FCC RF Test Report

APPLICANT	:	**CT Asia**
EQUIPMENT	:	**Mobile phone**
BRAND NAME	:	**BLU**
MODEL NAME	:	**Sport 4.5**
FCC ID	:	**YHLBLUSPORT45**
STANDARD	:	**FCC 47 CFR Part 2, 22(H), 24(E) , 27(L)**
CLASSIFICATION	:	**PCS Licensed Transmitter Held to Ear (PCE)**

The product was received on Jul. 30, 2014 and testing was completed on Aug. 27, 2014. We, SPORTON INTERNATIONAL (SHENZHEN) INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI / TIA / EIA-603-C-2004 and has been in 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 (SHENZHEN) INC., the test report shall not be reproduced except in full.

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager

Testing Laboratory
2353

SPORTON INTERNATIONAL (SHENZHEN) INC.
No. 3 Building, the third floor of south, Shahe River west, Fengzeyuan warehouse, Nanshan District, Shenzhen, Guangdong, P.R.C.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG473002	Rev. 01	Initial issue of report	Sep. 17, 2014

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	§2.1046	RSS-132 (5.4) RSS-133 (6.4) RSS-139 (6.4)	Conducted Output Power	Reporting Only	PASS	-
3.2	§24.232(d)	RSS-132 (5.4) RSS-133 (6.4) RSS-139 (6.4)	Peak-to-Average Ratio	< 13 dB	PASS	-
3.3	§22.913(a)(2)	RSS-132(5.4) SRSP-503(5.1.3)	Effective Radiated Power	< 7 Watts	PASS	-
	§24.232(c)	RSS-133 (6.4) SRSP-510(5.1.2)	Equivalent Isotropic Radiated Power	< 2 Watts	PASS	-
	§27.50(d)(4)	RSS-139 (6.4) SRSP-513(5.1.2)	Equivalent Isotropic Radiated Power	< 1 Watts	PASS	-
3.4	§2.1049 §22.917(b) §24.238(b) §27.53(g)	RSS-GEN(4.6.1) RSS-133(6.5) RSS-139 (6.5)	Occupied Bandwidth	Reporting Only	PASS	-
3.5	§2.1051 §22.917(a) §24.238(a) §27.53(h)	RSS-GEN(4.9) RSS-132 (5.5) RSS-133 (6.5) RSS-139 (6.5)	Band Edge Measurement	< 43+10log10(P[Watts])	PASS	-
3.6	§2.1051 §22.917(a) §24.238(a) §27.53(h)	RSS-GEN(4.9) RSS-132 (5.5) RSS-133 (6.5) RSS-139 (6.5)	Conducted Emission	< 43+10log10(P[Watts])	PASS	-
3.7	§2.1053 §22.917(a) §24.238(a) §27.53(h)	RSS-GEN(4.9) RSS-132 (5.5) RSS-133 (6.5) RSS-139 (6.5)	Field Strength of Spurious Radiation	< 43+10log10(P[Watts])	PASS	Under limit 19.70 dB at 9396.000 MHz
3.8	§2.1055 §22.355 §24.235 §27.54	RSS-GEN(4.7) RSS-132 (5.3) RSS-133 (6.3) RSS-139 (6.3)	Frequency Stability for Temperature & Voltage	< 2.5 ppm	PASS	-

1 General Description

1.1 Applicant

CT Asia
Unit 01,15/F, Seaview Centre,139-141 Hoi bun road, Kwun Tong, Kowloon, Hongkong

1.2 Manufacturer

Ragentek Technology Group
Building D10-D11, No. 58-60, Lane 3188, Xiupu Road, PuDong District, Shanghai,PRC

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile phone
Brand Name	BLU
Model Name	Sport 4.5
FCC ID	YHLBLUSPORT45
EUT supports Radios application	GSM/GPRS/WCDMA/HSPA/HSPA+(Downlink Only) WLAN2.4GHz 802.11b/g/n HT20 Bluetooth v3.0+EDR/Bluetooth v4.0 LE
HW Version	v1.0
SW Version	BLU_S430_V07_GENERIC
EUT Stage	Pre-Production

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 Product Specification subjective to this standard

Product Specification subjective to this standard	
Tx Frequency	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz WCDMA Band IV : 1712.4 MHz ~ 1752.6 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz
Rx Frequency	GSM850: 869.2 MHz ~ 893.8 MHz GSM1900: 1930.2 MHz ~ 1989.8 MHz WCDMA Band V: 871.4 MHz ~ 891.6 MHz WCDMA Band IV : 2112.4 MHz ~ 2152.6 MHz WCDMA Band II: 1932.4 MHz ~ 1987.6 MHz
Maximum Output Power to Antenna	GSM850 : 32.51 dBm GSM1900 : 30.10 dBm WCDMA Band V : 23.55 dBm WCDMA Band IV : 23.17 dBm WCDMA Band II : 23.22 dBm
Antenna Type	PIFA Antenna
Type of Modulation	GSM: GMSK GPRS: GMSK WCDMA : QPSK (Uplink) HSDPA : QPSK (Uplink) HSUPA : QPSK (Uplink) HSPA+: 16QAM (Downlink Only)

1.5 Modification of EUT

No modifications are made to the EUT during all test items.

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

FCC Rule	System	Type of Modulation	Maximum ERP/EIRP (W)	Frequency Tolerance (ppm)	Emission Designator
Part 22	GSM850 GSM	GMSK	0.9854	0.0311ppm	250KGXW
Part 22	WCDMA Band V RMC 12.2Kbps	QPSK	0.0804	0.0287 ppm	4M16F9W
Part 24	GSM1900 GSM	GMSK	1.0681	0.0399 ppm	248KGXW
Part 24	WCDMA Band II RMC 12.2Kbps	QPSK	0.2251	0.0495 ppm	4M20F9W
Part 27	WCDMA Band IV RMC 12.2Kbps	QPSK	0.2568	0.0173 ppm	4M18F9W

1.7 Testing Location

Test Site	SPORTON INTERNATIONAL (SHENZHEN) INC.		
Test Site Location	No. 3 Building, the third floor of south, Shahe River west, Fengzeyuan warehouse, Nanshan District, Shenzhen, Guangdong, P.R.C. TEL: +86-755-3320-2398		
Test Site No.	**Sporton Site No.**		**FCC Registration No.**
	TH01-SZ	03CH01-SZ	831040

Test Site	SPORTON INTERNATIONAL (SHENZHEN) INC.	
Test Site Location	No. 101, Complex Building C, Guanlong Village, Xili Town, Nanshan District, Shenzhen, Guangdong, P.R.C. TEL:+86-755-8637-9589 FAX: +86-755-8637-9595	
Test Site No.	**Sporton Site No.**	
	OTA01-SZ	

1.8 Applicable Standards

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

- 47 CFR Part 2, 22(H), 24(E), 27(L)
- ANSI / TIA / EIA-603-C-2004
- FCC KDB 971168 D01 Power Meas. License Digital Systems v02r01

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.

2 Test Configuration of Equipment Under Test

2.1 Test Mode

Antenna port conducted and radiated test items were performed according to KDB 971168 D01 Power Meas. License Digital Systems v02r01 with maximum output power.

Radiated measurements were performed with rotating EUT in different three orthogonal test planes with accessories and standalone to find the maximum emission.

Radiated emissions were investigated as following frequency range:

1. 30 MHz to 9000 MHz for GSM850 and WCDMA Band V.
2. 30 MHz to 19000 MHz for GSM1900 and WCDMA Band II.
3. 30 MHz to 18000 MHz for WCDMA Band IV.

Test Modes		
Band	**Radiated TCs**	**Conducted TCs**
GSM 850	■ GSM Link	■ GSM Link
GSM 1900	■ GSM Link	■ GSM Link
WCDMA Band V	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link
WCDMA Band II	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link
WCDMA Band IV	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link

Note: The maximum power levels are chosen to test as the worst case configuration as follows:

GSM mode for GMSK modulation,

RMC 12.2Kbps mode for WCDMA band V,

RMC 12.2Kbps mode for WCDMA band II,

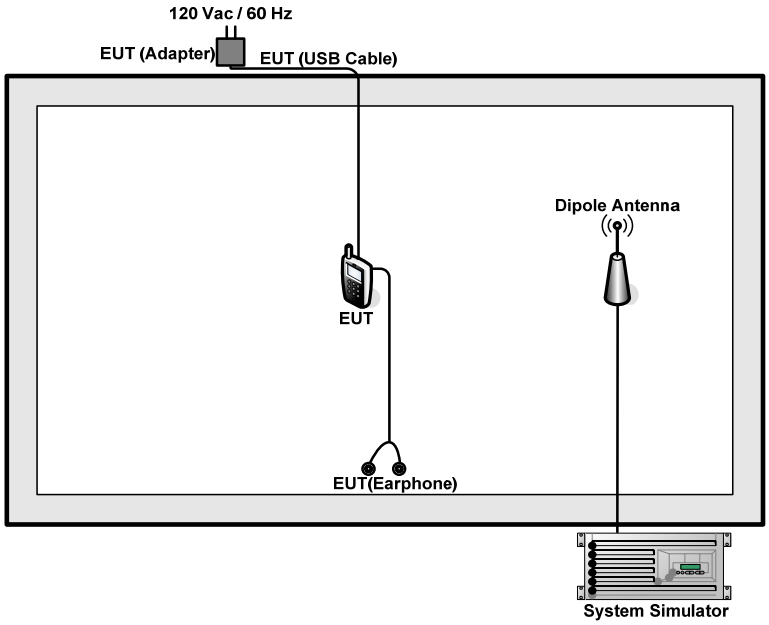
RMC 12.2Kbps mode for WCDMA band IV, only these modes were used for all tests.

Conducted Power Measurement Results:

Conducted Power (*Unit: dBm)						
Band	GSM850			GSM1900		
Channel	128	189	251	512	661	810
Frequency	824.2	836.4	848.8	1850.2	1880.0	1909.8
GSM	32.47	**32.51**	32.50	29.75	29.89	**30.10**
GPRS class 8	32.38	32.47	32.45	29.65	29.83	29.99
GPRS class 10	31.24	31.36	31.32	28.36	28.65	28.96
GPRS class 11	29.15	29.25	29.28	26.04	26.49	26.98
GPRS class 12	28.18	28.31	28.38	25.06	25.61	26.18

Conducted Power (*Unit: dBm)									
Band	WCDMA Band V			WCDMA Band II			WCDMA Band IV		
Channel	4132	4182	4233	9262	9400	9538	1312	1413	1513
Frequency	826.4	836.4	846.6	1852.4	1880	1907.6	1712.4	1732.6	1752.6
AMR 12.2Kbps	23.36	23.54	23.16	23.21	23.15	22.90	23.16	23.02	22.92
RMC 12.2K	23.37	**23.55**	23.16	**23.22**	23.14	22.89	**23.17**	23.00	22.92
HSDPA Subtest-1	22.40	22.50	22.25	22.25	22.19	22.03	22.19	22.00	21.96
HSDPA Subtest-2	22.39	22.53	22.23	22.26	22.18	22.00	22.18	22.02	21.95
HSDPA Subtest-3	21.97	22.18	21.78	21.85	21.76	21.51	21.80	21.61	21.55
HSDPA Subtest-4	21.95	22.13	21.78	21.82	21.73	21.51	21.77	21.59	21.53
HSUPA Subtest-1	20.22	20.13	20.17	20.02	20.16	19.82	20.34	20.21	20.09
HSUPA Subtest-2	20.22	20.14	20.15	20.06	20.16	19.82	20.29	20.19	20.15
HSUPA Subtest-3	21.18	21.11	21.10	21.01	21.13	20.78	20.98	20.75	20.63
HSUPA Subtest-4	19.67	19.59	19.68	19.50	19.70	19.36	19.65	19.34	19.45
HSUPA Subtest-5	21.66	21.56	21.62	21.51	21.62	21.31	21.48	21.12	21.19

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	DC Power Supply	GW	3303D	N/A	N/A	Unshielded, 1.8 m

2.4 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between RF conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level will be exactly the RF output level.

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

The following shows an offset computation example with RF cable loss 5.2 dB and a 10dB attenuator.

Example :

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).

= 5.2 + 10 = 15.2 (dB)

3 Test Result

3.1 Conducted Output Power Measurement

3.1.1 Description of the Conducted Output Power Measurement

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

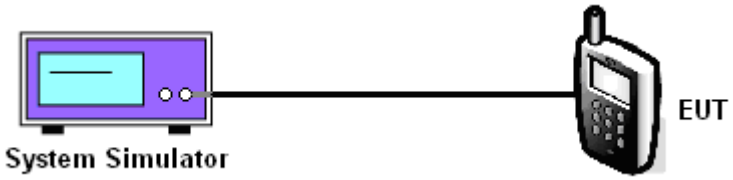
3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedures

1. The transmitter output port was connected to the system simulator.
2. Set EUT at maximum power through system simulator.
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

Cellular Band						
Modes	GSM850 (GSM)			WCDMA Band V (RMC 12.2Kbps)		
Channel	128 (Low)	189 (Mid)	251 (High)	4132 (Low)	4182 (Mid)	4233 (High)
Frequency (MHz)	824.2	836.4	848.8	826.4	836.4	846.6
Conducted Power (dBm)	32.47	32.51	32.50	23.37	23.55	23.16
Conducted Power (Watts)	1.77	1.78	1.78	0.22	0.23	0.21

Cellular Band						
Modes	GSM1900 (GSM)			WCDMA Band II (RMC 12.2Kbps)		
Channel	512 (Low)	661 (Mid)	810 (High)	9262 (Low)	9400 (Mid)	9538 (High)
Frequency (MHz)	1850.2	1880	1909.8	1852.4	1880	1907.6
Conducted Power (dBm)	29.75	29.89	30.10	23.22	23.14	22.89
Conducted Power (Watts)	0.94	0.97	1.02	0.21	0.21	0.19

AWS Band			
Modes	WCDMA Band IV (RMC 12.2Kbps)		
Channel	1312(Low)	1413 (Mid)	1513 (High)
Frequency (MHz)	1712.4	1732.6	1752.6
Conducted Power (dBm)	23.17	23.00	22.92
Conducted Power (Watts)	0.21	0.20	0.20

3.2 Peak-to-Average Ratio

3.2.1 Description of the PAR Measurement

The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

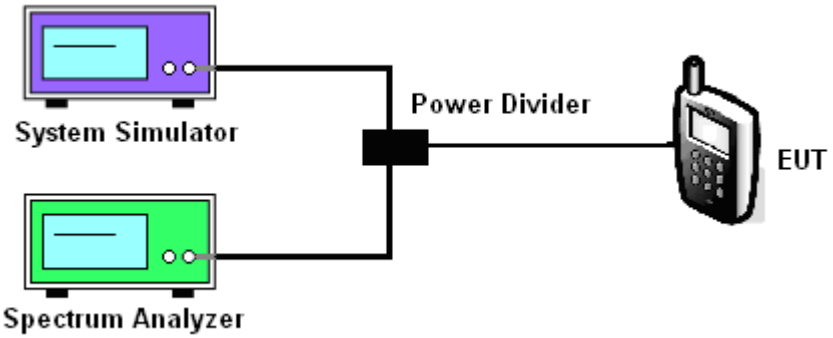
3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.2.3 Test Procedures

1. The testing follows FCC KDB 971168 v02r01 Section 5.7.1.
2. The EUT was connected to the spectrum analyzer and system simulator via a power divider.
3. For GSM/EGPRS operating modes:
   a. Set EUT in maximum power output.
   b. Set the RBW = 1MHz, VBW = 3MHz, Peak detector on spectrum analyzer for first trace.
   c. Set the RBW = 1MHz, VBW = 3MHz, RMS detector on spectrum analyzer for second trace.
   d. The wanted burst signal is triggered by spectrum analyzer, and measured respectively the peak level and Mean level without burst-off time, after system simulator has synchronized with the spectrum analyzer.
4. For UMTS operating modes:
   a. Set the CCDF (Complementary Cumulative Distribution Function) option on the spectrum analyzer.
   b. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.
5. Record the deviation as Peak to Average Ratio.

3.2.4 Test Setup



3.2.5 Test Result of Peak-to-Average Ratio

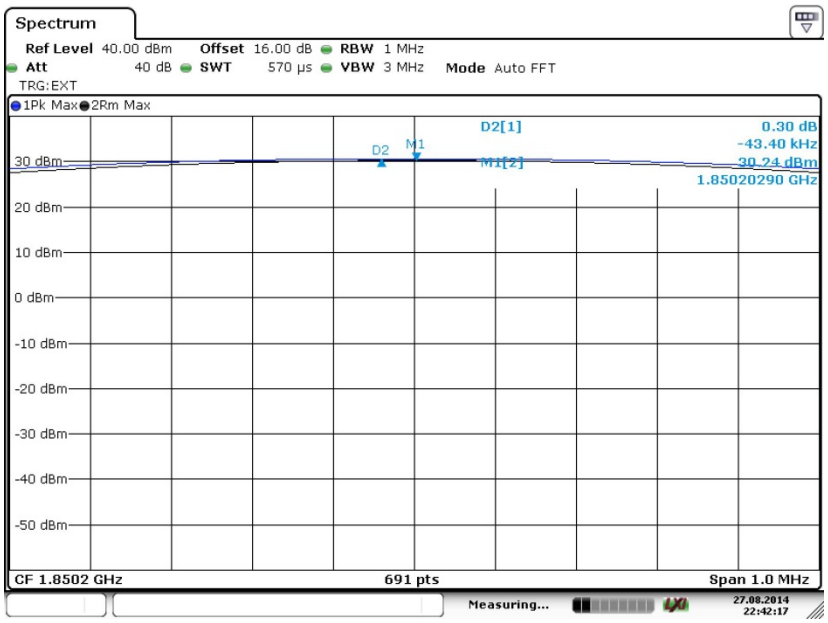
PCS Band						
Modes	GSM1900 (GSM)			WCDMA Band II (RMC 12.2Kbps)		
Channel	512 (Low)	661 (Mid)	810 (High)	9262 (Low)	9400 (Mid)	9538 (High)
Frequency (MHz)	1850.2	1880	1909.8	1852.4	1880	1907.6
Peak-to-Average Ratio (dB)	0.30	0.30	0.30	2.36	2.40	2.24

AWS Band			
Modes	WCDMA Band IV (RMC 12.2Kbps)		
Channel	1312(Low)	1413 (Mid)	1513 (High)
Frequency (MHz)	1712.4	1732.6	1752.6
Peak-to-Average Ratio (dB)	3.20	3.16	3.12

