FCC RF Test Report

APPLICANT	:	**CT Asia**
EQUIPMENT	:	**Smart Phone**
BRAND NAME	:	**BLU**
MODEL NAME	:	**Studio C Mini**
FCC ID	:	**YHLBLUSTUDIOMI**
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 May 14, 2014 and testing was completed on Jun. 02, 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.

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APPENDIX A. SETUP PHOTOGRAPHS

REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG451404	Rev. 01	Initial issue of report	Jun. 19, 2014

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	§2.1046	Conducted Output Power	Reporting Only	PASS	-
3.2	§24.232(d) §27.50(d)(5)	Peak-to-Average Ratio	< 13 dB	PASS	-
3.3	§22.913(a)(2)	Effective Radiated Power	< 7 Watts	PASS	-
	§24.232(c)	Equivalent Isotropic Radiated Power	< 2 Watts	PASS	-
	§27.50(d)(4)	Equivalent Isotropic Radiated Power	< 1 Watts	PASS	-
3.4	§2.1049 §22.917(b) §24.238(b) §27.53(g)	Occupied Bandwidth	Reporting Only	PASS	-
3.5	§2.1051 §22.917(a) §24.238(a) §27.53(g)	Band Edge Measurement	< 43+10log10(P[Watts])	PASS	-
3.6	§2.1051 §22.917(a) §24.238(a) §27.53(g)	Conducted Emission	< 43+10log10(P[Watts])	PASS	-
3.7	§2.1053 §22.917(a) §24.238(a) §27.53(g)	Field Strength of Spurious Radiation	< 43+10log10(P[Watts])	PASS	Under limit 22.74 dB at 2510.000 MHz
3.8	§2.1055 §22.355 §24.235 §27.54	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

TINNO MOBILE
4/F, H-3 Building, OCT Eastern industrial Park, No.1 XiangShan East Road., Nan Shan District, Shenzhen, P.R.China

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Smart Phone
Brand Name	BLU
Model Name	Studio C Mini
FCC ID	YHLBLUSTUDIOMI
EUT supports Radios application	GSM/GPRS/EGPRS/WCDMA/HSPA/HSPA+(Downlink Only)/ WLAN 2.4GHz 802.11b/g/n HT20/HT40/ Bluetooth v3.0 + EDR/Bluetooth v4.0 LE
HW Version	V1.1
SW Version	BLU_D670L_V01_GENERIC
EUT Stage	Identical Prototype

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

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 : 32.27 dBm GSM1900 : 29.29 dBm WCDMA Band V : 21.85 dBm WCDMA Band IV : 21.96 dBm WCDMA Band II : 21.04 dBm
Antenna Type	IFA Antenna
Type of Modulation	GSM: GMSK GPRS: GMSK EDGE: GMSK / 8PSK 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	0.7128	0.015 ppm	249KGXW
Part 22	GSM850 EDGE class 8	8PSK	0.2149	0.027 ppm	249KG7W
Part 22	WCDMA Band V RMC 12.2Kbps	QPSK	0.0733	0.008 ppm	4M17F9W
Part 24	GSM1900 GSM	GMSK	1.4676	0.021 ppm	247KGXW
Part 24	GSM1900 EDGE class 8	8PSK	0.8530	0.024 ppm	249KG7W
Part 24	WCDMA Band II RMC 12.2Kbps	QPSK	0.2097	0.007 ppm	4M18F9W
Part 27	WCDMA Band IV RMC 12.2Kbps	QPSK	0.1797	0.006 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

Note: The test site complies with ANSI C63.4 2003 requirement.

