

FCC RF Test Report

APPLICANT : Xplore Technologies Corp.
EQUIPMENT : Wireless Modules
BRAND NAME : Xplore Technologies
MODEL NAME : MC7700
FCC ID : Q2GMC7700
STANDARD : FCC 47 CFR Part 2, 22(H), 24(E)
CLASSIFICATION : PCS Licensed Transmitter (PCB)

The product was installed into Rugged Tablet PC (Brand Name: Xplore Technologies, Model Name: iX104C5) during test.

The product was received on Mar. 07, 2013 and completely tested on Mar. 22, 2013. 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: Joseph Lin / Supervisor



Approved 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
FG330705A	Rev. 01	Initial issue of report	Apr. 16, 2013

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)	Conducted Output Power	N/A	PASS	-
3.1	§22.913(a)(2)	RSS-132(5.4) SRSP-503(5.1.3)	Effective Radiated Power	< 7 Watts	PASS	-
3.1	§24.232(c)	RSS-133 (6.4) SRSP-510(5.1.2)	Equivalent Isotropic Radiated Power	< 2 Watts	PASS	-
3.2	§24.232(d)	RSS-132 (5.4) RSS-133(6.4)	Peak-to-Average Ratio	< 13 dB	PASS	-
3.3	§2.1049 §22.917(a) §24.238(a)	RSS-GEN(4.6.1) RSS-133(2.3)	Occupied Bandwidth	N/A	PASS	-
3.4	§2.1051 §22.917(a) §24.238(a)	RSS-132 (5.5) RSS-133 (6.5)	Band Edge Measurement	< 43+10log ₁₀ (P[Watts])	PASS	-
3.5	§2.1051 §22.917(a) §24.238(a)	RSS-132 (5.5) RSS-133 (6.5)	Conducted Spurious Emission	< 43+10log ₁₀ (P[Watts])	PASS	-
3.6	§2.1053 §22.917(a) §24.238(a)	RSS-132 (5.5) RSS-133 (6.5)	Field Strength of Spurious Radiation	< 43+10log ₁₀ (P[Watts])	PASS	Under limit 1.57 dB at 1672.000 MHz
3.7	§2.1055 §22.355 §24.235	RSS-132(5.3) RSS-133(6.3)	Frequency Stability for Temperature & Voltage	< 2.5 ppm	PASS	-

1 General Description

1.1 Applicant

Xplore Technologies Corp.

14000 Summit Road Suite 900, Austin, Texas, 78728 USA

1.2 Manufacturer

Sierra Wireless Inc.

13811, Wireless Way, Richmond, British Columbia, Canada

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	Wireless Modules
Brand Name	Xplore Technologies
Model Name	MC7700
FCC ID	Q2GMC7700
EUT supports Radios application	GSM/EGPRS/WCDMA/HSPA/LTE WLAN 11abgn / Bluetooth 2.1
EUT Stage	Production Unit

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

Host Information	
Manufacturer	Wistron Corporation 21F., 88, Sec.1, Hsin Tai Wu Rd., Hsichin, Taipei Hsien 221, Taiwan, R.O.C.
Brand Name	Xplore Technologies
Model Name	iX104C5

1.4 Product Specification of Equipment Under Test

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 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 II: 1932.4 MHz ~ 1987.6 MHz
Maximum Output Power to Antenna	GSM850 : 31.78 dBm GSM1900 : 29.30 dBm WCDMA Band V : 22.86 dBm WCDMA Band II : 22.42 dBm
Antenna Type	PIFA Antenna
Antenna Gain	Main Antenna : GSM850 : 0.41 dBi GSM1900 : 3.55 dBi WCDMA Band V : 0.41 dBi WCDMA Band II : 3.55dBi Aux. Antenna : GSM850 : -1.02 dBi GSM1900 : -0.1 dBi WCDMA Band V : -1.02dBi WCDMA Band II : -0.1 dBi
Type of Modulation	GSM: GMSK GPRS: GMSK EDGE: GMSK / 8PSK WCDMA: QPSK (Uplink) HSDPA: QPSK (Uplink) HSUPA: QPSK (Uplink)

1.5 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	GSM850 GPRS class 8	GMSK	1.009	0.02 ppm	250KGXW
Part 22	GSM850 EDGE class 8	8PSK	0.291	0.02 ppm	248KG7W
Part 22	WCDMA Band V RMC 12.2Kbps	QPSK	0.129	0.01 ppm	4M16F9W
Part 24	GSM1900 GPRS class 8	GMSK	1.928	0.03 ppm	248KGXW
Part 24	GSM1900 EDGE class 8	8PSK	0.698	0.03 ppm	248KG7W
Part 24	WCDMA Band II RMC 12.2Kbps	QPSK	0.395	0.01 ppm	4M16F9W

1.6 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

1.7 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)
- ♦ FCC KDB 412172 D01 Determining ERP and ERIP v01
- ♦ IC RSS-132 Issue 3
- ♦ IC RSS-133 Issue 6
- ♦ IC RSS-Gen Issue 3

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

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.

Frequency range investigated for radiated emission is as follows:

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

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

Note:

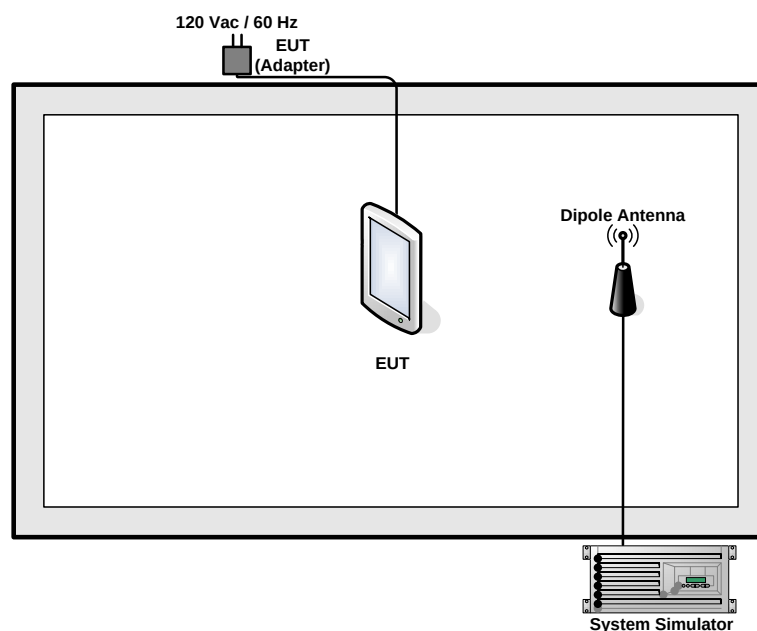
1. The maximum power levels are GSM or GPRS multi-slot class 8 mode for GMSK link, EDGE multi-slot class 8 mode for 8PSK link, RMC 12.2Kbps mode for WCDMA band V, and RMC 12.2Kbps mode for WCDMA band II, only these modes were used for all tests.
2. Because there are individual antennas for each WWAN,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

The conducted power tables are as follows:

Conducted Power (*Unit: dBm)						
Band	GSM850			GSM1900		
Channel	128	189	251	512	661	810
Frequency	824.2	836.4	848.8	1850.2	1880.0	1909.8
GPRS class 8	31.76	31.78	31.73	29.20	29.30	29.09
GPRS class 10	31.62	31.68	31.56	29.00	29.10	28.94
EGPRS class 8	26.24	26.38	26.20	25.50	25.55	25.48
EGPRS class 10	26.16	26.32	26.06	25.38	25.41	25.35
EGPRS class 11	26.10	26.23	26.01	25.15	25.27	25.13
EGPRS class 12	26.09	26.15	26.03	25.08	25.28	25.03

Conducted Power (*Unit: dBm)						
Band	WCDMA Band V			WCDMA Band II		
Channel	4132	4182	4233	9262	9400	9538
Frequency	826.4	836.4	846.6	1852.4	1880.0	1907.6
RMC 12.2K	22.86	22.54	22.74	22.32	22.42	22.33
HSDPA Subtest-1	22.34	22.07	22.15	22.09	22.25	22.02
HSDPA Subtest-2	22.32	22.05	22.14	22.04	22.23	22.00
HSDPA Subtest-3	21.81	21.64	21.70	21.57	21.73	21.61
HSDPA Subtest-4	21.85	21.66	21.71	21.60	21.79	21.52
HSUPA Subtest-1	22.14	22.04	22.09	22.06	22.30	22.26
HSUPA Subtest-2	20.79	20.61	20.77	20.83	21.08	20.72
HSUPA Subtest-3	21.35	21.11	21.26	21.16	21.37	21.25
HSUPA Subtest-4	21.40	21.06	21.32	21.10	21.11	21.35
HSUPA Subtest-5	22.38	22.16	22.21	22.28	22.40	22.30

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

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

2.4 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 EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

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

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

Example :

$$\begin{aligned}
 \text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)}. \\
 &= 4.2 + 10 = 14.2 \text{ (dB)}
 \end{aligned}$$

3 Test Result

3.1 Conducted Output Power and ERP/EIRP Measurement

3.1.1 Description of the Conducted Output Power and ERP/EIRP 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.

The ERP of mobile transmitters must not exceed 7 Watts and the EIRP of mobile transmitters are limited to 2 Watts. According to KDB 412172 D01 Power Approach,

$EIRP = P_T + G_T - L_C$, $ERP = EIRP - 2.15$, where

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

L_C = signal attenuation in the connecting cable between the transmitter and antenna in dB

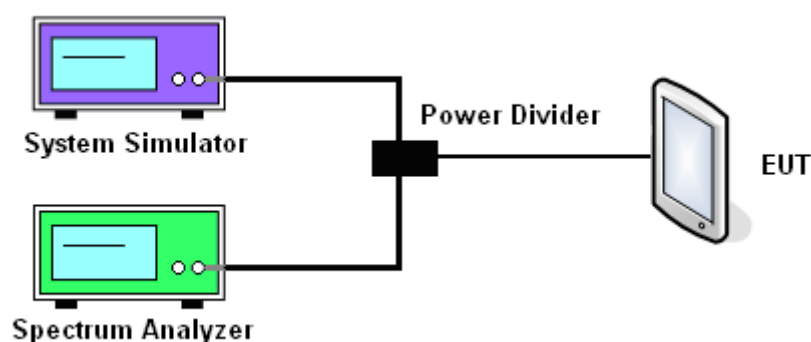
3.1.2 Measuring Instruments

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. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set EUT at maximum power through base station.
4. Select lowest, middle, and highest channels for each band and different modulation.
5. 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 ($G_T - L_C = 0.41\text{dB}$)									
Modes	GSM850 (GPRS class 8)			GSM850 (EDGE class 8)			WCDMA Band V (RMC 12.2Kbps)		
Channel	128 (Low)	189 (Mid)	251 (High)	128 (Low)	189 (Mid)	251 (High)	4132 (Low)	4182 (Mid)	4233 (High)
Frequency (MHz)	824.2	836.4	848.8	824.2	836.4	848.8	826.4	836.4	846.6
Conducted Power (dBm)	31.76	31.78	31.73	26.24	26.38	26.2	22.86	22.54	22.74
Conducted Power (Watts)	1.50	1.51	1.49	0.42	0.43	0.42	0.19	0.18	0.19
ERP(dBm)	30.02	30.04	29.99	24.50	24.64	24.46	21.12	20.80	21.00
ERP(Watts)	1.005	1.009	0.998	0.282	0.291	0.279	0.129	0.120	0.126

PCS Band ($G_T - L_C = 3.55\text{dB}$)									
Modes	GSM1900 (GPRS class 8)			GSM1900 (EDGE class 8)			WCDMA Band II (RMC 12.2Kbps)		
Channel	512 (Low)	661 (Mid)	810 (High)	512 (Low)	661 (Mid)	810 (High)	9262 (Low)	9400 (Mid)	9538 (High)
Frequency (MHz)	1850.2	1880	1909.8	1850.2	1880	1909.8	1852.4	1880	1907.6
Conducted Power (dBm)	29.20	29.30	29.09	24.84	24.89	24.83	22.32	22.42	22.33
Conducted Power (Watts)	0.83	0.85	0.81	0.30	0.31	0.30	0.17	0.17	0.17
EIRP(dBm)	32.75	32.85	32.64	28.39	28.44	28.38	25.87	25.97	25.88
EIRP(Watts)	1.884	1.928	1.837	0.690	0.698	0.689	0.386	0.395	0.387

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

$EIRP = P_T + G_T - L_C$, $ERP = EIRP - 2.15$, where

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

L_C = signal attenuation in the connecting cable between the transmitter and antenna in dB

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.

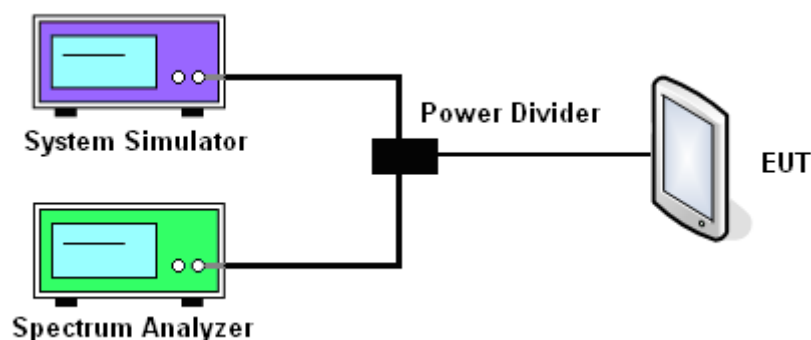
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. The EUT was connected to Spectrum Analyzer and System Simulator via power divider.
2. For GSM/EGPRS operating modes:
 - a. Set EUT in maximum power output.
 - b. Set the RBW = 1MHz, VBW = 3MHz, Peak detector in spectrum analyzer for first trace.
 - c. Set the RBW = 1MHz, VBW = 3MHz, RMS detector in 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 synchronized with the spectrum analyzer.
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 %.
4. Record the deviation as Peak to Average Ratio.

3.2.4 Test Setup



3.2.5 Test Result of Peak-to-Average Ratio

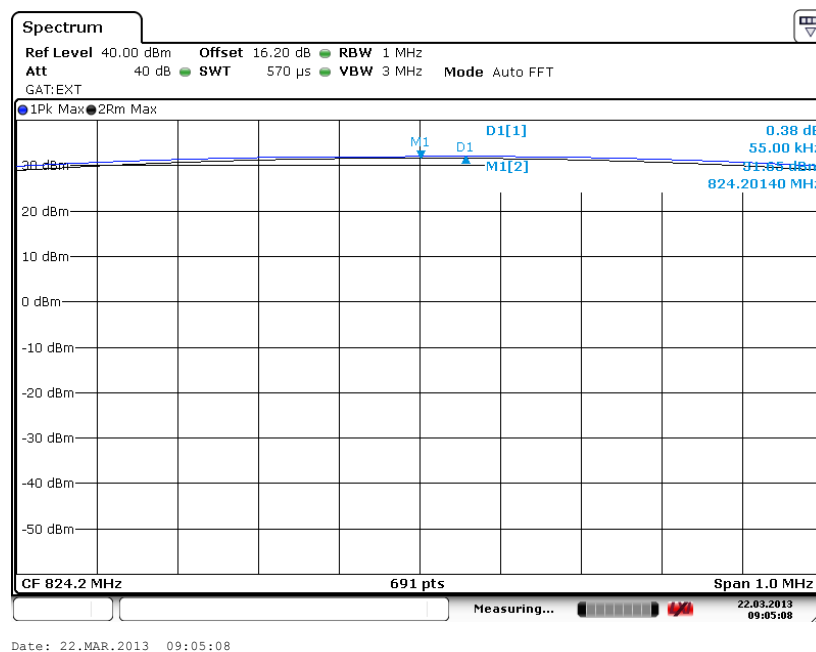
Cellular Band									
Modes	GSM850 (GPRS class 8)			GSM850 (EDGE class 8)			WCDMA Band V (RMC 12.2Kbps)		
Channel	128 (Low)	189 (Mid)	251 (High)	128 (Low)	189 (Mid)	251 (High)	4132 (Low)	4182 (Mid)	4233 (High)
Frequency (MHz)	824.2	836.4	848.8	824.2	836.4	848.8	826.4	836.4	846.6
Peak-to-Average Ratio (dB)	0.38	0.28	0.24	2.80	2.77	2.78	3.20	3.24	3.28

PCS Band									
Modes	GSM1900 (GPRS class 8)			GSM1900 (EDGE class 8)			WCDMA Band II (RMC 12.2Kbps)		
Channel	512 (Low)	661 (Mid)	810 (High)	512 (Low)	661 (Mid)	810 (High)	9262 (Low)	9400 (Mid)	9538 (High)
Frequency (MHz)	1850.2	1880	1909.8	1850.2	1880	1909.8	1852.4	1880	1907.6
Peak-to-Average Ratio (dB)	0.24	0.28	0.24	2.81	2.88	2.69	3.48	3.28	3.44

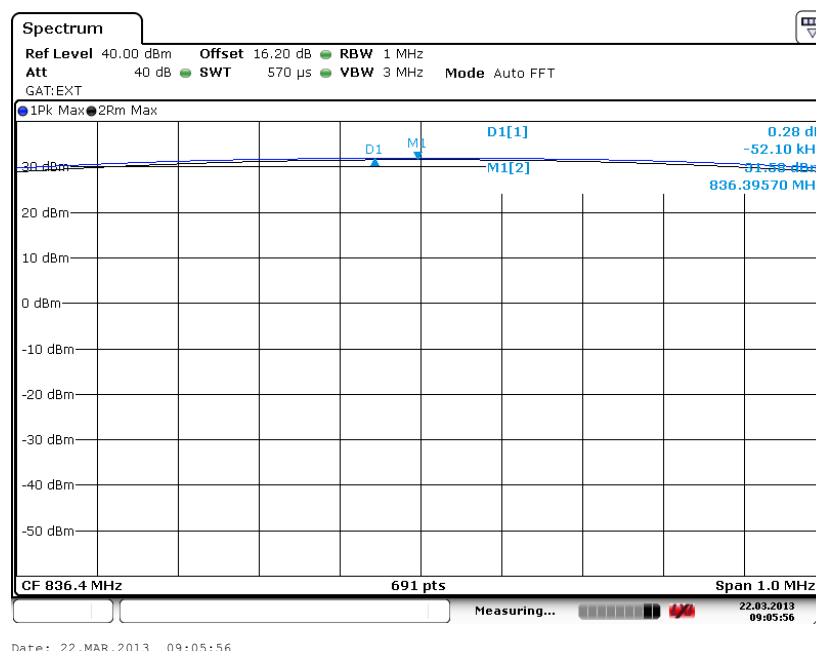
3.2.6 Test Result (Plots) of Peak-to-Average Ratio

Band :	GSM 850	Test Mode :	GPRS class 8 Link (GMSK)
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Peak-to-Average Ratio on Channel 128 (824.2 MHz)

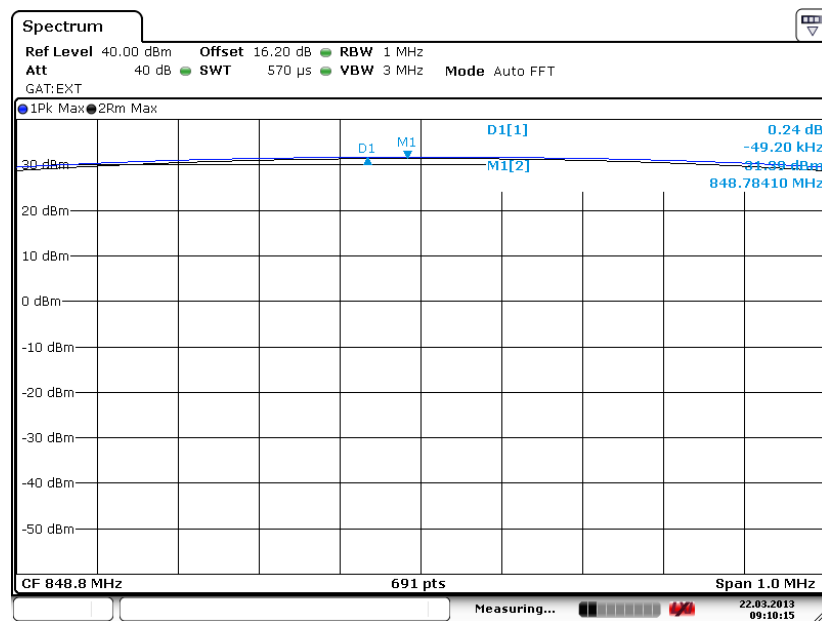


Peak-to-Average Ratio on Channel 189 (836.4 MHz)





Peak-to-Average Ratio on Channel 251 (848.8 MHz)

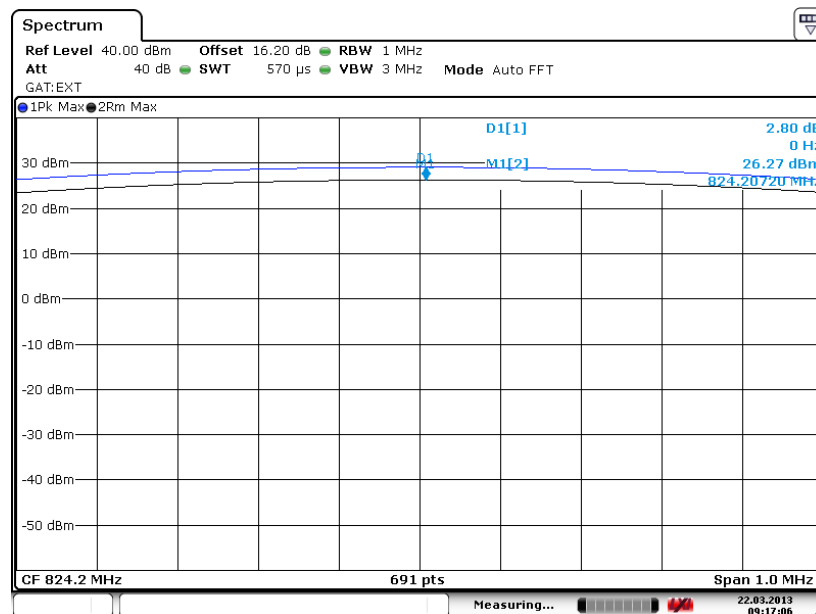


Date: 22.MAR.2013 09:10:15



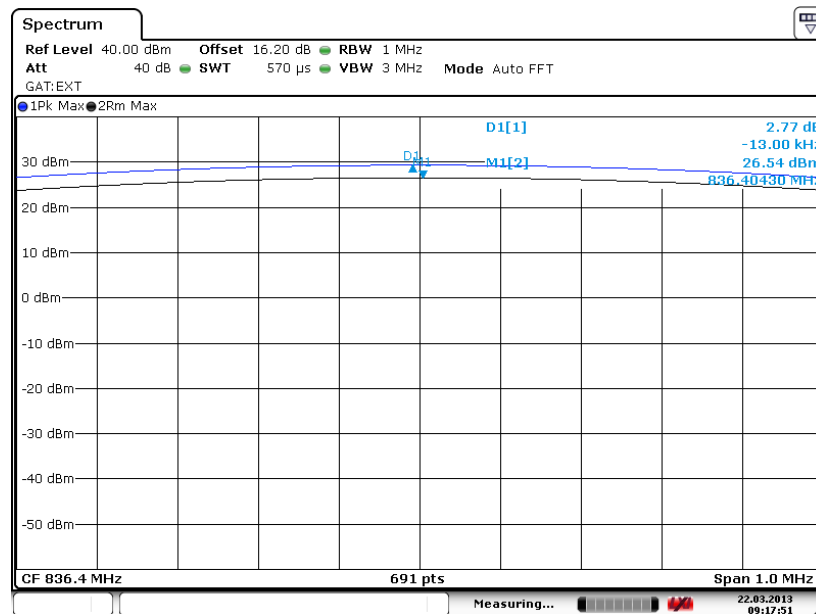
Band :	GSM 850	Test Mode :	EDGE class 8 Link (8PSK)
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Peak-to-Average Ratio on Channel 128 (824.2 MHz)



Date: 22.MAR.2013 09:17:07

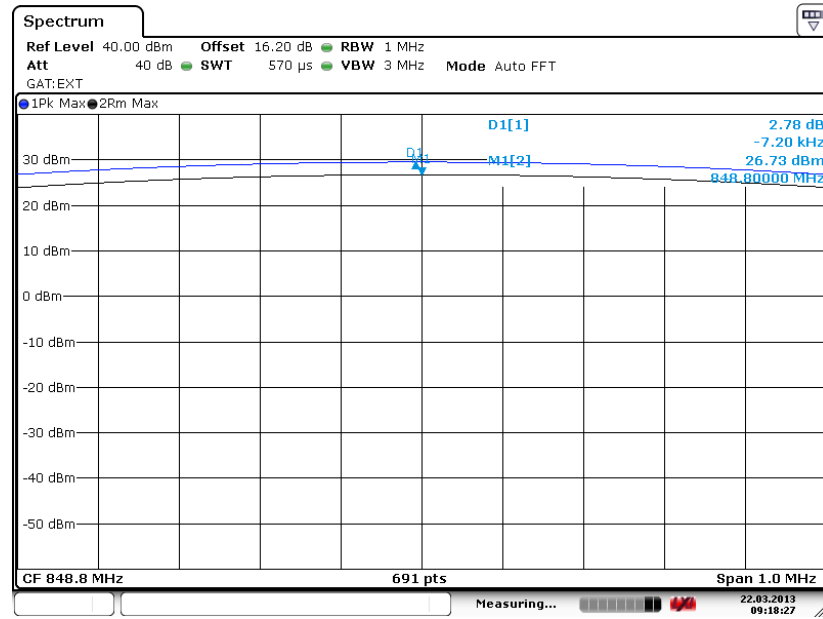
Peak-to-Average Ratio on Channel 189 (836.4 MHz)