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

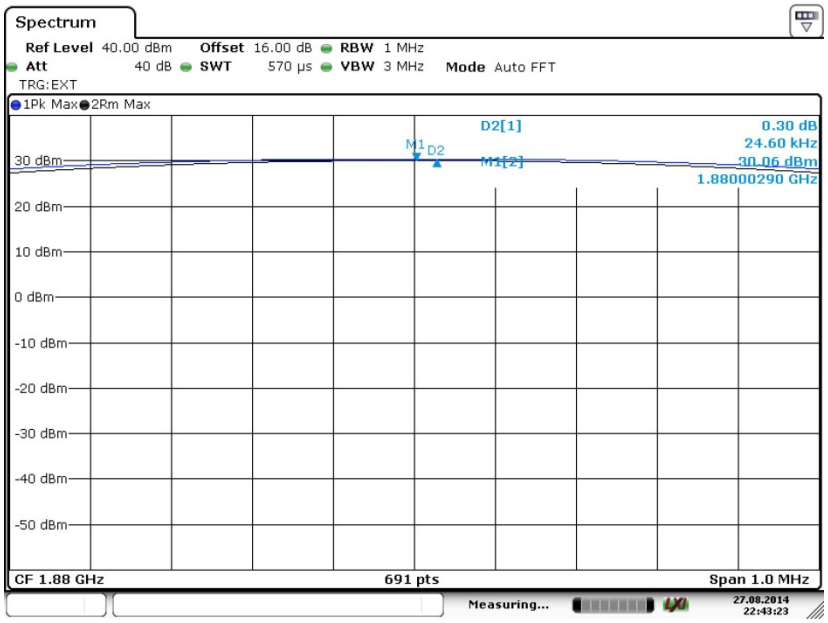
Band :	GSM 1900	Test Mode :	GSM Link (GMSK)

Peak-to-Average Ratio on Channel 512 (1850.2 MHz)



Date: 27.AUG.2014 22:42:17

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



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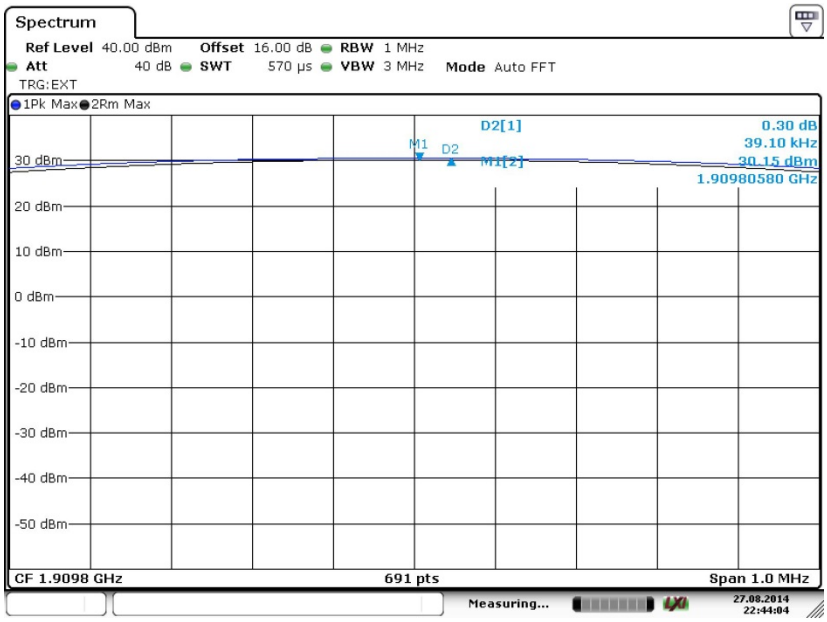
Peak-to-Average Ratio on Channel 810 (1909.8 MHz)



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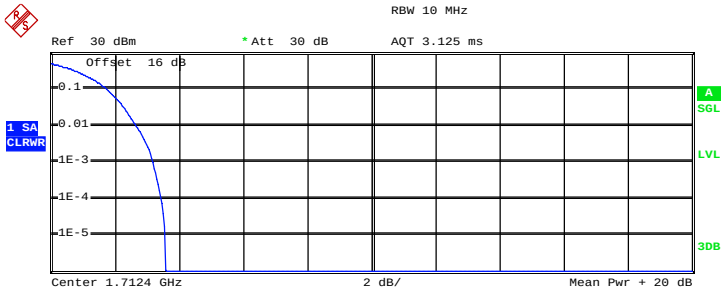
Band :	WCDMA Band IV	Test Mode :	RMC 12.2Kbps Link (QPSK)

Peak-to-Average Ratio on Channel 1312 (1712.4 MHz)

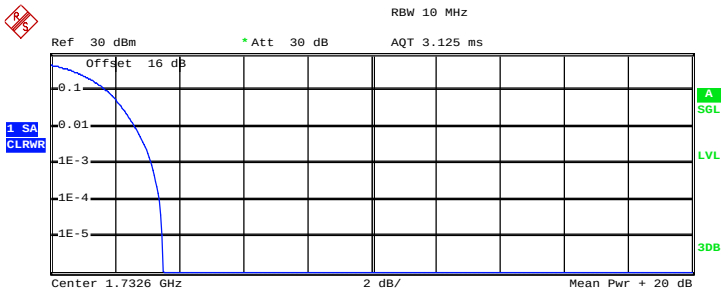


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	21.55 dBm
Peak	25.13 dBm
Crest	3.58 dB
10 %	1.76 dB
1 %	2.68 dB
.1 %	3.20 dB
.01 %	3.44 dB

Date: 23.AUG.2014 08:40:49

Peak-to-Average Ratio On Channel 1413 (1732.6 MHz)



Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	21.43 dBm
Peak	24.92 dBm
Crest	3.49 dB
10 %	1.76 dB
1 %	2.64 dB
.1 %	3.16 dB
.01 %	3.40 dB

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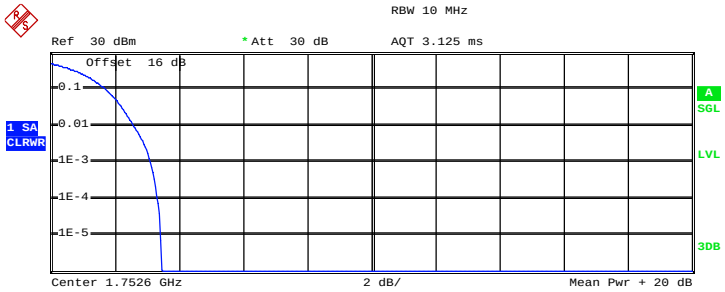
Peak-to-Average Ratio on Channel 1513 (1752.6 MHz)



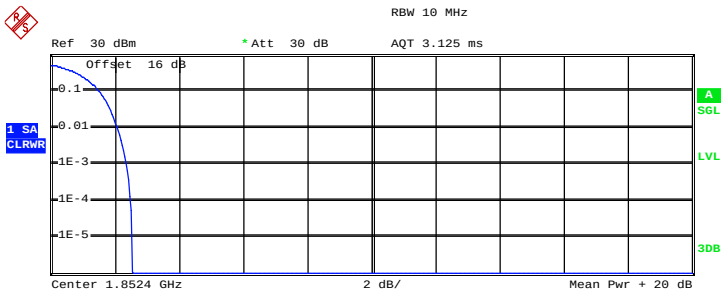
Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	21.06 dBm
Peak	24.50 dBm
Crest	3.44 dB
10 %	1.72 dB
1 %	2.60 dB
.1 %	3.12 dB
.01 %	3.32 dB

Date: 23.AUG.2014 08:42:06

Band :	WCDMA Band II	Test Mode :	RMC 12.2Kbps Link (QPSK)

Peak-to-Average Ratio on Channel 9262 (1852.4 MHz)



Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	24.56 dBm
Peak	27.11 dBm
Crest	2.55 dB
10 %	1.52 dB
1 %	2.08 dB
.1 %	2.36 dB
.01 %	2.48 dB

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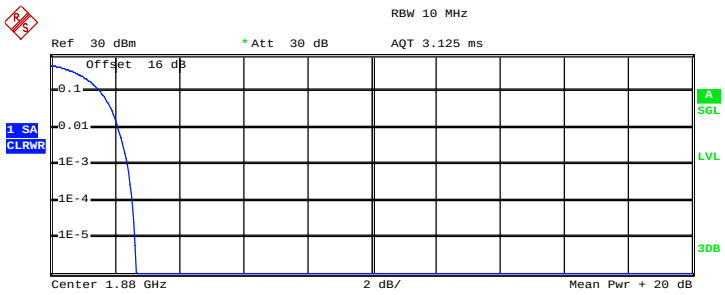
Peak-to-Average Ratio on Channel 9400 (1880.0 MHz)

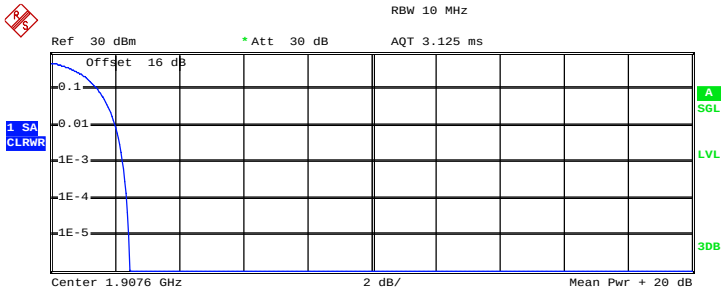


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	24.64 dBm
Peak	27.32 dBm
Crest	2.68 dB
10 %	1.56 dB
1 %	2.12 dB
.1 %	2.40 dB
.01 %	2.56 dB

Date: 23.AUG.2014 08:22:24

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



Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	24.10 dBm
Peak	26.54 dBm
Crest	2.45 dB
10 %	1.48 dB
1 %	2.04 dB
.1 %	2.24 dB
.01 %	2.36 dB

Date: 23.AUG.2014 08:23:04

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 v02r01. The ERP of mobile transmitters must not exceed 7 Watts (Cellular Band) and the EIRP of mobile transmitters are limited to 2 Watts (PCS Band) and 1 Watts (AWS Band).

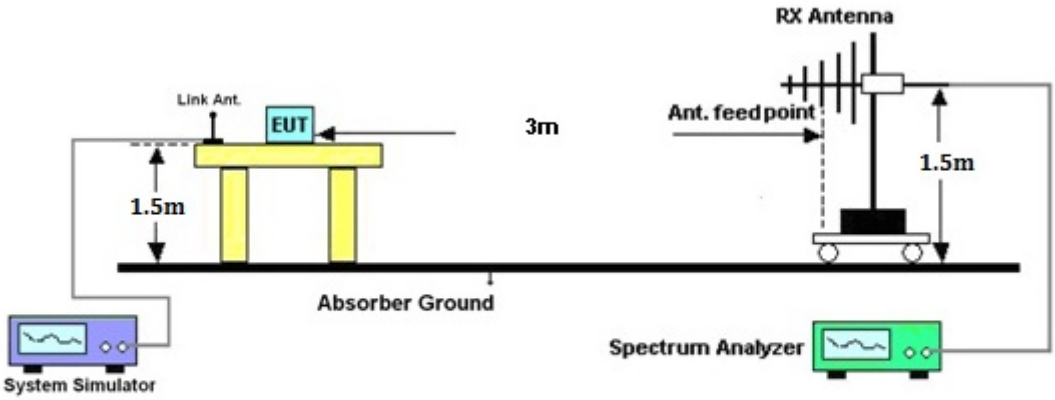
3.3.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.3.3 Test Procedures

1. The testing follows FCC KDB 971168 v02r01 Section 5.2.1. (for CDMA/WCDMA), Section 5.2.2.2 (for GSM/GPRS/EDGE) and ANSI / TIA-603-C-2004 Section 2.2.17.
2. The EUT was placed on a turntable 1.5 meters high in a fully anechoic chamber.
3. The EUT was placed 3 meters from the receiving antenna, which was mounted on the antenna tower.
4. GSM operating modes: Set RBW= 1MHz, VBW= 3MHz, RMS detector over burst;
   UMTS operating modes: Set RBW= 100 kHz, VBW= 300 kHz, RMS detector over frame, and use channel power option with bandwidth=5MHz, per KDB 971168 D01.
5. The table was rotated 360 degrees to determine the position of the highest radiated power.
6. The height of the receiving antenna is adjusted to look for the maximum ERP/EIRP.
7. Taking the record of maximum ERP/EIRP.
8. A dipole antenna was substituted in place of the EUT and was driven by a signal generator.
9. The conducted power at the terminal of the dipole antenna is measured.
10. Repeat step 3 to step 5 to get the maximum ERP/EIRP of the substitution antenna.
11. ERP/EIRP = Ps + Et – Es + Gs = Ps + Rt – Rs + Gs
    Ps (dBm)：Input power to substitution antenna.
    Gs (dBi or dBd)：Substitution antenna Gain.
    Et = Rt + AF
    Es = Rs + AF
    AF (dB/m)：Receive antenna factor
    Rt：The highest received signal in spectrum analyzer for EUT.
    Rs：The highest received signal in spectrum analyzer for substitution antenna.

3.3.4 Test Setup



3.3.5 Test Result of ERP

GSM850 (GSM) Radiated Power ERP						
Horizontal Polarization						
Frequency (MHz)	**Rt (dBm)**	**Rs (dBm)**	**Ps (dBm)**	**Gs (dBd)**	**ERP (dBm)**	**ERP (W)**
824.20	-17.16	-48.12	0.00	-1.08	29.88	0.9732
836.40	-17.41	-48.28	0.00	-0.93	29.94	0.9854
848.80	-18.04	-48.35	0.00	-0.76	29.55	0.9020
Vertical Polarization						
Frequency (MHz)	**Rt (dBm)**	**Rs (dBm)**	**Ps (dBm)**	**Gs (dBd)**	**ERP (dBm)**	**ERP (W)**
824.20	-30.57	-47.97	0.00	-1.08	16.32	0.0429
836.40	-30.53	-48.01	0.00	-0.93	16.55	0.0452
848.80	-30.86	-48.05	0.00	-0.76	16.43	0.0439

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	-27.99	-48.12	0.00	-1.08	19.05	0.0804
836.40	-28.33	-48.28	0.00	-0.93	19.02	0.0799
846.60	-29.31	-48.35	0.00	-0.76	18.28	0.0673
Vertical Polarization						
Frequency (MHz)	**Rt (dBm)**	**Rs (dBm)**	**Ps (dBm)**	**Gs (dBd)**	**ERP (dBm)**	**ERP (W)**
826.40	-41.20	-47.97	0.00	-1.08	5.69	0.0037
836.40	-41.26	-48.01	0.00	-0.93	5.82	0.0038
846.60	-42.33	-48.05	0.00	-0.76	4.96	0.0031

3.3.6 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	-24.12	-51.88	0.00	1.96	29.72	0.9370
1880.00	-24.78	-52.99	0.00	2.00	30.21	1.0489
1909.80	-25.97	-54.28	0.00	1.98	30.29	1.0681
Vertical Polarization						
Frequency (MHz)	**Rt (dBm)**	**Rs (dBm)**	**Ps (dBm)**	**Gs (dBi)**	**EIRP (dBm)**	**EIRP (W)**
1850.20	-24.69	-52.13	0.00	1.96	29.40	0.8716
1880.00	-25.39	-53.17	0.00	2.00	29.78	0.9516
1909.80	-25.99	-54.13	0.00	1.98	30.12	1.0292

WCDMA Band IV (RMC 12.2Kbps) Radiated Power EIRP						
Horizontal Polarization						
Frequency (MHz)	**Rt (dBm)**	**Rs (dBm)**	**Ps (dBm)**	**Gs (dBi)**	**EIRP (dBm)**	**EIRP (W)**
1712.40	-30.25	-51.88	0.00	1.96	23.59	0.2283
1732.60	-30.89	-52.99	0.00	2.00	24.10	0.2568
1752.60	-32.68	-54.28	0.00	1.98	23.58	0.2280
Vertical Polarization						
Frequency (MHz)	**Rt (dBm)**	**Rs (dBm)**	**Ps (dBm)**	**Gs (dBi)**	**EIRP (dBm)**	**EIRP (W)**
1712.40	-31.15	-52.13	0.00	1.96	22.94	0.1967
1732.60	-32.17	-53.17	0.00	2.00	23.00	0.1994
1752.60	-33.69	-54.13	0.00	1.98	22.42	0.1745

WCDMA Band II (RMC 12.2Kbps) Radiated Power EIRP						
Horizontal Polarization						
Frequency (MHz)	**Rt (dBm)**	**Rs (dBm)**	**Ps (dBm)**	**Gs (dBi)**	**EIRP (dBm)**	**EIRP (W)**
1852.40	-30.32	-51.88	0.00	1.96	23.52	0.2251
1880.00	-31.73	-52.99	0.00	2.00	23.26	0.2118
1907.60	-32.99	-54.28	0.00	1.98	23.27	0.2125
Vertical Polarization						
Frequency (MHz)	**Rt (dBm)**	**Rs (dBm)**	**Ps (dBm)**	**Gs (dBi)**	**EIRP (dBm)**	**EIRP (W)**
1852.40	-30.90	-52.13	0.00	1.96	23.19	0.2083
1880.00	-32.38	-53.17	0.00	2.00	22.79	0.1902
1907.60	-33.01	-54.13	0.00	1.98	23.10	0.2043

3.4 99% Occupied Bandwidth and 26dB Bandwidth Measurement

3.4.1 Description of 99% Occupied Bandwidth and 26dB Bandwidth Measurement

The 99% 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.

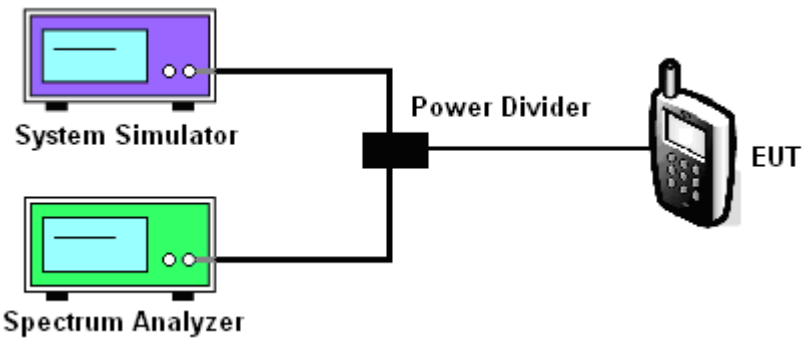
3.4.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.4.3 Test Procedures

1. The testing follows FCC KDB 971168 v02r01 Section 4.2.
2. The EUT was connected to the spectrum analyzer and system simulator via a power divider.
3. The RF output of the EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
4. The 99% occupied bandwidth were measured, set RBW= 1% of span, VBW= 3*RBW, sample detector, trace maximum hold.
5. The 26dB bandwidth were measured, set RBW= 1% of EBW, VBW= 3*RBW, peak detector, trace maximum hold.

