

FCC RF Test Report

APPLICANT : SAMSUNG Electronics Co., LTD.
EQUIPMENT : Mobile Phone
BRAND NAME : Samsung
MODEL NAME : SCH-W2013
MARKETING NAME : Grande
FCC ID : A3LSCHW2013
STANDARD : FCC 47 CFR Part 2, 22(H), 24(E)
CLASSIFICATION : PCS Licensed Transmitter Held to Ear (PCE)

The product was received on Oct. 09, 2012 and completely tested on Oct. 26, 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
FG2O0932	Rev. 01	Initial issue of report	Oct. 30, 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)	RSS-133(6.4)	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 Spurious 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 3.37 dB at 13160.000 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

SAMSUNG Electronics Co., LTD.

IT center, 416, Maetan-3dong, Yeongtong-gu, Suwon-city, Gyeonggi-do, Korea

1.2 Manufacturer

SAMSUNG Electronics Co., LTD.

IT center, 416, Maetan-3dong, Yeongtong-gu, Suwon-city, Gyeonggi-do, Korea

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Phone
Brand Name	Samsung
Model Name	SCH-W2013
Marketing Name	Grande
FCC ID	A3LSCHW2013
EUT supports Radios application	CDMA/EV-DO/GSM/EGPRS/ WLAN 11abgn / Bluetooth
HW Version	W2013.05
SW Version	W2013KELG4
EUT Stage	Identical Prototype

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

Product Specification subjective to this standard	
Tx Frequency	GSM1900: 1850.2 MHz ~ 1909.8MHz CDMA2000 BC0: 824.70 MHz ~ 848.31 MHz CDMA2000 BC1: 1851.25 MHz ~ 1908.75 MHz
Rx Frequency	GSM1900: 1930.2 MHz ~ 1989.8 MHz CDMA2000 BC0: 869.70 MHz ~ 893.31 MHz CDMA2000 BC1: 1931.25 MHz ~ 1988.75 MHz
Maximum Output Power to Antenna	GSM1900 : 30.74 dBm CDMA2000 BC0 : 25.82 dBm CDMA2000 BC1 : 25.77 dBm
Antenna Type	IMA Antenna
Type of Modulation	GSM: GMSK GPRS: GMSK EDGE: 8PSK CDMA2000 : QPSK CDMA2000 1xEV-DO : 8PSK

1.4 Maximum ERP/EIRP Power, Frequency Tolerance, and Emission Designator

FCC Rule	System	Type of Modulation	Maximum ERP/EIRP (W)	Frequency Tolerance (% , Hz, ppm)	Emission Designator
Part 22	CDMA2000 BC0 1xRTT	QPSK	0.0679	0.02 ppm	1M27F9W
Part 22	CDMA2000 BC0 1xEV-DO Rev. 0	QPSK	0.0573	0.01 ppm	1M27F9W
Part 24	GSM1900 GSM	GMSK	0.3177	0.05 ppm	248KGXW
Part 24	GSM1900 EDGE 8	GMSK / 8PSK	0.2244	0.05 ppm	248KG7W
Part 24	CDMA2000 BC1 1xRTT	QPSK	0.0482	0.01 ppm	1M25F9W
Part 24	CDMA2000 BC1 1xEV-DO Rev. A	QPSK	0.0551	0.01 ppm	1M25F9W

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:

- ♦ 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:

All test items were verified and recorded according to the standards and without any deviation during the test.



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 CDMA2000 BC0.
2. 30 MHz to 19000 MHz for GSM1900 and CDMA2000 BC1.

Test Modes		
Band	Radiated TCs	Conducted TCs
GSM 1900	■ GSM Link ■ EDGE 8 Link	■ GSM Link ■ EDGE 8 Link
CDMA2000 BC0	■ 1xRTT Link Mode ■ 1xEV-DO Rev. 0 Link Mode	■ 1xRTT Link Mode ■ 1xEV-DO Rev. 0 Link Mode
CDMA2000 BC1	■ 1xRTT Link Mode ■ 1xEV-DO Rev. A Link Mode	■ 1xRTT Link Mode ■ 1xEV-DO Rev. A Link Mode

Note:

1. The maximum power levels are GSM mode for GMSK link, EDGE multi-slot class 8 mode for 8PSK link, 1xRTT RC1+SO55 mode for CDMA2000 BC0, 1xEV-DO Rev. 0 RTAP 153.6K mode for CDMA2000 BC0, 1xRTT RC1+SO55 mode for CDMA2000 BC1, and 1xEV-DO Rev. 0 RTAP 4096K mode for CDMA2000 BC1 on QPSK Link, 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.

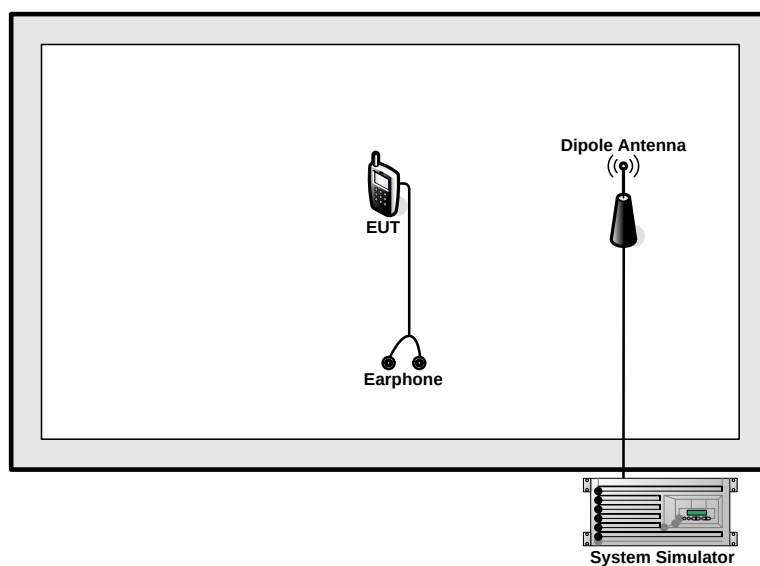
The conducted power tables are as follows:

Conducted Power (*Unit: dBm)			
Band	GSM1900		
Channel	512	661	810
Frequency	1850.2	1880.0	1909.8
GSM	30.43	30.62	30.74
GPRS 8	30.42	30.61	30.73
GPRS 10	27.62	27.84	27.99
EGPRS 8	27.01	27.18	27.27
EGPRS 10	26.96	27.14	27.24

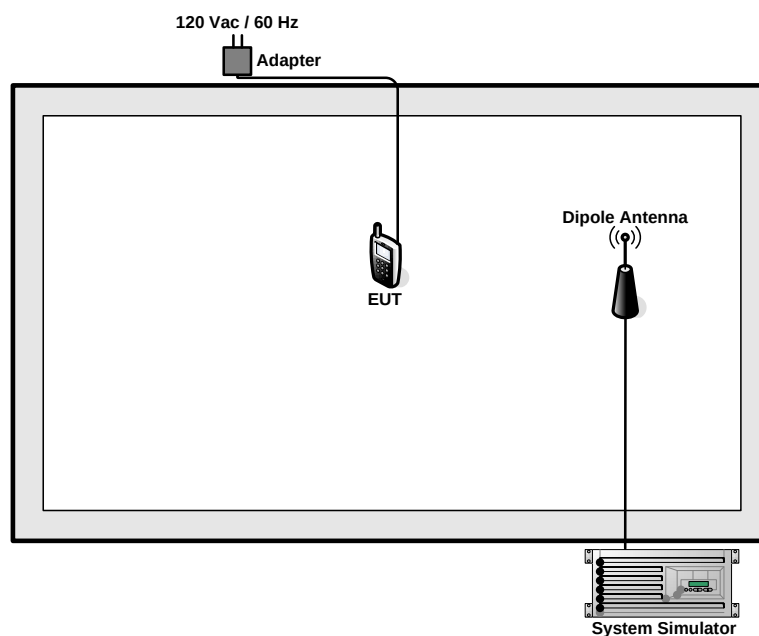
Conducted Power (*Unit: dBm)						
Band	CDMA2000 BC0			CDMA2000 BC1		
Channel	1013	384	777	25	600	1175
Frequency	824.7	836.52	848.31	1851.25	1880	1908.75
1xRTT RC1+SO55	25.75	25.82	25.80	25.18	25.03	24.28
1xRTT RC3+SO55	25.71	25.77	25.58	25.15	24.86	24.22
1xRTT RC3+SO32	25.71	25.77	25.55	25.12	24.87	24.27
1xEV-DO RTAP 153.6K	24.93	25.23	24.95	25.62	24.98	24.07
1xEV-DO RETAP 4096K	25.00	25.08	25.04	25.77	25.15	24.54

2.2 Connection Diagram of Test System

<EUT with Earphone mode>



<EUT with Adapter mode>



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.

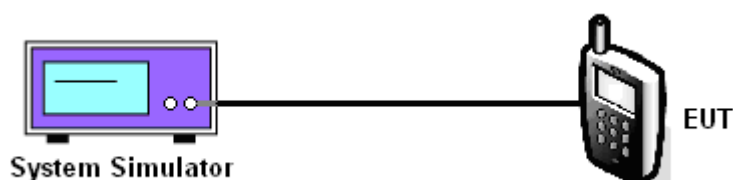
3.1.2 Measuring Instruments

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.
4. Measure the maximum burst average power for GSM and maximum average power for other modulation signal.

3.1.4 Test Setup



3.1.5 Test Result of Conducted Output Power

PCS Band						
Modes	GSM1900 (GSM)			GSM1900 (EDGE 8)		
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)	30.43	30.62	30.74	27.01	27.18	27.27
Conducted Power (Watts)	1.10	1.15	1.19	0.50	0.52	0.53

CDMA2000 BC0			
Test Mode	CDMA 2000 1xRTT		
Test Status	RC1+SO55		
Channel	1013 (Low)	384 (Mid)	777 (High)
Frequency (MHz)	824.70	836.52	848.31
Conducted Power (dBm)	25.75	25.82	25.80
Conducted Power (Watts)	0.38	0.38	0.38

CDMA2000 BC0			
Test Mode	CDMA 2000 1xEV-DO Rev. 0		
Test Status	RTAP 153.6K		
Channel	1013 (Low)	384 (Mid)	777 (High)
Frequency (MHz)	824.70	836.52	848.31
Conducted Power (dBm)	24.93	25.23	24.95
Conducted Power (Watts)	0.31	0.33	0.31

CDMA2000 BC1			
Test Mode	CDMA 2000 1xRTT		
Test Status	RC1+SO55		
Channel	25 (Low)	600 (Mid)	1175 (High)
Frequency (MHz)	1851.25	1880.00	1908.75
Conducted Power (dBm)	25.18	25.03	24.28
Conducted Power (Watts)	0.33	0.32	0.27

CDMA2000 BC1			
Test Mode	CDMA 2000 1xEV-DO Rev. A		
Test Status	RETAP 4096K		
Channel	25 (Low)	600 (Mid)	1175 (High)
Frequency (MHz)	1851.25	1880.00	1908.75
Conducted Power (dBm)	25.77	25.15	24.54
Conducted Power (Watts)	0.38	0.33	0.28

Note: maximum burst average power for GSM, and maximum average power for CDMA2000.

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. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

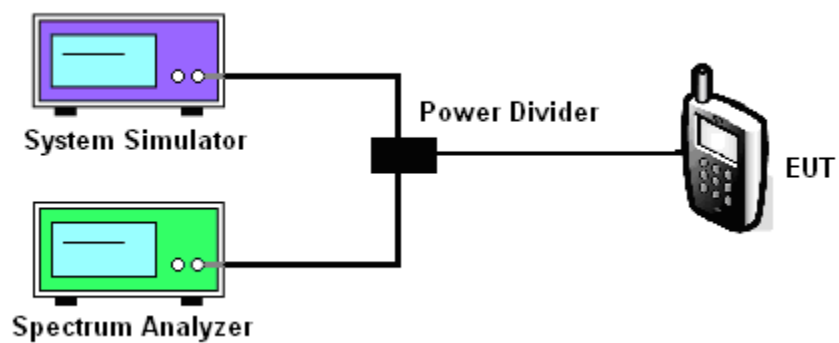
3.2.2 Measuring Instruments

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. For GSM/EGPRS operating modes:
 - a. Set the RBW = 1MHz, VBW = 1MHz, Peak detector in spectrum analyzer.
 - b. Set EUT in maximum power output, and triggered the burst signal.
 - c. Measured respectively the Peak level and Mean level, and the deviation was recorded as Peak to Average Ratio.
3. For UMTS operating modes:
 - a. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
 - b. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.

3.2.4 Test Setup



3.2.5 Test Result of Peak-to-Average Ratio

PCS Band			
Modes	GSM1900 (GSM)		
Channel	512 (Low)	661 (Mid)	810 (High)
Frequency (MHz)	1850.2	1880	1909.8
Peak-to-Average Ratio (dB)	0.12	0.12	0.10

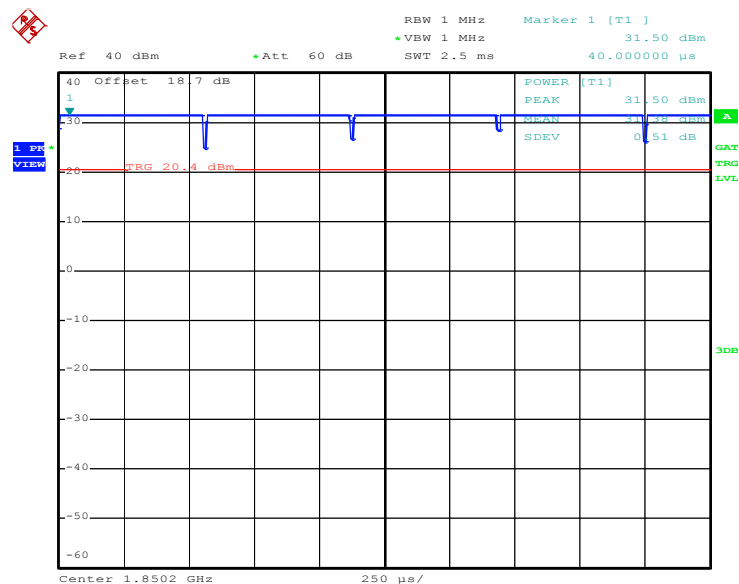
CDMA2000 BC1			
Modes	CDMA 2000 1xRTT		
Channel	25 (Low)	600 (Mid)	1175 (High)
Frequency (MHz)	1851.25	1880	1908.75
Peak-to-Average Ratio (dB)	2.60	4.20	4.48

CDMA2000 BC1			
Modes	CDMA 2000 1xEV-DO Rev. A		
Channel	25 (Low)	600 (Mid)	1175 (High)
Frequency (MHz)	1851.25	1880	1908.75
Peak-to-Average Ratio (dB)	3.80	4.16	4.12

3.2.6 Test Result (Plots) of Peak-to-Average Ratio

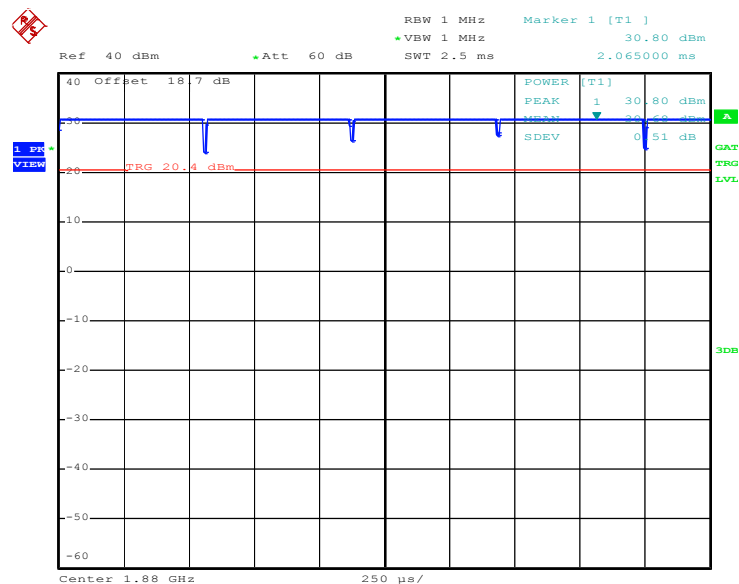
Band :	GSM 1900	Test Mode :	GSM Link
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Peak-to-Average Ratio on Channel 512 (1850.2 MHz)



Date: 22.OCT.2012 13:15:40

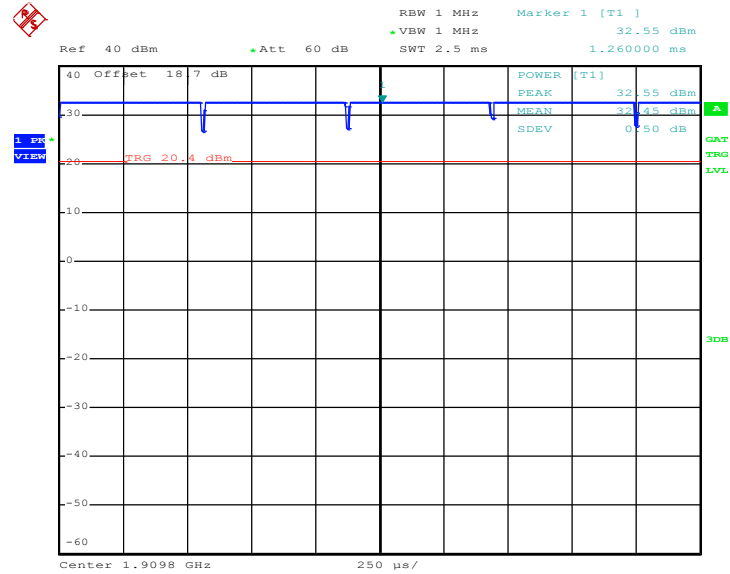
Peak-to-Average Ratio on Channel 661 (1880.0 MHz)



Date: 22.OCT.2012 13:15:01



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

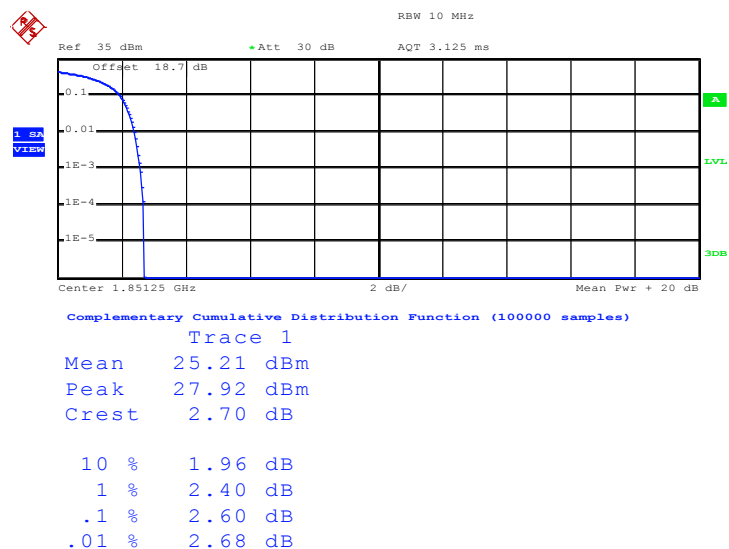


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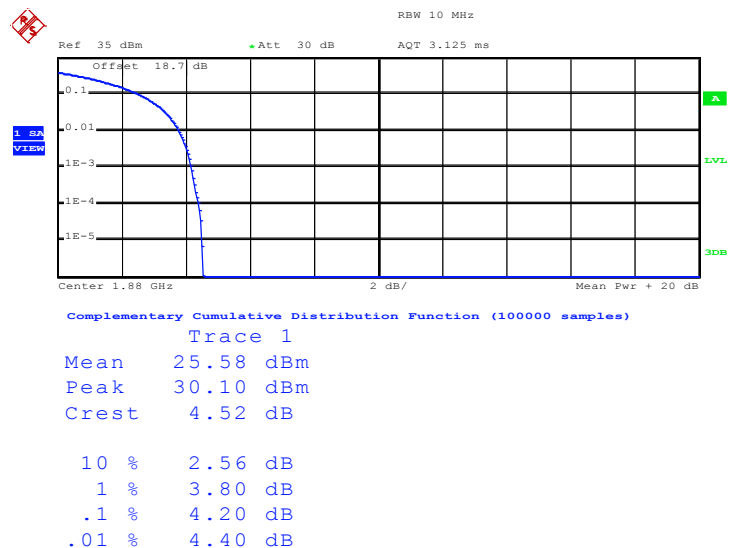
Band :	CDMA2000 BC1	Test Mode :	1xRTT Link
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Peak-to-Average Ratio on Channel 25 (1851.25 MHz)



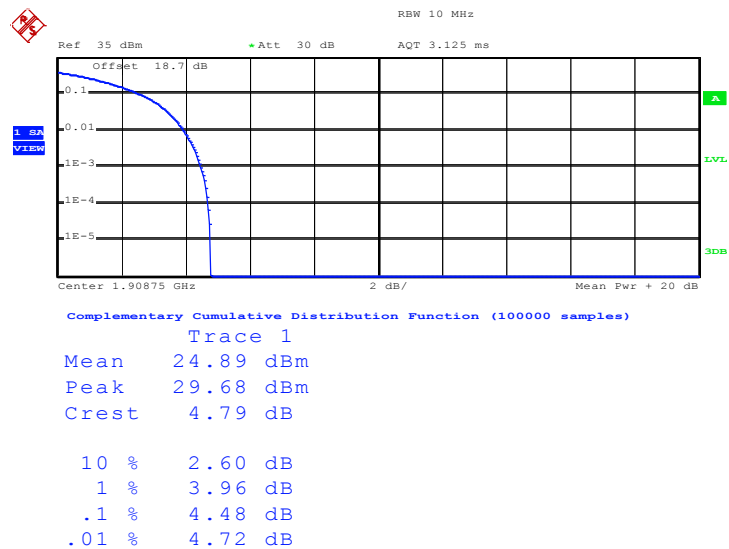
Date: 23.OCT.2012 18:30:29

Peak-to-Average Ratio on Channel 600 (1880 MHz)



Date: 23.OCT.2012 18:29:39

Peak-to-Average Ratio on Channel 1175 (1908.75 MHz)

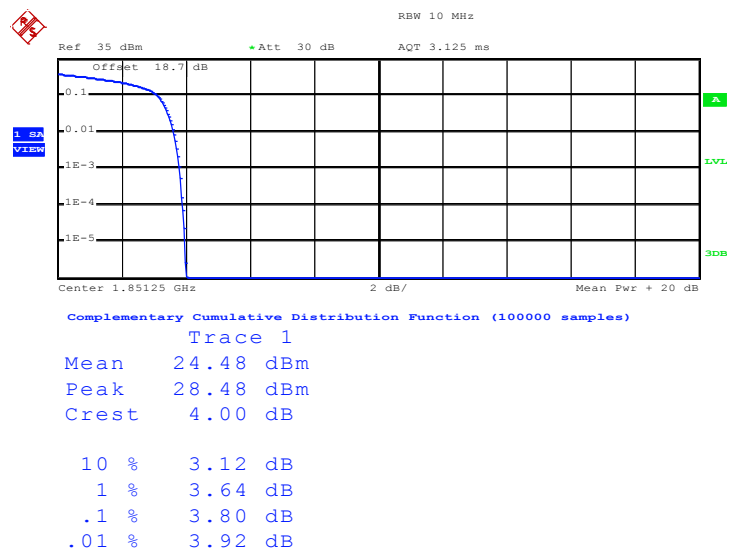


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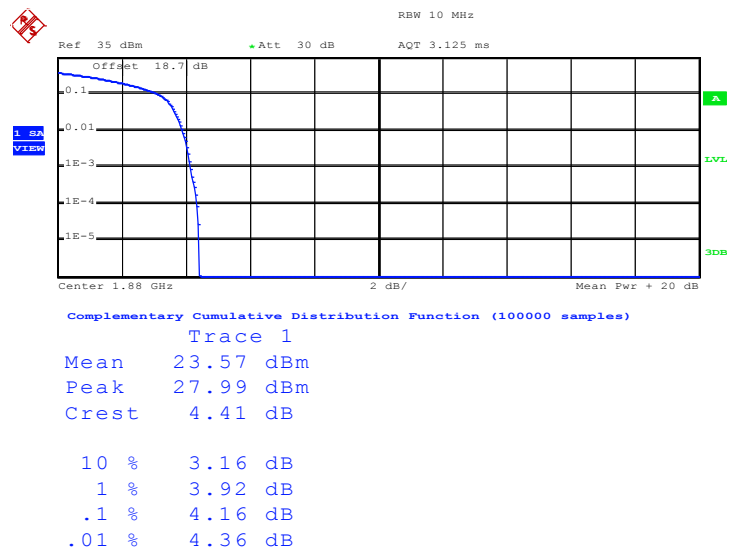
Band :	CDMA2000 BC1	Test Mode :	1xEV-DO Rev. A_RETAP 4096K
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Peak-to-Average Ratio on Channel 25 (1851.25 MHz)



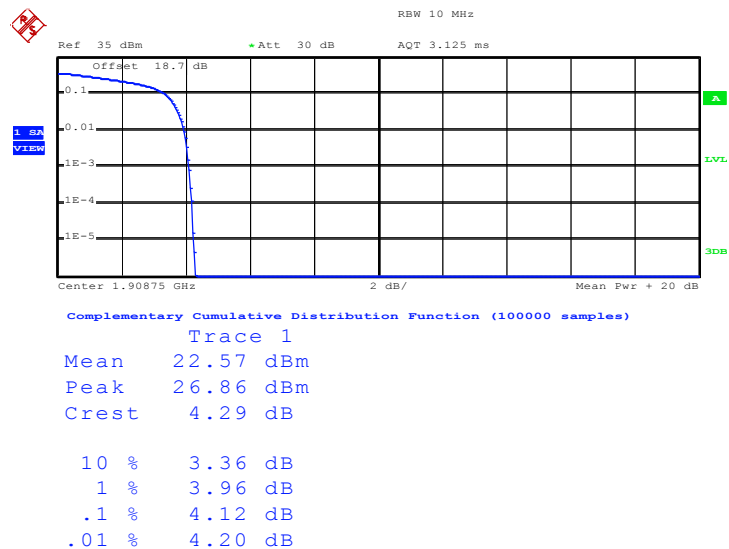
Date: 23.OCT.2012 15:33:57

Peak-to-Average Ratio on Channel 600 (1880 MHz)



Date: 23.OCT.2012 15:33:09

Peak-to-Average Ratio on Channel 1175 (1908.75 MHz)



Date: 23.OCT.2012 15:32:33

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.

