SGS-CSTC Standards
Technical Services Co., Ltd.

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TEST REPORT

Application No. : SHEMO09060056801

Applicant: ZTE CORPORATION

ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, P.R. China 518057

FCC ID: Q78-ZTEMF100

Equipment Under Test (EUT):

Name: HSDPA USB Stick

Model: MF100

Serial No.: Not supplied by client

Standards: FCC part 2, 22H & 24E

Date of Receipt: Jun 5, 2009

Date of Test: Jun 5, 2009 to Jun 10, 2009

Date of Issue: Jun 10, 2009

Test Result :	**PASS ***

* In the configuration tested, the EUT detailed in this report complied with the standards specified above. Please refer to section 2 of this report for further details.

Tino Pan
E&E Section Manager
SGS-CSTC Co., Ltd.

Bruce Zhan
Project Engineer
SGS-CSTC Co., Ltd.

2 Test Summary

Description of Test	FCC Rules	Result
RF Power Output	2.1046(a) 22.913(a) 24.232(2)	Compliant
99% Occupied Bandwidth	2.1049(h)	Compliant
Effective Isotropic Radiated Power	2.1046(a) 22.913(a) 22.232(a)	Compliant
Out of Band Emissions at antenna Terminals and Band Edge	2.1051 22.917(a) 24.238(a)	Compliant
Field Strength of Spurious Emissions	2.1053 22.917(a) 24.238(a)	Compliant
Frequency Stability vs. Temperature and Voltage	2.1055(d)(1)(2)	Compliant
Modulation characteristics	2.1047	Compliant

3 Contents

4 General Information

4.1 Client Information

Applicant: ZTE CORPORATION

Address of Applicant: ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, P.R. China 518057

4.2 General Description of E.U.T.

Product Name:	HSDPA USB Stick
Brand Name	ZTE
Model Name:	MF100
Power Supply:	5V dc from USB port

GSM and WCDMA:

	Operating frequency		Rated Power
Cellular phone standards Frequency Range and Power:	GSM/GPRS/EDGE, 850 GPRS Class 10 EDGE Class 12	824.2MHz-848.8MHz	33dBm
	GSM/GPRS/EDGE, 1900 GPRS Class 10 EDGE Class 12	1850.2MHz-1909.8MHz	30dBm
	WCDMA/ HSDPA. Band II	1852.4MHz-1907.6MHz	24dBm
	WCDMA/ HSDPA Band V	826.4MHz-846.6MHz	24dBm
	HSDPA data rate: uplink up to 2Mbps		
Type of Emission:	GSM 850: 243KGXW GSM1900:247KGXW EDGE 850:245KG7W EDGE 1900:245KG7W WCDMA/HSDPA. Band II:4M20F9W WCDMA/HSDPA Band V:4M18F9W		
Hardware Version:	N/A		
Software Version:	N/A		
IMEI:	35178903001368700		

4.3 Test Location

Tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shanghai EMC Laboratory

588 West Jindu Road, Songjiang District, Shanghai, China

Tel: +86 21 61915666 Fax: +86 21 61915678

4.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **FCC – Registration No.: 402683**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration **402683**, Feb 23, 2009. SGS-CSTC is an authorized test laboratory for the DoC process.

4.5 Test Methodogy

Both conducted and radiated testing were performed according to the procedures document on TIA/EIA-603-C-2004 and FCC CFR 47 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055 and 2.1057.

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

5 Equipments Used during Test

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due date
1	Spectrum Analyzer	Rohde & Schwarz	FSP-30	100324	2009-4-21	2010-4-20
2	EMI test receiver	Rohde & Schwarz	ESU40	100109	2008-6-19	2009-6-18
3	Bilog Antenna	TESEQ	CBL6112D	23193	2009-05-14	2010-05-14
4	Horn Antenna	EMCO	3115	9100284	2009-04-11	2010-04-10
5	Horn Antenna	EMCO	3115	100285	2008-10-9	2009-10-8
6	ANTENNA	SCHWARZBECK	VULB9168	9168-313	2009-5-29	2010-5-28
7	VHAP PRECISION HALFWAVE DIPOLES	R&S	VHAP	1096＋1097	2009-05-18	2010-05-17
8	Atmosphere pressure meter	Shanghai ZhongXuan Electronic Co;Ltd	BY－2003P	--	2008-10-21	2009-10-20
9	CLAMP METER	FLUKE	316	86080010	2009-04-21	2010-04-20
10	Thermo-Hygrometer	ZHICHEN	ZC1-2	01050033	2008-10-21	2009-10-20
11	Digital illuminance meter	TES electrical electronic Corp.	TES-1330A	050602219	2008-10-21	2009-10-20
12	TEMPERATURE& HUMIDITY BOX	KSON	THS-D2C-100	K40723	2008-11-18	2009-11-17
13	High-low temperature cabinet	Shanghai YuanZhen	GW2050	--	2008-6-27	2009-6-26
14	DC power	KIKUSUI	PMC35－3	NF100260	--	--
15	EMI test receiver	Rohde & Schwarz	ESCS30	100086	2008-06-26	2009-06-25
16	Line impedance stabilization network	ETS	3816/2	00034161	2008-07-30	2009-07-29
17	Power meter	Rohde & Schwarz	NRP	101641	2009-5-5	2010-5-4

18	UNIVERSAL RADIO COMMUNICATION TESTER	Rohde & Schwarz	CMU 200	103633	2008-06-17	2009-06-16
19	Tunable Notch Filter	WRCT800.0/880.0-0.2/40-5SSK	Wainwright instruments Gmbh	9	2009-1-27	2010-1-26
20	Tunable Notch Filter	WRCT1800.0/2000.0-0.2/40-5SSK	Wainwright instruments Gmbh	11	2009-1-27	2010-1-26
21	Band Reject Filter	WRCG 824/849-814/859-40/8SS	Amiden,Ireland	1	2009-1-27	2010-1-26
22	Band Reject Filter	WRCG 1850/1910-1835/1925-40/8SS	Amiden,Ireland	13	2009-1-27	2010-1-26

AC Conducted Measuring Equipment

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due date
1	EMI test receiver	Rohde & Schwarz	ESCS30	100086	2008-06-26	2009-06-25
2	Line impedance stabilization network	ETS	3816/2	00034161	2008-07-30	2009-07-29
3	LISN	SCHWARZBECK	NSLK8127	8127-490	2009-5-8	2010-5-7

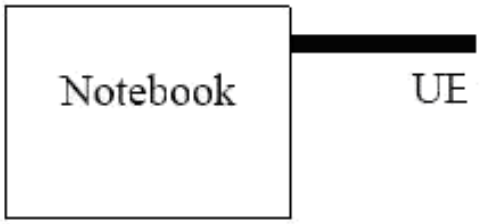
6 Test Results

6.1 E.U.T. test conditions

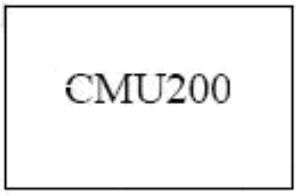
Power supply: DC 5.0V

Operating Environment:
Temperature: 20.0 -25.0 °C
Humidity: 38-48 % RH
Atmospheric Pressure: 992 -1006 mbar

Configuration of Tested System:



Remote Side



Notebook:

Manufacturer: IBM

Model no.: T42

Serial No.: 2374IMN

6.2 RF Power Output

Test Requirement: Part 2.1046

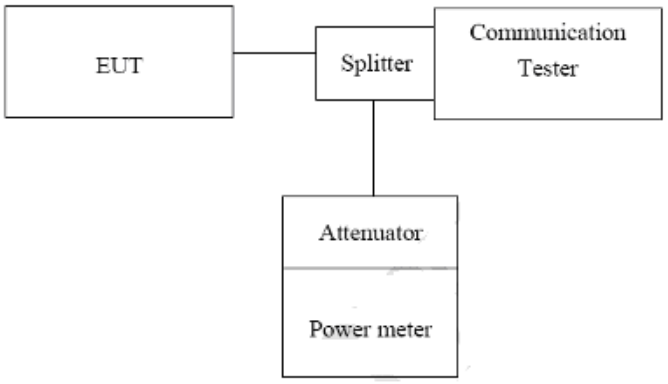
Part 22.913(a) Mobile station are limited to 7W

Part 24.232(d) peak Power measurement, FCC 24.232(c) Maximum Power reduction 3GPP Power Limitation for HSDPA.

Maximum Output Powers With HSDPA for test:

Sub-test	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	+2.7/-3.7	+20	+3.7/-2.7
4	+22	+3.7/-3.7	+19	+4.7/-2.7

Test Setup



Measurement Setup for testing on Antenna connector.

Test Date: Jun 5, 2009 – Jun 7, 2009

Test Status: Test lowest, middle, highest channel.

Test Procedure:

The transmitter output was connected to calibrated attenuator, the other end of which was connected to a power meter. Transmitter output was read off the power in dBm. The power output at the transmitter antenna port was determined by adding the vaule of attenuator to the power meter reading. The procedure of KDB941225 KDB941125 (SAR Measurement Procedures for 3G devices, WCDMA/HSDPA) was used for EUT and Base station setting. RMC 12.2kps is used for testing.

Measurement Result:

RF Conducted output power

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	31.3	31.2	27.1	24.9	28.5	28.4	26.8	24.8
836.6	190	31.2	31.1	27.1	24.9	28.5	28.3	27.0	25.1
848.8	251	31.0	30.9	27.2	24.8	28.3	28.2	27.2	25.1
1850.2	512	28.6	28.4	27.3	24.4	25.9	25.8	27.2	24.0
1880.0	661	28.5	28.3	27.0	24.7	25.9	25.8	27.0	24.1
1909.8	810	28.3	28.1	26.8	24.6	25.8	25.7	27.1	24.0

Frequency (MHz)	Ch	3 Time Slot		4 Time Slot	
		8-PSK Mode		8-PSK Mode	
		Peak power (dBm)	AV power (dBm)	Peak power (dBm)	AV power (dBm)
824.2	128	26.4	23.3	25.5	22.4
836.6	190	26.2	23.4	25.2	22.2
848.8	251	26.2	23.1	25.0	22.1
1850.2	512	24.9	22.0	24.5	20.7
1880.0	661	25.0	22.0	24.4	20.9
1909.8	810	25.1	22.2	24.4	20.7

WCDMA Mode;

The following tests were completed according to the test requirements outlined in section 5.2 of the 3GPP TS 34.121 V8.4.0 specification. The EUT supports power Class 3, Which has a norminal maximum output power of 24 dBm (+1.7/-3.7). RMC 12.2kps is used for this testing.

Result:

EUT Mode	Frequency (MHz)	CH	Peak Power (dBm)	RMS Power (dBm)
WCDMA Band II	1852.4	9262	23.56	20.55
	1880.0	9400	23.00	20.74
	1907.6	9538	23.30	20.81

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

EUT Mode	Frequency (MHz)	CH	Peak Power (dBm)	RMS Power (dBm)
WCDMA Band V	826.4	4132	23.10	21.47
	836.6	4180	23.05	21.54
	846.6	4233	23.01	21.63

Release 5 HSDPA mode

The following 4 Sub-Test were completed according to the test requirements outlined in section 5.2A of the 3Gpp TS34.121 V8.4.0 specification. All TX RMS power requirements for power Class 3 were met according to table 5.2AA.5 and 5.2B.5. All UE channels and power ratio are set according to table C10.1.4&C11.1.3 in the 3Gpp34.121 V8.4.0. RMC12.2kps is used for this testing.

HSDPA SUB-TEST Setting:

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs}	CM(dB)
1	2/15	15/15	64	2/15	4/15	0.0
2	12/15	15/15	64	12/15	24/15	1.0
3	15/15	8/15	64	15/8	30/15	1.5
4	15/15	4/15	64	15/4	30/15	1.5

Note: the recommended HSDPA MPRs are implemented as per following sub-test.

Result:

Mode	Sub-test	RMS Power(dBm) Channel			Power Class 3 Limitation (dBm)	Comments
		9262	9400	9538		
HSDPA Band II	1	21.00	21.08	21.15	20.3dBm-25.7dBm	Pass
	2	20.84	20.85	20.93	20.3dBm-25.7dBm	Pass
	3	20.28	20.46	20.55	19.3dBm-25.7dBm	Pass
	4	19.30	19.50	19.60	18.3dBm-25.7dBm	Pass

Mode	Sub-test	RMS Power(dBm) Channel			Power Class 3 Limitation (dBm)	Comments
		4132	4180	4233		
HSDPA Band V	1	21.68	21.80	21.92	20.3dBm-25.7dBm	Pass
	2	21.55	21.70	21.88	20.3dBm-25.7dBm	Pass
	3	20.57	20.71	20.83	19.3dBm-25.7dBm	Pass
	4	19.60	19.79	19.84	18.3dBm-25.7dBm	Pass

6.3 Occupied Bandwidth

Test Requirement: Part 2.1049

Test Date: Jun 8, 2009

Test Status: Test lowest, middle, highest channel.

Test Procedure:

The EUT output RF connector was connected with a short a cable to the spectrum analyzer, RBW was set to about 1% of emission BW, VBW>=3 times RBW, 99% bandwidth and -26 dBc bandwidth were measured, the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace.

Test result:

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)	-26 dBc Bandwidth (MHz)
GSM 850	824.2	128	0.24358	0.26282
	836.6	190	0.24358	0.26442
	848.8	251	0.24038	0.26282

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)	-26 dBc Bandwidth (MHz)
EDGE 850	824.2	128	0.24278	0.26442
	836.6	190	0.24519	0.26442
	848.8	251	0.24278	0.26442

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)	-26 dBc Bandwidth (MHz)
PCS 1900	1850.2	512	0.24519	0.26442
	1880.0	661	0.24759	0.26282
	1909.8	810	0.24519	0.26442

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)	-26 dBc Bandwidth (MHz)
EDGE 1900	1850.2	512	0.24519	0.26282
	1880.0	661	0.24519	0.26282
	1909.8	810	0.24519	0.26442

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)	-26 dBc Bandwidth (MHz)
WCDMA II	1852.4	9262	4.1826	4.2884
	1880.0	9400	4.1826	4.2884
	1907.6	9538	4.2019	4.2980

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)	-26 dBc Bandwidth (MHz)
WCDMA V	826.4	4132	4.1730	4.2980
	836.6	4180	4.1826	4.2884
	846.6	4233	4.1730	4.2884

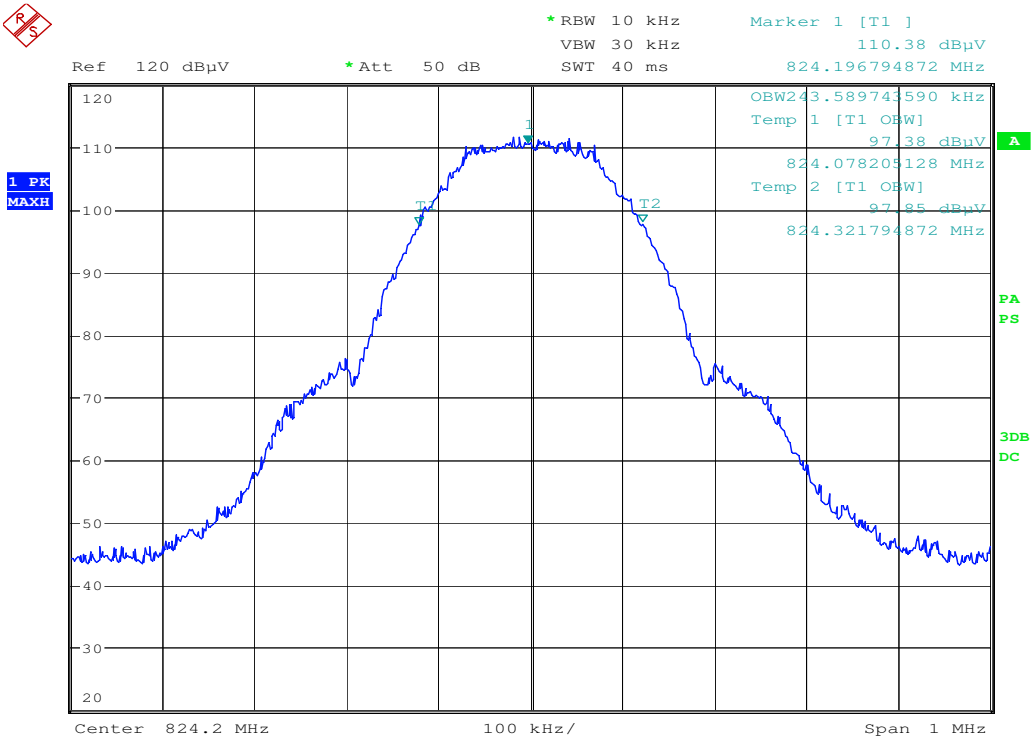
EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)	-26 dBc Bandwidth (MHz)
HSDPA II	1852.4	9262	4.1826	4.2980
	1880.0	9400	4.1826	4.2884
	1907.6	9538	4.1923	4.2980

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)	-26 dBc Bandwidth (MHz)
HSDPA V	826.4	4132	4.1730	4.2980
	836.6	4180	4.1730	4.2980
	846.6	4233	4.1634	4.2980

99% Bandwidth

Graph:

GSM Channel Low



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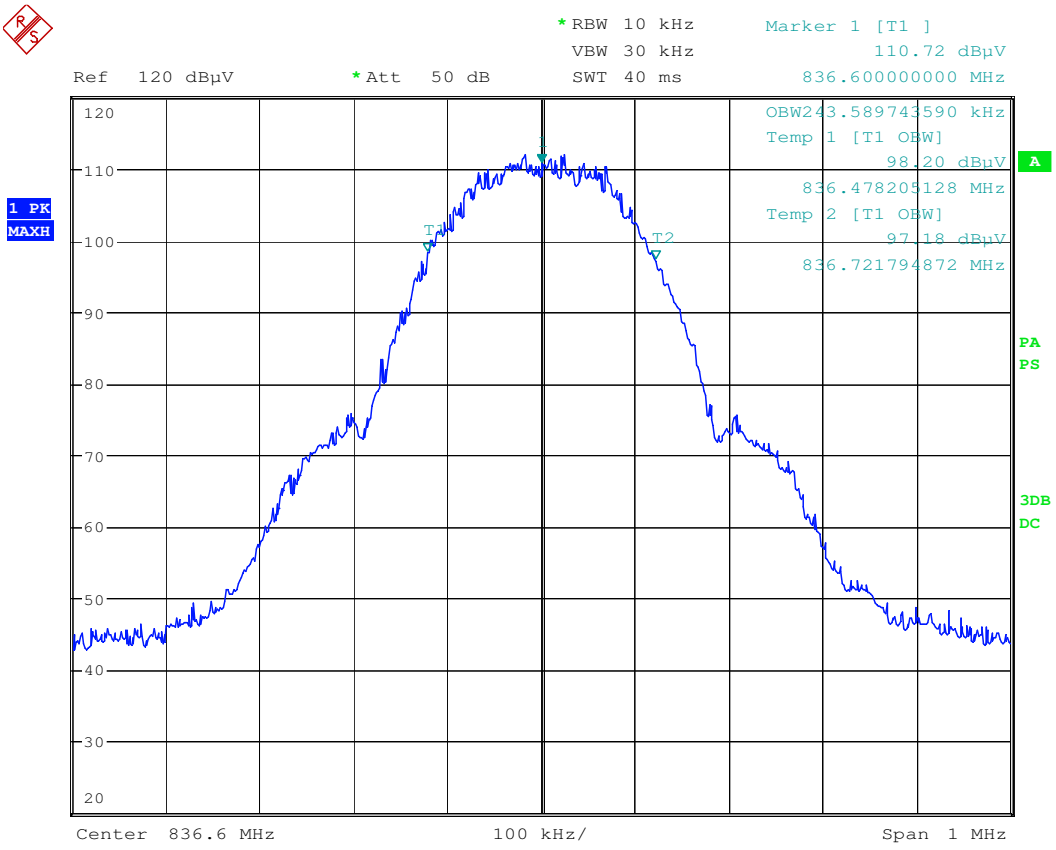
99% Bandwidth

GSM Channel Mid



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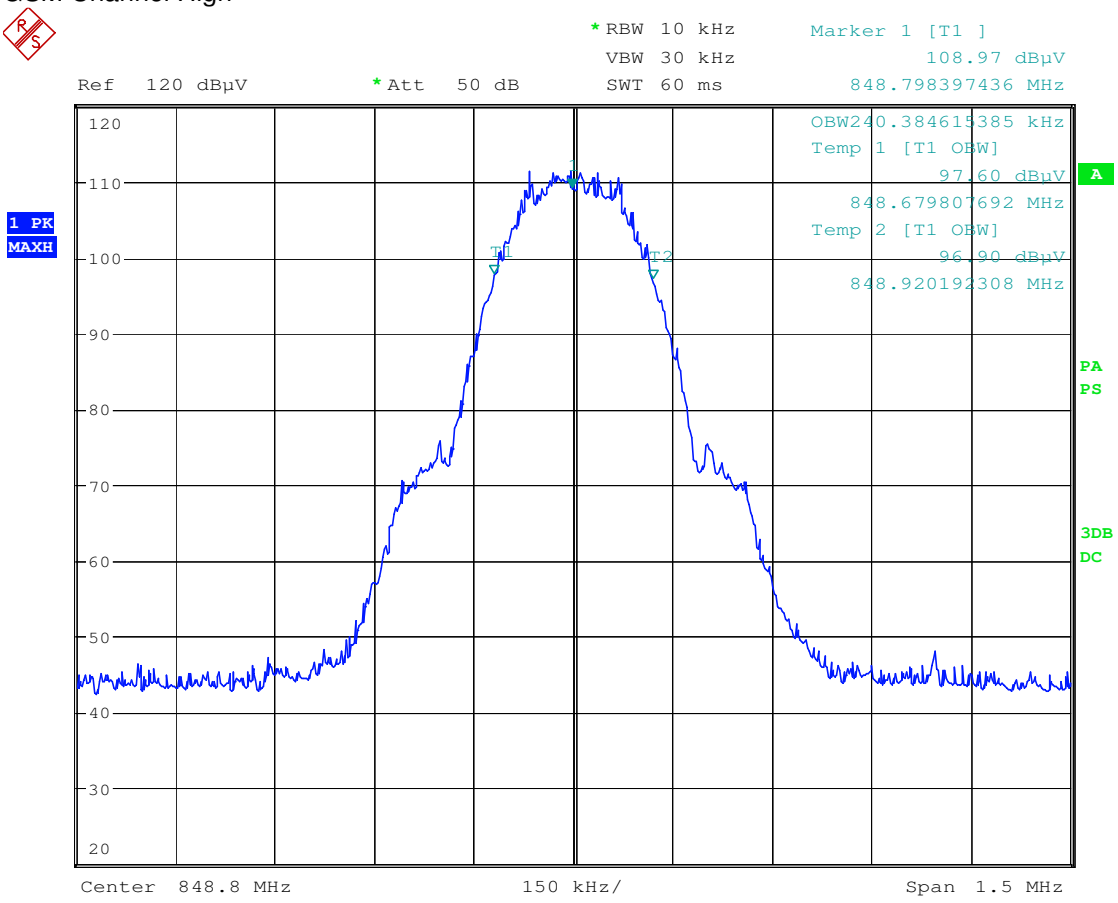
99% Bandwidth

GSM Channel High



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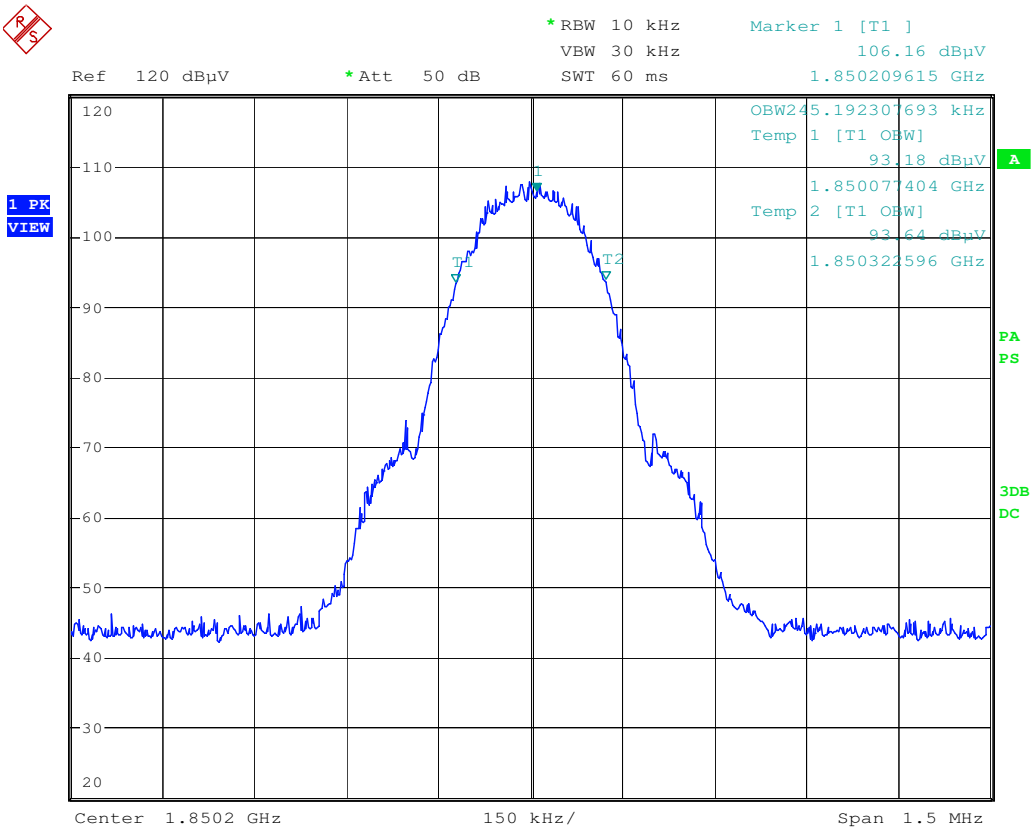
99% Bandwidth

PCS Channel Low



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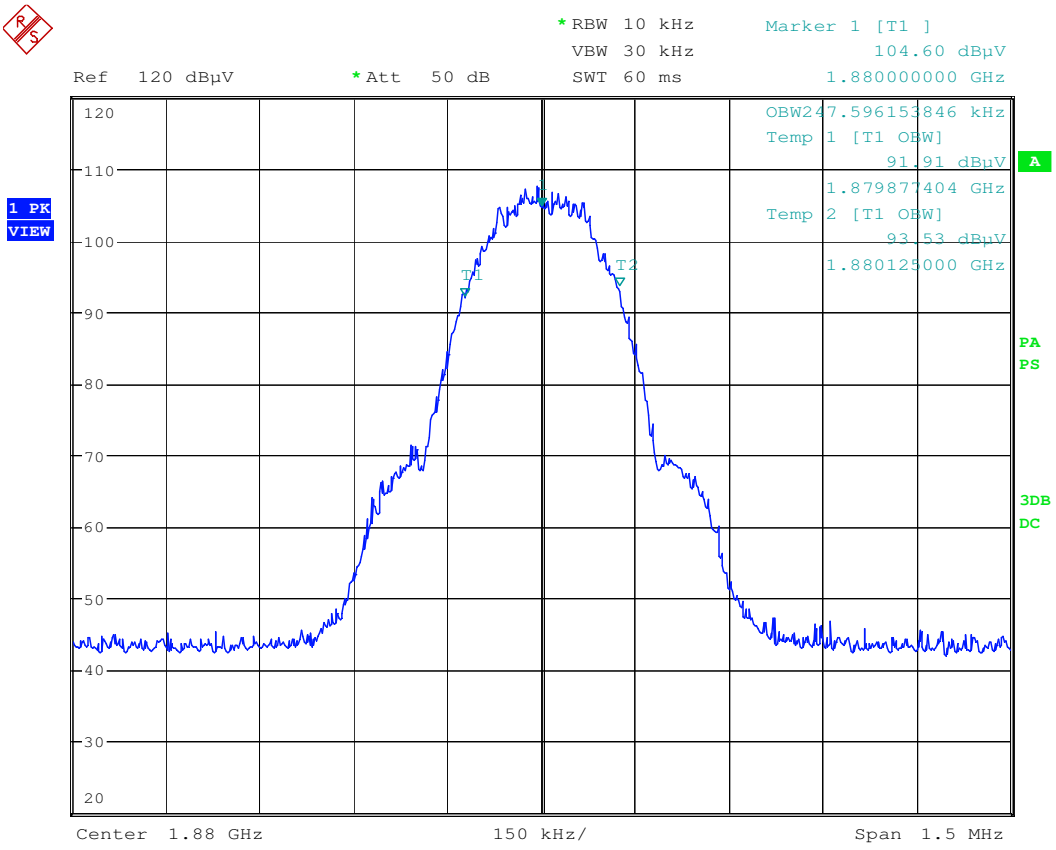
99% Bandwidth

PCS Channel Mid



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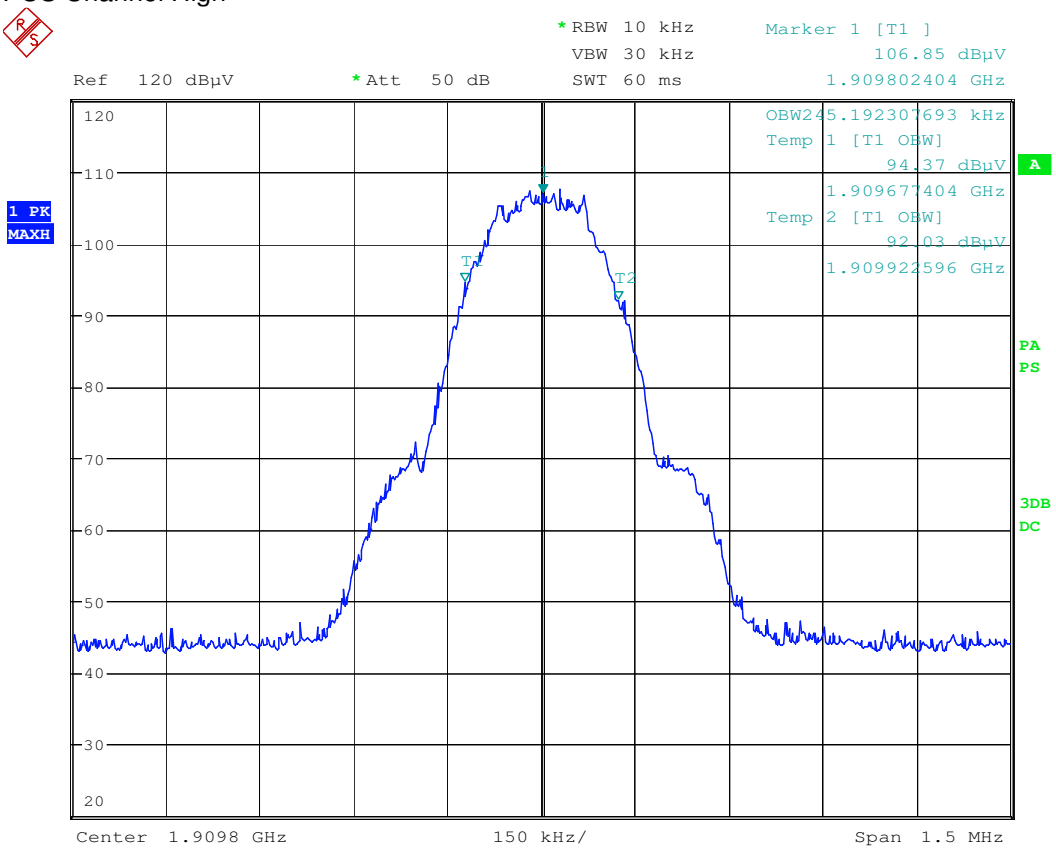
99% Bandwidth

PCS Channel High



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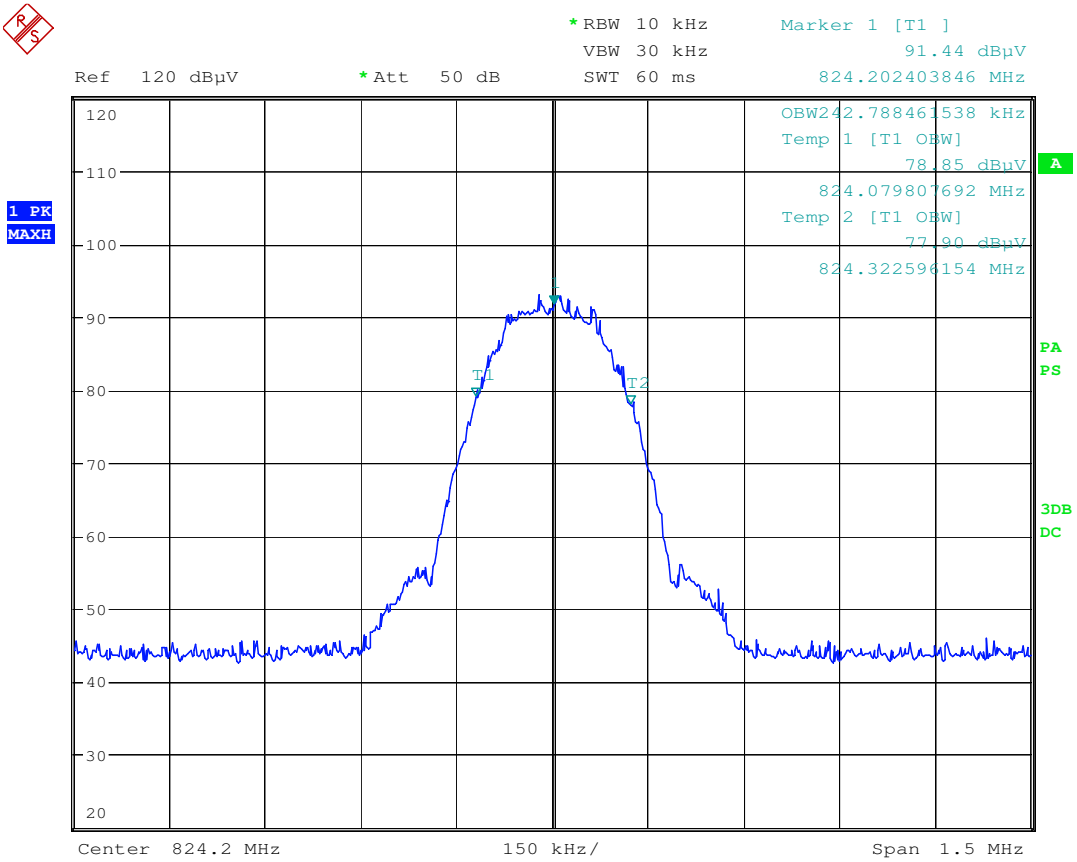
99% Bandwidth

EDGE 850 Channel Low



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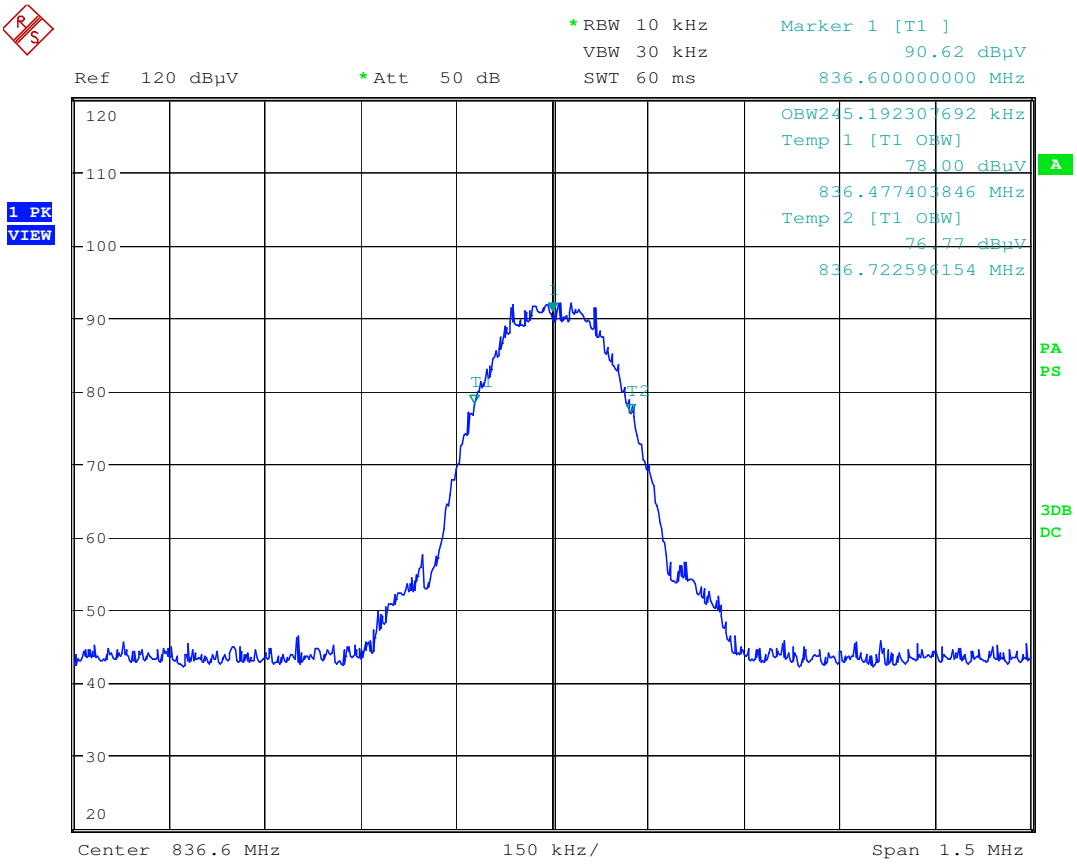
99% Bandwidth

EDGE 850 Channel Mid



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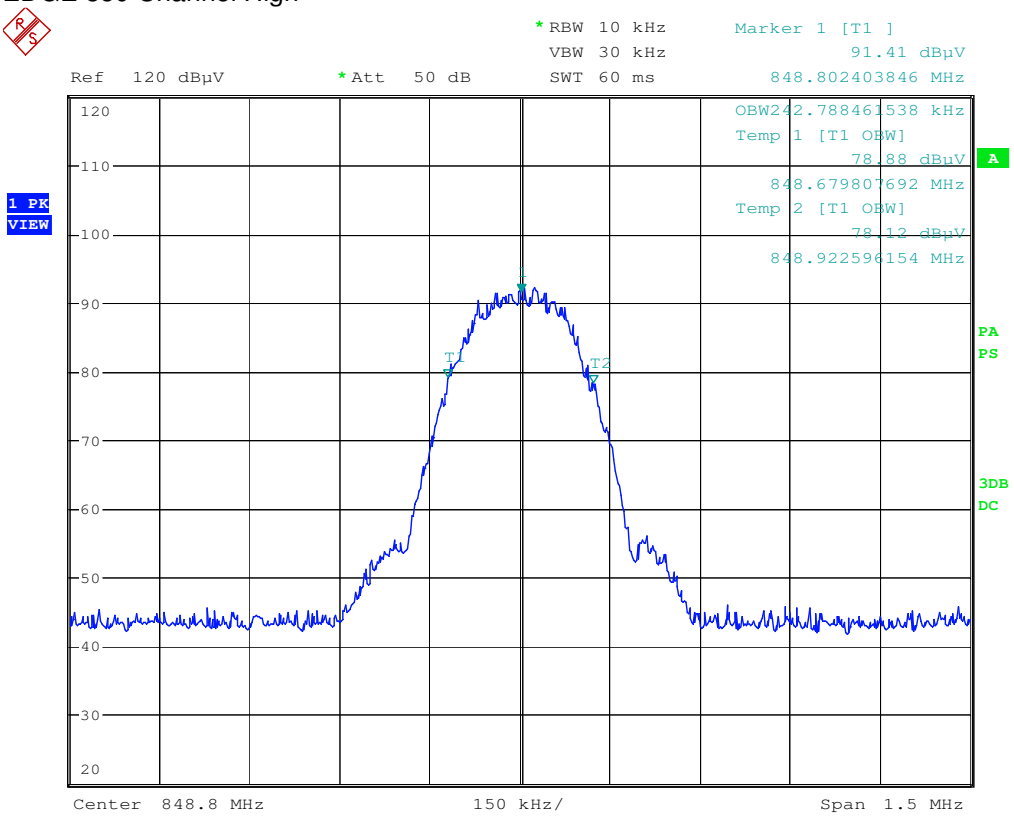
99% Bandwidth

EDGE 850 Channel High



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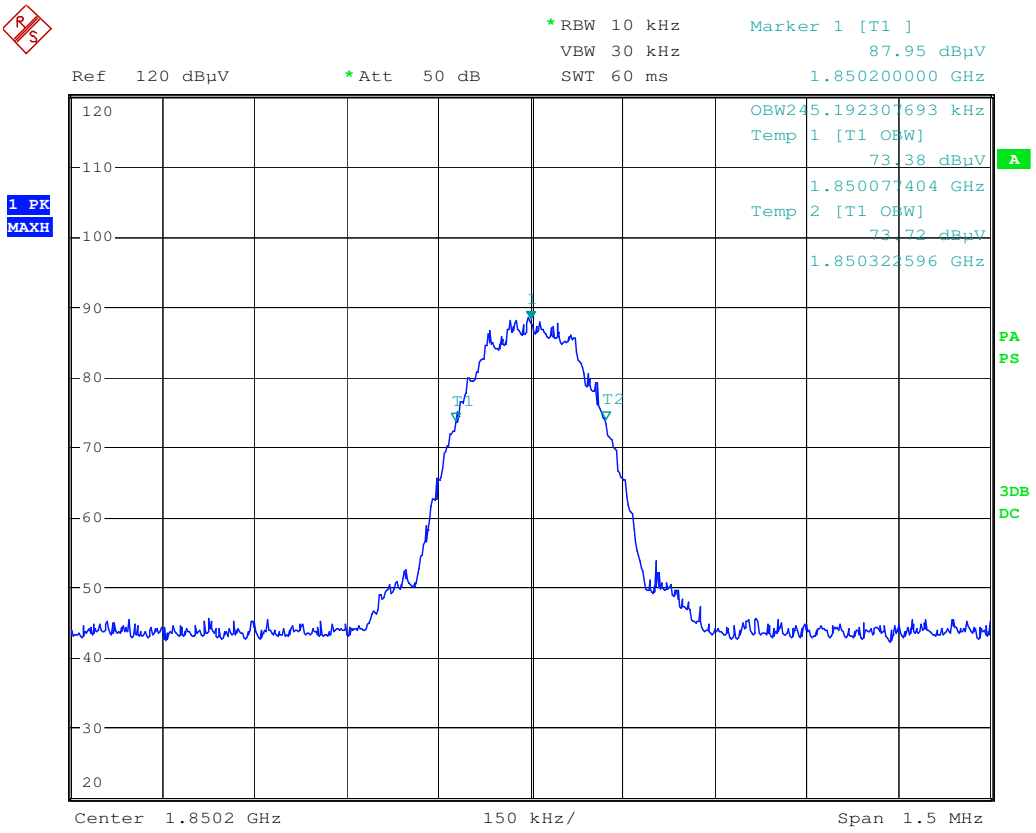
99% Bandwidth