Date: 22.MAR.2013 09:17:52



Peak-to-Average Ratio on Channel 251 (848.8 MHz)

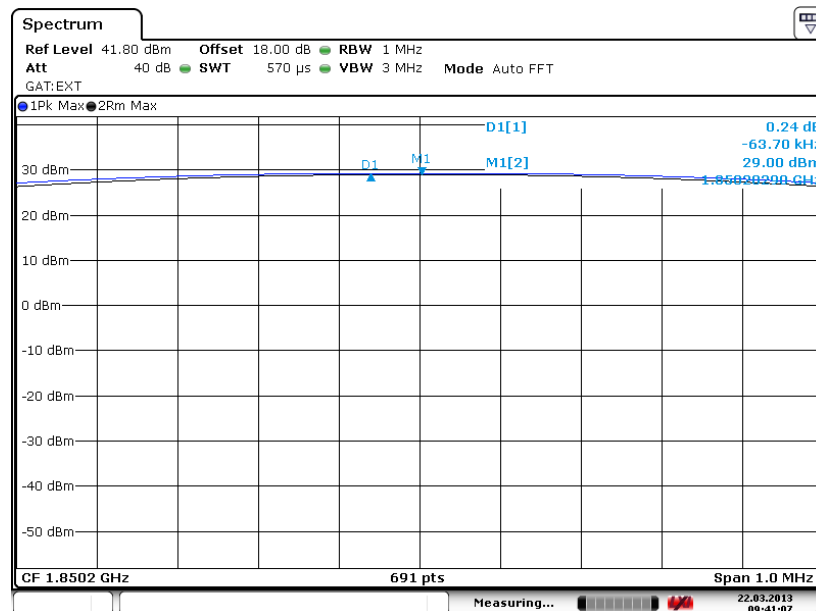


Date: 22.MAR.2013 09:18:27



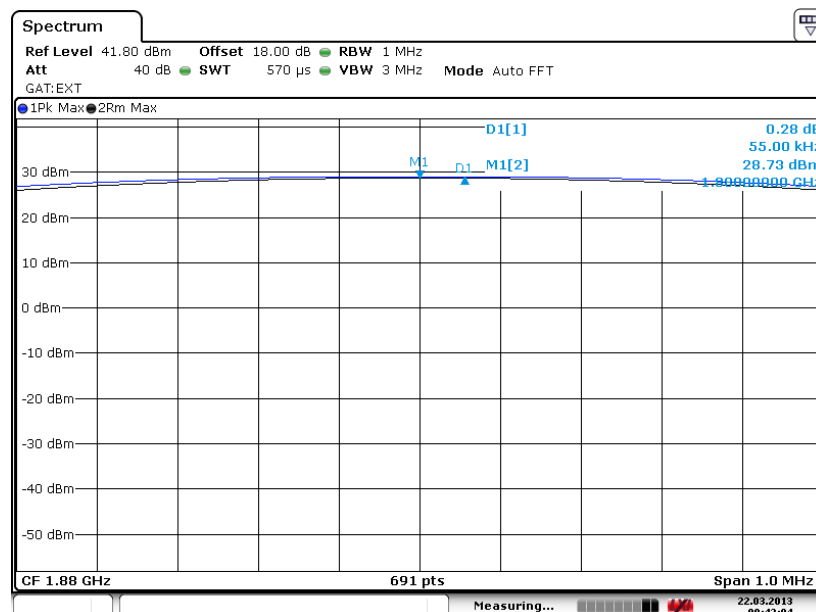
Band :	GSM 1900	Test Mode :	GPRS class 8 Link (GMSK)
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Peak-to-Average Ratio on Channel 512 (1850.2 MHz)



Date: 22.MAR.2013 09:41:07

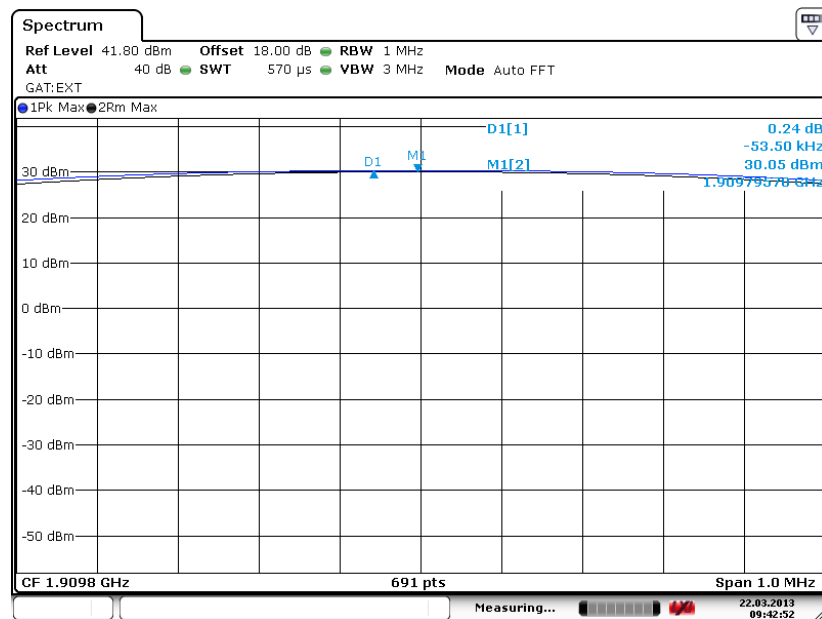
Peak-to-Average Ratio on Channel 661 (1880.0 MHz)



Date: 22.MAR.2013 09:42:04



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

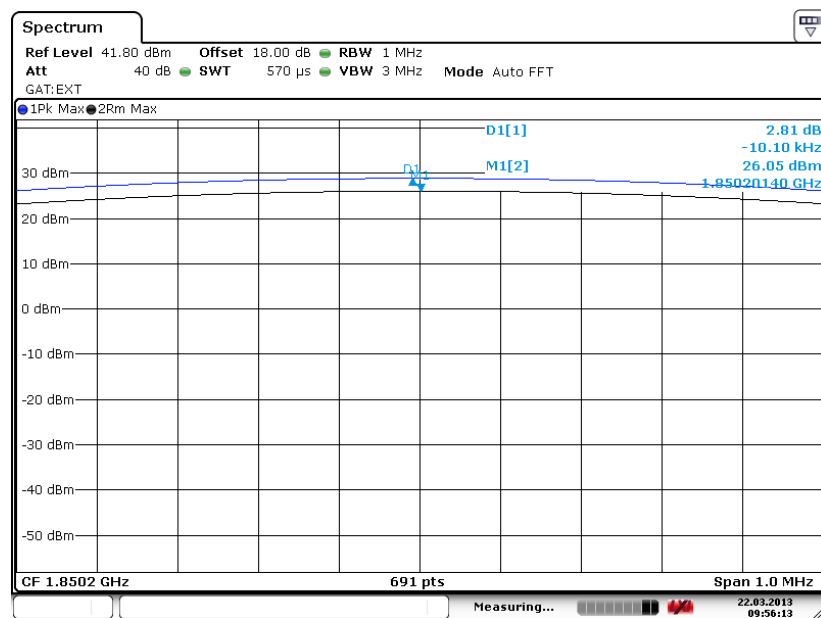


Date: 22.MAR.2013 09:42:52



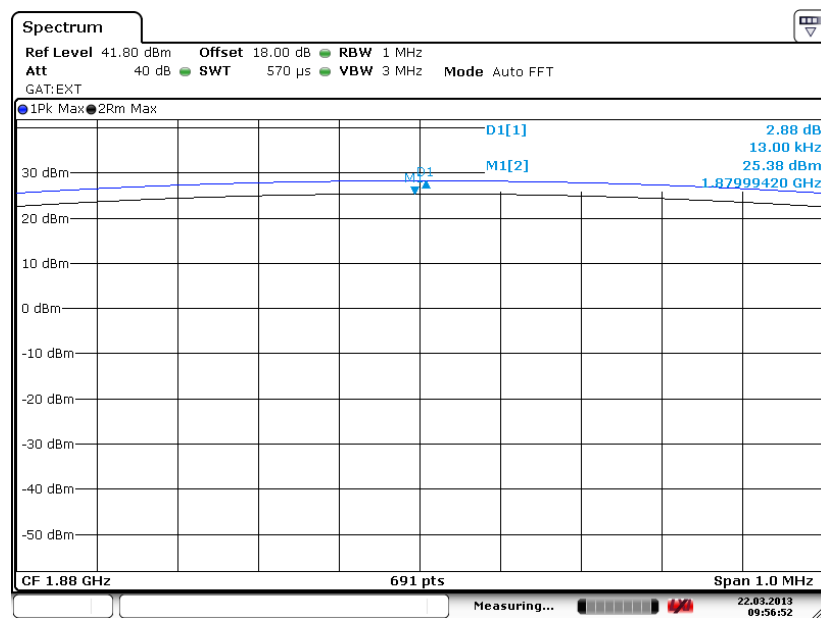
Band :	GSM 1900	Test Mode :	EDGE class 8 Link (8PSK)
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Peak-to-Average Ratio on Channel 512 (1850.2 MHz)



Date: 22.MAR.2013 09:56:13

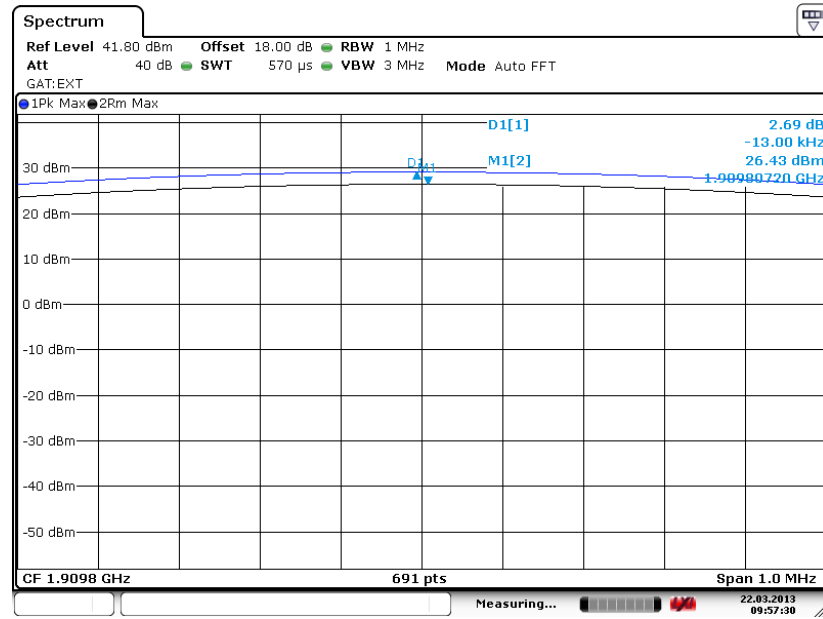
Peak-to-Average Ratio on Channel 661 (1880.0 MHz)



Date: 22.MAR.2013 09:56:52



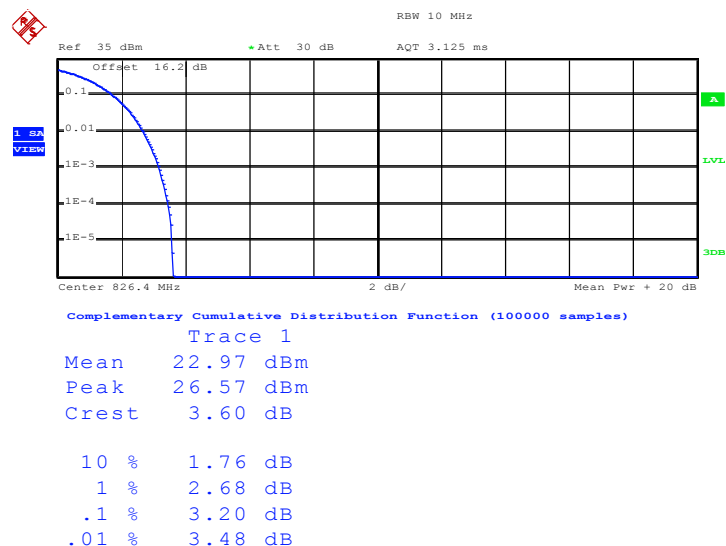
Peak-to-Average Ratio on Channel 810 (1909.8 MHz)



Date: 22.MAR.2013 09:57:31

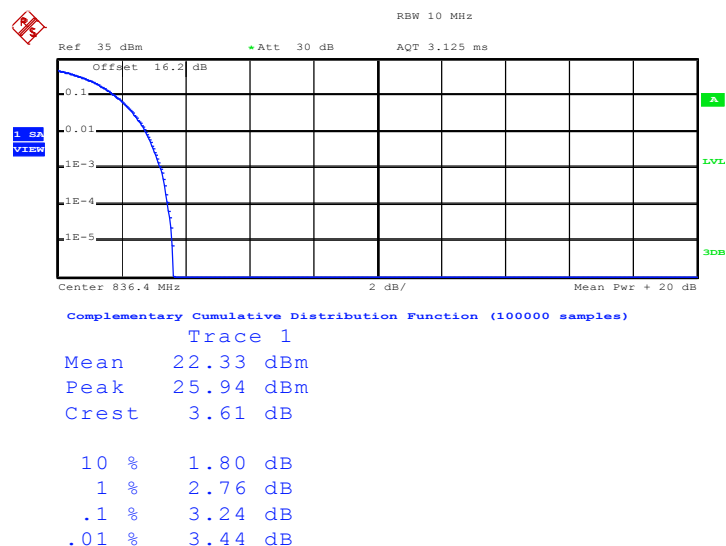
Band :	WCDMA Band V	Test Mode :	RMC 12.2Kbps Link (QPSK)
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Peak-to-Average Ratio on Channel 4132 (826.4 MHz)



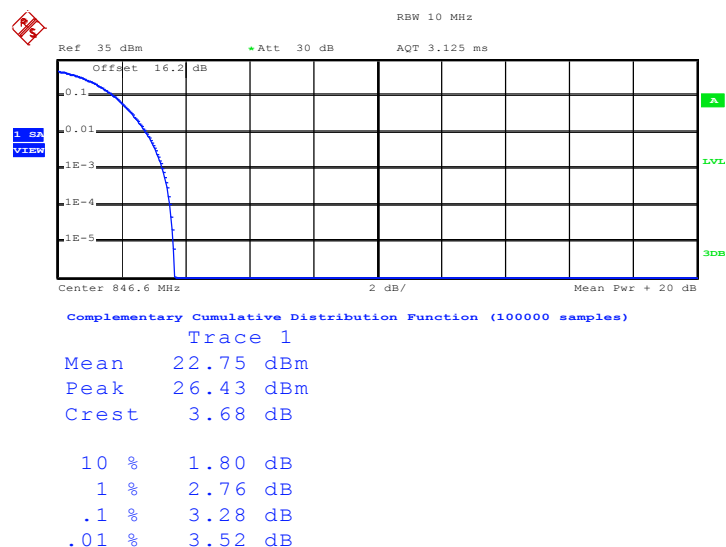
Date: 14.MAR.2013 00:01:36

Peak-to-Average Ratio on Channel 4182 (836.4 MHz)



Date: 14.MAR.2013 00:01:15

Peak-to-Average Ratio on Channel 4233 (846.6 MHz)

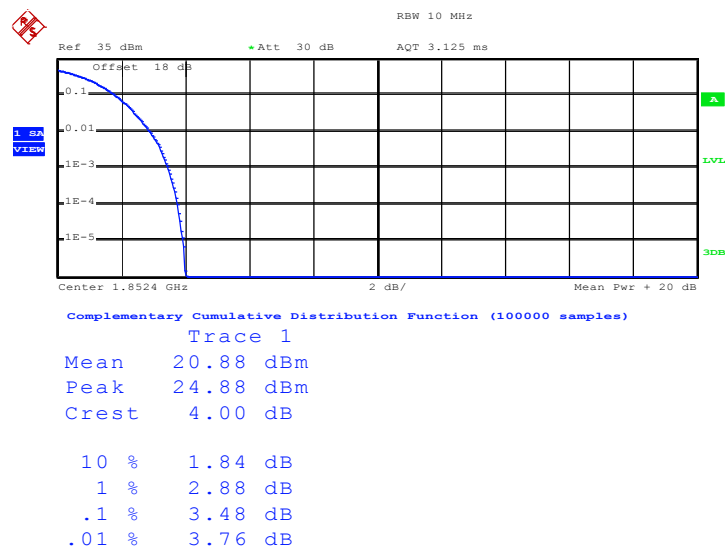


Date: 14.MAR.2013 00:02:05



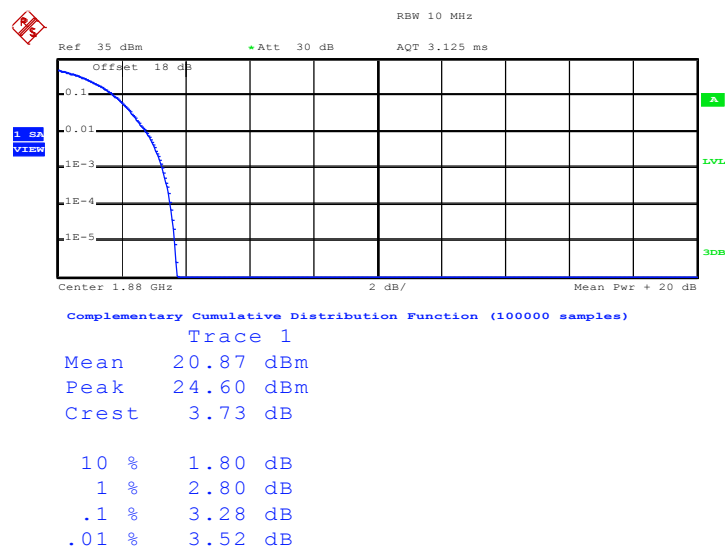
Band :	WCDMA Band II	Test Mode :	RMC 12.2Kbps Link (QPSK)
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Peak-to-Average Ratio on Channel 9262 (1852.4 MHz)



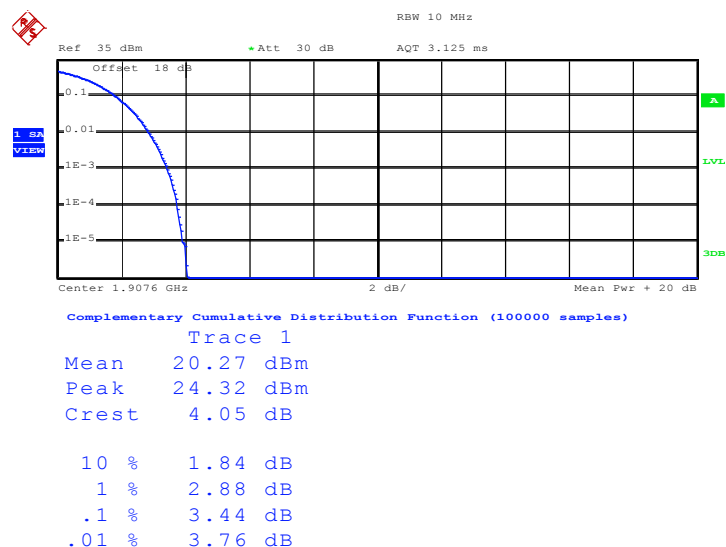
Date: 14.MAR.2013 00:09:44

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



Date: 14.MAR.2013 00:10:01

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



Date: 14.MAR.2013 00:10:21

3.3 99% Occupied Bandwidth and 26dB Bandwidth Measurement

3.3.1 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.

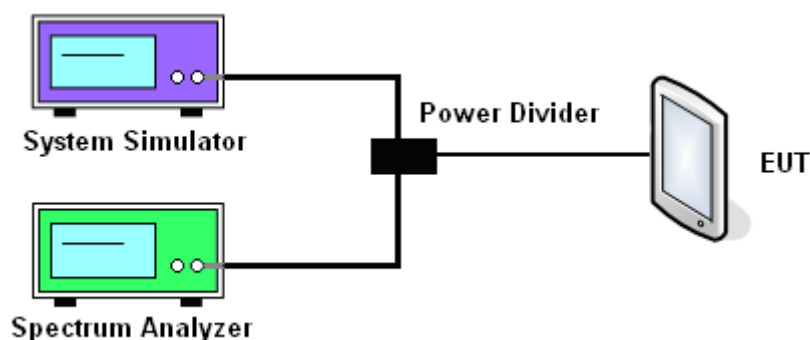
3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. The 99% occupied bandwidth and 26 dB bandwidth of the middle channel for the highest RF powers were measured.
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 section 4.0 of KDB 971168 D01.

3.3.4 Test Setup



3.3.5 Test Result of Occupied Bandwidth and 26dB Bandwidth

Cellular Band						
Modes	GSM850 (GPRS class 8)			GSM850 (EDGE class 8)		
Channel	128 (Low)	189 (Mid)	251 (High)	128 (Low)	189 (Mid)	251 (High)
Frequency (MHz)	824.2	836.4	848.8	824.2	836.4	848.8
99% OBW (KHz)	250.00	242.00	244.00	246.00	246.00	248.00
26dB BW (KHz)	308.00	318.00	318.00	316.00	312.00	308.00

PCS Band						
Modes	GSM1900 (GPRS class 8)			GSM1900 (EDGE class 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	246.00	248.00	244.00	246.00	248.00
26dB BW (KHz)	314.00	306.00	320.00	314.00	308.00	310.00

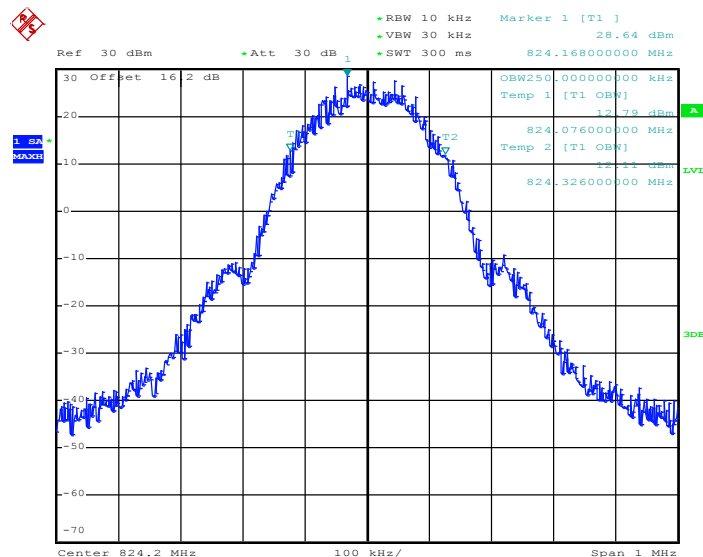
Cellular Band			
Modes	WCDMA Band V (RMC 12.2Kbps)		
Channel	4132 (Low)	4182 (Mid)	4233 (High)
Frequency (MHz)	826.4	836.4	846.6
99% OBW (MHz)	4.16	4.16	4.16
26dB BW (MHz)	4.66	4.68	4.66

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)	4.16	4.16	4.14
26dB BW (MHz)	4.68	4.66	4.66

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

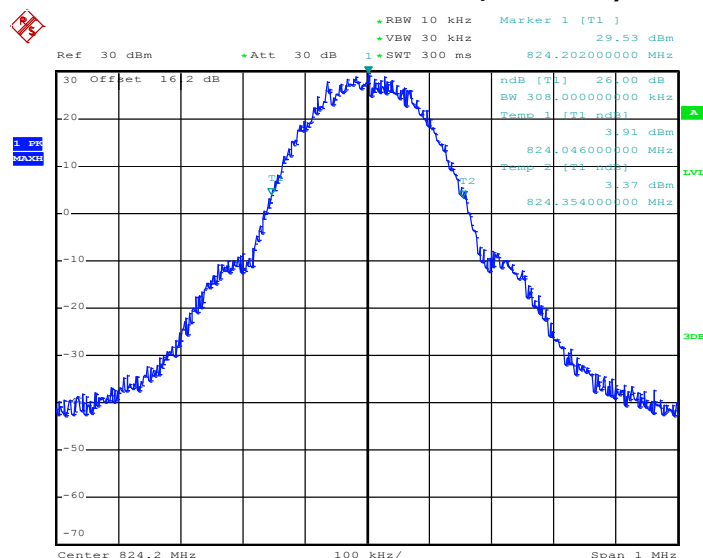
Band :	GSM 850	Test Mode :	GPRS class 8 Link (GMSK)
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99% Occupied Bandwidth Plot on Channel 128 (824.2 MHz)



Date: 13.MAR.2013 22:50:04

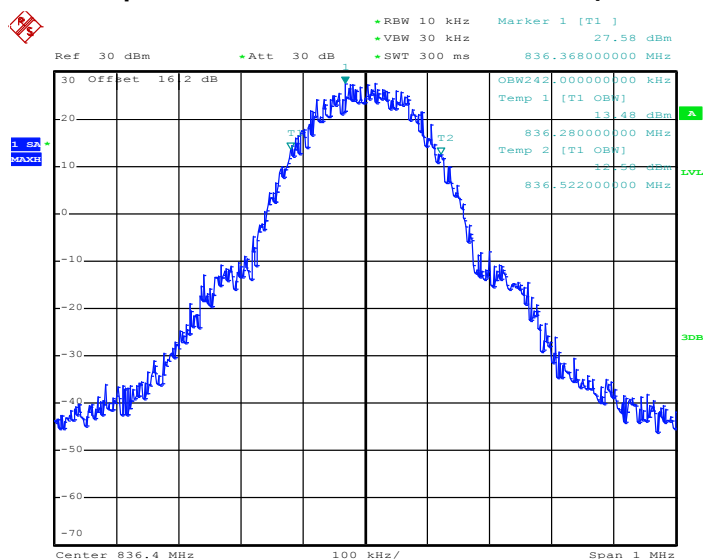
26dB Bandwidth Plot on Channel 128 (824.2 MHz)



