

FCC RF Test Report

APPLICANT : Intel Corp.
EQUIPMENT : Android Smart Phone
BRAND NAME : Intel
MODEL NAME : AZ210
MARKETING NAME : AZ210
FCC ID : O2Z-AZ210
STANDARD : FCC 47 CFR Part 2, 22(H), 24(E)
CLASSIFICATION : PCS Licensed Transmitter Held to Ear (PCE)
Tx/Rx FREQUENCY RANGE : GSM850 : 824.2 ~ 848.8 MHz /
869.2 ~ 893.8 MHz
GSM1900 : 1850.2 ~ 1909.8 MHz /
1930.2 ~ 1989.8 MHz
WCDMA Band V : 826.4 ~ 846.6 MHz /
871.4 ~ 891.6 MHz
WCDMA Band II : 1852.4 ~ 1907.6 MHz /
1932.4 ~ 1987.6 MHz
MAX. ERP/EIRP POWER : GSM850 (GSM) : 0.5483 W
GSM850 (EDGE 8) : 0.1291 W
GSM1900 (GPRS 8) : 0.9484 W
GSM1900 (EDGE 8) : 0.2958 W
WCDMA Band V (RMC 12.2Kbps) : 0.0735 W
WCDMA Band II (RMC 12.2Kbps) : 0.2312 W

The product was received on Mar. 23, 2012 and completely tested on Aug. 31, 2012. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI / TIA / EIA-603-C-2004 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by:



Jones Tsai / Manager



SPORTON INTERNATIONAL INC.

No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG232306	Rev. 01	Initial issue of report	Jun. 11, 2012
FG232306	Rev. 02	Update report by adding FCC ID and revising ERP / EIRP	Sep. 03, 2012
FG232306	Rev. 03	Update report by adding Peak to Average Ratio	Sep. 06, 2012

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	§2.1046	N/A	Conducted Output Power	N/A	PASS	-
3.2	§24.232(d)	N/A	Peak-to-Average Ratio	< 13 dB	PASS	-
3.3	§22.913(a)(2)	RSS-132(4.4) SRSP-503(5.1.3)	Effective Radiated Power	< 7 Watts	PASS	-
3.3	§24.232(c)	RSS-133 (6.4) SRSP-510(5.1.2)	Equivalent Isotropic Radiated Power	< 2 Watts	PASS	-
3.4	§2.1049 §22.917(a) §24.238(a)	N/A	Occupied Bandwidth	N/A	PASS	-
3.5	§2.1051 §22.917(a) §24.238(a)	RSS-132 (4.5.1) RSS-133 (6.5.1)	Band Edge Measurement	< 43+10log ₁₀ (P[Watts])	PASS	-
3.6	§2.1051 §22.917(a) §24.238(a)	RSS-132 (4.5.1) RSS-133 (6.5.1)	Conducted Emission	< 43+10log ₁₀ (P[Watts])	PASS	-
3.7	§2.1053 §22.917(a) §24.238(a)	RSS-132 (4.5.1) RSS-133 (6.5.1)	Field Strength of Spurious Radiation	< 43+10log ₁₀ (P[Watts])	PASS	Under limit 13.05 dB at 2509.000 MHz
3.8	§2.1055 §22.355 §24.235	RSS-132(4.3) RSS-133(6.3)	Frequency Stability for Temperature & Voltage	< 2.5 ppm	PASS	-

1 General Description

1.1 Applicant

Intel Corp.

RNB-5-112, 2200 Mission College Blvd, Santa Clara, CA 95054, USA

1.2 Manufacturer

Chi Mei Communication Systems, Inc.

No. 4, Mingsheng Street, Tucheng City, New Taipei City 23678, Taiwan

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Android Smart Phone
Brand Name	Intel
Model Name	AZ210
Marketing Name	AZ210
FCC ID	O2Z-AZ210
Tx Frequency	GSM850 : 824 MHz ~ 849 MHz GSM1900 : 1850 MHz ~ 1910 MHz WCDMA Band V : 824 MHz ~ 849 MHz WCDMA Band II : 1850 MHz ~ 1910 MHz
Rx Frequency	GSM850 : 869 MHz ~ 894 MHz GSM1900 : 1930 MHz ~ 1990 MHz WCDMA Band V : 869 MHz ~ 894 MHz WCDMA Band II : 1930 MHz ~ 1990 MHz
Maximum Output Power to Antenna	GSM850 : 32.78 dBm GSM1900 : 30.65 dBm WCDMA Band V : 23.72 dBm WCDMA Band II : 23.85 dBm
Antenna Type	PIFA Antenna
HW Version	DV2.0
SW Version	20120409
Type of Modulation	GSM: GMSK GPRS: GMSK EDGE: GMSK / 8PSK WCDMA: QPSK (Uplink) HSDPA: QPSK (Uplink) HSUPA: QPSK (Uplink)
EUT Stage	Production Unit

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Emission Designator and Maximum ERP/EIRP Power

FCC Rule	System	Type of Modulation	Emission Designator	Maximum ERP/EIRP
Part 22	GSM850 GSM	GMSK	246KGXW	0.5483 W
Part 22	GSM850 EDGE 8	GMSK / 8PSK	250KG7W	0.1291 W
Part 22	WCDMA Band V RMC 12.2Kbps	QPSK	4M06F9W	0.0735 W
Part 24	GSM1900 GPRS 8	GMSK	250KGXW	0.9484 W
Part 24	GSM1900 EDGE 8	GMSK / 8PSK	256KG7W	0.2958 W
Part 24	WCDMA Band II RMC 12.2Kbps	QPSK	4M10F9W	0.2312 W

1.5 Testing Site

Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978		
Test Site No.	Sporton Site No.		FCC/IC Registration No.
	TH02-HY	03CH05-HY	722060/4086B-1

1.6 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ Preliminary Guidance for Receiving Applications for Certification of 3G Device. May 9, 2006.
- ♦ FCC 47 CFR Part 2, 22(H), 24(E)
- ♦ ANSI / TIA / EIA-603-C-2004
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v01
- ♦ IC RSS-132 Issue 2
- ♦ IC RSS-133 Issue 5

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

1.7 Ancillary Equipment List

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU200	N/A	N/A	Unshielded, 1.8 m

2 Test Configuration of Equipment Under Test

2.1 Test Mode

During all testing, EUT is in link mode with base station emulator at maximum power level. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT is rotated on three test planes to find out the worst emission.

Frequency range investigated for radiated emission is as follows:

1. 30 MHz to 9000 MHz for GSM850 and WCDMA Band V.
2. 30 MHz to 19000 MHz for GSM1900 and WCDMA Band II.

Test Modes		
Band	Radiated TCs	Conducted TCs
GSM 850	■ GSM Link ■ EDGE 8 Link	■ GSM Link ■ EDGE 8 Link
GSM 1900	■ GPRS 8 Link ■ EDGE 8 Link	■ GPRS 8 Link ■ EDGE 8 Link
WCDMA Band V	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link
WCDMA Band II	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link

Note:

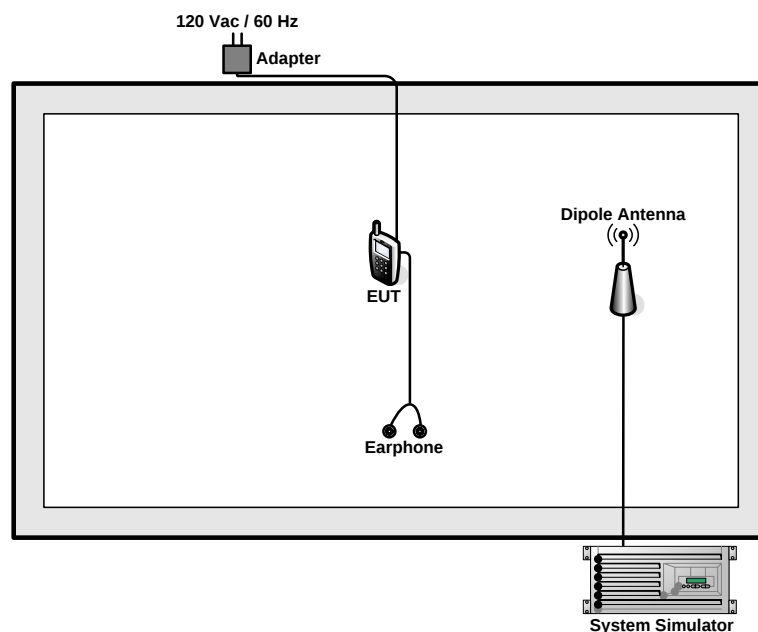
1. The maximum power levels are GSM or GPRS multi-slot class 8 mode for GMSK link, EDGE multi-slot class 8 mode for 8PSK link, RMC 12.2Kbps mode for WCDMA band V, and RMC 12.2Kbps mode for WCDMA band II, only these modes were used for all tests.
2. Because there are individual antennas for each WWAN, WLAN, and Bluetooth, the co-location test modes are not required.

The conducted power tables are as follows:

Conducted Power (*Unit: dBm)						
Band	GSM850			GSM1900		
Channel	128	189	251	512	661	810
Frequency	824.2	836.4	848.8	1850.2	1880.0	1909.8
GSM	32.78	32.76	32.75	30.64	30.61	30.63
GPRS 8	32.77	32.75	32.74	30.65	30.61	30.64
GPRS 10	32.75	32.73	32.74	30.63	30.59	30.63
GPRS 12	30.76	30.78	30.76	28.70	28.69	28.73
EGPRS 8	27.03	27.08	27.05	25.78	25.80	25.89
EGPRS 10	27.01	26.99	27.03	25.75	25.78	25.88
EGPRS 12	24.85	24.90	24.93	23.59	23.61	23.74

Conducted Power (*Unit: dBm)						
Band	WCDMA Band V			WCDMA Band II		
Channel	4132	4182	4233	9262	9400	9538
Frequency	826.4	836.4	846.6	1852.4	1880.0	1907.6
RMC 12.2K	23.72	23.66	23.60	23.85	23.71	23.80
HSDPA Subtest-1	23.69	23.63	23.61	23.80	23.72	23.77
HSDPA Subtest-2	23.24	23.19	23.11	23.46	23.35	23.31
HSDPA Subtest-3	22.78	22.71	22.63	23.11	23.04	23.00
HSDPA Subtest-4	22.58	22.42	22.40	22.82	22.79	22.65
HSUPA Subtest-1	22.94	22.86	22.78	22.98	22.93	22.86
HSUPA Subtest-2	21.06	20.92	20.83	21.29	21.20	21.07
HSUPA Subtest-3	21.76	21.60	21.52	22.04	21.96	21.88
HSUPA Subtest-4	21.13	21.03	20.95	21.39	21.30	21.19
HSUPA Subtest-5	23.16	23.08	23.01	23.16	23.13	23.07

2.2 Connection Diagram of Test System



3 Test Result

3.1 Conducted Output Power Measurement

3.1.1 Description of the Conducted Output Power Measurement

A base station simulator was used to establish communication with the EUT. Its parameters were set to transmit the maximum power on the EUT. The measured power in the radio frequency on the transmitter output terminals shall be reported.

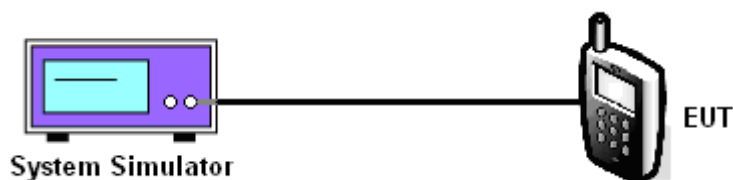
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The transmitter output port was connected to base station.
2. Set EUT at maximum power through base station.
3. Select lowest, middle, and highest channels for each band and different modulation.

3.1.4 Test Setup



3.1.5 Test Result of Conducted Output Power

Cellular Band									
Modes	GSM850 (GSM)			GSM850 (EDGE 8)			WCDMA Band V (RMC 12.2Kbps)		
Channel	128 (Low)	189 (Mid)	251 (High)	128 (Low)	189 (Mid)	251 (High)	4132 (Low)	4182 (Mid)	4233 (High)
Frequency (MHz)	824.2	836.4	848.8	824.2	836.4	848.8	826.4	836.4	846.6
Conducted Power (dBm)	32.78	32.76	32.75	27.03	27.08	27.05	23.72	23.66	23.60
Conducted Power (Watts)	1.90	1.89	1.88	0.50	0.51	0.51	0.24	0.23	0.23

PCS Band									
Modes	GSM1900 (GPRS 8)			GSM1900 (EDGE 8)			WCDMA Band II (RMC 12.2Kbps)		
Channel	512 (Low)	661 (Mid)	810 (High)	512 (Low)	661 (Mid)	810 (High)	9262 (Low)	9400 (Mid)	9538 (High)
Frequency (MHz)	1850.2	1880	1909.8	1850.2	1880	1909.8	1852.4	1880	1907.6
Conducted Power (dBm)	30.65	30.61	30.64	25.78	25.80	25.89	23.85	23.71	23.80
Conducted Power (Watts)	1.16	1.15	1.16	0.38	0.38	0.39	0.24	0.23	0.24

3.2 Peak-to-Average Ratio

3.2.1 Description of the PAR Measurement

Power Complementary Cumulative Distribution Function (CCDF) curves provide a means for characterizing the power peaks of a digitally modulated signal on a statistical basis. A CCDF curve depicts the probability of the peak signal amplitude exceeding the average power level. Most contemporary measurement instrumentation include the capability to produce CCDF curves for an input signal provided that the instrument's resolution bandwidth can be set wide enough to accommodate the entire input signal bandwidth. The following guidelines are offered for performing a CCDF measurement.

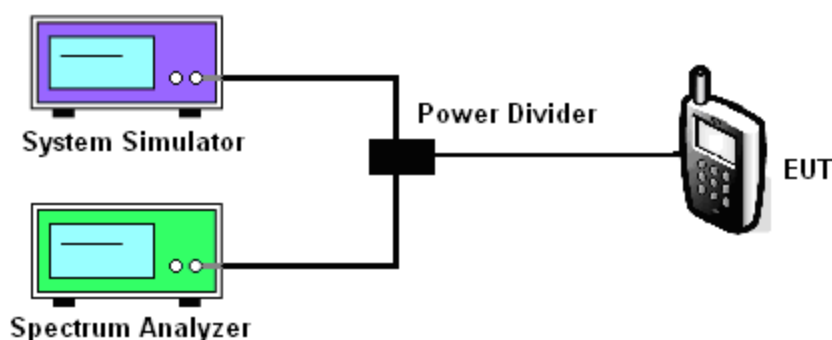
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The CCDF (Complementary Cumulative Distribution Function) of the middle channel for the highest RF powers were measured.

3.2.4 Test Setup



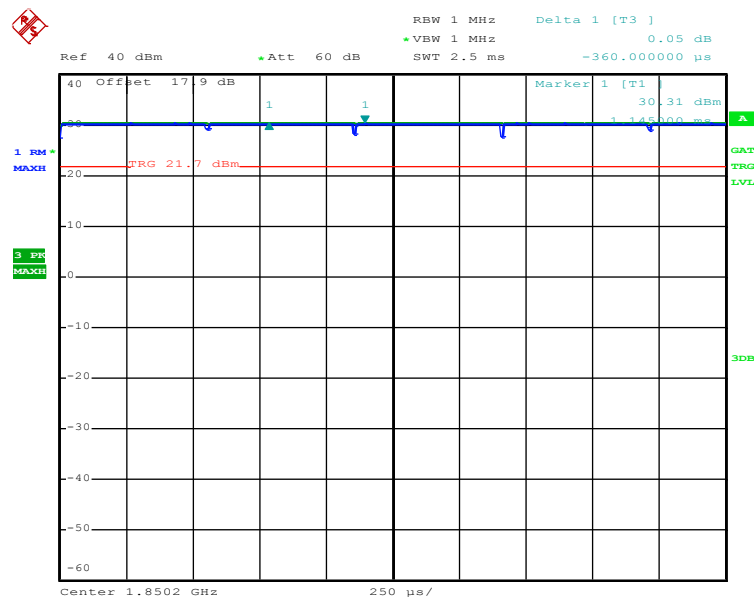
3.2.5 Test Result of Peak-to-Average Ratio

PCS Band									
Modes	GSM1900 (GPRS 8)			GSM1900 (EDGE 8)			WCDMA Band II (RMC 12.2Kbps)		
Channel	512 (Low)	661 (Mid)	810 (High)	512 (Low)	661 (Mid)	810 (High)	9262 (Low)	9400 (Mid)	9538 (High)
Frequency (MHz)	1850.2	1880	1909.8	1850.2	1880	1909.8	1852.4	1880	1907.6
Peak-to-Average Ratio (dB)	0.05	0.06	0.06	0.08	0.11	0.13	2.72	2.72	2.76



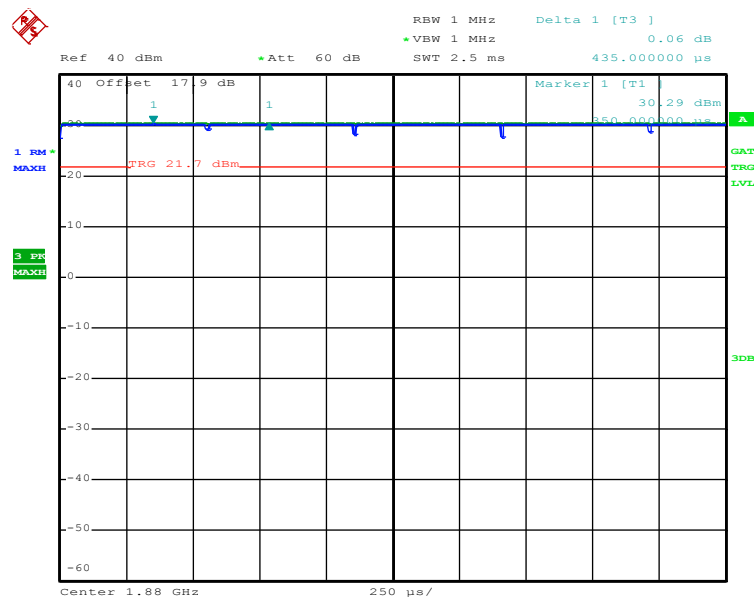
Band :	GSM 1900	Test Mode :	GPRS 8 Link
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Peak-to-Average Ratio on Channel 512 (1850.2 MHz)



Date: 8.MAY.2012 19:24:08

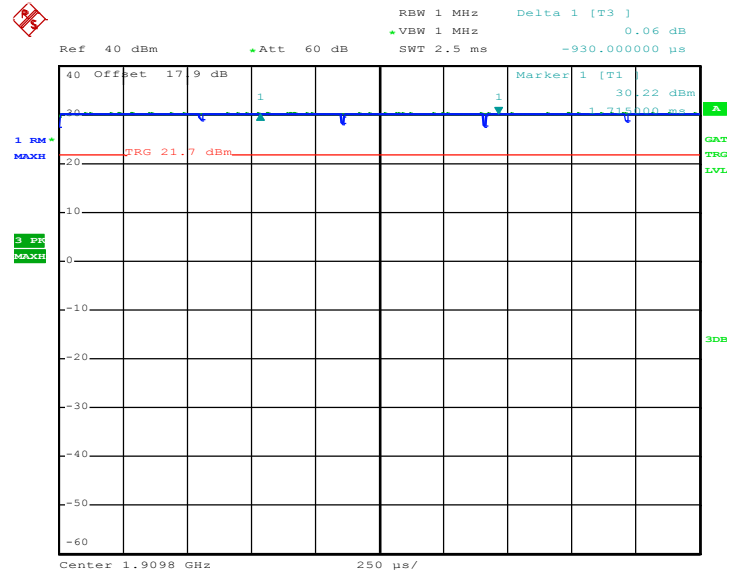
Peak-to-Average Ratio on Channel 661 (1880.0 MHz)



Date: 8.MAY.2012 19:23:31



Peak-to-Average Ratio on Channel 810 (1909.8 MHz)

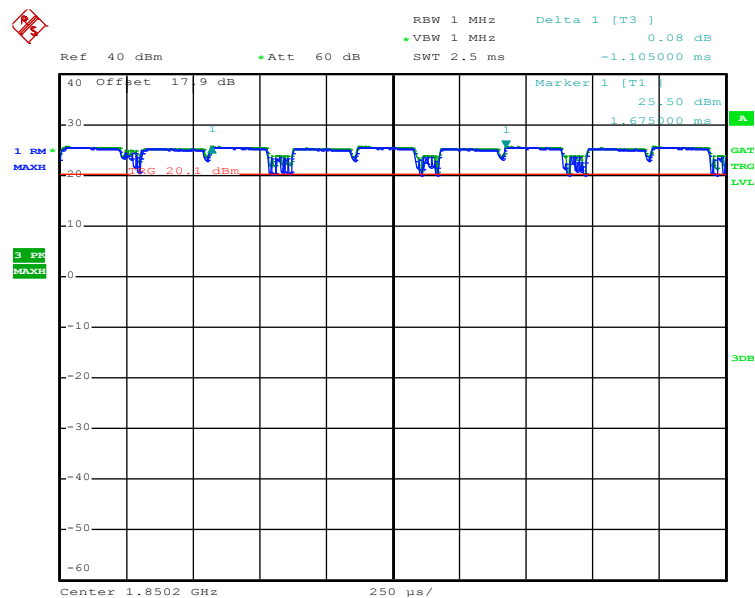


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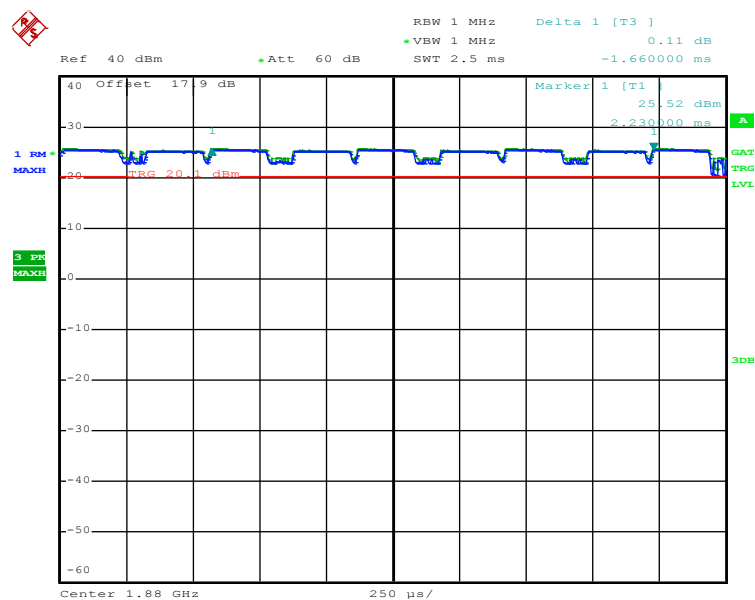
Band :	GSM 1900	Test Mode :	EDGE 8 Link
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Peak-to-Average Ratio on Channel 512 (1850.2 MHz)



Date: 8.MAY.2012 19:13:46

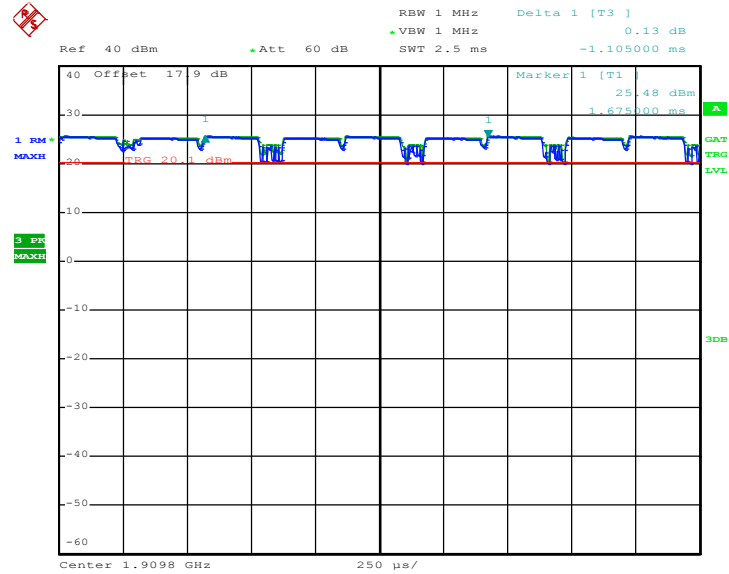
Peak-to-Average Ratio on Channel 661 (1880.0 MHz)



Date: 8.MAY.2012 19:13:21



Peak-to-Average Ratio on Channel 810 (1909.8 MHz)

