ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 22 SUBPART H, PART 24 SUBPART E and Part 27 AND INDUSTRY CANADA RSS-129, RSS-133 and RSS-139

OF

Product Name:	**PDA Phone**
Brand Name:	**HTC**
Model Name:	**PB99100**
Model Difference:	**N/A**
FCC ID:	**NM8PB99100**
IC Number:	**4115B-PB99100**
Report No.:	**EH/2009/90001**
Issue Date:	**Oct. 02, 2009**
FCC Rule Part:	**2 , 22H, 24E &27**
IC Rule Part:	**RSS 129 Issue 2, RSS 133 Issue 4 and RSS-139 Issue 1**
Prepared for:	**HTC Corporation** **No.23, Xinghua Rd., Taoyuan City, Taoyuan County 330, Taiwan, R.O.C**
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:	HTC Corporation No.23, Xinghua Rd., Taoyuan City, Taoyuan County 330, Taiwan, R.O.C
Product Name:	PDA Phone
FCC ID:	NM8PB99100
IC Number:	4115B-PB99100
Brand Name:	HTC
Model No.:	PB99100
Model Difference:	N/A
File Number:	EH/2009/90001
Date of test:	Aug. 17, 2009 ~ Oct. 01, 2009
Date of EUT Received:	Aug. 17, 2009

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, Issue 2 of RSS-Gen 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 and Part 27 and IC standards Issue 2 of RSS-129, Issue 4 of RSS-133 and Issue 1 of RSS-139 .

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

Test By:	Jazz Huang	***Date:***	Oct. 02, 2009
	Jazz Huang / Engineer		
Prepared By:	Gigi yeh	***Date:***	Oct. 02, 2009
	Gigi Yeh / Clerk		
Approved By:	Vincent Su	***Date:***	Oct. 02, 2009
	Vincent Su / Manager		

Version

Version No.	Date	Description
00	Oct. 02, 2009	Initial creation of document

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1. GENERAL INFORMATION

General:

Product Name	PDA Phone	
Brand Name	HTC	
Model Name	PB99100	
Model Difference	N/A	
Data Cable (USB)	Model No.: DC M400, Supplier: MEC	
Simple Hands-free (SHF)	Model No.: RC E151, Supplier: Cotron / Merry	
Power Supply	3.7 Vdc re-chargeable battery or 5Vdc by AC/DC power adapter	
	Battery:	Model: BB99100, Supplier: Formasa / Welldone
	Adapter:	Model No.: PSAA05X-050(X=A,C,E,K or S), Supplier: Phihong

Other Source

Camera	(1) 1ST :Model No.: 08PM15A；Supplier: LiteOn (2) 2ND:Model No.: 50-70483HTT8；Supplier: Primax

GSM and WCDMA:

	Operating Frequency		Rated Power
Cellular Phone Standards Frequency Range and Power	GSM/GPRS/EDGE 850 Class 12	824.2 MHz– 848.8 MHz	33 dBm
	GSM/GPRS/EDGE 900 Class 12	880.2MHz – 914.8MHz	33 dBm
	GSM/GPRS/EDGE 1800 Class 12	1710.2MHz – 1784.8MHz	30 dBm
	GSM/GPRS/EDGE 1900 Class 12	1850.2MHz – 1909.8MHz	30 dBm
	WCDMA/HSUPA/HSDPA Band I	1922.4MHz – 1977.6MHz	24 dBm
	WCDMA/HSUPA/HSDPA Band IV	1712.4MHz –1752.6MHz	24 dBm
	HSUPA data rate: uplink up to 2Mbps HSDPA data rate: downlink up to 7.2Mbps		
Type of Emission	GSM 850: 247KGXW, GSM 1900 :247KGXW EDGE 850: 247KG7W, EDGE 1900:246KG7W WCDMA Band IV: 4M16F9W		
IMEI	354957030014388		

WLAN:

Frequency Range:	2412 – 2462 MHz
Channel number:	11 channels
Max. Output Power:	802.11 b: 17.41 dBm (Peak) 802.11 g: 13.54dBm (Peak)
Modulation Technology:	DSSS, OFDM
Modulation type:	CCK, DQPSK, DBPSK for DSSS 64QAM. 16QAM, QPSK, BPSK for OFDM
Transition Rate:	802.11 b: 1/2/5.5/11 Mbps; 802.11 g: 6/9/12/18/24/36/48/54 Mbps
Antenna Designation:	PIFA Antenna / 1.1dBi.
Type of Emission	16M3M4D

The EUT is compliance with IEEE 802.11 b/g Standard.

Bluetooth:

Bluetooth Version	☐ V1.1 (GFSK) ☐ V1.2 (GFSK) ☐ V2.0 (GFSK) ☐ V2.0 + EDR (GFSK + π/4DQPSK + 8DPSK) ☒ V2.1 + EDR (GFSK + π/4DQPSK + 8DPSK)
Frequency Range	2402 – 2480MHz
Channel number	79 channels max.
Rated Power	1.85 dBm (Peak)
Modulation type	Frequency Hopping Spread Spectrum
Antenna Designation	PIFA Antenna / 1.1dBi.
Type of Emission	1M84F7D

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

1.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for **FCC ID: NM8PB99100** filing to comply with Section Part 22 subpart H, Part 24 subpart E and Part27 of the FCC CFR 47 Rules. And **IC: 4115B-PB99100** filing to comply with issue 2 of RSS-129, issue 4 of RSS-133 and issue 1 of RSS-139.

1.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures document on chapter 13 of ANSI C63.4 (2003) and FCC 47 CFR 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057, issue 2 of RSS-129, issue 4 of RSS-133, issue 1 of RSS-139 and Issue 2 of RSS-Gen.

The Output power Procedure of KDB941225 (SAR Measurement Procedures for 3G devices, WCDMA / HSDPA) was used for EUT and Base station setting.

1.4 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.

1.5 Special Accessories

Not available for this EUT intended for grant.

1.6 Equipment Modifications

Not available for this EUT intended for grant.

1. 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 AC Power Line Conducted Emissions

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 con-nect the antenna port of EUT to measurement equipment.

2.3.2 Conducted Measurement at Antenna Port:

According to measurement procured TIA/EIA 603C and RSS-Gen, 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 con- nect the antenna port of EUT to measurement equipment.

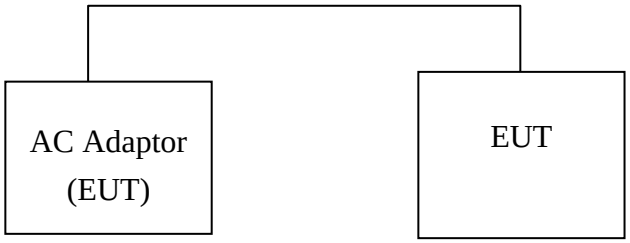
2.3.3 Radiated Emissions (ERP/EIRP):

According to measurement procured TIA/EIA 603C, issue 2 of RSS-Gen 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 re-quirements.

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 Configuration of Tested System

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



Remote Side

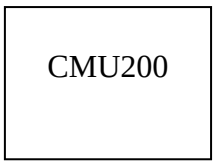


Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/ Type No.	Series No.	Data Cable	Power Cord
1.	Universal Radio Communication Tester	R&S	CMU200	102189	N/A	Un-shielded
2.	AC Adaptor	Phihong	PSAA05X-050(X=A,C,E,K or S)	79H00055-29M	N/A	180cm, Un-shielded

2. SUMMARY OF TEST RESULTS

FCC Rules	IC Rules	Description Of Test	Result
§2.1046(a) §22.913(a)(2) §24.232(c)	N/A	RF Conducted Power Output	Compliant
§2.1046(a) §22.913(a)(2) §24.232(c) §27.50(d)(2)	§4.8 (RSS-Gen) §4.4 (RSS-132) §6.4 (RSS-133)	ERP/EIRP measurement	Compliant
§2.1049(h)	§4.6.1 (RSS-Gen) §2.3 (RSS-133)	99% Occupied Bandwidth	Compliant
§2.1051 §22.917(a) §24.238(a) §27.53(g)	§4.9 (RSS-Gen) §4.5 (RSS-132) §6.5 (RSS-133)	Out of Band Emissions at Antenna Terminals	Compliant
§2.1053 §22.917(a) §24.238(a) §27.53(g)	§4.9 (RSS-Gen) §4.5 (RSS-132) §6.5 (RSS-133)	Field Strength of Spurious Radiation (TX)	Compliant
§2.1055(a)(1) §22.355 §24.235 §27.54	§4.7 (RSS-Gen) §4.3 (RSS-132) §6.3 (RSS-133)	Frequency Stability vs. Temperature	Compliant
§2.1055(d)(2) §22.355 §24.235 §27.54	§4.7 (RSS-Gen) §4.3 (RSS-132) §6.3 (RSS-133)	Frequency Stability vs. Voltage	Compliant
N/A	§4.10 (RSS-Gen) §4.6 (RSS-132) §6.6 (RSS-133)	Receiver Spurious Emissions	Compliant
§15.107,§15.207(a)	§7.2.2 (RSS-Gen)	AC Power Line Conducted Emission	Compliant

3. 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.

The field strength of spurious radiation emission was measured as EUT stand-up position (E1 mode) and lie down position (E1, E2 mode) for GSM/GPRS/EDGE and WCDMA Band 4 with power adaptors. The worst-case of E2 position for GSM 850 band, E2 position for GSM 1900, E2 position WCDMA Band IV were reported.

Max ERP/EIRP measurement result:

	dBm	dB	W
GSM 850 Band	25.44	ERP	0.350
GSM 1900 Band	23.43	EIRP	0.220
EDGE 850 Band	25.50	ERP	0.355
EDGE 1900 Band	22.73	EIRP	0.187
WCDMA Band IV	16.38	EIRP	0.043
HSUPA Band IV	19.36	EIRP	0.086

4. 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(d) Peak Power Measurement, FCC 24.232(c) Maximum Power Reduction.

3GPP Power limitation for HSDPA and HSUPA

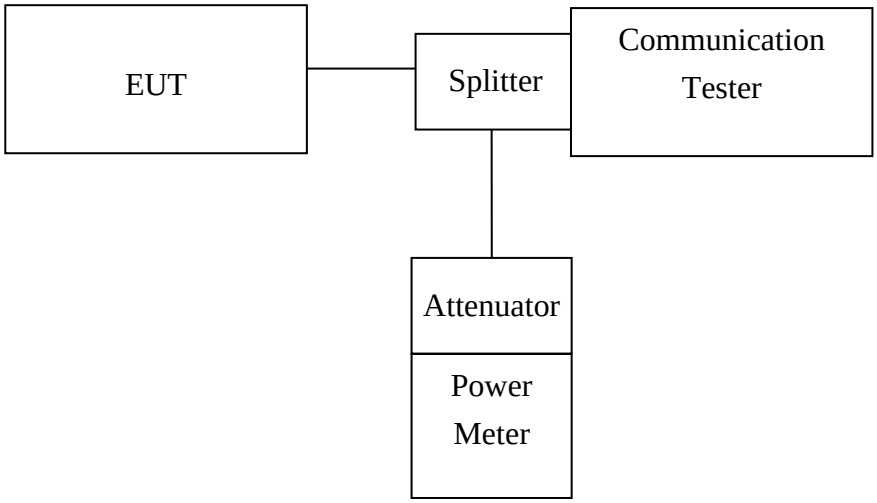
Maximum Output Powers for HSDPA

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:

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	01/23/2008	01/22/2010
Radio Communication Analyzer	R&S	CMU200	102189	05/13/208	05/13/2010
800 – 1000MHz Filter	Micro-Tronics	BRM13462	001	01/05/2009	01/04/2010
1800 – 2000MHz Filter	Micro-Tronics	BRM13463	001	01/05/2009	01/04/2010
Temperature Chamber	TERCHY	MHG-120LF	911009	04/14/2008	04/13/2010
Temperature Chamber	GIANT FORCE	GTH-150-40-CP-AR	MAA0512-018	02/05/2008	02/04/2010
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	06/26/2010
DC Power Supply	Topward	3303D	981327	10/26/2009	10/25/2010

5.5 Measurement Result:

5.5.1RF Conducted Output Power

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

Result:

Frequency (MHz)	CH	1 Time Slot				2 Time Slot			
		GMSK Mode		8-PSK Mode		GMSK Mode		8-PSK Mode	
		Peak Power (dBm)	AV Power (dBm)	Peak Power (dBm)	AV Power (dBm)	Peak Power (dBm)	AV Power (dBm)	Peak Power (dBm)	AV Power (dBm)
824.2	128	32.5	32.4	30.3	27.5	31.9	31.8	30.2	27.3
836.6	190	32.6	32.5	30.1	27.2	31.9	31.7	30.1	27.2.
848.8	251	32.6	32.5	30.6	27.6	32.0	31.9	30.6	27.5
1850.2	512	28.6	28.5	28.7	25.9	28.5	28.4	28.6	25.8
1880.0	661	28.5	28.4	28.9	26.1	28.5	28.4	28.9	26.0
1909.8	810	28.8	28.7	28.8	25.9	28.7	28.5	28.8	25.9

Frequency (MHz)	CH	3 Time Slot				4 Time Slot			
		GMSK Mode		8-PSK Mode		GMSK Mode		8-PSK Mode	
		Peak Power (dBm)	AV Power (dBm)	Peak Power (dBm)	AV Power (dBm)	Peak Power (dBm)	AV Power (dBm)	Peak Power (dBm)	AV Power (dBm)
824.2	128	30.2	30.1	30.1	27.1	29.8	29.7	30.1	27.0
836.6	190	30.4	30.3	30.1	27.2.	29.6	29.5	30.1	27.2.
848.8	251	30.3	30.1	30.5	27.4	29.6	29.5	30.5	27.4
1850.2	512	28.4	28,3	28.5	25.6	28.2	28.1	28.5	25.4
1880.0	661	28.5	28.4	28.9	26.0	28.3	28.2	28.8	26.0
1909.8	810	28.5	28.3	28.6	25.8	28.2	28.1	28.6	25.7

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.

Results:

EUT Mode	Frequency (MHz)	CH	Peak Power (dBm)	AVG. Power (dBm)
WCDMA Band IV	1712.4	1312	25.92	22.72
	1732.6	1413	25.70	22.46
	1752.6	1513	25.62	22.23

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

5.5.13: 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
		1312	1413	1513		
HSDPA(B4)	1	23.01	22.72	22.50	20.3dBm – 25.7dBm	Pass
	2	22.60	22.32	22.08	20.3dBm – 25.7dBm	Pass
	3	22.53	22.27	21.97	19.8dBm – 25.7dBm	Pass
	4	22.6	22.28	22.09	19.8dBm – 25.7dBm	Pass

5.5.1.4: 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:

Mode	Sub-test	TX Power (dBm) Channel			Power Class 3 Limitation (dBm)	Comments
		1312	1413	1513		
HSUPA(B4)	1	22.64	22.44	22.17	18.8dBm – 25.7dBm	Pass
	2	20.69	20.51	20.21	16.8dBm – 25.7dBm	Pass
	3	21.70	21.46	21.25	17.8dBm – 25.7dBm	Pass
	4	20.82	20.56	20.25	16.8dBm – 25.7dBm	Pass
	5	22.53	22.30	22.08	18.8dBm – 25.7dBm	Pass

5.5.1.5Minimum Communications Power Measurement

PCS 1900 band

PCL	0	1	2	3	4	5	6	7	8
Output power (dBm)	28.7	27.8	25.3	24.1	22.2	20.3	18.2	16.2	14.3
PCL	9	10	11	12	13	14	15	16	17
Output power (dBm)	12.1	10.2	8.3	6.4	4.3	2.3	0.3		

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/HSUPA band IV

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 15 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.

5. 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.

FCC 27.50(d)(2) Fixed, mobile, and portable (hand-held) stations are limited to 1W EIRP.

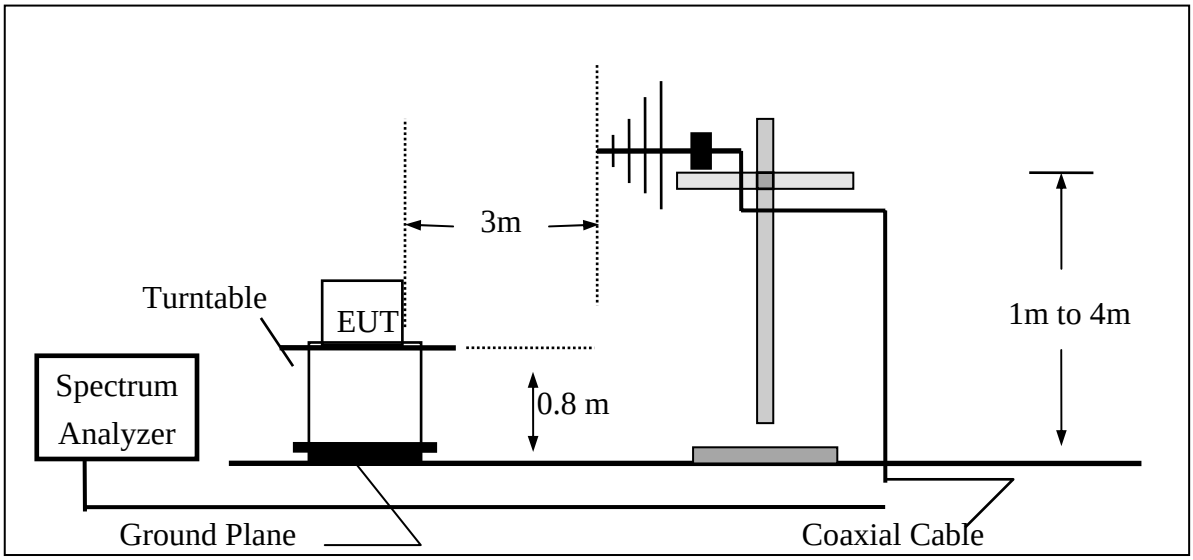
According to issue 2 of RSS 129, section 9.1. The transmitter output power shall not exceed the limits given in Table 9.1. Class III, max. 1W (30dBm) ERP and min. 0.2W(23dBm) ERP.

According to issue 4 of RSS-133 §6.4. The peak e.i.r.p. for transmitters operating in the band 1850-1910 MHz shall not exceed the limits given in SRSP-510.

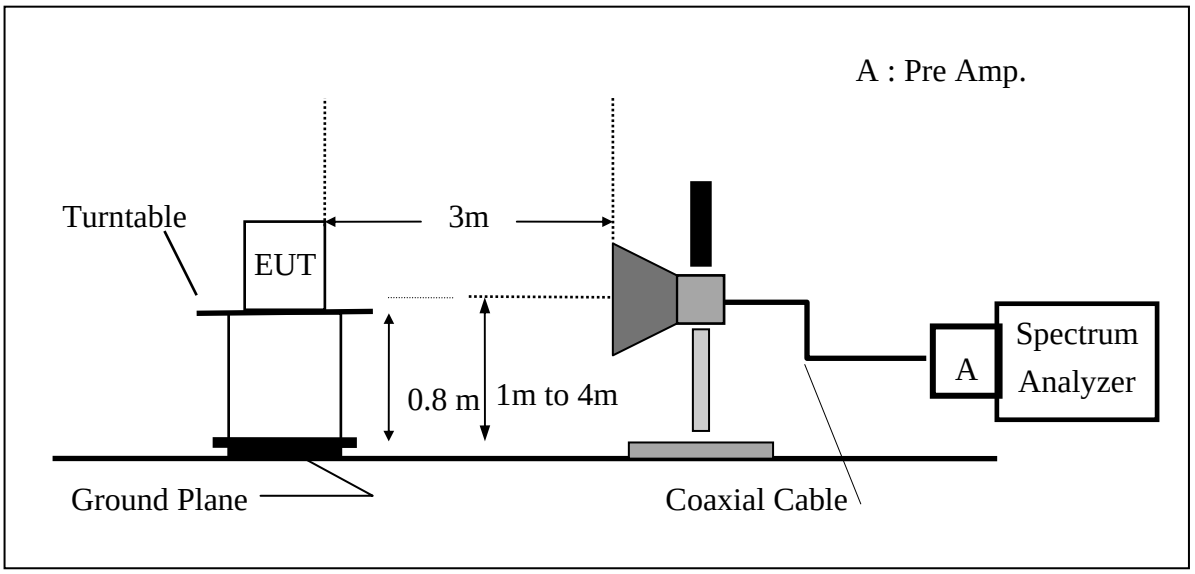
According to issue 1 of RSS-139, section 6.4. The transmitter output power shall be within ± 1.0 dB of the manufacturer's rated power. The peak equivalent isotropically radiated power (e.i.r.p.) for fixed, mobile and portable transmitters in the 1710-1755 MHz shall not exceed 1 watt.

6.2 Test SET-UP (Block Diagram of Configuration)

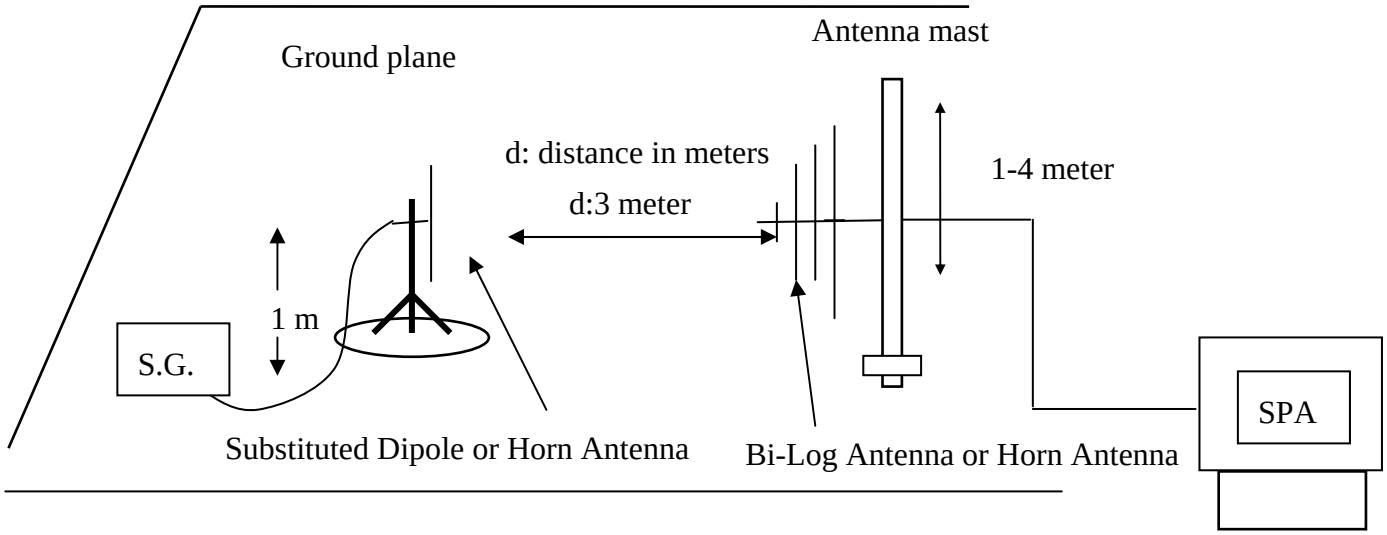
(A) Radiated Emission Test Set-Up, Frequency Below 1000MHz



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

During the measurement, 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 824.2 –848.80.8MHz 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 1850.2 –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:

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:

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	R&S	FSP 40	100034	02/12/2009	02/11/2010
Bilog Antenna	SCHWAZBECK	VULB9160	9160-3136	11/15/2008	11/14/2009
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	01/22/2008	01/21/2010
Horn antenna	SCHWAZBECK	BBHA 9120D	9120D-673	05/09/2008	05/08/2010
Signal Generator	R&S	SMR40	100210	01/22/2008	01/21/2010
Signal Generator	Agilent	E4438C	MY45093613	06/11/2009	06/10/2010
Pre-Amplifier	Agilent	8447D	1937A02834	11/30/2008	11/29/2009
Pre-Amplifier	Agilent	8449B	3008A01973	01/05/2009	01/04/2010
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	05/13/208	05/12/2010
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	01/05/2009	01/04/2010
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-3M	3m	01/05/2009	01/04/2010
3m Site	SGS	966 chamber	N/A	11/08/2008	11/09/2009

6.5 Measurement Result

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)
GSM 850	824.20	128	H	V	111.03	24.64	-7.87	3.62	13.14	38.45
				H	121.25	34.98	-7.87	3.62	23.48	38.45
			E1	V	109.38	22.99	-7.87	3.62	11.49	38.45
				H	122.59	36.32	-7.87	3.62	24.82	38.45
			E2	V	123.24	36.85	-7.87	3.62	25.35	38.45
				H	114.35	28.08	-7.87	3.62	16.58	38.45
	836.60	190	H	V	110.02	23.77	-7.88	3.65	12.24	38.45
				H	120.87	34.64	-7.88	3.65	23.11	38.45
			E1	V	107.55	21.30	-7.88	3.65	9.77	38.45
				H	122.02	35.79	-7.88	3.65	24.26	38.45
			E2	V	123.02	36.77	-7.88	3.65	25.24	38.45
				H	114.11	27.88	-7.88	3.65	16.35	38.45
	848.80	251	H	V	109.85	23.73	-7.88	3.68	12.17	38.45
				H	121.43	35.24	-7.88	3.68	23.68	38.45
			E1	V	106.16	20.04	-7.88	3.68	8.48	38.45
				H	122.34	36.15	-7.88	3.68	24.59	38.45
			E2	V	123.12	37.00	-7.88	3.68	**25.44**	38.45
				H	112.89	26.70	-7.88	3.68	15.14	38.45

Remark：

(1) The RBW,VBW of SPA for frequency

RBW=300 KHz, VBW=1MHz,

Measurement Result:

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
PCS 1900	1850.20	512	H	V	120.89	16.50	9.90	5.56	20.84	33.00
				H	122.17	17.99	9.90	5.56	22.33	33.00
			E1	V	122.80	18.41	9.90	5.56	22.75	33.00
				H	117.68	13.50	9.90	5.56	17.84	33.00
			E2	V	111.26	6.87	9.90	5.56	11.21	33.00
				H	123.55	19.37	9.90	5.84	**23.43**	33.00
	1880.00	661	H	V	119.20	14.84	9.99	5.61	19.22	33.00
				H	121.40	17.26	9.99	5.61	21.63	33.00
			E1	V	121.42	17.06	9.99	5.61	21.44	33.00
				H	116.52	12.38	9.99	5.61	16.75	33.00
			E2	V	110.38	6.02	9.99	5.61	10.40	33.00
				H	122.41	18.27	9.99	5.61	22.64	33.00
	1909.80	810	H	V	118.26	13.93	10.08	5.66	18.35	33.00
				H	120.54	16.43	10.08	5.66	20.85	33.00
			E1	V	115.69	11.36	10.08	5.66	15.78	33.00
				H	121.06	16.95	10.08	5.66	21.37	33.00
			E2	V	109.14	4.81	10.08	5.66	9.23	33.00
				H	121.35	17.24	10.08	5.66	21.66	33.00

Remark：

(1) The RBW,VBW of SPA for frequency

RBW=300 KHz, VBW=1MHz,

Measurement Result:

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)
EDGE 850	824.20	128	H	V	112.76	26.37	-7.87	3.62	14.87	38.45
				H	123.05	36.78	-7.87	3.62	25.28	38.45
			E1	V	107.06	20.67	-7.87	3.62	9.17	38.45
				H	123.14	36.87	-7.87	3.62	25.37	38.45
			E2	V	123.19	36.80	-7.87	3.62	25.30	38.45
				H	109.63	23.36	-7.87	3.62	11.86	38.45
	836.60	190	H	V	112.41	26.16	-7.88	3.65	14.63	38.45
				H	123.00	36.77	-7.88	3.65	25.24	38.45
			E1	V	107.70	21.45	-7.88	3.65	9.92	38.45
				H	122.66	36.43	-7.88	3.65	24.90	38.45
			E2	V	123.23	36.98	-7.88	3.65	25.45	38.45
				H	108.76	22.53	-7.88	3.65	11.00	38.45
	848.80	251	H	V	111.43	25.31	-7.88	3.68	13.75	38.45
				H	122.64	36.45	-7.88	3.68	24.89	38.45
			E1	V	107.43	21.31	-7.88	3.68	9.75	38.45
				H	122.40	36.21	-7.88	3.68	24.65	38.45
			E2	V	123.18	37.06	-7.88	3.68	**25.50**	38.45
				H	107.82	21.63	-7.88	3.68	10.07	38.45

Remark：

(1) The RBW,VBW of SPA for frequency

RBW=1MHz, VBW=3MHz

Measurement Result:

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
EDGE 1900	1850.20	512	H	V	119.77	15.38	9.90	5.56	19.72	33.00
				H	122.47	18.29	9.90	5.56	22.63	33.00
			E1	V	106.95	2.56	9.90	5.56	6.90	33.00
				H	119.69	15.51	9.90	5.56	19.85	33.00
			E2	V	122.78	18.39	9.90	5.56	**22.73**	33.00
				H	116.69	12.51	9.90	5.84	16.57	33.00
	1880.00	661	H	V	115.77	11.41	9.99	5.61	15.79	33.00
				H	118.62	14.48	9.99	5.61	18.85	33.00
			E1	V	103.69	-0.67	9.99	5.61	3.71	33.00
				H	118.00	13.86	9.99	5.61	18.23	33.00
			E2	V	121.96	17.60	9.99	5.61	21.98	33.00
				H	116.30	12.16	9.99	5.61	16.53	33.00
	1909.80	810	H	V	113.28	8.95	10.08	5.66	13.37	33.00
				H	116.18	12.07	10.08	5.66	16.49	33.00
			E1	V	105.48	1.15	10.08	5.66	5.57	33.00
				H	117.29	13.18	10.08	5.66	17.60	33.00
			E2	V	121.06	16.73	10.08	5.66	21.15	33.00
				H	116.35	12.24	10.08	5.66	16.66	33.00

Remark：

(1) The RBW,VBW of SPA for frequency

RBW=1MHz, VBW=3MHz

Measurement Result:

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
WCDMA Band IV	1712.40	1312	H	V	104.75	0.23	9.48	5.33	4.37	33.00
				H	116.06	11.73	9.48	5.33	15.87	33.00
			E1	V	116.48	11.96	9.48	5.33	16.10	33.00
				H	112.61	8.28	9.48	5.33	12.42	33.00
			E2	V	115.56	11.04	9.48	5.33	15.18	33.00
				H	116.65	12.32	9.90	5.84	**16.38**	33.00
	1732.60	1413	H	V	103.78	-0.72	9.54	5.36	3.45	33.00
				H	116.03	11.72	9.54	5.36	15.89	33.00
			E1	V	114.29	9.79	9.54	5.36	13.96	33.00
				H	110.29	5.98	9.54	5.36	10.15	33.00
			E2	V	116.25	11.75	9.54	5.36	15.92	33.00
				H	116.35	12.04	9.54	5.36	16.21	33.00
	1752.60	1513	H	V	103.43	-1.05	9.61	5.40	3.15	33.00
				H	115.30	11.01	9.61	5.40	15.22	33.00
			E1	V	114.23	9.75	9.61	5.40	13.95	33.00
				H	109.97	5.68	9.61	5.40	9.89	33.00
			E2	V	114.34	9.86	9.61	5.40	14.06	33.00
				H	115.41	11.12	9.61	5.40	15.33	33.00

Remark:

(1) The RBW,VBW of SPA for frequency

RBW= 5MHz , VBW= 8MHz

Measurement Result:

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
HSUPA Band IV	1712.40	1312	H	V	116.08	11.56	9.48	5.33	15.70	33.00
				H	116.12	11.79	9.48	5.33	15.93	33.00
			E1	V	107.49	2.97	9.48	5.33	7.11	33.00
				H	118.96	14.63	9.48	5.33	18.77	33.00
			E2	V	118.82	14.30	9.48	5.33	18.44	33.00
				H	114.33	10.00	9.90	5.84	14.06	33.00
	1732.60	1413	H	V	114.40	9.90	9.54	5.36	14.07	33.00
				H	115.48	11.17	9.54	5.36	15.34	33.00
			E1	V	107.31	2.81	9.54	5.36	6.98	33.00
				H	119.50	15.19	9.54	5.36	**19.36**	33.00
			E2	V	119.03	14.53	9.54	5.36	18.70	33.00
				H	114.33	10.02	9.54	5.36	14.19	33.00
	1752.60	1513	H	V	114.78	10.30	9.61	5.40	14.50	33.00
				H	114.64	10.35	9.61	5.40	14.56	33.00
			E1	V	105.25	0.77	9.61	5.40	4.97	33.00
				H	117.70	13.41	9.61	5.40	17.62	33.00
			E2	V	116.56	12.08	9.61	5.40	16.28	33.00
				H	112.38	8.09	9.61	5.40	12.30	33.00

Remark:

(1) The RBW,VBW of SPA for frequency

RBW= 5MHz , VBW= 8MHz

6. 99% OCCUPIED BANDWIDTH MEASUREMENT

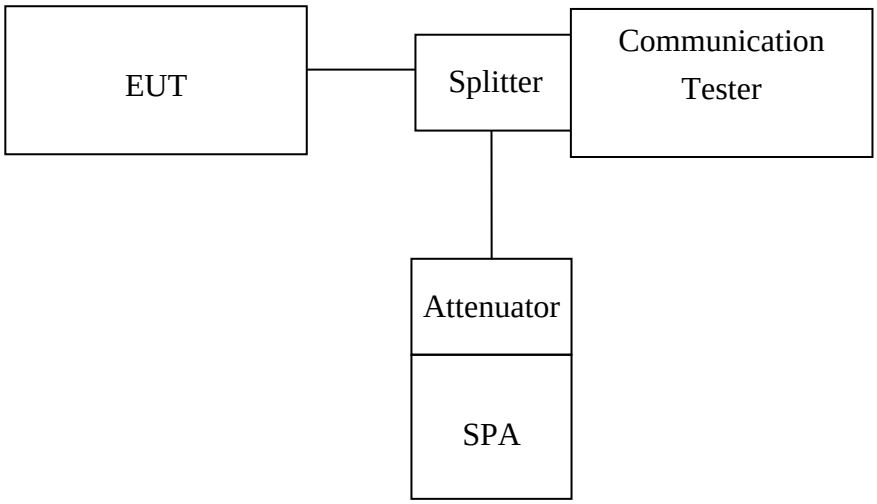
7.1 Standard Applicable

According to FCC§2.1049(h).