EDGE 1900 Channel Low



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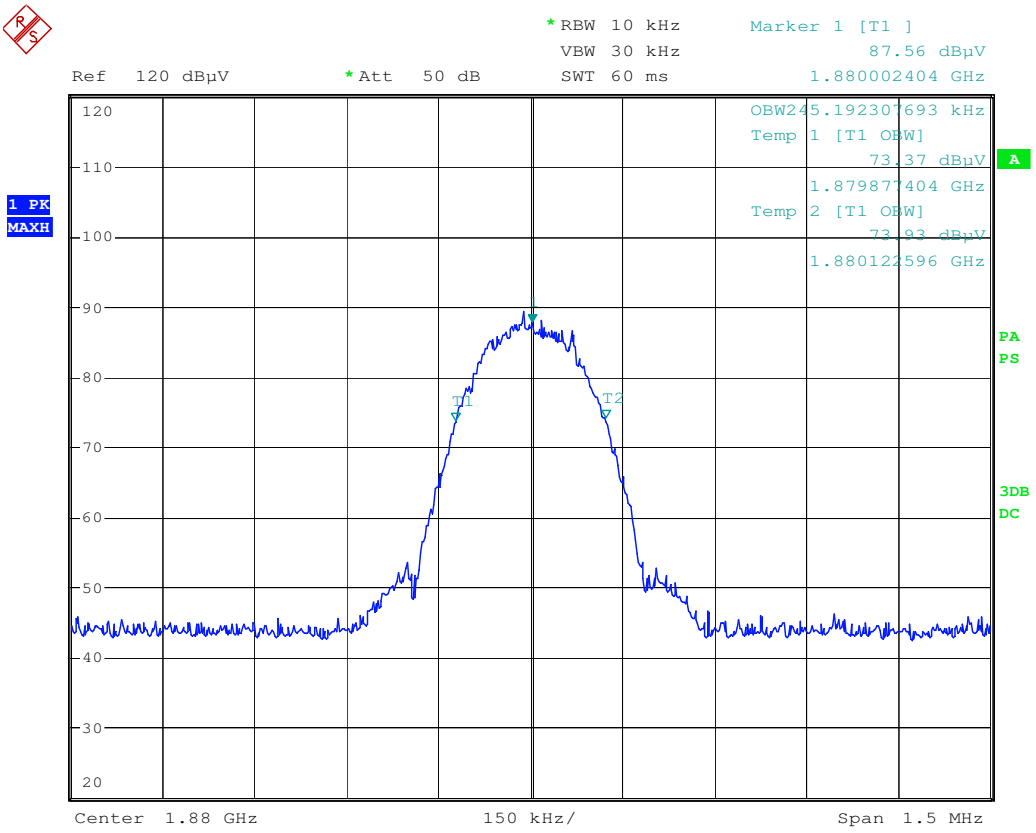
99% Bandwidth

EDGE 1900 Channel Mid



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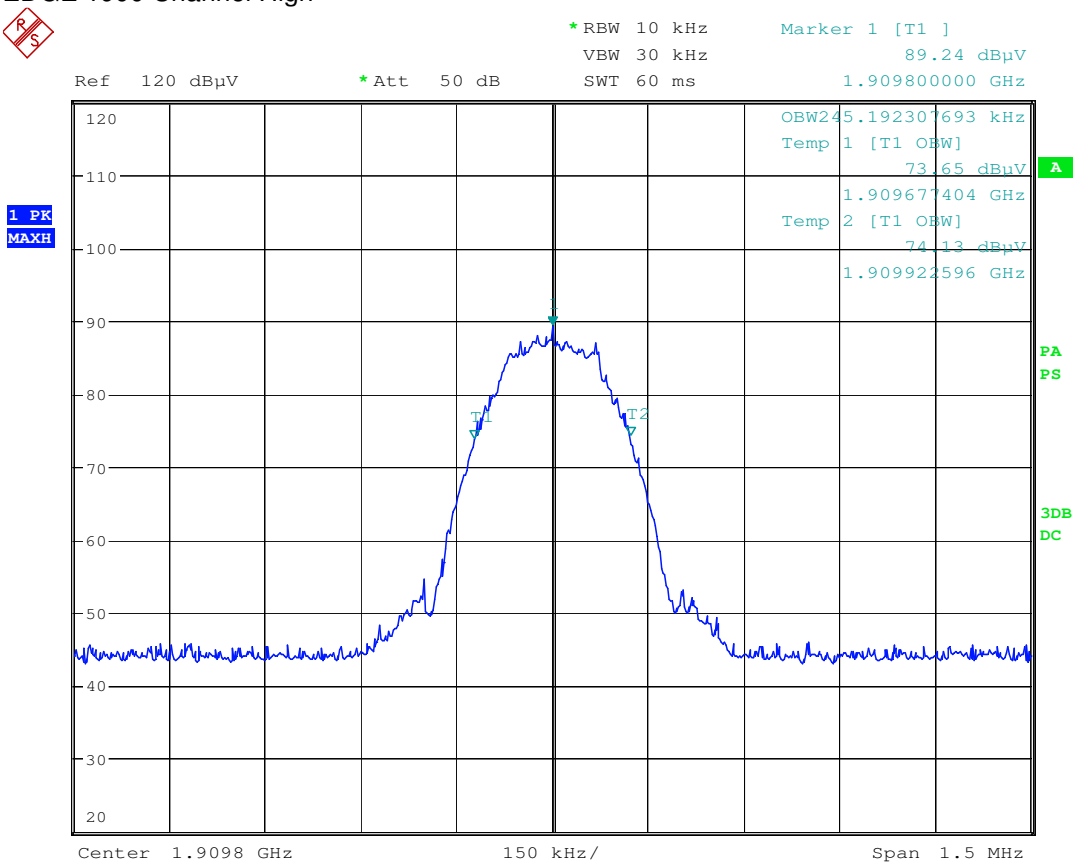
99% Bandwidth

EDGE 1900 Channel High



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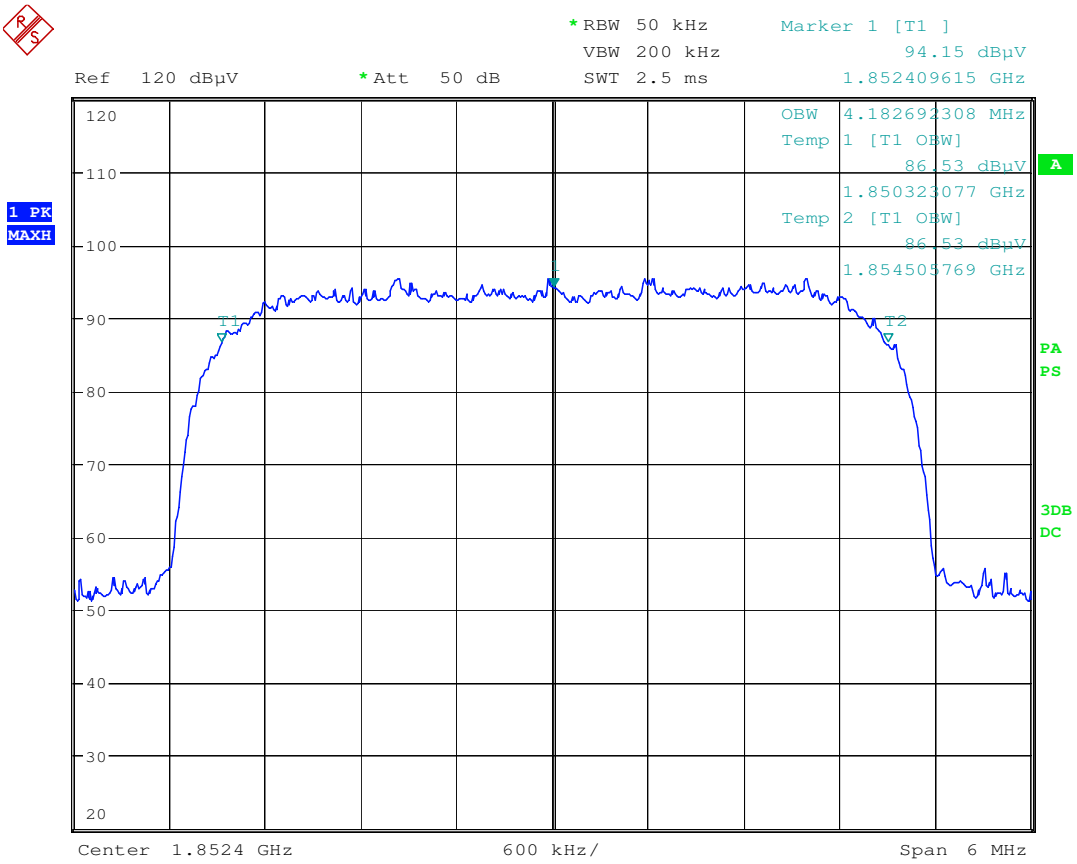
99% Bandwidth

WCDMA II Channel Low



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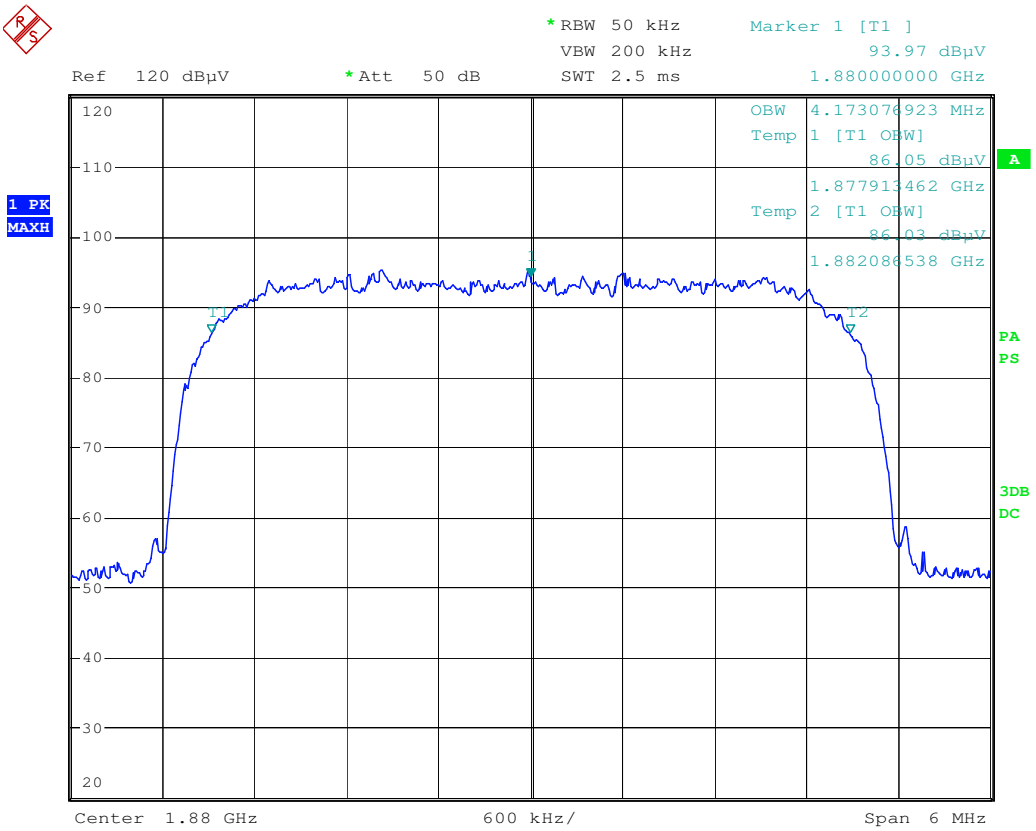
99% Bandwidth

WCDMA II Channel Mid



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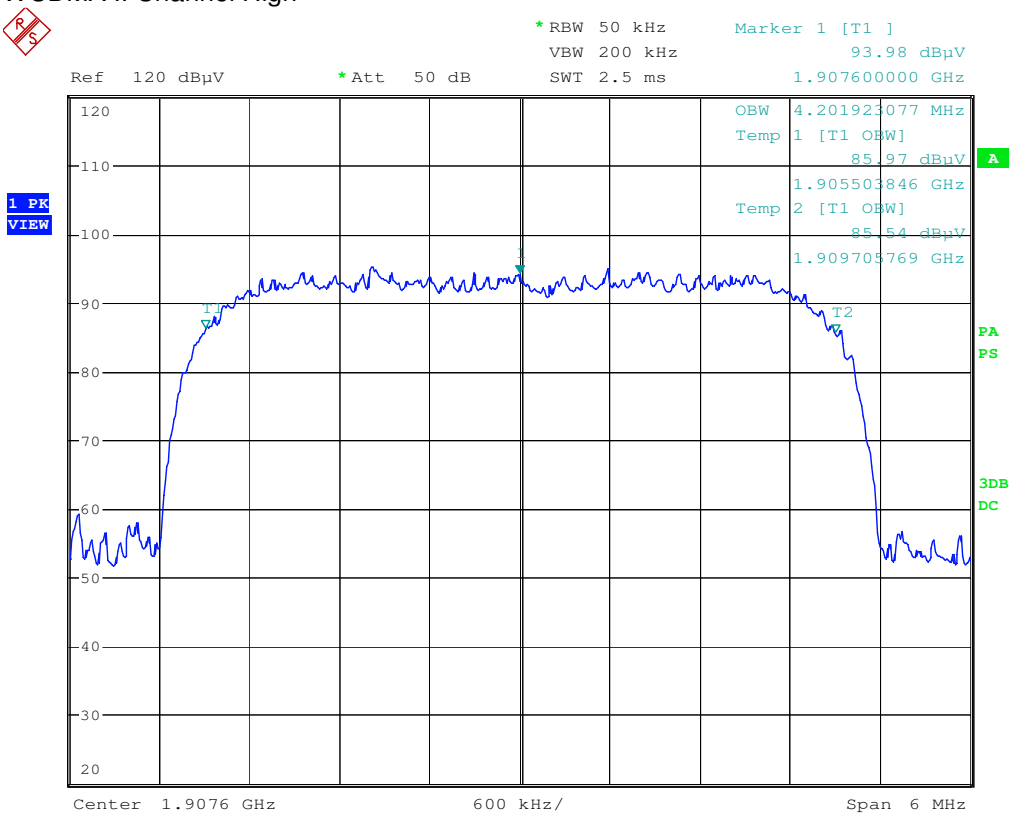
99% Bandwidth

WCDMA II Channel High



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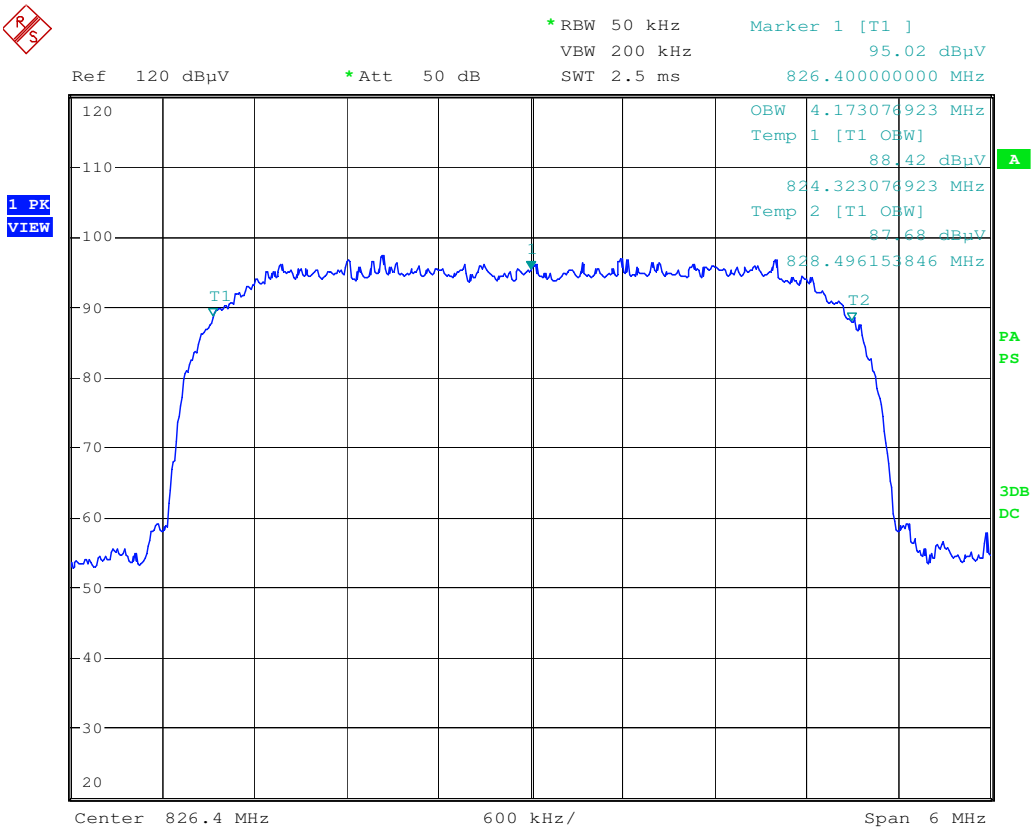
99% Bandwidth

WCDMA V Channel Low



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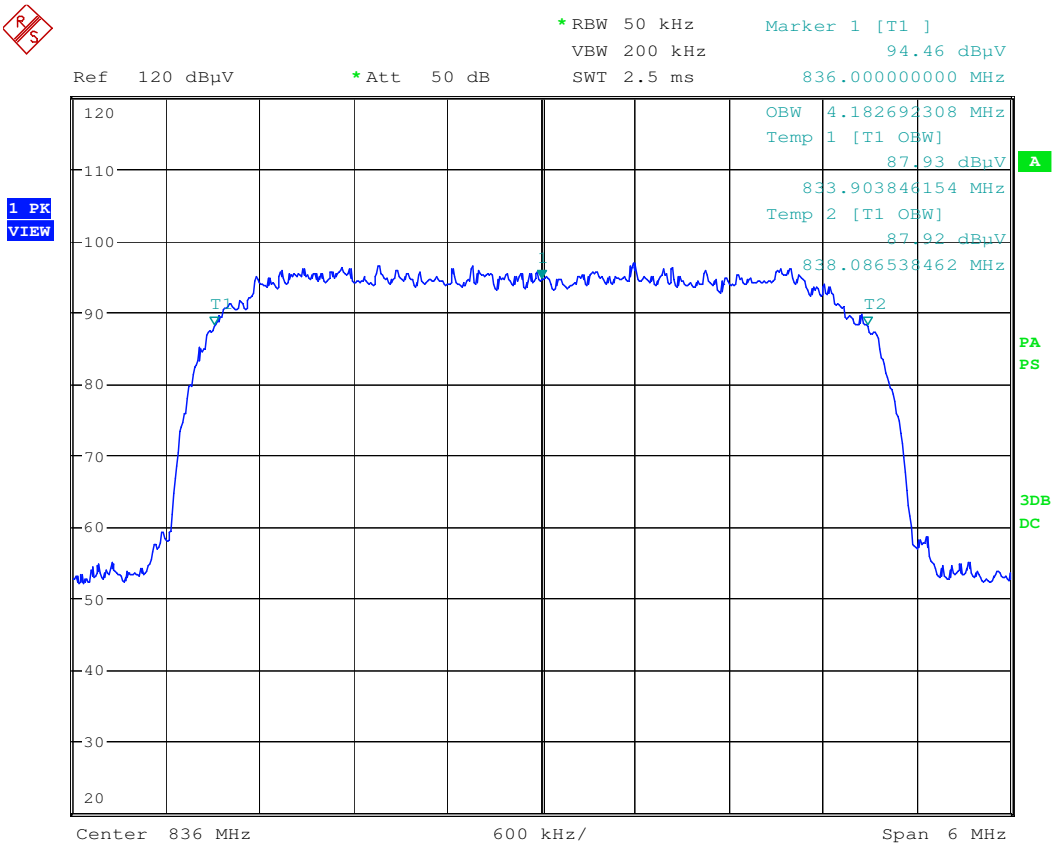
99% Bandwidth

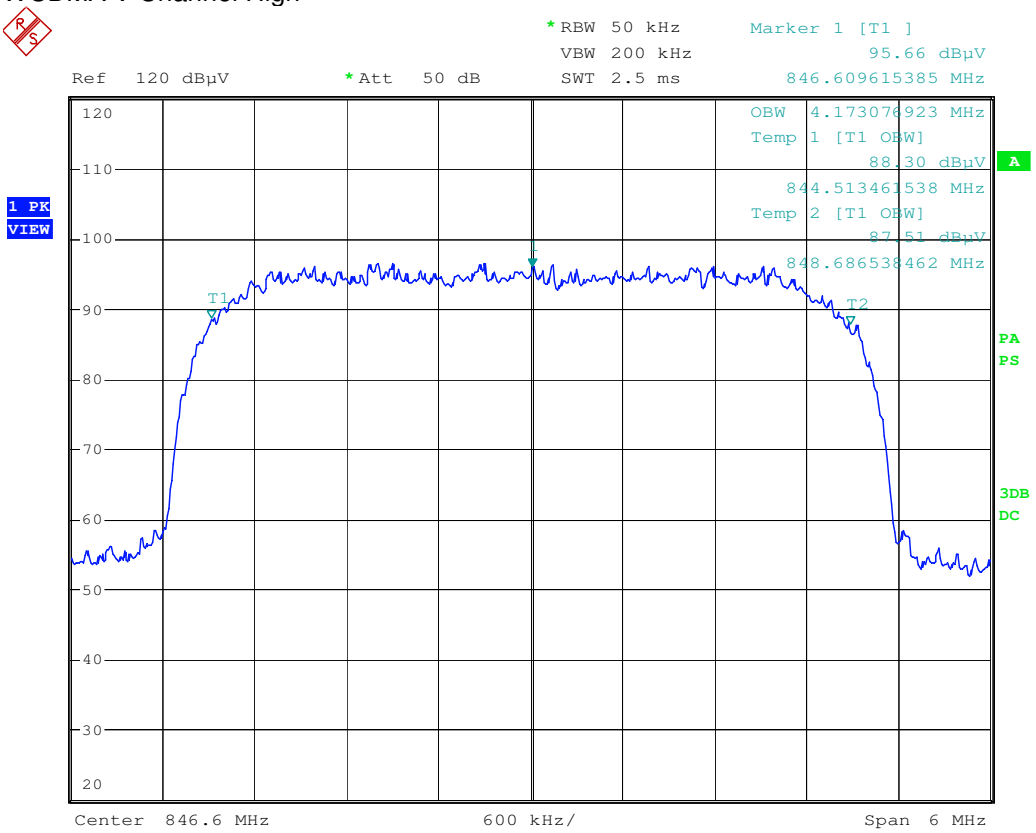
WCDMA V Channel Mid



Date: 8.JUN.2009 08:19:05

99% Bandwidth

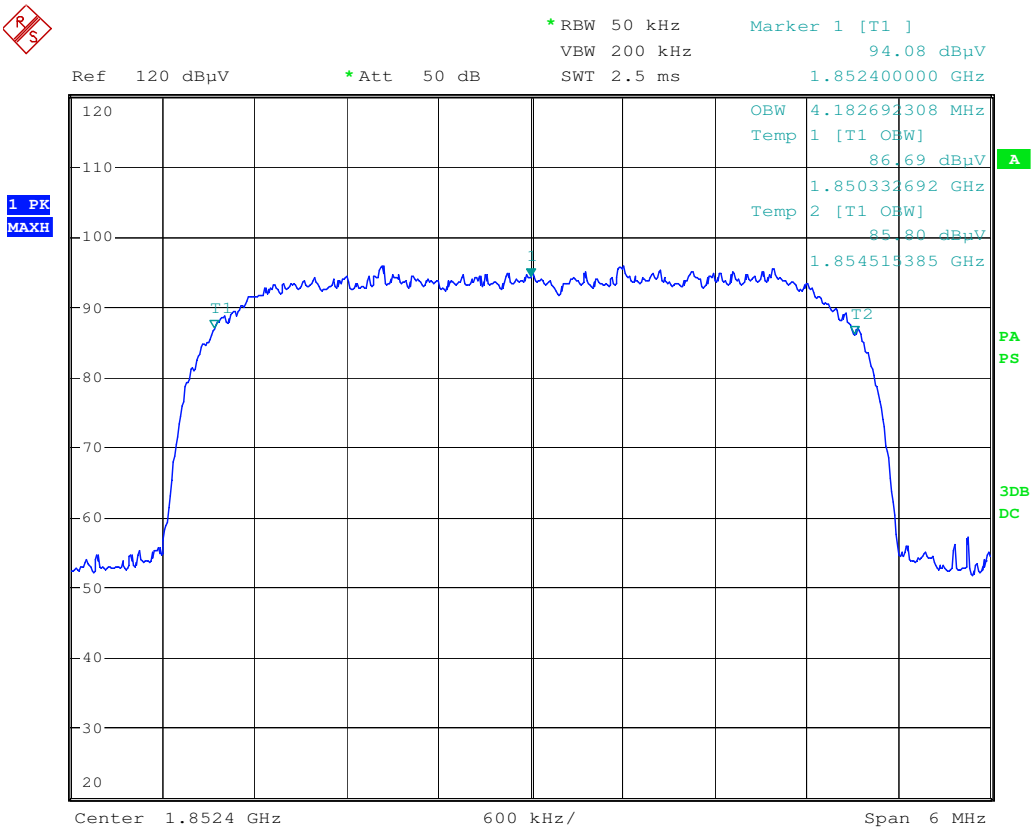
WCDMA V Channel High



Date: 8.JUN.2009 08:19:57

99% Bandwidth

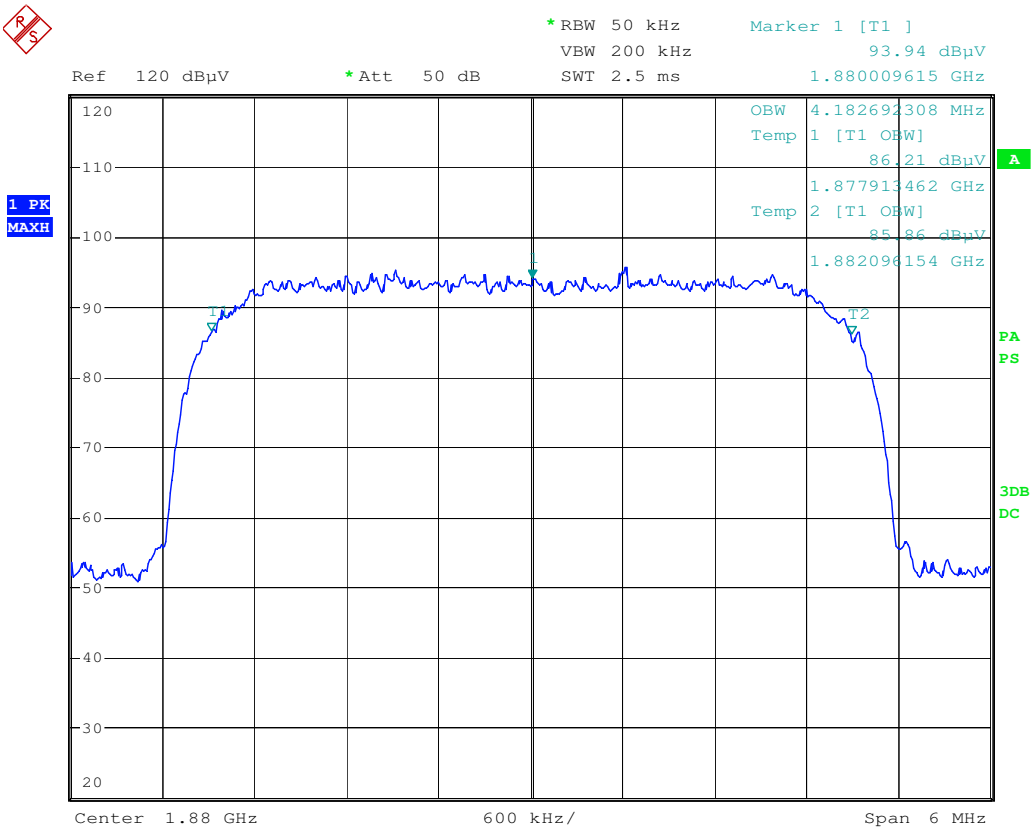
HSDPA II Channel Low



Date: 8.JUN.2009 08:15:14

99% Bandwidth

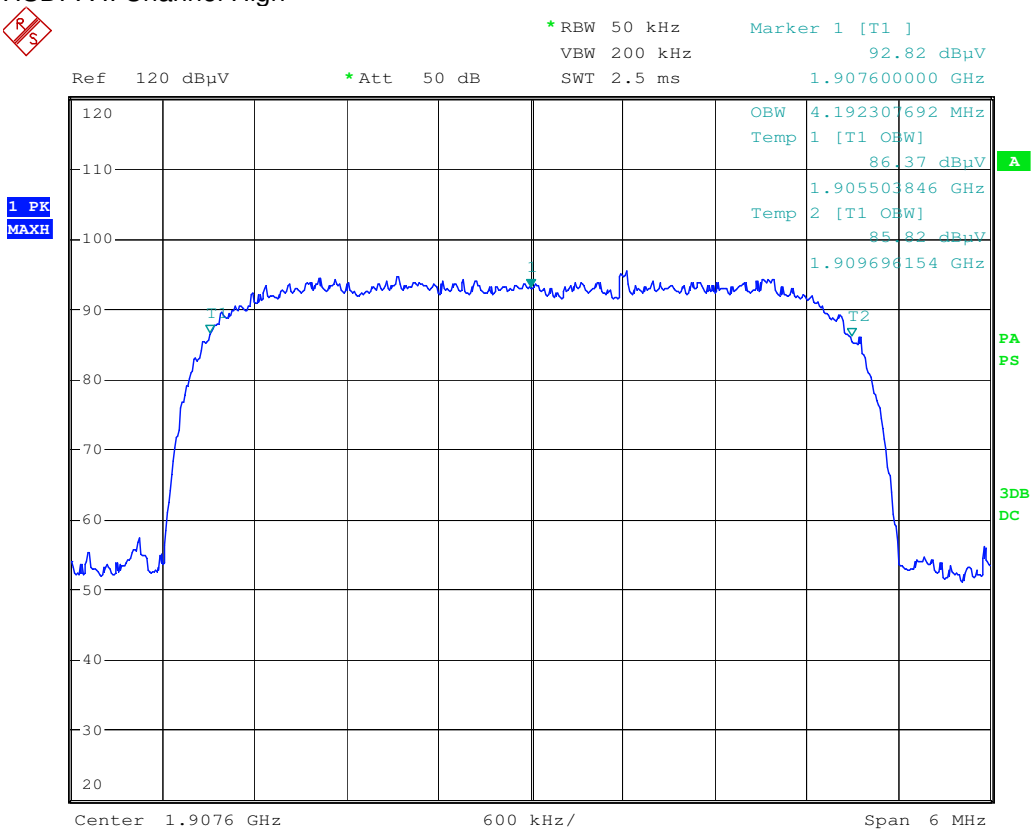
HSDPA II Channel Mid



Date: 8.JUN.2009 08:16:11

99% Bandwidth

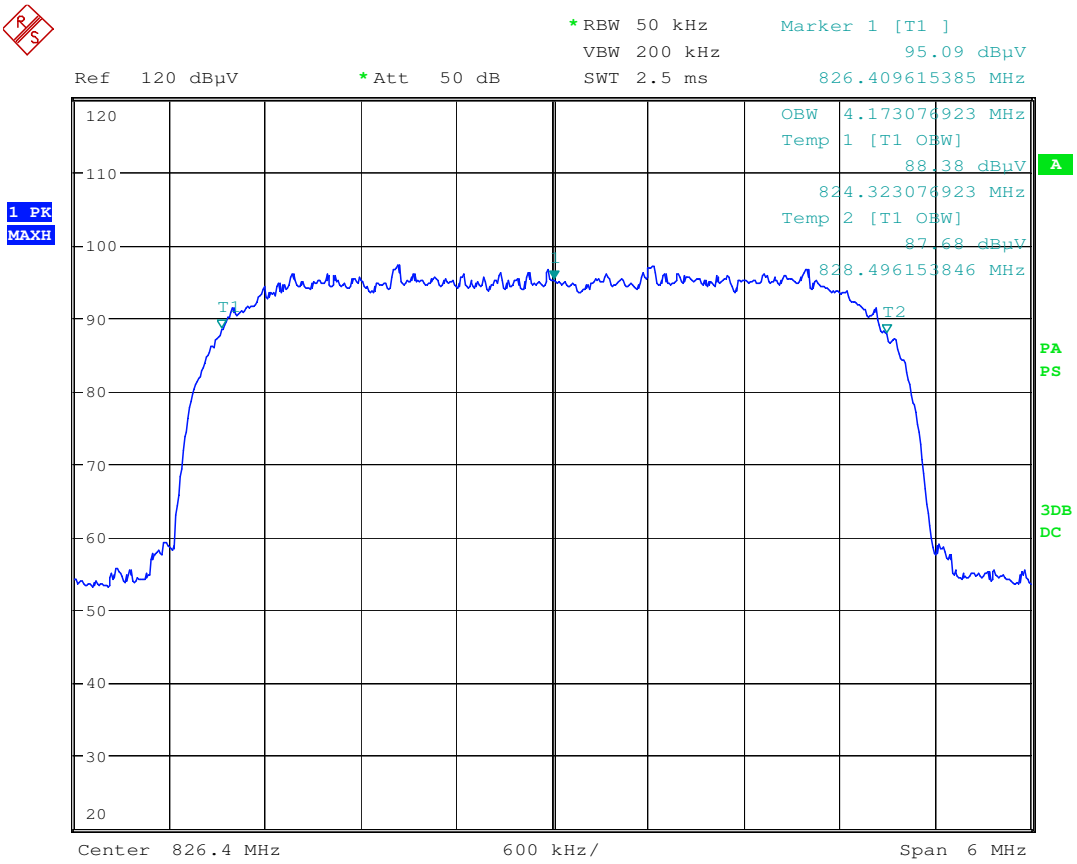
HSDPA II Channel High



Date: 8.JUN.2009 08:14:10

99% Bandwidth

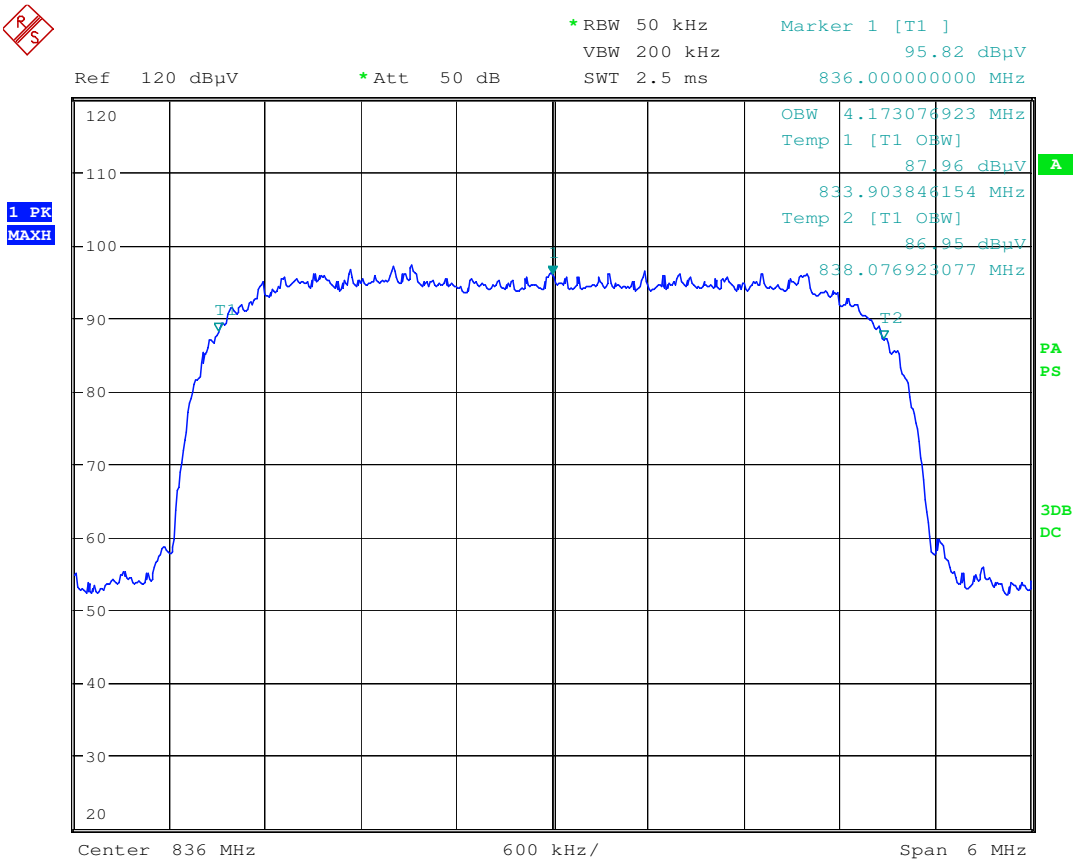
HSDPA V Channel Low



Date: 8.JUN.2009 08:22:30

99% Bandwidth

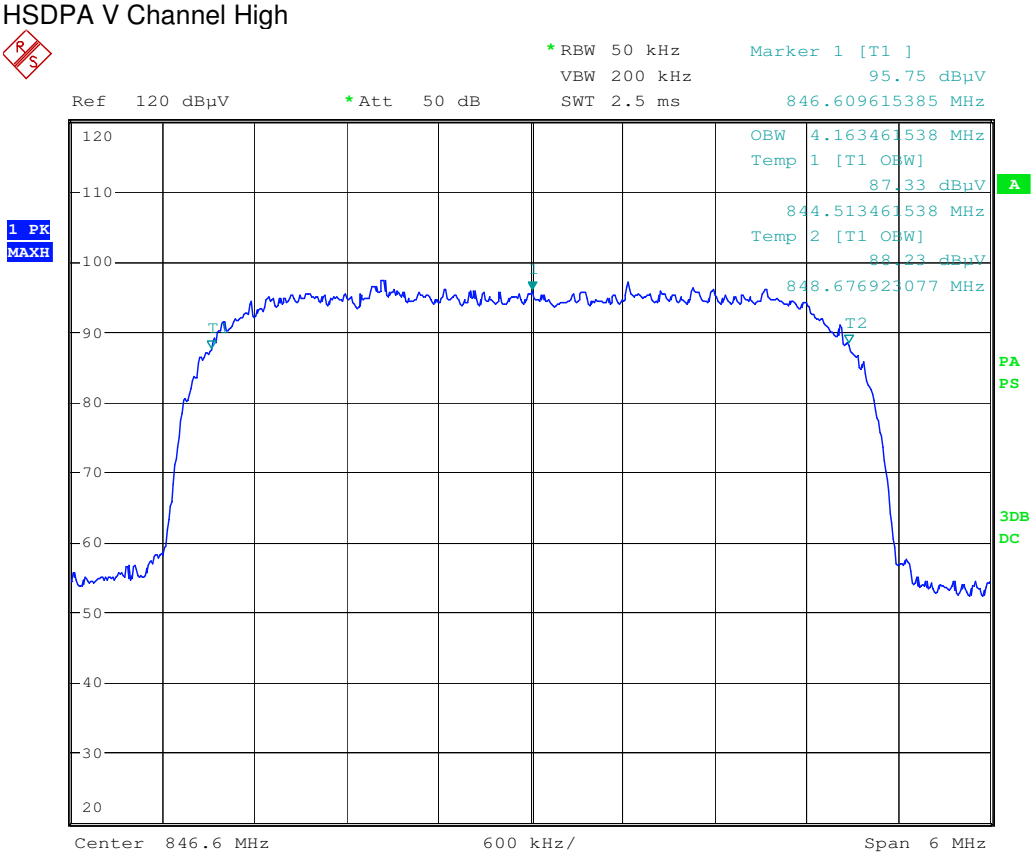
HSDPA V Channel Mid



Date: 8.JUN.2009 08:21:38

99% Bandwidth

HSDPA V Channel High

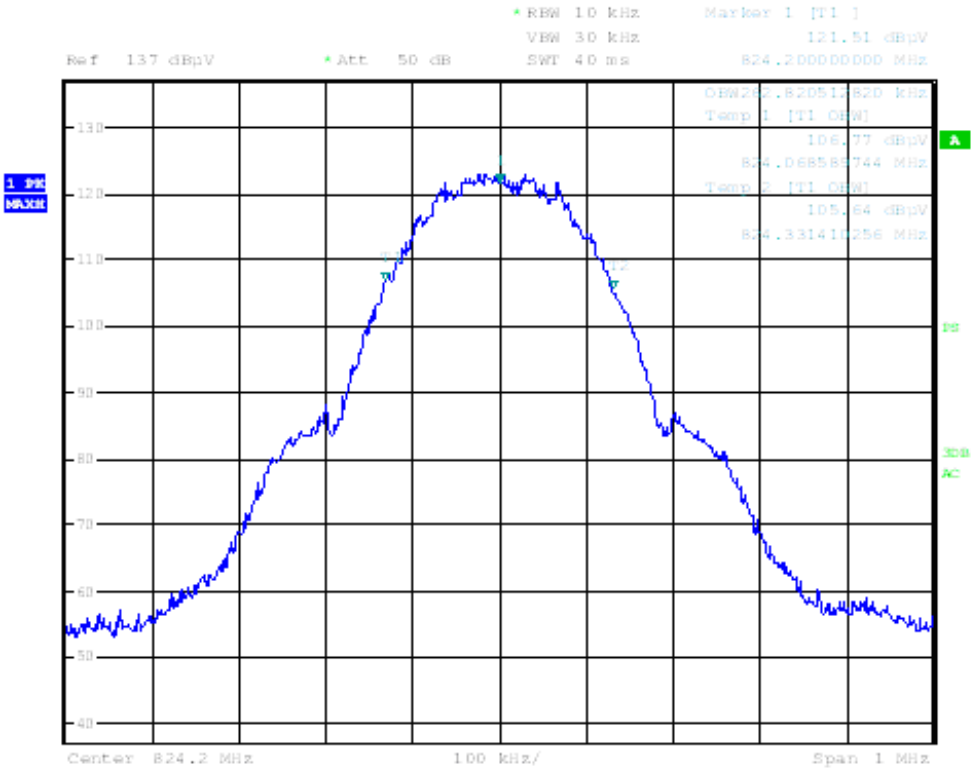


Date: 8.JUN.2009 08:20:40

-26 dBc Bandwidth

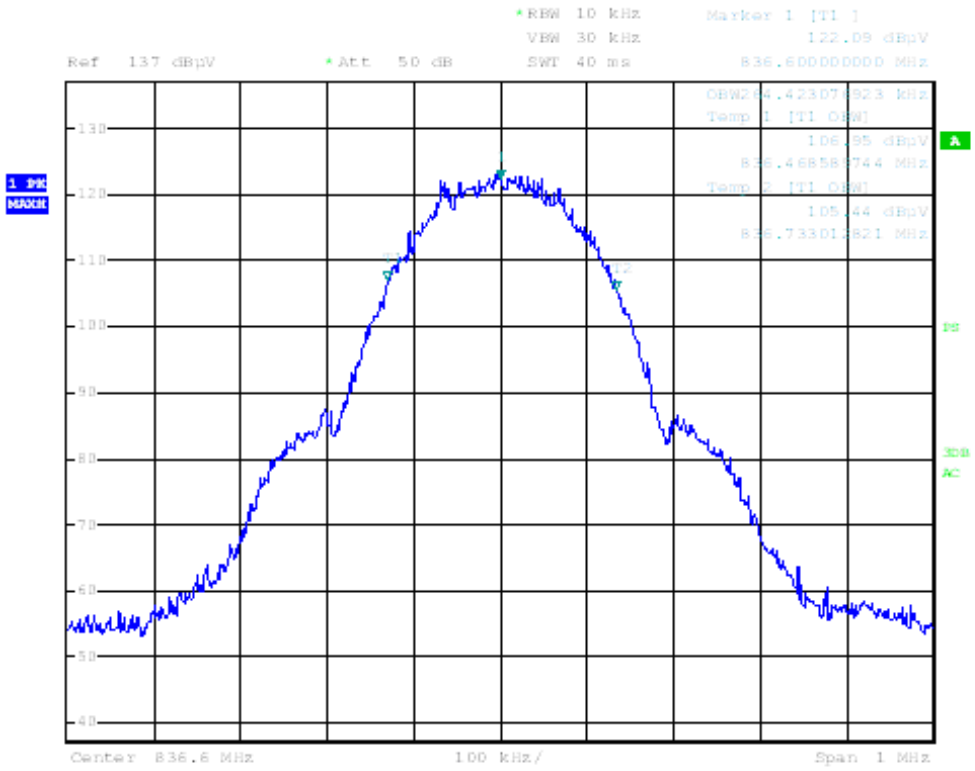
Graph:

