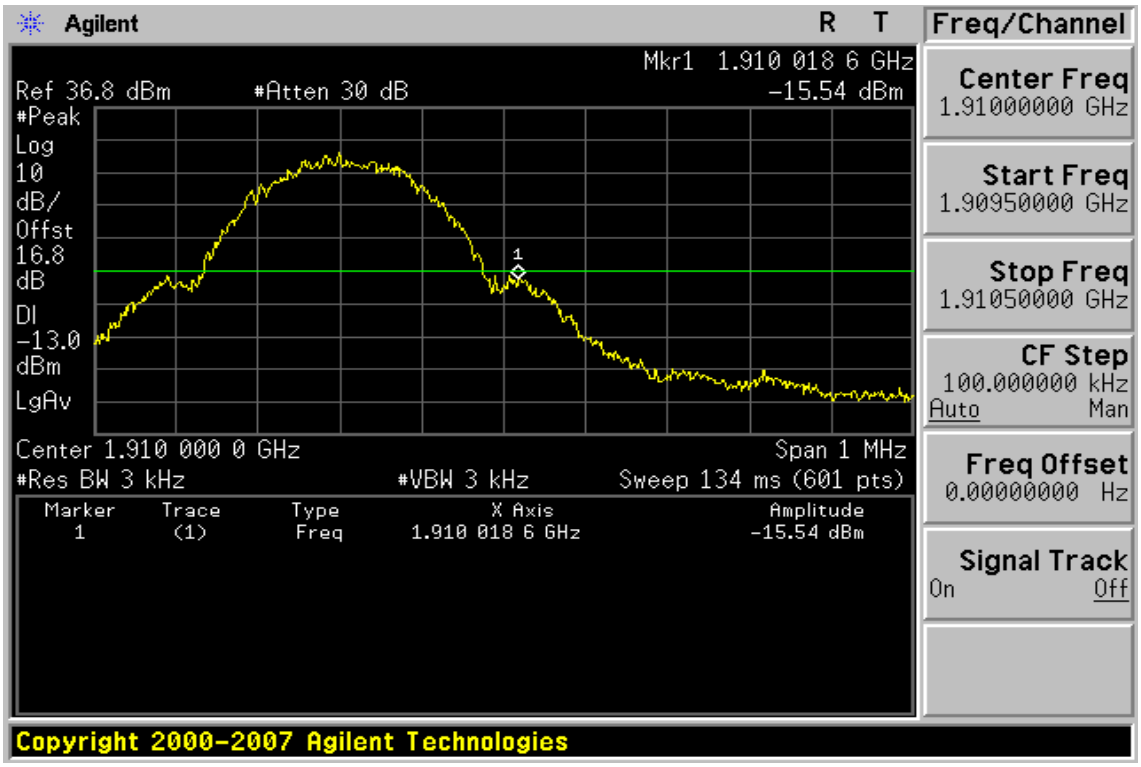
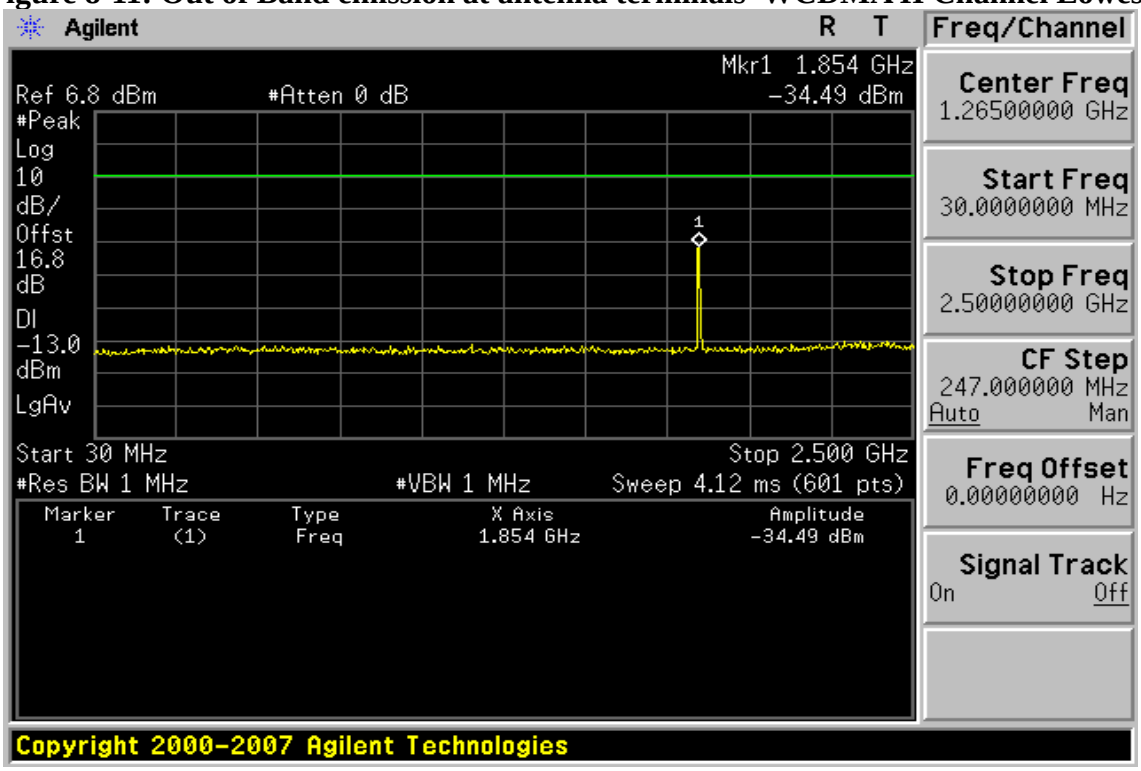


Figure 8-11: Out of Band emission at antenna terminals–WCDMA II Channel Lowest



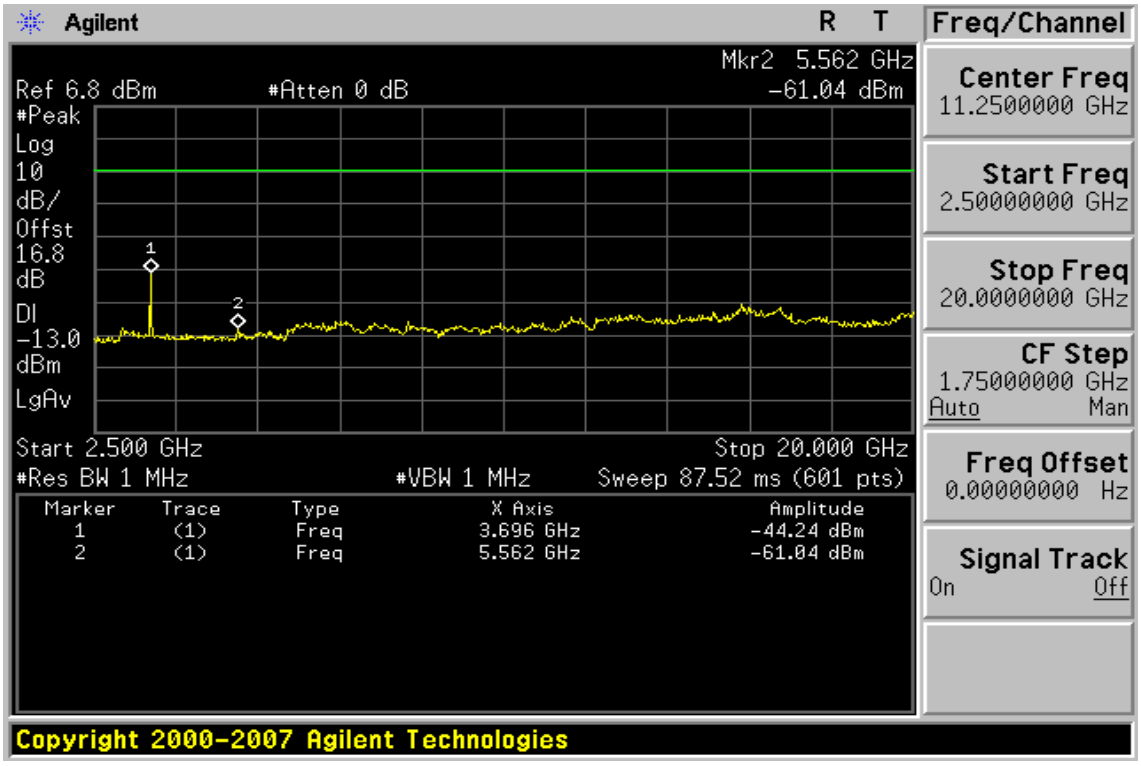
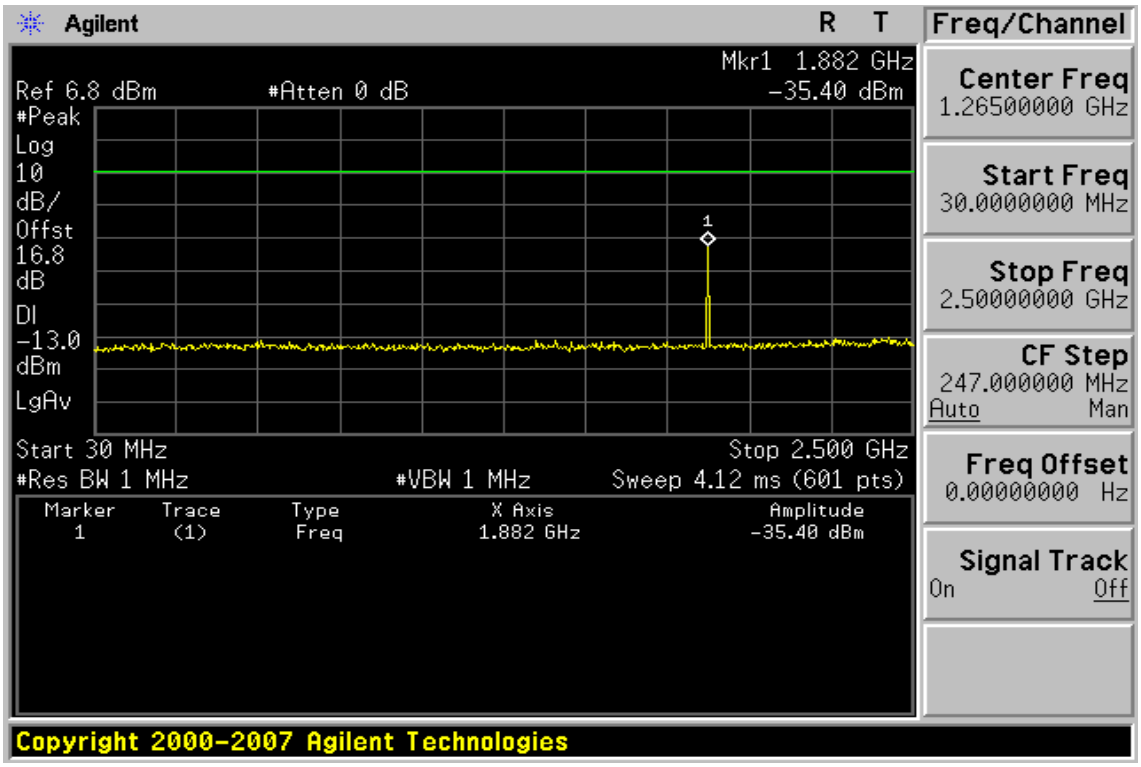