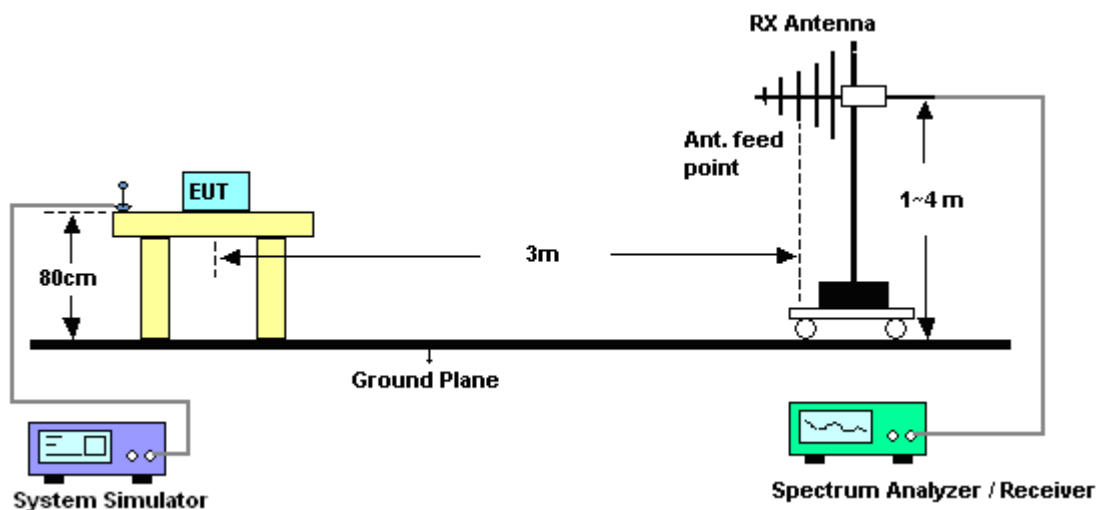
3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

1. The EUT was placed on an non-conductive rotating platform with 0.8 meter height in a semi-anechoic chamber. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and a spectrum analyzer with RBW= 1MHz, VBW= 3MHz for GSM, RBW= 300KHz, VBW= 1MHz for WCDMA, RBW= 30kHz, VBW= 100kHz for CDMA2000, and RMS detector settings per section 4.0 of KDB 971168 D01.
2. During the measurement, the EUT was enforced in maximum power and linked with a base station. The highest emission was recorded from analyzer power level (LVL) from the 360 degrees rotation of the turntable and the test antenna raised and lowered over a range from 1 to 4 meters in both horizontally and vertically polarized orientations.
3. Effective Isotropic Radiated Power (EIRP) was measured by substitution method according to TIA/EIA-603-C. The EUT was replaced by dipole antenna (substitution antenna) at same location, and then a known power from S.G. was applied into the dipole antenna through a Tx cable, and then recorded the maximum Analyzer reading through raised and lowered the test antenna. The correction factor (in dB) = S.G. - Tx Cable loss + Substitution antenna gain - Analyzer reading. Then the EUT's EIRP was calculated with the correction factor, $EIRP = LVL + \text{Correction factor}$ and $ERP = EIRP - 2.15$.

3.3.4 Test Setup



3.3.5 Test Result of ERP

CDMA2000 BC0 1xRTT_RC1+SO55 Radiated Power ERP				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
824.70	-10.53	31.00	18.32	0.0679
836.52	-10.60	30.95	18.20	0.0661
848.31	-11.48	31.20	17.57	0.0571
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
824.70	-17.19	34.47	15.13	0.0326
836.52	-16.52	34.91	16.24	0.0421
848.31	-16.34	34.76	16.27	0.0424

CDMA2000 BC0 1xEV-DO Rev. 0_RTAP 153.6K Radiated Power ERP				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
824.70	-11.32	31.00	17.53	0.0566
836.52	-11.22	30.95	17.58	0.0573
848.31	-11.99	31.20	17.06	0.0508
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
824.70	-17.63	34.47	14.69	0.0294
836.52	-16.87	34.91	15.89	0.0388
848.31	-16.83	34.76	15.78	0.0378

* ERP = LVL (dBm) + Correction Factor (dB) – 2.15

3.3.6 Test Result of EIRP

GSM1900 (GSM) Radiated Power EIRP				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1850.2	-15.68	40.70	25.02	0.3177
1880.0	-17.79	41.91	24.12	0.2582
1909.8	-18.62	41.73	23.11	0.2046
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1850.2	-19.16	42.78	23.62	0.2301
1880.0	-20.59	43.75	23.16	0.2070
1909.8	-21.28	43.06	21.78	0.1507

* EIRP = LVL (dBm) + Correction Factor (dB)

GSM1900 (EDGE 8) Radiated Power EIRP				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1850.2	-17.19	40.70	23.51	0.2244
1880.0	-19.43	41.91	22.48	0.1770
1909.8	-20.83	41.73	20.90	0.1230
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1850.2	-20.48	42.78	22.30	0.1698
1880.0	-22.22	43.75	21.53	0.1422
1909.8	-23.08	43.06	19.98	0.0995

* EIRP = LVL (dBm) + Correction Factor (dB)

CDMA2000 BC1 1xRTT_RC1+SO55 Radiated Power EIRP				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1851.25	-24.41	40.63	16.22	0.0419
1880.00	-25.08	41.91	16.83	0.0482
1908.75	-25.46	41.76	16.30	0.0427
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1851.25	-28.43	42.82	14.39	0.0275
1880.00	-28.54	43.75	15.21	0.0332
1908.75	-28.95	43.33	14.38	0.0274

CDMA2000 BC1 1xEV-DO Rev. A_RETAP 4096K Radiated Power EIRP				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1851.25	-23.92	40.63	16.71	0.0469
1880.00	-24.50	41.91	17.41	0.0551
1908.75	-24.69	41.76	17.07	0.0509
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1851.25	-27.48	42.82	15.34	0.0342
1880.00	-27.63	43.75	16.12	0.0409
1908.75	-27.70	43.33	15.63	0.0366

* EIRP = LVL (dBm) + Correction Factor (dB)

3.4 Occupied Bandwidth and 26dB Bandwidth Measurement

3.4.1 Description of Occupied Bandwidth and 26dB Bandwidth Measurement

The occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean transmitted power.

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.

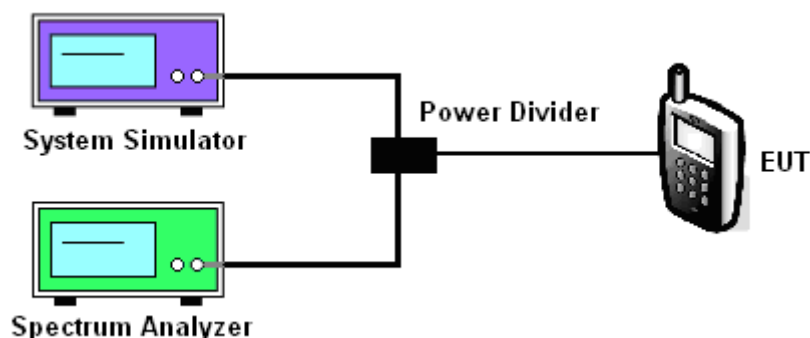
3.4.2 Measuring Instruments

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% occupied bandwidth and 26 dB bandwidth of the middle channel for the highest RF powers were measured.

3.4.4 Test Setup



3.4.5 Test Result of Occupied Bandwidth and 26dB Bandwidth

PCS Band						
Modes	GSM1900 (GSM)			GSM1900 (EDGE 8)		
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
99% OBW (KHz)	244.00	248.00	248.00	248.00	248.00	248.00
26dB BW (KHz)	308.00	304.00	314.00	294.00	292.00	296.00

CDMA2000 BC0			
Test Mode	CDMA 2000 1xRTT		
Test Status	RC1+SO55		
Channel	1013 (Low)	384 (Mid)	777 (High)
Frequency (MHz)	824.70	836.52	848.31
99% OBW (MHz)	1.276	1.276	1.272
26dB BW (MHz)	1.432	1.432	1.432

CDMA2000 BC0			
Test Mode	CDMA 2000 1xEV-DO Rev. 0		
Test Status	RTAP 153.6K		
Channel	1013 (Low)	384 (Mid)	777 (High)
Frequency (MHz)	824.70	836.52	848.31
99% OBW (MHz)	1.272	1.272	1.272
26dB BW (MHz)	1.424	1.420	1.432

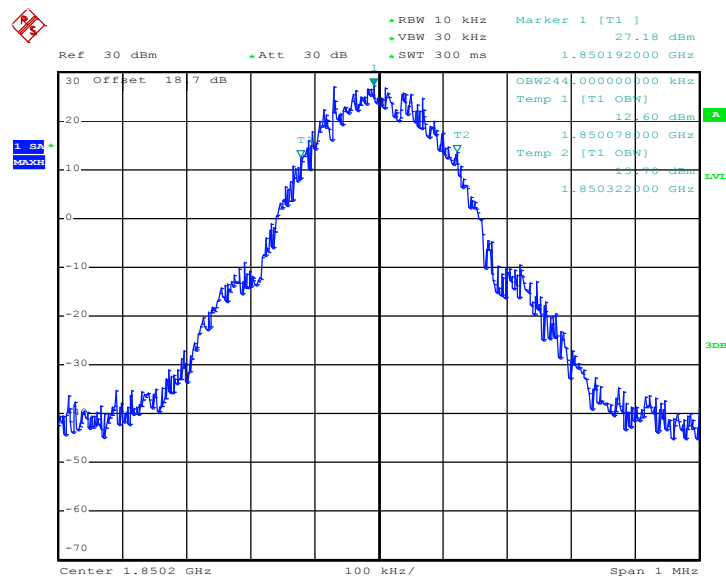


CDMA2000 BC1			
Test Mode	CDMA 2000 1xRTT		
Test Status	RC1+SO55		
Channel	25 (Low)	600 (Mid)	1175 (High)
Frequency (MHz)	1851.25	1880.00	1908.75
99% OBW (MHz)	1.296	1.276	1.276
26dB BW (MHz)	1.508	1.428	1.432

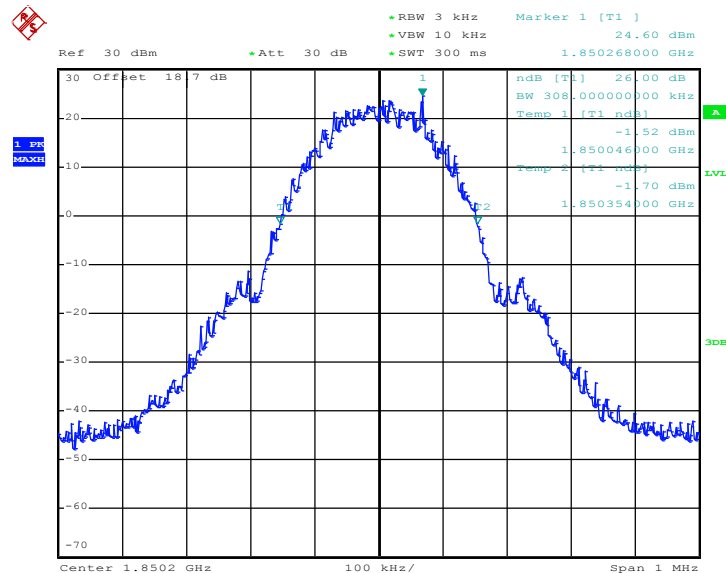
CDMA2000 BC1			
Test Mode	CDMA 2000 1xEV-DO Rev. A		
Test Status	RETAP 4096K		
Channel	25 (Low)	600 (Mid)	1175 (High)
Frequency (MHz)	1851.25	1880.00	1908.75
99% OBW (MHz)	1.280	1.280	1.280
26dB BW (MHz)	1.452	1.452	1.472

3.4.6 Test Result (Plots) of Occupied Bandwidth and 26dB Bandwidth

Band :	GSM 1900	Test Mode :	GSM Link
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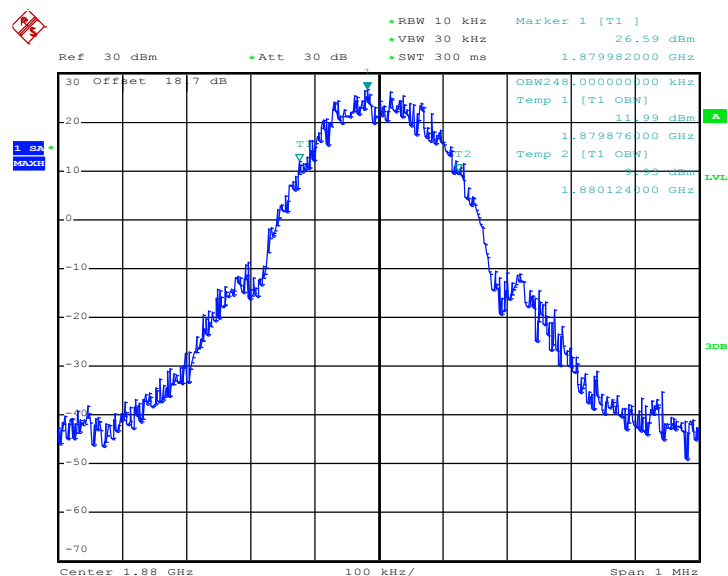
99% Occupied Bandwidth Plot on Channel 512 (1850.2 MHz)


Date: 22.OCT.2012 13:06:54

26dB Bandwidth Plot on Channel 512 (1850.2 MHz)


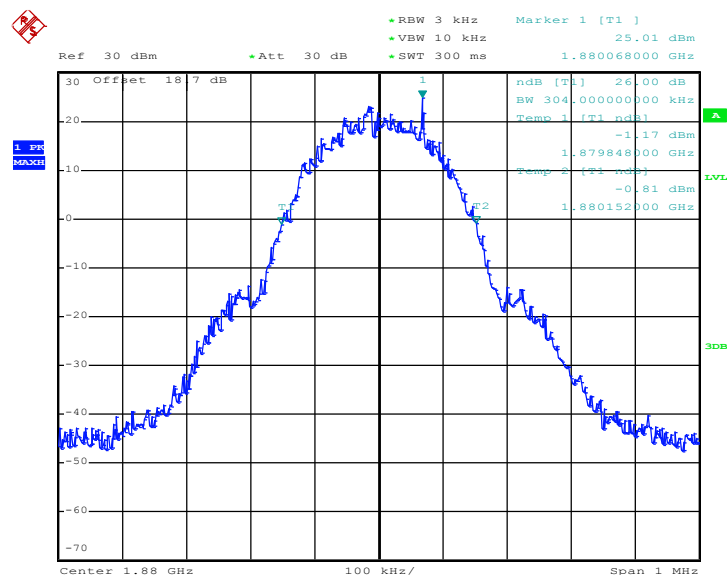
Date: 22.OCT.2012 13:05:35

99% Occupied Bandwidth Plot on Channel 661 (1880.0 MHz)

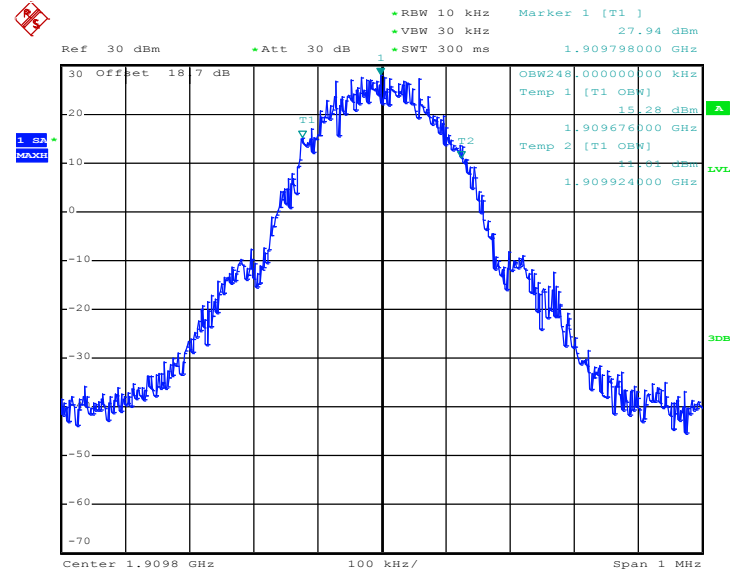


Date: 22.OCT.2012 13:07:20

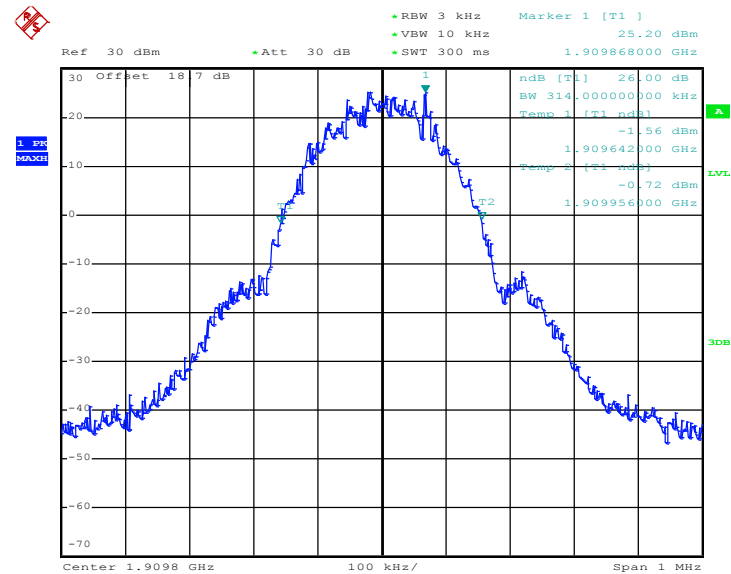
26dB Bandwidth Plot on Channel 661 (1880.0 MHz)



Date: 22.OCT.2012 13:06:01

99% Occupied Bandwidth Plot on Channel 810 (1909.8 MHz)


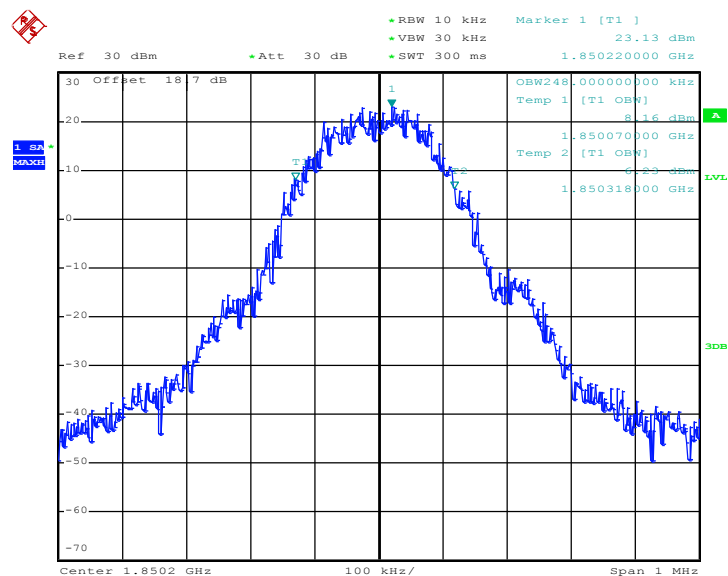
Date: 22.OCT.2012 13:07:46

26dB Bandwidth Plot on Channel 810 (1909.8 MHz)


Date: 22.OCT.2012 13:06:27

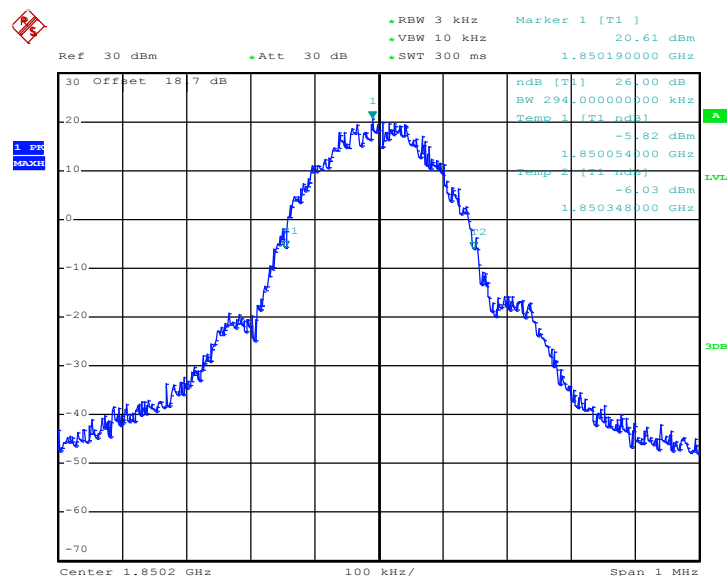
Band :	GSM 1900	Test Mode :	EDGE 8 Link
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99% Occupied Bandwidth Plot on Channel 512 (1850.2 MHz)

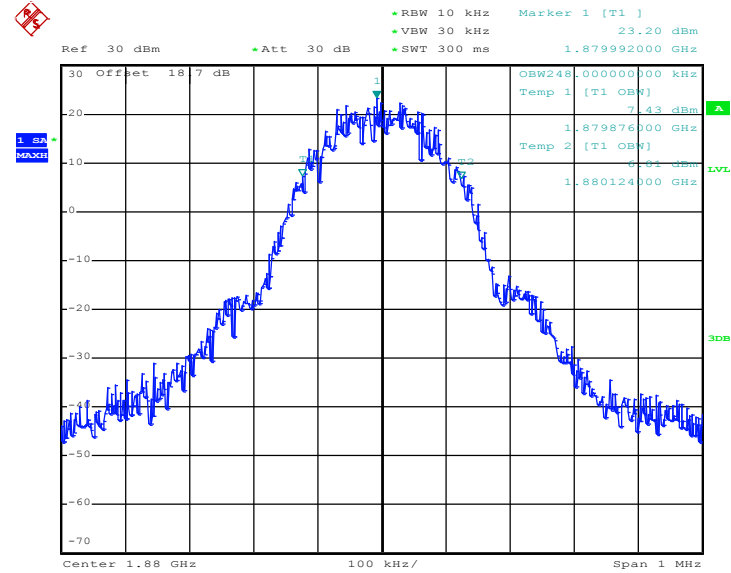


Date: 24.OCT.2012 23:10:11

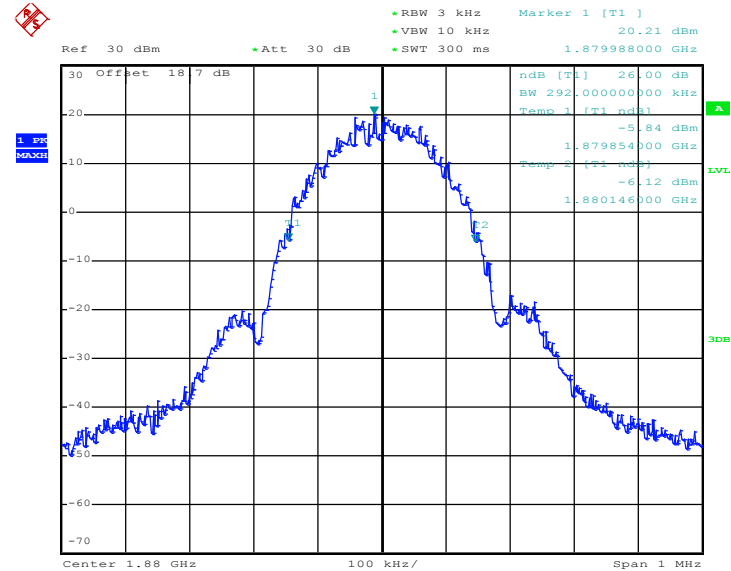
26dB Bandwidth Plot on Channel 512 (1850.2 MHz)