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 ■ EDGE class 8 Link	■ GSM Link ■ EDGE class 8 Link
GSM 1900	■ GSM Link ■ EDGE class 8 Link	■ GSM 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
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,

EDGE multi-slot class 8 mode for 8PSK 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:

<SIM 1 Card>

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	**32.27**	32.20	32.12	29.06	29.05	**29.29**
GPRS class 8	32.24	32.17	32.10	29.05	29.02	29.28
GPRS class 10	31.45	31.42	31.37	28.24	28.18	28.47
GPRS class 11	29.94	29.93	29.91	26.66	26.57	26.87
GPRS class 12	29.23	29.22	29.19	25.83	25.75	26.06
EGPRS class 8	27.10	26.89	26.64	26.26	26.49	26.85
EGPRS class 10	26.17	25.90	25.57	25.23	25.45	25.95
EGPRS class 11	24.12	23.83	23.43	23.25	23.53	23.99
EGPRS class 12	23.03	22.76	22.40	22.17	22.43	22.92

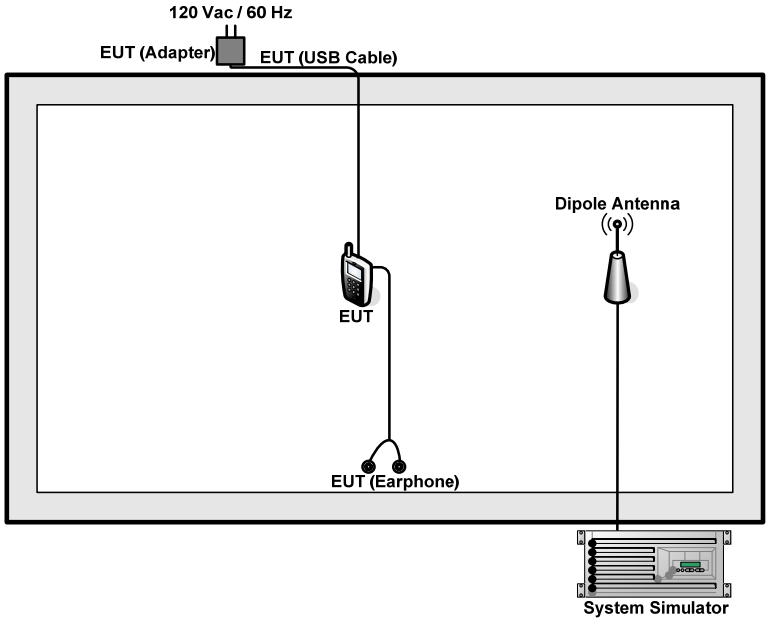
Conducted Power (*Unit: dBm)									
Band	**WCDMA Band V**			**WCDMA Band II**			**WCDMA Band IV**		
Channel	**4132**	**4182**	**4233**	**9262**	**9400**	**9538**	**1312**	**1413**	**1513**
Frequency	**826.4**	**836.4**	**846.6**	**1852.4**	**1880**	**1907.6**	**1712.4**	**1732.6**	**1752.6**
RMC 12.2K	21.83	21.76	**21.85**	**21.04**	21.02	21.03	21.95	21.86	**21.96**
HSDPA Subtest-1	20.89	20.80	20.92	20.15	20.07	20.05	21.07	21.01	21.09
HSDPA Subtest-2	20.87	20.86	20.91	20.14	20.01	19.99	21.12	21.02	21.10
HSDPA Subtest-3	20.42	20.40	20.50	19.68	19.54	19.57	20.68	20.62	20.66
HSDPA Subtest-4	20.44	20.38	20.47	19.69	19.48	19.52	20.66	20.63	20.65
HSUPA Subtest-1	18.93	18.87	18.95	18.22	18.00	18.04	19.13	19.07	19.12
HSUPA Subtest-2	18.40	18.36	18.45	17.58	17.48	17.50	18.68	18.61	18.71
HSUPA Subtest-3	19.45	19.40	19.49	18.62	18.47	18.50	19.66	19.62	19.68
HSUPA Subtest-4	18.88	18.83	18.91	18.22	18.02	18.06	19.14	19.07	19.15
HSUPA Subtest-5	20.56	20.53	20.63	19.54	19.43	19.45	20.63	20.57	20.64

