

CFR 47 Part 22H, 24E

TEST REPORT

E.U.T. : **NoteBook PC**

Trade Name : MTC ; GTEAC

Model Number : 8212X

FCC ID : MAU8212X

Prepared for

MiTAC Technology Corp.

9th Fl., No. 75, Ming Sheng East Road, Sec. 3, Taipei, Taiwan, R.O.C.

TEL. : +886 2 2506 8898

FAX. : +886 2 2509 5887

Prepared by

Interocean EMC Technology Corp.

244 No.5-2, Lin 1, Tin-Fu Tsun, Lin-Kou Hsiang,
Taipei County, Taiwan, R.O.C.

TEL.: +886 2 2600 6861

FAX.: +886 2 2600 6859

Remark:

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2. The report prohibit used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Statement of Compliance

Applicant: MiTAC Technology Corp.
Manufacturer: Getac Technology (Kunshan) Co., Ltd.
EUT Description: NoteBook PC
Model No.: 8212X
Serial No.: N/A
Tested Power Supply: 120Vac; 60Hz
Date of Final Test: Nov. 30, 2007

Configuration of Measurements and Standards Used :

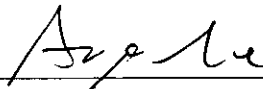
47CFR Part 22H, 24E

I HEREBY CERTIFY THAT: The data shown in this report were made in accordance with the procedures given in ANSI C63.4, and the energy emitted by the device was founded to be within the limits applicable. I assume full responsibility for accuracy and completeness of these data.

Note: 1. The result of the testing report relate only to the item tested.

2. The testing report shall not be reproduced expect in full, without the written approval of IETC

Report Issued: 2007/12/10

Test Engineer: 
Anya Lee

Checked: 
Danny Tang

Approved: 
Jerry Liu

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1 General Information

1.1 Description of Equipment Under Test

Equipment Under Test : NoteBook PC

Model Number : 8212X

FCC ID : MAU8212X

Type of Sample Tested : Proto-type Pre-Production Mass Production

Applicant : **MiTAC Technology Corp.**

9th Fl., No. 75, Ming Sheng East Road, Sec. 3, Taipei, Taiwan, R.O.C.

Manufacturer : **Getac Technology (Kunshan) Co., Ltd.**

Kunshan Export Processing Zone, 215300 Jiangsu, P.R.China

Power Adapter : Manufacturer: Delta, M/N: ADP-45AD A, S/N: 86W0731000118

Input: 100~240Vac, 50~60Hz, 1.2A

Power cord: Non-shielded Detachable, 1.8 m w/o core

Output: 15Vdc, 3A

Power cable: Non-shielded Un-detachable, 1.8m w/o core

Sample Receive date : Nov. 13, 2007

Date of Test : Nov. 26~28, 2007

1.2 Feature of Equipment under test

Tx Frequency Range	:	GSM850 (GPRS) : 824~849MHz GSM850 (Edge) : 824~849MHz PCS1900 (GPRS) : 1850~1910MHz PCS1900 (Edge) : 1850~1910MHz WCDMA Band V : 824~849MHz WCDMA Band II : 1850~1910MHz
Rx Frequency Range	:	GSM850 (GPRS) : 869~894MHz GSM850 (Edge) : 824~849MHz PCS1900 (GPRS) : 1930~1990MHz PCS1900 (Edge) : 1930~1990MHz WCDMA Band V : 869~894MHz WCDMA Band II : 1930~1990MHz
Emission Designator	:	GSM (GPRS) : 300KGXW EDGE : 300KG7W WCDMA : 4M20F9W
Antenna Type	:	PCB Printed
Digital Modulation Emission	:	GSM (GPRS) : GMSK EDGE : 8PSK WCDMA / HSDPA : QPSK
Device Power Class	:	GSM850 (GPRS) : Class 4 GSM850 (Edge) : Class E2 PCS1900 (GPRS) : Class 1 PCS1900 (Edge) : Class E2 WCDMA Band V : Class 3 WCDMA Band II : Class 3

1.3 Test Facility

- Site Description** : OATS 2 Conduction 2
- Name of Firm** : Interocean EMC Technology Corp.
- Company web** : <http://www.ietc.com.tw>
- Site 1, 2 Location** : No.5-2, Lin 1, Tin-Fu Tsun, Lin-Kou Hsiang,
Taipei County, Taiwan, R.O.C.
- Site 3, 4 Location** : No. 12, Ruei-Shu Valley, Ruei-Ping Tsun, Lin-Kou Hsiang,
Taipei County, Taiwan, R.O.C.
- Site Filing** : ● Federal Communication Commissions – USA
Registration No.: 96399 (OATS 1 & 2)
Registration No.: 518958 (OATS 3 & 4)
- Voluntary Control Council for Interference by Information
Technology Equipment (VCCI) – Japan
Registration No. (Conducted Room): C-1094
Registration No. (Conducted Room): T-271
Registration No. (OATS 1): R-1040
Registration No. (OATS 2): R-1041
- Industry Canada (IC)
Submission: 113543
- Japan Electrical Safety & Environment Technology Laboratories (JET)
Registration No.: 04S03-01
- Site Accreditation** : ● Bureau of Standards and Metrology and Inspection (BSMI) –
Taiwan, R.O.C.
Accreditation No.:
SL2-IN-E-0026 for CNS13438 / CISPR22
SL2-R1-E-0026 for CNS13439 / CISPR13
SL2-R2-E-0026 for CNS13439 / CISPR13
SL2-A1-E-0026 for CNS13783-1 / CISPR14-1
- National Voluntary Laboratory Accreditation Program (NVLAP)
- USA
NVLAP LAB CODE 200458
- Nemko AS
Authorization No.: ELA 181A
Authorization No.: ELA 181B
- Taiwan Accreditation Foundation (TAF)
Accrditation No.: 1113



1.4 Test Equipment

Instrument	Manufacturer	Model	Serial No.	Last Calibration
EMI Test Receiver	Rohde & Schwarz	ESCS 30	100135	2007/08/03
L.I.S.N.	Schwarzbeck	NNLK8121	8121417	2007/07/17
L.I.S.N.	Rohde & Schwarz	ESH3-Z5	100176	2007/02/14
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	843602/02	2007/09/10
RF Cable	HARBOUR	RG400	CBL04	2007/08/09
Spectrum Analyzer	Agilent	8564EC	4046A00331	2007/03/29
Spectrum Analyzer	R&S	FSQ	200406	2007/03/29
Biconical Antenna	Schwarzbeck	VHA 9103	2484	2007/09/06
Log Antenna	Schwarzbeck	UHALP 9108	A 0765	2007/09/06
Pre-Amplifier	HP	8447D	2944A10321	2007/07/17
Preamplifier	Agilent	8449B	3008A01434	2007/04/03
RF Cable	Ultra Link	CBL02	CBL02	2007/05/04
Cable	IETC	CBL07	CBL07	2007/05/08

Note: All instrument upon which need to be calibrated are within calibration period of 1 year.

Instrument	Manufacturer	Model	Serial No.	Last Calibration
Horn Antenna	COM-POWER	AH-118	10081	2006/05/16
Horn Antenna	SCHWARZBECK	BBHA9120	9120D-583	2006/12/18

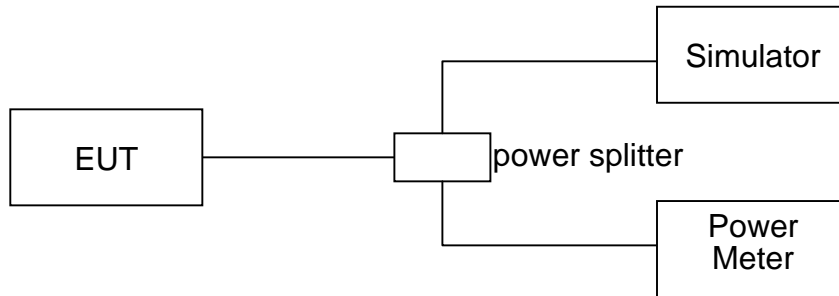
Note: All instrument upon which need to be calibrated are within calibration period of 2 year.

1.5 Summary of Measurement

Report Clause	Test Parameter	Reference Document	Results
2	RF Output Power	§2.1046	Passed
3	ERP / EIRP	§22.913 §24.232	Passed
4	Occupied Bandwidth & Band Edge Measurement	§2.1049 §22.917 §24.238 (b)	Passed
5	Conducted emission	§2.1051	Passed
6	Field strength of Spurious radiation	§2.1053	Passed
7	Frequency Stability	§2.1055 §22.355 §24.235	Passed

2 RF Output Power

2.1 Configuration of Measurement



2.2 Test Procedures

- 2.2.1 The transmitter output was connected to power meter and base station through power splitter.
- 2.2.2 Set EUT at maximum power through base station.
- 2.2.3 Select lowest, middle, and highest channels for each band.
- 2.2.4 The RF output power was read directly from power meter.

2.3 Test Result

PASS.

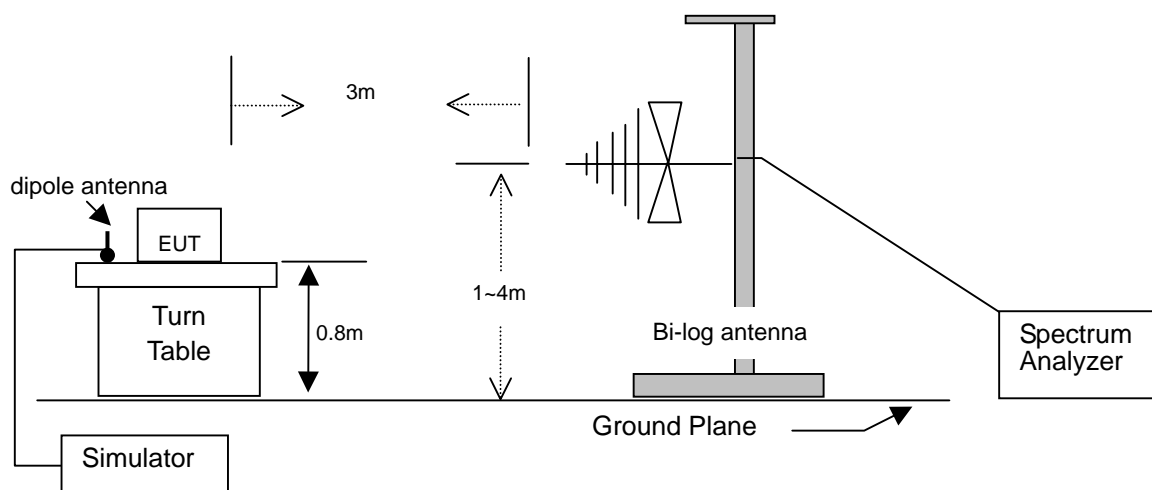
The final test data is shown on as following pages.

Bands	Channel	Frequency (MHz)	Conducted Power (dBm)	Conducted Power (Watts)
GSM850 (GSM)	128	824.2 (Low)	32.20	1.66
	189	836.4 (Mid)	32.10	1.62
	251	848.8 (High)	31.90	1.55
GSM850 (EDGE12)	128	824.2 (Low)	30.35	1.08
	189	836.4 (Mid)	30.65	1.16
	251	848.8 (High)	31.57	1.44
PCS1900 (GSM)	512	1850.2 (Low)	29.00	0.79
	661	1880.0 (Mid)	29.30	0.85
	810	1909.8 (High)	29.30	0.85
PCS1900 (EDGE12)	512	1850.2 (Low)	29.51	0.89
	661	1880.0 (Mid)	30.13	1.03
	810	1909.8 (High)	29.75	0.94
WCDMA BAND V	4132	826.4 (Low)	23.40	0.22
	4182	836.4 (Mid)	23.24	0.21
	4233	846.6 (High)	23.48	0.22
WCDMA BAND V (HSDPA)	4132	826.4 (Low)	22.88	0.19
	4182	836.4 (Mid)	22.36	0.17
	4233	846.6 (High)	23.00	0.20
WCDMA BAND II	9262	1852.4 (Low)	23.41	0.22
	9400	1880.0 (Mid)	23.71	0.23
	9538	1907.6 (High)	23.80	0.24
WCDMA BAND II (HSDPA)	9262	1852.4 (Low)	24.00	0.25
	9400	1880.0 (Mid)	22.75	0.19
	9538	1907.6 (High)	22.55	0.18

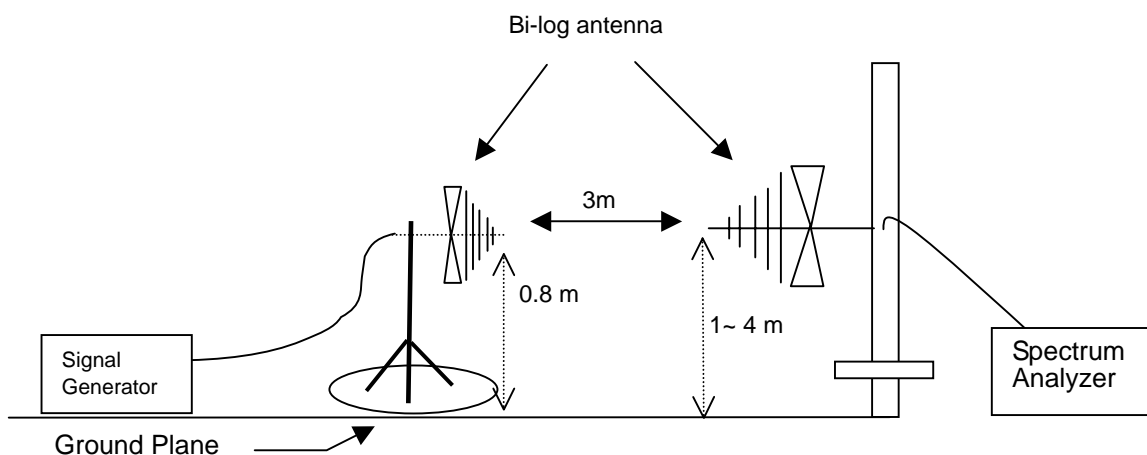
3 ERP / EIRP Measurement

3.1 Configuration of Measurement

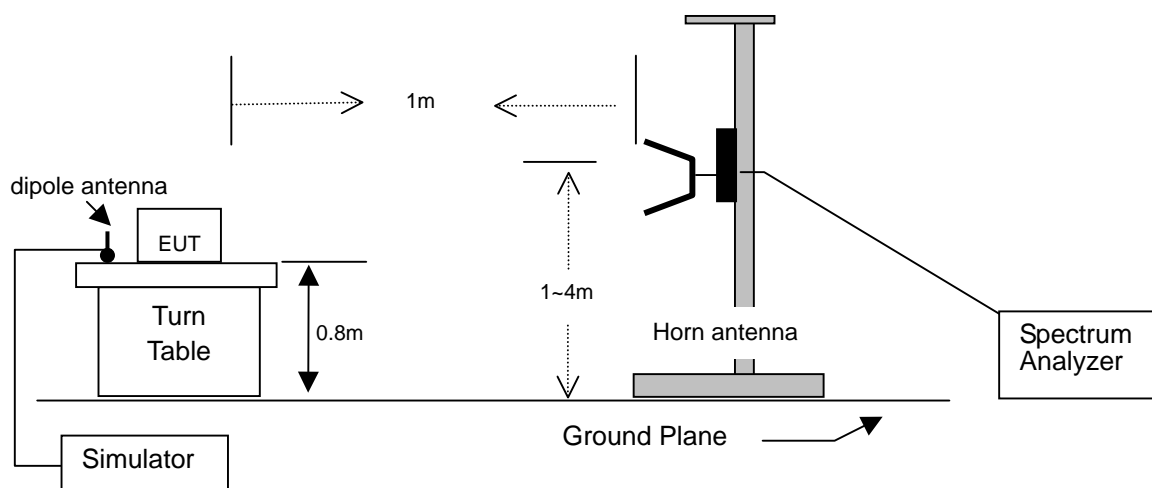
Frequency measurement below 1GHz configuration