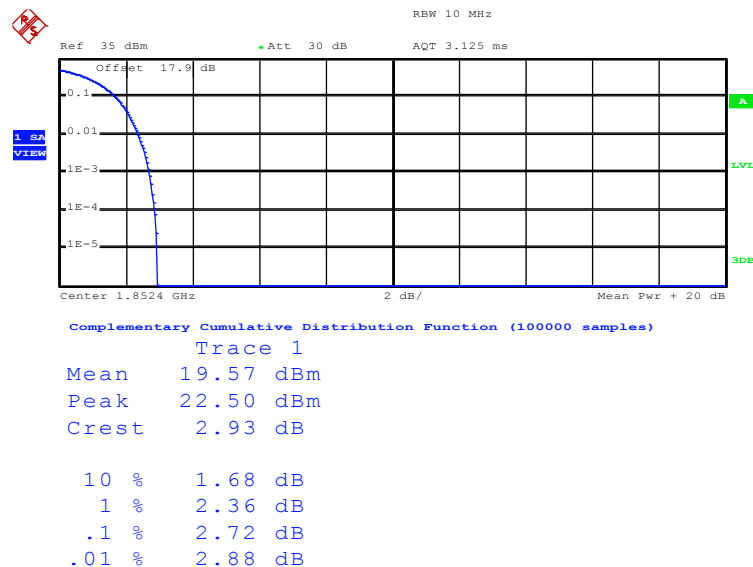


Date: 8.MAY.2012 19:12:17



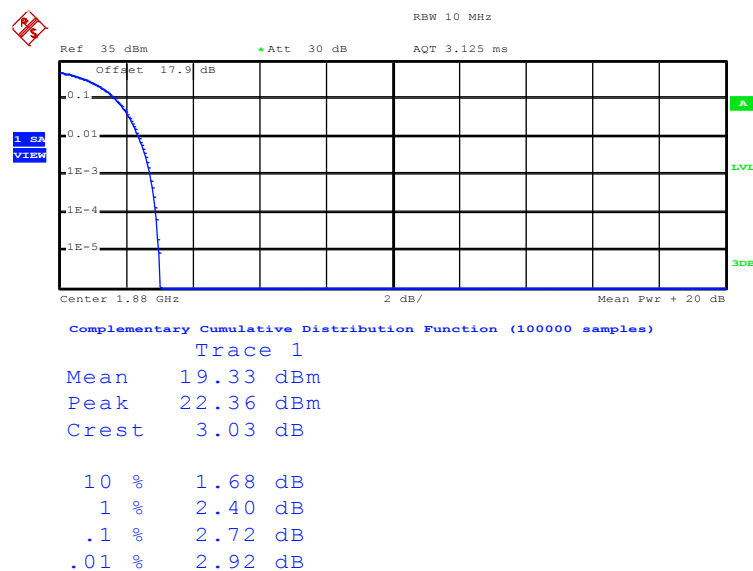
Band :	WCDMA Band II	Test Mode :	RMC 12.2Kbps Link
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Peak-to-Average Ratio on Channel 9262 (1852.4 MHz)



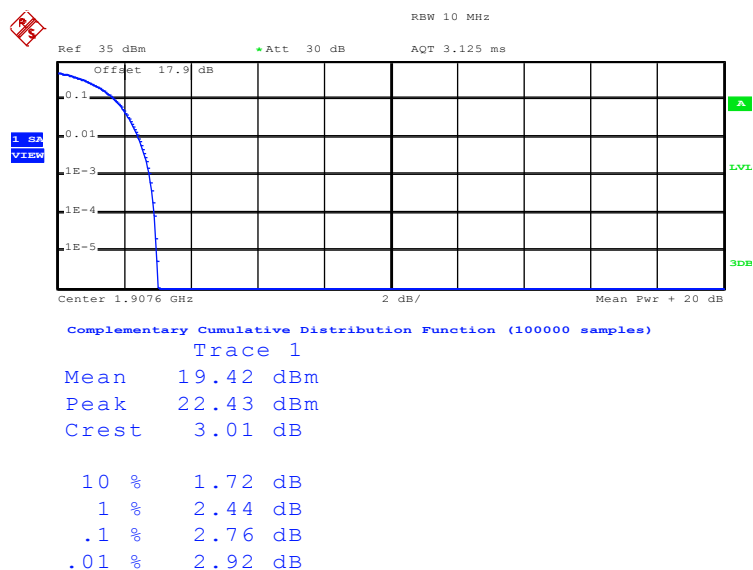
Date: 8.MAY.2012 20:13:12

Peak-to-Average Ratio on Channel 9400 (1880.0 MHz)



Date: 8.MAY.2012 20:12:33

Peak-to-Average Ratio on Channel 9538 (1907.6 MHz)



Date: 8.MAY.2012 20:11:22

3.3 Effective Radiated Power and Effective Isotropic Radiated Power Measurement

3.3.1 Description of the ERP/EIRP Measurement

The substitution method, in ANSI / TIA / EIA-603-C-2004, was used for ERP/EIRP measurement, and the spectrum analyzer configuration follows KDB 971168 D01 Power Meas. License Digital Systems v01. The ERP of mobile transmitters must not exceed 7 Watts and the EIRP of mobile transmitters are limited to 2 Watts.

3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

1. The EUT was placed on a turntable with 1.0 meter height in a fully anechoic chamber.
2. The EUT was set at 1.2 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiated power.
4. The height of the receiving antenna is adjusted to look for the maximum ERP/EIRP.
5. Taking the record of maximum ERP/EIRP.
6. A dipole antenna was substituted in place of the EUT and was driven by a signal generator.
7. The conducted power at the terminal of the dipole antenna is measured.
8. Repeat step 3 to step 5 to get the maximum ERP/EIRP of the substitution antenna.
9. $ERP/EIRP = P_s + E_t - E_s + G_s = P_s + R_t - R_s + G_s$

P_s (dBm) : Input power to substitution antenna.

G_s (dBi or dBd) : Substitution antenna Gain.

$E_t = R_t + AF$

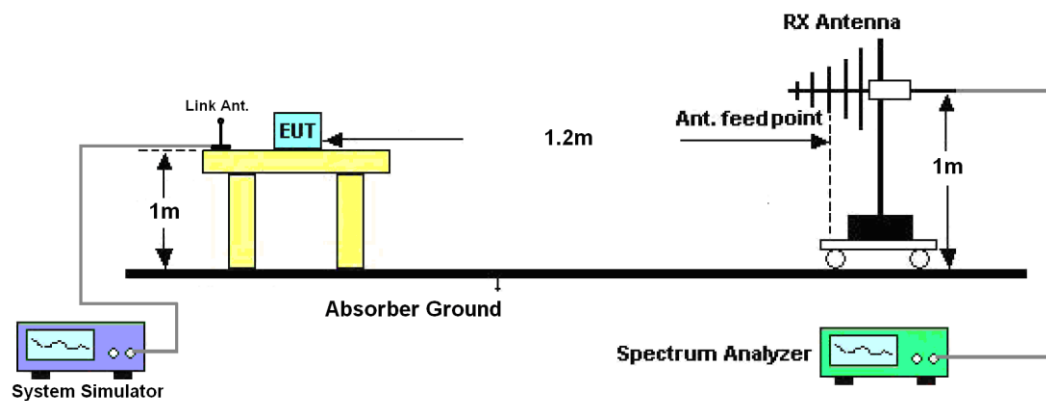
$E_s = R_s + AF$

AF (dB/m) : Receive antenna factor

R_t : The highest received signal in spectrum analyzer for EUT.

R_s : The highest received signal in spectrum analyzer for substitution antenna.

3.3.4 Test Setup



3.3.5 Test Result of ERP

GSM850 (GSM) Radiated Power ERP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.20	-21.37	-48.12	0.00	-1.08	25.67	0.3690
836.40	-20.89	-48.28	0.00	-0.93	26.46	0.4426
848.80	-20.20	-48.35	0.00	-0.76	27.39	0.5483
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.20	-31.37	-47.97	0.00	-1.08	15.52	0.0356
836.40	-31.01	-48.01	0.00	-0.93	16.07	0.0405
848.80	-30.76	-48.05	0.00	-0.76	16.53	0.0450

GSM850 (EDGE 8) Radiated Power ERP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.20	-27.29	-48.12	0.00	-1.08	19.75	0.0944
836.40	-26.79	-48.28	0.00	-0.93	20.56	0.1138
848.80	-26.48	-48.35	0.00	-0.76	21.11	0.1291
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.20	-39.74	-47.97	0.00	-1.08	7.15	0.0052
836.40	-39.45	-48.01	0.00	-0.93	7.63	0.0058
848.80	-38.17	-48.05	0.00	-0.76	9.12	0.0082



WCDMA Band V (RMC 12.2Kbps) Radiated Power ERP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
826.40	-29.75	-48.12	0.00	-1.08	17.29	0.0536
836.40	-28.85	-48.28	0.00	-0.93	18.50	0.0708
846.60	-28.93	-48.35	0.00	-0.76	18.66	0.0735
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
826.40	-41.88	-47.97	0.00	-1.08	5.01	0.0032
836.40	-40.79	-48.01	0.00	-0.93	6.29	0.0043
846.60	-40.56	-48.05	0.00	-0.76	6.73	0.0047

3.3.6 Test Result of EIRP

GSM1900 (GPRS 8) Radiated Power EIRP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.20	-24.68	-51.88	0.00	1.96	29.16	0.8241
1880.00	-25.53	-52.99	0.00	2.00	29.46	0.8831
1909.80	-26.49	-54.28	0.00	1.98	29.77	0.9484
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.20	-27.29	-52.13	0.00	1.96	26.80	0.4786
1880.00	-28.40	-53.17	0.00	2.00	26.77	0.4753
1909.80	-29.69	-54.13	0.00	1.98	26.42	0.4385

GSM1900 (EDGE 8) Radiated Power EIRP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.20	-29.34	-51.88	0.00	1.96	24.50	0.2818
1880.00	-30.28	-52.99	0.00	2.00	24.71	0.2958
1909.80	-32.15	-54.28	0.00	1.98	24.11	0.2576
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.20	-32.35	-52.13	0.00	1.96	21.74	0.1493
1880.00	-33.12	-53.17	0.00	2.00	22.05	0.1603
1909.80	-33.84	-54.13	0.00	1.98	22.27	0.1687



WCDMA Band II (RMC 12.2Kbps) Radiated Power EIRP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1852.40	-30.20	-51.88	0.00	1.96	23.64	0.2312
1880.00	-31.55	-52.99	0.00	2.00	23.44	0.2208
1907.60	-33.36	-54.28	0.00	1.98	22.90	0.1950
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1852.40	-33.13	-52.13	0.00	1.96	20.96	0.1247
1880.00	-34.35	-53.17	0.00	2.00	20.82	0.1208
1907.60	-35.37	-54.13	0.00	1.98	20.74	0.1186

3.4 Occupied Bandwidth Measurement

3.4.1 Description of Occupied Bandwidth Measurement

The emission bandwidth is defined as the width of the signal between two points, located at the 2 sides of the carrier frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

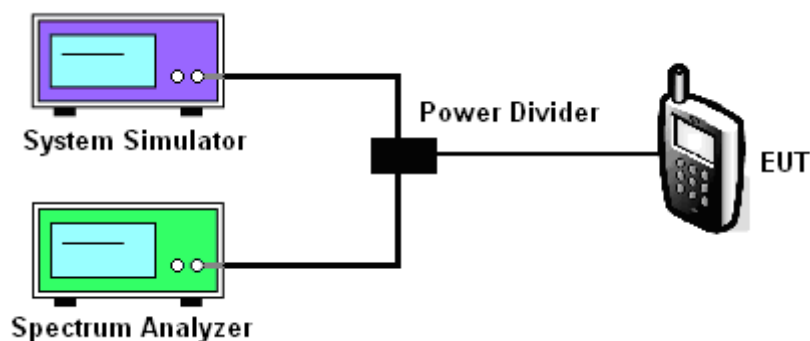
3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedures

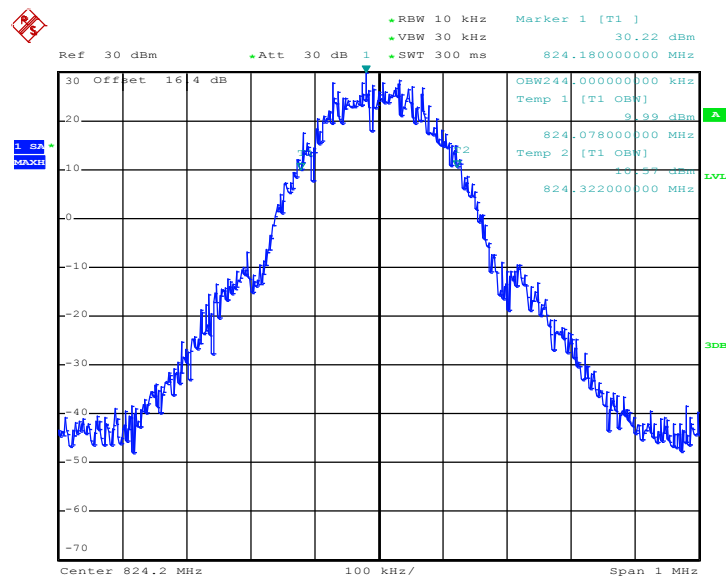
1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The 99% and 26 dB occupied bandwidth (BW) of the middle channel for the highest RF powers were measured.

3.4.4 Test Setup

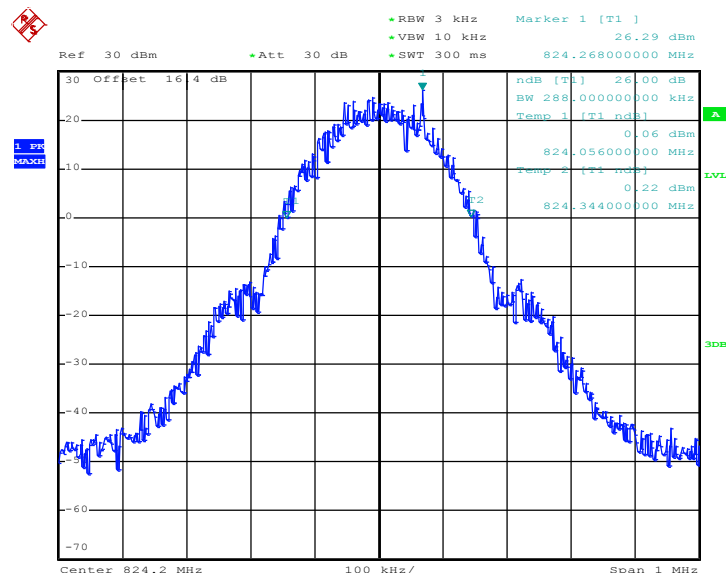


3.4.5 Test Result (Plots) of Occupied Bandwidth

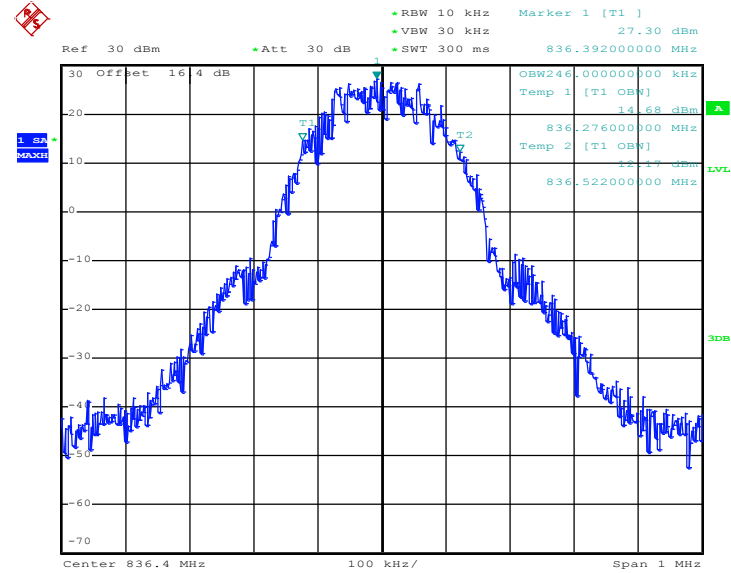
Band :	GSM 850	Power Stage :	High
Test Mode :	GSM Link		

99% Occupied Bandwidth Plot on Channel 128


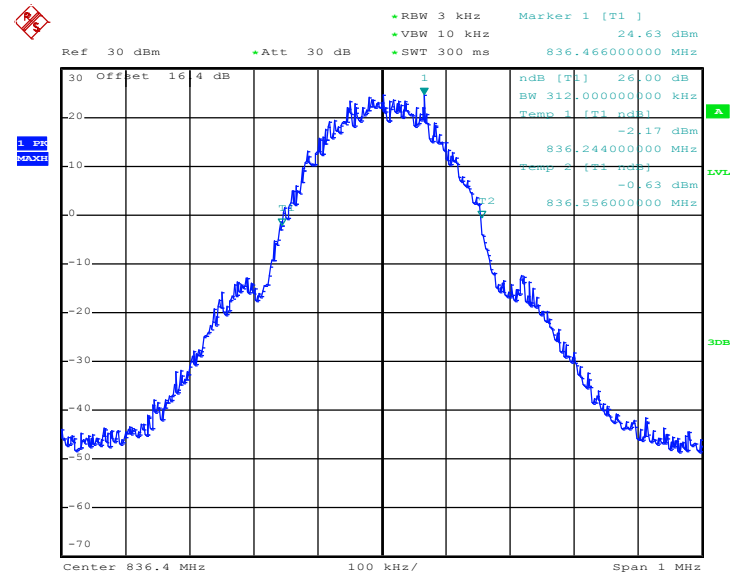
Date: 8.MAY.2012 18:26:11

26dB Bandwidth Plot on Channel 128


Date: 8.MAY.2012 18:24:52

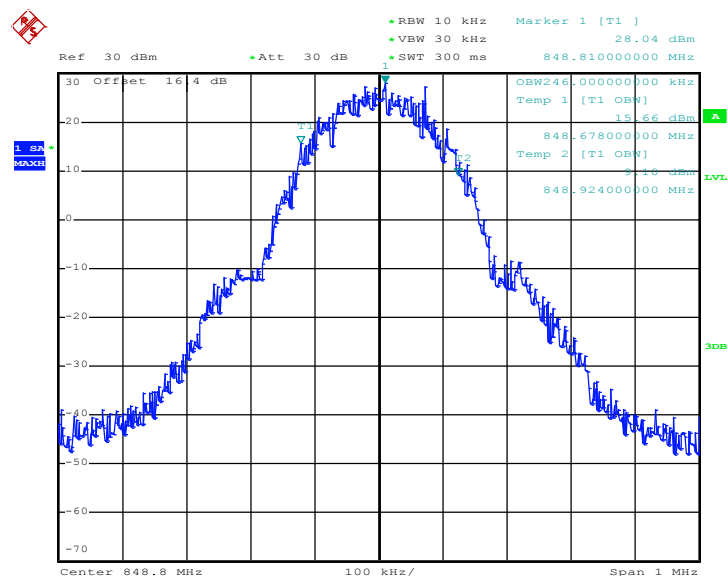
99% Occupied Bandwidth Plot on Channel 189


Date: 8.MAY.2012 18:26:37

26dB Bandwidth Plot on Channel 189


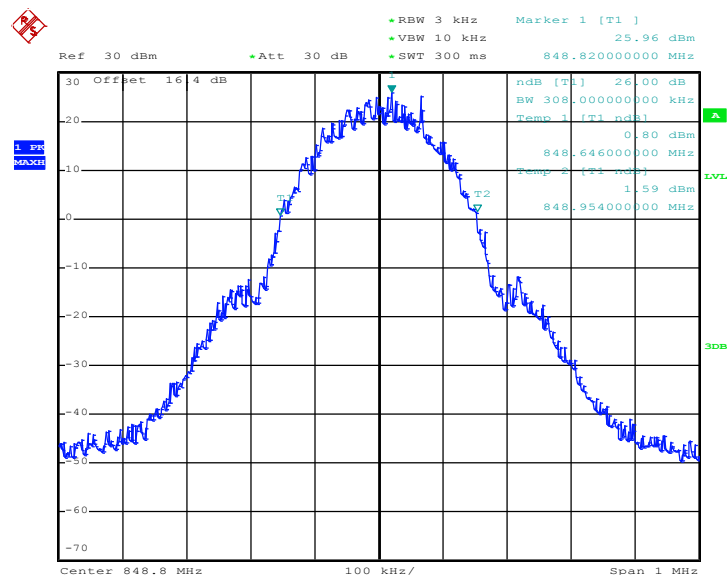
Date: 8.MAY.2012 18:25:18

99% Occupied Bandwidth Plot on Channel 251



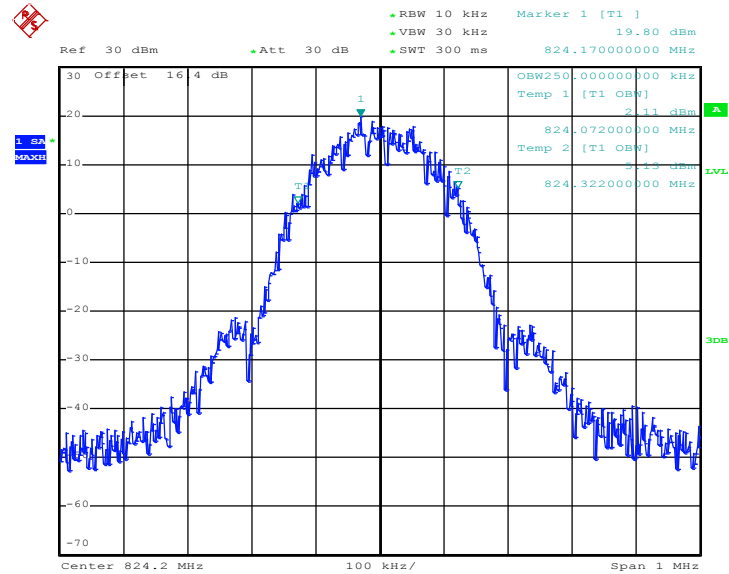
Date: 8.MAY.2012 18:27:04

26dB Bandwidth Plot on Channel 251

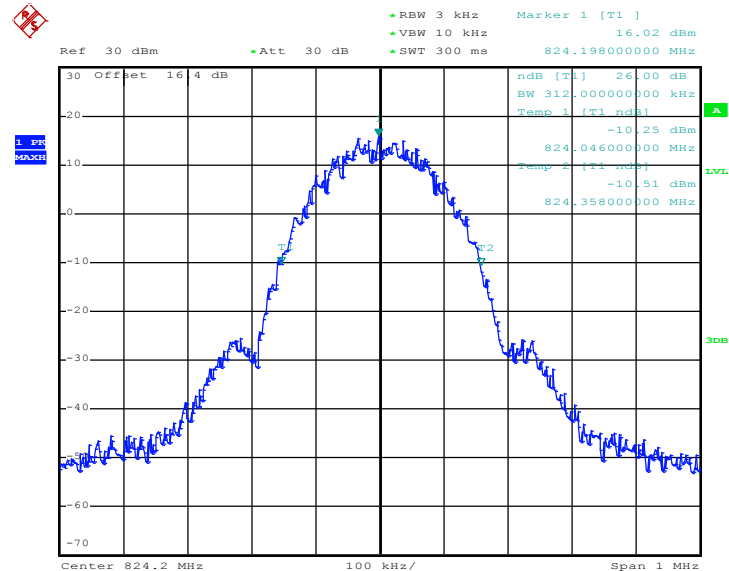


Date: 8.MAY.2012 18:25:45

Band :	GSM 850	Power Stage :	High
Test Mode :	EDGE 8 Link		

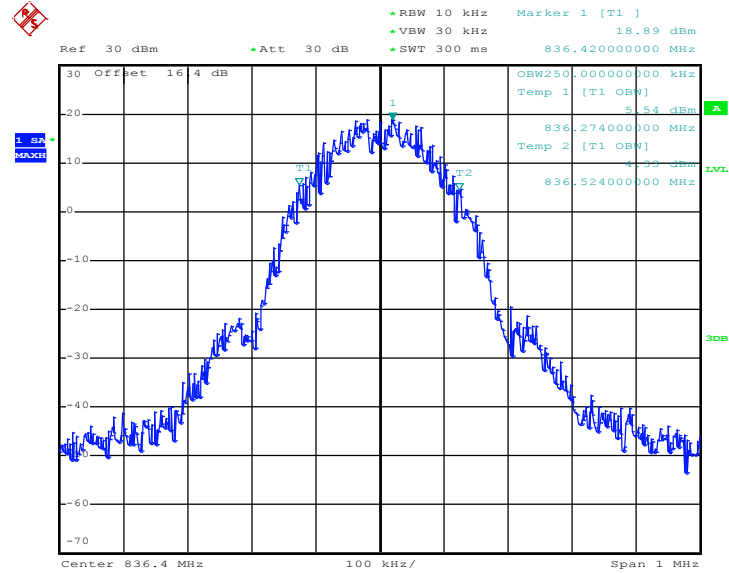
99% Occupied Bandwidth Plot on Channel 128