<SIM 2 Card>

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	32.23	32.15	32.07	29.04	29.03	29.28
GPRS class 8	32.21	32.13	32.05	29.03	29.00	29.27
GPRS class 10	31.44	31.40	31.35	28.23	28.17	28.47
GPRS class 11	29.90	29.89	29.82	26.64	26.56	26.87
GPRS class 12	29.23	29.21	29.17	25.81	25.74	26.04
EGPRS class 8	27.10	26.85	26.63	26.21	26.41	26.84
EGPRS class 10	26.16	25.87	25.56	25.19	25.37	25.85
EGPRS class 11	24.10	23.81	23.40	23.13	23.40	23.86
EGPRS class 12	23.02	22.74	22.39	22.05	22.28	22.81

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
RMC 12.2K	21.82	21.77	21.84	21.03	21.02	21.01	21.93	21.85	21.94
HSDPA Subtest-1	20.91	20.85	20.96	20.15	20.03	20.07	21.08	21.05	21.09
HSDPA Subtest-2	20.93	20.87	20.97	20.16	20.02	20.06	21.10	21.07	21.11
HSDPA Subtest-3	20.48	20.42	20.51	19.71	19.53	19.62	20.65	20.64	20.66
HSDPA Subtest-4	20.47	20.41	20.49	19.70	19.50	19.58	20.65	20.63	20.65
HSUPA Subtest-1	18.96	18.91	18.96	18.21	18.48	18.05	19.12	19.08	19.11
HSUPA Subtest-2	18.46	18.40	18.48	17.65	17.50	17.59	18.65	18.60	18.62
HSUPA Subtest-3	18.47	18.42	18.50	18.64	18.51	18.57	19.62	19.61	19.65
HSUPA Subtest-4	18.95	18.89	18.98	18.18	18.02	18.04	19.12	19.09	19.15
HSUPA Subtest-5	20.58	20.51	20.57	19.47	19.31	19.36	20.55	20.52	20.57

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.	System Simulator	R&S	CMW 500	N/A	N/A	Unshielded, 1.8 m
3.	DC Power Supply	TOPWORD	3303DR	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.

Example:

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 7.5 dB and a 10dB attenuator.

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

= 7.5 + 10 = 17.5 (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.

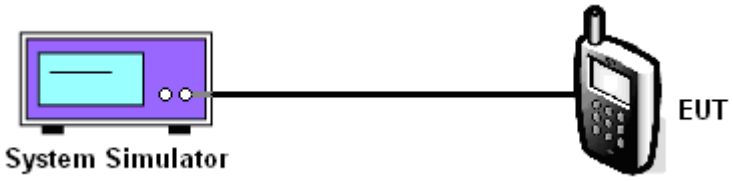
3.1.2 Measuring Instruments

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)			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)	32.27	32.20	32.12	27.10	26.89	26.64	21.83	21.76	21.85
Conducted Power (Watts)	1.69	1.66	1.63	0.51	0.49	0.46	0.15	0.15	0.15

PCS Band									
Modes	GSM1900 (GSM)			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)	29.06	29.05	29.29	26.26	26.49	26.85	21.04	21.02	21.03
Conducted Power (Watts)	0.81	0.80	0.85	0.42	0.45	0.48	0.13	0.13	0.13

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)	21.95	21.86	21.96
Conducted Power (Watts)	0.16	0.15	0.16

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

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.

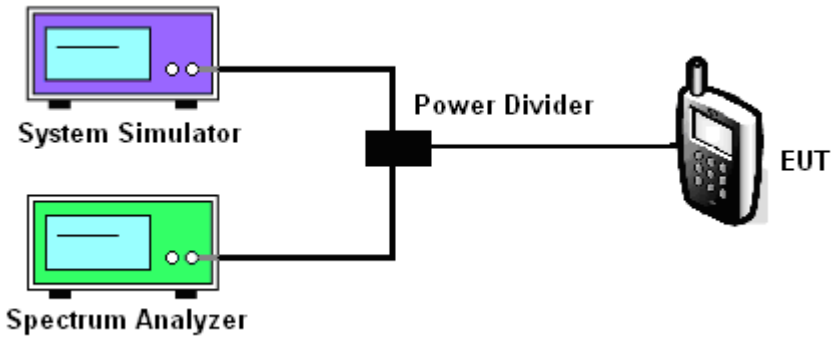
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

1. The EUT was connected to the spectrum analyzer and system simulator via a power divider.
2. 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.
3. 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 %.
4. Record the deviation as Peak to Average Ratio.