GSM Channel Low



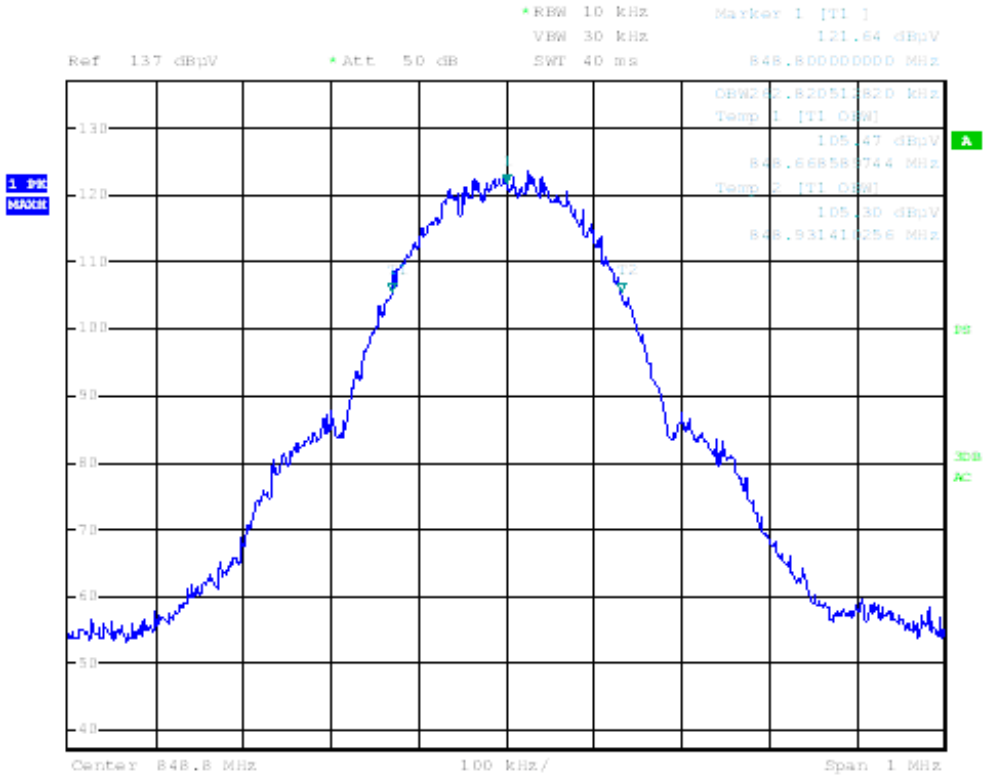
- 26 dBc Bandwidth

GSM Channel Mid



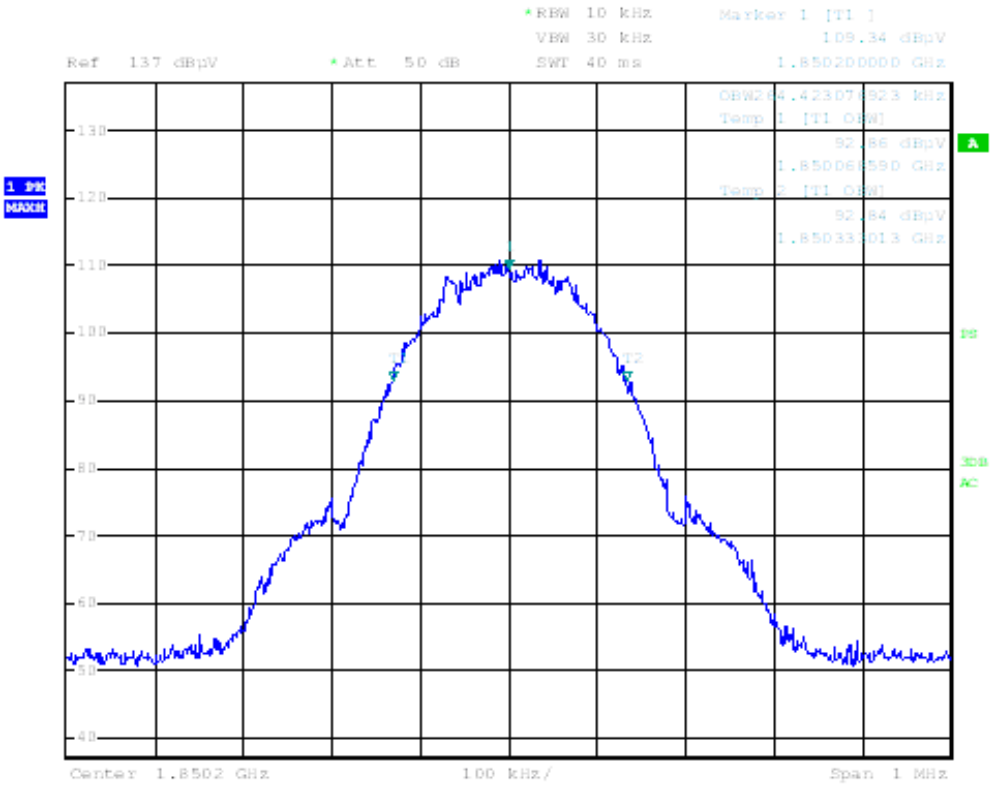
-26 dBc Bandwidth

GSM Channel High



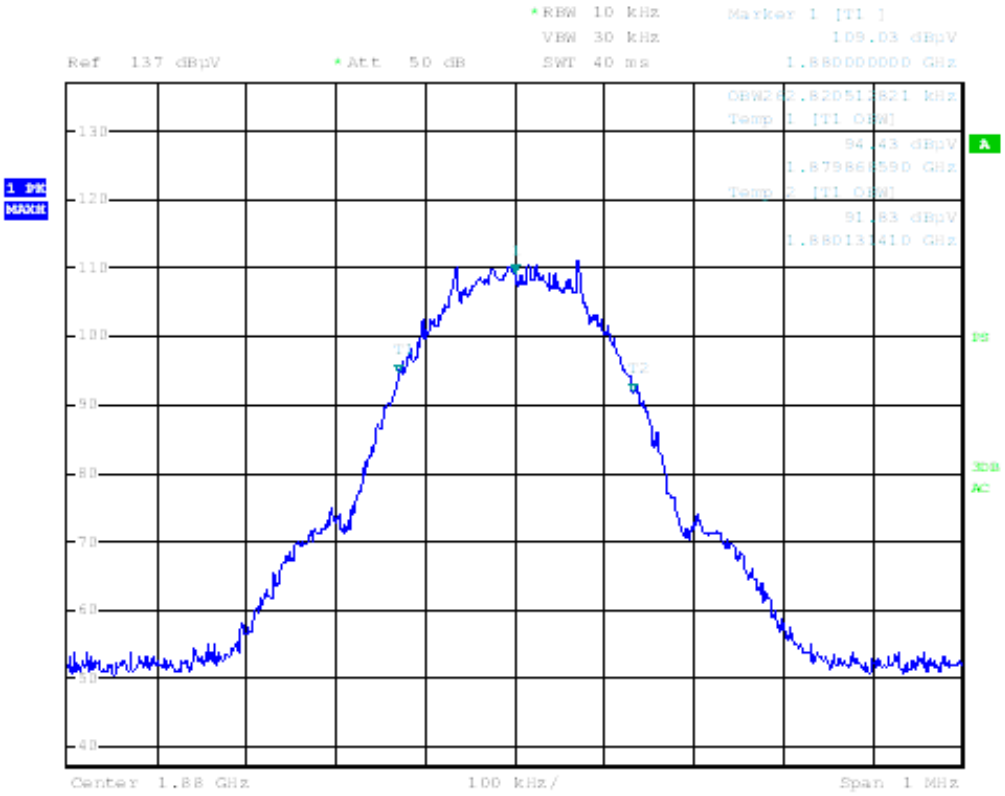
-26 dBc Bandwidth

PCS Channel Low



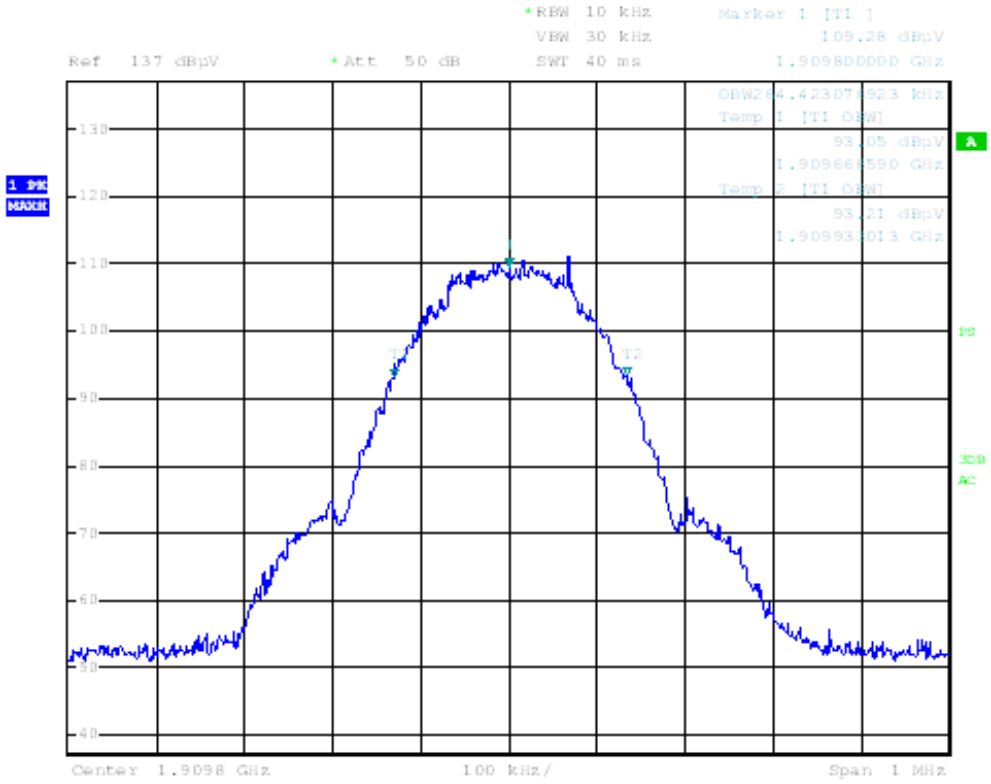
-26 dBc Bandwidth

PCS Channel Mid



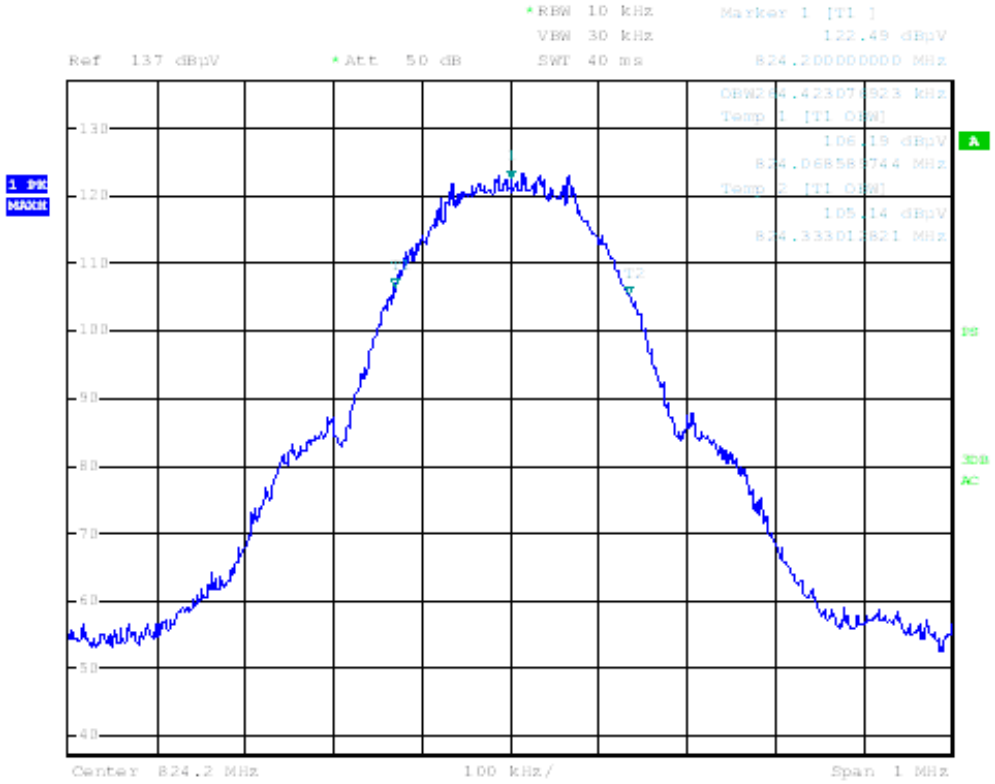
-26 dBc Bandwidth

PCS Channel High



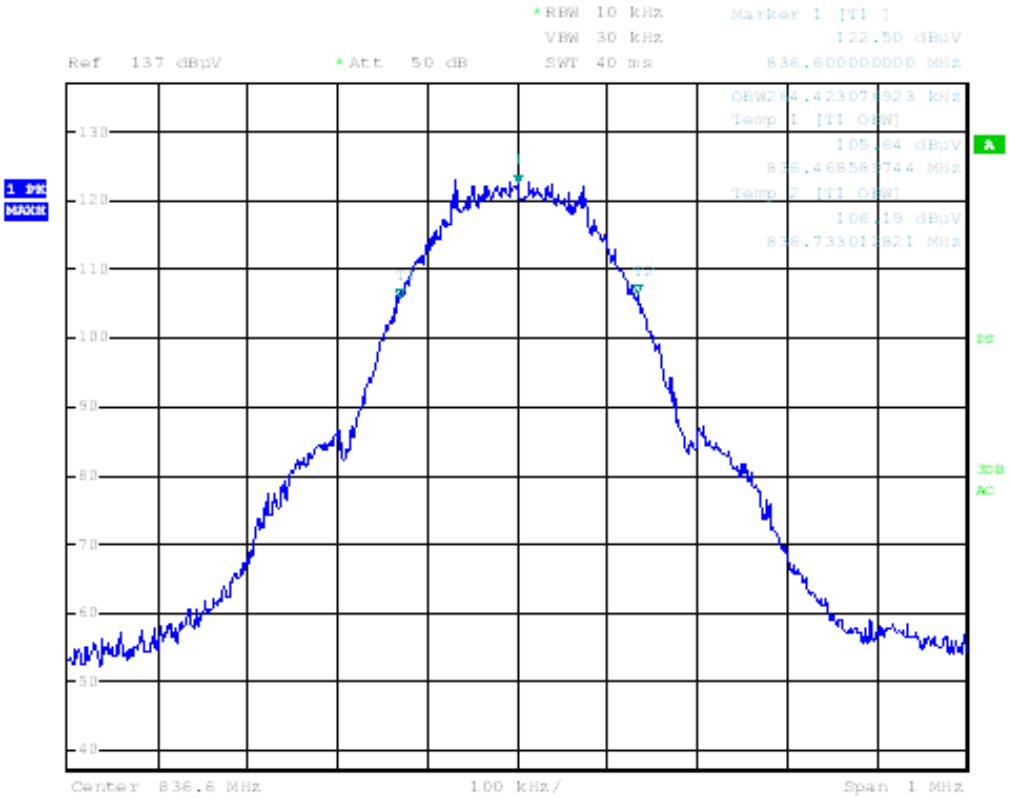
- 26 dBc Bandwidth

EDGE 850 Channel Low



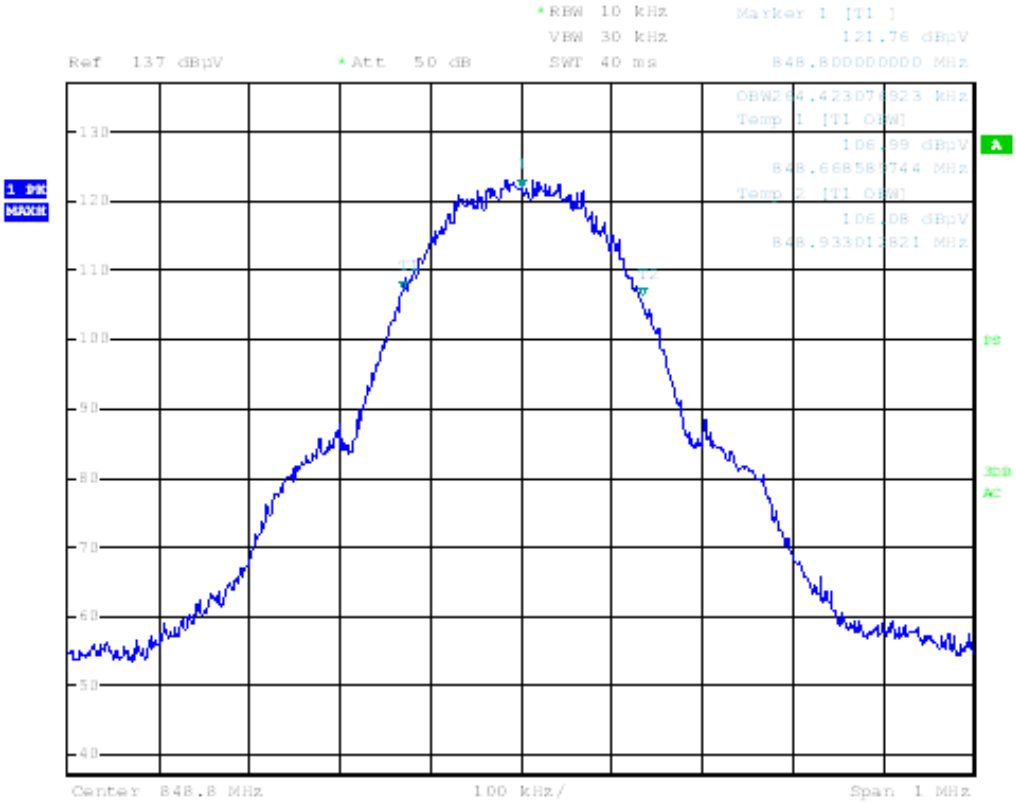
-26 dBc Bandwidth

EDGE 850 Channel Mid



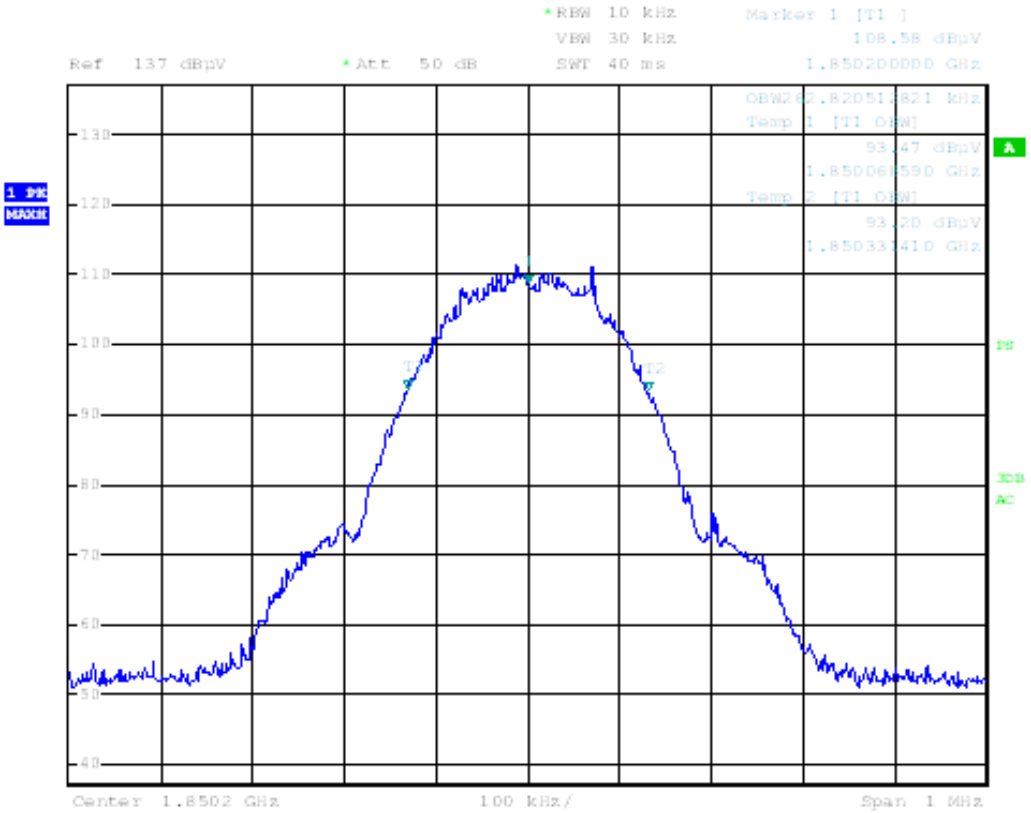
- 26 dBc Bandwidth

EDGE 850 Channel High



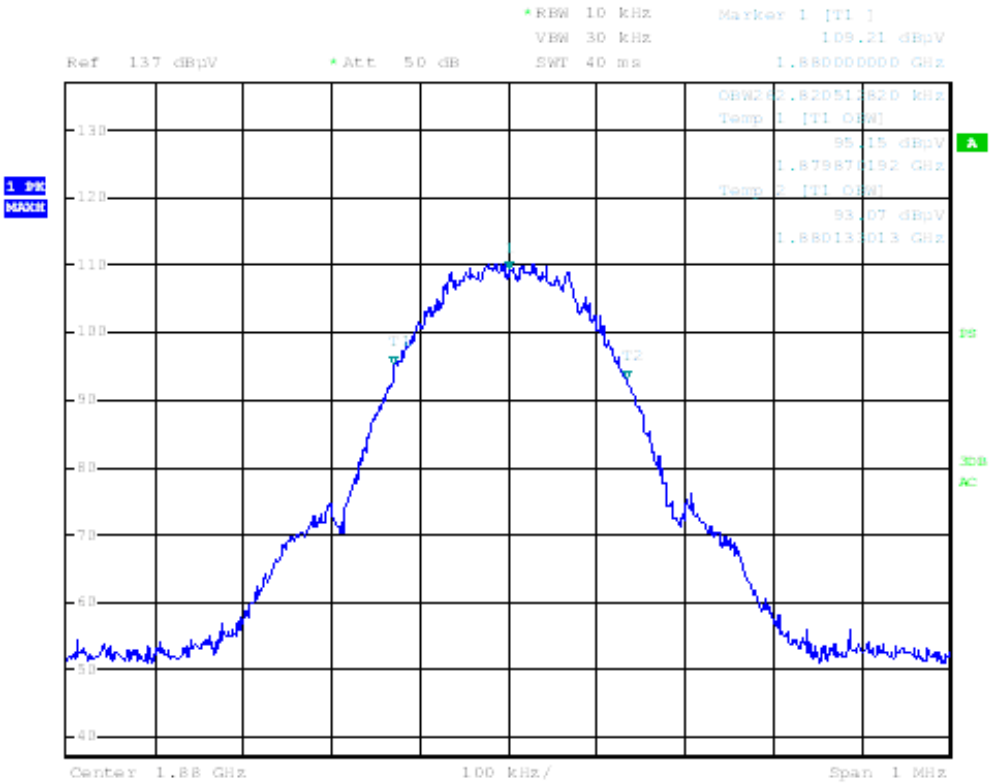
- 26 dBc Bandwidth

EDGE 1900 Channel Low



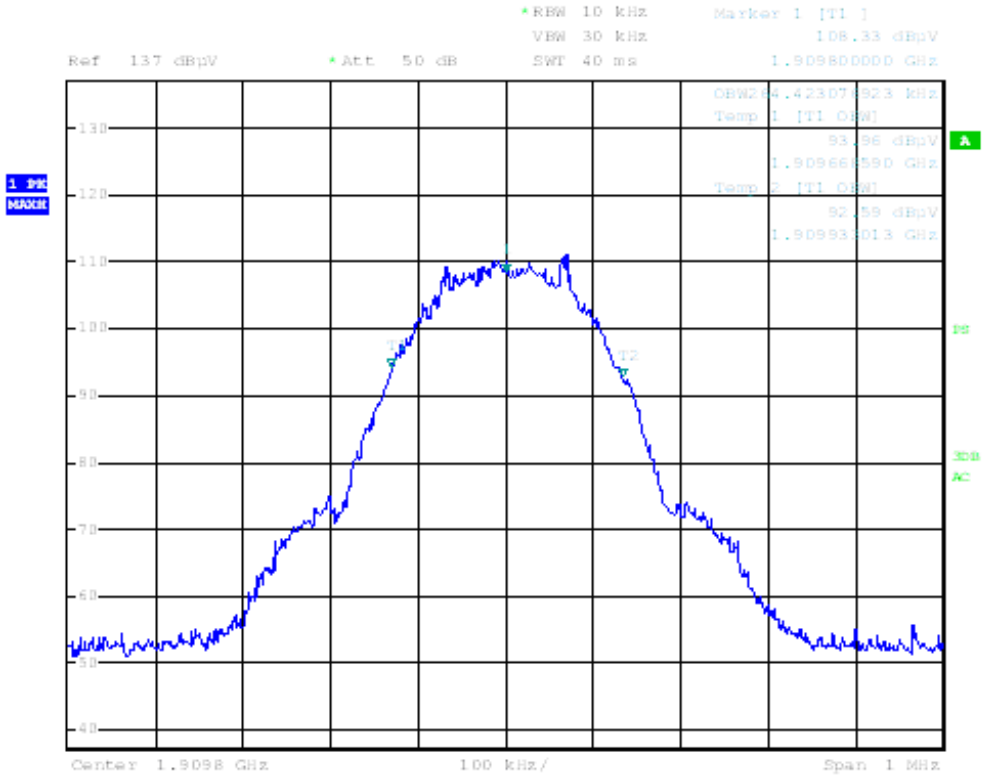
-26 dBc Bandwidth

EDGE 1900 Channel Mid



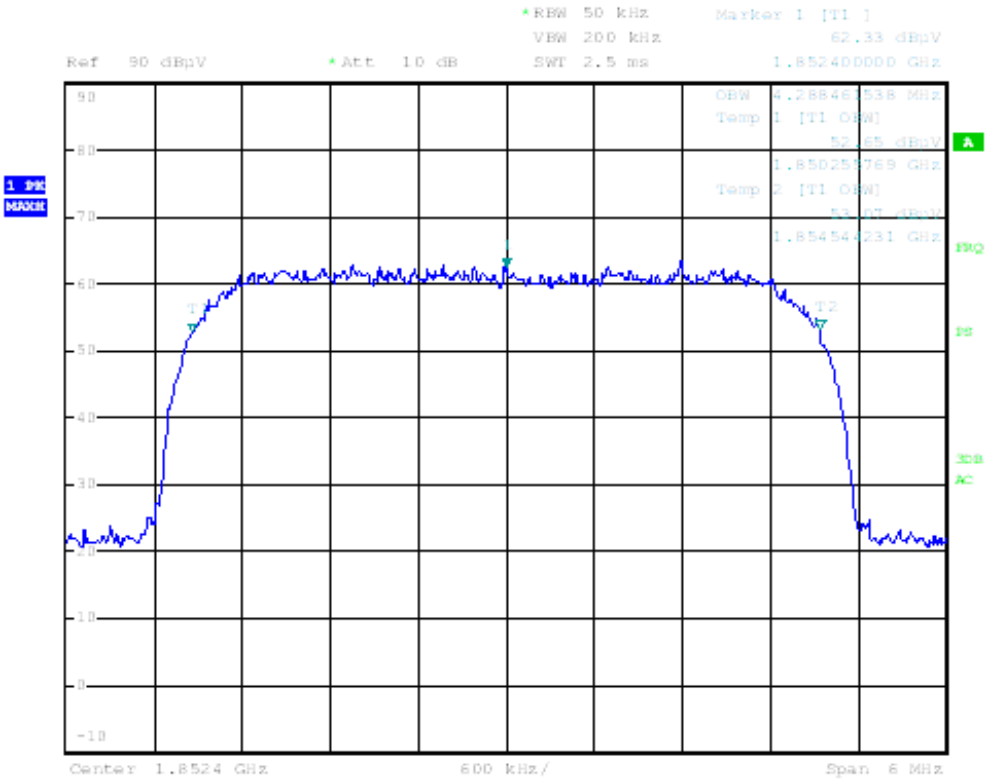
-26 dBc Bandwidth

EDGE 1900 Channel High



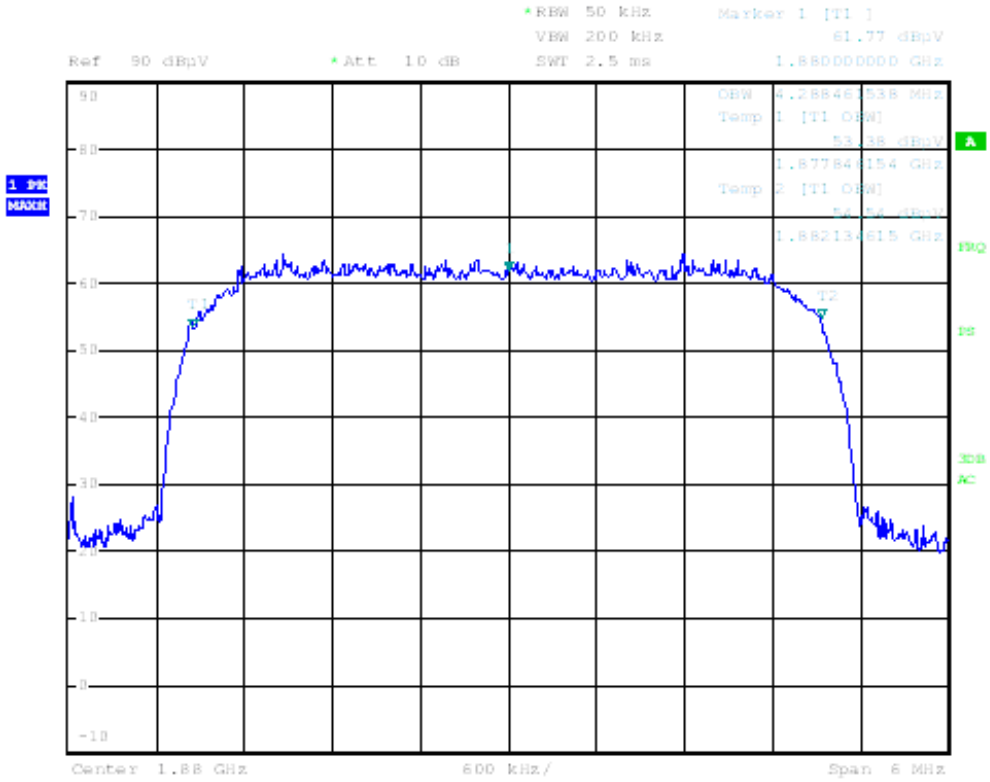
- 26 dBc Bandwidth

WCDMA II Channel Low



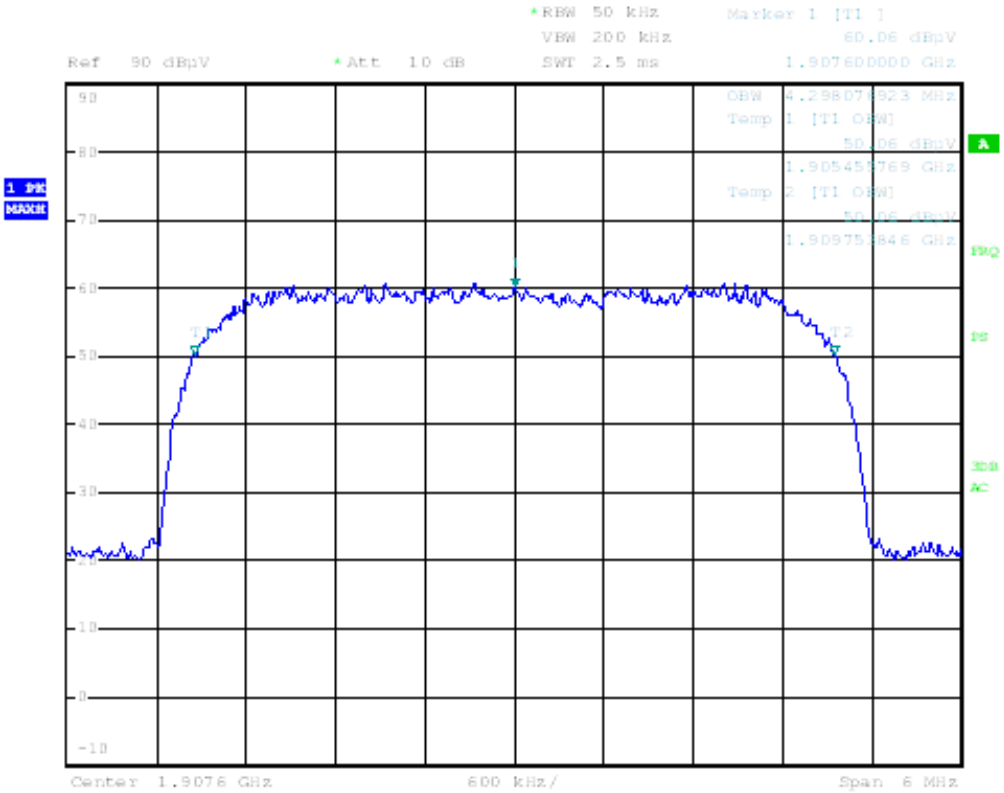
- 26 dBc Bandwidth

WCDMA II Channel Mid



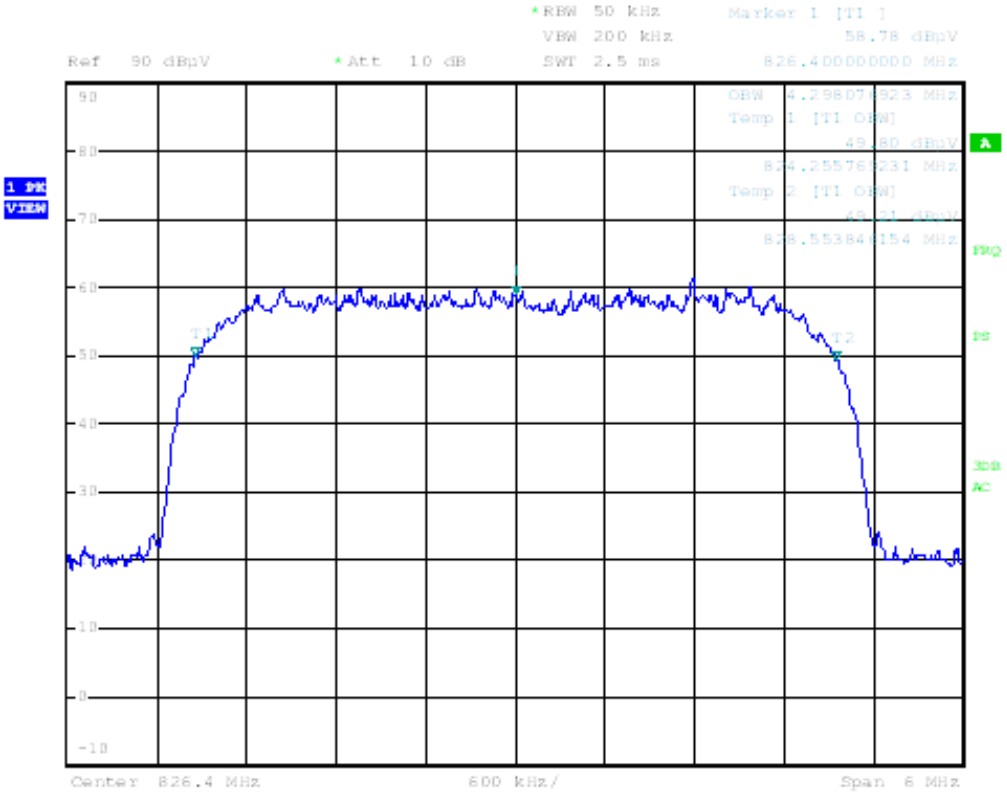
-26 dBc Bandwidth

WCDMA II Channel High



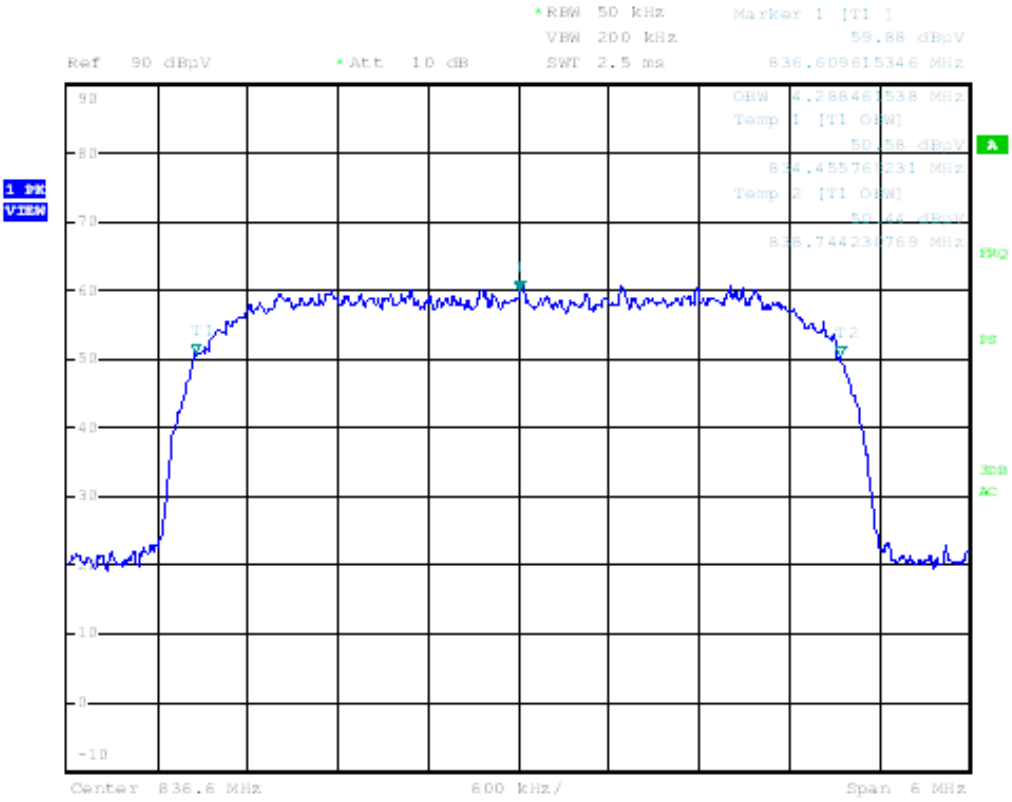
-26 dBc Bandwidth

WCDMA V Channel Low



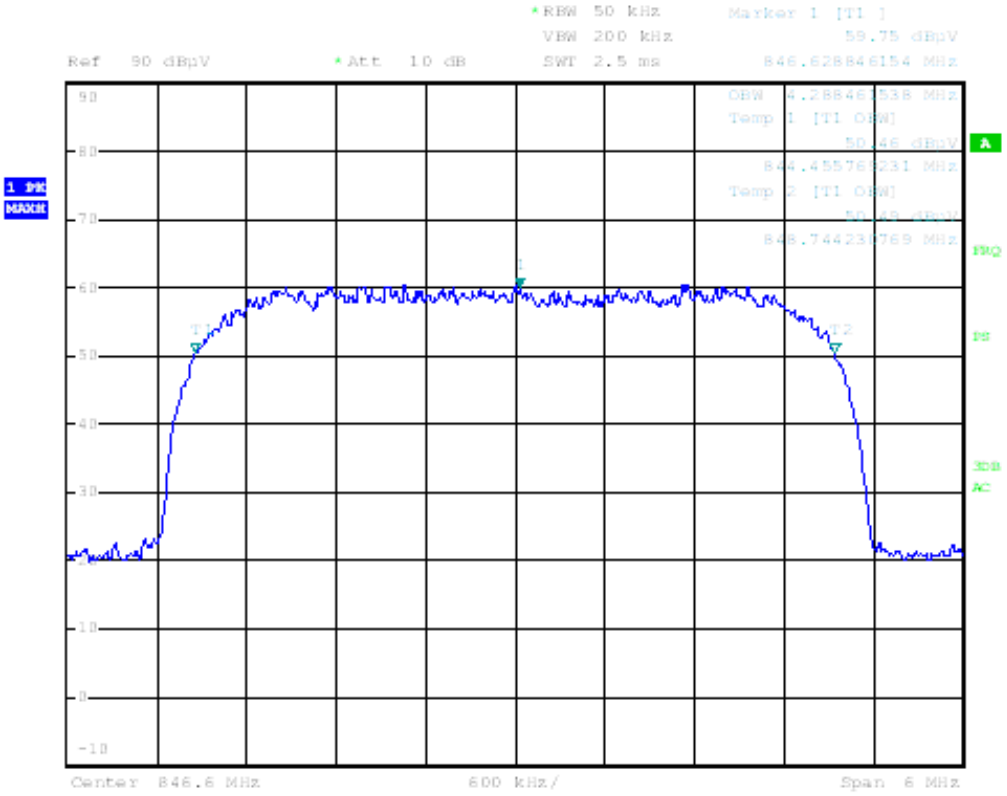
-26 dBc Bandwidth

WCDMA V Channel Mid



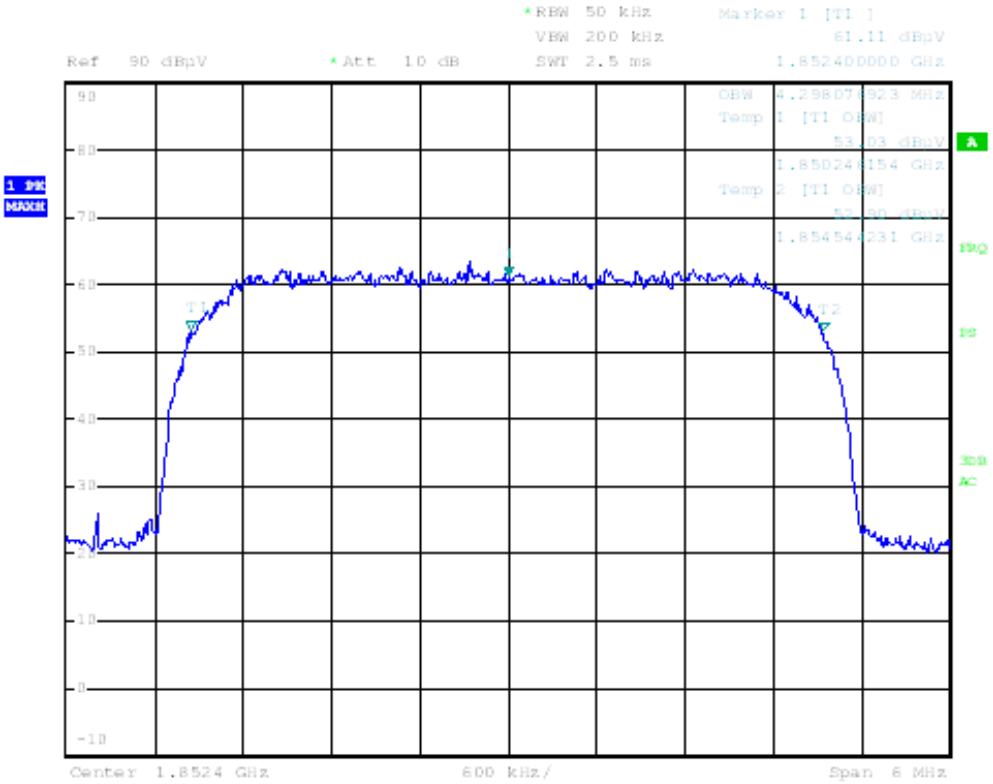
-26 dBc Bandwidth

WCDMA V Channel High



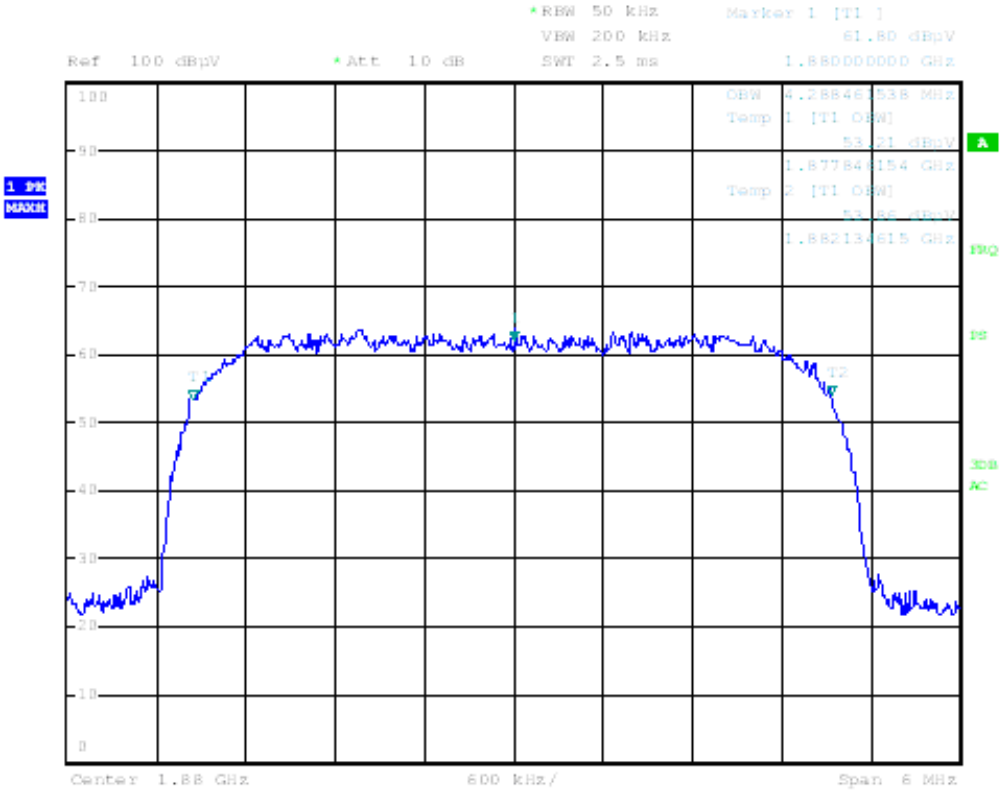
-26 dBc Bandwidth

HSDPA II Channel Low



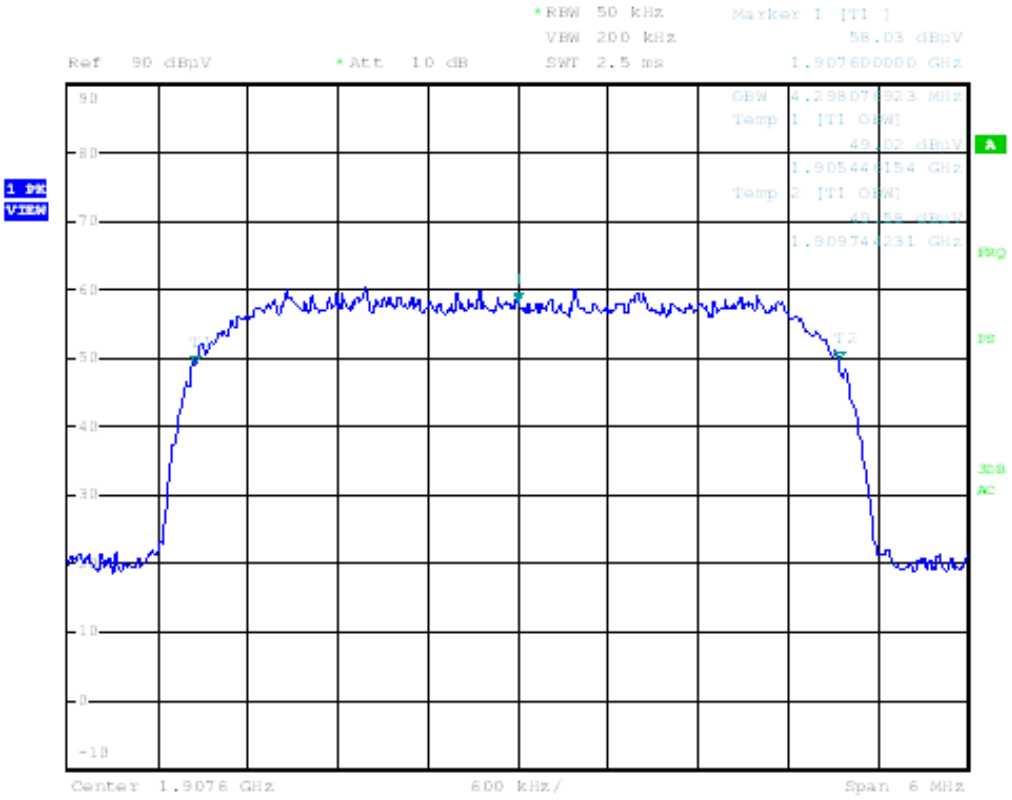
-26 dBc Bandwidth

HSDPA II Channel Mid



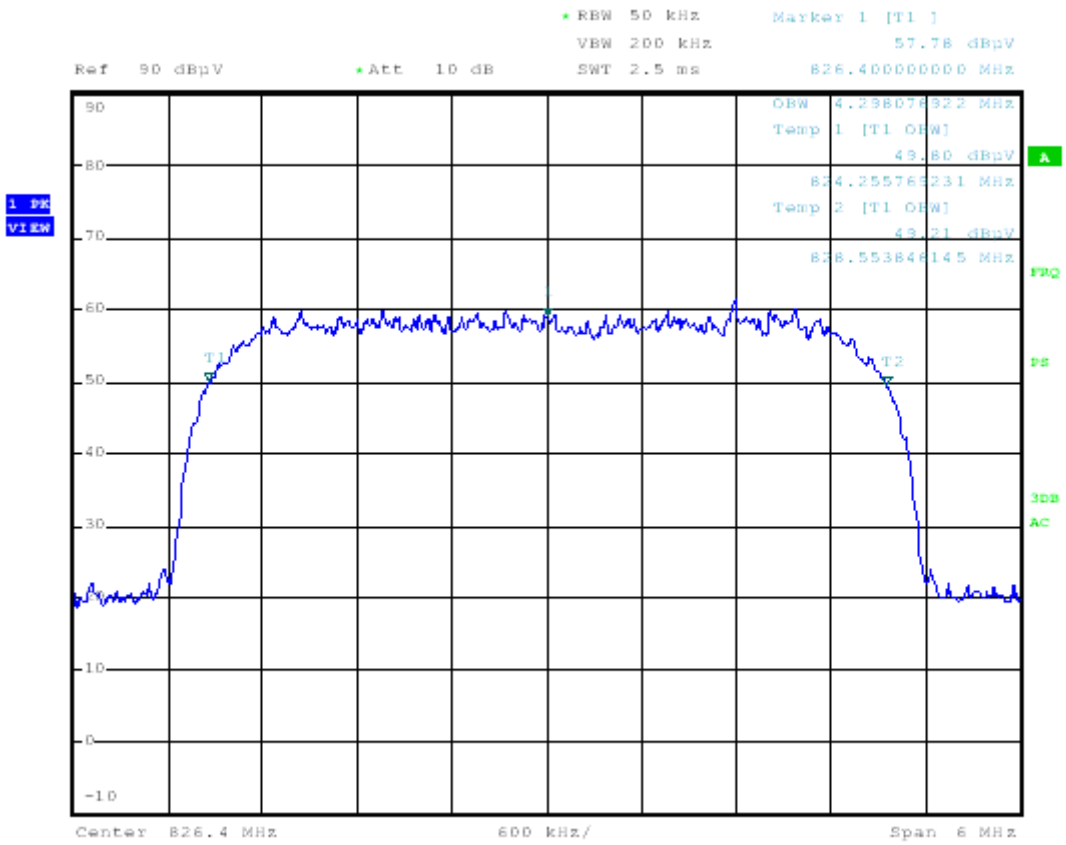
-26 dBc Bandwidth

HSDPA II Channel High



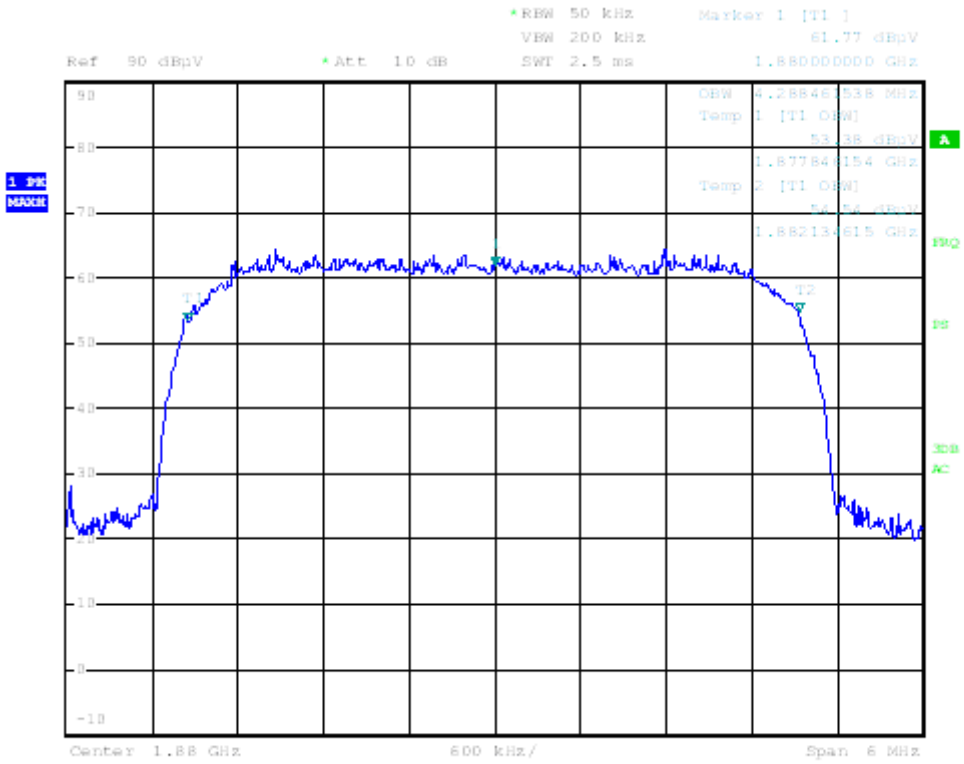
-26 dBc Bandwidth

HSDPA V Channel Low



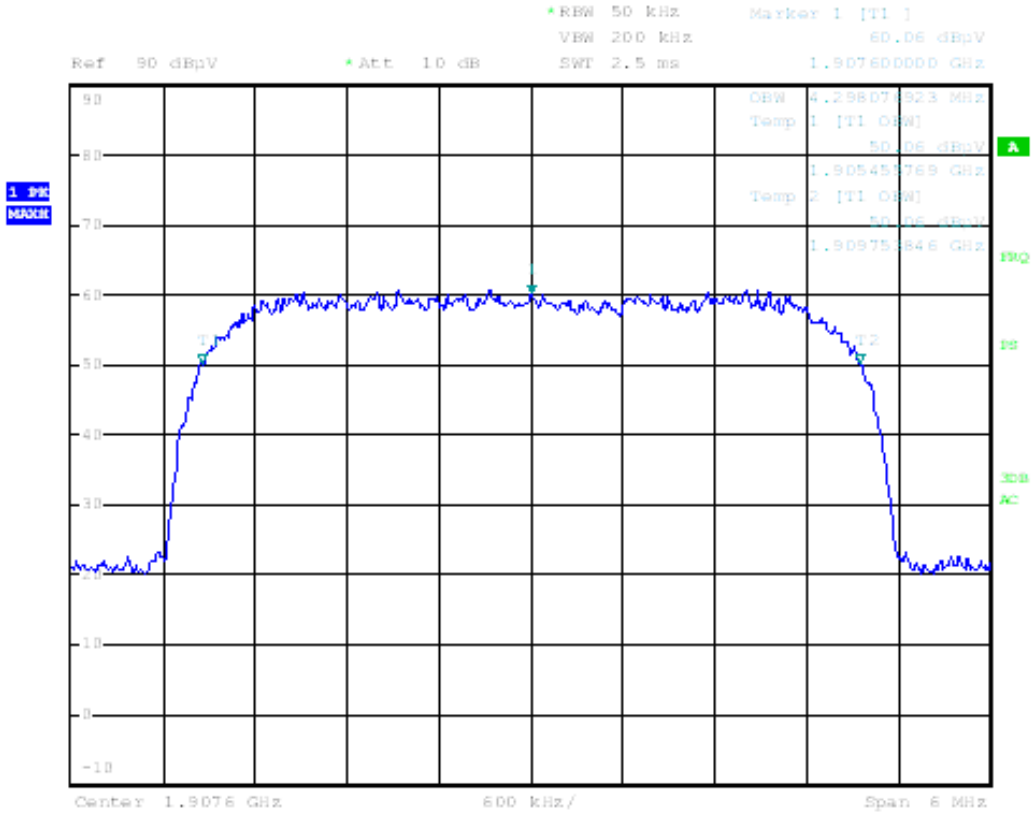
-26dBc Bandwidth

HSDPA V Channel Mid



-26 dBc Bandwidth

HSDPA V Channel High



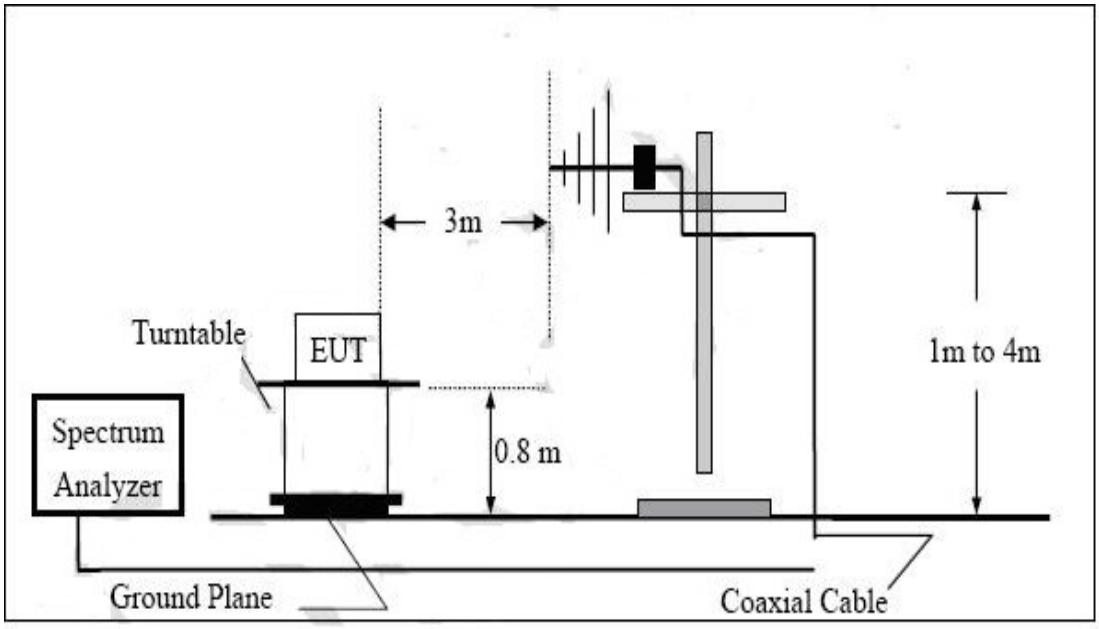
6.4 Effective Isotropic Radiated Power

Test Requirement: Part 2.1046
Part 24.232(b) Mobile station are Limited to 2W ERP.
Part 22.913(a) Mobile station are limited to 7W EIRP.

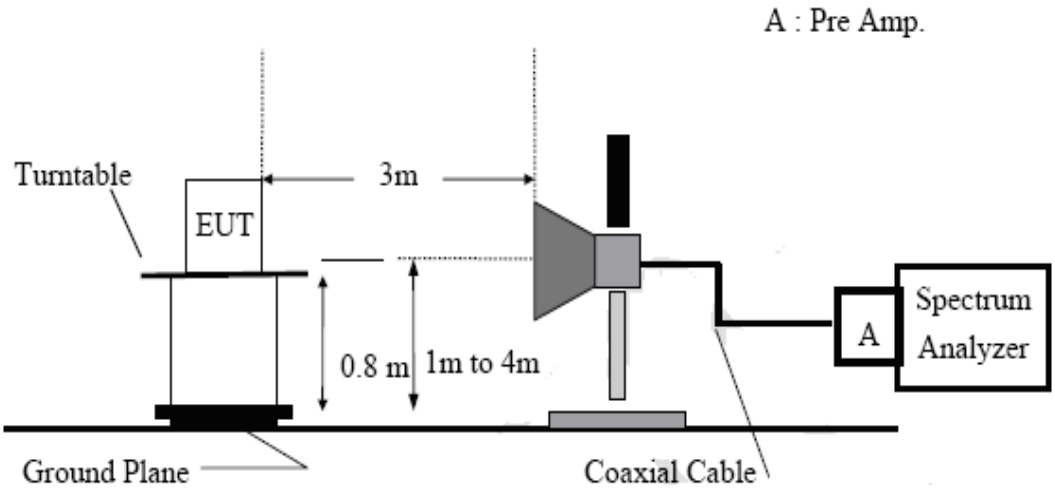
Test Date: Jun 8, 2009 – Jun 9, 2009

Test Setup:

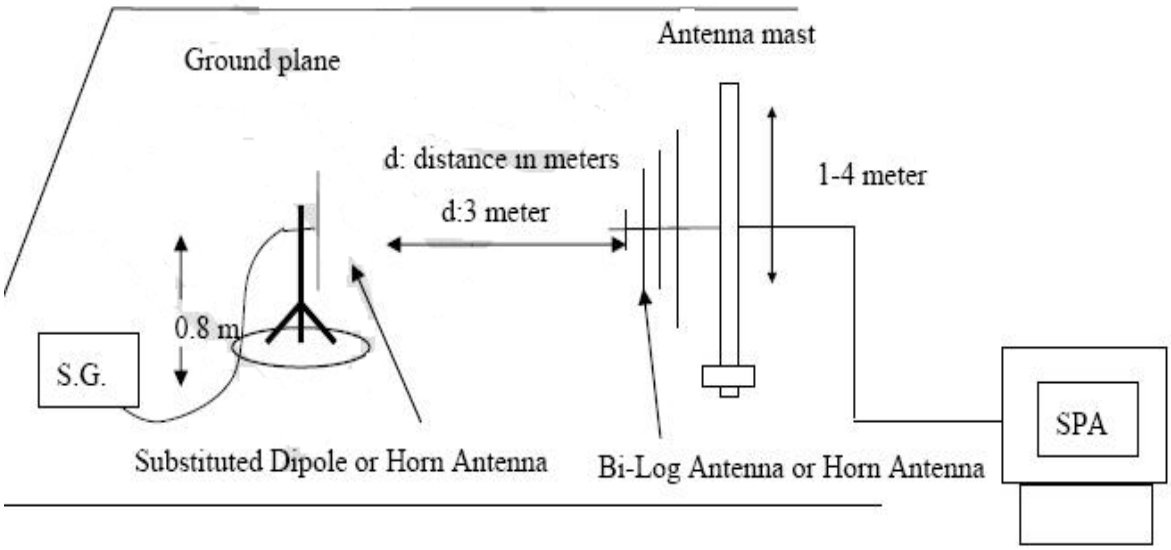
(A) Radiated emission Test setup, Below Frequency 1000MHz:



(B) Radiated emission Test setup frequency over 1GHz:



(C) Substituted Method Test setup:



Test Procedure:

The EUT was placed on an non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer. During the measurement, the EUT was communication with the station. The highest emission was recorded with the rotation of the turntable and 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 824.2-848.8MHz were measured using substitution method. The EUT was replaced by dipole antenna connected, the S.G. output was recorded and ERP was calculated as follow:

EIRP in frequency band 1710-1755MHz and 1850.5-1909.8MHz 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)

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

Measurement result:

(1) The RBW, VBW of SPA for frequency
Below 1GHz was RBW=300KHz, VBW=1MHz;
Above 1GHz was RBW=1MHz, VBW=3MHz

EUT mode	Frequency(MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. output (dBm)	Antenna Gain (dBd)	Cable loss (dB)	ERP (dBm)	Limit (dBm)
GSM 850	824.2	128	H	V	106.85	21.15	-2.99	3.32	14.84	38.45
				H	107.26	21.31	-2.99	3.32	15.00	38.45
	836.6	190	H	V	107.53	21.40	-3.02	3.40	14.98	38.45
				H	109.46	23.22	-3.02	3.40	16.80	38.45
	848.8	251	H	V	108.40	22.49	-3.11	3.43	15.95	38.45
				H	109.11	23.73	-3.11	3.43	17.19	38.45

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	1850.2	512	H	V	110.47	11.23	9.15	4.15	16.23	33.00
				H	116.22	17.29	9.15	4.15	22.29	33.00