Figure 8-12: Out of Band emission at antenna terminals –WCDMA II Channel Mid



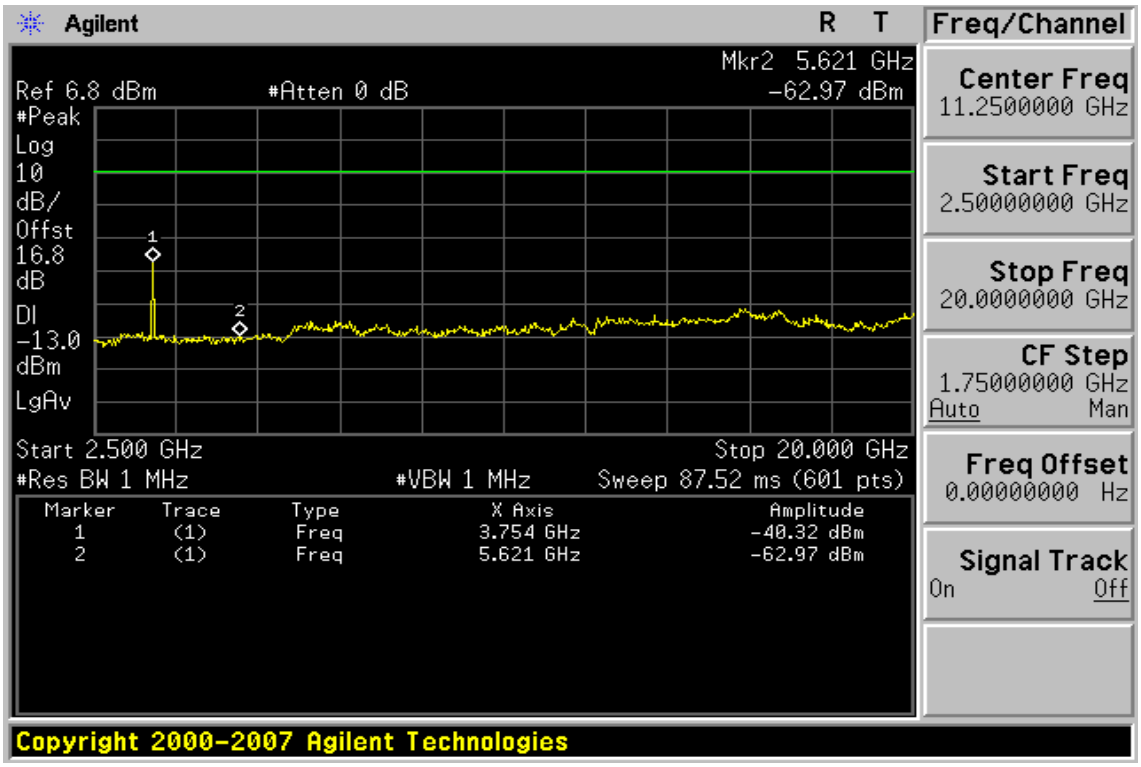
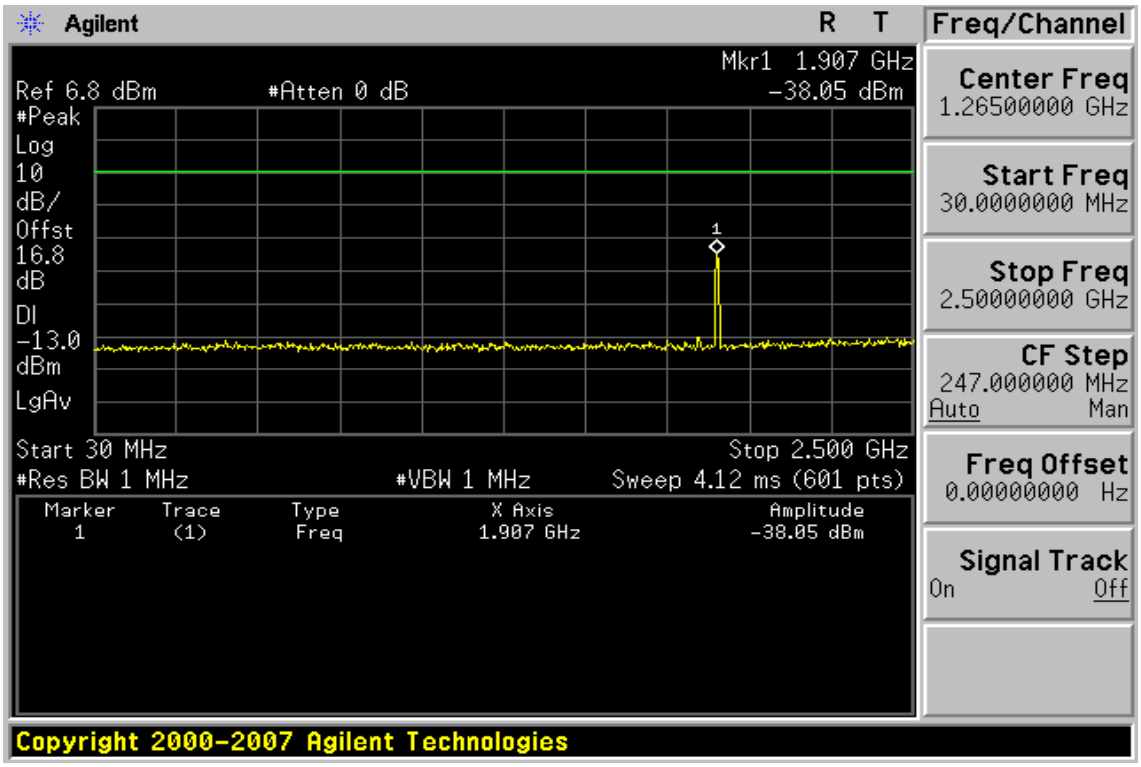


Figure 8-13: Out of Band emission at antenna terminals–WCDMA II Channel Highest



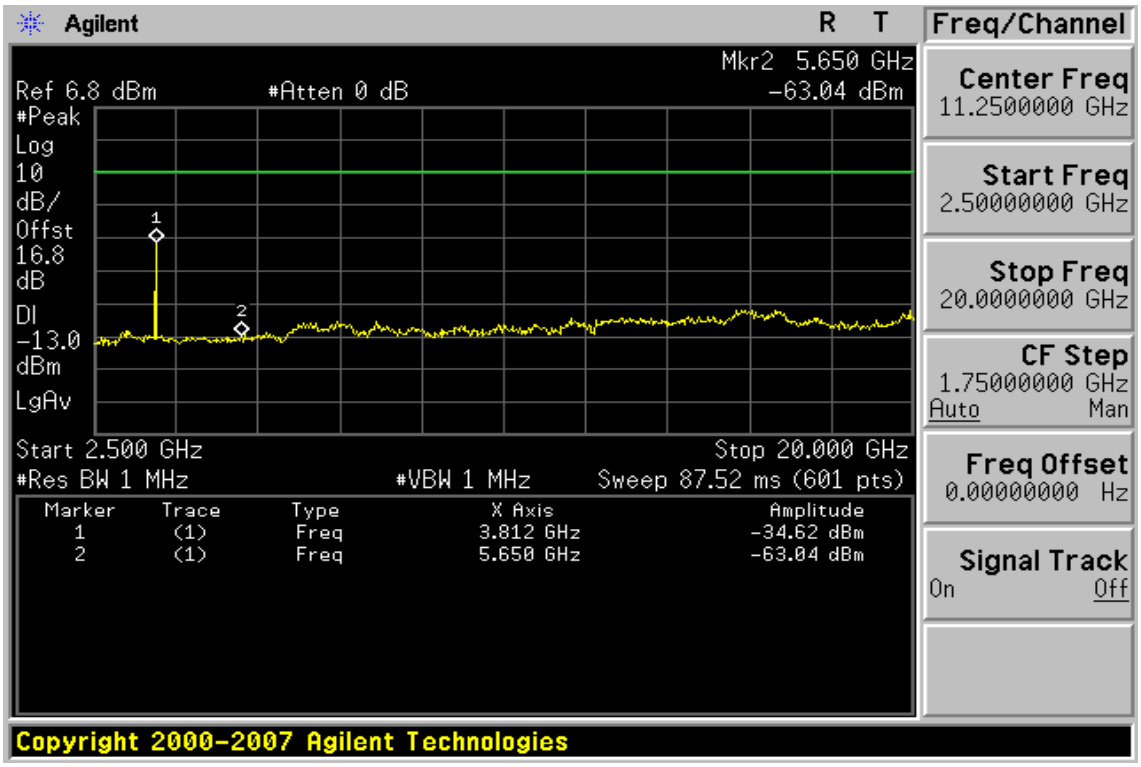


Figure 8-14: Bad edge emission at antenna terminals –WCDMA II Channel Lowest

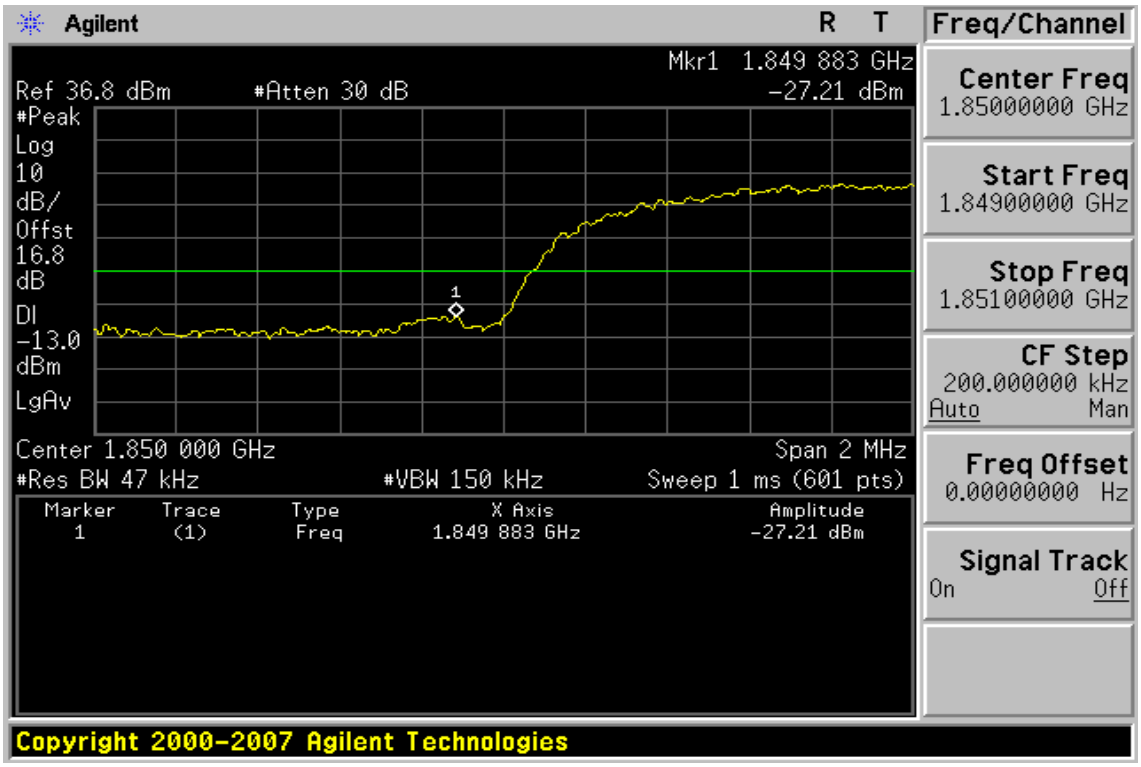


Figure 8-15: Band edge emission at antenna terminals –WCDMA II Channel Highest

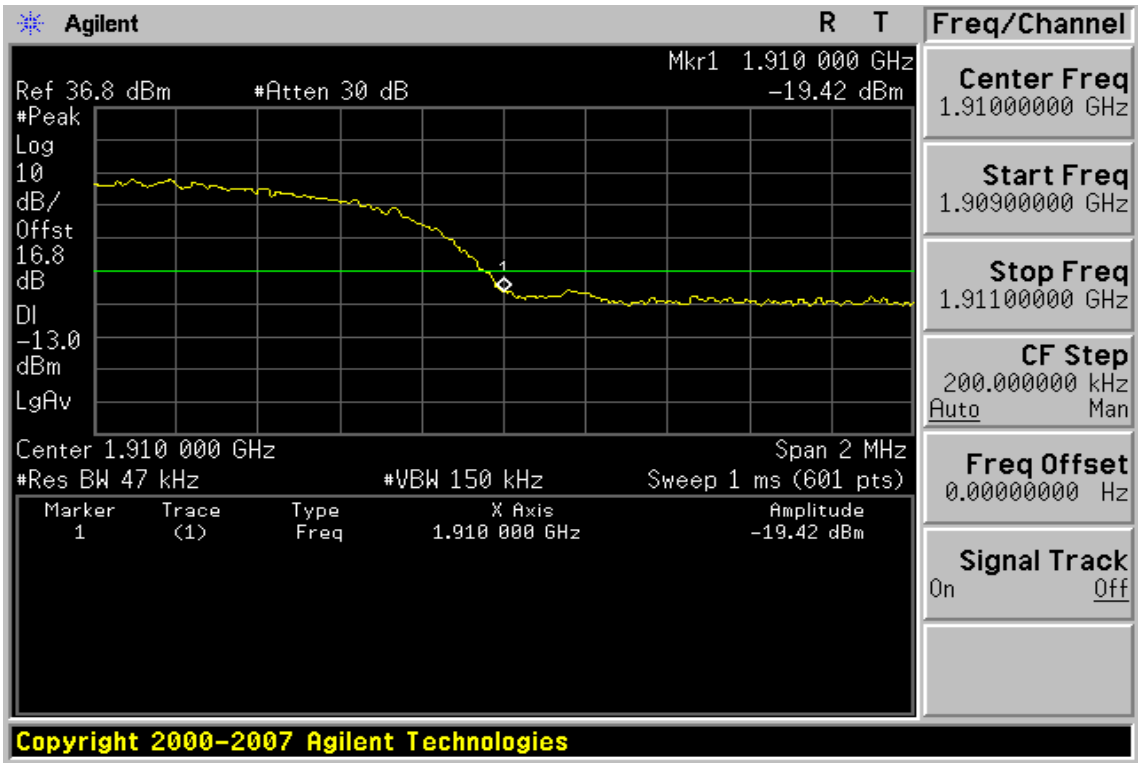
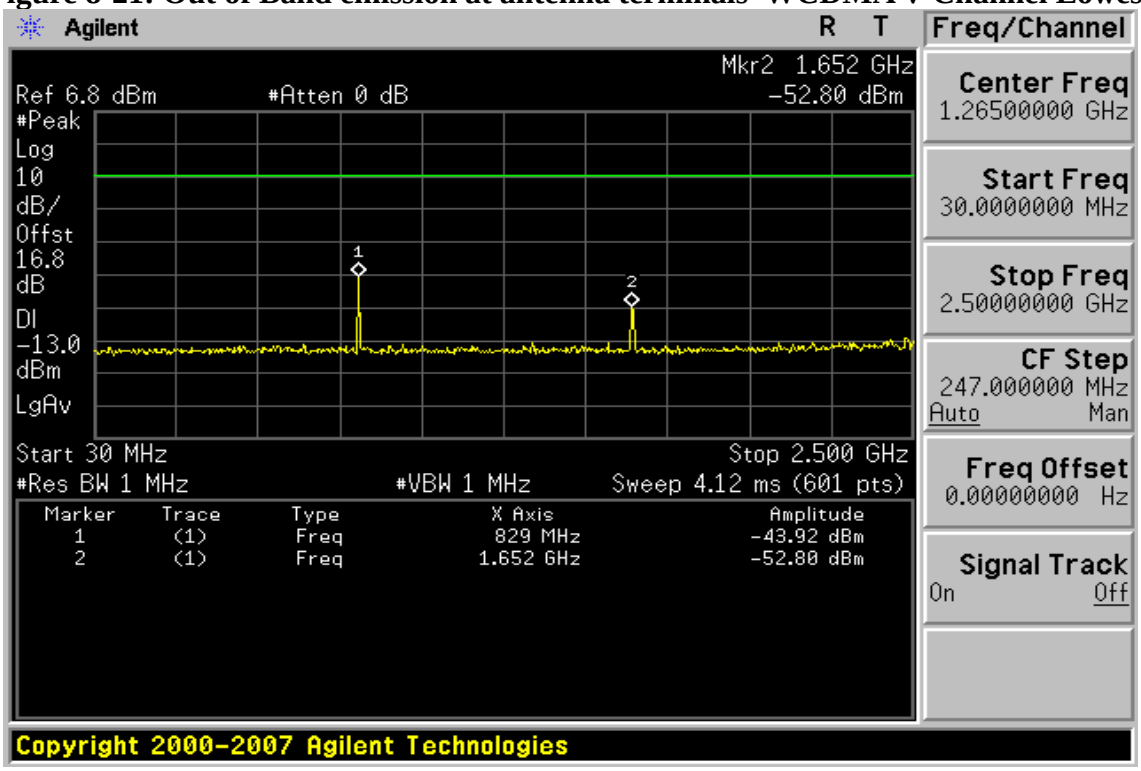