Date: 13.MAR.2013 22:49:20

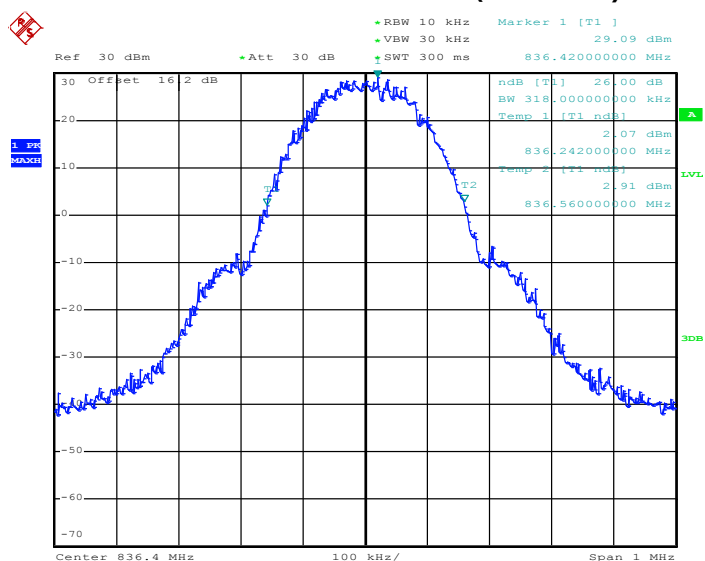


99% Occupied Bandwidth Plot on Channel 189 (836.4 MHz)



Date: 13.MAR.2013 22:50:44

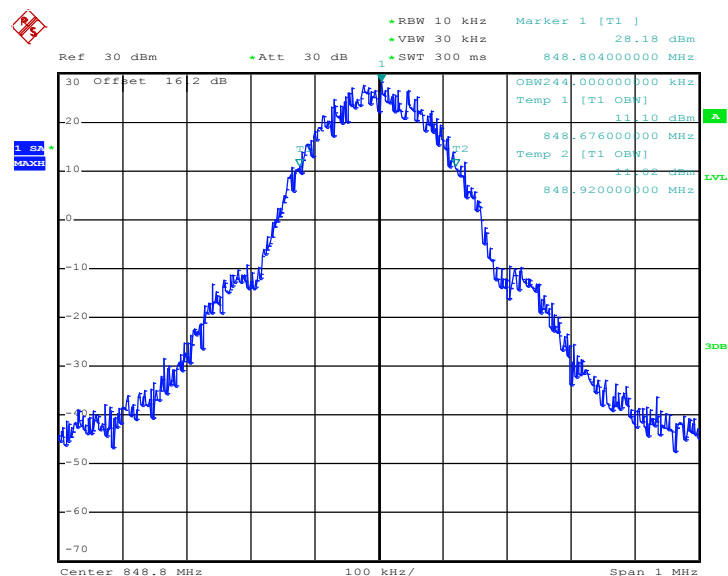
26dB Bandwidth Plot on Channel 189 (836.4 MHz)



Date: 13.MAR.2013 22:49:00

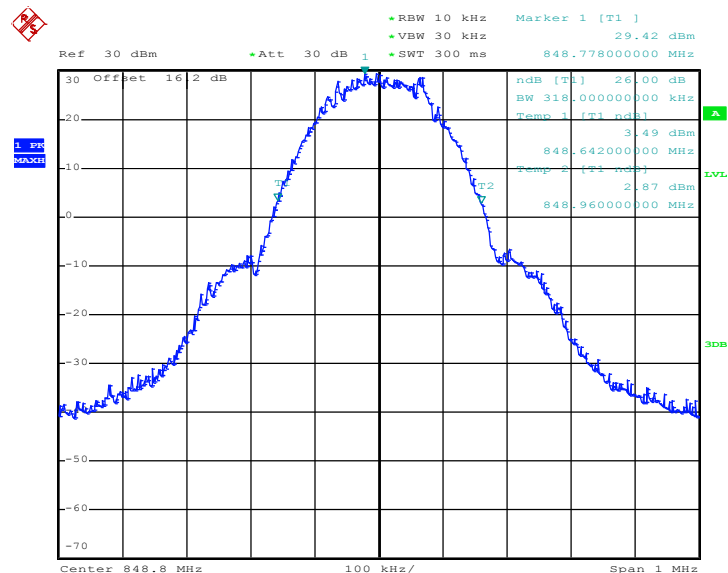


99% Occupied Bandwidth Plot on Channel 251 (848.8 MHz)



Date: 13.MAR.2013 22:51:22

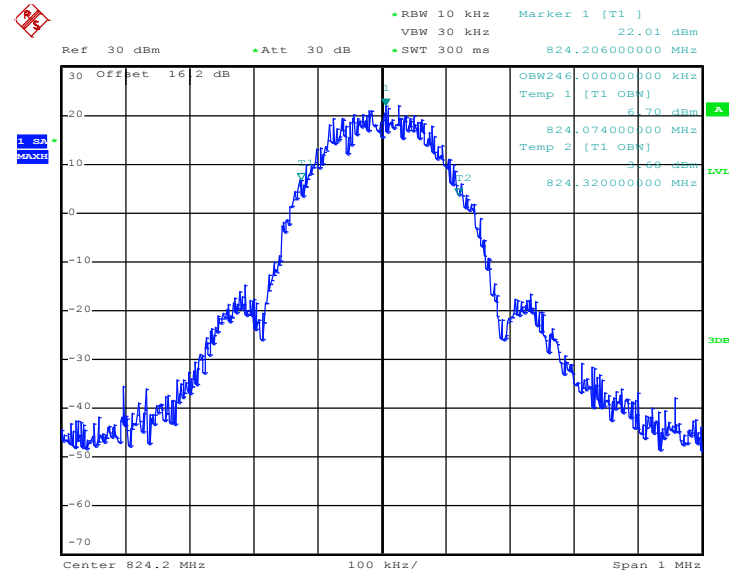
26dB Bandwidth Plot on Channel 251 (848.8 MHz)



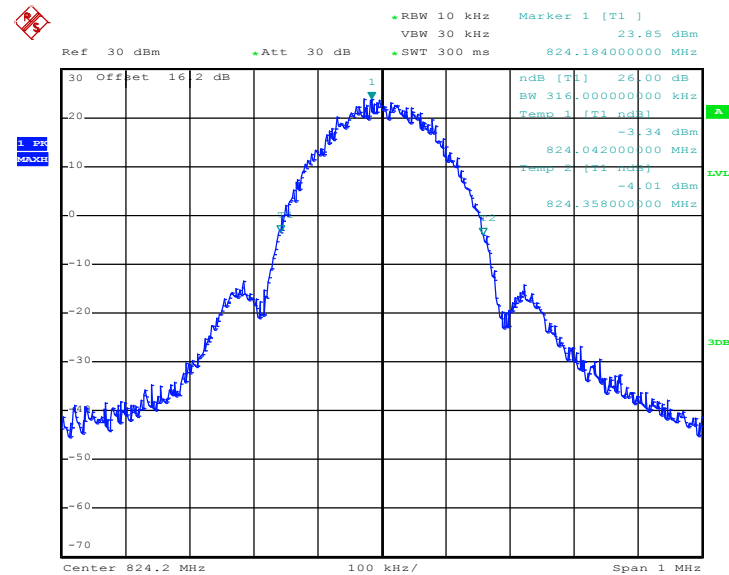
Date: 13.MAR.2013 22:48:41



Band :	GSM 850	Test Mode :	EDGE class 8 Link (8PSK)
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99% Occupied Bandwidth Plot on Channel 128 (824.2 MHz)

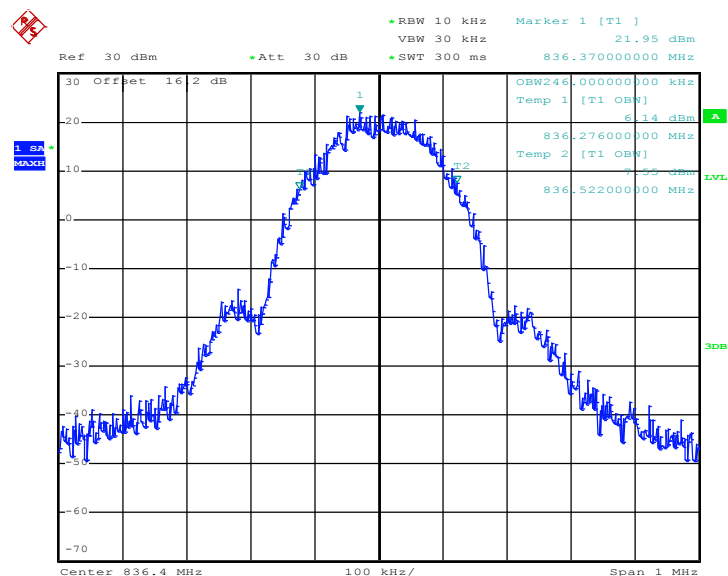
Date: 13.MAR.2013 23:45:58

26dB Bandwidth Plot on Channel 128 (824.2 MHz)

Date: 13.MAR.2013 23:45:21

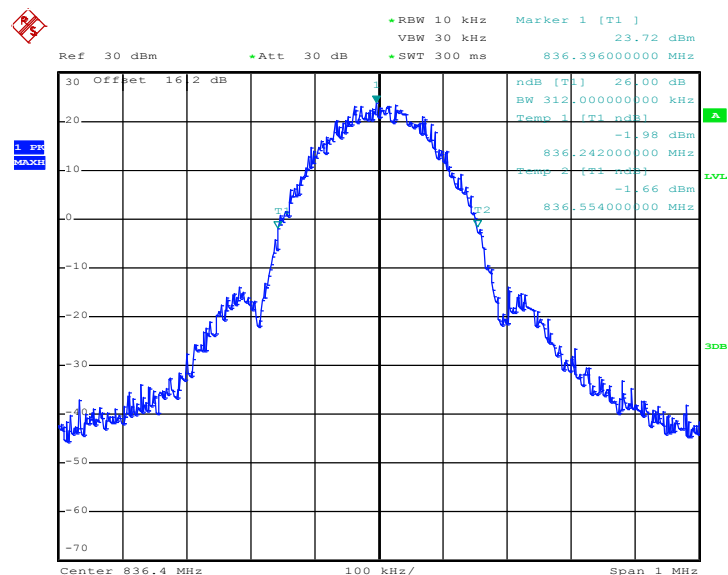


99% Occupied Bandwidth Plot on Channel 189 (836.4 MHz)



Date: 13.MAR.2013 23:46:41

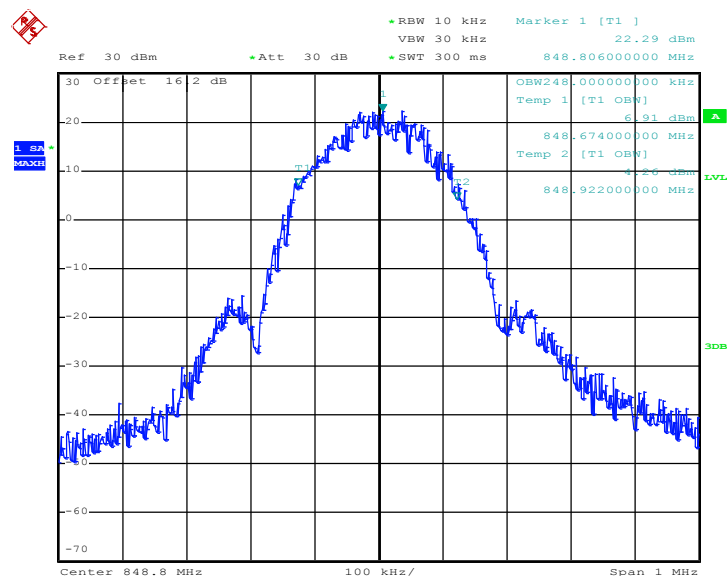
26dB Bandwidth Plot on Channel 189 (836.4 MHz)



Date: 13.MAR.2013 23:44:57

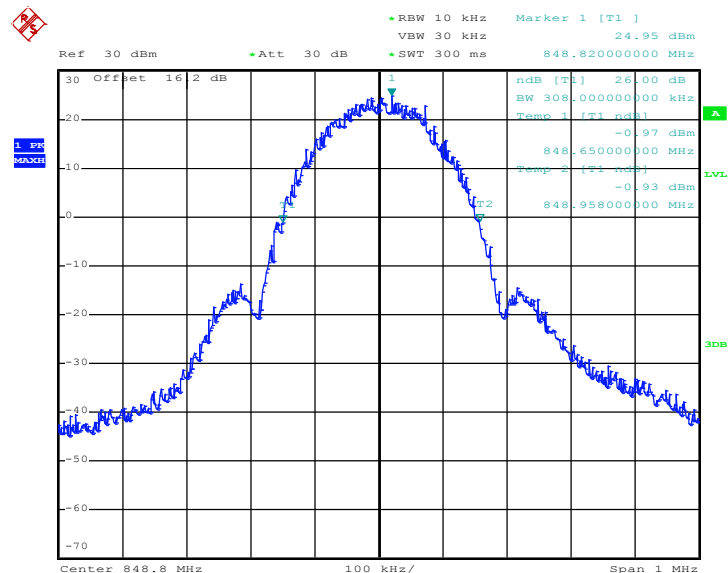


99% Occupied Bandwidth Plot on Channel 251 (848.8 MHz)



Date: 13.MAR.2013 23:47:18

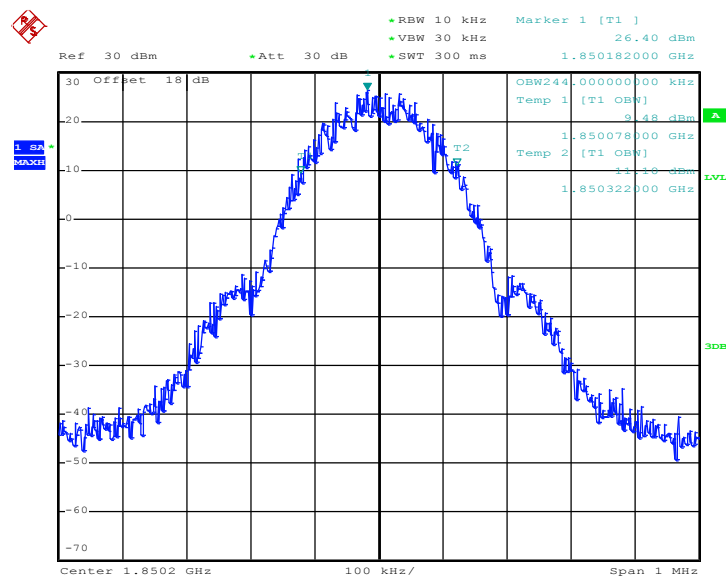
26dB Bandwidth Plot on Channel 251 (848.8 MHz)



Date: 13.MAR.2013 23:44:39

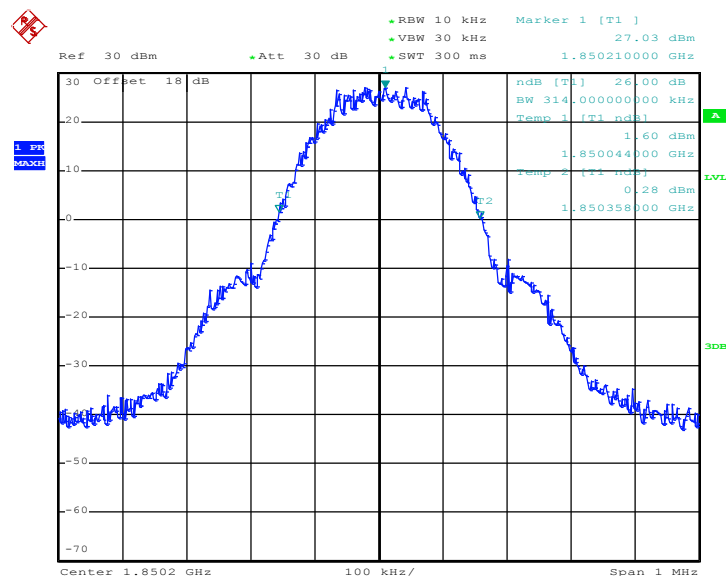
Band :	GSM 1900	Test Mode :	GPRS class 8 Link (GMSK)
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99% Occupied Bandwidth Plot on Channel 512 (1850.2 MHz)



Date: 13.MAR.2013 23:12:02

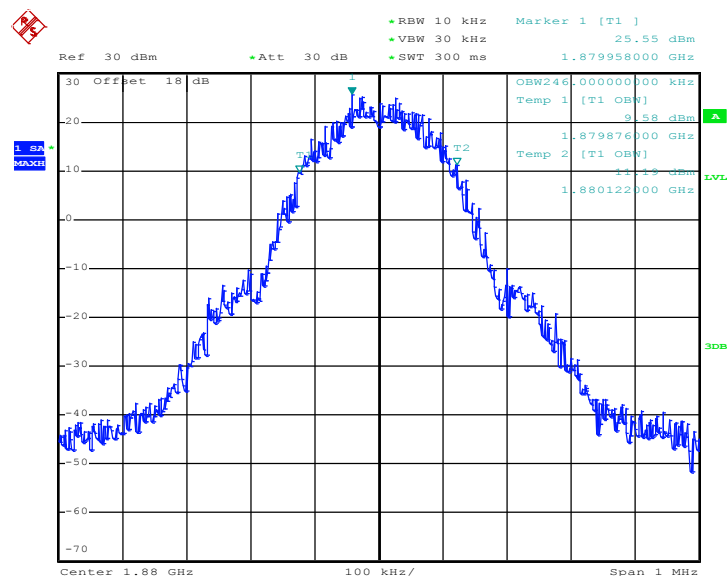
26dB Bandwidth Plot on Channel 512 (1850.2 MHz)



Date: 13.MAR.2013 23:15:25

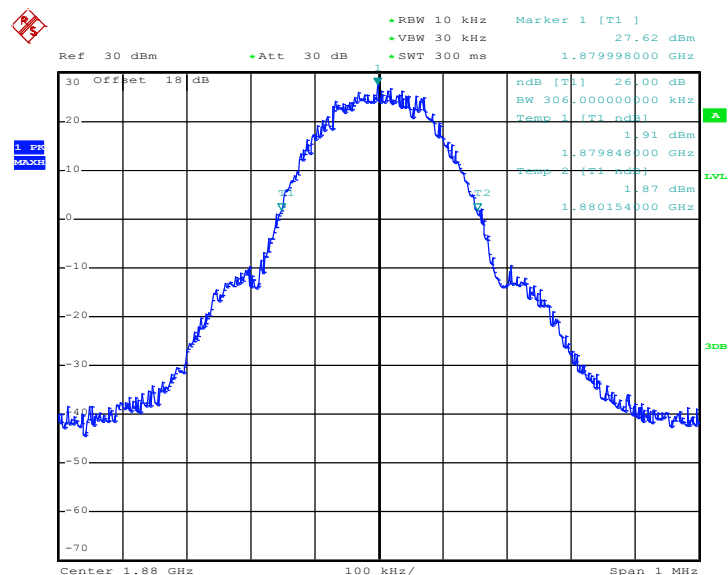


99% Occupied Bandwidth Plot on Channel 661 (1880.0 MHz)



Date: 13.MAR.2013 23:12:27

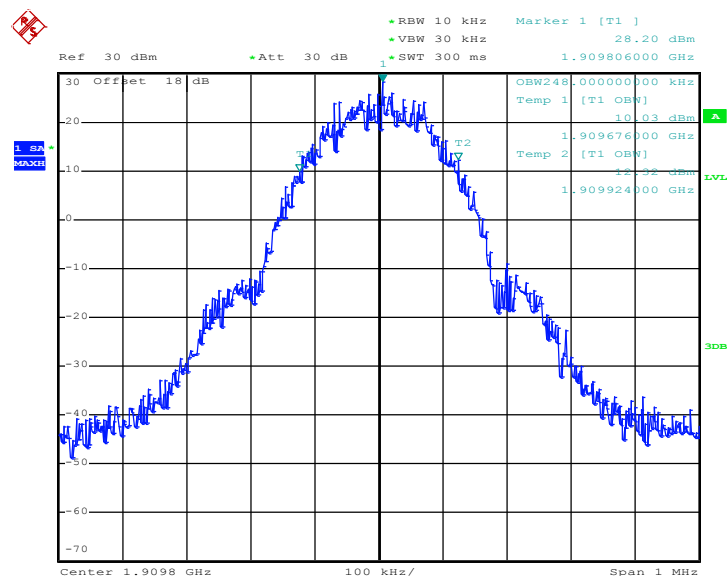
26dB Bandwidth Plot on Channel 661 (1880.0 MHz)



Date: 13.MAR.2013 23:15:02

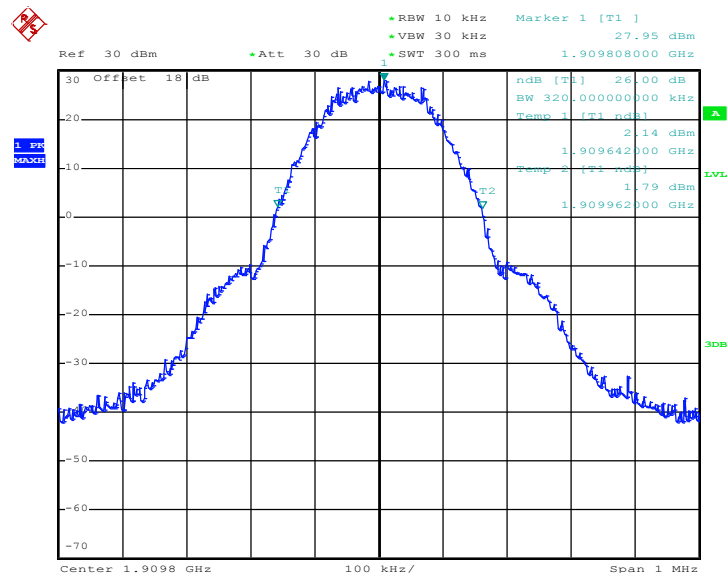


99% Occupied Bandwidth Plot on Channel 810 (1909.8 MHz)



Date: 13.MAR.2013 23:12:53

26dB Bandwidth Plot on Channel 810 (1909.8 MHz)

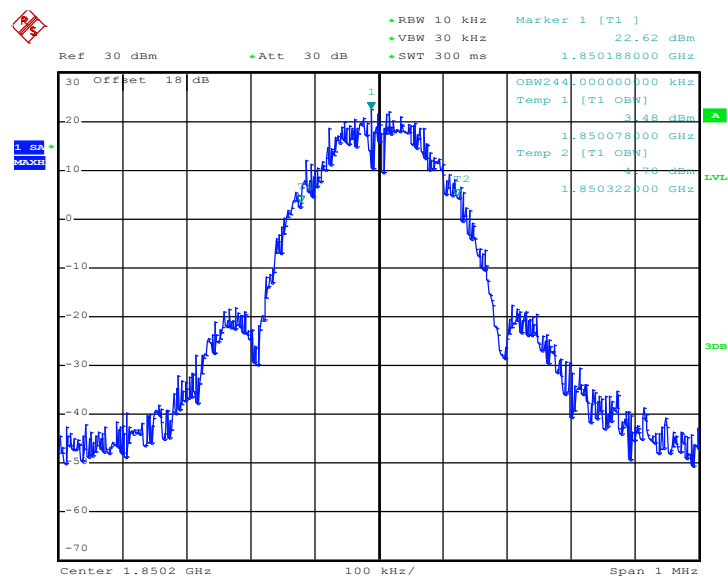


Date: 13.MAR.2013 23:14:44



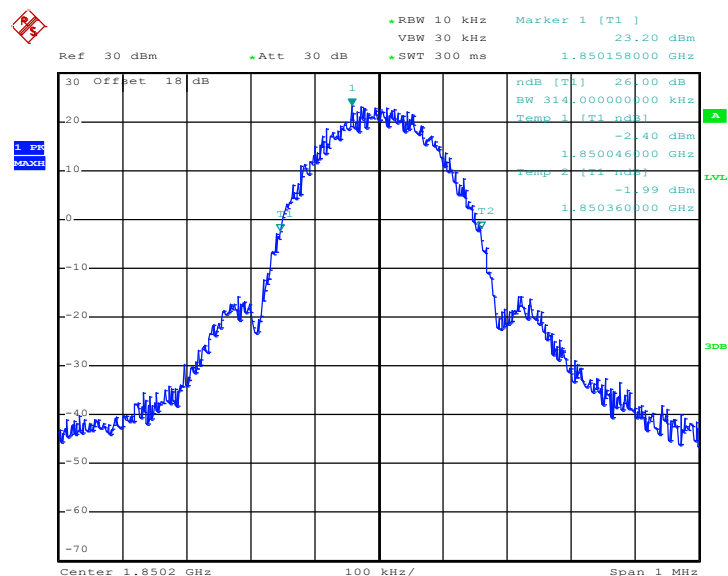
Band :	GSM 1900	Test Mode :	EDGE class 8 Link (8PSK)
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99% Occupied Bandwidth Plot on Channel 512 (1850.2 MHz)