3.4.4 Test Setup



3.4.5 Test Result of Occupied Bandwidth and 26dB Bandwidth

Cellular Band			
Modes	**GSM850 (GSM)**		
Channel	**128 (Low)**	**189 (Mid)**	**251 (High)**
Frequency (MHz)	**824.2**	**836.4**	**848.8**
99% OBW (kHz)	248.00	250.00	248.00
26dB BW (kHz)	314.00	310.00	314.00

Cellular Band			
Modes	**GSM1900 (GSM)**		
Channel	**512 (Low)**	**661 (Mid)**	**810 (High)**
Frequency (MHz)	**1850.2**	**1880**	**1909.8**
99% OBW (kHz)	248.00	244.00	246.00
26dB BW (kHz)	312.00	314.00	314.00

Cellular Band			
Modes	**WCDMA Band V (RMC 12.2Kbps)**		
Channel	**4132 (Low)**	**4182 (Mid)**	**4233 (High)**
Frequency (MHz)	**826.4**	**836.4**	**846.6**
99% OBW (MHz)	4.14	4.14	4.16
26dB BW (MHz)	4.70	4.68	4.70

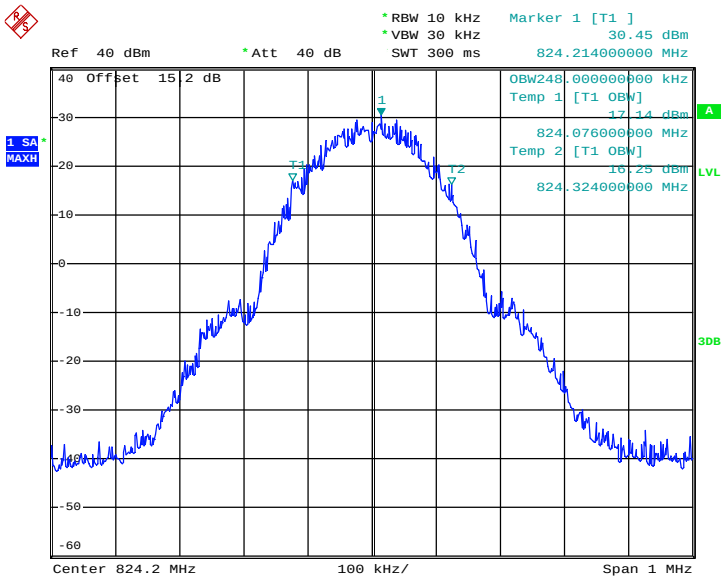
AWS Band			
Modes	**WCDMA Band IV (RMC** 12.2Kbps**)**		
Channel	**1312(Low)**	**1413 (Mid)**	**1513 (High)**
Frequency (MHz)	**1712.4**	**1732.6**	**1752.6**
99% OBW (MHz)	4.14	4.18	4.18
26dB BW (MHz)	4.70	4.72	4.70

PCS Band			
Modes	**WCDMA Band II (RMC 12.2Kbps)**		
Channel	**9262 (Low)**	**9400 (Mid)**	**9538 (High)**
Frequency (MHz)	**1852.4**	**1880**	**1907.6**
99% OBW (MHz)	4.20	4.18	4.18
26dB BW (MHz)	4.76	4.74	4.76

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

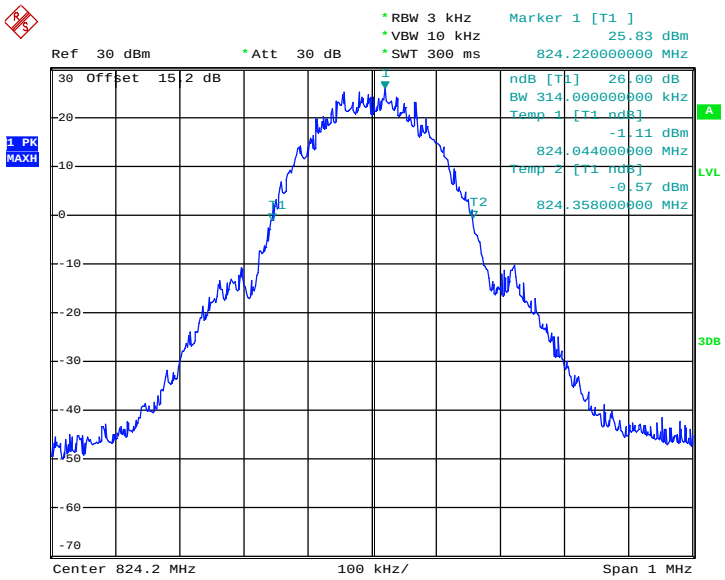
Band :	GSM 850	Test Mode :	GSM Link (GMSK)

99% Occupied Bandwidth Plot on Channel 128 (824.2 MHz)



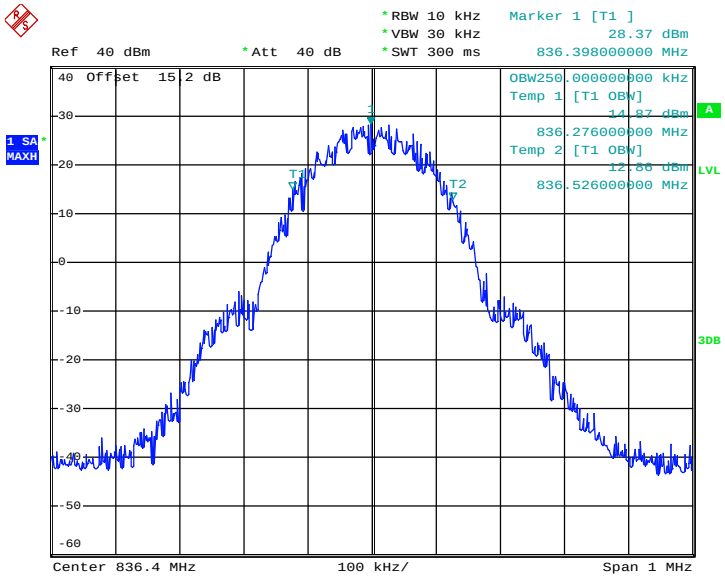
Date: 23.AUG.2014 05:50:09

26dB Bandwidth Plot on Channel 128 (824.2 MHz)



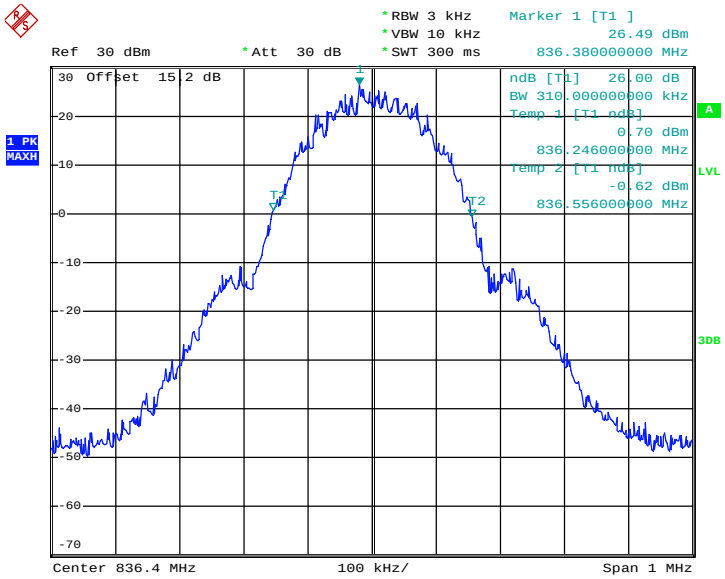
Date: 23.AUG.2014 05:32:45

99% Occupied Bandwidth Plot on Channel 189 (836.4 MHz)



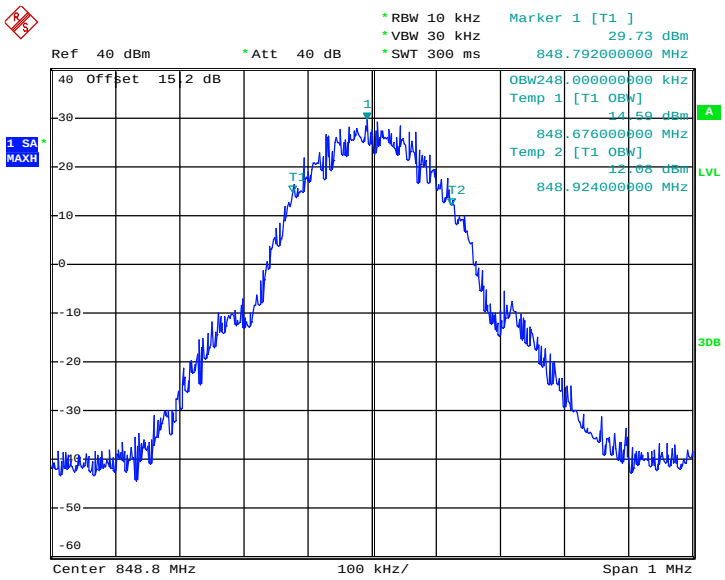
Date: 23.AUG.2014 05:34:30

26dB Bandwidth Plot on Channel 189 (836.4 MHz)



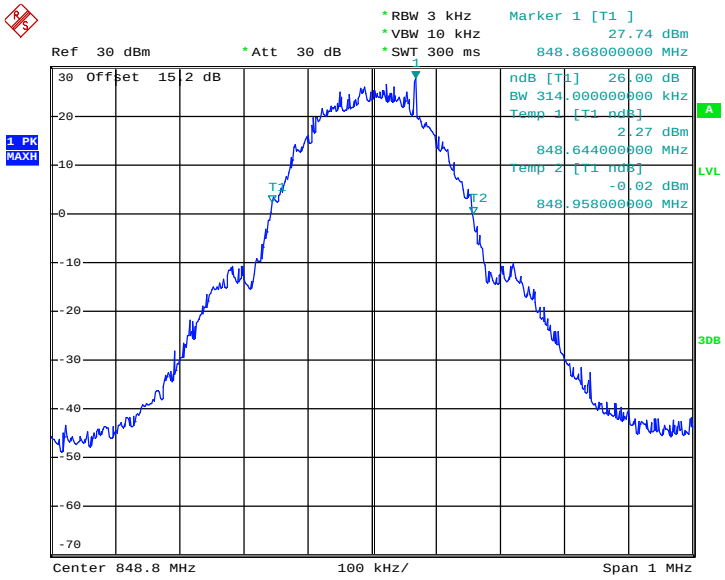
Date: 23.AUG.2014 05:33:11

99% Occupied Bandwidth Plot on Channel 251 (848.8 MHz)



Date: 23.AUG.2014 05:34:56

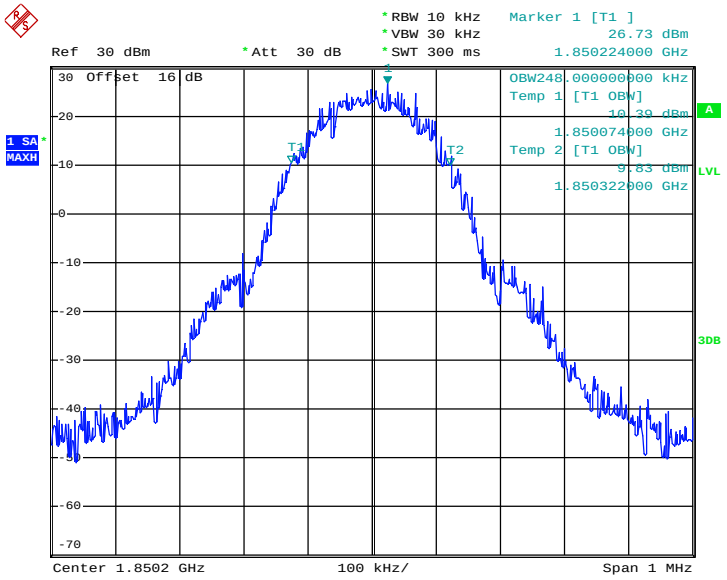
26dB Bandwidth Plot on Channel 251 (848.8 MHz)



Date: 23.AUG.2014 05:41:30

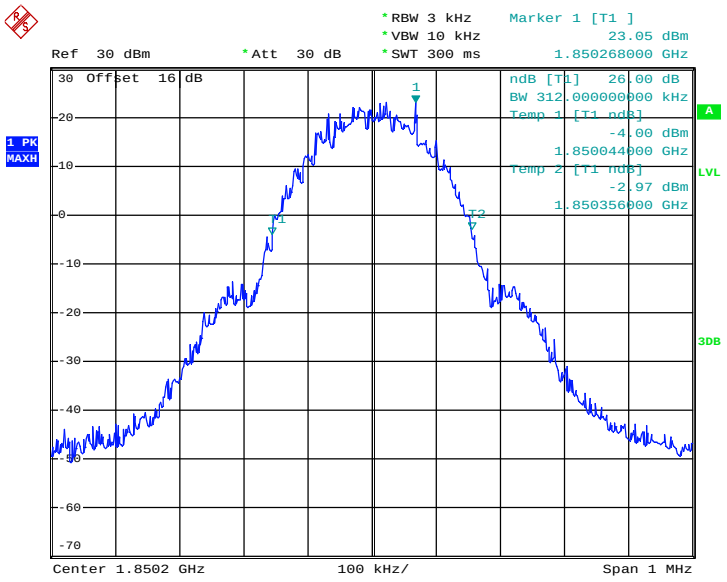
Band :	GSM 1900	Test Mode :	GSM Link (GMSK)

99% Occupied Bandwidth Plot on Channel 512 (1850.2 MHz)



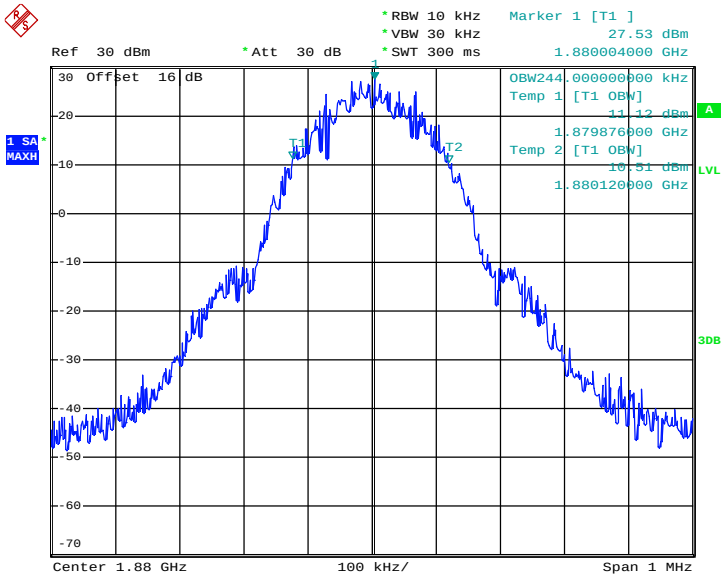
Date: 23.AUG.2014 07:10:24

26dB Bandwidth Plot on Channel 512 (1850.2 MHz)



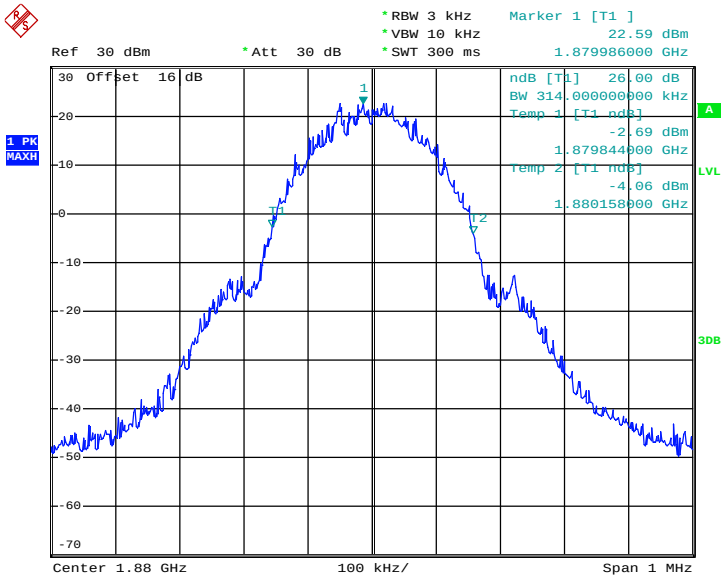
Date: 23.AUG.2014 07:17:18

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



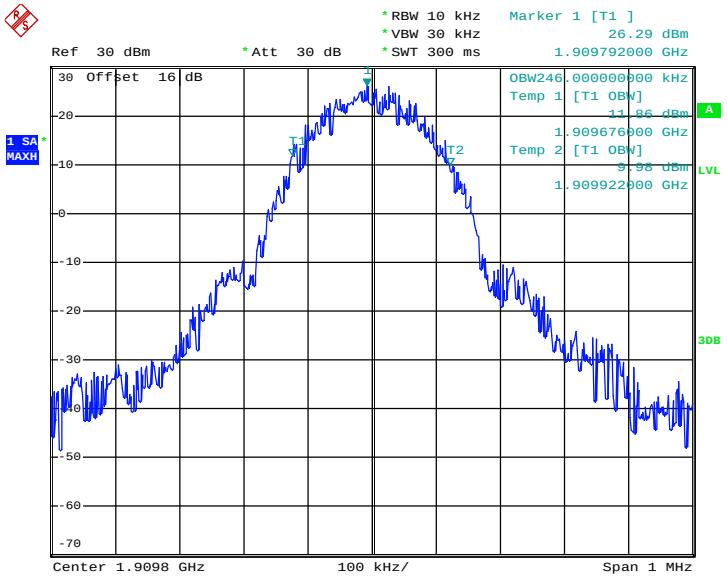
Date: 23.AUG.2014 07:10:50

26dB Bandwidth Plot on Channel 661 (1880.0 MHz)



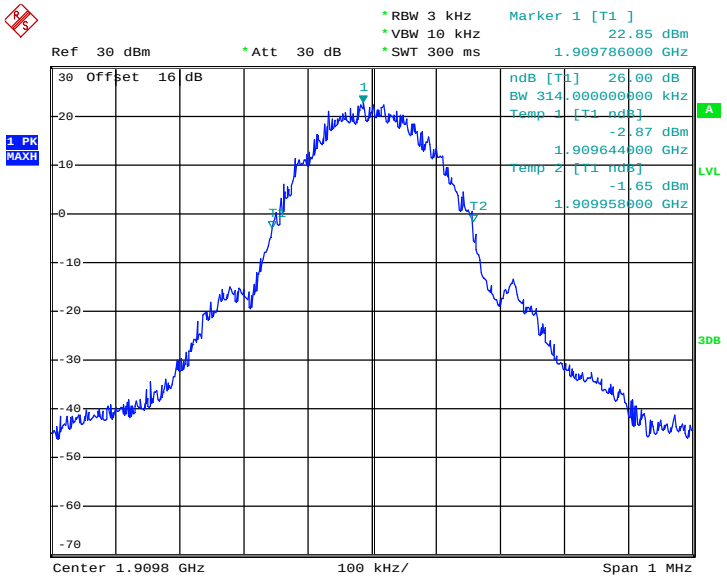
Date: 23.AUG.2014 07:17:44

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



Date: 23.AUG.2014 07:11:16

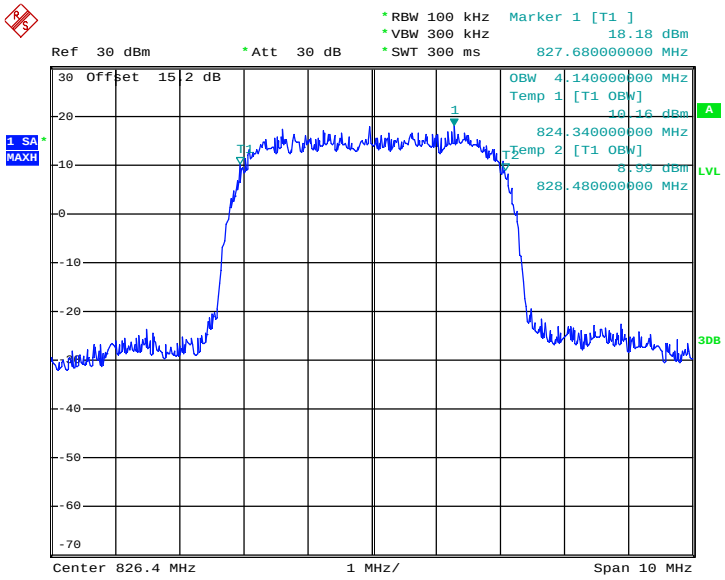
26dB Bandwidth Plot on Channel 810 (1909.8 MHz)