Figure 8-21: Out of Band emission at antenna terminals–WCDMA V Channel Lowest



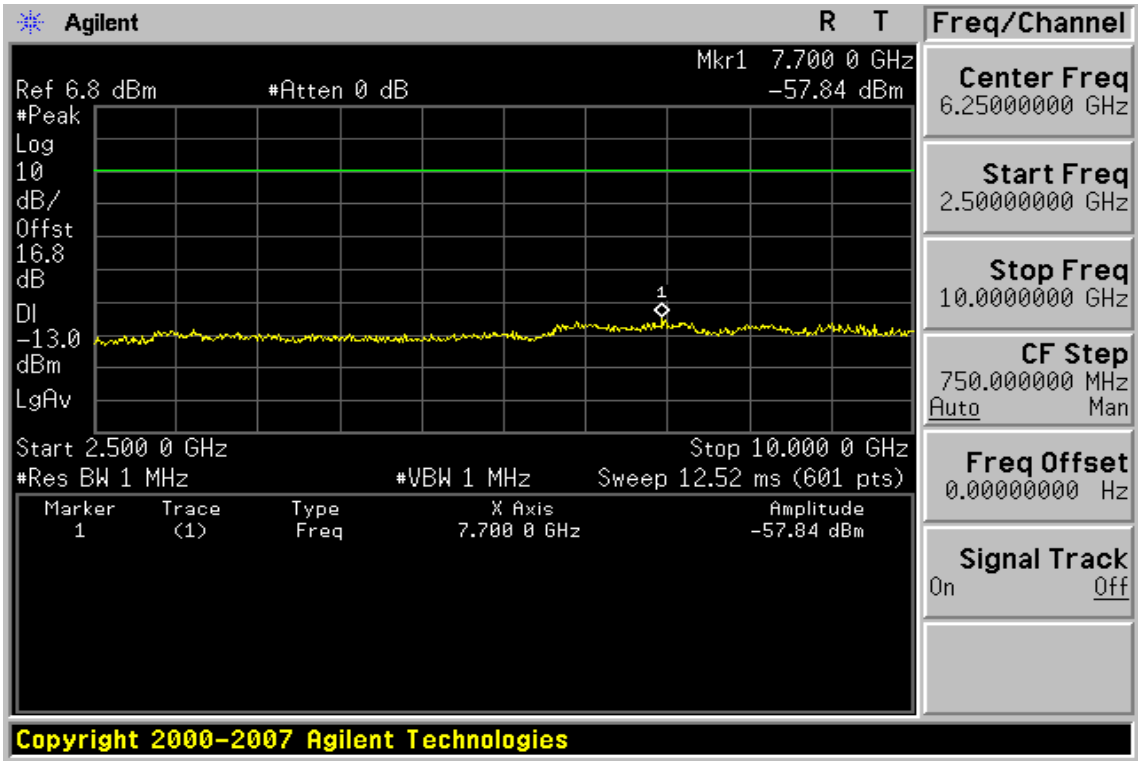
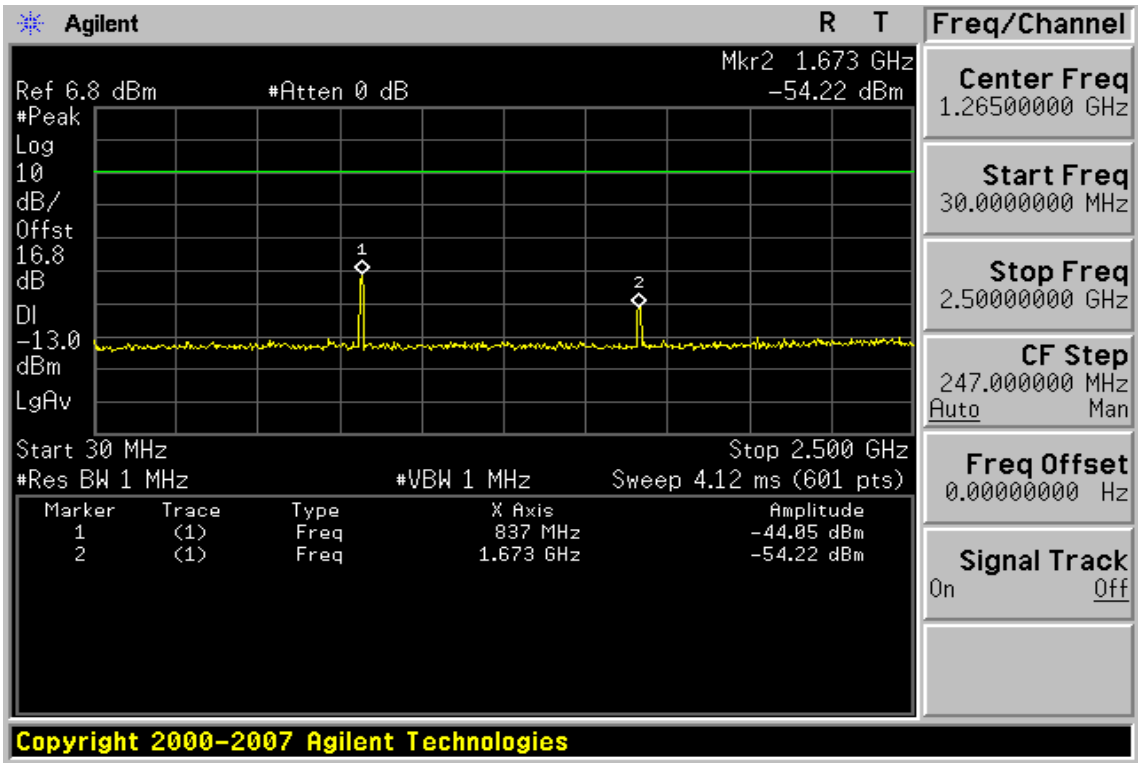


Figure 8-22: Out of Band emission at antenna terminals –WCDMA V Channel Mid



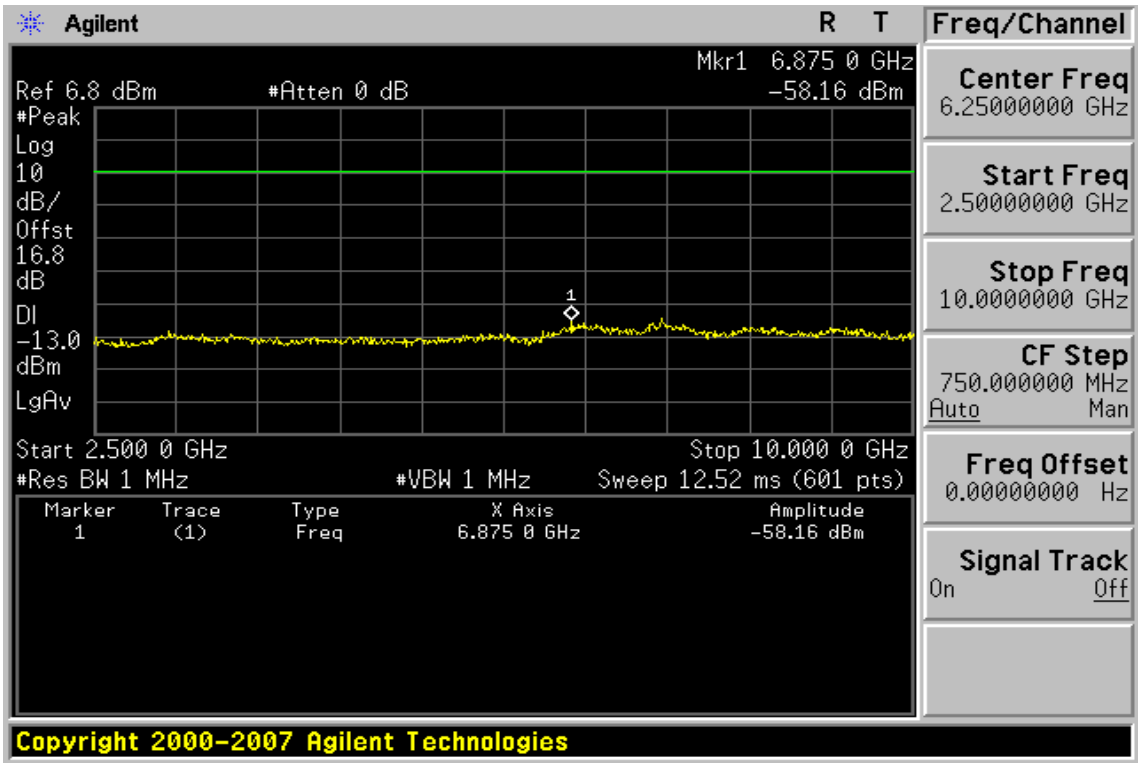
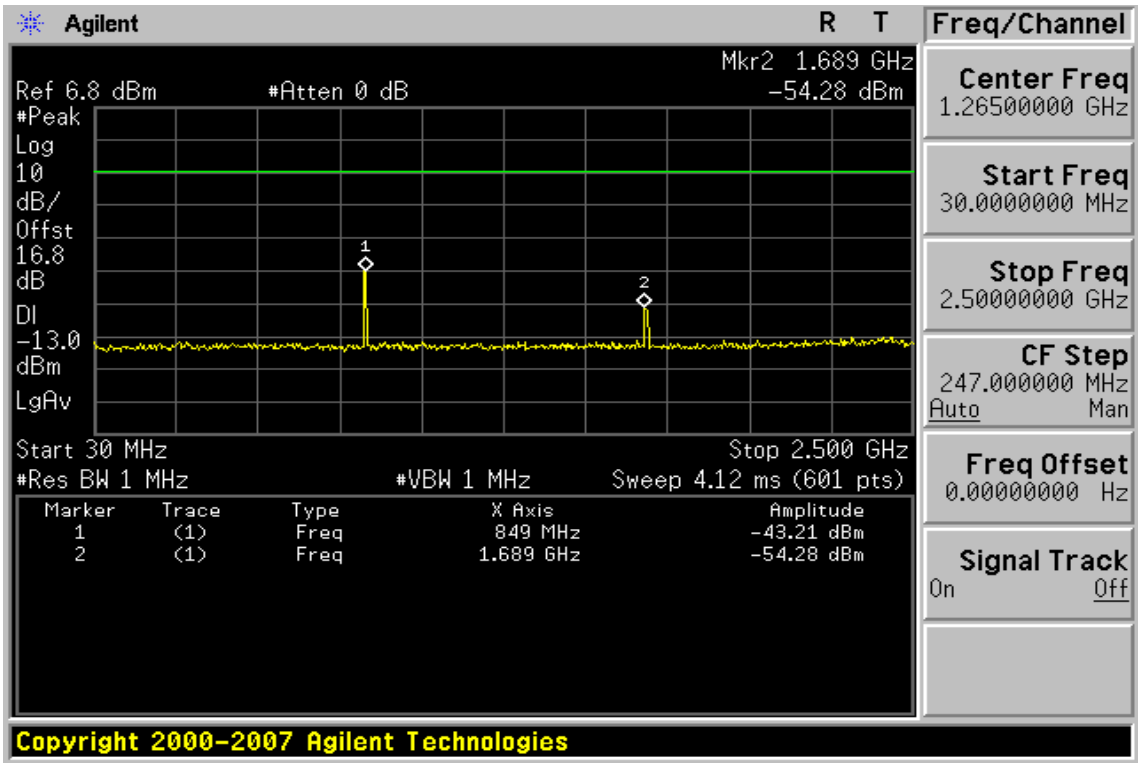