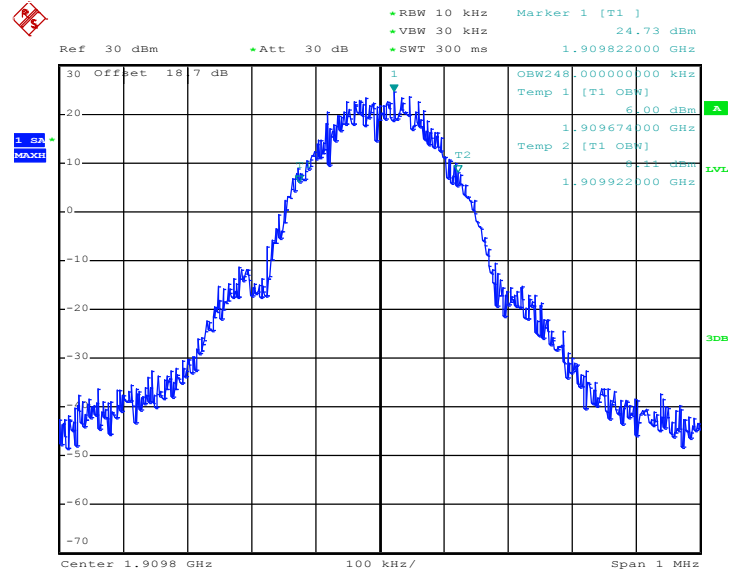
Date: 22.OCT.2012 13:28:36

99% Occupied Bandwidth Plot on Channel 661 (1880.0 MHz)


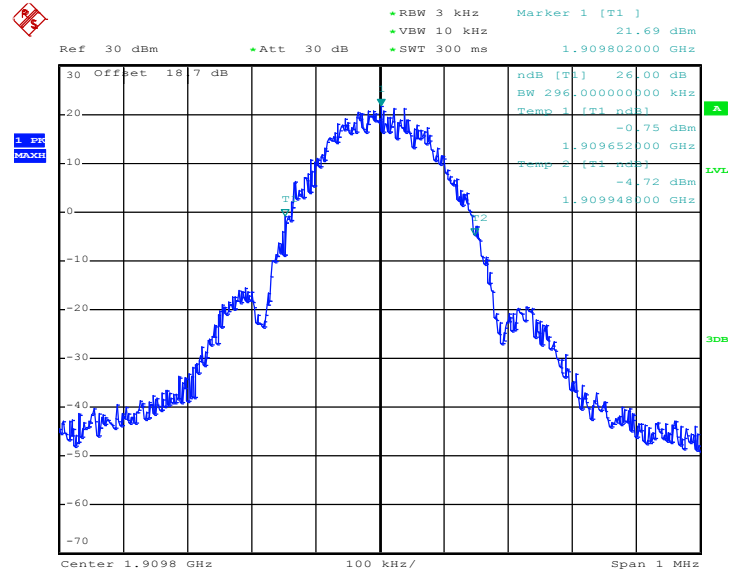
Date: 24.OCT.2012 23:10:37

26dB Bandwidth Plot on Channel 661 (1880.0 MHz)


Date: 22.OCT.2012 13:29:03

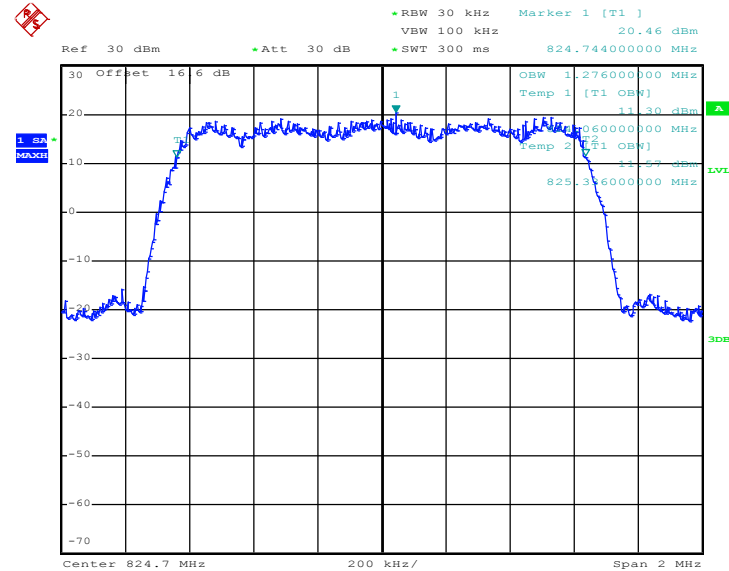
99% Occupied Bandwidth Plot on Channel 810 (1909.8 MHz)


Date: 24.OCT.2012 23:11:03

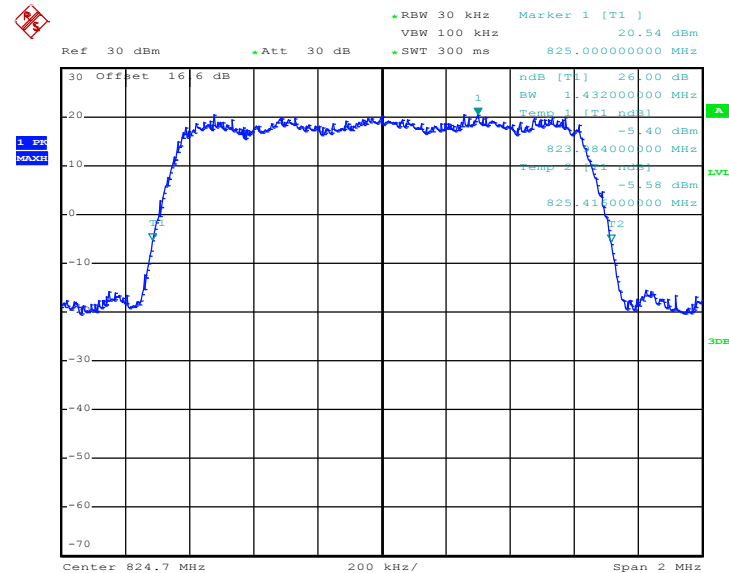
26dB Bandwidth Plot on Channel 810 (1909.8 MHz)


Date: 22.OCT.2012 13:29:29

Band :	CDMA2000 BC0	Test Mode :	1xRTT_RC1+SO55
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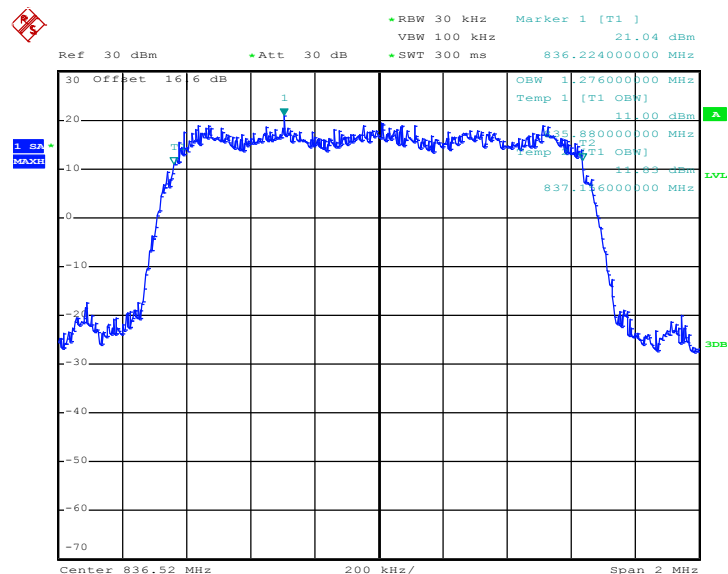
99% Occupied Bandwidth Plot on Channel 1013 (824.7 MHz)


Date: 22.OCT.2012 20:55:49

26dB Bandwidth Plot on Channel 1013 (824.7 MHz)


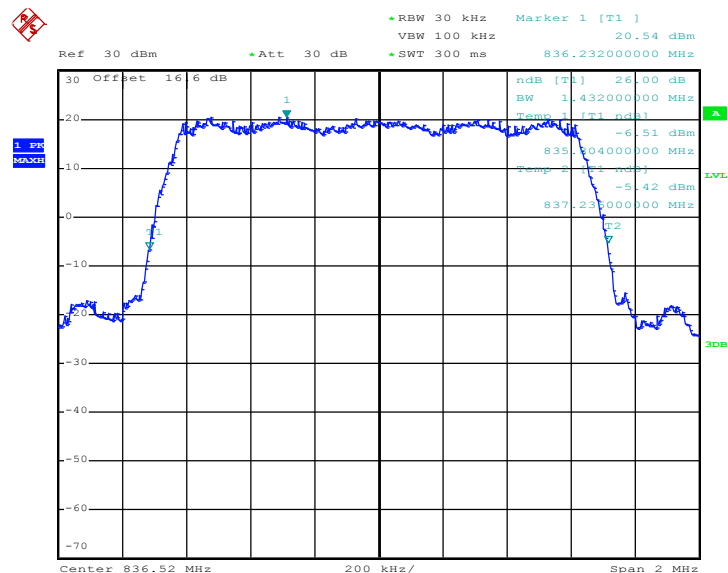
Date: 22.OCT.2012 20:52:54

99% Occupied Bandwidth Plot on Channel 384 (836.52 MHz)

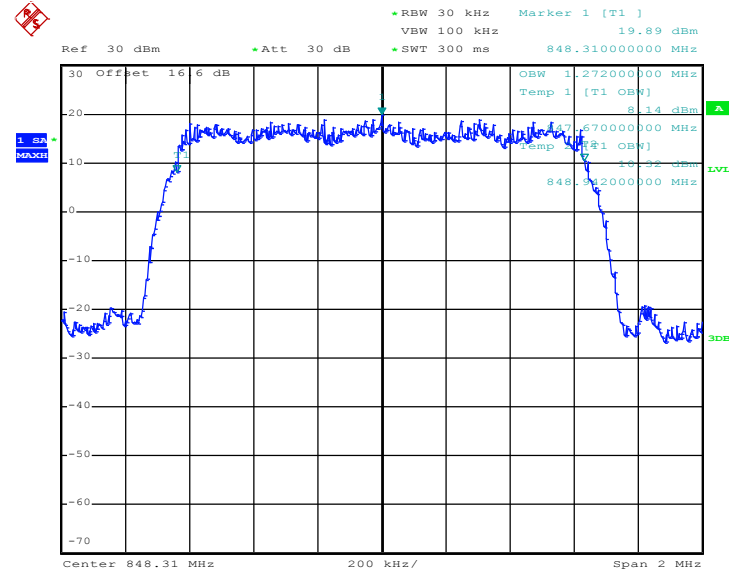


Date: 22.OCT.2012 20:56:49

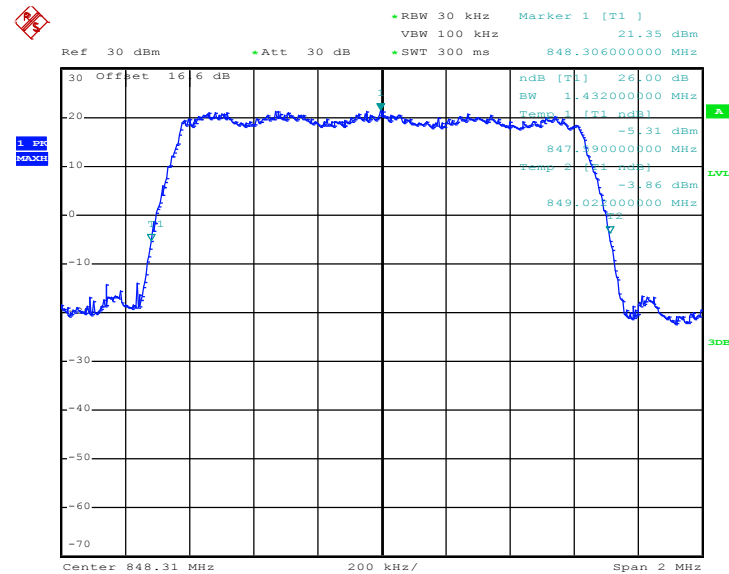
26dB Bandwidth Plot on Channel 384 (836.52 MHz)



Date: 22.OCT.2012 20:52:10

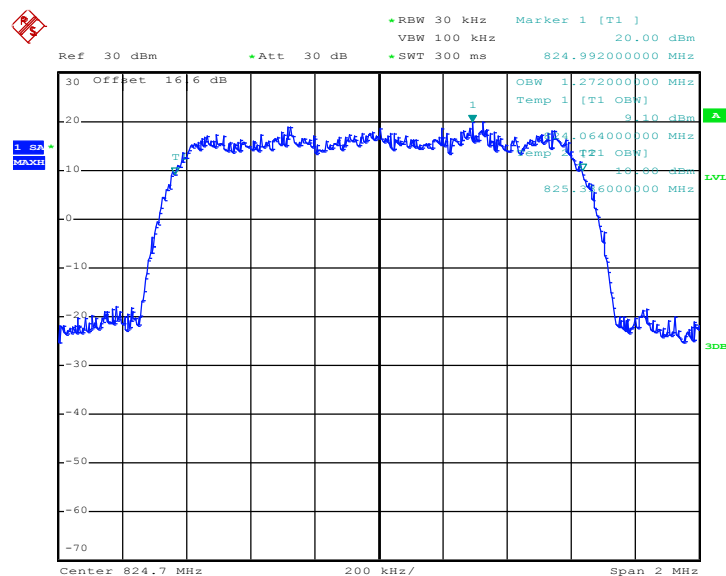
99% Occupied Bandwidth Plot on Channel 777 (848.31 MHz)


Date: 22.OCT.2012 20:57:35

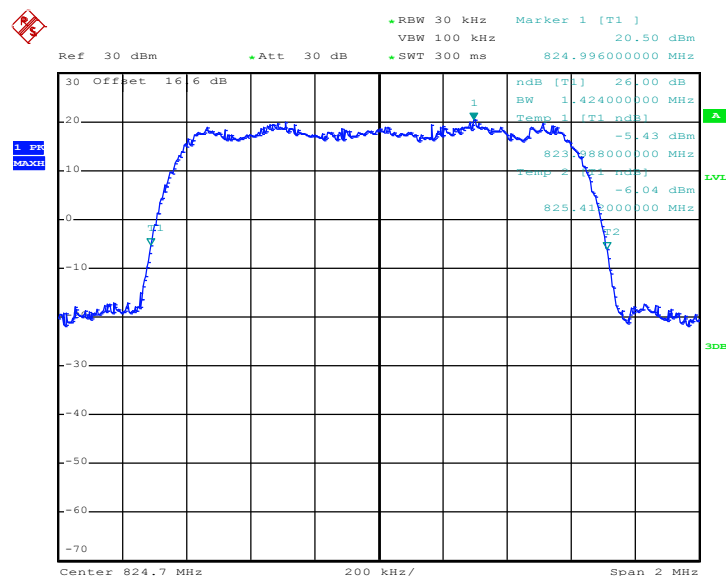
26dB Bandwidth Plot on Channel 777 (848.31 MHz)


Date: 22.OCT.2012 20:51:13

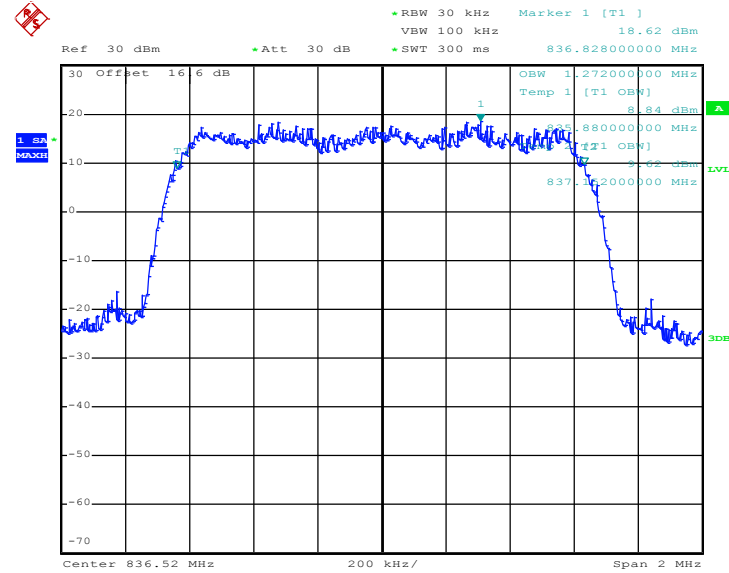
Band :	CDMA2000 BC0	Test Mode :	1xEV-DO Rev. 0_RTAP 153.6K
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99% Occupied Bandwidth Plot on Channel 1013 (824.7 MHz)


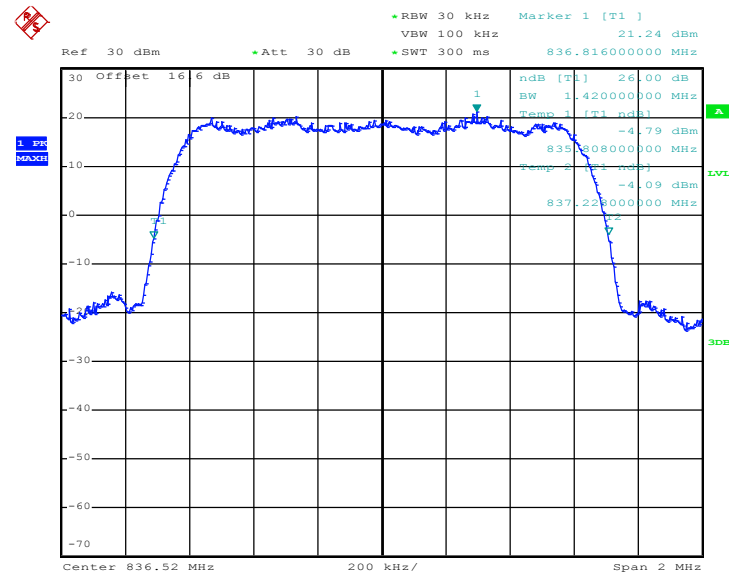
Date: 23.OCT.2012 17:02:18

26dB Bandwidth Plot on Channel 1013 (824.7 MHz)


Date: 23.OCT.2012 17:00:15

99% Occupied Bandwidth Plot on Channel 384 (836.52 MHz)


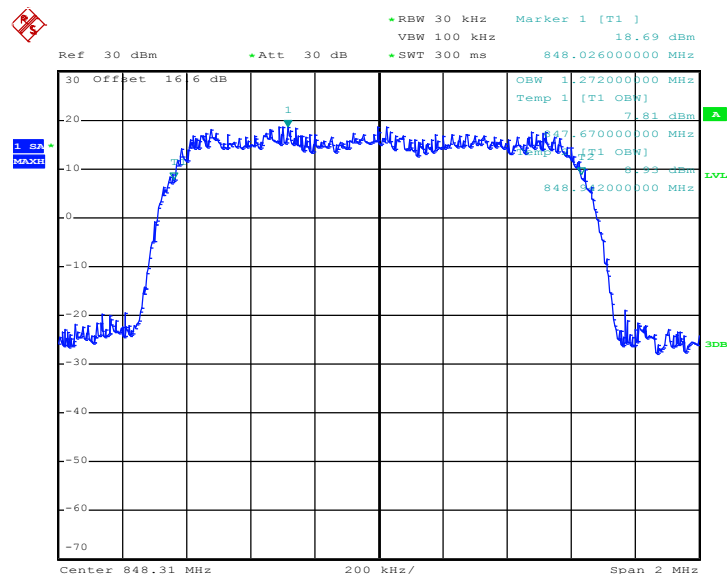
Date: 23.OCT.2012 17:02:59

26dB Bandwidth Plot on Channel 384 (836.52 MHz)


Date: 23.OCT.2012 16:59:40

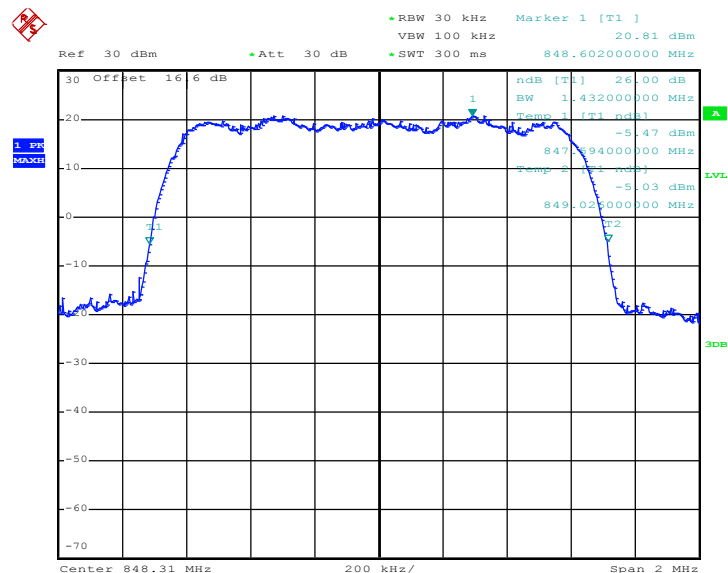


99% Occupied Bandwidth Plot on Channel 777 (848.31 MHz)



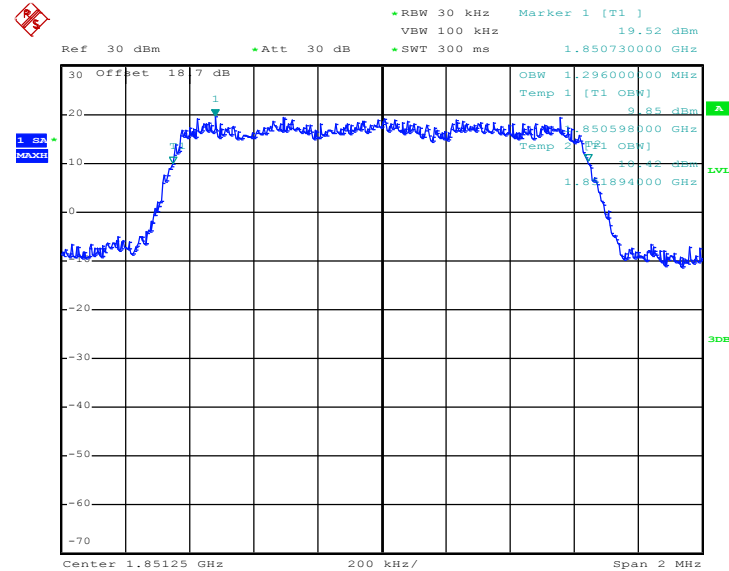
Date: 23.OCT.2012 17:03:36

26dB Bandwidth Plot on Channel 777 (848.31 MHz)

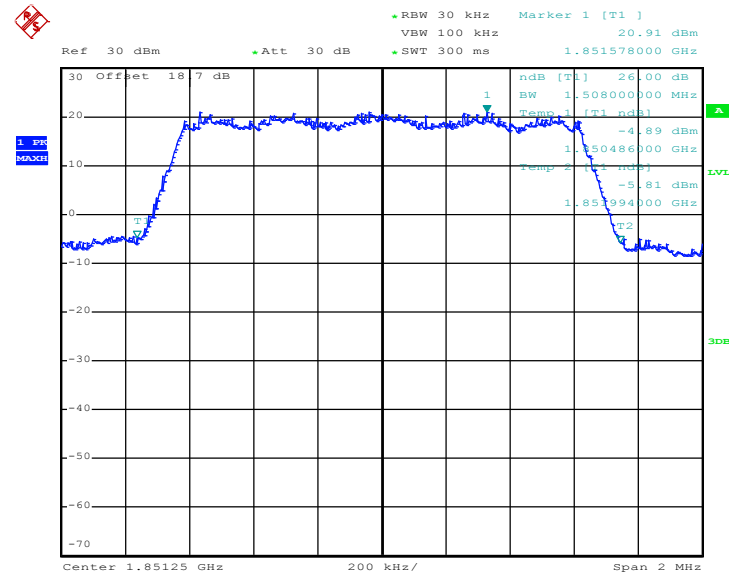


Date: 23.OCT.2012 16:58:56

Band :	CDMA2000 BC1	Test Mode :	1xRTT_RC1+SO55
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99% Occupied Bandwidth Plot on Channel 25 (1851.25 MHz)


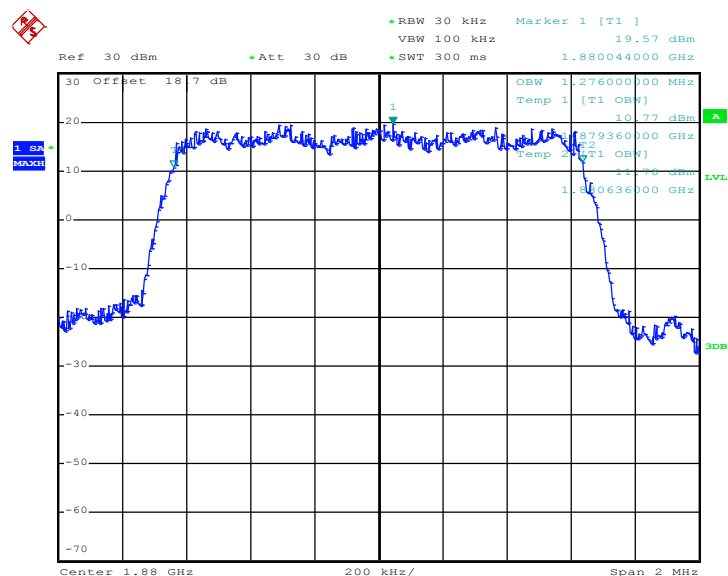
Date: 23.OCT.2012 18:22:24

26dB Bandwidth Plot on Channel 25 (1851.25 MHz)