According to issue 4 of RSS-133 §2.3

According to issue 1 of RSS-139 §2.3

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 (10/30KHz) was set to about 1% of emission BW, VBW= 3 times RBW(30/100KHz), -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:

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	01/23/2008	01/22/2010
Radio Communication Analyzer	R&S	CMU200	102189	05/13/208	05/13/2010
800 – 1000MHz Filter	Micro-Tronics	BRM13462	001	01/05/2009	01/04/2010
1800 – 2000MHz Filter	Micro-Tronics	BRM13463	001	01/05/2009	01/04/2010
Temperature Chamber	TERCHY	MHG-120LF	911009	04/14/2008	04/13/2010
Temperature Chamber	GIANT FORCE	GTH-150-40-CP-AR	MAA0512-018	02/05/2008	02/04/2010
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	06/26/2010
DC Power Supply	Topward	3303D	981327	10/26/2009	10/25/2010

7.5 Measurement Result:

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
GSM 850	824.20	128	0.2463
	836.60	190	0.2473
	848.80	251	0.2464

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
EDGE 850	824.20	128	0.2470
	836.60	190	0.2457
	848.80	251	0.2458

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
PCS 1900	1850.20	512	0.2448
	1880.00	661	0.2449
	1909.80	810	0.2445

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
EDGE 1900	1850.20	512	0.2438
	1880.00	661	0.2462
	1909.80	810	0.2467

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
WCDMA Band IV	1712.40	1312	4.1650
	1732.60	1413	4.1646
	1752.60	1513	4.1874

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
HSUPA IV	1712.40	1312	4.1714
	1732.60	1413	4.1651
	1752.60	1513	4.1698