Date: 8.MAY.2012 18:43:14

26dB Bandwidth Plot on Channel 128


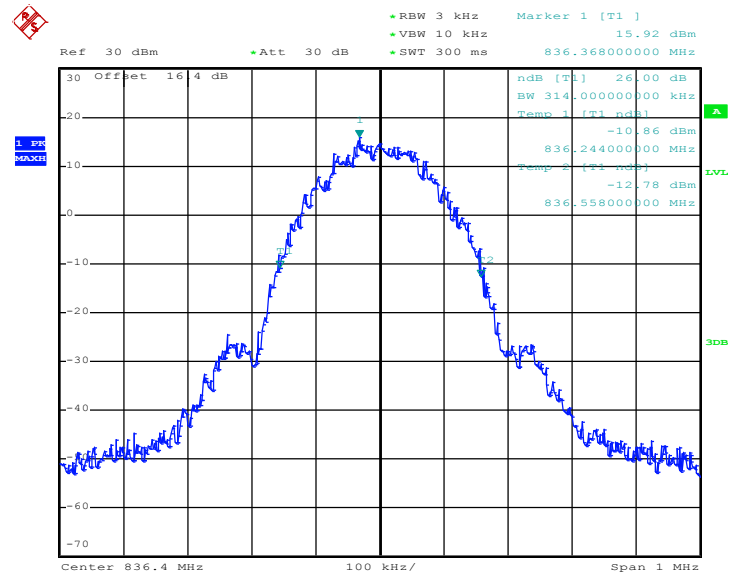
Date: 8.MAY.2012 18:41:55

99% Occupied Bandwidth Plot on Channel 189

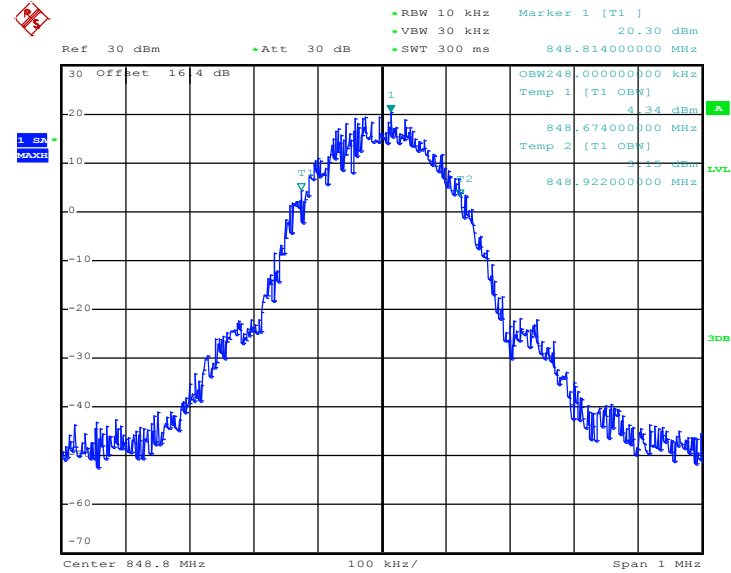


Date: 8.MAY.2012 18:43:40

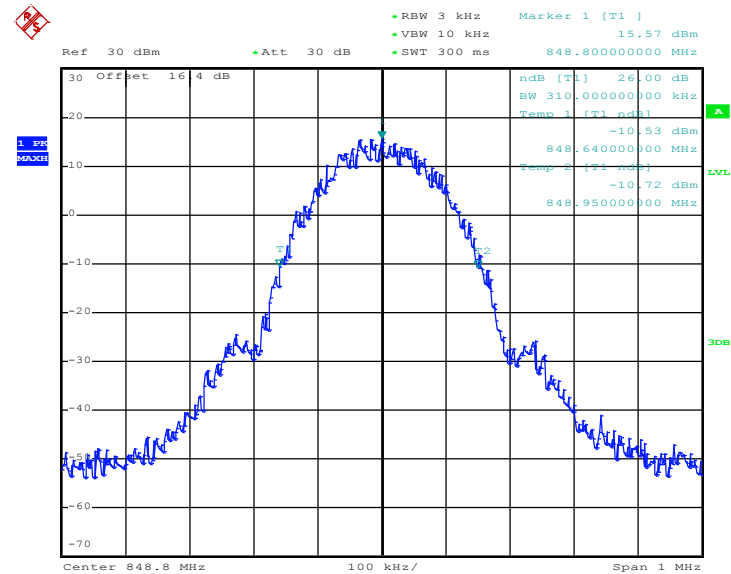
26dB Bandwidth Plot on Channel 189



Date: 8.MAY.2012 18:42:21

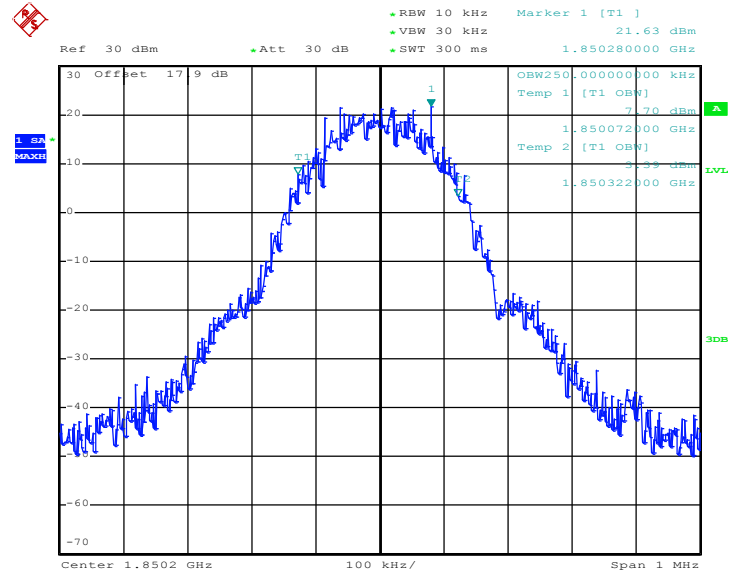
99% Occupied Bandwidth Plot on Channel 251


Date: 8.MAY.2012 18:44:06

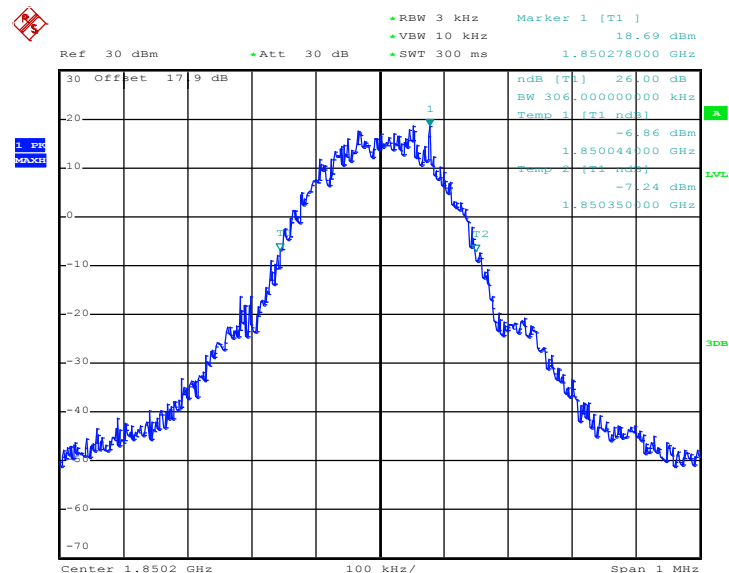
26dB Bandwidth Plot on Channel 251


Date: 8.MAY.2012 18:42:47

Band :	GSM 1900	Power Stage :	High
Test Mode :	GPRS 8 Link		

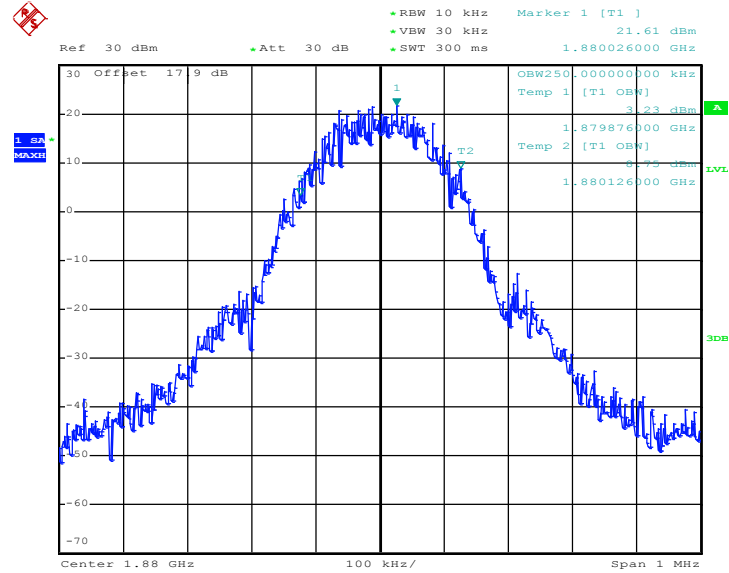
99% Occupied Bandwidth Plot on Channel 512


Date: 8.MAY.2012 19:17:07

26dB Bandwidth Plot on Channel 512


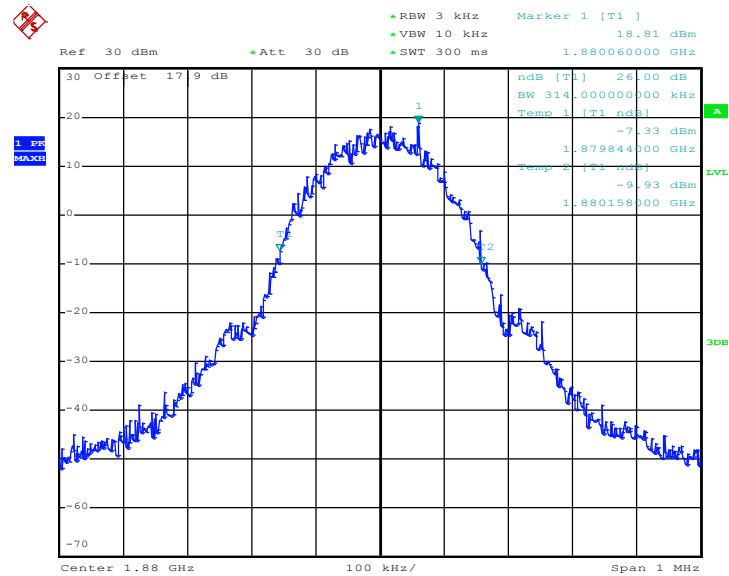
Date: 8.MAY.2012 19:15:48

99% Occupied Bandwidth Plot on Channel 661



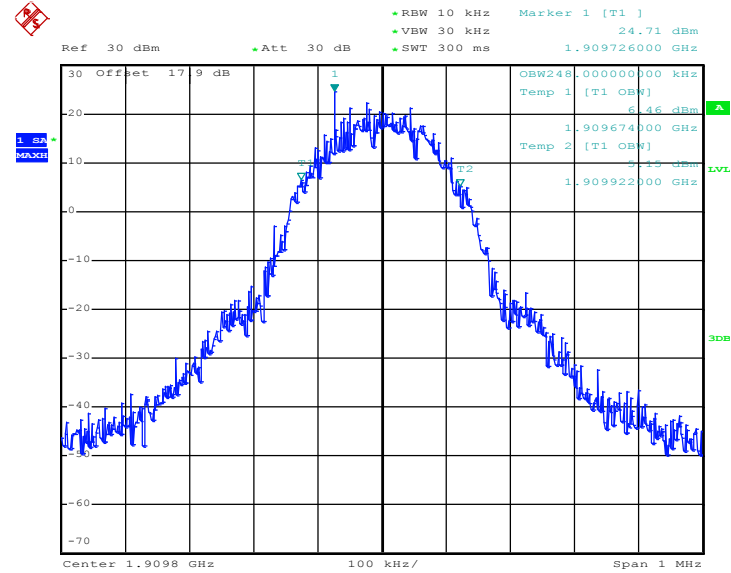
Date: 8.MAY.2012 19:17:34

26dB Bandwidth Plot on Channel 661



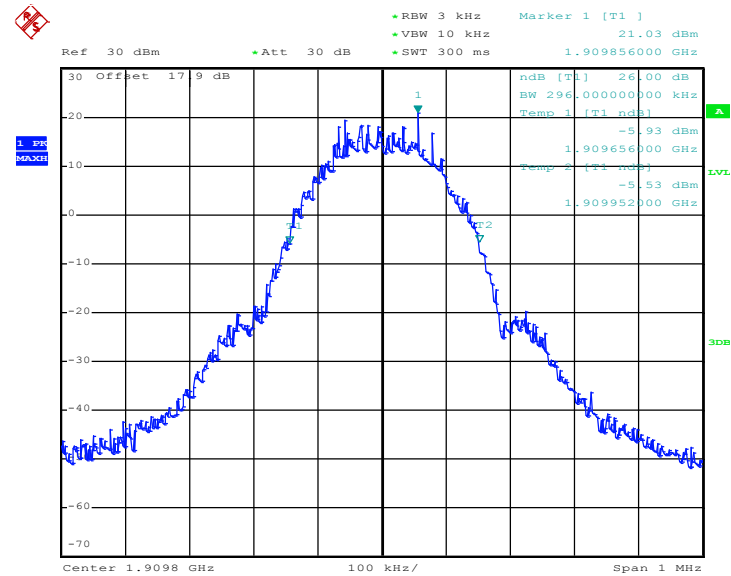
Date: 8.MAY.2012 19:16:14

99% Occupied Bandwidth Plot on Channel 810



Date: 8.MAY.2012 19:18:01

26dB Bandwidth Plot on Channel 810

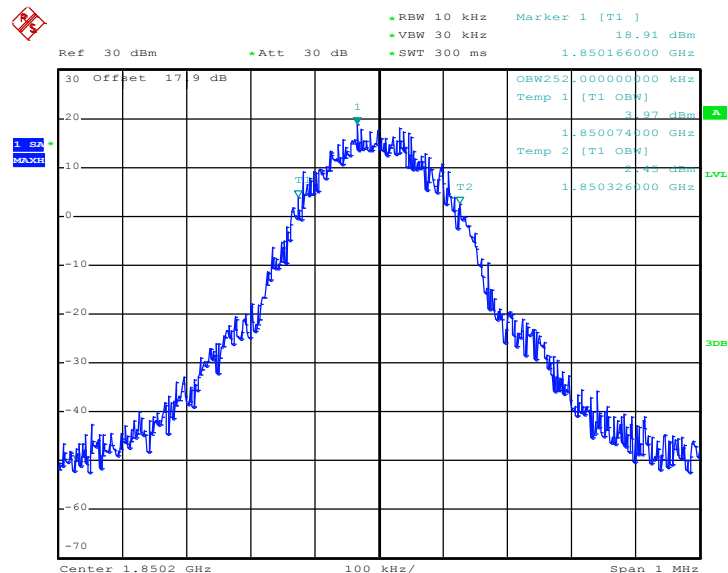


Date: 8.MAY.2012 19:16:41



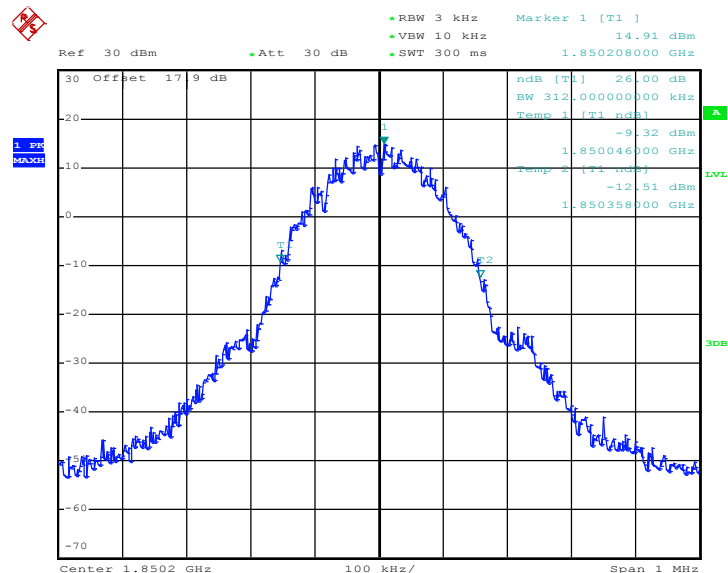
Band :	GSM 1900	Power Stage :	High
Test Mode :	EDGE 8 Link		

99% Occupied Bandwidth Plot on Channel 512



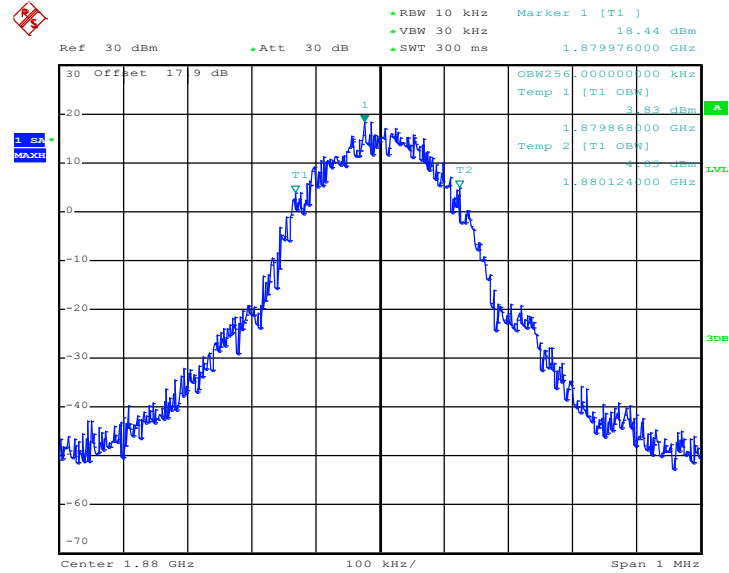
Date: 8.MAY.2012 19:00:47

26dB Bandwidth Plot on Channel 512



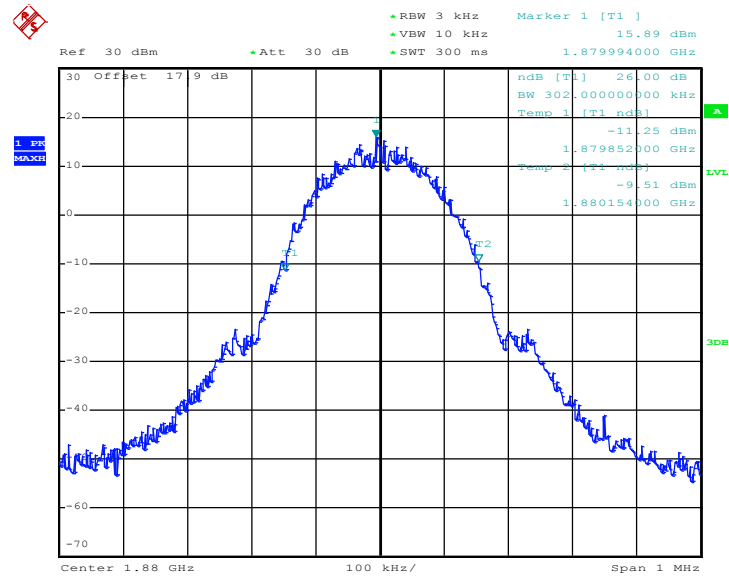
Date: 8.MAY.2012 18:59:27

99% Occupied Bandwidth Plot on Channel 661



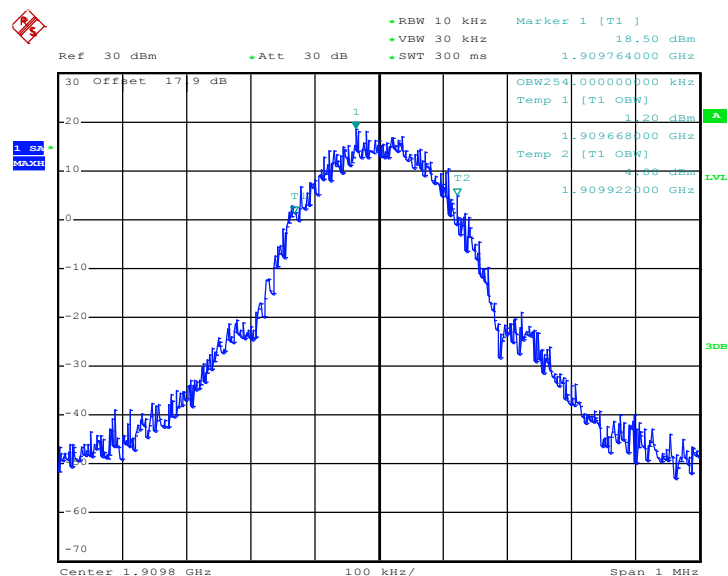
Date: 8.MAY.2012 19:01:13

26dB Bandwidth Plot on Channel 661



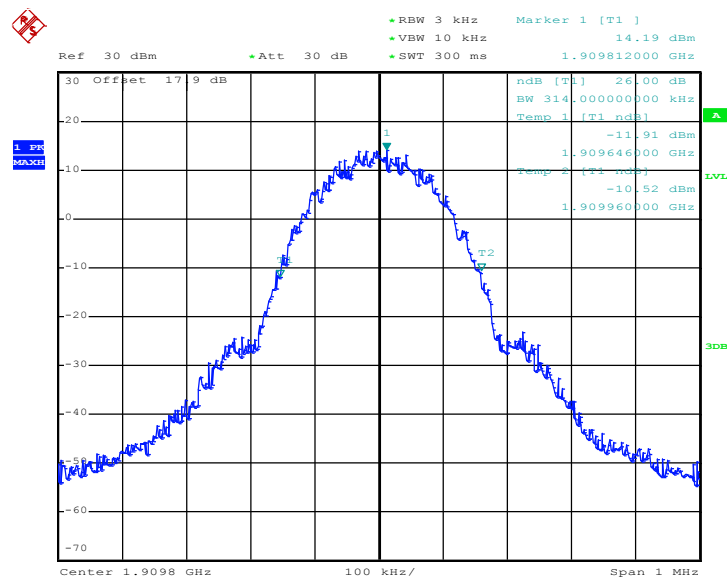
Date: 8.MAY.2012 18:59:54

99% Occupied Bandwidth Plot on Channel 810



Date: 8.MAY.2012 19:01:39

26dB Bandwidth Plot on Channel 810

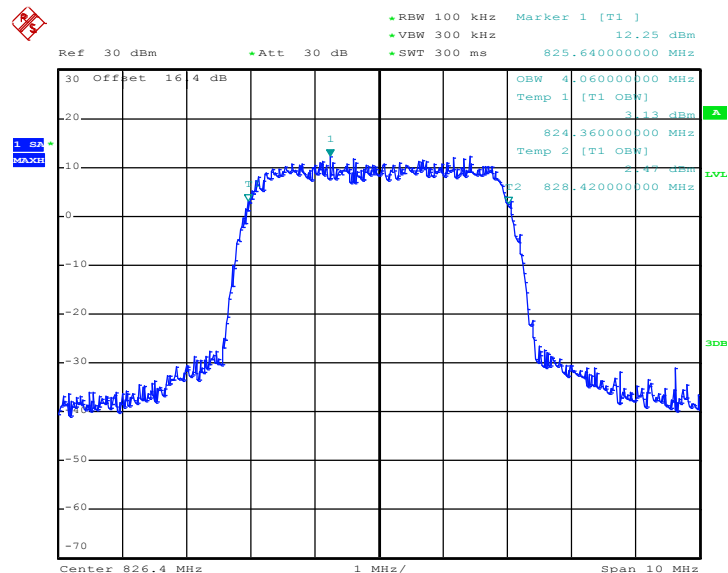


Date: 8.MAY.2012 19:00:20



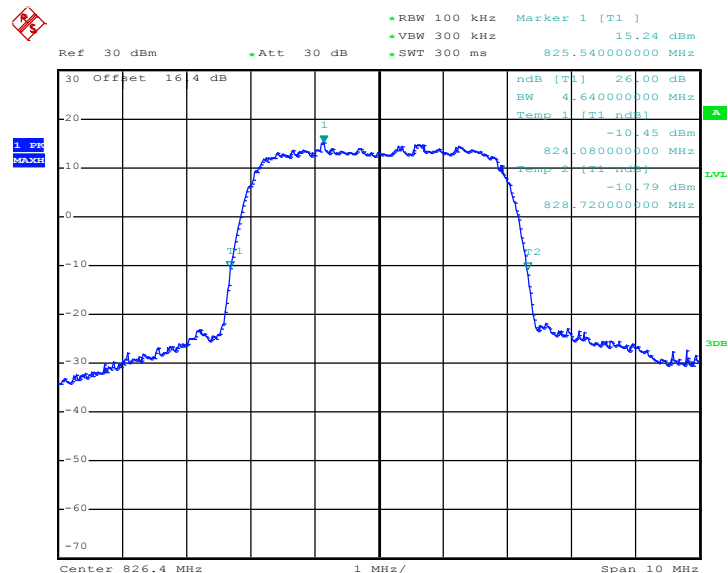
Band :	WCDMA Band V	Power Stage :	High
Test Mode :	RMC 12.2Kbps Link		