Date: 23.OCT.2012 18:20:35

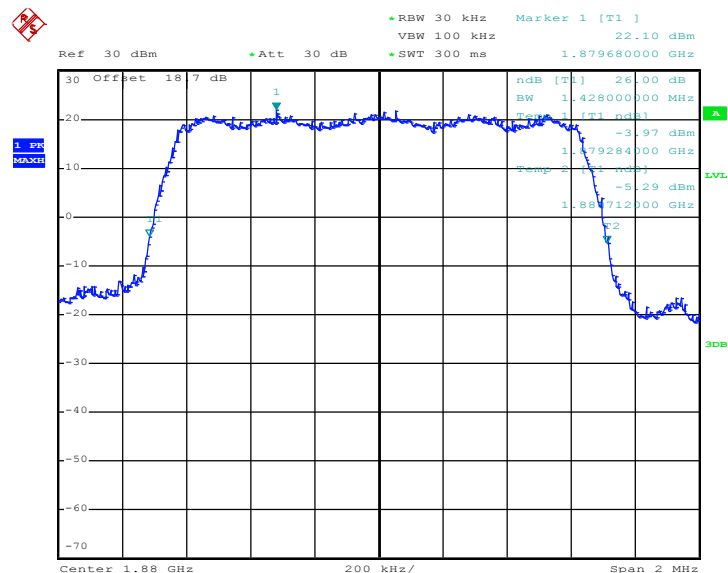


99% Occupied Bandwidth Plot on Channel 600 (1880.0 MHz)

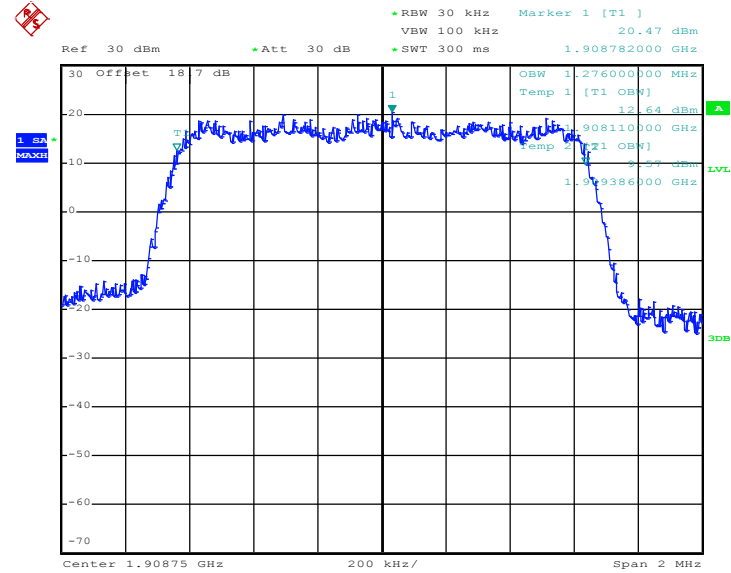


Date: 23.OCT.2012 18:24:51

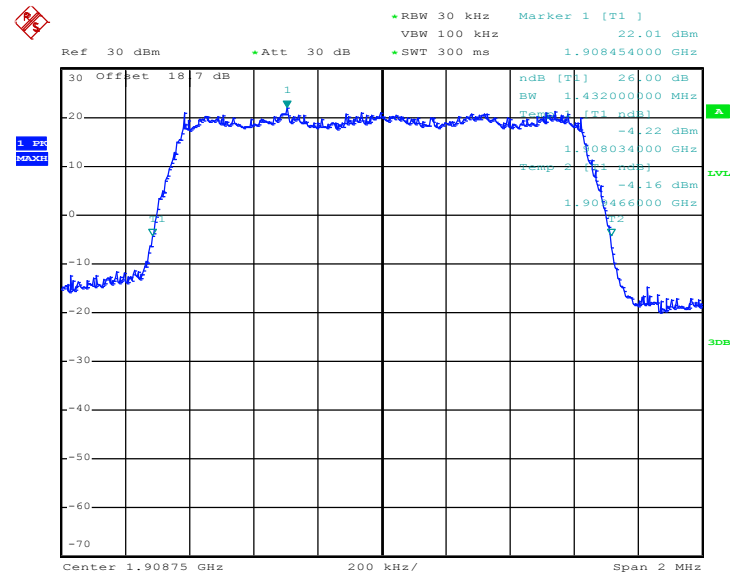
26dB Bandwidth Plot on Channel 600 (1880.0 MHz)



Date: 23.OCT.2012 18:18:44

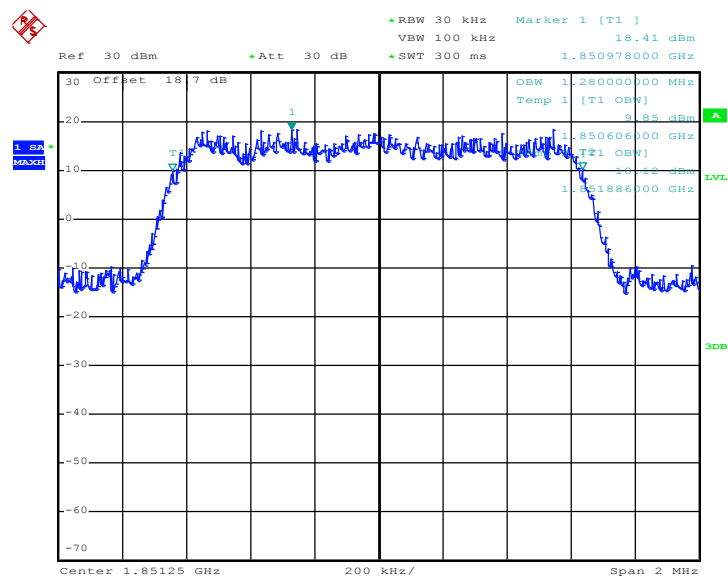
99% Occupied Bandwidth Plot on Channel 1175 (1908.75 MHz)


Date: 23.OCT.2012 18:25:41

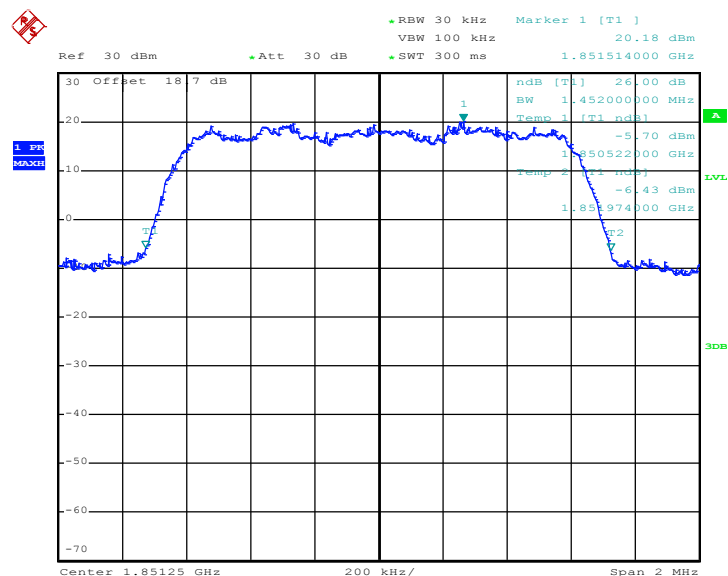
26dB Bandwidth Plot on Channel 1175 (1908.75 MHz)


Date: 23.OCT.2012 18:19:43

Band :	CDMA2000 BC1	Test Mode :	1xEV-DO Rev. A_RETAP 4096K
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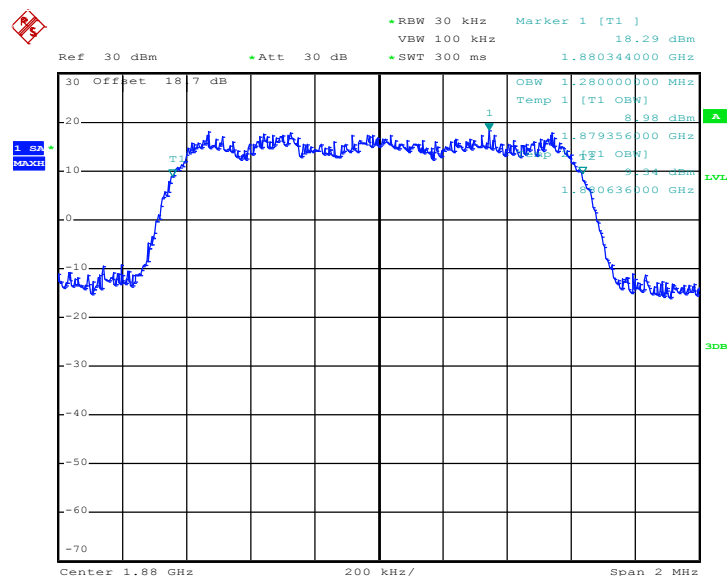
99% Occupied Bandwidth Plot on Channel 25 (1851.25 MHz)


Date: 23.OCT.2012 15:26:40

26dB Bandwidth Plot on Channel 25 (1851.25 MHz)


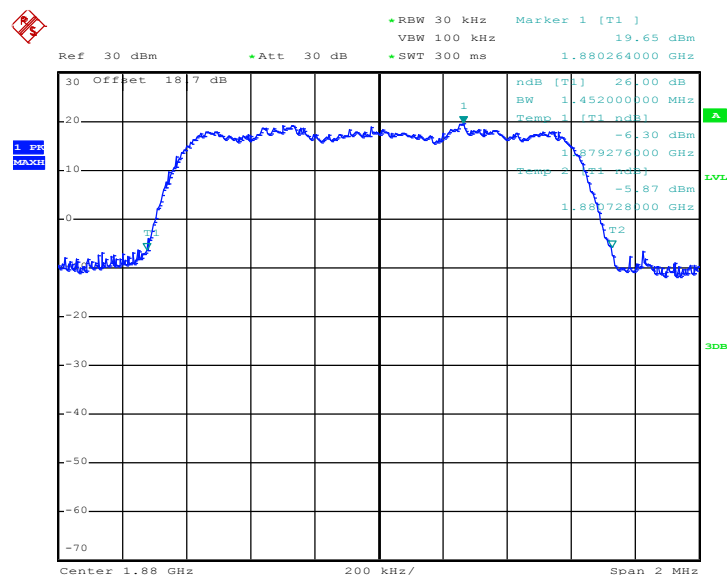
Date: 23.OCT.2012 15:15:06

99% Occupied Bandwidth Plot on Channel 600 (1880.0 MHz)



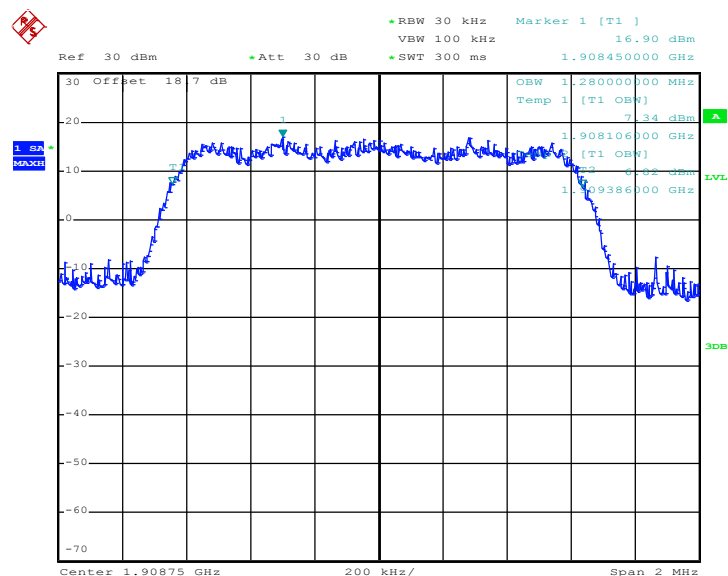
Date: 23.OCT.2012 15:24:20

26dB Bandwidth Plot on Channel 600 (1880.0 MHz)



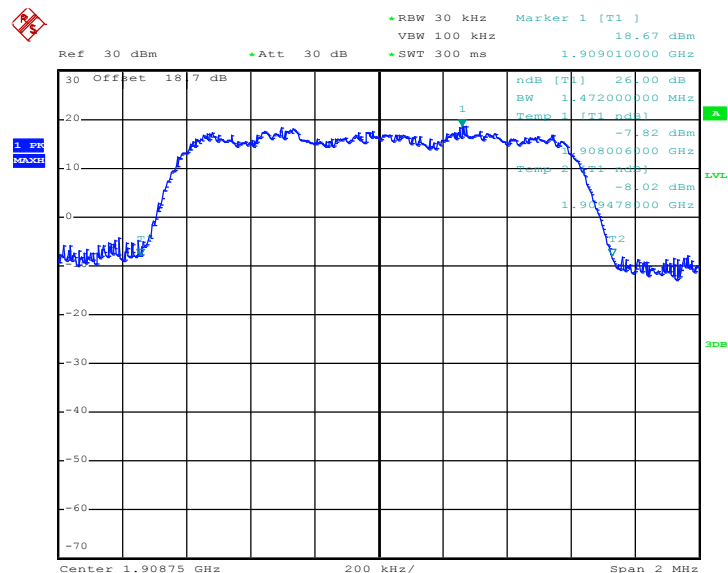
Date: 23.OCT.2012 15:13:17

99% Occupied Bandwidth Plot on Channel 1175 (1908.75 MHz)



Date: 23.OCT.2012 15:26:02

26dB Bandwidth Plot on Channel 1175 (1908.75 MHz)



Date: 23.OCT.2012 15:14:15

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

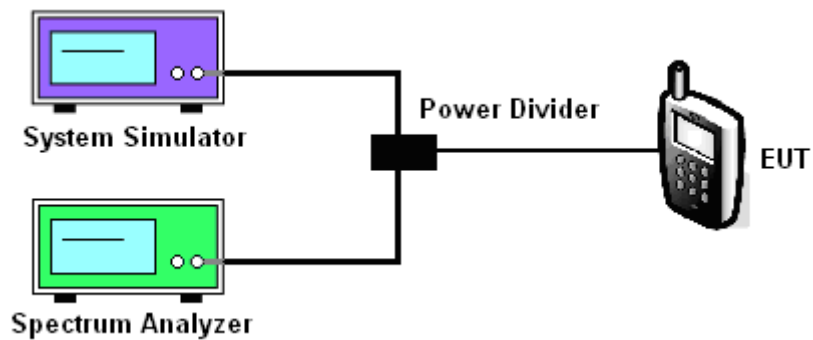
See list of measuring instruments of this test report.

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.
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.

3.5.4 Test Setup

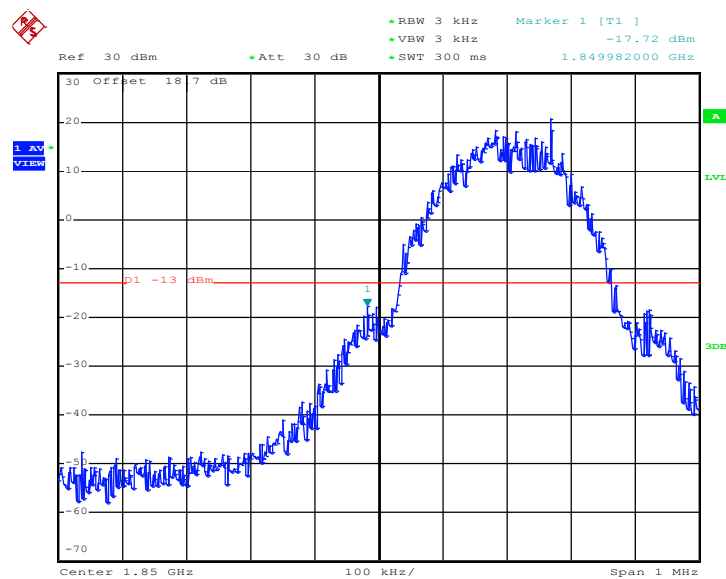
<Conducted Band Edge >



3.5.5 Test Result (Plots) of Conducted Band Edge

Band :	GSM1900	Test Mode :	GSM Link
Correction Factor :	0.20dB	Maximum 26dB Bandwidth :	0.314MHz
Band Edge :	-17.52dBm	Measurement Value :	-17.72dBm

Lower Band Edge Plot on Channel 512 (1850.2 MHz)

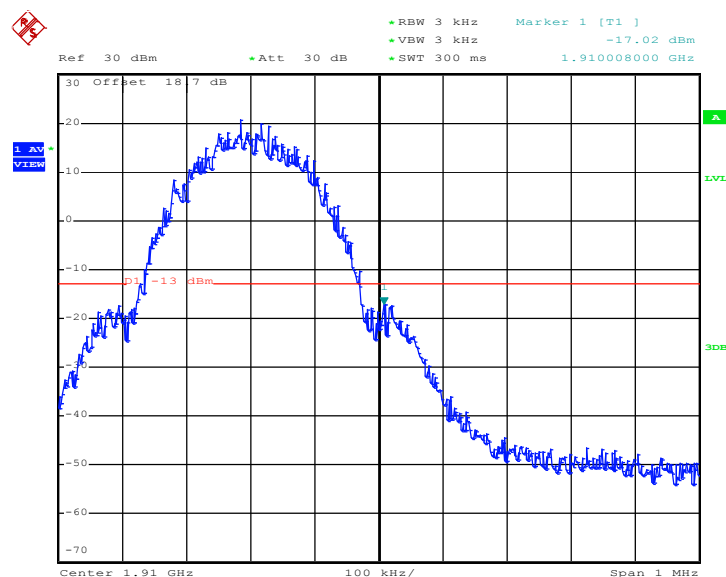


Date: 22.OCT.2012 13:19:15

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

Band :	GSM1900	Test Mode :	GSM Link
Correction Factor :	0.20dB	Maximum 26dB Bandwidth :	0.314MHz
Band Edge :	-16.82dBm	Measurement Value :	-17.02dBm

Higher Band Edge Plot on Channel 810 (1909.8 MHz)

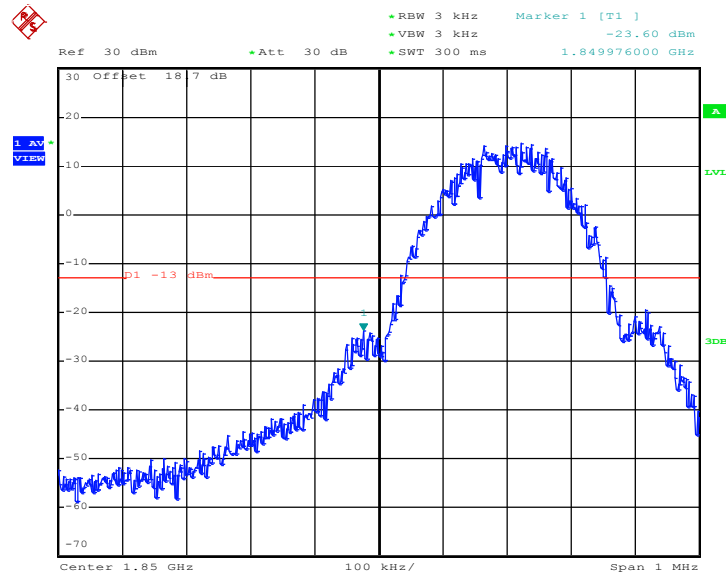


Date: 22.OCT.2012 13:19:42

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

Band :	GSM1900	Test Mode :	EDGE 8 Link
Correction Factor :	-0.06dB	Maximum 26dB Bandwidth :	0.296MHz
Band Edge :	-23.66dBm	Measurement Value :	-23.60dBm

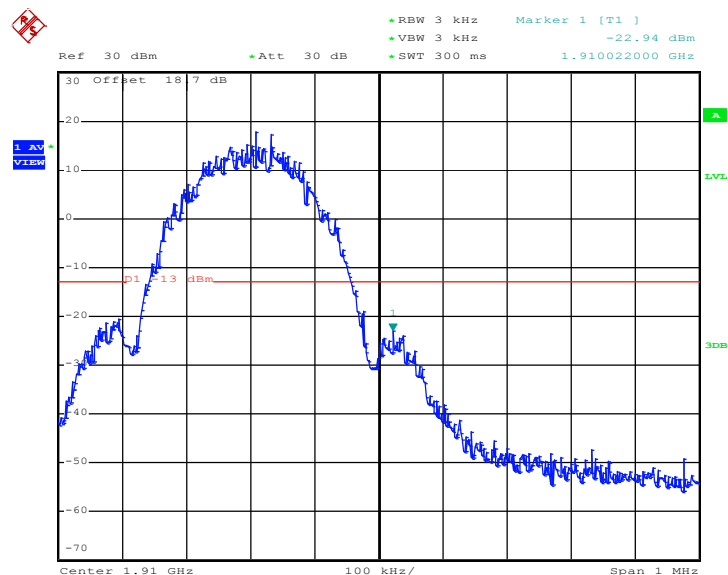
Lower Band Edge Plot on Channel 512 (1850.2 MHz)



Date: 22.OCT.2012 13:32:13

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

Band :	GSM1900	Test Mode :	EDGE 8 Link
Correction Factor :	-0.06dB	Maximum 26dB Bandwidth :	0.296MHz
Band Edge :	--23.00dBm	Measurement Value :	-22.94dBm

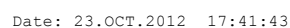
Higher Band Edge Plot on Channel 810 (1909.8 MHz)


Date: 22.OCT.2012 13:32:39

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

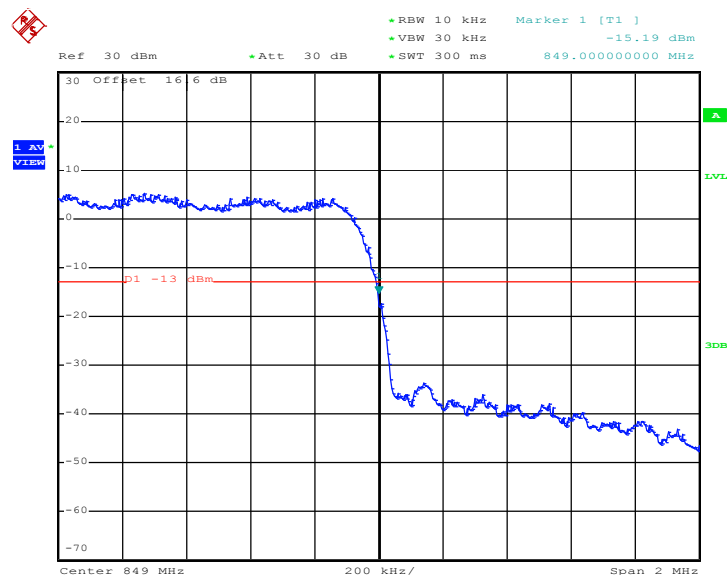


Lower Band Edge Plot on Channel 1013 (824.7 MHz)



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

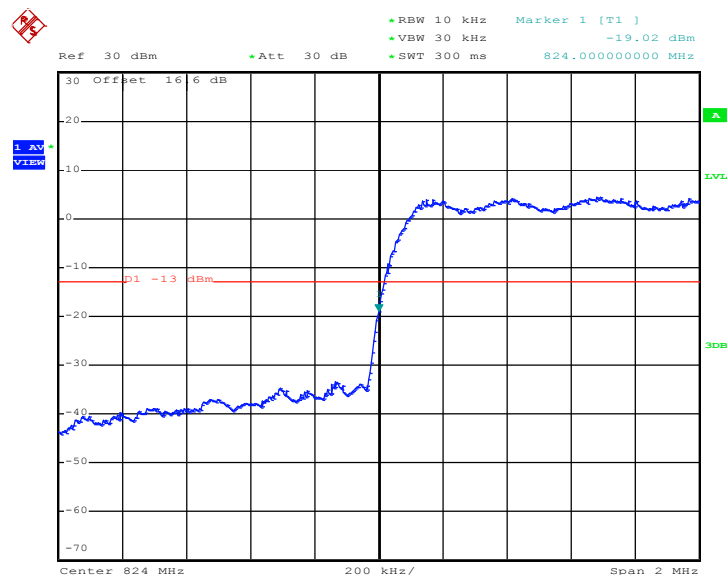
Band :	CDMA2000 BC0	Test Mode :	1xRTT_RC1+S055
Correction Factor :	1.56dB	Maximum 26dB Bandwidth :	1.432MHz
Band Edge :	-13.63dBm	Measurement Value :	-15.19dBm

Higher Band Edge Plot on Channel 777 (848.31 MHz)


Date: 23.OCT.2012 17:48:14

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

Band :	CDMA2000 BC0	Test Mode :	1xEV-DO Rev. 0_RTAP 153.6K
Correction Factor :	1.56dB	Maximum 26dB Bandwidth :	1.432MHz
Band Edge :	-17.46dBm	Measurement Value :	-19.02dBm