Figure 7-1: GSM Channel Low

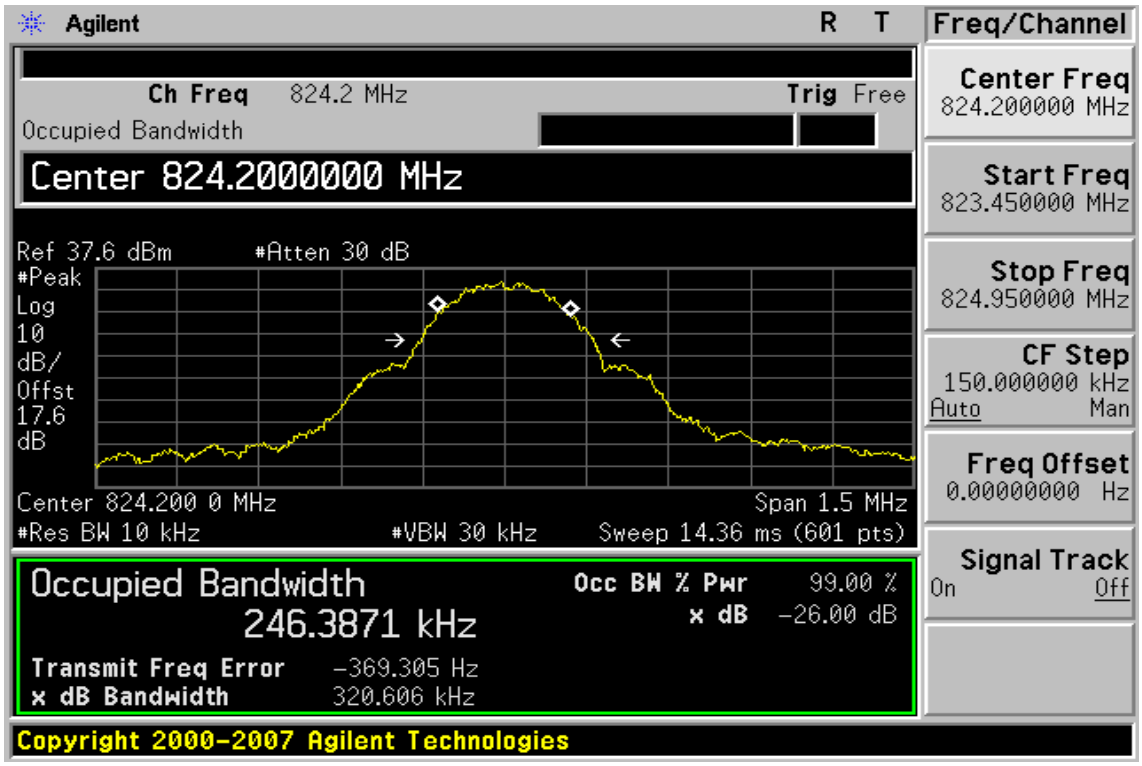


Figure 7-2 GSM Channel Mid

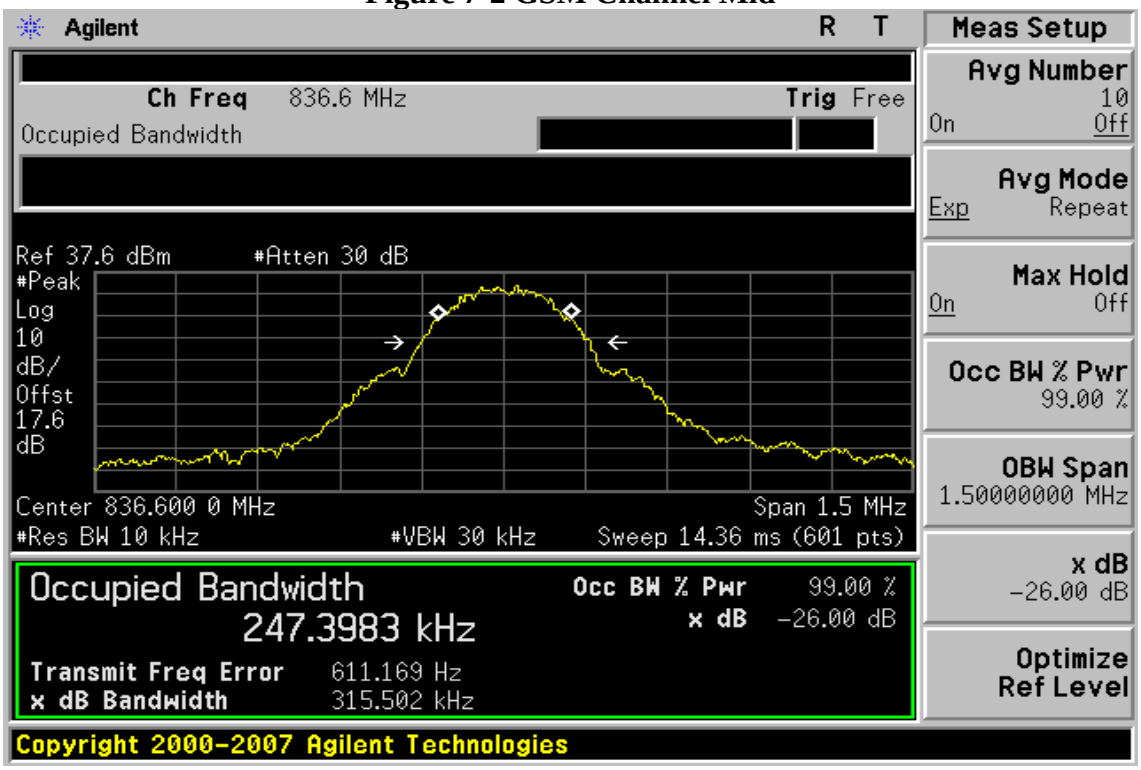


Figure 7-3: GSM Channel High

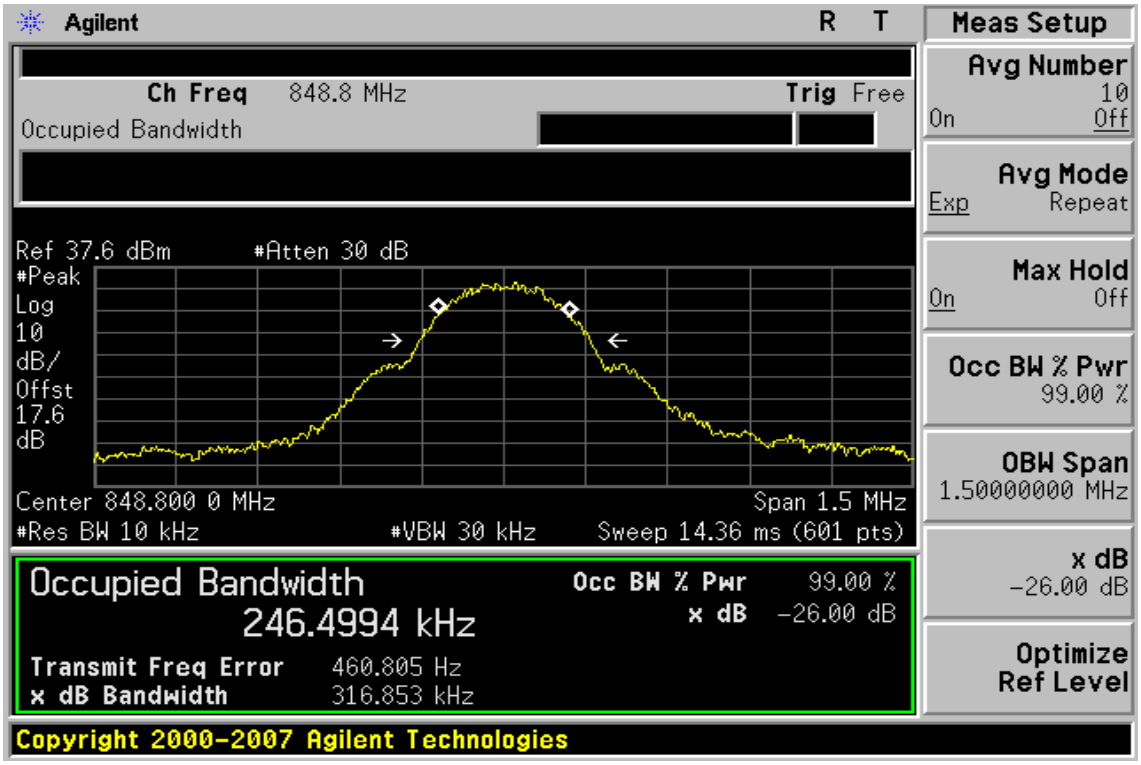


Figure 7-4: PCS Channel Low

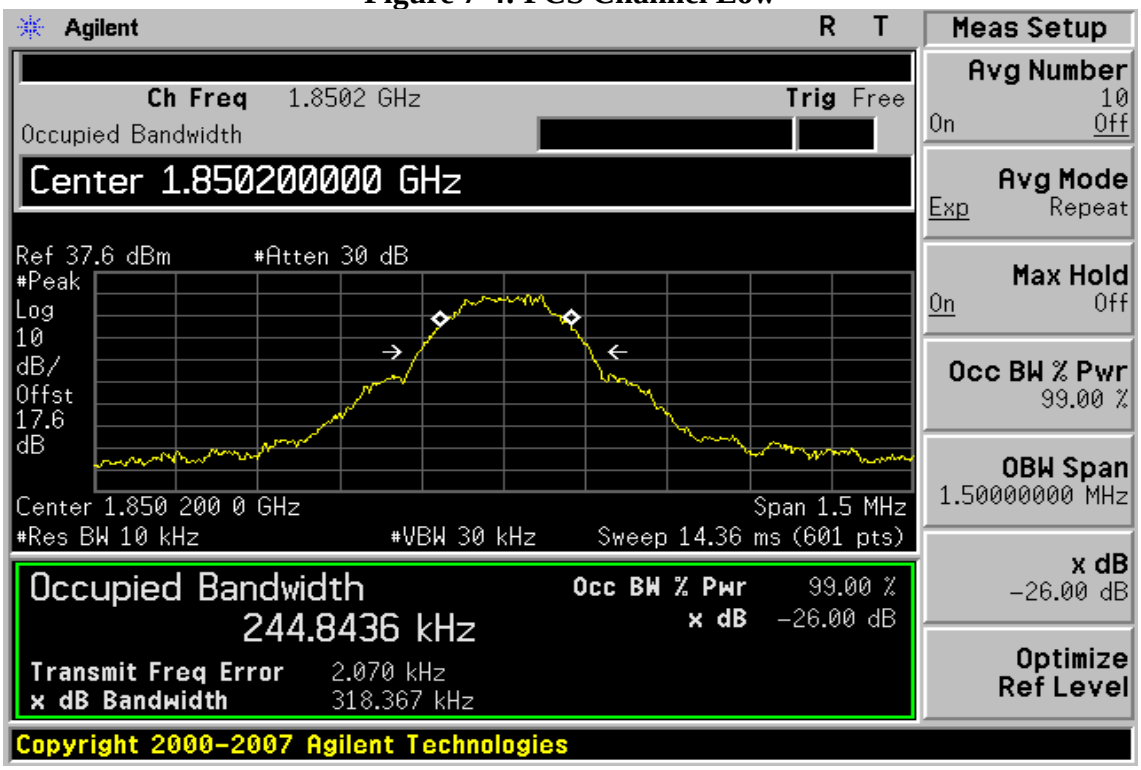


Figure 7-5 PCS Channel Mid

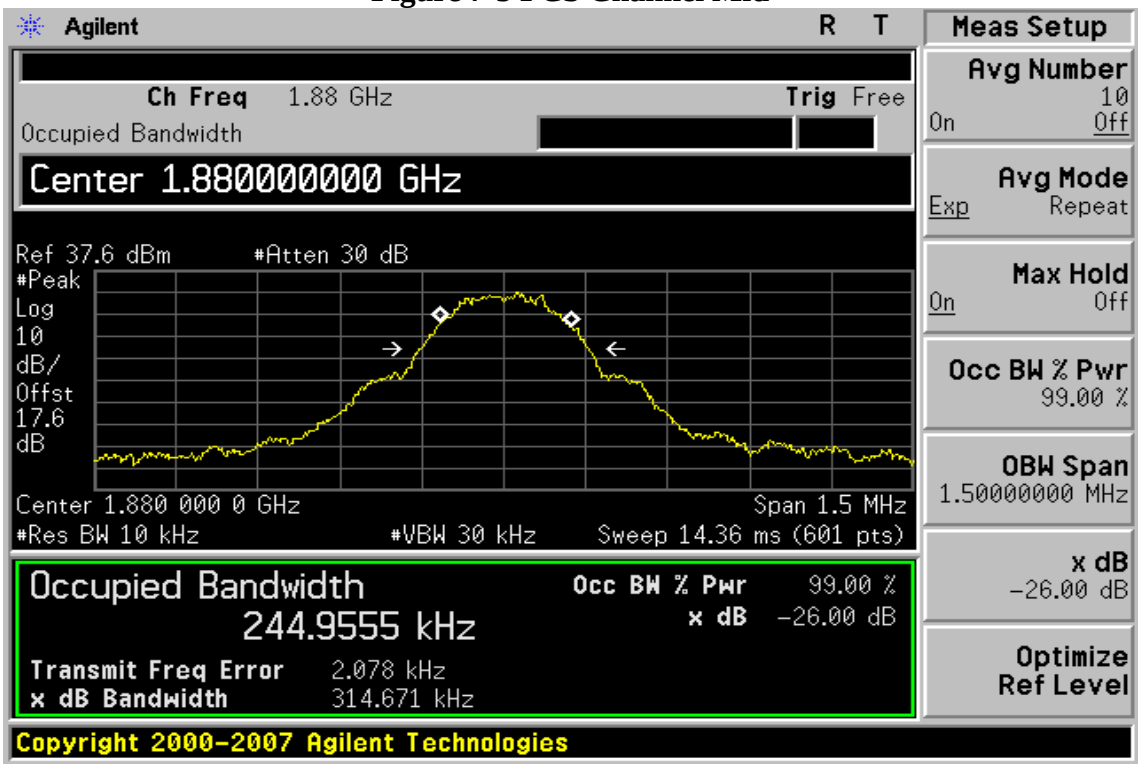


Figure 7-6: PCS Channel High

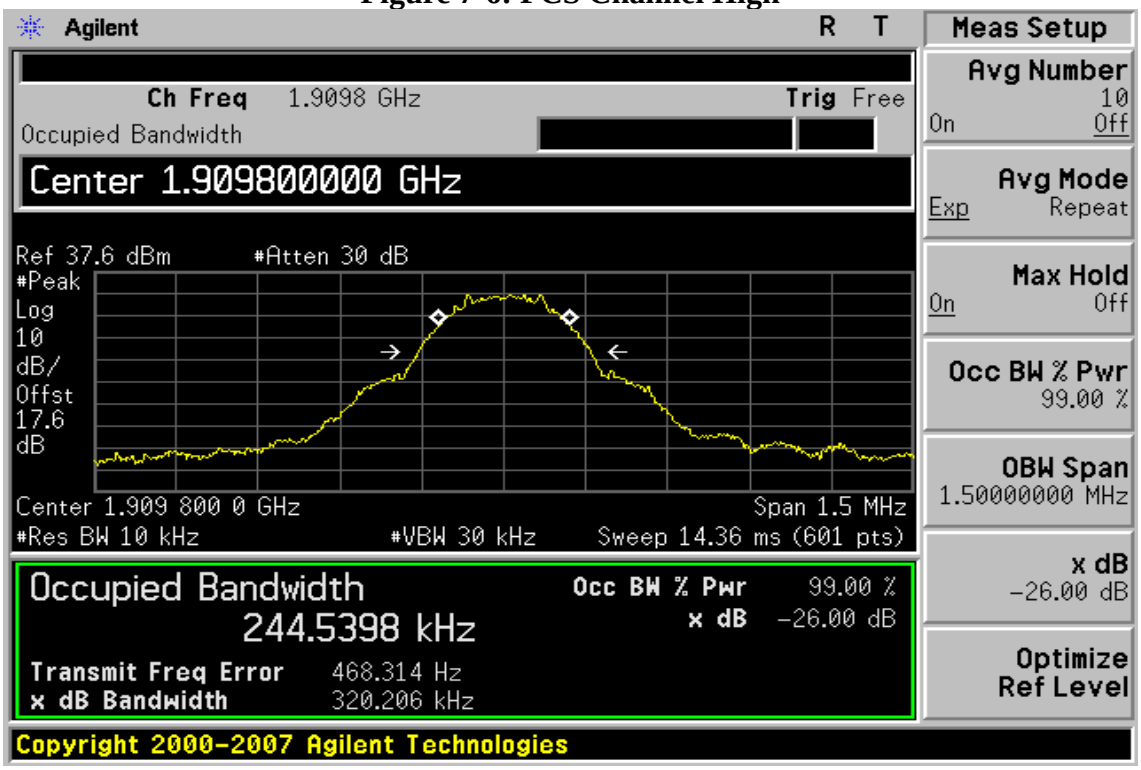


Figure 7-7: EDGE 850 Channel Low

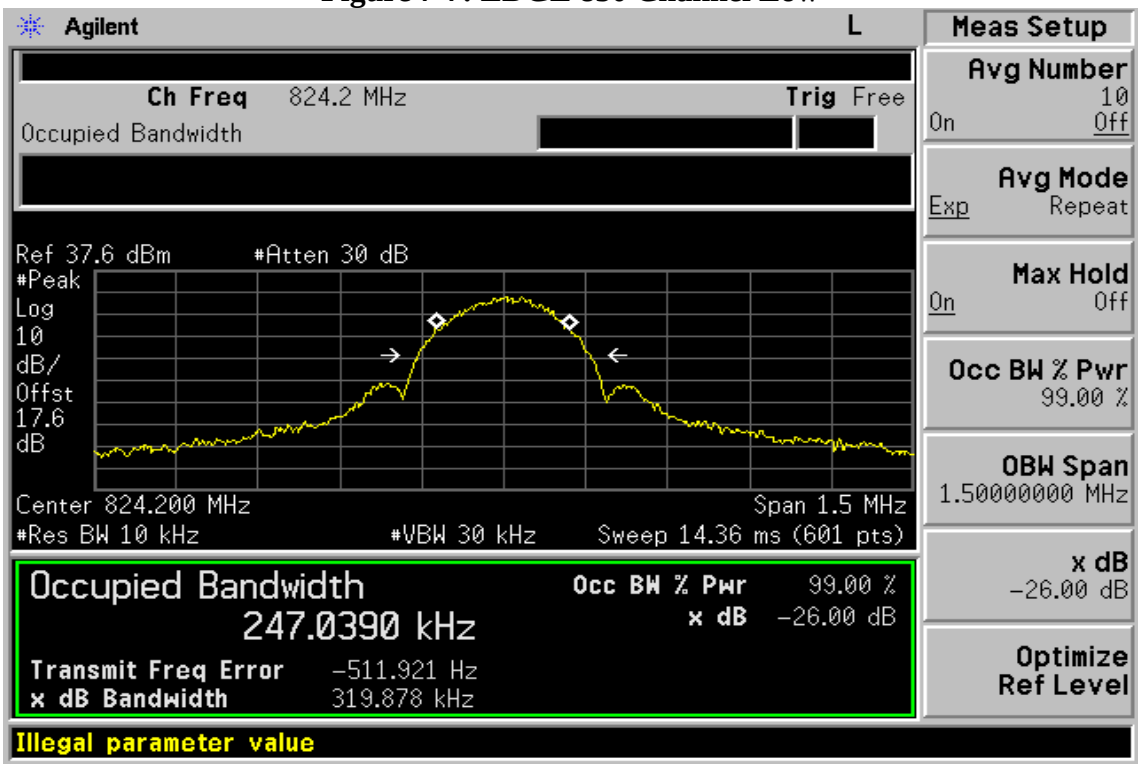


Figure 7-8 EDGE 850 Channel Mid

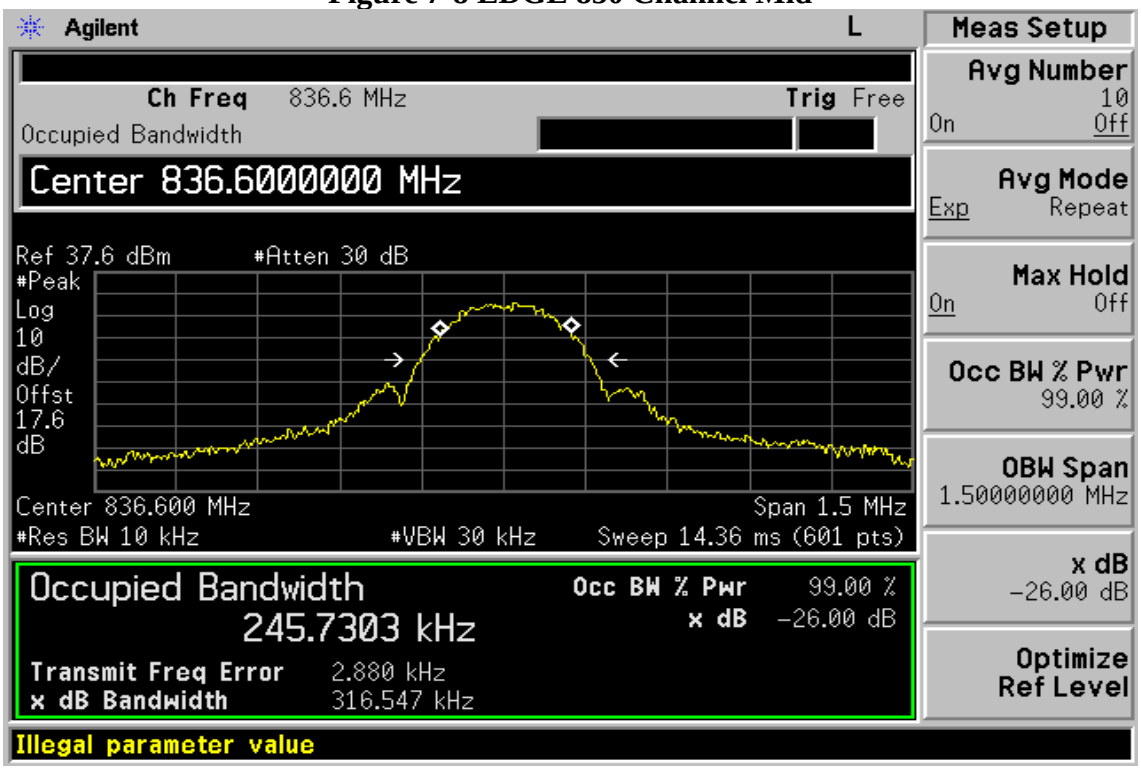


Figure 7-9: EDGE 850 Channel High

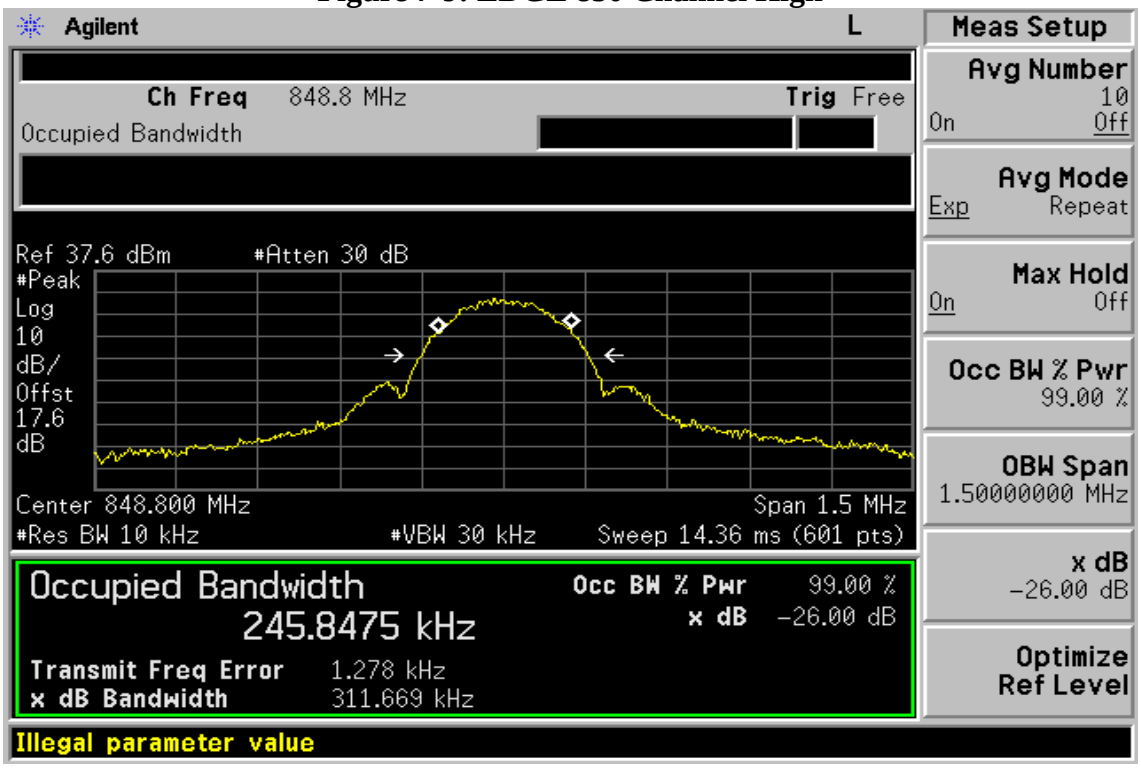


Figure 7-10: EDGE 1900 Channel Low

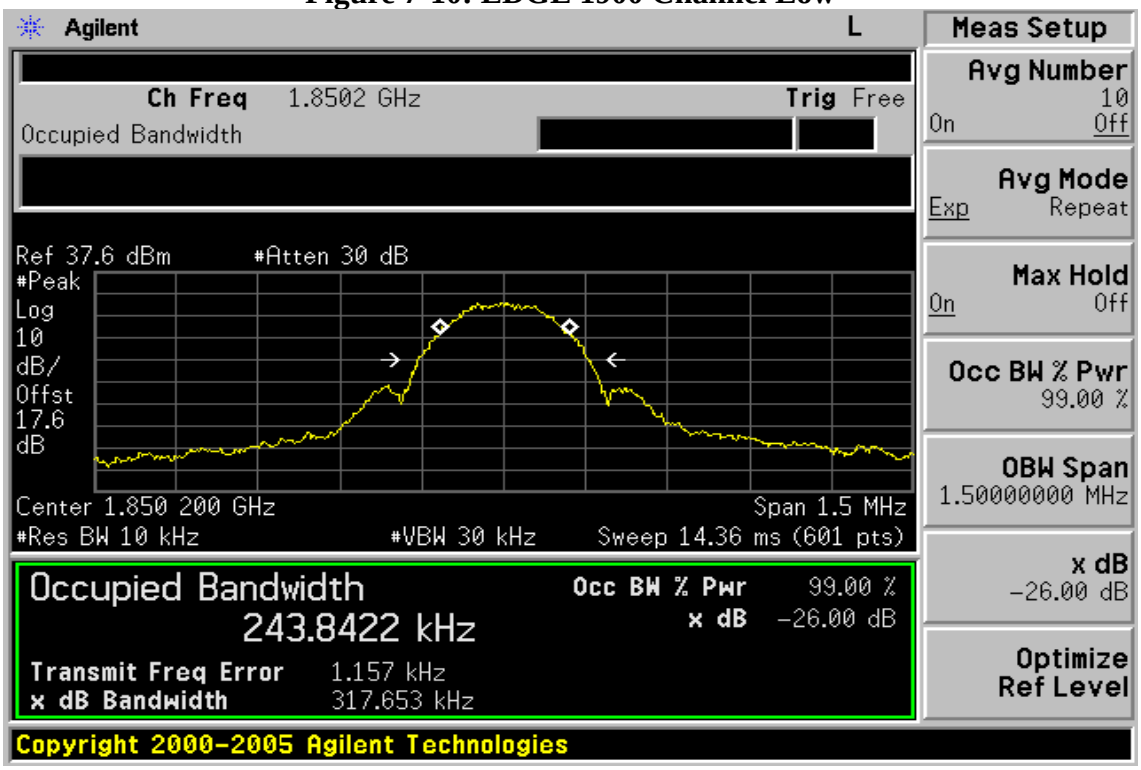


Figure 7-11 EDGE 1900 Channel Mid

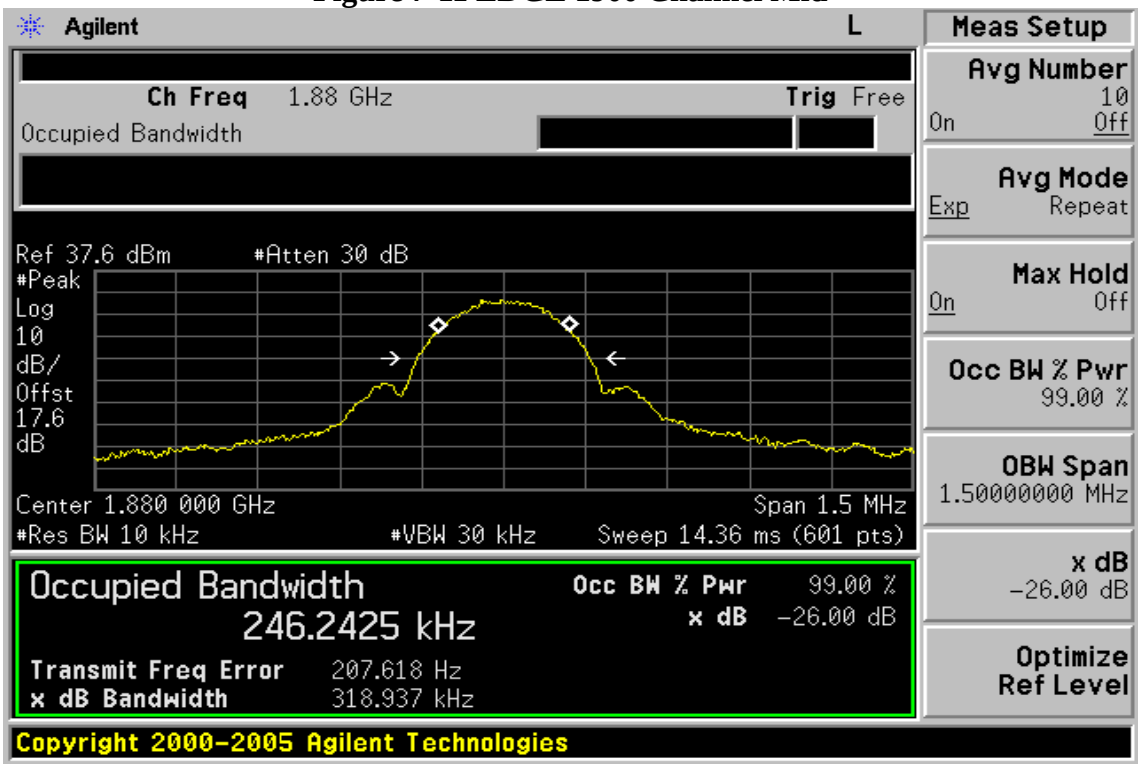


Figure 7-12: EDGE 1900 Channel High

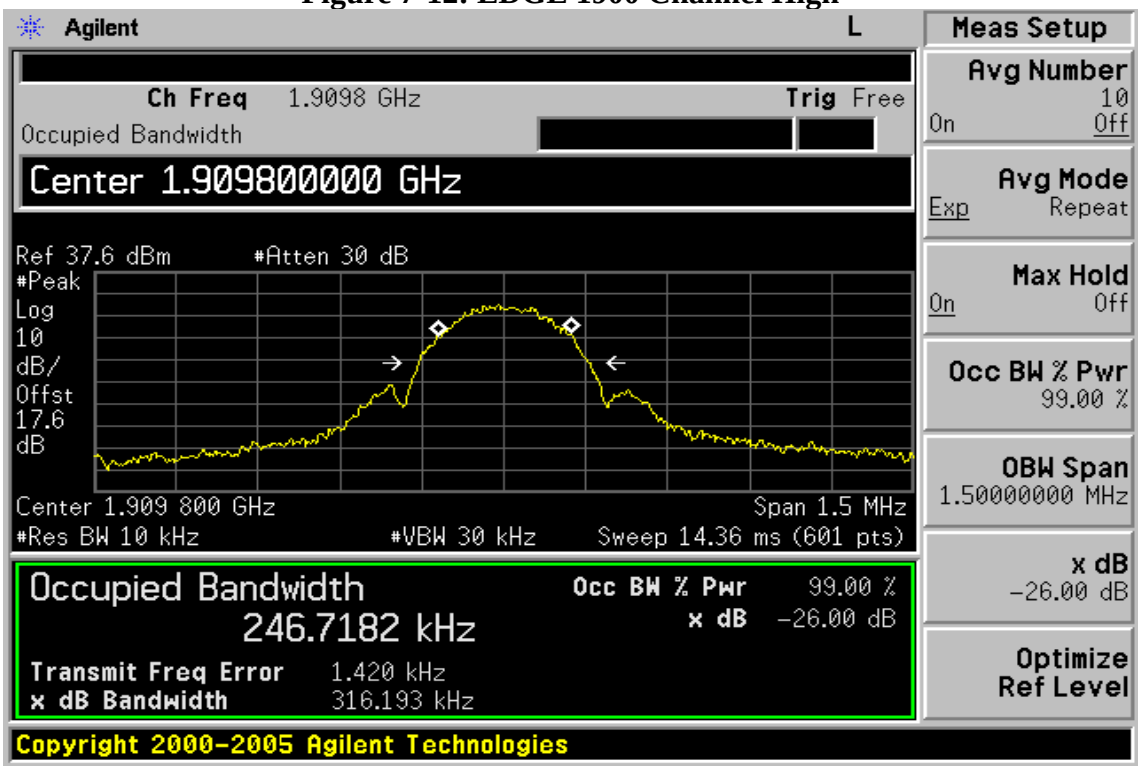


Figure 7-13: WCDMA IV Channel Low

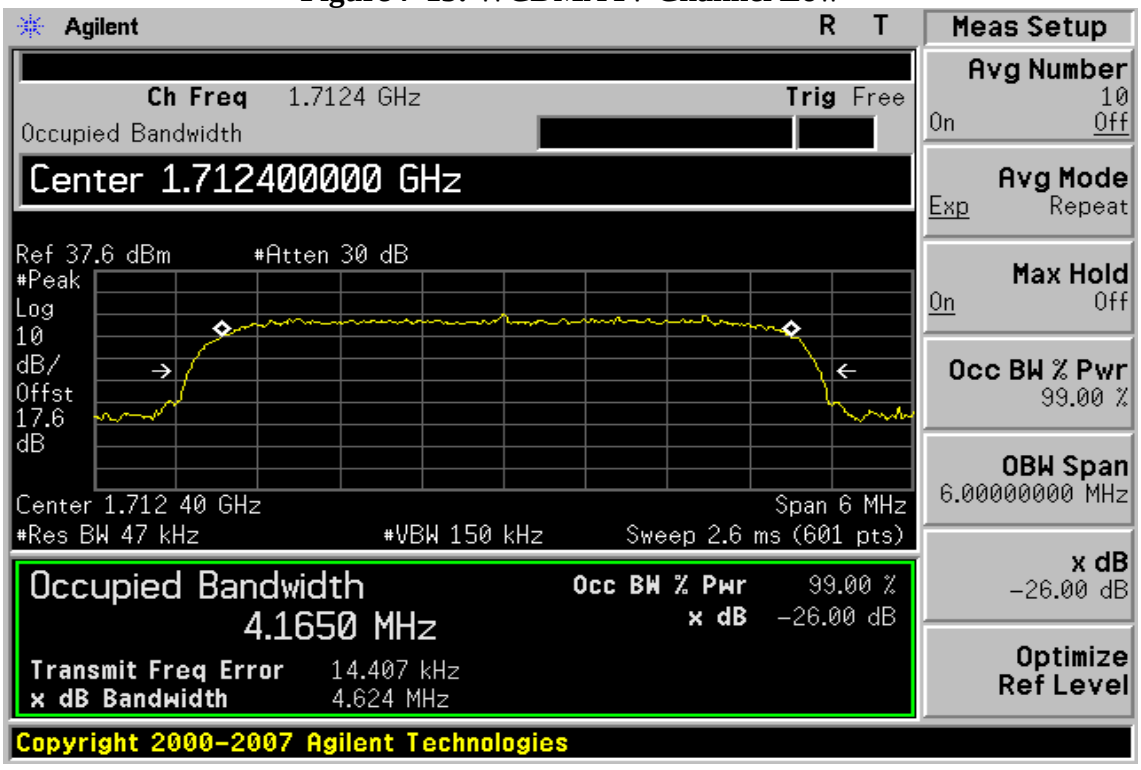


Figure 7-14 WCDMA IV Channel Mid

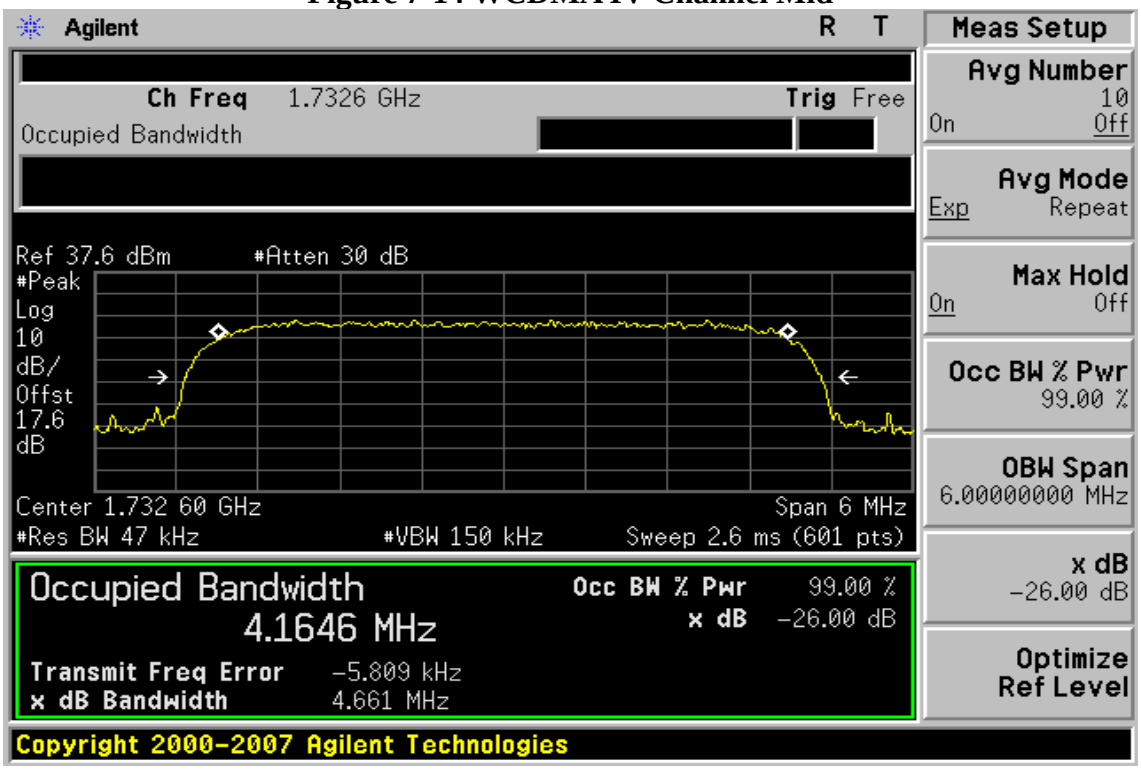


Figure 7-15: WCDMA IV Channel High

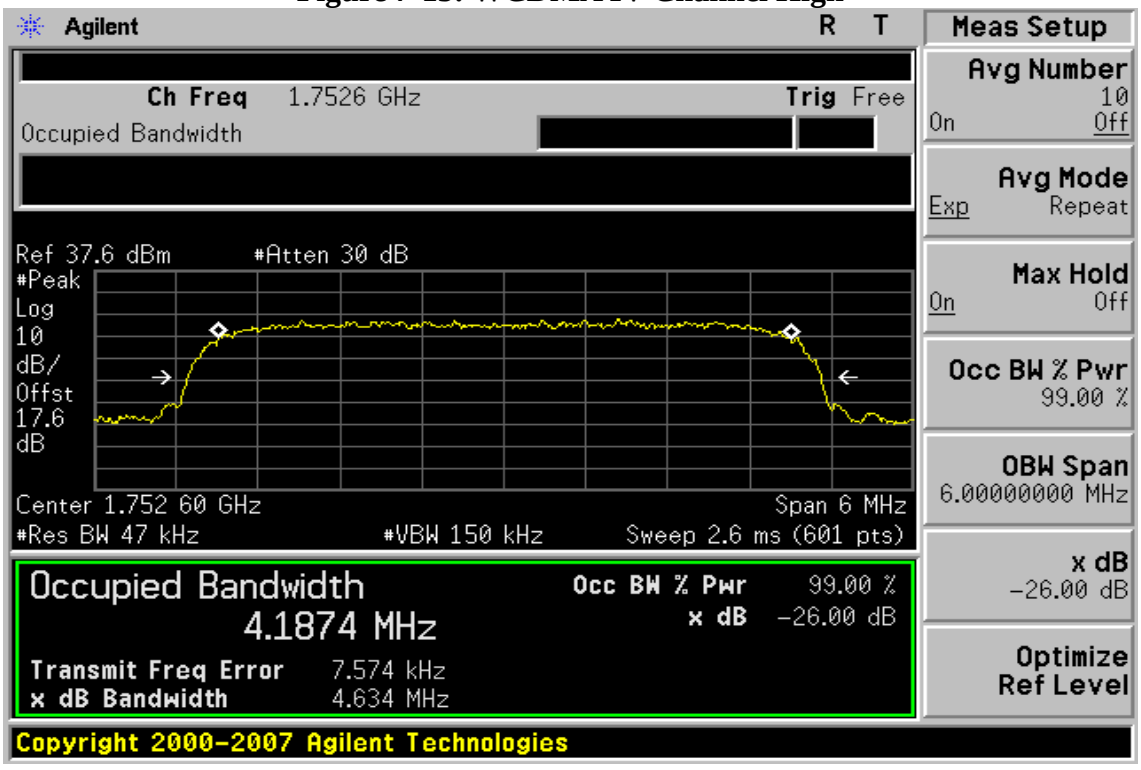


Figure 7-16: HSUPA IV Channel Low

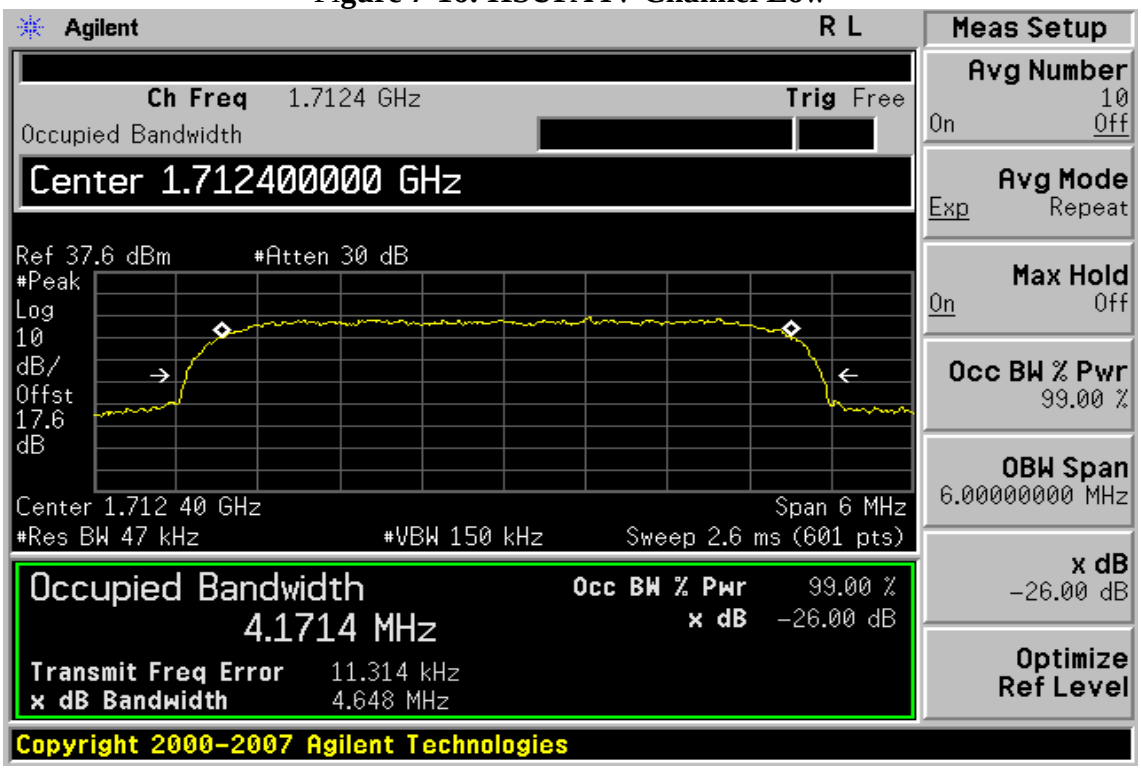


Figure 7-17 HSUPA IV Channel Mid

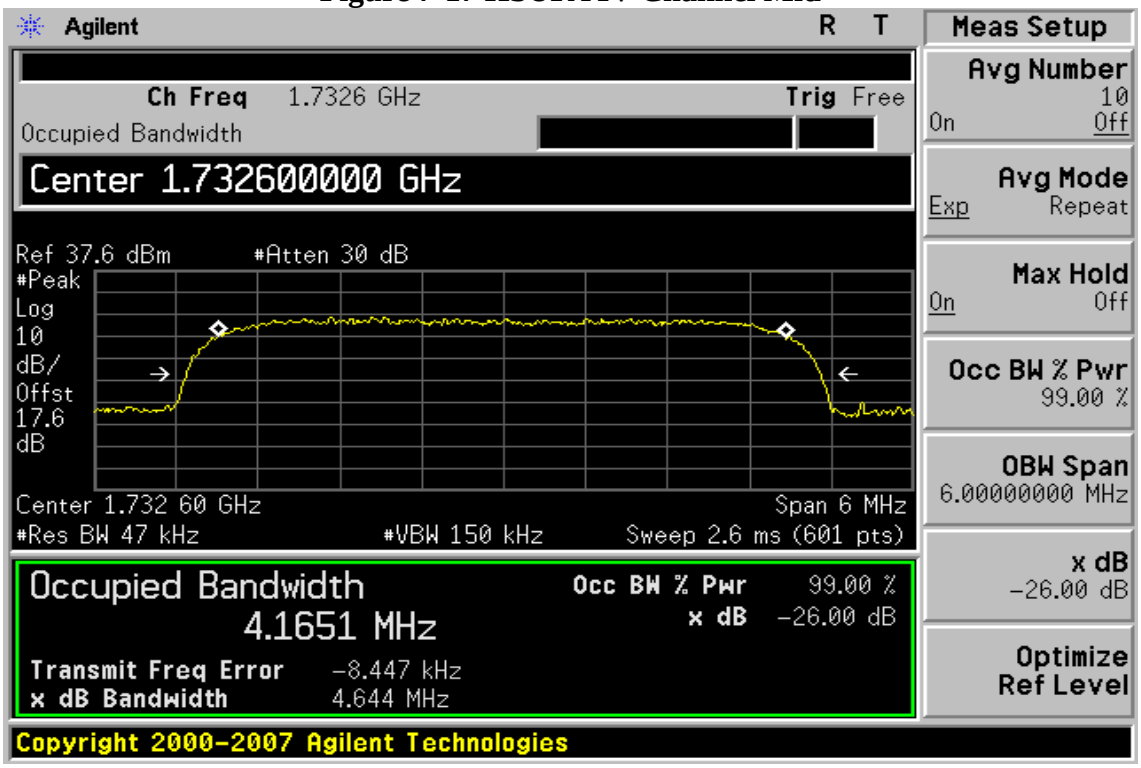
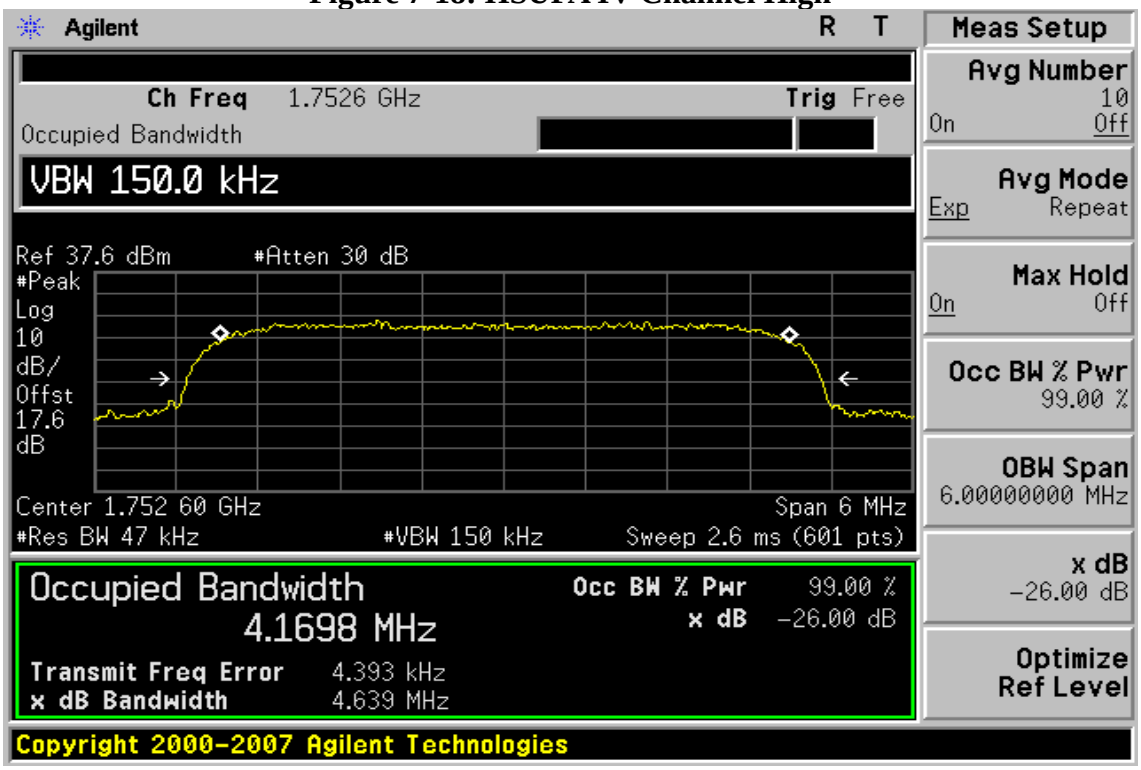


Figure 7-18: HSUPA IV Channel High



7. OUT OF BAND EMISSION AT ANTENNA TERMINALS (TX)

8.1 Standard Applicable

According to FCC §2.1051.

FCC §22.917(a),§24.238(a), §27.53(g)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)

According to RSS-129 §8.1.1

(1) The spurious emissions shall not exceed the limits in Table 8.1, where dBc is dB relative to the transmitter mean output power.

(2) The mean power of emissions in the mobile station receive band (869-894 MHz) shall be attenuated to a level not to exceed -80 dBm/1.23 MHz at the transmit antenna connector.

(3) In any 30 kHz outside the cellular band, the attenuation shall be at least 43+10 Log10 (mean output power in watts) dB.

Table 8.1

Mobile Station Spurious Emission Limits When Transmitting

Col. 1	Col. 2 : Centre frequency offset by greater than 900 kHz for 30 kHz bandwidth or greater than 1.385 MHz for 1 MHz bandwidth. #	Col. 3: Centre frequency offset by-greater than 1.98 MHz for 30 kHz bandwidth or greater than 2.465MHz for 1 MHz bandwidth. #
Spurious emissions not to exceed (a), or both (b) and (c), whichever is less stringent.	(a) -42 dBc/30 kHz (b) -60 dBm/30 kHz (c) -55 dBm/ MHz	(a) -54 dBc/30 kHz (b) -60 dBm/30 kHz (c) -55 dBm/ MHz

See 5.2(e).

Note: In Table 8.1, the dBm values are to be measured at the antenna connector.

According to RSS-133 §6.5
6.5.1 Out-of-Block Emissions

a. Mobile stations must comply with subsection i. below.

In the first 1.0MHz band immediately outside and adjacent to the licensee's frequency block. the power of emissions per any 1% of the emission bandwidth shall be attenuated below the transmitter output power P (in watts) by at least 43 + 10 log (P), dB.

b. After the first 1.0 MHz (for equipment that complies with a.i. of this subsection) or 1.5 MHz (for equipment that complies with all of this subsection), the power of emissions shall be attenuated below the transmitter output power by at least 43 + 10 log (P), dB, per any MHz of bandwidth.

(Note: If the test result using 1% of the emission bandwidth is used, then power integration over 1.0 MHz is required; alternatively, the spectrum analyzer resolution and video bandwidths can be increased to 1.0 MHz for this measurement).

6.5.2 Out-of-Sub-band Emissions

Outside the sub-bands 1850-1910 MHz and 1930-1990 MHz, the attenuation shall be equal to or greater than the out-of-block emission limits in Section 6.5.1.

According to RSS-133 §6.5

(i) In the first 1.0 MHz bands immediately outside and adjacent to the equipment's operating frequency block, the power of emissions per any 1% of the emission bandwidth shall be attenuated below the transmitter output power P (in watts) by at least 43 + 10 log10(P), dB.

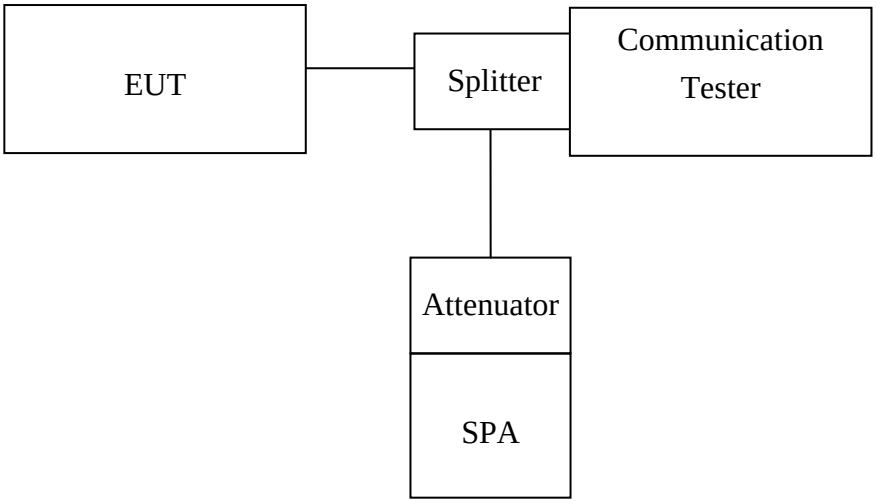
(ii) After the first 1.0 MHz outside the equipment's operating frequency block, the power of emissions shall be attenuated below the transmitter output power P (in watts) by at least 43 + 10 log10(P), dB in any 1 MHz bandwidth.

According to RSS-139 §6.5

(i) In the first 1.0 MHz bands immediately outside and adjacent to the equipment's operating frequency block, the power of emissions per any 1% of the emission bandwidth shall be attenuated below the transmitter output power P (in watts) by at least 43 + 10 log10(P), dB.

(ii) After the first 1.0 MHz outside the equipment's operating frequency block, the power of emissions shall be attenuated below the transmitter output power P (in watts) by at least 43 + 10 log10(P), dB inany 1 MHz bandwidth.

8.2 Test SET-UP



Note: *Measurement setup for testing on Antenna connector*

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

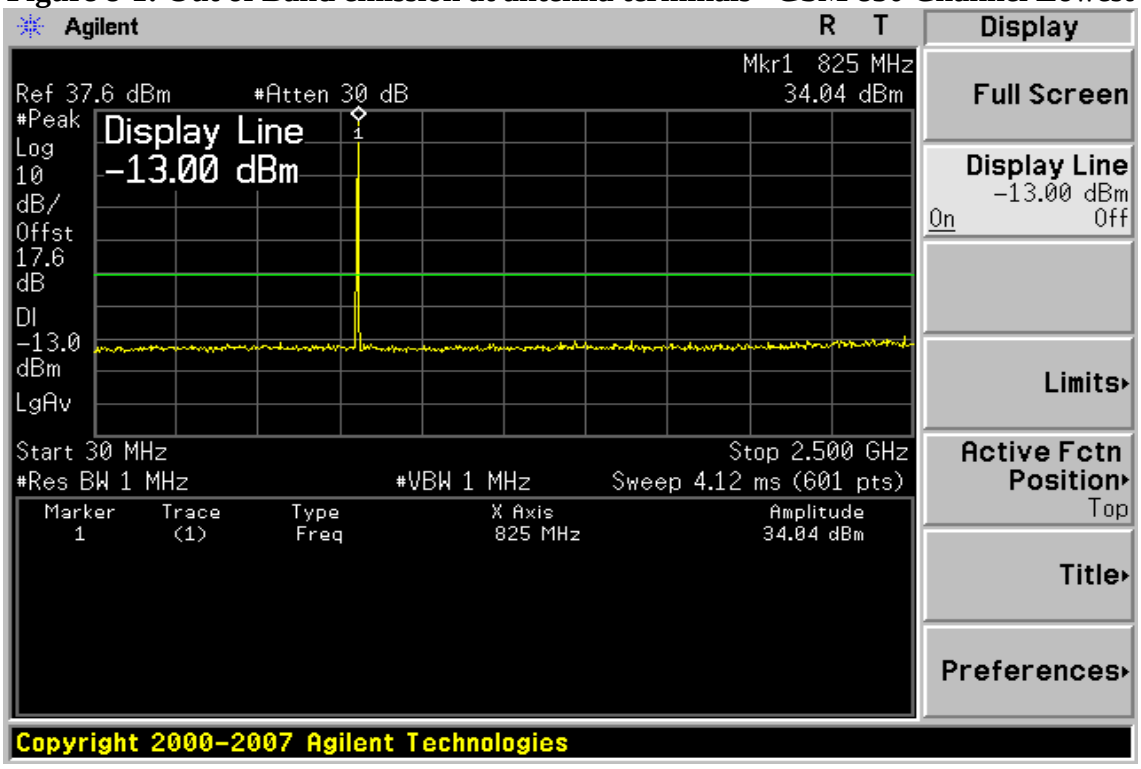
Band Edge Requirements: In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions. Limit, -13dBm.