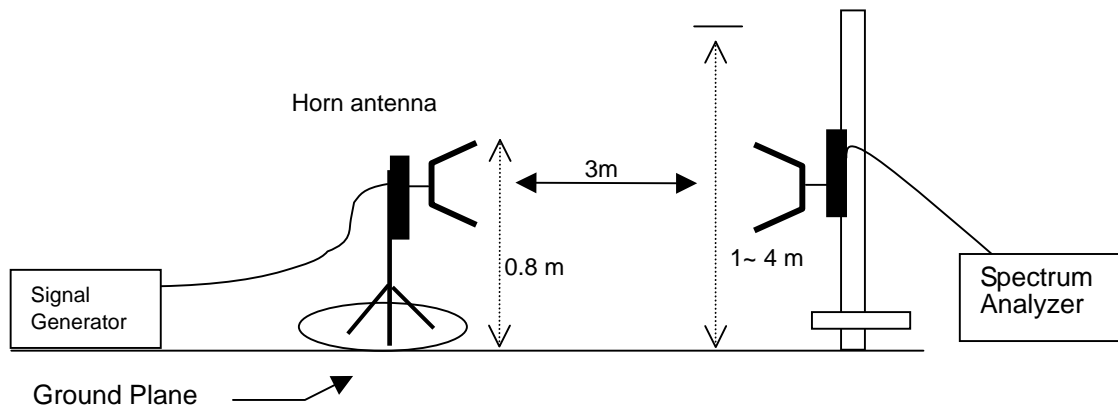
Frequency measurement below 1GHz configuration



Frequency measurement above 1GHz configuration



Frequency measurement above 1GHz configuration



3.2 Test Procedures

- 3.2.1 The EUT was placed on a rotate table with 3m open area test site.
- 3.2.2 The table was rotate 360 degrees to search the highest radiated capacity of the position.
- 3.2.3 Record the maximum ERP / EIRP.
- 3.2.4 A dipole antenna was substituted in place of the EUT and was driven by a signal generator.
- 3.2.5 Measure the conducted power at the terminal of the dipole antenna.
- 3.2.6 Repeat step 3 to step 5 to find the maximum ERP/EIRP of the substitution antenna.
- 3.2.7 $ERP = SGLEVEL + \text{Antenna Gain} - \text{Cable Loss}$.

3.3 Test Result

PASS.

The final test data is shown on as following pages.

GSM850 (GSM) Radiated Power ERP				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	ERP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
824.2	14.20	6	1.42	18.78
836.4	15.79	6	1.42	20.37
848.8	15.77	6	1.42	20.35
Vertical Polarization				
824.2	22.97	6	1.42	27.55
836.4	24.14	6	1.42	28.72
848.8	24.02	6	1.42	28.60

GSM850 (EDGE) Radiated Power ERP				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	ERP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
824.2	12.32	6	1.42	16.90
836.4	11.78	6	1.42	16.36
848.8	9.18	6	1.42	13.76
Vertical Polarization				
824.2	21.23	6	1.42	25.81
836.4	20.89	6	1.42	25.47
848.8	21.58	6	1.42	26.16

PCS1900 (GSM) Radiated Power EIRP				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	EIRP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
1850.2	1.46	10.4	1.91	9.95
1880.0	1.42	10.4	1.91	9.91
1909.0	0.09	10.4	1.91	8.58
Vertical Polarization				
1850.2	20.72	10.4	1.91	29.21
1880.0	18.88	10.4	1.91	27.37
1909.0	18.07	10.4	1.91	26.56

PCS1900 (EDGE) Radiated Power EIRP				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	EIRP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
1850.2	-1.13	10.4	1.91	7.36
1880.0	-0.97	10.4	1.91	7.52
1909.0	-3.46	10.4	1.91	5.03
Vertical Polarization				
1850.2	14.76	10.4	1.91	23.25
1880.0	12.06	10.4	1.91	20.55
1909.0	11.50	10.4	1.91	19.99

WCDMA Band V Radiated Power ERP				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	ERP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
826.4	4.18	6	1.42	8.76
836.4	3.45	6	1.42	8.03
846.6	3.01	6	1.42	7.59
Vertical Polarization				
826.4	16.65	6	1.42	21.21
836.4	16.14	6	1.42	20.72
846.6	16.58	6	1.42	19.16

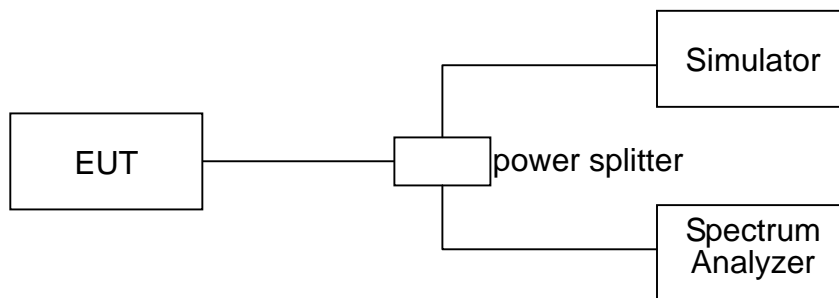
WCDMA Band V (HSDPA) Radiated Power ERP				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	ERP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
826.4	4.43	6	1.42	9.01
836.4	5.26	6	1.42	9.84
846.6	4.70	6	1.42	9.28
Vertical Polarization				
826.4	15.88	6	1.42	20.46
836.4	15.17	6	1.42	19.75
846.6	14.11	6	1.42	18.69

WCDMA Band II Radiated Power EIRP				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	EIRP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
1852.4	1.48	6	1.42	6.06
1880.0	0.67	6	1.42	5.25
1907.6	4.86	6	1.42	9.44
Vertical Polarization				
1852.4	15.75	6	1.42	20.33
1880.0	13.75	6	1.42	18.33
1907.6	13.29	6	1.42	17.87

WCDMA Band II (HSDPA) Radiated Power EIRP				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	EIRP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
1852.4	2.03	6	1.42	6.61
1880.0	2.79	6	1.42	7.37
1907.6	3.23	6	1.42	7.81
Vertical Polarization				
1852.4	14.46	6	1.42	19.04
1880.0	15.75	6	1.42	20.33
1907.6	10.73	6	1.42	15.31

4 Occupied bandwidth & Band Edge Measurement

4.1 Configuration of Measurement



4.2 Test Procedures

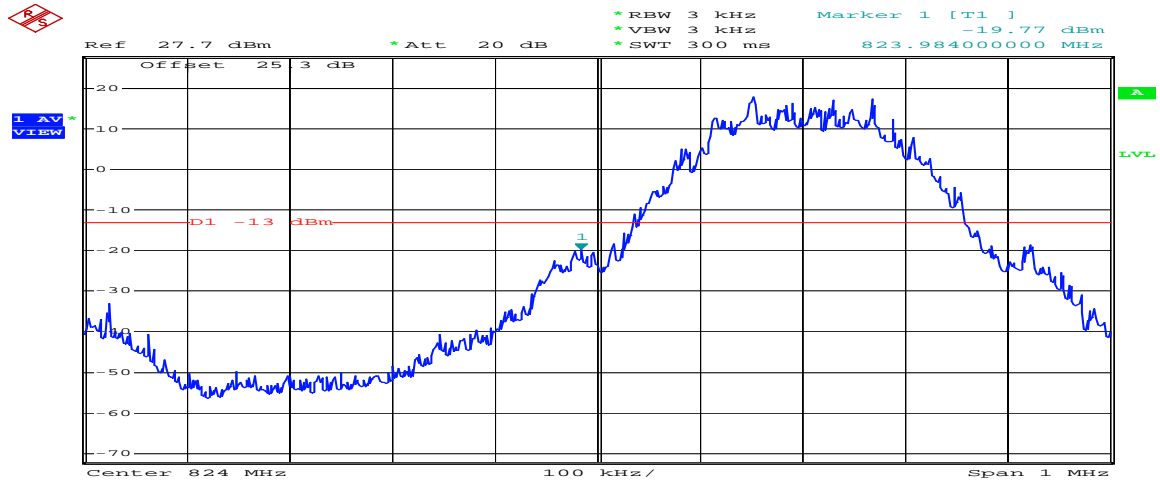
1. EUT was connected to Base Station (Simulator) via power splitter and Spectrum Analyzer.
2. 99% occupied bandwidth of middle channel were measured.
3. Band-edge of high and low channels for the highest RF powers within the transmitting frequency band were measured. Setting RBW as roughly $BW/100$.

4.3 Test Result

PASS.

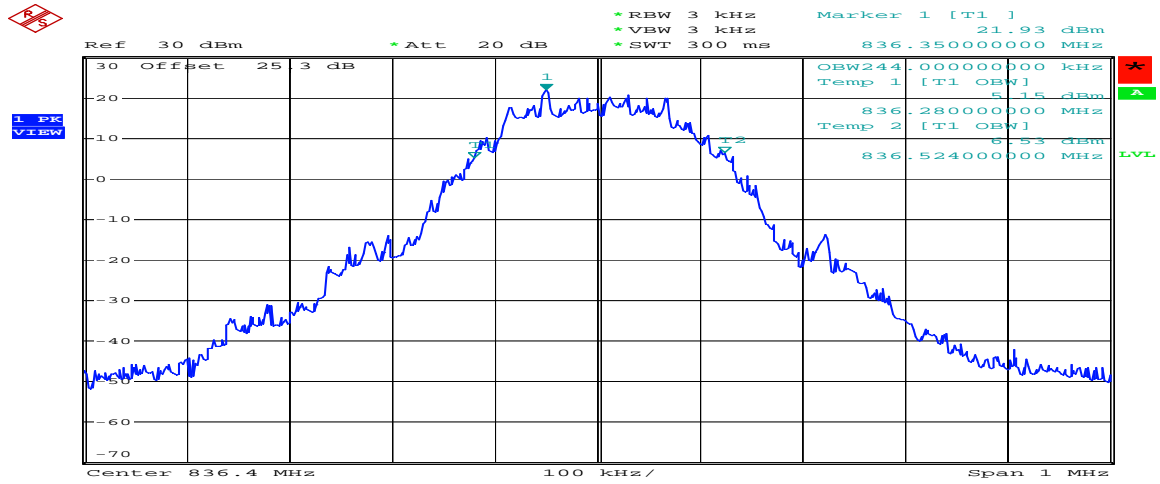
The final test data is shown on as following pages.

GSM850 Lower Band Edge CH128



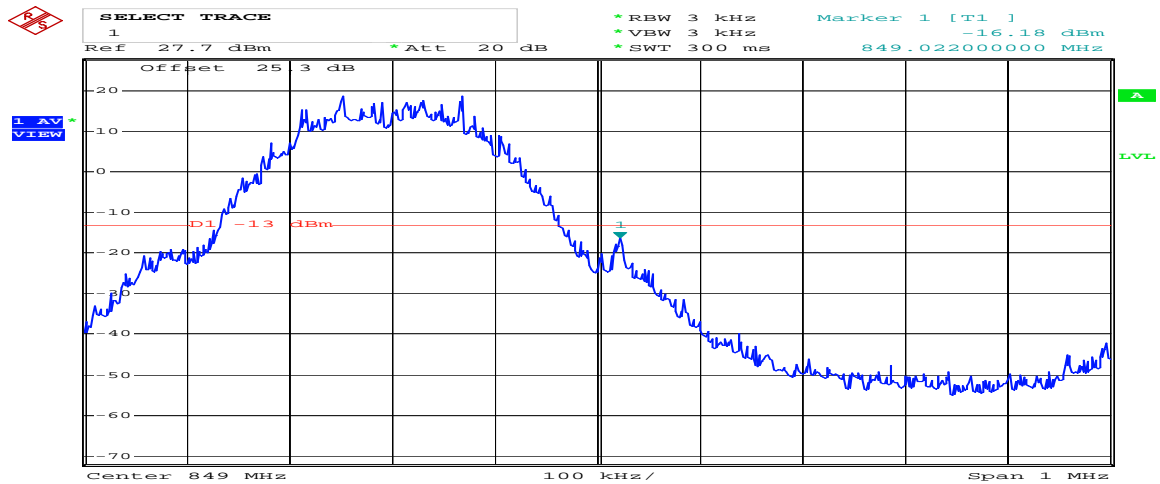
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GSM850 Occupied bandwidth CH189



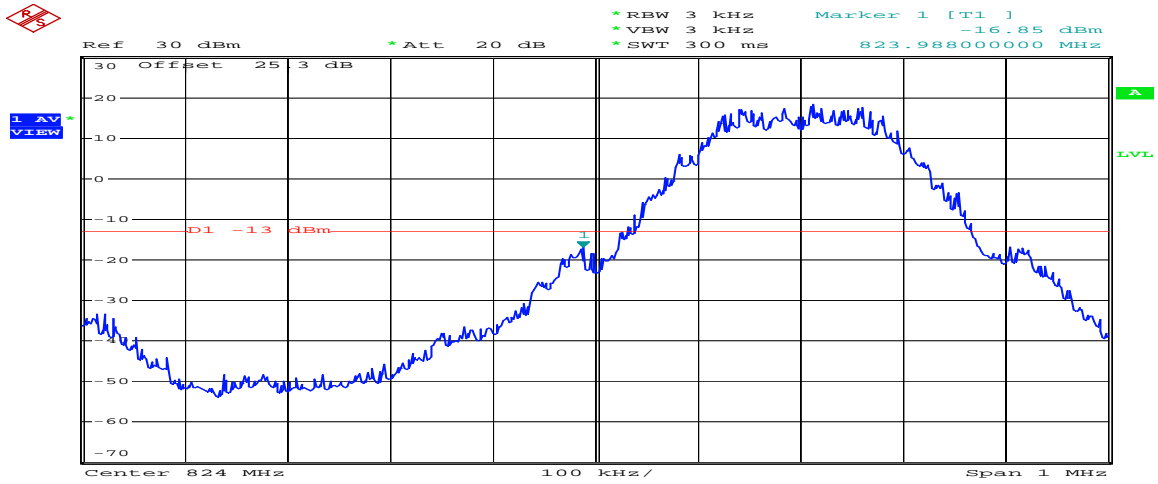
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GSM850 High Band Edge CH251



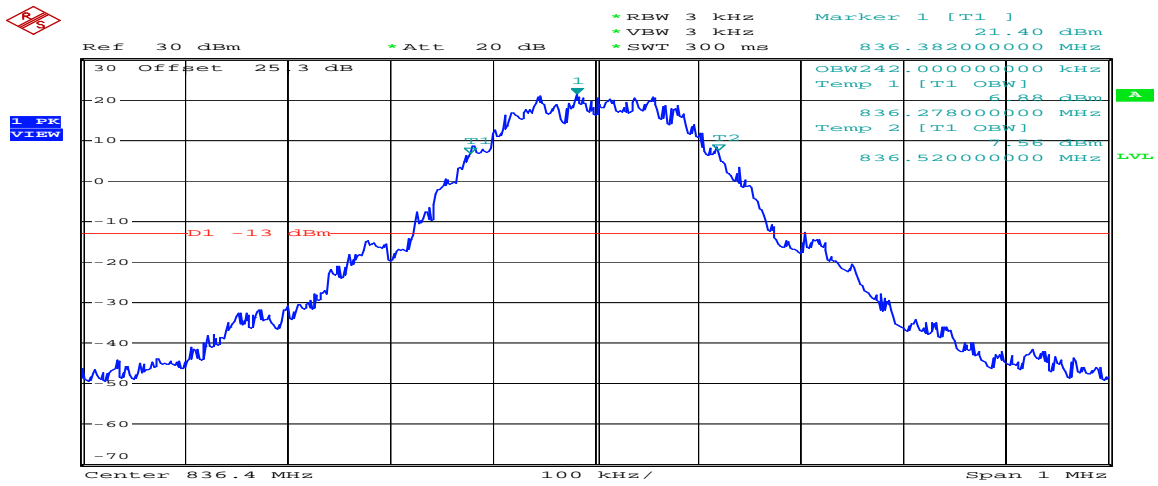
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GSM850 (EDGE) Lower Band Edge CH128