99% Occupied Bandwidth Plot on Channel 4132



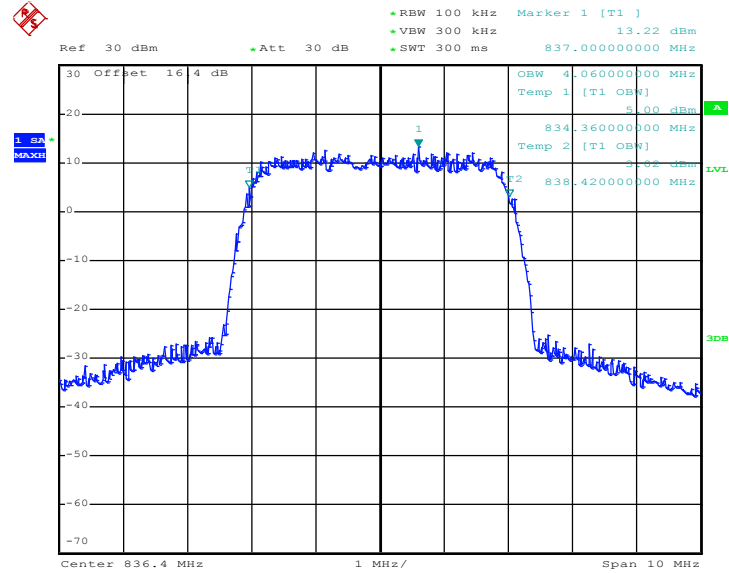
Date: 8.MAY.2012 20:17:08

26dB Bandwidth Plot on Channel 4132



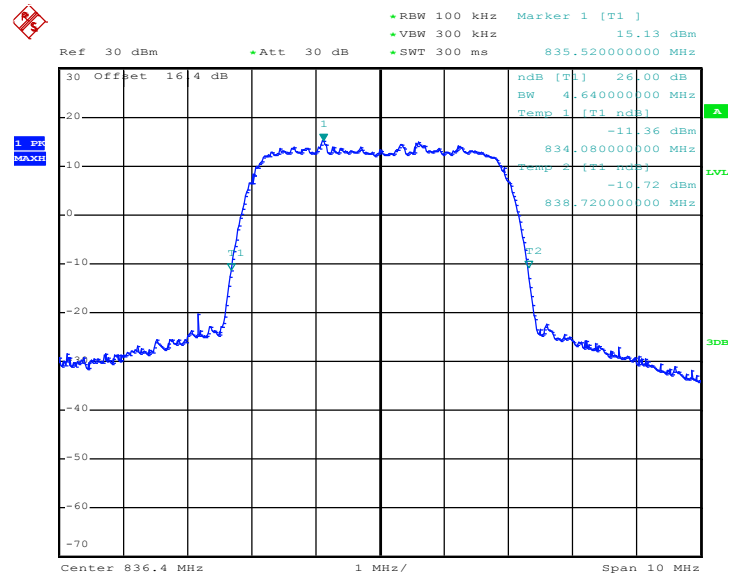
Date: 8.MAY.2012 20:15:49

99% Occupied Bandwidth Plot on Channel 4182

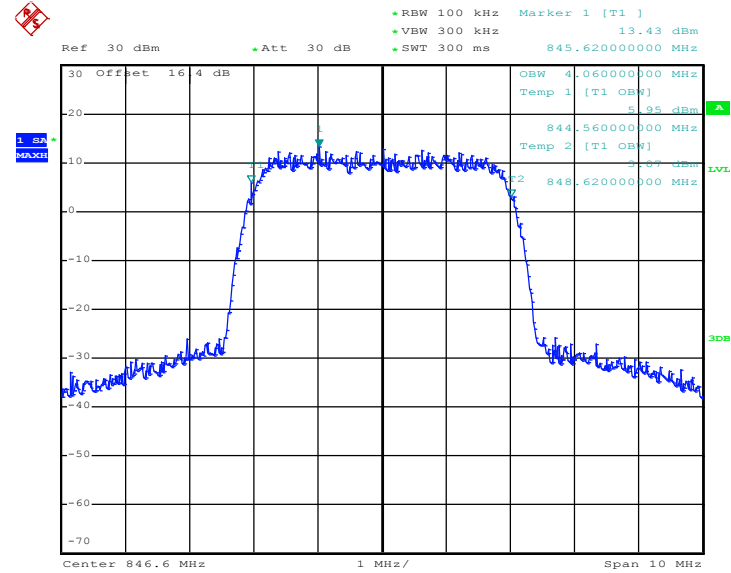


Date: 8.MAY.2012 20:17:35

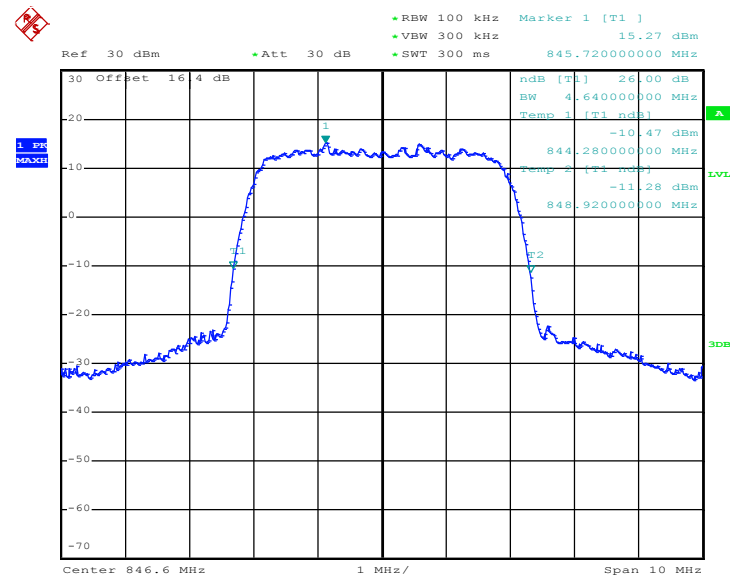
26dB Bandwidth Plot on Channel 4182



Date: 8.MAY.2012 20:16:15

99% Occupied Bandwidth Plot on Channel 4233


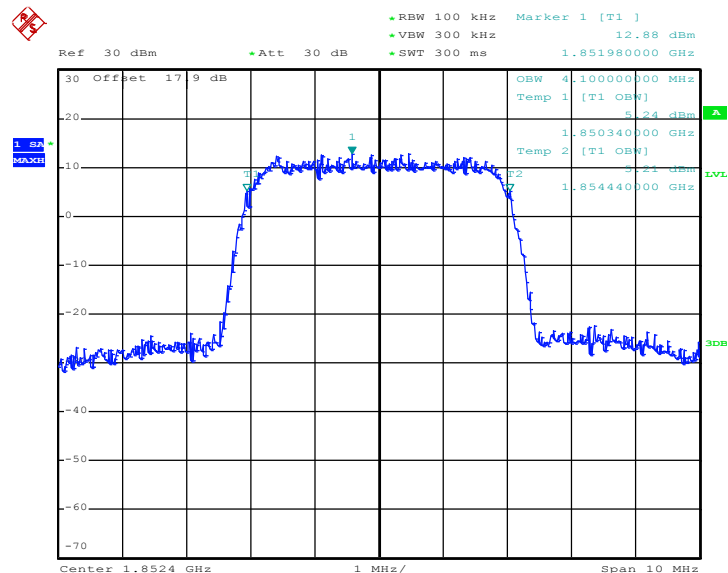
Date: 8.MAY.2012 20:18:01

26dB Bandwidth Plot on Channel 4233


Date: 8.MAY.2012 20:16:42

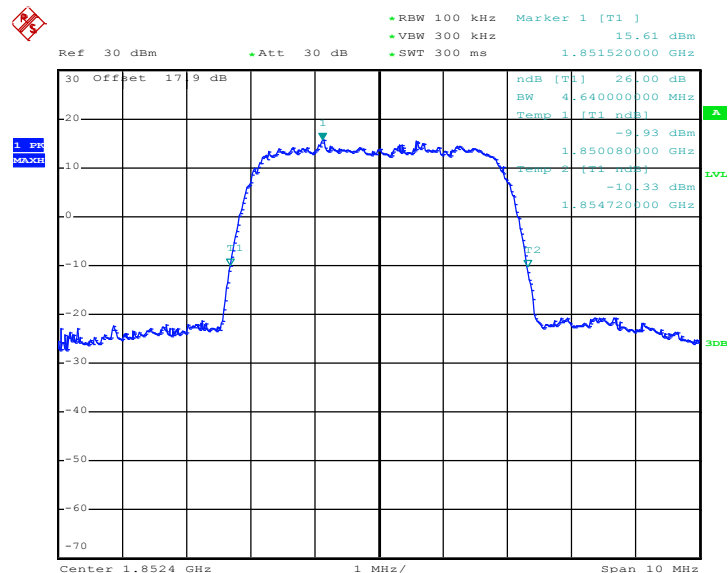
Band :	WCDMA Band II	Power Stage :	High
Test Mode :	RMC 12.2Kbps Link		

99% Occupied Bandwidth Plot on Channel 9262



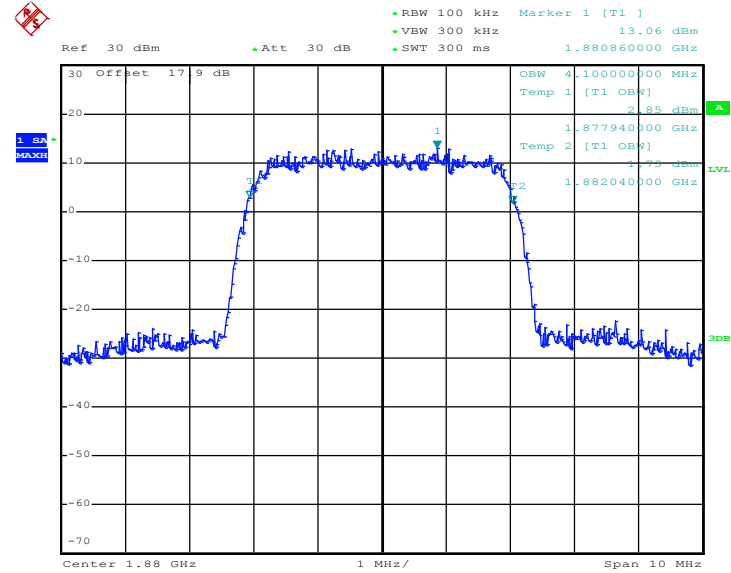
Date: 8.MAY.2012 20:02:55

26dB Bandwidth Plot on Channel 9262



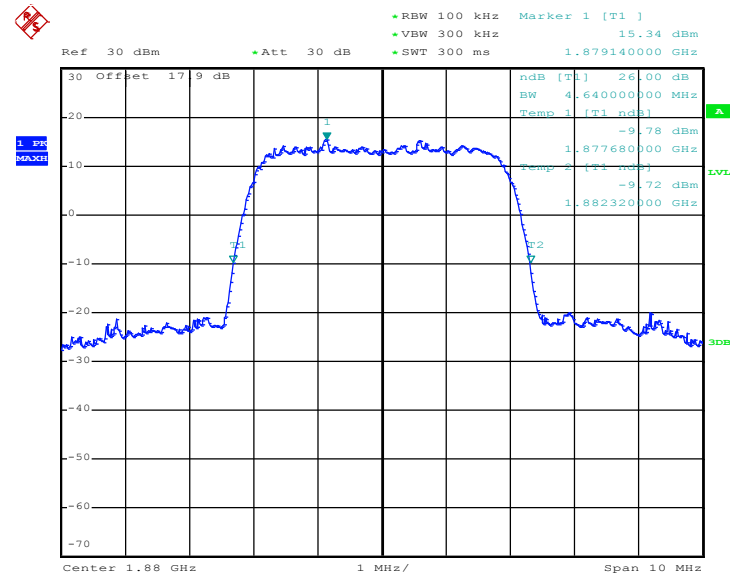
Date: 8.MAY.2012 20:01:35

99% Occupied Bandwidth Plot on Channel 9400



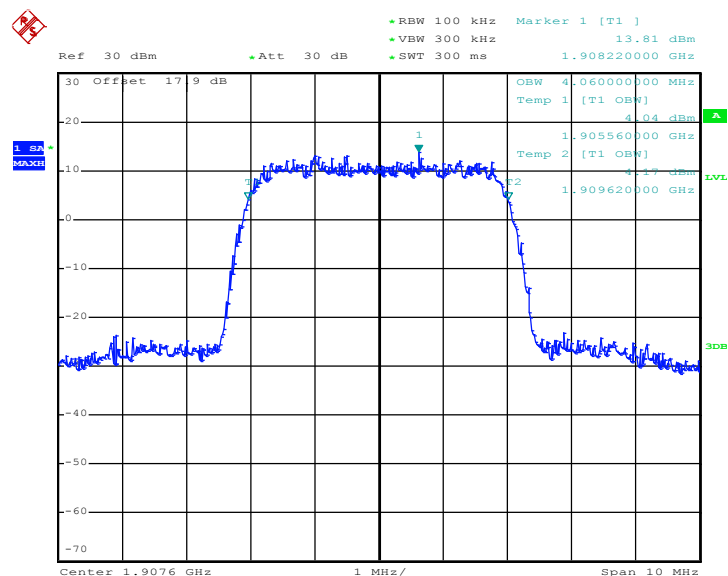
Date: 8.MAY.2012 20:03:21

26dB Bandwidth Plot on Channel 9400



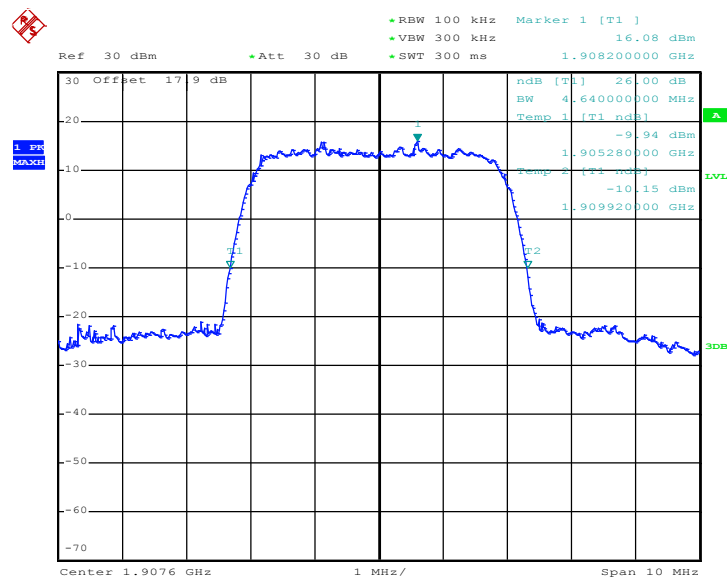
Date: 8.MAY.2012 20:02:02

99% Occupied Bandwidth Plot on Channel 9538



Date: 8.MAY.2012 20:03:47

26dB Bandwidth Plot on Channel 9538



Date: 8.MAY.2012 20:02:28

3.5 Band Edge Measurement

3.5.1 Description of Band Edge Measurement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB.

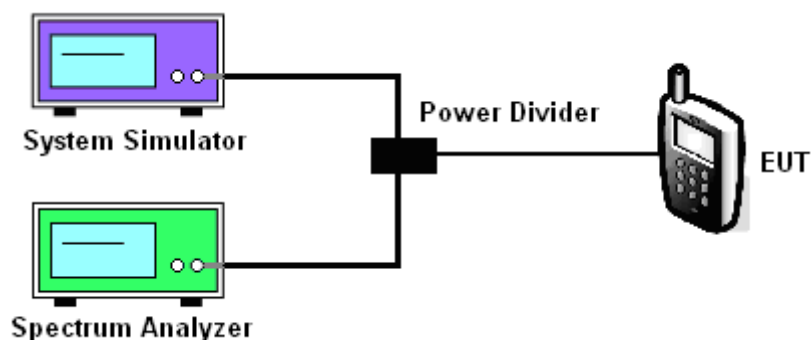
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The band edges of low and high channels for the highest RF powers were measured. Setting RBW as roughly BW/100.

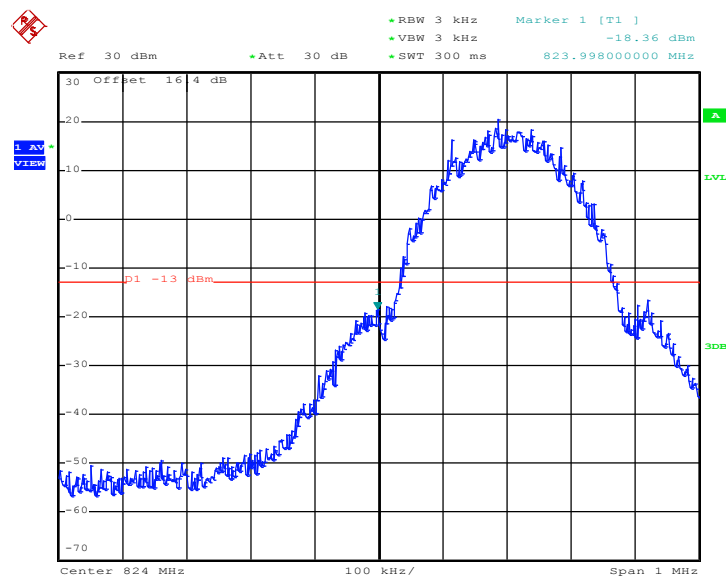
3.5.4 Test Setup



3.5.5 Test Result (Plots) of Conducted Band Edge

Band :	GSM850	Power Stage :	High
Test Mode :	GSM Link	Maximum 26dB Bandwidth :	3.120MHz
Correction Factor :	0.17dB	Measurement Value :	-18.36dBm
Band Edge :	-18.19dBm		

Lower Band Edge Plot on Channel 128

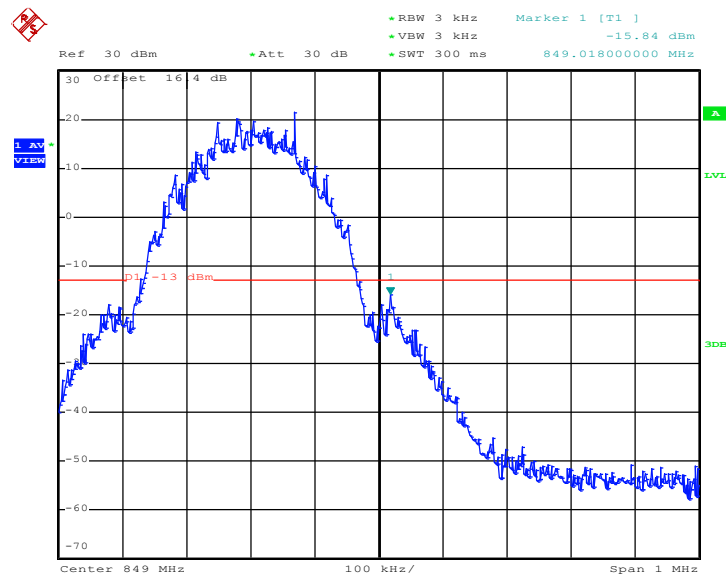


Date: 8.MAY.2012 18:28:30

1. Correction Factor(dB)= 10log(1% Emission BW/RBW)
2. Band Edge= Measurement Value + Correction Factor(dB)

Band :	GSM850	Power Stage :	High
Test Mode :	GSM Link	Maximum 26dB Bandwidth :	3.120MHz
Correction Factor :	0.17dB	Measurement Value :	-15.84dBm
Band Edge :	-15.67dBm		

Higher Band Edge Plot on Channel 251

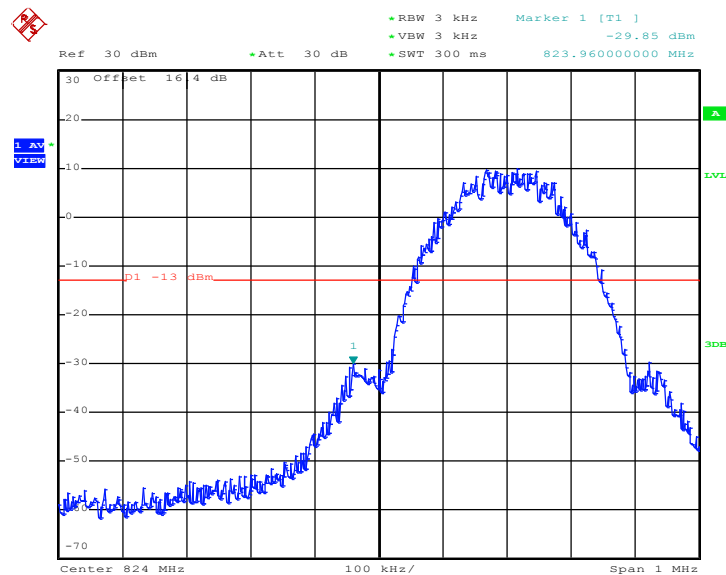


Date: 8.MAY.2012 18:28:57

1. Correction Factor(dB)= $10\log(1\% \text{ Emission BW/RBW})$
2. Band Edge= Measurement Value + Correction Factor(dB)

Band :	GSM850	Power Stage :	High
Test Mode :	EDGE 8 Link	Maximum 26dB Bandwidth :	3.140MHz
Correction Factor :	0.20dB	Measurement Value :	-29.85dBm
Band Edge :	-29.65dBm		

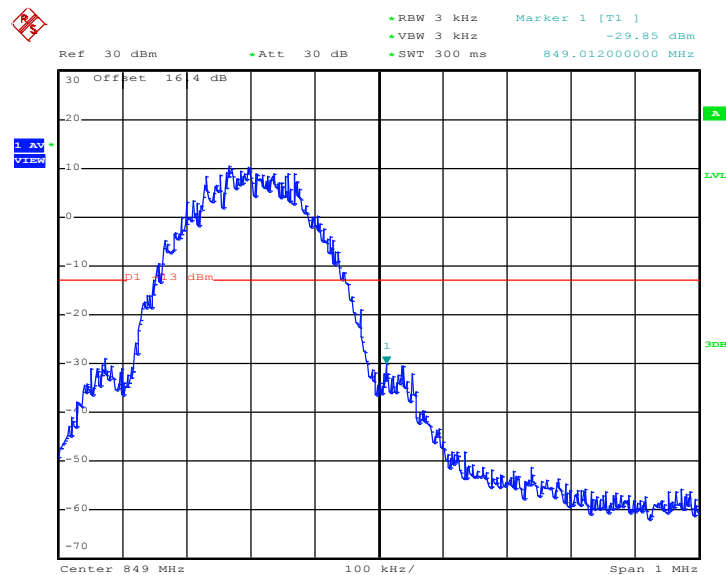
Lower Band Edge Plot on Channel 128



Date: 8.MAY.2012 18:45:33

1. Correction Factor(dB)= $10\log(1\% \text{ Emission BW/RBW})$
2. Band Edge= Measurement Value + Correction Factor(dB)

Band :	GSM850	Power Stage :	High
Test Mode :	EDGE 8 Link	Maximum 26dB Bandwidth :	3.140MHz
Correction Factor :	0.20dB	Measurement Value :	-29.85dBm
Band Edge :	-29.65dBm		