Date: 23.AUG.2014 07:18:10

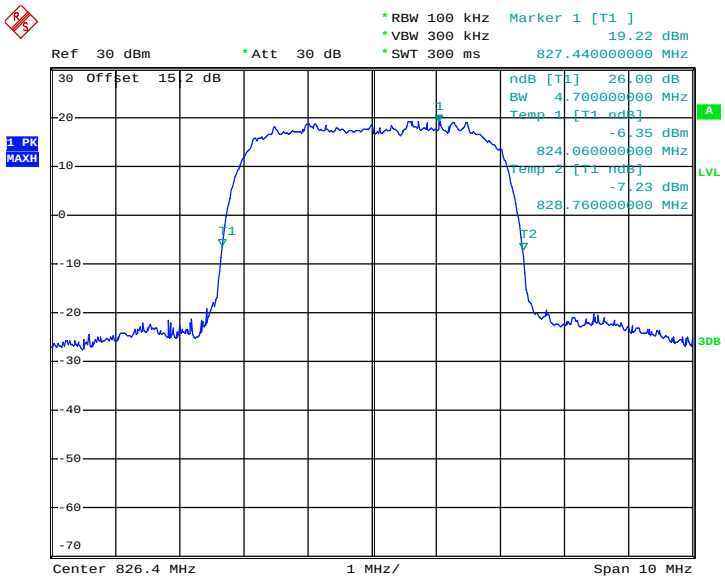
Band :	WCDMA Band V	Test Mode :	RMC 12.2Kbps Link (QPSK)

99% Occupied Bandwidth Plot on Channel 4132 (826.4 MHz)



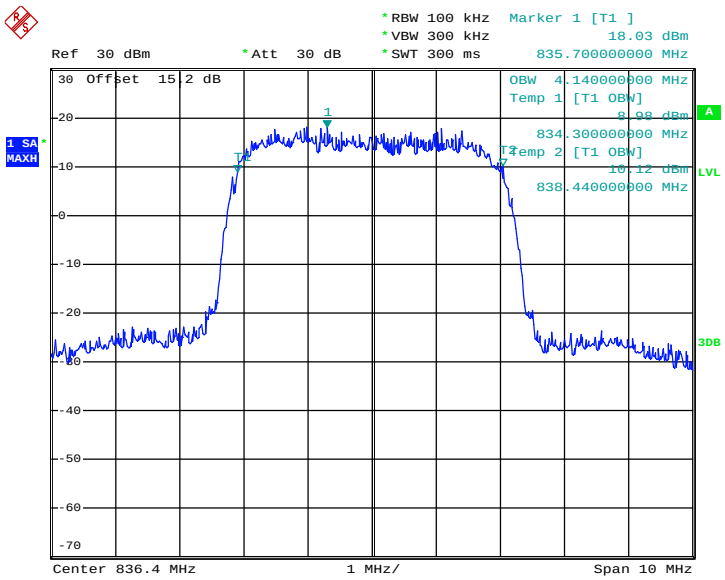
Date: 23.AUG.2014 06:38:11

26dB Bandwidth Plot on Channel 4132 (826.4 MHz)



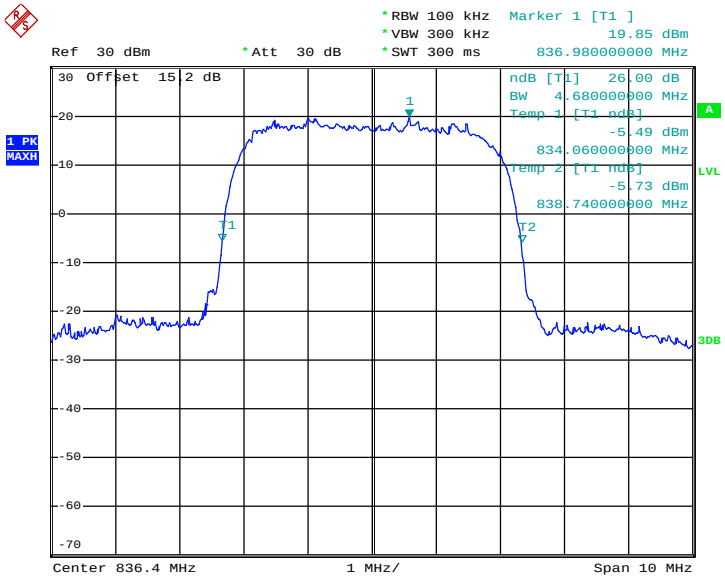
Date: 23.AUG.2014 06:36:52

99% Occupied Bandwidth Plot on Channel 4182 (836.4 MHz)



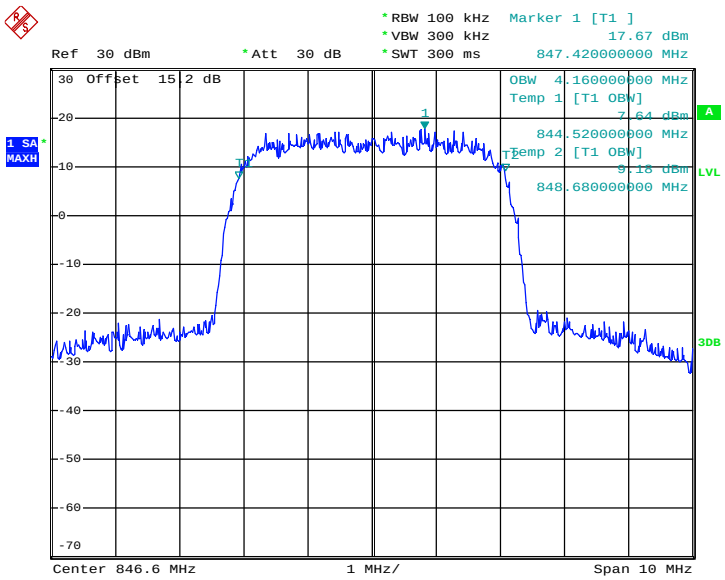
Date: 23.AUG.2014 06:44:18

26dB Bandwidth Plot on Channel 4182 (836.4 MHz)



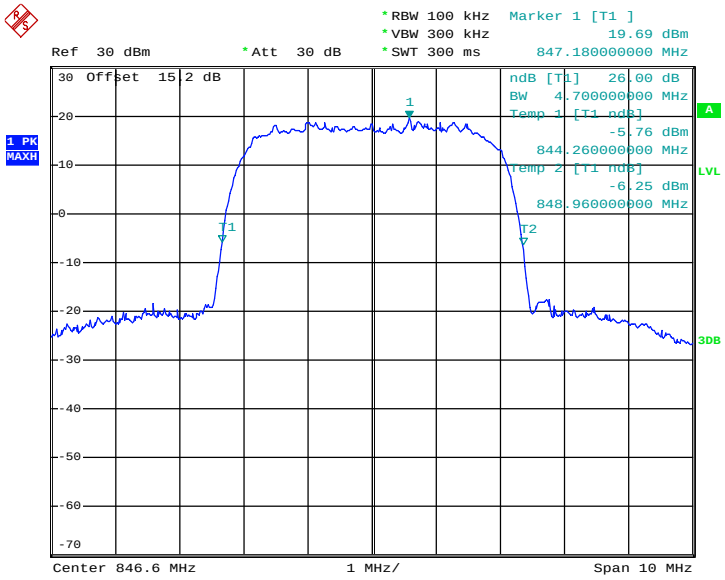
Date: 23.AUG.2014 06:37:18

99% Occupied Bandwidth Plot on Channel 4233 (846.6 MHz)



Date: 23.AUG.2014 06:39:03

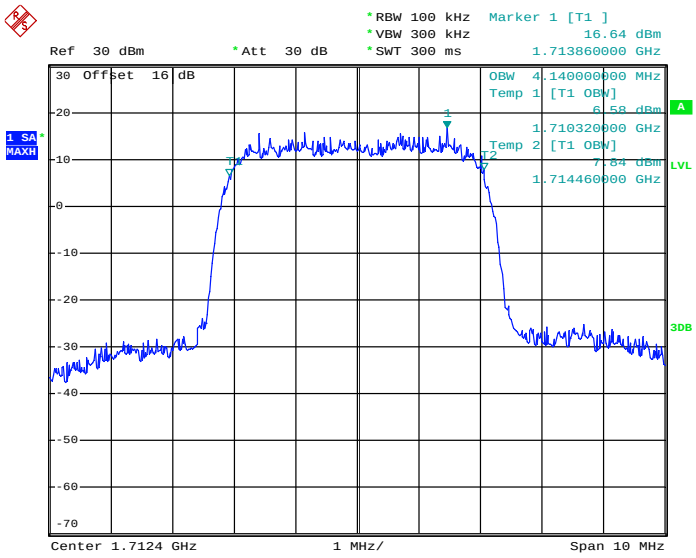
26dB Bandwidth Plot on Channel 4233 (846.6 MHz)



Date: 23.AUG.2014 06:37:45

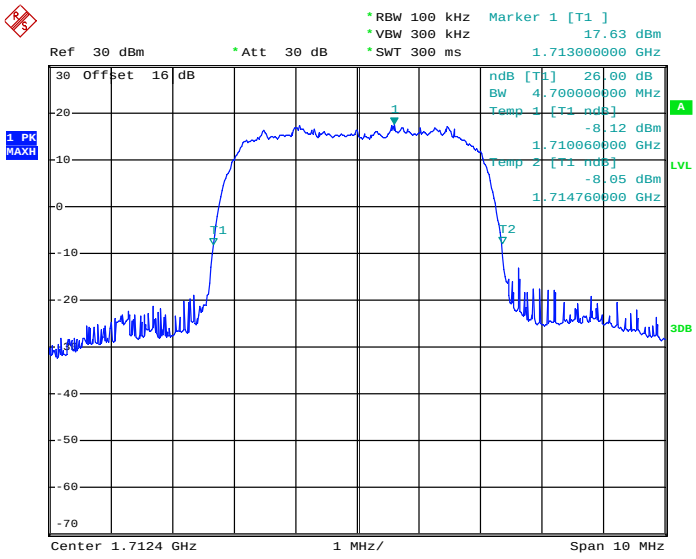
Band :	WCDMA Band IV	Test Mode :	RMC 12.2Kbps Link (QPSK)

99% Occupied Bandwidth Plot on Channel 1312 (1712.4 MHz)



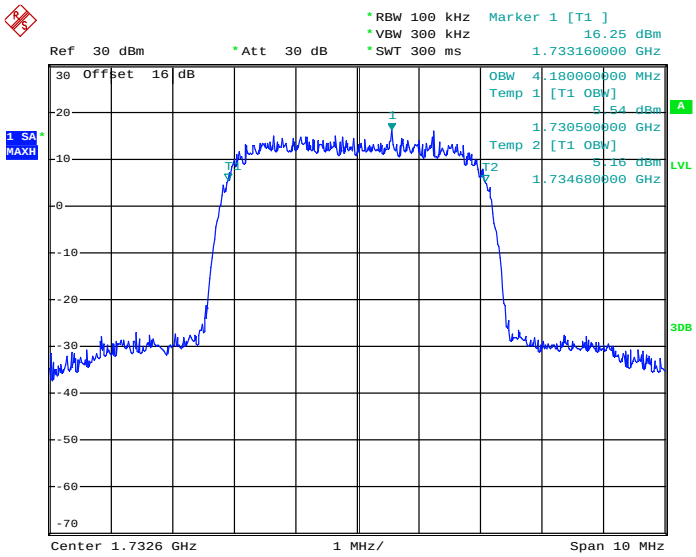
Date: 23.AUG.2014 08:35:26

26dB Bandwidth Plot on Channel 1312 (1712.4 MHz)



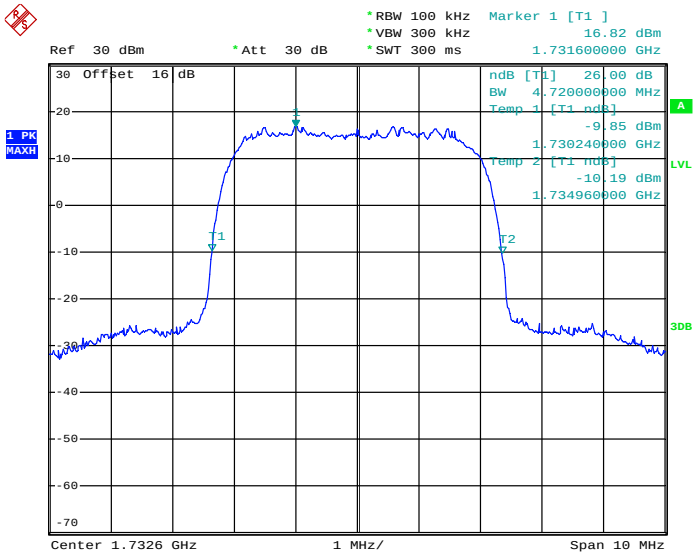
Date: 23.AUG.2014 08:34:07

99% Occupied Bandwidth Plot on Channel 1413 (1732.6 MHz)



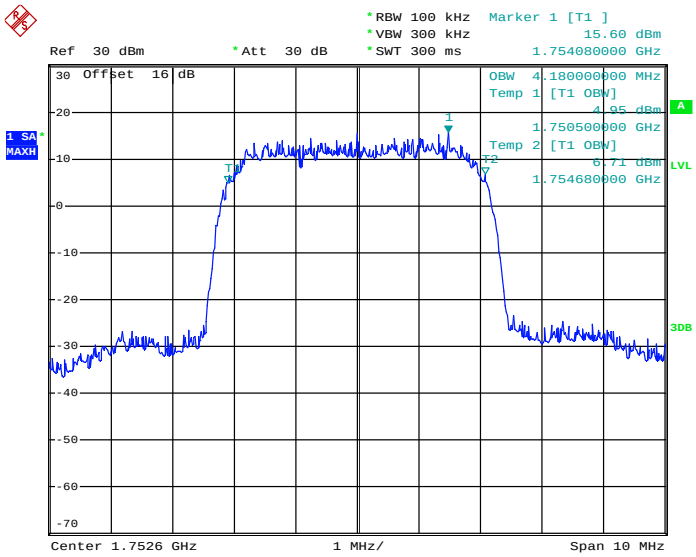
Date: 23.AUG.2014 08:35:52

26dB Bandwidth Plot on Channel 1413 (1732.6 MHz)



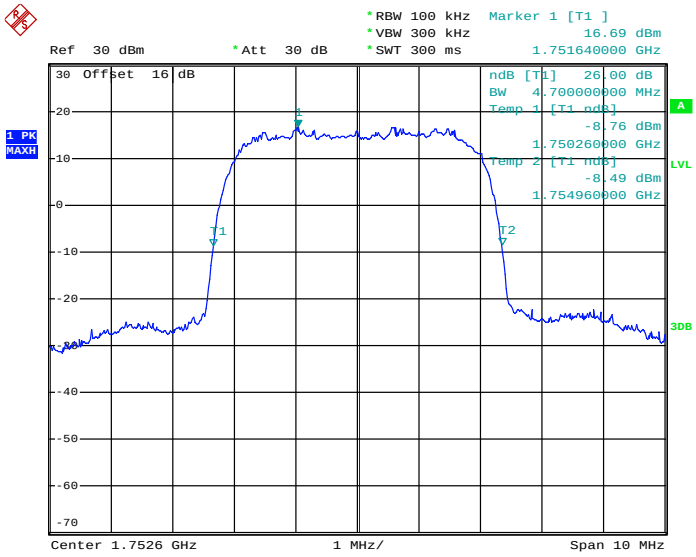
Date: 23.AUG.2014 08:34:33

99% Occupied Bandwidth Plot on Channel 1513 (1752.6 MHz)



Date: 23.AUG.2014 08:36:18

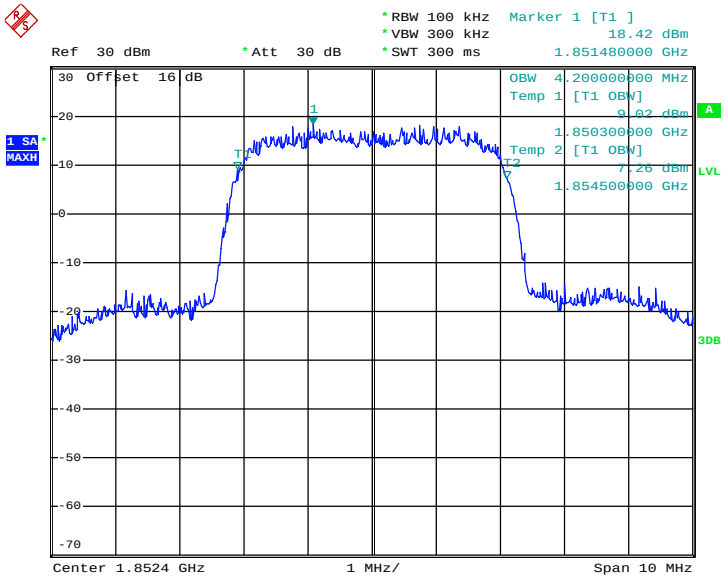
26dB Bandwidth Plot on Channel 1513 (1752.6 MHz)



Date: 23.AUG.2014 08:35:00

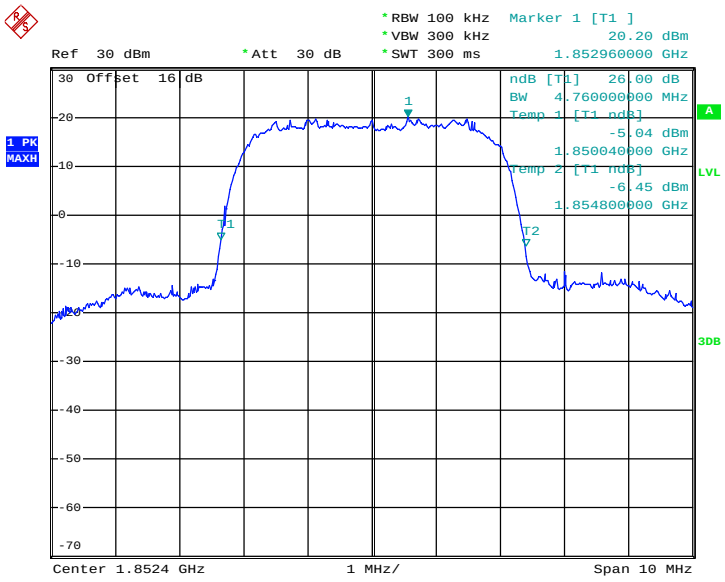
Band :	WCDMA Band II	Test Mode :	RMC 12.2Kbps Link (QPSK)

99% Occupied Bandwidth Plot on Channel 9262 (1852.4 MHz)