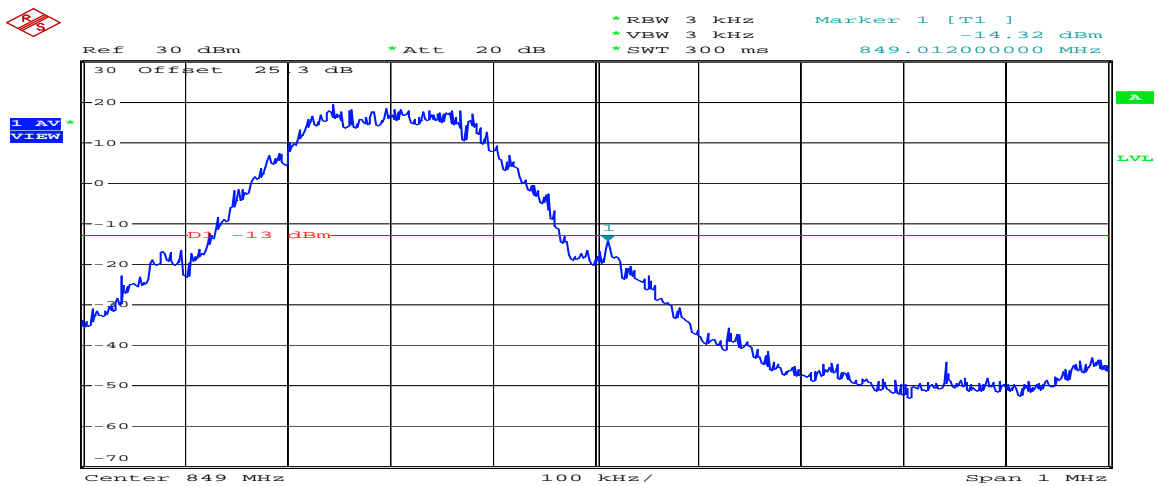
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GSM850 (EDGE) Occupied bandwidth CH189



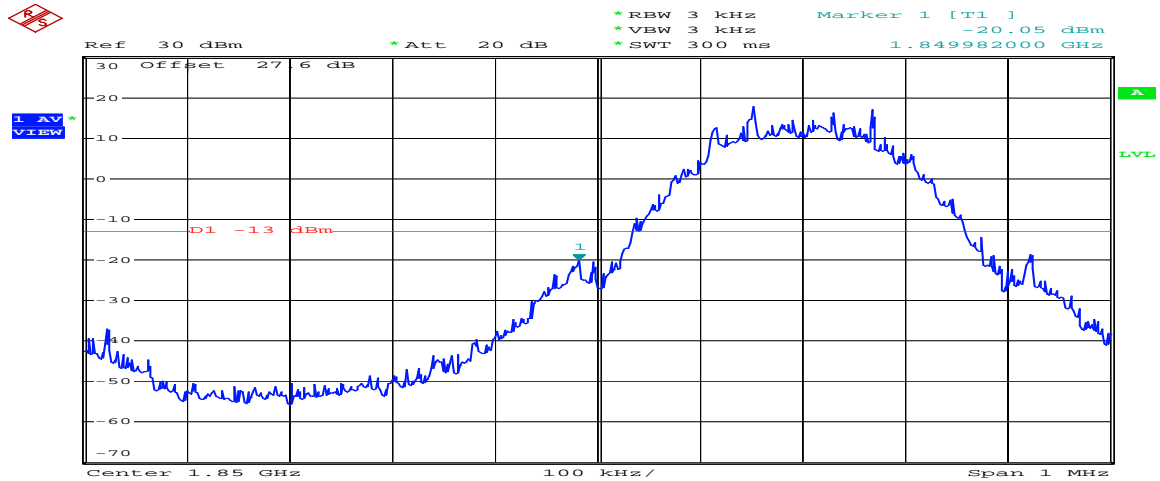
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GSM850 (EDGE) High Band Edge CH251



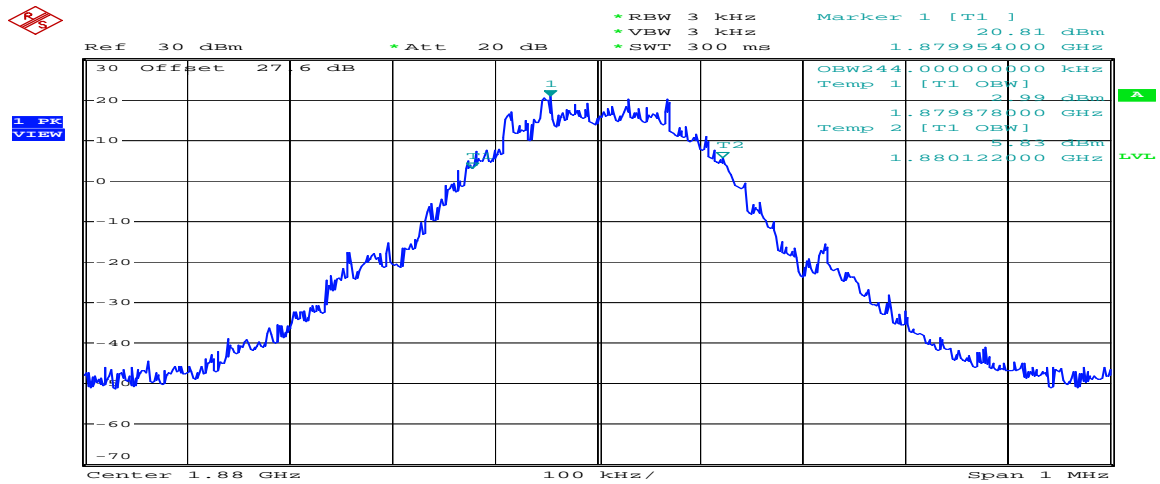
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PCS1900 Lower Band Edge CH512



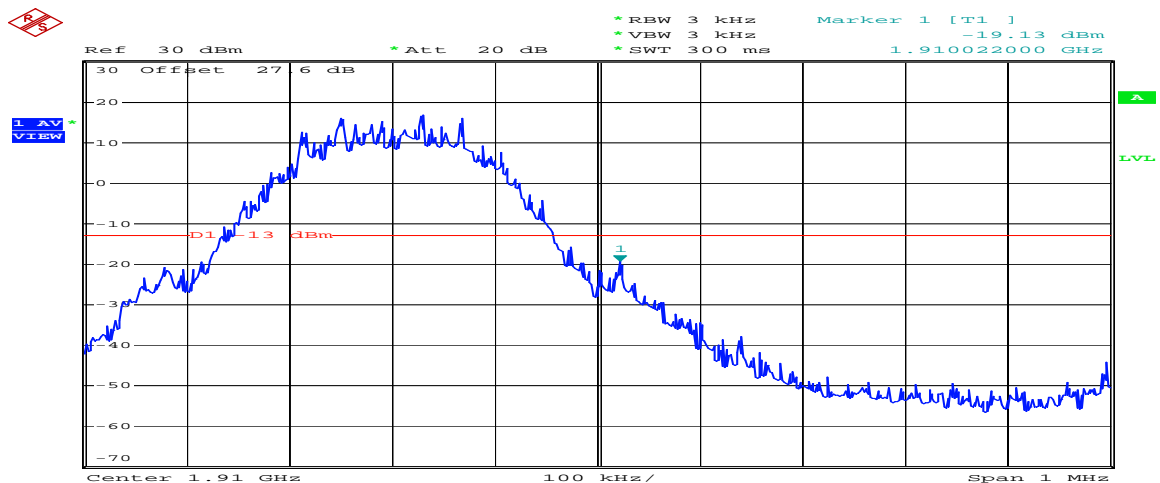
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PCS1900 Occupied bandwidth CH661



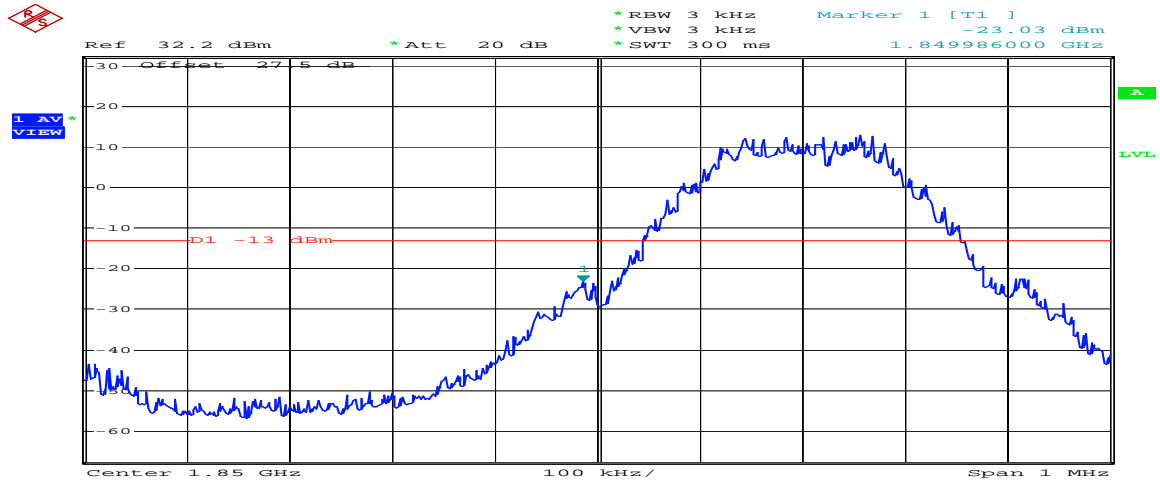
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PCS1900 High Band Edge CH810



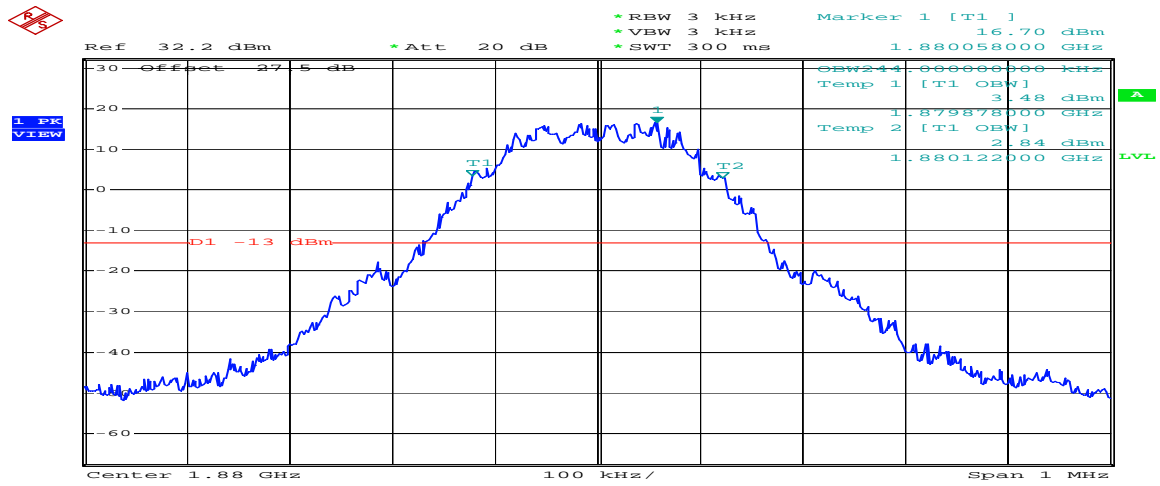
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PCS1900 (EDGE) Lower Band Edge CH512



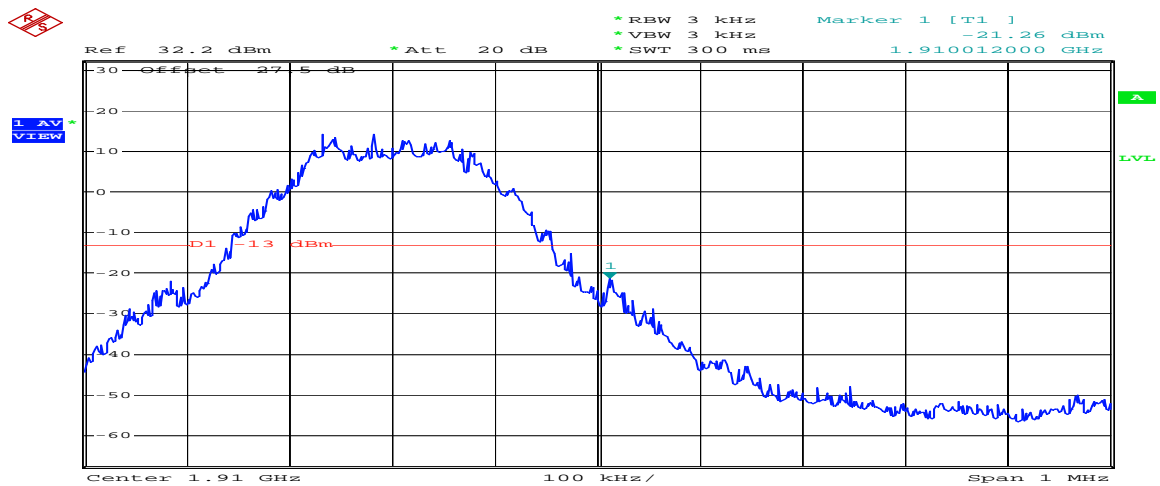
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PCS1900 (EDGE) Occupied bandwidth CH661



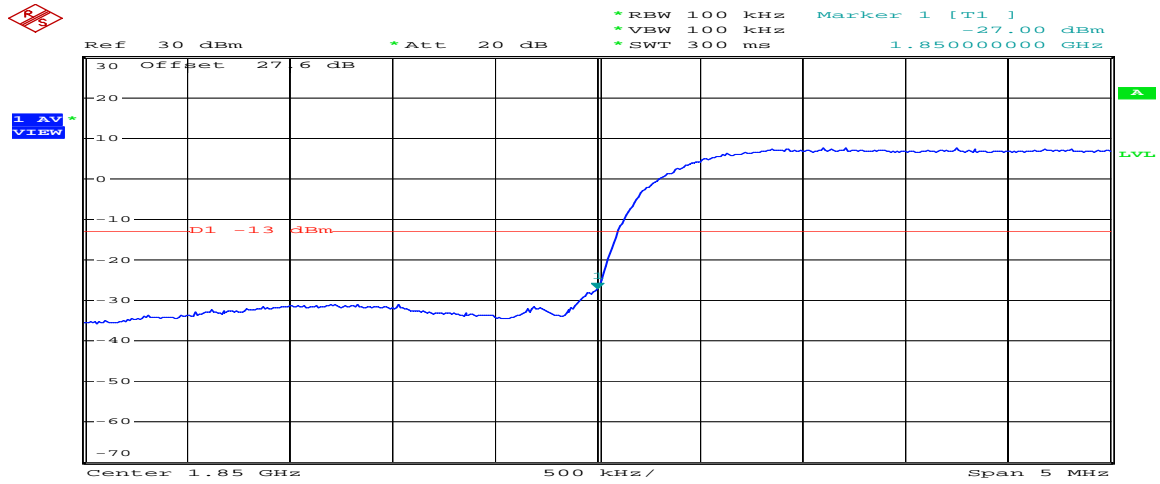
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PCS1900 (EDGE) High Band Edge CH810