3.2.4 Test Setup



3.2.5 Test Result of Peak-to-Average Ratio

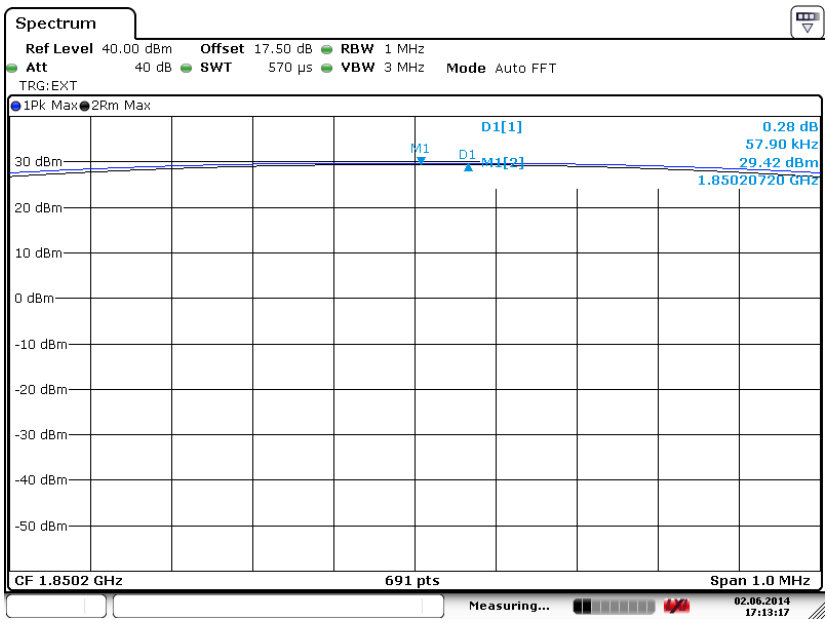
PCS Band									
Modes	GSM1900 (GSM)			GSM1900 (EDGE class 8)			WCDMA Band II (RMC 12.2Kbps)		
Channel	512 (Low)	661 (Mid)	810 (High)	512 (Low)	661 (Mid)	810 (High)	9262 (Low)	9400 (Mid)	9538 (High)
Frequency (MHz)	1850.2	1880	1909.8	1850.2	1880	1909.8	1852.4	1880	1907.6
Peak-to-Average Ratio (dB)	0.28	0.29	0.28	2.86	2.70	2.82	2.84	2.55	2.87

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)	2.81	3.16	2.64

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)



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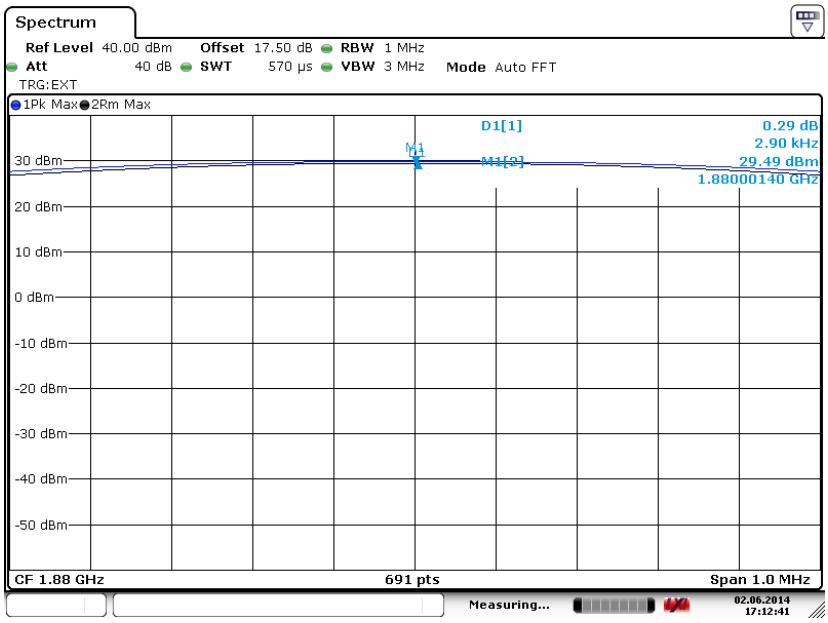
Peak-to-Average Ratio on Channel 661 (1880.0 MHz)