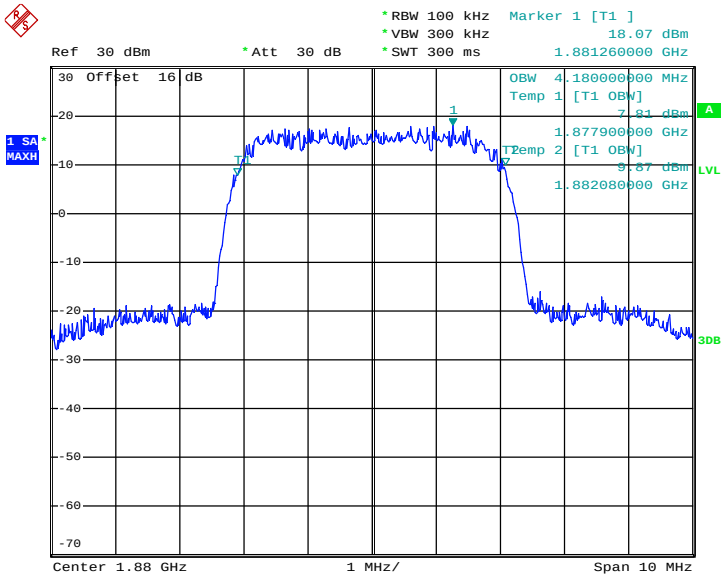
Date: 23.AUG.2014 08:14:05

26dB Bandwidth Plot on Channel 9262 (1852.4 MHz)



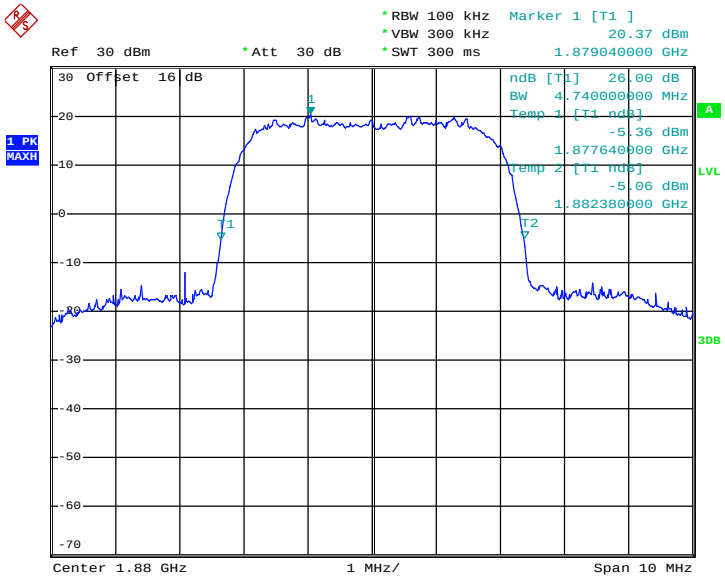
Date: 23.AUG.2014 08:12:46

99% Occupied Bandwidth Plot on Channel 9400 (1880.0 MHz)



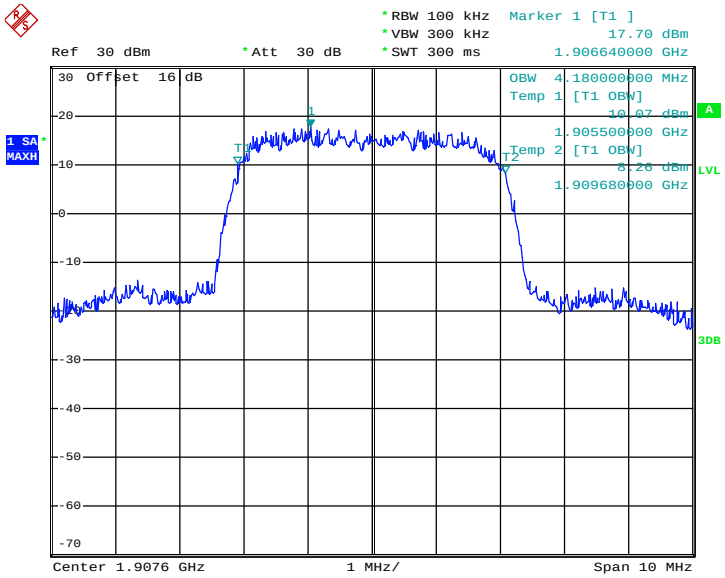
Date: 23.AUG.2014 08:14:31

26dB Bandwidth Plot on Channel 9400 (1880.0 MHz)



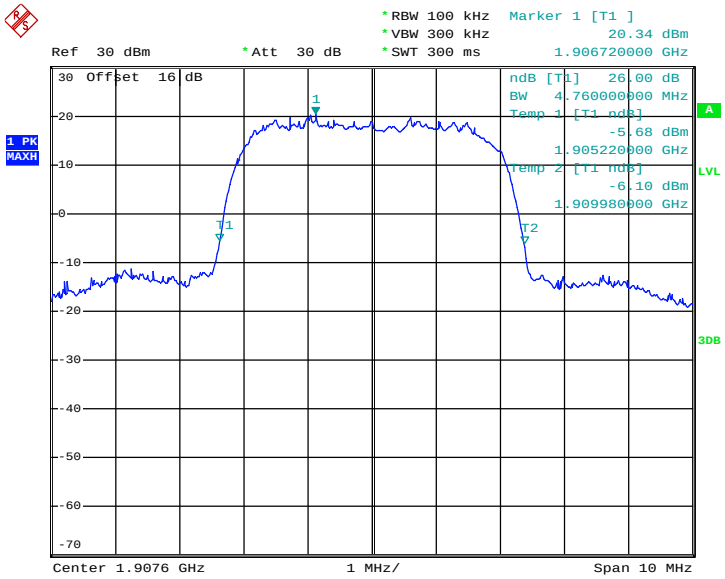
Date: 23.AUG.2014 08:13:12

99% Occupied Bandwidth Plot on Channel 9538 (1907.6 MHz)



Date: 23.AUG.2014 08:14:57

26dB Bandwidth Plot on Channel 9538 (1907.6 MHz)



Date: 23.AUG.2014 08:13:38

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

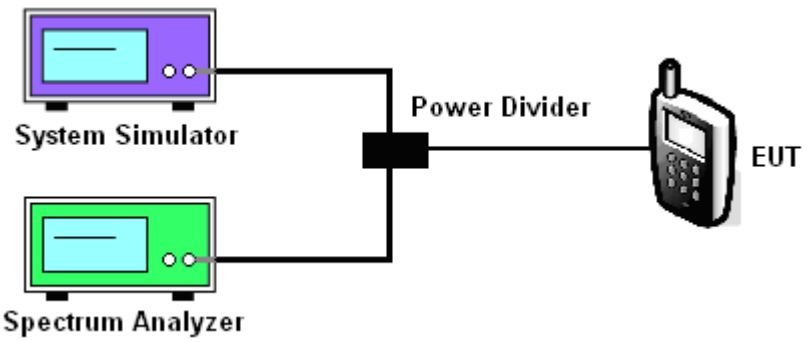
The measuring equipment is listed in the section 4 of this test report.

3.5.3 Test Procedures

1. The testing follows FCC KDB 971168 v02r01 Section 6.0.
2. The EUT was connected to the spectrum analyzer and system simulator via a power divider.
3. The RF output of EUT was connected to the spectrum analyzer by an RF cable and attenuator. The path loss was compensated to the results for each measurement.
4. The band edges of low and high channels for the highest RF powers were measured.
5. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
6. The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts)
   = P(W) - [43 + 10log(P)] (dB)
   = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
   = -13dBm.

3.5.4 Test Setup

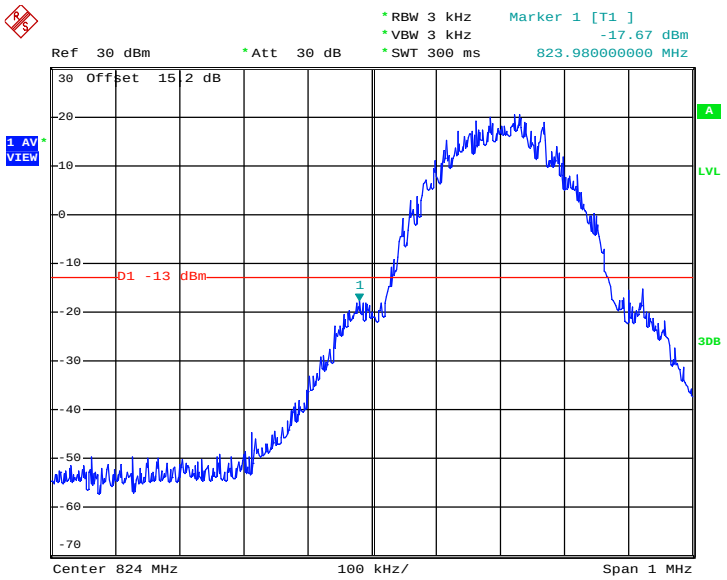
<Conducted Band Edge >



3.5.5 Test Result (Plots) of Conducted Band Edge

Band :	GSM850	Test Mode :	GSM Link (GMSK)
Correction Factor :	0.20dB	Maximum 26dB Bandwidth :	0.314MHz
Band Edge :	-17.47dBm	Measurement Value :	-17.67dBm

Lower Band Edge Plot on Channel 128 (824.2 MHz)



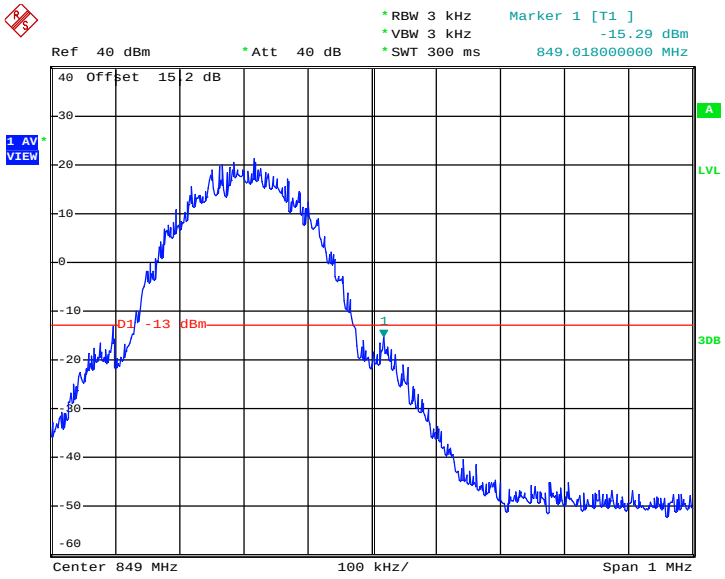
Date: 23.AUG.2014 05:45:54

1. Correction Factor(dB)= 10log(1% Emission BW/RBW)

2. Band Edge= Measurement Value + Correction Factor(dB)

Band :	GSM850	Test Mode :	GSM Link (GMSK)
Correction Factor :	0.20dB	Maximum 26dB Bandwidth :	0.314MHz
Band Edge :	-15.09dBm	Measurement Value :	-15.29dBm

Higher Band Edge Plot on Channel 251 (848.8 MHz)



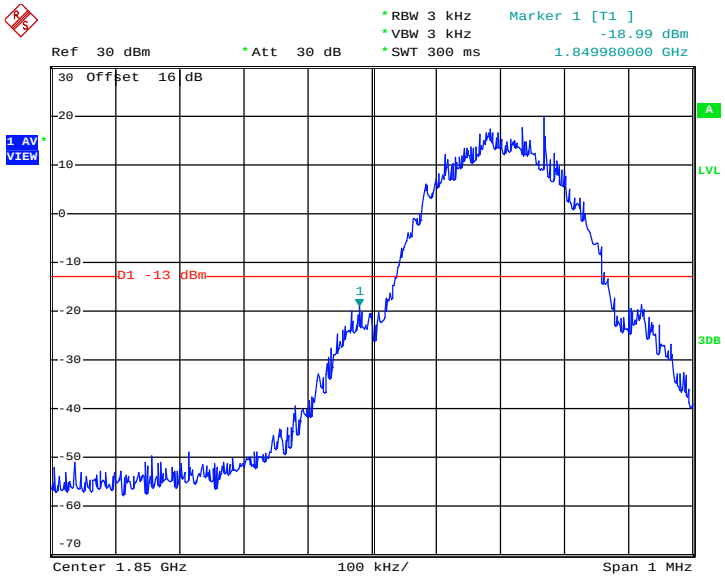
Date: 23.AUG.2014 05:36:48

1. Correction Factor(dB)= 10log(1% Emission BW/RBW)

2. Band Edge= Measurement Value + Correction Factor(dB)

Band :	GSM1900	Test Mode :	GSM Link (GMSK)
Correction Factor :	0.20 dB	Maximum 26dB Bandwidth :	0.314MHz
Band Edge :	-18.79dBm	Measurement Value :	-18.99dBm

Lower Band Edge Plot on Channel 512 (1850.2 MHz)



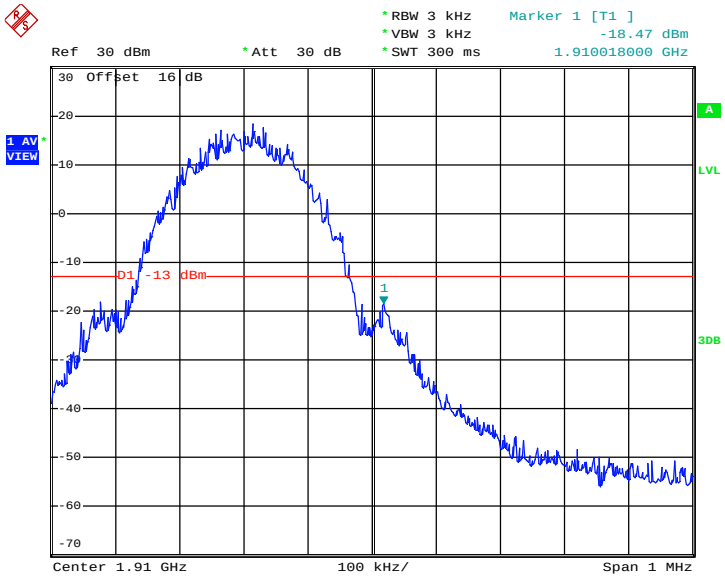
Date: 23.AUG.2014 07:12:41

1. Correction Factor(dB)= 10log(1% Emission BW/RBW)

2. Band Edge= Measurement Value + Correction Factor(dB)

Band :	GSM1900	Test Mode :	GSM Link (GMSK)
Correction Factor :	0.20 dB	Maximum 26dB Bandwidth :	0.314MHz
Band Edge :	-18.27dBm	Measurement Value :	-18.47dBm

Higher Band Edge Plot on Channel 810 (1909.8 MHz)

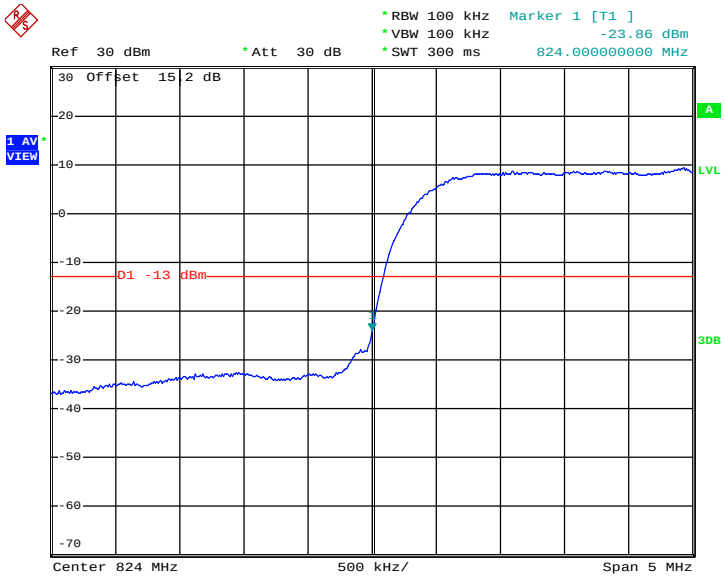


1. Correction Factor(dB)= 10log(1% Emission BW/RBW)

2. Band Edge= Measurement Value + Correction Factor(dB)

Band :	WCDMA Band V	Test Mode :	RMC 12.2Kbps Link (QPSK)
Correction Factor :	-3.28 dB	Maximum 26dB Bandwidth :	4.700MHz
Band Edge :	-27.14dBm	Measurement Value :	-23.86dBm

Lower Band Edge Plot on Channel 4132 (826.4 MHz)

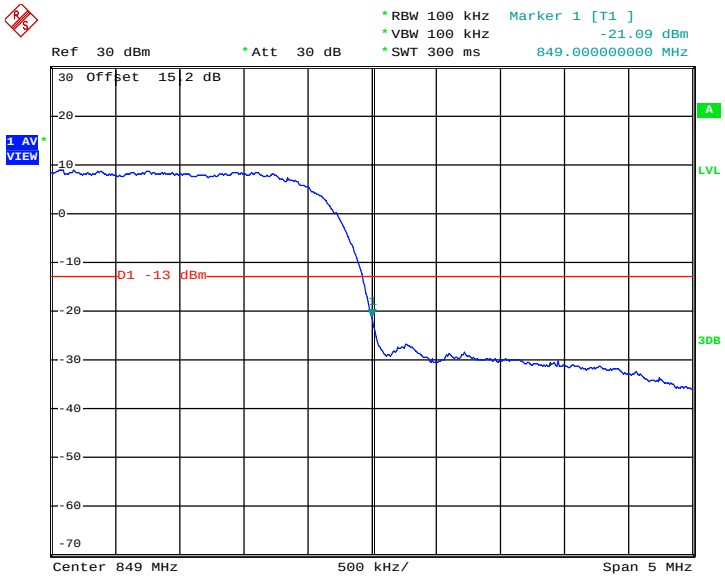


1. Correction Factor(dB)= 10log(1% Emission BW/RBW)

2. Band Edge= Measurement Value + Correction Factor(dB)

Band :	WCDMA Band V	Test Mode :	RMC 12.2Kbps Link (QPSK)
Correction Factor :	-3.28 dB	Maximum 26dB Bandwidth :	4.700MHz
Band Edge :	-24.37dBm	Measurement Value :	-21.09dBm

Higher Band Edge Plot on Channel 4233 (846.6 MHz)



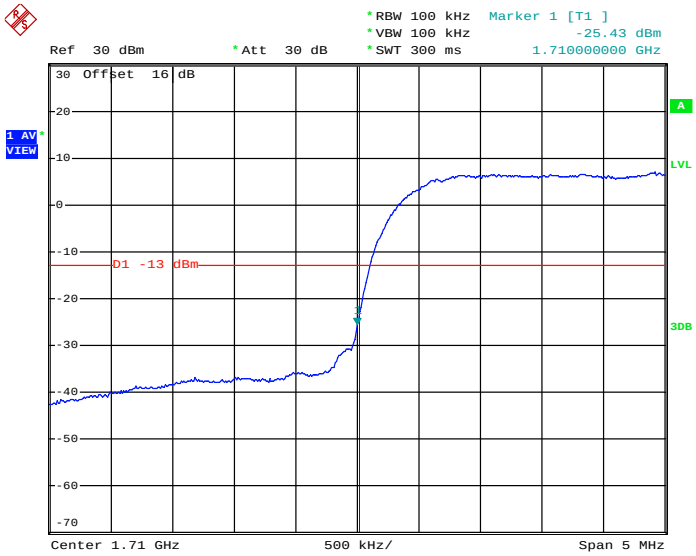
Date: 23.AUG.2014 06:40:57

1. Correction Factor(dB)= 10log(1% Emission BW/RBW)

2. Band Edge= Measurement Value + Correction Factor(dB)

Band :	WCDMA Band IV	Test Mode :	RMC 12.2Kbps Link (QPSK)
Correction Factor :	-3.26 dB	Maximum 26dB Bandwidth :	4.720MHz
Band Edge :	-28.69dBm	Measurement Value :	-25.43dBm

