

FCC RF Test Report

APPLICANT : HTC Corporation
EQUIPMENT : Smartphone
MODEL NAME : CDMA_HTI13
FCC ID : NM8CDMAHTI13
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
CDMA2000 BC0 : 824.70 ~ 848.31 MHz /
869.70 ~ 893.31 MHz
MAX. ERP/EIRP POWER : GSM850 (GSM) : 1.3614 W
GSM850 (EDGE 8) : 0.3177 W
GSM1900 (GSM) : 1.3032 W
GSM1900 (EDGE 12) : 0.4487 W
WCDMA Band V (RMC 12.2Kbps) : 0.2080 W
CDMA2000 BC0 : 0.1968 W

The product was received on Feb. 03, 2012 and completely tested on Mar. 16, 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
FG220352	Rev. 01	Initial issue of report	Apr. 03, 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	§22.913(a)(2)	RSS-132(4.4) SRSP-503(5.1.3)	Effective Radiated Power	< 7 Watts	PASS	-
3.2	§24.232(c)	RSS-133 (6.4) SRSP-510(5.1.2)	Equivalent Isotropic Radiated Power	< 2 Watts	PASS	-
3.3	§2.1049 §22.917(a) §24.238(a)	N/A	Occupied Bandwidth	N/A	PASS	-
3.4	§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	-
3.5	§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	-
3.6	§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 20.69 dB at 1672.000 MHz
3.7	§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

HTC Corporation

No. 23, Xinghua Rd., Taoyuan City, Taiwan

1.2 Manufacturer

HTC Corporation

1F., No. 6-3, Baoqiang Rd., Xindian City, Taipei, Taiwan

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Smartphone
Model Name	CDMA_HTI13
FCC ID	NM8CDMAHTI13
Sample 1	EUT with LCD Panel 1, Main Camera 1, and 2nd Camera 1
Sample 2	EUT with LCD Panel 1, Main Camera 2, and 2nd Camera 2
Tx Frequency	GSM850 : 824 MHz ~ 849 MHz GSM1900 : 1850 MHz ~ 1910 MHz WCDMA Band V : 824 MHz ~ 849 MHz CDMA2000 BC0 : 824 MHz ~ 849 MHz
Rx Frequency	GSM850 : 869 MHz ~ 894 MHz GSM1900 : 1930 MHz ~ 1990 MHz WCDMA Band V : 869 MHz ~ 894 MHz CDMA2000 BC0 : 869 MHz ~ 894 MHz
Maximum Output Power to Antenna	GSM850 : 33.58 dBm GSM1900 : 30.41 dBm WCDMA Band V : 23.72 dBm CDMA2000 BC0 : 24.46 dBm
Antenna Type	Fixed Internal Antenna
Type of Modulation	GSM: GMSK GPRS: GMSK EDGE: GMSK / 8PSK WCDMA: QPSK (Uplink) HSDPA: QPSK (Uplink) HSUPA: QPSK (Uplink) CDMA2000 : QPSK
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	244KGXW	1.3614 W
Part 22	GSM850 EDGE 8	GMSK / 8PSK	244KG7W	0.3177 W
Part 22	WCDMA Band V RMC 12.2Kbps	QPSK	4M20F9W	0.2080 W
Part 22	CDMA2000 BC0 1xRTT	QPSK	1M28F9W	0.1968 W
Part 24	GSM1900 GSM	GMSK	248KGXW	1.3032 W
Part 24	GSM1900 EDGE 12	GMSK / 8PSK	240KG7W	0.4487 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, WCDMA Band V, and CDMA2000 BC0.
2. 30 MHz to 19000 MHz for GSM1900.

Test Modes		
Band	Radiated TCs	Conducted TCs
GSM 850	■ GSM Link ■ EDGE 8 Link	■ GSM Link ■ EDGE 8 Link
GSM 1900	■ GSM Link ■ EDGE 12 Link	■ GSM Link ■ EDGE 12 Link
WCDMA Band V	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link
CDMA2000 BC0	■ 1xRTT Link Mode	■ 1xRTT Link Mode

Note:

1. The maximum power levels are GSM mode for GMSK link, EDGE multi-slot class 8 mode for 8PSK link for GSM850, EDGE multi-slot class 12 mode for 8PSK link for GSM1900, RMC 12.2Kbps mode for WCDMA band V, and 1xRTT mode for CDMA2000 BC0, 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.
3. All the cases of conducted and radiation were only for Sample 1 and Battery 2.

The conducted power tables are as follows:

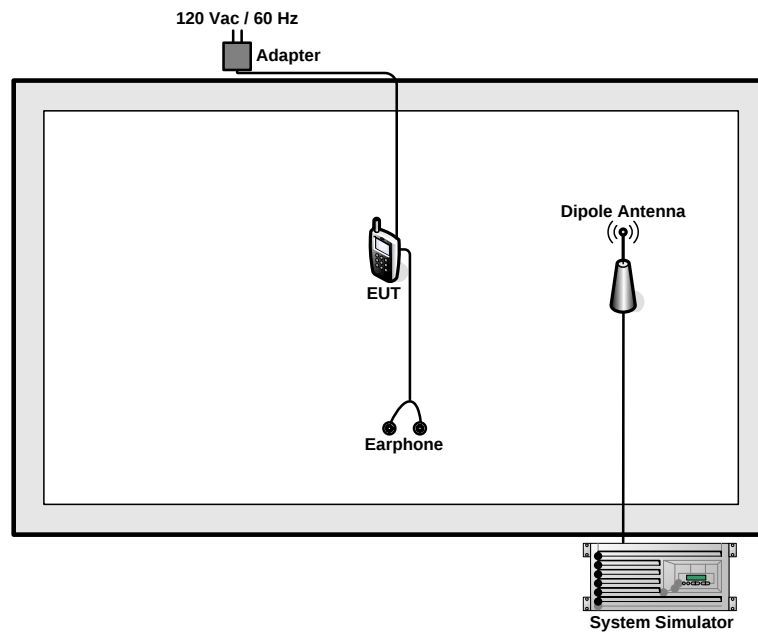
Conducted Power (*Unit: dBm)						
Band	GSM850			GSM1900		
Channel	128	189	251	512	661	810
Frequency	824.2	836.4	848.8	1850.2	1880.0	1909.8
GSM	33.58	33.47	33.50	30.41	30.28	30.15
GPRS 8	33.56	33.45	33.48	30.39	30.26	30.12
GPRS 10	31.49	31.38	31.24	29.50	29.75	29.65
GPRS 11	28.69	28.68	28.65	28.60	28.62	28.58
GPRS 12	27.78	27.69	27.64	27.13	27.12	27.13
EDGE 8 (MCS1)	33.56	33.43	33.43	30.31	30.25	30.03
EDGE 10 (MCS1)	31.45	31.31	31.22	29.41	29.65	29.63
EDGE 11 (MCS1)	28.60	28.65	28.61	28.55	28.52	28.57
EDGE 12 (MCS1)	27.70	27.63	27.59	27.12	27.10	27.06
EDGE 8 (MCS9)	26.71	26.69	26.70	26.58	26.57	26.55
EDGE 10 (MCS9)	26.59	26.60	26.55	26.62	26.60	26.59
EDGE 11 (MCS9)	26.39	26.45	26.40	26.68	26.69	26.63
EDGE 12 (MCS9)	26.04	26.03	26.09	26.69	26.68	26.63

Conducted Power (*Unit: dBm)			
Band	WCDMA Band V		
Channel	4132	4182	4233
Frequency	826.4	836.4	846.6
RMC 12.2K	23.72	23.71	23.65
HSDPA Subtest-1	22.67	22.74	22.68
HSDPA Subtest-2	22.77	22.73	22.71
HSDPA Subtest-3	22.30	22.26	22.19
HSDPA Subtest-4	22.26	22.28	22.17
HSUPA Subtest-1	22.16	22.04	22.45
HSUPA Subtest-2	19.68	19.60	19.71
HSUPA Subtest-3	21.40	21.30	21.67
HSUPA Subtest-4	22.15	22.06	21.74
HSUPA Subtest-5	21.95	21.80	22.45

Conducted Power (*Unit: dBm)			
Band	CDMA2000 BC0		
Channel	1013	384	777
Frequency	824.7	836.52	848.31
1xRTT RC1+SO55	24.40	24.36	24.30
1xRTT RC3+SO55	24.46	24.38	24.31
1xRTT RC3+SO32(+ F-SCH)	24.43	24.34	24.29
1xRTT RC3+SO32(+SCH)	24.39	24.30	24.32

1xEVDO RTAP 153.6K	24.42	24.36	24.31
1xEVDO RETAP 4096K	24.44	24.35	24.32

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.

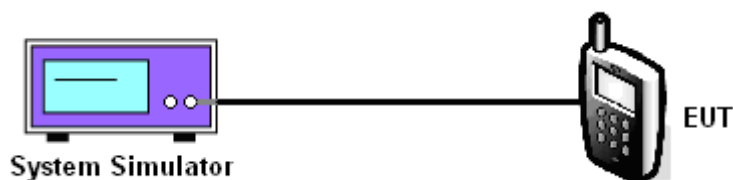
3.1.2 Measuring Instruments

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)	33.58	33.47	33.50	26.71	26.69	26.70	23.72	23.71	23.65
Conducted Power (Watts)	2.28	2.22	2.24	0.47	0.47	0.47	0.24	0.23	0.23

PCS Band						
Modes	GSM1900 (GSM)			GSM1900 (EDGE 12)		
Channel	512 (Low)	661 (Mid)	810 (High)	512 (Low)	661 (Mid)	810 (High)
Frequency (MHz)	1850.2	1880	1909.8	1850.2	1880	1909.8
Conducted Power (dBm)	30.41	30.28	30.15	26.69	26.68	26.63
Conducted Power (Watts)	1.10	1.07	1.04	0.47	0.47	0.46

CDMA2000 BC0			
Test Mode	CDMA 2000 1xRTT		
Test Status	RC3+SO55		
Channel	1013 (Low)	384 (Mid)	777 (High)
Frequency (MHz)	824.70	836.52	848.31
Conducted Power (dBm)	24.46	24.38	24.31
Conducted Power (Watts)	0.28	0.27	0.27

3.2 Effective Radiated Power and Effective Isotropic Radiated Power Measurement

3.2.1 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.

3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 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.

$E_t = R_t + AF$

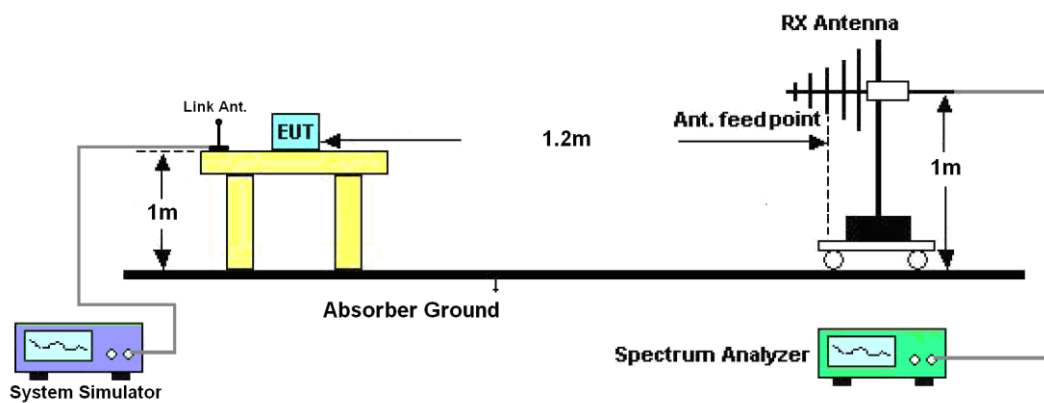
$E_s = R_s + AF$

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.

3.2.4 Test Setup



3.2.5 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	-15.79	-48.12	0.00	-1.08	31.25	1.3335
836.40	-16.01	-48.28	0.00	-0.93	31.34	1.3614
848.80	-16.55	-48.35	0.00	-0.76	31.04	1.2706
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.20	-29.91	-47.97	0.00	-1.08	16.98	0.0499
836.40	-29.48	-48.01	0.00	-0.93	17.60	0.0575
848.80	-29.72	-48.05	0.00	-0.76	17.57	0.0571

GSM850 (EDGE 8) Radiated Power ERP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.20	-22.02	-48.12	0.00	-1.08	25.02	0.3177
836.40	-22.81	-48.28	0.00	-0.93	24.54	0.2844
848.80	-22.57	-48.35	0.00	-0.76	25.02	0.3177
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.20	-36.16	-47.97	0.00	-1.08	10.73	0.0118
836.40	-36.03	-48.01	0.00	-0.93	11.05	0.0127
848.80	-35.68	-48.05	0.00	-0.76	11.61	0.0145

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	-24.31	-48.12	0.00	-1.08	22.73	0.1875
836.40	-24.25	-48.28	0.00	-0.93	23.10	0.2042
846.60	-24.41	-48.35	0.00	-0.76	23.18	0.2080
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
826.40	-38.36	-47.97	0.00	-1.08	8.53	0.0071
836.40	-37.66	-48.01	0.00	-0.93	9.42	0.0087
846.60	-37.37	-48.05	0.00	-0.76	9.92	0.0098

CDMA2000 BC01xRTT_RC3+SO55 Radiated Power ERP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.70	-24.61	-48.12	0.00	-1.08	22.43	0.1750
836.52	-24.56	-48.28	0.00	-0.93	22.79	0.1901
848.31	-24.65	-48.35	0.00	-0.76	22.94	0.1968
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.70	-38.46	-47.97	0.00	-1.08	8.43	0.0070
836.52	-37.82	-48.01	0.00	-0.93	9.26	0.0084
848.31	-37.39	-48.05	0.00	-0.76	9.90	0.0098

3.2.6 Test Result of EIRP

GSM1900 (GSM) Radiated Power EIRP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.20	-22.69	-51.88	0.00	1.96	31.15	1.3032
1880.00	-24.25	-52.99	0.00	2.00	30.74	1.1858
1909.80	-25.64	-54.28	0.00	1.98	30.62	1.1535
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.20	-25.16	-52.13	0.00	1.96	28.93	0.7816
1880.00	-26.57	-53.17	0.00	2.00	28.60	0.7244
1909.80	-27.93	-54.13	0.00	1.98	28.18	0.6577

GSM1900 (EDGE 12) Radiated Power EIRP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.20	-27.32	-51.88	0.00	1.96	26.52	0.4487
1880.00	-28.72	-52.99	0.00	2.00	26.27	0.4236
1909.80	-30.19	-54.28	0.00	1.98	26.07	0.4046
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.20	-29.90	-52.13	0.00	1.96	24.19	0.2624
1880.00	-31.34	-53.17	0.00	2.00	23.83	0.2415
1909.80	-32.45	-54.13	0.00	1.98	23.66	0.2323

3.3 Occupied Bandwidth Measurement

3.3.1 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.

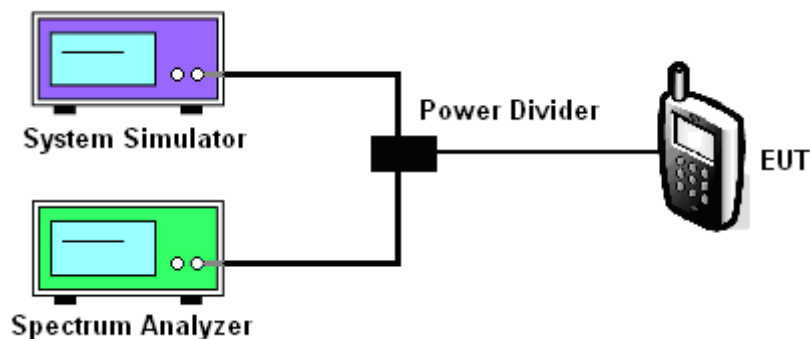
3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

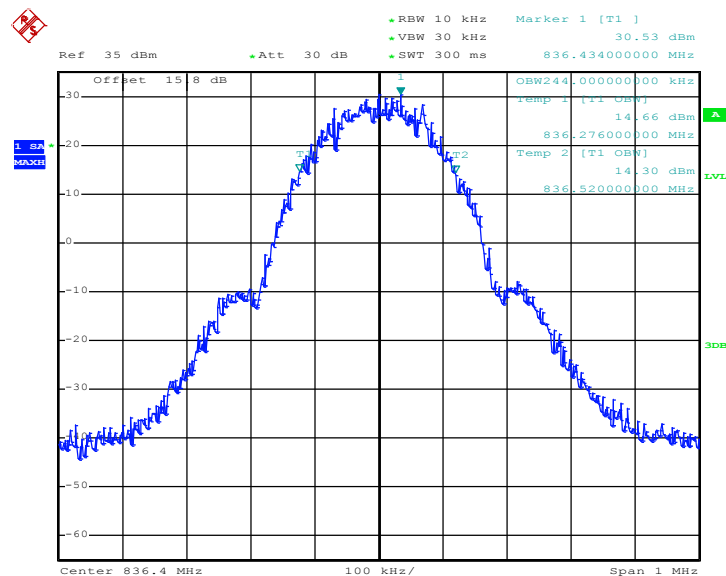
1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The 99% and 26 dB occupied bandwidth (BW) of the middle channel for the highest RF powers were measured.