	1880.0	661	H	V	108.54	11.56	9.22	4.28	16.50	33.00
				H	117.68	18.63	9.22	4.28	23.57	33.00
	1809.8	810	H	V	110.23	12.04	9.25	4.41	16.88	33.00
				H	115.59	17.52	9.25	4.41	22.36	33.00

EUT mode	Frequency(MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. output (dBm)	Antenna Gain (dBd)	Cable loss (dB)	ERP (dBm)	Limit (dBm)
EDGE 850	824.2	128	H	V	104.33	20.12	-2.99	3.32	13.81	38.45
				H	106.54	22.60	-2.99	3.32	16.29	38.45
	836.6	190	H	V	105.84	20.20	-3.02	3.40	13.78	38.45
				H	108.21	22.79	-3.02	3.40	16.37	38.45
	848.8	251	H	V	103.99	19.76	-3.11	3.43	13.22	38.45
				H	106.25	22.55	-3.11	3.43	16.01	38.45

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	1850.2	512	H	V	108.67	11.87	9.15	4.15	16.87	33.00
				H	110.24	14.30	9.15	4.15	19.30	33.00
	1880.0	661	H	V	105.36	9.24	9.22	4.28	14.18	33.00
				H	110.60	14.10	9.22	4.28	19.04	33.00
	1809.8	810	H	V	105.50	10.11	9.25	4.41	14.95	33.00
				H	106.43	11.72	9.25	4.41	16.56	33.00

(2) The RBW, VBW of SPA for frequency
Below 1GHz was RBW=5MHz, VBW=5MHz
Above 1GHz was RBW=5MHz, VBW=5MHz

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 II	1852.4	9262	H	V	113.23	11.40	9.15	4.16	16.39	33.00
				H	108.56	7.35	9.15	4.16	12.34	33.00
	1880.0	9400	H	V	112.42	10.86	9.22	4.28	15.80	33.00
				H	107.33	7.20	9.22	4.28	12.14	33.00
	1907.6	9538	H	V	115.71	13.68	9.25	4.42	18.51	33.00
				H	110.16	9.82	9.25	4.42	14.65	33.00

EUT mode	Frequency(MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. output (dBm)	Antenna Gain (dBd)	Cable loss (dB)	ERP (dBm)	Limit (dBm)
WCDMA Band V	826.4	4132	H	V	104.32	15.30	-3.00	3.31	8.99	38.45
				H	108.53	19.43	-3.00	3.31	13.12	38.45
	836.0	4180	H	V	104.67	15.90	-3.02	3.40	9.48	38.45
				H	108.60	20.2	-3.02	3.40	13.78	38.45
	846.6	4233	H	V	105.58	16.33	-3.11	3.44	9.78	38.45
				H	108.77	19.93	-3.11	3.44	13.38	38.45

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)
HSDPA Band II	1852.4	9262	H	V	110.16	10.26	9.15	4.16	15.25	33.00
				H	109.26	9.99	9.15	4.16	14.98	33.00
	1880.0	9400	H	V	111.44	11.68	9.22	4.28	16.62	33.00
				H	110.79	11.31	9.22	4.28	16.25	33.00
	1907.6	9538	H	V	109.52	10.46	9.25	4.42	15.29	33.00
				H	109.20	10.83	9.25	4.42	15.66	33.00

EUT mode	Frequency(MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. output (dBm)	Antenna Gain (dBd)	Cable loss (dB)	ERP (dBm)	Limit (dBm)
HSDPA Band V	826.4	4132	H	V	103.60	14.85	-3.00	3.31	8.54	38.45
				H	107.44	18.82	-3.00	3.31	12.51	38.45
	836.0	4180	H	V	103.34	14.56	-3.02	3.40	8.14	38.45
				H	107.77	19.22	-3.02	3.40	12.8	38.45
	846.6	4233	H	V	104.82	15.10	-3.11	3.44	8.55	38.45
				H	107.00	19.09	-3.11	3.44	12.54	38.45

6.5 Out of band emissions at antenna Terminals

6.5.1 Band edges emissions

Test Requirement: Part 2.1051

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

Test Date: Jun 8, 2009

Test Procedure:

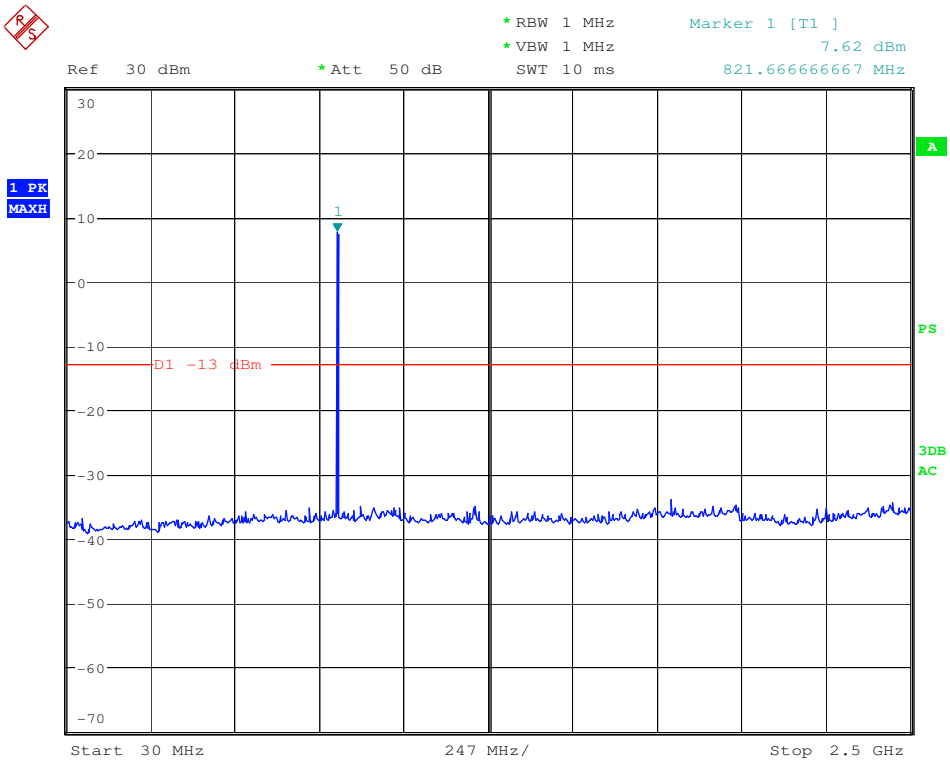
The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of spectrum analyzer was set at 1MHz, sufficient scans were taken to show the out of band Emission is any up to 10^{th} harmonic.

For the out of band: set RBW, VBW=1MHz, stat=30MHz, stop= 10 th harmonic. Limit= --13dBm

Band Edge requirements: In 1Mhz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 % of bandwidth of fundamental emission of the transmitter any be employed to measure the out of band emission. Limit=--13dBm.

Measurement result:

GSM Channel Low



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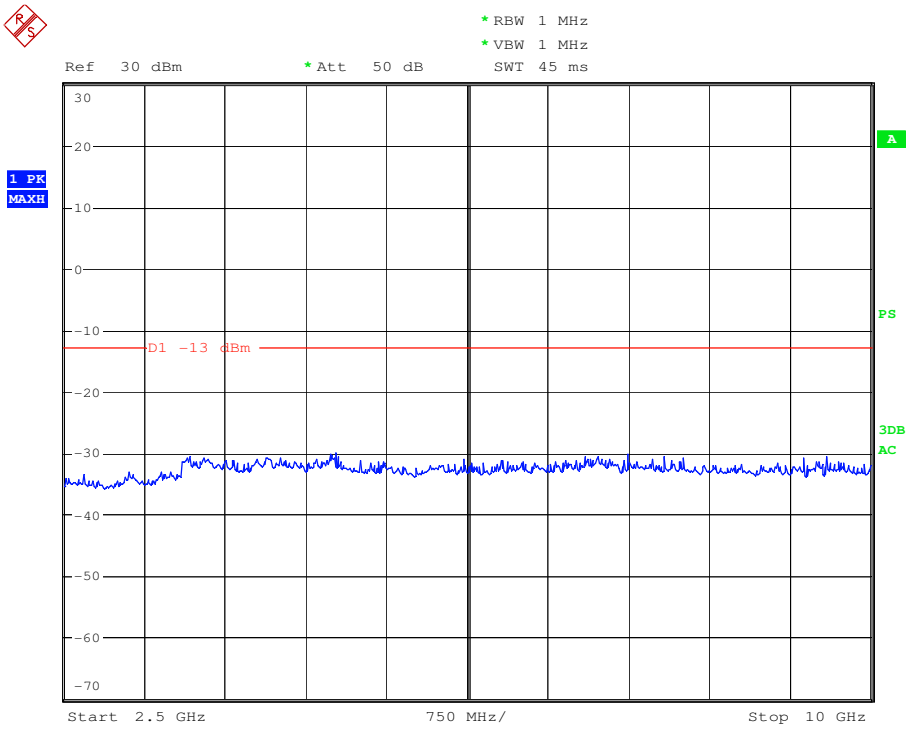

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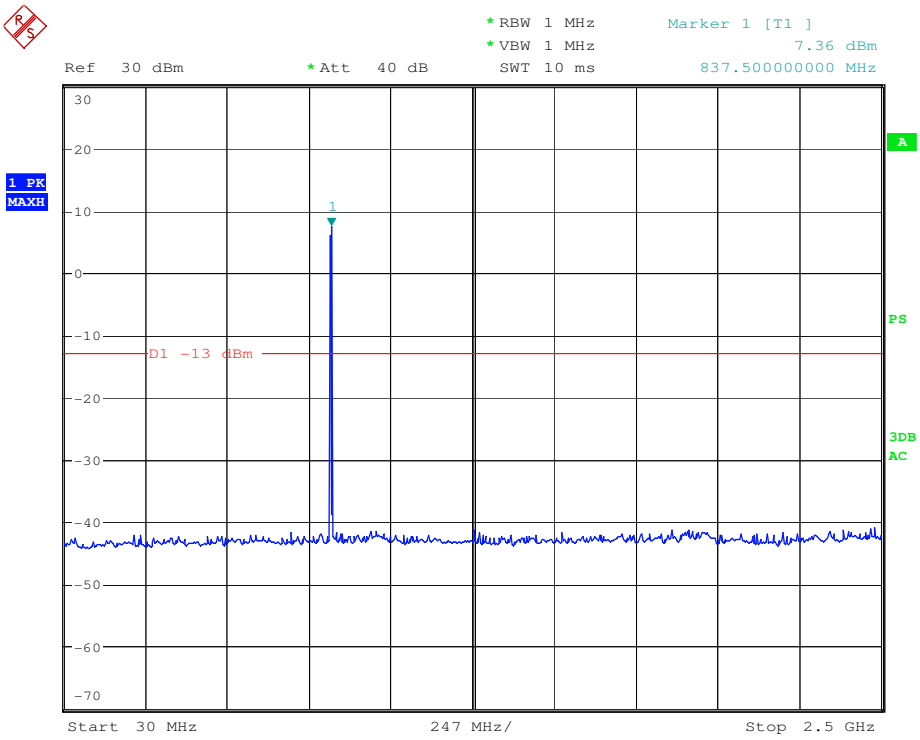
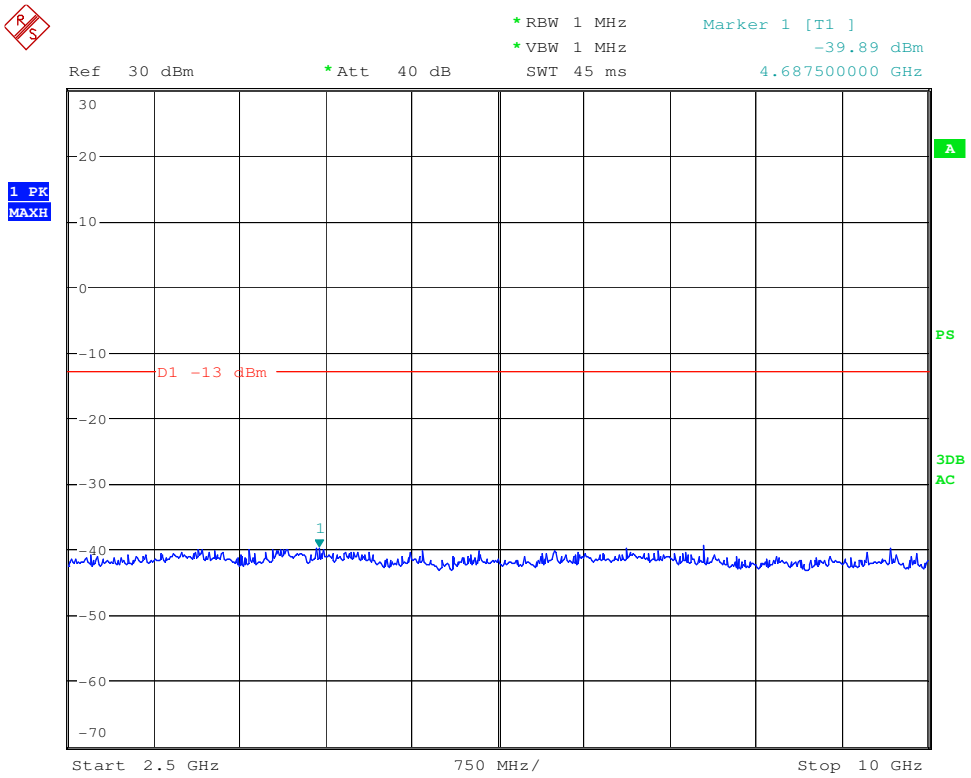
GSM Channel Mid





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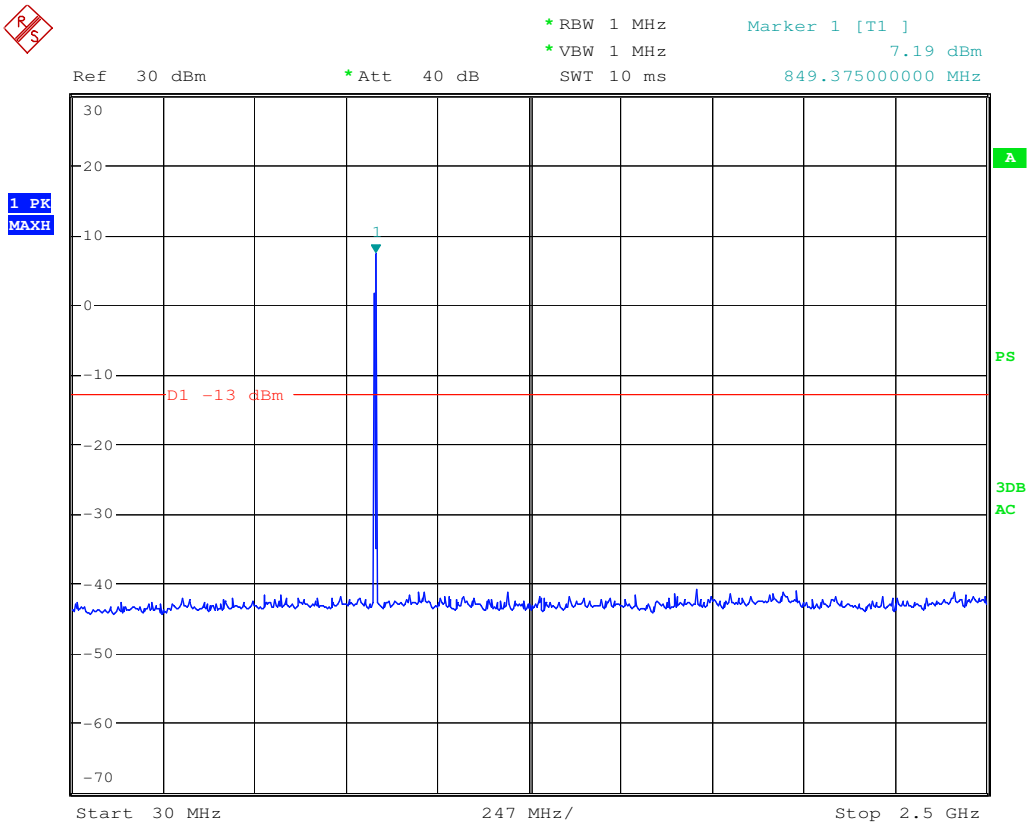
GSM Channel High