Figure 8-23: Out of Band emission at antenna terminals–WCDMA V Channel Highest



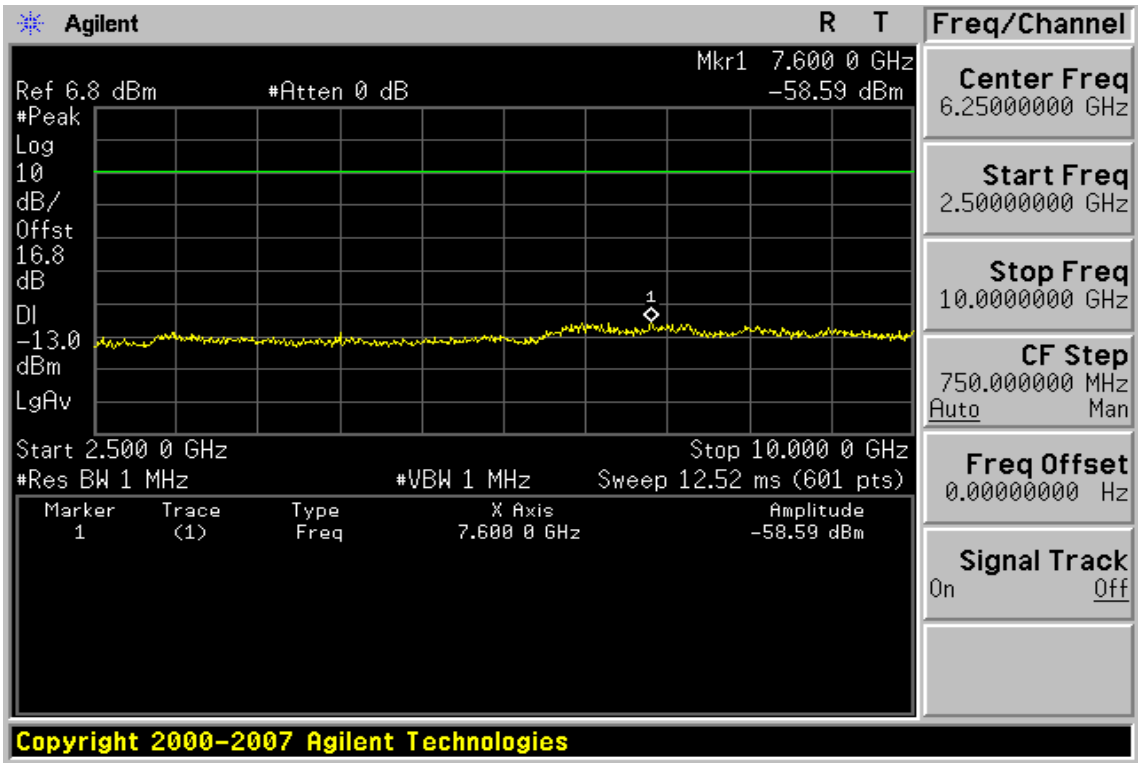


Figure 8-24: Bad edge emission at antenna terminals –WCDMA V Channel Lowest

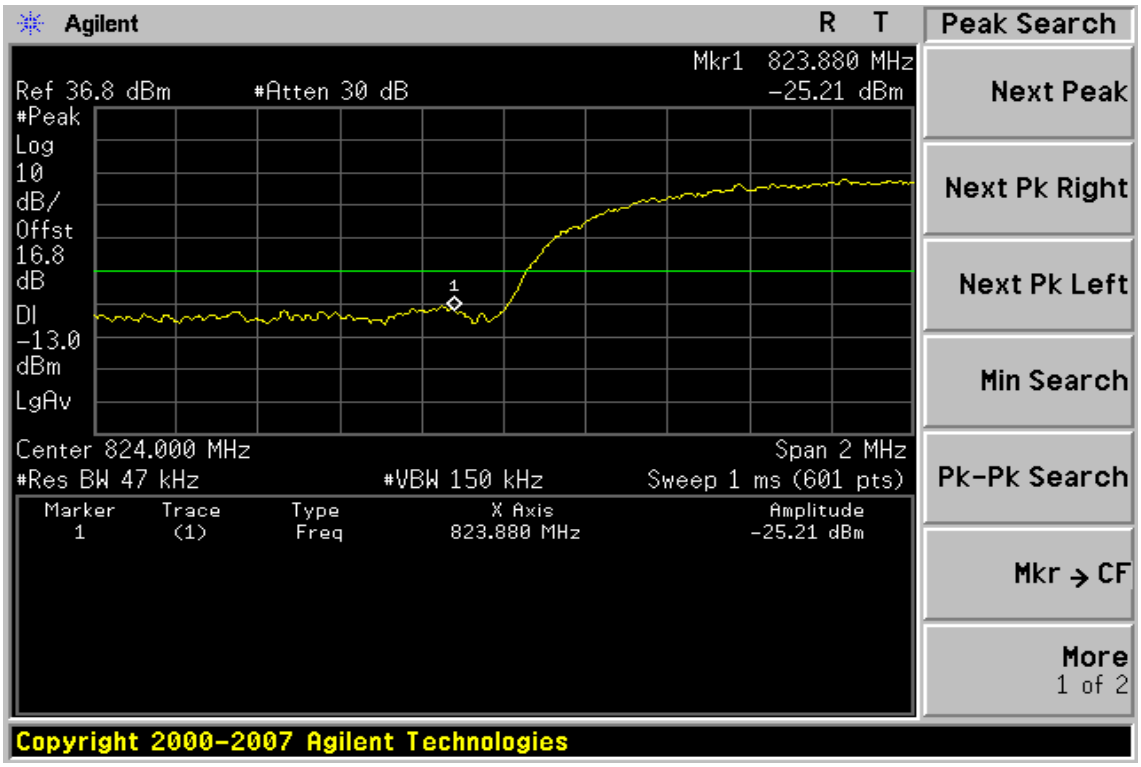
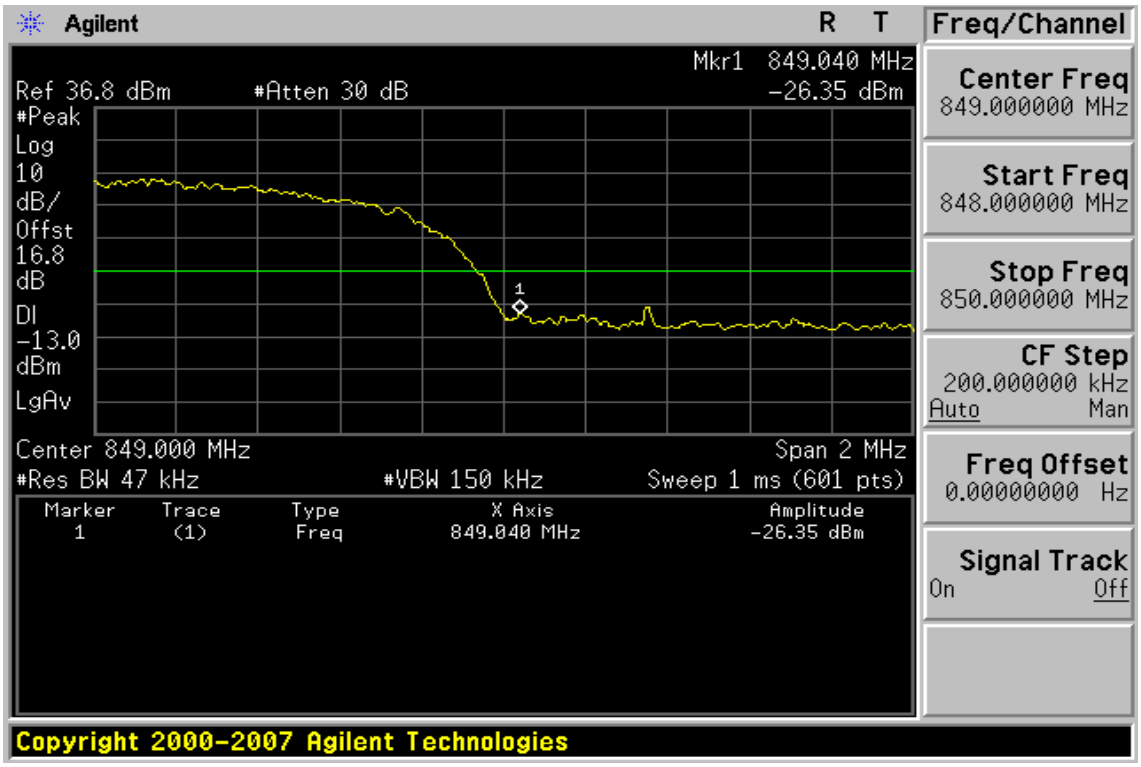


Figure 8-25: Band edge emission at antenna terminals –WCDMA V Channel Highest



9 FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT

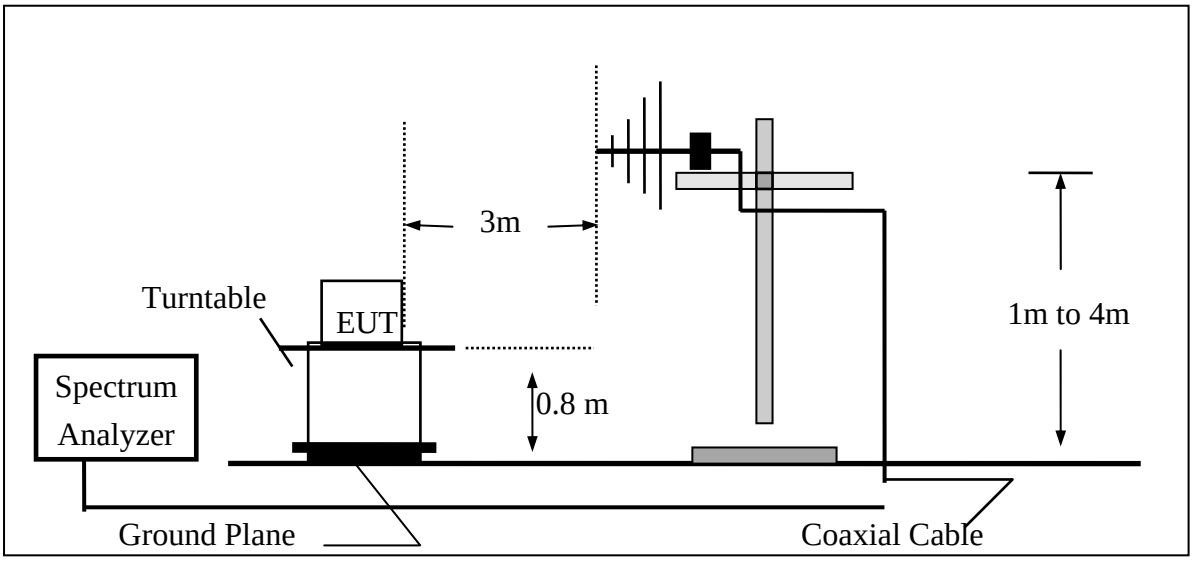
9.1 Standard Applicable

According to FCC §2.1053,

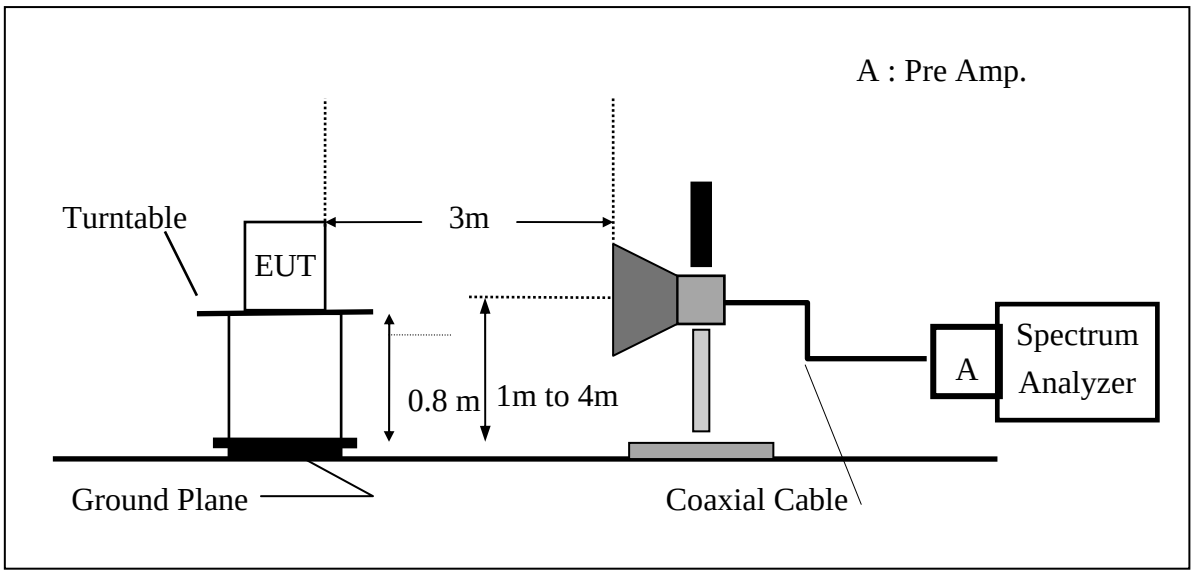
FCC §22.917(a),§24.238(a) the magnitude of each spurious and harmonic emission that can be detected when the equipment is operated under the conditions specified in the instruction manual and/or alignment procedure, shall not be less than 43 + 10 log (mean output power in watts) dBc below the mean power output outside a license's frequency block (-13dBm)