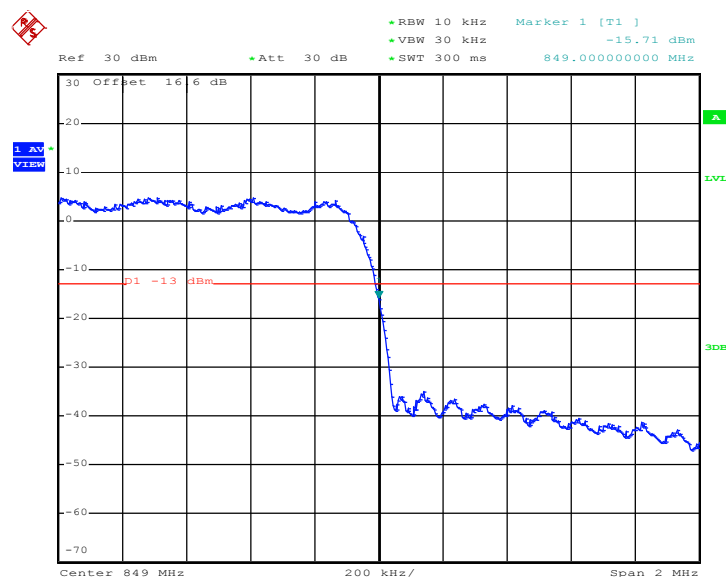
Lower Band Edge Plot on Channel 1013 (824.7 MHz)


Date: 23.OCT.2012 16:49:21

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

Band :	CDMA2000 BC0	Test Mode :	1xEV-DO Rev. 0_RTAP 153.6K
Correction Factor :	1.56dB	Maximum 26dB Bandwidth :	1.432MHz
Band Edge :	-14.15dBm	Measurement Value :	-15.71dBm

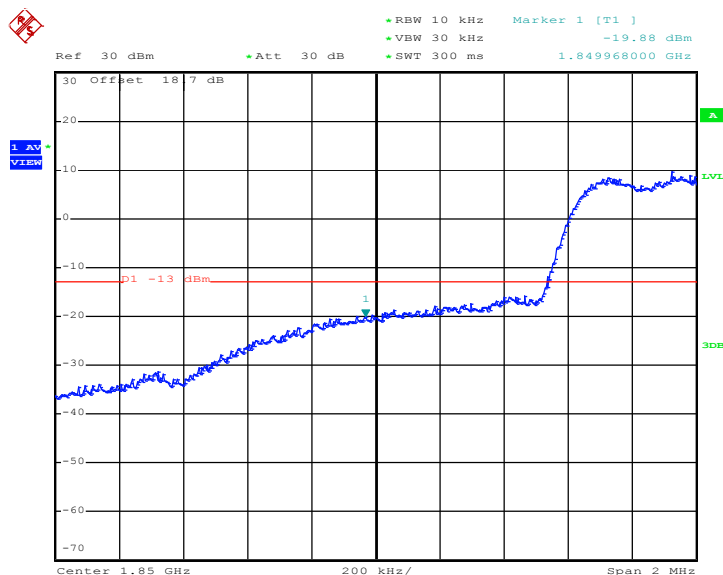
Higher Band Edge Plot on Channel 777 (848.31 MHz)



Date: 23.OCT.2012 16:46:21

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

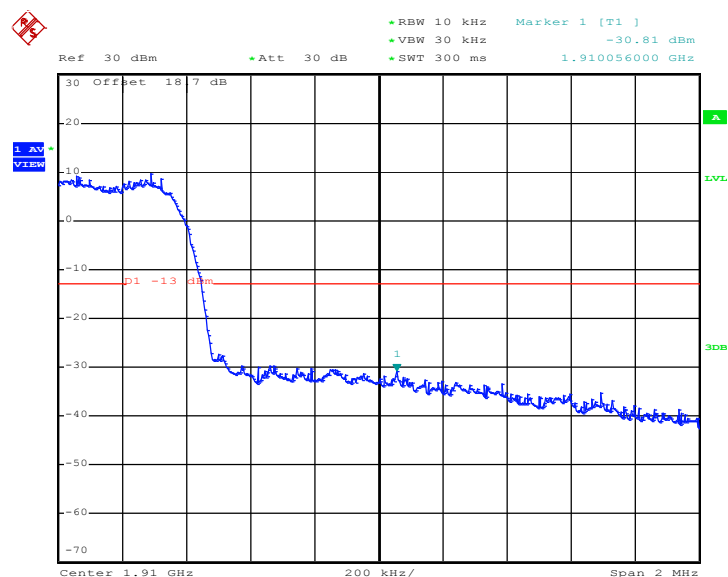
Band :	CDMA2000 BC1	Test Mode :	1xRTT_RC1+SO55
Correction Factor :	1.78dB	Maximum 26dB Bandwidth :	1.508MHz
Band Edge :	-18.10dBm	Measurement Value :	-19.88dBm

Lower Band Edge Plot on Channel 25 (1851.25 MHz)


Date: 23.OCT.2012 18:35:29

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

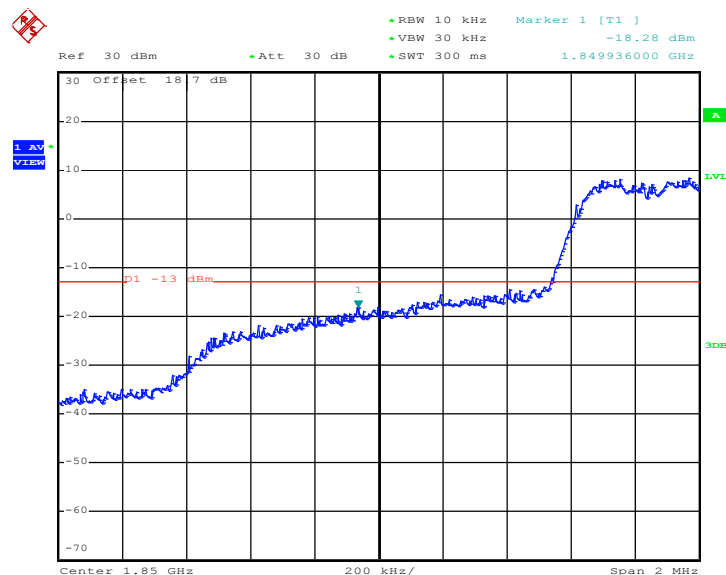
Band :	CDMA2000 BC1	Test Mode :	1xRTT_RC1+SO55
Correction Factor :	1.78dB	Maximum 26dB Bandwidth :	1.508MHz
Band Edge :	-29.03dBm	Measurement Value :	-30.81dBm

Higher Band Edge Plot on Channel 1175 (1908.75 MHz)


Date: 23.OCT.2012 18:42:44

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

Band :	CDMA2000 BC1	Test Mode :	1xEV-DO Rev. A_RETAP 4096K
Correction Factor :	1.68dB	Maximum 26dB Bandwidth :	1.472MHz
Band Edge :	-16.60dBm	Measurement Value :	-18.28dBm

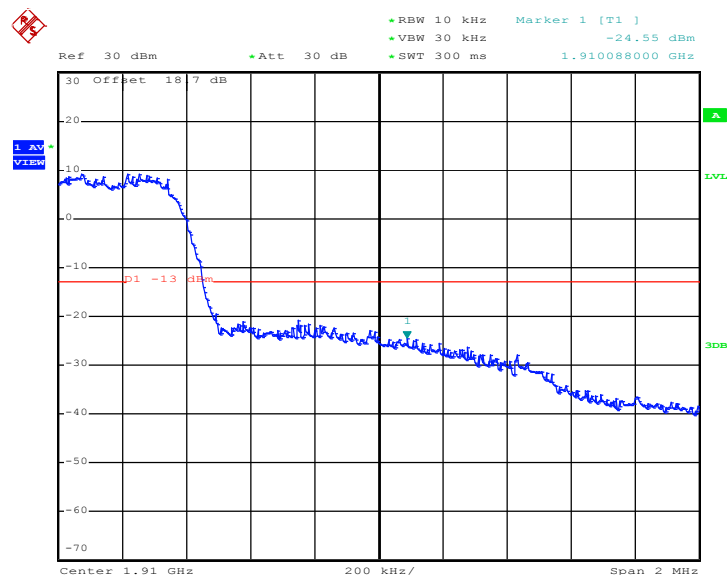
Lower Band Edge Plot on Channel 25 (1851.25 MHz)


Date: 23.OCT.2012 16:06:02

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

Band :	CDMA2000 BC1	Test Mode :	1xEV-DO Rev. A_RETAP 4096K
Correction Factor :	1.68dB	Maximum 26dB Bandwidth :	1.472MHz
Band Edge :	-22.87dBm	Measurement Value :	-24.55dBm

Higher Band Edge Plot on Channel 1175 (1908.75 MHz)



Date: 23.OCT.2012 16:16:26

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

3.6 Conducted Spurious Emission Measurement

3.6.1 Description of Conducted Spurious 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.

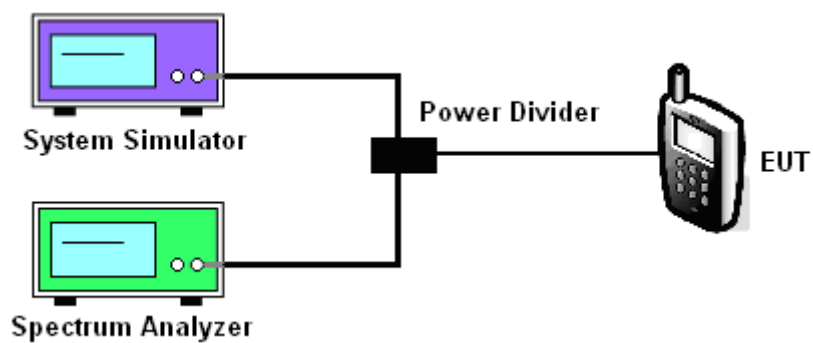
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

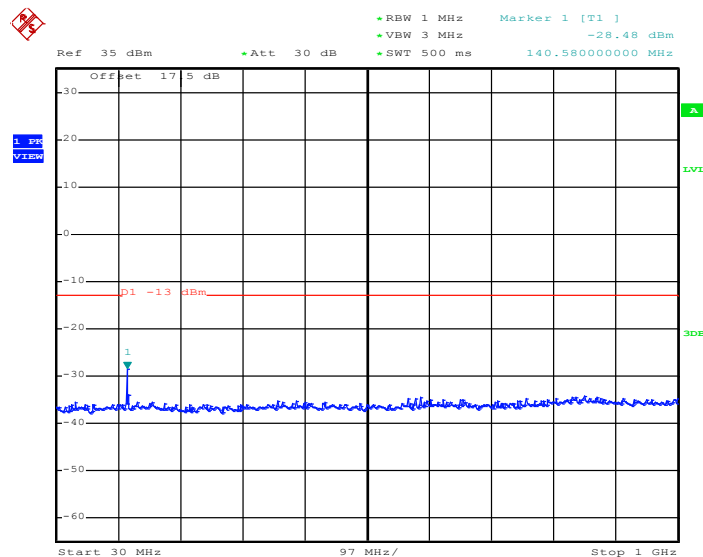
1. The EUT was connected to spectrum analyzer and base station via power divider.
2. The middle channel for the highest RF power within the transmitting frequency was measured.
3. The conducted spurious emission for the whole frequency range was taken.

3.6.4 Test Setup

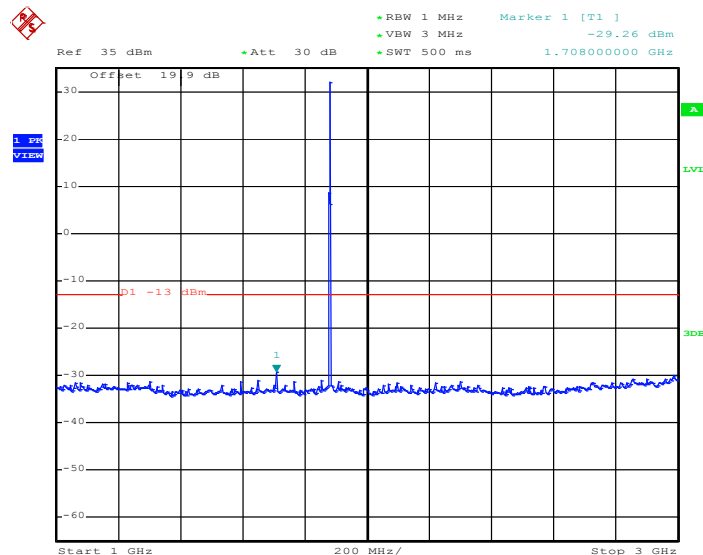


3.6.5 Test Result (Plots) of Conducted Spurious Emission

Band :	GSM1900	Channel :	CH661
Test Mode :	GSM Link	Frequency :	1880.0 MHz

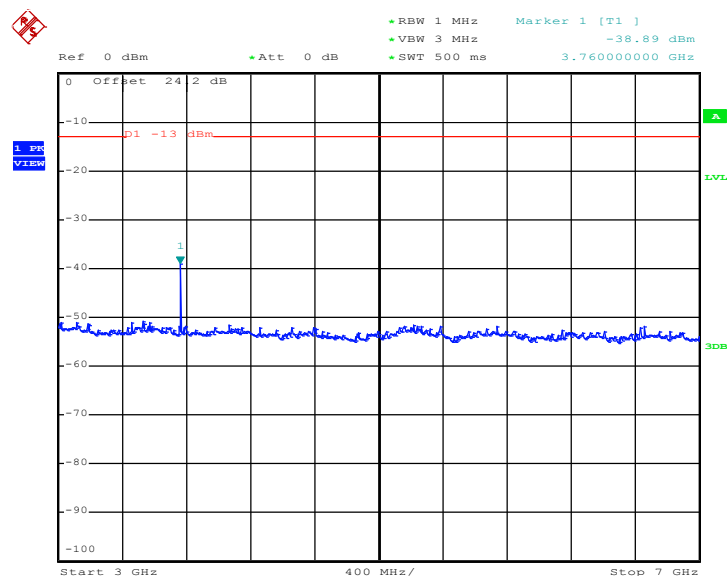
Conducted Spurious Emission Plot between 30MHz ~ 1GHz


Date: 22.OCT.2012 13:02:29

Conducted Spurious Emission Plot between 1GHz ~ 3GHz


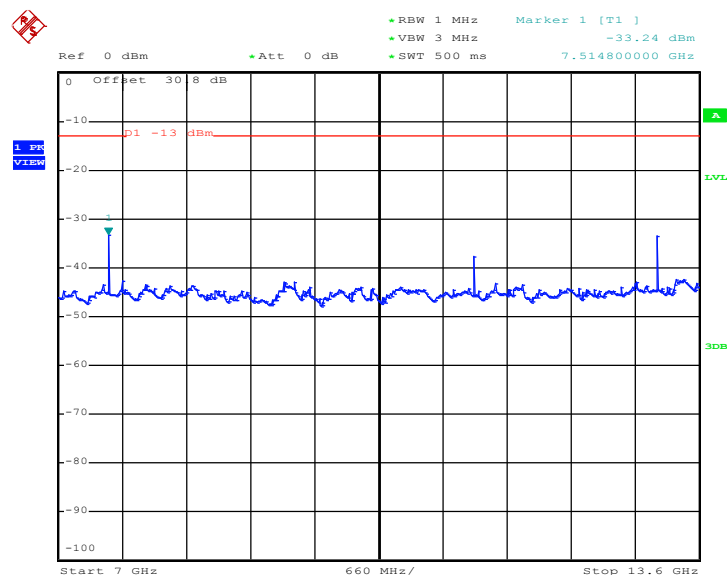
Date: 22.OCT.2012 13:02:42

Conducted Spurious Emission Plot between 3GHz ~ 7GHz

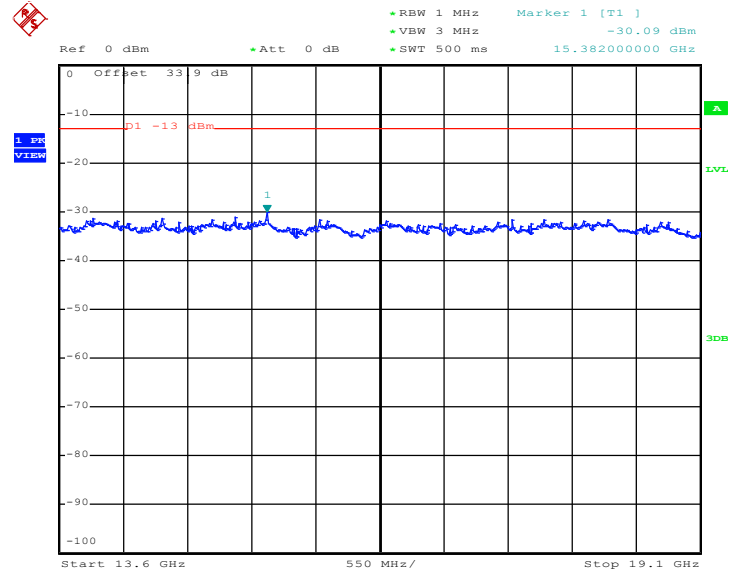


Date: 22.OCT.2012 13:03:01

Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz



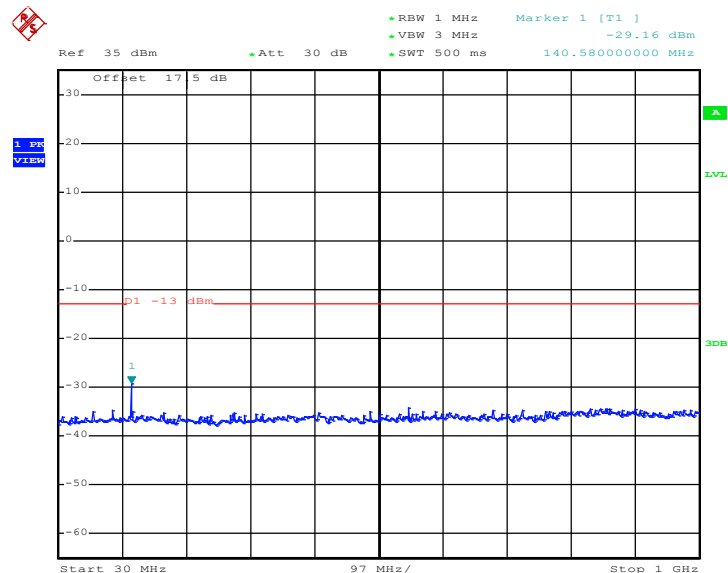
Date: 22.OCT.2012 13:03:13

Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz


Date: 22.OCT.2012 13:03:26

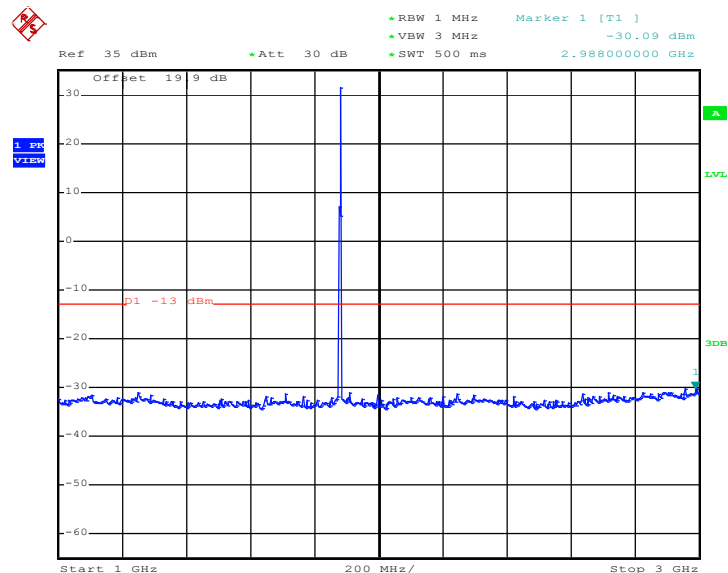
Band :	GSM1900	Channel :	CH661
Test Mode :	EDGE 8 Link	Frequency :	1880.0 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



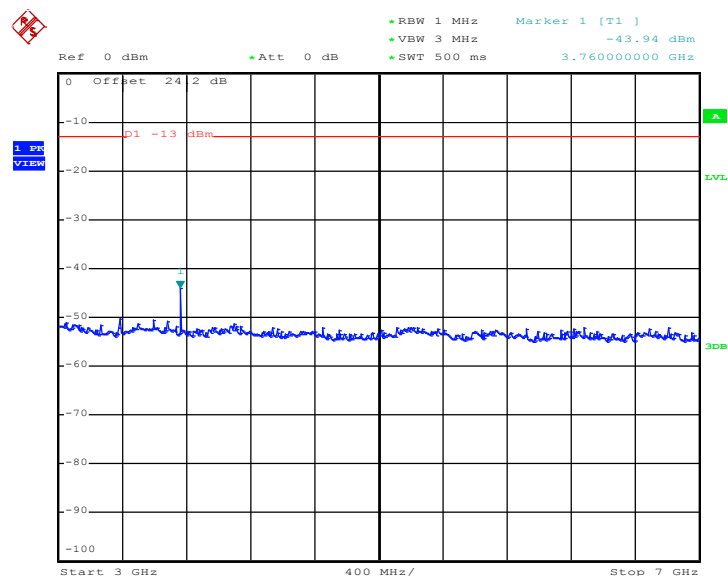
Date: 22.OCT.2012 13:36:19

Conducted Spurious Emission Plot between 1GHz ~ 3GHz



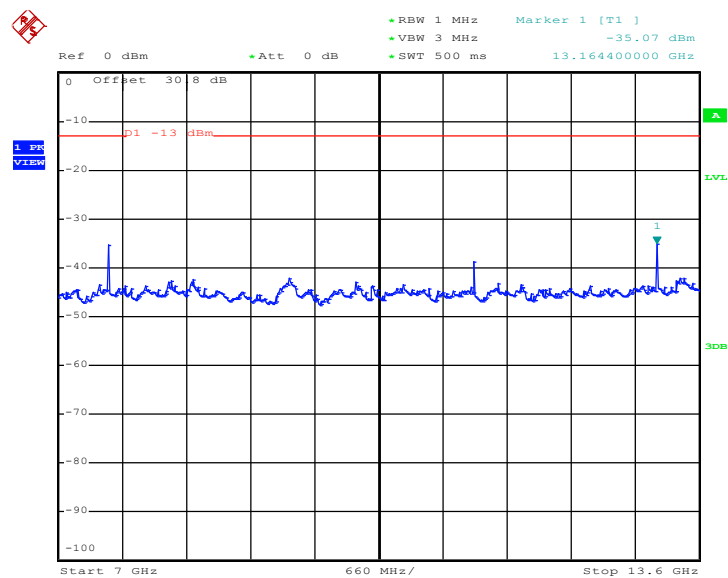
Date: 22.OCT.2012 13:36:32

Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 22.OCT.2012 13:36:52

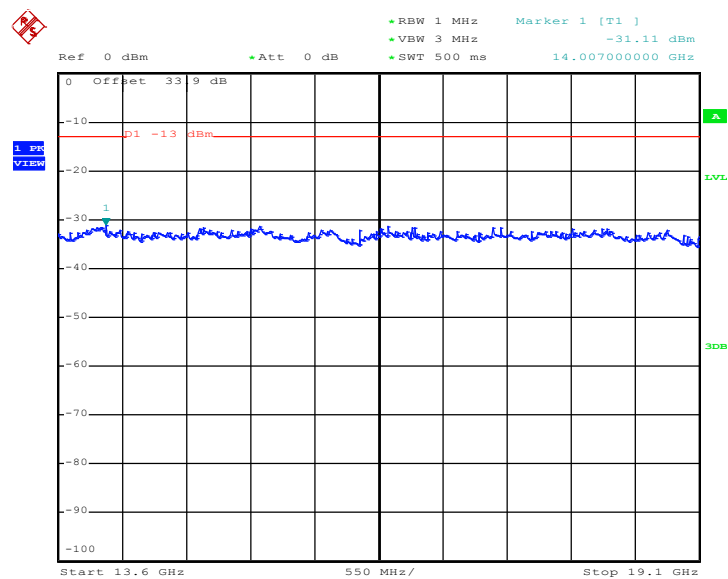
Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz



Date: 22.OCT.2012 13:37:05

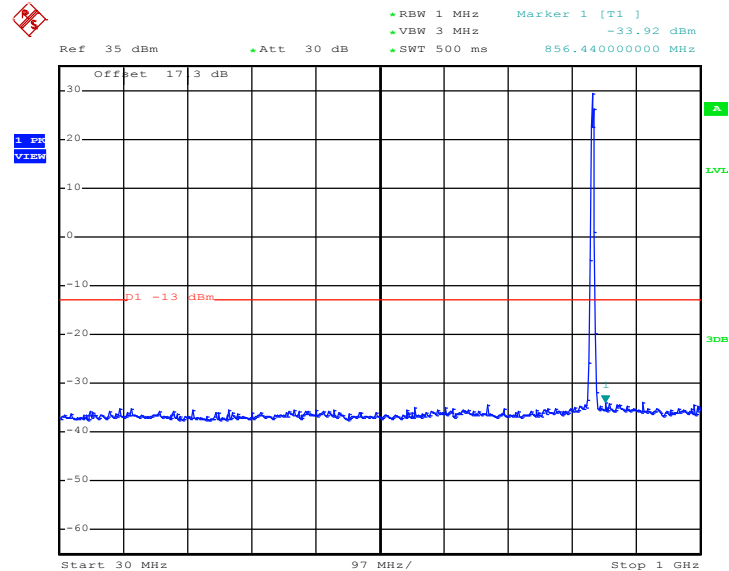


Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz

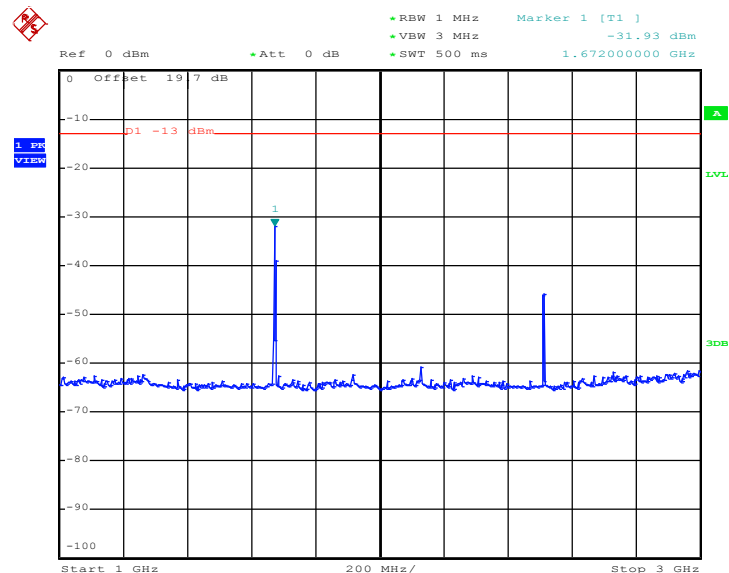


Date: 22.OCT.2012 13:37:17

Band :	CDMA2000 BC0	Channel :	CH384
Test Mode :	1xRTT_RC1+SO55	Frequency :	836.52 MHz