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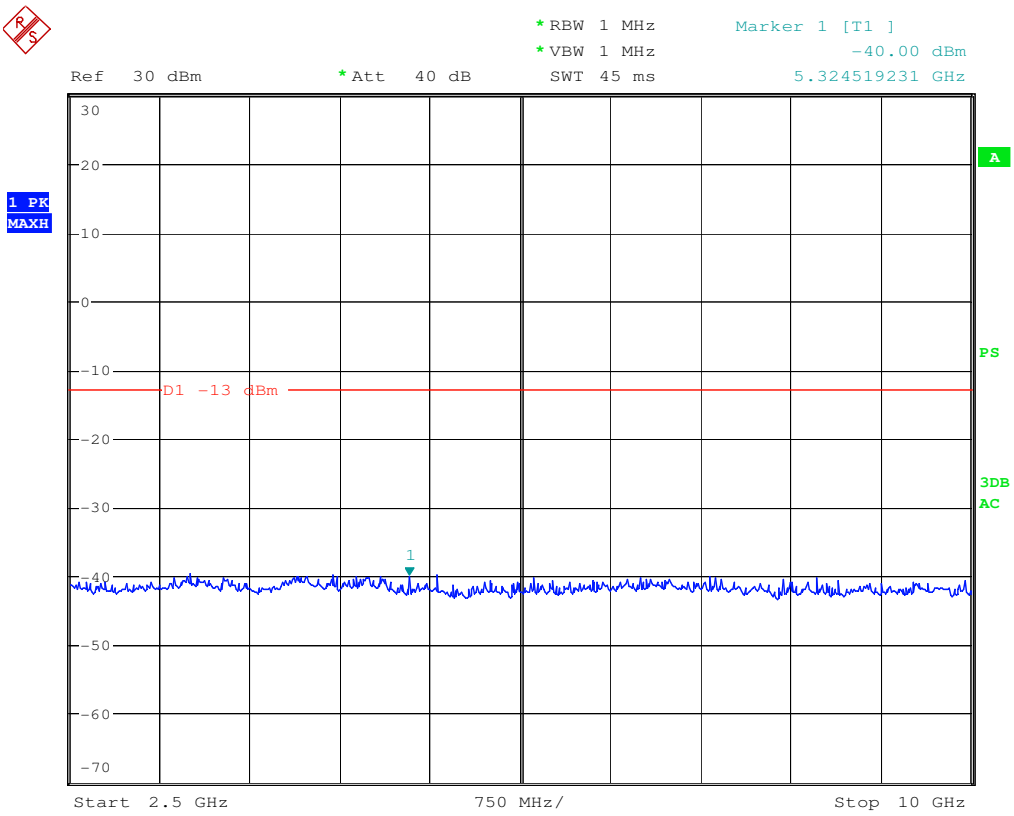

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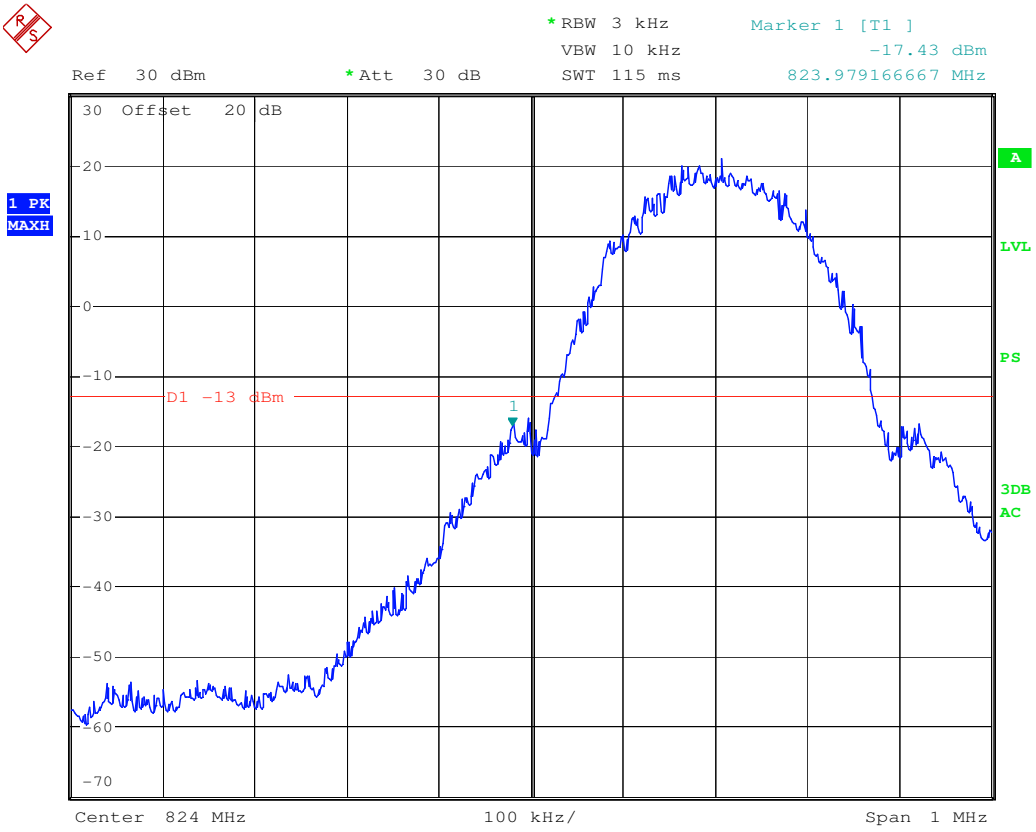
Band Edge emission GSM Channel Low



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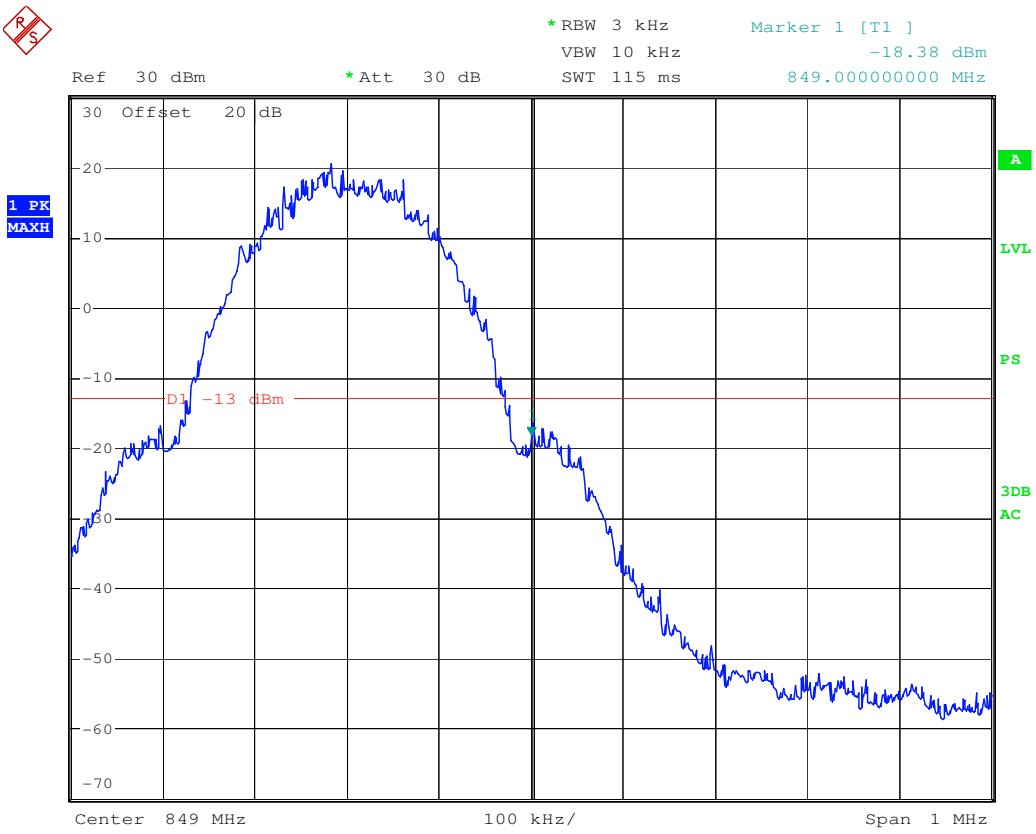
Band Edge emission GSM Channel high



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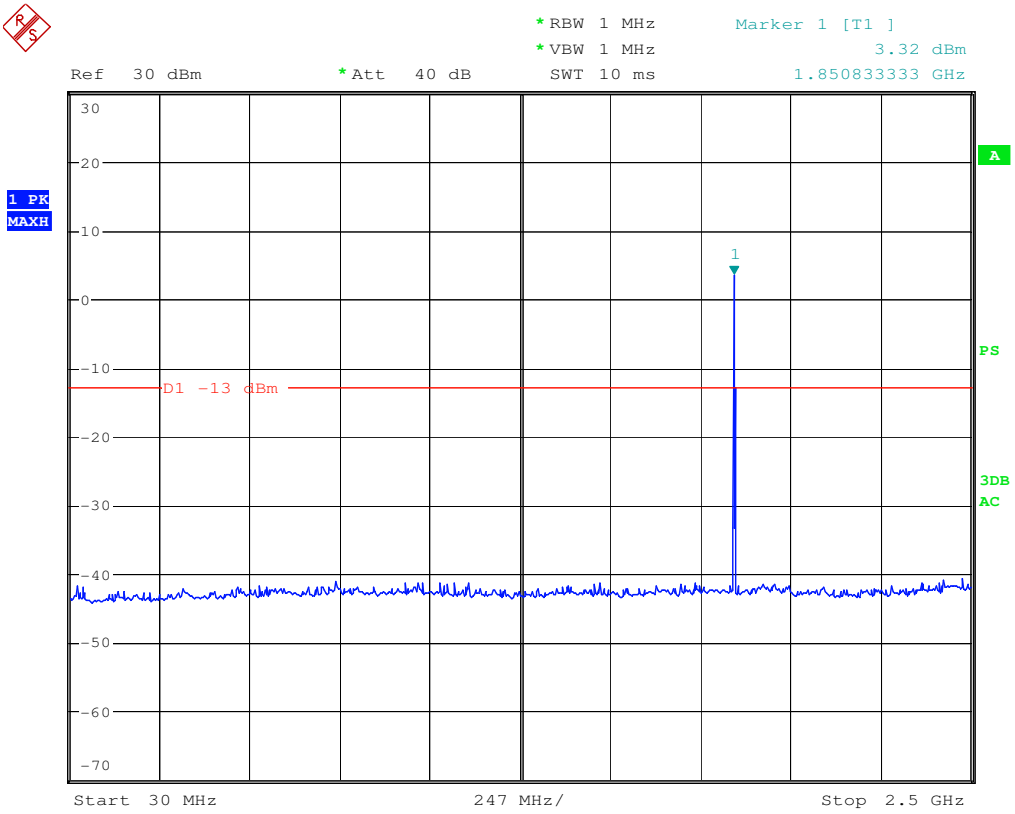
PCS Channel Low



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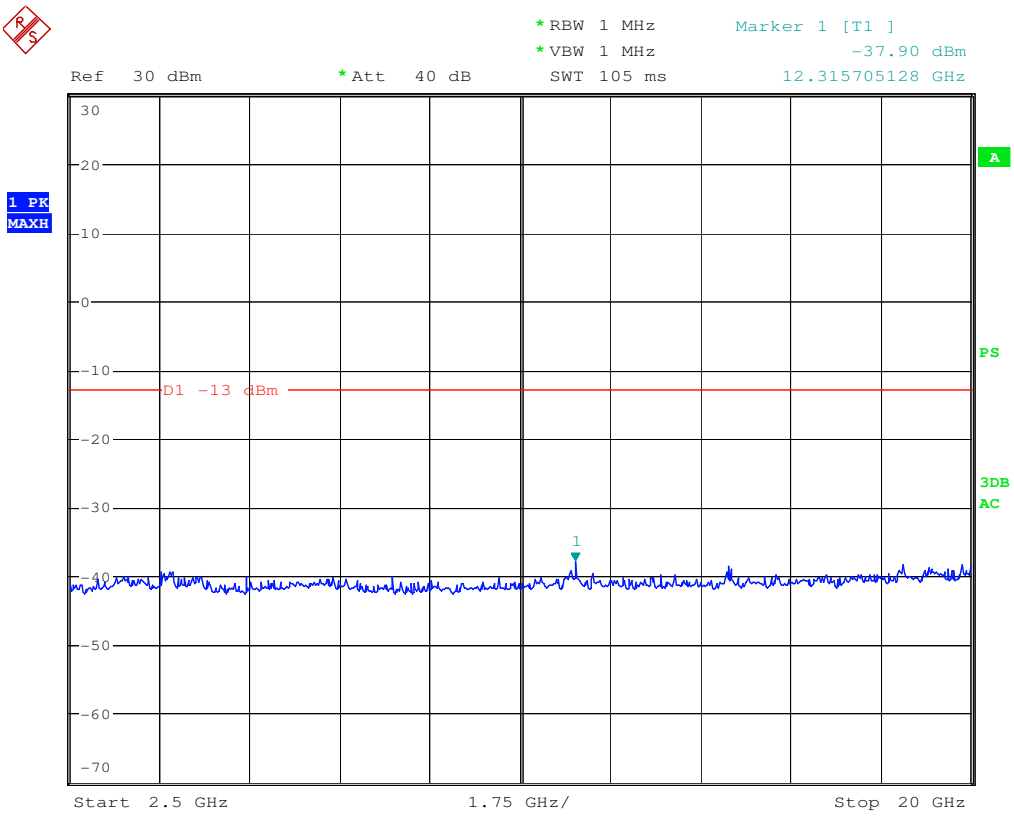

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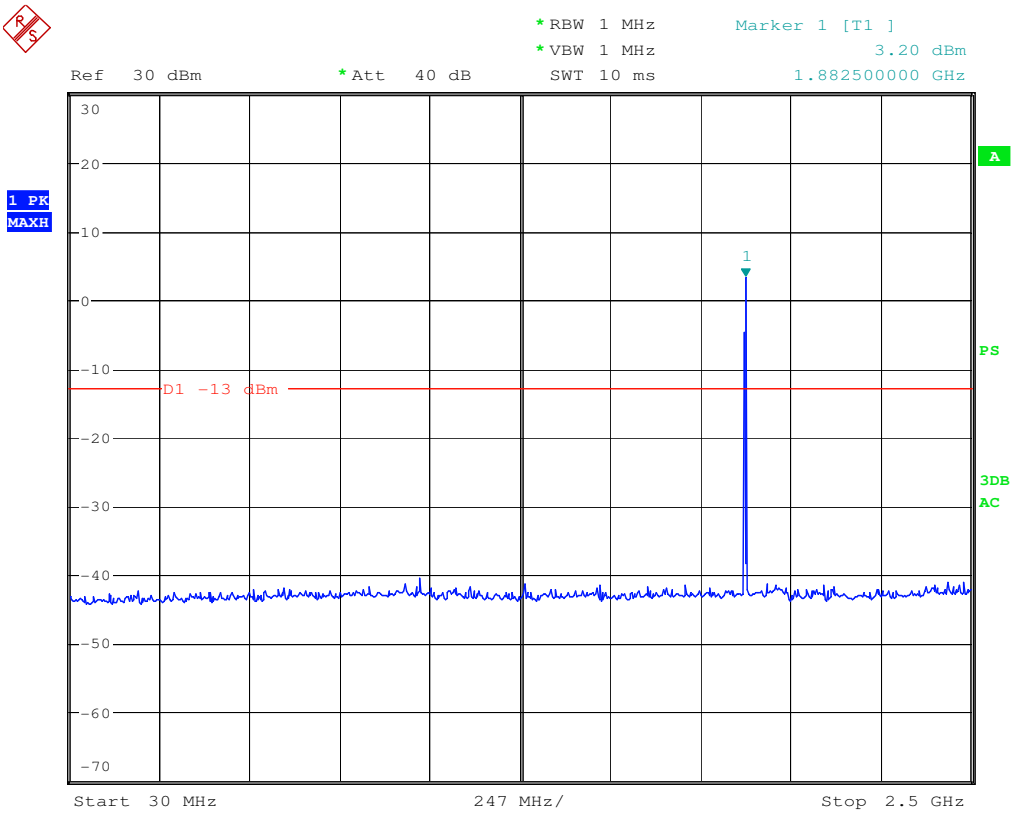
PCS Channel Mid



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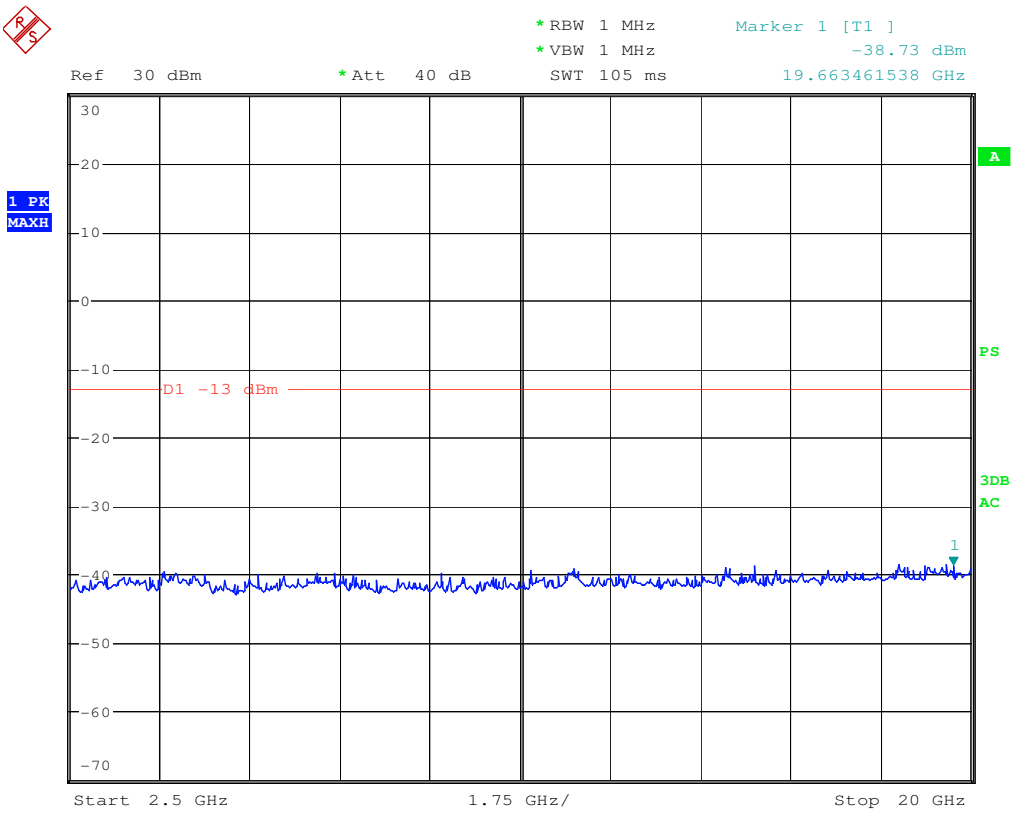

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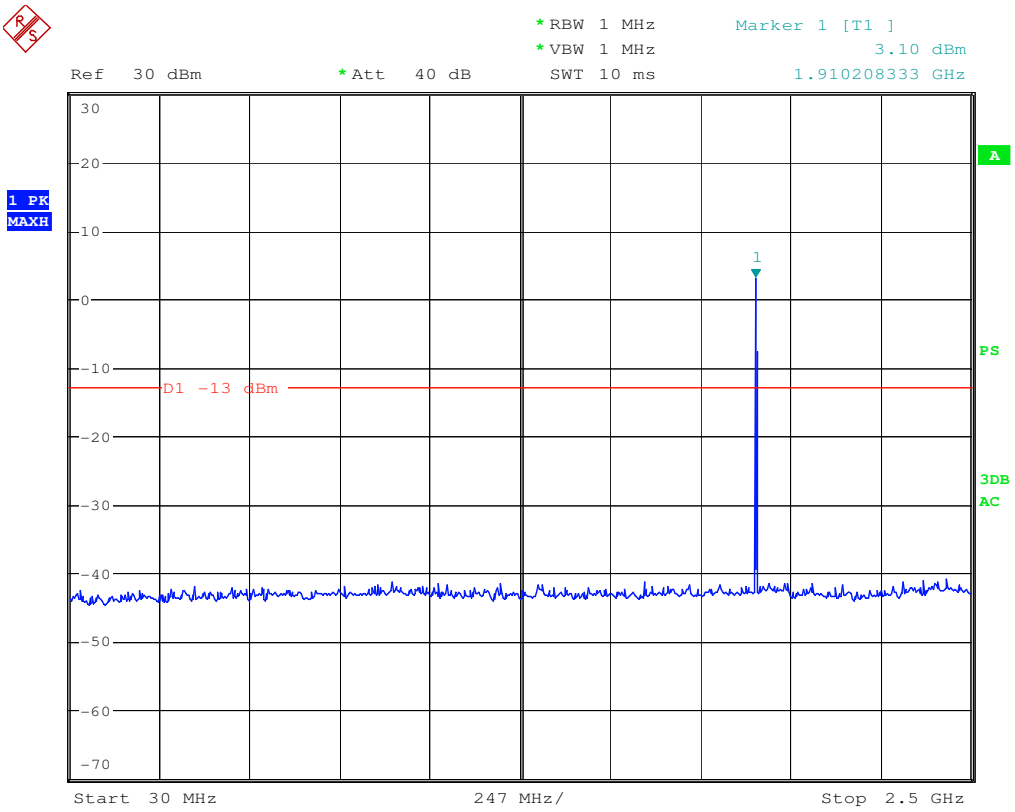
PCS Channel High



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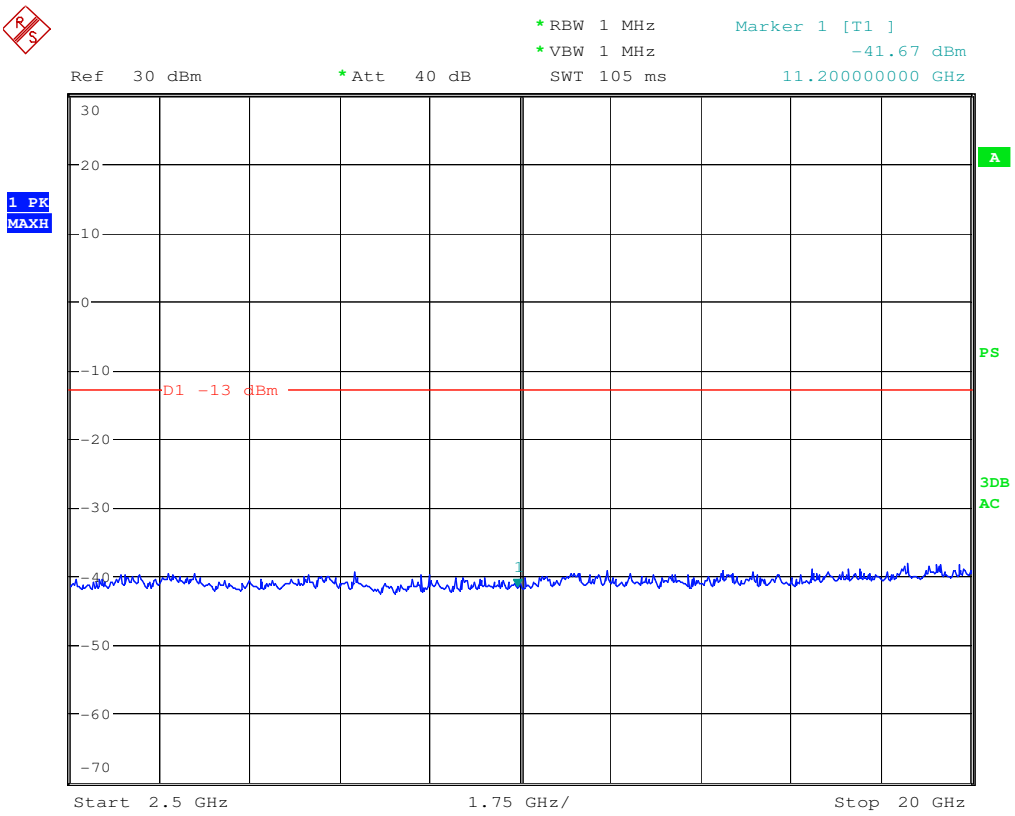

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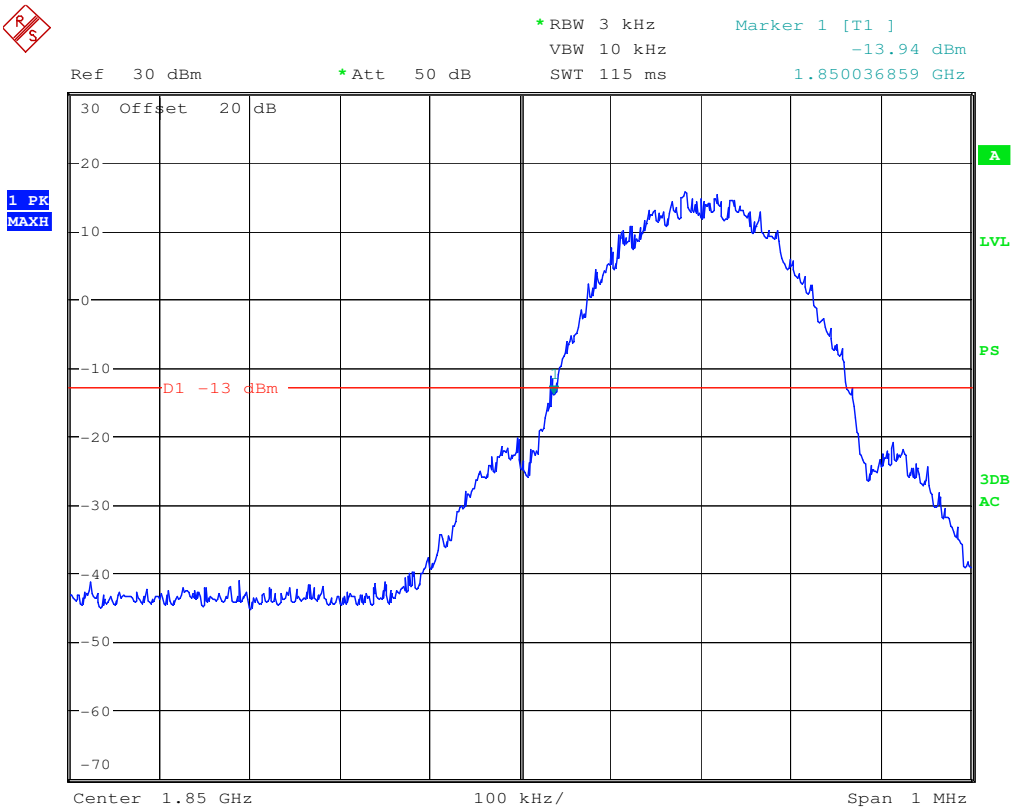
Band Edge emission PCS Channel Low



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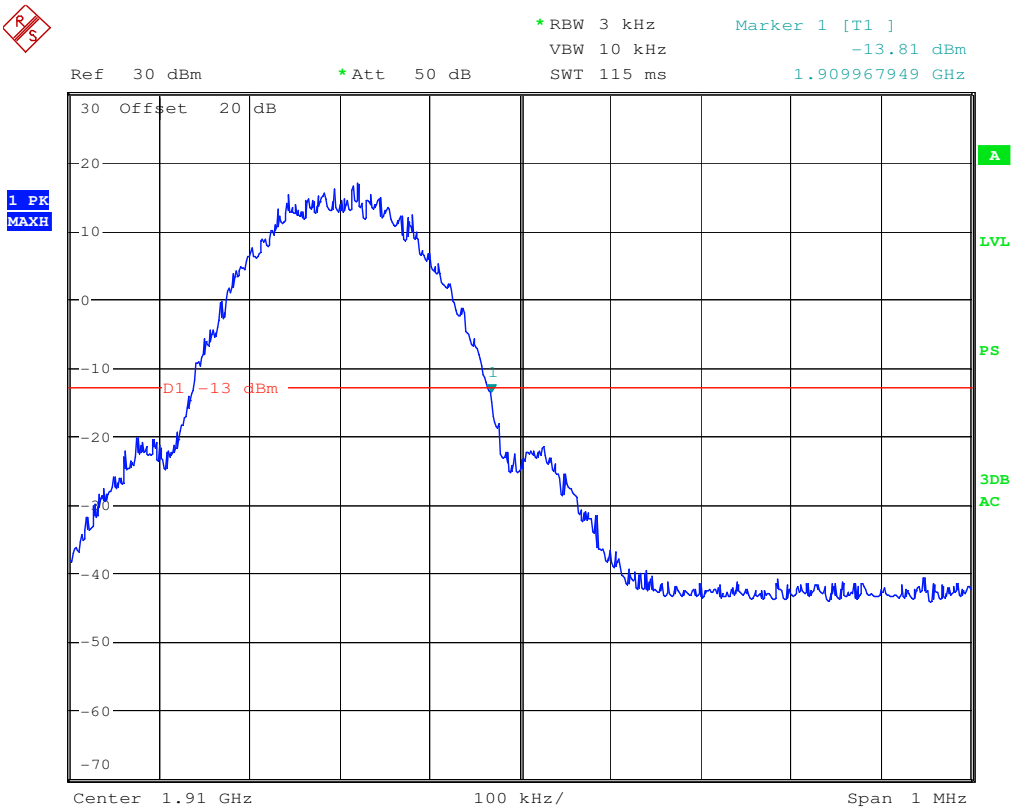
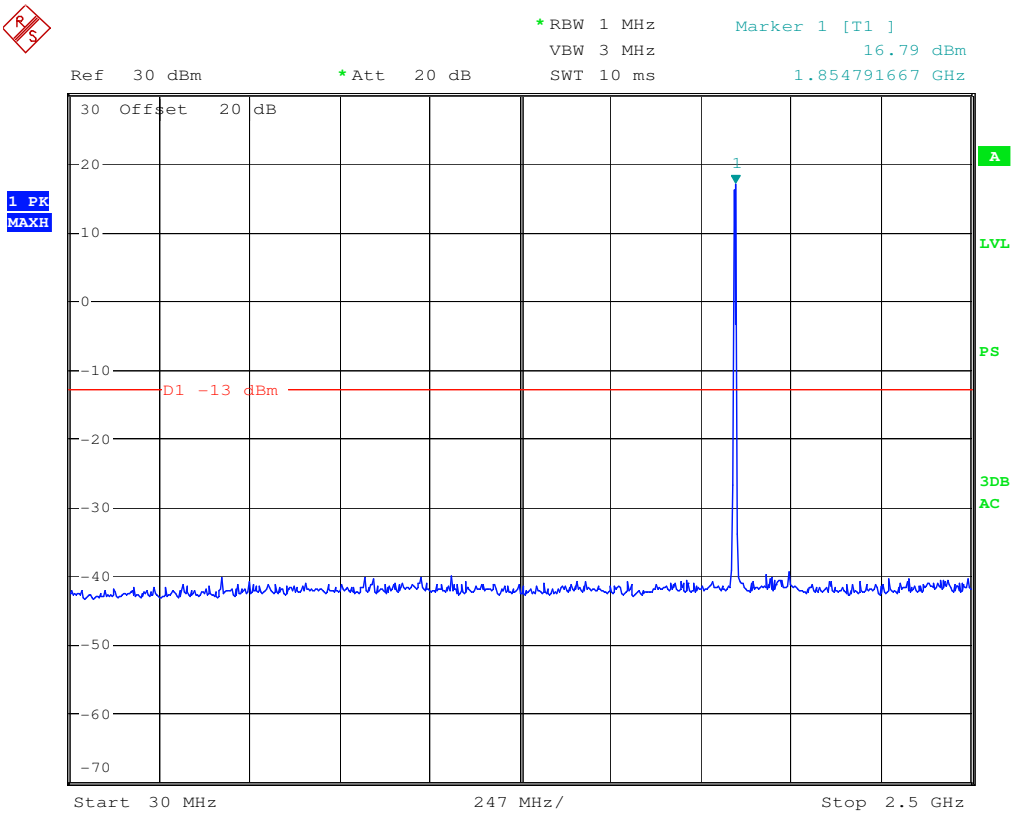
Band Edge emission PCS Channel high



Date: 8.JUN.2009 08:59:12

WCDMA II Channel low



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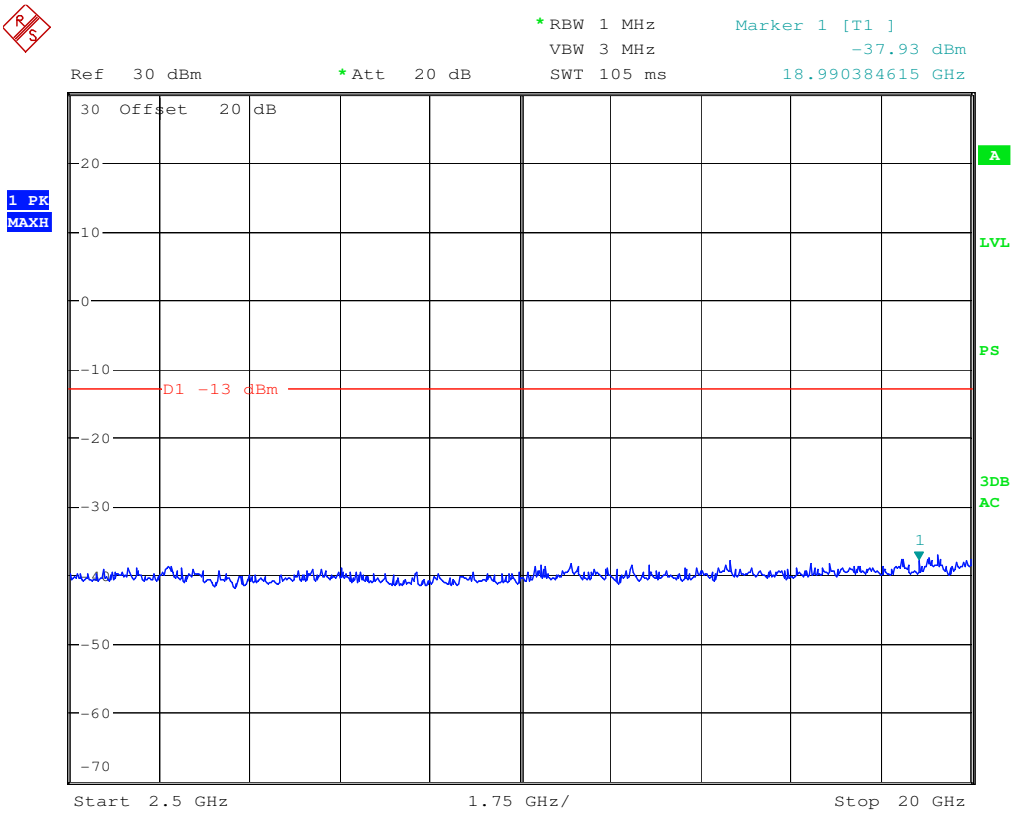

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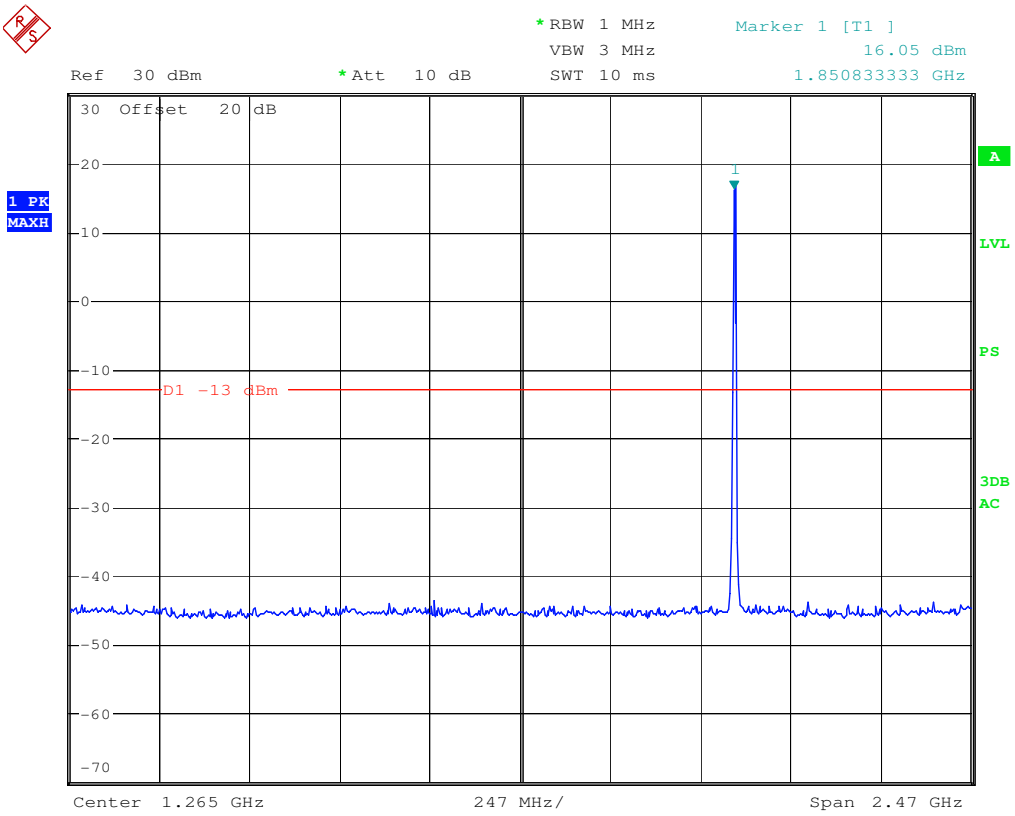
WCDMA II Channel Mid



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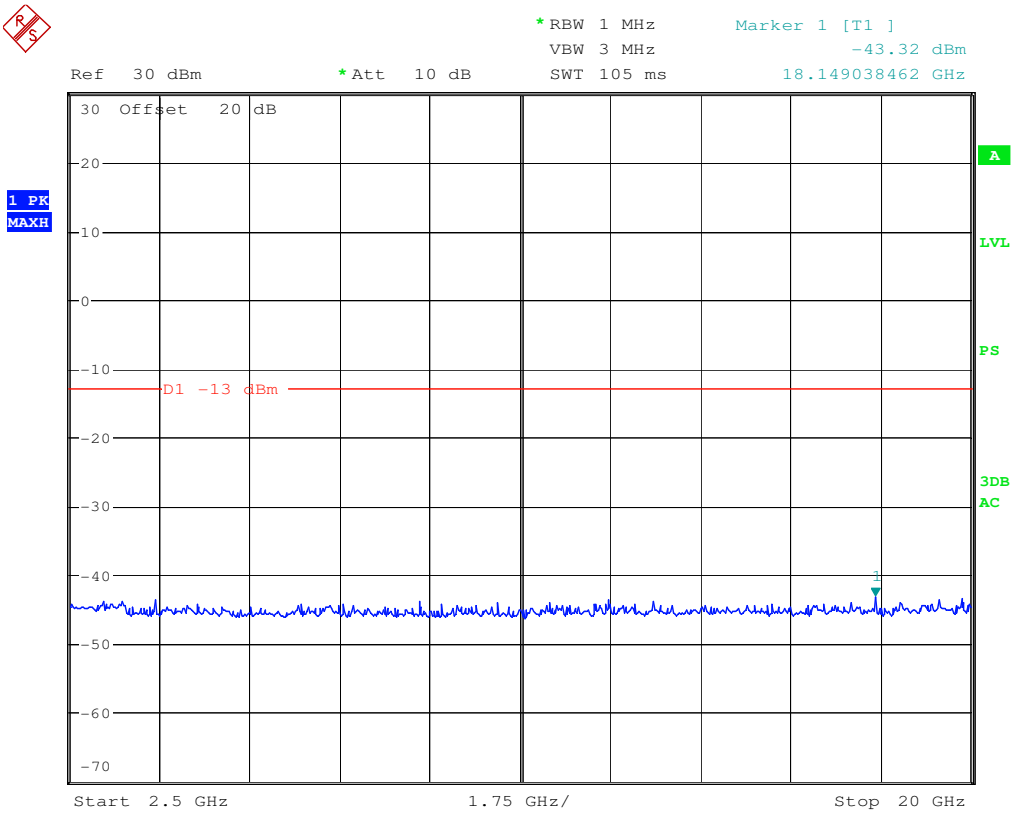