3.3.4 Test Setup

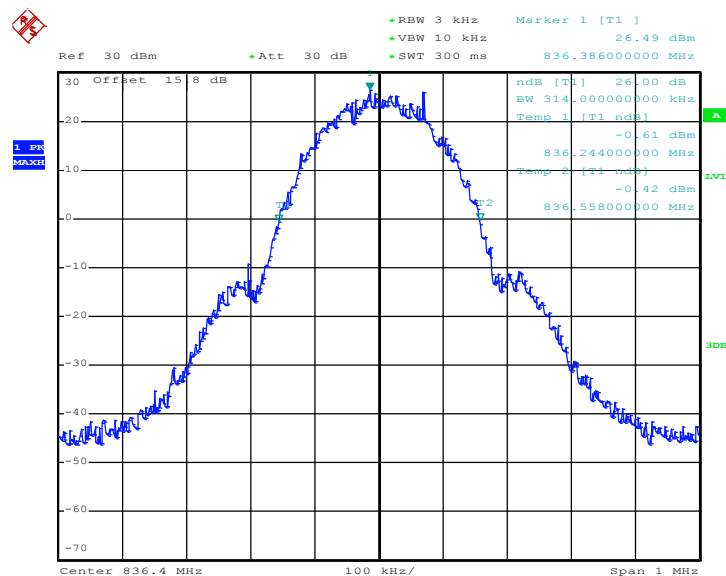


3.3.5 Test Result (Plots) of Occupied Bandwidth

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

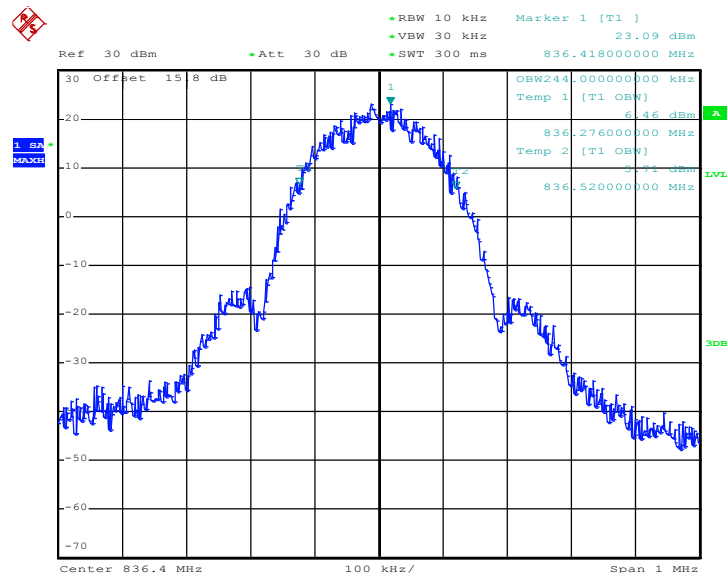
99% Occupied Bandwidth Plot on Channel 189


Date: 9.MAR.2012 22:09:13

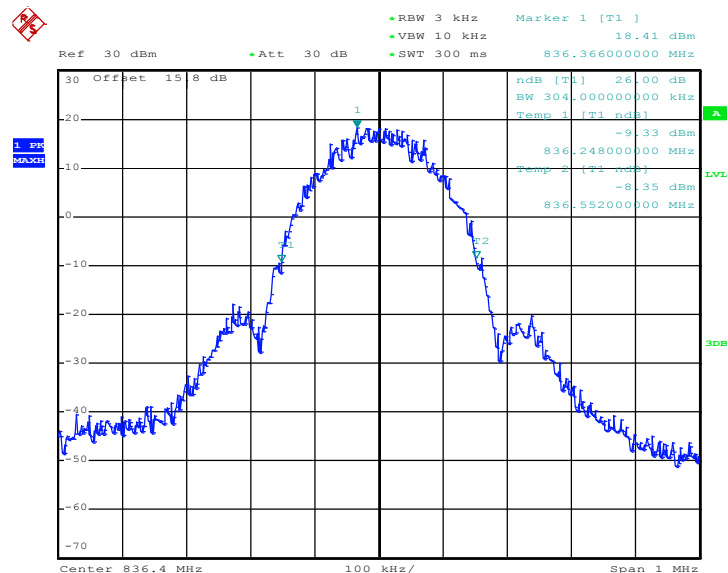
26dB Bandwidth Plot on Channel 189


Date: 9.MAR.2012 22:05:58

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

99% Occupied Bandwidth Plot on Channel 189


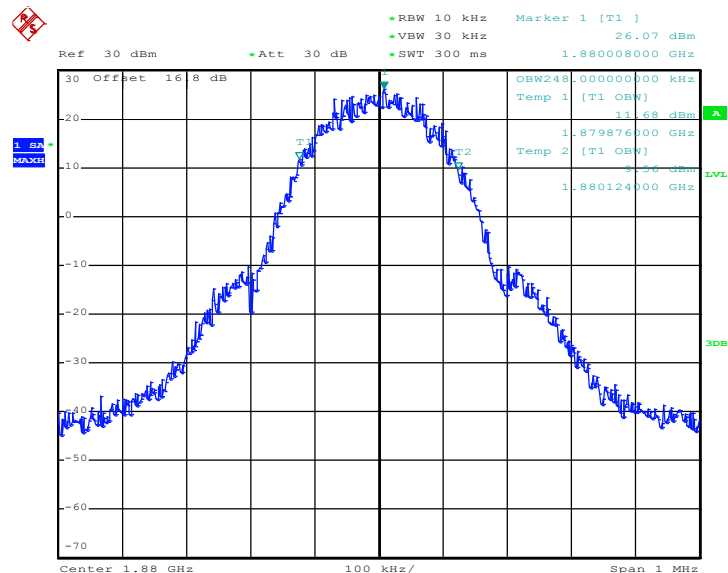
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26dB Bandwidth Plot on Channel 189


Date: 10.MAR.2012 01:05:42

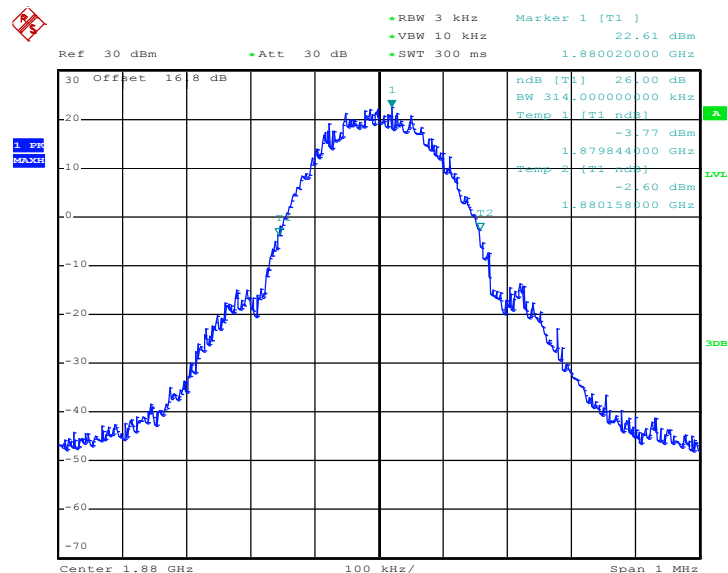
Band :	GSM 1900	Power Stage :	High
Test Mode :	GSM Link		

99% Occupied Bandwidth Plot on Channel 661



Date: 10.MAR.2012 01:29:08

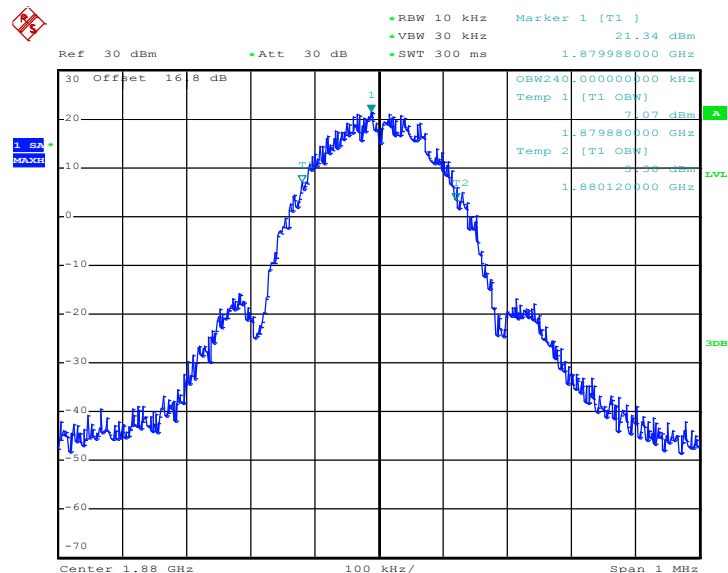
26dB Bandwidth Plot on Channel 661



Date: 10.MAR.2012 01:26:20

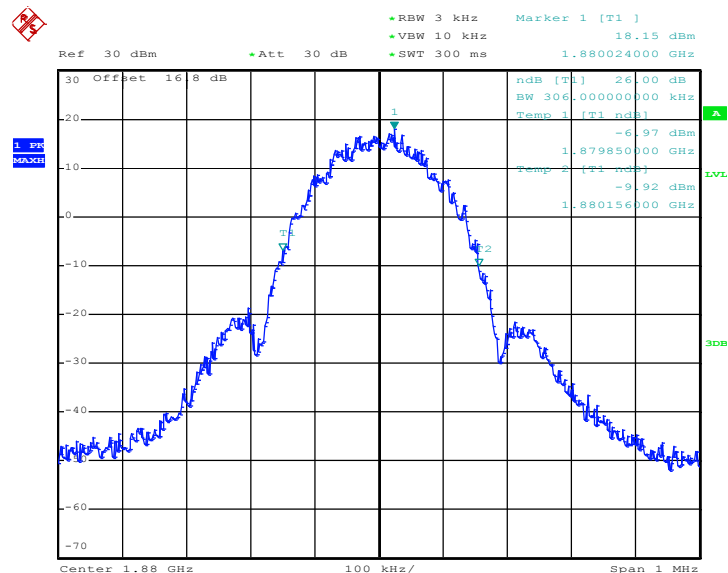
Band :	GSM 1900	Power Stage :	High
Test Mode :	EDGE 12 Link		

99% Occupied Bandwidth Plot on Channel 661



Date: 10.MAR.2012 02:04:11

26dB Bandwidth Plot on Channel 661

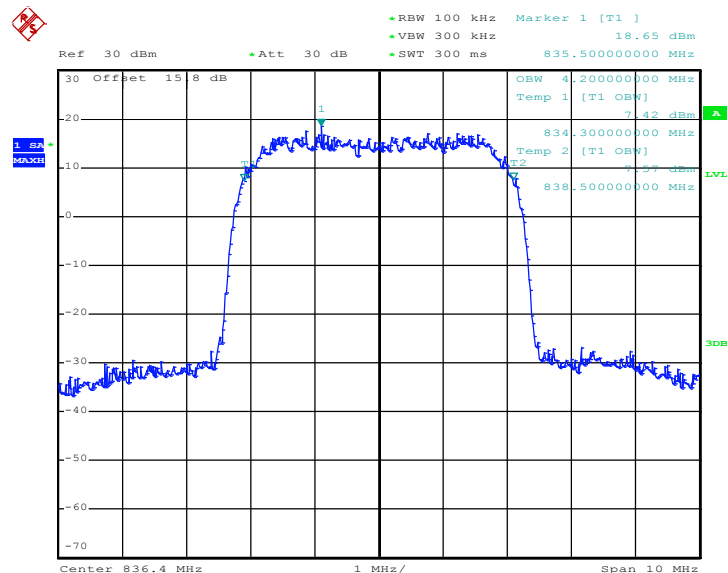


Date: 10.MAR.2012 02:01:54



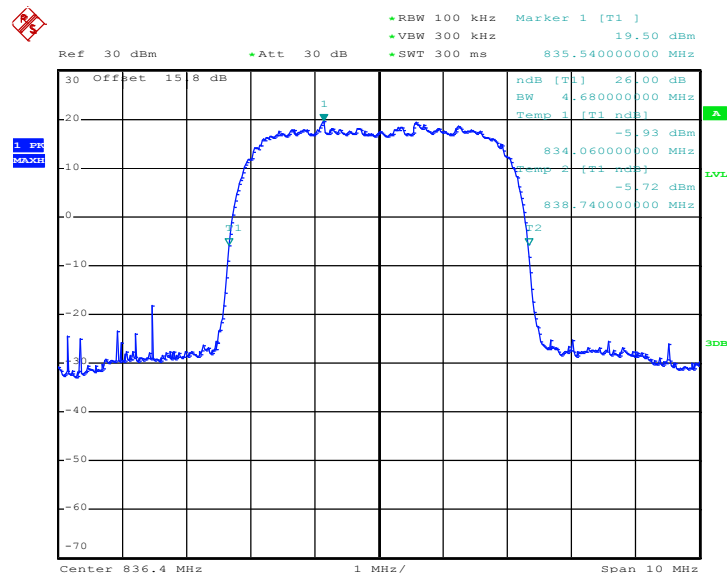
Band :	WCDMA Band V	Power Stage :	High
Test Mode :	RMC 12.2Kbps Link		

99% Occupied Bandwidth Plot on Channel 4182



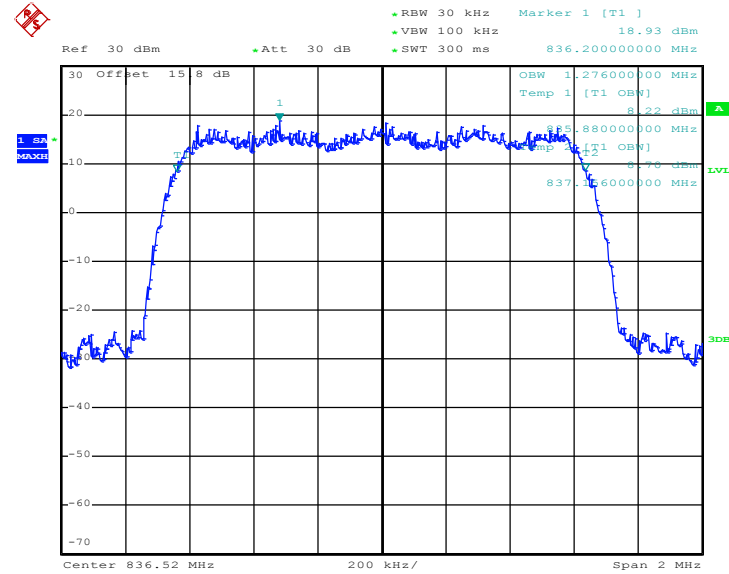
Date: 10.MAR.2012 02:29:49

26dB Bandwidth Plot on Channel 4182

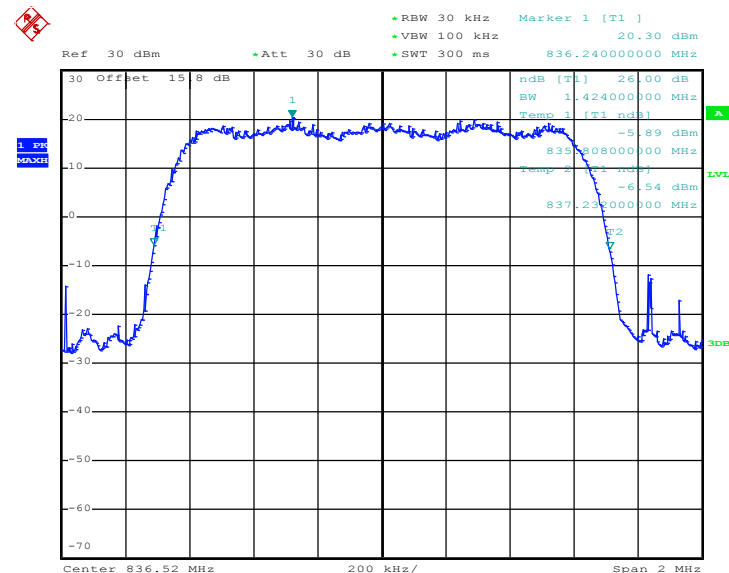


Date: 10.MAR.2012 02:27:08

Band :	CDMA2000 BC0	Power Stage :	High
Test Mode :	1xRTT_RC3+SO55		

99% Occupied Bandwidth Plot on Channel 384


Date: 10.MAR.2012 02:48:00

26dB Bandwidth Plot on Channel 384


Date: 10.MAR.2012 02:44:46

3.4 Band Edge Measurement

3.4.1 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.