9.2 EUT Setup (Block Diagram of Configuration)

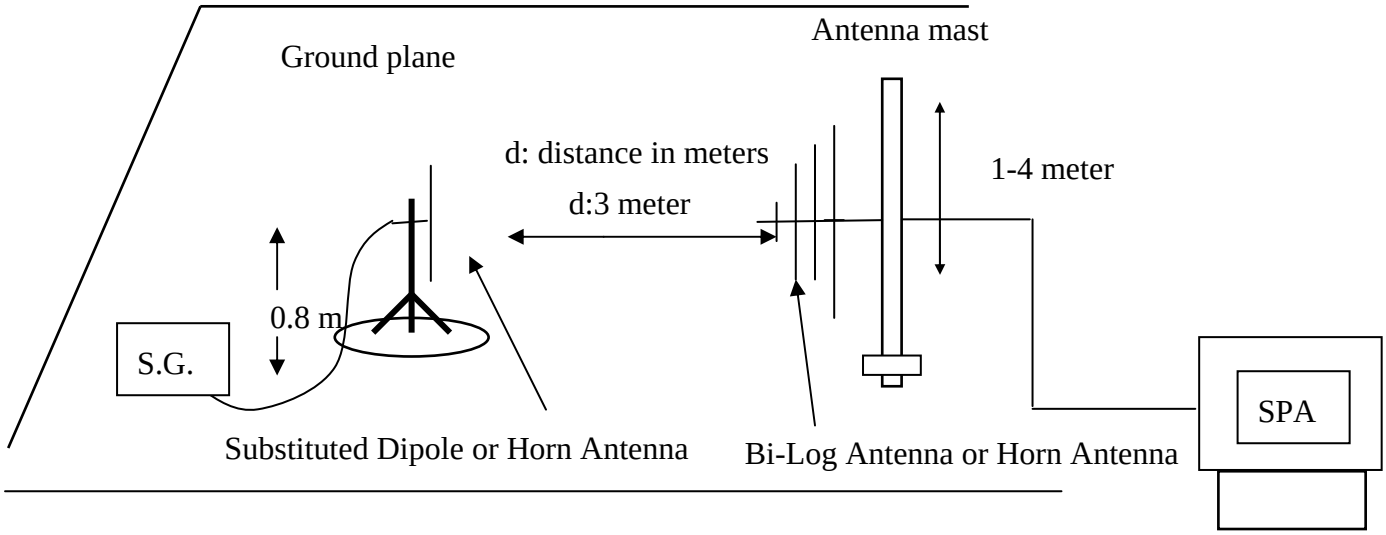
(A) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(B) Radiated Emission Test Set-UP Frequency Over 1 GHz



(C) Substituted Method Test Set-UP



9.3 Measurement 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.

ERP in frequency band 824 –850 MHz were measured using a substitution method. The EUT was replaced by dipole antenna connected, the S.G. output was recorded and ERP was calculated as follows:

EIRP in frequency band 1850.2 –1909.8MHz were measured using a substitution method. The EUT was replaced by a horn antenna connected, the S.G. output was recorded and EIRP was calculated as follows:

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

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

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

9.4 Measurement Equipment Used:

Refer to section 2.4 in this report

9.5 Measurement Result

Refer to attach tabular data sheets.

Radiated Spurious Emission Measurement Result: GSM 850 Mode

Operation Mode	: TX CH Low Mode	Test Date:	Apr. 02, 2010
Fundamental Frequency	: 824.20 MHz	Test By:	Brian
Temperature	: 25℃	Pol:	Ver
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
56.19	40.56	V	-69.10	-0.51	1.09	-70.71	-13.00	-57.71
90.14	43.85	V	-59.33	-7.75	1.27	-68.35	-13.00	-55.35
104.69	42.60	V	-58.89	-7.76	1.38	-68.03	-13.00	-55.03
594.54	32.73	V	-57.16	-7.79	3.02	-67.97	-13.00	-54.97
652.74	36.38	V	-52.57	-7.81	3.17	-63.55	-13.00	-50.55
823.99	73.84	V	-8.50	-7.87	3.62	-20.00	-13.00	-7.00
963.14	33.71	V	-50.61	-8.00	3.92	-62.52	-13.00	-49.52
1644.00	44.66	V	-59.93	9.27	5.22	-55.87	-13.00	-42.87
2463.00	40.57	V	-60.50	10.08	6.51	-56.94	-13.00	-43.94
2472.60	---	V		10.08	6.53		-13.00	
3296.80	---	V		12.17	7.71		-13.00	
4121.00	---	V		12.61	8.86		-13.00	
4945.20	---	V		12.65	9.74		-13.00	
5769.40	---	V		13.55	10.54		-13.00	
6593.60	---	V		12.05	11.30		-13.00	
7417.80	---	V		11.49	12.10		-13.00	
8242.00	---	V		11.48	12.71		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: GSM 850 Mode

Operation Mode	: TX CH Low Mode	Test Date:	Apr. 02, 2010
Fundamental Frequency	: 824.20 MHz	Test By:	Brian
Temperature	: 25℃	Pol:	Hor
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
53.28	38.68	H	-69.76	-0.55	1.11	-71.43	-13.00	-58.43
90.14	40.61	H	-63.12	-7.75	1.27	-72.14	-13.00	-59.14
104.69	38.24	H	-64.27	-7.76	1.38	-73.41	-13.00	-60.41
145.43	33.21	H	-65.04	-7.80	1.57	-74.40	-13.00	-61.40
536.34	37.03	H	-55.16	-7.75	2.92	-65.83	-13.00	-52.83
652.74	46.48	H	-43.13	-7.81	3.17	-54.11	-13.00	-41.11
823.99	83.41	H	-4.97	-7.87	3.62	-16.47	-13.00	-3.47
1644.00	46.80	H	-57.61	9.27	5.22	-53.55	-13.00	-40.55
2463.00	55.48	H	-45.49	10.08	6.51	-41.93	-13.00	-28.93
2472.60	---	H		10.08	6.53		-13.00	
3296.80	---	H		12.17	7.71		-13.00	
4121.00	---	H		12.61	8.86		-13.00	
4945.20	---	H		12.65	9.74		-13.00	
5769.40	---	H		13.55	10.54		-13.00	
6593.60	---	H		12.05	11.30		-13.00	
7417.80	---	H		11.49	12.10		-13.00	
8242.00	---	H		11.48	12.71		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: GSM 850 Mode

Operation Mode	: TX CH Mid Mode	Test Date:	Apr. 02, 2010
Fundamental Frequency	: 836.60 MHz	Test By:	Brian
Temperature	: 25℃	Pol:	Ver
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
56.19	40.35	V	-69.31	-0.51	1.09	-70.92	-13.00	-57.92
90.14	43.98	V	-59.20	-7.75	1.27	-68.22	-13.00	-55.22
106.63	41.63	V	-59.68	-7.77	1.39	-68.83	-13.00	-55.83
577.08	32.59	V	-58.32	-7.78	3.00	-69.09	-13.00	-56.09
664.38	37.63	V	-51.44	-7.82	3.20	-62.46	-13.00	-49.46
950.53	33.05	V	-51.56	-8.00	3.88	-63.44	-13.00	-50.44
1679.00	45.04	V	-59.51	9.38	5.28	-55.41	-13.00	-42.41
2498.00	43.46	V	-57.37	10.06	6.57	-53.88	-13.00	-40.88
3346.40	---	V		12.28	7.79		-13.00	
4183.00	---	V		12.62	8.93		-13.00	
5019.60	---	V		12.67	9.81		-13.00	
5856.20	---	V		13.68	10.62		-13.00	
6692.80	---	V		11.95	11.39		-13.00	
7529.40	---	V		11.45	12.20		-13.00	
8366.00	---	V		11.59	12.81		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

1 The emission behaviors belongs to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: GSM 850 Mode

Operation Mode	: TX CH Mid Mode	Test Date:	Apr. 02, 2010
Fundamental Frequency	: 836.60 MHz	Test By:	Brian
Temperature	: 25℃	Pol:	Hor
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
53.28	37.97	H	-70.47	-0.55	1.11	-72.14	-13.00	-59.14
90.14	41.48	H	-62.25	-7.75	1.27	-71.27	-13.00	-58.27
104.69	37.61	H	-64.90	-7.76	1.38	-74.04	-13.00	-61.04
547.98	34.47	H	-57.32	-7.76	2.95	-68.03	-13.00	-55.03
606.18	34.26	H	-56.32	-7.79	3.05	-67.16	-13.00	-54.16
664.38	45.49	H	-43.63	-7.82	3.20	-54.65	-13.00	-41.65
1679.00	48.80	H	-55.57	9.38	5.28	-51.47	-13.00	-38.47
2498.00	50.54	H	-50.20	10.06	6.57	-46.71	-13.00	-33.71
3346.40	---	H		12.28	7.79		-13.00	
4183.00	---	H		12.62	8.93		-13.00	
5019.60	---	H		12.67	9.81		-13.00	
5856.20	---	H		13.68	10.62		-13.00	
6692.80	---	H		11.95	11.39		-13.00	
7529.40	---	H		11.45	12.20		-13.00	
8366.00	---	H		11.59	12.81		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: GSM 850 Mode

Operation Mode	: TX CH High Mode	Test Date:	Apr. 02, 2010
Fundamental Frequency	: 848.80 MHz	Test By:	Brian
Temperature	: 25℃	Pol:	Ver
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
53.28	38.99	V	-69.42	-0.55	1.11	-71.08	-13.00	-58.08
77.53	42.23	V	-69.19	-2.12	1.21	-72.52	-13.00	-59.52
90.14	43.34	V	-59.84	-7.75	1.27	-68.86	-13.00	-55.86
104.69	41.70	V	-59.79	-7.76	1.38	-68.93	-13.00	-55.93
676.99	35.35	V	-53.85	-7.84	3.23	-64.92	-13.00	-51.92
722.58	32.90	V	-55.49	-7.86	3.37	-66.72	-13.00	-53.72
849.00	79.13	V	-6.79	-7.88	3.68	-18.35	-13.00	-5.35
1693.00	50.59	V	-53.95	9.42	5.30	-49.83	-13.00	-36.83
2533.00	39.91	V	-60.79	10.16	6.61	-57.24	-13.00	-44.24
2546.40	---	V		10.20	6.63		-13.00	
3395.20	---	V		12.38	7.87		-13.00	
4244.00	---	V		12.63	9.00		-13.00	
5092.80	---	V		12.74	9.88		-13.00	
5941.60	---	V		13.81	10.70		-13.00	
6790.40	---	V		11.86	11.48		-13.00	
7639.20	---	V		11.40	12.27		-13.00	
8488.00	---	V		11.70	12.91		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: GSM 850 Mode

Operation Mode	: TX CH High Mode	Test Date:	Apr. 02, 2010
Fundamental Frequency	: 848.80 MHz	Test By:	Brian
Temperature	: 25℃	Pol:	Hor
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
53.28	38.94	H	-69.50	-0.55	1.11	-71.17	-13.00	-58.17
90.14	41.33	H	-62.40	-7.75	1.27	-71.42	-13.00	-58.42
104.69	38.29	H	-64.22	-7.76	1.38	-73.36	-13.00	-60.36
560.59	33.93	H	-57.57	-7.77	2.97	-68.32	-13.00	-55.32
618.79	37.87	H	-52.46	-7.80	3.08	-63.34	-13.00	-50.34
676.99	41.81	H	-46.78	-7.84	3.23	-57.85	-13.00	-44.85
849.03	83.76	H	-5.27	-7.88	3.68	-16.83	-13.00	-3.83
1693.00	48.14	H	-56.21	9.42	5.30	-52.09	-13.00	-39.09
2533.00	51.96	H	-48.68	10.16	6.61	-45.13	-13.00	-32.13
2546.40	---	H		10.20	6.63		-13.00	
3395.20	---	H		12.38	7.87		-13.00	
4244.00	---	H		12.63	9.00		-13.00	
5092.80	---	H		12.74	9.88		-13.00	
5941.60	---	H		13.81	10.70		-13.00	
6790.40	---	H		11.86	11.48		-13.00	
7639.20	---	H		11.40	12.27		-13.00	
8488.00	---	H		11.70	12.91		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: PCS 1900 Mode