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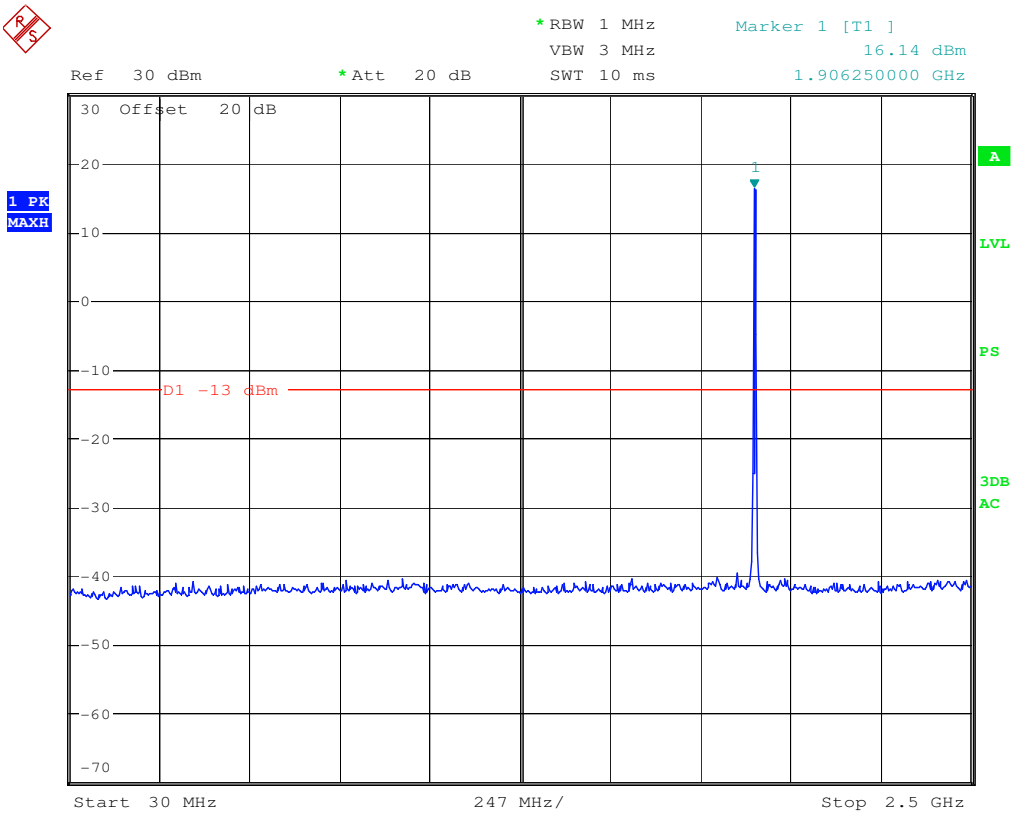
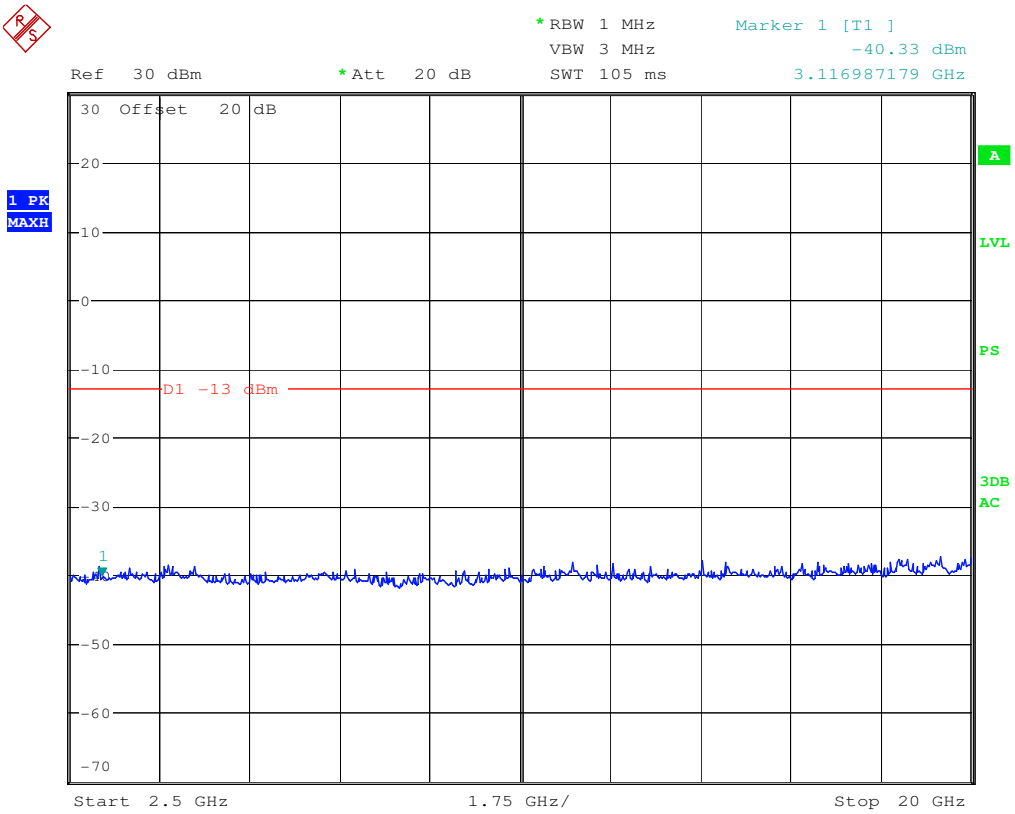
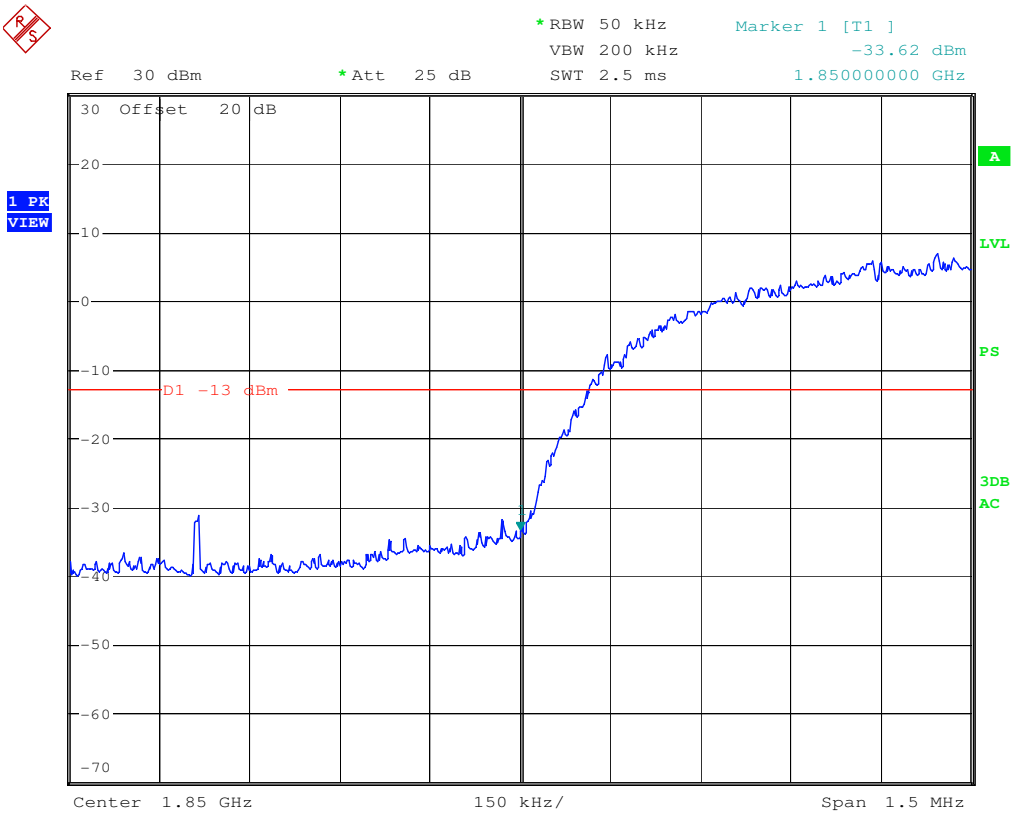


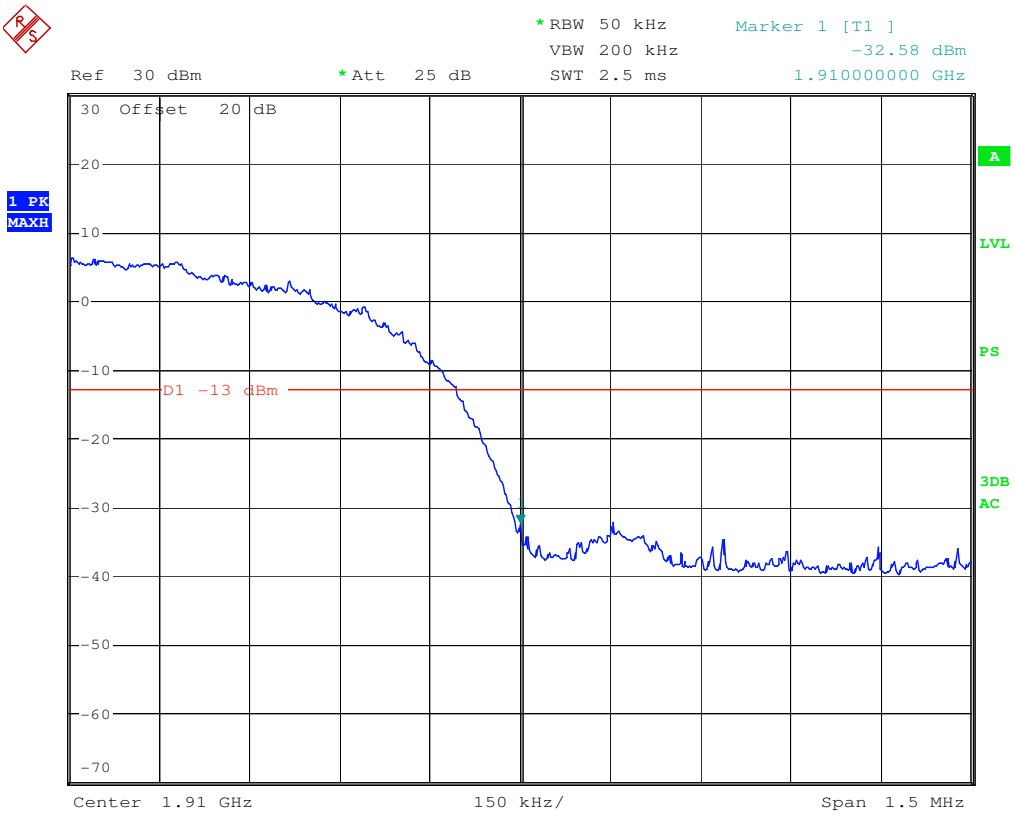


Date: 8.JUN.2009 10:14:34

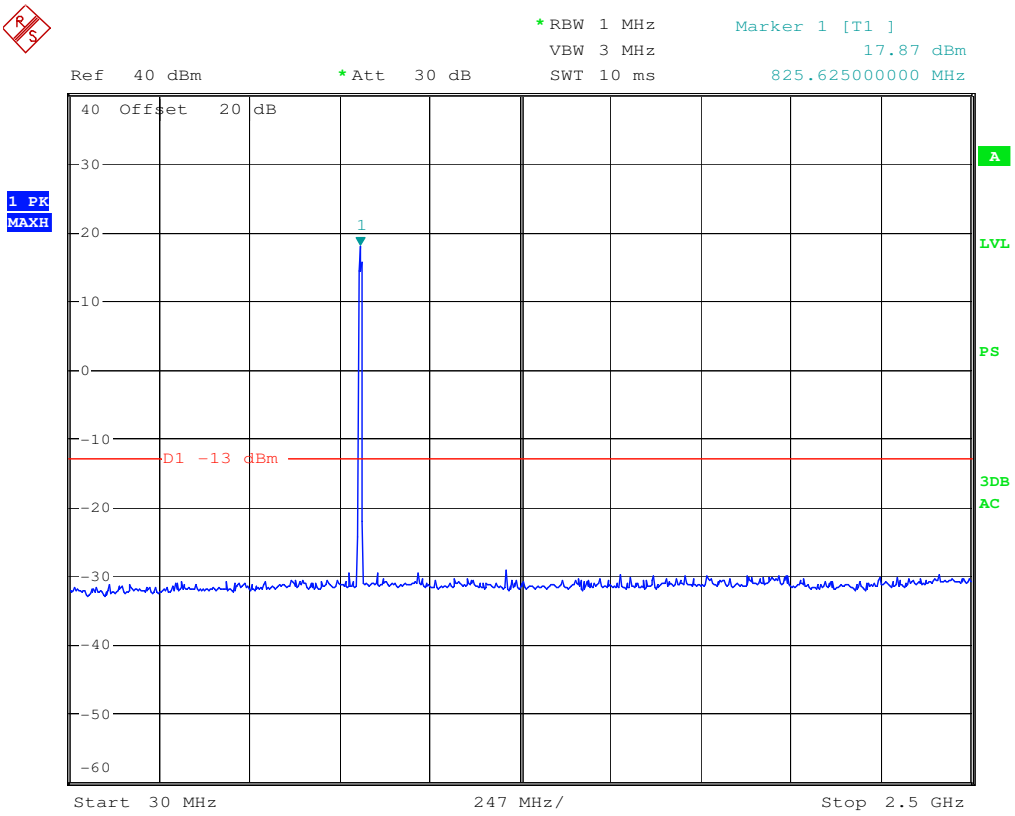
Band Edge emission WCDMA II Channel Low



Band Edge emission WCDMA II Channel high



WCDMA V Channel Low



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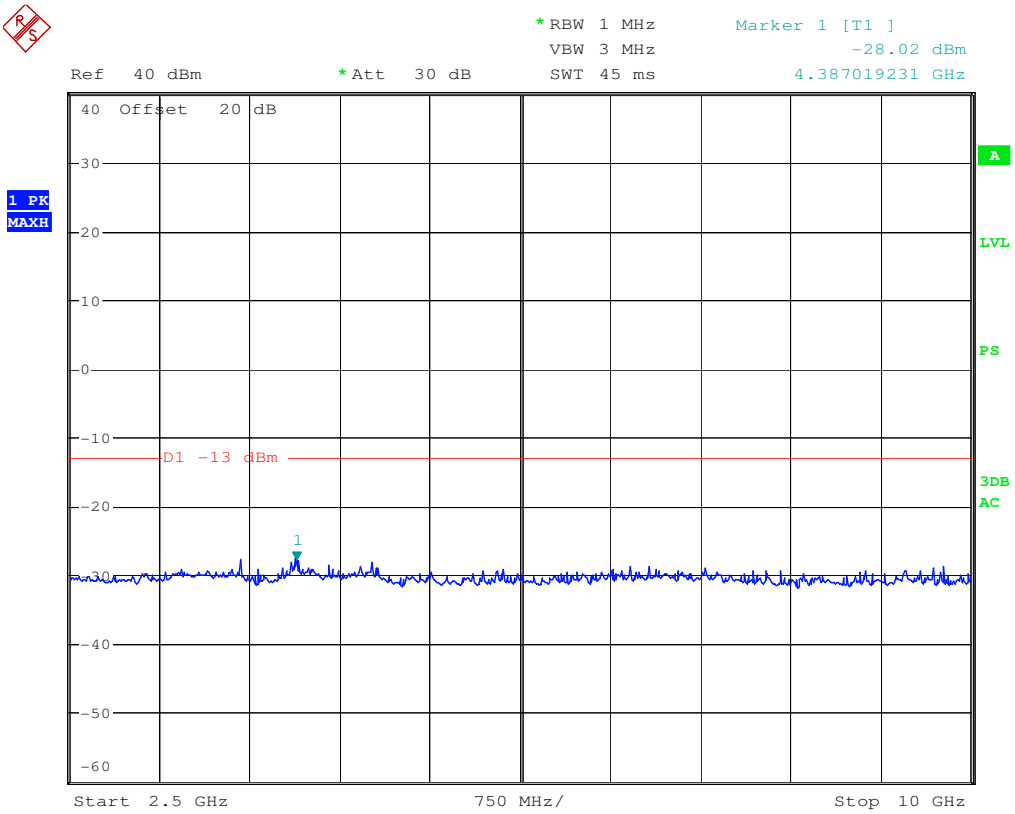

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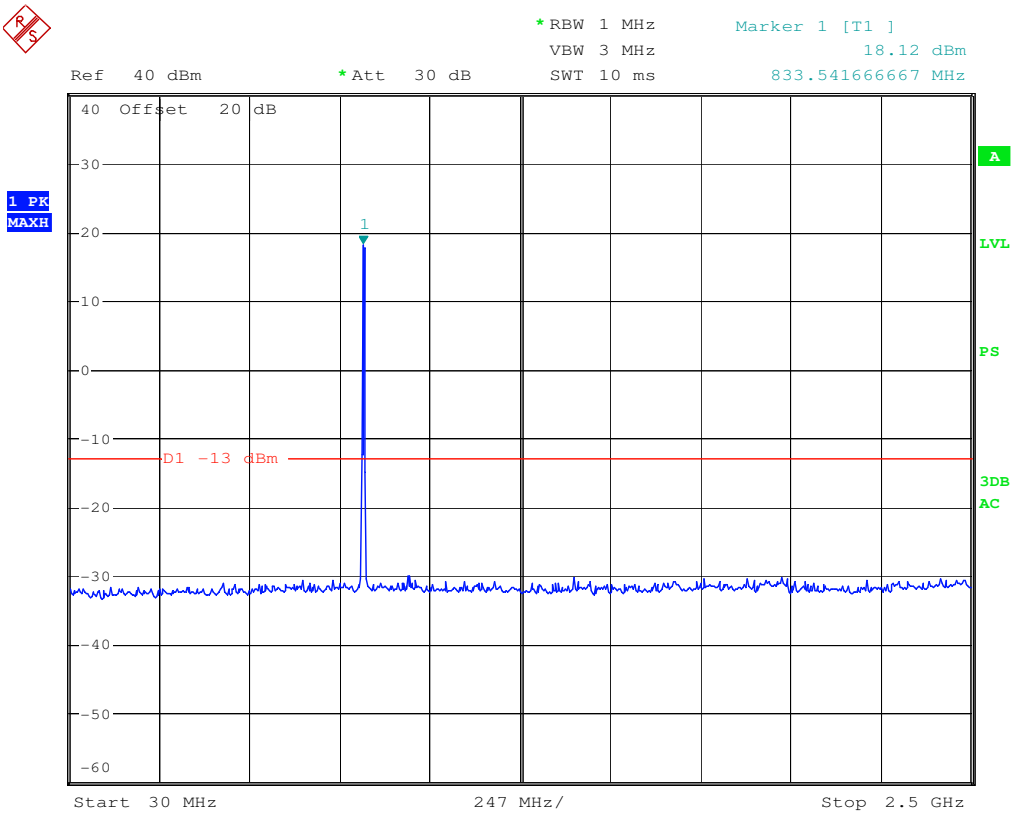
WCDMA V Channel Mid



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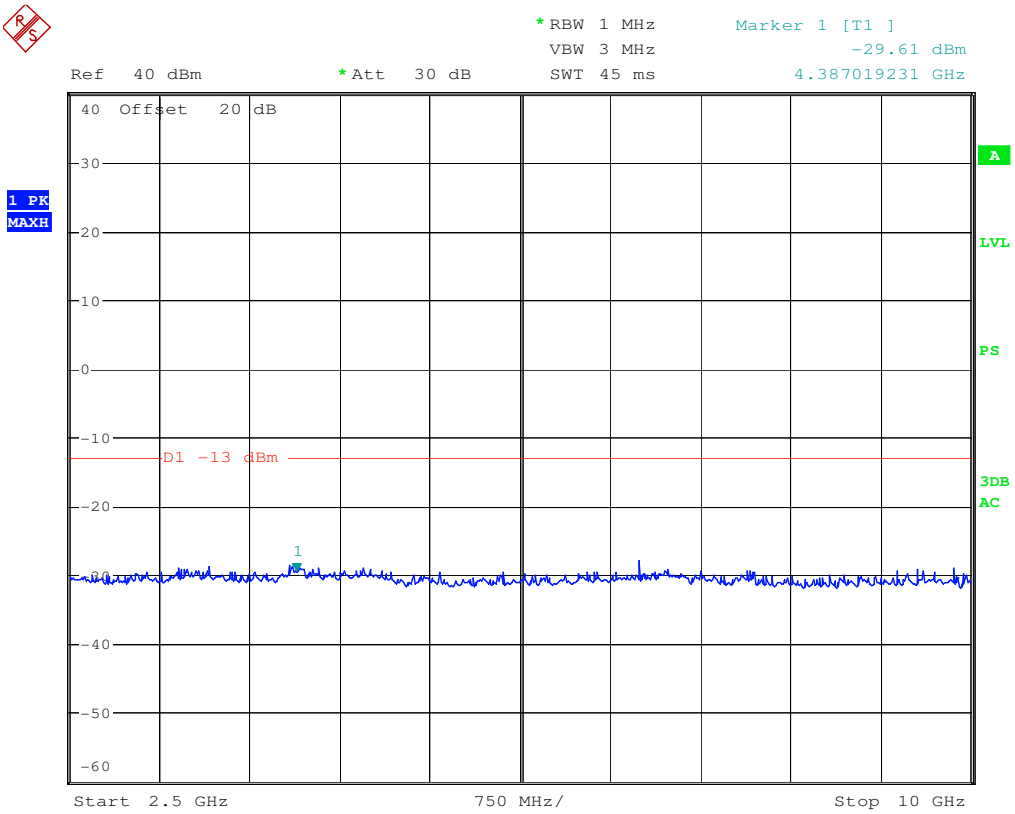
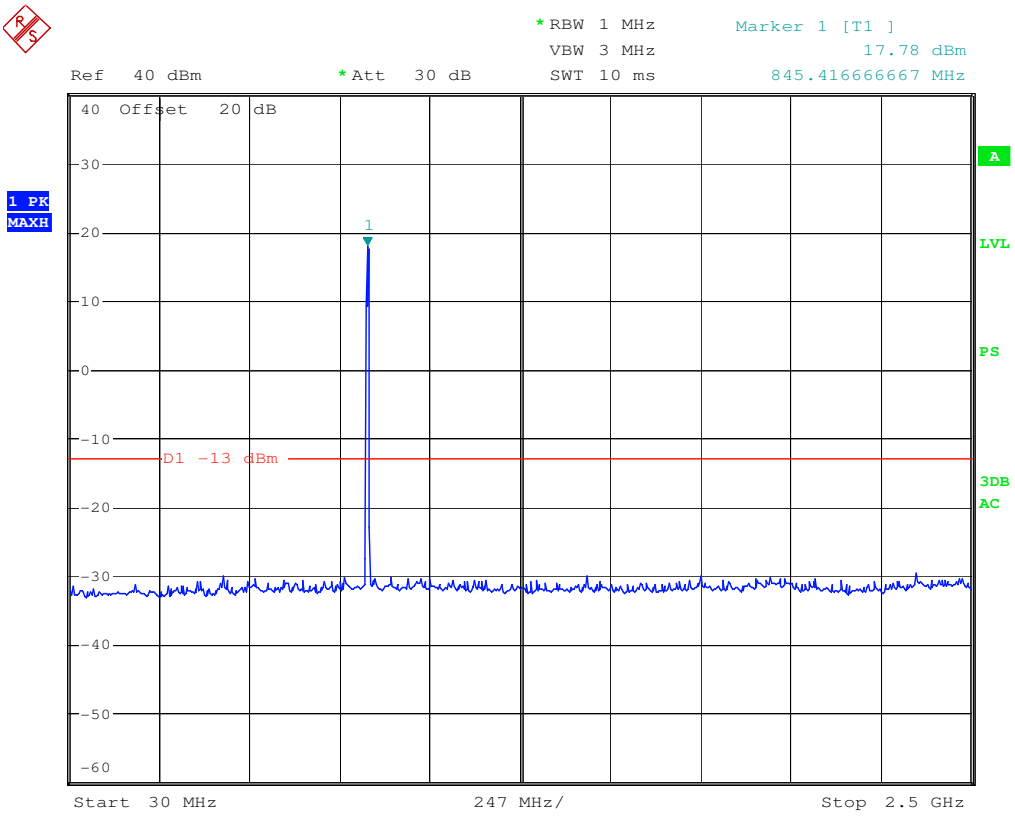


Date: 8.JUN.2009 09:55:52

WCDMA V Channel High



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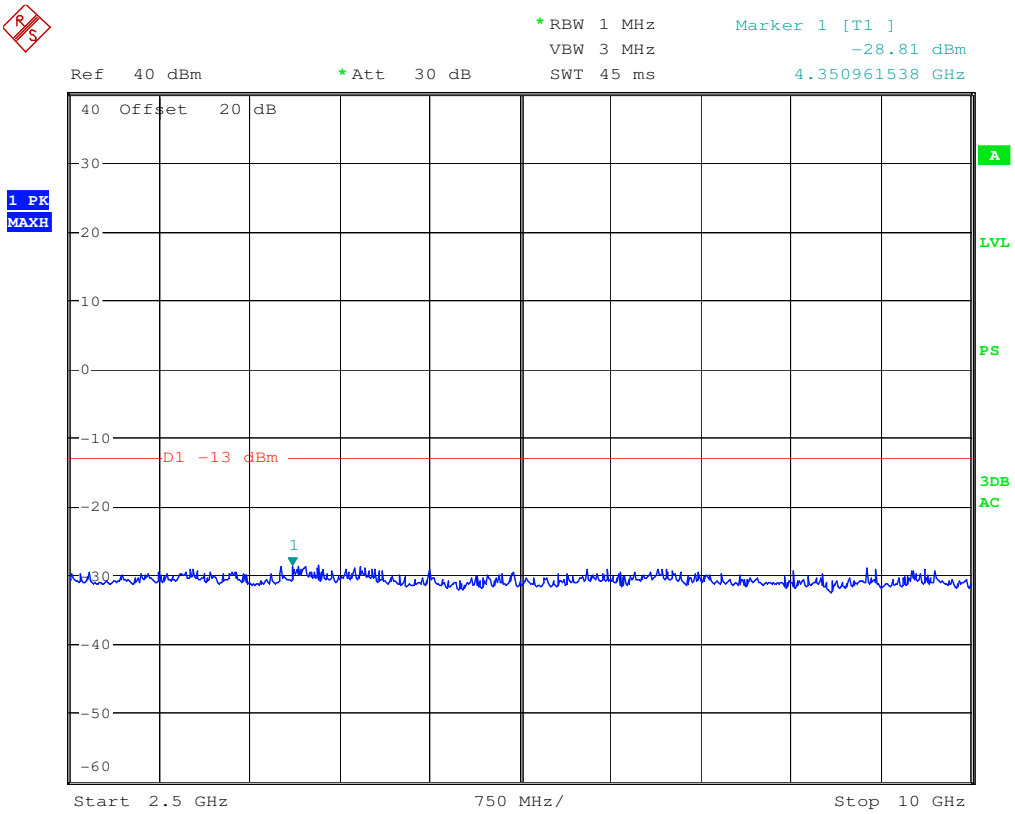
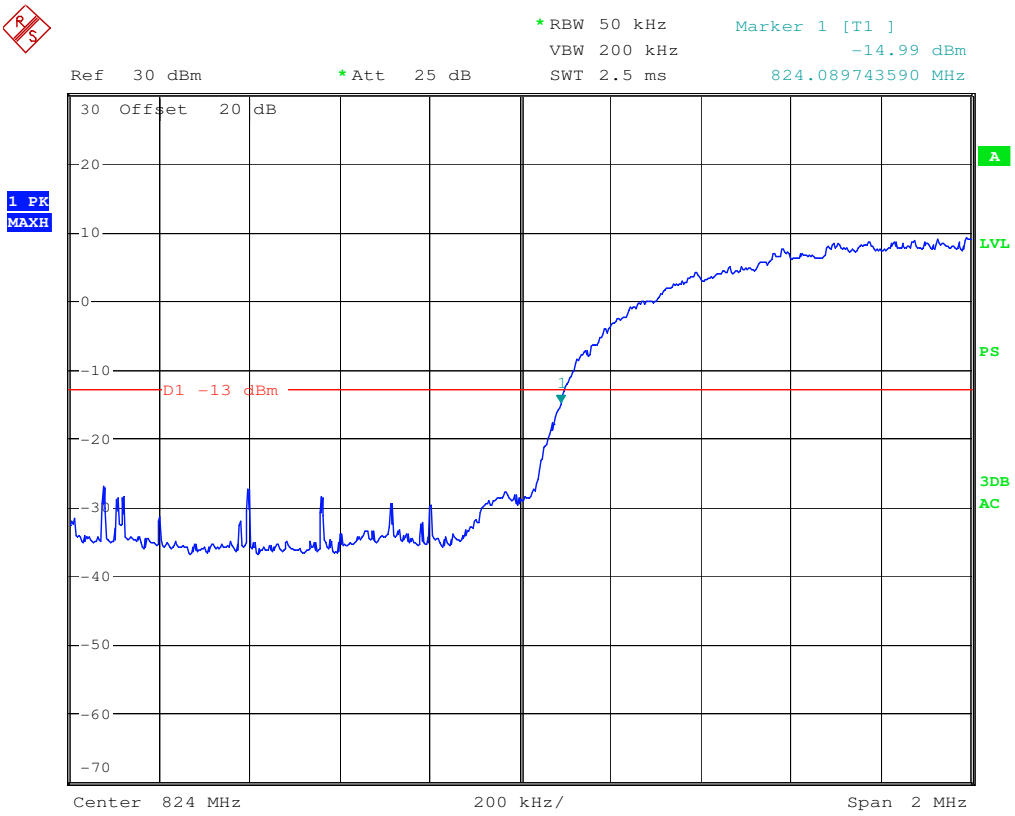


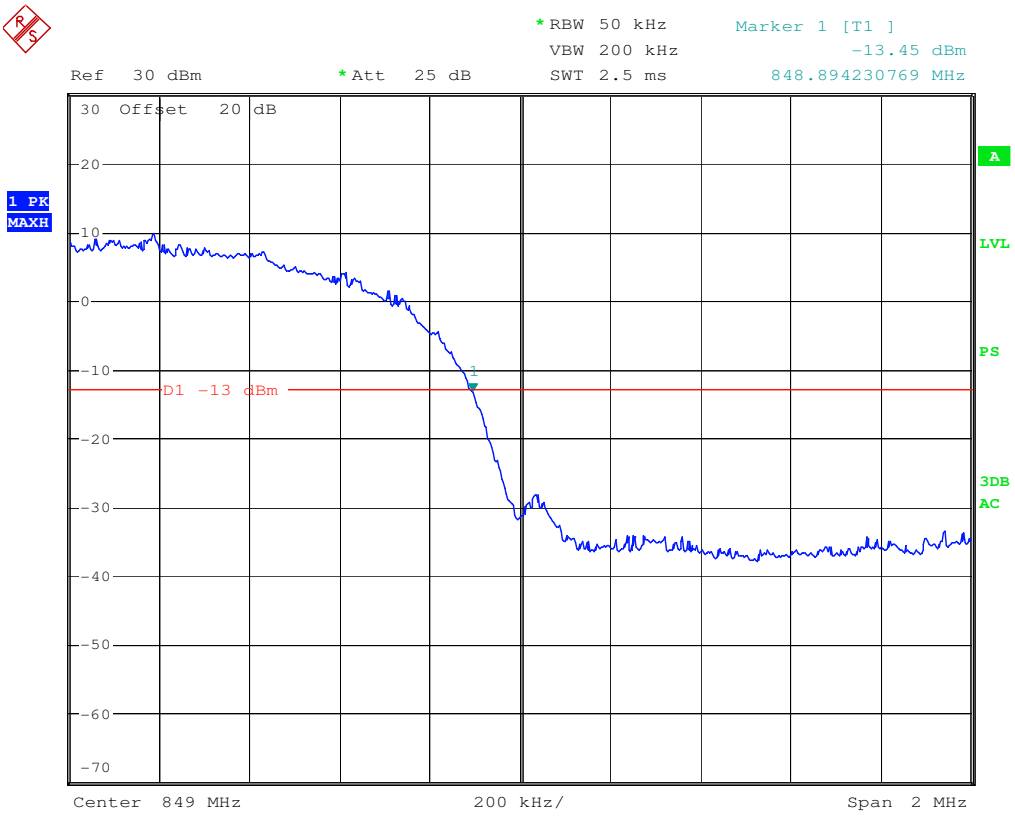
Date: 8.JUN.2009 09:57:56

Band Edge emission WCDMA V Channel Low



Date: 8.JUN.2009 10:25:14

Band Edge emission WCDMA V Channel high



6.6 Field Strength of Radiated Spurious Emissions

Test Requirement: Part 2.1051

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

Test Date: Jun 8, 2009

Test Procedure:

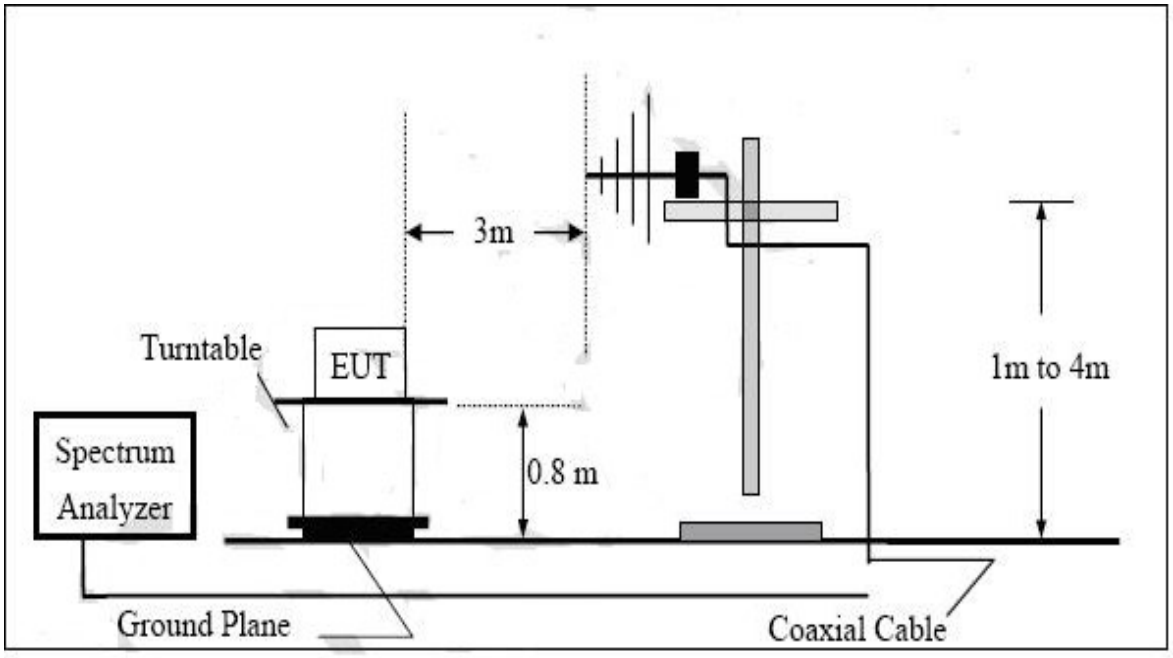
The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of spectrum analyzer was set at 1MHz, sufficient scans were taken to show the out of band Emission is any up to 10^{th} harmonic.

For the out of band: set RBW, VBW=1MHz, stat=30MHz, stop= 10 th harmonic. Limit= --13dBm

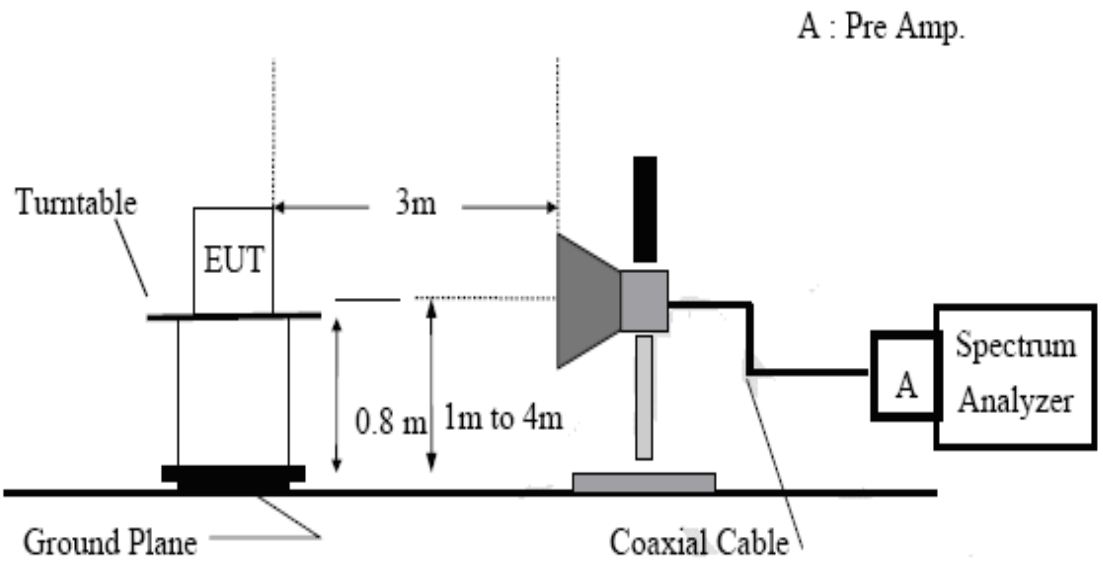
Band Edge requirements: In 1Mhz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 % of bandwidth of fundamental emission of the transmitter any be employed to measure the out of band emission. Limit=--13dBm.

Test Setup:

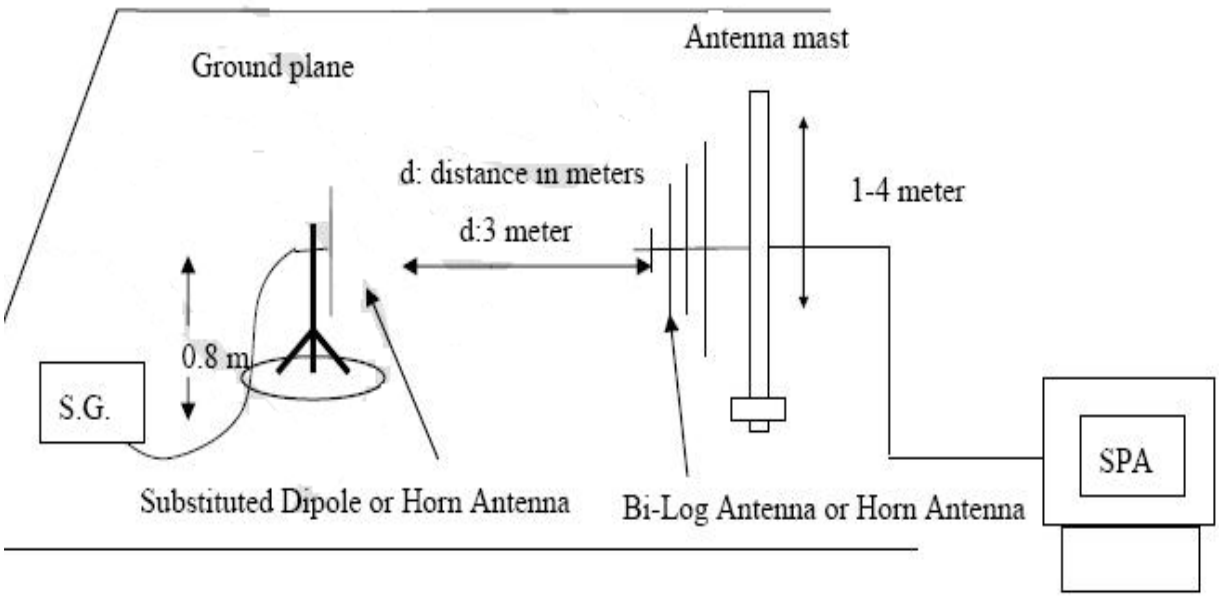
(A) Radiated emission Test setup, Below Frequency 1000MHz:



(B) Radiated emission Test setup frequency over 1GHz:



(C) Substituted Method Test setup:



Test Procedure:

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

emission was recorded with the rotation of the turntable and 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 824.2-848.8MHz were measured using substitution method. The EUT was replaced by dipole antenna connected, the S.G. output was recorded and ERP was calculated as follow:

ERP in frequency band 1710-1755MHz and 1850.5-1909.8MHz 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)

Radiated spurious Emission Measurement Result: GSM 850 mode

Operation mode: TX CH Low mode

Fundamental Frequency: 824.2MHz

Frequency (MHz)	SPA Reading (dBuV)	Ant.Pol. H/V	S.G Output (dBm)	Antenna Gain (dBi/dBd)	Cable Loss (dBm)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dB)
100.00	44.2	H	-54.89	-1.80	1.02	-57.71	-13.0	44.71
200.00	45.6	H	-54.96	-1.40	1.66	-58.02	-13.0	45.02
800.00	44.0	H	-54.60	-2.87	2.10	-59.57	-13.0	46.57
1648.40	46.0	H	-53.80	6.95	3.93	-50.78	-13.0	37.78
2472.60	44.6	H	-53.50	8.35	5.02	-50.17	-13.0	37.17
3296.80	45.2	H	-53.80	8.15	5.62	-51.27	-13.0	38.27
4121.00	45.8	H	-55.10	8.45	6.13	-52.78	-13.0	39.78
100.00	45.2	V	-54.30	-1.80	1.02	-57.12	-13.0	44.12
200.00	46.0	V	-55.00	-1.40	1.66	-58.06	-13.0	45.06
800.00	43.8	V	-55.80	-2.87	2.10	-60.77	-13.0	47.77
1648.40	47.2	V	-53.20	6.95	3.93	-50.18	-13.0	37.18
2472.60	45.6	V	-53.42	8.35	5.02	-50.09	-13.0	37.09
3296.80	46.8	V	-53.72	8.15	5.62	-51.19	-13.0	38.19
4121.00	47.2	V	-53.00	8.45	6.13	-50.68	-13.0	37.68

Remark:

1 emission behaviors belong to narrowband spurious emission.