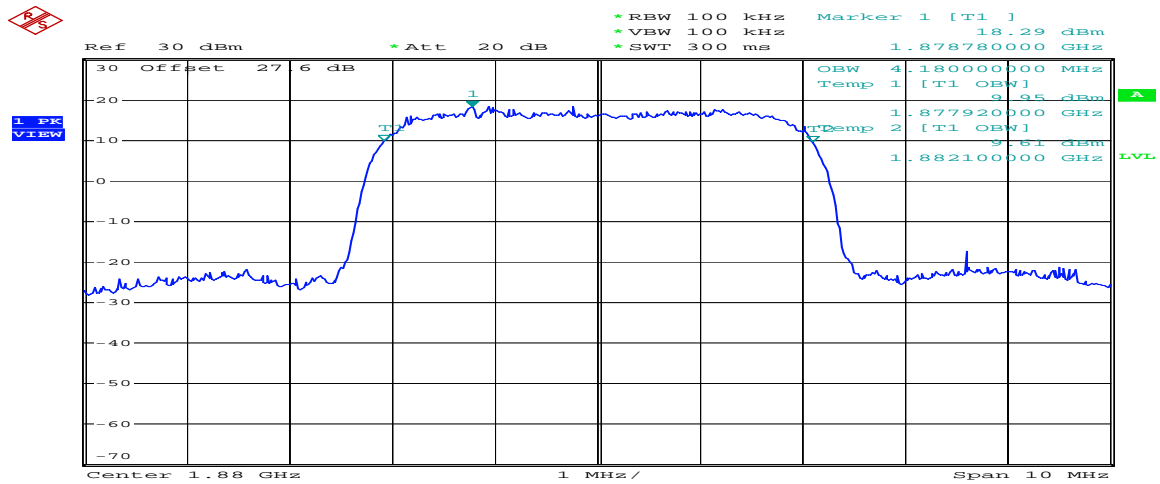
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WCDMA BAND II CH9262 Lower band edge



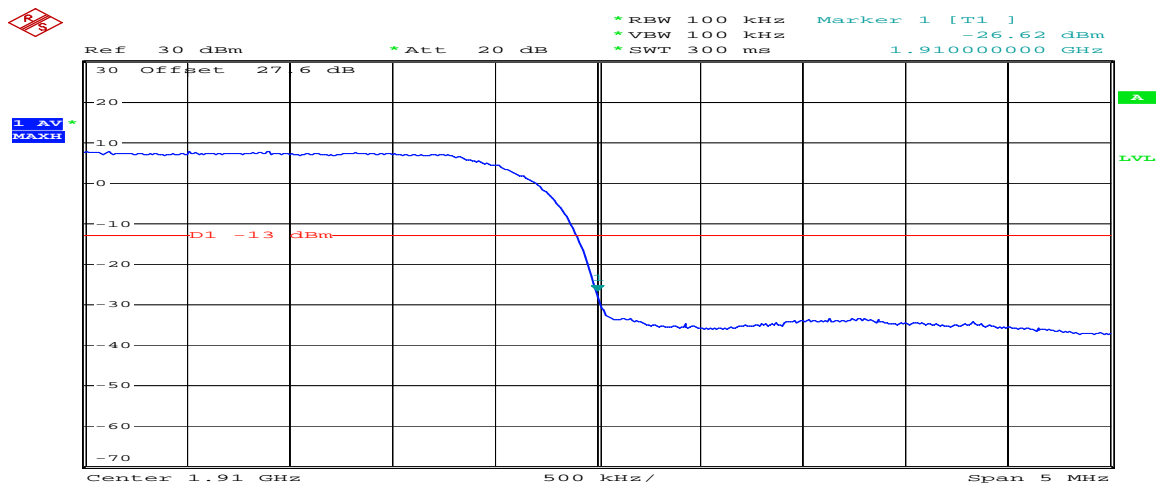
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WCDMA BAND II CH9400 Occupied bandwidth



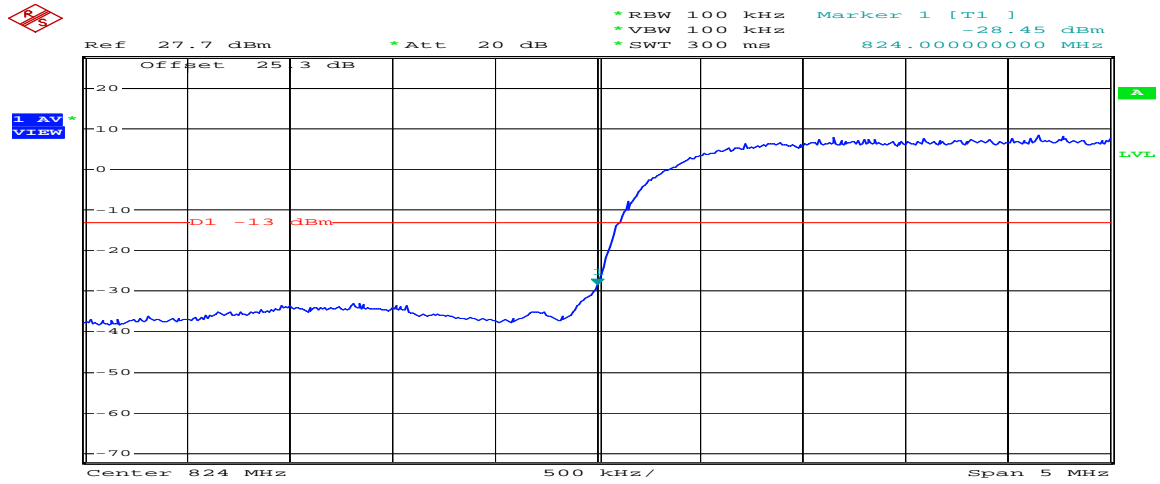
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WCDMA BAND II CH9538 High band edge



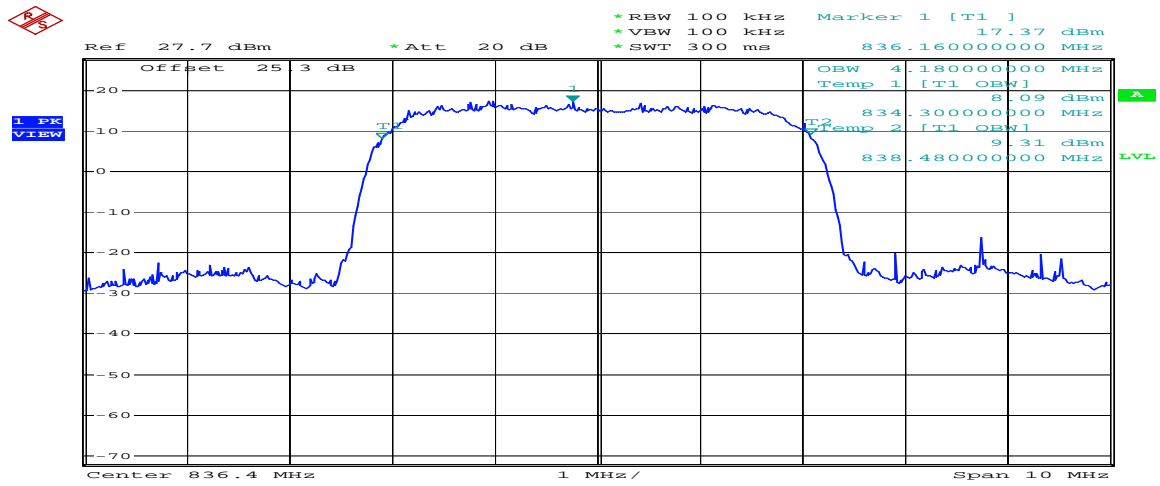
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WCDMA BAND V CH4132 Lower band edge



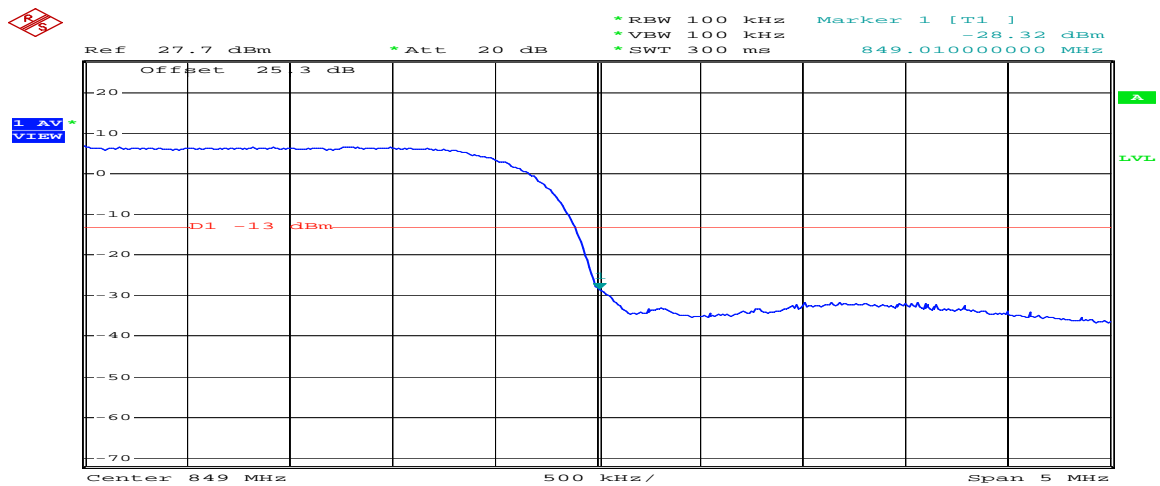
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 Comment: Lower Band Edge
 Date: 30.NOV.2007 15:18:28

WCDMA BAND V CH4182 Occupied bandwidth



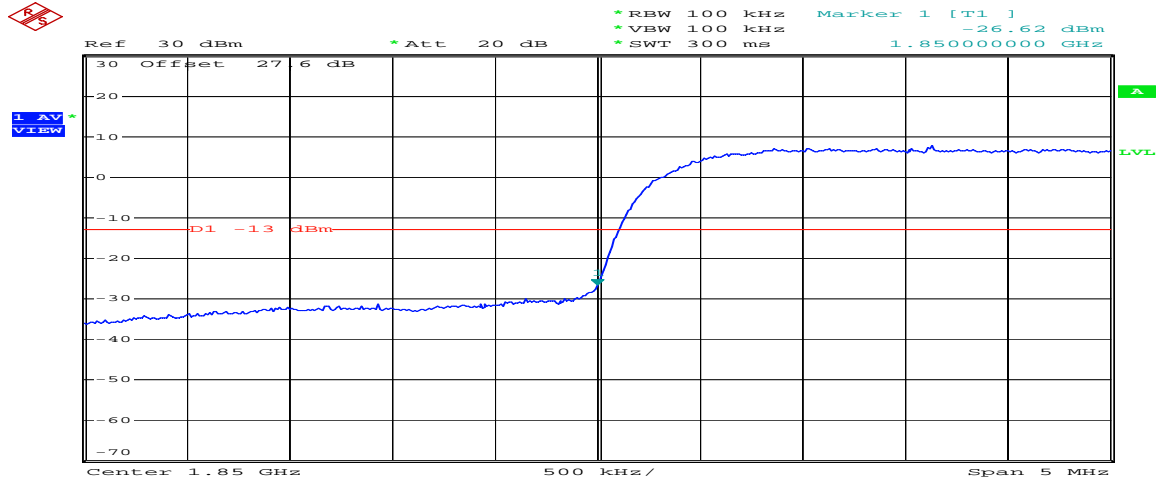
Comment: WCDMA BAND V CH4182
 Comment: Occupied bandwidth
 Date: 30.NOV.2007 15:01:36

WCDMA BAND V CH4233 High band edge



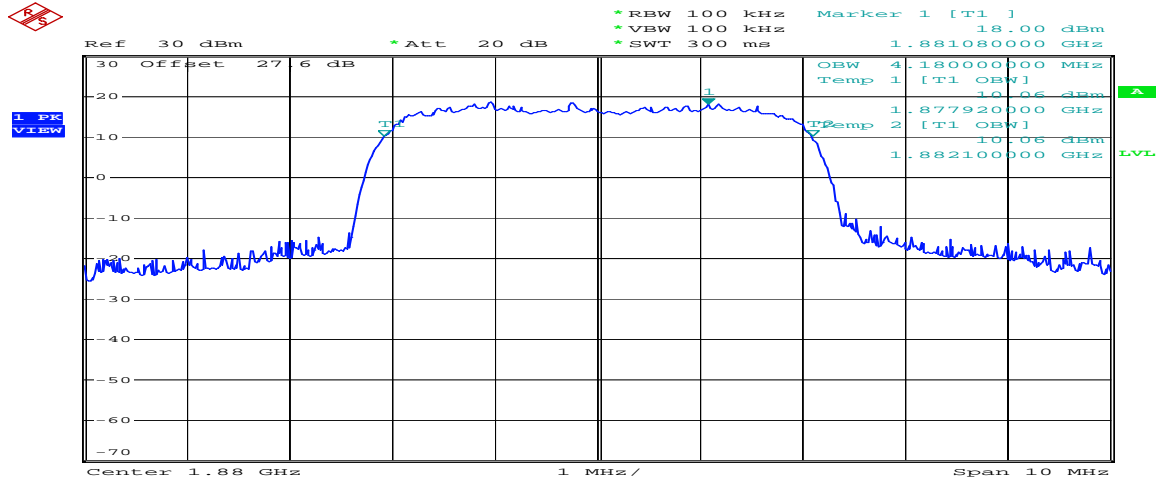
Comment: WCDMA BAND V CH4233
 Comment: Higher BAND EDGE
 Date: 30.NOV.2007 14:59:01

WCDMA BAND II (HSDPA) CH9262 Lower Band Edge



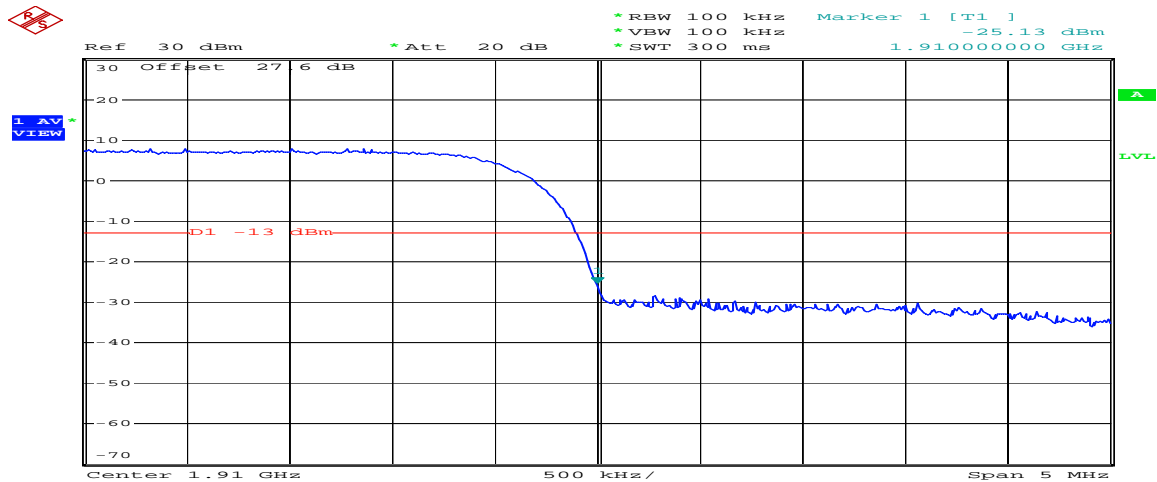
Comment: WCDMA BAND II (HSDPA) CH9262
Comment: Lower Band Edge
Date: 30.NOV.2007 15:46:34