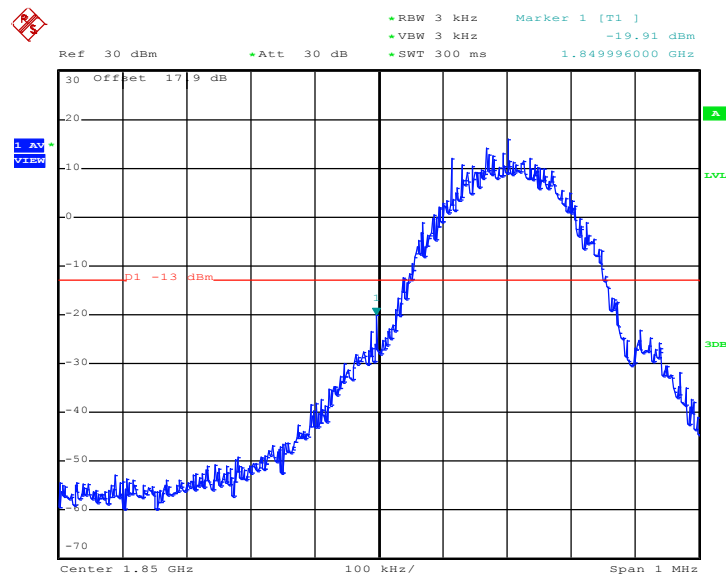
Higher Band Edge Plot on Channel 251


Date: 8.MAY.2012 18:46:00

1. Correction Factor(dB)= $10\log(1\% \text{ Emission BW/RBW})$
2. Band Edge= Measurement Value + Correction Factor(dB)

Band :	GSM1900	Power Stage :	High
Test Mode :	GPRS 8 Link	Maximum 26dB Bandwidth :	3.140MHz
Correction Factor :	0.20dB	Measurement Value :	-19.91dBm
Band Edge :	-19.71dBm		

Lower Band Edge Plot on Channel 512

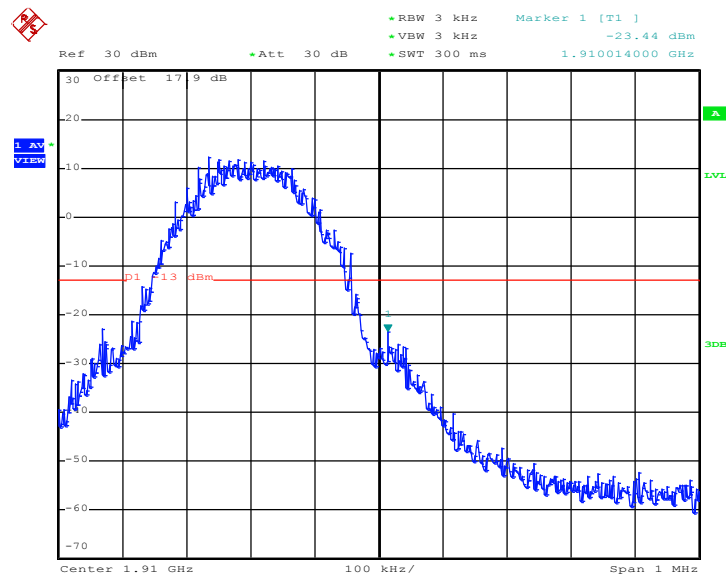


Date: 8.MAY.2012 19:19:27

1. Correction Factor(dB)= 10log(1% Emission BW/RBW)
2. Band Edge= Measurement Value + Correction Factor(dB)

Band :	GSM1900	Power Stage :	High
Test Mode :	GPRS 8 Link	Maximum 26dB Bandwidth :	3.140MHz
Correction Factor :	0.20dB	Measurement Value :	-23.44dBm
Band Edge :	-23.24dBm		

Higher Band Edge Plot on Channel 810

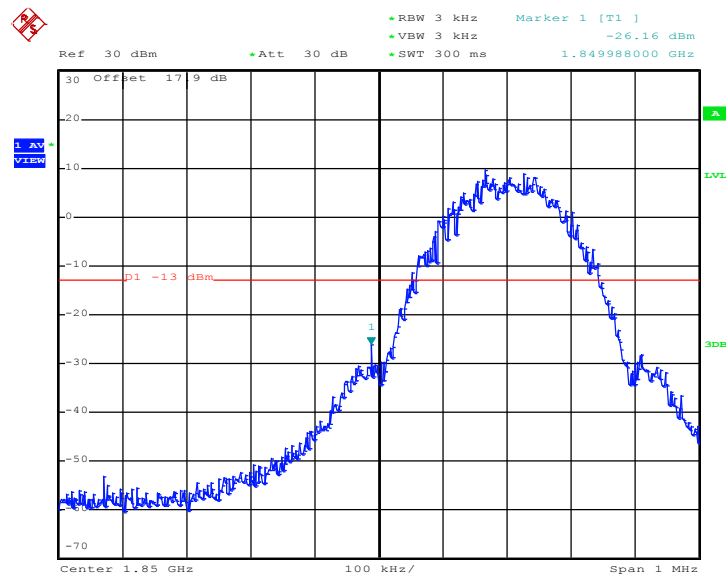


Date: 8.MAY.2012 19:19:54

1. Correction Factor(dB)= $10\log(1\% \text{ Emission BW/RBW})$
2. Band Edge= Measurement Value + Correction Factor(dB)

Band :	GSM1900	Power Stage :	High
Test Mode :	EDGE 8 Link	Maximum 26dB Bandwidth :	3.140MHz
Correction Factor :	0.20dB	Measurement Value :	-26.16dBm
Band Edge :	-25.96dBm		

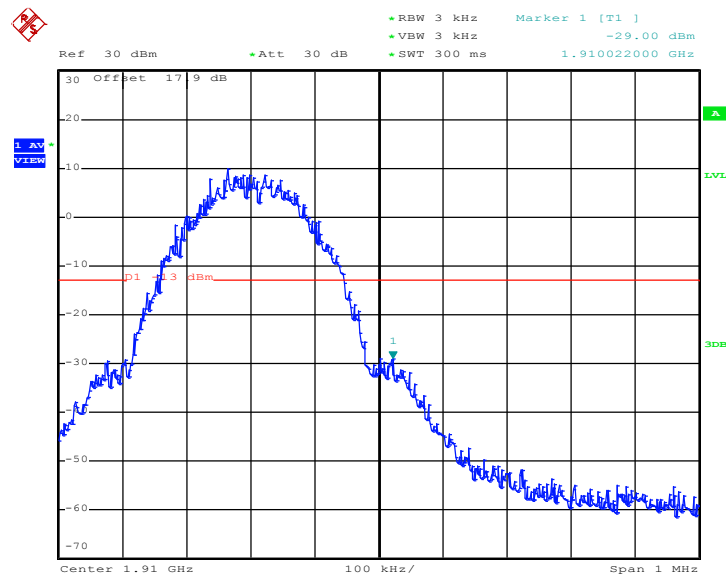
Lower Band Edge Plot on Channel 512



Date: 8.MAY.2012 19:03:06

1. Correction Factor(dB)= 10log(1% Emission BW/RBW)
2. Band Edge= Measurement Value + Correction Factor(dB)

Band :	GSM1900	Power Stage :	High
Test Mode :	EDGE 8 Link	Maximum 26dB Bandwidth :	3.140MHz
Correction Factor :	0.20dB	Measurement Value :	-29.00dBm
Band Edge :	-28.80dBm		

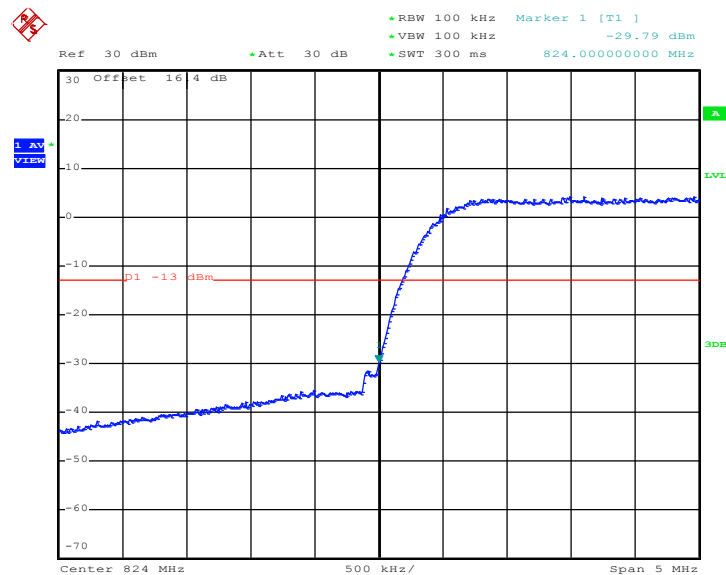
Higher Band Edge Plot on Channel 810


Date: 8.MAY.2012 19:03:32

1. Correction Factor(dB)= 10log(1% Emission BW/RBW)
2. Band Edge= Measurement Value + Correction Factor(dB)

Band :	WCDMA Band V	Power Stage :	High
Test Mode :	RMC 12.2Kbps Link	Maximum 26dB Bandwidth :	4.64MHz
Correction Factor :	-3.33dB	Measurement Value :	-29.79dBm
Band Edge :	-33.12dBm		

Lower Band Edge Plot on Channel 4132

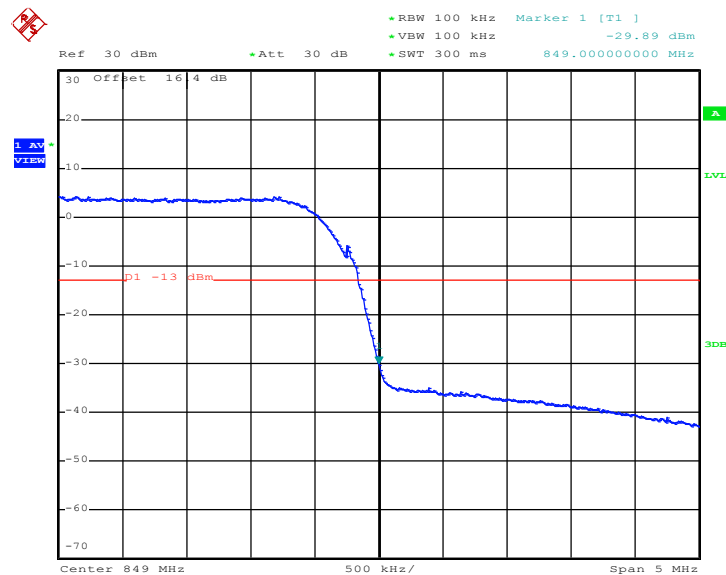


Date: 8.MAY.2012 20:19:30

1. Correction Factor(dB)= $10\log(1\% \text{ Emission BW/RBW})$
2. Band Edge= Measurement Value + Correction Factor(dB)

Band :	WCDMA Band V	Power Stage :	High
Test Mode :	RMC 12.2Kbps Link	Maximum 26dB Bandwidth :	4.64MHz
Correction Factor :	-3.33dB	Measurement Value :	-29.89dBm
Band Edge :	-33.22dBm		

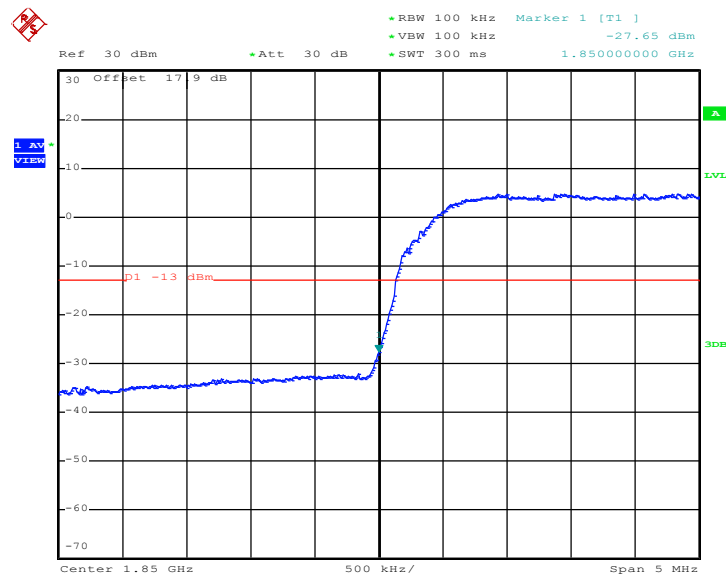
Higher Band Edge Plot on Channel 4233



Date: 8.MAY.2012 20:19:56

1. Correction Factor(dB)= $10\log(1\% \text{ Emission BW/RBW})$
2. Band Edge= Measurement Value + Correction Factor(dB)

Band :	WCDMA Band II	Power Stage :	High
Test Mode :	RMC 12.2Kbps Link	Maximum 26dB Bandwidth :	4.64MHz
Correction Factor :	-3.33dB	Measurement Value :	-27.65dBm
Band Edge :	-30.98dBm		

Lower Band Edge Plot on Channel 9262


Date: 8.MAY.2012 20:05:16

1. Correction Factor(dB)= 10log(1% Emission BW/RBW)
2. Band Edge= Measurement Value + Correction Factor(dB)



Higher Band Edge Plot on Channel 9538



1. *Correction Factor(dB)= 10log(1% Emission BW/RBW)*
2. *Band Edge= Measurement Value + Correction Factor(dB)*

3.6 Conducted Emission Measurement

3.6.1 Description of Conducted Emission Measurement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB.

It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10th harmonic.

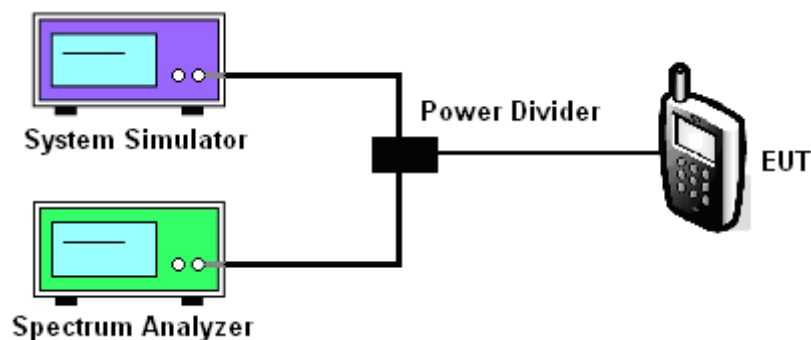
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

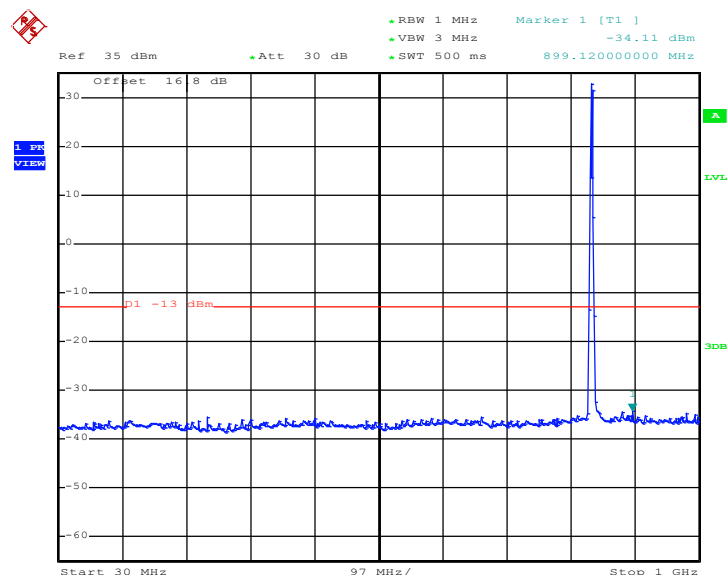
1. The EUT was connected to spectrum analyzer and base station via power divider.
2. The middle channel for the highest RF power within the transmitting frequency was measured.
3. The conducted spurious emission for the whole frequency range was taken.

3.6.4 Test Setup

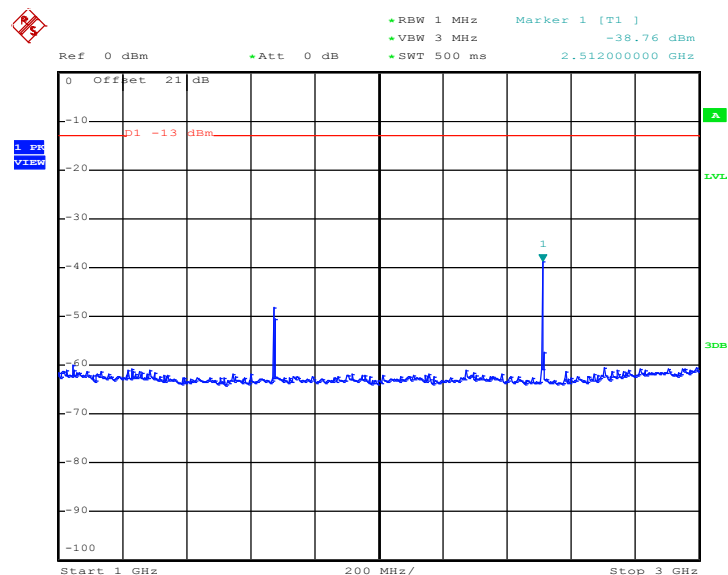


3.6.5 Test Result (Plots) of Conducted Emission

Band :	GSM850	Channel :	CH189
Test Mode :	GSM Link		

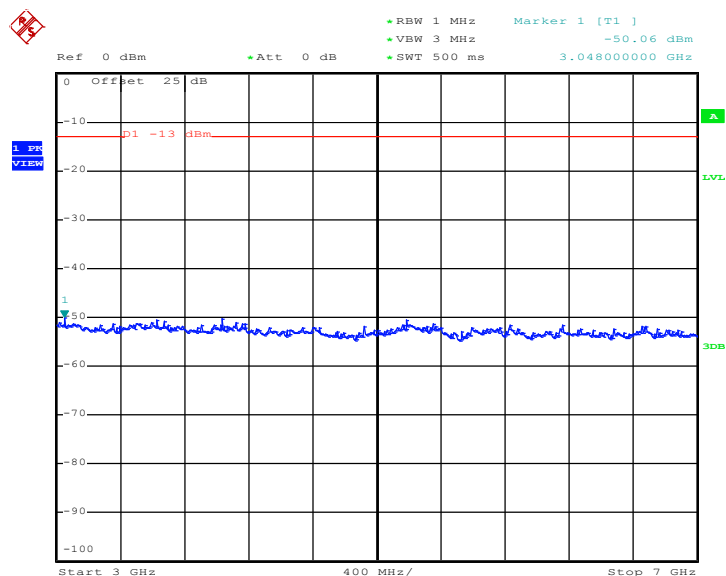
Conducted Emission Plot between 30MHz ~ 1GHz


Date: 10.MAY.2012 10:08:39

Conducted Emission Plot between 1GHz ~ 3GHz


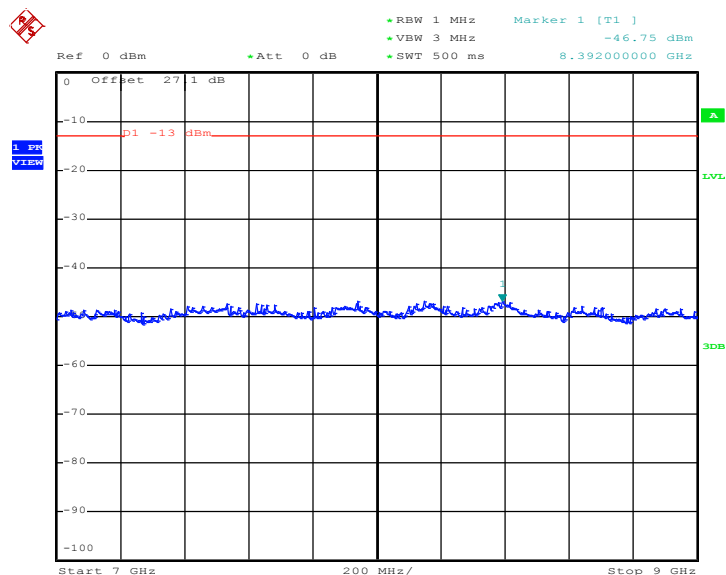
Date: 10.MAY.2012 10:09:22

Conducted Emission Plot between 3GHz ~ 7GHz



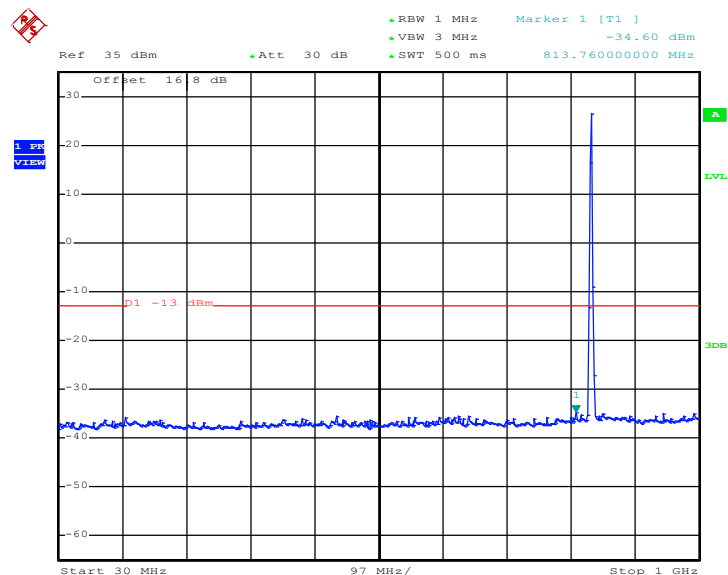
Date: 10.MAY.2012 10:09:34

Conducted Emission Plot between 7GHz ~ 9GHz

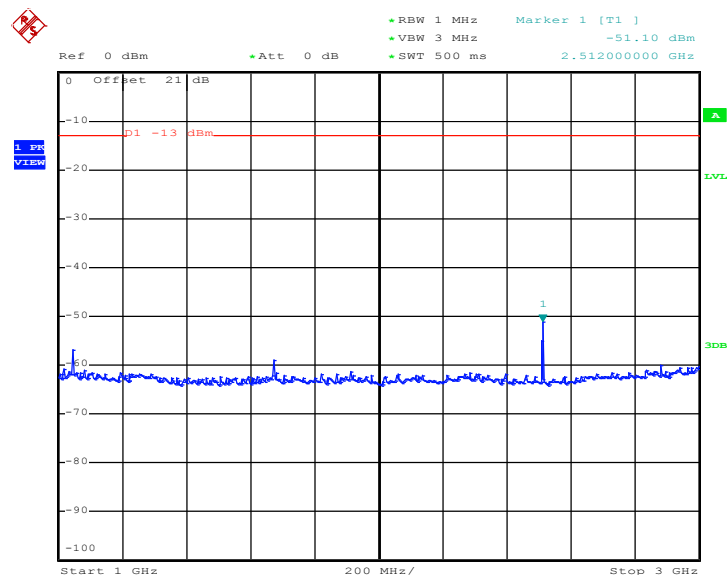


Date: 10.MAY.2012 10:09:47

Band :	GSM850	Channel :	CH189
Test Mode :	EDGE 8 Link		

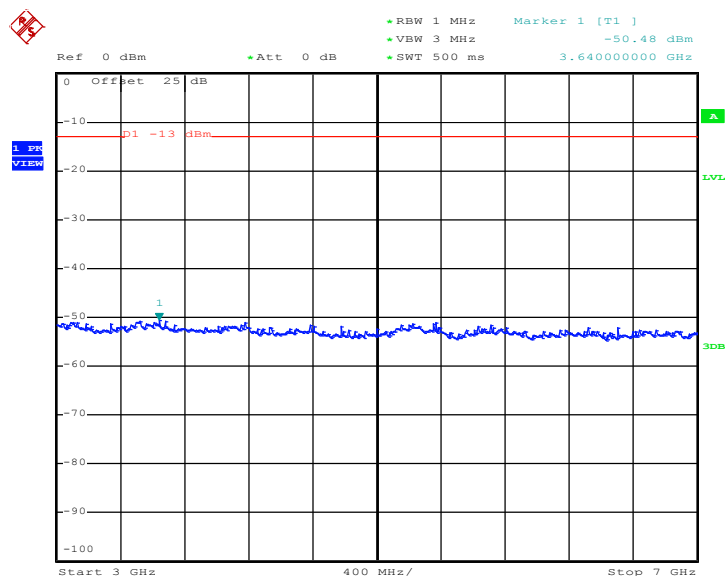
Conducted Emission Plot between 30MHz ~ 1GHz