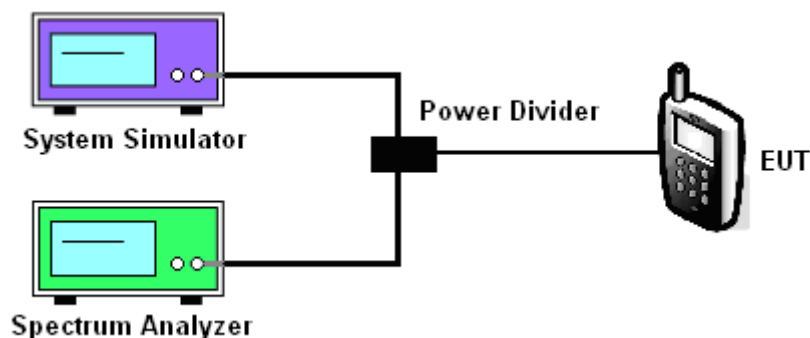
3.4.2 Measuring Instruments

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 band edges of low and high channels for the highest RF powers were measured. Setting RBW as roughly $BW/100$.
3. The RBW was replaced by 10 kHz, slightly smaller than the value in (2), due to the spectrum analyzer limitation to set the exact value. A worst case correction factor of $10 \cdot \log (1\% \text{ emission-BW/measurement RBW})$ was compensated.

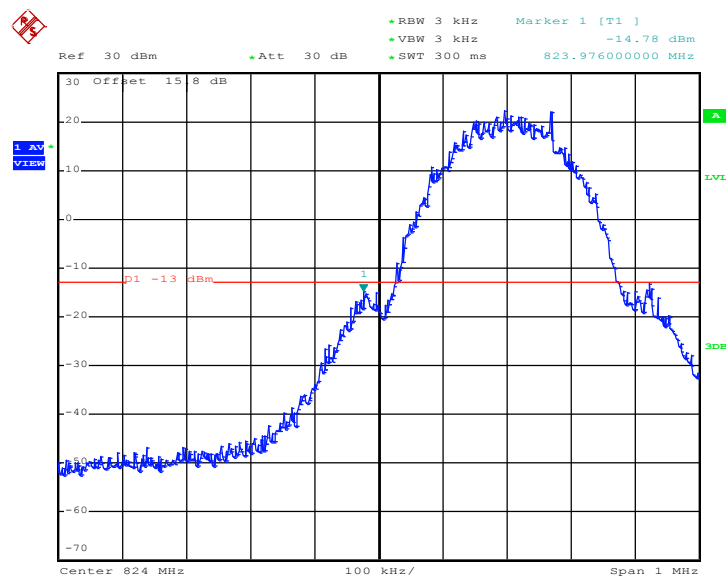
3.4.4 Test Setup



3.4.5 Test Result (Plots) of Conducted Band Edge

Band :	GSM850	Power Stage :	High
Test Mode :	GSM Link	26dB Bandwidth :	0.314MHz
Correction Factor :	0.20dB	Measurement Value :	-14.78dBm
Band Edge :	-14.58dBm		

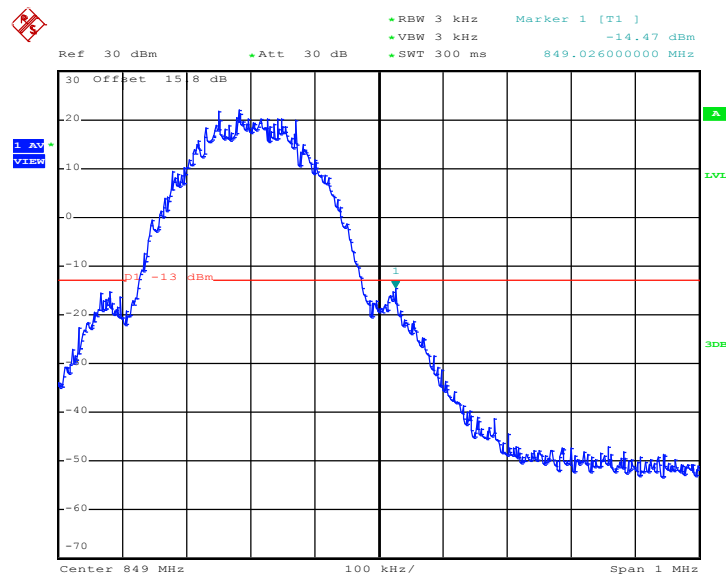
Lower Band Edge Plot on Channel 128



Date: 9.MAR.2012 22:15:10

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

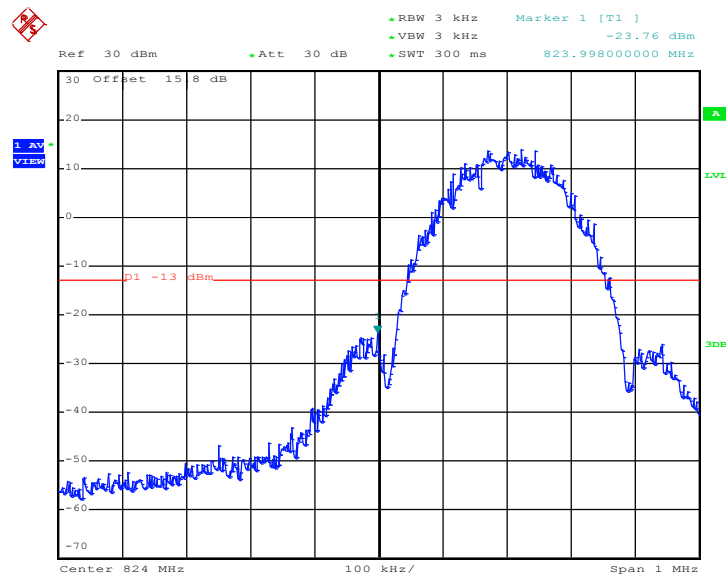
Band :	GSM850	Power Stage :	High
Test Mode :	GSM Link	26dB Bandwidth :	0.314MHz
Correction Factor :	0.20dB	Measurement Value :	-14.47dBm
Band Edge :	-14.27dBm		

Higher Band Edge Plot on Channel 251


Date: 9.MAR.2012 22:19:38

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

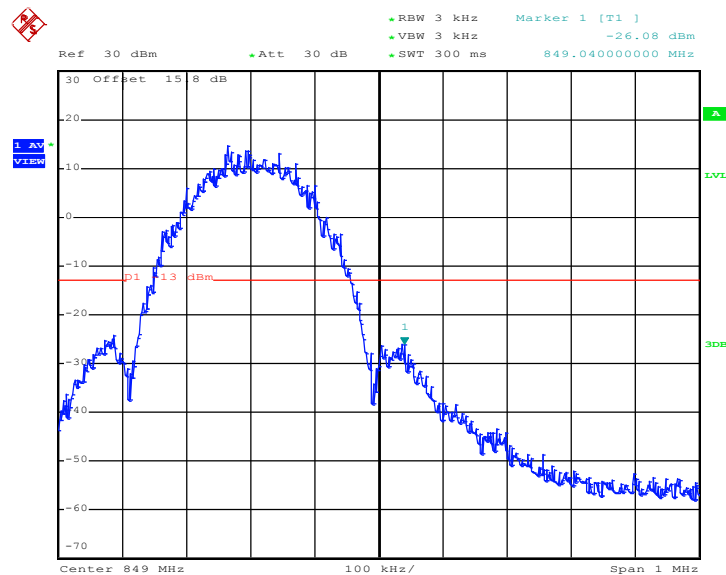
Band :	GSM850	Power Stage :	High
Test Mode :	EDGE 8 Link	26dB Bandwidth :	0.308MHz
Correction Factor :	0.11dB	Measurement Value :	-23.76dBm
Band Edge :	-23.65dBm		

Lower Band Edge Plot on Channel 128


Date: 10.MAR.2012 01:13:59

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

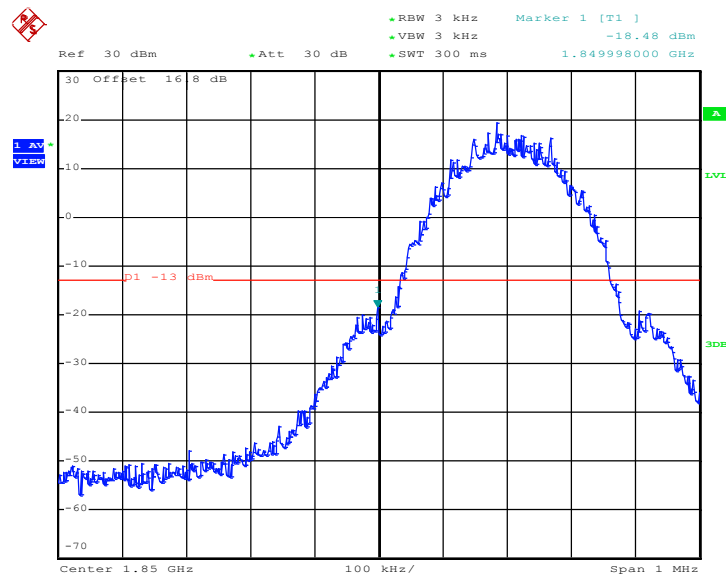
Band :	GSM850	Power Stage :	High
Test Mode :	EDGE 8 Link	26dB Bandwidth :	0.308MHz
Correction Factor :	0.11dB	Measurement Value :	-26.08dBm
Band Edge :	-25.97dBm		

Higher Band Edge Plot on Channel 251


Date: 10.MAR.2012 01:17:17

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

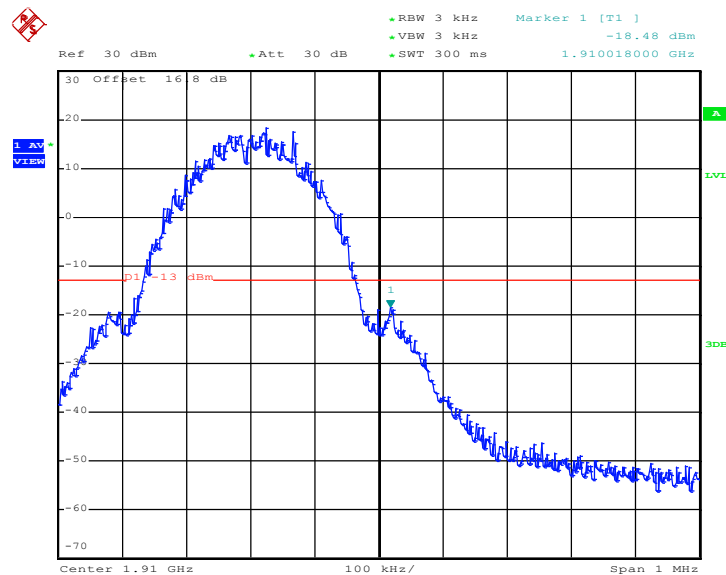
Band :	GSM1900	Power Stage :	High
Test Mode :	GSM Link	26dB Bandwidth :	0.314MHz
Correction Factor :	0.20dB	Measurement Value :	-18.48dBm
Band Edge :	-18.28dBm		

Lower Band Edge Plot on Channel 512


Date: 10.MAR.2012 01:33:04

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

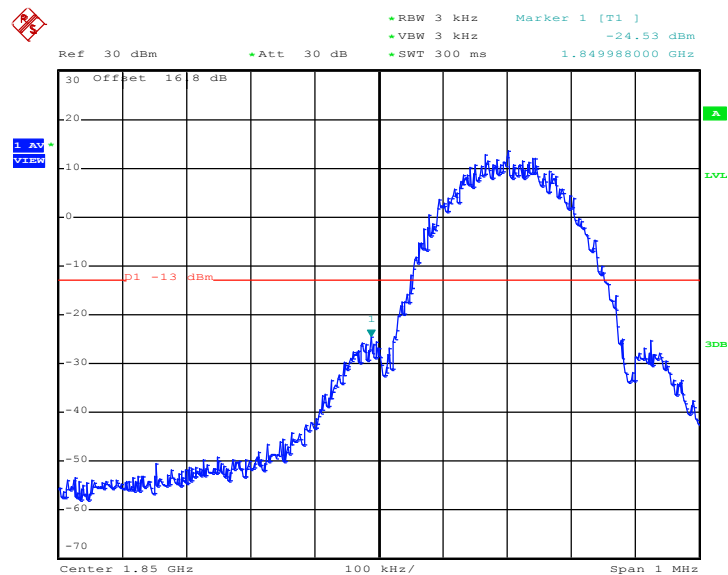
Band :	GSM1900	Power Stage :	High
Test Mode :	GSM Link	26dB Bandwidth :	0.314MHz
Correction Factor :	0.20dB	Measurement Value :	-18.48dBm
Band Edge :	-18.28dBm		

Higher Band Edge Plot on Channel 810


Date: 10.MAR.2012 01:36:16

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

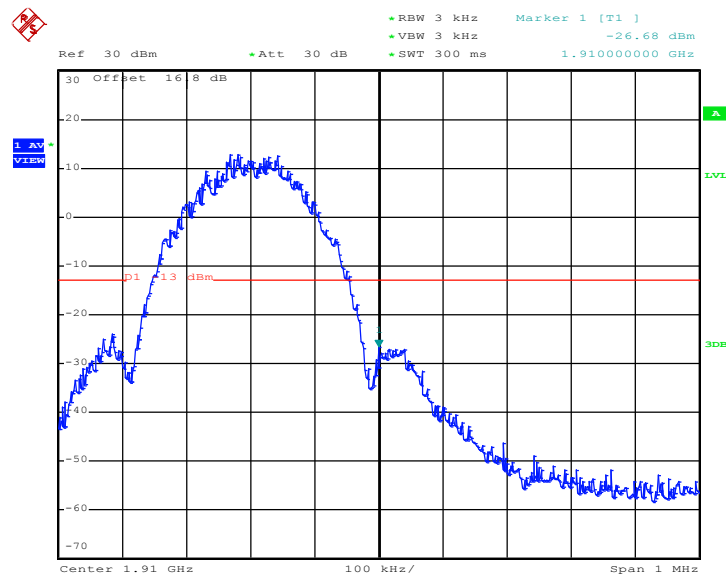
Band :	GSM1900	Power Stage :	High
Test Mode :	EDGE 12 Link	26dB Bandwidth :	0.306MHz
Correction Factor :	0.09dB	Measurement Value :	-24.53dBm
Band Edge :	-24.44dBm		

Lower Band Edge Plot on Channel 512


Date: 10.MAR.2012 02:11:09

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

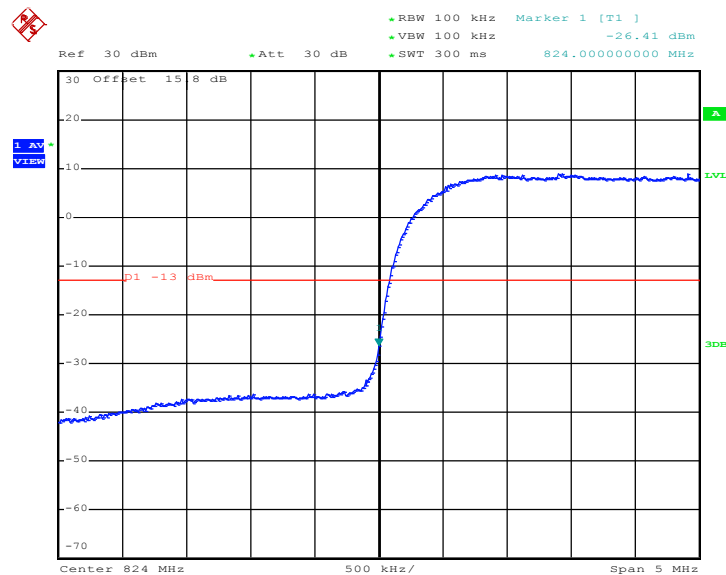
Band :	GSM1900	Power Stage :	High
Test Mode :	EDGE 12 Link	26dB Bandwidth :	0.306MHz
Correction Factor :	0.09dB	Measurement Value :	-26.68dBm
Band Edge :	-26.59dBm		