WCDMA BAND II (HSDPA) CH9400 Occupied bandwidth



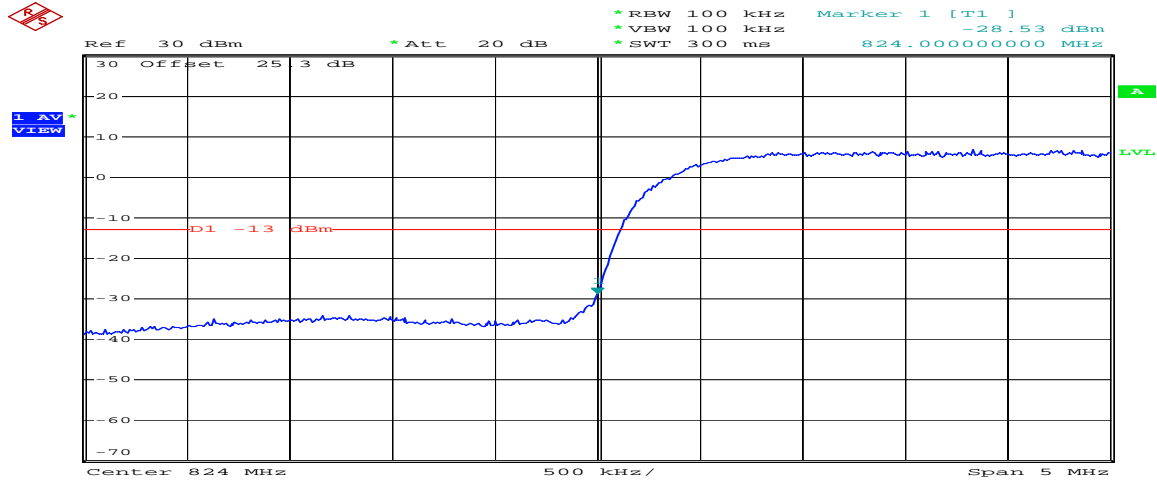
Comment: WCDMA BAND II (HSDPA) CH9400
Comment: Occupied bandwidth
Date: 30.NOV.2007 15:49:27

WCDMA BAND II (HSDPA) CH9538 High Band Edge



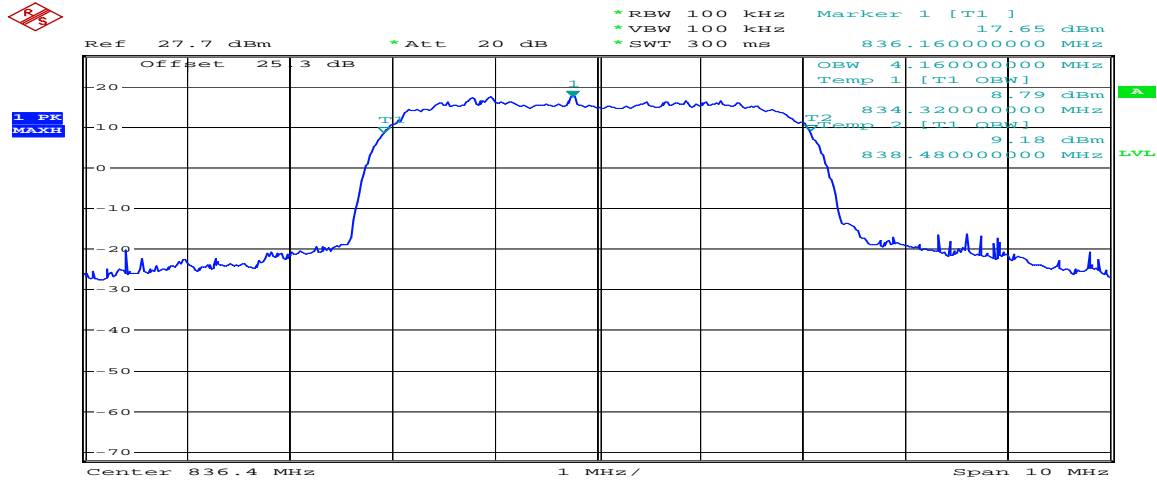
Comment: WCDMA BAND II (HSDPA) CH9538
Comment: Higher Band Edge
Date: 30.NOV.2007 15:42:59

WCDMA BAND V (HSDPA) CH4132 Lower Band Edge



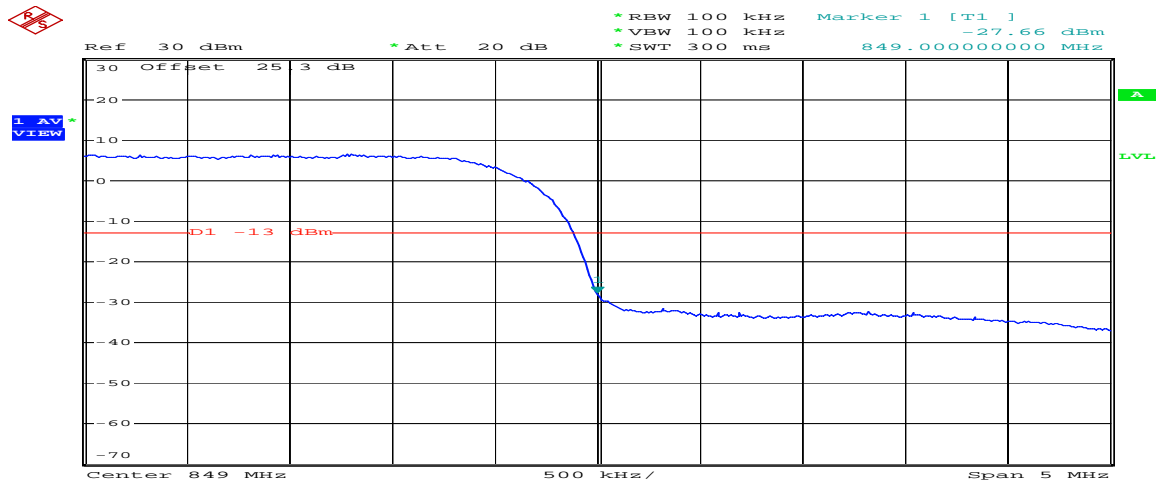
Comment: WCDMA BAND V(HSDPA)CH4132
 Comment: Lower Band Edge
 Date: 3.DEC.2007 11:56:39

WCDMA BAND V (HSDPA) CH4182 Occupied bandwidth



Comment: WCDMA BAND V(HSDPA)CH4182
 Comment: Occupied bandwidth
 Date: 30.NOV.2007 15:08:26

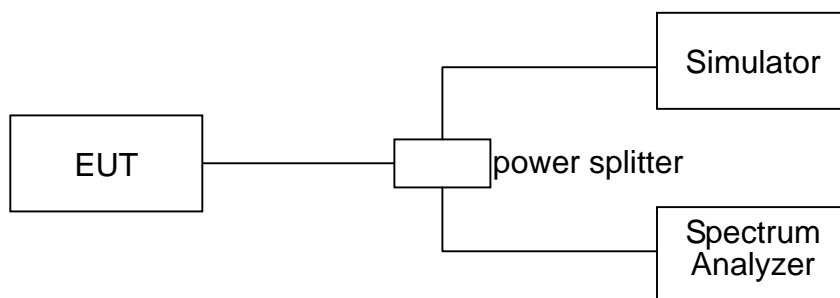
WCDMA BAND V (HSDPA) CH4233 High Band Edge



Comment: WCDMA BAND V(HSDPA)CH4233
 Comment: Higher Band Edge
 Date: 3.DEC.2007 11:47:32

5 Conducted Emission

5.1 Configuration of Measurement



5.2 Test Procedures

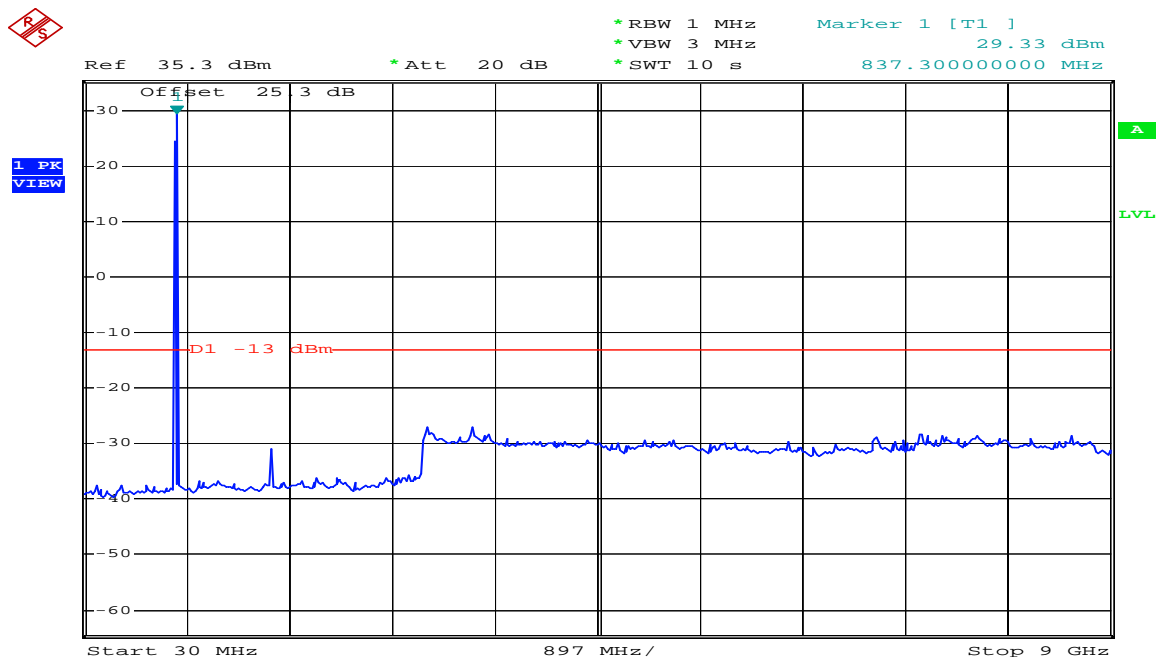
1. EUT was connected to Base Station (simulator) via power splitter and Spectrum Analyzer.
2. Measured the middle channel for the highest RF power within the transmitting frequency.
3. Conducted spurious emission for the whole frequency range was taken.

5.3 Test Result

PASS.

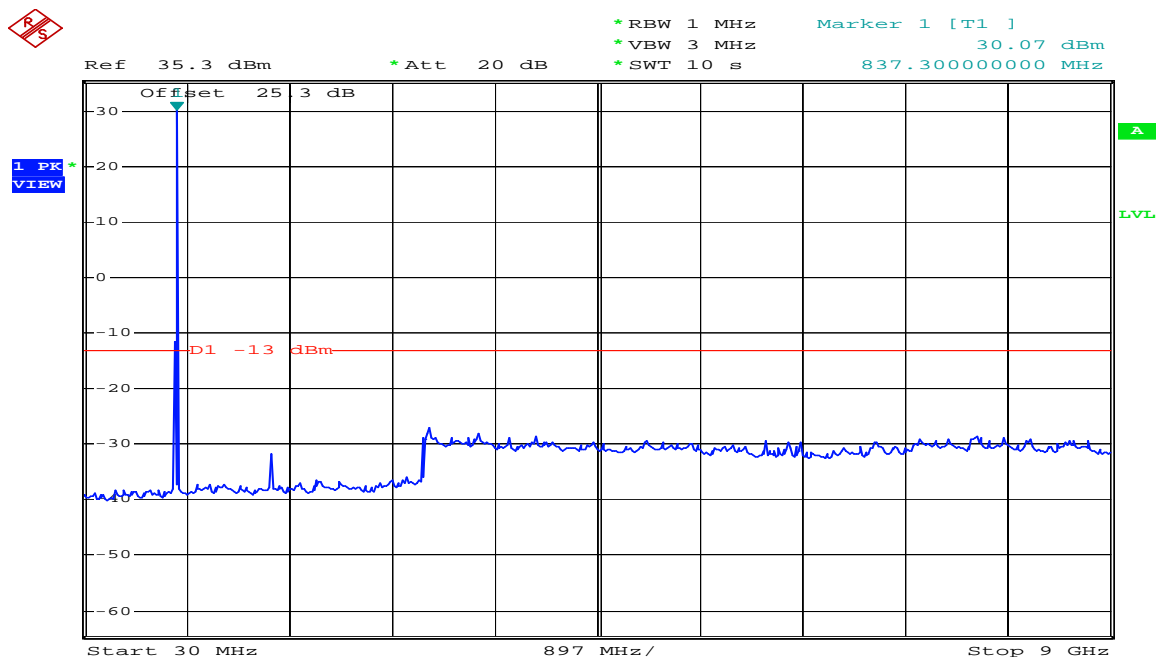
The final test data is shown on as following pages.

GSM850 conducted spurious CH189



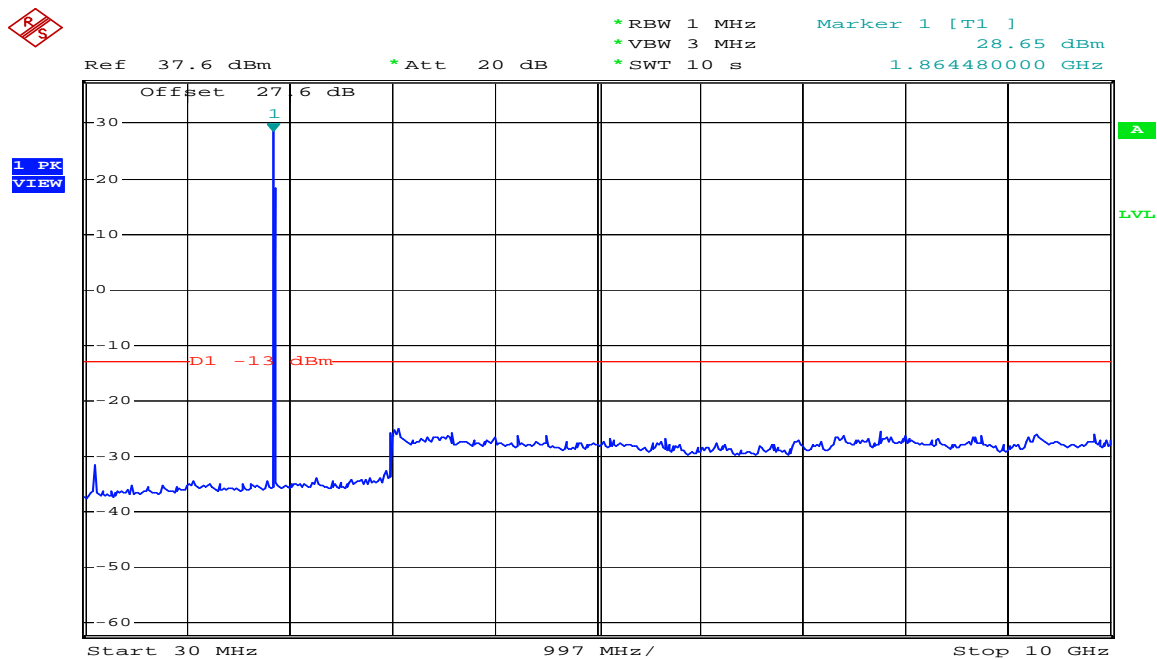
Comment: GSM850 CH189
Comment: Conducted Spurious Emissions
Date: 30.NOV.2007 13:54:35