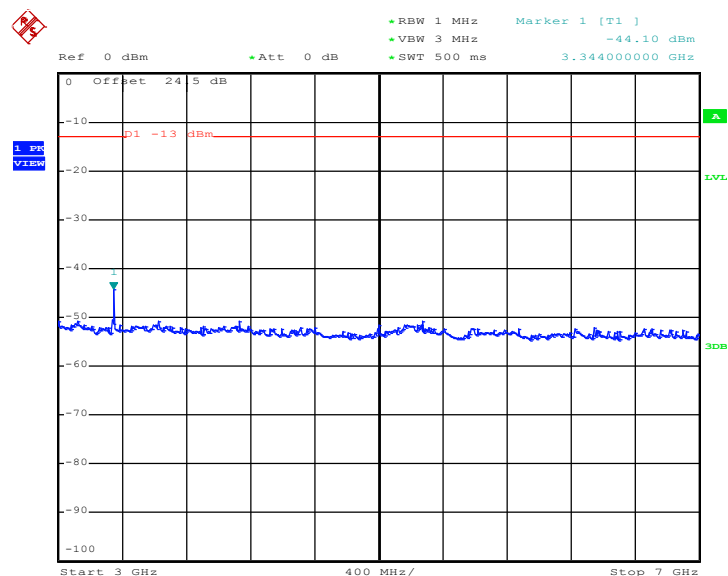
Conducted Spurious Emission Plot between 30MHz ~ 1GHz


Date: 22.OCT.2012 18:42:52

Conducted Spurious Emission Plot between 1GHz ~ 3GHz


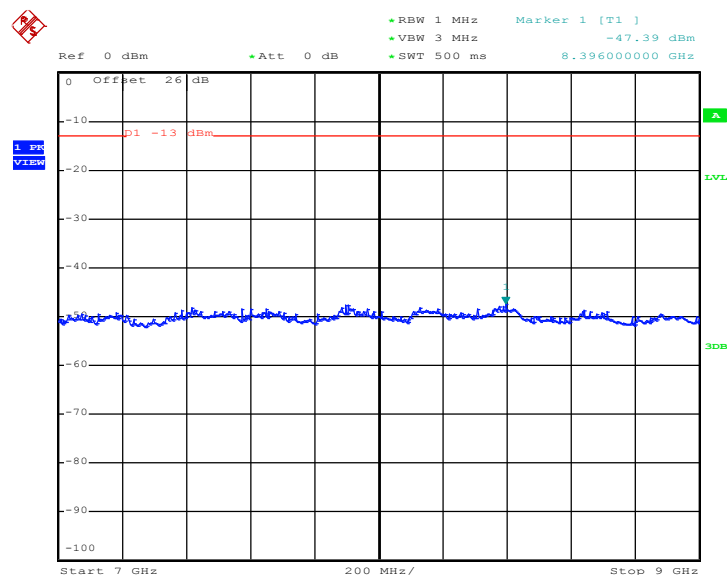
Date: 22.OCT.2012 18:43:18

Conducted Spurious Emission Plot between 3GHz ~ 7GHz



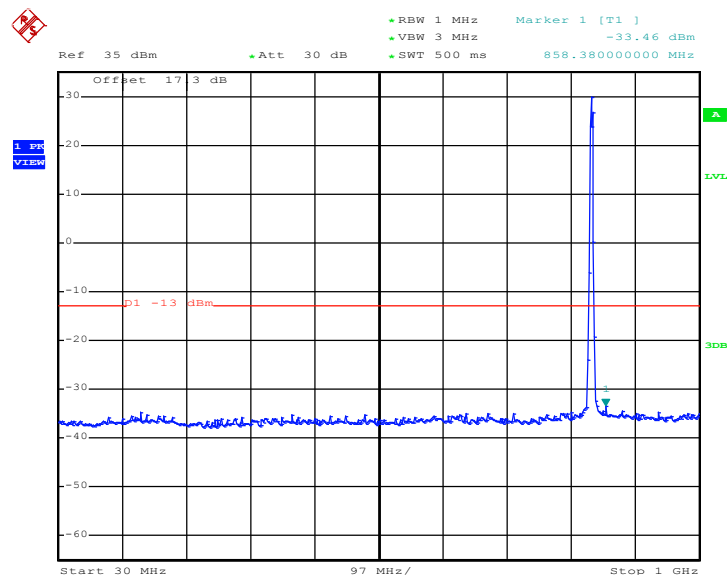
Date: 22.OCT.2012 18:43:30

Conducted Spurious Emission Plot between 7GHz ~ 9GHz

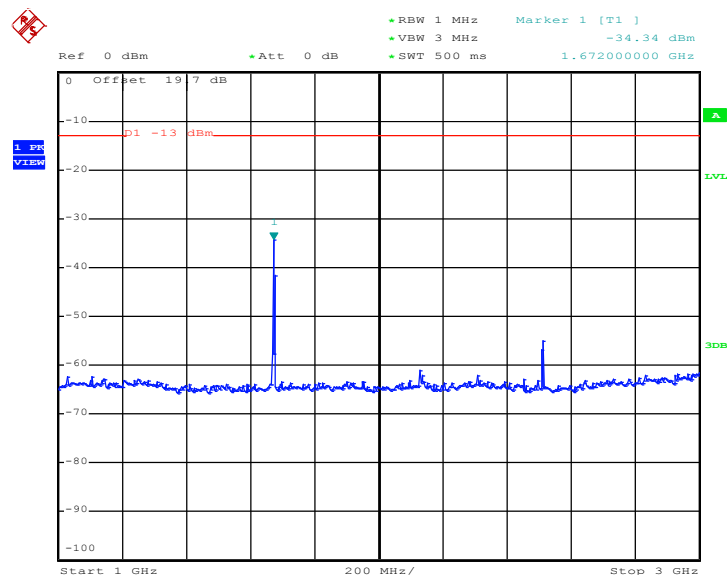


Date: 22.OCT.2012 18:43:42

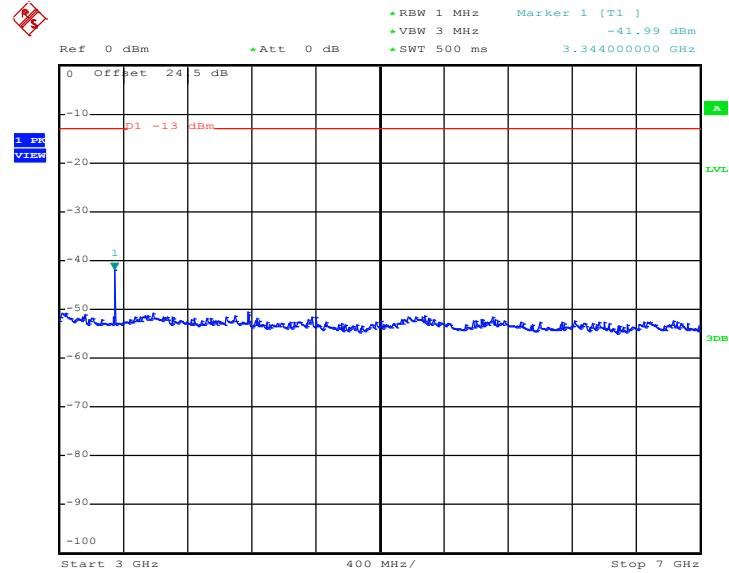
Band :	CDMA2000 BC0	Channel :	CH384
Test Mode :	1xEV-DO Rev. 0_RTAP 153.6K	Frequency :	836.52 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz


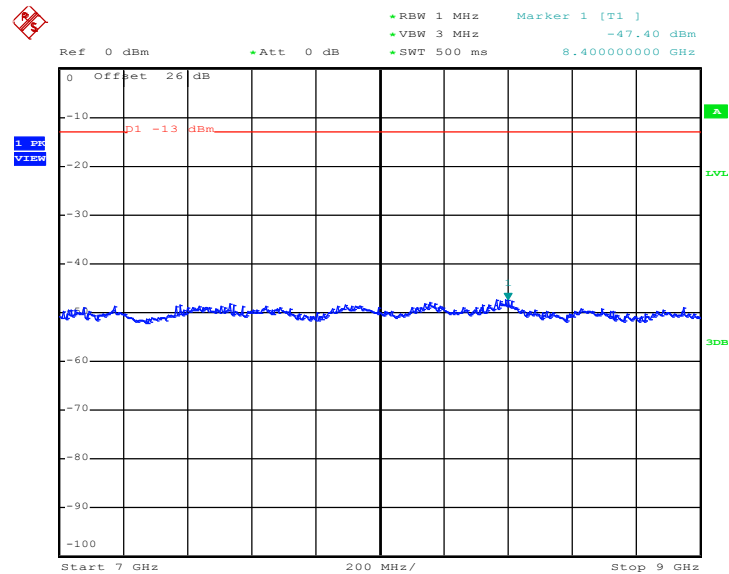
Date: 23.OCT.2012 17:19:07

Conducted Spurious Emission Plot between 1GHz ~ 3GHz


Date: 23.OCT.2012 17:19:31

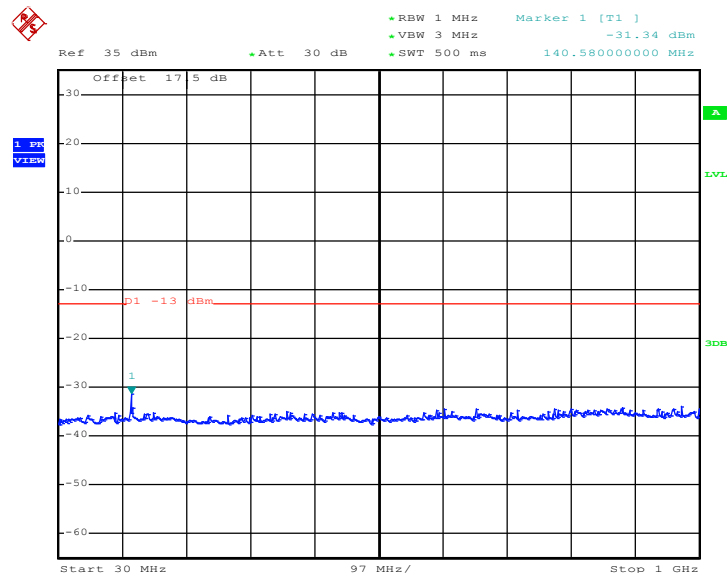
Conducted Spurious Emission Plot between 3GHz ~ 7GHz


Date: 23.OCT.2012 17:19:43

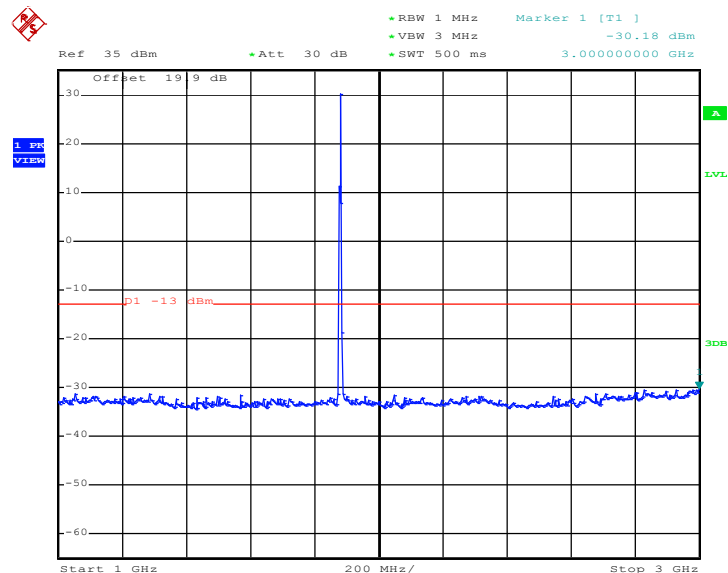
Conducted Spurious Emission Plot between 7GHz ~ 9GHz


Date: 23.OCT.2012 17:19:55

Band :	CDMA2000 BC1	Channel :	CH600
Test Mode :	1xRTT_RC1+SO55	Frequency :	1880.0 MHz

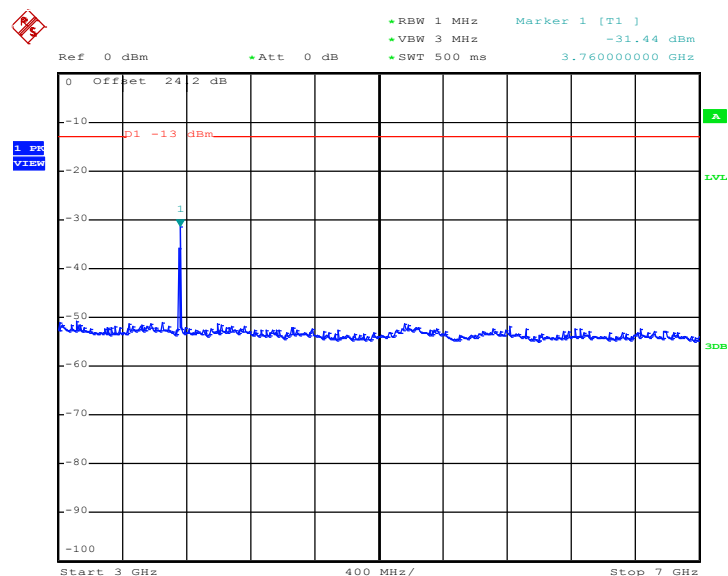
Conducted Spurious Emission Plot between 30MHz ~ 1GHz


Date: 23.OCT.2012 18:15:23

Conducted Spurious Emission Plot between 1GHz ~ 3GHz


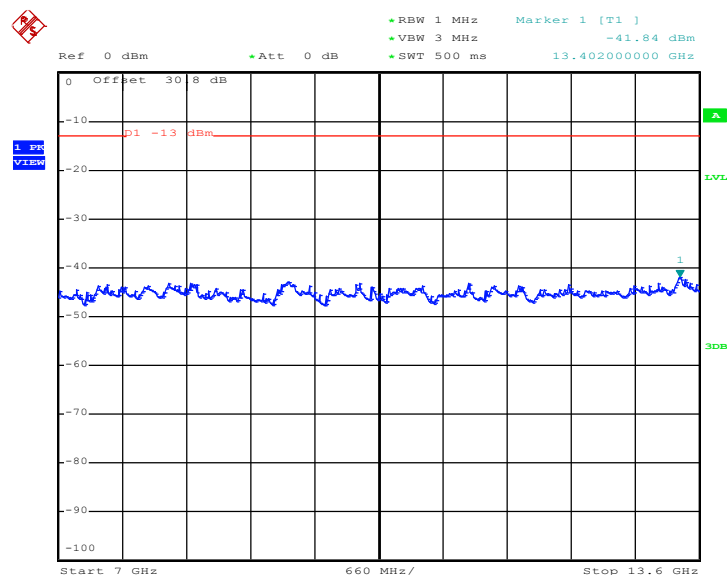
Date: 23.OCT.2012 18:15:35

Conducted Spurious Emission Plot between 3GHz ~ 7GHz

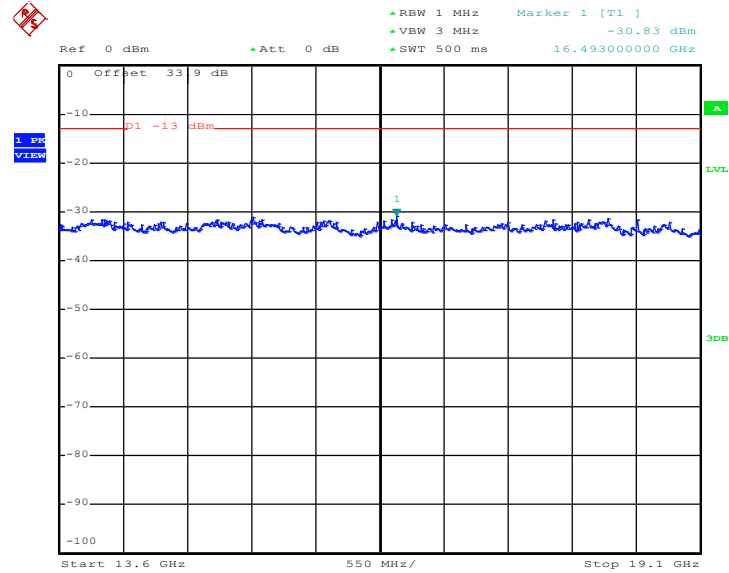


Date: 23.OCT.2012 18:15:53

Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz

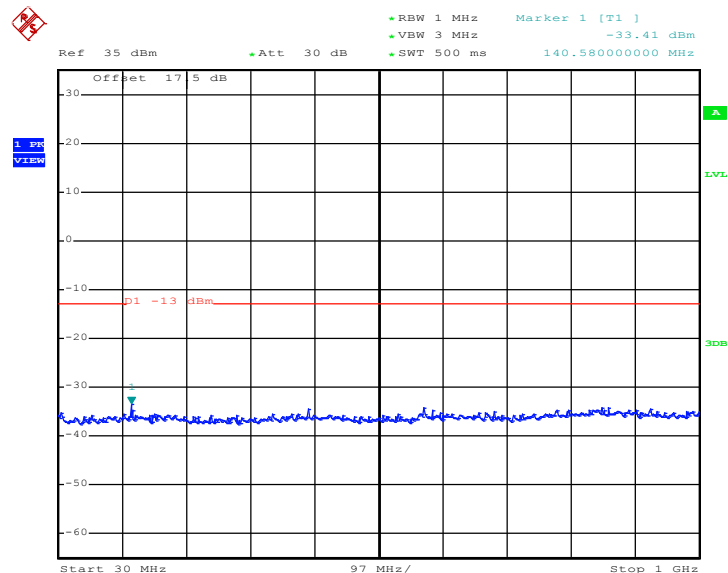


Date: 23.OCT.2012 18:16:06

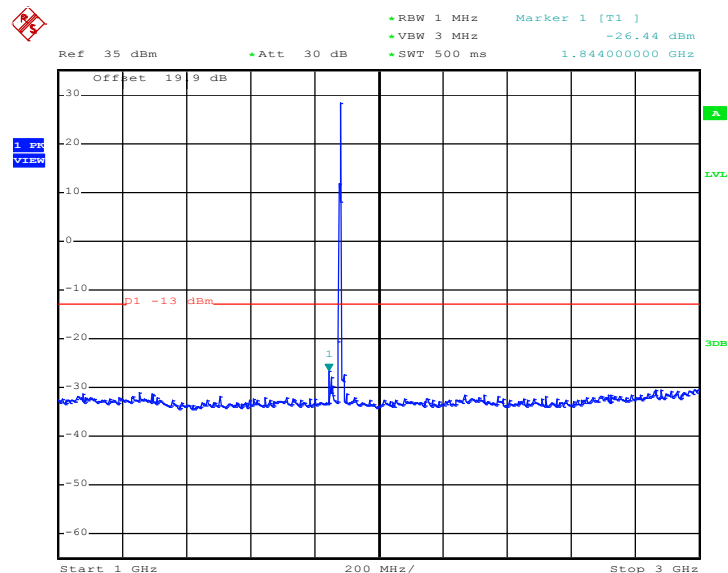
Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz


Date: 23.OCT.2012 18:16:18

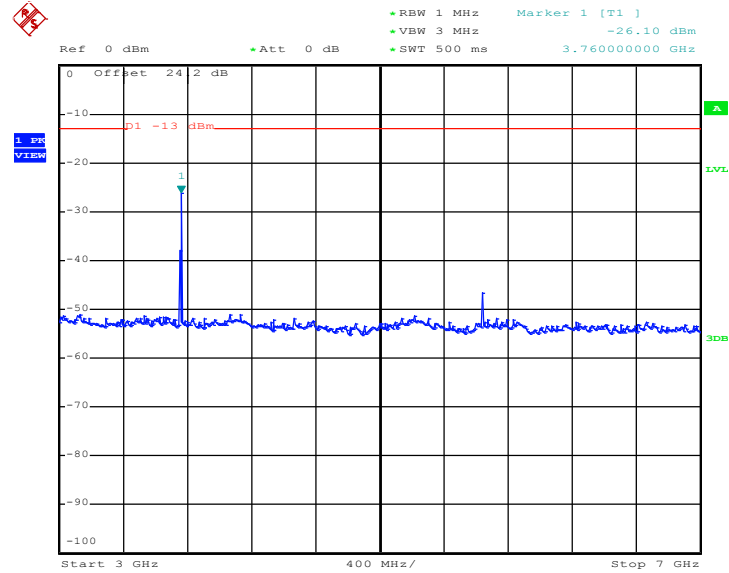
Band :	CDMA2000 BC1	Channel :	CH600
Test Mode :	1xEV-DO Rev. A_RETAP 4096K	Frequency :	1880.0 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz


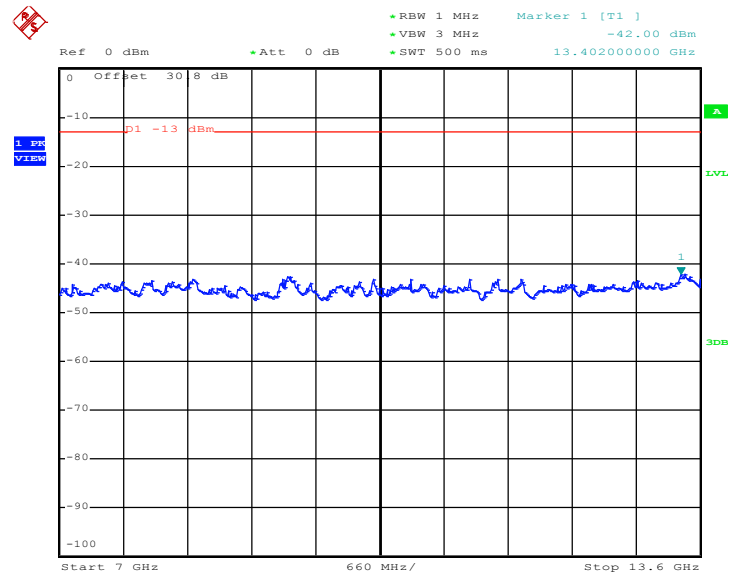
Date: 23.OCT.2012 14:48:04

Conducted Spurious Emission Plot between 1GHz ~ 3GHz


Date: 23.OCT.2012 14:48:16

Conducted Spurious Emission Plot between 3GHz ~ 7GHz


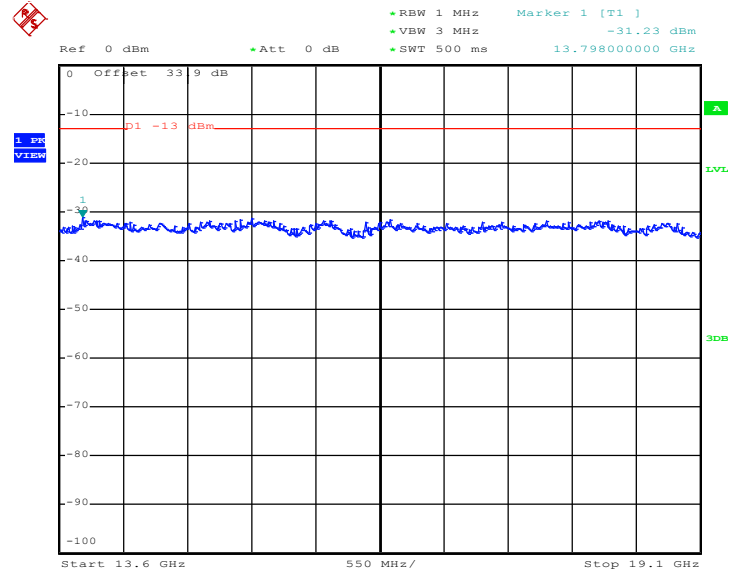
Date: 23.OCT.2012 14:48:40

Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz


Date: 23.OCT.2012 14:48:52



Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz



Date: 23.OCT.2012 14:49:05

3.7 Field Strength of Spurious Radiation Measurement

3.7.1 Description of Field Strength of Spurious Radiated Measurement

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

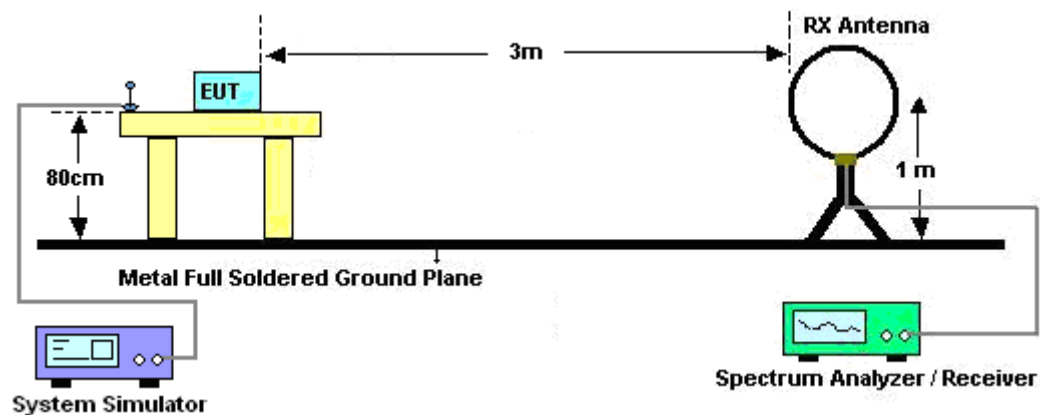
See list of measuring instruments of this test report.