Higher Band Edge Plot on Channel 810


Date: 10.MAR.2012 02:08:03

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	26dB Bandwidth :	4.680MHz
Correction Factor :	-3.30dB	Measurement Value :	-26.41dBm
Band Edge :	-29.71dBm		

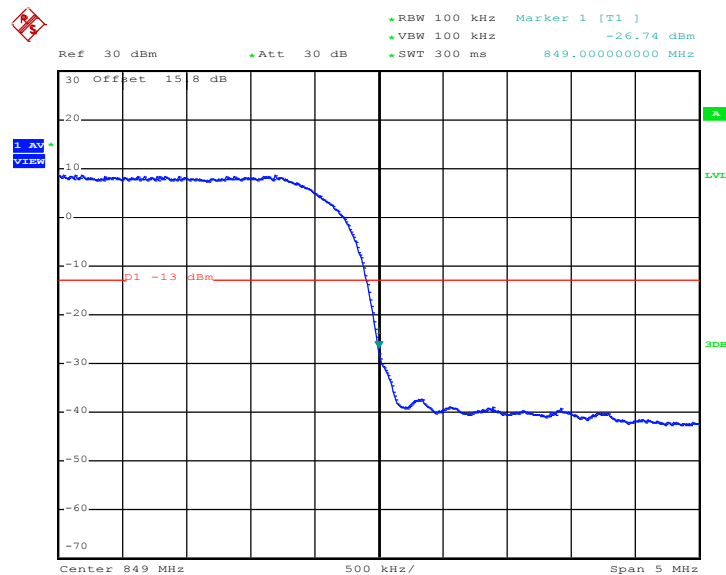
Lower Band Edge Plot on Channel 4132


Date: 10.MAR.2012 02:35:38

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	26dB Bandwidth :	4.680MHz
Correction Factor :	-3.30dB	Measurement Value :	-26.74dBm
Band Edge :	-30.04dBm		

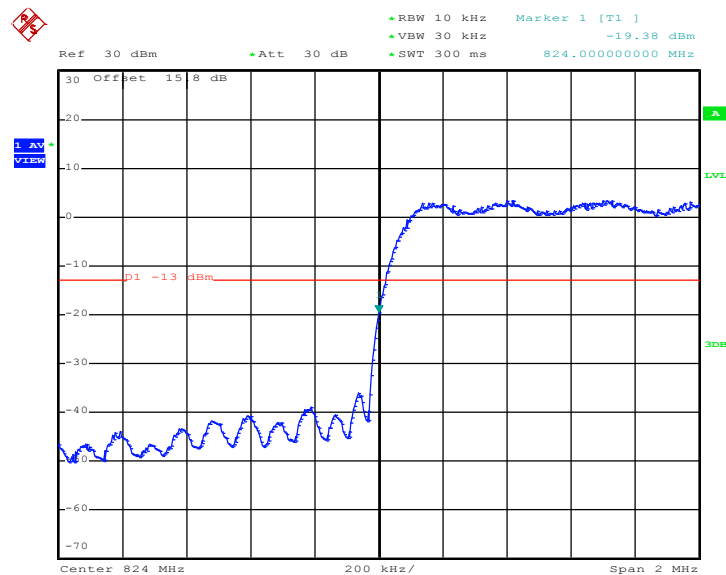
Higher Band Edge Plot on Channel 4233



Date: 10.MAR.2012 02:36:17

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

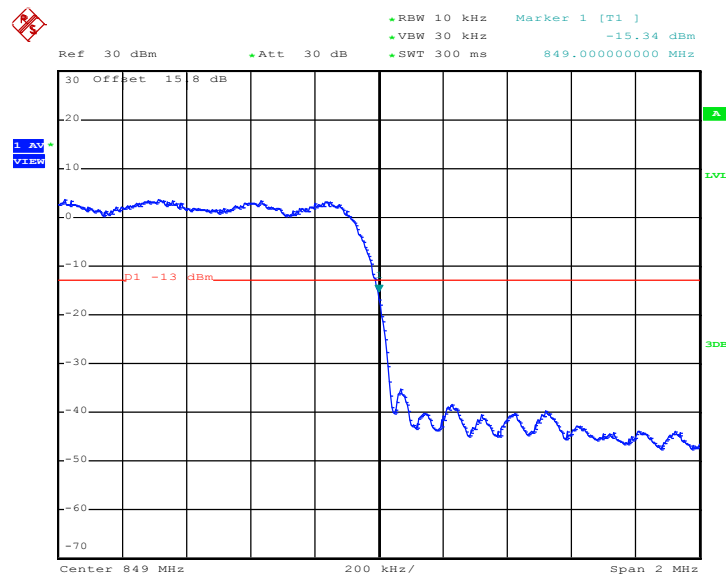
Band :	CDMA2000 BC0	Power Stage :	High
Test Mode :	1xRTT_RC3+SO55	26dB Bandwidth :	1.424MHz
Correction Factor :	1.54dB	Measurement Value :	-19.38dBm
Band Edge :	-17.84dBm		

Lower Band Edge Plot on Channel 1013


Date: 10.MAR.2012 02:52:10

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

Band :	CDMA2000 BC0	Power Stage :	High
Test Mode :	1xRTT_RC3+SO55	26dB Bandwidth :	1.424MHz
Correction Factor :	1.54dB	Measurement Value :	-15.34dBm
Band Edge :	-13.80dBm		

Higher Band Edge Plot on Channel 777


Date: 10.MAR.2012 02:51:34

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

3.5 Conducted Emission Measurement

3.5.1 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.

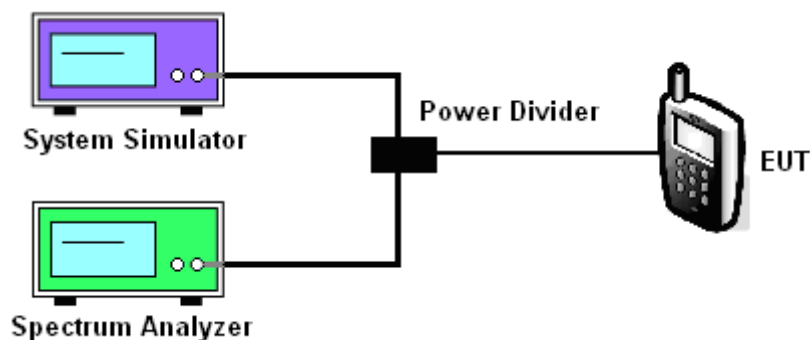
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

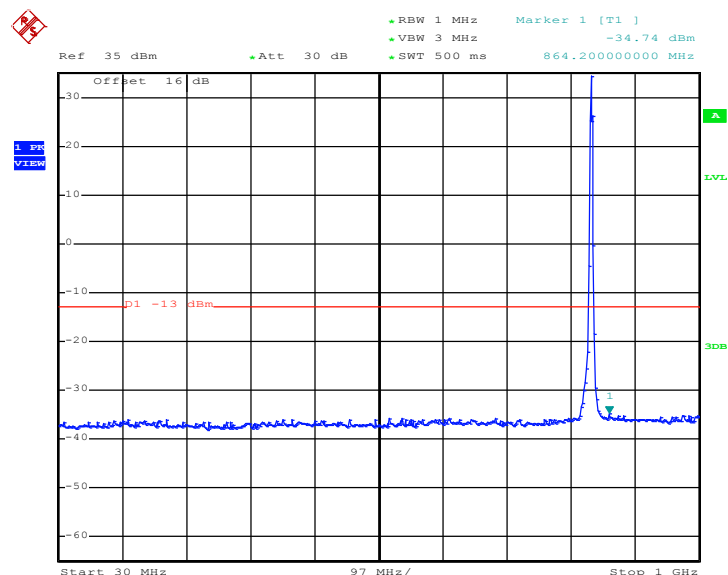
1. The EUT was connected to spectrum analyzer and base station via power divider.
2. The middle channel for the highest RF power within the transmitting frequency was measured.
3. The conducted spurious emission for the whole frequency range was taken.

3.5.4 Test Setup

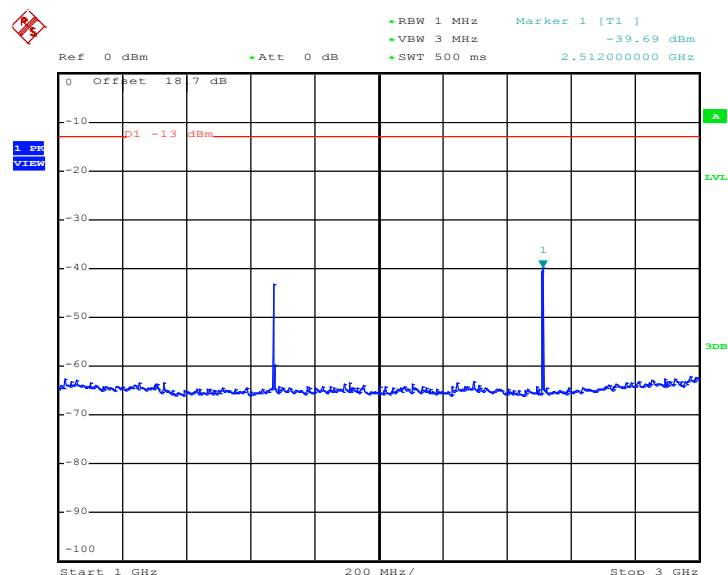


3.5.5 Test Result (Plots) of Conducted Emission

Band :	GSM850	Channel :	CH189
Test Mode :	GSM Link		

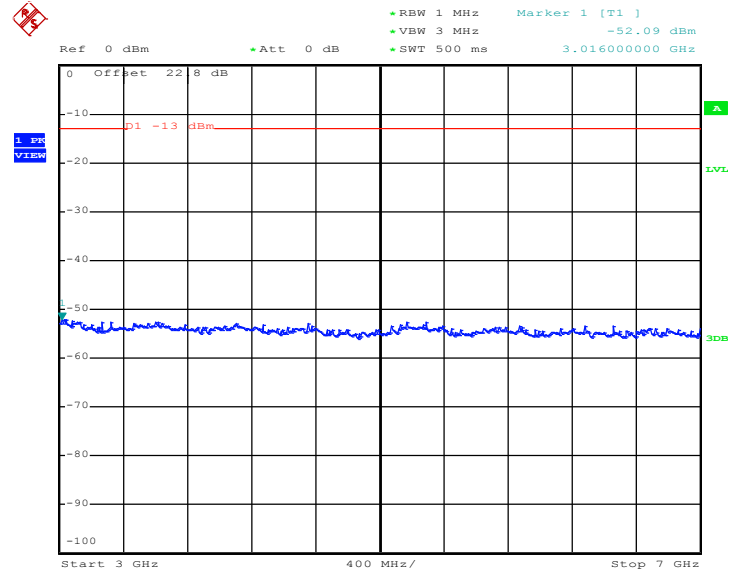
Conducted Emission Plot between 30MHz ~ 1GHz