GSM850 (EDGE) conducted spurious CH189



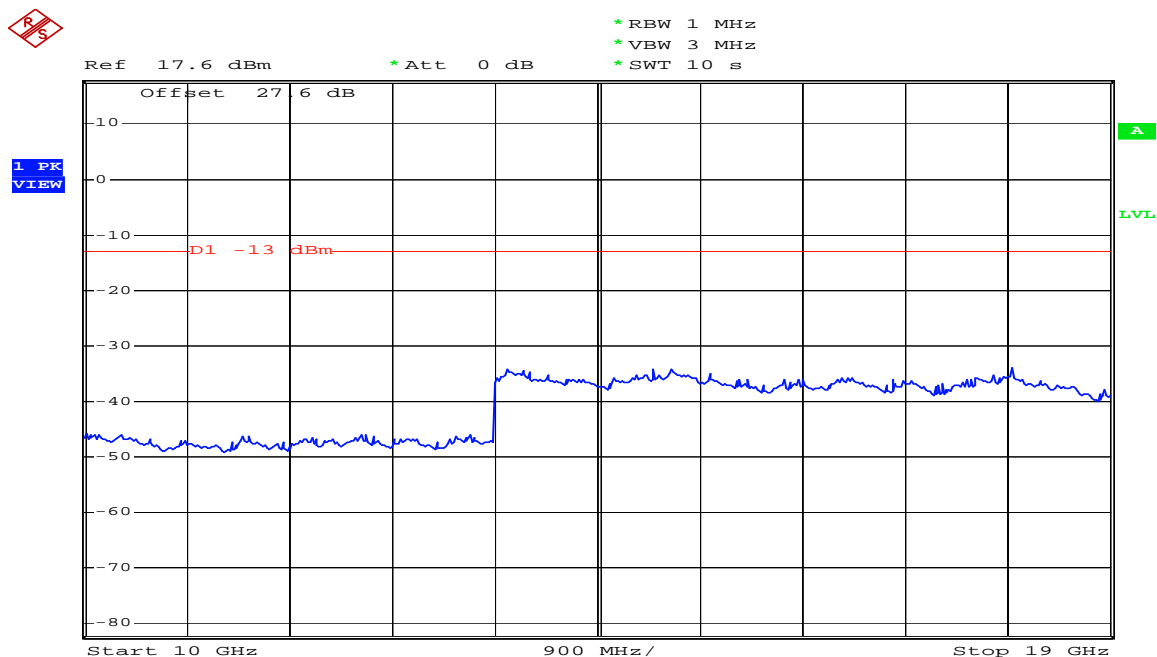
Comment: GSM850(EDGE) CH189
Comment: Conducted Spurious Emissions
Date: 5.DEC.2007 11:15:06

PCS1900 conducted spurious CH661 (30MHz~10GHz)



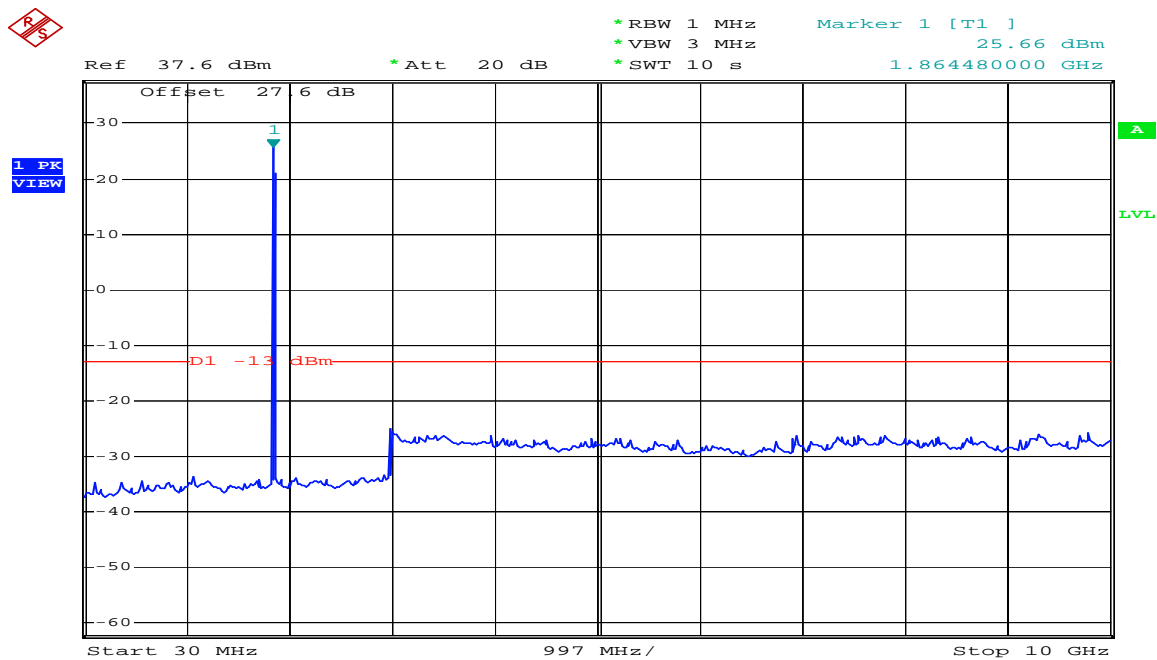
Comment: PCS1900 CH661
Comment: Conducted Spurious Emissions
Date: 30.NOV.2007 13:59:30

PCS1900 conducted spurious CH661 (10GHz~19GHz)



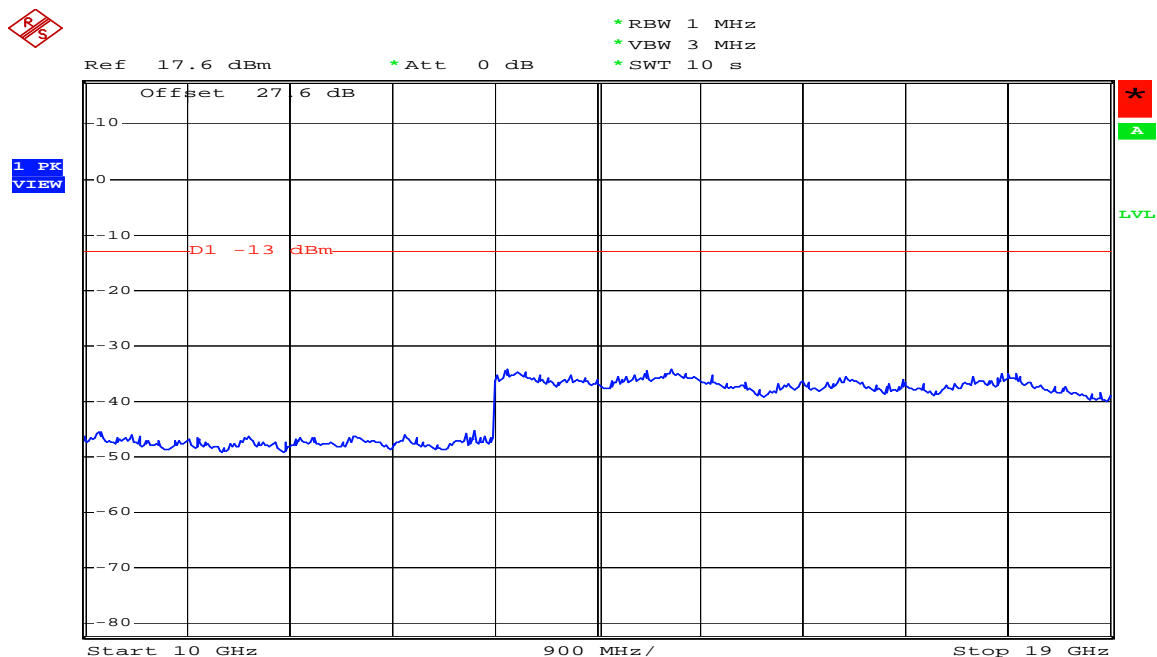
Comment: PCS1900 CH661
Comment: Conducted Spurious Emissions
Date: 30.NOV.2007 14:01:01

PCS1900 (EDGE) conducted spurious CH661 (30MHz~10GHz)



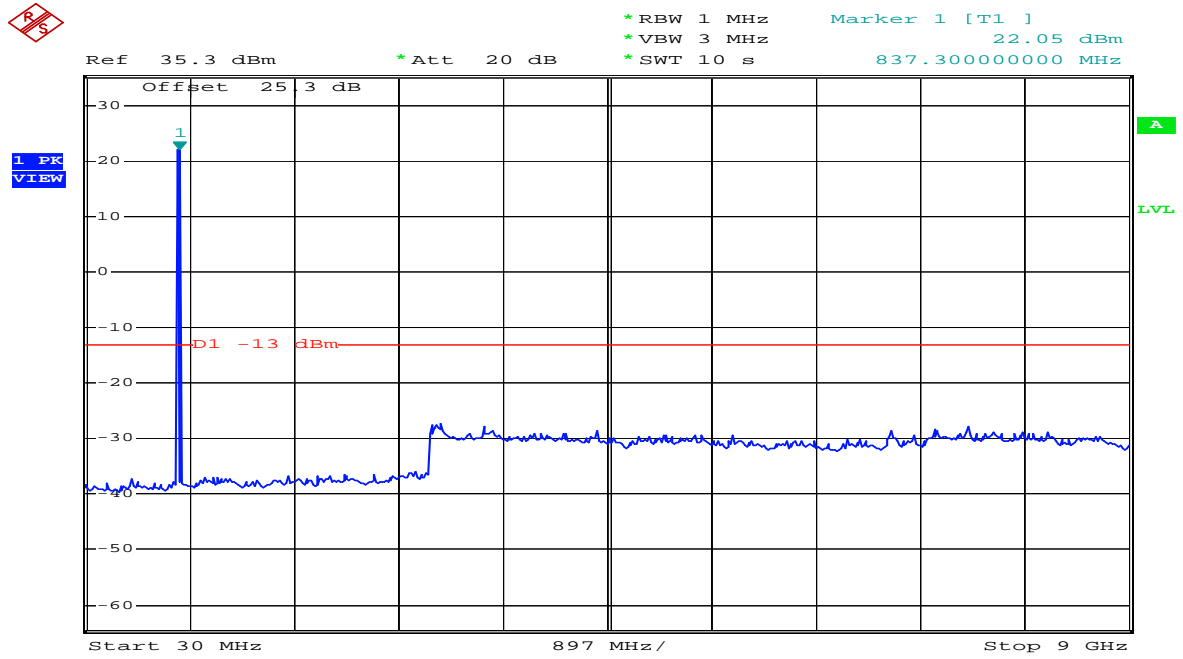
Comment: PCS1900(EDGE)CH661
Comment: Conducted Spurious Emissions
Date: 5.DEC.2007 11:21:58

PCS1900 (EDGE) conducted spurious CH661 (10GHz~19GHz)



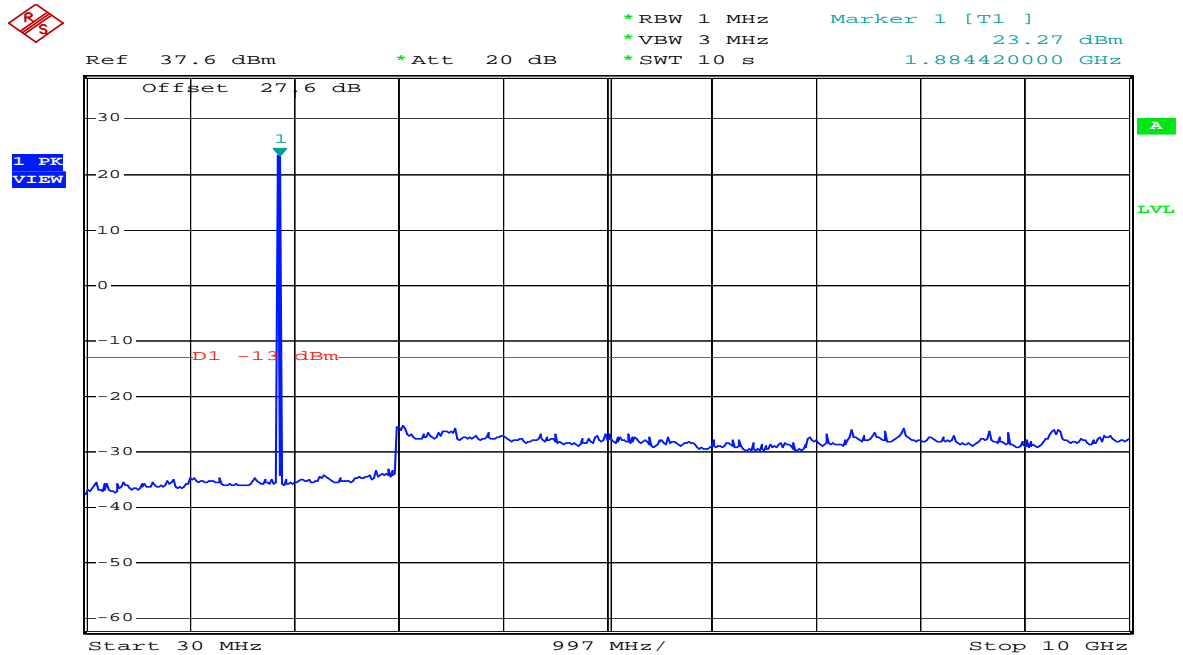
Comment: PCS1900(EDGE)CH661
Comment: Conducted Spurious Emissions
Date: 5.DEC.2007 11:23:46

WCDMA conducted spurious CH4182



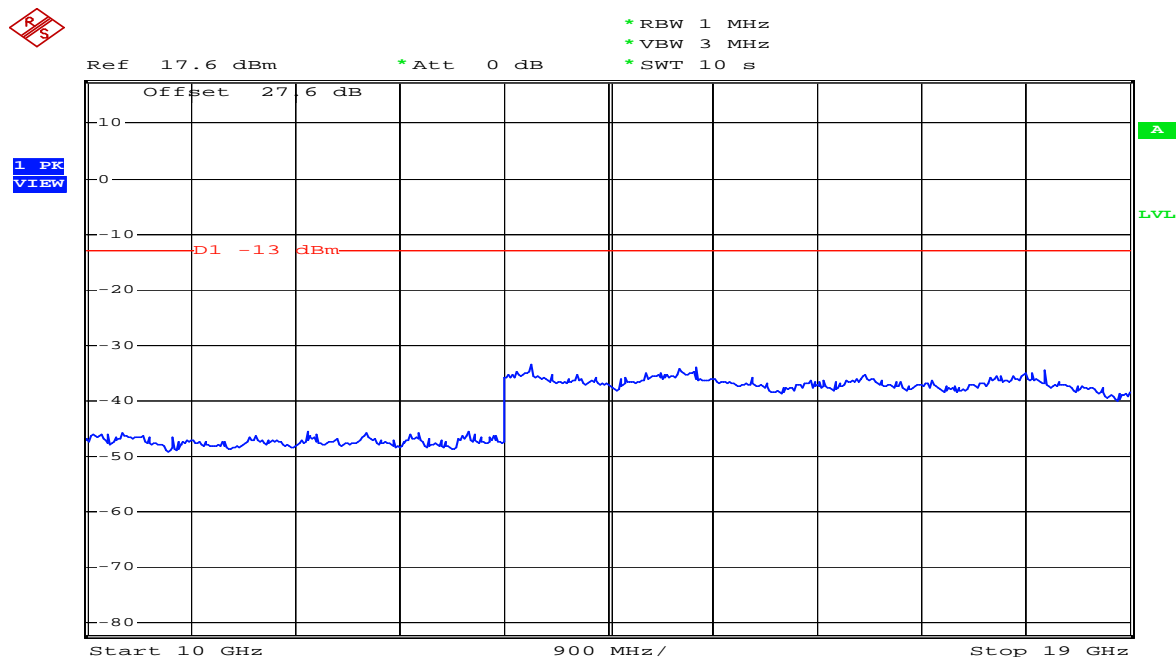
Comment: WCDMA Band V CH4182
Comment: Conducted Spurious Emissions
Date: 30.NOV.2007 13:45:35