Lower Band Edge Plot on Channel 1312 (1712.4 MHz)

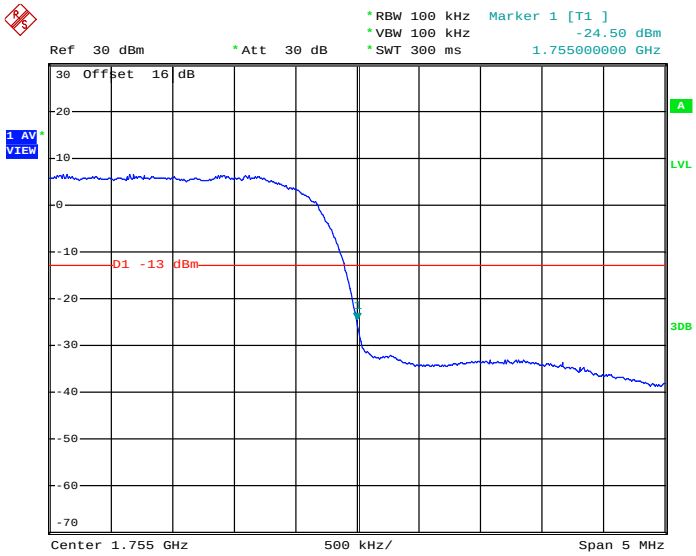


1. Correction Factor(dB)= 10log(1% Emission BW/RBW)

2. Band Edge= Measurement Value + Correction Factor(dB)

Band :	WCDMA Band IV	Test Mode :	RMC 12.2Kbps Link (QPSK)
Correction Factor :	-3.26 dB	Maximum 26dB Bandwidth :	4.720MHz
Band Edge :	-27.76dBm	Measurement Value :	-24.50dBm

Higher Band Edge Plot on Channel 1513 (1752.6 MHz)

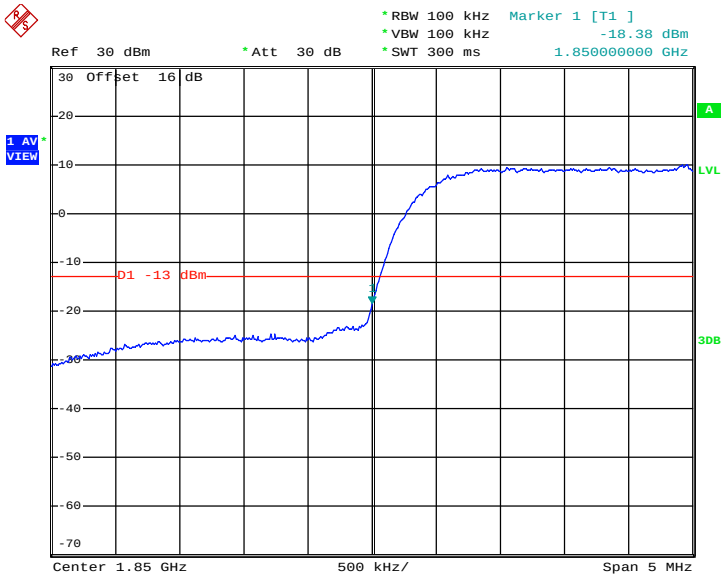


1. Correction Factor(dB)= 10log(1% Emission BW/RBW)

2. Band Edge= Measurement Value + Correction Factor(dB)

Band :	WCDMA Band II	Test Mode :	RMC 12.2Kbps Link (QPSK)
Correction Factor :	-3.22 dB	Maximum 26dB Bandwidth :	4.760MHz
Band Edge :	-21.60dBm	Measurement Value :	-18.38dBm

Lower Band Edge Plot on Channel 9262 (1852.4 MHz)



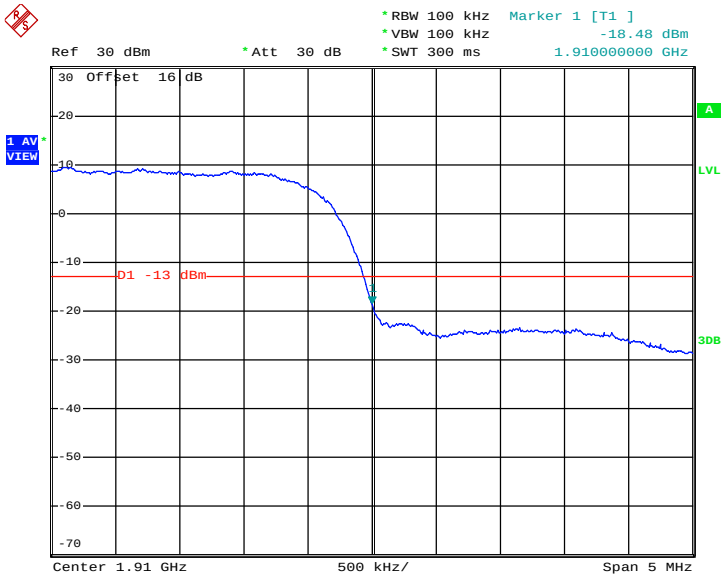
Date: 23.AUG.2014 08:16:26

1. Correction Factor(dB)= 10log(1% Emission BW/RBW)

2. Band Edge= Measurement Value + Correction Factor(dB)

Band :	WCDMA Band II	Test Mode :	RMC 12.2Kbps Link (QPSK)
Correction Factor :	-3.22 dB	Maximum 26dB Bandwidth :	4.760MHz
Band Edge :	-21.60dBm	Measurement Value :	-18.48dBm

Higher Band Edge Plot on Channel 9538 (1907.6 MHz)



Date: 23.AUG.2014 08:16:52

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 10^{th} harmonic.

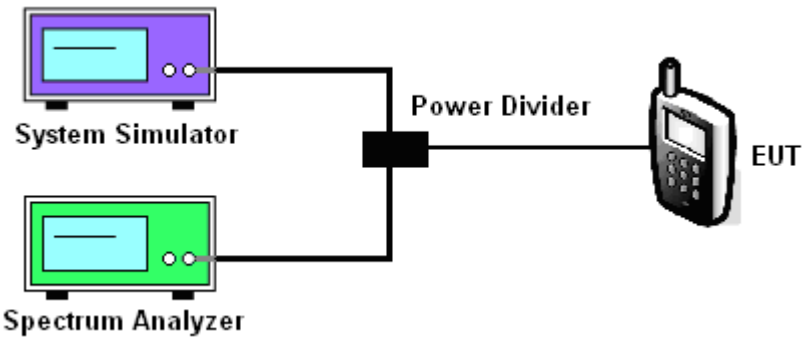
3.6.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.6.3 Test Procedures

1. The testing follows FCC KDB 971168 v02r01 Section 6.0.
2. The EUT was connected to the spectrum analyzer and system simulator via a power divider.
3. The RF output of EUT was connected to the spectrum analyzer by an RF cable and attenuator. The path loss was compensated to the results for each measurement.
4. The middle channel for the highest RF power within the transmitting frequency was measured.
5. The conducted spurious emission for the whole frequency range was taken.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
7. The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts)
   = P(W) - [43 + 10log(P)] (dB)
   = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
   = -13dBm.

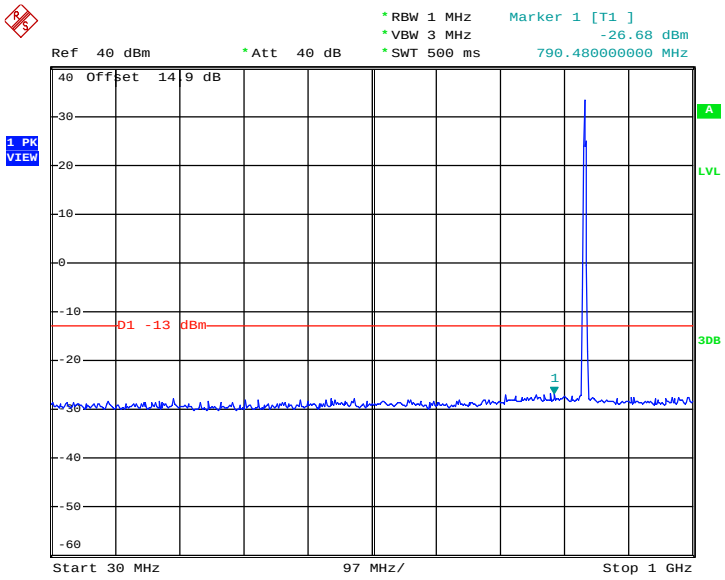
3.6.4 Test Setup



3.6.5 Test Result (Plots) of Conducted Spurious Emission

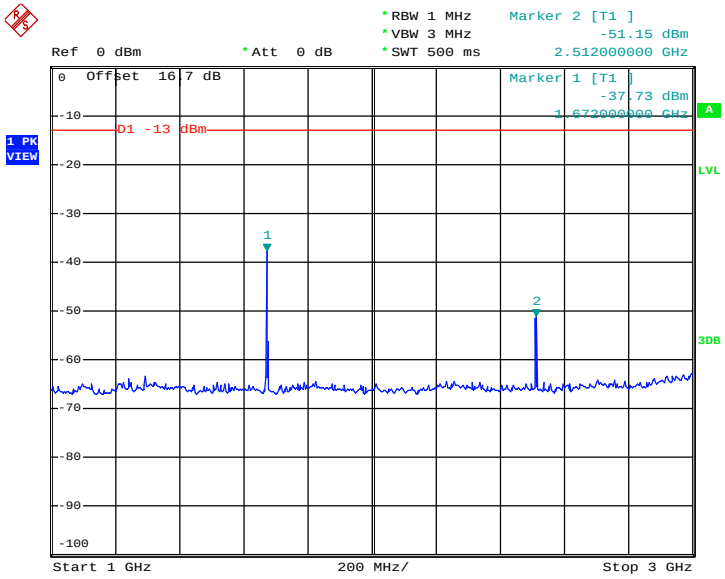
Band :	GSM850	Channel :	CH189
Test Mode :	GSM Link (GMSK)	Frequency :	836.4 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



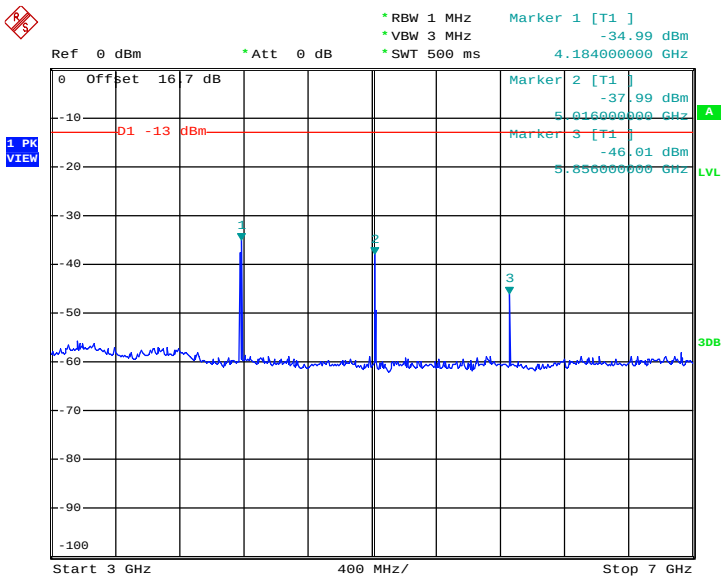
Date: 23.AUG.2014 06:04:18

Conducted Spurious Emission Plot between 1GHz ~ 3GHz



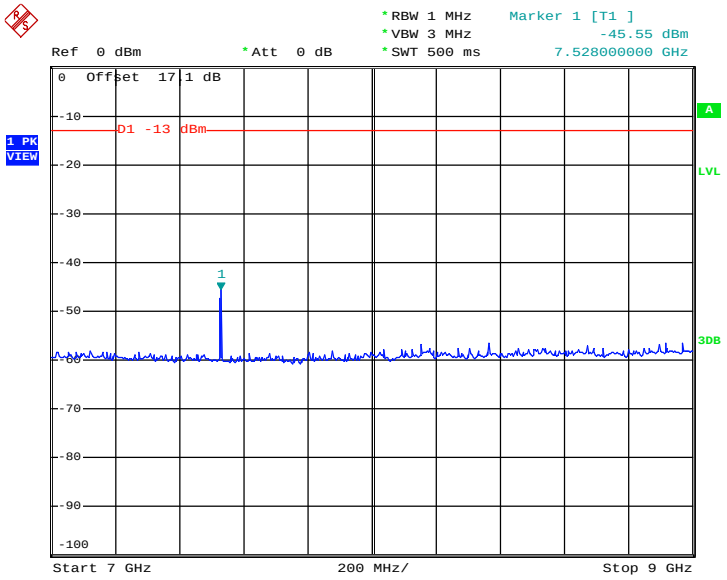
Date: 23.AUG.2014 06:08:01

Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 23.AUG.2014 06:10:36

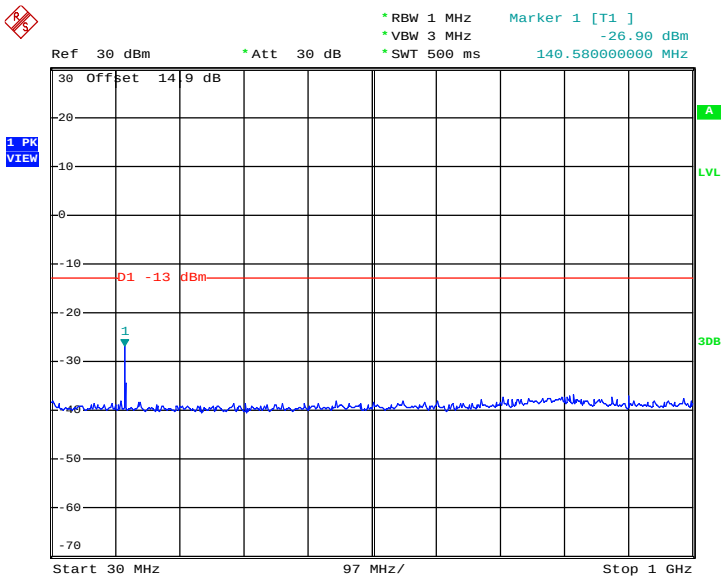
Conducted Spurious Emission Plot between 7GHz ~ 9GHz



Date: 23.AUG.2014 06:12:14

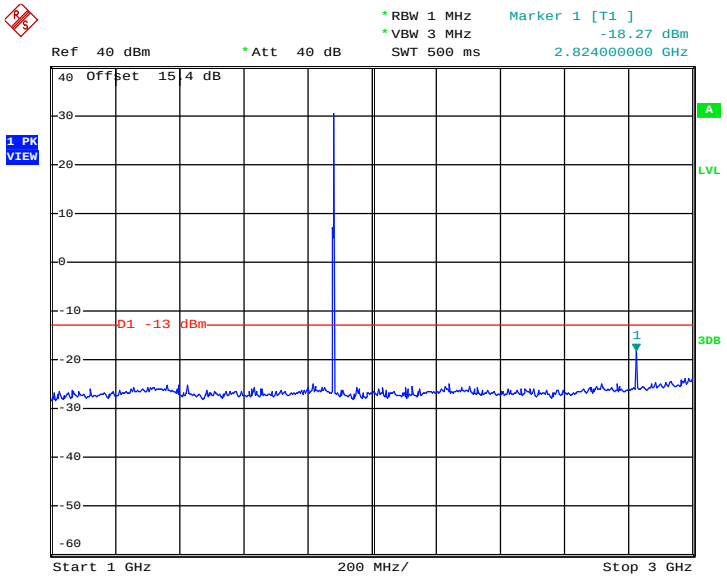
Band :	GSM1900	Channel :	CH661
Test Mode :	GSM Link (GMSK)	Frequency :	1880.0 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



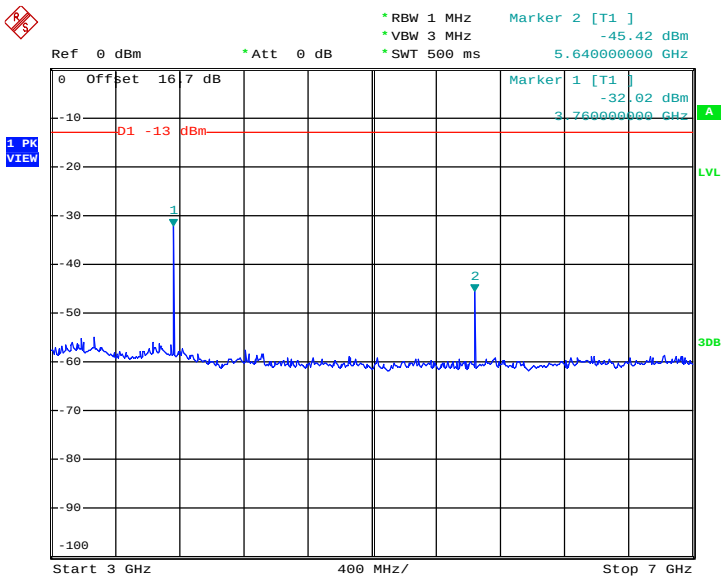
Date: 23.AUG.2014 07:21:08

Conducted Spurious Emission Plot between 1GHz ~ 3GHz



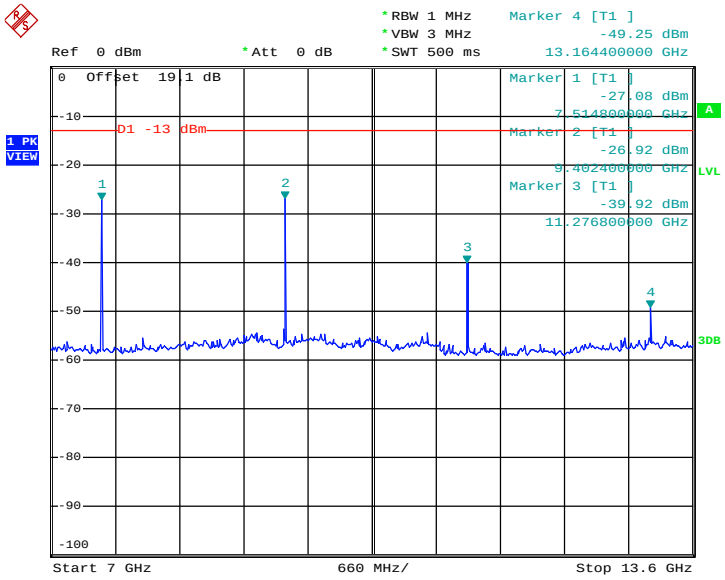
Date: 23.AUG.2014 07:22:29

Conducted Spurious Emission Plot between 3GHz ~ 7GHz



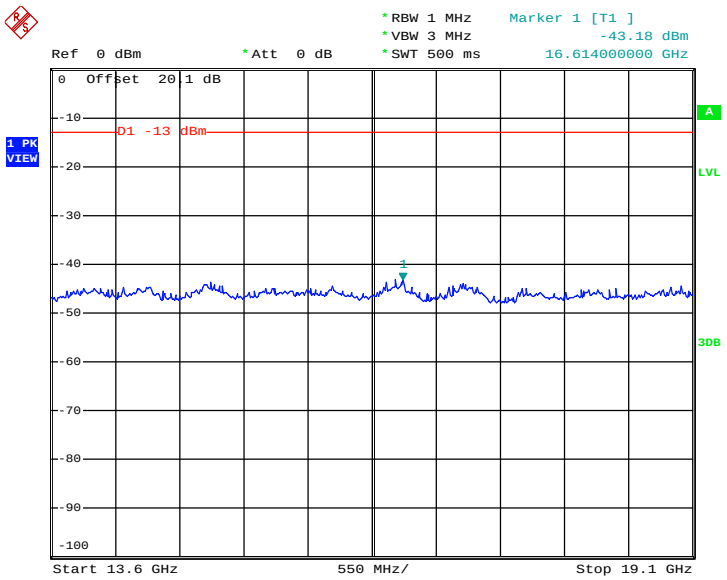
Date: 23.AUG.2014 07:24:41

Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz



Date: 23.AUG.2014 07:26:07

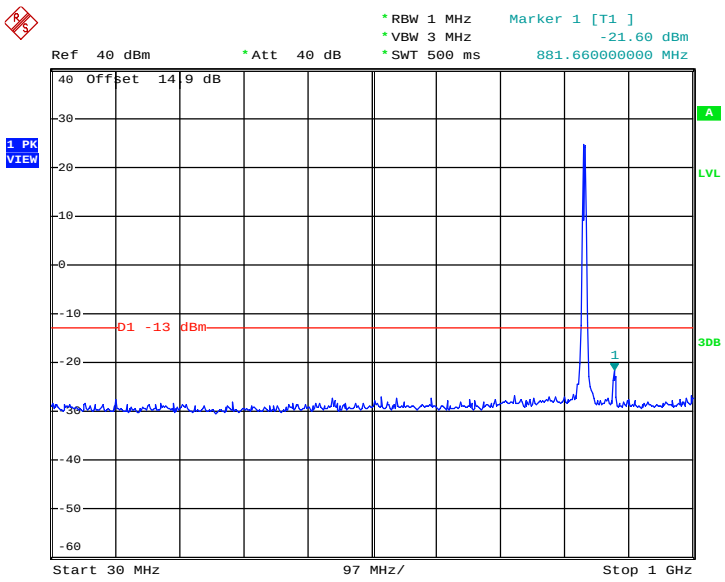
Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz



Date: 23.AUG.2014 07:27:20

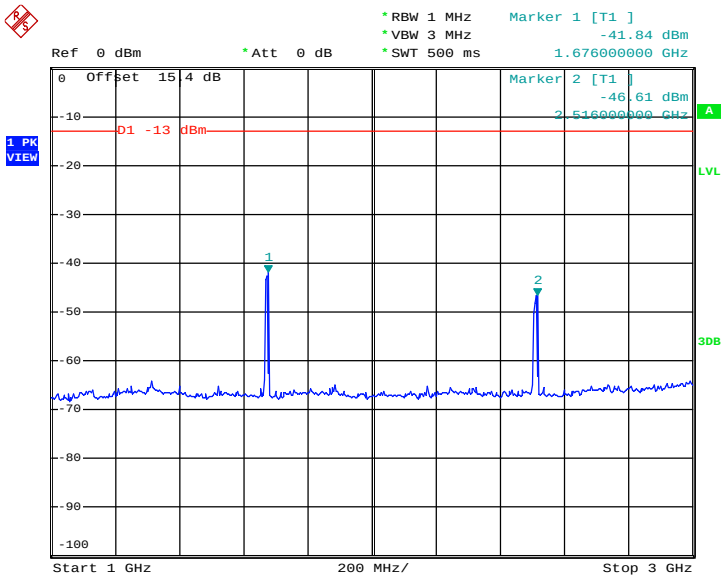
Band :	WCDMA Band V	Channel :	CH4182
Test Mode :	RMC 12.2Kbps Link (QPSK)	Frequency :	836.4 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



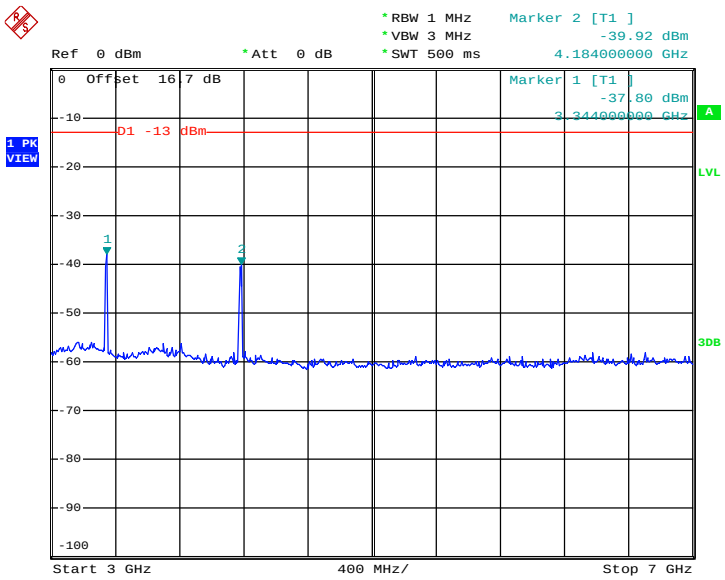
Date: 23.AUG.2014 06:55:00

Conducted Spurious Emission Plot between 1GHz ~ 3GHz



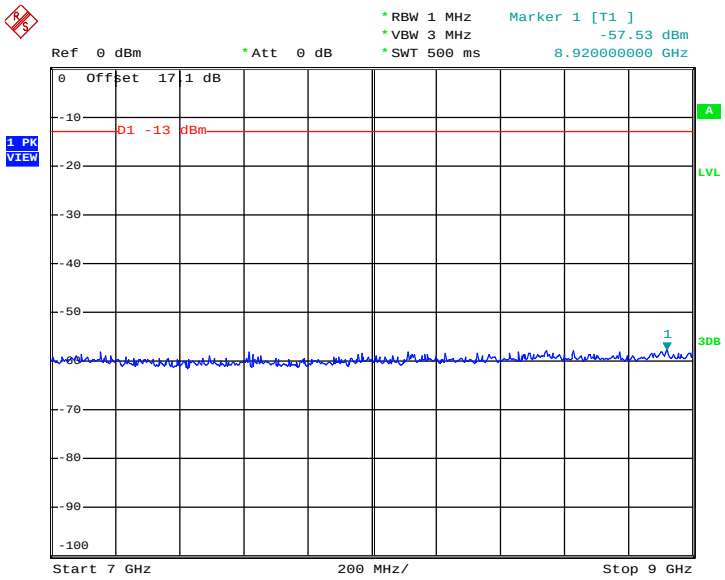
Date: 23.AUG.2014 06:57:31

Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 23.AUG.2014 06:58:45

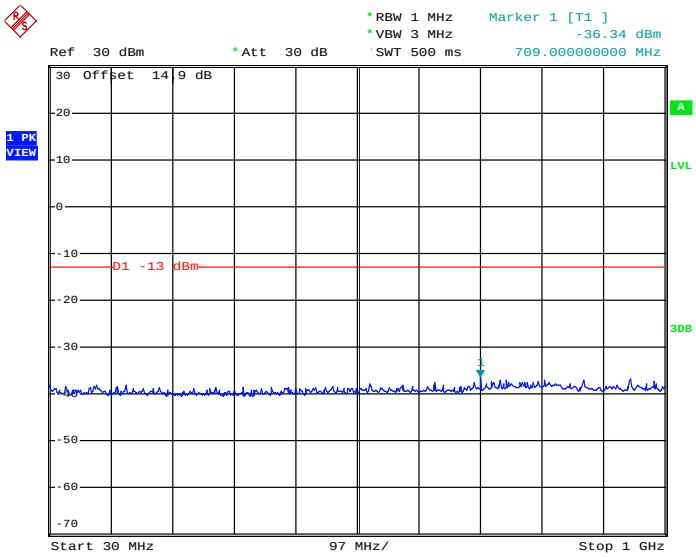
Conducted Spurious Emission Plot between 7GHz ~ 9GHz



Date: 27.AUG.2014 23:36:53

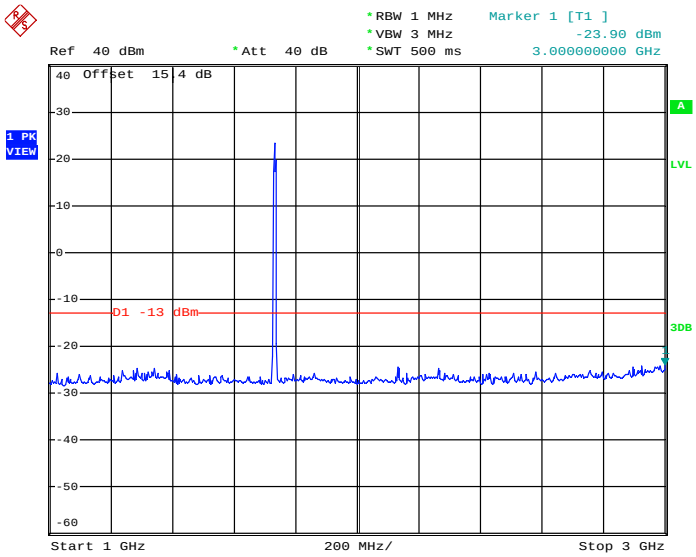
Band :	WCDMA Band IV	Channel :	CH1413
Test Mode :	RMC 12.2Kbps Link (QPSK)	Frequency :	1732.6 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



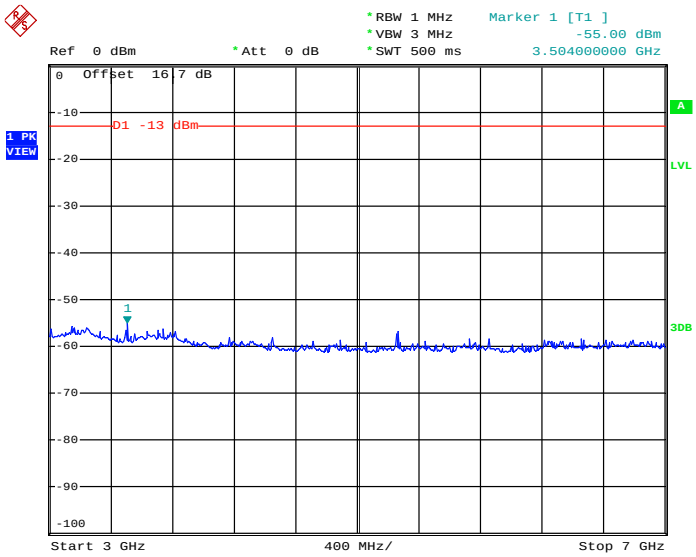
Date: 23.AUG.2014 08:54:28

Conducted Spurious Emission Plot between 1GHz ~ 3GHz



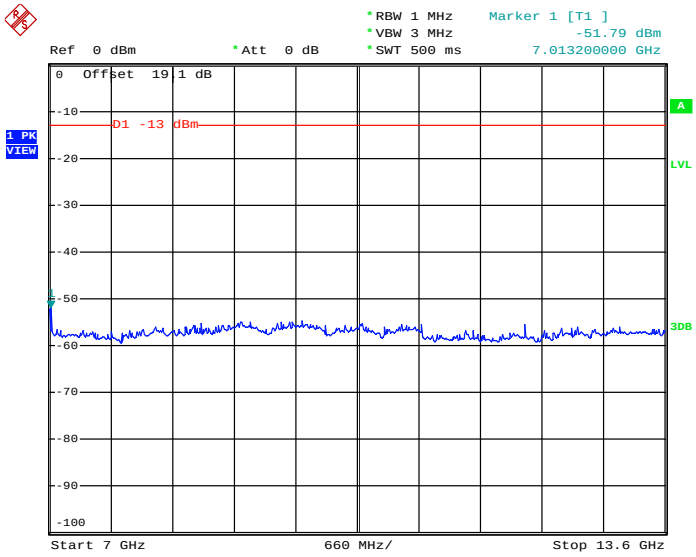
Date: 1.AUG.2014 22:24:45

Conducted Spurious Emission Plot between 3GHz ~ 7GHz



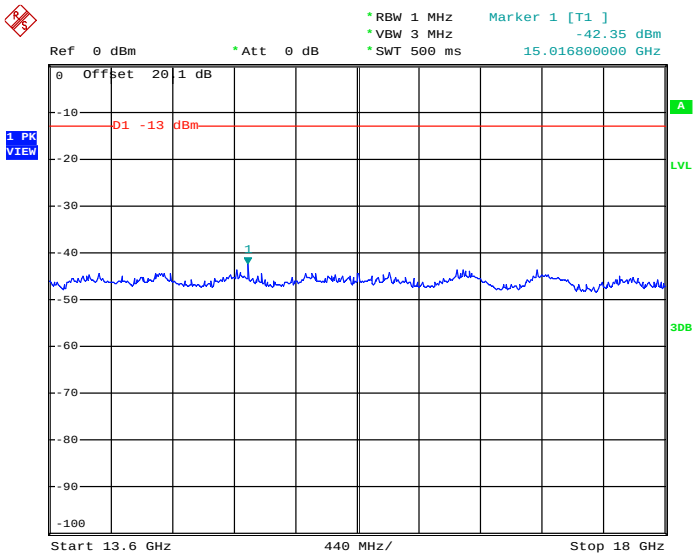
Date: 23.AUG.2014 08:50:49

Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz



Date: 23.AUG.2014 08:51:00

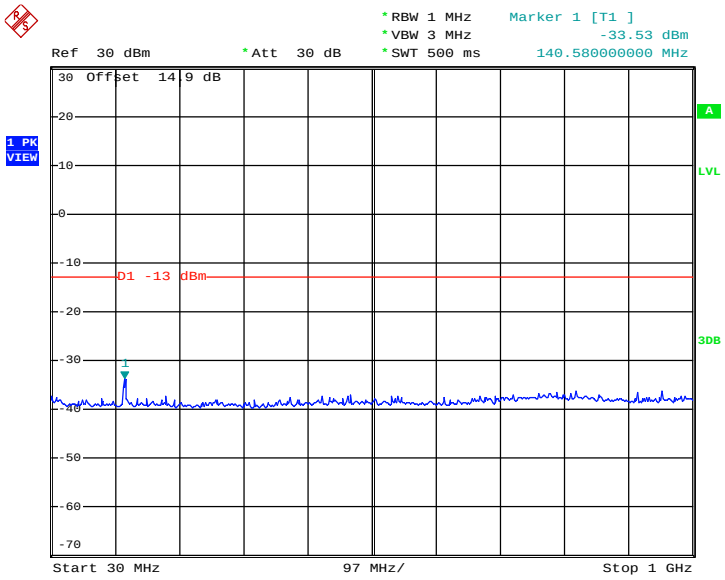
Conducted Spurious Emission Plot between 13.6GHz ~ 18GHz



Date: 23.AUG.2014 08:51:12

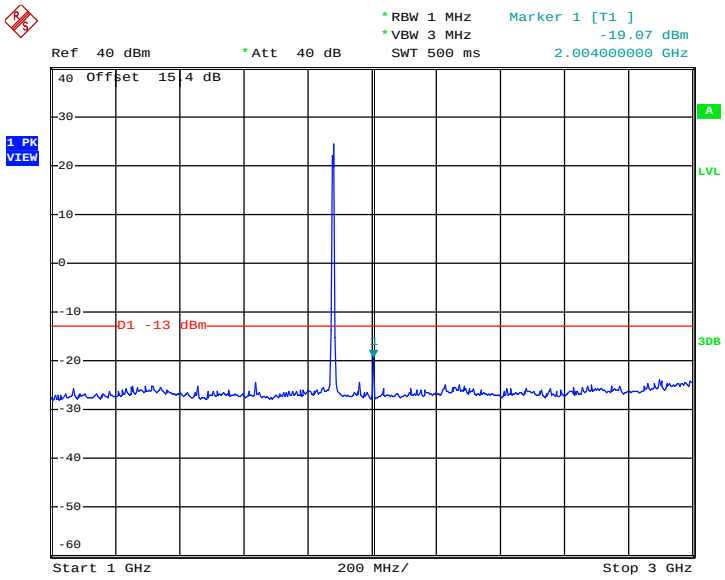
Band :	WCDMA Band II	Channel :	CH9400
Test Mode :	RMC 12.2Kbps Link (QPSK)	Frequency :	1880.0 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



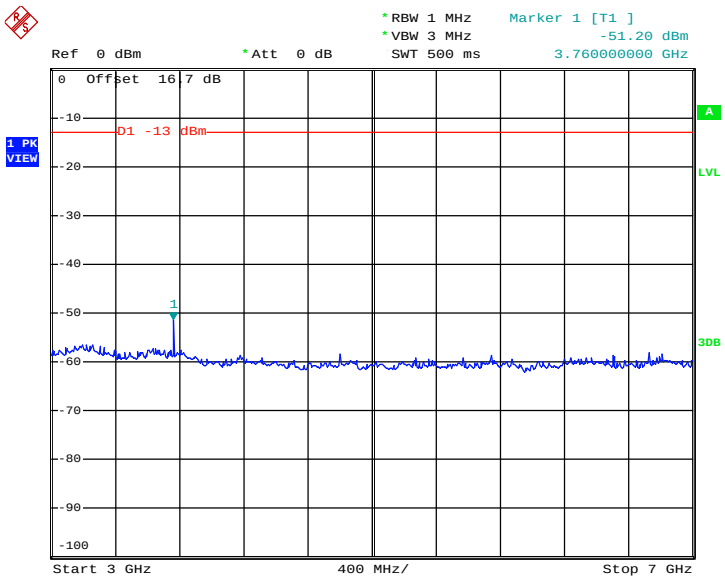
Date: 23.AUG.2014 08:26:04

Conducted Spurious Emission Plot between 1GHz ~ 3GHz



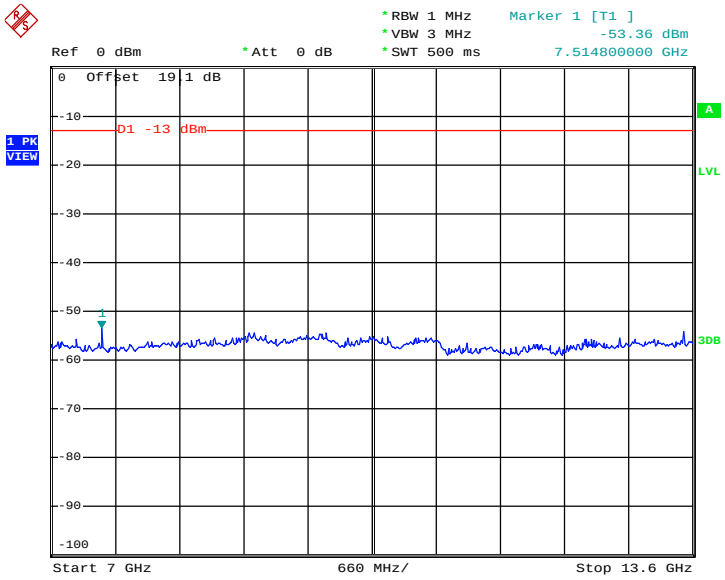
Date: 23.AUG.2014 08:27:13

Conducted Spurious Emission Plot between 3GHz ~ 7GHz



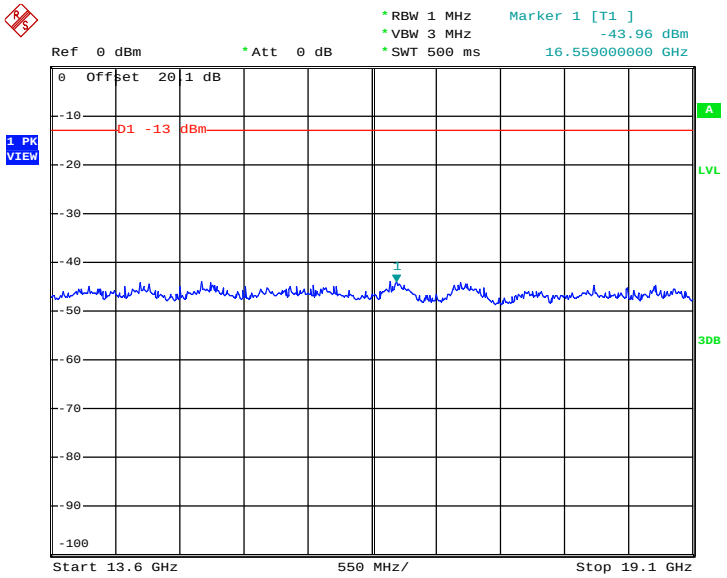
Date: 27.AUG.2014 07:44:49

Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz



Date: 23.AUG.2014 08:30:28

Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz



Date: 23.AUG.2014 08:31:46

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

The measuring equipment is listed in the section 4 of this test report.