Date: 10.MAY.2012 10:16:26

Conducted Emission Plot between 1GHz ~ 3GHz


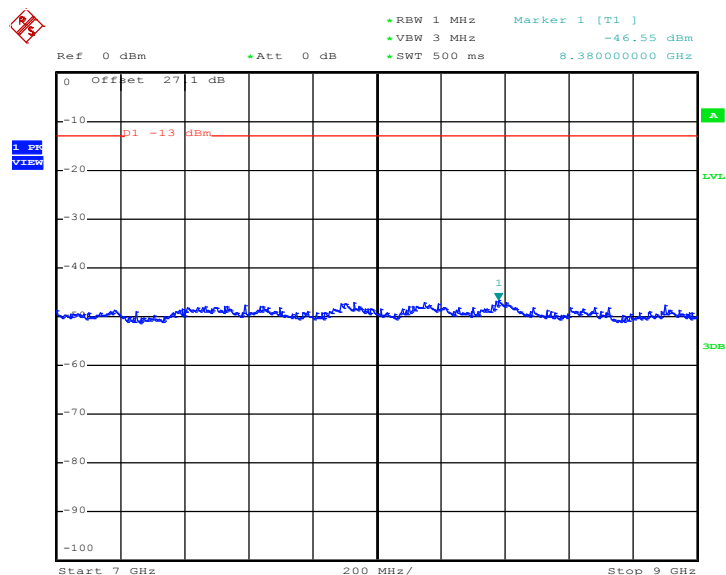
Date: 10.MAY.2012 10:16:43

Conducted Emission Plot between 3GHz ~ 7GHz



Date: 10.MAY.2012 10:16:56

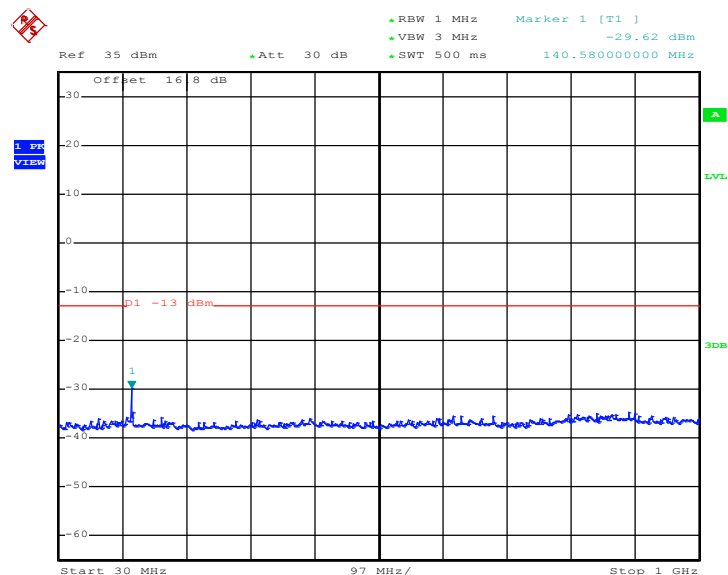
Conducted Emission Plot between 7GHz ~ 9GHz



Date: 10.MAY.2012 10:17:09

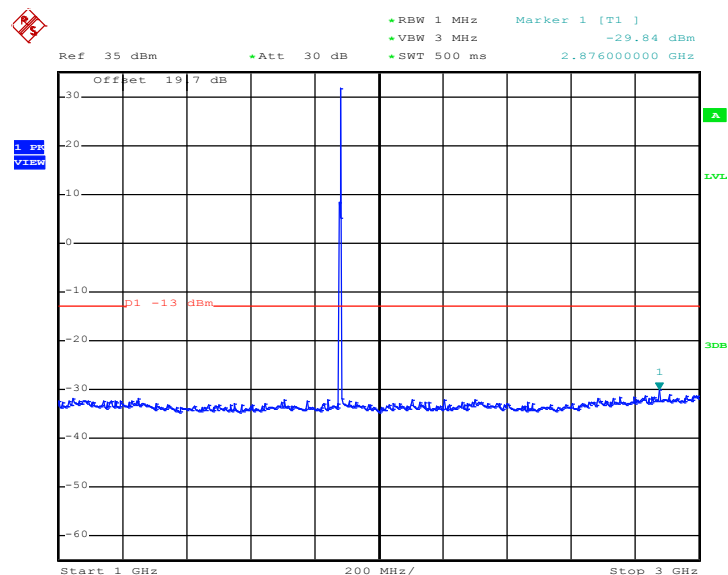
Band :	GSM1900	Channel :	CH661
Test Mode :	GPRS 8 Link		

Conducted Emission Plot between 30MHz ~ 1GHz



Date: 10.MAY.2012 10:47:05

Conducted Emission Plot between 1GHz ~ 3GHz



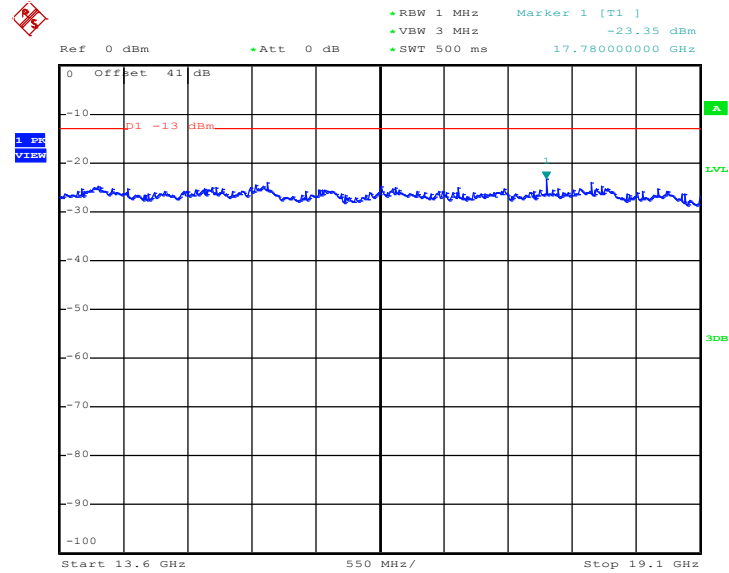
Date: 10.MAY.2012 10:47:17



Conducted Emission Plot between 7GHz ~ 13.6GHz



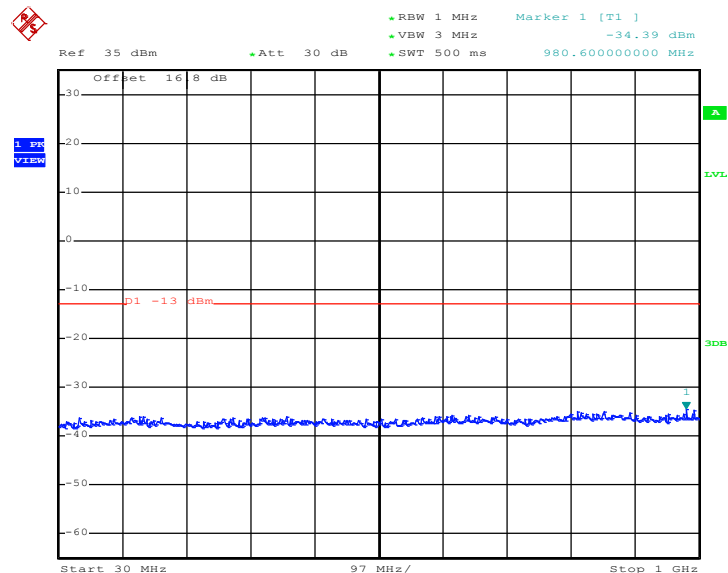
Conducted Emission Plot between 13.6GHz ~ 19.1GHz



Date: 10.MAY.2012 10:48:06

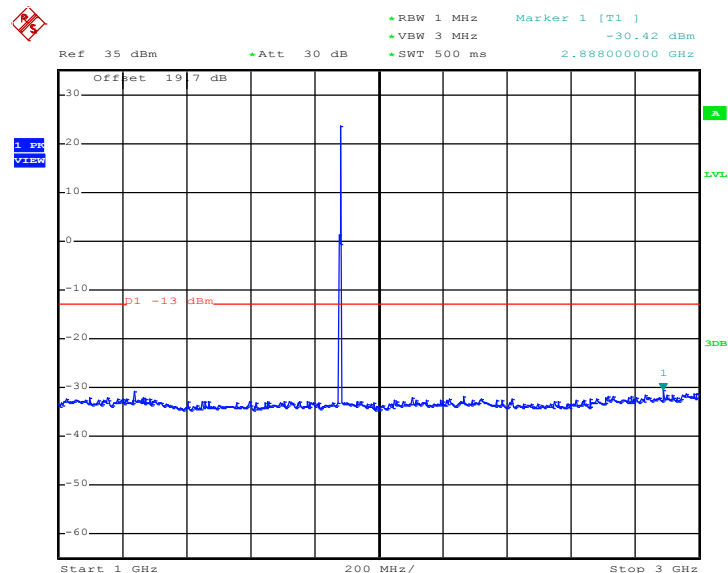
Band :	GSM1900	Channel :	CH661
Test Mode :	EDGE 8 Link		

Conducted Emission Plot between 30MHz ~ 1GHz



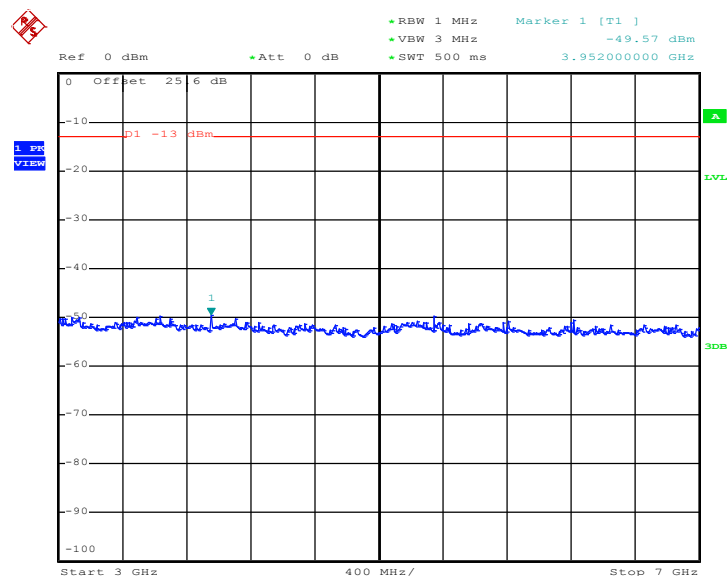
Date: 10.MAY.2012 10:51:20

Conducted Emission Plot between 1GHz ~ 3GHz



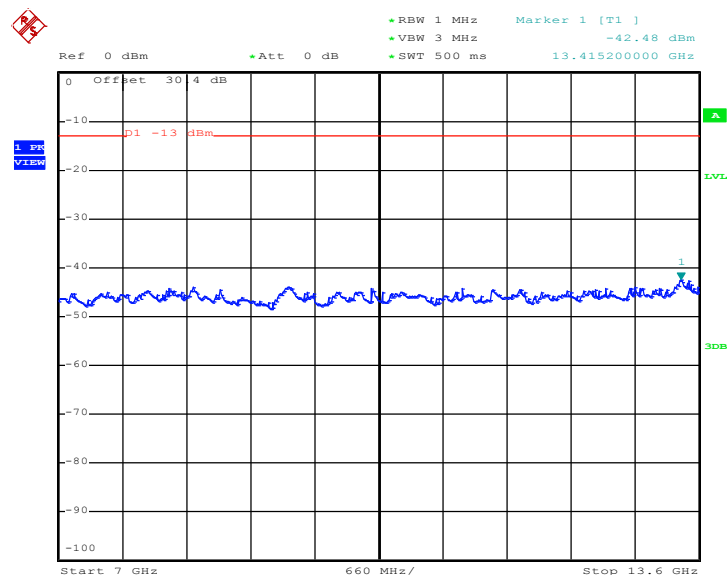
Date: 10.MAY.2012 10:51:33

Conducted Emission Plot between 3GHz ~ 7GHz



Date: 10.MAY.2012 10:51:50

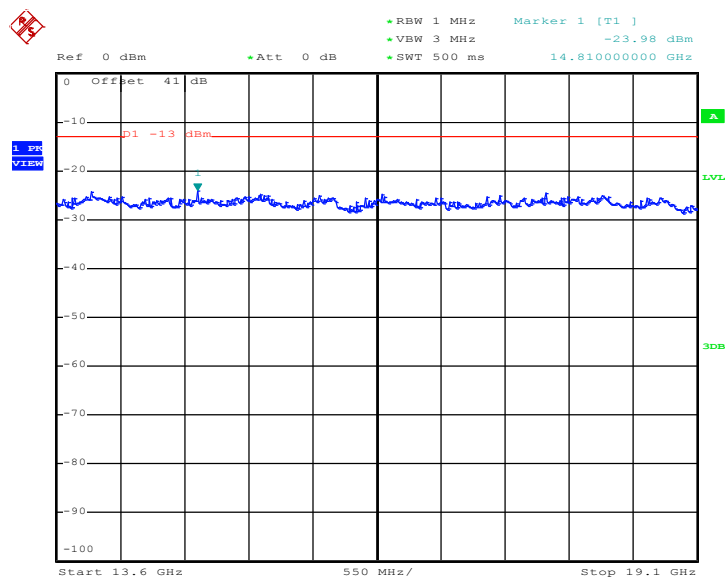
Conducted Emission Plot between 7GHz ~ 13.6GHz



Date: 10.MAY.2012 10:52:03

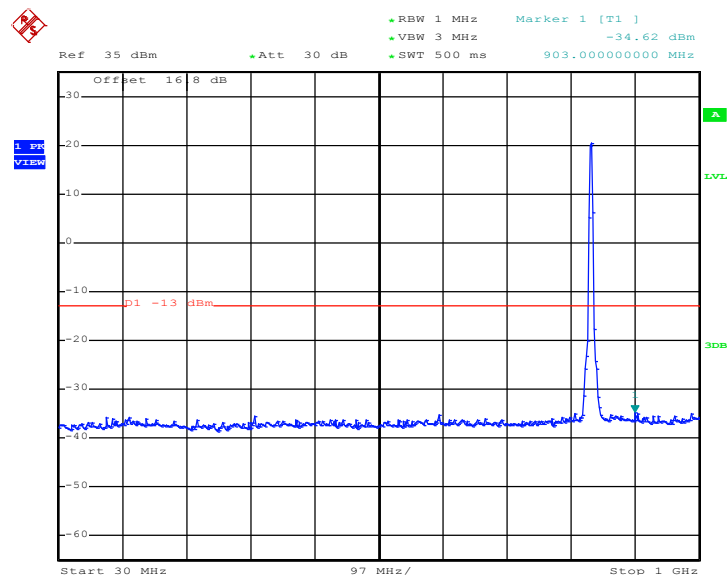


Conducted Emission Plot between 13.6GHz ~ 19.1GHz

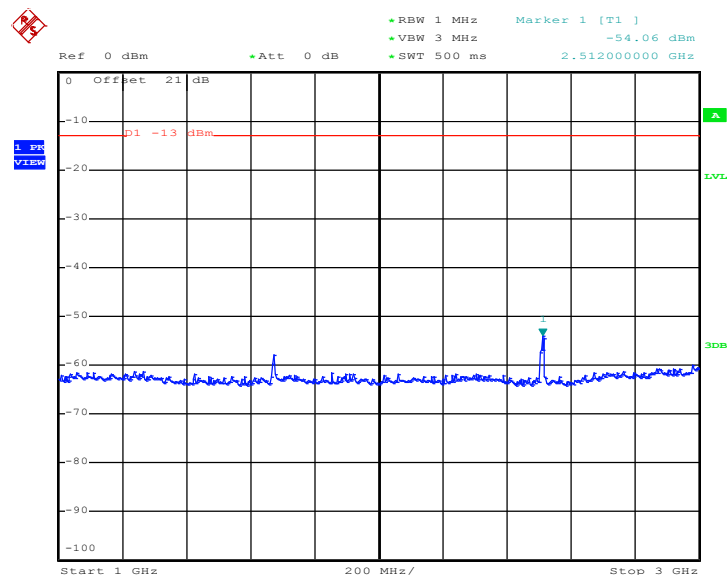


Date: 10.MAY.2012 10:52:15

Band :	WCDMA Band V	Channel :	CH4182
Test Mode :	RMC 12.2Kbps Link		

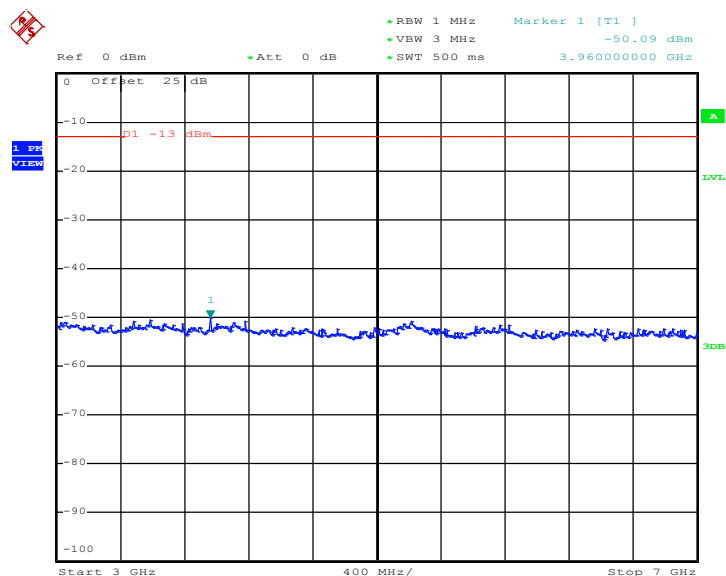
Conducted Emission Plot between 30MHz ~ 1GHz


Date: 10.MAY.2012 10:30:15

Conducted Emission Plot between 1GHz ~ 3GHz


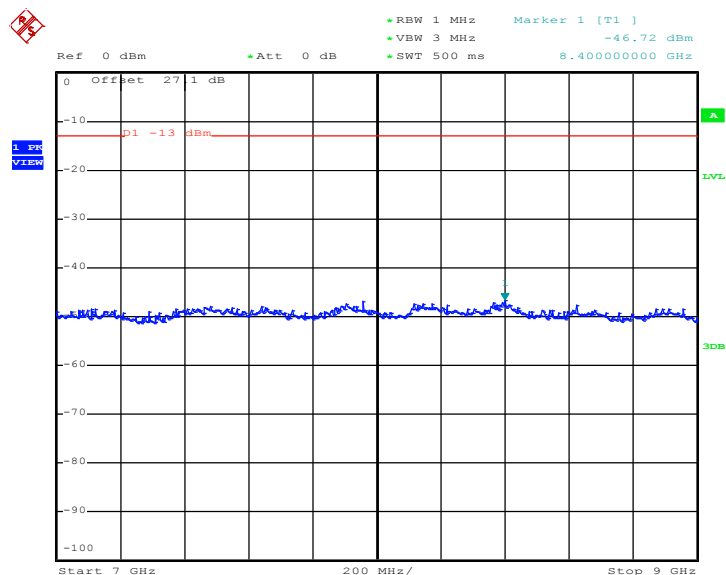
Date: 10.MAY.2012 10:30:38

Conducted Emission Plot between 3GHz ~ 7GHz



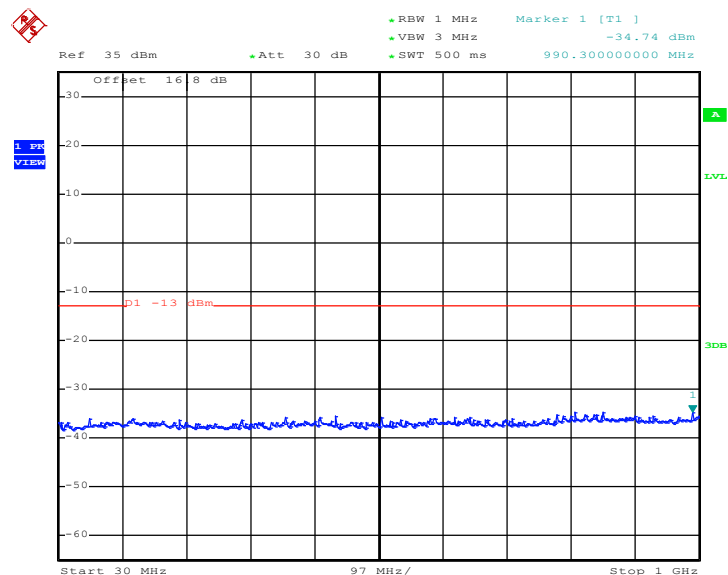
Date: 10.MAY.2012 10:30:50

Conducted Emission Plot between 7GHz ~ 9GHz

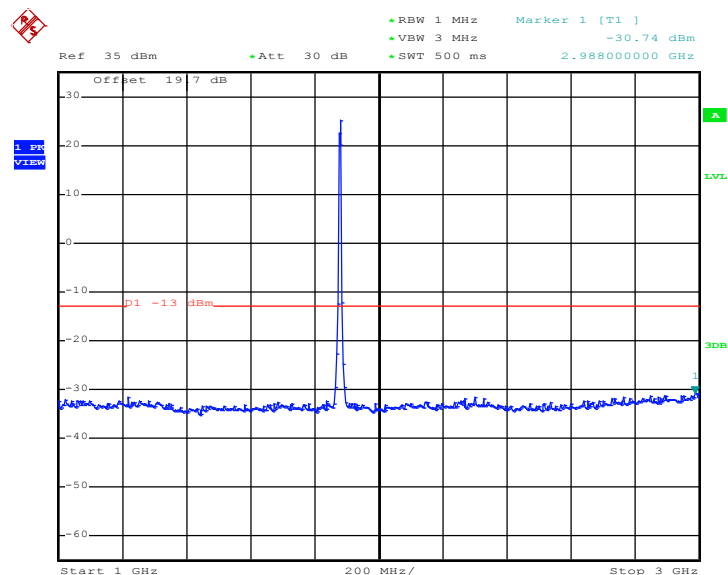


Date: 10.MAY.2012 10:31:03

Band :	WCDMA Band II	Channel :	CH9400
Test Mode :	RMC 12.2Kbps Link		

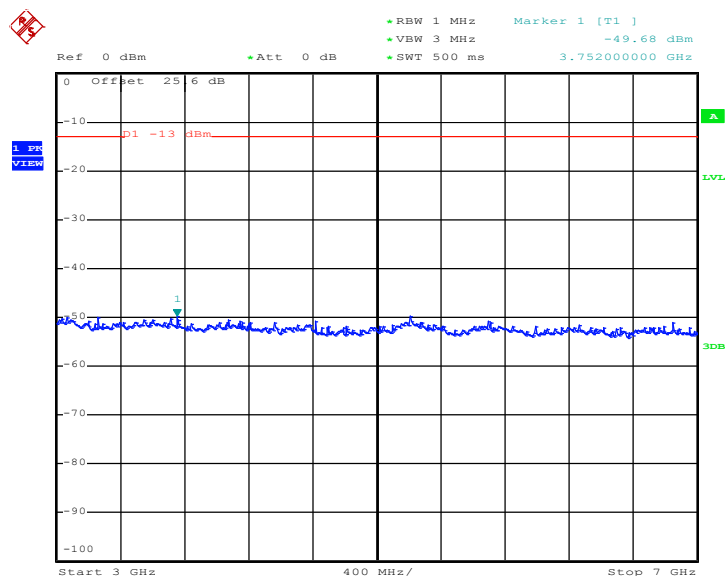
Conducted Emission Plot between 30MHz ~ 1GHz


Date: 10.MAY.2012 10:38:46

Conducted Emission Plot between 1GHz ~ 3GHz


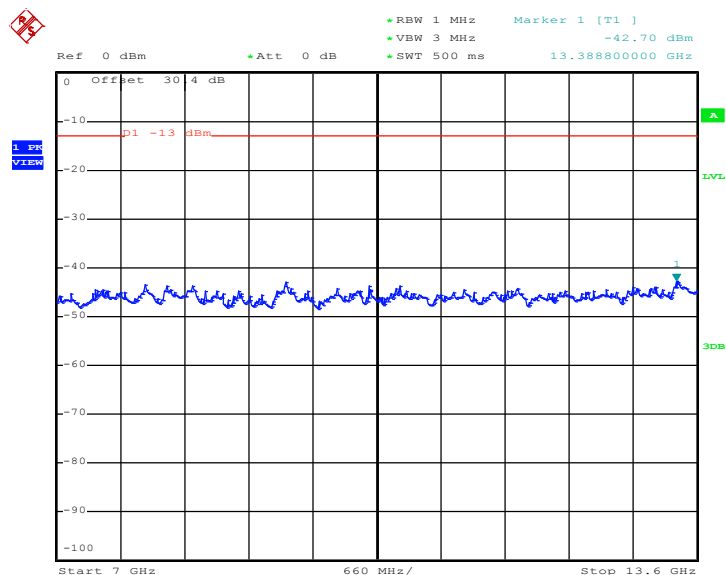
Date: 10.MAY.2012 10:38:58

Conducted Emission Plot between 3GHz ~ 7GHz



Date: 10.MAY.2012 10:39:29

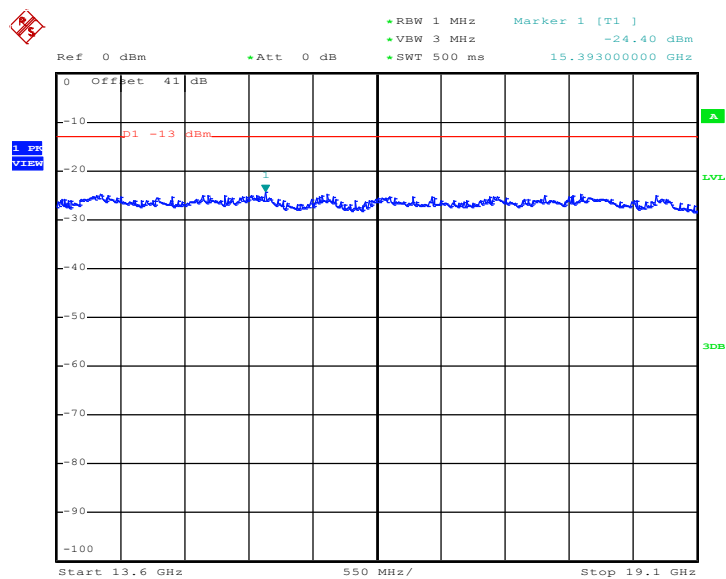
Conducted Emission Plot between 7GHz ~ 13.6GHz



Date: 10.MAY.2012 10:39:42



Conducted Emission Plot between 13.6GHz ~ 19.1GHz



Date: 10.MAY.2012 10:39:55

3.7 Field Strength of Spurious Radiation Measurement

3.7.1 Description of Field Strength of Spurious Radiated Measurement

The radiated spurious emission was measured by substitution method according to ANSI / TIA / EIA-603-C-2004. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

3.7.2 Measuring Instruments

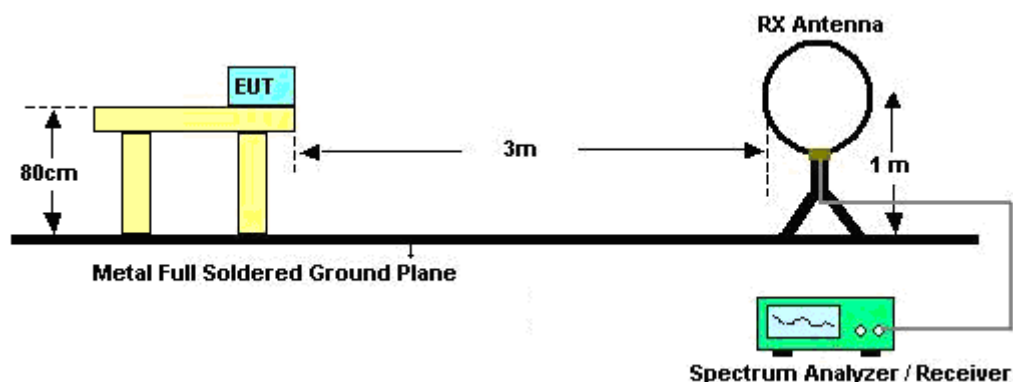
See list of measuring instruments of this test report.