Operation Mode	: TX CH Low Mode	Test Date:	Apr. 02, 2010
Fundamental Frequency	: 1850.20MHz	Test By:	Brian
Temperature	: 25℃	Pol:	Ver
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
53.28	40.23	V	-68.18	-0.55	1.11	-69.84	-13.00	-56.84
90.14	45.03	V	-58.15	-7.75	1.27	-67.17	-13.00	-54.17
96.93	42.40	V	-59.91	-7.76	1.33	-69.00	-13.00	-56.00
106.63	42.89	V	-58.42	-7.77	1.39	-67.57	-13.00	-54.57
603.27	32.11	V	-57.42	-7.79	3.04	-68.25	-13.00	-55.25
914.64	32.01	V	-52.70	-7.96	3.82	-64.48	-13.00	-51.48
1849.99	70.20	V	-34.19	9.90	5.56	-29.85	-13.00	-16.85
3700.00	34.60	V	-63.33	12.61	8.31	-59.03	-13.00	-46.03
5550.60	---	V		13.23	10.33		-13.00	
7400.80	---	V		11.50	12.08		-13.00	
9251.00	---	V		11.92	13.50		-13.00	
11101.20	---	V		11.66	15.11		-13.00	
12951.40	---	V		13.63	16.60		-13.00	
14801.60	---	V		12.76	17.95		-13.00	
16651.80	---	V		15.92	19.14		-13.00	
18502.00	---	V		18.75	10.40		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: PCS 1900 Mode

Operation Mode	: TX CH Low Mode	Test Date:	Apr. 02, 2010
Fundamental Frequency	: 1850.20MHz	Test By:	Brian
Temperature	: 25℃	Pol:	Hor
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
53.28	40.35	H	-68.09	-0.55	1.11	-69.76	-13.00	-56.76
90.14	42.75	H	-60.98	-7.75	1.27	-70.00	-13.00	-57.00
96.93	38.40	H	-64.83	-7.76	1.33	-73.92	-13.00	-60.92
148.34	32.82	H	-65.12	-7.80	1.58	-74.50	-13.00	-61.50
681.84	32.32	H	-56.07	-7.84	3.24	-67.15	-13.00	-54.15
963.14	32.07	H	-52.06	-8.00	3.92	-63.98	-13.00	-50.98
1849.99	82.73	H	-21.45	9.90	5.56	-17.11	-13.00	-4.11
3700.00	34.98	H	-63.07	12.61	8.31	-58.77	-13.00	-45.77
5550.60	---	H		13.23	10.33		-13.00	
7400.80	---	H		11.50	12.08		-13.00	
9251.00	---	H		11.92	13.50		-13.00	
11101.20	---	H		11.66	15.11		-13.00	
12951.40	---	H		13.63	16.60		-13.00	
14801.60	---	H		12.76	17.95		-13.00	
16651.80	---	H		15.92	19.14		-13.00	
18502.00	---	H		18.75	10.40		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: PCS 1900 Mode

Operation Mode	: TX CH Mid Mode	Test Date:	Apr. 02, 2010
Fundamental Frequency	: 1880MHz	Test By:	Brian
Temperature	: 25℃	Pol:	Ver
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
53.28	40.80	V	-67.61	-0.55	1.11	-69.27	-13.00	-56.27
77.53	43.99	V	-67.43	-2.12	1.21	-70.76	-13.00	-57.76
90.14	44.43	V	-58.75	-7.75	1.27	-67.77	-13.00	-54.77
96.93	41.60	V	-60.71	-7.76	1.33	-69.80	-13.00	-56.80
106.63	42.30	V	-59.01	-7.77	1.39	-68.16	-13.00	-55.16
737.13	32.17	V	-55.54	-7.87	3.42	-66.83	-13.00	-53.83
3758.00	37.74	V	-59.93	12.60	8.39	-55.71	-13.00	-42.71
5640.00	---	V		13.36	10.41		-13.00	
7520.00	---	V		11.45	12.19		-13.00	
9400.00	---	V		11.93	13.61		-13.00	
11280.00	---	V		11.92	15.27		-13.00	
13160.00	---	V		13.33	16.71		-13.00	
15040.00	---	V		13.76	18.15		-13.00	
16920.00	---	V		15.27	19.32		-13.00	
18800.00	---	V		18.68	16.58		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: PCS 1900 Mode

Operation Mode	: TX CH Mid Mode	Test Date:	Apr. 02, 2010
Fundamental Frequency	: 1880MHz	Test By:	Brian
Temperature	: 25℃	Pol:	Hor
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
53.28	39.94	H	-68.50	-0.55	1.11	-70.17	-13.00	-57.17
90.14	42.26	H	-61.47	-7.75	1.27	-70.49	-13.00	-57.49
106.63	38.01	H	-64.30	-7.77	1.39	-73.45	-13.00	-60.45
155.13	34.32	H	-63.85	-7.80	1.60	-73.25	-13.00	-60.25
773.99	32.40	H	-59.47	-7.87	3.52	-70.86	-13.00	-57.86
892.33	32.43	H	-52.63	-7.94	3.77	-64.34	-13.00	-51.34
3760.00	34.49	H	-63.28	12.60	8.39	-59.07	-13.00	-46.07
5640.00	---	H		13.36	10.41		-13.00	
7520.00	---	H		11.45	12.19		-13.00	
9400.00	---	H		11.93	13.61		-13.00	
11280.00	---	H		11.92	15.27		-13.00	
13160.00	---	H		13.33	16.71		-13.00	
15040.00	---	H		13.76	18.15		-13.00	
16920.00	---	H		15.27	19.32		-13.00	
18800.00	---	H		18.68	16.58		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: PCS 1900 Mode

Operation Mode	: TX CH High Mode	Test Date:	Apr. 02, 2010
Fundamental Frequency	: 1909.8 MHz	Test By:	Brian
Temperature	: 25℃	Pol:	Ver
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
53.28	40.65	V	-67.76	-0.55	1.11	-69.42	-13.00	-56.42
77.53	43.80	V	-67.62	-2.12	1.21	-70.95	-13.00	-57.95
90.14	45.26	V	-57.92	-7.75	1.27	-66.94	-13.00	-53.94
94.99	42.58	V	-59.98	-7.75	1.31	-69.05	-13.00	-56.05
104.69	43.65	V	-57.84	-7.76	1.38	-66.98	-13.00	-53.98
775.93	32.57	V	-54.30	-7.87	3.52	-65.69	-13.00	-52.69
1910.03	67.07	V	-30.79	10.08	5.66	-26.37	-13.00	-13.37
3814.00	37.11	V	-60.31	12.60	8.46	-56.17	-13.00	-43.17
5729.40	---	V		13.49	10.50		-13.00	
7639.20	---	V		11.40	12.27		-13.00	
9549.00	---	V		11.95	13.74		-13.00	
11458.80	---	V		12.17	15.43		-13.00	
13368.60	---	V		12.97	16.82		-13.00	
15278.40	---	V		15.00	18.29		-13.00	
17188.20	---	V		14.47	19.52		-13.00	
19098.00	---	V		18.66	20.78		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: PCS 1900 Mode

Operation Mode	: TX CH High Mode	Test Date:	Apr. 02, 2010
Fundamental Frequency	: 1909.8 MHz	Test By:	Brian
Temperature	: 25℃	Pol:	Hor
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
53.28	39.60	H	-68.84	-0.55	1.11	-70.51	-13.00	-57.51
90.14	42.53	H	-61.20	-7.75	1.27	-70.22	-13.00	-57.22
104.69	38.60	H	-63.91	-7.76	1.38	-73.05	-13.00	-60.05
261.83	36.12	H	-62.73	-7.90	2.03	-72.66	-13.00	-59.66
769.14	32.45	H	-60.46	-7.87	3.51	-71.84	-13.00	-58.84
870.99	32.88	H	-52.75	-7.91	3.73	-64.38	-13.00	-51.38
1910.00	78.38	H	-26.75	10.08	5.66	-22.33	-13.00	-9.33
3819.00	35.47	H	-62.04	12.60	8.47	-57.90	-13.00	-44.90
5729.40	---	H		13.49	10.50		-13.00	
7639.20	---	H		11.40	12.27		-13.00	
9549.00	---	H		11.95	13.74		-13.00	
11458.80	---	H		12.17	15.43		-13.00	
13368.60	---	H		12.97	16.82		-13.00	
15278.40	---	H		15.00	18.29		-13.00	
17188.20	---	H		14.47	19.52		-13.00	
19098.00	---	H		18.66	20.78		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: WCDMA II Mode

Operation Mode	: TX CH Low Mode	Test Date:	Apr. 02, 2010
Fundamental Frequency	: 1852.4MHz	Test By:	Brian
Temperature	: 25℃	Pol:	Ver
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
56.19	41.10	V	-68.56	-0.51	1.09	-70.17	-13.00	-57.17
92.08	43.28	V	-59.65	-7.75	1.29	-68.69	-13.00	-55.69
104.69	46.29	V	-55.20	-7.76	1.38	-64.34	-13.00	-51.34
631.40	32.10	V	-57.06	-7.80	3.11	-67.98	-13.00	-54.98
771.08	32.42	V	-54.50	-7.87	3.51	-65.88	-13.00	-52.88
902.03	31.99	V	-52.75	-7.95	3.79	-64.50	-13.00	-51.50
1849.98	55.58	V	-38.71	9.90	5.56	-34.37	-13.00	-21.37
3709.00	42.85	V	-55.04	12.61	8.32	-50.75	-13.00	-37.75
5557.20	---	V		13.24	10.33		-13.00	
7409.60	---	V		11.49	12.09		-13.00	
9262.00	---	V		11.92	13.51		-13.00	
11114.40	---	V		11.68	15.12		-13.00	
12966.80	---	V		13.62	16.61		-13.00	
14819.20	---	V		12.83	17.96		-13.00	
16671.60	---	V		15.87	19.15		-13.00	
18524.00	---	V		18.74	10.86		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: WCDMA II Mode

Operation Mode	: TX CH Low Mode	Test Date:	Apr. 02, 2010
Fundamental Frequency	: 1852.4MHz	Test By:	Brian
Temperature	: 25℃	Pol:	Hor
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
53.28	40.21	H	-68.23	-0.55	1.11	-69.90	-13.00	-56.90
90.14	40.77	H	-62.96	-7.75	1.27	-71.98	-13.00	-58.98
104.69	38.61	H	-63.90	-7.76	1.38	-73.04	-13.00	-60.04
688.63	32.35	H	-55.76	-7.85	3.26	-66.86	-13.00	-53.86
819.58	32.13	H	-54.15	-7.87	3.61	-65.64	-13.00	-52.64
929.19	32.57	H	-51.91	-7.98	3.84	-63.73	-13.00	-50.73
1849.87	67.56	H	-37.03	9.90	5.56	-32.69	-13.00	-19.69
3709.00	46.80	H	-51.21	12.61	8.32	-46.92	-13.00	-33.92
5557.20	---	H		13.24	10.33		-13.00	
7409.60	---	H		11.49	12.09		-13.00	
9262.00	---	H		11.92	13.51		-13.00	
11114.40	---	H		11.68	15.12		-13.00	
12966.80	---	H		13.62	16.61		-13.00	
14819.20	---	H		12.83	17.96		-13.00	
16671.60	---	H		15.87	19.15		-13.00	
18524.00	---	H		18.74	10.86		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: WCDMA II Mode

Operation Mode	: TX CH Mid Mode	Test Date:	Apr. 02, 2010
Fundamental Frequency	: 1880MHz	Test By:	Brian
Temperature	: 25℃	Pol:	Ver
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
56.19	41.07	V	-68.59	-0.51	1.09	-70.20	-13.00	-57.20
90.14	43.08	V	-60.10	-7.75	1.27	-69.12	-13.00	-56.12
104.69	45.59	V	-55.90	-7.76	1.38	-65.04	-13.00	-52.04
725.49	32.05	V	-56.20	-7.87	3.38	-67.45	-13.00	-54.45
780.78	32.65	V	-54.18	-7.87	3.53	-65.58	-13.00	-52.58
914.64	31.81	V	-52.90	-7.96	3.82	-64.68	-13.00	-51.68
3758.00	38.70	V	-58.97	12.60	8.39	-54.75	-13.00	-41.75
5640.00	---	V		13.36	10.41		-13.00	
7520.00	---	V		11.45	12.19		-13.00	
9400.00	---	V		11.93	13.61		-13.00	
11280.00	---	V		11.92	15.27		-13.00	
13160.00	---	V		13.33	16.71		-13.00	
15040.00	---	V		13.76	18.15		-13.00	
16920.00	---	V		15.27	19.32		-13.00	
18800.00	---	V		18.68	16.58		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: WCDMA II Mode