Date: 9.MAR.2012 22:22:48

Conducted Emission Plot between 1GHz ~ 3GHz


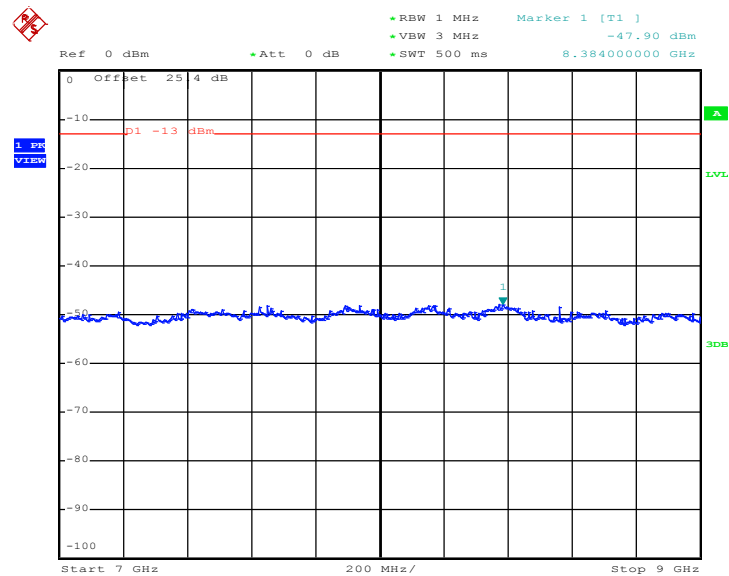
Date: 9.MAR.2012 22:24:08

Conducted Emission Plot between 3GHz ~ 7GHz



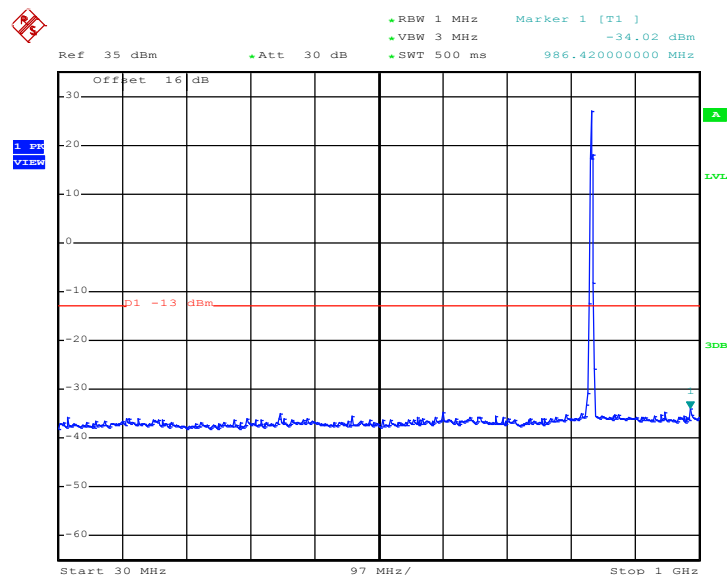
Date: 9.MAR.2012 22:25:25

Conducted Emission Plot between 7GHz ~ 9GHz

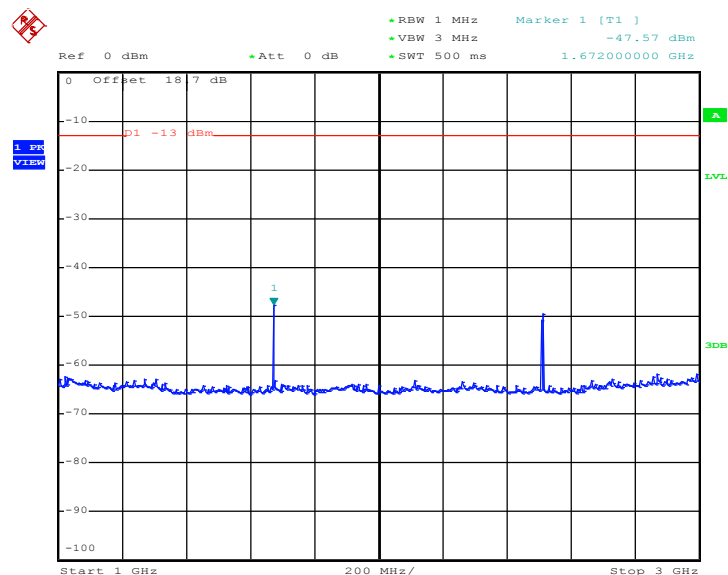


Date: 9.MAR.2012 22:26:34

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

Conducted Emission Plot between 30MHz ~ 1GHz


Date: 10.MAR.2012 01:02:56

Conducted Emission Plot between 1GHz ~ 3GHz


Date: 10.MAR.2012 00:58:41

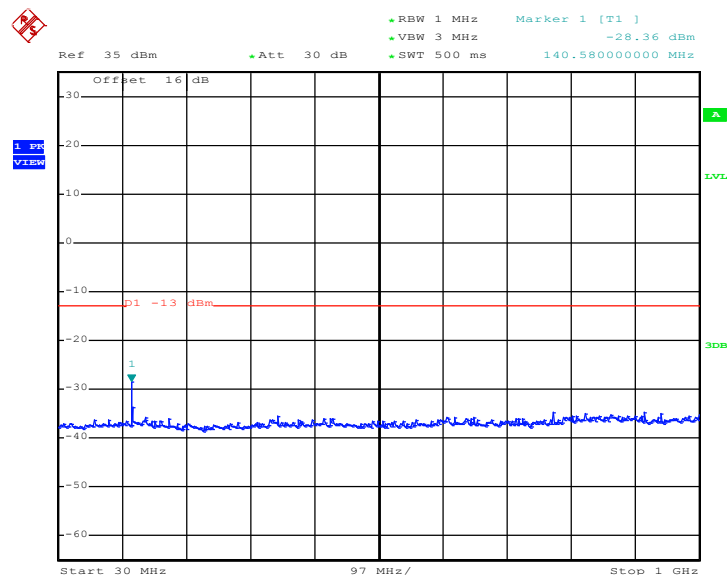


Conducted Emission Plot between 7GHz ~ 9GHz



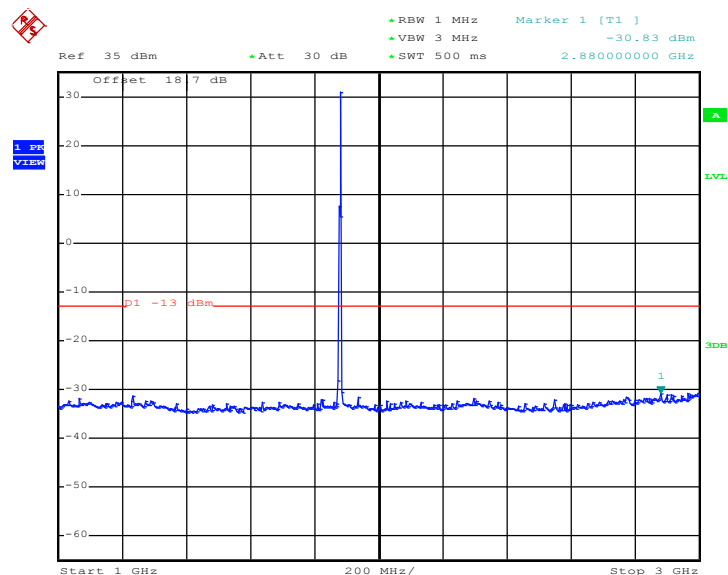
Band :	GSM1900	Channel :	CH661
Test Mode :	GSM Link		

Conducted Emission Plot between 30MHz ~ 1GHz

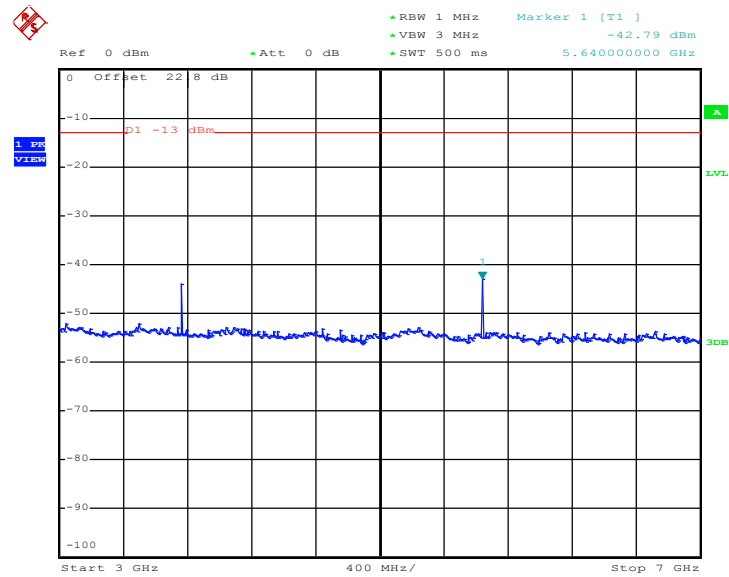


Date: 10.MAR.2012 01:37:35

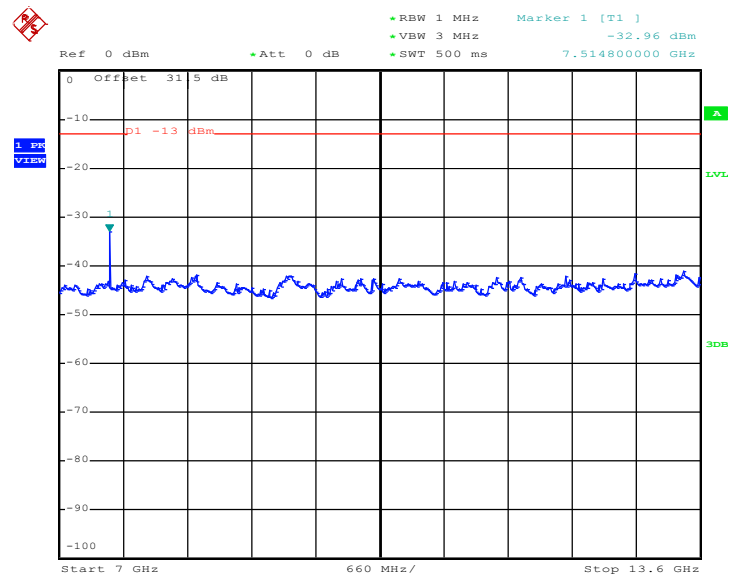
Conducted Emission Plot between 1GHz ~ 3GHz



Date: 10.MAR.2012 01:39:01

Conducted Emission Plot between 3GHz ~ 7GHz


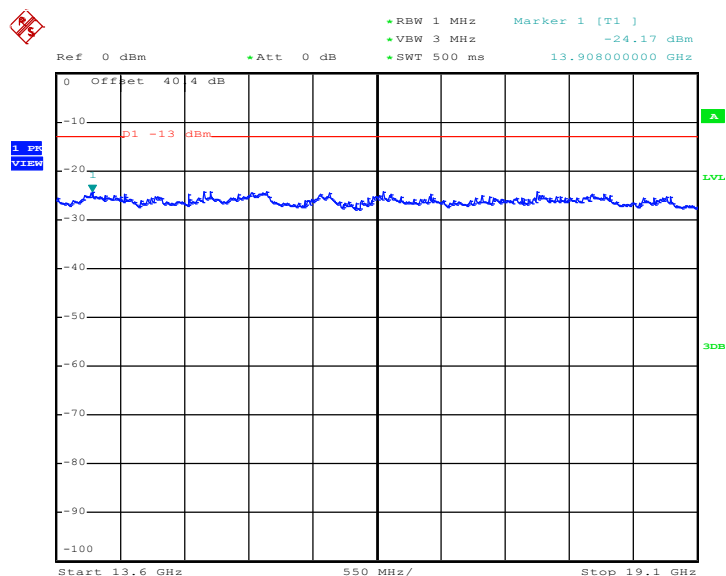
Date: 10.MAR.2012 01:40:55

Conducted Emission Plot between 7GHz ~ 13.6GHz


Date: 10.MAR.2012 01:46:30



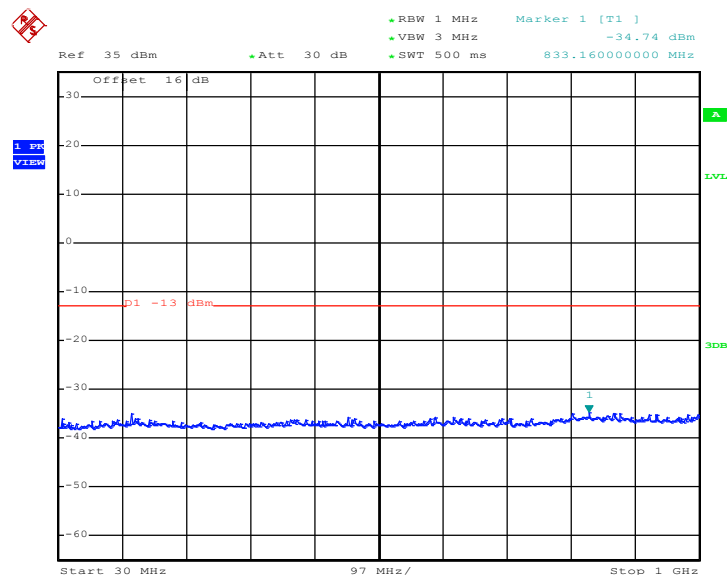
Conducted Emission Plot between 13.6GHz ~ 19.1GHz



Date: 10.MAR.2012 01:43:39

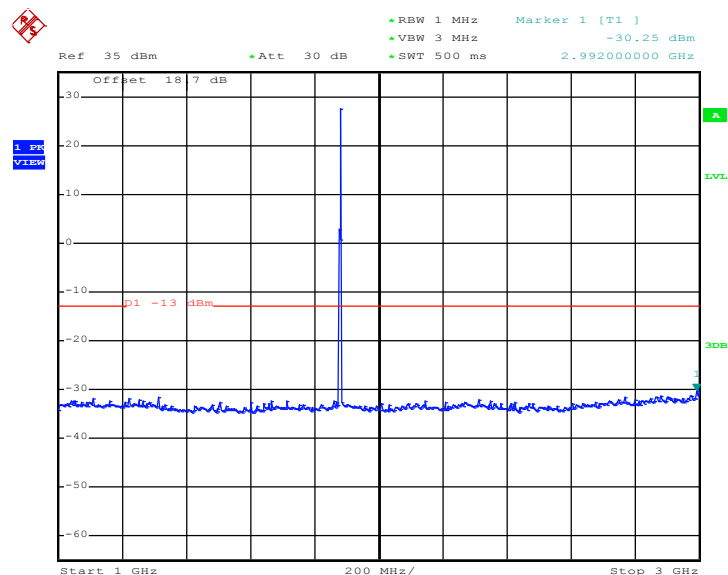
Band :	GSM1900	Channel :	CH661
Test Mode :	EDGE 12 Link		

Conducted Emission Plot between 30MHz ~ 1GHz



Date: 10.MAR.2012 01:54:43

Conducted Emission Plot between 1GHz ~ 3GHz



Date: 10.MAR.2012 01:56:27

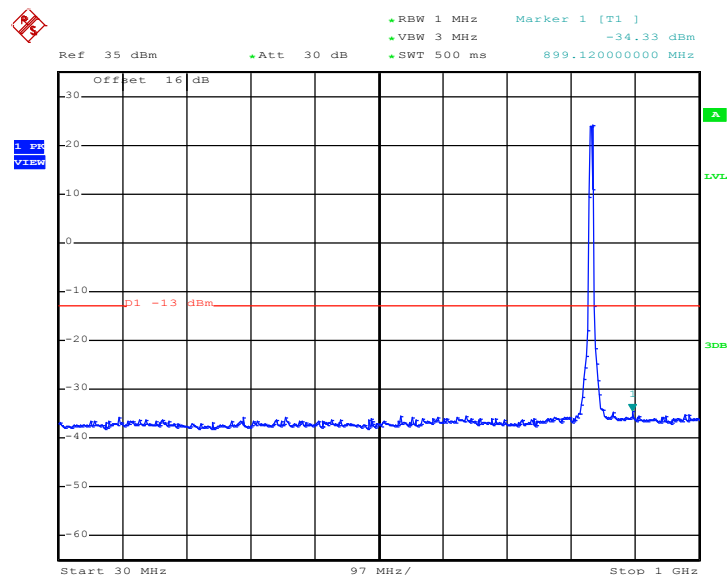


Conducted Emission Plot between 7GHz ~ 13.6GHz

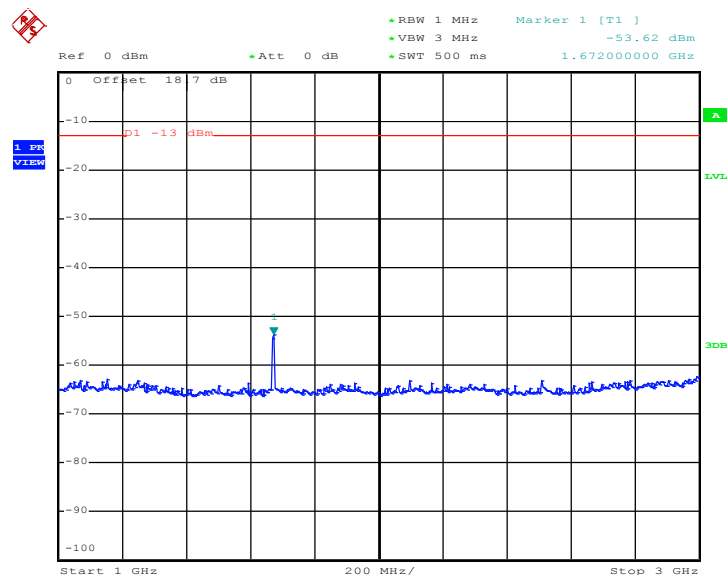




Band :	WCDMA Band V	Channel :	CH4182
Test Mode :	RMC 12.2Kbps Link		

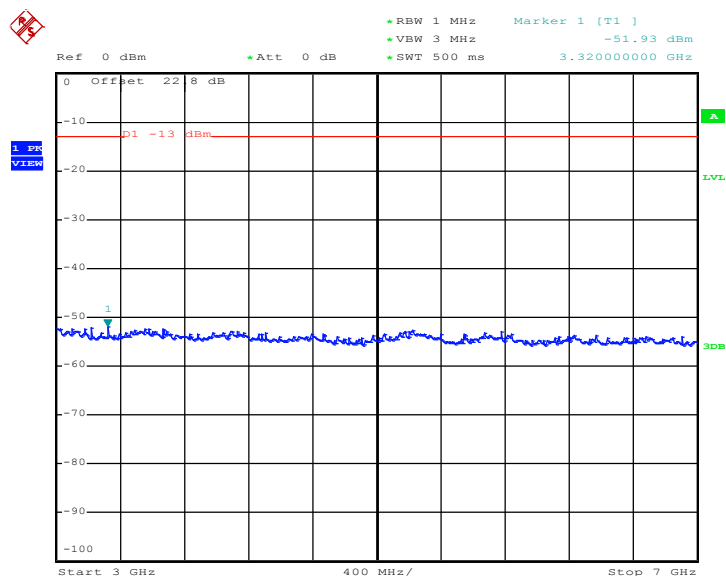
Conducted Emission Plot between 30MHz ~ 1GHz


Date: 10.MAR.2012 02:22:03

Conducted Emission Plot between 1GHz ~ 3GHz


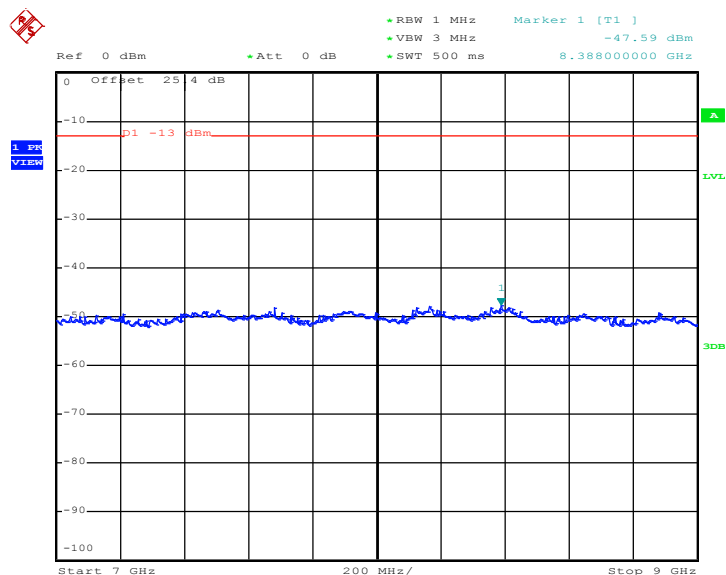
Date: 10.MAR.2012 02:22:56

Conducted Emission Plot between 3GHz ~ 7GHz



Date: 10.MAR.2012 02:23:55

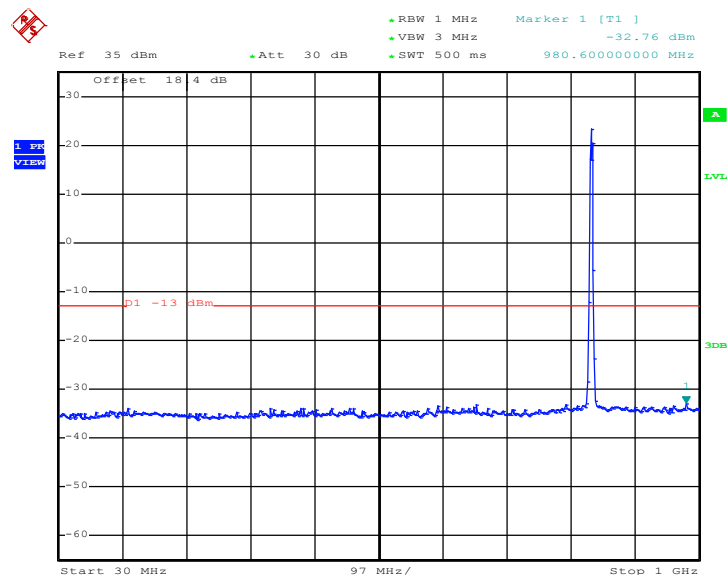
Conducted Emission Plot between 7GHz ~ 9GHz