WCDMA conducted spurious CH9400-01



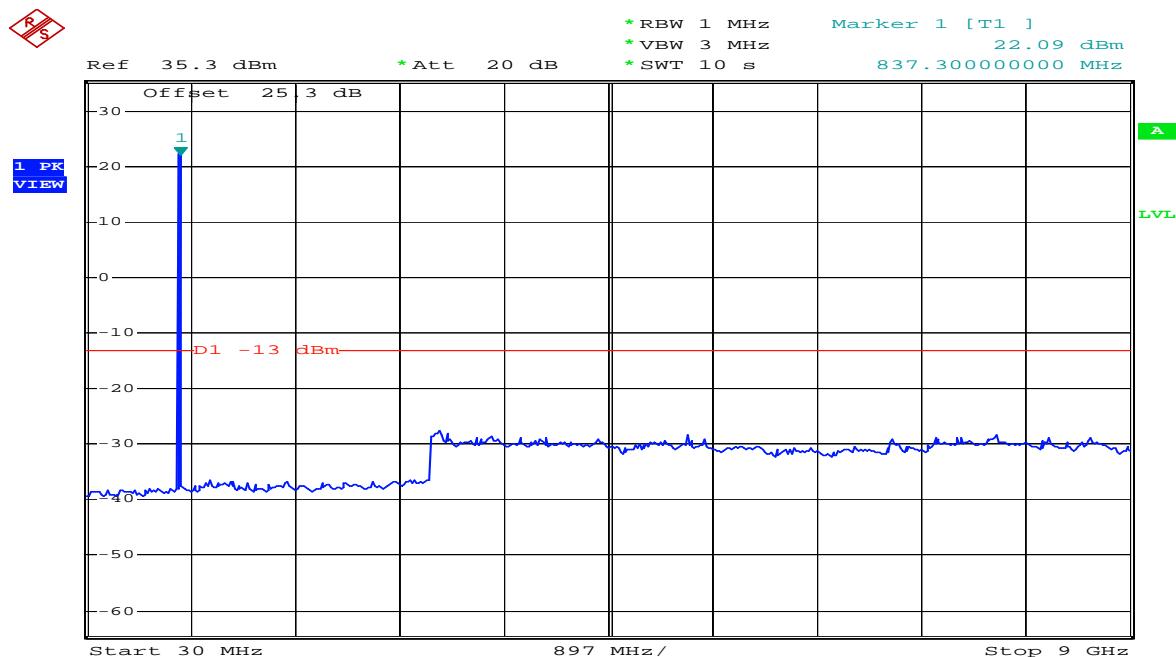
Comment: WCDMA Band II CH9400
Comment: Conducted Spurious Emissions
Date: 30.NOV.2007 13:39:47

WCDMA conducted spurious CH9400-02



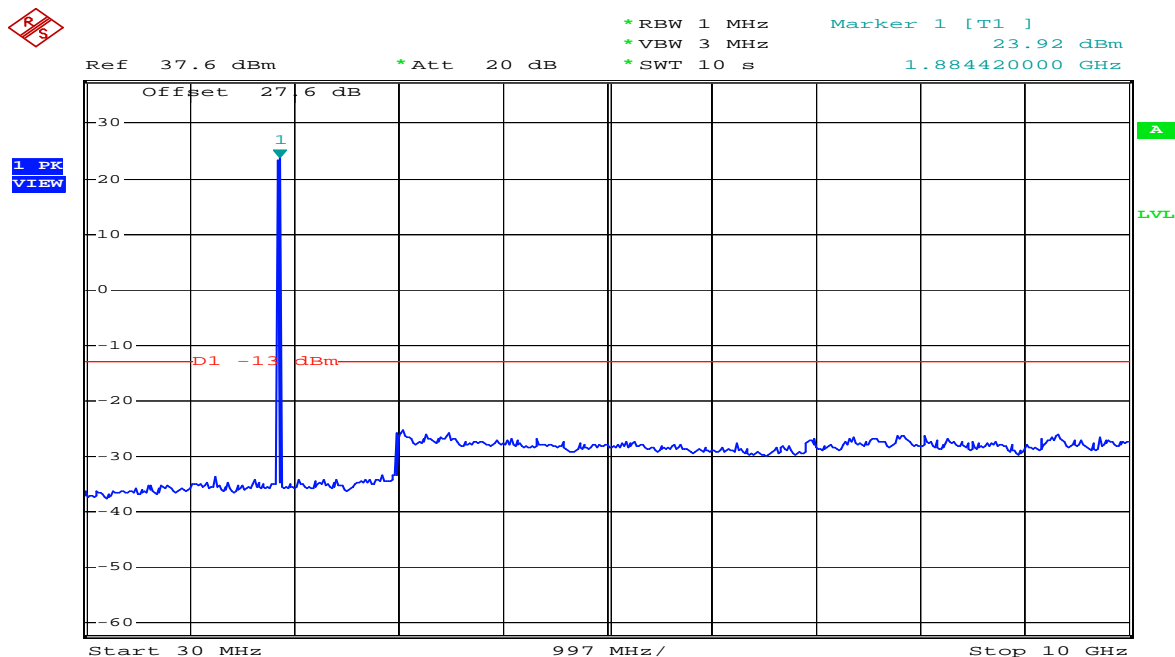
Comment: WCDMA Band II CH9400
Comment: Conducted Spurious Emissions
Date: 30.NOV.2007 13:41:14

HSDPA conducted spurious CH4182



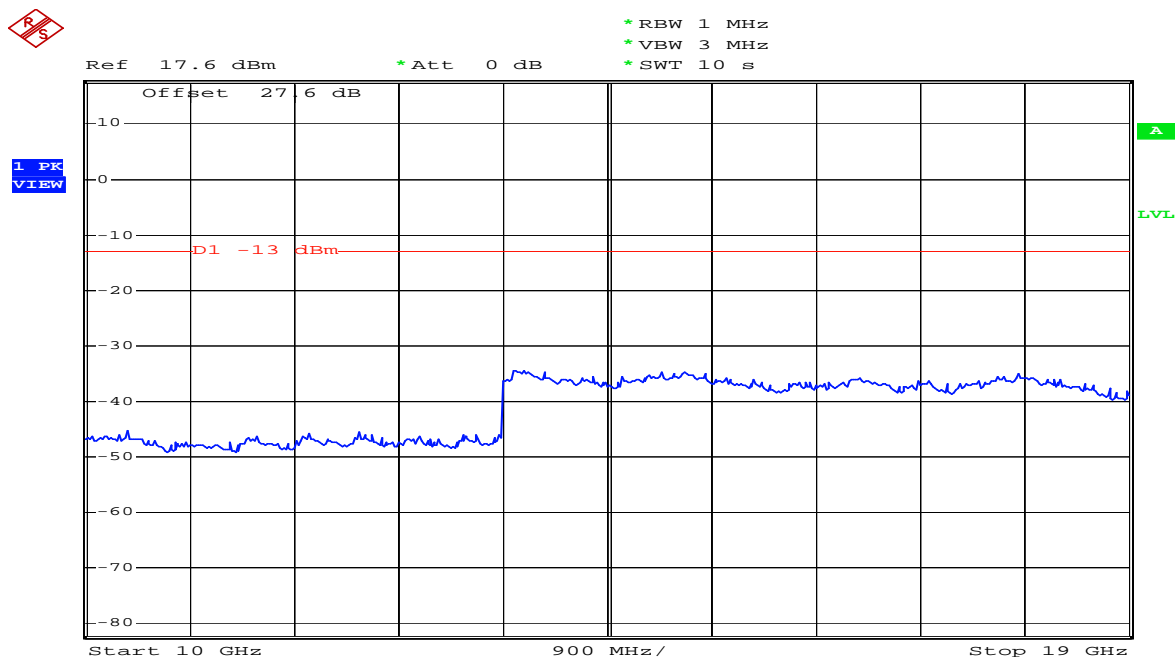
Comment: WCDMA Band V (HSDPA) CH4182
Comment: Conducted Spurious Emissions
Date: 30.NOV.2007 12:22:58

HSDPA conducted spurious CH9400-01



Comment: WCDMA Band II (HSDPA) CH9400
Comment: Conducted Spurious Emissions
Date: 30.NOV.2007 13:33:41

HSDPA conducted spurious CH9400-02

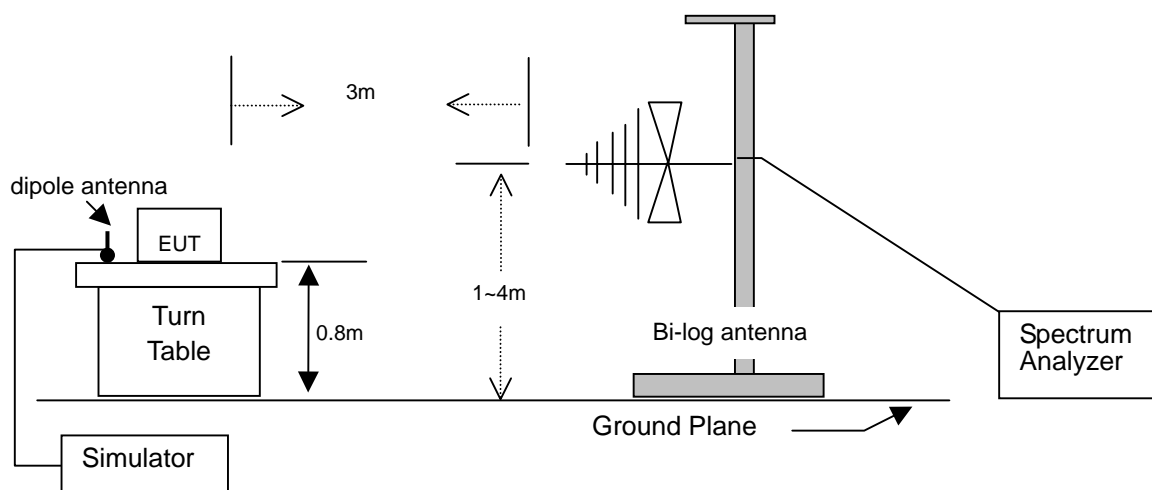


Comment: WCDMA Band II (HSDPA) CH9400
Comment: Conducted Spurious Emissions
Date: 30.NOV.2007 13:35:58

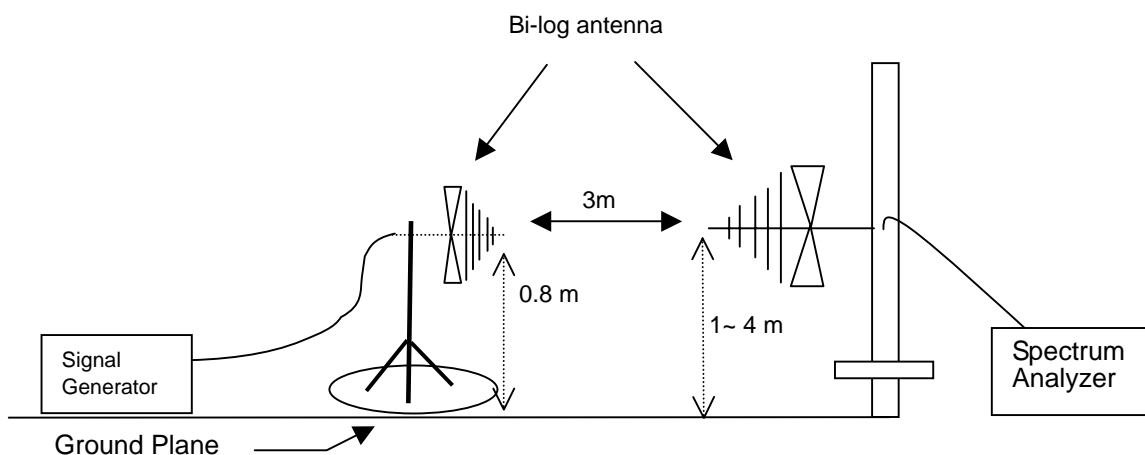
6 Field Strength of Spurious Radiation

6.1 Configuration of Measurement

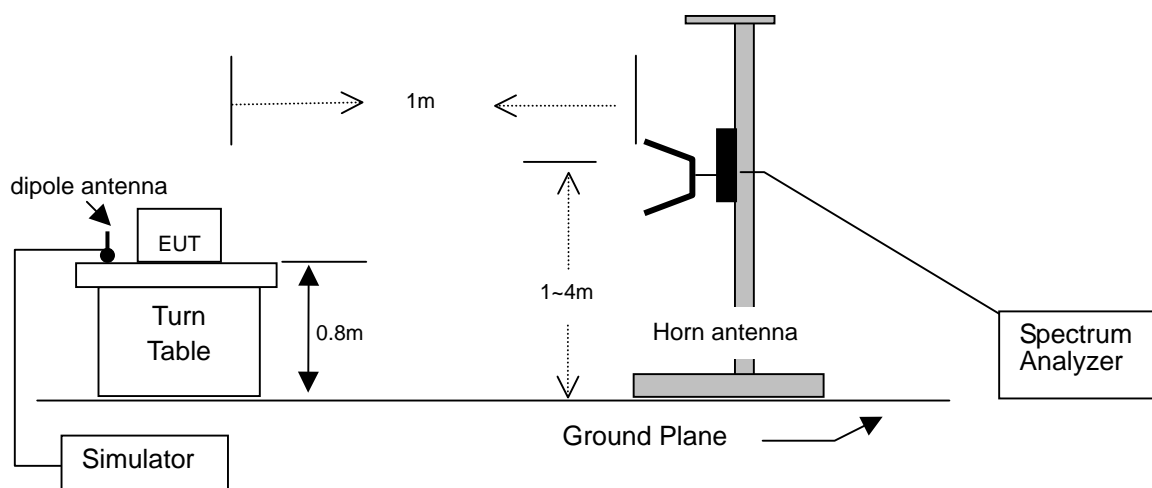
Frequency measurement below 1GHz configuration



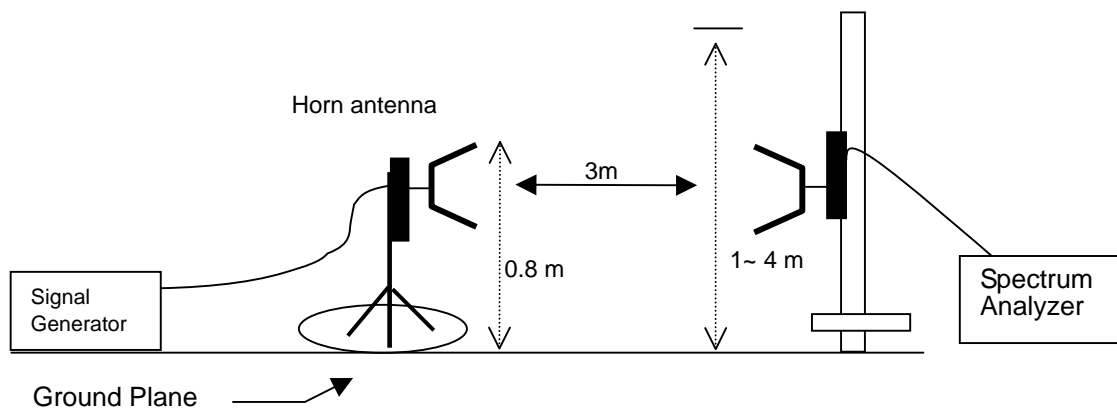
Frequency measurement below 1GHz configuration



Frequency measurement above 1GHz configuration



Frequency measurement above 1GHz configuration



6.2 Test Procedures

1. EUT was placed 0.8 meter about ground on a turntable wooden table.
2. EUT was set receiving bilog antenna for frequency below 1GHz and set horn antenna for frequency above 1 GHz.
3. Table was rotated 360 degrees to arrive the position of the highest spurious emission.
4. The height of the receiving antenna is varied between 1 meter and 4 meter to determine the maximum spurious emission for both vertical and horizontal polarizations.
5. Record the signal generator to the same emission level with EUT maximum spurious emission.
6. Horn or Bilog antenna was substituted in place of the EUT and was driven by a signal generator.
7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
8. Record the output power at antenna port.
9. Repeat step 7 to step 8 for other polarization.
10. Formula: $SG \text{ level} + \text{substitution Gain} - \text{Cable Loss} = \text{Emission level (dBm)}$.