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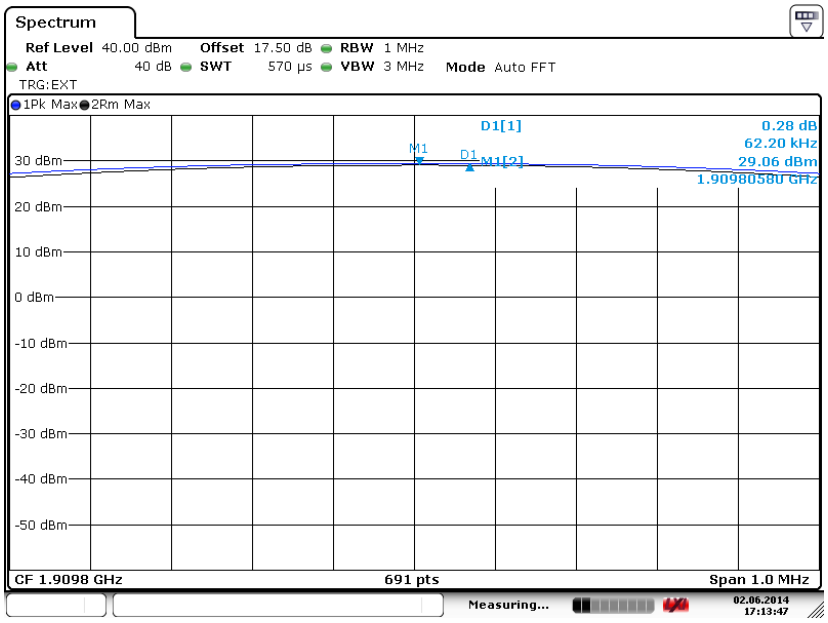
Peak-to-Average Ratio on Channel 810 (1909.8 MHz)



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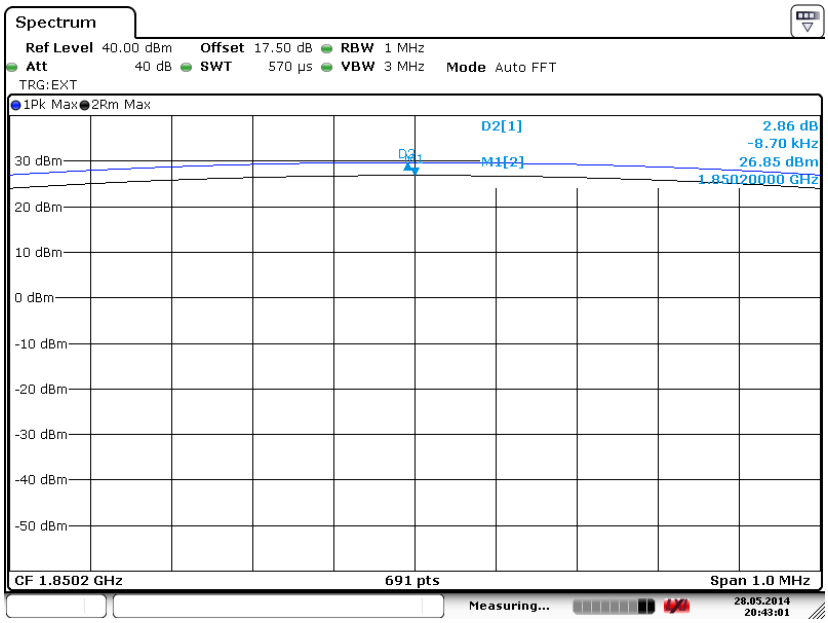
Band :	GSM 1900	Test Mode :	EDGE class 8 Link (8PSK)