2 The result basic equation calculation is as follow:

ERP/EIRP(dBm)=S.G. Output(dBm) + Antenna Gain(dBd/dBi)-Cable Loss

Radiated spurious Emission Measurement Result: GSM 850 mode

Operation mode: TX CH Mid mode

Fundamental Frequency: 836.60MHz

Frequency (MHz)	SPA Reading (dBuV)	Ant.Pol. H/V	S.G Output (dBm)	Antenna Gain (dBi/dBd)	Cable Loss (dBm)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dB)
100.00	44.5	H	-55.00	-1.80	1.02	-57.82	-13.0	44.82
200.00	45.0	H	-54.00	-1.40	1.66	-57.06	-13.0	44.06
800.00	44.5	H	-54.60	-2.87	2.10	-59.57	-13.0	46.57
1673.20	46.2	H	-53.80	6.95	3.93	-50.78	-13.0	37.78
2509.80	44.8	H	-53.50	8.35	5.02	-50.17	-13.0	37.17
3346.40	45.6	H	-53.80	8.15	5.62	-51.27	-13.0	38.27
4183.00	46.0	H	-55.10	8.45	6.13	-52.78	-13.0	39.78
100.00	45.2	V	-54.00	-1.80	1.02	-56.82	-13.0	43.82
200.00	46.0	V	-55.00	-1.40	1.66	-58.06	-13.0	45.06
800.00	43.8	V	-55.00	-2.87	2.10	-59.97	-13.0	46.97
1673.20	46.5	V	-53.00	6.95	3.93	-49.98	-13.0	36.98
2509.80	45.8	V	-54.00	8.35	5.02	-50.67	-13.0	37.67
3346.40	47.2	V	-53.70	8.15	5.62	-51.17	-13.0	38.17
4183.00	47.0	V	-53.00	8.45	6.13	-50.68	-13.0	37.68

Remark:

1 emission behaviors belong to narrowband spurious emission.

2 The result basic equation calculation is as follow:

ERP/EIRP(dBm)=S.G. Output(dBm) + Antenna Gain(dBd/dBi)-Cable Loss

Radiated spurious Emission Measurement Result: GSM 850 mode

Operation mode: TX CH High mode

Fundamental Frequency: 848.8MHz

Frequency (MHz)	SPA Reading (dBuV)	Ant.Pol. H/V	S.G Output (dBm)	Antenna Gain (dBi/dBd)	Cable Loss (dBm)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dB)
100.00	44.8	H	-54.50	-1.80	1.02	-57.32	-13.0	44.32
200.00	45.2	H	-54.33	-1.40	1.66	-57.39	-13.0	44.39
800.00	44.3	H	-54.00	-2.87	2.10	-58.97	-13.0	45.97
1673.20	46.0	H	-53.50	6.95	3.93	-50.48	-13.0	37.48
2509.80	44.8	H	-53.10	8.35	5.02	-49.77	-13.0	36.77
3346.40	45.6	H	-53.00	8.15	5.62	-50.47	-13.0	37.47
4183.00	46.0	H	-55.16	8.45	6.13	-52.84	-13.0	39.84
100.00	44.8	V	-54.00	-1.80	1.02	-56.82	-13.0	43.82
200.00	44.8	V	-55.00	-1.40	1.66	-58.06	-13.0	45.06
800.00	43.6	V	-55.00	-2.87	2.10	-59.97	-13.0	46.97
1673.20	46.0	V	-53.22	6.95	3.93	-50.2	-13.0	37.2
2509.80	45.6	V	-53.56	8.35	5.02	-50.23	-13.0	37.23
3346.40	46.5	V	-53.70	8.15	5.62	-51.17	-13.0	38.17
4183.00	46.3	V	-53.08	8.45	6.13	-50.76	-13.0	37.76

Remark:

1 emission behaviors belong to narrowband spurious emission.

2 The result basic equation calculation is as follow:

ERP/EIRP(dBm)=S.G. Output(dBm) + Antenna Gain(dBd/dBi)-Cable Loss

Radiated spurious Emission Measurement Result: PCS 1900 mode

Operation mode: TX CH Low mode

Fundamental Frequency: 1850.2MHz

Frequency (MHz)	SPA Reading (dBuV)	Ant.Pol. H/V	S.G Output (dBm)	Antenna Gain (dBi/dBd)	Cable Loss (dBm)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dB)
100.00	43.3	H	-54.50	-1.80	1.02	-57.32	-13.0	44.32
200.00	44.4	H	-54.33	-1.40	1.66	-57.39	-13.0	44.39
800.00	45.2	H	-54.00	-2.87	2.10	-58.97	-13.0	45.97
1800.00	46.1	H	-53.00	7.00	4.28	-50.28	-13.0	37.28
3700.40	44.3	H	-54.20	8.35	4.57	-50.42	-13.0	37.42
5550.60	44.2	H	-53.10	9.55	5.57	-49.12	-13.0	36.12
7400.80	44.8	H	-53.00	9.75	7.62	-50.87	-13.0	37.87
9251.00	45.4	H	-55.16	10.55	10.90	-55.51	-13.0	42.51
100.00	44.0	V	-54.00	-1.80	1.02	-56.82	-13.0	43.82
200.00	44.1	V	-55.00	-1.40	1.66	-58.06	-13.0	45.06
800.00	43.0	V	-55.00	-2.87	2.10	-59.97	-13.0	46.97
1800.00	46.2	V	-51.20	7.00	4.28	-48.48	-13.0	35.48
3700.40	45.3	V	-53.56	8.35	4.57	-49.78	-13.0	36.78
5550.60	45.2	V	-53.70	9.55	5.57	-49.72	-13.0	36.72
7400.80	45.1	V	-53.08	9.75	7.62	-50.95	-13.0	37.95
9251.00	44.8	V	-53.20	10.55	10.90	-53.55	-13.0	40.55

Remark:

1 emission behaviors belong to narrowband spurious emission.

2 The result basic equation calculation is as follow:

ERP/EIRP(dBm)=S.G. Output(dBm) + Antenna Gain(dBd/dBi)-Cable Loss

Radiated spurious Emission Measurement Result: PCS 1900 mode

Operation mode: TX CH mid mode

Fundamental Frequency: 1880.0MHz

Frequency (MHz)	SPA Reading (dBuV)	Ant.Pol. H/V	S.G Output (dBm)	Antenna Gain (dBi/dBd)	Cable Loss (dBm)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dB)
100.00	44.1	H	-54.50	-1.80	1.02	-57.32	-13.0	44.32
200.00	44.3	H	-56.33	-1.40	1.66	-59.39	-13.0	46.39
800.00	44.8	H	-56.00	-2.87	2.10	-60.97	-13.0	47.97
1800.00	44.7	H	-53.00	7.00	4.28	-50.28	-13.0	37.28
3760.00	45.1	H	-53.00	8.42	4.59	-49.17	-13.0	36.17
5640.00	45.2	H	-53.10	9.50	5.59	-49.19	-13.0	36.19
7520.00	45.7	H	-53.05	9.78	7.72	-50.99	-13.0	37.99
9400.00	46.0	H	-55.16	10.61	10.98	-55.53	-13.0	42.53
100.00	44.1	V	-56.00	-1.80	1.02	-58.82	-13.0	45.82
200.00	43.5	V	-56.00	-1.40	1.66	-59.06	-13.0	46.06
800.00	43.4	V	-55.00	-2.87	2.10	-59.97	-13.0	46.97
1800.00	45.5	V	-54.20	7.00	4.28	-51.48	-13.0	38.48
3760.00	45.1	V	-55.56	8.42	4.59	-51.73	-13.0	38.73
5640.00	46.2	V	-55.70	9.50	5.59	-51.79	-13.0	38.79
7520.00	46.0	V	-55.08	9.78	7.72	-53.02	-13.0	40.02
9400.00	44.7	V	-55.20	10.61	10.98	-55.57	-13.0	42.57

Remark:

1 emission behaviors belong to narrowband spurious emission.

2 The result basic equation calculation is as follow:

ERP/EIRP(dBm)=S.G. Output(dBm) + Antenna Gain(dBd/dBi)-Cable Loss

Radiated spurious Emission Measurement Result: PCS 1900 mode

Operation mode: TX CH High mode

Fundamental Frequency: 1909.8MHz

Frequency (MHz)	SPA Reading (dBuV)	Ant.Pol. H/V	S.G Output (dBm)	Antenna Gain (dBi/dBd)	Cable Loss (dBm)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dB)
100.00	44.2	H	-54.33	-1.80	1.02	-57.15	-13.0	44.15
200.00	44.2	H	-54.22	-1.40	1.66	-57.28	-13.0	44.28
800.00	45.1	H	-54.01	-2.87	2.10	-58.98	-13.0	45.98
1800.00	44.0	H	-54.50	7.00	4.28	-51.78	-13.0	38.78
3981.60	45.8	H	-54.44	8.42	4.59	-50.61	-13.0	37.61
5972.40	45.5	H	-54.23	9.50	5.59	-50.32	-13.0	37.32
7963.20	45.5	H	-55.26	9.78	7.72	-53.2	-13.0	40.2
9954.00	45.3	H	-55.00	10.61	10.98	-55.37	-13.0	42.37
100.00	43.8	V	-55.50	-1.80	1.02	-58.32	-13.0	45.32
200.00	44.2	V	-55.88	-1.40	1.66	-58.94	-13.0	45.94
800.00	41.9	V	-55.00	-2.87	2.10	-59.97	-13.0	46.97
1800.00	44.2	V	-54.33	7.00	4.28	-51.61	-13.0	38.61
3981.60	44.6	V	-55.50	8.42	4.59	-51.67	-13.0	38.67
5972.40	45.5	V	-55.60	9.50	5.59	-51.69	-13.0	38.69
7963.20	45.7	V	-55.24	9.78	7.72	-53.18	-13.0	40.18
9954.00	43.9	V	-55.64	10.61	10.98	-56.01	-13.0	43.01

Remark:

1 emission behaviors belong to narrowband spurious emission.

2 The result basic equation calculation is as follow:

ERP/EIRP(dBm)=S.G. Output(dBm) + Antenna Gain(dBd/dBi)-Cable Loss

Radiated spurious Emission Measurement Result: WCDMA II mode

Operation mode: TX CH Low mode

Fundamental Frequency: 1852.4MHz

Frequency (MHz)	SPA Reading (dBuV)	Ant.Pol. H/V	S.G Output (dBm)	Antenna Gain (dBi/dBd)	Cable Loss (dBm)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dB)
94.52	44.2	H	-55.30	-2.04	0.95	-58.29	-13.0	45.29
200.00	44.2	H	-56.20	-1.40	1.66	-59.26	-13.0	46.26
800.00	45.1	H	-55.00	-2.87	2.10	-59.97	-13.0	46.97
1800.00	44.0	H	-54.50	7.00	4.28	-51.78	-13.0	38.78
3704.80	45.8	H	-54.40	8.35	4.57	-50.62	-13.0	37.62
5557.20	45.5	H	-54.20	9.55	5.57	-50.22	-13.0	37.22
7409.60	45.5	H	-55.26	9.75	7.62	-53.13	-13.0	40.13
9262.00	45.3	H	-55.00	10.55	10.90	-55.35	-13.0	42.35
94.52	43.8	V	-55.50	-2.04	0.95	-58.49	-13.0	45.49
200.00	44.2	V	-55.40	-1.40	1.66	-58.46	-13.0	45.46
800.00	41.9	V	-55.00	-2.87	2.10	-59.97	-13.0	46.97
1800.00	44.2	V	-54.30	7.00	4.28	-51.58	-13.0	38.58
3704.80	44.6	V	-55.50	8.35	4.57	-51.72	-13.0	38.72
5557.20	45.5	V	-55.60	9.55	5.57	-51.62	-13.0	38.62
7409.60	45.7	V	-55.20	9.75	7.62	-53.07	-13.0	40.07
9262.00	43.9	V	-55.60	10.55	10.90	-55.95	-13.0	42.95

Remark:

1 emission behaviors belong to narrowband spurious emission.

2 The result basic equation calculation is as follow:

ERP/EIRP(dBm)=S.G. Output(dBm) + Antenna Gain(dBd/dBi)-Cable Loss

Radiated spurious Emission Measurement Result: WCDMA II mode

Operation mode: TX CH Mid mode

Fundamental Frequency: 1880.0MHz

Frequency (MHz)	SPA Reading (dBuV)	Ant.Pol. H/V	S.G Output (dBm)	Antenna Gain (dBi/dBd)	Cable Loss (dBm)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dB)
94.52	44.0	H	-55.32	-2.04	0.95	-58.31	-13.0	45.31
200.00	43.8	H	-55.30	-1.40	1.66	-58.36	-13.0	45.36
800.00	44.5	H	-55.08	-2.87	2.10	-60.05	-13.0	47.05
1800.00	44.6	H	-53.20	7.00	4.28	-50.48	-13.0	37.48
3760.00	45.0	H	-53.00	8.42	4.59	-49.17	-13.0	36.17
5640.00	45.0	H	-54.10	9.50	5.59	-50.19	-13.0	37.19
7520.00	45.5	H	-54.05	9.78	7.72	-51.99	-13.0	38.99
9400.00	45.4	H	-55.16	10.61	10.98	-55.53	-13.0	42.53
94.52	44.0	H	-55.30	-2.04	0.95	-58.29	-13.0	45.29
200.00	44.1	V	-55.05	-1.40	1.66	-58.11	-13.0	45.11
800.00	44.6	V	-55.40	-2.87	2.10	-60.37	-13.0	47.37
1800.00	45.3	V	-53.20	7.00	4.28	-50.48	-13.0	37.48
3760.00	45.2	V	-54.56	8.42	4.59	-50.73	-13.0	37.73
5640.00	45.7	V	-54.70	9.50	5.59	-50.79	-13.0	37.79
7520.00	45.5	V	-54.08	9.78	7.72	-52.02	-13.0	39.02
9400.00	45.0	V	-54.20	10.61	10.98	-54.57	-13.0	41.57

Remark:

1 emission behaviors belong to narrowband spurious emission.

2 The result basic equation calculation is as follow:

ERP/EIRP(dBm)=S.G. Output(dBm) + Antenna Gain(dBd/dBi)-Cable Loss

Radiated spurious Emission Measurement Result: WCDMA II mode

Operation mode: TX CH High mode

Fundamental Frequency: 1907.6MHz

Frequency (MHz)	SPA Reading (dBuV)	Ant.Pol. H/V	S.G Output (dBm)	Antenna Gain (dBi/dBd)	Cable Loss (dBm)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dB)
94.52	44.1	H	-54.50	-2.04	0.95	-57.49	-13.0	44.49
200.00	44.5	H	-55.00	-1.40	1.66	-58.06	-13.0	45.06
800.00	44.2	H	-54.50	-2.87	2.10	-59.47	-13.0	46.47
1800.00	43.9	H	-54.70	7.00	4.28	-51.98	-13.0	38.98
3815.20	45.1	H	-53.55	8.42	4.59	-49.72	-13.0	36.72
5722.80	44.8	H	-53.89	9.50	5.59	-49.98	-13.0	36.98
7630.40	45.4	H	-53.57	9.78	7.72	-51.51	-13.0	38.51
9538.00	45.4	H	-54.10	10.61	10.98	-54.47	-13.0	41.47
94.52	44.2	H	-54.30	-2.04	0.95	-57.29	-13.0	44.29
200.00	44.1	V	-54.05	-1.40	1.66	-57.11	-13.0	44.11
800.00	44.8	V	-54.40	-2.87	2.10	-59.37	-13.0	46.37
1800.00	44.8	V	-54.21	7.00	4.28	-51.49	-13.0	38.49
3815.20	45.6	V	-54.56	8.42	4.59	-50.73	-13.0	37.73
5722.80	45.7	V	-54.74	9.50	5.59	-50.83	-13.0	37.83
7630.40	44.7	V	-53.56	9.78	7.72	-51.5	-13.0	38.5
9538.00	44.6	V	-53.75	10.61	10.98	-54.12	-13.0	41.12

Remark:

1 emission behaviors belong to narrowband spurious emission.

2 The result basic equation calculation is as follow:

ERP/EIRP(dBm)=S.G. Output(dBm) + Antenna Gain(dBd/dBi)-Cable Loss

Radiated spurious Emission Measurement Result: WCDMA V mode

Operation mode: TX CH Low mode

Fundamental Frequency: 826.4MHz

Frequency (MHz)	SPA Reading (dBuV)	Ant.Pol. H/V	S.G Output (dBm)	Antenna Gain (dBi/dBd)	Cable Loss (dBm)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dB)
100.00	44.4	H	-55.80	-1.80	1.02	-58.62	-13.0	45.62
200.00	45.1	H	-55.90	-1.40	1.66	-58.96	-13.0	45.96
800.00	44.0	H	-55.60	-2.87	2.10	-60.57	-13.0	47.57
1652.80	46.0	H	-53.80	6.95	3.93	-50.78	-13.0	37.78
2479.20	44.6	H	-53.50	8.35	5.02	-50.17	-13.0	37.17
3305.60	45.0	H	-54.80	8.15	5.62	-52.27	-13.0	39.27
4132.00	45.5	H	-55.10	8.45	6.13	-52.78	-13.0	39.78
100.00	45.2	V	-54.30	-1.80	1.02	-57.12	-13.0	44.12
200.00	45.1	V	-55.00	-1.40	1.66	-58.06	-13.0	45.06
800.00	44.5	V	-55.80	-2.87	2.10	-60.77	-13.0	47.77
1652.80	46.2	V	-53.20	6.95	3.93	-50.18	-13.0	37.18
2479.20	45.6	V	-53.40	8.35	5.02	-50.07	-13.0	37.07
3305.60	45.2	V	-53.70	8.15	5.62	-51.17	-13.0	38.17
4132.00	44.8	V	-53.08	8.45	6.13	-50.76	-13.0	37.76

Remark:

1 emission behaviors belong to narrowband spurious emission.

2 The result basic equation calculation is as follow:

ERP/EIRP(dBm)=S.G. Output(dBm) + Antenna Gain(dBd/dBi)-Cable Loss

Radiated spurious Emission Measurement Result: WCDMA V mode

Operation mode: TX CH Mid mode

Fundamental Frequency: 836.0MHz

Frequency (MHz)	SPA Reading (dBuV)	Ant.Pol. H/V	S.G Output (dBm)	Antenna Gain (dBi/dBd)	Cable Loss (dBm)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dB)
100.00	44.1	H	-55.80	-1.80	1.02	-58.62	-13.0	45.62
200.00	45.2	H	-55.00	-1.40	1.66	-58.06	-13.0	45.06
800.00	44.5	H	-55.00	-2.87	2.10	-59.97	-13.0	46.97
1672.00	46.2	H	-53.80	6.95	3.93	-50.78	-13.0	37.78
2508.00	44.4	H	-53.50	8.35	5.02	-50.17	-13.0	37.17
3344.00	45.0	H	-53.80	8.15	5.62	-51.27	-13.0	38.27
4180.00	45.5	H	-55.10	8.45	6.13	-52.78	-13.0	39.78
100.00	45.2	V	-54.00	-1.80	1.02	-56.82	-13.0	43.82
200.00	45.2	V	-55.00	-1.40	1.66	-58.06	-13.0	45.06
800.00	44.2	V	-55.00	-2.87	2.10	-59.97	-13.0	46.97
1672.00	44.3	V	-54.00	6.95	3.93	-50.98	-13.0	37.98
2508.00	45.8	V	-54.00	8.35	5.02	-50.67	-13.0	37.67
3344.00	44.6	V	-53.70	8.15	5.62	-51.17	-13.0	38.17
4180.00	44.8	V	-53.00	8.45	6.13	-50.68	-13.0	37.68

Remark:

1 emission behaviors belong to narrowband spurious emission.

2 The result basic equation calculation is as follow:

ERP/EIRP(dBm)=S.G. Output(dBm) + Antenna Gain(dBd/dBi)-Cable Loss

Radiated spurious Emission Measurement Result: WCDMA V mode

Operation mode: TX CH High mode

Fundamental Frequency: 846.6MHz

Frequency (MHz)	SPA Reading (dBuV)	Ant.Pol. H/V	S.G Output (dBm)	Antenna Gain (dBi/dBd)	Cable Loss (dBm)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dB)
100.00	44.8	H	-55.50	-1.80	1.02	-58.32	-13.0	45.32
200.00	45.2	H	-55.33	-1.40	1.66	-58.39	-13.0	45.39
800.00	44.3	H	-54.00	-2.87	2.10	-58.97	-13.0	45.97
1693.20	46.0	H	-54.00	6.99	3.96	-50.97	-13.0	37.97
2539.80	44.8	H	-53.10	8.41	5.10	-49.79	-13.0	36.79
3386.00	45.6	H	-53.00	8.22	5.60	-50.38	-13.0	37.38
4233.00	46.0	H	-55.16	8.48	6.22	-52.9	-13.0	39.9
100.00	44.8	V	-54.00	-1.80	1.02	-56.82	-13.0	43.82
200.00	44.8	V	-55.00	-1.40	1.66	-58.06	-13.0	45.06
800.00	43.6	V	-55.00	-2.87	2.10	-59.97	-13.0	46.97
1693.20	46.0	V	-53.22	6.99	3.96	-50.19	-13.0	37.19
2539.80	45.6	V	-52.56	8.41	5.10	-49.25	-13.0	36.25
3386.00	46.5	V	-54.70	8.22	5.60	-52.08	-13.0	39.08
4233.00	46.3	V	-53.00	8.48	6.22	-50.74	-13.0	37.74

Remark:

1 emission behaviors belong to narrowband spurious emission.

2 The result basic equation calculation is as follow:

ERP/EIRP(dBm)=S.G. Output(dBm) + Antenna Gain(dBd/dBi)-Cable Loss

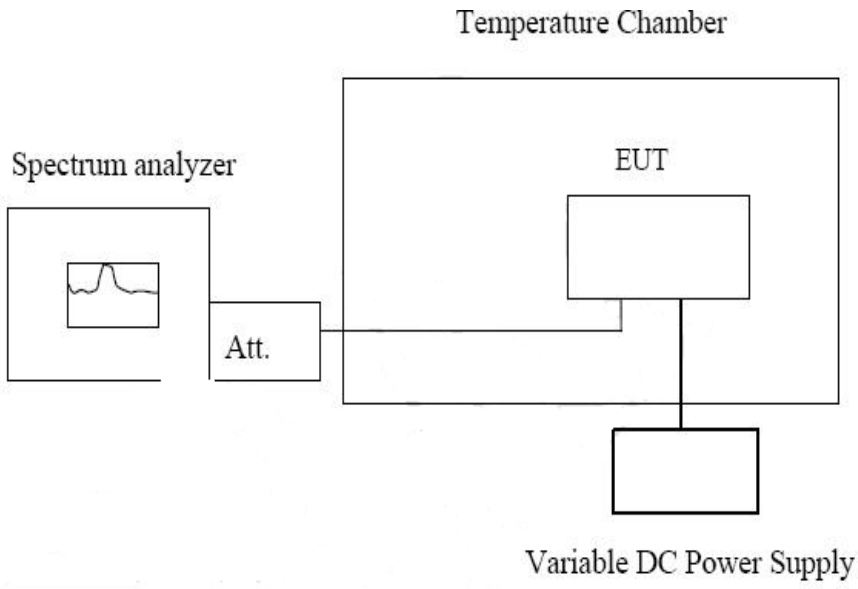
6.7 Frequency Stability V.S. TEMPERATURE MEASUREMENT

Test Requirement: Part 2.1055(a)(1)

Test Date: Jun 5, 2009

Test Status: Test lowest channel, middle, highest channel.

Test Setup:



Note: Measurement setup for testing On antenna connector.

Test procedure:

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the Spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25 degree operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30 degree. After the temperature stabilized for approximately 30 minutes record the frequency. Repeat step measure with 10 degree per stage until the highest temperature of 50 degree reached.

Frequency Tolerance: +/-2.5ppm for 850MHz band
+/-2.5ppm for 1900MHz band

Reference Frequency: GSM Mid channel 836.6MHz@ 25 degree				
Limit: +/- 2.5ppm = 2091Hz				
Power Supply	Environment	Frequency	Delta	Limit
Vdc	Temperature(degree)	(MHz)	(Hz)	(Hz)
5	-30	836.599970	30	2091
5	-20	836.599981	19	2091
5	-10	836.598899	101	2091
5	10	836.599250	750	2091
5	20	836.599996	4	2091
5	30	836.600011	-11	2091
5	40	836.599913	87	2091
5	50	836.599943	57	2091

Reference Frequency: PCS Mid channel 1880MHz@ 25 degree				
Limit: +/- 2.5ppm = 4700Hz				
Power Supply	Environment	Frequency	Delta	Limit
Vdc	Temperature(degree)	(MHz)	(Hz)	(Hz)
5	-30	1879.999265	725	4700
5	-20	1879.999824	176	4700
5	-10	1879.999953	47	4700
5	10	1879.999944	56	4700
5	20	1879.999880	120	4700
5	30	1879.999973	27	4700
5	40	1879.999928	72	4700
5	50	1879.999863	127	4700

Reference Frequency: WCDMA II Mid channel 1880MHz@ 25 degree				
Limit: +/- 2.5ppm = 4700Hz				
Power Supply	Environment	Frequency	Delta	Limit
Vdc	Temperature(degree)	(MHz)	(Hz)	(Hz)
5	-30	1879.999936	64	4700
5	-20	1879.999988	12	4700
5	-10	1879.999990	10	4700
5	10	1879.999994	6	4700
5	20	1879.999999	1	4700
5	30	1879.999907	93	4700
5	40	1879.999914	86	4700
5	50	1879.999870	130	4700

Reference Frequency: WCDMA V Mid channel 836.0MHz@ 25 degree				
Limit: +/- 2.5ppm = 2091Hz				
Power Supply	Environment	Frequency	Delta	Limit
Vdc	Temperature(degree)	(MHz)	(Hz)	(Hz)
5	-30	835.999911	89	2091
5	-20	835.999926	74	2091
5	-10	835.999933	67	2091
5	10	835.999943	57	2091
5	20	835.999995	5	2091
5	30	835.999942	58	2091
5	40	835.999937	63	2091
5	50	835.999725	275	2091

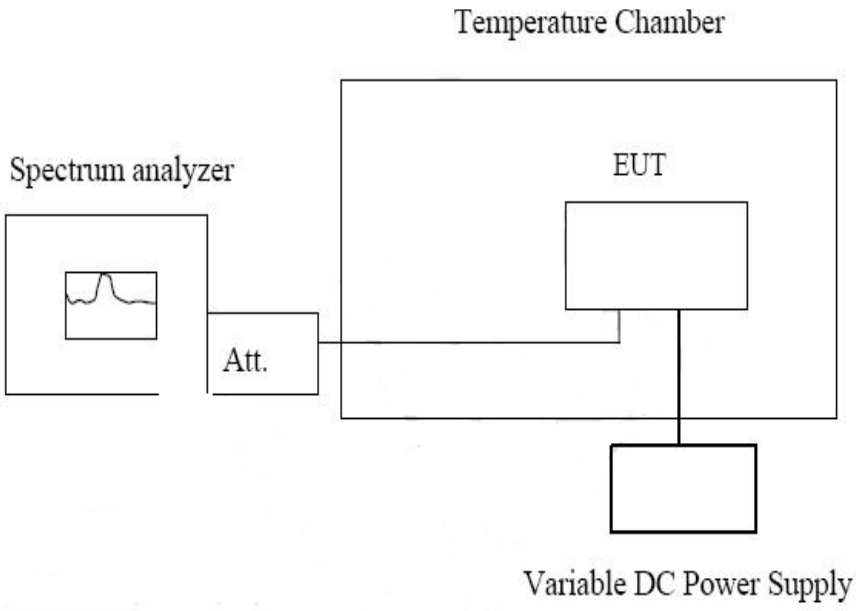
6.8 Frequency Stability V.S. VOLTAGE MEASUREMENT

Test Requirement: Part 2.1055(a)(1)

Test Date: Jun 5, 2009

Test Status: Test lowest channel, middle, highest channel.

Test Setup:



Note: Measurement setup for testing On antenna connector.

Test procedure:

Set chamber temperature to 25 degree. Use a variable AC power/ DC power supply to power the EUT and set the Voltage to rated voltage. Set the spectrum analyzer RBW 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 chang.

Frequency Tolerance: +/-2.5ppm for 850MHz band
+/-2.5ppm for 1900MHz band

Reference Frequency: GSM Mid channel 836.6MHz@ 25 degree				
Limit: +/- 2.5ppm = 2091Hz				
Power Supply	Environment	Frequency	Delta	Limit
Vdc	Temperature(degree)	(MHz)	(Hz)	(Hz)
5.5	25	836.600072	-72	2091
5.0	25	836.600000	0	2091
4.5	25	836.599982	18	2091
3.0 (Endpoint)	25	836.600114	-114	2091

Reference Frequency: PCS Mid channel 1880MHz@ 25 degree				
Limit: +/- 2.5ppm = 4700Hz				
Power Supply	Environment	Frequency	Delta	Limit
Vdc	Temperature(degree)	(MHz)	(Hz)	(Hz)
5.5	25	1879.999990	10	4700
5.0	25	1880.000000	0	4700
4.5	25	1879.999994	6	4700
3.0 (Endpoint)	25	1880.000072	-72	4700

Reference Frequency: WCDMA II Mid channel 1880MHz@ 25 degree				
Limit: +/- 2.5ppm = 4700Hz				
Power Supply	Environment	Frequency	Delta	Limit
Vdc	Temperature(degree)	(MHz)	(Hz)	(Hz)
5.5	25	1879.999888	112	4700
5.0	25	1880.000000	0	4700
4.5	25	1879.999955	45	4700
3.0 (Endpoint)	25	1879.999763	227	4700

Reference Frequency: WCDMA V Mid channel 836.0MHz@ 25 degree				
Limit: +/- 2.5ppm = 2091Hz				
Power Supply	**Environment**	**Frequency**	**Delta**	**Limit**
Vdc	**Temperature(degree)**	**(MHz)**	**(Hz)**	**(Hz)**
5.5	25	835.999883	117	2091
5.0	25	836.000000	0	2091
4.5	25	835.999907	97	2091
3.0 (Endpoint)	25	835.999993	7	2091

6.9 Modulation characteristics

Specification: Part 2.1047

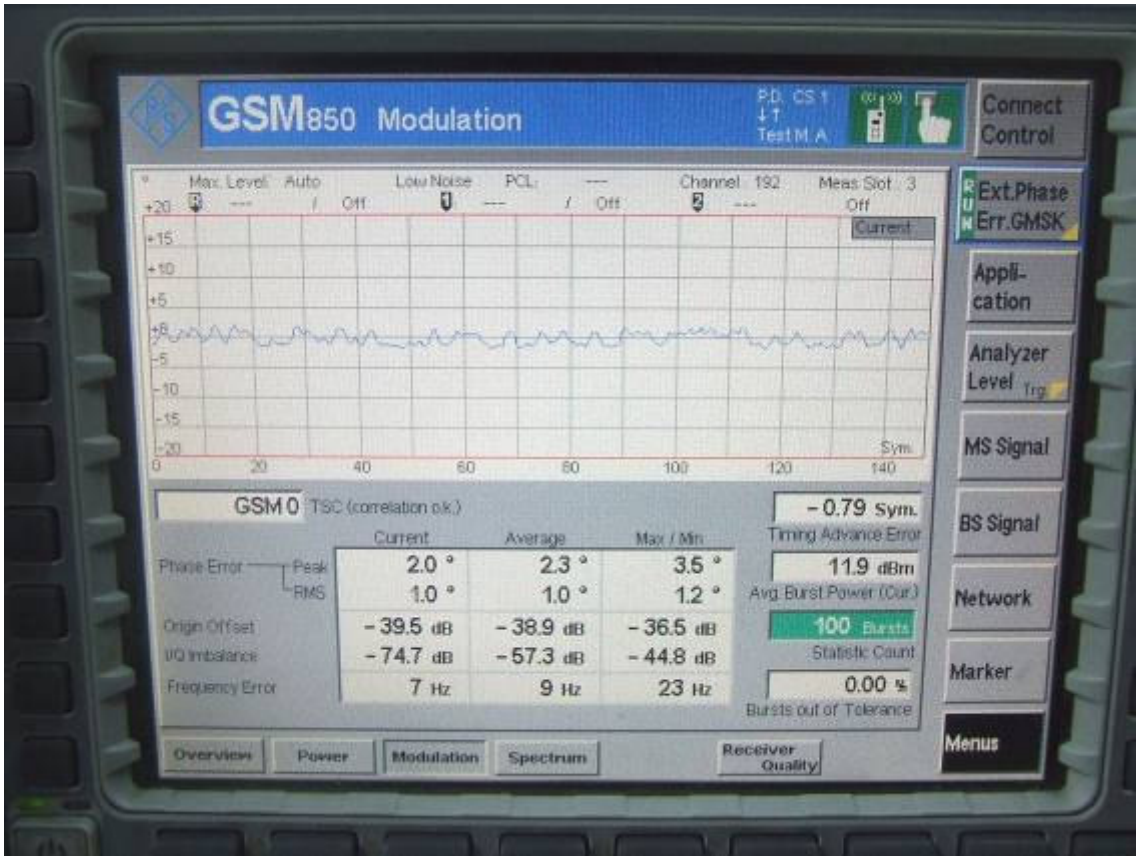
Test Method: Connect EUT to Universal Radio Communication Tester CMU200 via the antenna connector. The waveform quality and constellation of the EUT was tested.

Test Setup:

Universal Radio Communication Tester CMU200	RF cable ← →	EUT	←	Power supply

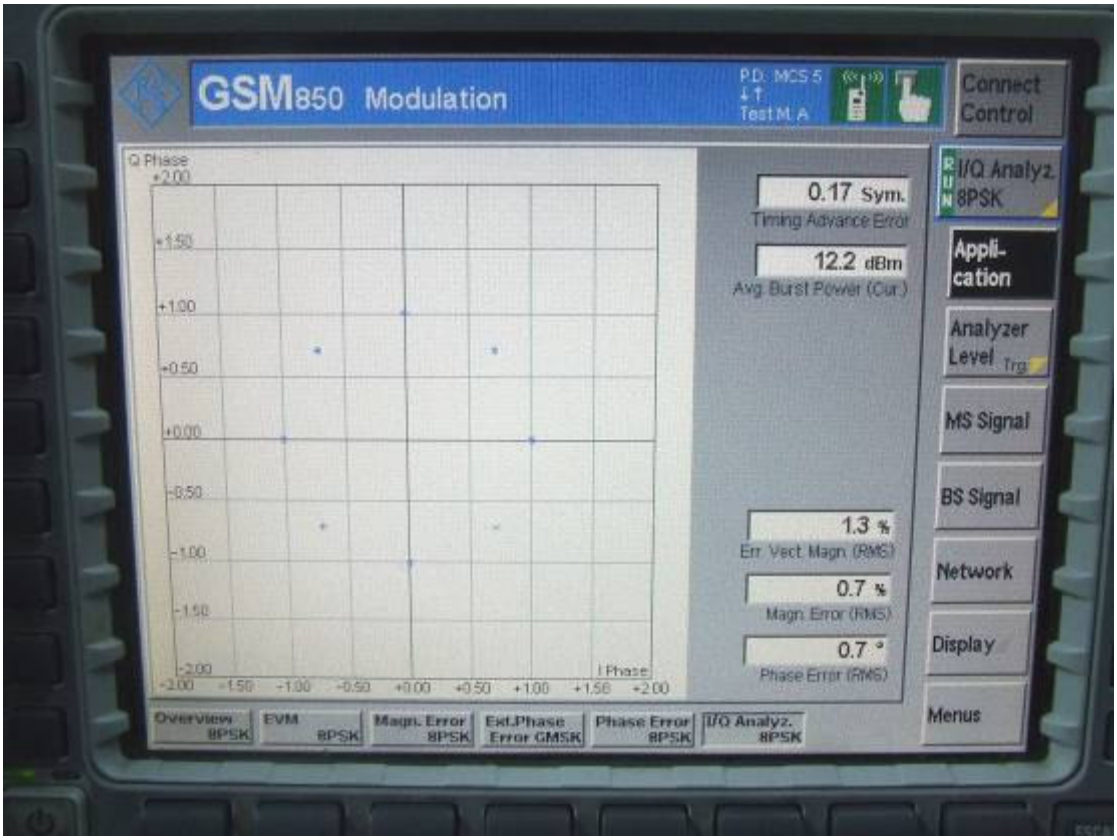
Test result: GSM (GPRS/GSM)

Channel: 192



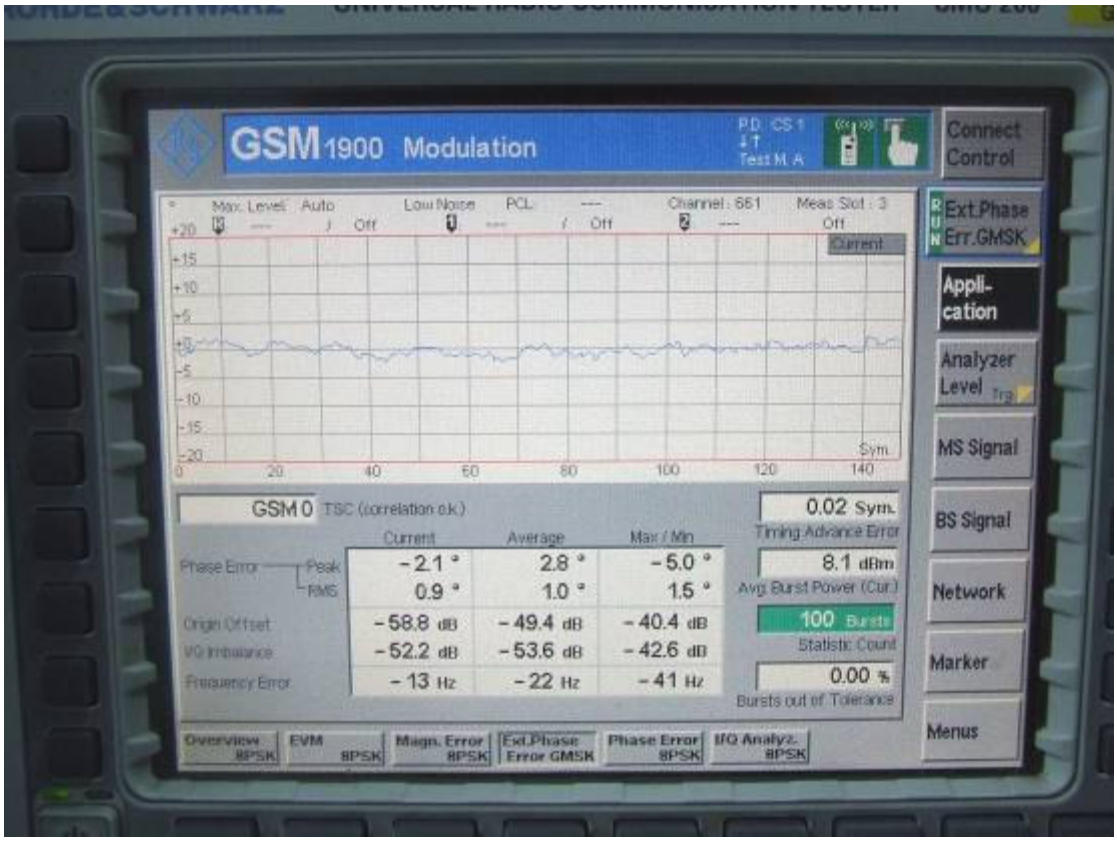
Test result: GSM (EDGE)

Channel: 192



Test result: PCS (GPRS/GSM)

Channel: 661

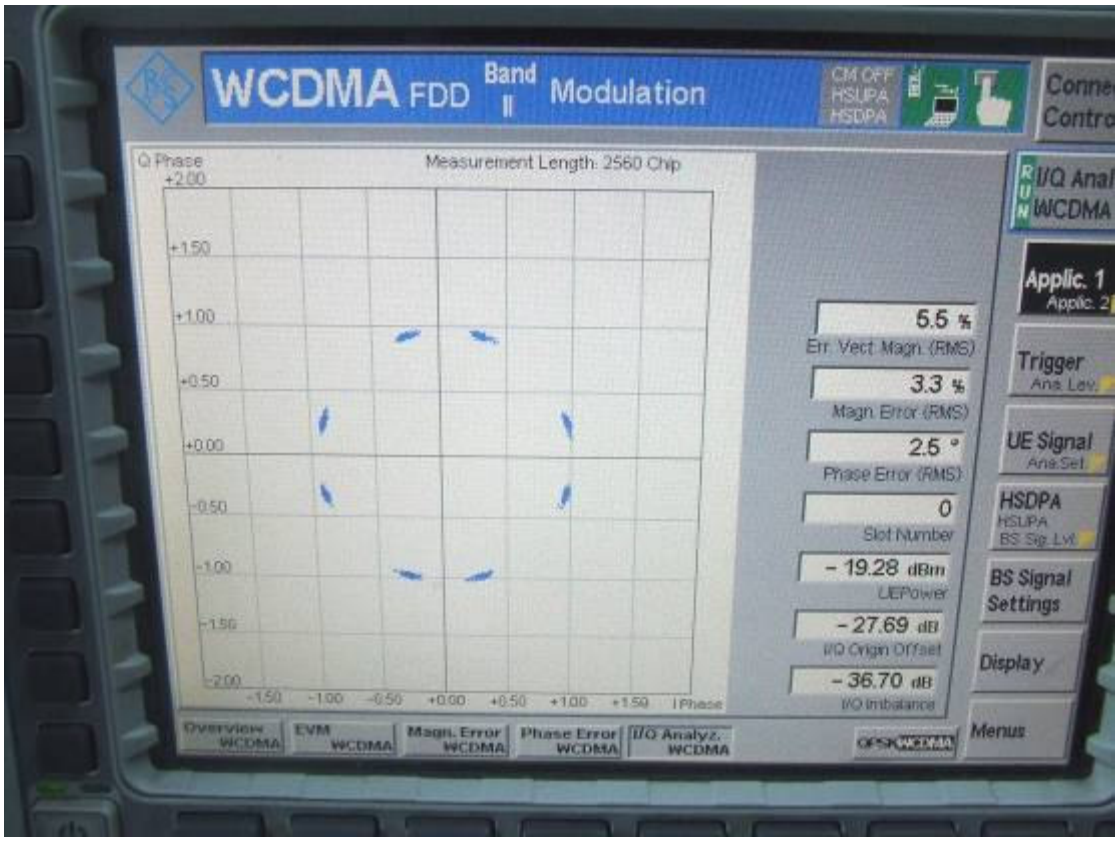


Test result: PCS (EDGE)

Channel: 661

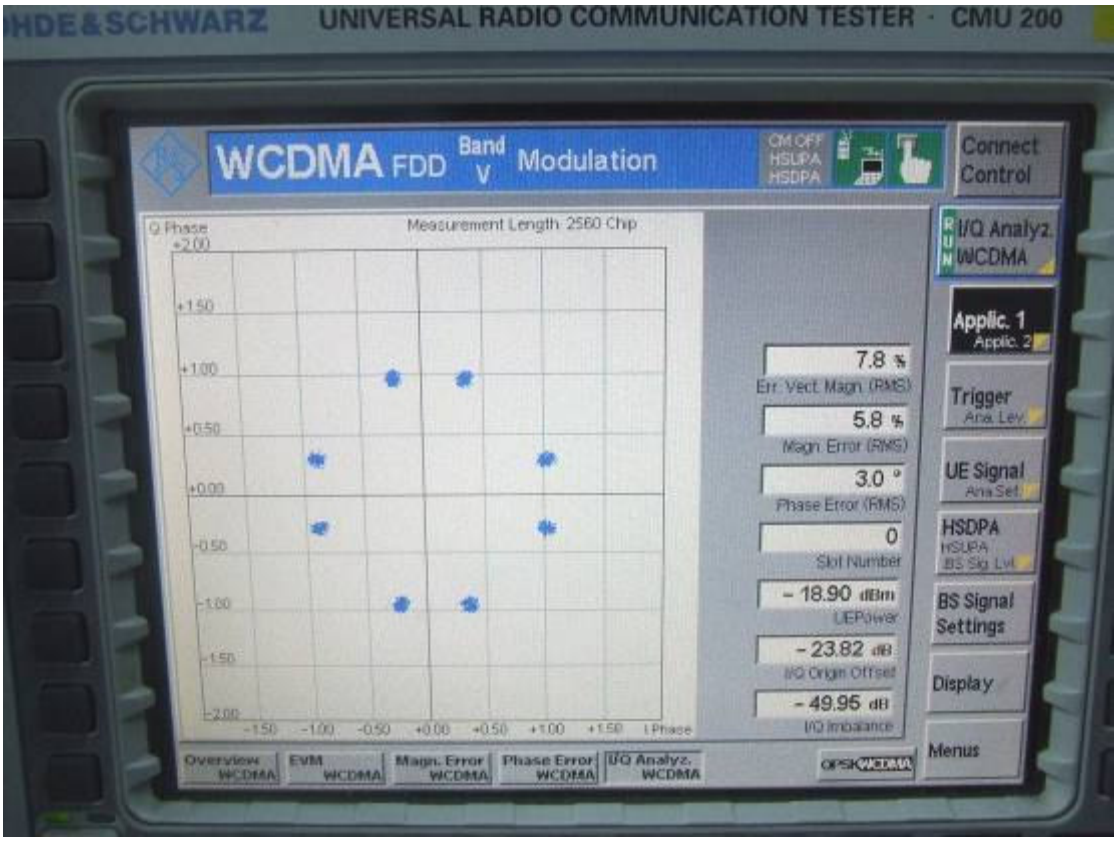
Test result: WCDMA Band II/HSDPA

Channel: 9400



Test result: WCDMA Band V/HSDPA

Channel: 4180



6.10 Conducted Emissions Mains Terminals, 150 kHz to 30MHz

Test Requirement: Part 15.207

Test Method: ANSI C63.4.