3.7.3 Test Procedures

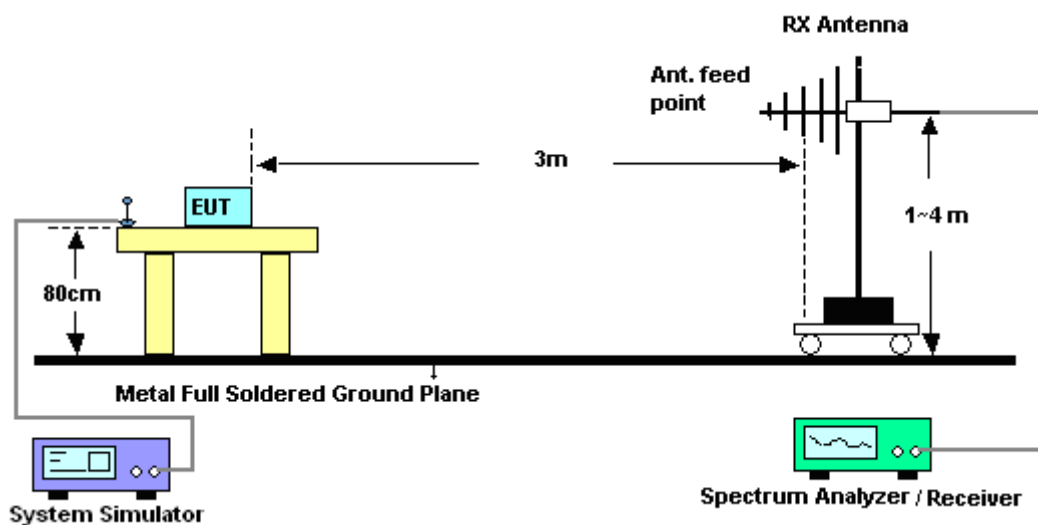
1. The EUT was placed on a rotatable wooden table with 0.8 meter above ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving 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, 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

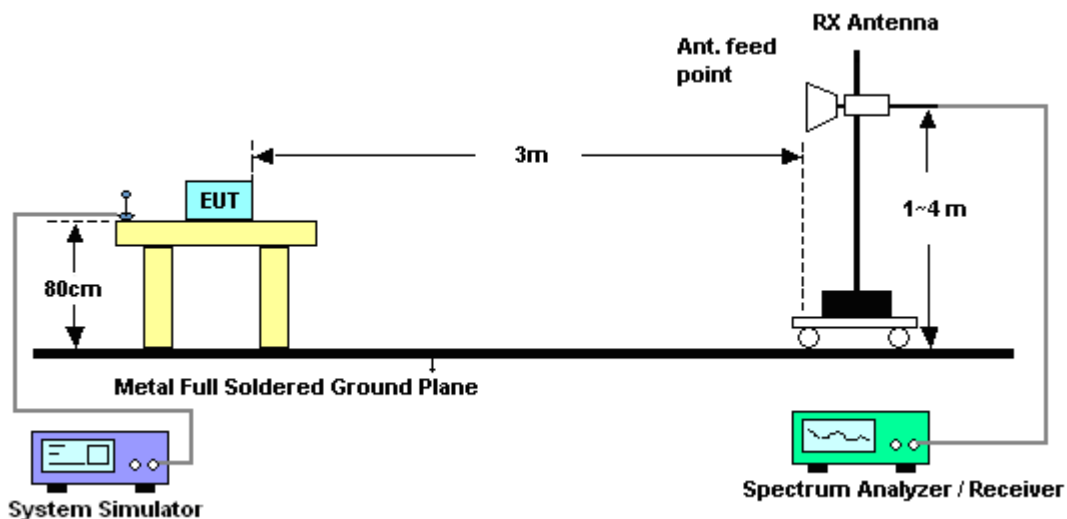
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz

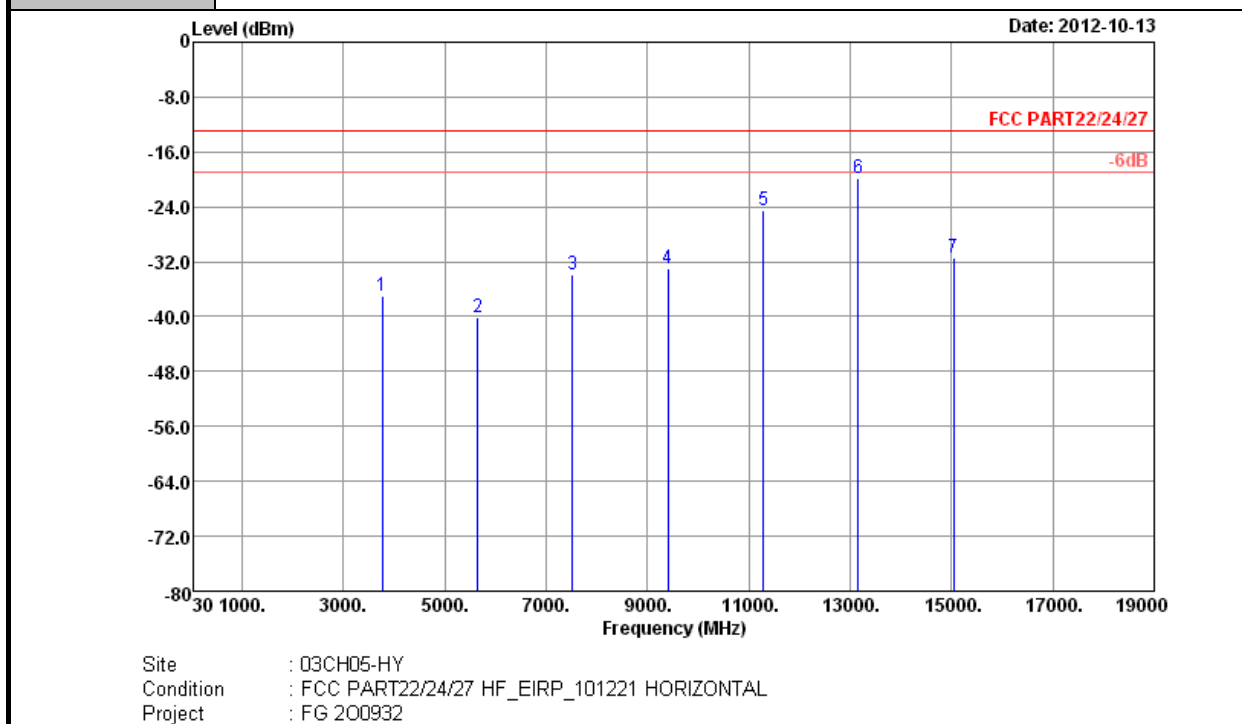


3.7.5 Test Results of Radiated Emissions (9 KHz ~ 30 MHz)

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

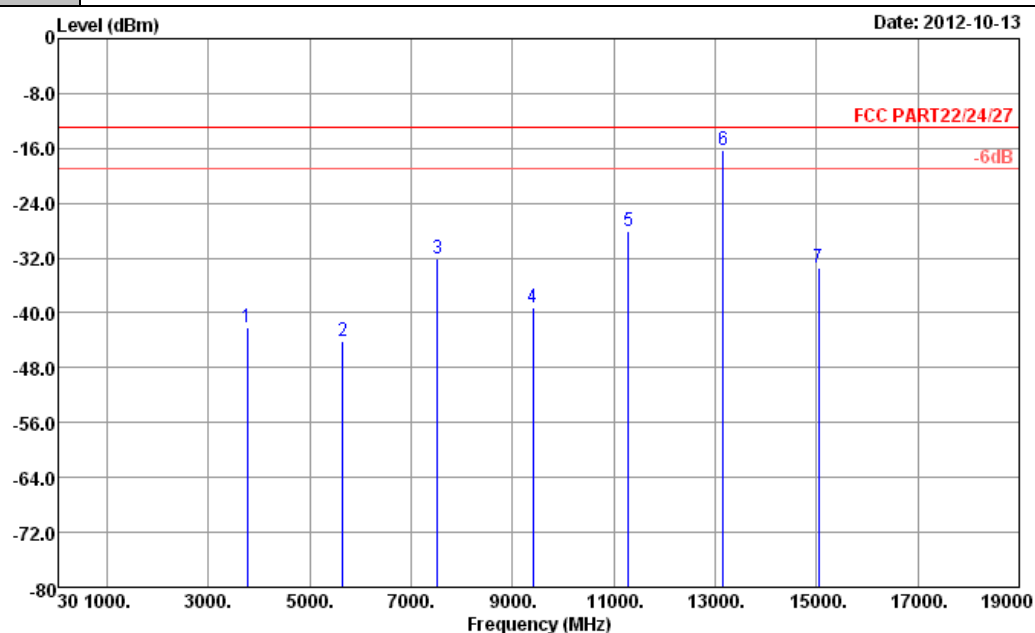
Band :	GSM1900	Temperature :	20~22°C
Test Mode :	GSM Link	Relative Humidity :	40~42%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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	-37.05	-13	-24.05	-50.49	-43.76	2.00	8.71	H	Pass
5640	-40.02	-13	-27.02	-58.86	-48.66	2.13	10.77	H	Pass
7520	-33.96	-13	-20.96	-55.87	-43.5	2.68	12.22	H	Pass
9400	-32.89	-13	-19.89	-56.81	-43.4	2.87	13.38	H	Pass
11280	-24.48	-13	-11.48	-51.47	-35.2	2.64	13.36	H	Pass
13160	-19.87	-13	-6.87	-50.48	-30.7	2.86	13.69	H	Pass
15039	-31.35	-13	-18.35	-62.48	-42.1	3.35	14.09	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.		

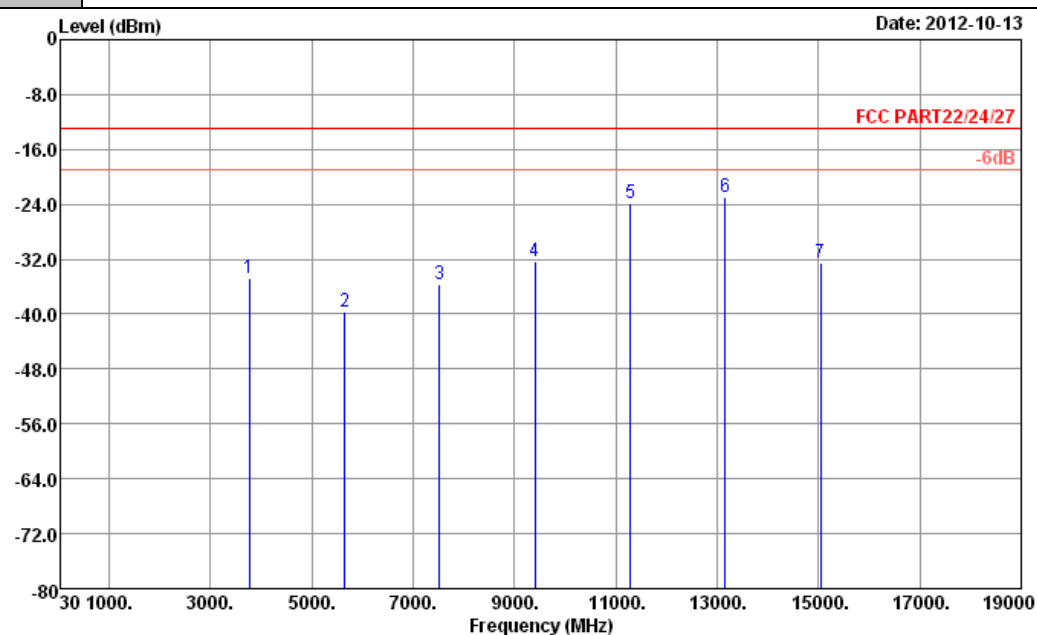


Site : 03CH05-HY
Condition : FCC PART22/24/27 HF_EIRP_101221 VERTICAL
Project : FG 200932

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	-42.09	-13	-29.09	-55.6	-48.8	2.00	8.71	V	Pass
5640	-44.06	-13	-31.06	-63	-52.7	2.13	10.77	V	Pass
7520	-32.16	-13	-19.16	-54.14	-41.7	2.68	12.22	V	Pass
9400	-39.19	-13	-26.19	-63.1	-49.7	2.87	13.38	V	Pass
11280	-28.08	-13	-15.08	-55.14	-38.8	2.64	13.36	V	Pass
13160	-16.37	-13	-3.37	-47.04	-27.2	2.86	13.69	V	Pass
15039	-33.45	-13	-20.45	-64.66	-44.2	3.35	14.09	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.		

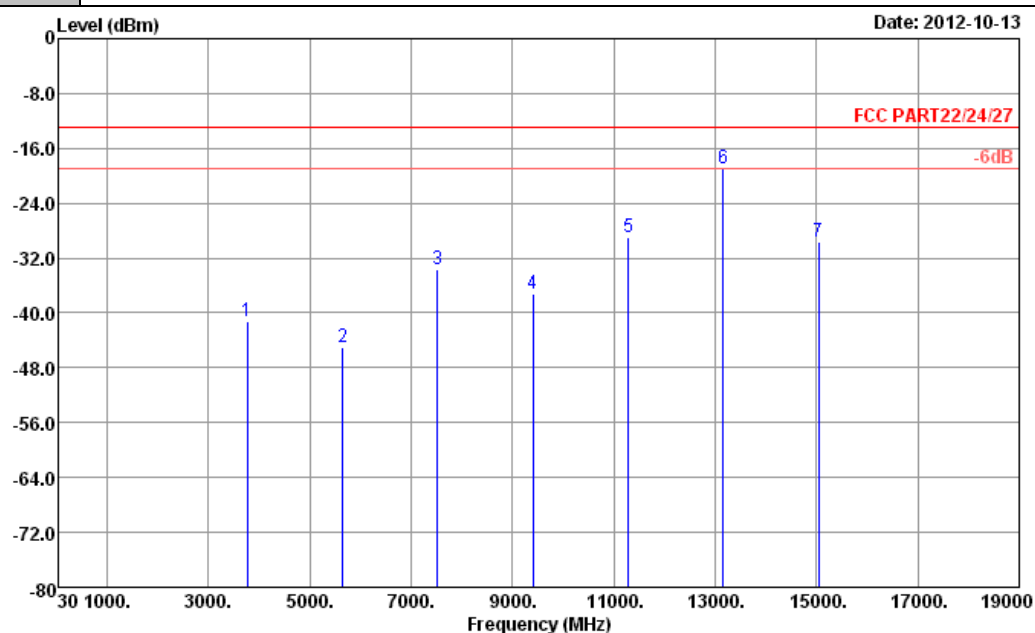


Site : 03CH05-HY
Condition : FCC PART22/24/27 HF_EIRP_101221 HORIZONTAL
Project : FG 200932

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	-34.86	-13	-21.86	-49.27	-41.57	2.00	8.71	H	Pass
5640	-39.72	-13	-26.72	-58.99	-48.36	2.13	10.77	H	Pass
7520	-35.64	-13	-22.64	-58.16	-45.18	2.68	12.22	H	Pass
9400	-32.21	-13	-19.21	-57.4	-42.72	2.87	13.38	H	Pass
11280	-23.74	-13	-10.74	-51.29	-34.46	2.64	13.36	H	Pass
13160	-22.98	-13	-9.98	-53.56	-33.81	2.86	13.69	H	Pass
15039	-32.50	-13	-19.50	-64.08	-43.25	3.35	14.09	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.		

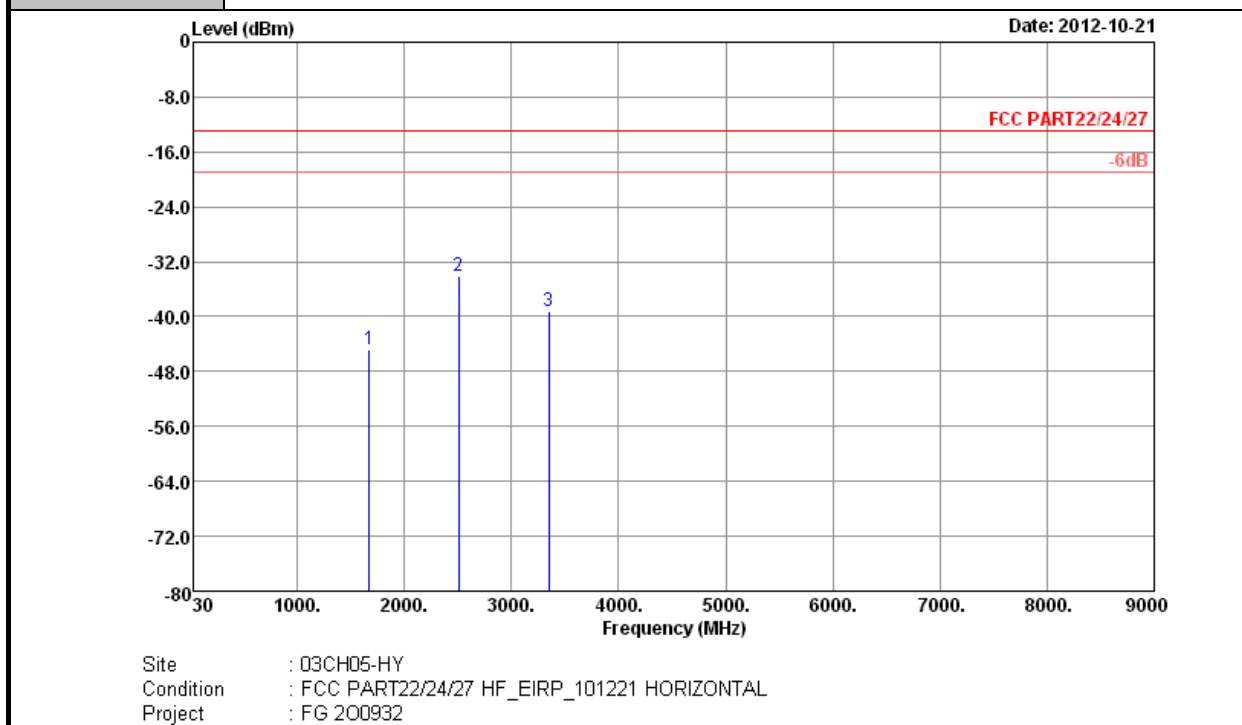


Site : 03CH05-HY
Condition : FCC PART22/24/27 HF_EIRP_101221 VERTICAL
Project : FG 200932

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	-41.12	-13	-28.12	-56.1	-47.83	2.00	8.71	V	Pass
5640	-45.03	-13	-32.03	-64.82	-53.67	2.13	10.77	V	Pass
7520	-33.62	-13	-20.62	-56.37	-43.16	2.68	12.22	V	Pass
9400	-37.28	-13	-24.28	-62.37	-47.79	2.87	13.38	V	Pass
11280	-28.90	-13	-15.90	-56.66	-39.62	2.64	13.36	V	Pass
13160	-18.91	-13	-5.91	-50.19	-29.74	2.86	13.69	V	Pass
15039	-29.60	-13	-16.60	-61.67	-40.35	3.35	14.09	V	Pass

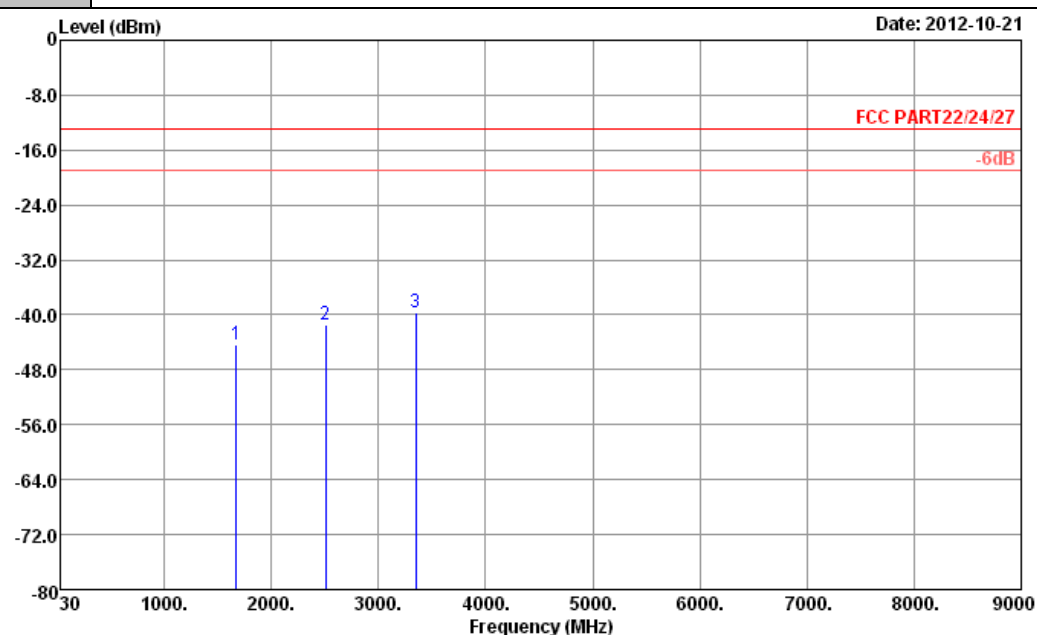


Band :	CDMA2000 BC0	Temperature :	20~22°C
Test Mode :	1xRTT_RC1+SO55	Relative Humidity :	40~42%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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	-44.69	-13	-31.69	-50.18	-46.45	1.35	5.25	H	Pass
2509	-34.20	-13	-21.20	-43.98	-36.58	1.58	6.12	H	Pass
3346	-39.26	-13	-26.26	-50.97	-43.11	1.94	7.94	H	Pass

Band :	CDMA2000 BC0	Temperature :	20~22°C
Test Mode :	1xRTT_RC1+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.		