8.4 Measurement Equipment Used:

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	01/23/2008	01/22/2010
Radio Communication Analyzer	R&S	CMU200	102189	05/13/208	05/13/2010
800 – 1000MHz Filter	Micro-Tronics	BRM13462	001	01/05/2009	01/04/2010
1800 – 2000MHz Filter	Micro-Tronics	BRM13463	001	01/05/2009	01/04/2010
Temperature Chamber	TERCHY	MHG-120LF	911009	04/14/2008	04/13/2010
Temperature Chamber	GIANT FORCE	GTH-150-40-CP-AR	MAA0512-018	02/05/2008	02/04/2010
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	06/26/2010
DC Power Supply	Topward	3303D	981327	10/26/2009	10/25/2010

8.5 Measurement Result

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



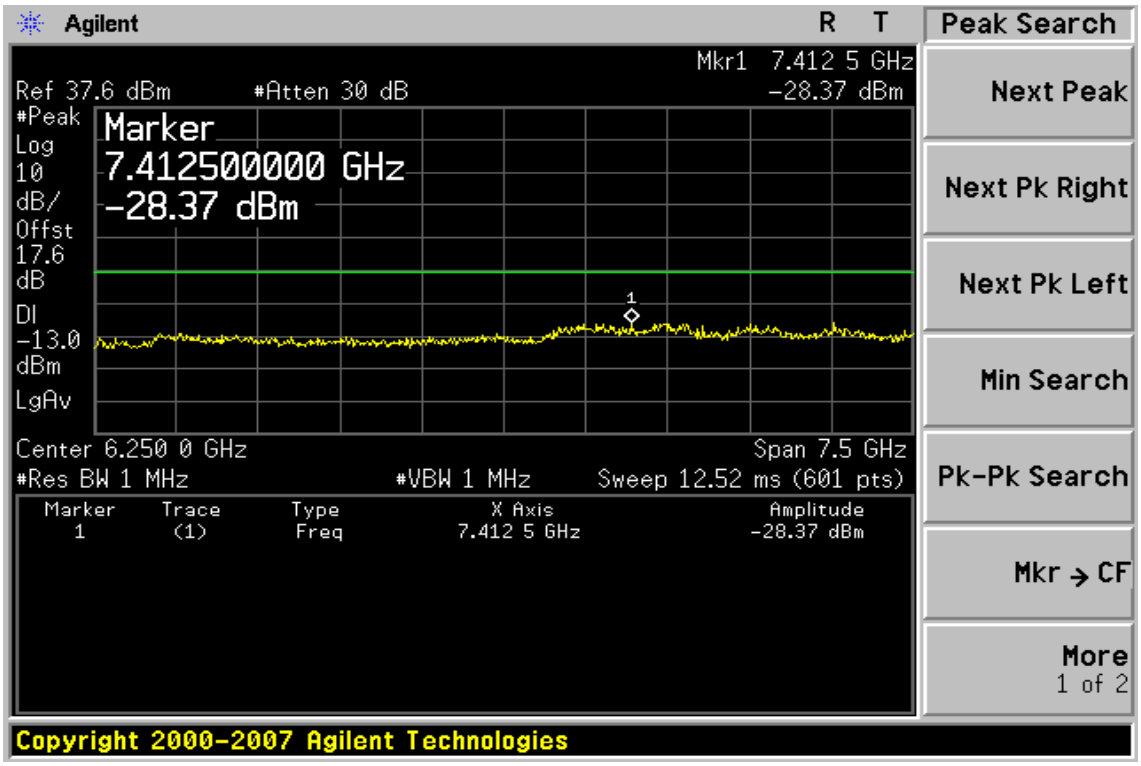
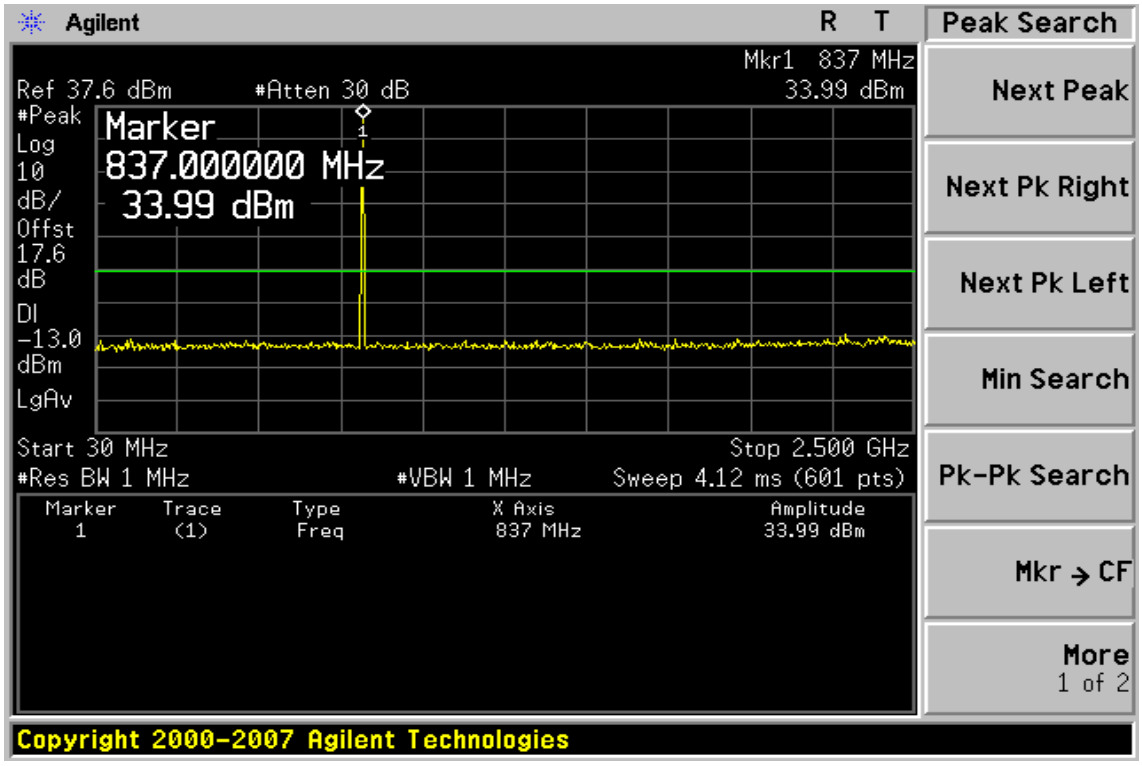


Figure 8-2: Out of Band emission at antenna terminals –GSM 850 Channel Mid



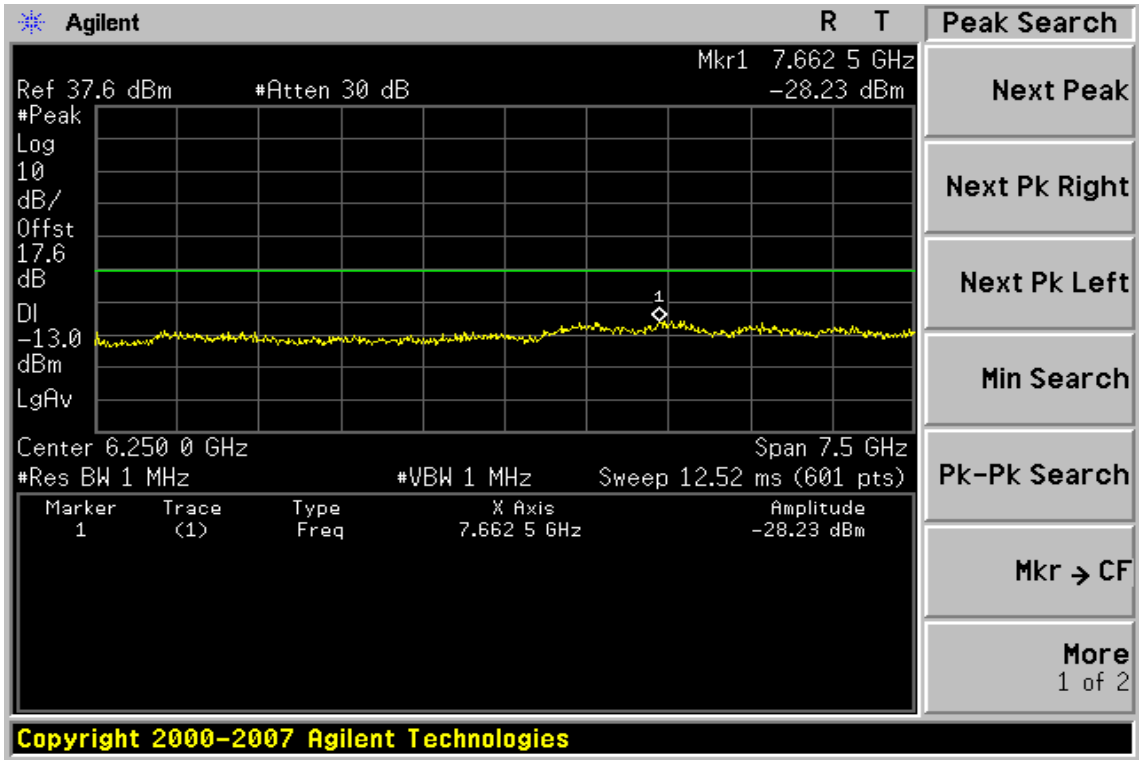
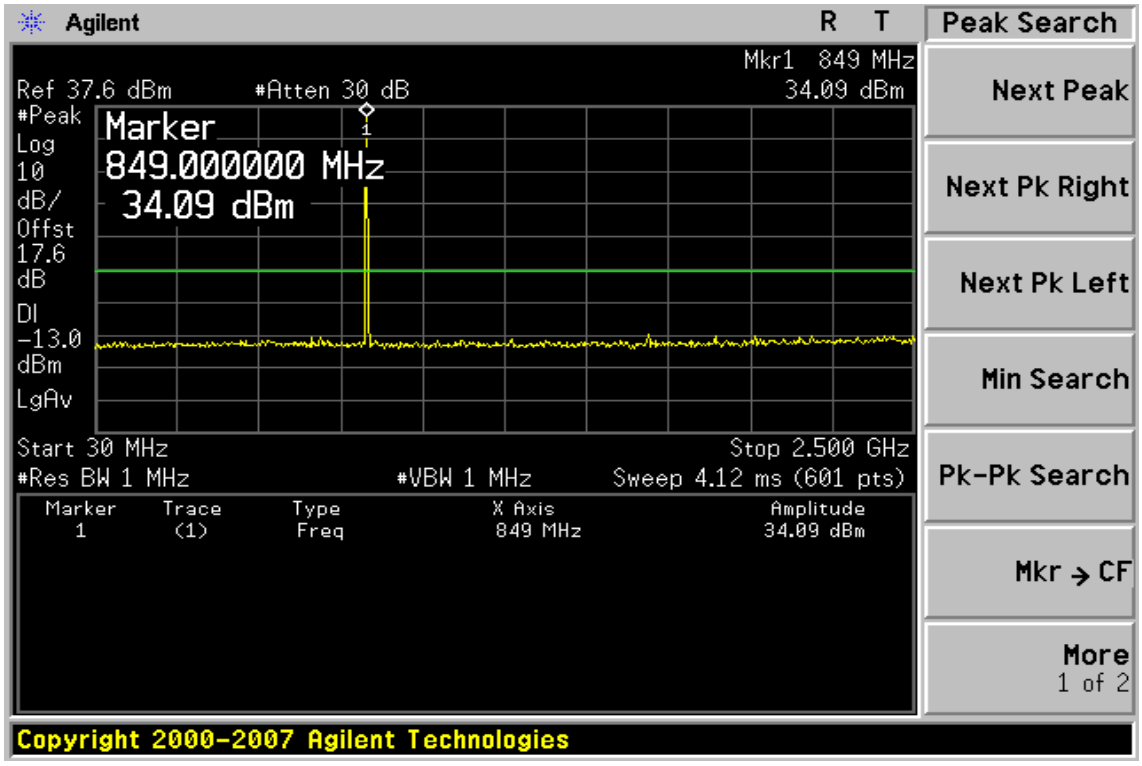


Figure 8-3: Out of Band emission at antenna terminals–GSM 850 Channel Highest



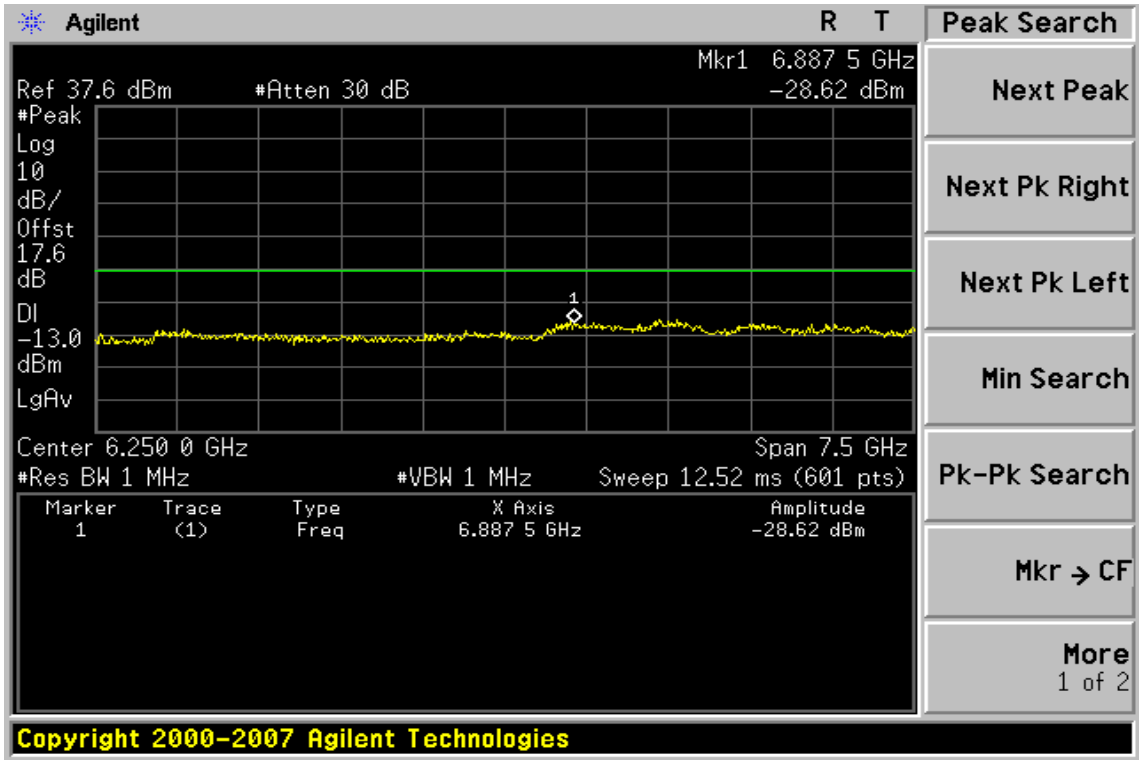


Figure 8-4: Band edge emission at antenna terminals – GSM 850 Channel Lowest

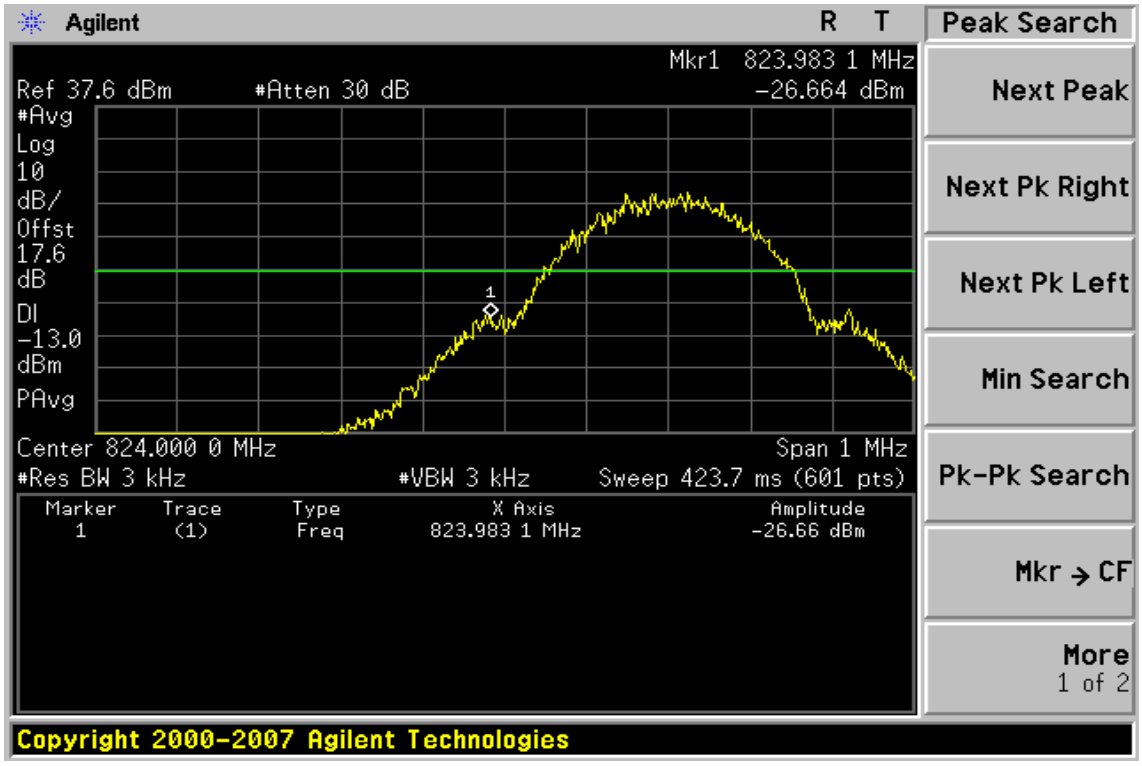


Figure 8-5: Band edge emission at antenna terminals – GSM Channel Highest

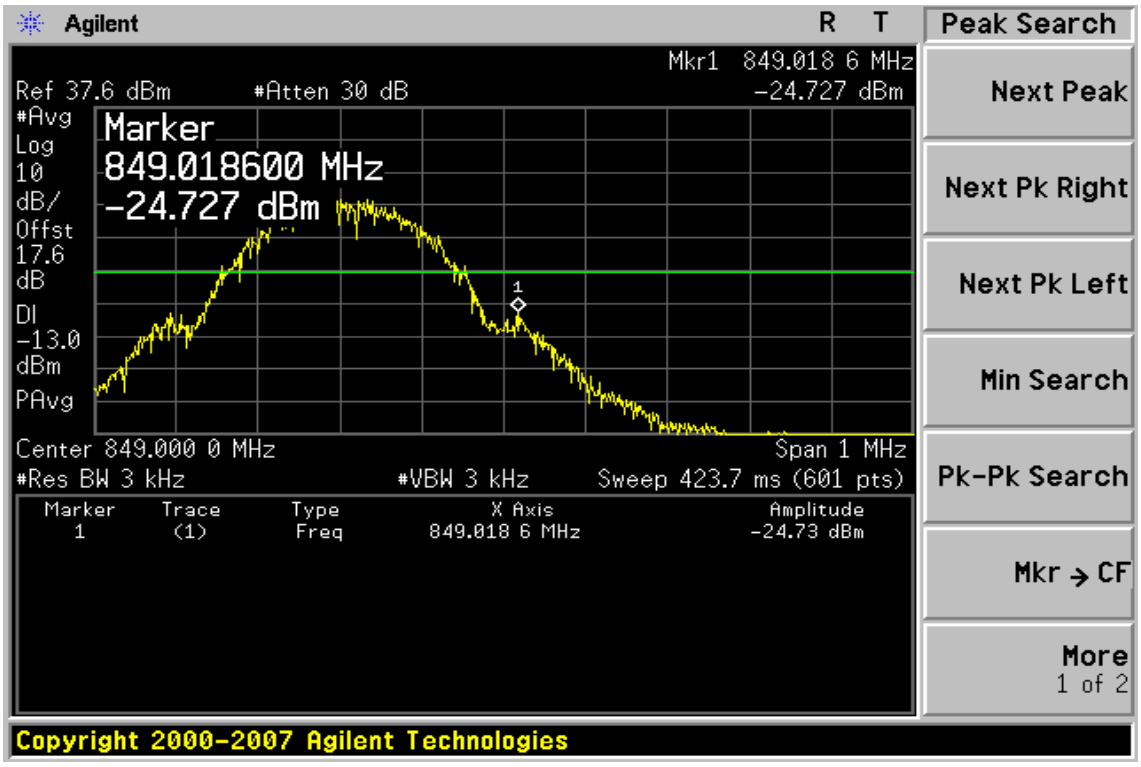
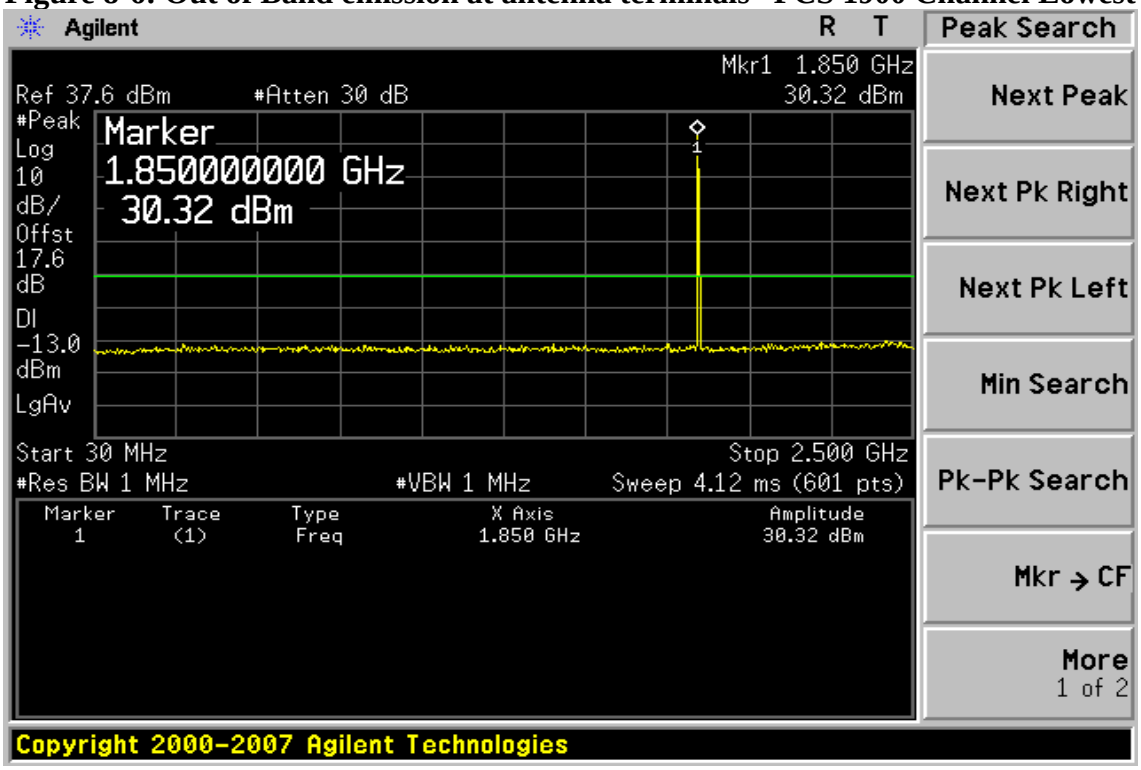


Figure 8-6: Out of Band emission at antenna terminals– PCS 1900 Channel Lowest



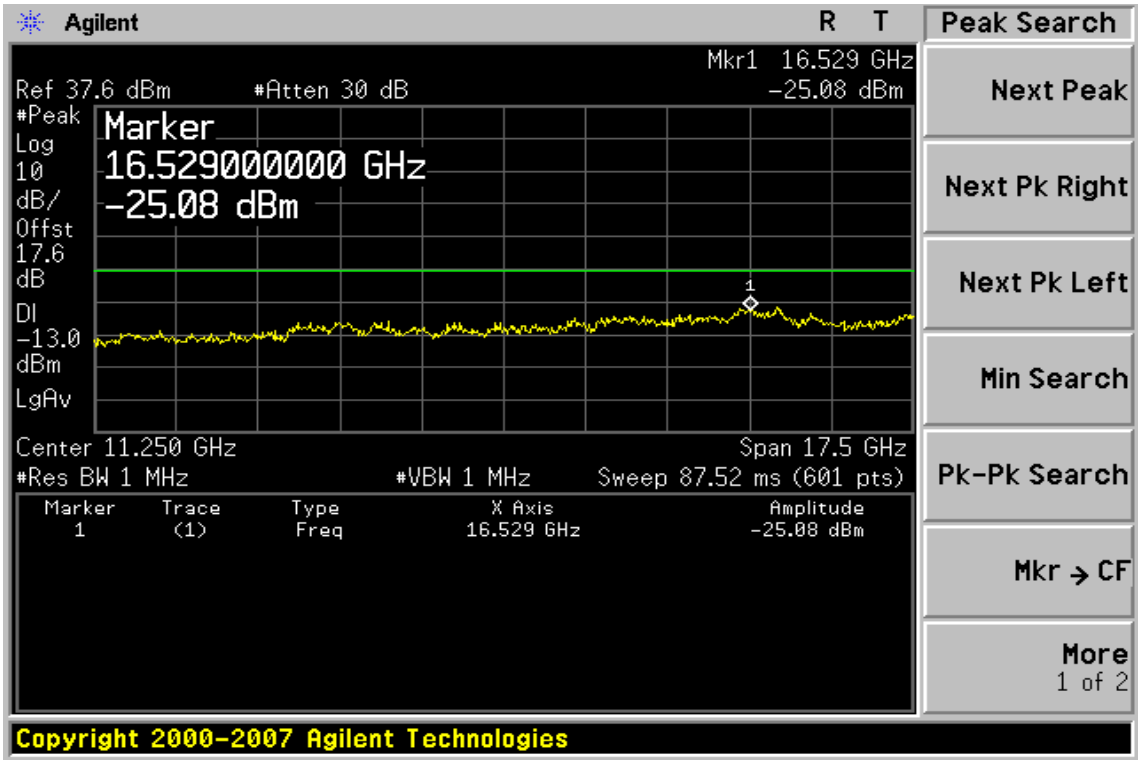
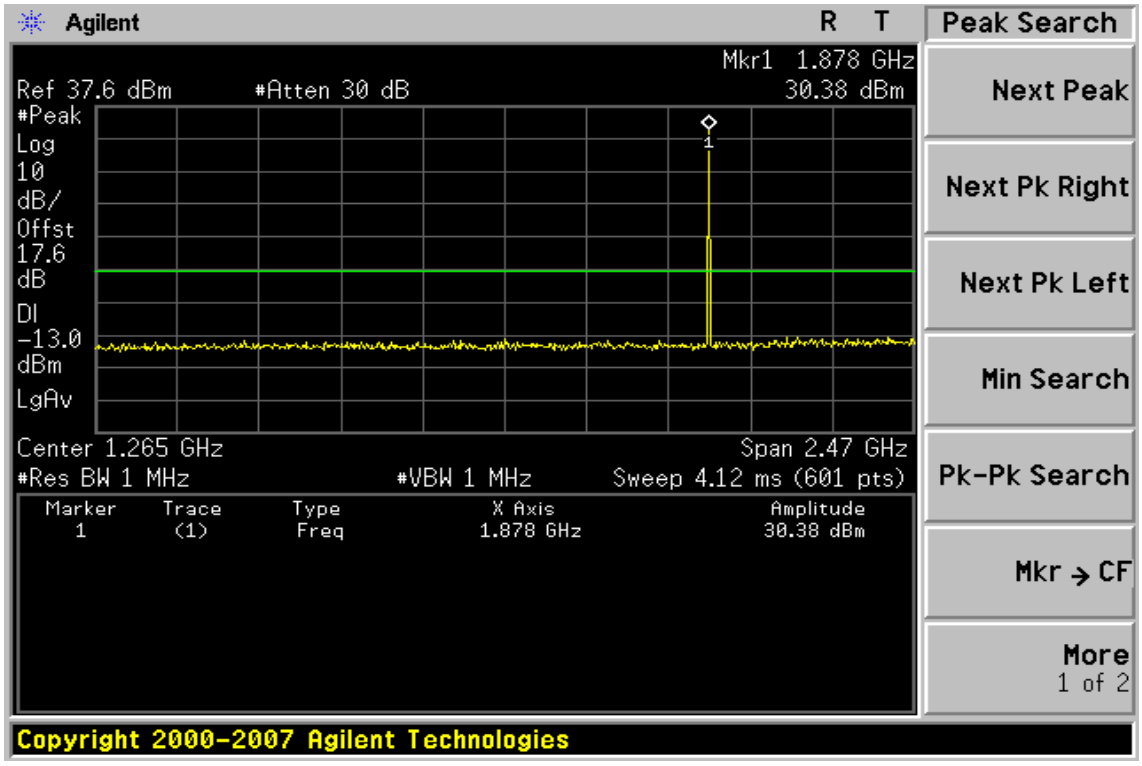


Figure 8-7: Out of Band emission at antenna terminals –PCS 1900 Channel Mid



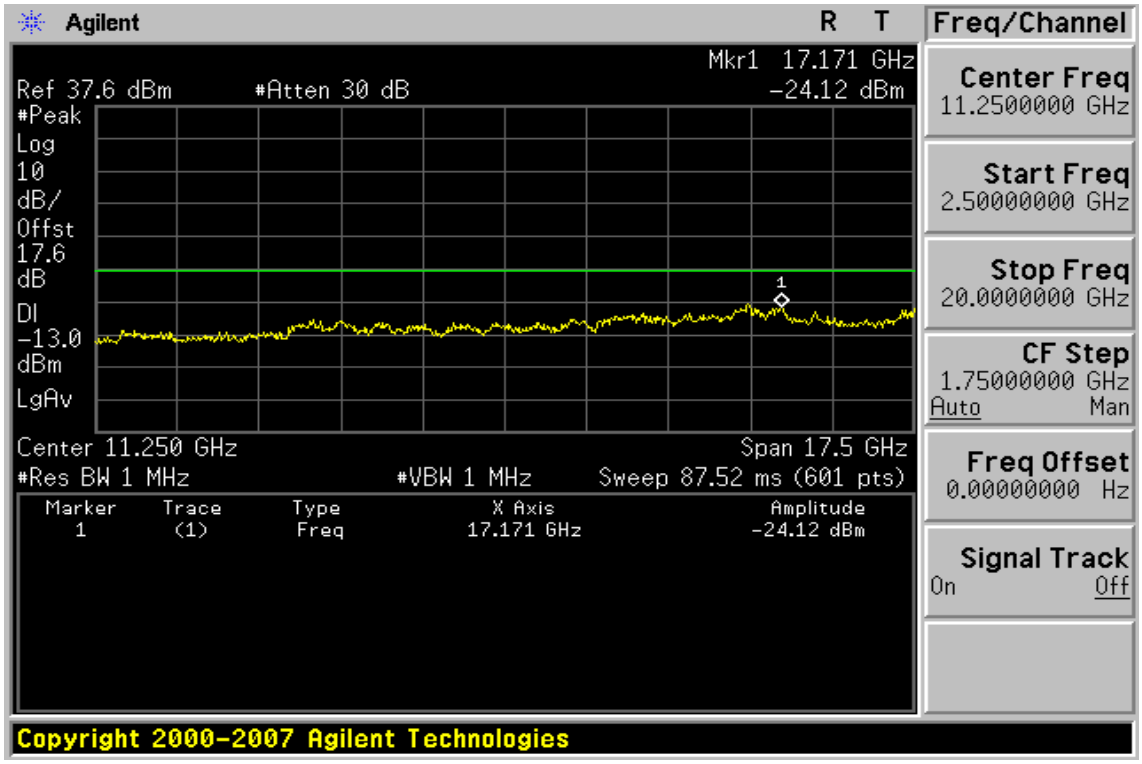
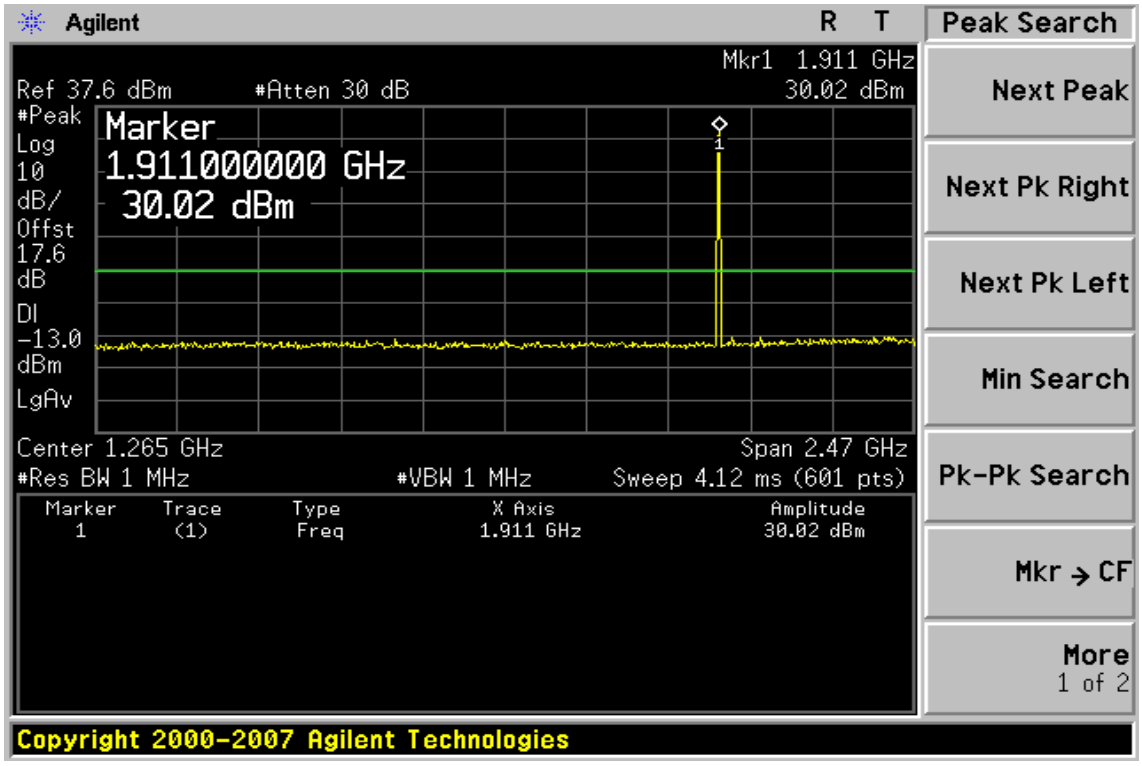