Date: 13.MAR.2013 23:24:40

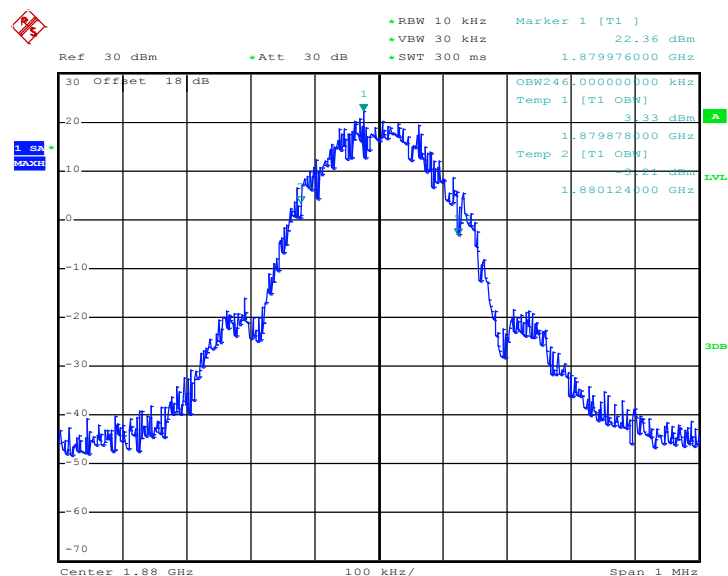
26dB Bandwidth Plot on Channel 512 (1850.2 MHz)



Date: 13.MAR.2013 23:27:38

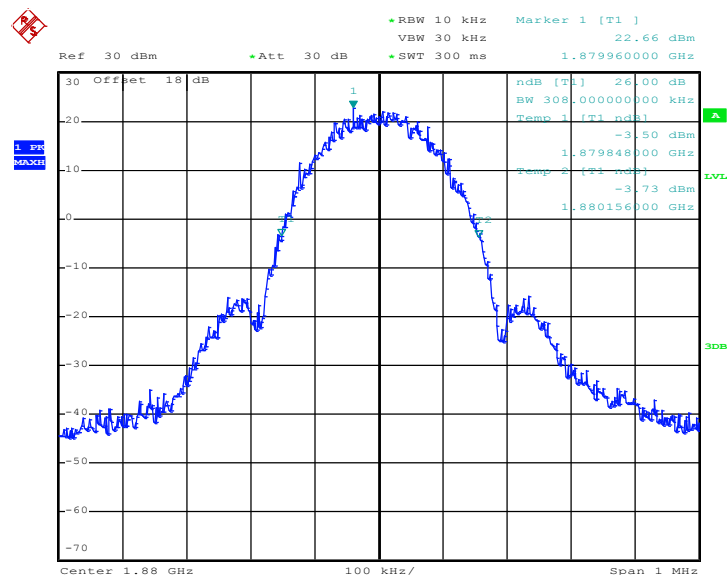


99% Occupied Bandwidth Plot on Channel 661 (1880.0 MHz)



Date: 13.MAR.2013 23:25:06

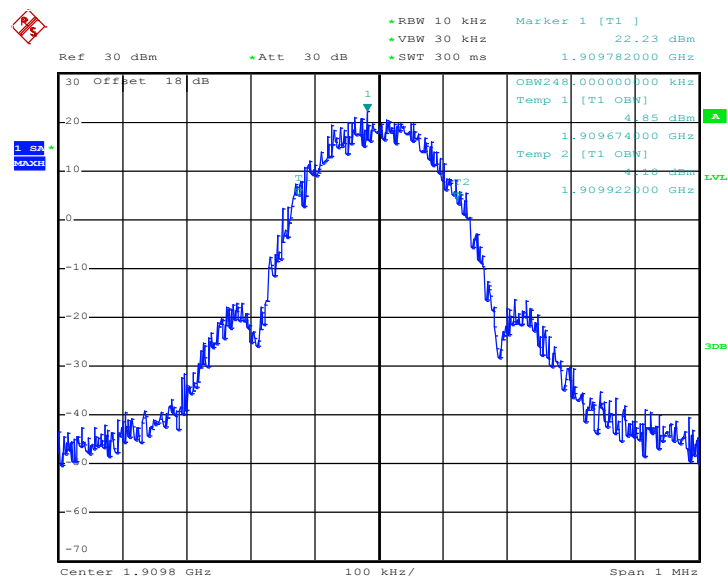
26dB Bandwidth Plot on Channel 661 (1880.0 MHz)



Date: 13.MAR.2013 23:27:19

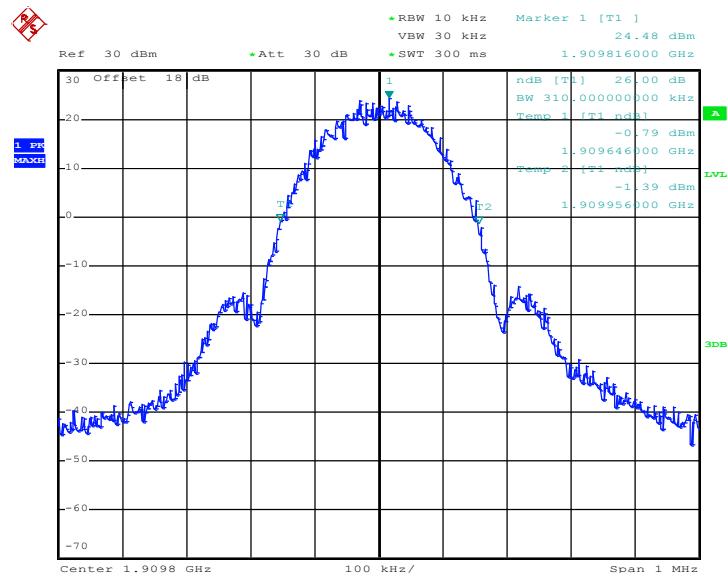


99% Occupied Bandwidth Plot on Channel 810 (1909.8 MHz)



Date: 13.MAR.2013 23:25:32

26dB Bandwidth Plot on Channel 810 (1909.8 MHz)

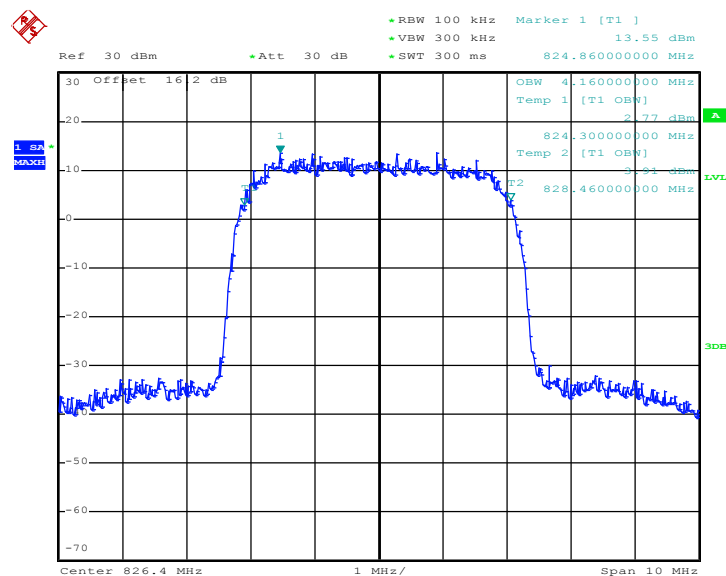


Date: 13.MAR.2013 23:27:02



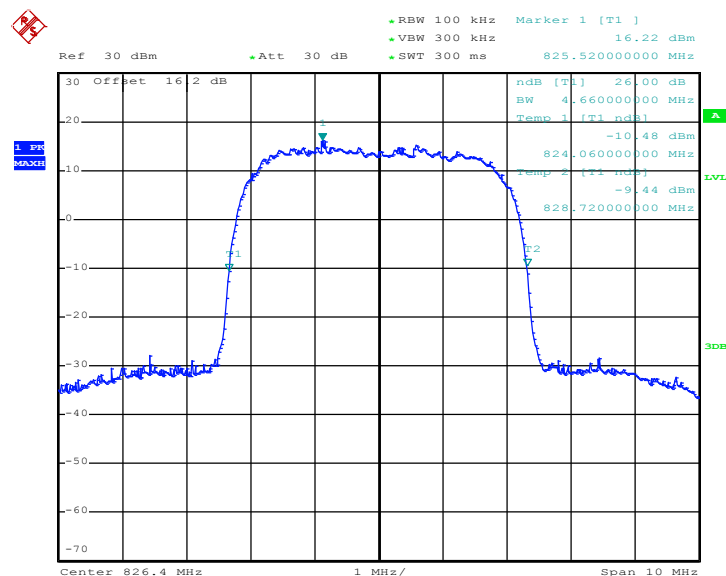
Band :	WCDMA Band V	Test Mode :	RMC 12.2Kbps Link (QPSK)
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99% Occupied Bandwidth Plot on Channel 4132 (826.4 MHz)



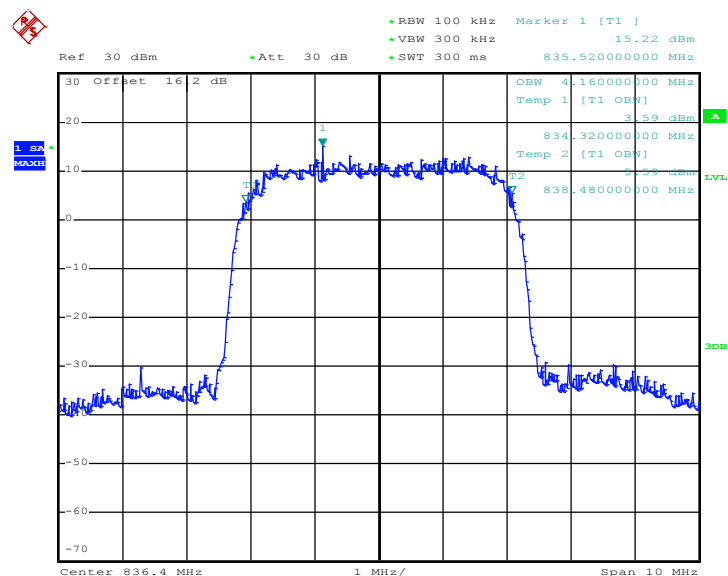
Date: 14.MAR.2013 00:05:56

26dB Bandwidth Plot on Channel 4132 (826.4 MHz)



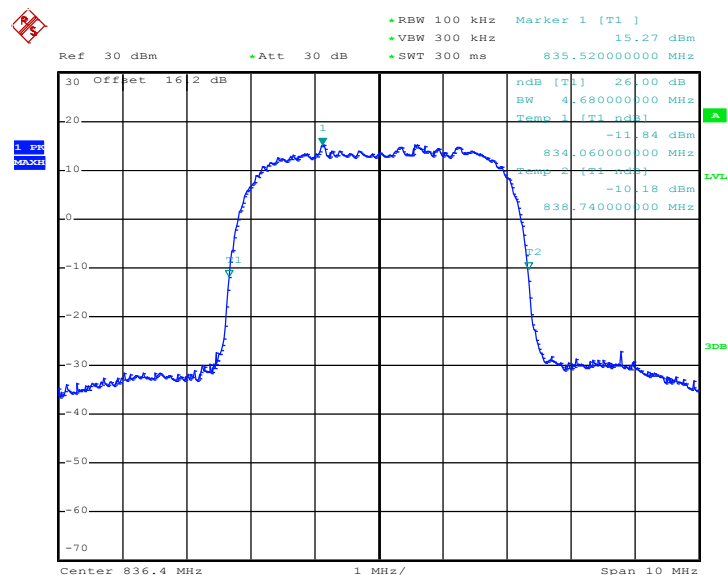
Date: 14.MAR.2013 00:04:37

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



Date: 14.MAR.2013 00:06:22

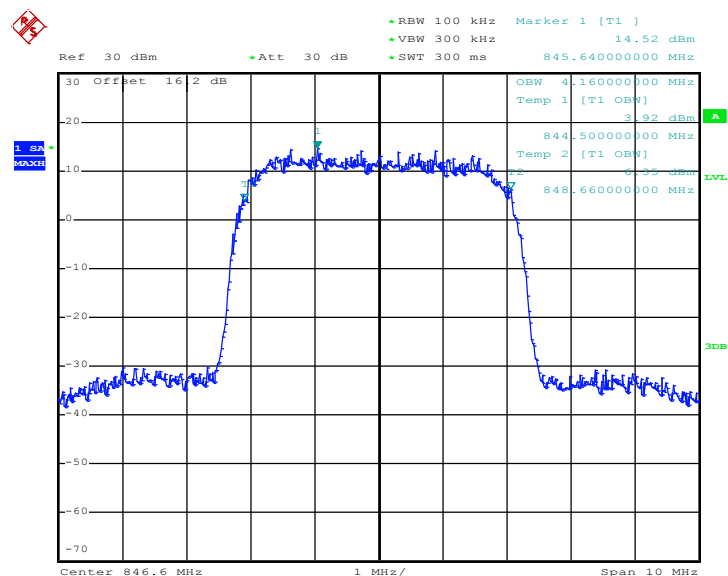
26dB Bandwidth Plot on Channel 4182 (836.4 MHz)



Date: 14.MAR.2013 00:05:04

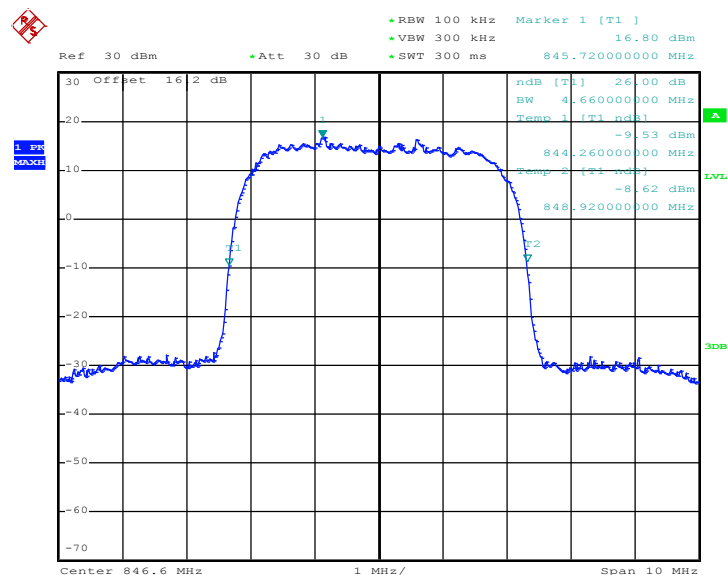


99% Occupied Bandwidth Plot on Channel 4233 (846.6 MHz)



Date: 14.MAR.2013 00:06:48

26dB Bandwidth Plot on Channel 4233 (846.6 MHz)

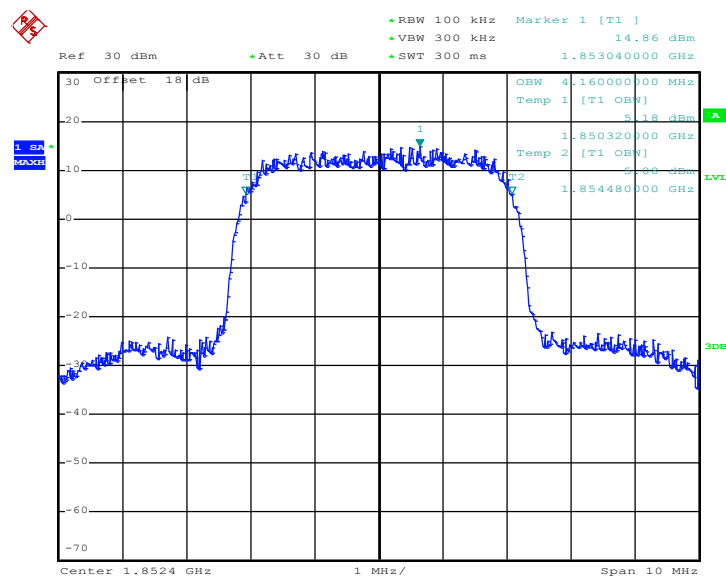


Date: 14.MAR.2013 00:05:30



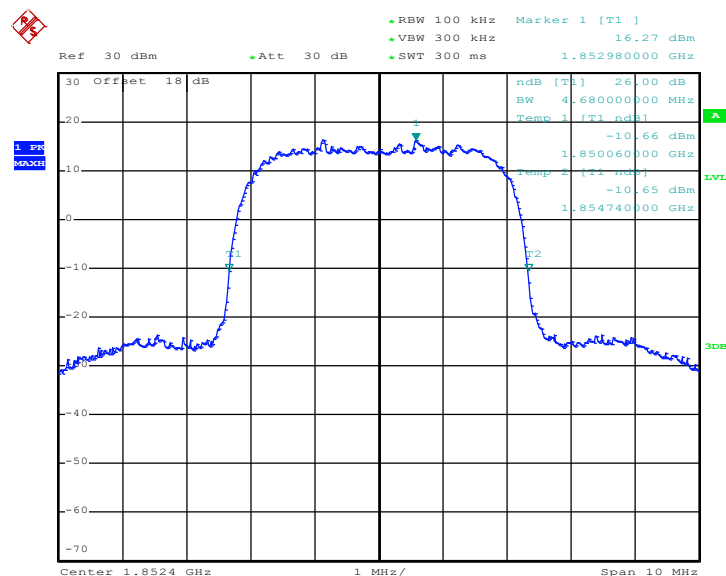
Band :	WCDMA Band II	Test Mode :	RMC 12.2Kbps Link (QPSK)
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99% Occupied Bandwidth Plot on Channel 9262 (1852.4 MHz)



Date: 14.MAR.2013 00:13:42

26dB Bandwidth Plot on Channel 9262 (1852.4 MHz)



Date: 14.MAR.2013 00:12:24

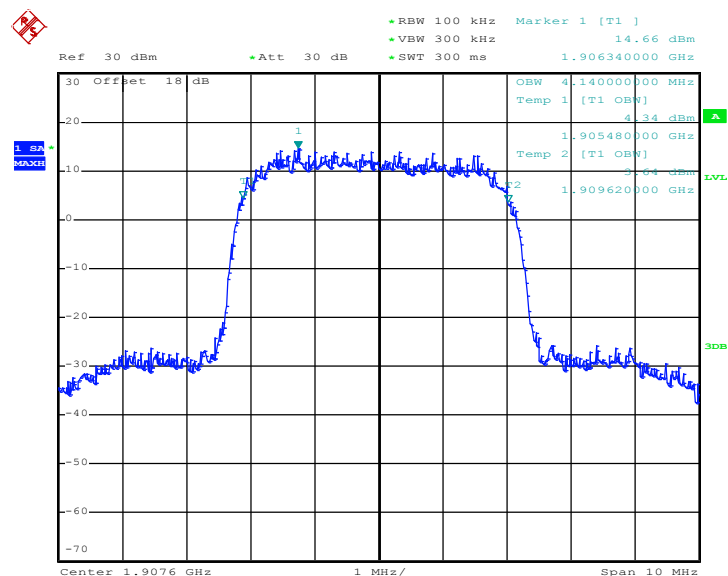


26dB Bandwidth Plot on Channel 9400 (1880.0 MHz)



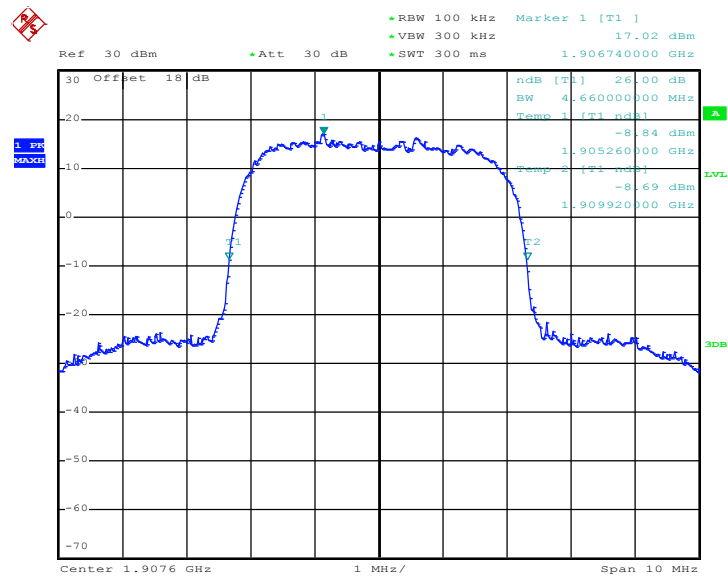


99% Occupied Bandwidth Plot on Channel 9538 (1907.6 MHz)



Date: 14.MAR.2013 00:14:34

26dB Bandwidth Plot on Channel 9538 (1907.6 MHz)



Date: 14.MAR.2013 00:13:16

3.4 Band Edge Measurement

3.4.1 Description of Band Edge Measurement

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

3.4.2 Measuring Instruments

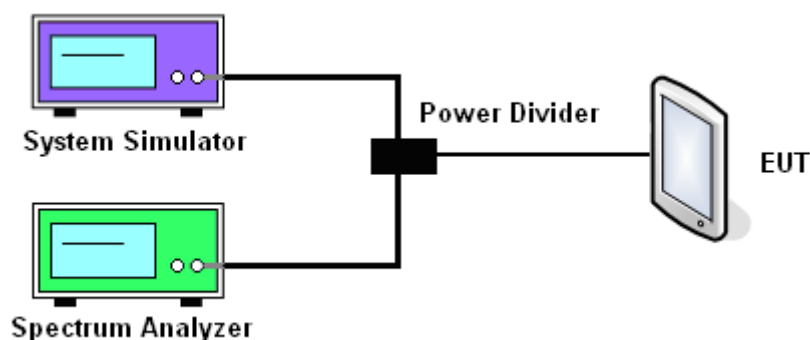
See list of measuring instruments of this test report.

3.4.3 Test Procedures

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. The band edges of low and high channels for the highest RF powers were measured. Setting RBW as roughly BW/100.
4. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
5. The limit line is derived from $43 + 10\log(P)$ dB below the transmitter power P(Watts)
 $= P(W) - [43 + 10\log(P)] \text{ (dB)}$
 $= [30 + 10\log(P)] \text{ (dBm)} - [43 + 10\log(P)] \text{ (dB)}$
 $= -13\text{dBm}.$

3.4.4 Test Setup

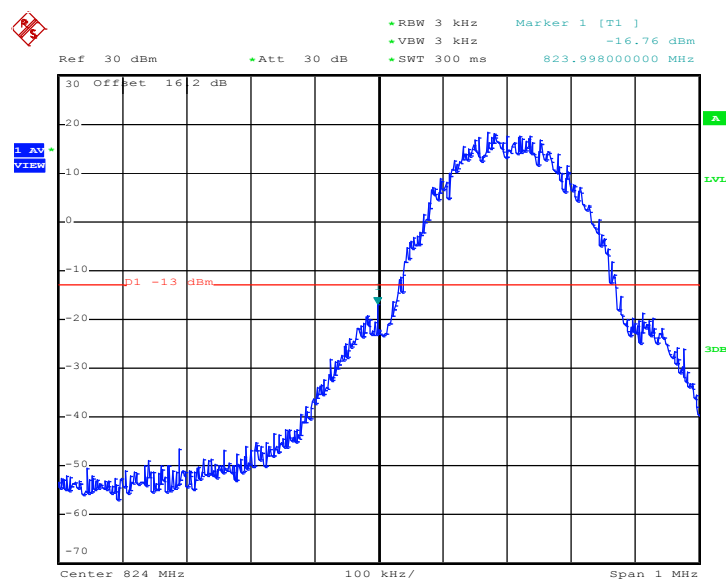
<Conducted Band Edge >



3.4.5 Test Result (Plots) of Conducted Band Edge

Band :	GSM850	Test Mode :	GPRS class 8 Link (GMSK)
Correction Factor :	0.25dB	Maximum 26dB Bandwidth :	0.318MHz
Band Edge :	-16.51dBm	Measurement Value :	-16.76dBm

Lower Band Edge Plot on Channel 128 (824.2 MHz)

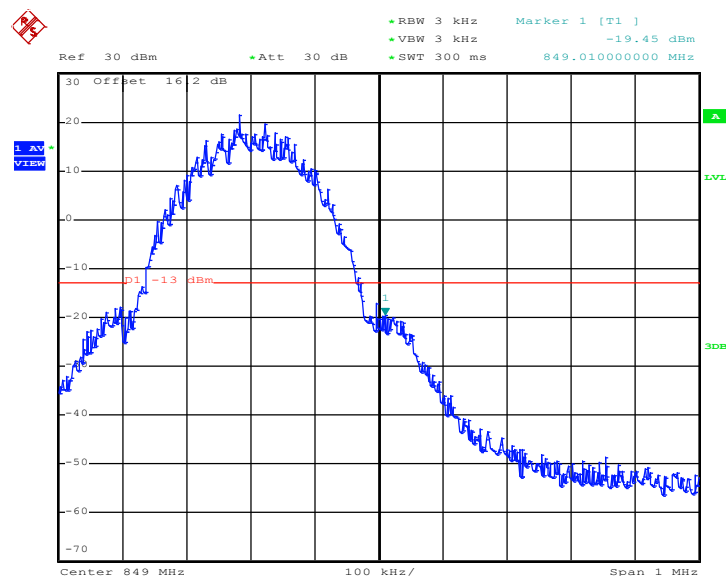


Date: 13.MAR.2013 22:47:17

1. Correction Factor(dB)= $10\log(1\% \text{ Emission BW/RBW})$
 2. Band Edge= Measurement Value + Correction Factor(dB)
- For example, $-16.76\text{dBm} + 0.25\text{dB} = -16.51\text{dBm}$

Band :	GSM850	Test Mode :	GPRS class 8 Link (GMSK)
Correction Factor :	0.25dB	Maximum 26dB Bandwidth :	0.318MHz
Band Edge :	-19.20dBm	Measurement Value :	-19.45dBm