Date: 10.MAR.2012 02:24:54

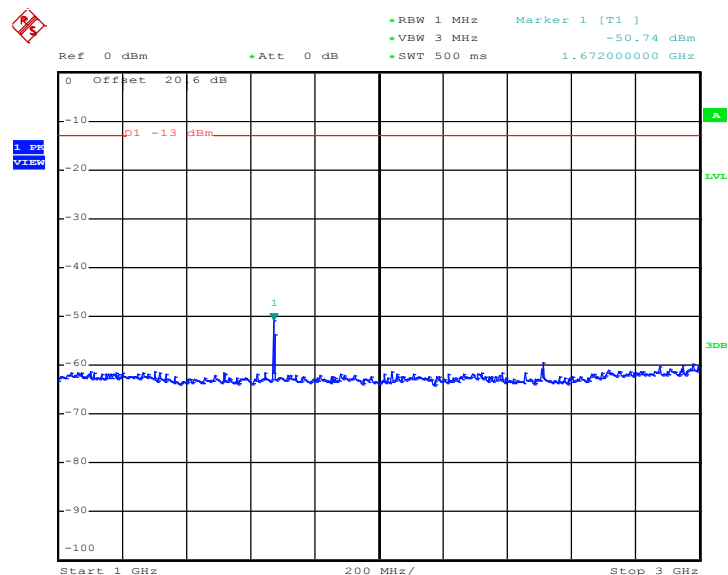
Band :	CDMA2000 BC0	Power Stage :	High
Test Mode :	1xRTT_RC3+SO55		

Conducted Emission Plot between 30MHz ~ 1GHz

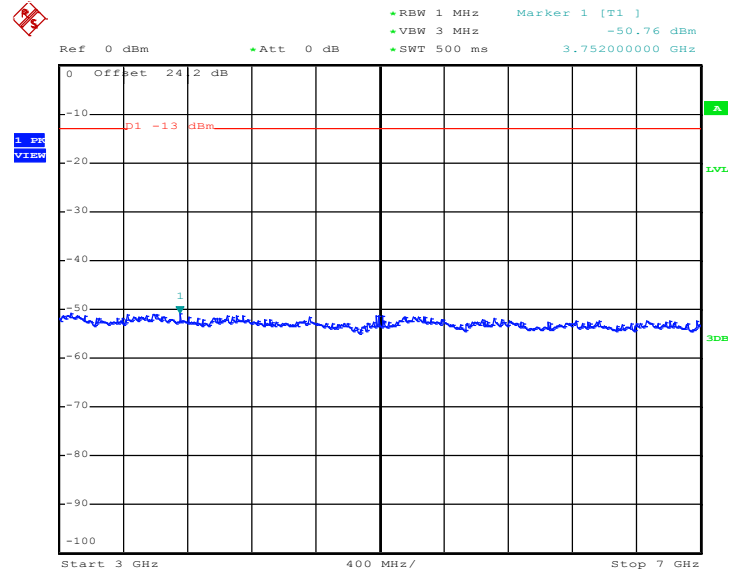


Date: 10.MAR.2012 03:01:53

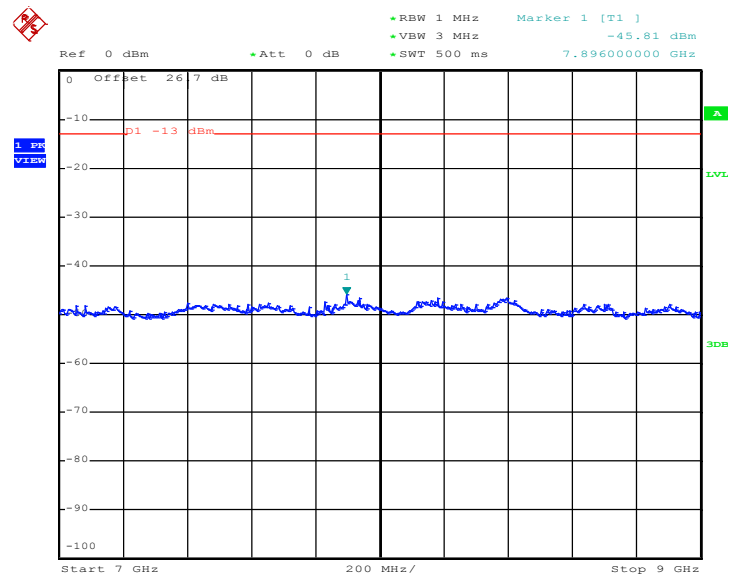
Conducted Emission Plot between 1GHz ~ 3GHz



Date: 10.MAR.2012 02:57:18

Conducted Emission Plot between 3GHz ~ 7GHz


Date: 10.MAR.2012 02:58:18

Conducted Emission Plot between 7GHz ~ 9GHz


Date: 10.MAR.2012 02:59:07

3.6 Field Strength of Spurious Radiation Measurement

3.6.1 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.

3.6.2 Measuring Instruments

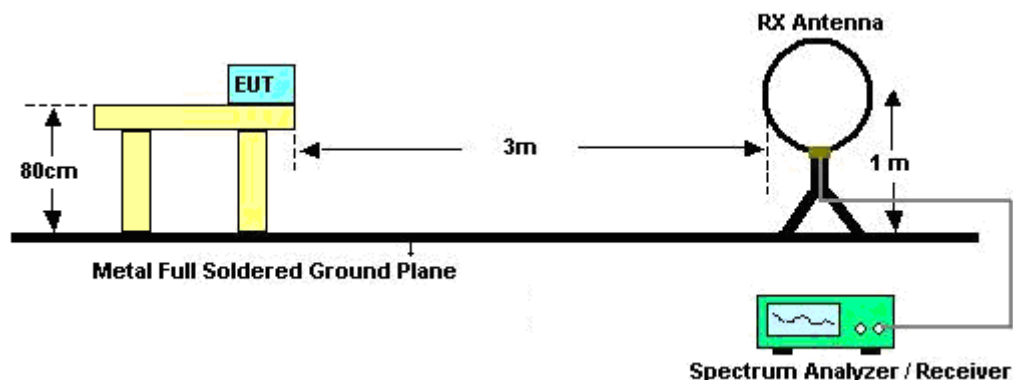
See list of measuring instruments of this test report.

3.6.3 Test Procedures

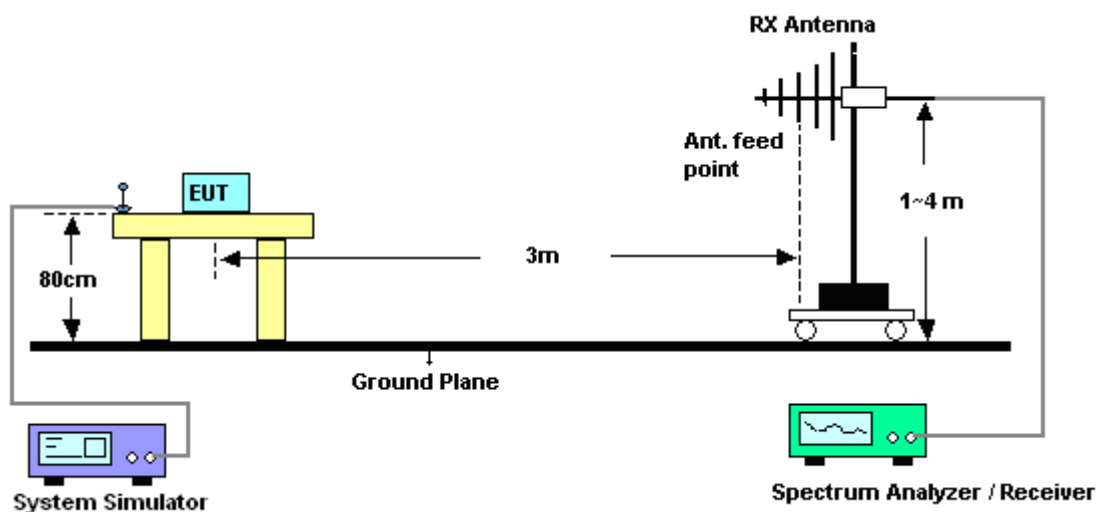
1. The EUT was placed on a rotatable wooden table with 0.8 meter about ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving 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. $ERP \text{ (dBm)} = EIRP - 2.15$

3.6.4 Test Setup

For radiated emissions below 30MHz



For radiated emissions above 30MHz

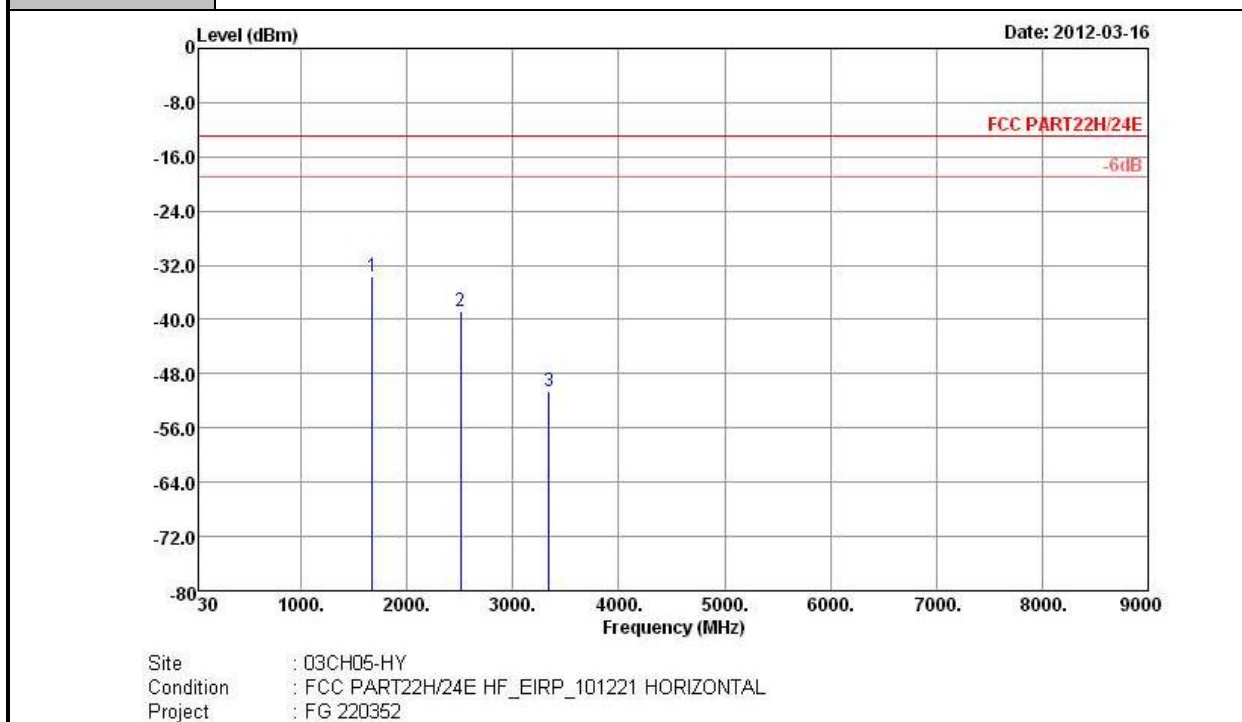


3.6.5 Test Results of Radiated Emissions (9 KHz ~ 30 MHz)

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.

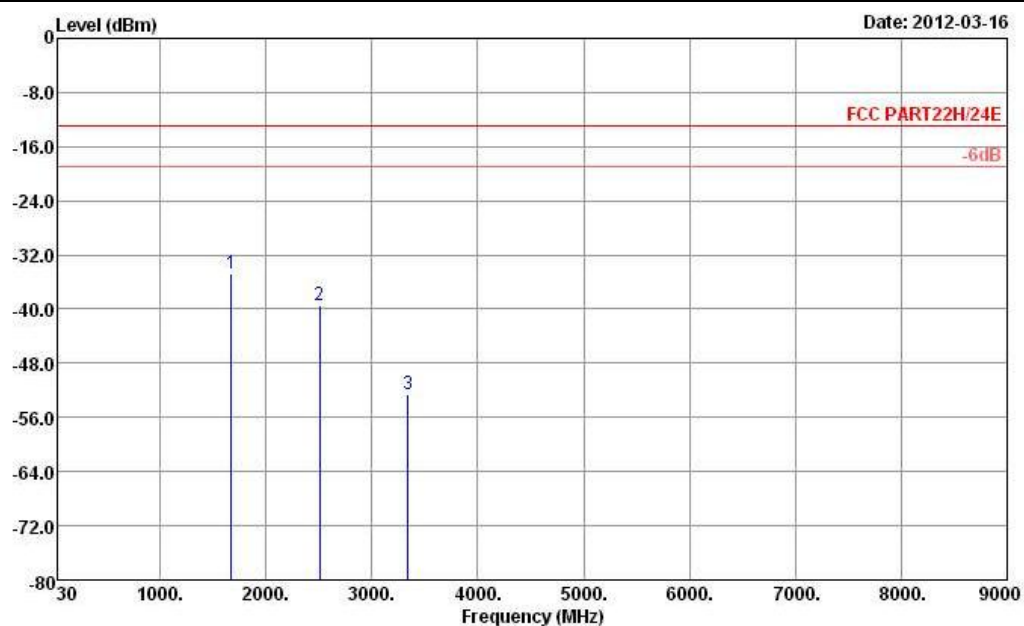
3.6.6 Test Result of Field Strength of Spurious Radiated

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	-33.69	-13	-20.69	-39.71	-34.88	2.15	5.49	H	Pass
2509	-38.77	-13	-25.77	-48.09	-40.66	2.38	6.41	H	Pass
3345	-50.67	-13	-37.67	-62.28	-54	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.		