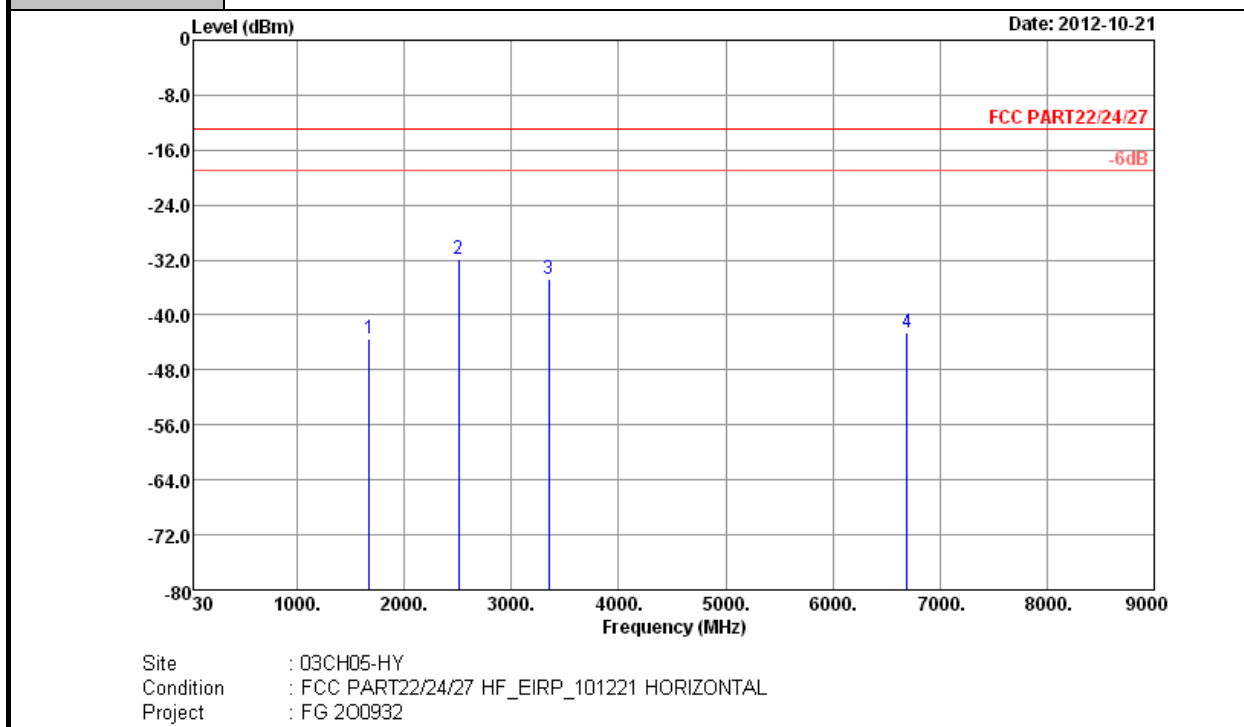


Site : 03CH05-HY
Condition : FCC PART22/24/27 HF_EIRP_101221 VERTICAL
Project : FG 200932

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	-44.36	-13	-31.36	-50.82	-46.12	1.35	5.25	V	Pass
2509	-41.47	-13	-28.47	-50.83	-43.85	1.58	6.12	V	Pass
3346	-39.64	-13	-26.64	-51.18	-43.49	1.94	7.94	V	Pass

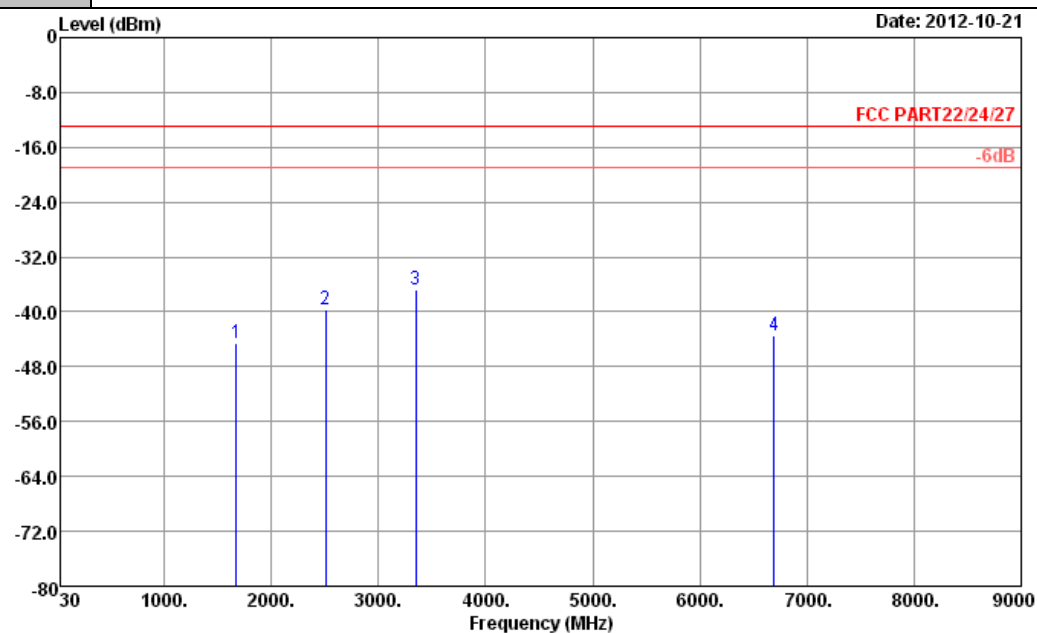


Band :	CDMA2000 BC0	Temperature :	20~22°C
Test Mode :	1xEV-DO Rev. 0_RTAP 153.6K	Relative Humidity :	40~42%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



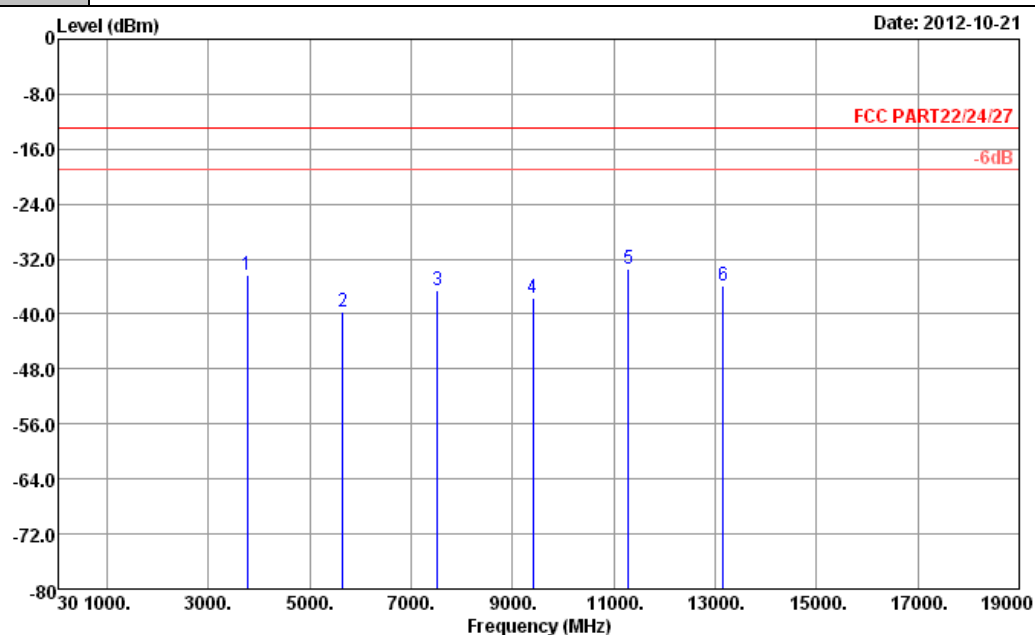
Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1672	-43.37	-13	-30.37	-48.95	-45.13	1.35	5.25	H	Pass
2509	-31.78	-13	-18.78	-40.29	-34.16	1.58	6.12	H	Pass
3346	-34.82	-13	-21.82	-45.94	-38.67	1.94	7.94	H	Pass
6692	-42.64	-13	-29.64	-63.82	-49.33	2.33	11.17	H	Pass

Band :	CDMA2000 BC0	Temperature :	20~22°C
Test Mode :	1xEV-DO Rev. 0_RTAP 153.6K	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	-44.46	-13	-31.46	-50.46	-46.22	1.35	5.25	V	Pass
2509	-39.73	-13	-26.73	-48.78	-42.11	1.58	6.12	V	Pass
3346	-36.82	-13	-23.82	-47.99	-40.67	1.94	7.94	V	Pass
6692	-43.47	-13	-30.47	-64.48	-50.16	2.33	11.17	V	Pass

Band :	CDMA2000 BC1	Temperature :	20~22°C
Test Mode :	1xRTT_RC1+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.		

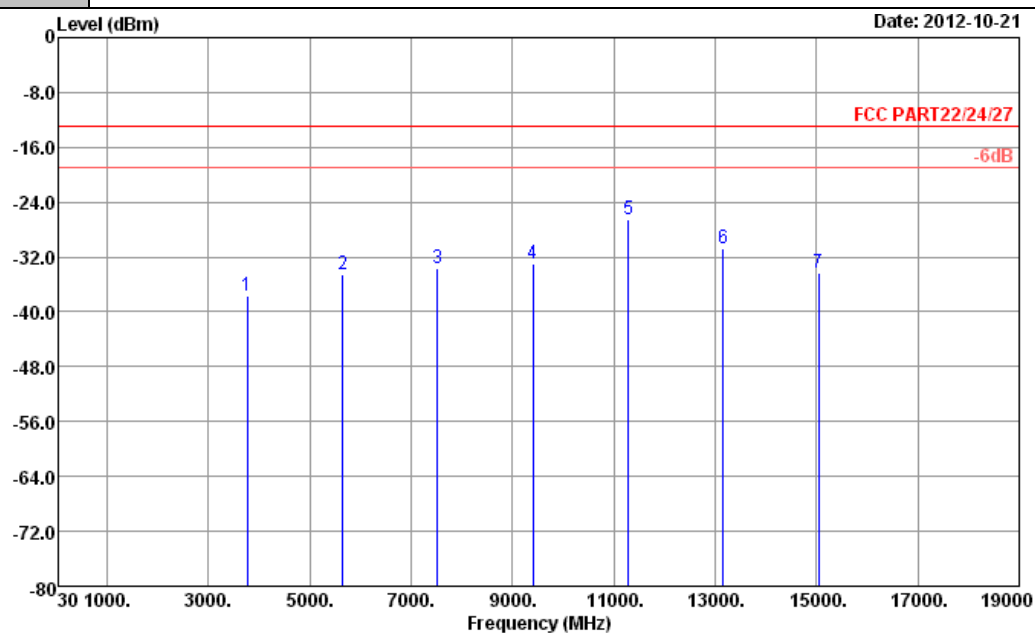


Site : 03CH05-HY
 Condition : FCC PART22/24/27 HF_EIRP_101221 HORIZONTAL
 Project : FG 200932

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	-34.35	-13	-21.35	-48.31	-41.06	2.00	8.71	H	Pass
5640	-39.57	-13	-26.57	-58.24	-48.21	2.13	10.77	H	Pass
7520	-36.64	-13	-23.64	-58.05	-46.18	2.68	12.22	H	Pass
9400	-37.62	-13	-24.62	-60.93	-48.13	2.87	13.38	H	Pass
11280	-33.44	-13	-20.44	-60.2	-44.16	2.64	13.36	H	Pass
13160	-35.90	-13	-22.90	-65.86	-46.73	2.86	13.69	H	Pass



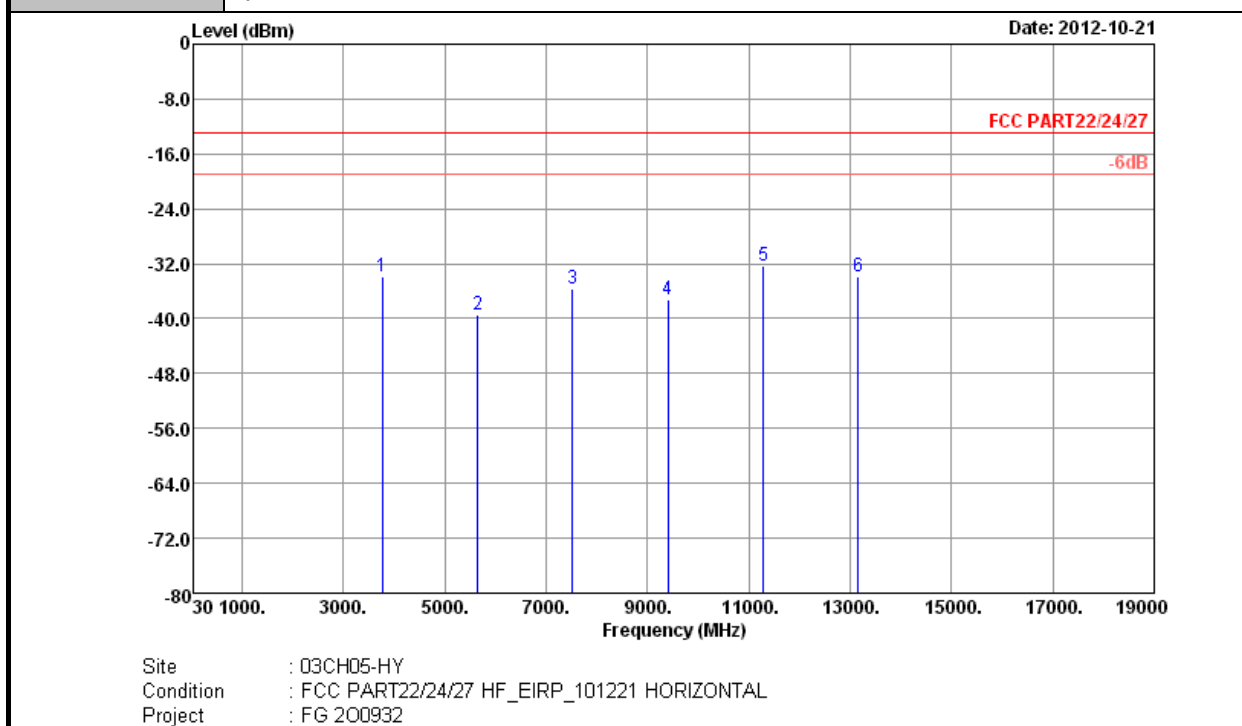
Band :	CDMA2000 BC1	Temperature :	20~22°C
Test Mode :	1xRTT_RC1+SO55	Relative Humidity :	40~42%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Site : 03CH05-HY
Condition : FCC PART22/24/27 HF_EIRP_101221 VERTICAL
Project : FG 200932

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	-37.60	-13	-24.60	-50.95	-44.31	2.00	8.71	V	Pass
5640	-34.54	-13	-21.54	-53.48	-43.18	2.13	10.77	V	Pass
7520	-33.57	-13	-20.57	-54.88	-43.11	2.68	12.22	V	Pass
9400	-33.05	-13	-20.05	-57.79	-43.56	2.87	13.38	V	Pass
11280	-26.44	-13	-13.44	-53.16	-37.16	2.64	13.36	V	Pass
13160	-30.83	-13	-17.83	-61.09	-41.66	2.86	13.69	V	Pass
15040	-34.38	-13	-21.38	-65.18	-45.13	3.35	14.09	V	Pass

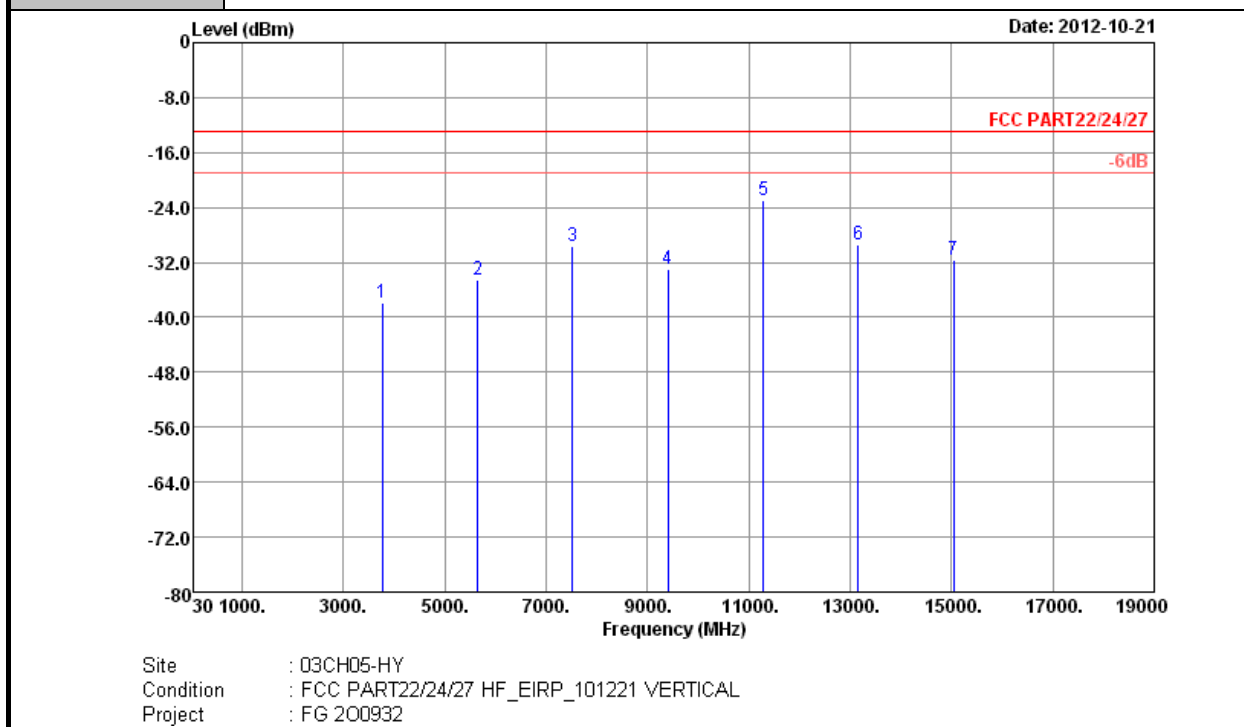
Band :	CDMA2000 BC1	Temperature :	20~22°C
Test Mode :	1xEV-DO Rev. A_RETAP 4096K	Relative Humidity :	40~42%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Frequency (MHz)	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	-33.82	-13	-20.82	-47.48	-40.53	2.00	8.71	H	Pass
5640	-39.52	-13	-26.52	-58.18	-48.16	2.13	10.77	H	Pass
7520	-35.59	-13	-22.59	-57.34	-45.13	2.68	12.22	H	Pass
9400	-37.16	-13	-24.16	-60.98	-47.67	2.87	13.38	H	Pass
11280	-32.41	-13	-19.41	-59.74	-43.13	2.64	13.36	H	Pass
13160	-33.94	-13	-20.94	-64.49	-44.77	2.86	13.69	H	Pass



Band :	CDMA2000 BC1	Temperature :	20~22°C
Test Mode :	1xEV-DO Rev. A_RETAP 4096K	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)	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	-37.89	-13	-24.89	-51.19	-44.6	2.00	8.71	V	Pass
5640	-34.49	-13	-21.49	-53.75	-43.13	2.13	10.77	V	Pass
7520	-29.68	-13	-16.68	-51.78	-39.22	2.68	12.22	V	Pass
9400	-33.05	-13	-20.05	-57.37	-43.56	2.87	13.38	V	Pass
11280	-23.04	-13	-10.04	-50.93	-33.76	2.64	13.36	V	Pass
13160	-29.44	-13	-16.44	-60.2	-40.27	2.86	13.69	V	Pass
15040	-31.61	-13	-18.61	-62.98	-42.36	3.35	14.09	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.

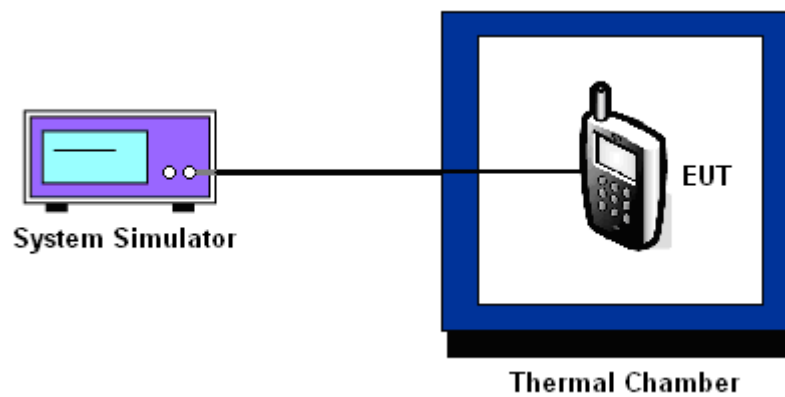
3.8.3 Test Procedures for Temperature Variation

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 1900	Channel :	661
Limit (ppm) :	2.5	Frequency :	1880.0 MHz

Temperature (°C)	GSM		EDGE 8		Result
	Freq. Dev. (Hz)	Deviation (ppm)	Freq. Dev. (Hz)	Deviation (ppm)	
-30	-98	-0.05	-97	-0.05	PASS
-20	-88	-0.05	-93	-0.05	
-10	-86	-0.05	-60	-0.03	
0	-64	-0.03	-90	-0.05	
10	-67	-0.04	-67	-0.04	
20	-69	-0.04	-43	-0.02	
30	-73	-0.04	-65	-0.03	
40	-64	-0.03	-97	-0.05	
50	-97	-0.05	-47	-0.02	

Band :	CDMA2000 BC0 1xRTT_RC1+SO55	Channel :	384
Limit (ppm) :	2.5	Frequency :	836.52 MHz

Temperature (°C)	Freq. Dev. (Hz)	Deviation (ppm)	Result
-30	11	0.01	PASS
-20	8	0.01	
-10	-12	-0.01	
0	8	0.01	
10	10	0.01	
20	-6	-0.01	
30	-12	-0.01	
40	15	0.02	
50	12	0.01	

Band :	CDMA2000 BC0 1xEV-DO Rev. 0_RTAP 153.6K	Channel :	384
Limit (ppm) :	2.5	Frequency :	836.52 MHz

Temperature (°C)	Freq. Dev. (Hz)	Deviation (ppm)	Result
-30	-8	-0.01	PASS
-20	-6	-0.01	
-10	5	0.01	
0	4	0.00	
10	6	0.01	
20	-5	-0.01	
30	-6	-0.01	
40	-5	-0.01	
50	-8	-0.01	

Band :	CDMA2000 BC1 1xRTT_RC1+SO55	Channel :	600
Limit (ppm) :	2.5	Frequency :	1880.0 MHz

Temperature (°C)	Freq. Dev. (Hz)	Deviation (ppm)	Result
-30	-18	-0.01	PASS
-20	15	0.01	
-10	16	0.01	
0	14	0.01	
10	13	0.01	
20	-11	-0.01	
30	-9	0.00	
40	-12	-0.01	

Band :	CDMA2000 BC1 1xEV-DO Rev. A_RETAP 4096K	Channel :	600
Limit (ppm) :	2.5	Frequency :	1880.0 MHz

Temperature (°C)	Freq. Dev. (Hz)	Deviation (ppm)	Result
-30	8	0.00	PASS
-20	5	0.00	
-10	9	0.00	
0	7	0.00	
10	6	0.00	
20	8	0.00	
30	-9	0.00	
40	-11	-0.01	
50	-10	-0.01	

3.8.7 Test Result of Voltage Variation

Band & Channel	Mode	Voltage (Volt)	Freq. Dev. (Hz)	Deviation (ppm)	Limit (ppm)	Result
GSM 1900 CH661	GSM	3.8	-56	-0.03	2.5	PASS
		BEP	-57	-0.03		
		4.2	-48	-0.03		
		4.35	-50	-0.03		
	EDGE 8	3.8	-38	-0.02		
		BEP	-33	-0.02		
		4.2	-49	-0.03		
		4.35	-68	-0.04		
CDMA2000 BC0 CH384	1xRTT RC1+SO55	3.8	-10	-0.01		
		BEP	9	0.01		
		4.2	-8	-0.01		
		4.35	-9	0.00		
CDMA2000 BC0 CH384	1xEV-DO Rev. 0 RTAP 153.6K	3.8	-7	-0.01		
		BEP	-9	-0.01		
		4.2	-6	-0.01		
		4.35	-5	0.00		
CDMA2000 BC1 CH600	1xRTT RC1+SO55	3.8	-5	0.00		
		BEP	-6	0.00		
		4.2	-7	0.00		
		4.35	-6	0.00		
CDMA2000 BC1 CH600	1xEV-DO Rev. A RETAP 4096K	3.8	-8	0.00		
		BEP	-10	-0.01		
		4.2	-9	0.00		
		4.35	11	0.01		

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. 30, 2012	Oct. 22, 2012 ~ Oct. 25, 2012	Jul. 29, 2013	Conducted (TH02-HY)
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 06, 2012	Oct. 22, 2012 ~ Oct. 25, 2012	Jun. 05, 2013	Conducted (TH02-HY)
Thermal Chamber	Ten Billion	TTH-D3SP	TBN-930701	N/A	Jul. 23, 2012	Oct. 22, 2012 ~ Oct. 25, 2012	Jul. 22, 2013	Conducted (TH02-HY)
Spectrum Analyzer	R&S	ESU26	100390	20Hz ~ 26.5GHz	Dec. 22, 2011	Oct. 13, 2012~ Oct. 26, 2012	Dec. 21, 2012	Radiation (03CH05-HY)
Bilog Antenna	SCHAFFNER	CBL6112B	2885	30MHz ~ 2GHz	Oct. 06, 2012	Oct. 13, 2012~ Oct. 26, 2012	Oct. 05, 2013	Radiation (03CH05-HY)
Turn Table	HD	Deis HD 2000	420/611	0 ~ 360 degree	N/A	Oct. 13, 2012~ Oct. 26, 2012	N/A	Radiation (03CH05-HY)
Antenna Mast	HD	MA 240	240/666	1 m ~ 4 m	N/A	Oct. 13, 2012~ Oct. 26, 2012	N/A	Radiation (03CH05-HY)
Horn Antenna	ESCO	3117	66584	1GHz~18GHz	Aug. 10, 2012	Oct. 13, 2012~ Oct. 26, 2012	Aug. 09, 2013	Radiation (03CH05-HY)
Pre Amplifier	Agilent	8449B	3008A02665	1GHz~26.5GHz	Aug. 28, 2012	Oct. 13, 2012~ Oct. 26, 2012	Aug. 27, 2013	Radiation (03CH05-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA917025 1	15GHz ~ 40GHz	Sep. 28, 2012	Oct. 13, 2012~ Oct. 26, 2012	Sep. 27, 2013	Radiation (03CH05-HY)
Pre Amplifier	COM-POWER	PA-103	161075	10-1000MHz.32dB. GAIN	Feb. 27, 2012	Oct. 13, 2012~ Oct. 26, 2012	Feb. 26, 2013	Radiation (03CH05-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9KHz ~ 30MHz	Jul. 03, 2012	Oct. 13, 2012~ Oct. 26, 2012	Jul. 02, 2014	Radiation (03CH05-HY)
System Simulator	R&S	CMU200	117591	N/A	Oct. 21, 2011	Oct. 13, 2012~ Oct. 26, 2012	Oct. 20, 2013	Radiation (03CH05-HY)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.54
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Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.72
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