3.7.3 Test Procedures

1. The testing follows FCC KDB 971168 v02r01 Section 5.8 and ANSI / TIA-603-C-2004 Section 2.2.12.
2. The EUT was placed on a rotatable wooden table 0.8 meters above the ground.
3. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest spurious emission.
5. The height of the receiving antenna is varied between one meter and four meters to search for the maximum spurious emission for both horizontal and vertical polarizations.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking record of maximum spurious emission.
7. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
8. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
9. Taking the record of output power at antenna port.
10. Repeat step 7 to step 8 for another polarization.
11. EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain
12. ERP (dBm) = EIRP - 2.15
13. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
14. The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts)

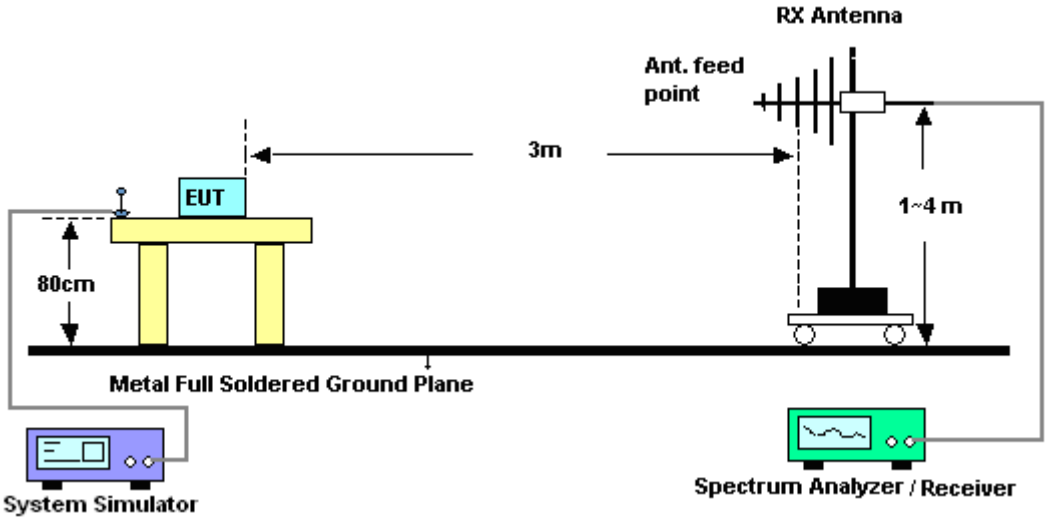
    = P(W) - [43 + 10log(P)] (dB)

    = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)

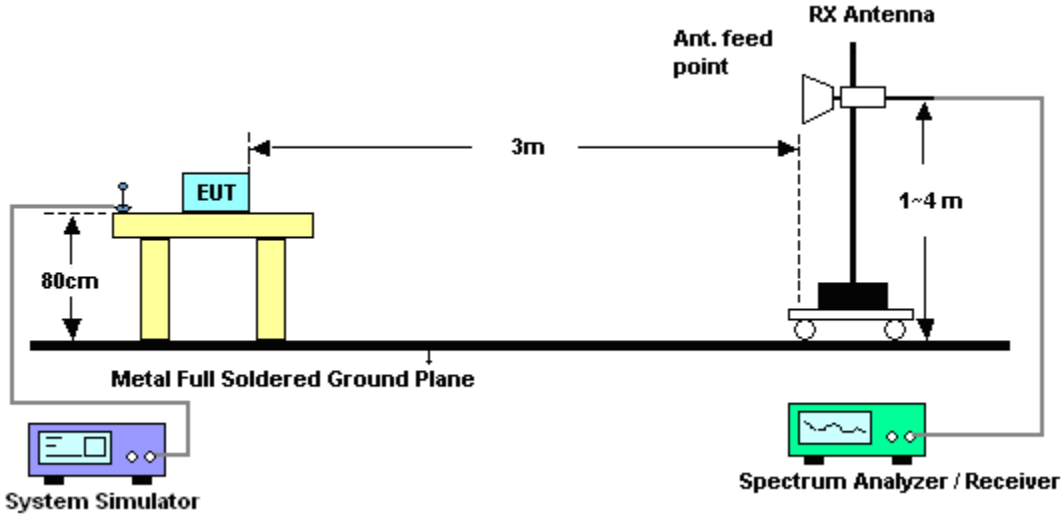
    = -13dBm.

3.7.4 Test Setup

For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.7.5 Test Result of Field Strength of Spurious Radiated

Band :	GSM850	Temperature :	23~25°C
Test Mode :	GSM Link (GMSK)	Relative Humidity :	48~49%
Test Engineer :	Leo	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
1674	-64.70	-13	-51.70	-58.21	-71.08	0.78	7.16	H	Pass
2510	-61.98	-13	-48.98	-60.65	-70.52	1.04	9.58	H	Pass
3344	-66.89	-13	-53.89	-66.52	-77.00	1.35	11.46	H	Pass
4182	-66.76	-13	-53.76	-66.45	-77.82	1.75	12.81	H	Pass
5016	-61.30	-13	-48.30	-62.94	-72.39	2	13.09	H	Pass

Band :	GSM850	Temperature :	23~25°C
Test Mode :	GSM Link (GMSK)	Relative Humidity :	48~49%
Test Engineer :	Leo	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	-55.80	-13	-42.80	-57.02	-62.18	0.78	7.16	V	Pass
2512	-46.13	-13	-33.13	-53.99	-54.67	1.04	9.58	V	Pass
3346	-61.54	-13	-48.54	-62.6	-71.65	1.35	11.46	V	Pass
4182	-61.74	-13	-48.74	-64.42	-72.80	1.75	12.81	V	Pass
5016	-49.35	-13	-36.35	-59	-60.44	2	13.09	V	Pass

Band :	GSM1900	Temperature :	23~25°C
Test Mode :	GSM Link (GMSK)	Relative Humidity :	48~49%
Test Engineer :	Leo	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
3759	-55.64	-13	-42.64	-60.83	-62.02	0.78	7.16	H	Pass
5643	-48.89	-13	-35.89	-60.42	-57.43	1.04	9.58	H	Pass
7521	-50.02	-13	-37.02	-61.56	-60.13	1.35	11.46	H	Pass
9396	-32.70	-13	-19.70	-51.68	-43.76	1.75	12.81	H	Pass
11277	-44.81	-13	-31.81	-64.32	-55.90	2	13.09	H	Pass

Band :	GSM1900	Temperature :	23~25°C
Test Mode :	GSM Link (GMSK)	Relative Humidity :	48~49%
Test Engineer :	Leo	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
3759	-49.89	-13	-36.89	-58.96	-56.27	0.78	7.16	V	Pass
5643	-41.76	-13	-28.76	-57.35	-50.30	1.04	9.58	V	Pass
7521	-49.56	-13	-36.56	-63.65	-59.67	1.35	11.46	V	Pass
9396	-36.16	-13	-23.16	-54.73	-47.22	1.75	12.81	V	Pass
11277	-45.67	-13	-32.67	-62.37	-56.76	2	13.09	V	Pass

Band :	WCDMA Band V	Temperature :	23~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	Relative Humidity :	48~49%
Test Engineer :	Leo	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
1676	-67.96	-13	-54.96	-59.59	-74.34	0.78	7.16	H	Pass
2510	-68.75	-13	-55.75	-67.42	-77.29	1.04	9.58	H	Pass
3348	-63.88	-13	-50.88	-63.51	-73.99	1.35	11.46	H	Pass
4182	-66.54	-13	-53.54	-66.23	-77.60	1.75	12.81	H	Pass

Band :	WCDMA Band V	Temperature :	23~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	Relative Humidity :	48~49%
Test Engineer :	Leo	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
1676	-53.40	-13	-40.40	-55.45	-59.78	0.78	7.16	V	Pass
2510	-65.07	-13	-52.07	-67.5	-73.61	1.04	9.58	V	Pass
3350	-54.58	-13	-41.58	-59.28	-64.69	1.35	11.46	V	Pass
4186	-60.52	-13	-47.52	-63.2	-71.58	1.75	12.81	V	Pass

Band :	WCDMA Band IV	Temperature :	23~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	Relative Humidity :	48~49%
Test Engineer :	Leo	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
3465	-58.11	-13	-45.11	-60.34	-63.51	2.2	7.60	H	Pass
5196	-51.30	-13	-38.30	-62.79	-58.08	3.12	9.90	H	Pass
6930	-57.34	-13	-44.34	-65.63	-65.23	2.98	10.87	H	Pass

Band :	WCDMA Band IV	Temperature :	23~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	Relative Humidity :	48~49%
Test Engineer :	Leo	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
3468	-60.67	-13	-47.67	-61.69	-66.07	2.2	7.6	V	Pass
5197	-58.88	-13	-45.88	-66.85	-65.66	3.12	9.9	V	Pass
6930	-56.78	-13	-43.78	-67.3	-64.67	2.98	10.87	V	Pass

Band :	WCDMA Band II	Temperature :	23~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	Relative Humidity :	48~49%
Test Engineer :	Leo	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
3759	-60.52	-13	-47.52	-63.87	-66.90	0.78	7.16	H	Pass
5640	-57.20	-13	-44.20	-67.26	-65.74	1.04	9.58	H	Pass
7521	-54.77	-13	-41.77	-66.31	-64.88	1.35	11.46	H	Pass

Band :	WCDMA Band II	Temperature :	23~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	Relative Humidity :	48~49%
Test Engineer :	Leo	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
3762	-55.45	-13	-42.45	-63.85	-61.83	0.78	7.16	V	Pass
5640	-54.39	-13	-41.39	-67.04	-62.93	1.04	9.58	V	Pass
7521	-52.11	-13	-39.11	-66.2	-62.22	1.35	11.46	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 ±0.00025% (±2.5ppm) of the center frequency.

3.8.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

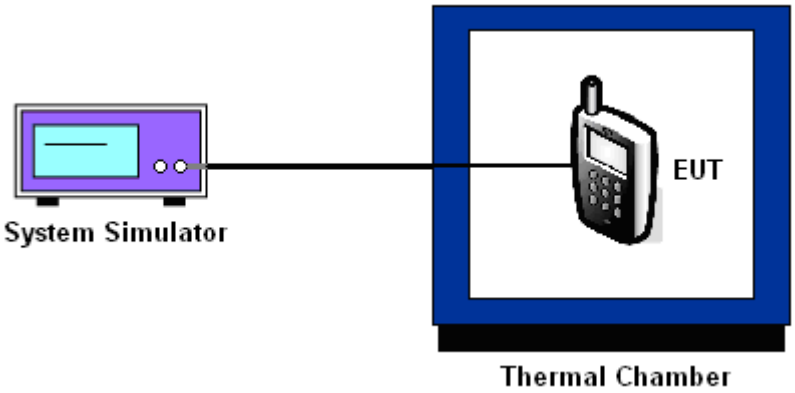
3.8.3 Test Procedures for Temperature Variation

1. The testing follows FCC KDB 971168 v02r01 Section 9.0.
2. The EUT was set up in the thermal chamber and connected with the system simulator.
3. 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.
4. With power OFF, the temperature was raised in 10°C steps 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.

3.8.4 Test Procedures for Voltage Variation

1. The testing follows FCC KDB 971168 v02r01 Section 9.0.
2. The EUT was placed in a temperature chamber at 25±5° C and connected with the system simulator.
3. The power supply voltage to the EUT was varied from BEP to 115% of the nominal value measured at the input to the EUT.
4. The variation in frequency was measured for the worst case.

3.8.5 Test Setup



3.8.6 Test Result of Temperature Variation

Band :	GSM 850	Channel :	189
Limit (ppm) :	2.5	Frequency :	836.4 MHz

Temperature (°C)	GSM		Result
	Freq. Dev. (Hz)	Deviation (ppm)	
50	-38	0.0239	PASS
40	-35	0.0167	
30	-31	0.0072	
20(Ref.)	-24	0.0000	
10	-16	0.0048	
0	-12	0.0143	
-10	-18	0.0227	
-20	-26	0.0275	
-30	-32	0.0311	

Band :	GSM 1900	Channel :	661
Limit (ppm) :	within authorized band	Frequency :	1880.0 MHz

Temperature (°C)	GSM		Result
	Freq. Dev. (Hz)	Deviation (ppm)	
50	-38	0.0059	PASS
40	-33	0.0021	
30	30	0.0027	
20(Ref.)	29	0.0000	
10	44	0.0048	
0	35	0.0032	
-10	40	0.0027	
-20	39	0.0362	
-30	46	0.0388	

Band :	WCDMA Band V	Channel :	4182
Limit (ppm) :	2.5	Frequency :	836.4 MHz

Temperature (°C)	RMC 12.2Kbps		Result
	Freq. Dev. (Hz)	Deviation (ppm)	
50	-35	0.0239	PASS
40	-33	0.0167	
30	-28	0.0072	
20(Ref.)	-21	0.0000	
10	-15	0.0048	
0	-11	0.0120	
-10	-17	0.0203	
-20	-25	0.0263	
-30	-31	0.0287	

Band :	WCDMA Band IV	Channel :	1413
Limit (ppm) :	within authorized band	Frequency :	1732.6 MHz

Temperature (°C)	RMC 12.2Kbps		Result
	Freq. Dev. (Hz)	Deviation (ppm)	
50	-42	0.0115	PASS
40	-35	0.0081	
30	-29	0.0017	
20(Ref.)	-22	0.0000	
10	-16	0.0023	
0	-12	0.0058	
-10	-15	0.0098	
-20	-26	0.0133	
-30	-32	0.0173	

Band :	WCDMA Band II	Channel :	9400
Limit (ppm) :	within authorized band	Frequency :	1880.0 MHz

Temperature (°C)	RMC 12.2Kbps		Result
	Freq. Dev. (Hz)	Deviation (ppm)	
50	25	0.0495	PASS
40	33	0.0059	
30	-36	0.0037	
20(Ref.)	-40	0.0000	
10	-39	0.0005	
0	-38	0.0011	
-10	-45	0.0011	
-20	-49	0.0378	
-30	55	0.0335	

3.8.7 Test Result of Voltage Variation

Band & Channel	Mode	Voltage (Volt)	Freq. Dev. (Hz)	Deviation (ppm)	Limit (ppm)	Result
GSM 850 CH189	GSM	3.7	-13	0.0048	2.5 Note 3.	PASS
		BEP	-8	0.0024		
		4.2	-10	0.0012		
GSM 1900 CH661	GSM	3.7	36	0.0399		
		BEP	-40	0.0324		
		4.2	-26	0.0005		
WCDMA Band V CH4182	RMC 12.2Kbps	3.7	-15	0.0012		
		BEP	-10	0.0024		
		4.2	-13	0.0048		
WCDMA Band IV CH1413	RMC 12.2Kbps	3.7	-16	0.0006		
		BEP	-11	0.0000		
		4.2	-12	0.0023		
WCDMA Band II CH9400	RMC 12.2Kbps	3.7	33	0.0011		
		BEP	-40	0.0479		
		4.2	52	0.0378		

Note:

1. Normal Voltage = 3.7V.
2. Battery End Point (BEP) = 3.4 V.
3. The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101078	10Hz~40GHz	May 08, 2014	Aug. 01, 2014~ Aug. 27, 2014	May 07, 2015	Conducted (TH01-SZ)
Thermal Chamber	Hongzhan	LP-150U	HD20120425	-40℃~150℃	Feb. 21, 2014	Aug. 01, 2014~ Aug. 27, 2014	Feb. 20, 2015	Conducted (TH01-SZ)
ESCIO TEST Receiver	R&S	ESCI	100724	9kHz~3GHz	Feb. 21, 2014	Aug. 26, 2014	Feb. 20, 2015	Radiation (03CH01-SZ)
Spectrum Analyzer	Agilent Technologies	N9038A	MY52260185	20Hz~26.5GHz	May 26, 2014	Aug. 26, 2014	May 25, 2015	Radiation (03CH01-SZ)
Bilog Antenna	TESEQ	CBL 6112D	23188	30MHz~2GHz	Oct. 26, 2013	Aug. 26, 2014	Oct. 25, 2014	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS Lindgren	3117	00119436	1GHz~18GHz	Oct. 26, 2013	Aug. 26, 2014	Oct. 25, 2014	Radiation (03CH01-SZ)
Double Ridged Horn Antenna	COM-POWER	AH-840	101073	18GHz~40GHz	Jan. 27, 2014	Aug. 26, 2014	Jan. 26, 2015	Radiation (03CH01-SZ)
Amplifier	ADVANTEST	BB525C	E9007003	9kHz~3000MHz	Feb. 21, 2014	Aug. 26, 2014	Feb. 20, 2015	Radiation (03CH01-SZ)
Amplifier	Yiai	AV3860B	04030	2GHz~26.5GHz	May 08, 2014	Aug. 26, 2014	May 07, 2015	Radiation (03CH01-SZ)
AC Source(AVR)	Chroma	61601	616010001985	100Vac~250Vac	Mar. 25, 2014	Aug. 26, 2014	Mar. 24, 2015	Radiation (03CH01-SZ)
Turn Table	EM Electronics	EM 1000	N/A	0~360 degree	NCR	Aug. 26, 2014	NCR	Radiation (03CH01-SZ)
Antenna Mast	EM Electronics	EM 1000	N/A	1 m~4 m	NCR	Aug. 26, 2014	NCR	Radiation (03CH01-SZ)
Spectrum Analyzer	R&S	FSP 7	100818	9kHz~7GHz	Sep. 03, 2013	Aug. 27, 2014	Sep. 02, 2014	ERP/EIRP (OTA01-SZ)
Quad-Ridged Horn	ETS-Lindgren	3164-08	00102954	700MHz~10000MHz	NCR	Aug. 27, 2014	NCR	ERP/EIRP (OTA01-SZ)
Multi-Devices Controller	ETS-Lindgren	2090-OPT1	00108147	N/A	NCR	Aug. 27, 2014	NCR	ERP/EIRP (OTA01-SZ)
Switch Control Mainframe	Agilent	3499A	MY42005451	N/A	NCR	Aug. 27, 2014	NCR	ERP/EIRP (OTA01-SZ)

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))	**3.9**