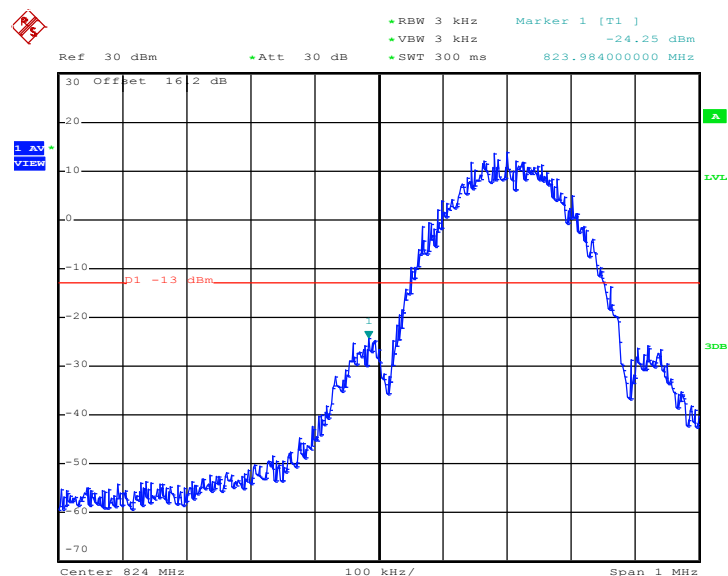
Higher Band Edge Plot on Channel 251 (848.8 MHz)



Date: 13.MAR.2013 22:47:44

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

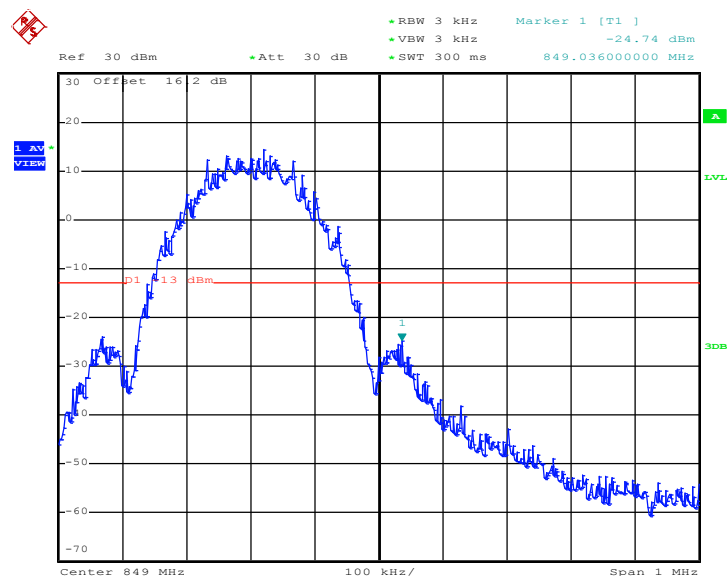
Band :	GSM850	Test Mode :	EDGE class 8 Link (8PSK)
Correction Factor :	0.23dB	Maximum 26dB Bandwidth :	0.316MHz
Band Edge :	-24.02dBm	Measurement Value :	-24.25dBm

Lower Band Edge Plot on Channel 128 (824.2 MHz)


Date: 13.MAR.2013 23:43:30

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

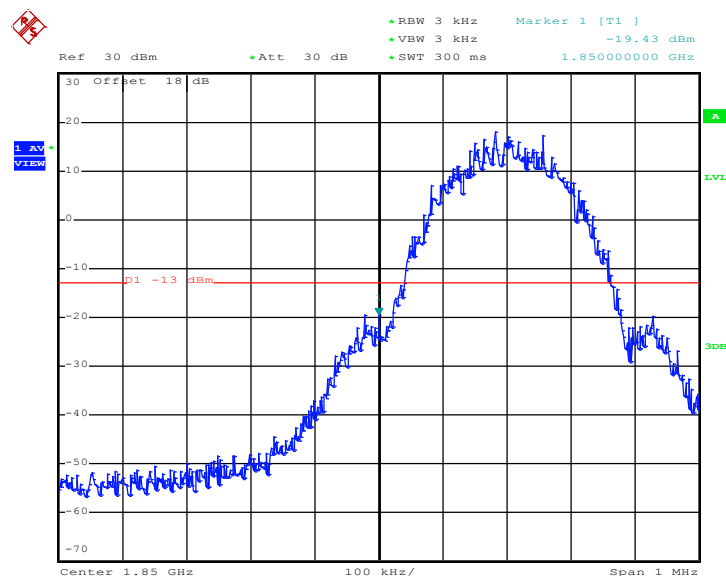
Band :	GSM850	Test Mode :	EDGE class 8 Link (8PSK)
Correction Factor :	0.23dB	Maximum 26dB Bandwidth :	0.316MHz
Band Edge :	-24.51dBm	Measurement Value :	-24.74dBm

Higher Band Edge Plot on Channel 251 (848.8 MHz)


Date: 13.MAR.2013 23:43:56

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

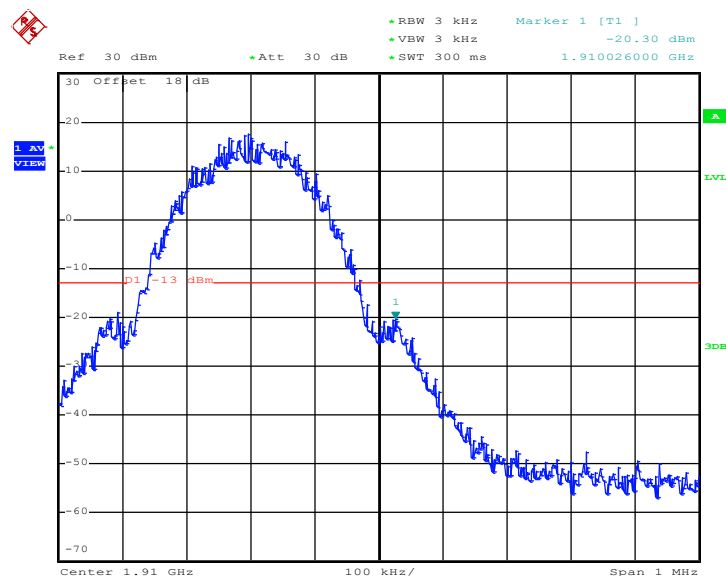
Band :	GSM1900	Test Mode :	GPRS class 8 Link (GMSK)
Correction Factor :	0.28dB	Maximum 26dB Bandwidth :	0.314MHz
Band Edge :	-19.15dBm	Measurement Value :	-19.43dBm

Lower Band Edge Plot on Channel 512 (1850.2 MHz)


Date: 13.MAR.2013 23:13:20

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

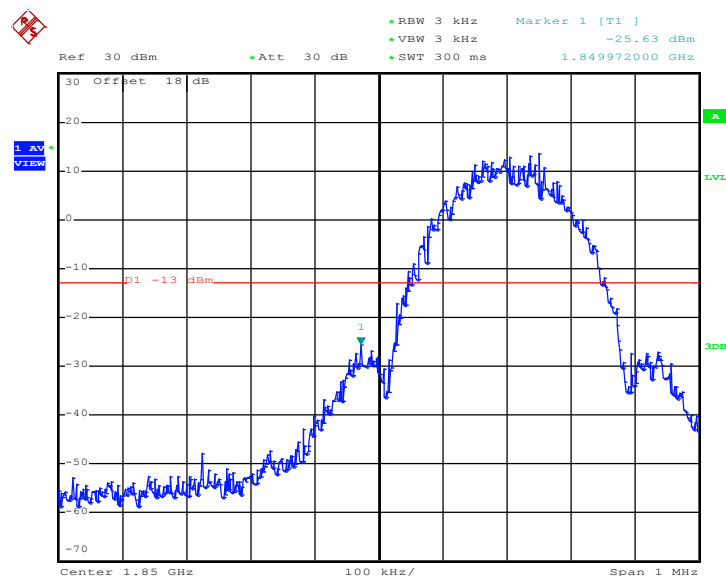
Band :	GSM1900	Test Mode :	GPRS class 8 Link (GMSK)
Correction Factor :	0.28dB	Maximum 26dB Bandwidth :	0.314MHz
Band Edge :	-20.02dBm	Measurement Value :	-20.30dBm

Higher Band Edge Plot on Channel 810 (1909.8 MHz)


Date: 13.MAR.2013 23:13:46

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

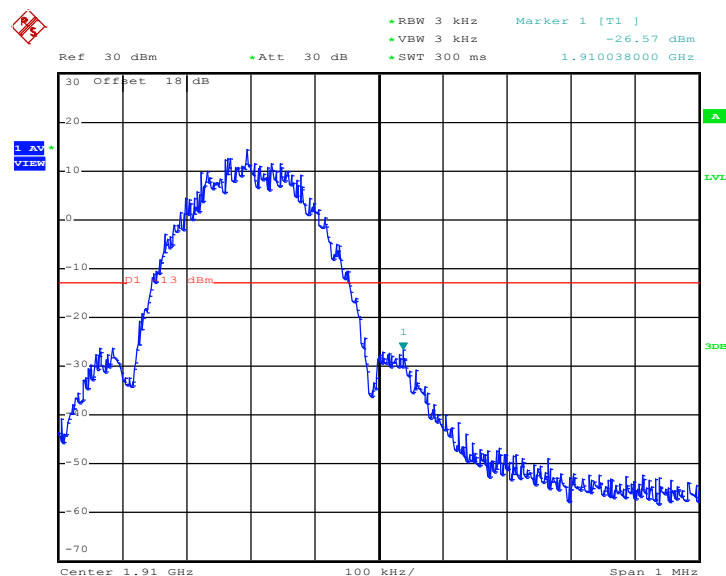
Band :	GSM1900	Test Mode :	EDGE class 8 Link (8PSK)
Correction Factor :	0.20dB	Maximum 26dB Bandwidth :	0.314MHz
Band Edge :	-25.43dBm	Measurement Value :	-25.63dBm

Lower Band Edge Plot on Channel 512 (1850.2 MHz)


Date: 13.MAR.2013 23:25:59

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

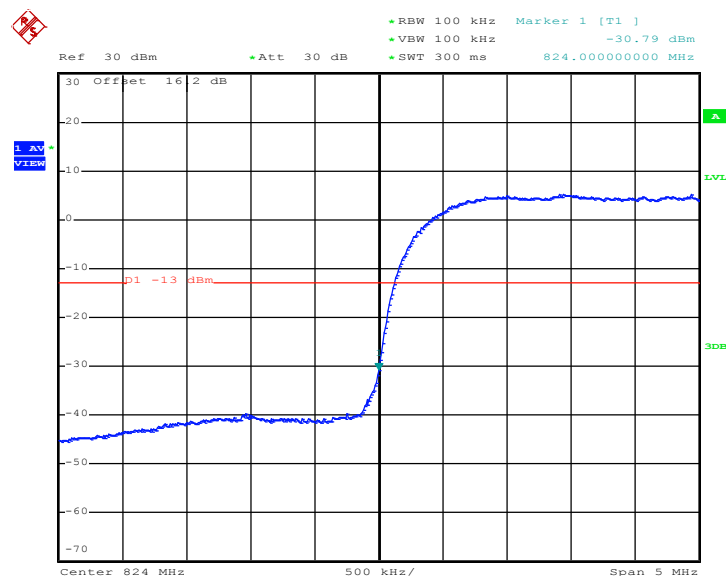
Band :	GSM1900	Test Mode :	EDGE class 8 Link (8PSK)
Correction Factor :	0.20dB	Maximum 26dB Bandwidth :	0.314MHz
Band Edge :	-26.37dBm	Measurement Value :	-26.57dBm

Higher Band Edge Plot on Channel 810 (1909.8 MHz)


Date: 13.MAR.2013 23:26:25

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

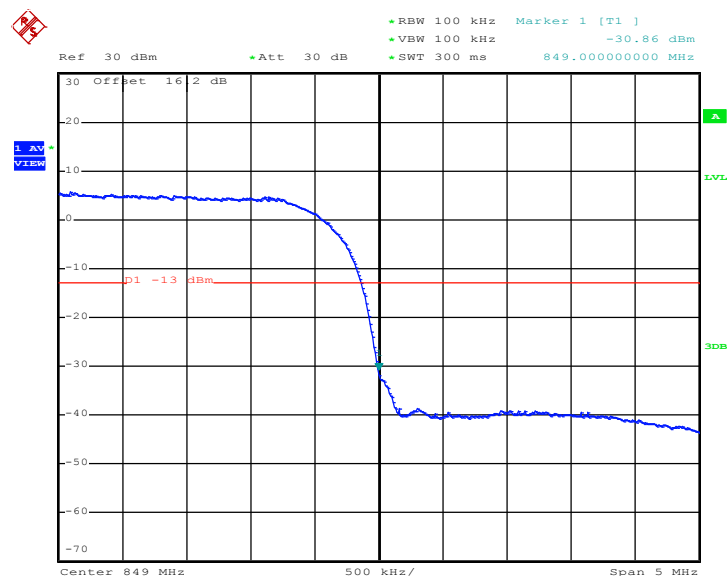
Band :	WCDMA Band V	Test Mode :	RMC 12.2Kbps Link (QPSK)
Correction Factor :	-3.30dB	Maximum 26dB Bandwidth :	4.680MHz
Band Edge :	-34.09dBm	Measurement Value :	-30.79dBm

Lower Band Edge Plot on Channel 4132 (826.4 MHz)


Date: 14.MAR.2013 00:07:15

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

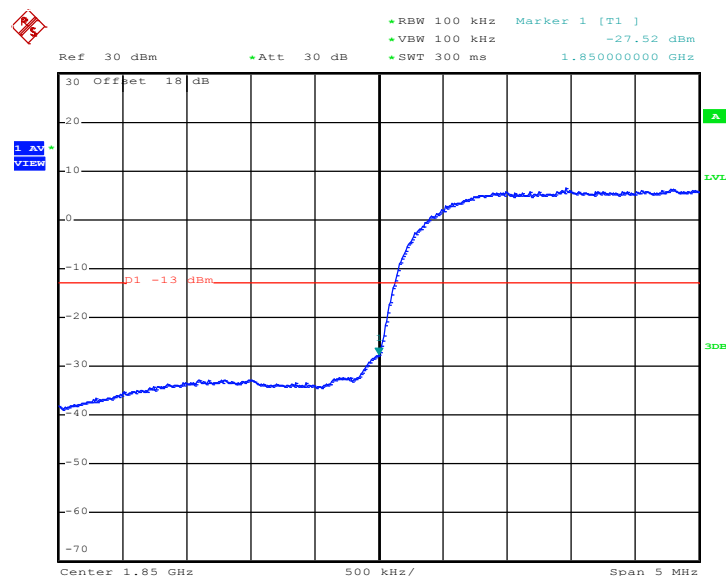
Band :	WCDMA Band V	Test Mode :	RMC 12.2Kbps Link (QPSK)
Correction Factor :	-3.30dB	Maximum 26dB Bandwidth :	4.680MHz
Band Edge :	-34.16dBm	Measurement Value :	-30.86dBm

Higher Band Edge Plot on Channel 4233 (846.6 MHz)


Date: 14.MAR.2013 00:07:41

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

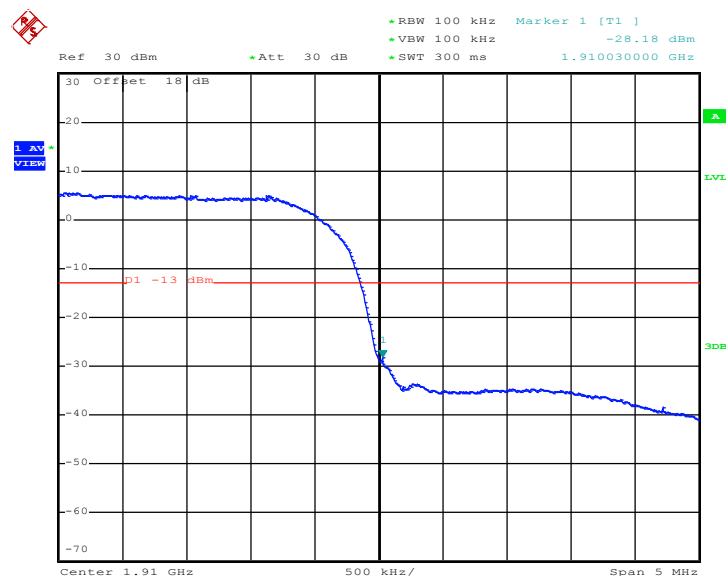
Band :	WCDMA Band II	Test Mode :	RMC 12.2Kbps Link (QPSK)
Correction Factor :	-3.30dB	Maximum 26dB Bandwidth :	4.680MHz
Band Edge :	-30.82dBm	Measurement Value :	-27.52dBm

Lower Band Edge Plot on Channel 9262 (1852.4 MHz)


Date: 14.MAR.2013 00:15:02

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 :	-3.30dB	Maximum 26dB Bandwidth :	1.440MHz
Band Edge :	-31.48dBm	Measurement Value :	-28.18dBm

Higher Band Edge Plot on Channel 9538 (1907.6 MHz)


Date: 14.MAR.2013 00:15:28

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

3.5 Conducted Spurious Emission Measurement

3.5.1 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.

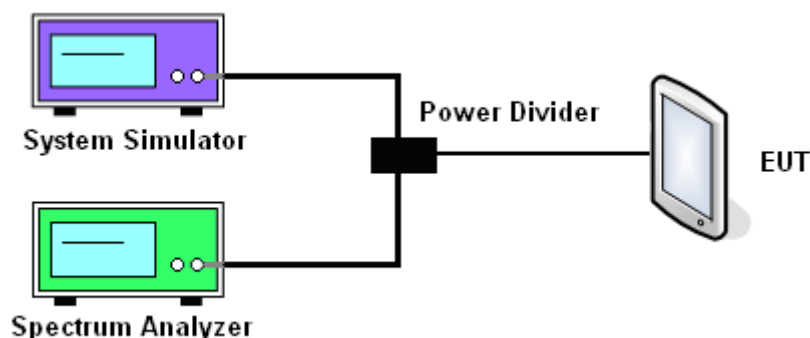
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

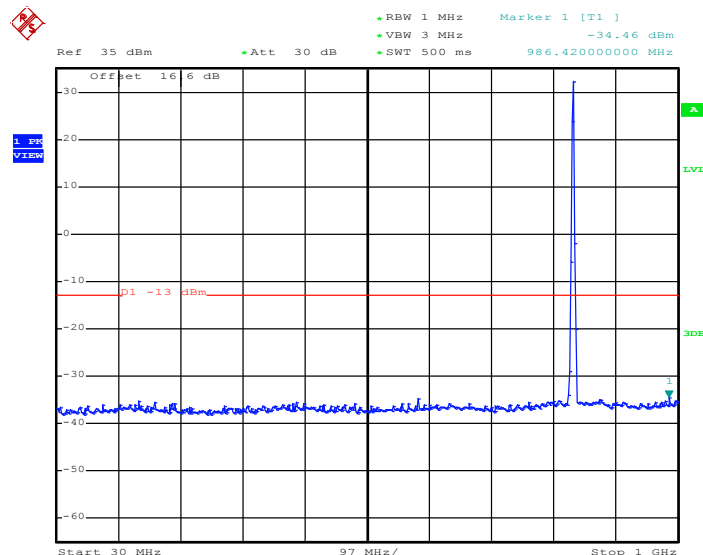
1. The EUT was connected to spectrum analyzer and base station via power divider.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. The middle channel for the highest RF power within the transmitting frequency was measured.
4. The conducted spurious emission for the whole frequency range was taken.
5. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
6. The limit line is derived from $43 + 10\log(P)$ dB below the transmitter power P(Watts)
 $= P(W) - [43 + 10\log(P)] \text{ (dB)}$
 $= [30 + 10\log(P)] \text{ (dBm)} - [43 + 10\log(P)] \text{ (dB)}$
 $= -13\text{dBm}.$

3.5.4 Test Setup

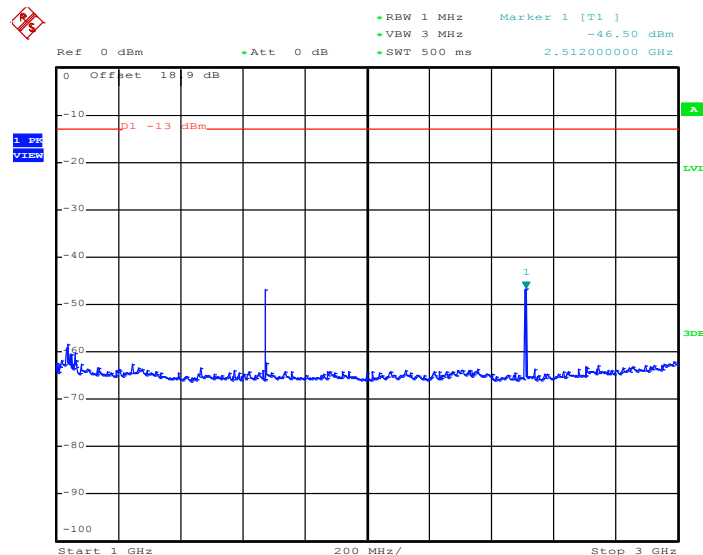


3.5.5 Test Result (Plots) of Conducted Spurious Emission

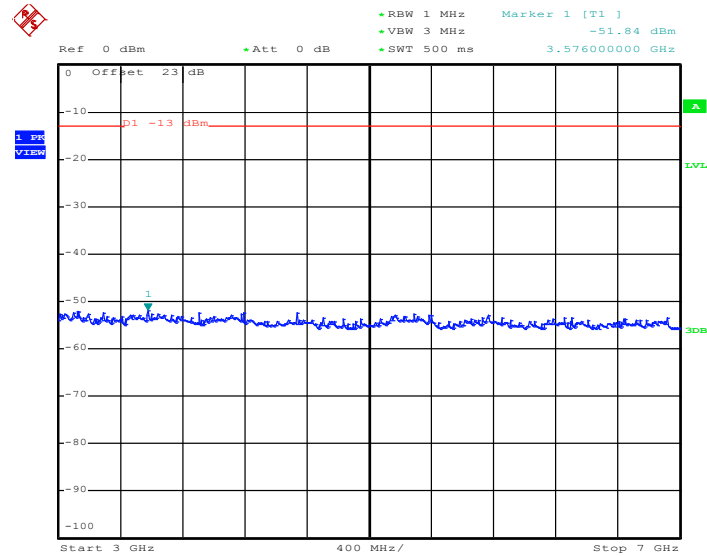
Band :	GSM850	Channel :	CH189
Test Mode :	GPRS class 8 Link (GMSK)	Frequency :	836.4 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz


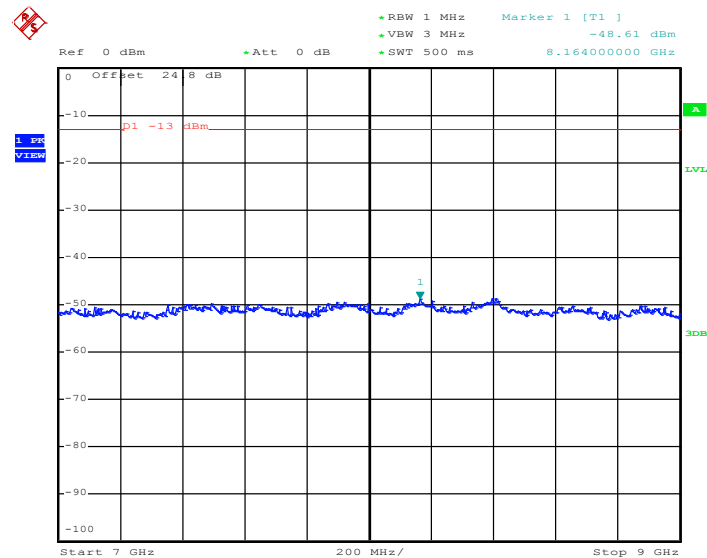
Date: 13.MAR.2013 22:44:44

Conducted Spurious Emission Plot between 1GHz ~ 3GHz


Date: 13.MAR.2013 22:44:58

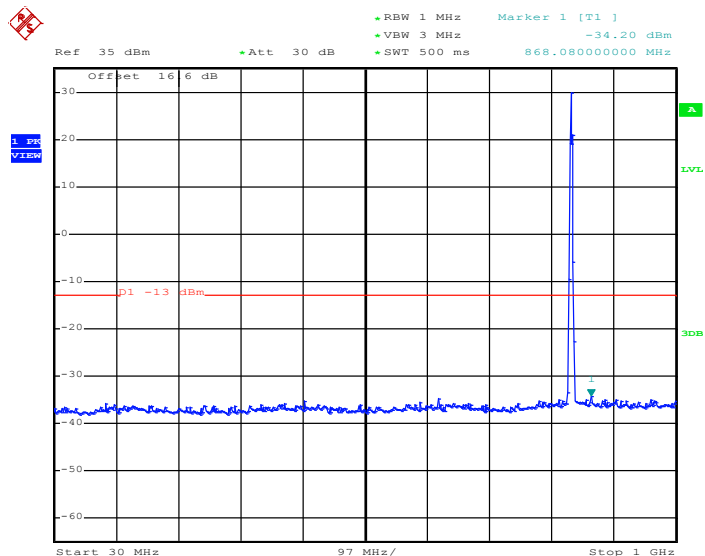
Conducted Spurious Emission Plot between 3GHz ~ 7GHz