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



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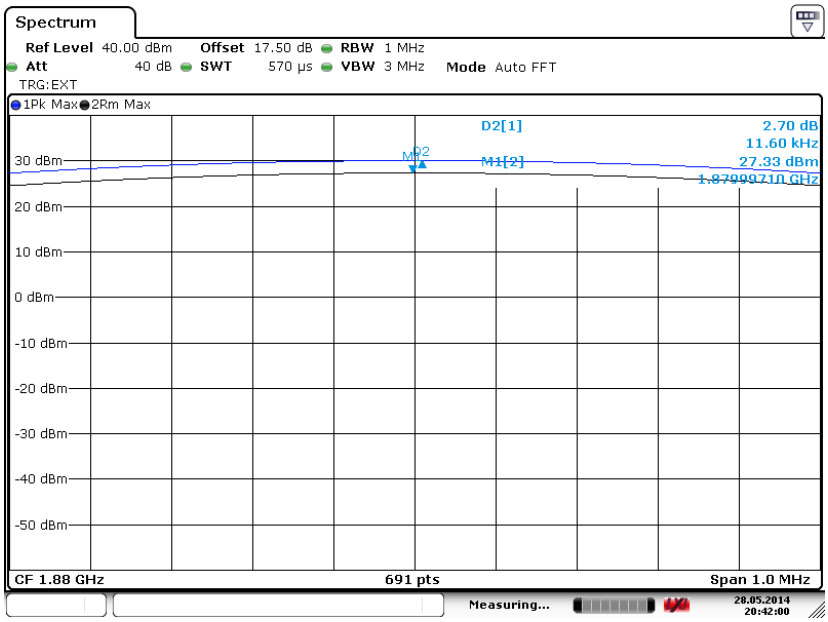
Peak-to-Average Ratio on Channel 661 (1880.0 MHz)