6.3 Test Result

PASS.

The final test data is shown on as following pages.

Field Strength of Spurious Radiation (30MHz~1GHz)

Worst Case of GSM 850				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	ERP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
45.52	-40.58	0.06	0.35	-40.87
482.00	-51.86	0.26	0.48	-52.08
Vertical Polarization				
99.84	-38.30	0.06	0.35	-38.59
751.68	-61.34	0.90	1.22	-61.66

Worst Case of EDGE GSM 850				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	ERP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
70.40	-66.47	0.06	0.35	-66.76
118.90	-75.71	0.26	0.48	-75.93
Vertical Polarization				
70.40	-67.1	0.06	0.35	-67.39

Worst Case of GSM PCS 1900				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	ERP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
424.50	-66.52	0.75	0.99	-66.76
510.20	-75.11	0.84	1.11	-75.38
Vertical Polarization				
125.40	-71.83	0.30	0.50	-72.03
665.40	-77.86	1.11	1.27	-78.02

Worst Case EDGE GSM PCS 1900				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	ERP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
264.40	-75.98	0.47	0.76	-76.27
296.80	-74.5	0.54	0.85	-74.81
Vertical Polarization				
143.20	-75.92	0.37	0.54	-76.09
177.10	-71.78	0.45	0.61	-71.94

Worst Case of WCDMA BAND 5				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	ERP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
70.74	-66.77	0.06	0.35	-67.06
239.52	-58.49	0.47	0.76	-58.78
443.22	-62.08	0.75	0.99	-62.32
Vertical Polarization				
245.34	-60.82	0.47	0.76	-61.11
350.00	-62.22	0.51	0.84	-62.55

Worst Case of WCDMA HSDPA BAND 5				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	ERP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
68.80	-82.08	0.06	0.35	-82.37
534.40	-51.49	0.84	1.11	-51.76
Vertical Polarization				
245.34	-60.82	0.47	0.76	-61.11
350.00	-62.22	0.51	0.84	-62.55

Worst Case of WCDMA BAND 2				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	ERP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
70.74	-58.38	0.06	0.35	-58.67
270.56	-40.14	0.47	0.76	-40.43
447.10	-33.65	0.75	0.99	-33.89
Vertical Polarization				
70.74	-56.3	0.06	0.35	-56.59
270.56	-38.6	0.47	0.76	-38.89
447.10	-34.13	0.75	0.99	-34.37

Worst Case of WCDMA HSDPA BAND 2				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	ERP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
74.62	-61.28	0.06	0.35	-61.57
167.74	-46.23	0.45	0.61	-46.39
421.88	-46.62	0.75	0.99	-46.86
483.96	-45.71	0.75	0.99	-45.95
Vertical Polarization				
70.74	-57.4	0.06	0.35	-57.69
239.52	-46.09	0.47	0.76	-46.38
443.22	-46.78	0.75	0.99	-47.02

Field Strength of Spurious Radiation (Frequency above 1GHz)

GSM 850 (LOW) 824.2MHz				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	ERP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
1240	-63.1	7.60	1.55	-57.05
1641	-63.51	9.60	1.91	-55.82
2442	-54.99	10.58	2.17	-46.58
Vertical Polarization				
1641	-58.5	9.60	1.1	-50.00
2442	-59.87	10.58	2.17	-51.46

GSM 850 (MID) 836.4MHz				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	ERP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
1240	-63.71	7.60	1.55	-57.66
1641	-64	9.60	1.91	-56.31
2482	-58.9	10.59	2.17	-50.48
Vertical Polarization				
1641	-62.48	9.60	1.91	-54.79
2482	-58.9	10.59	2.17	-50.48

GSM 850 (HIGH) 848.8MHz				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	ERP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
2522	-59.21	10.64	2.41	-50.98
Vertical Polarization				
1681	-59.21	10.64	2.41	-50.98
2522	-59.29	10.64	2.41	-51.06

EDGE GSM 850 (LOW) 824.2MHz				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	ERP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
3296	-57.24	12.15	2.71	-47.80
Vertical Polarization				
2594	-65.54	10.77	2.41	-57.18

EDGE GSM 850 (MID) 836.4MHz				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	ERP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
7198	-51.88	11.62	3.52	-43.78
Vertical Polarization				
2891	-67.13	11.30	2.41	-58.24
10366	-42.92	11.88	3.87	-34.91

EDGE GSM 850 (HIGH) 848.8MHz				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	ERP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
3845	-66.67	12.57	2.71	-56.81
7148	-51.96	11.64	3.52	-43.84
Vertical Polarization				
2495	-66.29	10.77	2.71	-58.23
3227	-65.76	12.15	2.71	-56.32

PCS 1900 (GSM)(LOW) 1850.2MHz				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	ERP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
9259	-64.92	11.95	3.86	-56.83
Vertical Polarization				
9259	-64.92	11.95	3.86	-56.83

PCS 1900 (GSM)(MID) 1880MHz				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	ERP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
9447	-50.7	11.99	3.86	-42.57
Vertical Polarization				
3750	-66.16	12.60	2.71	-56.27
9403	-43.07	11.98	3.86	-34.95

PCS 1900 (GSM)(HIGH) 1909.8MHz				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	ERP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
3663	-66.3	12.60	2.71	-56.41
9548	-49.44	12.01	3.86	-41.29
Vertical Polarization				
3807	-64.46	12.60	2.71	-54.57
9548	-49.1	12.01	3.86	-40.95
11466	-43.54	12.29	4.05	-35.30

EDGE GSM PCS 1900 (LOW) 1850.2MHz				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	ERP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
3540	-71.17	12.60	2.71	-61.28
9264	-51.46	11.95	3.86	-43.37
Vertical Polarization				
3702	-69.49	12.60	2.71	-59.60
9264	-48.83	11.95	3.86	-40.74

EDGE GSM PCS 1900 (MID) 1880MHz				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	ERP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
4602	-67.36	12.64	3.00	-57.72
10434	-47.96	11.84	3.87	-39.99
Vertical Polarization				
3774	-64.07	12.60	2.71	-54.18
9444	-52.42	11.99	3.86	-44.29

EDGE GSM PCS 1900 (HIGH) 1909.8MHz				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	ERP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
3810	-69.23	12.60	2.71	-59.34
9462	-56.55	11.99	3.86	-48.42
10434	-47.96	11.84	3.87	-39.99
Vertical Polarization				
3810	-61.24	12.60	2.71	-51.35
7104	-57.93	11.66	3.52	-49.79
9570	-56.74	12.01	3.88	-48.61

WCDMA BAND5 (LOW) Tx 826.4MHz				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	ERP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
3302	-66.41	12.16	2.58	-56.83
Vertical Polarization				
3302	-66.79	12.16	2.58	-52.21

WCDMA BAND5 (MID) Tx 836.4MHz				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	ERP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
3346	-62.32	12.26	2.58	-52.64
Vertical Polarization				
3346	-67.96	12.26	2.58	-58.28

WCDMA BAND5 (HIGH) Tx 846.6MHz				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	ERP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
3389	-61.39	12.36	2.58	-51.61
Vertical Polarization				
3389	-70.56	12.36	2.58	-60.78

WCDMA HSDPA BAND 5 (LOW) Tx 826.4MHz				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	ERP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
3302	-61.78	12.16	2.58	-52.20
Vertical Polarization				
3302	-61.79	12.16	2.58	-52.21

WCDMA HSDPA BAND 5 (MID) Tx 836.4MHz				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	ERP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
1594	-60.09	9.36	1.91	-52.64
Vertical Polarization				
1598	-59.24	9.39	1.91	-51.76

WCDMA HSDPA BAND 5 (HIGH) Tx 846.6MHz				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	ERP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
3389	-67.14	12.36	2.58	-57.36
Vertical Polarization				
3389	-63.96	12.36	2.58	-54.18

WCDMA BAND 2 (LOW) Tx 1852.4MHz				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	ERP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
3245	-66.59	12.60	2.71	-56.70
Vertical Polarization				
3692	-68.28	12.60	2.71	-58.39

WCDMA BAND 2 (MID) Tx 1880MHz				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	ERP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
3750	-59.92	12.60	2.71	-50.03
5109	-62.54	12.79	3.09	-52.84
Vertical Polarization				
3750	-59.04	12.60	2.71	-49.15

WCDMA BAND 2 (HIGH) Tx1907.6MHz				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	ERP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
3815	-54.76	12.60	2.71	-44.87
Vertical Polarization				
3815	-55.13	12.60	2.71	-45.24

WCDMA HSDPA BAND 2 (LOW) Tx 1852.4MHz				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	ERP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
3245	-66.72	12.60	2.58	-56.70
Vertical Polarization				
3692	-68.28	12.60	2.71	-58.39

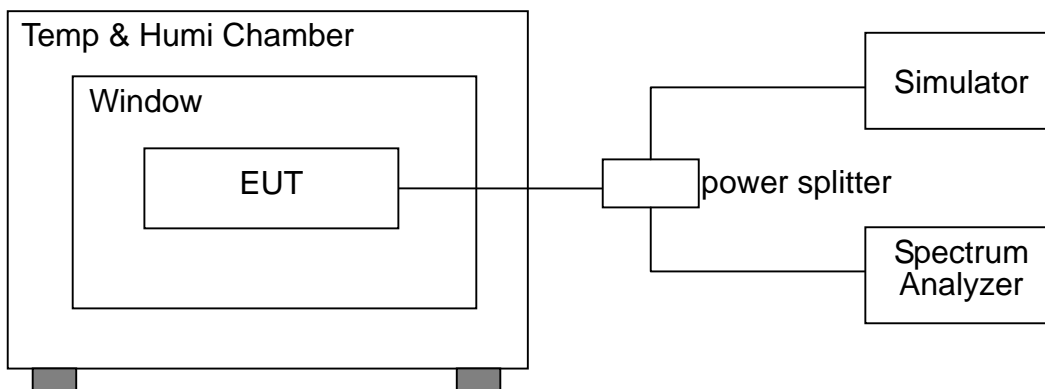
WCDMA HSDPA BAND 2 (MID) Tx 1880MHz				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	ERP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
3750	-59.92	12.60	2.71	-50.03
5109	-62.54	12.79	3.09	-52.84
Vertical Polarization				
3750	-66.72	12.60	2.71	-56.83

WCDMA HSDPA BAND 2 (HIGH) Tx1907.6MHz				
Horizontal Polarization				
Frequency	SG LEVEL	Antenna Gain	Cable Loss	ERP
(MHz)	(dBm)	(dB)	(dB)	(dBm)
3815	-52.23	12.60	2.71	-42.34
Vertical Polarization				
3815	-51.44	12.60	2.71	-41.55

7 Frequency Stability

7.1 Configuration of Measurement

Frequency Stability test



7.2 Test Procedures

(Temperature Variation)

1. The EUT and test equipment were set up as following.
2. Removed all power, the temperature was decreased to -30°C and permitted to stabilize for 3 hours. Power was applied and the maximum change in frequency was note within one minute.
3. Power OFF, the temperature was raised in 10°C steps. The sample was permitted to stabilize at each step for at least 1.5 hour. Power was applied and the maximum frequency change as noted within 1 minute.
4. After temperature tests were performed for the worst case.
5. Recorded the test data.

(Voltage Variation)

1. The EUT was placed in a 20°C temperature chamber and connected as the following.
2. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value.
3. Measured the worst case of the variation in frequency.

7.3 Test Result

PASS.

The final test data is shown on as following pages.

Frequency Stability

Test Mode: GSM 850 CH189				
Temperature (°C)	Voltage	Change (ppm)	Limit (ppm)	Result
-30	120	-0.035	2.5	PASS
-20	120	-0.025		
-10	120	-0.021		
0	120	0.011		
10	120	0.015		
20	102	0.014		
	120	0.014		
	138	0.013		
30	120	0.023		
40	120	0.025		
50	120	0.031		

Test Mode: GSM 850 (EDGE) CH189				
Temperature (°C)	Voltage	Change (ppm)	Limit (ppm)	Result
-30	120	-0.033	2.5	PASS
-20	120	-0.025		
-10	120	-0.024		
0	120	0.015		
10	120	0.013		
20	102	0.014		
	120	0.018		
	138	0.013		
30	120	0.024		
40	120	0.025		
50	120	0.031		

Test Mode: PCS1900 CH661				
Temperature (°C)	Voltage	Change (ppm)	Limit (ppm)	Result
-30	120	-0.032	2.5	PASS
-20	120	-0.023		
-10	120	-0.020		
0	120	0.013		
10	120	0.010		
20	102	0.012		
	120	0.012		
	138	0.013		
30	120	0.024		
40	120	0.024		
50	120	0.030		

Test Mode: PCS1900 (EDGE) CH661				
Temperature (°C)	Voltage	Change (ppm)	Limit (ppm)	Result
-30	120	-0.047	2.5	PASS
-20	120	-0.036		
-10	120	-0.028		
0	120	0.039		
10	120	0.028		
20	102	0.024		
	120	0.023		
	138	0.023		
30	120	0.026		
40	120	0.029		
50	120	0.031		

Test Mode: WCDMA Band V CH4182				
Temperature (°C)	Voltage	Change (ppm)	Limit (ppm)	Result
-30	120	-0.030	2.5	PASS
-20	120	-0.023		
-10	120	-0.019		
0	120	0.012		
10	120	0.010		
20	102	0.011		
	120	0.013		
	138	0.012		
30	120	0.021		
40	120	0.020		
50	120	0.029		

Test Mode: WCDMA Band V (HSDPA) CH4182				
Temperature (°C)	Voltage	Change (ppm)	Limit (ppm)	Result
-30	120	-0.021	2.5	PASS
-20	120	-0.023		
-10	120	-0.018		
0	120	0.014		
10	120	0.015		
20	102	0.013		
	120	0.013		
	138	0.012		
30	120	0.022		
40	120	0.017		
50	120	0.018		

Test Mode: WCDMA Band II CH9400				
Temperature (°C)	Voltage	Change (ppm)	Limit (ppm)	Result
-30	120	-0.020	2.5	PASS
-20	120	-0.021		
-10	120	-0.021		
0	120	0.015		
10	120	0.015		
20	102	0.014		
	120	0.014		
	138	0.015		
30	120	0.020		
40	120	0.020		
50	120	0.021		

Test Mode: WCDMA Band II (HSDPA) CH9400				
Temperature (°C)	Voltage	Change (ppm)	Limit (ppm)	Result
-30	120	-0.019	2.5	PASS
-20	120	-0.014		
-10	120	-0.016		
0	120	0.021		
10	120	0.018		
20	102	0.014		
	120	0.014		
	138	0.016		
30	120	0.021		
40	120	0.022		
50	120	0.022		