Operation Mode	: TX CH Mid Mode	Test Date:	Apr. 02, 2010
Fundamental Frequency	: 1880MHz	Test By:	Brian
Temperature	: 25℃	Pol:	Hor
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
53.28	39.85	H	-68.59	-0.55	1.11	-70.26	-13.00	-57.26
90.14	40.71	H	-63.02	-7.75	1.27	-72.04	-13.00	-59.04
104.69	39.51	H	-63.00	-7.76	1.38	-72.14	-13.00	-59.14
708.03	32.47	H	-56.66	-7.86	3.32	-67.84	-13.00	-54.84
778.84	32.08	H	-58.76	-7.87	3.53	-70.16	-13.00	-57.16
906.88	34.46	H	-50.30	-7.96	3.80	-62.06	-13.00	-49.06
3758.00	41.84	H	-55.94	12.60	8.39	-51.73	-13.00	-38.73
5640.00	---	H		13.36	10.41		-13.00	
7520.00	---	H		11.45	12.19		-13.00	
9400.00	---	H		11.93	13.61		-13.00	
11280.00	---	H		11.92	15.27		-13.00	
13160.00	---	H		13.33	16.71		-13.00	
15040.00	---	H		13.76	18.15		-13.00	
16920.00	---	H		15.27	19.32		-13.00	
18800.00	---	H		18.68	16.58		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: WCDMA II Mode

Operation Mode	: TX CH High Mode	Test Date:	Apr. 02, 2010
Fundamental Frequency	: 1907.6 MHz	Test By:	Brian
Temperature	: 25℃	Pol:	Ver
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
56.19	40.99	V	-68.67	-0.51	1.09	-70.28	-13.00	-57.28
77.53	45.27	V	-66.15	-2.12	1.21	-69.48	-13.00	-56.48
90.14	43.18	V	-60.00	-7.75	1.27	-69.02	-13.00	-56.02
104.69	44.93	V	-56.56	-7.76	1.38	-65.70	-13.00	-52.70
741.98	31.49	V	-55.99	-7.87	3.44	-67.30	-13.00	-54.30
875.84	31.79	V	-53.62	-7.92	3.74	-65.27	-13.00	-52.27
951.13	32.46	V	-43.88	10.08	5.66	-39.46	-13.00	-26.46
1910.17	55.21	V	-49.12	10.08	5.66	-44.70	-13.00	-31.70
3814.00	43.02	V	-54.40	12.60	8.46	-50.26	-13.00	-37.26
5722.80	---	V		13.48	10.49		-13.00	
7630.40	---	V		11.41	12.27		-13.00	
9538.00	---	V		11.95	13.73		-13.00	
11445.60	---	V		12.15	15.42		-13.00	
13353.20	---	V		13.00	16.81		-13.00	
15260.80	---	V		14.91	18.28		-13.00	
17168.40	---	V		14.53	19.50		-13.00	
19076.00	---	V		18.65	20.76		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: WCDMA II Mode

Operation Mode	: TX CH High Mode	Test Date:	Apr. 02, 2010
Fundamental Frequency	: 1907.6 MHz	Test By:	Brian
Temperature	: 25℃	Pol:	Hor
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
53.28	40.45	H	-67.99	-0.55	1.11	-69.66	-13.00	-56.66
77.53	41.50	H	-70.88	-2.12	1.21	-74.20	-13.00	-61.20
90.14	39.87	H	-63.86	-7.75	1.27	-72.88	-13.00	-59.88
104.69	39.03	H	-63.48	-7.76	1.38	-72.62	-13.00	-59.62
778.84	32.87	H	-57.97	-7.87	3.53	-69.37	-13.00	-56.37
922.40	31.62	H	-52.94	-7.97	3.83	-64.75	-13.00	-51.75
1910.15	70.59	H	-41.53	10.08	5.66	-37.11	-13.00	-24.11
3814.00	44.20	H	-53.33	12.60	8.46	-49.19	-13.00	-36.19
5722.80	---	H		13.48	10.49		-13.00	
7630.40	---	H		11.41	12.27		-13.00	
9538.00	---	H		11.95	13.73		-13.00	
11445.60	---	H		12.15	15.42		-13.00	
13353.20	---	H		13.00	16.81		-13.00	
15260.80	---	H		14.91	18.28		-13.00	
17168.40	---	H		14.53	19.50		-13.00	
19076.00	---	H		18.65	20.76		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: WCDMA V Mode

Operation Mode	: TX CH Low Mode	Test Date:	Apr. 02, 2010
Fundamental Frequency	: 826.4 MHz	Test By:	Brian
Temperature	: 25℃	Pol:	Ver
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
53.28	38.50	V	-69.91	-0.55	1.11	-71.57	-13.00	-58.57
90.14	39.26	V	-63.92	-7.75	1.27	-72.94	-13.00	-59.94
104.69	39.62	V	-61.87	-7.76	1.38	-71.01	-13.00	-58.01
153.19	31.78	V	-65.80	-7.80	1.60	-75.20	-13.00	-62.20
643.04	32.18	V	-56.83	-7.81	3.14	-67.78	-13.00	-54.78
965.08	33.40	V	-50.87	-8.00	3.93	-62.80	-13.00	-49.80
823.82	59.33	V	-27.30	-7.87	3.62	-38.80	-13.00	-25.80
2484.00	36.75	V	-64.18	10.07	6.55	-60.66	-13.00	-47.66
3303.00	40.48	V	-58.39	12.18	7.72	-53.93	-13.00	-40.93
4129.00	39.34	V	-56.75	12.62	8.87	-53.01	-13.00	-40.01
4132.00	---	V		12.62	8.87		-13.00	
4958.40	---	V		12.65	9.75		-13.00	
5784.80	---	V		13.58	10.55		-13.00	
6611.20	---	V		12.03	11.31		-13.00	
7437.60	---	V		11.48	12.12		-13.00	
8264.00	---	V		11.50	12.73		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: WCDMA V Mode

Operation Mode	: TX CH Low Mode	Test Date:	Apr. 02, 2010
Fundamental Frequency	: 826.4MHz	Test By:	Brian
Temperature	: 25℃	Pol:	Hor
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
53.28	38.85	H	-69.59	-0.55	1.11	-71.26	-13.00	-58.26
90.14	37.94	H	-65.79	-7.75	1.27	-74.81	-13.00	-61.81
99.84	37.65	H	-65.36	-7.76	1.36	-74.48	-13.00	-61.48
716.76	33.17	H	-57.59	-7.86	3.35	-68.81	-13.00	-55.81
929.19	33.03	H	-51.45	-7.98	3.84	-63.27	-13.00	-50.27
963.14	32.70	H	-51.43	-8.00	3.92	-63.35	-13.00	-50.35
823.81	67.90	H	-22.21	-7.87	3.62	-33.71	-13.00	-20.71
2484.00	38.18	H	-62.65	10.07	6.55	-59.13	-13.00	-46.13
3303.00	44.33	H	-54.76	12.18	7.72	-50.30	-13.00	-37.30
4129.00	38.25	H	-57.98	12.62	8.87	-54.23	-13.00	-41.23
4958.40	---	H		12.65	9.75		-13.00	
5784.80	---	H		13.58	10.55		-13.00	
6611.20	---	H		12.03	11.31		-13.00	
7437.60	---	H		11.48	12.12		-13.00	
8264.00	---	H		11.50	12.73		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: WCDMA V Mode

Operation Mode	: TX CH Mid Mode	Test Date:	Apr. 02, 2010
Fundamental Frequency	: 836.6MHz	Test By:	Brian
Temperature	: 25℃	Pol:	Ver
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
53.28	38.70	V	-69.71	-0.55	1.11	-71.37	-13.00	-58.37
90.14	40.13	V	-63.05	-7.75	1.27	-72.07	-13.00	-59.07
106.63	40.86	V	-60.45	-7.77	1.39	-69.60	-13.00	-56.60
150.28	32.00	V	-65.32	-7.80	1.59	-74.71	-13.00	-61.71
761.38	32.38	V	-54.63	-7.87	3.49	-65.99	-13.00	-52.99
931.13	33.37	V	-51.30	-7.98	3.85	-63.13	-13.00	-50.13
1658.00	35.58	V	-69.00	9.32	5.24	-64.92	-13.00	-51.92
2498.00	40.23	V	-60.60	10.06	6.57	-57.11	-13.00	-44.11
3338.00	42.24	V	-56.62	12.26	7.78	-52.14	-13.00	-39.14
4178.00	38.04	V	-57.87	12.62	8.93	-54.17	-13.00	-41.17
5019.60	---	V		12.67	9.81		-13.00	
5856.20	---	V		13.68	10.62		-13.00	
6692.80	---	V		11.95	11.39		-13.00	
7529.40	---	V		11.45	12.20		-13.00	
8366.00	---	V		11.59	12.81		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: WCDMA V Mode

Operation Mode	: TX CH Mid Mode	Test Date:	Apr. 02, 2010
Fundamental Frequency	: 836.6MHz	Test By:	Brian
Temperature	: 25℃	Pol:	Hor
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
53.28	38.72	H	-69.72	-0.55	1.11	-71.39	-13.00	-58.39
90.14	37.43	H	-66.30	-7.75	1.27	-75.32	-13.00	-62.32
104.69	37.16	H	-65.35	-7.76	1.38	-74.49	-13.00	-61.49
155.13	32.11	H	-66.06	-7.80	1.60	-75.46	-13.00	-62.46
710.94	33.84	H	-55.84	-7.86	3.33	-67.03	-13.00	-54.03
926.28	33.28	H	-51.23	-7.98	3.84	-63.05	-13.00	-50.05
1658.00	38.80	H	-65.59	9.32	5.24	-61.52	-13.00	-48.52
2498.00	45.45	H	-55.29	10.06	6.57	-51.80	-13.00	-38.80
3338.00	46.79	H	-52.28	12.26	7.78	-47.80	-13.00	-34.80
4178.00	36.93	H	-59.12	12.62	8.93	-55.42	-13.00	-42.42
5019.60	---	H		12.67	9.81		-13.00	
5856.20	---	H		13.68	10.62		-13.00	
6692.80	---	H		11.95	11.39		-13.00	
7529.40	---	H		11.45	12.20		-13.00	
8366.00	---	H		11.59	12.81		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: WCDMA V Mode

Operation Mode	: TX CH High Mode	Test Date:	Apr. 02, 2010
Fundamental Frequency	: 846.6MHz	Test By:	Brian
Temperature	: 25℃	Pol:	Ver
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
53.28	39.04	V	-69.37	-0.55	1.11	-71.03	-13.00	-58.03
90.14	39.84	V	-63.34	-7.75	1.27	-72.36	-13.00	-59.36
104.69	41.02	V	-60.47	-7.76	1.38	-69.61	-13.00	-56.61
620.73	31.94	V	-57.36	-7.80	3.08	-68.24	-13.00	-55.24
720.64	32.85	V	-55.63	-7.86	3.36	-66.86	-13.00	-53.86
919.49	33.15	V	-51.55	-7.97	3.83	-63.34	-13.00	-50.34
849.09	59.06	V	-26.60	-7.88	3.68	-38.16	-13.00	-25.16
1693.00	37.99	V	-66.55	9.42	5.30	-62.43	-13.00	-49.43
2533.00	41.15	V	-59.55	10.16	6.61	-56.00	-13.00	-43.00
3394.00	42.92	V	-55.93	12.38	7.86	-51.42	-13.00	-38.42
4234.00	36.45	V	-59.25	12.63	8.99	-55.61	-13.00	-42.61
5079.60	---	V		12.73	9.87		-13.00	
5926.20	---	V		13.79	10.69		-13.00	
6772.80	---	V		11.87	11.47		-13.00	
7619.40	---	V		11.41	12.26		-13.00	
8466.00	---	V		11.68	12.89		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: WCDMA V Mode

Operation Mode	: TX CH High Mode	Test Date:	Apr. 02, 2010
Fundamental Frequency	: 846.6MHz	Test By:	Brian
Temperature	: 25℃	Pol:	Hor
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
53.28	39.47	H	-68.97	-0.55	1.11	-70.64	-13.00	-57.64
90.14	36.87	H	-66.86	-7.75	1.27	-75.88	-13.00	-62.88
104.69	36.43	H	-66.08	-7.76	1.38	-75.22	-13.00	-62.22
158.04	32.16	H	-66.23	-7.81	1.61	-75.65	-13.00	-62.65
717.73	33.04	H	-57.91	-7.86	3.35	-69.12	-13.00	-56.12
958.29	33.28	H	-50.88	-8.00	3.90	-62.78	-13.00	-49.78
849.02	64.58	H	-23.89	-7.88	3.68	-35.45	-13.00	-22.45
1693.00	41.95	H	-62.40	9.42	5.30	-58.28	-13.00	-45.28
2533.00	44.07	H	-56.57	10.16	6.61	-53.02	-13.00	-40.02
3394.00	46.16	H	-52.87	12.38	7.86	-48.35	-13.00	-35.35
4234.00	37.98	H	-57.87	12.63	8.99	-54.23	-13.00	-41.23
5079.60	---	H		12.73	9.87		-13.00	
5926.20	---	H		13.79	10.69		-13.00	
6772.80	---	H		11.87	11.47		-13.00	
7619.40	---	H		11.41	12.26		-13.00	
8466.00	---	H		11.68	12.89		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