Test Date: Jun 10, 2009

Frequency Range: 150KHz to 30MHz

Detector: Peak for pre-scan (9kHz Resolution Bandwidth)

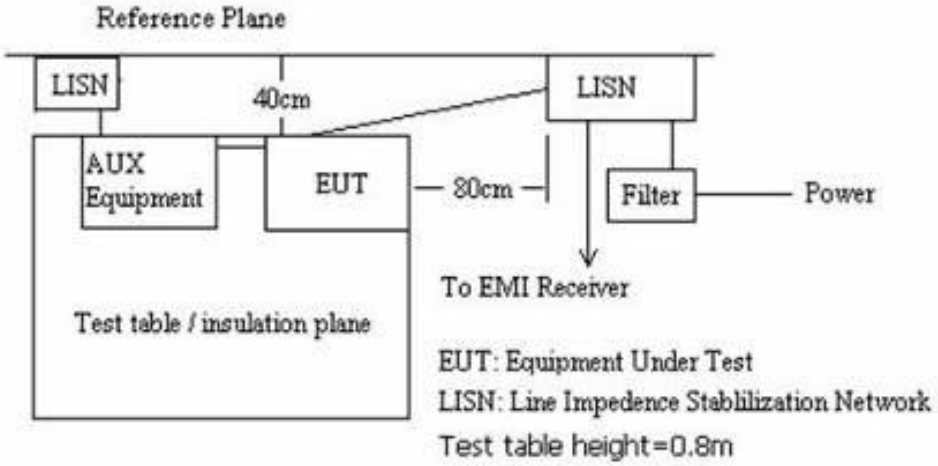
Quasi-Peak if maximised peak within 6dB of Quasi-Peak limit

EUT Operation:

An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

Plan View of Test Setup

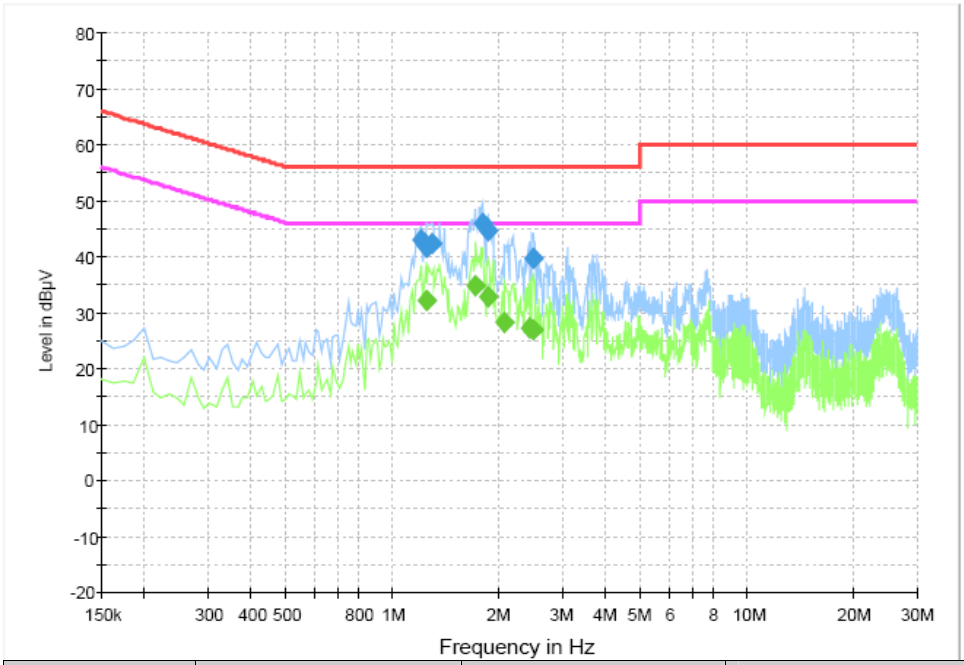


Limit:

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.		

Operating mode: GSM 850 Link

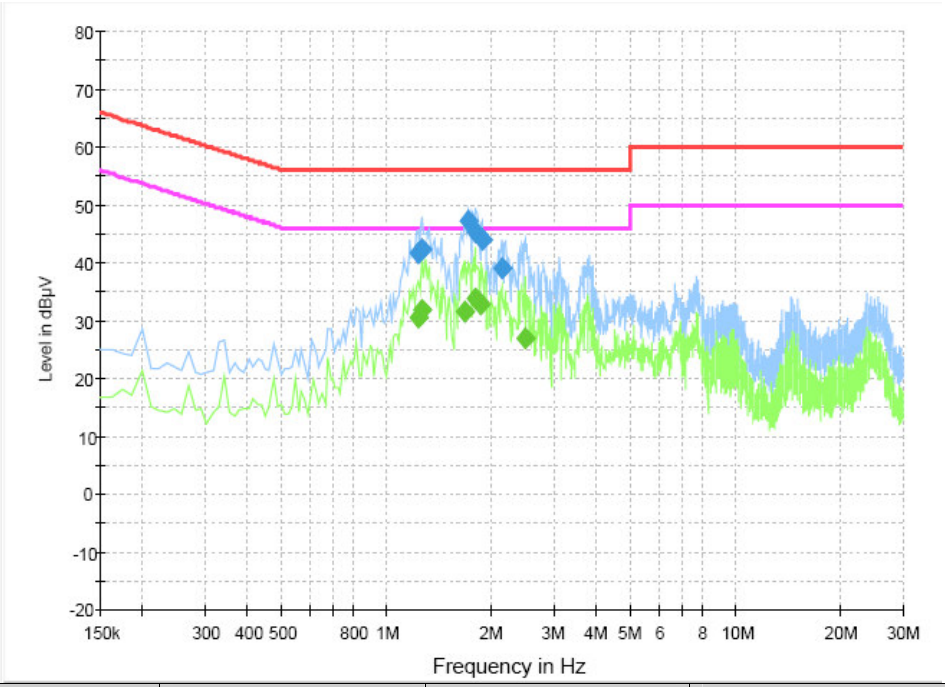
Live Line:



Frequency (MHz)	QuasiPeak (dBuV)	Limit (dBuV)	Margin (dB)
1.200720	43.0	56.0	13.0
1.236540	41.5	56.0	14.5
1.284300	42.1	56.0	13.9
1.785780	45.9	56.0	10.1
1.845480	44.4	56.0	11.6
2.490240	39.7	56.0	16.3
Frequency (MHz)	**AV (dBuV)**	**Limit (dBuV)**	**Margin (dB)**
1.236540	32.1	46.0	13.9
1.714140	34.7	46.0	11.3
1.857420	32.7	46.0	13.3
2.060400	28.2	46.0	17.8
2.418600	27.1	46.0	18.9
2.490240	26.8	46.0	19.2

Operating mode: GSM 850 Link

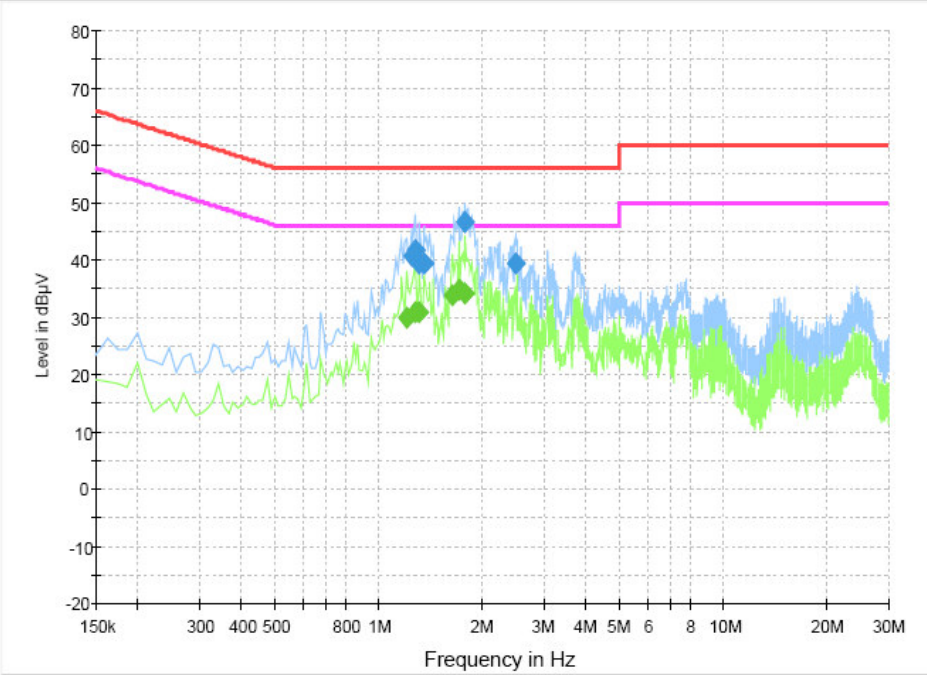
N Line:



Frequency (MHz)	QuasiPeak (dBuV)	Limit (dBuV)	Margin (dB)
1.224600	41.7	56.0	14.3
1.260420	42.3	56.0	13.7
1.714140	47.2	56.0	8.8
1.785780	45.3	56.0	10.7
1.869360	43.9	56.0	12.1
2.132040	39.1	56.0	16.9
Frequency (MHz)	**AV (dBuV)**	**Limit (dBuV)**	**Margin (dB)**
1.224600	30.6	46.0	15.4
1.260420	31.9	46.0	14.1
1.666380	31.5	46.0	14.5
1.785780	33.6	46.0	12.4
1.857420	32.7	46.0	13.3
2.478300	26.9	46.0	19.1

Operating mode: GSM 1900 Link

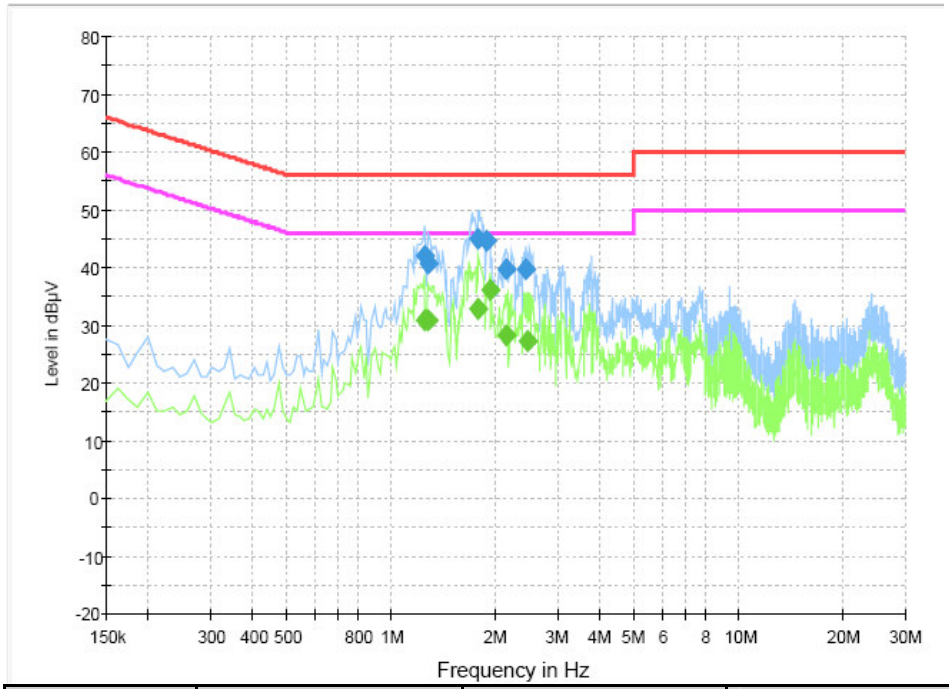
Live Line:



Frequency (MHz)	QuasiPeak (dBuV)	Limit (dBuV)	Margin (dB)
1.236540	40.6	56.0	15.4
1.272360	41.8	56.0	14.2
1.308180	39.4	56.0	16.6
1.344000	39.2	56.0	16.8
1.773840	46.5	56.0	9.5
2.478300	39.4	56.0	16.6
Frequency (MHz)	**AV (dBuV)**	**Limit (dBuV)**	**Margin (dB)**
1.200720	29.7	46.0	16.3
1.272360	30.8	46.0	15.2
1.308180	30.9	46.0	15.1
1.630560	33.6	46.0	12.4
1.702200	34.8	46.0	11.2
1.773840	34.0	46.0	12.0

Operating mode: GSM 1900 Link

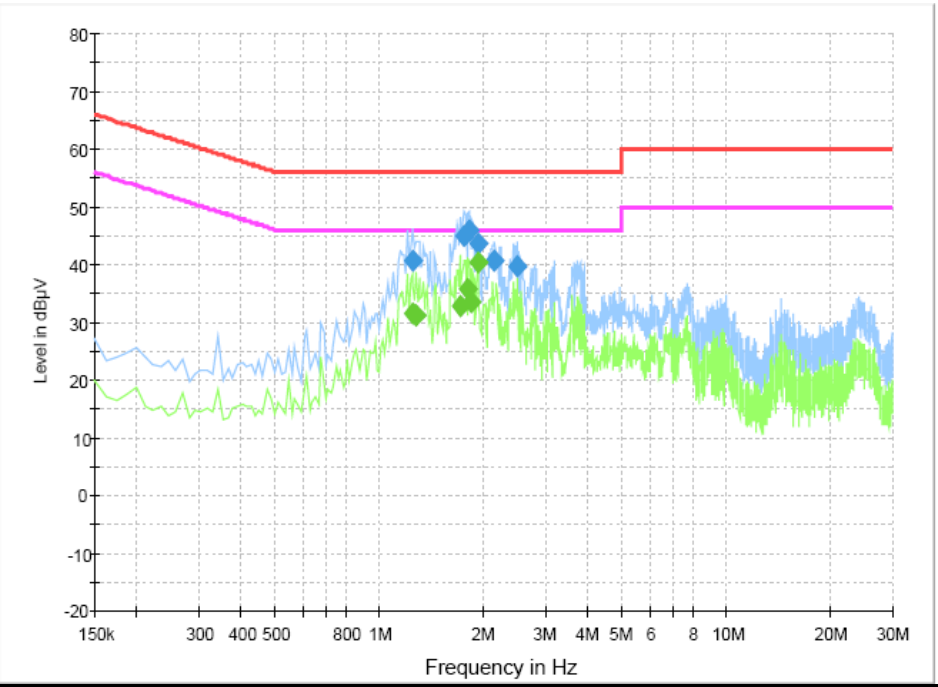
N Line:



Frequency (MHz)	QuasiPeak (dBuV)	Limit (dBuV)	Margin (dB)
1.248480	42.1	56.0	13.9
1.272360	40.8	56.0	15.2
1.773840	45.1	56.0	10.9
1.869360	44.6	56.0	11.4
2.132040	39.5	56.0	16.5
2.430540	39.6	56.0	16.4
Frequency (MHz)	**AV (dBuV)**	**Limit (dBuV)**	**Margin (dB)**
1.236540	30.7	46.0	15.3
1.272360	30.7	46.0	15.3
1.773840	32.7	46.0	13.3
1.917120	36.1	46.0	9.9
2.132040	28.1	46.0	17.9
2.454420	27.3	46.0	18.7

Operating mode: WCDMA BAND II Link Mode

Live Line:

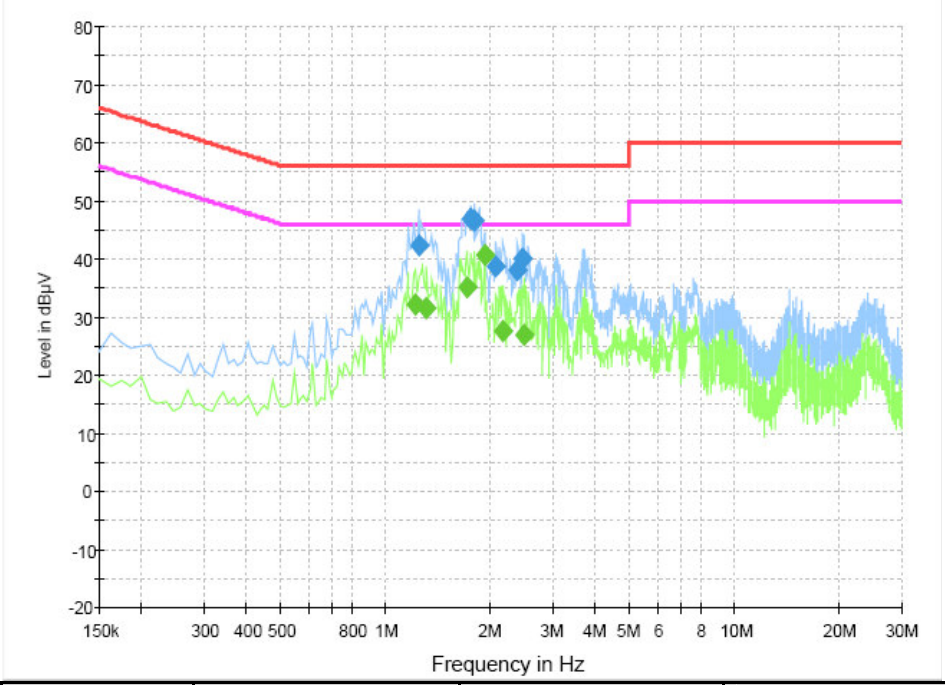


Frequency (MHz)	QuasiPeak (dBuV)	Limit (dBuV)	Margin (dB)
1.236540	40.6	56.0	15.4
1.738020	44.9	56.0	11.1
1.809660	46.0	56.0	10.0
1.917120	43.6	56.0	12.4
2.143980	40.6	56.0	15.4
2.490240	39.7	56.0	16.3

Frequency (MHz)	AV (dBuV)	Limit (dBuV)	Margin (dB)
1.236540	31.5	46.0	14.5
1.272360	31.2	46.0	14.8
1.702200	32.8	46.0	13.2
1.797720	35.7	46.0	10.3
1.833540	33.6	46.0	12.4
1.917120	40.4	46.0	5.6

Operating mode: WCDMA BAND II Link Mode

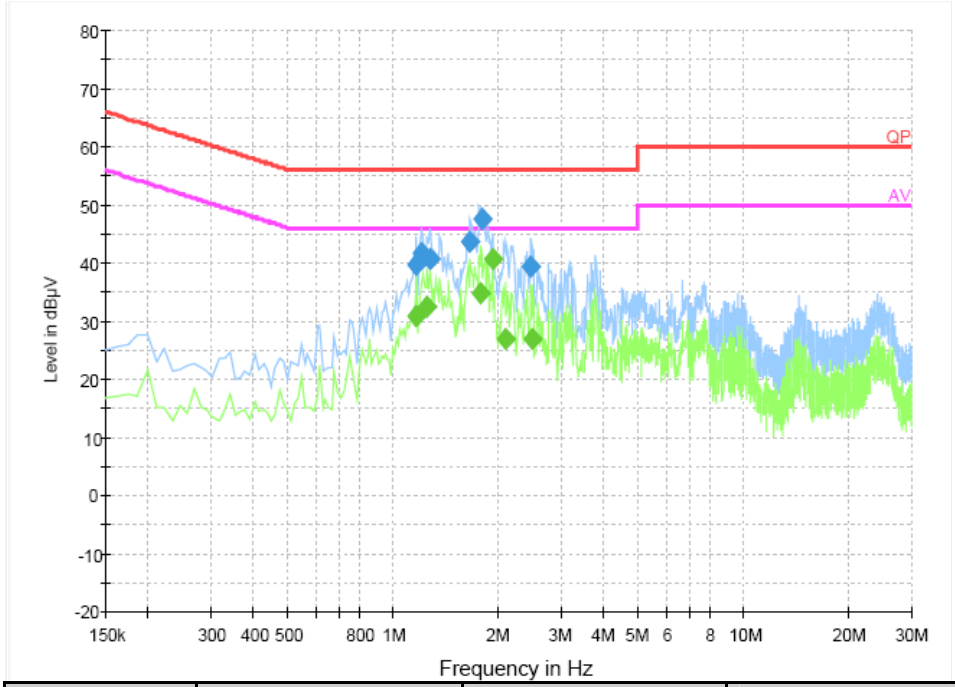
N Line:



Frequency (MHz)	QuasiPeak (dBuV)	Limit (dBuV)	Margin (dB)
1.236540	42.4	56.0	13.6
1.749960	46.9	56.0	9.1
1.797720	46.6	56.0	9.4
2.060400	38.7	56.0	17.3
2.382780	38.0	56.0	18.0
2.466360	39.9	56.0	16.1
Frequency (MHz)	**AV (dBuV)**	**Limit (dBuV)**	**Margin (dB)**
1.212660	32.0	46.0	14.0
1.308180	31.4	46.0	14.6
1.702200	34.9	46.0	11.1
1.917120	40.5	46.0	5.5
2.167860	27.5	46.0	18.5
2.490240	26.9	46.0	19.1

Operating mode: WCDMA BAND V Link Mode

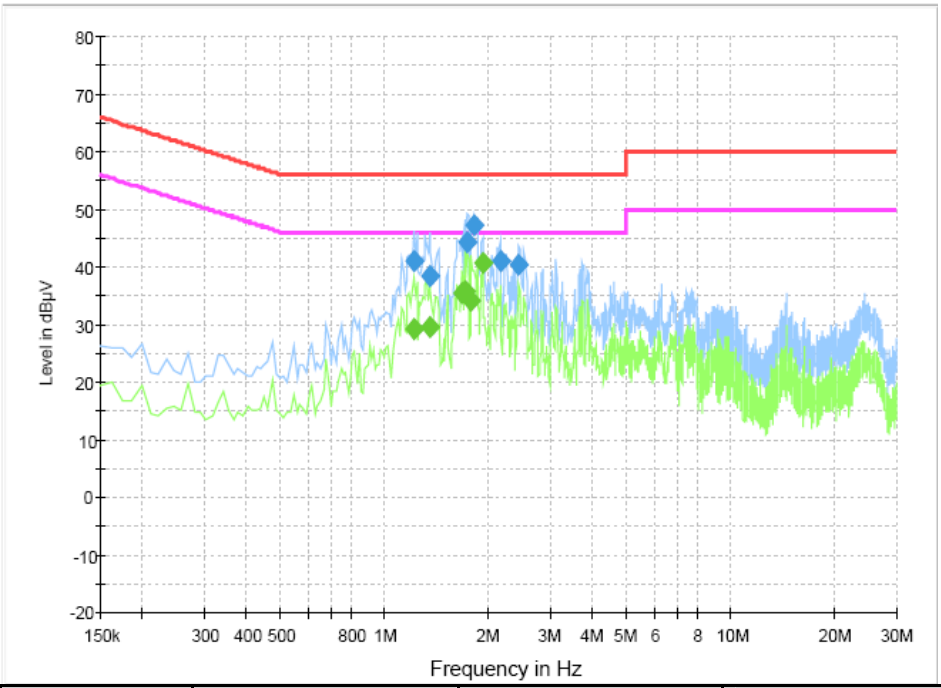
Live Line:



Frequency (MHz)	QuasiPeak (dBuV)	Limit (dBuV)	Margin (dB)
1.164900	39.7	56.0	16.3
1.200720	41.6	56.0	14.4
1.272360	40.8	56.0	15.2
1.654440	43.5	56.0	12.5
1.785780	47.6	56.0	8.4
2.466360	39.3	56.0	16.7
Frequency (MHz)	**AV (dBuV)**	**Limit (dBuV)**	**Margin (dB)**
1.164900	30.9	46.0	15.1
1.248480	32.6	46.0	13.4
1.773840	34.8	46.0	11.2
1.917120	40.5	46.0	5.5
2.084280	26.9	46.0	19.1
2.478300	26.9	46.0	19.1

Operating mode: WCDMA BAND V Link Mode

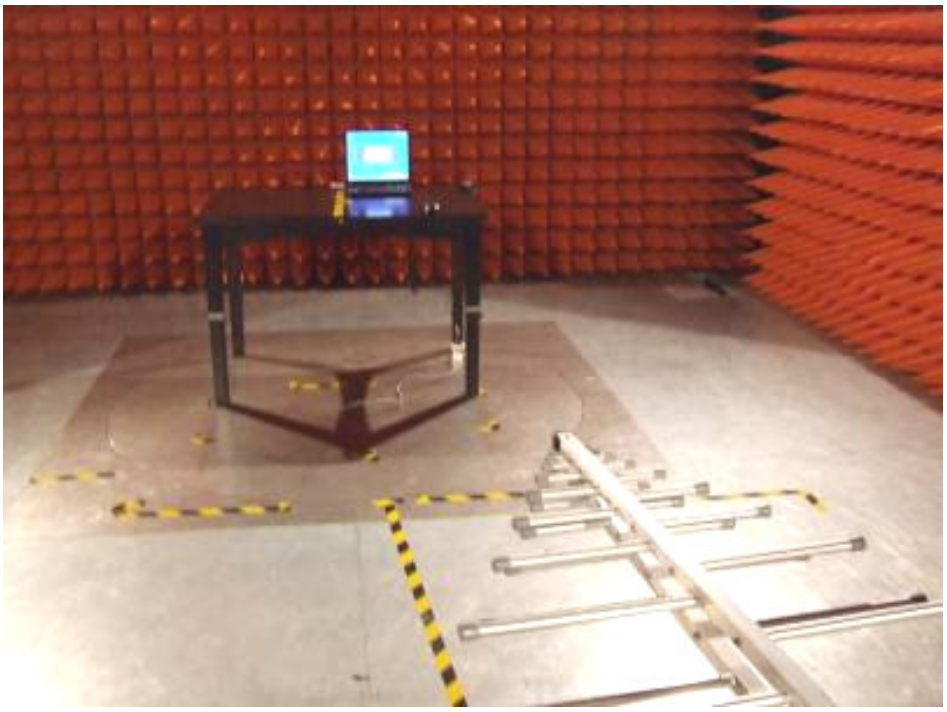
N Line:

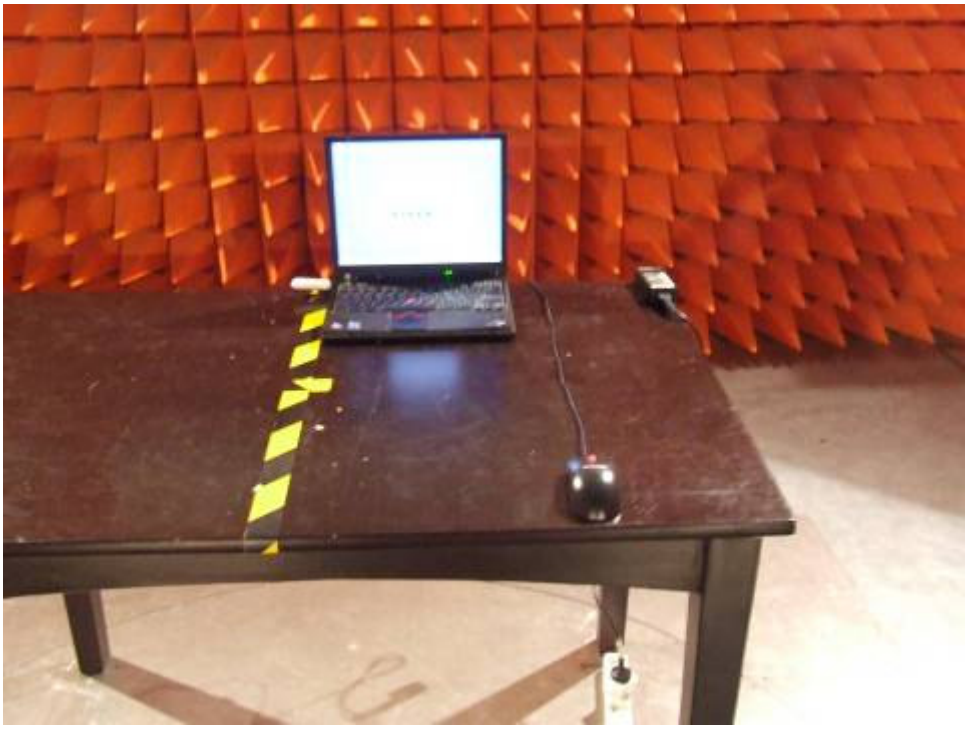


Frequency (MHz)	QuasiPeak (dBuV)	Limit (dBuV)	Margin (dB)
1.212660	40.9	56.0	15.1
1.344000	38.2	56.0	17.8
1.726080	44.1	56.0	11.9
1.809660	47.1	56.0	8.9
2.155920	41.1	56.0	14.9
2.430540	40.3	56.0	15.7
Frequency (MHz)	**AV (dBuV)**	**Limit (dBuV)**	**Margin (dB)**
1.212660	29.1	46.0	16.9
1.344000	29.4	46.0	16.6
1.666380	35.4	46.0	10.6
1.702200	35.8	46.0	10.2
1.773840	34.2	46.0	11.8
1.917120	40.5	46.0	5.5

7 Photographs

7.1 Radiated Spurious Emission Test Setup





7.2 Conducted Emission Test Setup

APPENDIX
PHOTOGRAPHS OF EUT

Front View of EUT

Back View of EUT

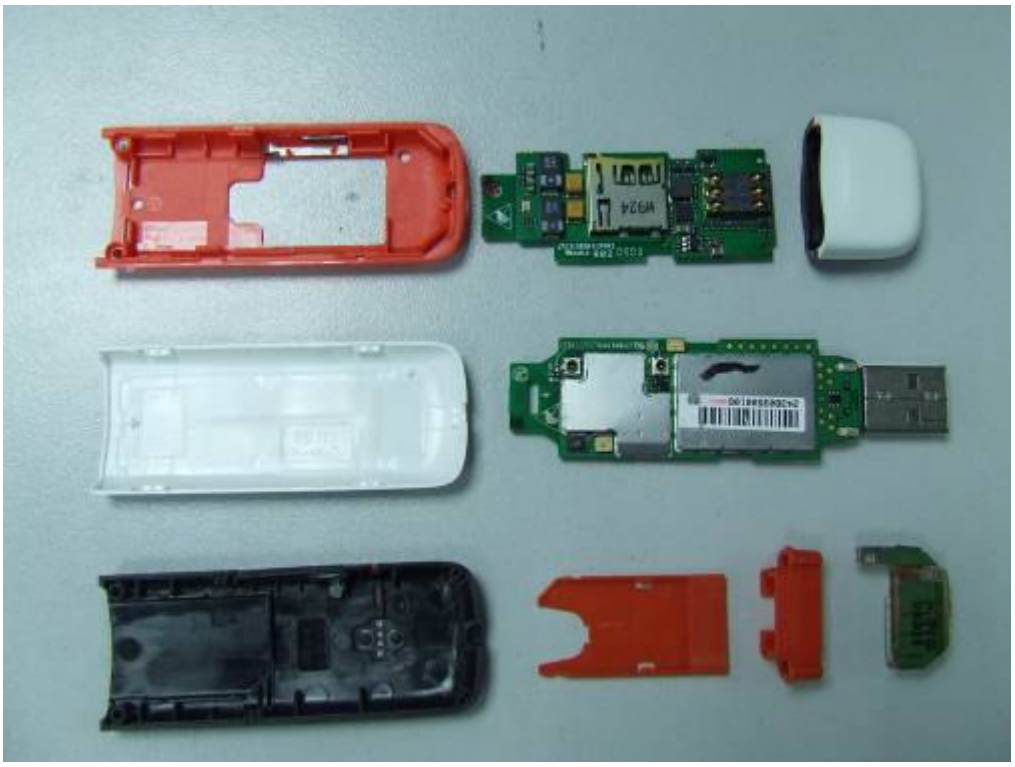
Side View of EUT-1

Side View of EUT-2

Side View of EUT-3

Side View of EUT-4

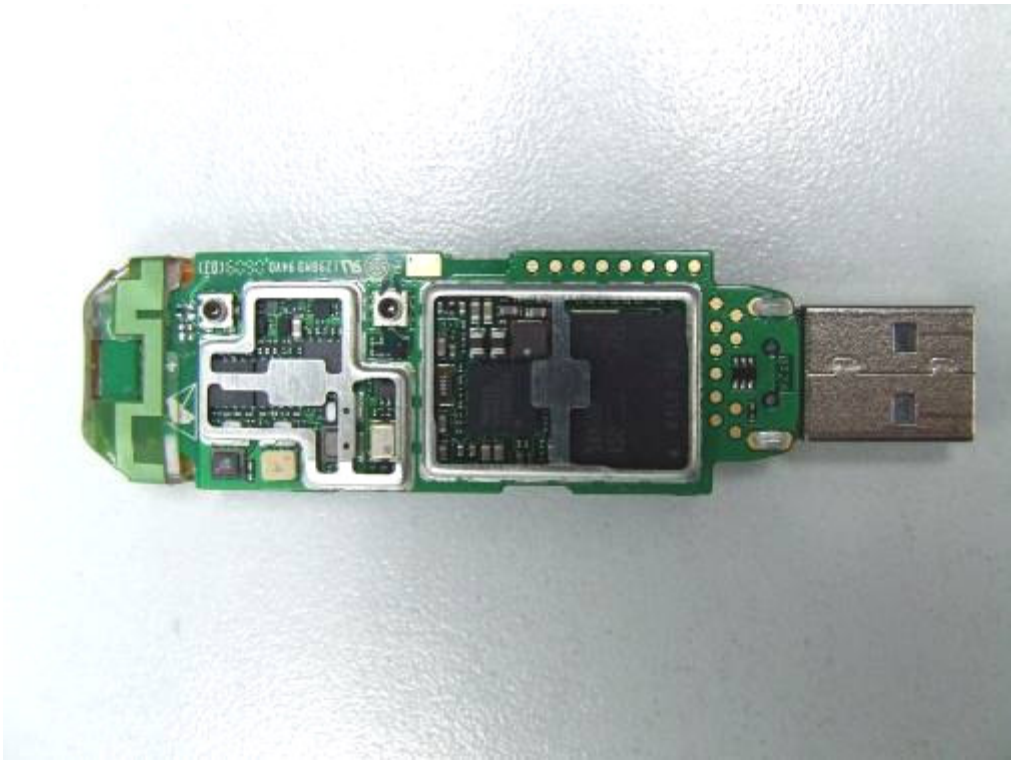
Open View of EUT-1



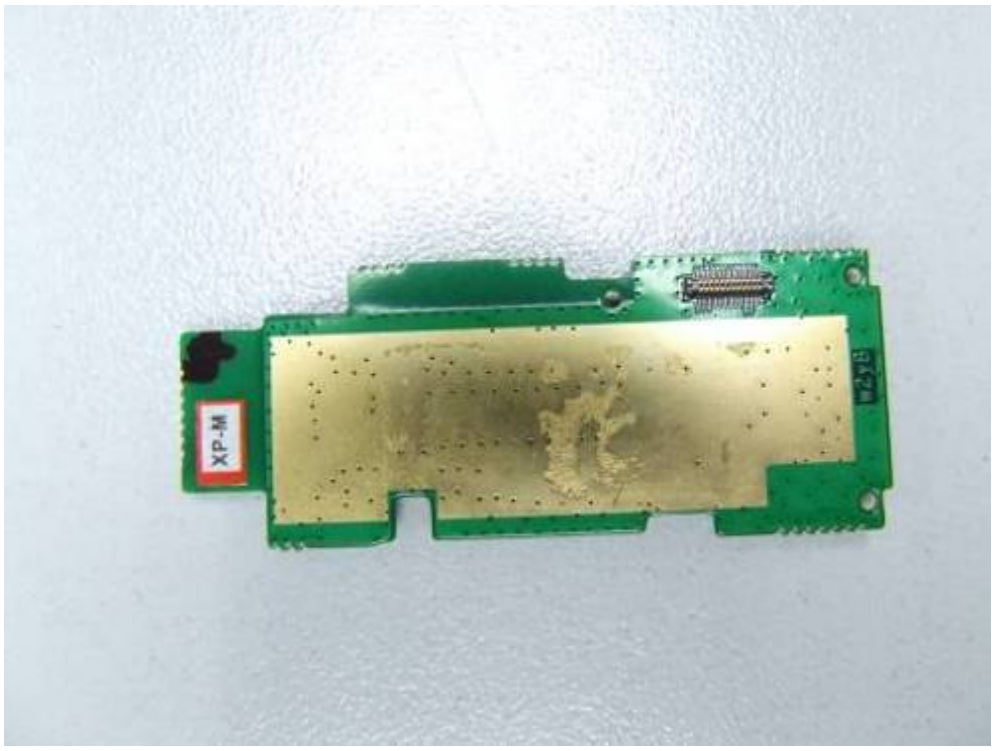
Internal of EUT-1

Internal of EUT-2

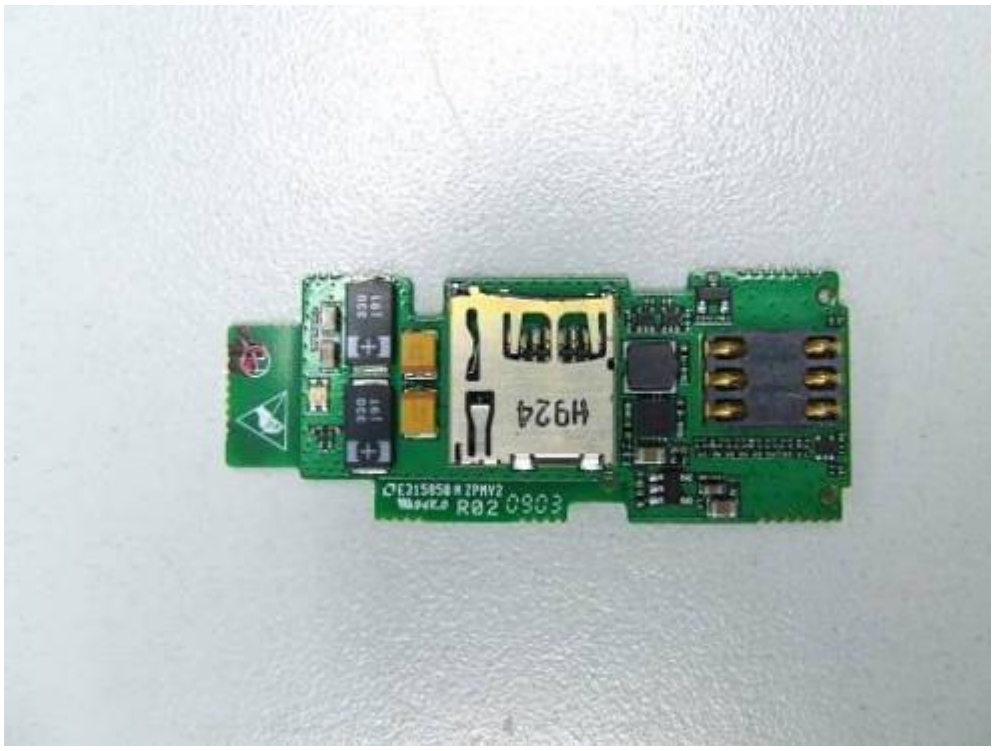
Internal of EUT-3



Internal of EUT-4



Internal of EUT-5



~End of Report~