Date: 13.MAR.2013 22:45:11

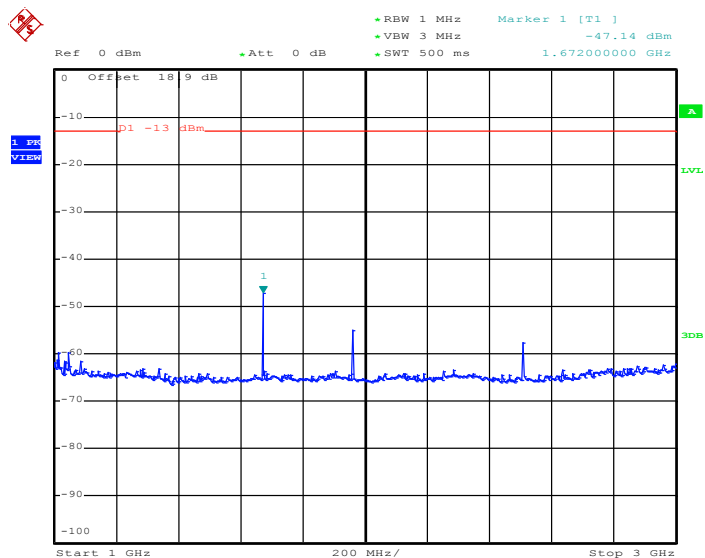
Conducted Spurious Emission Plot between 7GHz ~ 9GHz


Date: 13.MAR.2013 22:45:23

Band :	GSM850	Channel :	CH189
Test Mode :	EDGE class 8 Link (8PSK)	Frequency :	836.4 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz


Date: 13.MAR.2013 23:38:33

Conducted Spurious Emission Plot between 1GHz ~ 3GHz


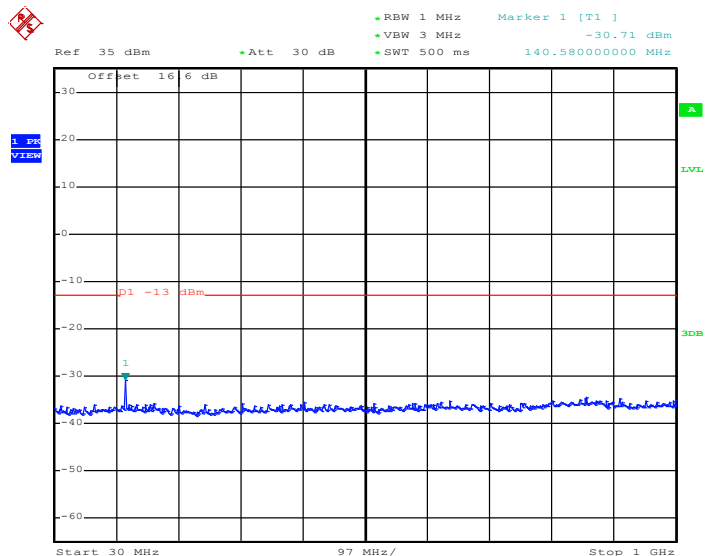
Date: 13.MAR.2013 23:38:48



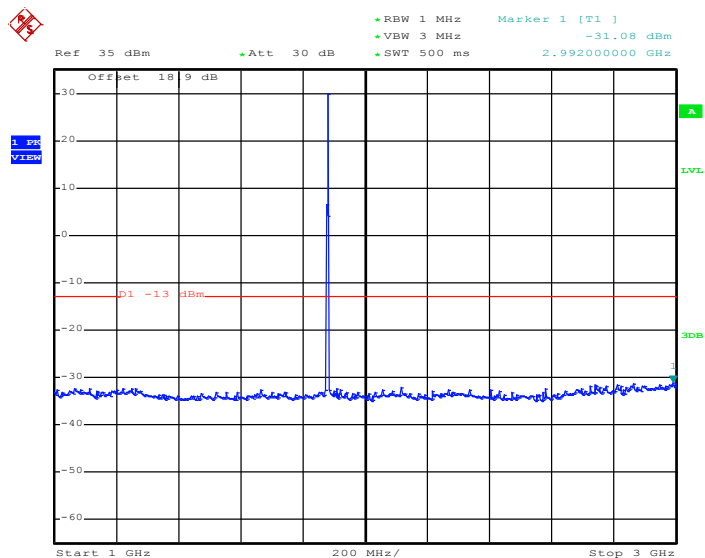
Conducted Spurious Emission Plot between 7GHz ~ 9GHz



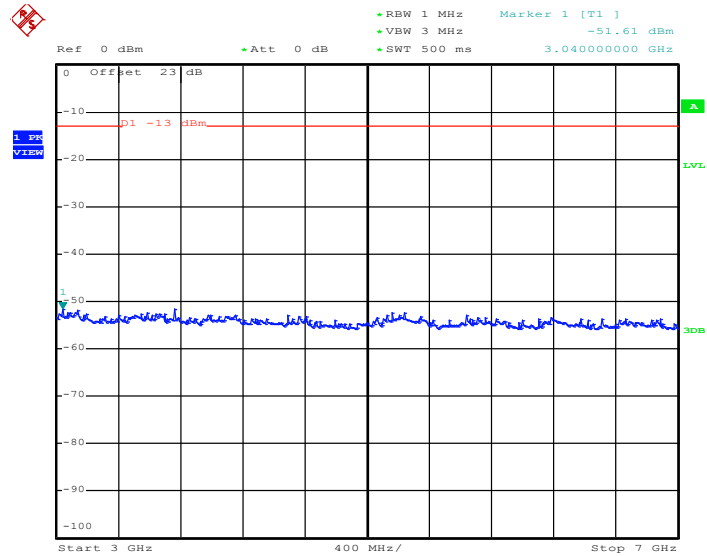
Band :	GSM1900	Channel :	CH661
Test Mode :	GPRS class 8 Link (GMSK)	Frequency :	1880.0 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz


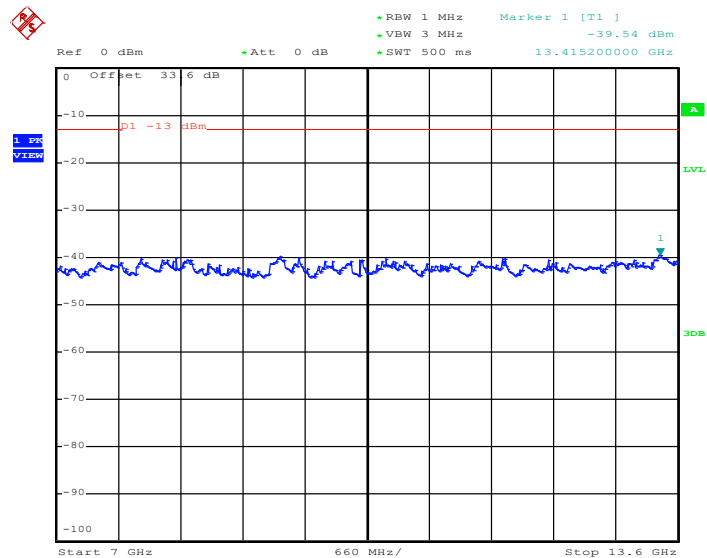
Date: 13.MAR.2013 23:10:25

Conducted Spurious Emission Plot between 1GHz ~ 3GHz


Date: 13.MAR.2013 23:10:38

Conducted Spurious Emission Plot between 3GHz ~ 7GHz


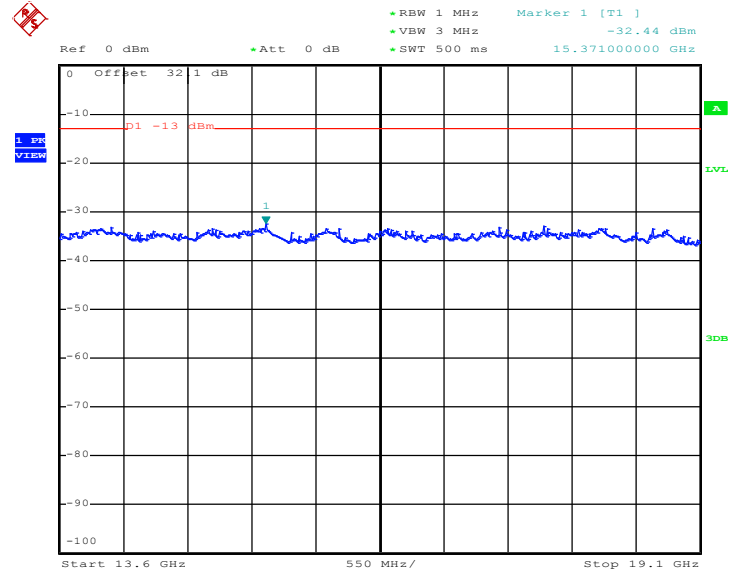
Date: 13.MAR.2013 23:10:55

Conducted Emission Plot between 7GHz ~ 13.6GHz


Date: 13.MAR.2013 23:11:07

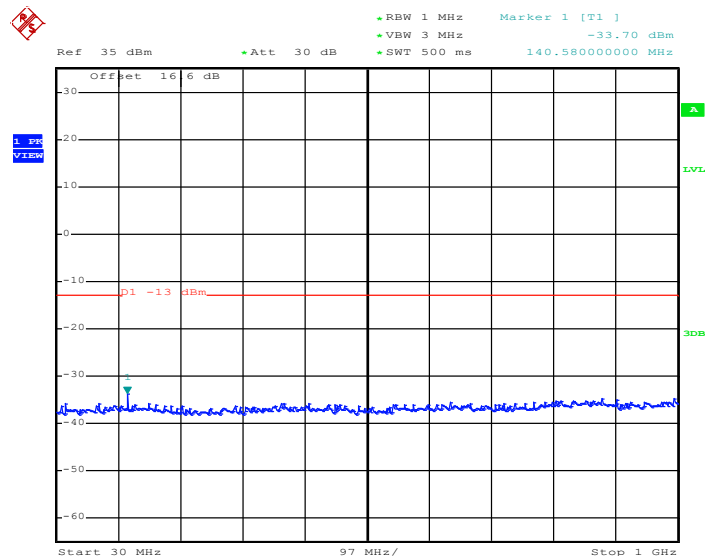


Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz

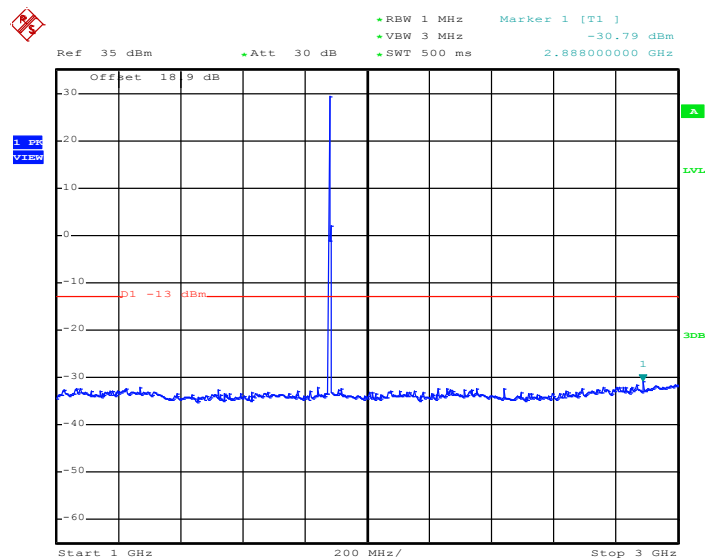


Date: 13.MAR.2013 23:11:20

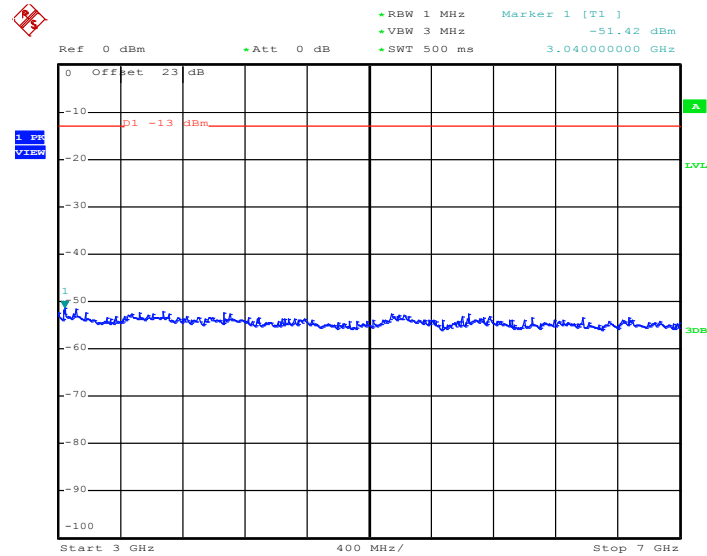
Band :	GSM1900	Channel :	CH661
Test Mode :	EDGE class 8 Link (8PSK)	Frequency :	1880.0 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz


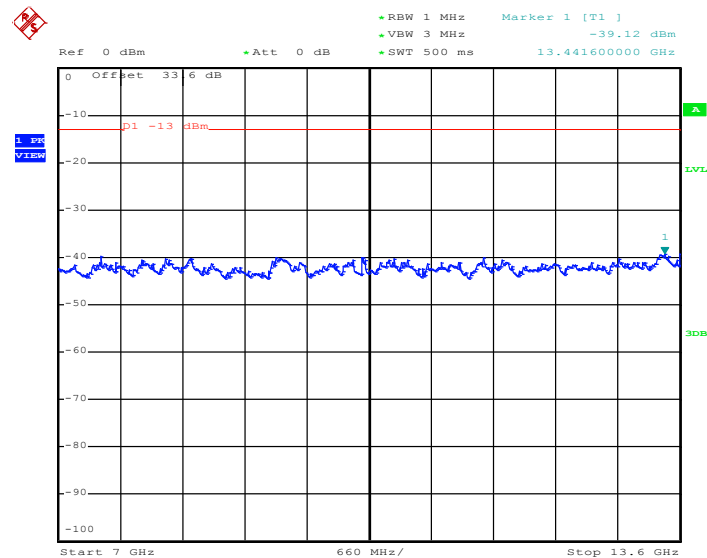
Date: 13.MAR.2013 23:23:05

Conducted Spurious Emission Plot between 1GHz ~ 3GHz


Date: 13.MAR.2013 23:23:18

Conducted Spurious Emission Plot between 3GHz ~ 7GHz


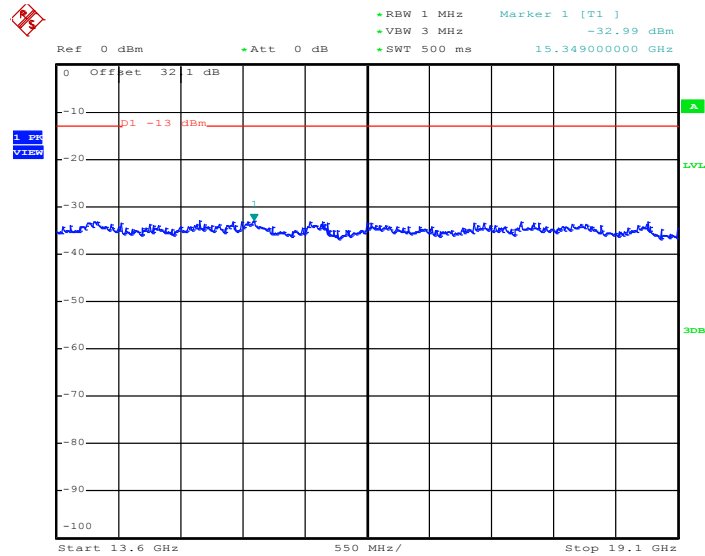
Date: 13.MAR.2013 23:23:33

Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz


Date: 13.MAR.2013 23:23:45

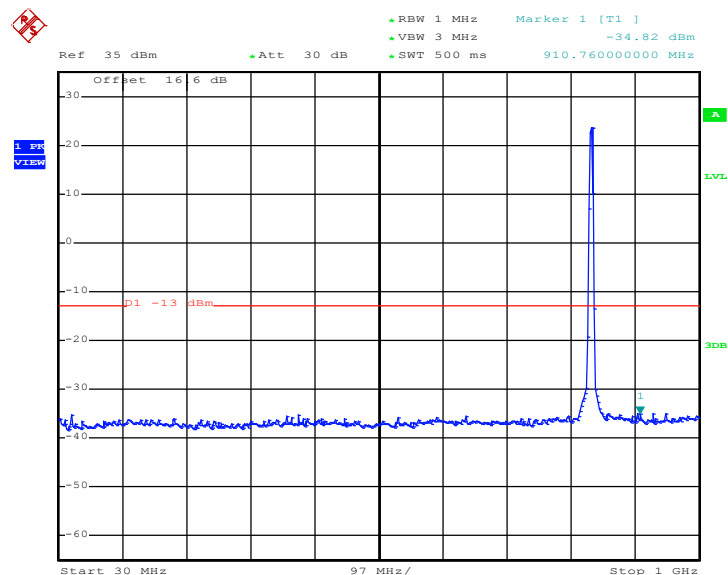


Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz

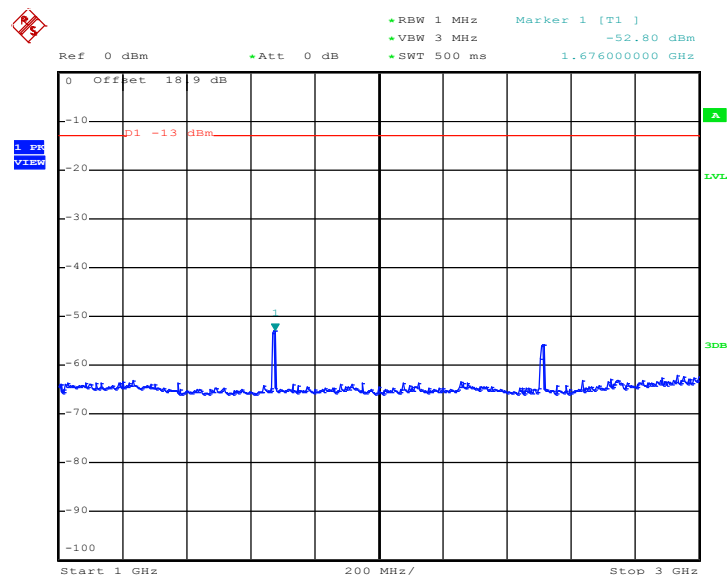


Date: 13.MAR.2013 23:23:58

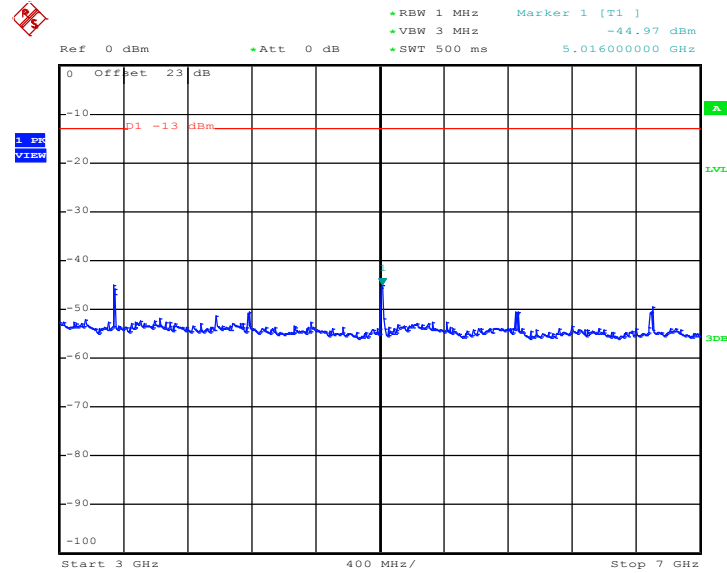
Band :	WCDMA Band V	Channel :	CH4182
Test Mode :	RMC 12.2Kbps Link (QPSK)	Frequency :	836.4 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz


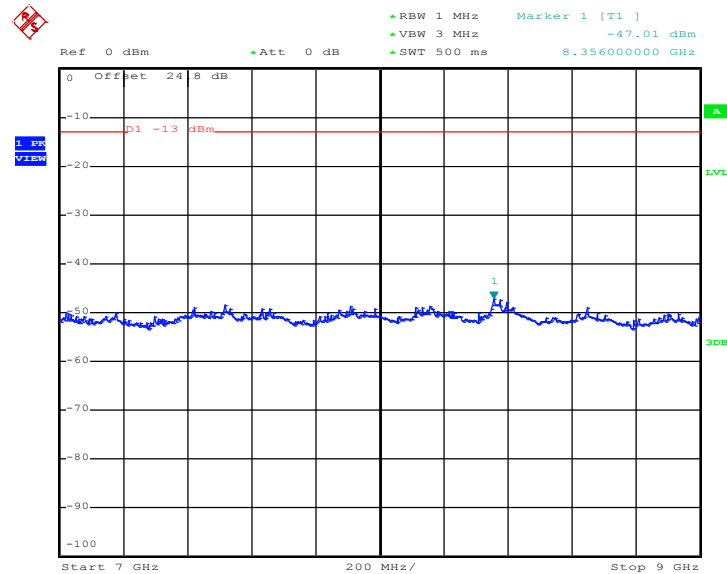
Date: 14.MAR.2013 00:03:12

Conducted Spurious Emission Plot between 1GHz ~ 3GHz


Date: 14.MAR.2013 00:03:29

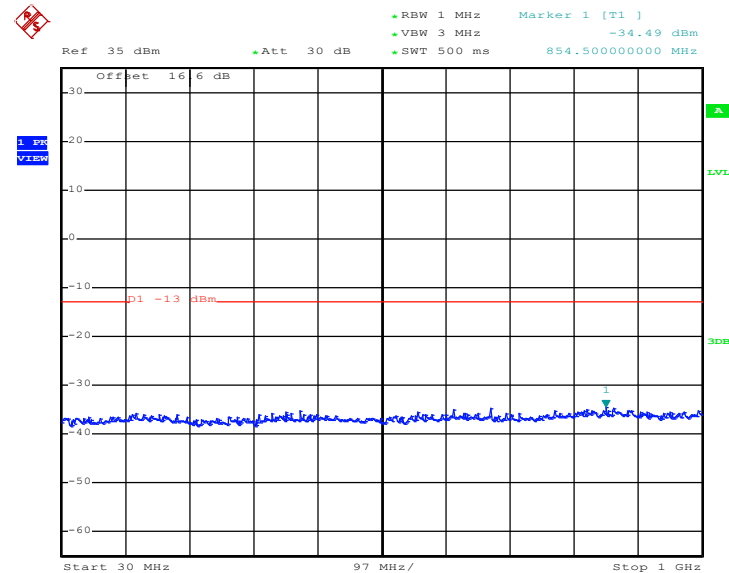
Conducted Spurious Emission Plot between 3GHz ~ 7GHz


Date: 14.MAR.2013 00:03:41

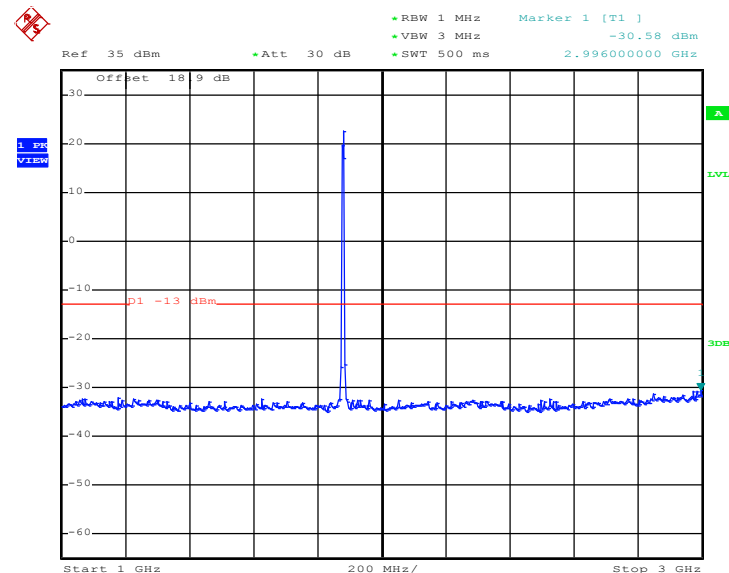
Conducted Spurious Emission Plot between 7GHz ~ 9GHz


Date: 14.MAR.2013 00:03:54

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

Conducted Spurious Emission Plot between 30MHz ~ 1GHz


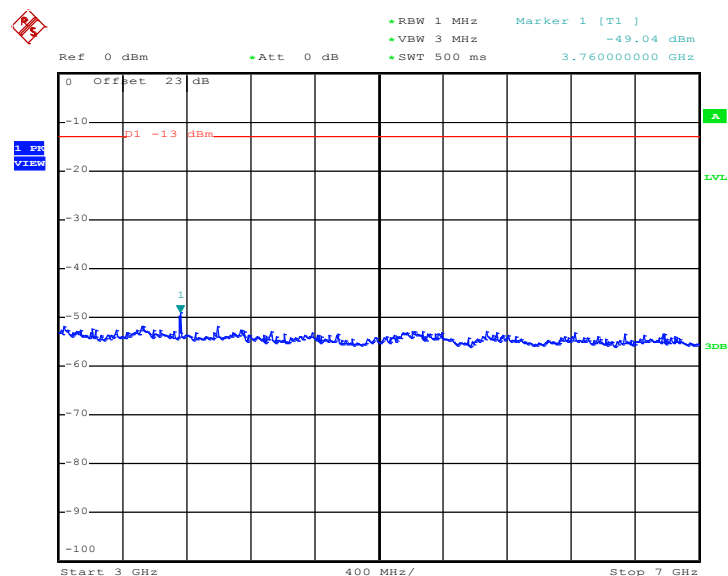
Date: 14.MAR.2013 00:10:48

Conducted Spurious Emission Plot between 1GHz ~ 3GHz


Date: 14.MAR.2013 00:11:01

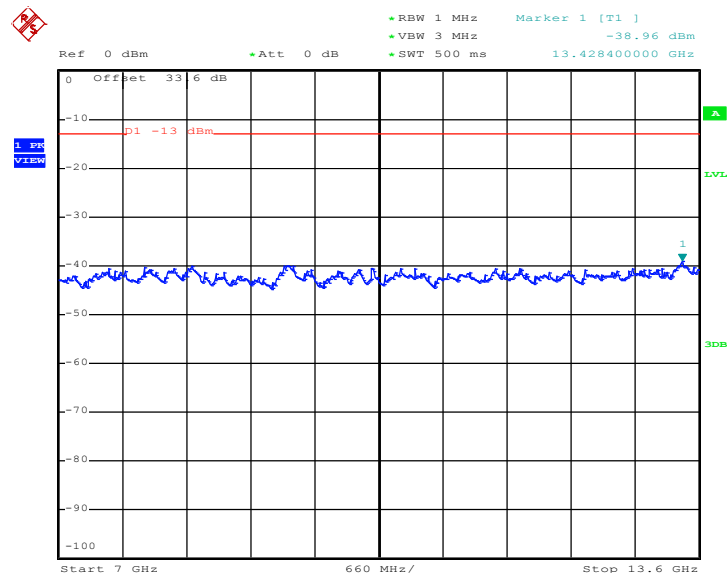


Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 14.MAR.2013 00:11:16

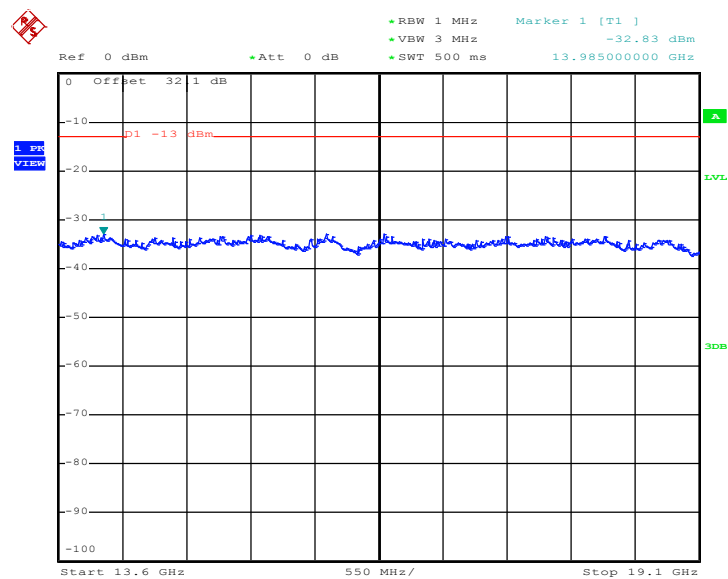
Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz



Date: 14.MAR.2013 00:11:29



Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz



Date: 14.MAR.2013 00:11:41

3.6 Field Strength of Spurious Radiation Measurement

3.6.1 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.