Figure 8-8: Out of Band emission at antenna terminals–PCS 1900 Channel Highest



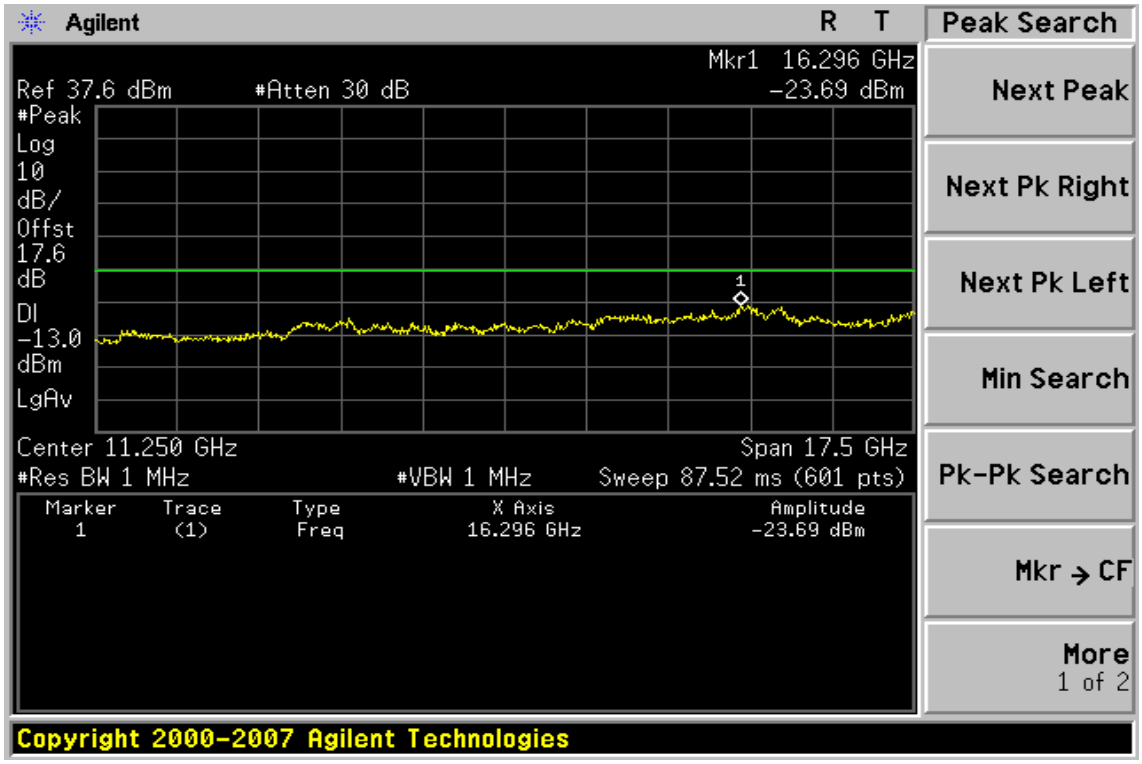


Figure 8-9: Bad edge emission at antenna terminals – PCS 1900 Channel Lowest

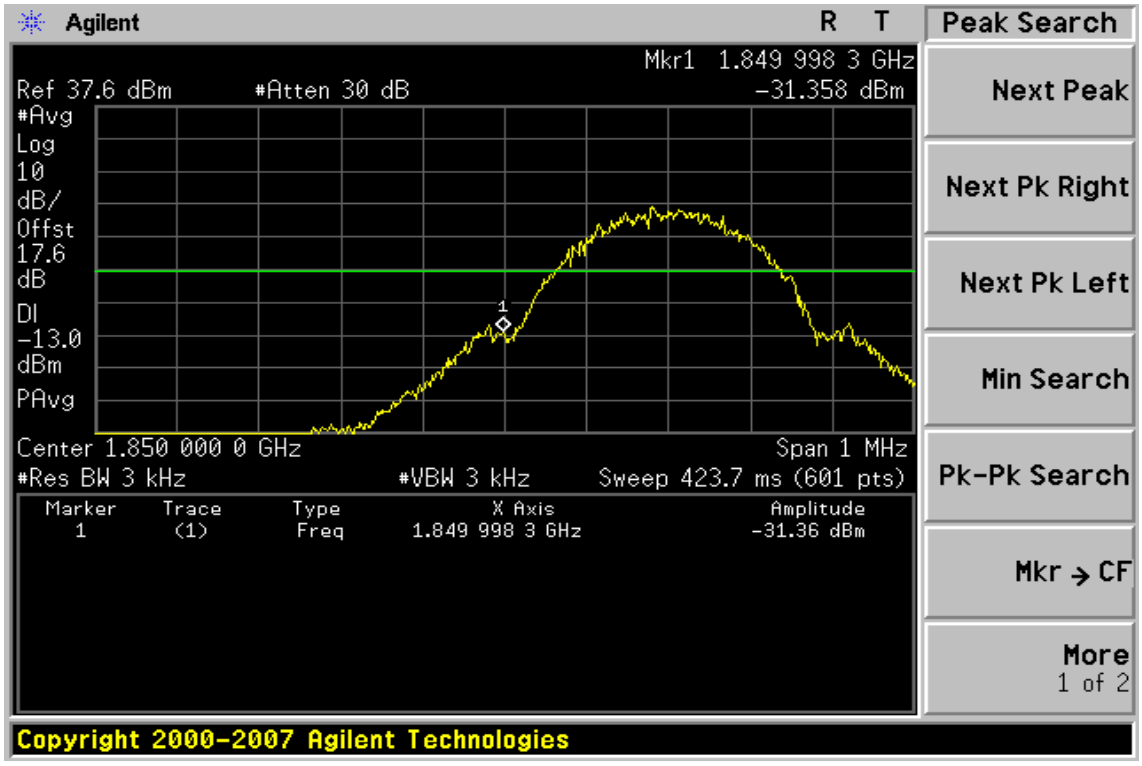


Figure 8-10: Band edge emission at antenna terminals – PCS 1900 Channel Highest

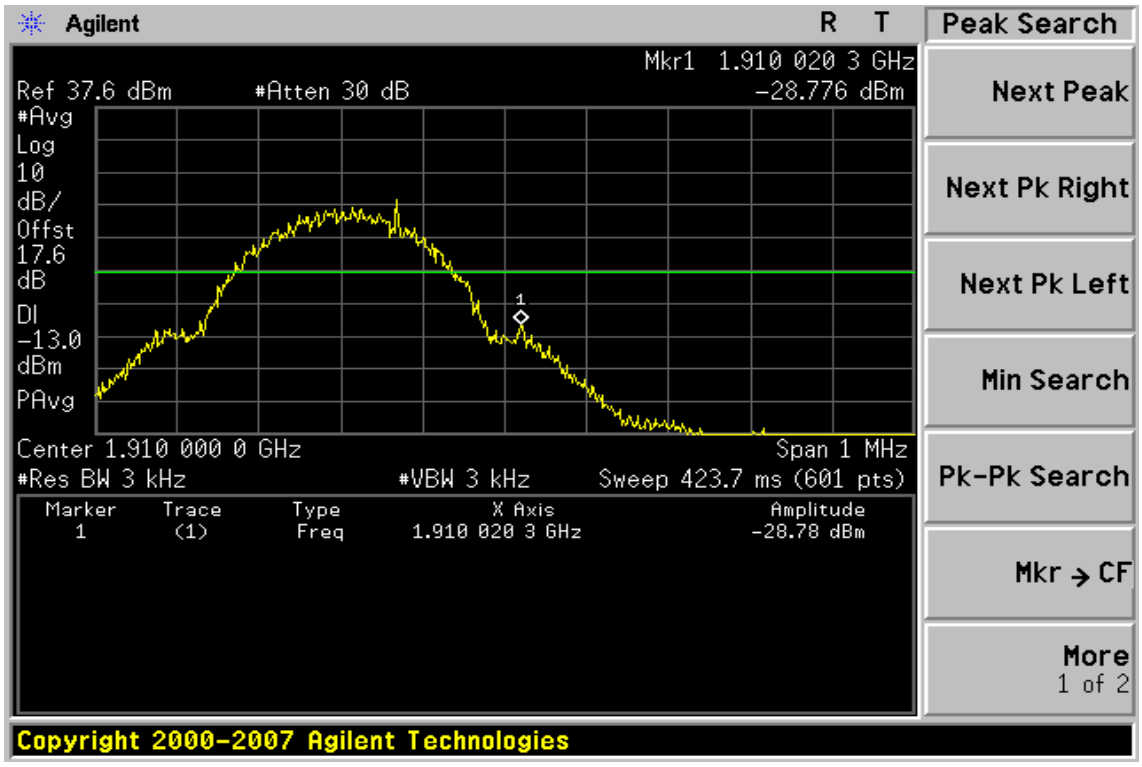
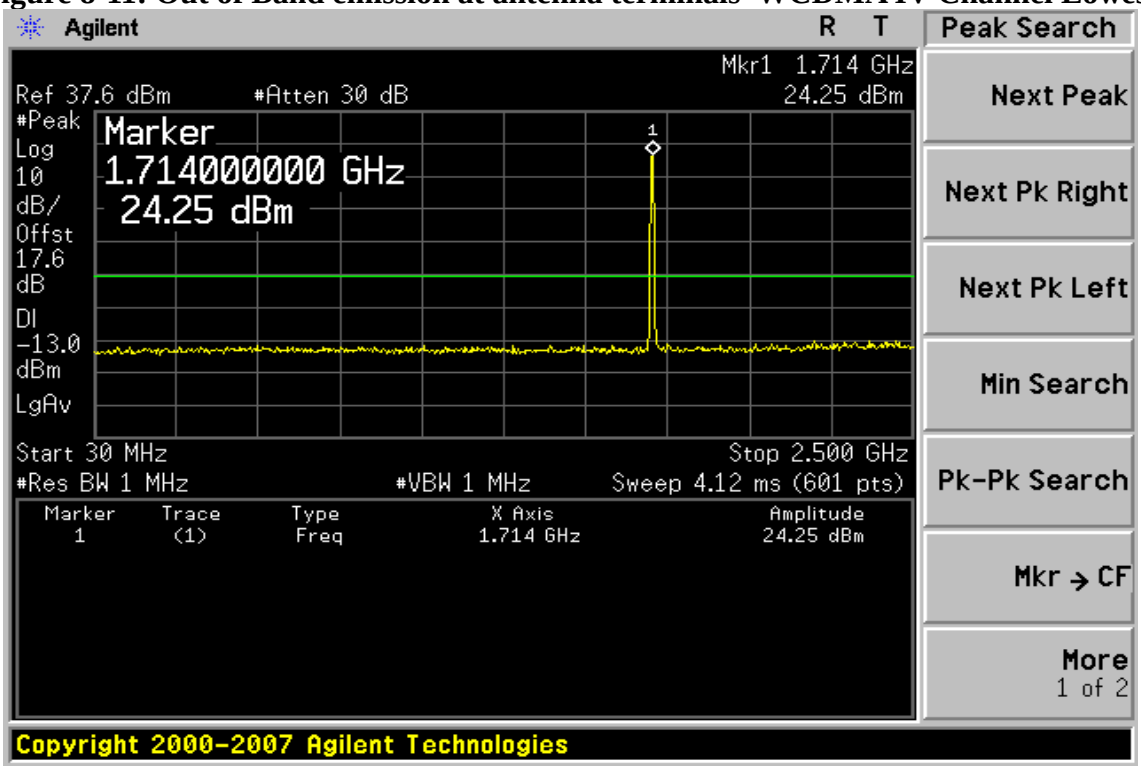


Figure 8-11: Out of Band emission at antenna terminals–WCDMA IV Channel Lowest



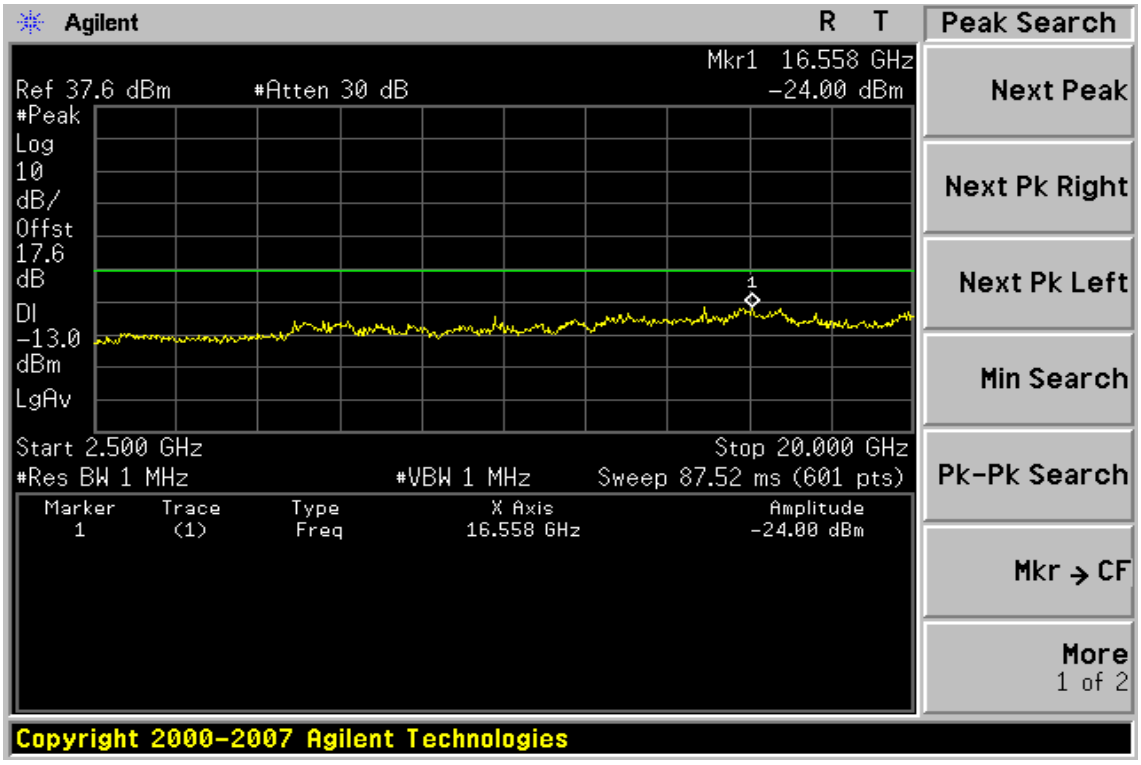
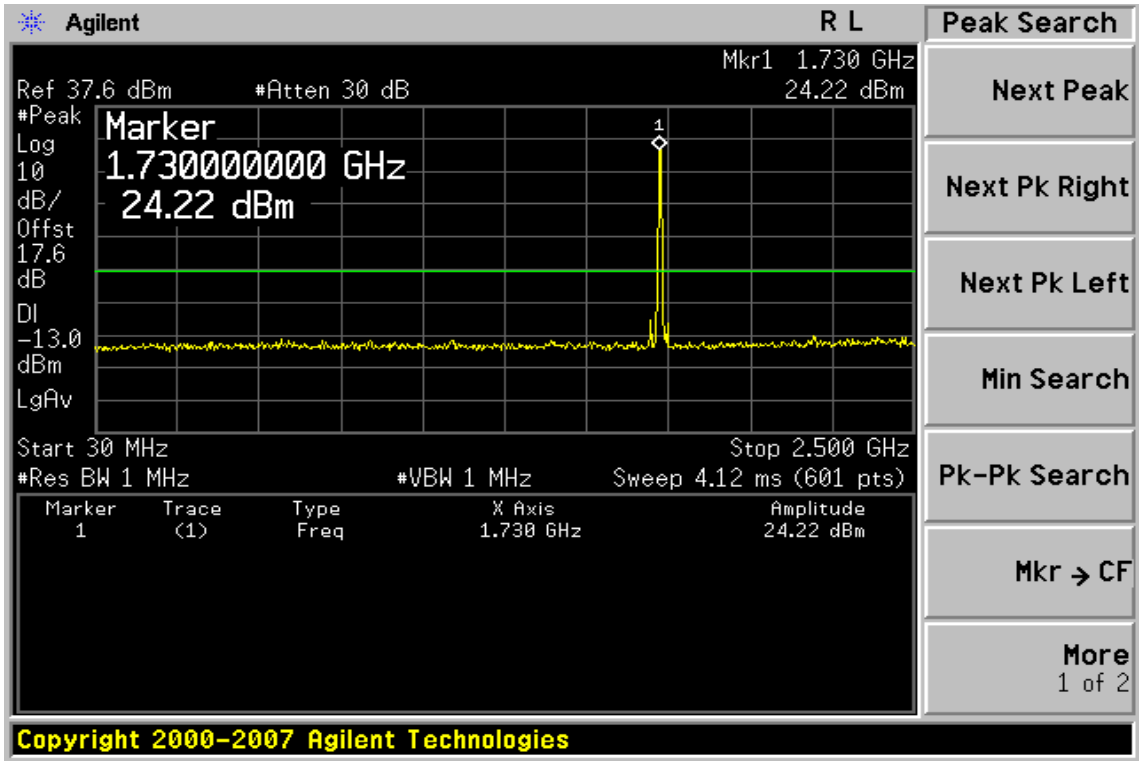


Figure 8-12: Out of Band emission at antenna terminals –WCDMA IV Channel Mid



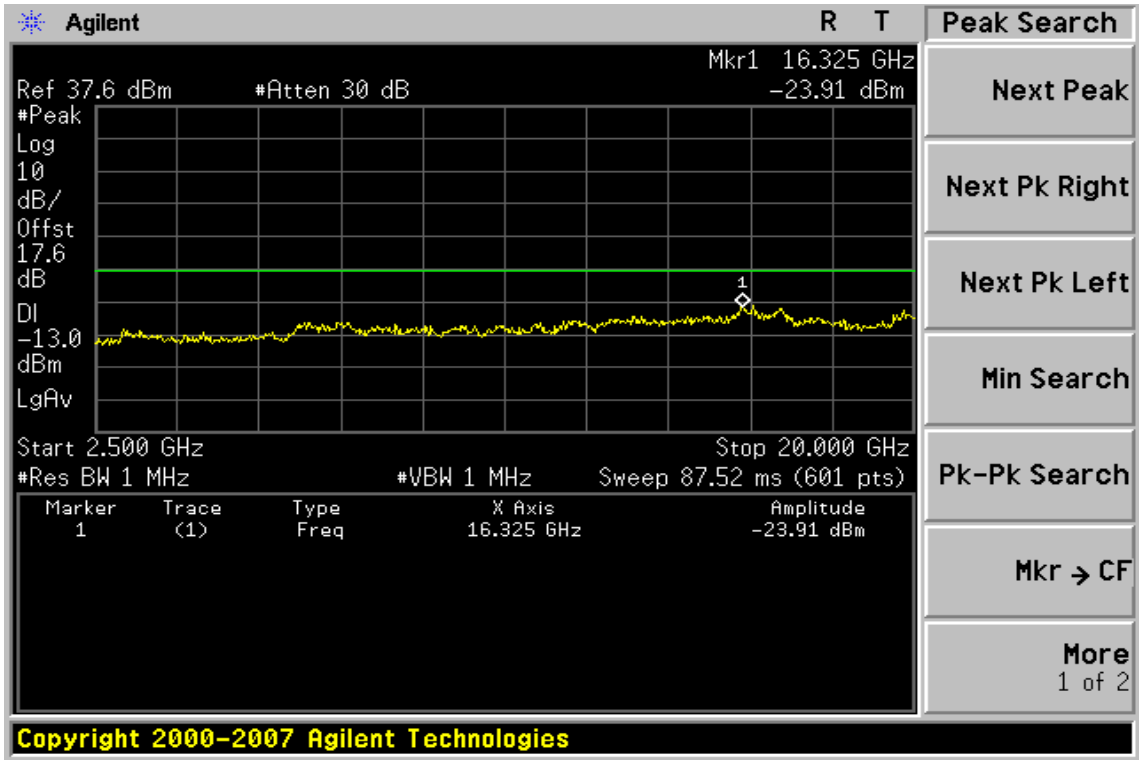
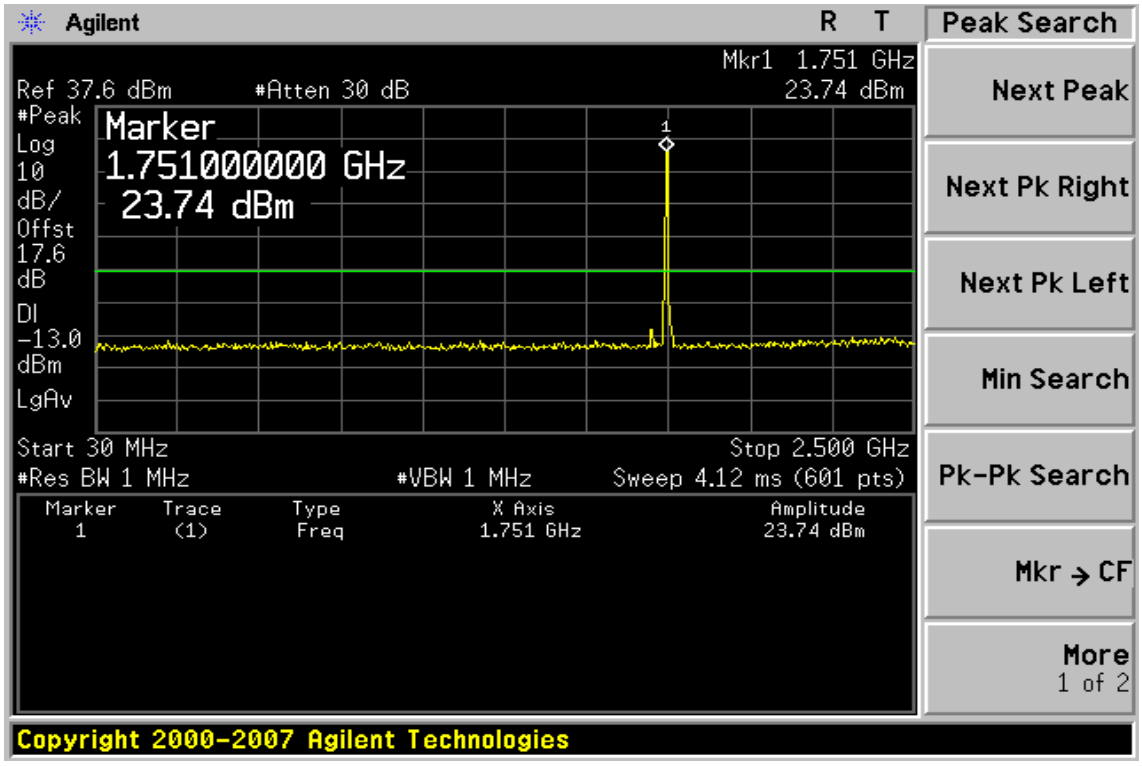


Figure 8-13: Out of Band emission at antenna terminals–WCDMA IV Channel Highest



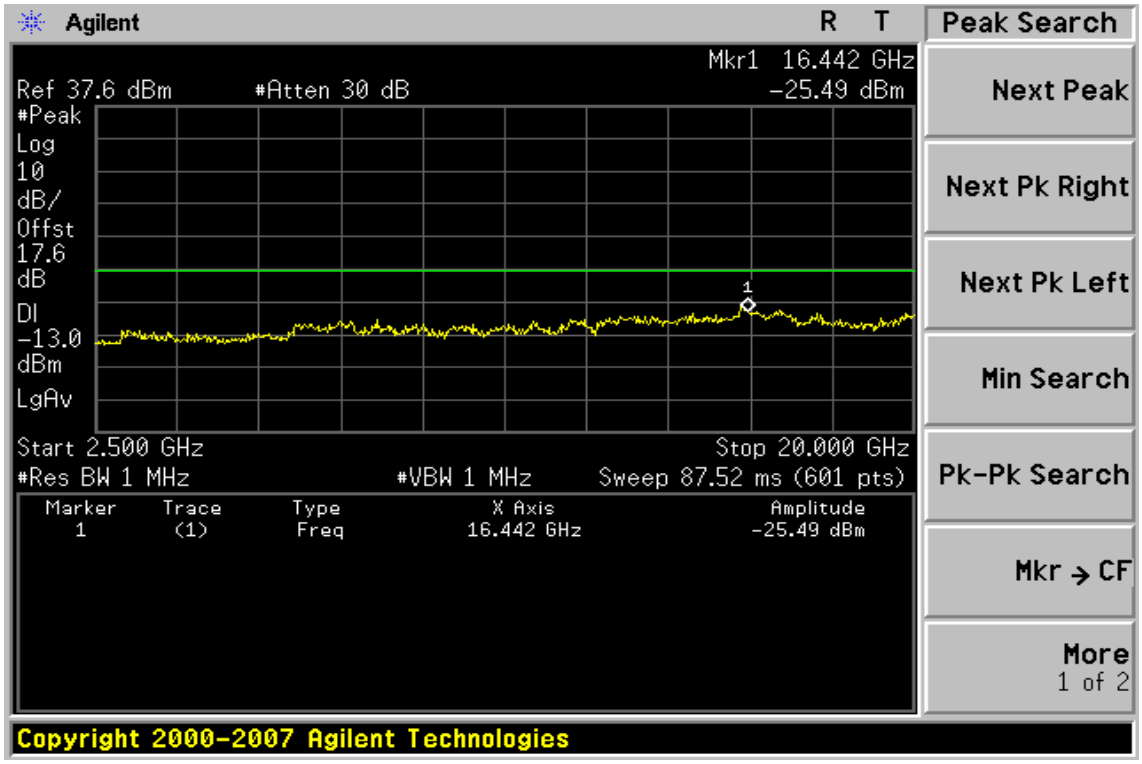


Figure 8-14: Bad edge emission at antenna terminals –WCDMA IV Channel Lowest

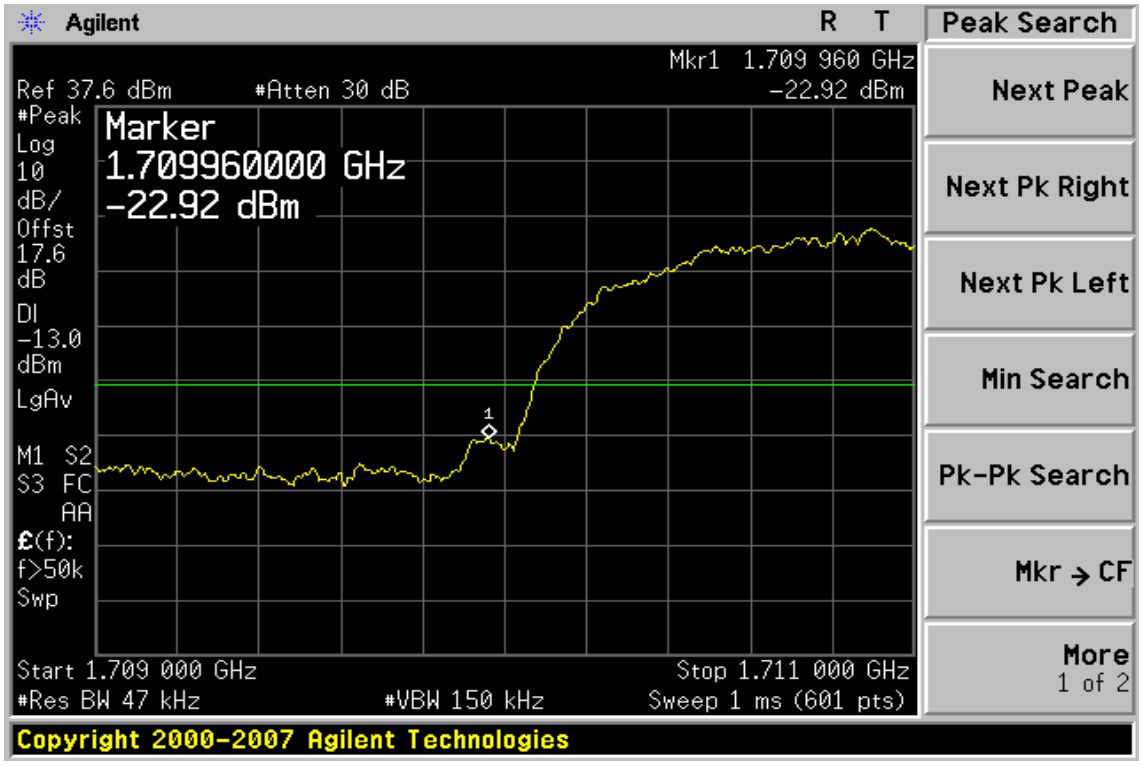


Figure 8-15: Band edge emission at antenna terminals –WCDMA IV Channel Highest

8. FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT (TX)

9.1 Standard Applicable

According to FCC §2.1053,

FCC §22.917(a),§24.238(a), §27.53(g) 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)

According to RSS-129 §8.1.1

(1) The spurious emissions shall not exceed the limits in Table 8.1, where dBc is dB relative to the transmitter mean output power.

(2) The mean power of emissions in the mobile station receive band (869-894 MHz) shall be attenuated to a level not to exceed -80 dBm/1.23 MHz at the transmit antenna connector.

(3) In any 30 kHz outside the cellular band, the attenuation shall be at least 43+10 Log10 (mean output power in watts) dB.

Table 8.1

Mobile Station Spurious Emission Limits When Transmitting

Col. 1	Col. 2 : Centre frequency offset by greater than 900 kHz for 30 kHz bandwidth or greater than 1.385 MHz for 1 MHz bandwidth. #	Col. 3: Centre frequency offset by-greater than 1.98 MHz for 30 kHz bandwidth or greater than 2.465MHz for 1 MHz bandwidth. #
Spurious emissions not to exceed (a), or both (b) and (c), whichever is less stringent.	(a) -42 dBc/30 kHz (b) -60 dBm/30 kHz (c) -55 dBm/ MHz	(a) -54 dBc/30 kHz (b) -60 dBm/30 kHz (c) -55 dBm/ MHz

See 5.2(e).

Note: In Table 8.1, the dBm values are to be measured at the antenna connector.