3.7.3 Test Procedures

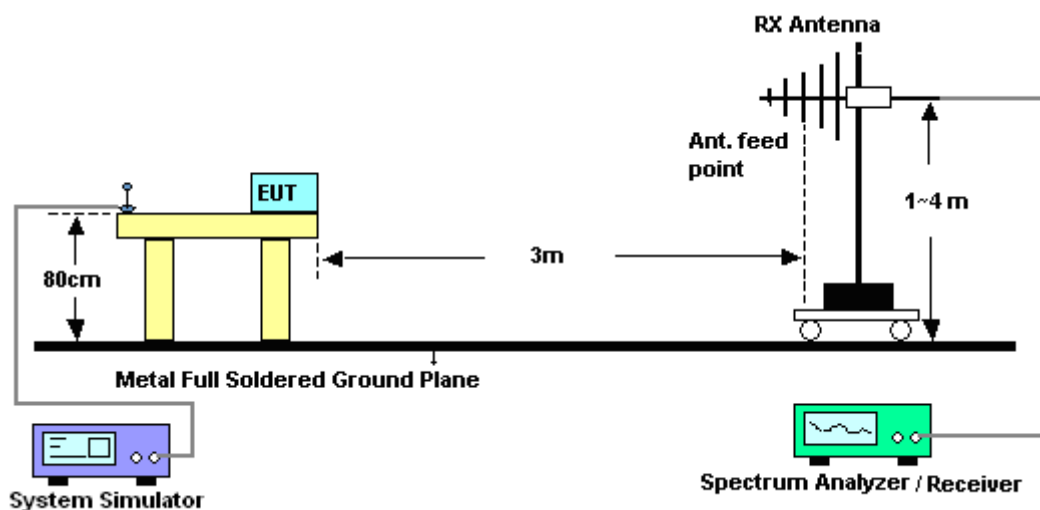
1. The EUT was placed on a rotatable wooden table with 0.8 meter about ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, Sweep = 500ms, Taking the record of maximum spurious emission.
6. A horn 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. Taking the record of output power at antenna port.
9. Repeat step 7 to step 8 for another polarization.
10. $EIRP \text{ (dBm)} = S.G. \text{ Power} - Tx \text{ Cable Loss} + Tx \text{ Antenna Gain}$
11. $ERP \text{ (dBm)} = EIRP - 2.15$

3.7.4 Test Setup

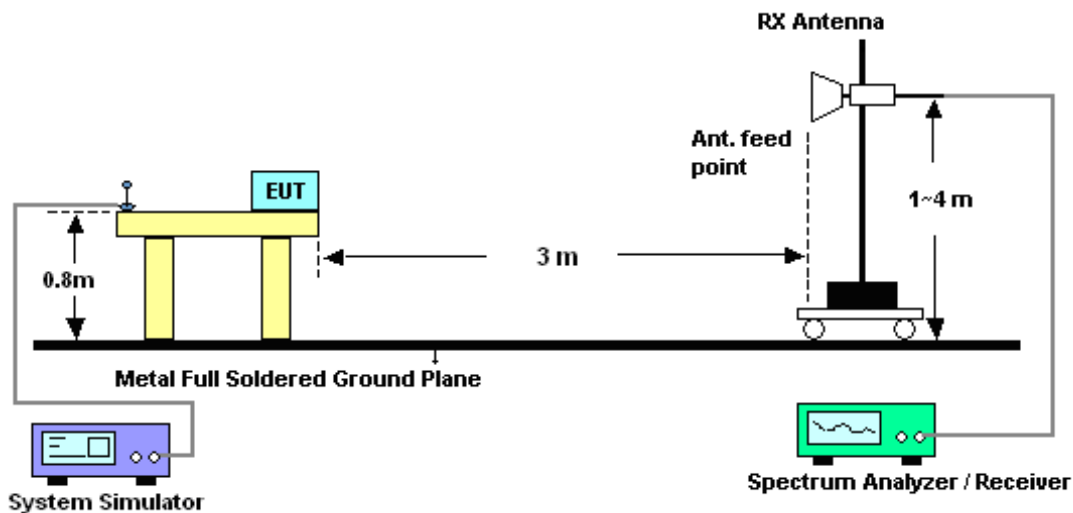
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz

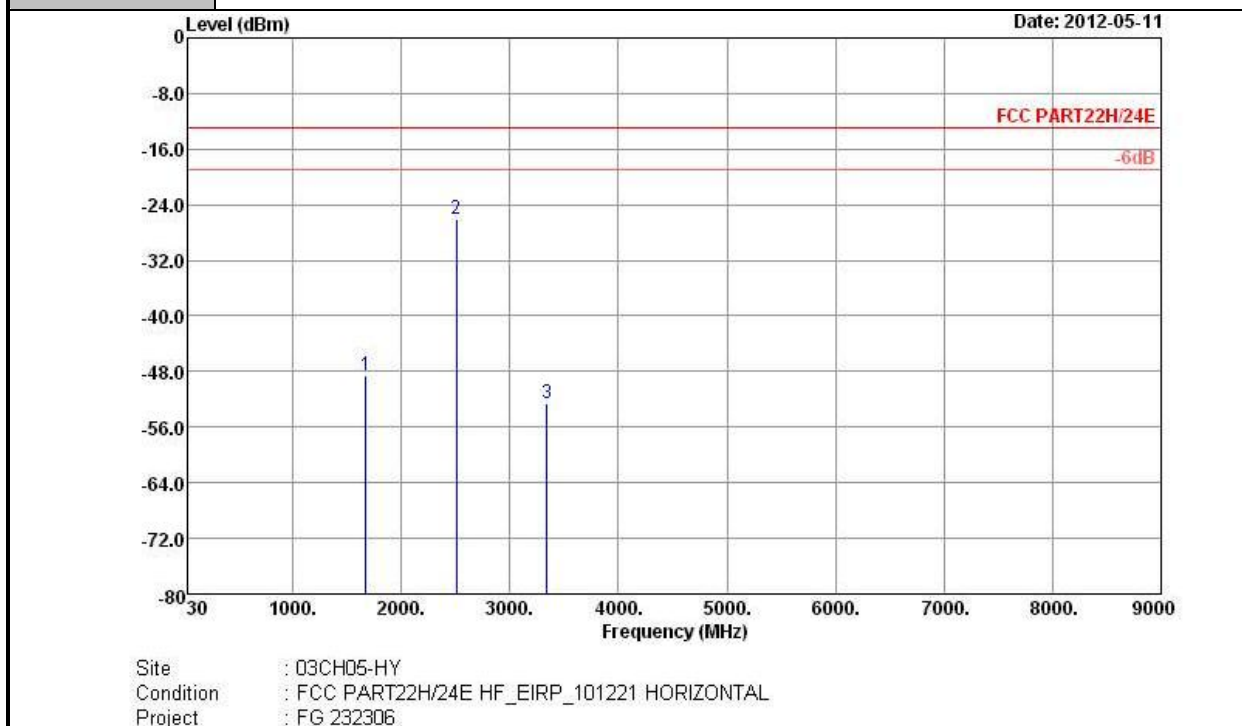


3.7.5 Test Results of Radiated Emissions (9 KHz ~ 30 MHz)

The low frequency, which started from 9 KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

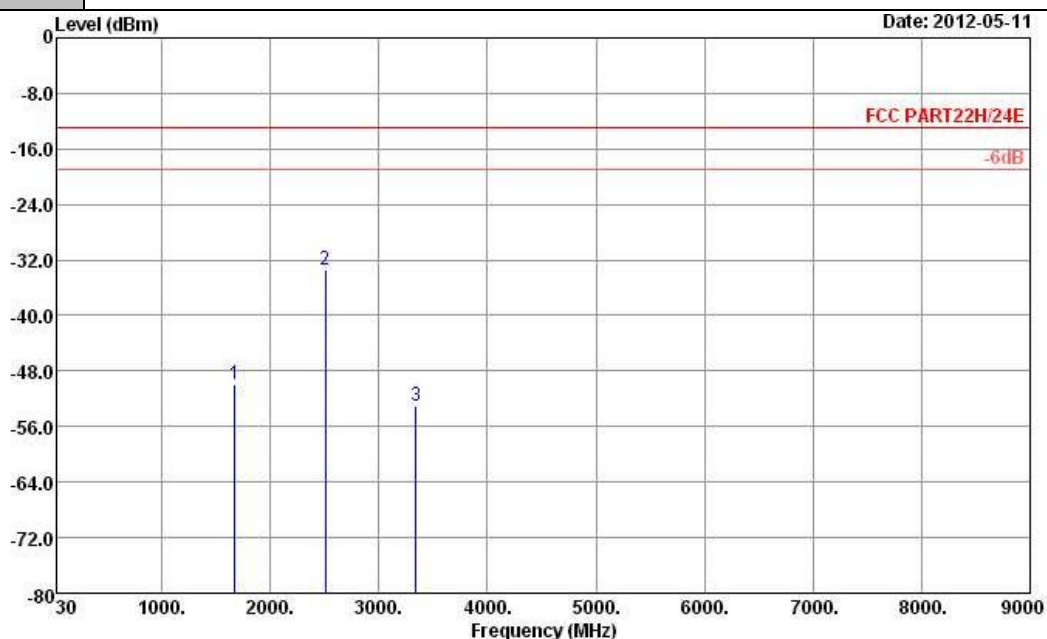
3.7.6 Test Result of Field Strength of Spurious Radiated

Band :	GSM850	Temperature :	20~22°C
Test Mode :	GSM Link	Relative Humidity :	40~42%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1672	-48.55	-13	-35.55	-54.66	-49.74	2.15	5.49	H	Pass
2509	-26.05	-13	-13.05	-35.34	-27.94	2.38	6.41	H	Pass
3345	-52.67	-13	-39.67	-64.25	-56	2.86	8.34	H	Pass

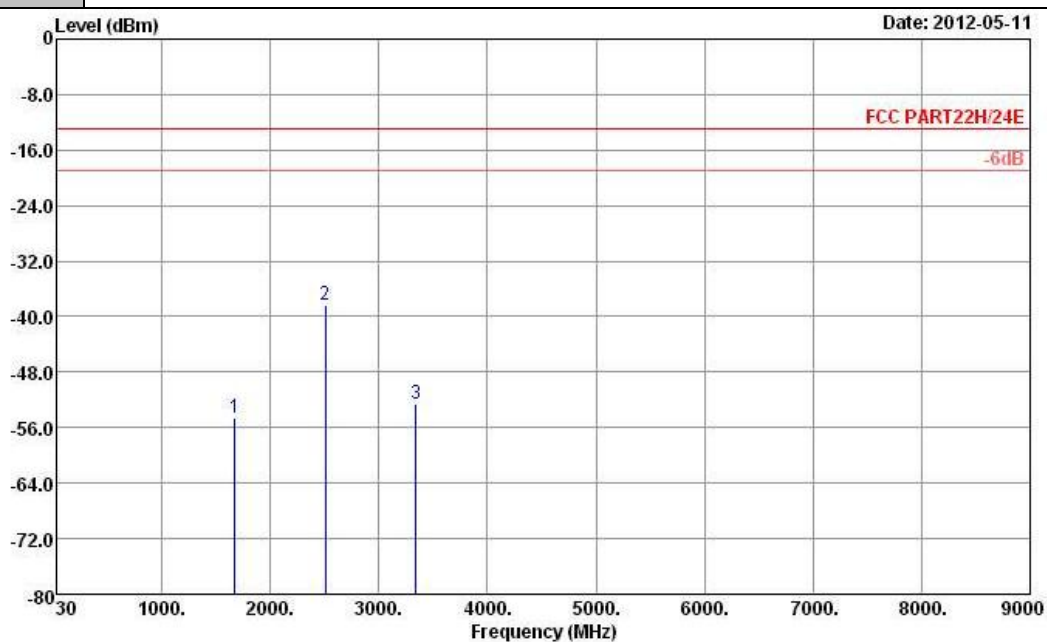
Band :	GSM850	Temperature :	20~22°C
Test Mode :	GSM Link	Relative Humidity :	40~42%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Site : 03CH05-HY
Condition : FCC PART22H/24E HF_EIRP_101221 VERTICAL
Project : FG 232306

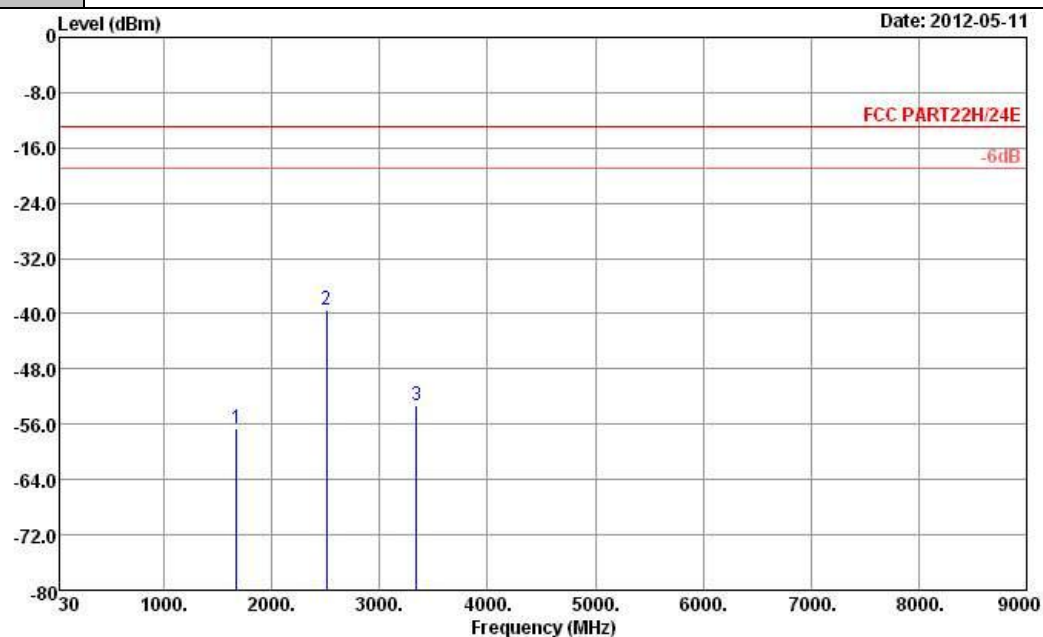
Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1672	-49.84	-13	-36.84	-55.88	-51.03	2.15	5.49	V	Pass
2509	-33.44	-13	-20.44	-42.73	-35.33	2.38	6.41	V	Pass
3345	-53.11	-13	-40.11	-64.64	-56.44	2.86	8.34	V	Pass

Band :	GSM850	Temperature :	20~22°C
Test Mode :	EDGE 8 Link	Relative Humidity :	40~42%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1672	-54.52	-13	-41.52	-60.47	-55.71	2.15	5.49	H	Pass
2509	-38.23	-13	-25.23	-47.57	-40.12	2.38	6.41	H	Pass
3345	-52.58	-13	-39.58	-64.09	-55.91	2.86	8.34	H	Pass

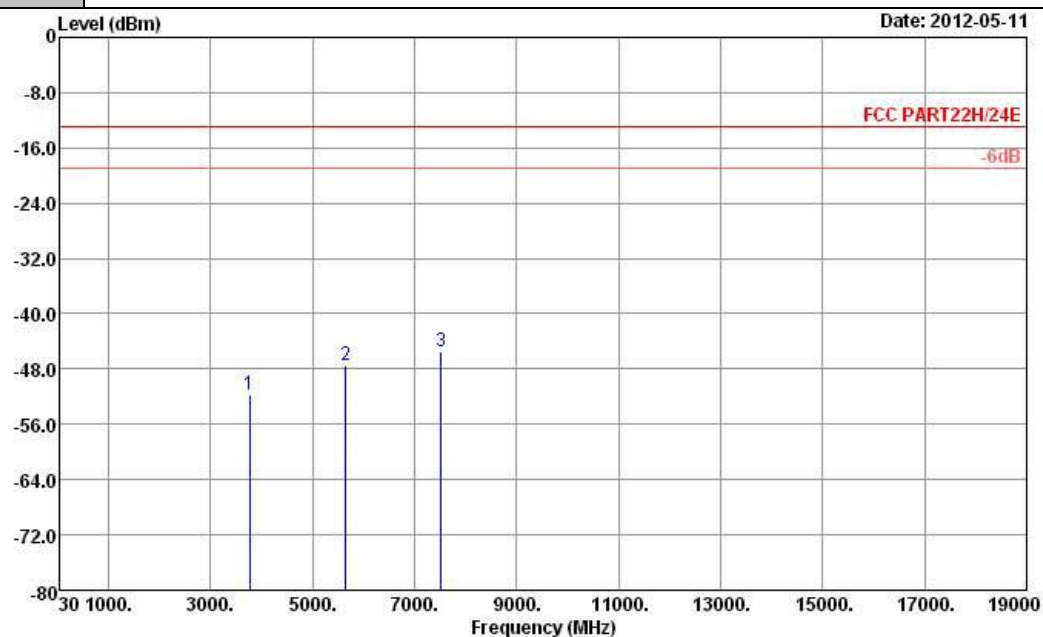
Band :	GSM850	Temperature :	20~22°C
Test Mode :	EDGE 8 Link	Relative Humidity :	40~42%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Site : 03CH05-HY
 Condition : FCC PART22H/24E HF_EIRP_101221 VERTICAL
 Project : FG 232306

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1672	-56.62	-13	-43.62	-62.65	-57.81	2.15	5.49	V	Pass
2509	-39.44	-13	-26.44	-48.74	-41.33	2.38	6.41	V	Pass
3345	-53.18	-13	-40.18	-64.79	-56.51	2.86	8.34	V	Pass

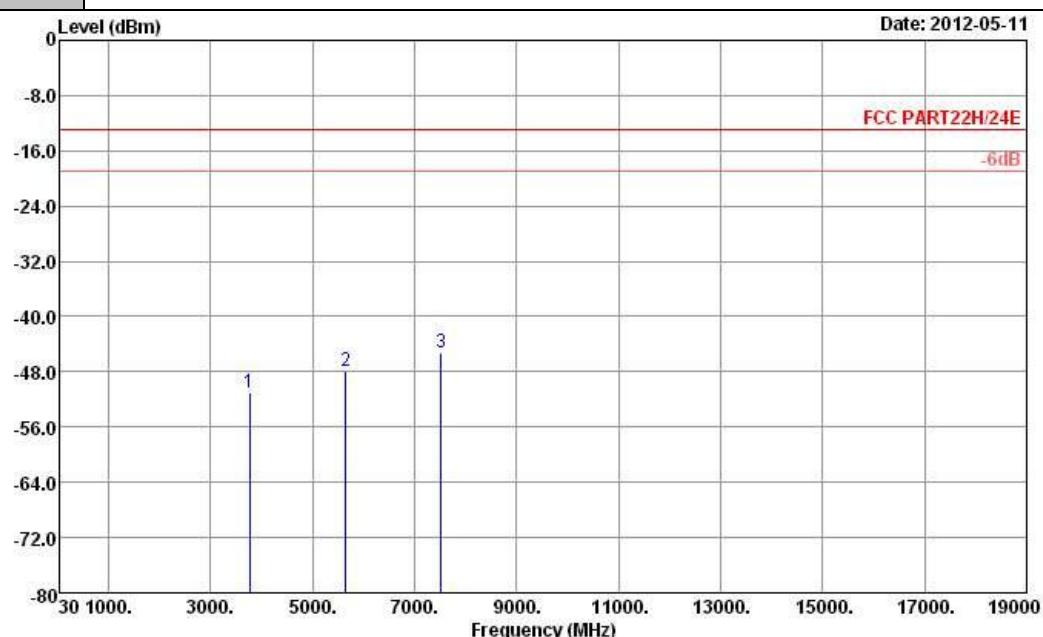
Band :	GSM1900	Temperature :	20~22°C
Test Mode :	GPRS 8 Link	Relative Humidity :	40~42%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Site : 03CH05-HY
 Condition : FCC PART22H/24E HF_EIRP_101221 HORIZONTAL
 Project : FG 232306

Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
3760	-51.68	-13	-38.68	-65.18	-57.81	2.9292	9.06	H	Pass
5640	-47.57	-13	-34.57	-66.6	-54.49	3.9072	10.83	H	Pass
7520	-45.54	-13	-32.54	-67.49	-53.56	4.5988	12.62	H	Pass

Band :	GSM1900	Temperature :	20~22°C
Test Mode :	GPRS 8 Link	Relative Humidity :	40~42%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

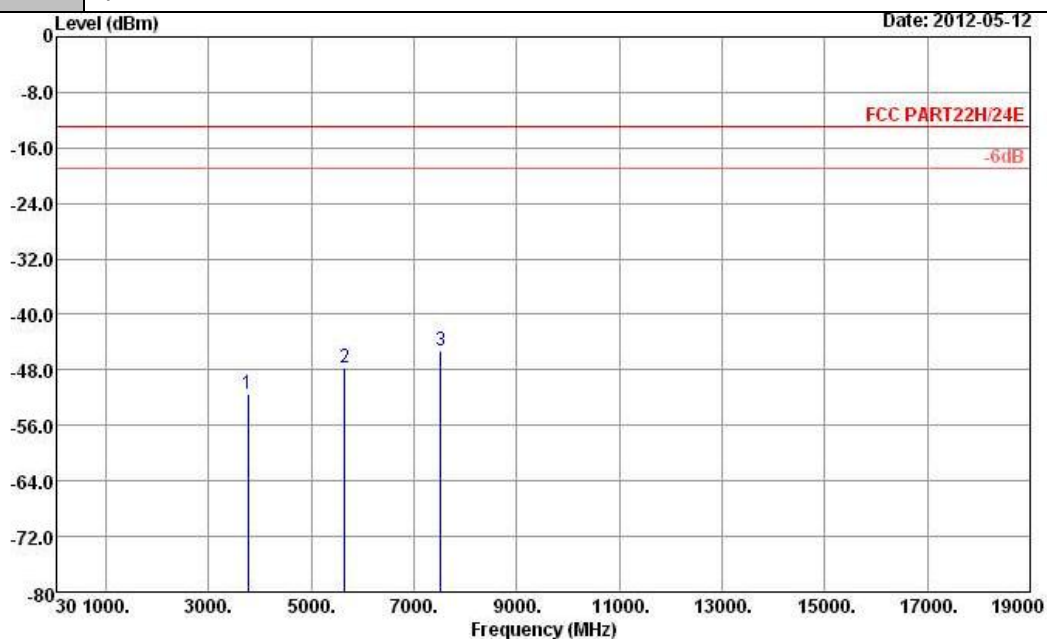


Site : 03CH05-HY
Condition : FCC PART22H/24E HF_EIRP_101221 VERTICAL
Project : FG 232306

Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
3760	-51.10	-13	-38.10	-64.57	-57.23	2.9292	9.06	V	Pass
5640	-48.01	-13	-35.01	-66.84	-54.93	3.9072	10.83	V	Pass
7520	-45.22	-13	-32.22	-67.18	-53.24	4.5988	12.62	V	Pass



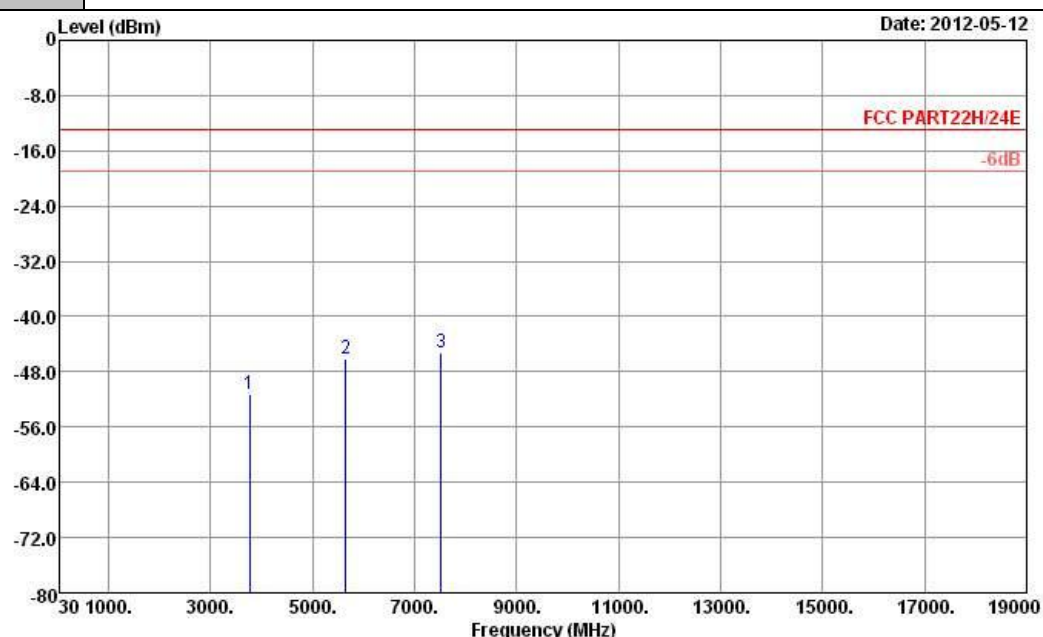
Band :	GSM1900	Temperature :	20~22°C
Test Mode :	EDGE 8 Link	Relative Humidity :	40~42%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Site : 03CH05-HY
Condition : FCC PART22H/24E HF_EIRP_101221 HORIZONTAL
Project : FG 232306

Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
3760	-51.41	-13	-38.41	-64.93	-57.54	2.9292	9.06	H	Pass
5640	-47.66	-13	-34.66	-66.58	-54.58	3.9072	10.83	H	Pass
7520	-45.29	-13	-32.29	-67.25	-53.31	4.5988	12.62	H	Pass

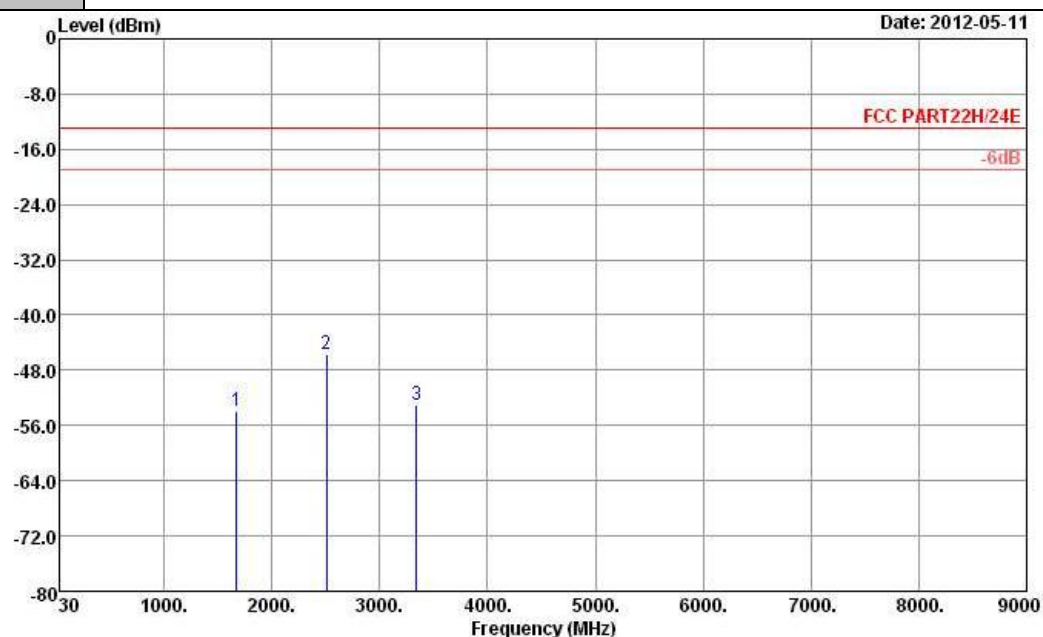
Band :	GSM1900	Temperature :	20~22°C
Test Mode :	EDGE 8 Link	Relative Humidity :	40~42%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Site : 03CH05-HY
 Condition : FCC PART22H/24E HF_EIRP_101221 VERTICAL
 Project : FG 232306

Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
3760	-51.28	-13	-38.28	-64.73	-57.41	2.9292	9.06	V	Pass
5640	-46.20	-13	-33.20	-65.2	-53.12	3.9072	10.83	V	Pass
7520	-45.30	-13	-32.30	-67.23	-53.32	4.5988	12.62	V	Pass

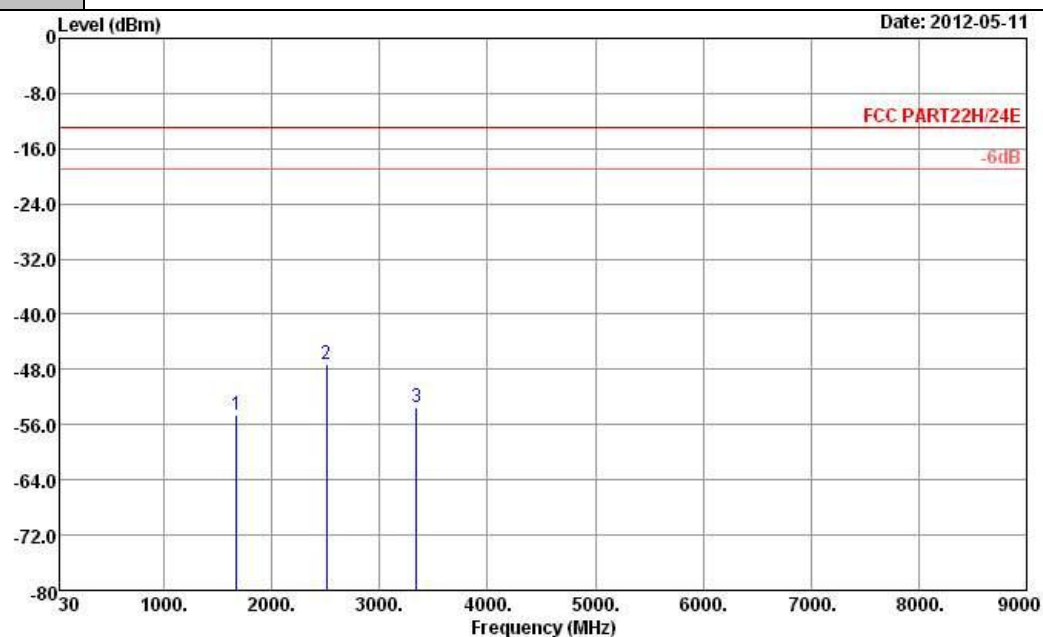
Band :	WCDMA Band V	Temperature :	20~22°C
Test Mode :	RMC 12.2Kbps Link	Relative Humidity :	40~42%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Site : 03CH05-HY
 Condition : FCC PART22H/24E HF_EIRP_101221 HORIZONTAL
 Project : FG 232306

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1672	-54.02	-13	-41.02	-59.91	-55.21	2.15	5.49	H	Pass
2509	-45.62	-13	-32.62	-55.01	-47.51	2.38	6.41	H	Pass
3345	-53.08	-13	-40.08	-64.64	-56.41	2.86	8.34	H	Pass

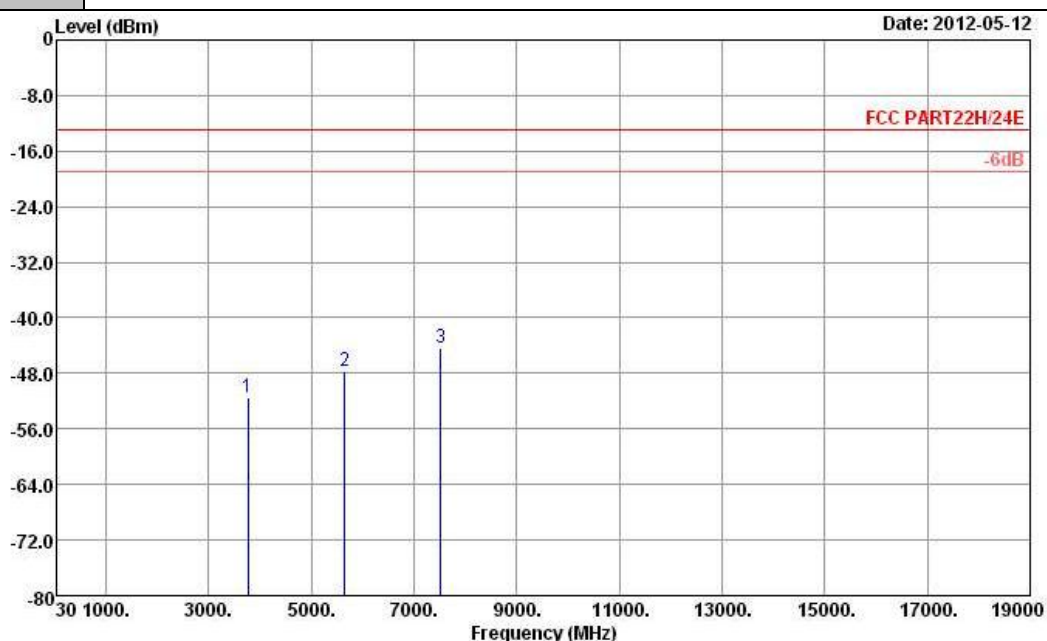
Band :	WCDMA Band V	Temperature :	20~22°C
Test Mode :	RMC 12.2Kbps Link	Relative Humidity :	40~42%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Site : 03CH05-HY
 Condition : FCC PART22H/24E HF_EIRP_101221 VERTICAL
 Project : FG 232306

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1672	-54.52	-13	-41.52	-60.45	-55.71	2.15	5.49	V	Pass
2509	-47.35	-13	-34.35	-56.73	-49.24	2.38	6.41	V	Pass
3345	-53.51	-13	-40.51	-65.1	-56.84	2.86	8.34	V	Pass

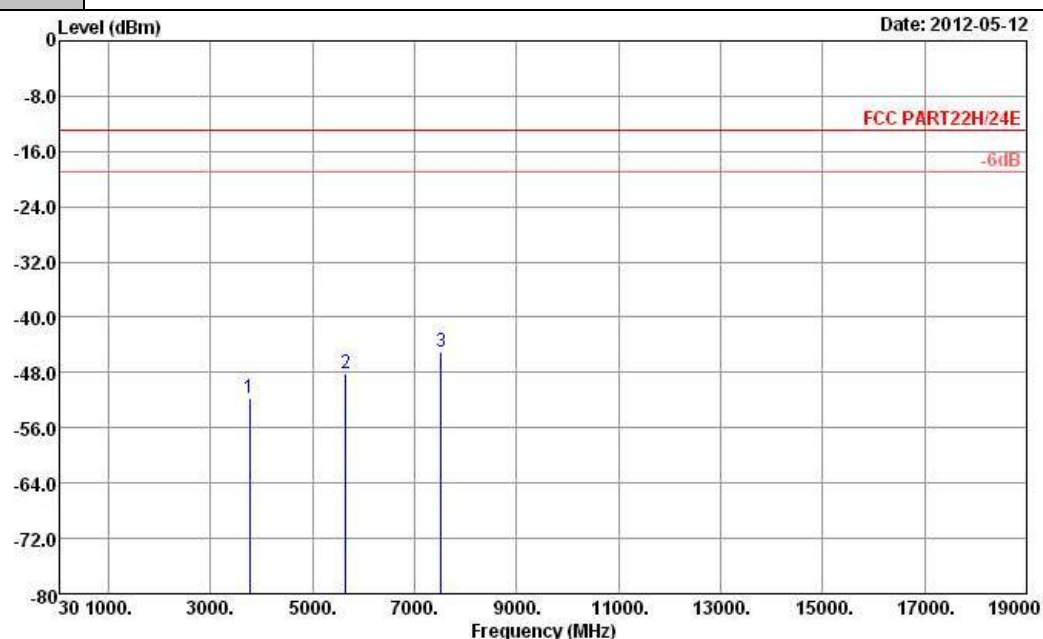
Band :	WCDMA Band II	Temperature :	20~22°C
Test Mode :	RMC 12.2Kbps Link	Relative Humidity :	40~42%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Site : 03CH05-HY
Condition : FCC PART22H/24E HF_EIRP_101221 HORIZONTAL
Project : FG 232306

Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
3760	-51.42	-13	-38.42	-65.02	-57.55	2.9292	9.06	H	Pass
5640	-47.69	-13	-34.69	-66.65	-54.61	3.9072	10.83	H	Pass
7520	-44.29	-13	-31.29	-66.32	-52.31	4.5988	12.62	H	Pass

Band :	WCDMA Band II	Temperature :	20~22°C
Test Mode :	RMC 12.2Kbps Link	Relative Humidity :	40~42%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Site : 03CH05-HY
 Condition : FCC PART22H/24E HF_EIRP_101221 VERTICAL
 Project : FG 232306

Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
3760	-51.66	-13	-38.66	-65.08	-57.79	2.9292	9.06	V	Pass
5640	-48.21	-13	-35.21	-67.07	-55.13	3.9072	10.83	V	Pass
7520	-45.09	-13	-32.09	-67.04	-53.11	4.5988	12.62	V	Pass

3.8 Frequency Stability Measurement

3.8.1 Description of Frequency Stability Measurement

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ ($\pm 2.5\text{ppm}$) of the center frequency.

3.8.2 Measuring Instruments

See list of measuring instruments of this test report.

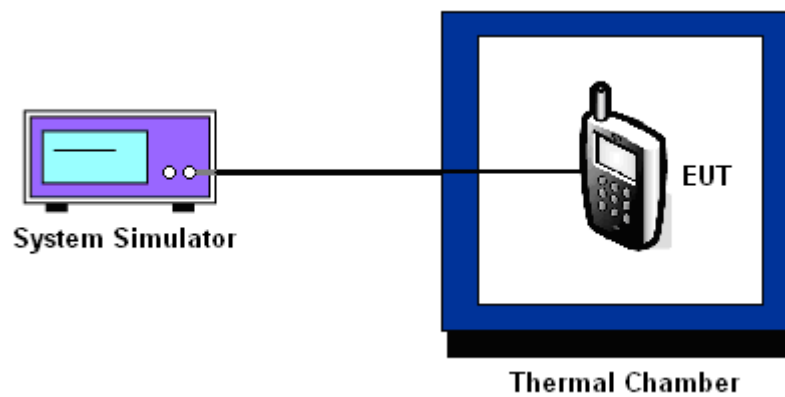
3.8.3 Test Procedures for Temperature Variation

1. The EUT was set up in the thermal chamber and connected with the base station.
2. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
3. With power OFF, the temperature was raised in 10°C step up to 50°C . The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.
4. If the EUT cannot be turned on at -30°C , the testing lowest temperature will be raised in 10°C step until the EUT can be turned on.

3.8.4 Test Procedures for Voltage Variation

1. The EUT was placed in a temperature chamber at $25\pm 5^{\circ}\text{C}$ and connected with the base station.
2. The power supply voltage to the EUT was varied from BEP to 115% of the nominal value measured at the input to the EUT.
3. The variation in frequency was measured for the worst case.

3.8.5 Test Setup



3.8.6 Test Result of Temperature Variation

Band :	GSM 850	Channel :	189
Limit (ppm) :	2.5		

Temperature (°C)	GSM		EDGE 8		Result
	Freq. Dev. (Hz)	Deviation (ppm)	Freq. Dev. (Hz)	Deviation (ppm)	
-30	-16	-0.02	-19	-0.02	PASS
-20	-17	-0.02	16	0.02	
-10	15	0.02	-18	-0.02	
0	12	0.01	-19	-0.02	
10	11	0.01	-17	-0.02	
20	11	0.01	16	0.02	
30	13	0.02	-18	-0.02	
40	13	0.02	-18	-0.02	
50	14	0.02	-17	-0.02	

Band :	GSM 1900	Channel :	661
Limit (ppm) :	2.5		

Temperature (°C)	GPRS 8		EDGE 8		Result
	Freq. Dev. (Hz)	Deviation (ppm)	Freq. Dev. (Hz)	Deviation (ppm)	
-30	-31	-0.02	-38	-0.02	PASS
-20	-28	-0.01	-34	-0.02	
-10	26	0.01	-31	-0.02	
0	-20	-0.01	-26	-0.01	
10	-19	-0.01	-25	-0.01	
20	19	0.01	-27	-0.01	
30	-19	-0.01	-30	-0.02	
40	24	0.01	-27	-0.01	
50	22	0.01	-26	-0.01	

Band :	WCDMA Band V	Channel :	4182
Limit (ppm) :	2.5		

Temperature (°C)	RMC 12.2Kbps		Result
	Freq. Dev. (Hz)	Deviation (ppm)	
-30	-13	-0.02	PASS
-20	-10	-0.01	
-10	-8	-0.01	
0	-9	-0.01	
10	-7	-0.01	
20	-7	-0.01	
30	-8	-0.01	
40	-6	-0.01	
50	7	0.01	

Band :	WCDMA Band II	Channel :	9400
Limit (ppm) :	2.5		

Temperature (°C)	RMC 12.2Kbps		Result
	Freq. Dev. (Hz)	Deviation (ppm)	
-30	-22	-0.01	PASS
-20	-18	-0.01	
-10	-15	-0.01	
0	-17	-0.01	
10	-14	-0.01	
20	-15	-0.01	
30	-13	-0.01	
40	-11	-0.01	
50	-18	-0.01	

3.8.7 Test Result of Voltage Variation

Band & Channel	Mode	Voltage (Volt)	Freq. Dev. (Hz)	Deviation (ppm)	Limit (ppm)	Result
GSM 850 CH189	GSM	3.7	15	0.02	2.5	PASS
		BEP	14	0.02		
		4.2	15	0.02		
	EDGE 8	3.7	-12	-0.01		
		BEP	-15	-0.02		
		4.2	-14	-0.02		
GSM 1900 CH661	GPRS 8	3.7	-26	-0.01		
		BEP	-23	-0.01		
		4.2	-27	-0.01		
	EDGE 8	3.7	-27	-0.01		
		BEP	-25	-0.01		
		4.2	-24	-0.01		
WCDMA Band V CH4182	RMC 12.2Kbps	3.7	-7	-0.01		
		BEP	6	0.01		
		4.2	-6	-0.01		
WCDMA Band II CH9400	RMC 12.2Kbps	3.7	-17	-0.01		
		BEP	-13	-0.01		
		4.2	-11	-0.01		

Note:

1. Normal Voltage = 3.7V.
2. Battery End Point (BEP) = 3.4 V.

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
System Simulator	R&S	CMU200	117995	N/A	Jul. 28, 2011	May 08, 2012 ~ May 10, 2012	Jul. 27, 2012	Conducted (TH02-HY)
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 13, 2011	May 08, 2012 ~ May 10, 2012	Jun. 12, 2012	Conducted (TH02-HY)
Thermal Chamber	Ten Billion	TTH-D35P	TBN-930701	N/A	Jul. 27, 2011	May 08, 2012 ~ May 10, 2012	Jul. 26, 2012	Conducted (TH02-HY)
Spectrum Analyzer	R&S	ESU26	100390	20Hz ~ 26.5GHz	Dec. 22, 2011	May 10, 2012 ~ Aug. 31, 2012	Dec. 21, 2012	Radiation (03CH05-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2725	30MHz ~ 2GHz	Oct. 22, 2011	May 10, 2012 ~ Aug. 31, 2012	Oct. 21, 2012	Radiation (03CH05-HY)
Turn Table	HD	Deis HD 2000	420/611	0 ~ 360 degree	N/A	May 10, 2012 ~ Aug. 31, 2012	N/A	Radiation (03CH05-HY)
Antenna Mast	HD	MA 240	240/666	1 m ~ 4 m	N/A	May 10, 2012 ~ Aug. 31, 2012	N/A	Radiation (03CH05-HY)
Horn Antenna	ESCO	3117	66584	1GHz ~ 18GHz	Aug. 04, 2011	May 10, 2012 ~ Aug. 31, 2012	Aug. 03, 2012	Radiation (03CH05-HY)
Horn Antenna	ESCO	3117	66584	1GHz~18GHz	Aug. 10, 2012	May 10, 2012 ~ Aug. 31, 2012	Aug. 09, 2013	Radiation (03CH05-HY)
Pre Amplifier	COM-POWER	PA-103A	161075	10Hz ~ 1000MHz Gain:32dB	Feb. 27, 2012	May 10, 2012 ~ Aug. 31, 2012	Feb. 26, 2013	Radiation (03CH05-HY)
Pre Amplifier	MITEQ	AMF-7D-00101 800-30-10P	159087	1GHz~18GHz	Feb. 27, 2012	May 10, 2012 ~ Aug. 31, 2012	Feb. 26, 2013	Radiation (03CH05-HY)
Pre Amplifier	Agilent	8449B	3008A01917	1GHz~26.5GHz	Aug. 30, 2011	May 10, 2012 ~ Aug. 31, 2012	Aug. 29, 2012	Radiation (03CH05-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 29, 2010	May 10, 2012 ~ Aug. 31, 2012	Jul. 28, 2012	Radiation (03CH05-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9KHz ~ 30MHz	Jul. 03, 2012	May 10, 2012 ~ Aug. 31, 2012	Jul. 02, 2014	Radiation (03CH06-HY)
System Simulator	R&S	CMU200	116457	N/A	Jun. 24, 2011	May 10, 2012 ~ Aug. 31, 2012	Jun. 23, 2013	Radiation (03CH05-HY)

5 Uncertainty of Evaluation

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Contribution	Uncertainty of X_i		$u(X_i)$
	dB	Probability Distribution	
Receiver Reading	0.41	Normal (k=2)	0.21
Antenna Factor Calibration	0.83	Normal (k=2)	0.42
Cable Loss Calibration	0.25	Normal (k=2)	0.13
Pre-Amplifier Gain Calibration	0.27	Normal (k=2)	0.14
RCV/SPA Specification	2.50	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29
Site Imperfection	1.43	Rectangular	0.83
Mismatch	+0.39 / -0.41	U-Shape	0.28
Combined Standard Uncertainty $U_c(y)$	1.27		
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.54		

Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)

Contribution	Uncertainty of X_i		$u(X_i)$	C_i	$C_i * u(X_i)$
	dB	Probability Distribution			
Receiver Reading	± 0.10	Normal (k=2)	0.10	1	0.10
Antenna Factor Calibration	± 1.70	Normal (k=2)	0.85	1	0.85
Cable Loss Calibration	± 0.50	Normal (k=2)	0.25	1	0.25
Receiver Correction	± 2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	± 1.50	Rectangular	0.87	1	0.87
Site Imperfection	± 2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR $\Gamma_1 = 0.197$ Antenna VSWR $\Gamma_2 = 0.194$ Uncertainty = $20\log(1-\Gamma_1\Gamma_2)$	+0.34 / -0.35	U-Shape	0.244	1	0.244
Combined Standard Uncertainty $U_c(y)$	2.36				
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	4.72				



Appendix A. Photographs of EUT

Please refer to Sporton report number EP232306 as below.