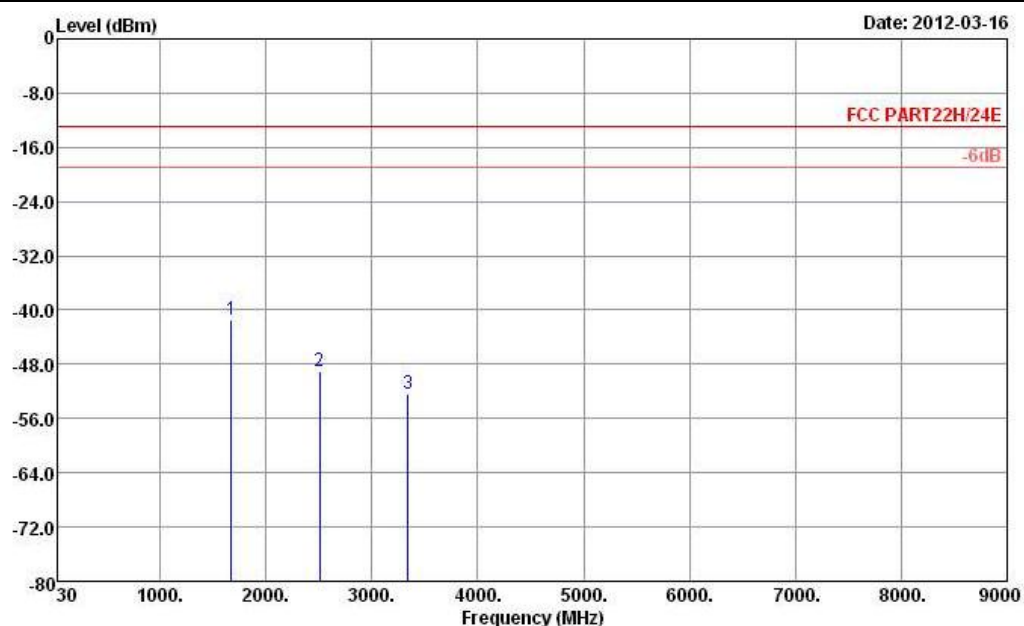


Site : 03CH05-HY
 Condition : FCC PART22H/24E HF_EIRP_101221 VERTICAL
 Project : FG 220352

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	-34.81	-13	-21.81	-40.91	-36	2.15	5.49	V	Pass
2509	-39.44	-13	-26.44	-48.73	-41.33	2.38	6.41	V	Pass
3345	-52.65	-13	-39.65	-64.14	-55.98	2.86	8.34	V	Pass

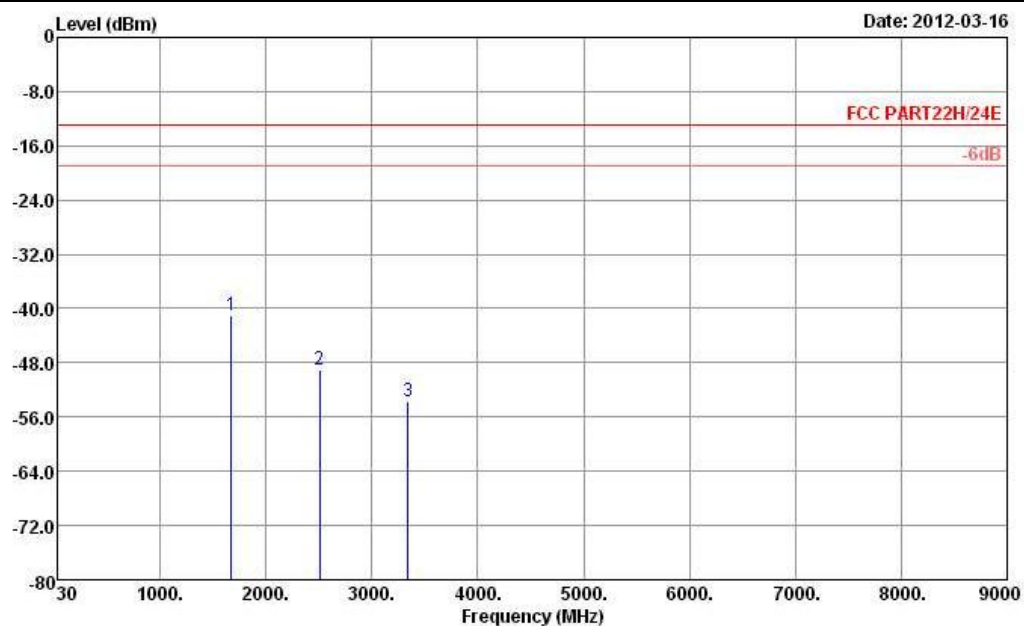


Band :	GSM850	Temperature :	20~22°C
Test Mode :	EDGE 8 Link	Relative Humidity :	40~42%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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	-41.36	-13	-28.36	-47.55	-42.55	2.15	5.49	H	Pass
2509	-49.11	-13	-36.11	-58.57	-51	2.38	6.41	H	Pass
3345	-52.31	-13	-39.31	-63.79	-55.64	2.86	8.34	H	Pass

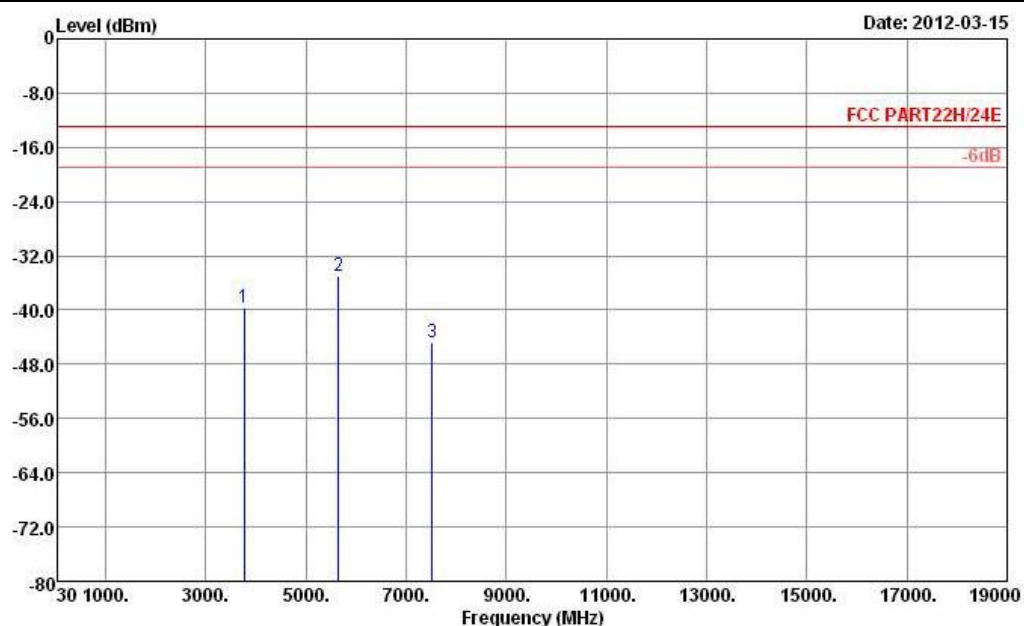
Band :	GSM850	Temperature :	20~22°C
Test Mode :	EDGE 8 Link	Relative Humidity :	40~42%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Site : 03CH05-HY
 Condition : FCC PART22H/24E HF_EIRP_101221 VERTICAL
 Project : FG 220352

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	-41.04	-13	-28.04	-46.97	-42.23	2.15	5.49	V	Pass
2509	-49.11	-13	-36.11	-58.49	-51	2.38	6.41	V	Pass
3345	-53.67	-13	-40.67	-65.26	-57	2.86	8.34	V	Pass

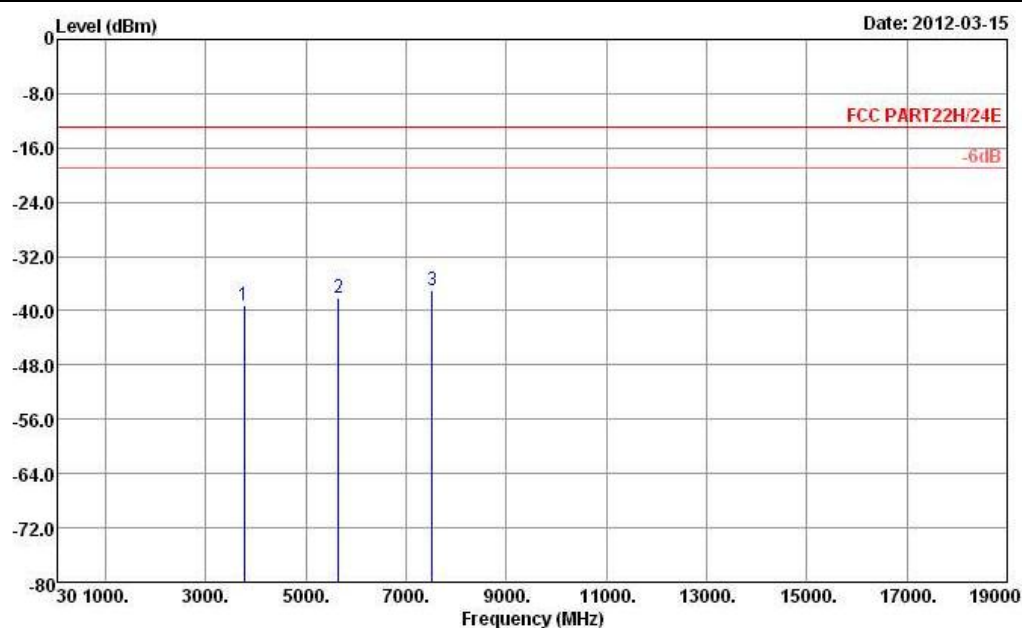
Band :	GSM1900	Temperature :	20~22°C
Test Mode :	GSM Link	Relative Humidity :	40~42%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Site : 03CH05-HY
Condition : FCC PART22H/24E HF_EIRP_101221 HORIZONTAL
Project : FG 220352

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	-39.60	-13	-26.60	-53.14	-45.73	2.9292	9.06	H	Pass
5640	-35.08	-13	-22.08	-54.18	-42	3.9072	10.83	H	Pass
7520	-44.79	-13	-31.79	-66.82	-52.81	4.5988	12.62	H	Pass

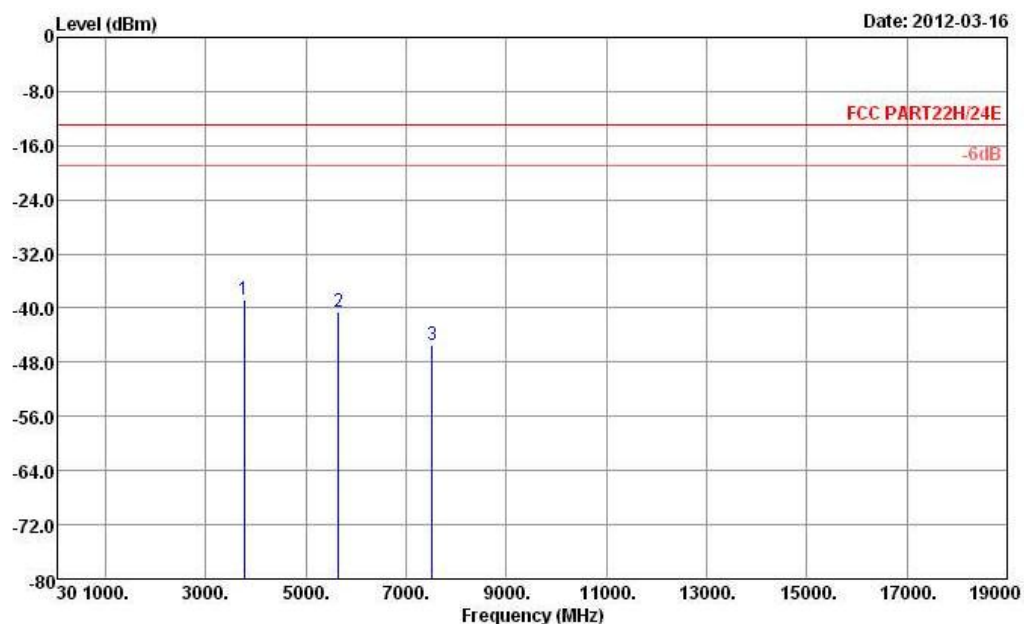
Band :	GSM1900	Temperature :	20~22°C
Test Mode :	GSM Link	Relative Humidity :	40~42%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Site : 03CH05-HY
Condition : FCC PART22H/24E HF_EIRP_101221 VERTICAL
Project : FG 220352

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	-39.12	-13	-26.12	-52.84	-45.25	2.9292	9.06	V	Pass
5640	-38.08	-13	-25.08	-57.1	-45	3.9072	10.83	V	Pass
7520	-37.01	-13	-24.01	-58.94	-45.03	4.5988	12.62	V	Pass

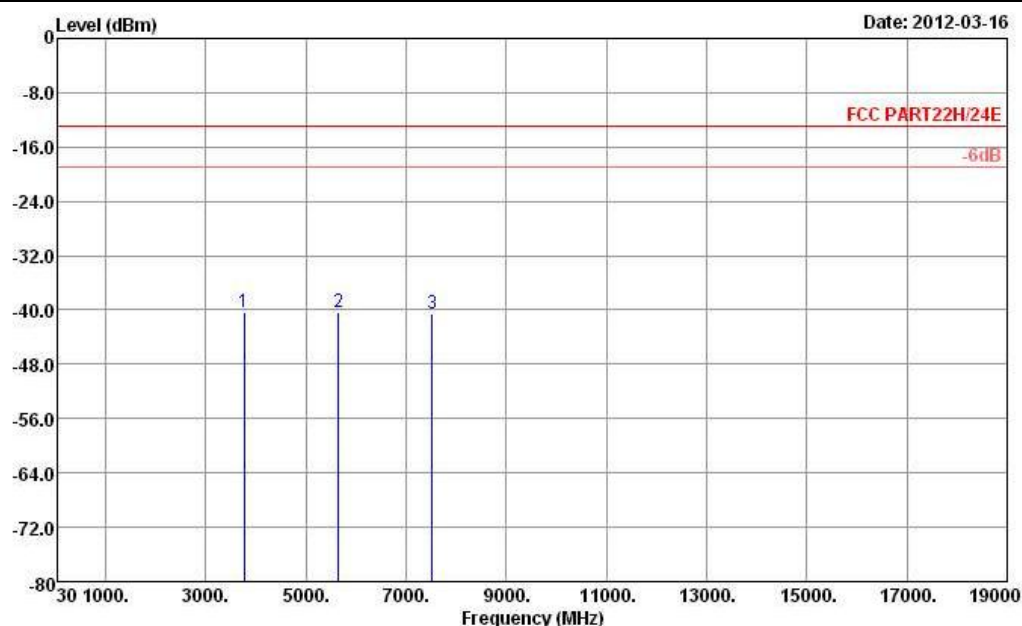
Band :	GSM1900	Temperature :	20~22°C
Test Mode :	EDGE 12 Link	Relative Humidity :	40~42%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Site : 03CH05-HY
Condition : FCC PART22H/24E HF_EIRP_101221 HORIZONTAL
Project : FG 220352

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	-38.87	-13	-25.87	-51.4	-45	2.9292	9.06	H	Pass
5640	-40.63	-13	-27.63	-59.65	-47.55	3.9072	10.83	H	Pass
7520	-45.41	-13	-32.41	-67.42	-53.43	4.5988	12.62	H	Pass

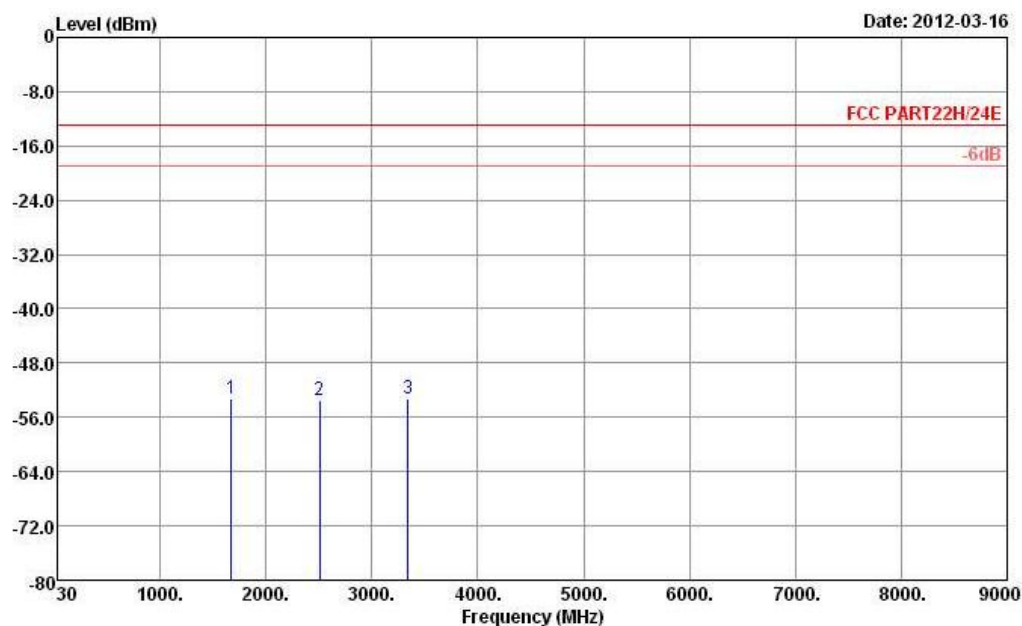
Band :	GSM1900	Temperature :	20~22°C
Test Mode :	EDGE 12 Link	Relative Humidity :	40~42%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Site : 03CH05-HY
 Condition : FCC PART22H/24E HF_EIRP_101221 VERTICAL
 Project : FG 220352

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	-40.42	-13	-27.42	-54.01	-46.55	2.9292	9.06	V	Pass
5640	-40.40	-13	-27.40	-59.45	-47.32	3.9072	10.83	V	Pass
7520	-40.55	-13	-27.55	-62.62	-48.57	4.5988	12.62	V	Pass