According to RSS-133 §6.5

6.5.1 Out-of-Block Emissions

a. Mobile stations must comply with subsection i. below.

In the first 1.0MHz band immediately outside and adjacent to the licensee's frequency block. the power of emissions per any 1% of the emission bandwidth shall be attenuated below the transmitter output power P (in watts) by at least 43 + 10 log (P), dB.

b. After the first 1.0 MHz (for equipment that complies with a.i. of this subsection) or 1.5 MHz (for equipment that complies with a.ii.of this subsection), the power of emissions shall be attenuated below the transmitter output power by at least 43 + 10 log (P), dB, per any MHz of bandwidth.

(Note: If the test result using 1% of the emission bandwidth is used, then power integration over 1.0 MHz is required; alternatively, the spectrum analyser resolution and video bandwidths can be increased to 1.0 MHz for this measurement).

6.5.2 Out-of-Sub-band Emissions

Outside the sub-bands 1850-1910 MHz and 1930-1990 MHz, the attenuation shall be equal to or greater than the out-of-block emission limits in Section 6.5.1.

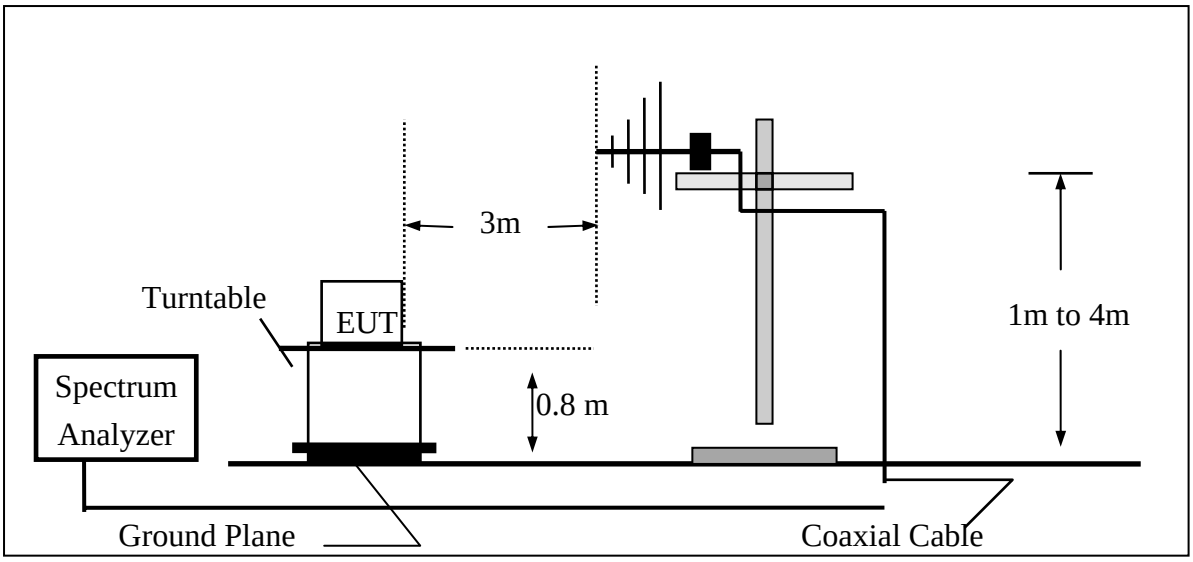
According to RSS-139 §6.5

(i) In the first 1.0 MHz bands immediately outside and adjacent to the equipment's operating frequency block, the power of emissions per any 1% of the emission bandwidth shall be attenuated below the transmitter output power P (in watts) by at least 43 + 10 log10(P), dB.

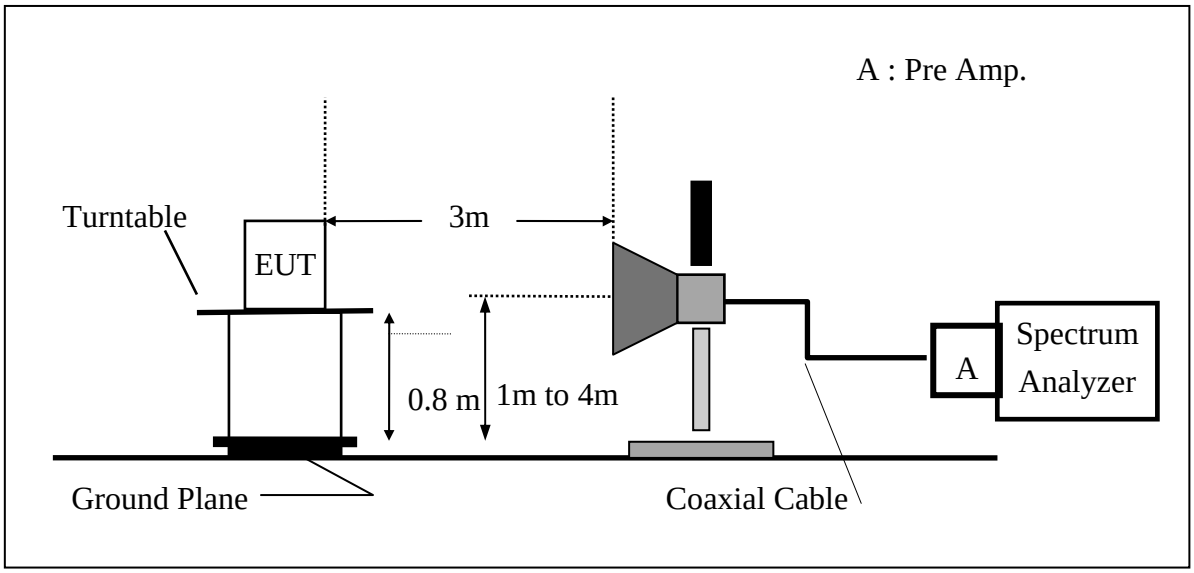
(ii) After the first 1.0 MHz outside the equipment's operating frequency block, the power of emissions shall be attenuated below the transmitter output power P (in watts) by at least 43 + 10 log10(P), dB inany 1 MHz bandwidth.

9.2 EUT Setup (Block Diagram of Configuration)

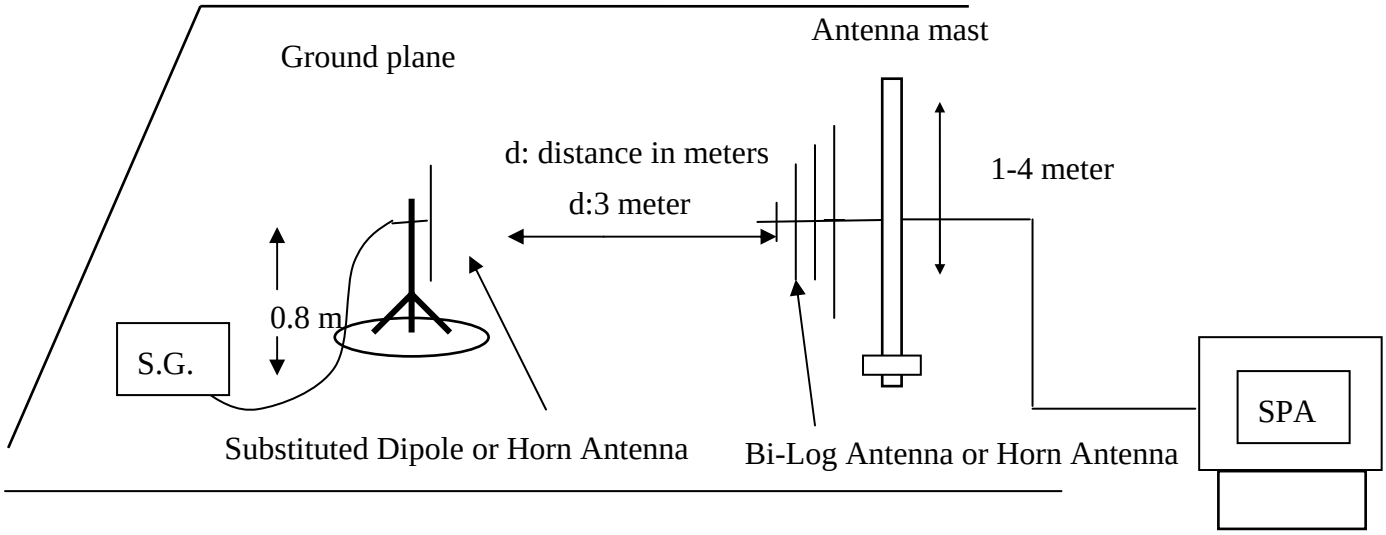
(A) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(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 824.2 –848.80.8MHz 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 1850.2 –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:

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	R&S	FSP 40	100034	02/12/2009	02/11/2010
Bilog Antenna	SCHWAZBECK	VULB9160	9160-3136	11/15/2008	11/14/2009
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	01/22/2008	01/21/2010
Horn antenna	SCHWAZBECK	BBHA 9120D	9120D-673	05/09/2008	05/08/2010
Signal Generator	R&S	SMR40	100210	01/22/2008	01/21/2010
Signal Generator	Agilent	E4438C	MY45093613	06/11/2009	06/10/2010
Pre-Amplifier	Agilent	8447D	1937A02834	11/30/2008	11/29/2009
Pre-Amplifier	Agilent	8449B	3008A01973	01/05/2009	01/04/2010
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	05/13/208	05/12/2010
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	01/05/2009	01/04/2010
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-3M	3m	01/05/2009	01/04/2010
3m Site	SGS	966 chamber	N/A	11/08/2008	11/09/2009

9.5 Measurement Result

Refer to attach tabular data sheets.

Radiated Spurious Emission Measurement Result: GSM 850 Mode

Operation Mode	: TX CH Low E2 Mode	Test Date:	Aug. 23, 2009
Fundamental Frequency	: 824.20 MHz	Test By:	Jazz
Temperature	: 25℃	Pol:	Ver
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
75.59	44.90	V	-66.62	-1.85	1.19	-69.67	-13.00	-56.67
96.93	42.97	V	-59.34	-7.76	1.33	-68.43	-13.00	-55.43
153.19	32.39	V	-65.19	-7.80	1.60	-74.59	-13.00	-61.59
266.68	32.44	V	-66.90	-7.90	2.05	-76.85	-13.00	-63.85
458.74	32.58	V	-61.39	-7.70	2.68	-71.77	-13.00	-58.77
552.83	32.91	V	-59.41	-7.76	2.96	-70.14	-13.00	-57.14
824.00	80.24	V	-6.15	-7.87	3.62	-17.65	-13.00	-4.65
1648.40	51.53	V	-53.05	9.29	5.23	-48.99	-13.00	-35.99
2472.60	46.02	V	-54.99	10.08	6.53	-51.44	-13.00	-38.44
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 E2 Mode	Test Date:	Aug. 23, 2009
Fundamental Frequency	: 824.20 MHz	Test By:	Jazz
Temperature	: 25℃	Pol:	Hor
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
75.59	44.39	H	-67.97	-1.85	1.19	-71.01	-13.00	-58.01
104.69	38.64	H	-63.87	-7.76	1.38	-73.01	-13.00	-60.01
150.28	31.52	H	-66.27	-7.80	1.59	-75.66	-13.00	-62.66
327.79	31.83	H	-65.57	-7.76	2.28	-75.61	-13.00	-62.61
441.28	31.58	H	-62.75	-7.69	2.63	-73.08	-13.00	-60.08
604.24	32.44	H	-58.18	-7.79	3.04	-69.01	-13.00	-56.01
824.00	68.46	H	-17.81	-7.87	3.62	-29.31	-13.00	-16.31
1648.40	47.53	H	-56.87	9.29	5.23	-52.81	-13.00	-39.81
2472.60	52.11	H	-48.80	10.08	6.53	-45.25	-13.00	-32.25
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 E2 Mode	Test Date:	Aug. 23, 2009
Fundamental Frequency	: 836.60 MHz	Test By:	Jazz
Temperature	: 25℃	Pol:	Ver
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
75.59	45.91	V	-65.61	-1.85	1.19	-68.66	-13.00	-55.66
90.14	43.15	V	-60.03	-7.75	1.27	-69.05	-13.00	-56.05
153.19	32.41	V	-65.17	-7.80	1.60	-74.57	-13.00	-61.57
305.48	32.06	V	-66.12	-7.89	2.19	-76.20	-13.00	-63.20
449.04	32.26	V	-61.70	-7.70	2.66	-72.06	-13.00	-59.06
589.69	32.55	V	-57.62	-7.78	3.02	-68.42	-13.00	-55.42
1673.20	50.15	V	-54.41	9.36	5.27	-50.31	-13.00	-37.31
2509.80	44.27	V	-56.51	10.09	6.58	-53.01	-13.00	-40.01
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 E2 Mode	Test Date:	Aug. 23, 2009
Fundamental Frequency	: 836.60 MHz	Test By:	Jazz
Temperature	: 25℃	Pol:	Hor
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
75.59	43.98	H	-68.38	-1.85	1.19	-71.42	-13.00	-58.42
90.14	41.35	H	-62.38	-7.75	1.27	-71.40	-13.00	-58.40
155.13	31.50	H	-66.67	-7.80	1.60	-76.07	-13.00	-63.07
303.54	32.18	H	-65.45	-7.90	2.18	-75.53	-13.00	-62.53
450.98	31.77	H	-62.11	-7.70	2.66	-72.47	-13.00	-59.47
548.84	33.37	H	-58.39	-7.76	2.96	-69.11	-13.00	-56.11
1673.20	46.44	H	-57.94	9.36	5.27	-53.84	-13.00	-40.84
2509.80	51.81	H	-48.89	10.09	6.58	-45.39	-13.00	-32.39
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 E2 Mode	Test Date:	Aug. 23, 2009
Fundamental Frequency	: 848.80 MHz	Test By:	Jazz
Temperature	: 25℃	Pol:	Ver
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
75.59	45.24	V	-66.28	-1.85	1.19	-69.33	-13.00	-56.33
153.19	32.32	V	-65.26	-7.80	1.60	-74.66	-13.00	-61.66
358.83	32.52	V	-64.73	-7.64	2.39	-74.76	-13.00	-61.76
538.28	32.08	V	-60.80	-7.75	2.92	-71.47	-13.00	-58.47
594.54	32.89	V	-57.00	-7.79	3.02	-67.81	-13.00	-54.81
647.89	31.97	V	-56.98	-7.81	3.15	-67.94	-13.00	-54.94
850.00	79.14	V	-6.97	-7.88	3.68	-18.53	-13.00	-5.53
1697.60	51.63	V	-52.91	9.44	5.31	-48.78	-13.00	-35.78
2546.40	42.40	V	-58.24	10.20	6.63	-54.68	-13.00	-41.68
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 E2 Mode	Test Date:	Aug. 23, 2009
Fundamental Frequency	: 848.80 MHz	Test By:	Jazz
Temperature	: 25℃	Pol:	Hor
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
75.59	43.54	H	-68.82	-1.85	1.19	-71.86	-13.00	-58.86
94.99	38.87	H	-64.50	-7.75	1.31	-73.57	-13.00	-60.57
286.08	31.83	H	-66.26	-7.91	2.12	-76.30	-13.00	-63.30
440.31	31.05	H	-63.33	-7.69	2.63	-73.66	-13.00	-60.66
606.18	32.56	H	-58.02	-7.79	3.05	-68.86	-13.00	-55.86
741.98	31.64	H	-63.84	-7.87	3.44	-75.15	-13.00	-62.15
850.00	66.85	H	-19.34	-7.88	3.68	-30.90	-13.00	-17.90
1697.60	47.21	H	-57.14	9.44	5.31	-53.01	-13.00	-40.01
2546.40	48.26	H	-52.34	10.20	6.63	-48.78	-13.00	-35.78
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 E2 Mode	Test Date:	Aug. 23, 2009
Fundamental Frequency	: 1850.20MHz	Test By:	Jazz
Temperature	: 25℃	Pol:	Ver
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
75.59	44.29	V	-67.23	-1.85	1.19	-70.28	-13.00	-57.28
126.03	34.26	V	-65.25	-7.78	1.48	-74.51	-13.00	-61.51
271.53	32.21	V	-66.97	-7.90	2.07	-76.94	-13.00	-63.94
455.83	32.52	V	-61.43	-7.70	2.68	-71.81	-13.00	-58.81
647.89	32.38	V	-56.57	-7.81	3.15	-67.53	-13.00	-54.53
827.34	32.17	V	-54.18	-7.88	3.63	-65.69	-13.00	-52.69
1850.00	66.75	V	-37.64	9.90	5.56	-33.30	-13.00	-20.30
3700.40	44.89	V	-53.04	12.61	8.31	-48.74	-13.00	-35.74
5550.60	48.82	V	-42.02	13.23	10.33	-39.12	-13.00	-26.12
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 E2 Mode	Test Date:	Aug. 23, 2009
Fundamental Frequency	: 1850.20MHz	Test By:	Jazz
Temperature	: 25℃	Pol:	Hor
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
72.68	42.18	H	-70.15	-1.45	1.18	-72.77	-13.00	-59.77
150.28	30.90	H	-66.89	-7.80	1.59	-76.28	-13.00	-63.28
383.08	31.26	H	-65.43	-7.65	2.46	-75.54	-13.00	-62.54
460.68	32.01	H	-61.79	-7.70	2.69	-72.18	-13.00	-59.18
601.33	32.59	H	-58.08	-7.79	3.03	-68.91	-13.00	-55.91
712.88	32.21	H	-57.83	-7.86	3.34	-69.03	-13.00	-56.03
1850.00	76.65	H	-27.53	9.90	5.56	-23.19	-13.00	-10.19
3700.40	43.85	H	-54.19	12.61	8.31	-49.89	-13.00	-36.89
5550.60	55.25	H	-35.80	13.23	10.33	-32.90	-13.00	-19.90
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 E2 Mode
Fundamental Frequency : 1880MHz
Temperature : 25℃
Humidity : 65%

Test Date: Aug. 23, 2009
Test By: Jazz
Pol: Ver

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
74.62	44.40	V	-67.17	-1.72	1.19	-70.07	-13.00	-57.07
153.19	32.22	V	-65.36	-7.80	1.60	-74.76	-13.00	-61.76
402.48	32.39	V	-63.03	-7.66	2.52	-73.21	-13.00	-60.21
513.06	31.47	V	-62.24	-7.73	2.84	-72.81	-13.00	-59.81
647.89	32.56	V	-56.39	-7.81	3.15	-67.35	-13.00	-54.35
821.59	32.00	V	-54.42	-7.87	3.62	-65.91	-13.00	-52.91
3760.00	47.60	V	-50.06	12.60	8.39	-45.84	-13.00	-32.84
5640.00	50.22	V	-40.36	13.36	10.41	-37.41	-13.00	-24.41
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 E2 Mode	Test Date:	Aug. 23, 2009
Fundamental Frequency	: 1880MHz	Test By:	Jazz
Temperature	: 25℃	Pol:	Hor
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
90.14	43.43	H	-60.30	-7.75	1.27	-69.32	-13.00	-56.32
150.28	31.38	H	-66.41	-7.80	1.59	-75.80	-13.00	-62.80
329.73	31.35	H	-66.04	-7.75	2.28	-76.07	-13.00	-63.07
407.33	32.51	H	-63.55	-7.67	2.53	-73.75	-13.00	-60.75
649.83	32.35	H	-57.37	-7.81	3.16	-68.34	-13.00	-55.34
800.18	31.62	H	-54.72	-7.87	3.57	-66.16	-13.00	-53.16
3760.00	43.28	H	-54.49	12.60	8.39	-50.28	-13.00	-37.28
5640.00	59.13	H	-31.62	13.36	10.41	-28.67	-13.00	-15.67
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 E2 Mode
Fundamental Frequency : 1909.8 MHz
Temperature : 25℃
Humidity : 65%

Test Date: Aug. 23, 2009
Test By: Jazz
Pol: Ver

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
75.59	43.88	V	-67.64	-1.85	1.19	-70.69	-13.00	-57.69
96.93	43.24	V	-59.07	-7.76	1.33	-68.16	-13.00	-55.16
309.36	31.36	V	-66.77	-7.87	2.21	-76.85	-13.00	-63.85
453.89	31.55	V	-62.40	-7.70	2.67	-72.77	-13.00	-59.77
672.14	32.26	V	-56.89	-7.83	3.22	-67.94	-13.00	-54.94
853.53	32.27	V	-53.74	-7.88	3.69	-65.32	-13.00	-52.32
1910.00	64.27	V	-40.06	10.08	5.66	-35.64	-13.00	-22.64
3819.60	42.08	V	-55.31	12.60	8.47	-51.18	-13.00	-38.18
5729.40	50.93	V	-39.39	13.49	10.50	-36.39	-13.00	-23.39
7963.20	---	V		11.27	12.49		-13.00	
9954.00	---	V		12.08	14.24		-13.00	
11944.80	---	V		13.08	15.87		-13.00	
13935.60	---	V		11.82	17.21		-13.00	
15926.40	---	V		17.08	18.70		-13.00	
17917.20	---	V		9.63	19.97		-13.00	
19908.00	---	V		18.88	21.24		-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 E2 Mode
Fundamental Frequency : 1909.8 MHz
Temperature : 25℃
Humidity : 65%

Test Date: Aug. 23, 2009
Test By: Jazz
Pol: Hor

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
75.59	43.71	H	-68.65	-1.85	1.19	-71.69	-13.00	-58.69
99.84	39.58	H	-63.43	-7.76	1.36	-72.55	-13.00	-59.55
352.04	32.45	H	-64.72	-7.64	2.37	-74.73	-13.00	-61.73
512.09	32.46	H	-60.57	-7.73	2.84	-71.14	-13.00	-58.14
591.63	32.05	H	-58.82	-7.78	3.02	-69.62	-13.00	-56.62
701.24	32.68	H	-55.18	-7.86	3.29	-66.34	-13.00	-53.34
1910.00	76.28	H	-27.83	10.08	5.66	-23.41	-13.00	-10.41
3819.60	42.08	H	-55.43	12.60	8.47	-51.29	-13.00	-38.29
5729.40	50.93	H	-39.52	13.49	10.50	-36.53	-13.00	-23.53
7963.20	---	H		11.27	12.49		-13.00	
9954.00	---	H		12.08	14.24		-13.00	
11944.80	---	H		13.08	15.87		-13.00	
13935.60	---	H		11.82	17.21		-13.00	
15926.40	---	H		17.08	18.70		-13.00	
17917.20	---	H		9.63	19.97		-13.00	
19908.00	---	H		18.88	21.24		-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 IV Mode

Operation Mode	: TX CH Low E2 Mode	Test Date:	Aug. 23, 2009
Fundamental Frequency	: 1712.4MHz	Test By:	Jazz
Temperature	: 25℃	Pol:	Ver
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
75.59	45.59	V	-65.93	-1.85	1.19	-68.98	-13.00	-55.98
94.99	42.99	V	-59.57	-7.75	1.31	-68.64	-13.00	-55.64
339.43	31.67	V	-66.09	-7.70	2.32	-76.11	-13.00	-63.11
541.19	32.44	V	-60.34	-7.75	2.93	-71.03	-13.00	-58.03
672.14	31.98	V	-57.17	-7.83	3.22	-68.22	-13.00	-55.22
902.03	31.83	V	-52.91	-7.95	3.79	-64.66	-13.00	-51.66
1709.85	61.65	V	-42.87	9.47	5.33	-38.73	-13.00	-25.73
3424.80	40.51	V	-58.34	12.45	7.91	-53.80	-13.00	-40.80
5137.20	---	V		12.79	9.36		-13.00	
6849.60	---	V		11.80	10.94		-13.00	
8562.00	---	V		11.73	12.66		-13.00	
10274.40	---	V		11.85	13.80		-13.00	
11986.80	---	V		13.15	15.25		-13.00	
13699.20	---	V		12.32	16.55		-13.00	
15411.60	---	V		15.69	18.06		-13.00	
17124.00	---	V		14.68	19.79		-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 IV Mode

Operation Mode	: TX CH Low E2 Mode	Test Date:	Aug. 23, 2009
Fundamental Frequency	: 1712.4MHz	Test By:	Jazz
Temperature	: 25℃	Pol:	Hor
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
75.59	42.63	H	-69.73	-1.85	1.19	-72.77	-13.00	-59.77
159.98	31.44	H	-67.10	-7.81	1.61	-76.53	-13.00	-63.53
352.04	31.63	H	-65.54	-7.64	2.37	-75.55	-13.00	-62.55
480.08	31.18	H	-62.45	-7.71	2.74	-72.90	-13.00	-59.90
628.49	32.35	H	-57.79	-7.80	3.10	-68.70	-13.00	-55.70
848.68	31.79	H	-54.40	-7.88	3.68	-65.96	-13.00	-52.96
1709.85	61.26	H	-43.07	9.47	5.33	-38.93	-13.00	-25.93
3424.80	39.81	H	-59.19	12.45	7.91	-54.66	-13.00	-41.66
5137.20	---	H		12.79	9.36		-13.00	
6849.60	---	H		11.80	10.94		-13.00	
8562.00	---	H		11.73	12.66		-13.00	
10274.40	---	H		11.85	13.80		-13.00	
11986.80	---	H		13.15	15.25		-13.00	
13699.20	---	H		12.32	16.55		-13.00	
15411.60	---	H		15.69	18.06		-13.00	
17124.00	---	H		14.68	19.79		-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 IV Mode

Operation Mode : TX CH Mid E2 Mode
Fundamental Frequency : 1732.6MHz
Temperature : 25℃
Humidity : 65%

Test Date: Aug. 23, 2009
Test By: Jazz
Pol: Ver

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
94.99	42.51	V	-60.05	-7.75	1.31	-69.12	-13.00	-56.12
153.19	31.80	V	-65.78	-7.80	1.60	-75.18	-13.00	-62.18
288.99	31.57	V	-67.04	-7.91	2.13	-77.08	-13.00	-64.08
400.54	32.43	V	-63.05	-7.66	2.51	-73.23	-13.00	-60.23
635.28	32.96	V	-56.15	-7.80	3.12	-67.08	-13.00	-54.08
853.53	32.07	V	-53.94	-7.88	3.69	-65.52	-13.00	-52.52
3464.80	35.30	V	-63.54	12.53	7.98	-58.98	-13.00	-45.98
5197.80	---	V		12.85	9.41		-13.00	
6930.40	---	V		11.72	11.05		-13.00	
8663.00	---	V		11.77	12.74		-13.00	
10395.60	---	V		11.75	13.95		-13.00	
12128.20	---	V		13.35	15.32		-13.00	
13860.80	---	V		11.98	16.77		-13.00	
15593.40	---	V		16.35	18.21		-13.00	
17326.00	---	V		14.02	19.68		-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 IV Mode

Operation Mode : TX CH Mid E2 Mode
Fundamental Frequency : 1732.6MHz
Temperature : 25℃
Humidity : 65%

Test Date: Aug. 23, 2009
Test By: Jazz
Pol: Hor

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
75.59	41.92	H	-70.44	-1.85	1.19	-73.48	-13.00	-60.48
90.14	39.84	H	-63.89	-7.75	1.27	-72.91	-13.00	-59.91
300.63	32.68	H	-64.97	-7.92	2.17	-75.06	-13.00	-62.06
444.19	31.73	H	-62.46	-7.70	2.64	-72.79	-13.00	-59.79
664.38	32.25	H	-56.87	-7.82	3.20	-67.89	-13.00	-54.89
795.33	32.67	H	-54.66	-7.87	3.56	-66.09	-13.00	-53.09
3464.80	36.76	H	-62.22	12.53	7.98	-57.66	-13.00	-44.66
5197.80	---	H		12.85	9.41		-13.00	
6930.40	---	H		11.72	11.05		-13.00	
8663.00	---	H		11.77	12.74		-13.00	
10395.60	---	H		11.75	13.95		-13.00	
12128.20	---	H		13.35	15.32		-13.00	
13860.80	---	H		11.98	16.77		-13.00	
15593.40	---	H		16.35	18.21		-13.00	
17326.00	---	H		14.02	19.68		-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 IV Mode

Operation Mode : TX CH High E2 Mode
Fundamental Frequency : 1752.6 MHz
Temperature : 25℃
Humidity : 65%

Test Date: Aug. 23, 2009
Test By: Jazz
Pol: Ver

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
72.68	43.71	V	-67.96	-1.45	1.18	-70.58	-13.00	-57.58
94.99	42.88	V	-59.68	-7.75	1.31	-68.75	-13.00	-55.75
356.89	32.26	V	-65.08	-7.64	2.38	-75.10	-13.00	-62.10
546.04	32.03	V	-60.59	-7.76	2.95	-71.29	-13.00	-58.29
669.23	32.38	V	-56.74	-7.83	3.21	-67.78	-13.00	-54.78
846.74	31.85	V	-54.30	-7.88	3.67	-65.85	-13.00	-52.85
1755.06	63.27	V	-41.21	9.61	5.40	-37.00	-13.00	-24.00
3505.20	35.97	V	-62.84	12.61	8.04	-58.26	-13.00	-45.26
5257.80	---	V		12.91	9.46		-13.00	
7010.40	---	V		11.65	11.14		-13.00	
8763.00	---	V		11.80	12.82		-13.00	
10515.60	---	V		11.66	14.08		-13.00	
12268.20	---	V		13.54	15.39		-13.00	
14020.80	---	V		11.67	16.95		-13.00	
15773.40	---	V		16.75	18.27		-13.00	
17526.00	---	V		13.21	19.62		-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 IV Mode

Operation Mode	: TX CH High E2 Mode	Test Date:	Aug. 23, 2009
Fundamental Frequency	: 1752.6 MHz	Test By:	Jazz
Temperature	: 25℃	Pol:	Hor
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
75.59	43.00	H	-69.36	-1.85	1.19	-72.40	-13.00	-59.40
104.69	38.32	H	-64.19	-7.76	1.38	-73.33	-13.00	-60.33
150.28	31.34	H	-66.45	-7.80	1.59	-75.84	-13.00	-62.84
366.89	31.94	H	-65.00	-7.65	2.41	-75.06	-13.00	-62.06
487.84	31.51	H	-62.05	-7.72	2.77	-72.53	-13.00	-59.53
644.98	33.14	H	-56.68	-7.81	3.15	-67.63	-13.00	-54.63
1755.06	32.16	H	-72.12	9.61	5.40	-67.92	-13.00	-54.92
3505.20	35.87	H	-63.06	12.61	8.04	-58.48	-13.00	-45.48
5257.80	---	H		12.91	9.46		-13.00	
7010.40	---	H		11.65	11.14		-13.00	
8763.00	---	H		11.80	12.82		-13.00	
10515.60	---	H		11.66	14.08		-13.00	
12268.20	---	H		13.54	15.39		-13.00	
14020.80	---	H		11.67	16.95		-13.00	
15773.40	---	H		16.75	18.27		-13.00	
17526.00	---	H		13.21	19.62		-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)

9. FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT

10.1 Standard Applicable

According to FCC §2.1055(a)(1)

Frequency Tolerance: +/- 2.5 ppm

§27.54: The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

According to RSS-129 §9.2.1

The RF carrier frequency, when tested over the temperature range of -30oC to +50oC, or over the supply voltage range of ±15% from the nominal value, but non-accumulatively, shall not depart from the reference frequency (reference frequency is the frequency at +20oC and rated supply voltage) in excess of 5x10-8 (0.000005%), i.e. non-accumulatively. (Note: This frequency stability is required for satisfactory soft-handoff functions).