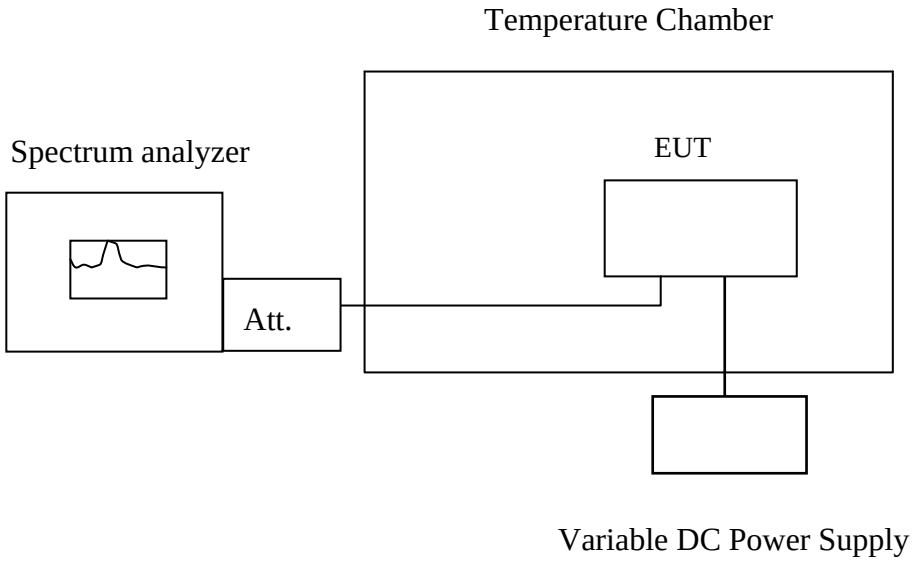
10 FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT

10.1 Standard Applicable

According to FCC §2.1055(a)(1)

Frequency Tolerance: +/- 2.5 ppm

10.2 Test Set-up:



Note : Measurement setup for testing on Antenna connector

10.3 Measurement 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 25°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.

10.4 Measurement Equipment Used:

Refer to section 2.4 in this report

10.5 Measurement Result

Reference Frequency: GSM Mid Channel 836.6 MHz℃				
Limit: +/- 2.5 ppm = 2091 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (℃)	(MHz)		
3.3	-30	836.599986	-12.00	2091
3.3	-20	836.599991	-7.00	2091
3.3	-10	836.599994	-4.00	2091
3.3	0	836.599988	-10.00	2091
3.3	10	836.599989	-9.00	2091
3.3	20	836.599998	0.00	2091
3.3	30	836.599974	-24.00	2091
3.3	40	836.599981	-19.00	2091
3.3	50	836.599984	-14.00	2091

Reference Frequency: PCS Mid Channel 1880 MHz				
Limit: +/- 2.5 ppm = 4700 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (℃)	(MHz)		
3.3	-30	1879.999959	-15.00	4700
3.3	-20	1879.999953	-21.00	4700
3.3	-10	1879.999950	-24.00	4700
3.3	0	1879.999961	-13.00	4700
3.3	10	1879.999945	-29.00	4700
3.3	20	1879.999974	0.00	4700
3.3	30	1879.999938	-36.00	4700
3.3	40	1879.999956	-18.00	4700
3.3	50	1879.999961	-13.00	4700

Reference Frequency: WCDMA II Mid Channel 1880 MHz				
Limit: +/- 2.5 ppm = 4700 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (℃)	(MHz)		
3.3	-30	1880.000006	3.00	4700
3.3	-20	1880.000004	2.00	4700
3.3	-10	1880.000000	-3.00	4700
3.3	0	1880.000004	1.00	4700
3.3	10	1880.000007	4.00	4700
3.3	20	1880.000003	0.00	4700
3.3	30	1879.999999	-4.00	4700
3.3	40	1880.000000	-3.00	4700
3.3	50	1880.000001	-2.00	4700

Reference Frequency: WCDMA V Mid Channel 836.6 MHz				
Limit: +/- 2.5 ppm = 2091 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (℃)	(MHz)		
3.3	-30	836.599995	-3.00	2091
3.3	-20	836.599997	-1.00	2091
3.3	-10	836.599999	1.00	2091
3.3	0	836.599995	-3.00	2091
3.3	10	836.600002	4.00	2091
3.3	20	836.599998	0.00	2091
3.3	30	836.599999	1.00	2091
3.3	40	836.599996	-2.00	2091
3.3	50	836.600000	2.00	2091

11 FREQUENCY STABILITY V.S. VOLTAGE MEASUREMENT

11.1 Standard Applicable

According to FCC §2.1055(d)(2)

Frequency Tolerance: +/- 2.5 ppm

11.2 Test Set-up:

Refer to section 10.2 in this report

11.3 Measurement Procedure

Set chamber temperature to 25℃. 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 specified extreme voltage variation (+/- 15%) and endpoint, record the maximum frequency change.

11.4 Measurement Equipment Used:

Refer to section 2.4 in this report

11.5 Measurement Result

Reference Frequency: GSM Mid Channel 836.6 MHz				
Limit: +/- 2.5 ppm = 2091 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (℃)	(MHz)		
3.6	25.00	836.599991	-4.00	2091.00
3.3	25.00	836.599995	0.00	2091.00
3.2 (Endpoint)	25.00	836.599982	-13.00	2091.00

Reference Frequency: PCS Mid Channel 1880 MHz				
Limit: +/- 2.5 ppm = 4700 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (℃)	(MHz)		
3.6	25	1879.999979	-11.00	4700
3.3	25	1879.999990	0.00	4700
3.2 (Endpoint)	25	1879.999959	-31.00	4700

Reference Frequency: WCDMA II Mid Channel 1880 (ARFCN9400) MHz				
Limit: +/- 2.5 ppm = 4700 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (℃)	(MHz)		
3.6	25	1879.999998	-5.00	4700
3.3	25	1880.000003	0.00	4700
3.2 (Endpoint)	25	1880.000008	5.00	4700

Reference Frequency: WCDMA V Mid Channel 836.6 MHz				
Limit: +/- 2.5 ppm = 2091 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (℃)	(MHz)		
3.6	25.00	836.599997	-1.00	2091.00
3.3	25.00	836.599998	0.00	2091.00
3.2 (Endpoint)	25.00	836.599999	1.00	2091.00

12. MAXIMUM PERMISSIBLE EXPOSURE (MPE)

12.1. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended to comply with Section Part 22, subpart H and Part 24, subpart E of the FCC CFR 47 Rules. For 47 CFR 1.1310 Radio frequency Radiation Exposure requirement.

12.2. Special Accessories

Not available for this EUT intended for grant.

12.4. Equipment Modifications

Not available for this EUT intended for grant.

12.5. Limitation

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Averaging Time (minute)
Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*($180/f^2$)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	F/1500	30
1500-15000	/	/	1.0	30

F = frequency in MHz

* = Plane-wave equipment power density

12.6. Maximum Permissible Exposure (MPE) Evaluation

In this application we seek approval to the H18T. Based on the FCC OET Bulletin 65 Supplement C and 47 CFR §2.1091, we have concluded that the H18T module will comply with the FCC rules on RF exposure for mobile devices in cellular band and PCS band. The following analysis will demonstrate such compliance. The analysis will be done in two US bands.

Operation in cellular band (824 – 849 MHz)

The ERP of H18T in cellular band is 32.03dBm max at GSM/GPRS mode. The resulted power density at a distance of 20 cm can be deducted as follows:

EUT Mode	Frequency (MHz)	CH	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)
GPRS 850 (Class 12)	824.20	128	V	120.33	33.94	-7.87	3.62	22.44	38.45
			H	129.62	43.35	-7.87	3.62	31.85	38.45
	836.60	190	V	121.76	35.51	-7.88	3.65	23.98	38.45
			H	129.55	43.32	-7.88	3.65	31.79	38.45
	848.80	251	V	122.56	36.44	-7.88	3.68	24.88	38.45
			H	129.78	43.59	-7.88	3.68	**32.03**	38.45

ERP = 32.03 dBm = 1595.88 mW

Power Density = ERP*Duty Cycle/($4\pi R^2$)

=1595.88*0. 5/(4* π *20^2) = 0.1587 mW/cm^2

where Duty Cycle is 0.5 for GPRS operation (class 12) and R is 20 cm.

The MPE limit for General Population/Uncontrolled Exposure is shown in the FCC OET Bulletin 65 Supplement C and can be calculated as follows:

MPE limit = 848.8/1500 = 0.56 mW/cm^2

As we can see the resulted power density is below the MPE limit, therefore H18T in cellular band is compliant with the FCC rules on RF exposure.

Operation in PCS band (1850 – 1910 MHz)

The EIRP of H18T in PCS band is 25.15dBm. max. The resulted EIRP can be expressed as follows:

EUT Mode	Frequency (MHz)	CH	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
GPRS 1900 (Class 12)	1850.20	512	V	113.70	9.31	9.90	5.56	13.65	33.00
			H	124.99	20.81	9.90	5.56	**25.15**	33.00
	1880.00	661	V	113.19	8.83	9.99	5.61	13.21	33.00
			H	124.64	20.50	9.99	5.61	24.87	33.00
	1909.80	810	V	115.85	11.52	10.08	5.66	15.94	33.00
			H	124.73	20.62	10.08	5.66	25.04	33.00

EIRP = 25.15 dBm = 327.34 mW

Power Density = EIRP*Duty Cycle/($4\pi R^2$)

=327.34*0.5/($4*\pi*20^2$) = 0.0326 mW/cm^2

where Duty Cycle is 0.5for GPRS operation (class 12) and R is 20 cm.

The MPE limit for General Population/Uncontrolled Exposure is shown in the FCC OET Bulletin 65 Supplement C and can be calculated as follows:

MPE limit = 1.0 mW/cm^2

As we can see the resulted power density is below the MPE limit, therefore H18T in PCS band is compliant with the FCC rules on RF exposure.

Operation inWCDMA band II (1850 – 1910 MHz)

The ERP of H189T in cellular band is 25.38dBm max at WCDMA II mode. The resulted power density at a distance of 20 cm can be deducted as follows:

EUT Mode	Frequency (MHz)	CH	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)
WCDMA II	1852.40	9262	V	112.49	7.97	9.48	5.33	12.11	33.00
			H	125.57	21.24	9.48	5.33	**25.38**	33.00
	1880.00	9400	V	110.90	6.40	9.54	5.36	10.57	33.00
			H	123.59	19.28	9.54	5.36	23.45	33.00
	1907.60	9538	V	110.63	6.15	9.61	5.40	10.35	33.00
			H	124.67	20.38	9.61	5.40	24.59	33.00

ERP = 25.38 dBm = 345.14 mW

Power Density = ERP*Duty Cycle/($4\pi R^2$)

=345.14*1/(4* π *20^2) = 0.0687 mW/cm^2

where Duty Cycle is 0.5 for GPRS operation (class 12) and R is 20 cm.

The MPE limit for General Population/Uncontrolled Exposure is shown in the FCC OET Bulletin 65 Supplement C and can be calculated as follows:

MPE limit = 1.0 mW/cm^2

As we can see the resulted power density is below the MPE limit, therefore H18T in cellular band is compliant with the FCC rules on RF exposure.

Operation in WCDMA band V (826 – 849 MHz)

The EIRP of H18T in PCS band is 27.73dBm. max. The resulted EIRP can be expressed as follows:

EUT Mode	Frequency (MHz)	CH	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
WCDMA V	826.40	4132	V	115.27	28.91	-7.88	3.63	17.40	38.45
			H	125.49	39.23	-7.88	3.63	**27.73**	38.45
	836.60	4183	V	114.05	27.79	-7.88	3.65	16.26	38.45
			H	123.93	37.70	-7.88	3.65	26.17	38.45
	846.60	4233	V	115.18	29.03	-7.88	3.67	17.48	38.45
			H	124.81	38.61	-7.88	3.67	27.06	38.45

EIRP = 27.73 dBm = 592.93 mW

Power Density = EIRP*Duty Cycle/($4\pi R^2$)

=592.93*1/(4* π *20^2) = 0.1180 mW/cm^2

where Duty Cycle is 0.5 for GPRS operation (class 12) and R is 20 cm.

The MPE limit for General Population/Uncontrolled Exposure is shown in the FCC OET Bulletin 65 Supplement C and can be calculated as follows:

MPE limit = 826.4/1500 = 0.55 mW/cm^2

As we can see the resulted power density is below the MPE limit, therefore H18T in PCS band is compliant with the FCC rules on RF exposure.