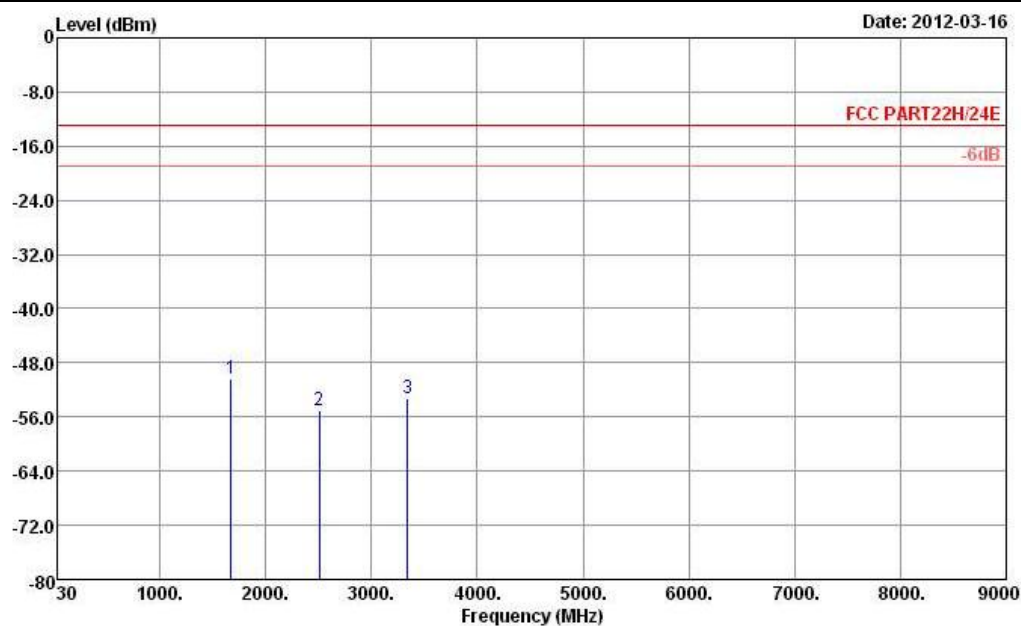
Band :	WCDMA Band V	Temperature :	20~22°C
Test Mode :	RMC 12.2Kbps Link	Relative Humidity :	40~42%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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	-53.36	-13	-40.36	-59.3	-54.55	2.15	5.49	H	Pass
2509	-53.44	-13	-40.44	-62.73	-55.33	2.38	6.41	H	Pass
3345	-53.32	-13	-40.32	-64.99	-56.65	2.86	8.34	H	Pass



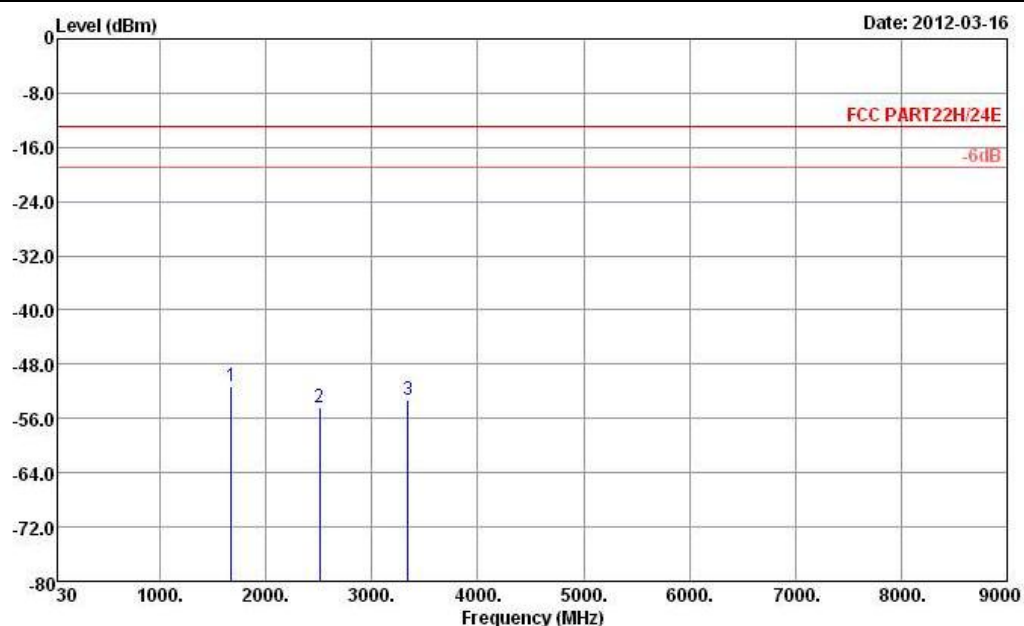
Band :	WCDMA Band V	Temperature :	20~22°C
Test Mode :	RMC 12.2Kbps Link	Relative Humidity :	40~42%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Site : 03CH05-HY
Condition : FCC PART22H/24E HF_EIRP_101221 VERTICAL
Project : FG 220352

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	-50.45	-13	-37.45	-56.43	-51.64	2.15	5.49	V	Pass
2509	-55.01	-13	-42.01	-64.25	-56.9	2.38	6.41	V	Pass
3345	-53.16	-13	-40.16	-65.05	-56.49	2.86	8.34	V	Pass

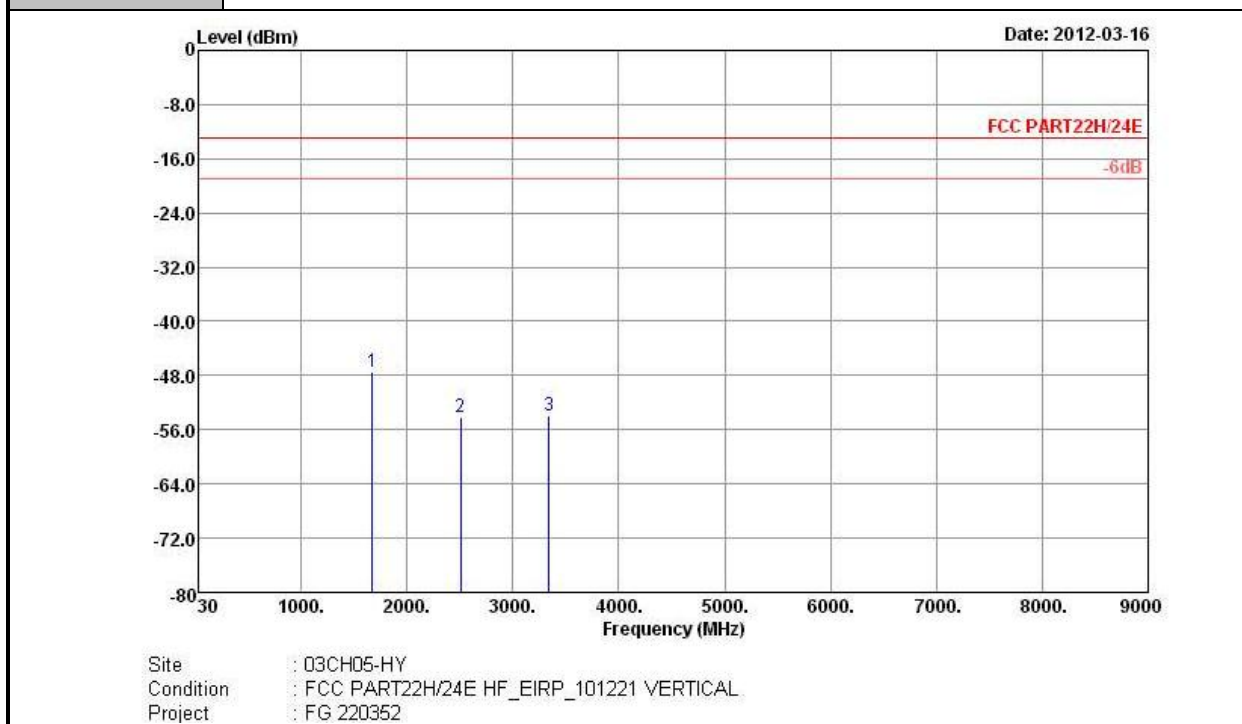
Band :	CDMA2000 BC0	Temperature :	20~22°C
Test Mode :	1xRTT_RC3+SO55	Relative Humidity :	40~42%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Site : 03CH05-HY
 Condition : FCC PART22H/24E HF_EIRP_101221 HORIZONTAL
 Project : FG 220352

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	-51.26	-13	-38.26	-57.34	-52.45	2.15	5.49	H	Pass
2509	-54.32	-13	-41.32	-63.73	-56.21	2.38	6.41	H	Pass
3345	-53.34	-13	-40.34	-65.05	-56.67	2.86	8.34	H	Pass

Band :	CDMA2000 BC0	Temperature :	20~22°C
Test Mode :	1xRTT_RC3+SO55	Relative Humidity :	40~42%
Test Engineer :	David Ke	Polarization :	Vertical
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	-47.48	-13	-34.48	-53.59	-48.67	2.15	5.49	V	Pass
2509	-54.11	-13	-41.11	-63.34	-56	2.38	6.41	V	Pass
3345	-54.01	-13	-41.01	-65.55	-57.34	2.86	8.34	V	Pass

3.7 Frequency Stability Measurement

3.7.1 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.

3.7.2 Measuring Instruments

See list of measuring instruments of this test report.

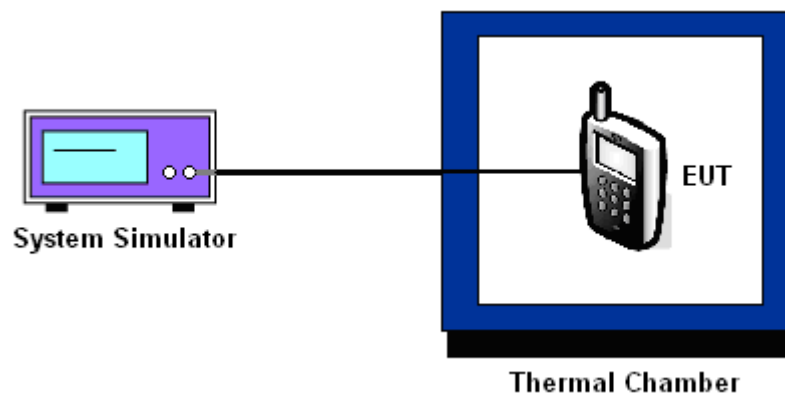
3.7.3 Test Procedures for Temperature Variation

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 for three hours. 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.

3.7.4 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.

3.7.5 Test Setup



3.7.6 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	N/A	N/A	N/A	N/A	PASS
-20	N/A	N/A	N/A	N/A	
-10	30	0.04	38	0.04	
0	26	0.03	29	0.03	
10	28	0.03	26	0.03	
20	31	0.04	21	0.02	
30	26	0.03	27	0.03	
40	20	0.02	35	0.04	
50	29	0.03	29	0.03	
55	24	0.03	31	0.04	

Note: The manufacturer declared that the EUT could work properly between temperatures -10°C~55°C.

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

Temperature (°C)	GSM		EDGE 12		Result
	Freq. Dev. (Hz)	Deviation (ppm)	Freq. Dev. (Hz)	Deviation (ppm)	
-30	N/A	N/A	N/A	N/A	PASS
-20	N/A	N/A	N/A	N/A	
-10	55	0.03	61	0.03	
0	49	0.03	55	0.03	
10	45	0.02	54	0.03	
20	48	0.03	67	0.04	
30	35	0.02	65	0.03	
40	41	0.02	53	0.03	
50	38	0.02	54	0.03	
55	26	0.01	64	0.03	

Note: The manufacturer declared that the EUT could work properly between temperatures -10°C~55°C.

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

Temperature (°C)	RMC 12.2Kbps		Result
	Freq. Dev. (Hz)	Deviation (ppm)	
-30	N/A	N/A	PASS
-20	N/A	N/A	
-10	18	0.02	
0	13	0.02	
10	11	0.01	
20	17	0.02	
30	15	0.02	
40	12	0.01	
50	20	0.02	
55	19	0.02	

Note: The manufacturer declared that the EUT could work properly between temperatures -10°C~55°C.

Band :	CDMA2000 BC0	Channel :	384
Test Mode :	1xRTT_RC3+SO55	Limit (ppm) :	2.5

Temperature (°C)	Freq. Dev. (Hz)	Deviation (ppm)	Result
-30	N/A	N/A	PASS
-20	N/A	N/A	
-10	-21	-0.02	
0	-23	-0.03	
10	-18	-0.02	
20	-16	-0.02	
30	-20	-0.02	
40	-21	-0.02	
50	-16	-0.02	
55	-11	-0.01	

Note: The manufacturer declared that the EUT could work properly between temperatures -10°C~55°C.

3.7.7 Test Result of Voltage Variation

Band & Channel	Mode	Voltage (Volt)	Freq. Dev. (Hz)	Deviation (ppm)	Limit (ppm)	Result
GSM 850 CH189	GSM	3.8	26	0.03	2.5	PASS
		BEP	21	0.02		
		4.2	28	0.03		
	EDGE 8	3.8	38	0.04		
		BEP	34	0.04		
		4.2	42	0.05		
GSM 1900 CH661	GSM	3.8	40	0.02		
		BEP	38	0.02		
		4.2	41	0.02		
	EDGE 12	3.8	51	0.03		
		BEP	45	0.02		
		4.2	65	0.03		
WCDMA Band V CH4182	RMC 12.2Kbps	3.8	9	0.01		
		BEP	10	0.01		
		4.2	11	0.01		
CDMA2000 BC0 CH384	1xRTT RC3+SO55	3.8	-16	-0.02		
		BEP	-15	-0.02		
		4.2	-20	-0.02		

Note:

1. Normal Voltage = 3.8V.
2. Battery End Point (BEP) = 3.6 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	Mar. 09, 2012~ Mar. 10, 2012	Jul. 27, 2012	Conducted (TH02-HY)
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 13, 2011	Mar. 09, 2012~ Mar. 10, 2012	Jun. 12, 2012	Conducted (TH02-HY)
Thermal Chamber	Ten Billion	TTH-D35P	TBN-930701	N/A	Jul. 27, 2011	Mar. 09, 2012~ Mar. 10, 2012	Jul. 26, 2012	Conducted (TH02-HY)
Spectrum Analyzer	R&S	ESU26	100390	20Hz ~ 26.5GHz	Dec. 22, 2011	Mar. 15, 2012~ Mar. 16, 2012	Dec. 21, 2012	Radiation (03CH05-HY)
COM-POWER	Double Ridge Horn	AH-118	701030	1GHz ~ 18GHz	N/A	Mar. 15, 2012~ Mar. 16, 2012	N/A	Radiation (03CH05-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2725	30MHz ~ 2GHz	Oct. 22, 2011	Mar. 15, 2012~ Mar. 16, 2012	Oct. 21, 2012	Radiation (03CH05-HY)
Turn Table	HD	Deis HD 2000	420/611	0 ~ 360 degree	N/A	Mar. 15, 2012~ Mar. 16, 2012	N/A	Radiation (03CH05-HY)
Antenna Mast	HD	MA 240	240/666	1 m ~ 4 m	N/A	Mar. 15, 2012~ Mar. 16, 2012	N/A	Radiation (03CH05-HY)
Horn Antenna	ESCO	3117	66584	1GHz ~ 18GHz	Aug. 04, 2011	Mar. 15, 2012~ Mar. 16, 2012	Aug. 03, 2012	Radiation (03CH05-HY)
COM-POWER	COM-POWER	PA-103	161075	10Hz ~ 1000MHz Gain:32dB	Mar. 29, 2011	Mar. 15, 2012~ Mar. 16, 2012	Mar. 28, 2012	Radiation (03CH05-HY)
Pre Amplifier	EMCI	EMC051845	SN980048	1GHz~18GHz	Jul. 18, 2011	Mar. 15, 2012~ Mar. 16, 2012	Jul. 17, 2012	Radiation (03CH05-HY)
Pre Amplifier	Agilent	8449B	3008A01917	1GHz~26.5GHz	Aug. 30, 2011	Mar. 15, 2012~ Mar. 16, 2012	Aug. 29, 2012	Radiation (03CH05-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 29, 2010	Mar. 15, 2012~ Mar. 16, 2012	Jul. 28, 2012	Radiation (03CH05-HY)
System Simulator	R&S	CMU200	117591	N/A	Oct. 21, 2011	Mar. 15, 2012~ Mar. 16, 2012	Oct. 20, 2012	Radiation (03CH06-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				