In addition, the mobile station transmit carrier frequency shall be 45.0 MHz ±300 Hz lower than the frequency of the base station transmit carrier as measured at the mobile station

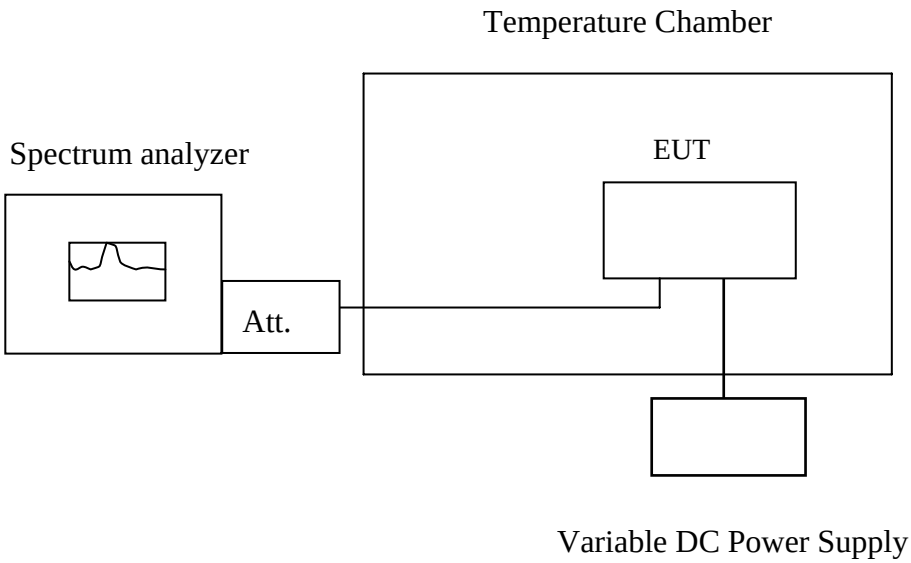
According to RSS-133 §6.3

The carrier frequency shall not depart from the reference frequency in excess of ±2.5 ppm for mobile stations.

According to RSS-139 §6.3

The frequency stability shall be sufficient to ensure that the emission bandwidth stays within the operating frequency block, when tested to the temperature and supply voltage variations specified in RSS-Gen.

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^{o}C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to –30^{o}C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10^{o}C increased per stage until the highest temperature of +50^{o}C reached.

10.4 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	01/23/2008	01/22/2010
Radio Communication Analyzer	R&S	CMU200	102189	05/13/208	05/13/2010
800 – 1000MHz Filter	Micro-Tronics	BRM13462	001	01/05/2009	01/04/2010
1800 – 2000MHz Filter	Micro-Tronics	BRM13463	001	01/05/2009	01/04/2010
Temperature Chamber	TERCHY	MHG-120LF	911009	04/14/2008	04/13/2010
Temperature Chamber	GIANT FORCE	GTH-150-40-CP-AR	MAA0512-018	02/05/2008	02/04/2010
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	06/26/2010
DC Power Supply	Topward	3303D	981327	10/26/2009	10/25/2010

10.5 Measurement Result

Reference Frequency: GSM Mid Channel 836.6 MHz @ 25℃				
Limit: +/- 2.5 ppm = 2091 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (℃)	(MHz)		
3.7	-30	836.600002	-5.00	2091
3.7	-20	836.599998	-1.00	2091
3.7	-10	836.599995	2.00	2091
3.7	0	836.599998	-1.00	2091
3.7	10	836.59991	87.00	2091
3.7	20	836.599997	0.00	2091
3.7	30	836.599999	-2.00	2091
3.7	40	836.599998	-1.00	2091
3.7	50	836.599984	13.00	2091

Reference Frequency: PCS Mid Channel 1880 MHz @ 25℃				
Limit: +/- 2.5 ppm = 4700 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (℃)	(MHz)		
3.7	-30	1879.999998	-3.00	4700
3.7	-20	1879.999999	-4.00	4700
3.7	-10	1879.999997	-2.00	4700
3.7	0	1879.999999	-4.00	4700
3.7	10	1879.999993	2.00	4700
3.7	20	1879.999995	0.00	4700
3.7	30	1879.999997	-2.00	4700
3.7	40	1879.999994	1.00	4700
3.7	50	1879.999997	-2.00	4700

Note: The battery is rated 3.7V dc.

Reference Frequency: WCDMA IV Mid Channel 1732.6(ARFCN1413) MHz @ 25℃				
Limit: +/- 2.5 ppm = 4331 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (℃)	(MHz)		
3.7	-30	1732.5999990	-4.00	4331
3.7	-20	1732.5999970	-2.00	4331
3.7	-10	1732.5999940	1.00	4331
3.7	0	1732.5999920	3.00	4331
3.7	10	1732.5999990	-4.00	4331
3.7	20	1732.5999950	0.00	4331
3.7	30	1732.5999930	2.00	4331
3.7	40	1732.5999990	-4.00	4331
3.7	50	1732.5999990	-4.00	4331

Note: The battery is rated 3.7V dc.

10. FREQUENCY STABILITY V.S. VOLTAGE MEASUREMENT

11.1 Standard Applicable

According to FCC §2.1055(d)(2)

Frequency Tolerance: +/- 2.5 ppm

§27.54: The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

According to RSS-129 §9.2.1

The RF carrier frequency, when tested over the temperature range of -30oC to +50oC, or over the supply voltage range of ±15% from the nominal value, but non-accumulatively, shall not depart from the reference frequency (reference frequency is the frequency at +20oC and rated supply voltage) in excess of 5x10-8 (0.000005%), i.e. non-accumulatively. (Note: This frequency stability is required for satisfactory soft-handoff functions).

In addition, the mobile station transmit carrier frequency shall be 45.0 MHz ±300 Hz lower than the frequency of the base station transmit carrier as measured at the mobile station

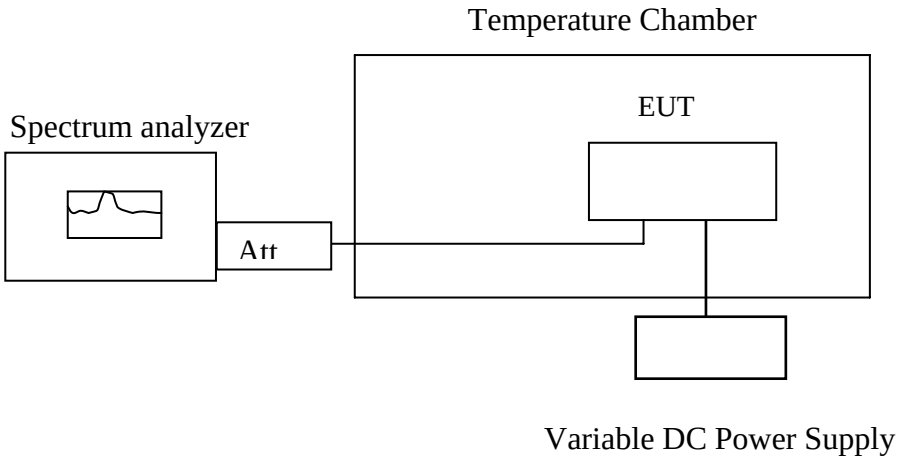
According to RSS-133 §6.3

The carrier frequency shall not depart from the reference frequency in excess of ±2.5 ppm for mobile stations.

According to RSS-139 §6.3

The frequency stability shall be sufficient to ensure that the emission bandwidth stays within the operating frequency block, when tested to the temperature and supply voltage variations specified in RSS-Gen.

11.2 Test Set-up:



Note: *Measurement setup for testing on Antenna conn...*

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:

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	01/23/2008	01/22/2010
Radio Communication Analyzer	R&S	CMU200	102189	05/13/208	05/13/2010
Temperature Chamber	TERCHY	MHG-120LF	911009	04/14/2008	04/13/2010
Temperature Chamber	GIANT FORCE	GTH-150-40-CP-AR	MAA0512-018	02/05/2008	02/04/2010
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	06/26/2010
DC Power Supply	Topward	3303D	981327	10/26/2009	10/25/2010

11.5 Measurement Result

Reference Frequency: GSM Mid Channel 836.6 MHz @ 25℃				
Limit: +/- 2.5 ppm = 2091 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (℃)	(MHz)		
4.25	25.00	836.599996	0.00	2091.00
3.70	25.00	836.599998	-2.00	2091.00
3.20	25.00	836.599987	9.00	2091.00
3.2 (End Point)	25.00	836.599985	11.00	2091.00

Reference Frequency: PCS Mid Channel 1880 MHz @ 25℃				
Limit: +/- 2.5 ppm = 4700 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (℃)	(MHz)		
4.25	25	1879.999994	0.00	4700
3.7	25	1879.999996	-2.00	4700
3.2	25	1879.999993	1.00	4700
3.2 (Endpoint)	25	1879.999991	3.00	4700

Reference Frequency: WCDMA IV Mid Channel 1732.6 MHz(ARFCN1413) @ 25℃				
Limit: +/- 2.5 ppm = 4331 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (℃)	(MHz)		
4.25	25	1732.5999960	0.00	4331
3.7	25	1732.5999940	2.00	4331
3.2	25	1732.5999930	3.00	4331
3.2 (Endpoint)	25	1732.5999920	4.00	4331

Note: The battery is rated 3.7V dc.

11. AC POWER LINE CONDUCTED EMISSION TEST

12.1 Standard Applicable

According to §15.207. The emission value for frequency within 150KHz to 30MHz shall not exceed criteria of below chart.

Frequency range MHz	Limits dB(uV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50
Note 1.The lower limit shall apply at the transition frequencies 2.The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.		

12.2 EUT Setup

1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI C63.4-2003.
2. The EUT was plug-in DC power adaptort and was placed on the center of the back edge on the test table. The peripherals like earphone was placed on the side of the EUT. The rear of the EUT and peripherals were placed flushed with the rear of the tabletop.
3. The Power adaptor was connected with 120Vac/60Hz power source.

12.3 Measurement Procedure

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

12.4 Measurement Equipment Used:

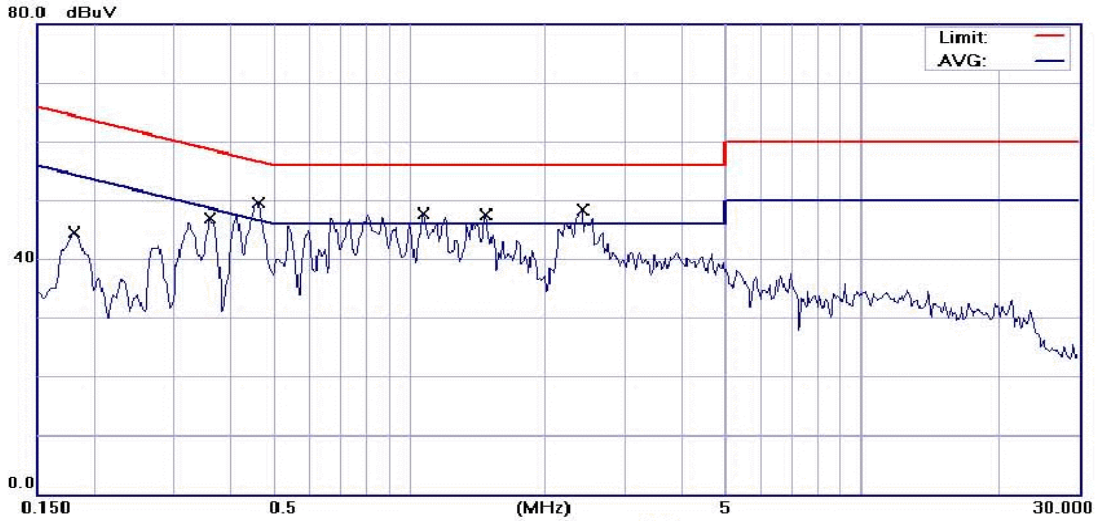
Conducted Emission Test Site					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
EMI Test Receiver	R&S	ESCS30	828985/004	09/16/2009	09/15/2010
LISN	Rolf-Heine	NNB-2/16Z	99012	04/28/2009	04/27/2010
LISN	FCC	FCC-LISN-50 /250-25-2-01	04034	04/28/2009	04/27/2010
Coaxial Cables	N/A	WK CE Cable	N/A	10/30/2008	10/29/2009

12.5 Measurement Result

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

AC POWER LINE CONDUCTED EMISSION TEST DATA

Operation Mode:	GSM 850 LINK			Test Date:	Aug. 28, 2009
Temperature:	23 ℃	Humidity:	60 %	Test By:	Jazz

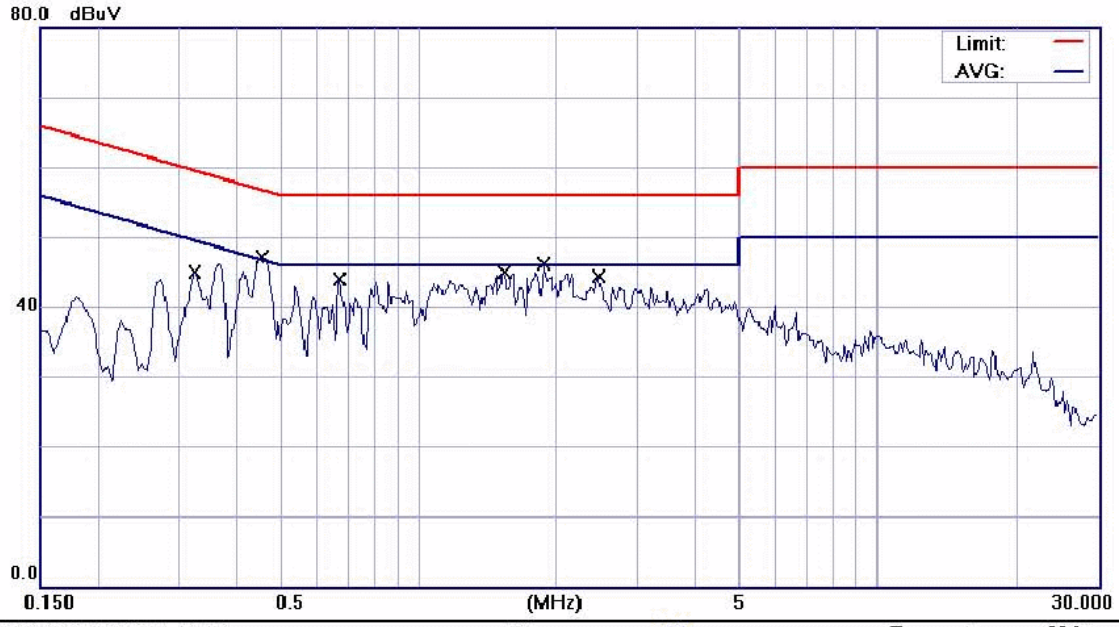


Site SGS CONDUCTED #1
Limit: CISPR22/11 Class B Conduction(QP)
EUT: PDA Phone
M/N: PB9910
Note: GSM 850 LINK MODE

Phase: L1
Power: AC 120V/60Hz
Distance:

Temperature: 23 ℃
Humidity: 60 %
Air Pressure: hpa

No.	Mk.	Freq.	Reading Level	Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1800	39.30	0.14	39.44	64.49	-25.05	QP	
2		0.1800	28.30	0.14	28.44	54.49	-26.05	AVG	
3		0.3600	43.30	0.09	43.39	58.73	-15.34	QP	
4		0.3600	36.00	0.09	36.09	48.73	-12.64	AVG	
5		0.4600	45.70	0.07	45.77	56.69	-10.92	QP	
6	*	0.4600	36.20	0.07	36.27	46.69	-10.42	AVG	
7		1.0700	42.10	0.09	42.19	56.00	-13.81	QP	
8		1.0700	28.70	0.09	28.79	46.00	-17.21	AVG	
9		1.4700	41.10	0.11	41.21	56.00	-14.79	QP	
10		1.4700	28.50	0.11	28.61	46.00	-17.39	AVG	
11		2.4200	42.50	0.13	42.63	56.00	-13.37	QP	
12		2.4200	28.70	0.13	28.83	46.00	-17.17	AVG	



Site SGS CONDUCTED #1
Limit: CISPR22/11 Class B Conduction(QP)
EUT: PDA Phone
M/N: PB9910
Note: GSM 850 LINK MODE

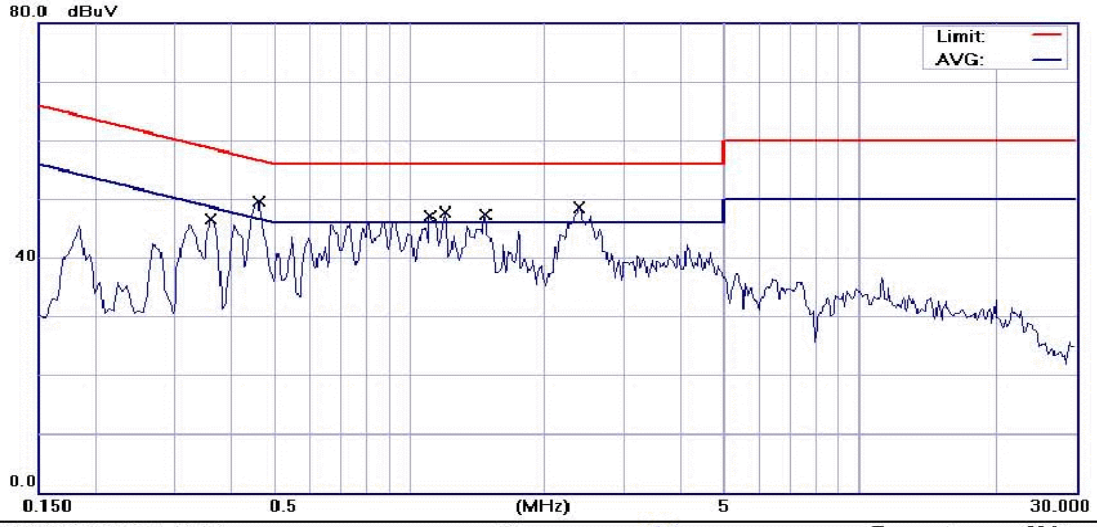
Phase: N
Power: AC 120V/60Hz
Distance:

Temperature: 23 ℃
Humidity: 60 %
Air Pressure: hpa

No.	Mk.	Freq.	Reading Level	Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.3250	41.70	0.12	41.82	59.58	-17.76	QP	
2		0.3250	33.00	0.12	33.12	49.58	-16.46	AVG	
3		0.4550	44.10	0.10	44.20	56.78	-12.58	QP	
4	*	0.4550	37.70	0.10	37.80	46.78	-8.98	AVG	
5		0.6700	41.20	0.11	41.31	56.00	-14.69	QP	
6		0.6700	30.70	0.11	30.81	46.00	-15.19	AVG	
7		1.5300	40.00	0.14	40.14	56.00	-15.86	QP	
8		1.5300	30.40	0.14	30.54	46.00	-15.46	AVG	
9		1.8700	41.10	0.15	41.25	56.00	-14.75	QP	
10		1.8700	27.70	0.15	27.85	46.00	-18.15	AVG	
11		2.4600	38.20	0.15	38.35	56.00	-17.65	QP	
12		2.4600	28.70	0.15	28.85	46.00	-17.15	AVG	

AC POWER LINE CONDUCTED EMISSION TEST DATA

Operation Mode:	GSM 1900 Link			Test Date:	Aug. 28, 2009
Temperature:	23 ℃	Humidity:	60 %	Test By:	Jazz

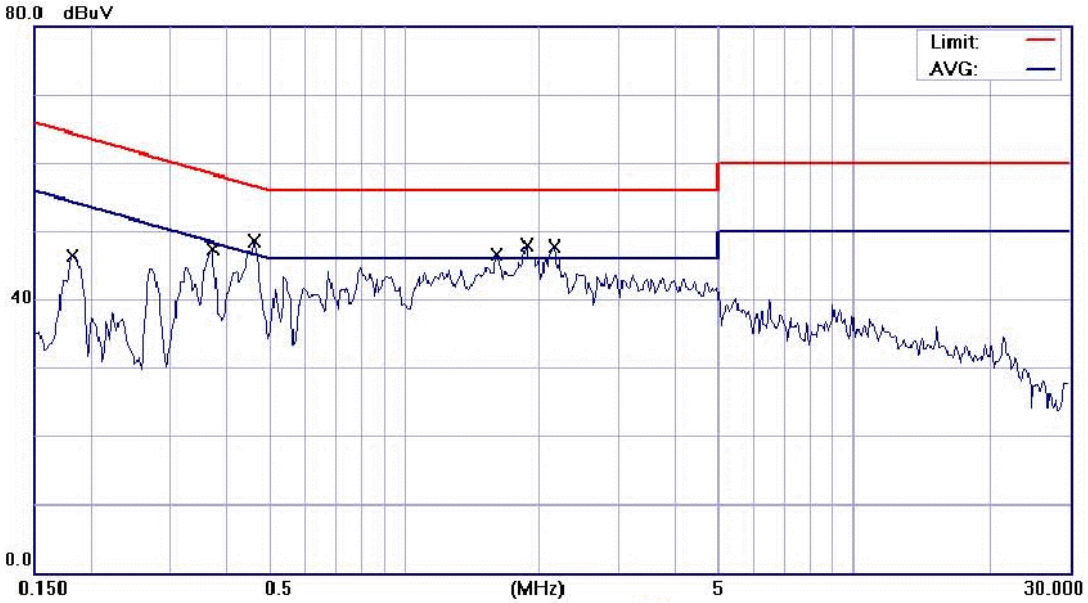


Site SGS CONDUCTED #1
Limit: CISPR22/11 Class B Conduction(QP)
EUT: PDA Phone
M/N: PB9910
Note: GSM 1900 LINK MODE

Phase: L1
Power: AC 120V/60Hz
Distance:

Temperature: 23 ℃
Humidity: 60 %
Air Pressure: hpa

No.	Mk.	Freq.	Reading Level	Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.3600	43.20	0.09	43.29	58.73	-15.44	QP	
2		0.3600	34.00	0.09	34.09	48.73	-14.64	AVG	
3		0.4600	46.00	0.07	46.07	56.69	-10.62	QP	
4	*	0.4600	36.60	0.07	36.67	46.69	-10.02	AVG	
5		1.1100	39.60	0.09	39.69	56.00	-16.31	QP	
6		1.1100	25.70	0.09	25.79	46.00	-20.21	AVG	
7		1.2000	42.40	0.10	42.50	56.00	-13.50	QP	
8		1.2000	28.60	0.10	28.70	46.00	-17.30	AVG	
9		1.4700	40.10	0.11	40.21	56.00	-15.79	QP	
10		1.4700	27.50	0.11	27.61	46.00	-18.39	AVG	
11		2.3800	41.80	0.13	41.93	56.00	-14.07	QP	
12		2.3800	28.00	0.13	28.13	46.00	-17.87	AVG	



Site SGS CONDUCTED #1
Limit: CISPR22/11 Class B Conduction(QP)
EUT: PDA Phone
M/N: PB9910
Note: GSM 1900 LINK MODE

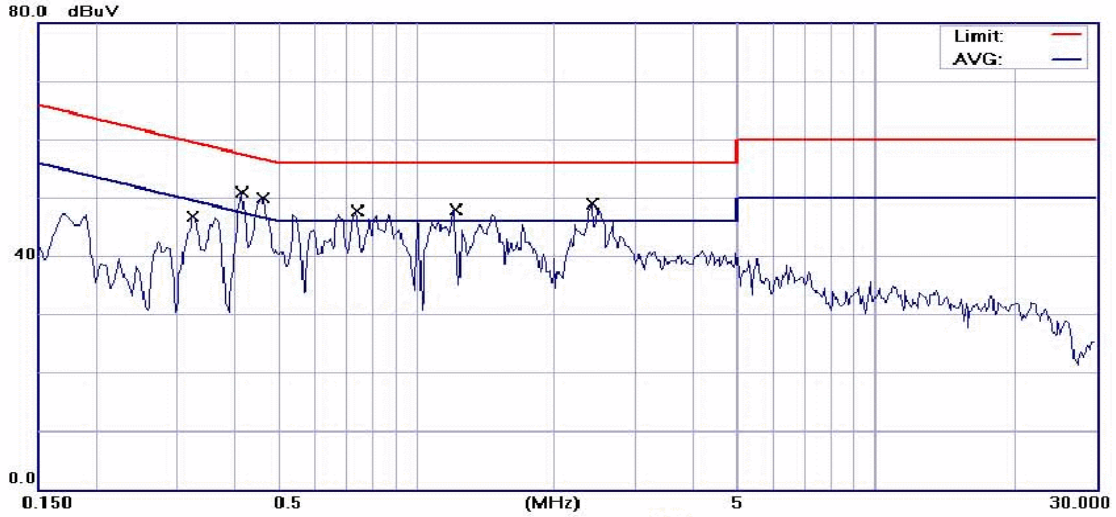
Phase: N
Power: AC 120V/60Hz
Distance:

Temperature: 23 ℃
Humidity: 60 %
Air Pressure: hpa

No.	Mk.	Freq.	Reading Level	Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1812	37.70	0.16	37.86	64.43	-26.57	QP	
2		0.1812	31.20	0.16	31.36	54.43	-23.07	AVG	
3		0.3727	43.20	0.11	43.31	58.44	-15.13	QP	
4		0.3727	36.60	0.11	36.71	48.44	-11.73	AVG	
5		0.4625	42.90	0.10	43.00	56.65	-13.65	QP	
6	*	0.4625	36.80	0.10	36.90	46.65	-9.75	AVG	
7		1.6016	40.00	0.14	40.14	56.00	-15.86	QP	
8		1.6016	27.30	0.14	27.44	46.00	-18.56	AVG	
9		1.8750	41.10	0.15	41.25	56.00	-14.75	QP	
10		1.8750	27.80	0.15	27.95	46.00	-18.05	AVG	
11		2.1523	40.00	0.15	40.15	56.00	-15.85	QP	
12		2.1523	28.60	0.15	28.75	46.00	-17.25	AVG	

AC POWER LINE CONDUCTED EMISSION TEST DATA

Operation Mode:	WCDMA IV Link			Test Date:	Aug. 28, 2009
Temperature:	23 ℃	Humidity:	60 %	Test By:	Jazz

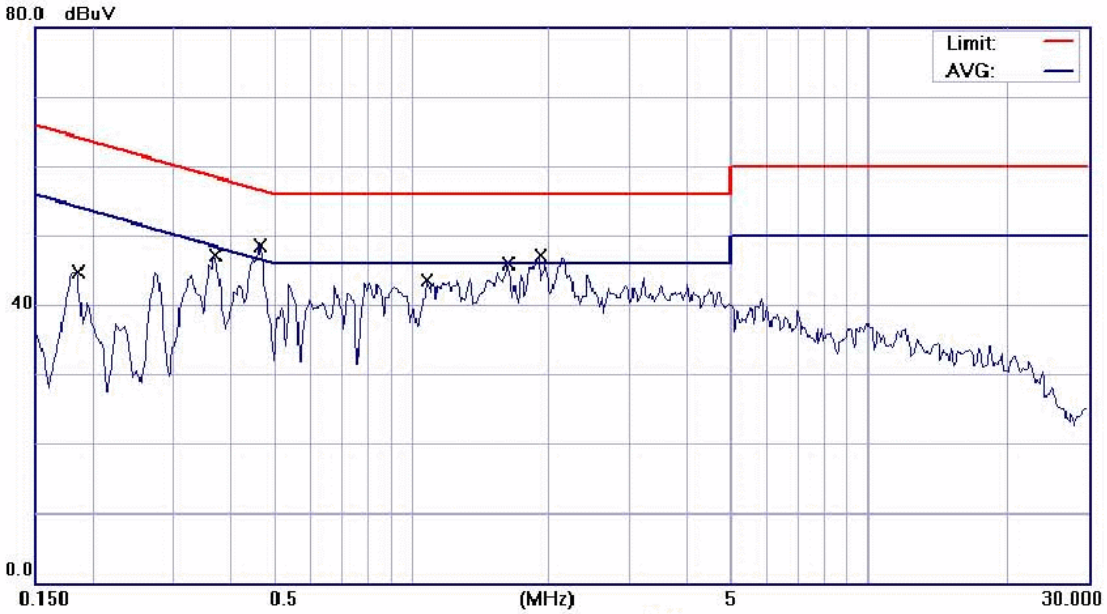


Site SGS CONDUCTED #1
Limit: CISPR22/11 Class B Conduction(QP)
EUT: PDA Phone
M/N: PB9910
Note: WCDMA B4 LINK MODE

Phase: L1
Power: AC 120V/60Hz
Distance:

Temperature: 23 ℃
Humidity: 60 %
Air Pressure: hpa

No.	Mk.	Freq.	Reading Level	Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.3250	41.30	0.10	41.40	59.58	-18.18	QP	
2		0.3250	33.10	0.10	33.20	49.58	-16.38	AVG	
3		0.4150	46.20	0.08	46.28	57.55	-11.27	QP	
4	*	0.4150	40.20	0.08	40.28	47.55	-7.27	AVG	
5		0.4600	45.80	0.07	45.87	56.69	-10.82	QP	
6		0.4600	36.50	0.07	36.57	46.69	-10.12	AVG	
7		0.7400	42.30	0.08	42.38	56.00	-13.62	QP	
8		0.7400	29.50	0.08	29.58	46.00	-16.42	AVG	
9		1.2100	42.50	0.10	42.60	56.00	-13.40	QP	
10		1.2100	28.70	0.10	28.80	46.00	-17.20	AVG	
11		2.4200	43.10	0.13	43.23	56.00	-12.77	QP	
12		2.4200	29.20	0.13	29.33	46.00	-16.67	AVG	



Site SGS CONDUCTED #1
Limit: CISPR22/11 Class B Conduction(QP)
EUT: PDA Phone
M/N: PB9910
Note: WCDMA B4 LINK MODE

Phase: N
Power: AC 120V/60Hz
Distance:

Temperature: 23 ℃
Humidity: 60 %
Air Pressure: hpa

No.	Mk.	Freq.	Reading Level	Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1850	40.00	0.16	40.16	64.26	-24.10	QP	
2		0.1850	31.80	0.16	31.96	54.26	-22.30	AVG	
3		0.3700	43.80	0.11	43.91	58.50	-14.59	QP	
4		0.3700	37.80	0.11	37.91	48.50	-10.59	AVG	
5		0.4650	44.20	0.10	44.30	56.60	-12.30	QP	
6	*	0.4650	38.10	0.10	38.20	46.60	-8.40	AVG	
7		1.0800	39.00	0.12	39.12	56.00	-16.88	QP	
8		1.0800	29.40	0.12	29.52	46.00	-16.48	AVG	
9		1.6200	40.40	0.14	40.54	56.00	-15.46	QP	
10		1.6200	28.90	0.14	29.04	46.00	-16.96	AVG	
11		1.9000	41.00	0.15	41.15	56.00	-14.85	QP	
12		1.9000	28.50	0.15	28.65	46.00	-17.35	AVG	

12. SPURIOUS RADIATED EMISSION TEST (RX)

13.1 Standard Applicable

According to RSS-129 §10

(a) No spurious output signals appearing at the antenna terminals shall exceed 2 nanowatts per any 4 kHz spurious frequency in the band 30-1000 MHz or 5 nanowatts above 1 GHz.

(b) No spurious output signals appearing at the antenna terminals and falling within the mobile station receive band (869-894 MHz) shall exceed 22.4 uV across 50 ohms, or equivalent output power of -80 dBm/30 kHz.

(c) No spurious output signals appearing at the antenna terminals and falling within the mobile station transmit band (824-849 MHz) shall exceed 224 uV across 50 ohms, or equivalent output power of -60 dBm/30 kHz.

(d) Except for the provisions of (a) and (b), all spurious emissions shall comply with the limits of Table 10.1. The resolution bandwidth of the spectrum analyser shall be 100 kHz for spurious emission measurements below 1.0 GHz and 1.0 MHz for measurements above 1.0 GHz.

Table 10.1

Spurious Frequency (MHz)	Field Strength (micro-volts/m) at 3 metres	Field Strength (dBuV/m) at 3 metres
30-88	100	40
88-216	150	43.5
216-960	200	46
960-1610	500	54
Above 1610	1000	60

According to RSS 133 §6.6, Receiver spurious emissions shall comply with the limits specified in RSS-Gen.

According to RSS-139 §6.6

Receiver spurious emissions shall comply with the limits specified in RSS-Gen.