3.6.2 Measuring Instruments

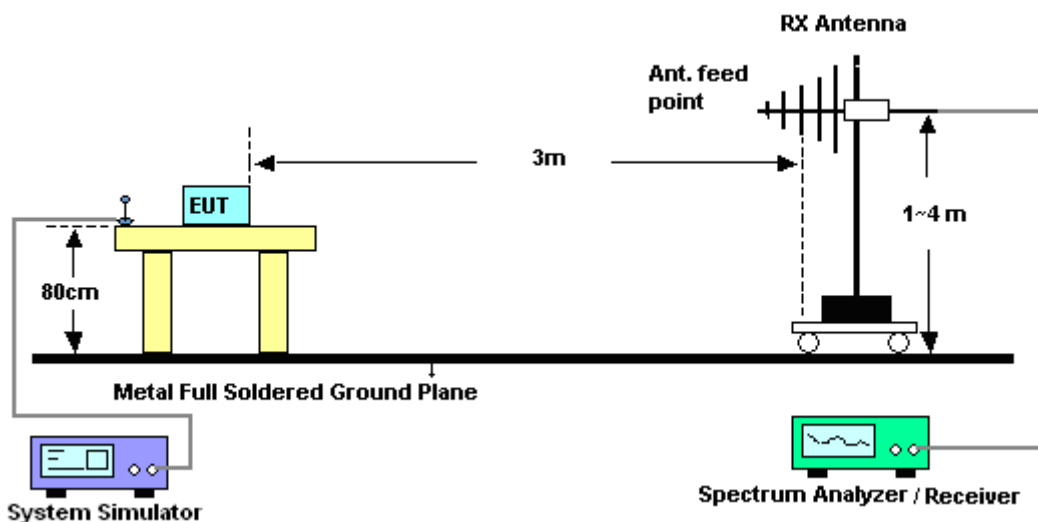
See list of measuring instruments of this test report.

3.6.3 Test Procedures

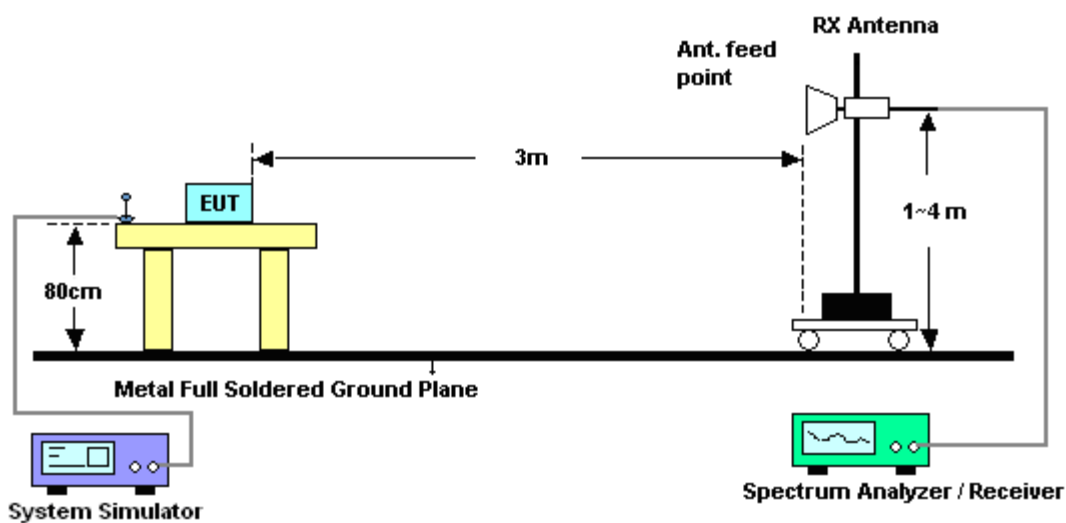
1. The EUT was placed on a rotatable wooden table with 0.8 meter above ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving 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. $ERP \text{ (dBm)} = EIRP - 2.15$
12. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
13. The limit line is derived from $43 + 10\log(P)$ dB below the transmitter power P(Watts)
 $= P(W) - [43 + 10\log(P)] \text{ (dB)}$
 $= [30 + 10\log(P)] \text{ (dBm)} - [43 + 10\log(P)] \text{ (dB)}$
 $= -13\text{dBm}.$

3.6.4 Test Setup

For radiated emissions from 30MHz to 1GHz

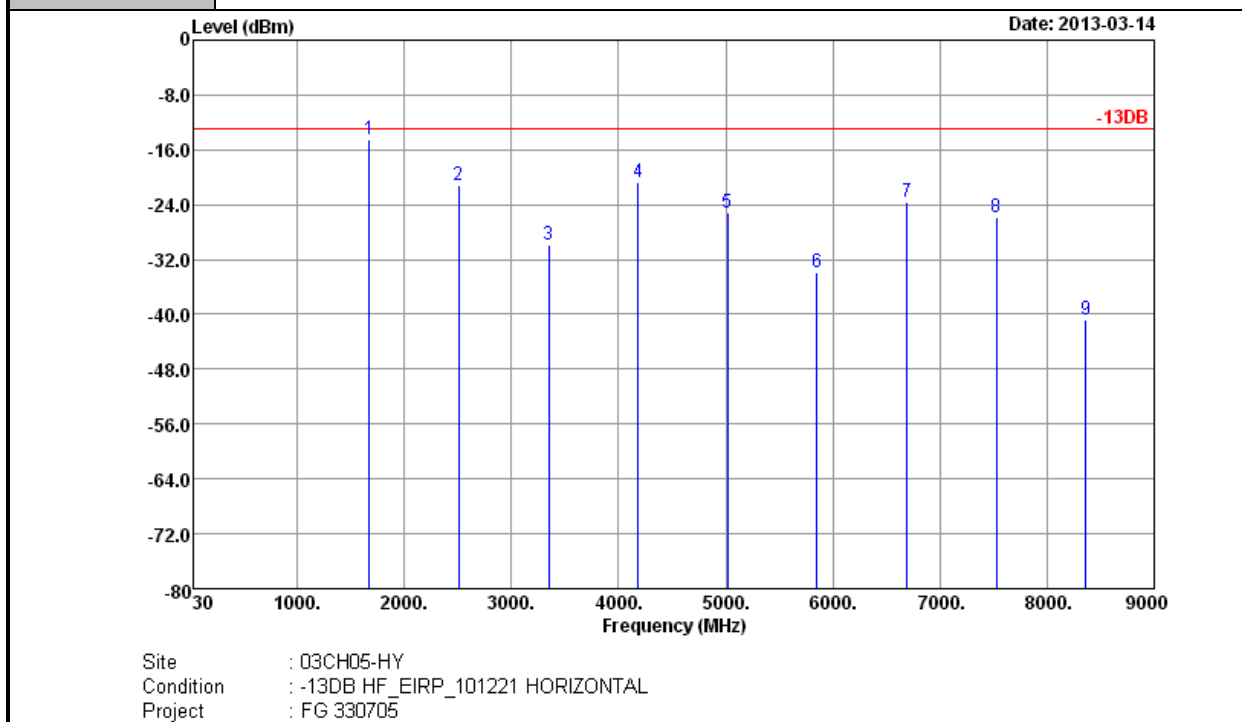


For radiated emissions above 1GHz



3.6.5 Test Result of Field Strength of Spurious Radiated

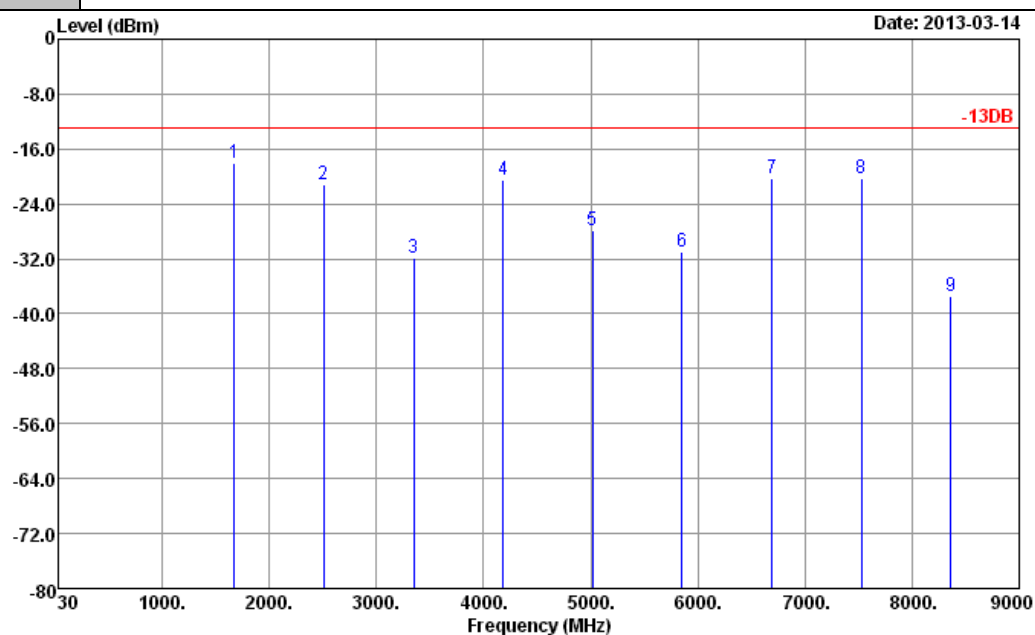
Band :	GSM850	Temperature :	23~25°C
Test Mode :	GPRS class 8 Link (GMSK)	Relative Humidity :	52~54%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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	-14.57	-13	-1.57	-20.44	-16.33	1.35	5.25	H	Pass
2509	-21.08	-13	-8.08	-30.61	-23.46	1.58	6.11	H	Pass
3346	-29.97	-13	-16.97	-42.18	-33.82	1.94	7.94	H	Pass
4180	-20.69	-13	-7.69	-36.69	-25.73	1.96	9.15	H	Pass
5015	-25.24	-13	-12.24	-43.47	-31.42	2.08	10.41	H	Pass
5855	-33.78	-13	-20.78	-53.5	-40.19	2.17	10.73	H	Pass
6690	-23.58	-13	-10.58	-45.43	-30.27	2.33	11.17	H	Pass
7530	-25.75	-13	-12.75	-48.61	-33.14	2.68	12.22	H	Pass
8365	-40.69	-13	-27.69	-63.73	-48.77	2.67	12.89	H	Pass



Band :	GSM850	Temperature :	23~25°C
Test Mode :	GPRS class 8 Link (GMSK)	Relative Humidity :	52~54%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

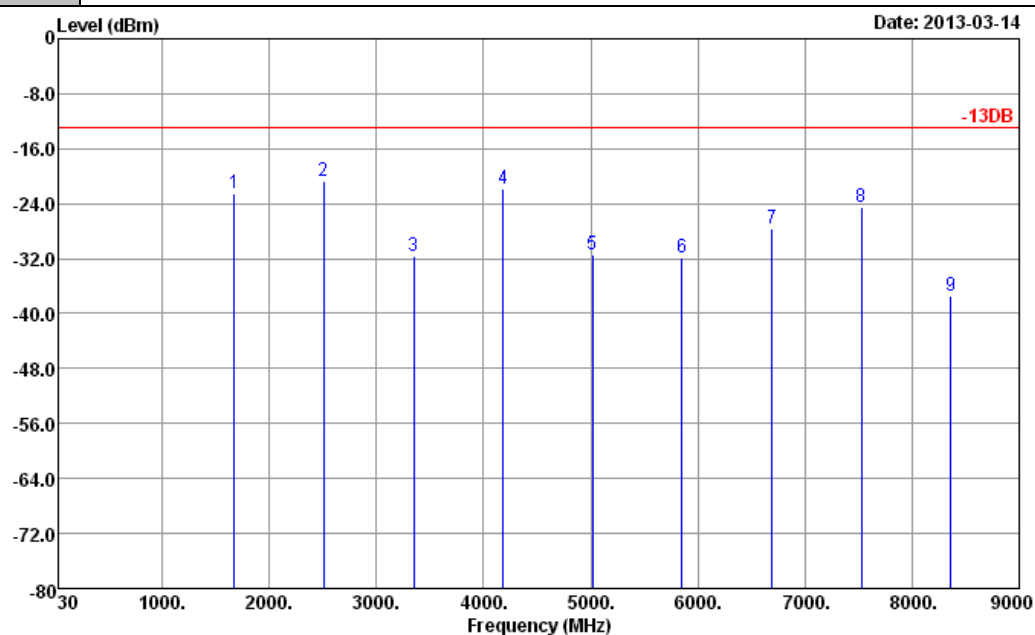


Site : 03CH05-HY
Condition : -13DB HF_EIRP_101221 VERTICAL
Project : FG 330705

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	-17.98	-13	-4.98	-24.83	-19.74	1.35	5.25	V	Pass
2509	-21.15	-13	-8.15	-30.42	-23.53	1.58	6.11	V	Pass
3346	-31.79	-13	-18.79	-44.44	-35.64	1.94	7.94	V	Pass
4180	-20.52	-13	-7.52	-36.8	-25.56	1.96	9.15	V	Pass
5015	-27.94	-13	-14.94	-46.03	-34.12	2.08	10.41	V	Pass
5855	-30.88	-13	-17.88	-50.94	-37.29	2.17	10.73	V	Pass
6690	-20.28	-13	-7.28	-43.09	-26.97	2.33	11.17	V	Pass
7530	-20.35	-13	-7.35	-42.89	-27.74	2.68	12.22	V	Pass
8365	-37.54	-13	-24.54	-62.11	-45.62	2.67	12.89	V	Pass



Band :	GSM850	Temperature :	23~25°C
Test Mode :	EDGE class 8 Link (8PSK)	Relative Humidity :	52~54%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

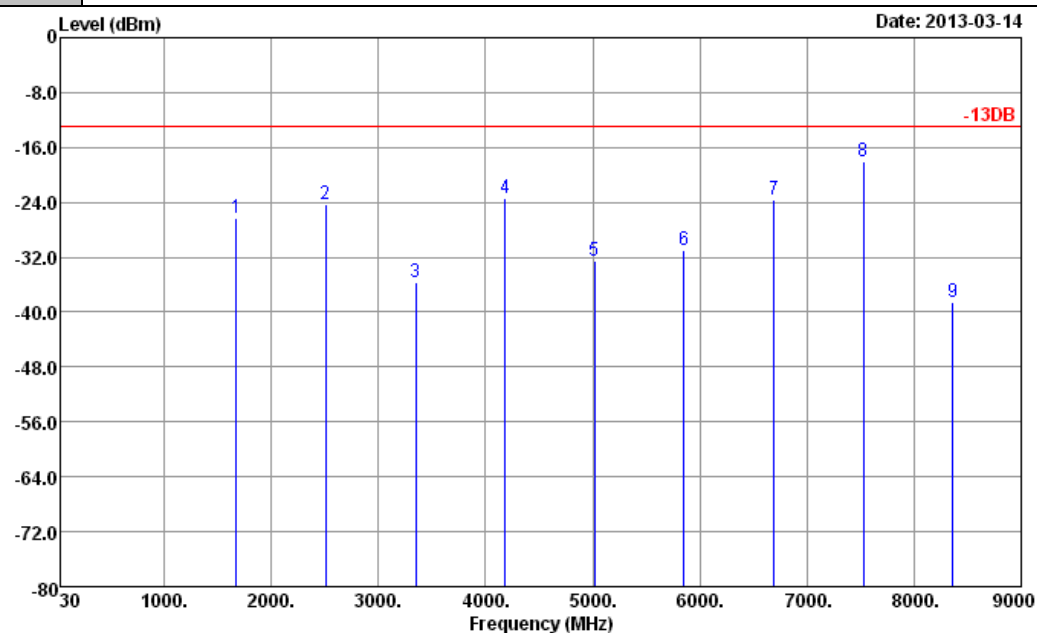


Site : 03CH05-HY
 Condition : -13DB HF_EIRP_101221 HORIZONTAL
 Project : FG 330705

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	-22.60	-13	-9.60	-29.61	-24.36	1.35	5.25	H	Pass
2509	-20.75	-13	-7.75	-30.23	-23.13	1.58	6.11	H	Pass
3346	-31.60	-13	-18.60	-44.15	-35.45	1.94	7.94	H	Pass
4180	-21.81	-13	-8.81	-37.98	-26.85	1.96	9.15	H	Pass
5015	-31.33	-13	-18.33	-49.22	-37.51	2.08	10.41	H	Pass
5855	-31.81	-13	-18.81	-51.62	-38.22	2.17	10.73	H	Pass
6690	-27.70	-13	-14.70	-50.02	-34.39	2.33	11.17	H	Pass
7530	-24.46	-13	-11.46	-47.36	-31.85	2.68	12.22	H	Pass
8365	-37.40	-13	-24.40	-61.5	-45.48	2.67	12.89	H	Pass



Band :	GSM850	Temperature :	23~25°C
Test Mode :	EDGE class 8 Link (8PSK)	Relative Humidity :	52~54%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

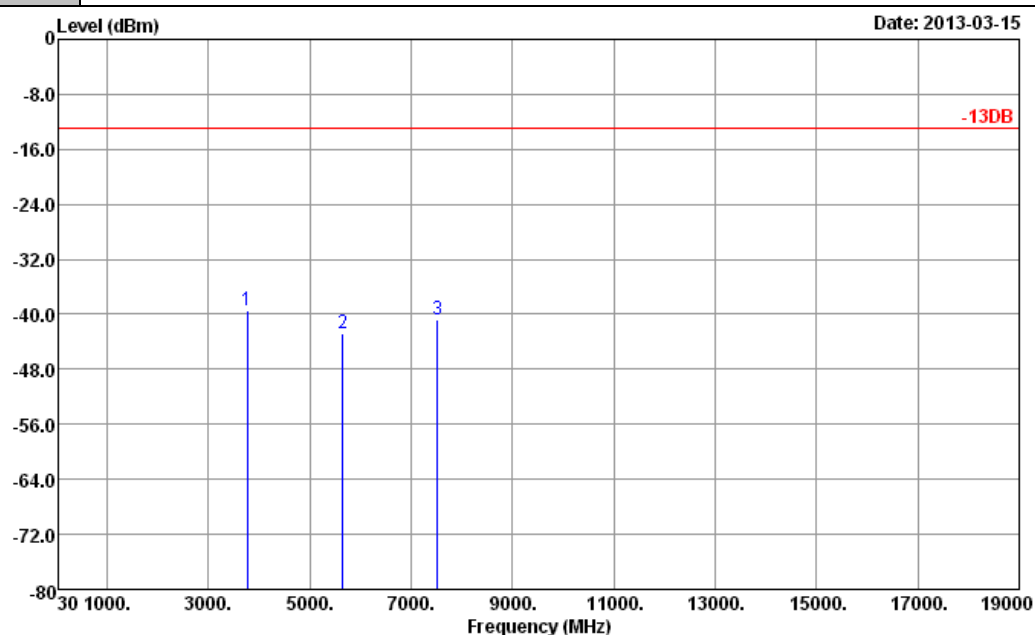


Site : 03CH05-HY
Condition : -13DB HF_EIRP_101221 VERTICAL
Project : FG 330705

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	-26.38	-13	-13.38	-33.13	-28.14	1.35	5.25	V	Pass
2509	-24.21	-13	-11.21	-34.41	-26.59	1.58	6.11	V	Pass
3346	-35.70	-13	-22.70	-47.81	-39.55	1.94	7.94	V	Pass
4180	-23.30	-13	-10.30	-39.46	-28.34	1.96	9.15	V	Pass
5015	-32.53	-13	-19.53	-50.25	-38.71	2.08	10.41	V	Pass
5855	-30.88	-13	-17.88	-50.33	-37.29	2.17	10.73	V	Pass
6690	-23.53	-13	-10.53	-45.51	-30.22	2.33	11.17	V	Pass
7530	-18.07	-13	-5.07	-41.18	-25.46	2.68	12.22	V	Pass
8365	-38.54	-13	-25.54	-62.76	-46.62	2.67	12.89	V	Pass



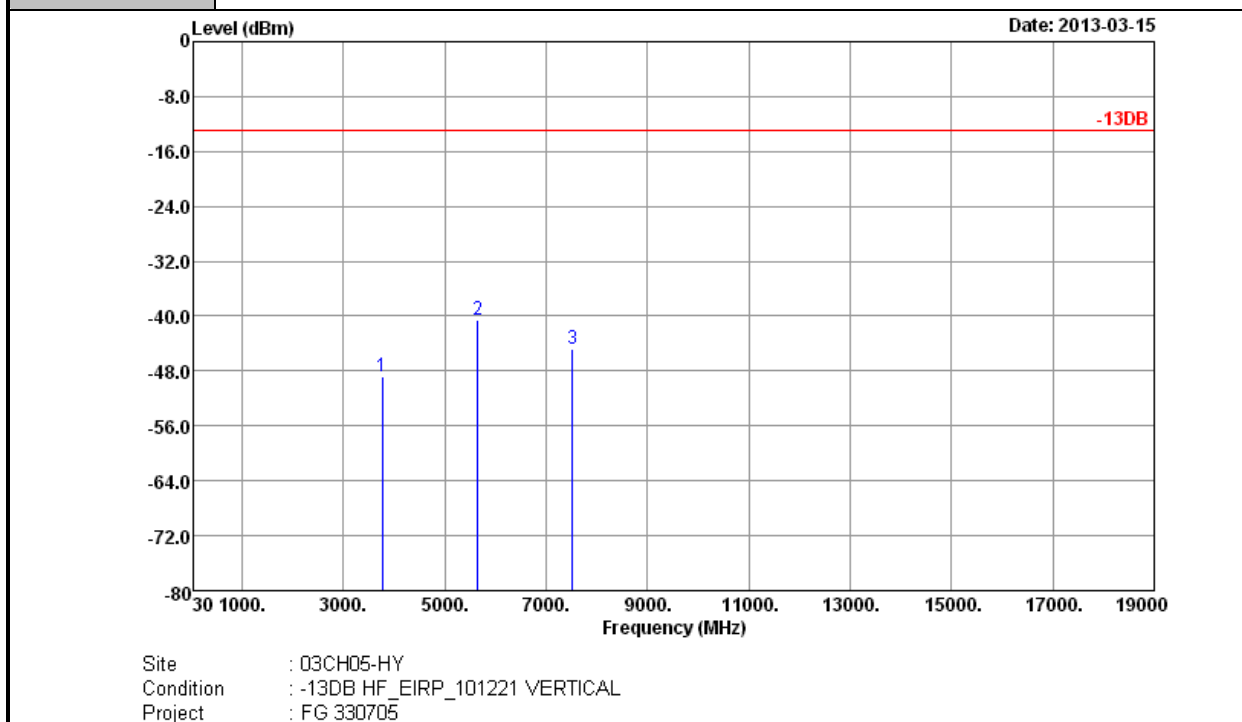
Band :	GSM1900	Temperature :	23~25°C
Test Mode :	GPRS class 8 Link (GMSK)	Relative Humidity :	52~54%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Site : 03CH05-HY
Condition : -13DB HF_EIRP_101221 HORIZONTAL
Project : FG 330705

Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
3760	-39.45	-13	-26.45	-53.68	-46.16	2.00	8.71	H	Pass
5640	-42.68	-13	-29.68	-62.75	-51.32	2.13	10.77	H	Pass
7520	-40.83	-13	-27.83	-63.87	-50.37	2.68	12.22	H	Pass

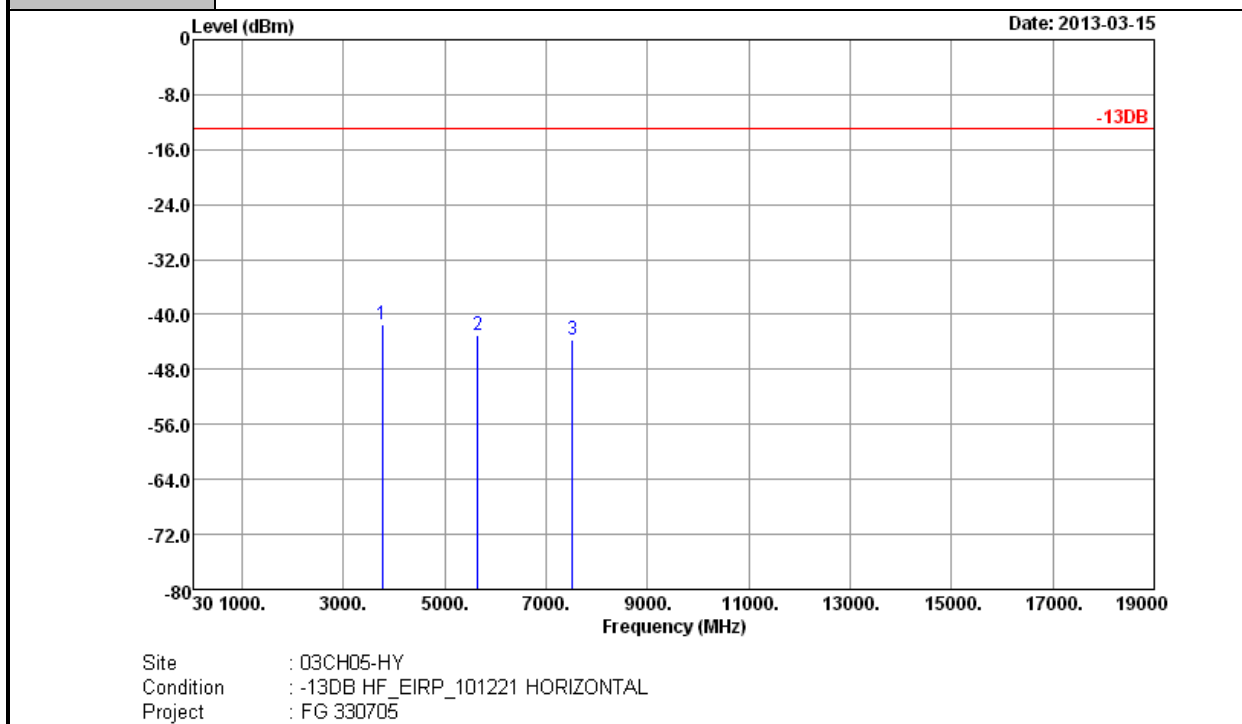
Band :	GSM1900	Temperature :	23~25°C
Test Mode :	GPRS class 8 Link (GMSK)	Relative Humidity :	52~54%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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	-48.77	-13	-35.77	-62.6	-55.48	2.00	8.71	V	Pass
5640	-40.58	-13	-27.58	-60.56	-49.22	2.13	10.77	V	Pass
7520	-44.85	-13	-31.85	-67.25	-54.39	2.68	12.22	V	Pass

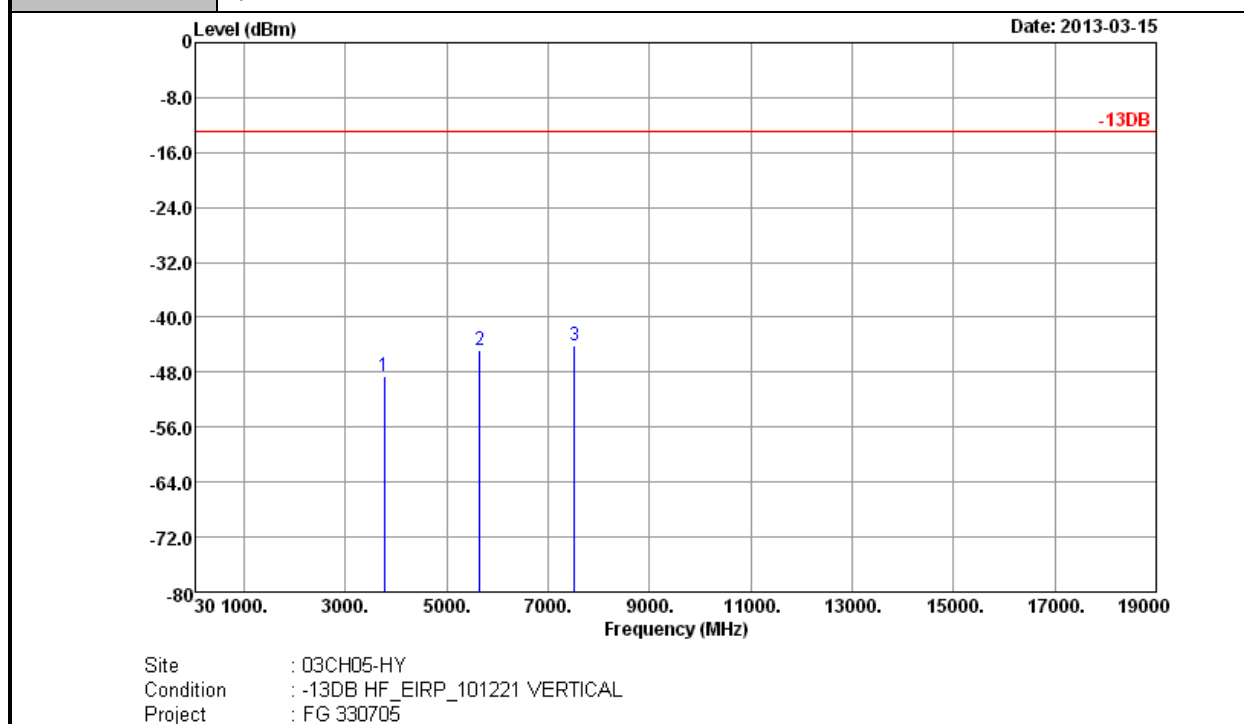


Band :	GSM1900	Temperature :	23~25°C
Test Mode :	EDGE class 8 Link (8PSK)	Relative Humidity :	52~54%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



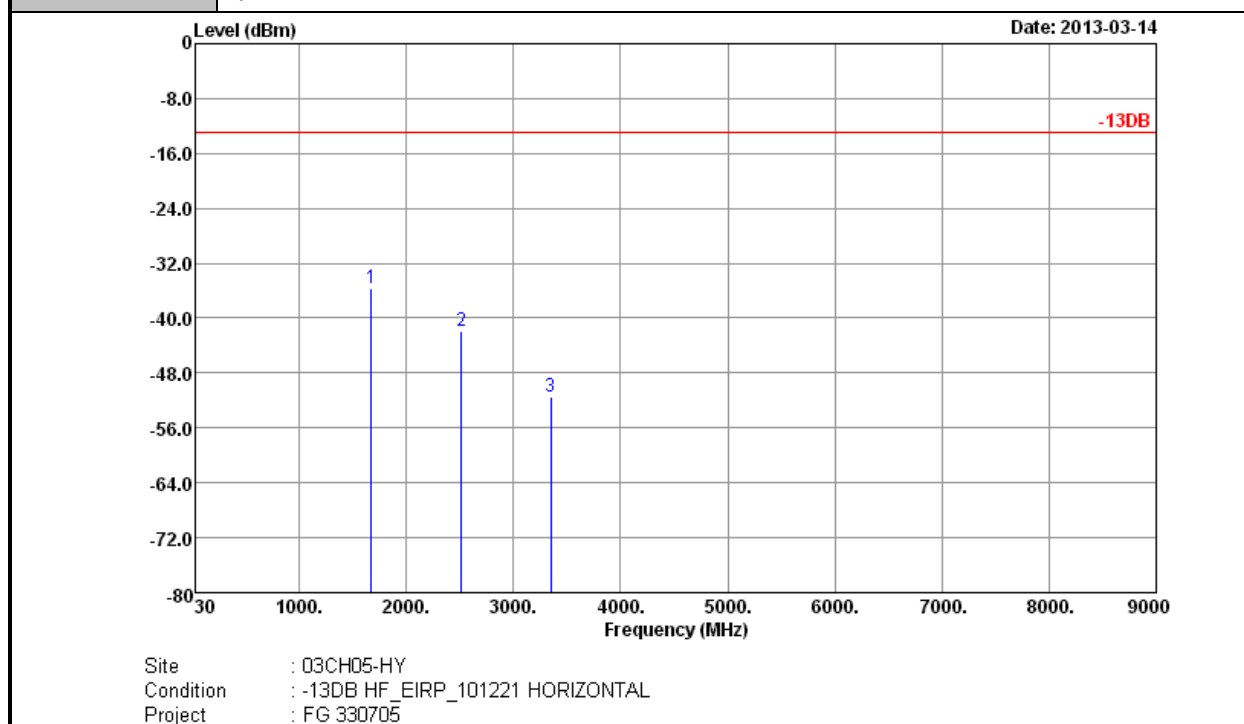
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
3760	-41.54	-13	-28.54	-56.12	-48.25	2.00	8.71	H	Pass
5640	-43.07	-13	-30.07	-63.46	-51.71	2.13	10.77	H	Pass
7520	-43.64	-13	-30.64	-66.09	-53.18	2.68	12.22	H	Pass

Band :	GSM1900	Temperature :	23~25°C
Test Mode :	EDGE class 8 Link (8PSK)	Relative Humidity :	52~54%
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	-48.55	-13	-35.55	-62.4	-55.26	2.00	8.71	V	Pass
5640	-44.74	-13	-31.74	-64.06	-53.38	2.13	10.77	V	Pass
7520	-44.20	-13	-31.20	-66.95	-53.74	2.68	12.22	V	Pass

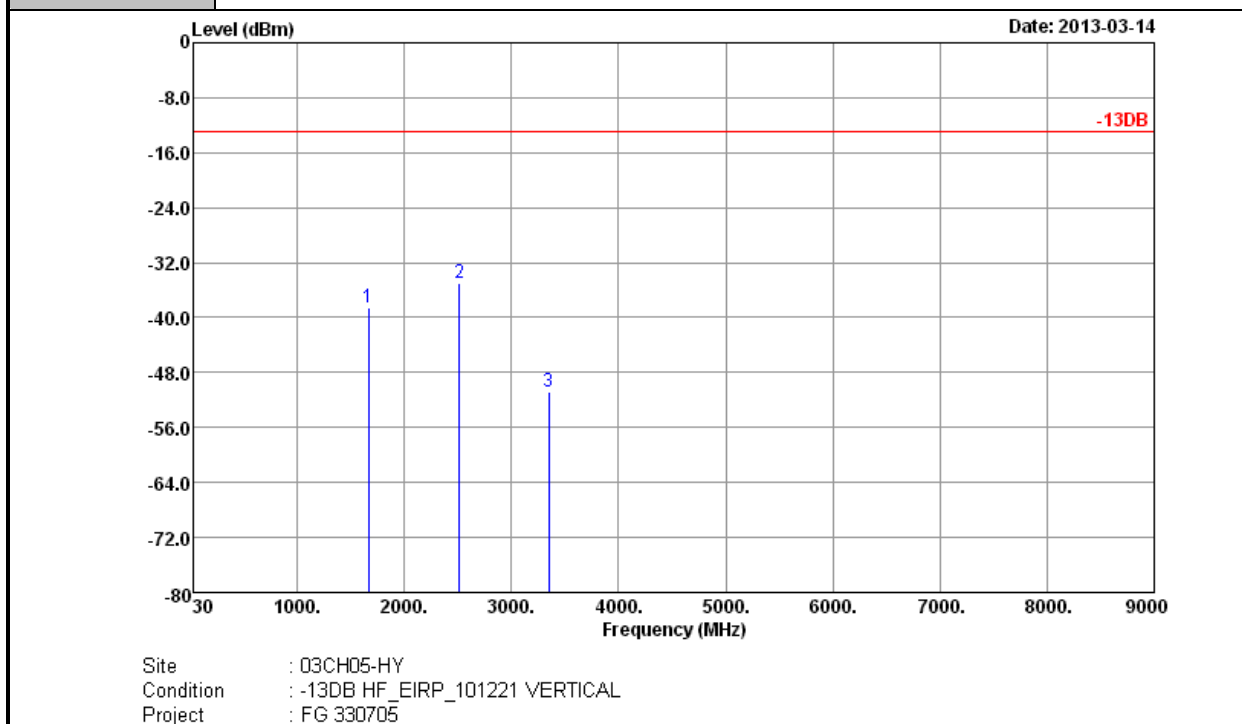
Band :	WCDMA Band V	Temperature :	23~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	Relative Humidity :	52~54%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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
1675	-35.60	-13	-22.60	-42.76	-37.36	1.35	5.25	H	Pass
2512	-41.86	-13	-28.86	-51.6	-44.24	1.58	6.11	H	Pass
3346	-51.54	-13	-38.54	-64.13	-55.39	1.94	7.94	H	Pass

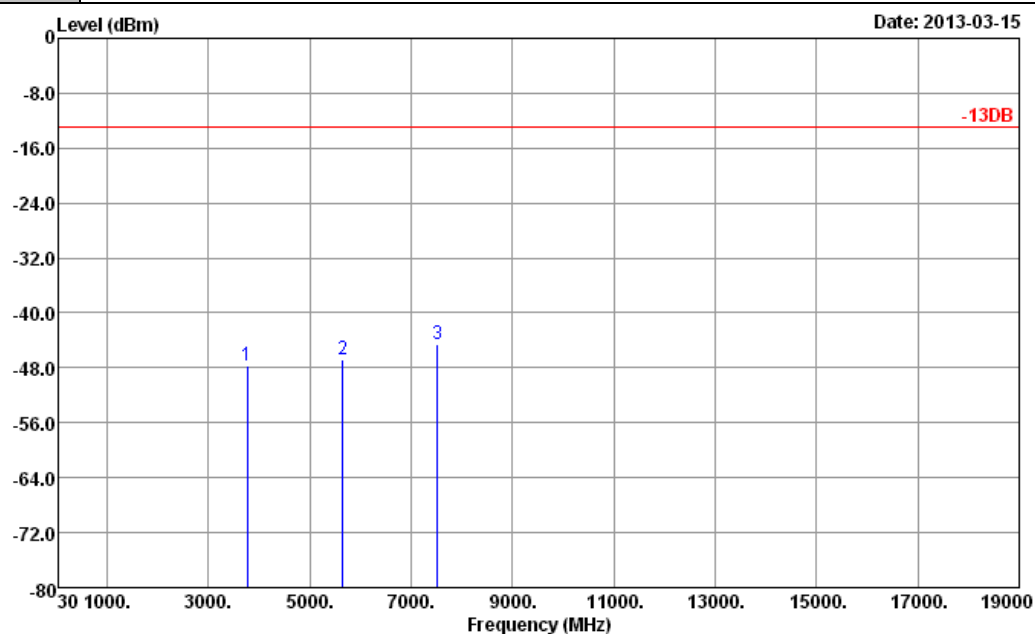


Band :	WCDMA Band V	Temperature :	23~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	Relative Humidity :	52~54%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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
1669	-38.53	-13	-25.53	-45.24	-40.29	1.35	5.25	V	Pass
2512	-35.04	-13	-22.04	-45.53	-37.42	1.58	6.11	V	Pass
3352	-50.91	-13	-37.91	-63.11	-54.76	1.94	7.94	V	Pass

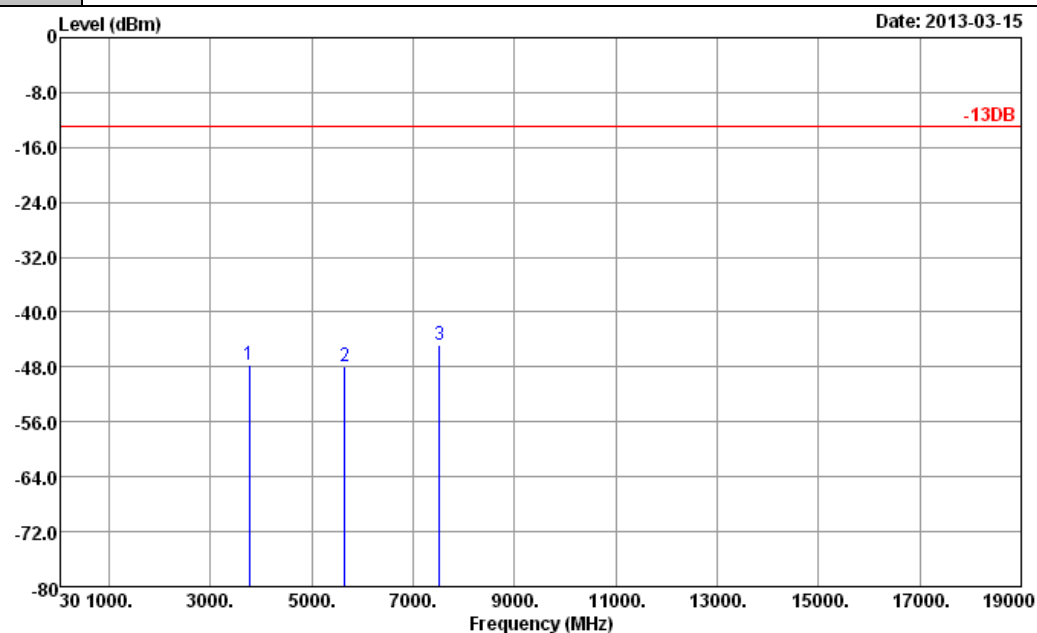
Band :	WCDMA Band II	Temperature :	23~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	Relative Humidity :	52~54%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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	-47.65	-13	-34.65	-62.22	-54.36	2.00	8.71	H	Pass
5640	-46.85	-13	-33.85	-66.37	-55.49	2.13	10.77	H	Pass
7520	-44.63	-13	-31.63	-67.31	-54.17	2.68	12.22	H	Pass



Band :	WCDMA Band II	Temperature :	23~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	Relative Humidity :	52~54%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Site : 03CH05-HY
Condition : -13DB HF_EIRP_101221 VERTICAL
Project : FG 330705

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	-47.60	-13	-34.60	-61.96	-54.31	2.00	8.71	V	Pass
5640	-47.85	-13	-34.85	-67.11	-56.49	2.13	10.77	V	Pass
7520	-44.73	-13	-31.73	-67.11	-54.27	2.68	12.22	V	Pass

3.7 Frequency Stability Measurement

3.7.1 Description of Frequency Stability Measurement

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

3.7.2 Measuring Instruments

See list of measuring instruments of this test report.

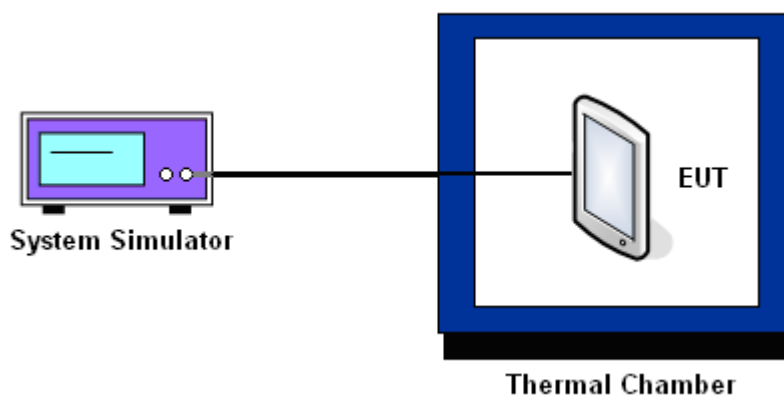
3.7.3 Test Procedures for Temperature Variation

1. The EUT was set up in the thermal chamber and connected with the base station.
2. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized 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.

3.7.4 Test Procedures for Voltage Variation

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

3.7.5 Test Setup



3.7.6 Test Result of Temperature Variation

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

Temperature (°C)	GPRS class 8		EDGE class 8		Result
	Freq. Dev. (Hz)	Deviation (ppm)	Freq. Dev. (Hz)	Deviation (ppm)	
-30	15	0.02	-12	-0.01	PASS
-20	16	0.02	10	0.01	
-10	14	0.02	14	0.02	
0	15	0.02	12	0.01	
10	16	0.02	13	0.02	
20	18	0.02	14	0.02	
30	18	0.02	12	0.01	
40	19	0.02	16	0.02	
50	21	0.02	14	0.02	

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

Temperature (°C)	GPRS class 8		EDGE class 8		Result
	Freq. Dev. (Hz)	Deviation (ppm)	Freq. Dev. (Hz)	Deviation (ppm)	
-30	44	0.02	49	0.03	PASS
-20	43	0.02	50	0.03	
-10	49	0.03	49	0.03	
0	56	0.03	48	0.03	
10	55	0.03	53	0.03	
20	58	0.03	54	0.03	
30	59	0.03	51	0.03	
40	57	0.03	56	0.03	
50	62	0.03	55	0.03	

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)	
-30	-4	0.00	PASS
-20	-6	-0.01	
-10	-5	-0.01	
0	6	0.01	
10	5	0.01	
20	-5	-0.01	
30	-7	-0.01	
40	-6	-0.01	
50	7	0.01	

Band :	WCDMA Band II	Channel :	9400
Limit (ppm) :	2.5	Frequency :	1880.0 MHz

Temperature (°C)	RMC 12.2Kbps		Result
	Freq. Dev. (Hz)	Deviation (ppm)	
-30	-9	0.00	PASS
-20	-7	0.00	
-10	-8	0.00	
0	-6	0.00	
10	-5	0.00	
20	-6	0.00	
30	-7	0.00	
40	-10	-0.01	
50	-10	-0.01	

3.7.7 Test Result of Voltage Variation

Band & Channel	Mode	Voltage (Volt)	Freq. Dev. (Hz)	Deviation (ppm)	Limit (ppm)	Result
GSM 850 CH189	GPRS class 8	7.4	10	0.01	2.5	PASS
		BEP	16	0.02		
		8.51	17	0.02		
	EDGE class 8	7.4	14	0.02		
		BEP	-18	-0.02		
		8.51	12	0.01		
GSM 1900 CH661	GPRS class 8	7.4	48	0.03		
		BEP	53	0.03		
		8.51	47	0.02		
	EDGE class 8	7.4	53	0.03		
		BEP	43	0.02		
		8.51	54	0.03		
WCDMA Band V CH4182	RMC 12.2Kbps	7.4	-8	-0.01		
		BEP	-6	-0.01		
		8.51	-5	-0.01		
WCDMA Band II CH9400	RMC 12.2Kbps	7.4	-9	0.00		
		BEP	-8	0.00		
		8.51	8	0.00		

Note:

1. Normal Voltage = 7.4V.
2. Battery End Point (BEP) = 6.29 V.

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 06, 2012	Mar. 13, 2013 ~ Mar. 22, 2013	Jun. 05, 2013	Conducted (TH02-HY)
Thermal Chamber	Ten Billion	TTH-D3SP	TBN-930701	N/A	Jul. 23, 2012	Mar. 13, 2013 ~ Mar. 22, 2013	Jul. 22, 2013	Conducted (TH02-HY)
Spectrum Analyzer	R&S	ESU26	100390	20Hz~26.5GHz	Dec. 14, 2012	Mar. 14, 2013 ~ Mar. 15, 2013	Dec. 13, 2013	Radiation (03CH05-HY)
Bilog Antenna	Schaffner	CBL6111C	2725	30MHz~2GHz	Oct. 06, 2012	Mar. 14, 2013 ~ Mar. 15, 2013	Oct. 05, 2013	Radiation (03CH05-HY)
Turn Table	HD	Deis HD 2000	420/611	0 ~ 360 degree	N/A	Mar. 14, 2013 ~ Mar. 15, 2013	N/A	Radiation (03CH05-HY)
Antenna Mast	HD	MA 240	240/666	1 m ~ 4 m	N/A	Mar. 14, 2013 ~ Mar. 15, 2013	N/A	Radiation (03CH05-HY)
Horn Antenna	ESCO	3117	66584	1GHz~18GHz	Aug. 10, 2012	Mar. 14, 2013 ~ Mar. 15, 2013	Aug. 09, 2013	Radiation (03CH05-HY)
Pre Amplifier	Agilent	8449B	3008A02665	1GHz~26.5GHz	Aug. 28, 2012	Mar. 14, 2013 ~ Mar. 15, 2013	Aug. 27, 2013	Radiation (03CH05-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA917025 1	15GHz ~ 40GHz	Sep. 28, 2012	Mar. 14, 2013 ~ Mar. 15, 2013	Sep. 27, 2013	Radiation (03CH05-HY)
Preamplifier	COM-POWER	PA-103	161075	10Hz~1000MHz Gain:32dB	Feb. 26, 2013	Mar. 14, 2013 ~ Mar. 15, 2013	Feb. 25, 2014	Radiation (03CH05-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9KHz ~ 30MHz	Jul. 03, 2012	Mar. 14, 2013 ~ Mar. 15, 2013	Jul. 02, 2013	Radiation (03CH05-HY)
System Simulator	R&S	CMU200	117995	N/A	Jul. 28, 2011	Mar. 13, 2013 ~ Mar. 22, 2013	Jul. 27, 2013	-

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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Appendix A. Photographs of EUT

Please refer to Sporton report number EP330705 as below.