13.2 EUT Setup

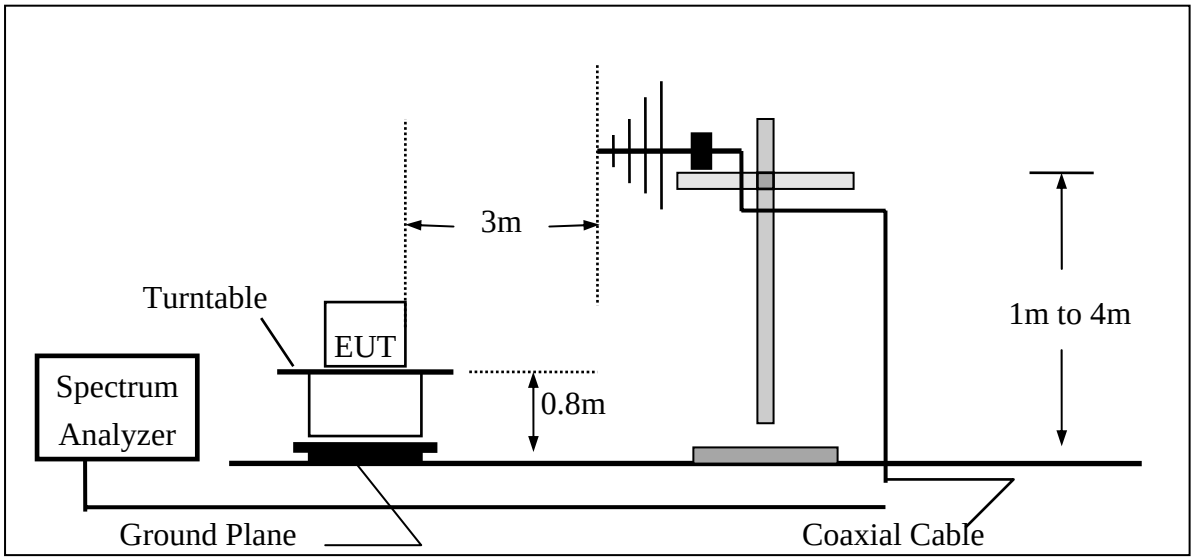
1. The radiated emission tests were performed in the 3 meter open-test site, using the setup in accordance with the ANSI C63.4-2003.
2. The EUT was put in the front of the test table. The rear of the EUT and peripherals were placed flushed with the rear of the tabletop.
3. The spacing between the peripherals was 10 centimeters.
4. External I/O cables were draped along the edge of the test table and bundle when necessary.
5. The host was connected with 110Vac/60Hz power source.

13.3 Measurement Procedure

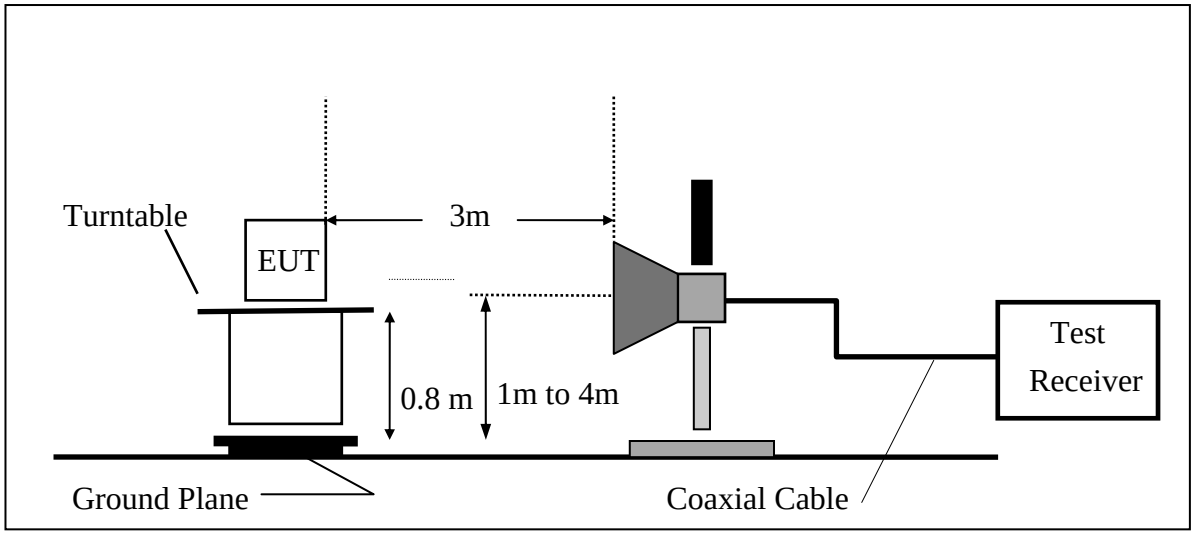
1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
5. Repeat above procedures until all frequency measured were complete.

13.4 Test SET-UP (Block Diagram of Configuration)

Radiated Emission Test Set-Up, Frequency Below 1000MHz



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



13.5 Measurement Equipment Used:

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	R&S	FSP 40	100034	02/12/2009	02/11/2010
Bilog Antenna	SCHWAZBECK	VULB9160	9160-3136	11/15/2008	11/14/2009
Hor.n antenna	SCHWAZBECK	BBHA 9120D	309	01/22/2008	01/21/2010
Horn antenna	SCHWAZBECK	BBHA 9120D	9120D-673	05/09/2008	05/08/2010
Pre-Amplifier	Agilent	8447D	1937A02834	11/30/2008	11/29/2009
Pre-Amplifier	Agilent	8449B	3008A01973	01/05/2009	01/04/2010
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 Communica-tion Analyzer	R&S	CMU200	102189	05/13/208	05/12/2010
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	01/05/2009	01/04/2010
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-3M	3m	01/05/2009	01/04/2010
3m Site	SGS	966 chamber	N/A	11/08/2008	11/09/2009

13.6 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL - AG

Where	FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
	RA = Reading Amplitude	AG = Amplifier Gain
	AF = Antenna Factor	

13.7 Measurement Result

Refer to attach tabular data sheets.

Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode	GSM 850 CH Low	Test Date	Sep. 04, 2009
Fundamental Frequency	N/A	Test By	Jazz
Temperature	25 ℃	Pol	Ver./Hor
Humidity	65 %		

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Ant./CL/ Amp. CF(dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)
67.83	V	Peak	44.05	-15.60	28.45	40.00	-11.55
101.78	V	Peak	43.97	-16.87	27.10	43.50	-16.40
153.19	V	Peak	33.03	-13.00	20.03	43.50	-23.47
235.64	V	Peak	31.78	-14.28	17.50	46.00	-28.50
421.88	V	Peak	31.52	-9.34	22.18	46.00	-23.82
720.64	V	Peak	32.80	-4.73	28.07	46.00	-17.93
70.74	H	Peak	41.88	-16.27	25.61	40.00	-14.39
104.69	H	Peak	38.00	-16.63	21.37	43.50	-22.13
155.13	H	Peak	31.27	-13.12	18.15	43.50	-25.35
470.38	H	Peak	31.67	-8.55	23.12	46.00	-22.88
609.09	H	Peak	32.24	-5.83	26.41	46.00	-19.59
788.54	H	Peak	32.26	-3.30	28.96	46.00	-17.04

Remark：

(1) Measuring frequencies from 30 MHz to the 1GHz.

(2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/AV detector mode.

(3) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode	GSM 850 CH Mid	Test Date	Sep. 04, 2009
Fundamental Frequency	N/A	Test By	Jazz
Temperature	25 ℃	Pol	Ver./Hor
Humidity	65 %		

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Ant./CL/ Amp. CF(dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)
67.83	V	Peak	43.97	-15.60	28.37	40.00	-11.63
101.78	V	Peak	42.39	-16.87	25.52	43.50	-17.98
153.19	V	Peak	33.76	-13.00	20.76	43.50	-22.74
332.64	V	Peak	32.85	-12.16	20.69	46.00	-25.31
604.24	V	Peak	32.10	-5.92	26.18	46.00	-19.82
880.69	V	Peak	31.67	-1.44	30.23	46.00	-15.77
67.83	H	Peak	41.74	-15.60	26.14	40.00	-13.86
104.69	H	Peak	37.72	-16.63	21.09	43.50	-22.41
159.98	H	Peak	31.97	-13.40	18.57	43.50	-24.93
353.98	H	Peak	31.76	-11.67	20.09	46.00	-25.91
480.08	H	Peak	32.05	-8.56	23.49	46.00	-22.51
652.74	H	Peak	32.13	-4.96	27.17	46.00	-18.83

Remark：

(1) Measuring frequencies from 30 MHz to the 1GHz。

(2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/AV detector mode.

(3) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode	GSM 850 CH High	Test Date	Sep. 04, 2009
Fundamental Frequency	N/A	Test By	Jazz
Temperature	25 ℃	Pol	Ver./Hor
Humidity	65 %		

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Ant./CL/ Amp. CF(dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)
67.83	V	Peak	45.56	-15.60	29.96	40.00	-10.04
104.69	V	Peak	41.74	-16.63	25.11	43.50	-18.39
245.34	V	Peak	31.63	-13.98	17.65	46.00	-28.35
463.59	V	Peak	31.45	-8.55	22.90	46.00	-23.10
611.03	V	Peak	32.76	-5.79	26.97	46.00	-19.03
715.79	V	Peak	31.77	-4.78	26.99	46.00	-19.01
70.74	H	Peak	42.66	-16.27	26.39	40.00	-13.61
150.28	H	Peak	31.51	-12.72	18.79	43.50	-24.71
237.58	H	Peak	31.73	-14.22	17.51	46.00	-28.49
387.93	H	Peak	31.58	-10.41	21.17	46.00	-24.83
589.69	H	Peak	32.45	-6.36	26.09	46.00	-19.91
778.84	H	Peak	31.54	-3.58	27.96	46.00	-18.04

Remark：

(1) Measuring frequencies from 30 MHz to the 1GHz。

(2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/AV detector mode.

(3) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode	GSM 850 CH Low	Test Date	Sep. 04, 2009
Fundamental Frequency	N/A	Test By	Jazz
Temperature	25 ℃	Pol	Ver
Humidity	65 %		

Freq. (MHz)	Peak Reading (dBuV)	AV Reading (dBuV)	Ant/CL CF(dB)	Actual FS Peak (dBuV/m)	Actual FS AV (dBuV/m)	Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	
1648.4	35.58	--	-5.22	30.36	---	74.00	54.00	-23.64	Peak
2472.6	--								
3296.8	--								
4121.0	--								
4945.2	--								
5769.4	--								
6593.6	--								
7417.8	--								
8242.0	--								

Remark：

(1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency。

(2) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column。

(4) Spectrum Peak Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 1MHz, Sweep time= 200 ms.

(5) Spectrum AV Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode	GSM 850 CH Low	Test Date	Sep. 04, 2009
Fundamental Frequency	N/A	Test By	Jazz
Temperature	25 ℃	Pol	Hor
Humidity	65 %		

Freq. (MHz)	Peak Reading (dBuV)	AV Reading (dBuV)	Ant./CL CF(dB)	Actual FS Peak (dBuV/m)	Actual FS AV (dBuV/m)	Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	
1648.4	35.22	---	-5.22	30.00	---	74.00	54.00	-24.00	Peak
2472.6	--								
3296.8	--								
4121.0	--								
4945.2	--								
5769.4	--								
6593.6	--								
7417.8	--								
8242.0	--								

Remark：

(1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency。

(2) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column。

(4) Spectrum Peak Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 1MHz, Sweep time= 200 ms.

(5) Spectrum AV Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode	GSM 850 CH Mid	Test Date	Sep. 04, 2009
Fundamental Frequency	N/A	Test By	Jazz
Temperature	25 ℃	Pol	Ver
Humidity	65 %		

Freq. (MHz)	Peak Reading (dBuV)	AV Reading (dBuV)	Ant./CL CF(dB)	Actual FS Peak (dBuV/m)	Actual FS AV (dBuV/m)	Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	
1673.2	36.06	---	-5.08	30.98	---	74.00	54.00	-23.02	Peak
2509.8	--								
3346.4	--								
4183.0	--								
5019.6	--								
5856.2	--								
6692.8	--								
7529.4	--								
8366.0	--								

Remark：

(1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency。

(2) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column。

(4) Spectrum Peak Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 1MHz, Sweep time= 200 ms.

(5) Spectrum AV Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode	GSM 850 CH Mid	Test Date	Sep. 04, 2009
Fundamental Frequency	N/A	Test By	Jazz
Temperature	25 ℃	Pol	Hor
Humidity	65 %		

Freq. (MHz)	Peak Reading (dBuV)	AV Reading (dBuV)	Ant./CL CF(dB)	Actual FS Peak (dBuV/m)	Actual FS AV (dBuV/m)	Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	
1673.2	35.65	---	-5.08	30.57	---	74.00	54.00	-23.43	Peak
2509.8	--								
3346.4	--								
4183.0	--								
5019.6	--								
5856.2	--								
6692.8	--								
7529.4	--								
8366.0	--								

Remark：

(1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency。

(2) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column。

(4) Spectrum Peak Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 1MHz, Sweep time= 200 ms.

(5) Spectrum AV Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode	GSM 850 CH High	Test Date	Sep. 04, 2009
Fundamental Frequency	N/A	Test By	Jazz
Temperature	25 ℃	Pol	Ver
Humidity	65 %		

Freq. (MHz)	Peak Reading (dBuV)	AV Reading (dBuV)	Ant./CL CF(dB)	Actual FS Peak (dBuV/m)	Actual FS AV (dBuV/m)	Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	
1697.6	35.22	---	-4.96	30.26	---	74.00	54.00	-23.74	Peak
2546.4	–								
3395.2	–								
4244.0	–								
5092.8	–								
5941.6	–								
6790.4	–								
7639.2	–								
8488.0	–								

Remark：

(1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency。

(2) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column。

(4) Spectrum Peak Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 1MHz, Sweep time= 200 ms.

(5) Spectrum AV Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode	GSM 850 CH High	Test Date	Sep. 04, 2009
Fundamental Frequency	N/A	Test By	Jazz
Temperature	25 ℃	Pol	Hor
Humidity	65 %		

Freq. (MHz)	Peak Reading (dBuV)	AV Reading (dBuV)	Ant./CL CF(dB)	Actual FS Peak (dBuV/m)	Actual FS AV (dBuV/m)	Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	
1697.6	36.05	---	-4.96	31.09	---	74.00	54.00	-22.91	Peak
2546.4	--								
3395.2	--								
4244.0	--								
5092.8	--								
5941.6	--								
6790.4	--								
7639.2	--								
8488.0	--								

Remark：

(1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency。

(2) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column。

(4) Spectrum Peak Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 1MHz, Sweep time= 200 ms.

(5) Spectrum AV Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode	PCS 1900 CH Low	Test Date	Sep. 04, 2009
Fundamental Frequency	N/A	Test By	Jazz
Temperature	25 ℃	Pol	Ver./Hor
Humidity	65 %		

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Ant./CL/ Amp. CF(dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)
67.83	V	Peak	45.62	-15.60	30.02	40.00	-9.98
104.69	V	Peak	41.58	-16.63	24.95	43.50	-18.55
153.19	V	Peak	33.60	-13.00	20.60	43.50	-22.90
339.43	V	Peak	32.16	-12.03	20.13	46.00	-25.87
449.04	V	Peak	31.77	-8.61	23.16	46.00	-22.84
650.80	V	Peak	31.89	-4.96	26.93	46.00	-19.07
56.19	H	Peak	40.63	-14.63	26.00	40.00	-14.00
70.74	H	Peak	41.44	-16.27	25.17	40.00	-14.83
104.69	H	Peak	38.61	-16.63	21.98	43.50	-21.52
247.28	H	Peak	31.61	-13.93	17.68	46.00	-28.32
475.23	H	Peak	31.70	-8.56	23.14	46.00	-22.86
638.19	H	Peak	33.00	-5.23	27.77	46.00	-18.23

Remark：

(1) Measuring frequencies from 30 MHz to the 1GHz。

(2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/AV detector mode.

(3) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode	PCS 1900 CH Mid	Test Date	Sep. 04, 2009
Fundamental Frequency	N/A	Test By	Jazz
Temperature	25 ℃	Pol	Ver./Hor
Humidity	65 %		

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Ant./CL/ Amp. CF(dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)
67.83	V	Peak	45.05	-15.60	29.45	40.00	-10.55
101.78	V	Peak	42.80	-16.87	25.93	43.50	-17.57
153.19	V	Peak	33.18	-13.00	20.18	43.50	-23.32
247.28	V	Peak	32.29	-13.00	19.29	46.00	-26.71
460.68	V	Peak	31.82	-8.61	23.21	46.00	-22.79
644.98	V	Peak	32.26	-5.10	27.16	46.00	-18.84
70.74	H	Peak	44.27	-16.27	28.00	40.00	-12.00
104.69	H	Peak	38.75	-16.63	22.12	43.50	-21.38
153.19	H	Peak	30.91	-13.00	17.91	43.50	-25.59
332.64	H	Peak	32.05	-12.16	19.89	46.00	-26.11
584.84	H	Peak	32.12	-6.52	25.60	46.00	-20.40
780.78	H	Peak	32.37	-3.47	28.90	46.00	-17.10

Remark：

(1) Measuring frequencies from 30 MHz to the 1GHz。

(2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/AV detector mode.

(3) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode	PCS 1900 CH High	Test Date	Sep. 04, 2009
Fundamental Frequency	N/A	Test By	Jazz
Temperature	25 ℃	Pol	Ver./Hor
Humidity	65 %		

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Ant./CL/ Amp. CF(dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)
67.83	V	Peak	45.46	-15.60	29.86	40.00	-10.14
104.69	V	Peak	42.26	-16.63	25.63	43.50	-17.87
153.19	V	Peak	33.00	-13.00	20.00	43.50	-23.50
274.44	V	Peak	32.21	-13.50	18.71	46.00	-27.29
421.88	V	Peak	32.20	-9.34	22.86	46.00	-23.14
816.67	V	Peak	31.32	-2.66	28.66	46.00	-17.34
70.74	H	Peak	42.61	-16.27	26.34	40.00	-13.66
104.69	H	Peak	37.65	-16.63	21.02	43.50	-22.48
240.49	H	Peak	31.73	-14.11	17.62	46.00	-28.38
411.21	H	Peak	31.36	-9.61	21.75	46.00	-24.25
628.49	H	Peak	32.59	-5.41	27.18	46.00	-18.82
769.14	H	Peak	31.58	-3.80	27.78	46.00	-18.22

Remark：

(1) Measuring frequencies from 30 MHz to the 1GHz。

(2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/AV detector mode.

(3) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode	PCS 1900 CH Low	Test Date	Sep. 04, 2009
Fundamental Frequency	N/A	Test By	Jazz
Temperature	25 ℃	Pol	Ver
Humidity	65 %		

Freq. (MHz)	Peak Reading (dBuV)	AV Reading (dBuV)	Ant./CL CF(dB)	Actual FS Peak (dBuV/m)	Actual FS AV (dBuV/m)	Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	
3700.4	34.95	---	6.83	41.78	---	74.00	54.00	-12.22	Peak
5550.6	--								
7400.8	--								
9251.0	--								
11101.2	--								
12951.4	--								
14801.6	--								
16651.8	--								
18502.0	--								

Remark：

(1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency。

(2) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column。

(4) Spectrum Peak Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 1MHz, Sweep time= 200 ms.

(5) Spectrum AV Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode	PCS 1900 CH Low	Test Date	Sep. 04, 2009
Fundamental Frequency	N/A	Test By	Jazz
Temperature	25 ℃	Pol	Hor
Humidity	65 %		

Freq. (MHz)	Peak Reading (dBuV)	AV Reading (dBuV)	Ant./CL CF(dB)	Actual FS Peak (dBuV/m)	Actual FS AV (dBuV/m)	Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	
3700.4	34.43	---	6.83	41.26	---	74.00	54.00	-12.74	Peak
5550.6	--								
7400.8	--								
9251.0	--								
11101.2	--								
12951.4	--								
14801.6	--								
16651.8	--								
18502.0	--								

Remark：

(1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency。

(2) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column。

(4) Spectrum Peak Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 1MHz, Sweep time= 200 ms.

(5) Spectrum AV Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode	PCS 1900 CH Mid	Test Date	Sep. 04, 2009
Fundamental Frequency	N/A	Test By	Jazz
Temperature	25 ℃	Pol	Ver
Humidity	65 %		

Freq. (MHz)	Peak Reading (dBuV)	AV Reading (dBuV)	Ant./CL CF(dB)	Actual FS Peak (dBuV/m)	Actual FS AV (dBuV/m)	Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	
3760.0	33.67	---	6.89	40.56	---	74.00	54.00	-13.44	Peak
5640.0	--								
7520.0	--								
9400.0	--								
11280.0	--								
13160.0	--								
15040.0	--								
16920.0	--								
18800.0	--								

Remark：

(1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency。

(2) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column。

(4) Spectrum Peak Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 1MHz, Sweep time= 200 ms.

(5) Spectrum AV Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode	PCS 1900 CH Mid	Test Date	Sep. 04, 2009
Fundamental Frequency	N/A	Test By	Jazz
Temperature	25 ℃	Pol	Hor
Humidity	65 %		

Freq. (MHz)	Peak Reading (dBuV)	AV Reading (dBuV)	Ant./CL CF(dB)	Actual FS Peak (dBuV/m)	Actual FS AV (dBuV/m)	Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	
3760.0	33.59	--	6.89	40.48	---	74.00	54.00	-13.52	Peak
5640.0	--								
7520.0	--								
9400.0	--								
11280.0	--								
13160.0	--								
15040.0	--								
16920.0	--								
18800.0	--								

Remark：

(1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency。

(2) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column。

(4) Spectrum Peak Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 1MHz, Sweep time= 200 ms.

(5) Spectrum AV Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode	PCS 1900 CH High	Test Date	Sep. 04, 2009
Fundamental Frequency	N/A	Test By	Jazz
Temperature	25 ℃	Pol	Ver
Humidity	65 %		

Freq. (MHz)	Peak Reading (dBuV)	AV Reading (dBuV)	Ant./CL CF(dB)	Actual FS Peak (dBuV/m)	Actual FS AV (dBuV/m)	Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	
3819.6	33.53	---	6.96	40.49	---	74.00	54.00	-13.51	Peak
5729.4	--								
7639.2	--								
9549.0	--								
11458.8	--								
13368.6	--								
15278.4	--								
17188.2	--								
19098.0	--								

Remark：

(1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency。

(2) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column。

(4) Spectrum Peak Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 1MHz, Sweep time= 200 ms.

(5) Spectrum AV Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode	PCS 1900 CH High	Test Date	Sep. 04, 2009
Fundamental Frequency	N/A	Test By	Jazz
Temperature	25 ℃	Pol	Hor
Humidity	65 %		

Freq. (MHz)	Peak Reading (dBuV)	AV Reading (dBuV)	Ant./CL CF(dB)	Actual FS Peak (dBuV/m)	Actual FS AV (dBuV/m)	Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)
3819.6	33.09	---	6.96	40.05	---	74.00	54.00	-13.95
5729.4	--							
7639.2	--							
9549.0	--							
11458.8	--							
13368.6	--							
15278.4	--							
17188.2	--							
19098.0	--							

Remark：

(1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency。

(2) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column。

(4) Spectrum Peak Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 1MHz, Sweep time= 200 ms.

(5) Spectrum AV Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode	WCDMA B4 CH Low	Test Date	Sep. 04, 2009
Fundamental Frequency	N/A	Test By	Jazz
Temperature	25 ℃	Pol	Ver./Hor
Humidity	65 %		

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Ant./CL/ Amp. CF(dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)
67.83	V	Peak	46.09	-15.60	30.49	40.00	-9.51
101.78	V	Peak	43.12	-16.87	26.25	43.50	-17.25
153.19	V	Peak	33.99	-13.00	20.99	43.50	-22.51
247.28	V	Peak	31.81	-13.93	17.88	46.00	-28.12
381.14	V	Peak	31.43	-10.69	20.74	46.00	-25.26
512.09	V	Peak	31.83	-8.33	23.50	46.00	-22.50
70.74	H	Peak	43.82	-16.27	27.55	40.00	-12.45
104.69	H	Peak	38.81	-16.63	22.18	43.50	-21.32
155.13	H	Peak	31.08	-13.12	17.96	43.50	-25.54
387.93	H	Peak	31.18	-10.41	20.77	46.00	-25.23
565.44	H	Peak	32.58	-7.15	25.43	46.00	-20.57
638.19	H	Peak	32.15	-5.22	26.93	46.00	-19.07

Remark：

(1) Measuring frequencies from 30 MHz to the 1GHz。

(2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/AV detector mode.

(3) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode	WCDMA B4 CH Mid	Test Date	Sep. 04, 2009
Fundamental Frequency	N/A	Test By	Jazz
Temperature	25 ℃	Pol	Ver./Hor
Humidity	65 %		

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Ant./CL/ Amp. CF(dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)
67.83	V	Peak	44.44	-15.60	28.84	40.00	-11.16
92.08	V	Peak	42.61	-17.38	25.23	43.50	-18.27
153.19	V	Peak	33.23	-13.00	20.23	43.50	-23.27
303.54	V	Peak	31.99	-12.93	19.06	46.00	-26.94
465.53	V	Peak	31.87	-8.55	23.32	46.00	-22.68
594.54	V	Peak	32.80	-6.18	26.62	46.00	-19.38
70.74	H	Peak	41.72	-16.27	25.45	40.00	-14.55
104.69	H	Peak	37.71	-16.63	21.08	43.50	-22.42
150.28	H	Peak	30.85	-12.83	18.02	43.50	-25.48
281.23	H	Peak	31.68	-13.31	18.37	46.00	-27.63
431.58	H	Peak	31.86	-9.09	22.77	46.00	-23.23
643.04	H	Peak	32.69	-5.14	27.55	46.00	-18.45

Remark：

(1) Measuring frequencies from 30 MHz to the 1GHz。

(2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/AV detector mode.

(3) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode	WCDMA B4 CH High	Test Date	Sep. 04, 2009
Fundamental Frequency	N/A	Test By	Jazz
Temperature	25 ℃	Pol	Ver./Hor
Humidity	65 %		

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Ant./CL/ Amp. CF(dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)
67.83	V	Peak	44.92	-15.60	29.32	40.00	-10.68
101.78	V	Peak	45.18	-16.87	28.31	43.50	-15.19
153.19	V	Peak	32.93	-13.00	19.93	43.50	-23.57
327.79	V	Peak	31.62	-12.36	19.26	46.00	-26.74
533.43	V	Peak	31.13	-7.96	23.17	46.00	-22.83
698.33	V	Peak	32.96	-5.06	27.90	46.00	-18.10
56.19	H	Peak	41.11	-14.63	26.48	40.00	-13.52
104.69	H	Peak	38.03	-16.63	21.40	43.50	-22.10
159.98	H	Peak	31.17	-13.40	17.77	43.50	-25.73
376.29	H	Peak	31.89	-10.86	21.03	46.00	-24.97
512.09	H	Peak	31.83	-8.33	23.50	46.00	-22.50
596.48	H	Peak	31.60	-6.12	25.48	46.00	-20.52

Remark：

(1) Measuring frequencies from 30 MHz to the 1GHz。

(2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/AV detector mode.

(3) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode	WCDMA B4 CH Low	Test Date	Sep. 04, 2009
Fundamental Frequency	N/A	Test By	Jazz
Temperature	25 ℃	Pol	Ver
Humidity	65 %		

Freq. (MHz)	Peak Reading (dBuV)	AV Reading (dBuV)	Ant./CL CF(dB)	Actual FS Peak (dBuV/m)	Actual FS AV (dBuV/m)	Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	
3424.8	34.89	---	6.49	41.38	---	74.00	54.00	-12.62	Peak
5137.2	--								
6849.6	--								
8562.0	--								
10274.4	--								
11986.8	--								
13699.2	--								
15411.6	--								
17124.0	--								

Remark：

(1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency。

(2) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column。

(4) Spectrum Peak Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 1MHz, Sweep time= 200 ms.

(5) Spectrum AV Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode	WCDMA B4 CH Low	Test Date	Sep. 04, 2009
Fundamental Frequency	N/A	Test By	Jazz
Temperature	25 ℃	Pol	Hor
Humidity	65 %		

Freq. (MHz)	Peak Reading (dBuV)	AV Reading (dBuV)	Ant./CL CF(dB)	Actual FS Peak (dBuV/m)	Actual FS AV (dBuV/m)	Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	
3424.8	34.21	---	6.49	40.70	---	74.00	54.00	-13.30	Peak
5137.2	--								
6849.6	--								
8562.0	--								
10274.4	--								
11986.8	--								
13699.2	--								
15411.6	--								
17124.0	--								

Remark：

(1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency。

(2) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column。

(4) Spectrum Peak Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 1MHz, Sweep time= 200 ms.

(5) Spectrum AV Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode	WCDMA B4 CH Mid	Test Date	Sep. 04, 2009
Fundamental Frequency	N/A	Test By	Jazz
Temperature	25 ℃	Pol	Ver
Humidity	65 %		

Freq. (MHz)	Peak Reading (dBuV)	AV Reading (dBuV)	Ant./CL CF(dB)	Actual FS Peak (dBuV/m)	Actual FS AV (dBuV/m)	Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	
3465.2	35.07	---	6.55	41.62	---	74.00	54.00	-12.38	Peak
5197.8	--								
6930.4	--								
8663.0	--								
10395.6	--								
12128.2	--								
13860.8	--								
15593.4	--								
17326.0	--								

Remark：

(1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency。

(2) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column。

(4) Spectrum Peak Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 1MHz, Sweep time= 200 ms.

(5) Spectrum AV Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode	WCDMA B4CH Mid	Test Date	Sep. 04, 2009
Fundamental Frequency	N/A	Test By	Jazz
Temperature	25 ℃	Pol	Hor
Humidity	65 %		

Freq. (MHz)	Peak Reading (dBuV)	AV Reading (dBuV)	Ant./CL CF(dB)	Actual FS Peak (dBuV/m)	Actual FS AV (dBuV/m)	Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	
3465.2	35.44	--	6.55	41.99	--	74.00	54.00	-12.01	Peak
5197.8	--								
6930.4	--								
8663.0	--								
10395.6	--								
12128.2	--								
13860.8	--								
15593.4	--								
17326.0	--								

Remark：

(1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency。

(2) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column。

(4) Spectrum Peak Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 1MHz, Sweep time= 200 ms.

(5) Spectrum AV Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode	WCDMA B4 CH High	Test Date	Sep. 04, 2009
Fundamental Frequency	N/A	Test By	Jazz
Temperature	25 ℃	Pol	Ver
Humidity	65 %		

Freq. (MHz)	Peak Reading (dBuV)	AV Reading (dBuV)	Ant./CL CF(dB)	Actual FS Peak (dBuV/m)	Actual FS AV (dBuV/m)	Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	
3505.2	33.88	---	6.58	40.46	---	74.00	54.00	-13.54	Peak
5257.8	--								
7010.4	--								
8763.0	--								
10515.6	--								
12268.2	--								
14020.8	--								
15773.4	--								
17526.0	--								

Remark：

(1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency。

(2) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column。

(4) Spectrum Peak Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 1MHz, Sweep time= 200 ms.

(5) Spectrum AV Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode	WCDMA B4 CH High	Test Date	Sep. 04, 2009
Fundamental Frequency	N/A	Test By	Jazz
Temperature	25 ℃	Pol	Hor
Humidity	65 %		

Freq. (MHz)	Peak Reading (dBuV)	AV Reading (dBuV)	Ant./CL CF(dB)	Actual FS Peak (dBuV/m)	Actual FS AV (dBuV/m)	Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)
3505.2	35.05	---	6.58	41.63	---	74.00	54.00	-12.37
5257.8	--							
7010.4	--							
8763.0	--							
10515.6	--							
12268.2	--							
14020.8	--							
15773.4	--							
17526.0	--							

Remark：

(1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency。

(2) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column。

(4) Spectrum Peak Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 1MHz, Sweep time= 200 ms.

(5) Spectrum AV Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.