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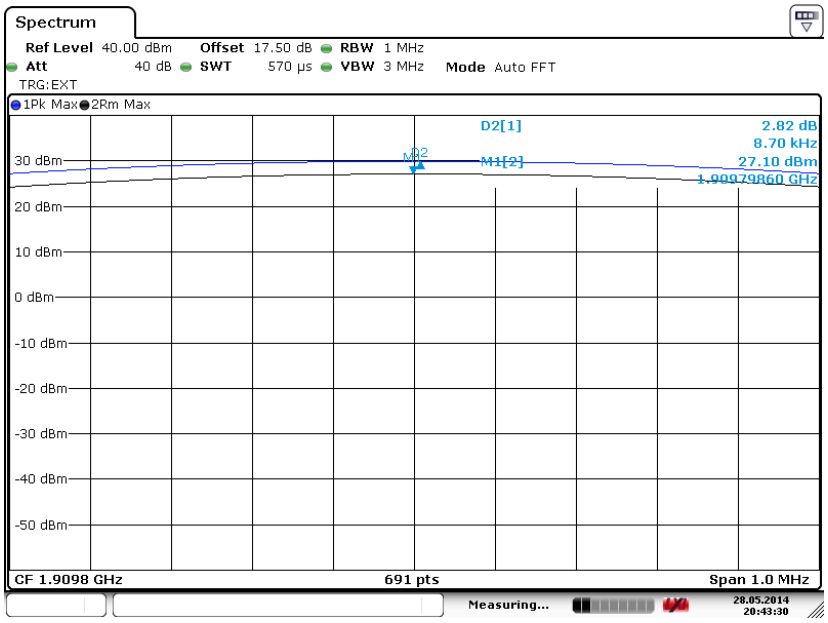
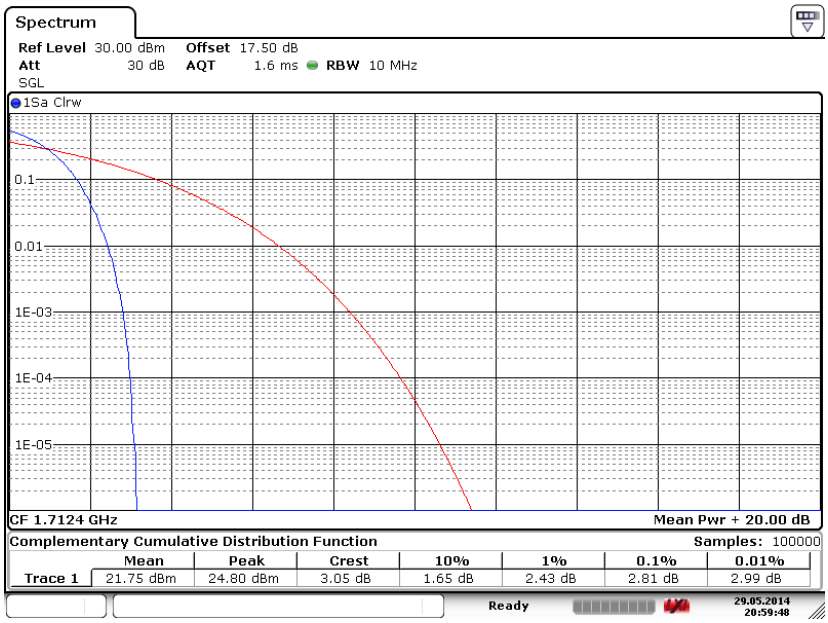
Peak-to-Average Ratio on Channel 810 (1909.8 MHz)



Date: 28.MAY.2014 20:43:31

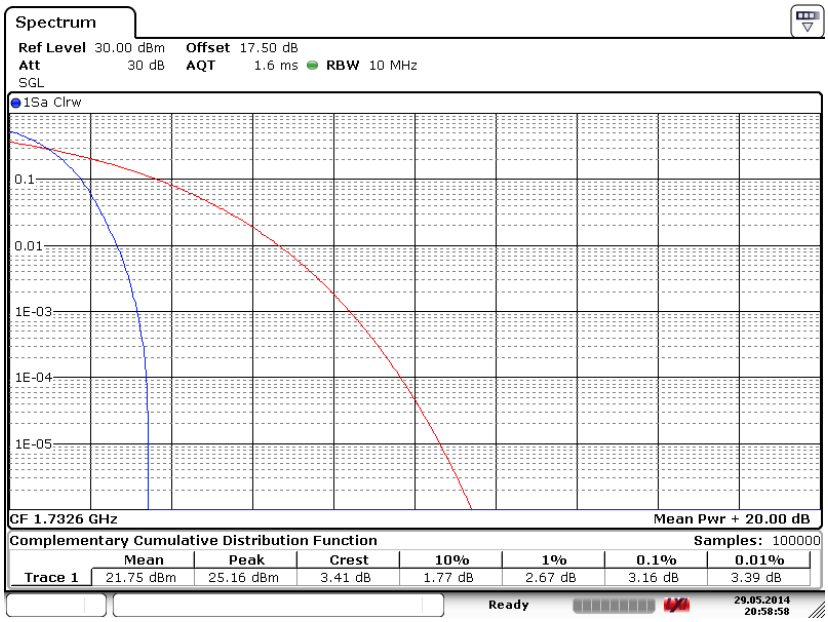
Band :	WCDMA Band IV	Test Mode :	RMC 12.2Kbps Link (QPSK)

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



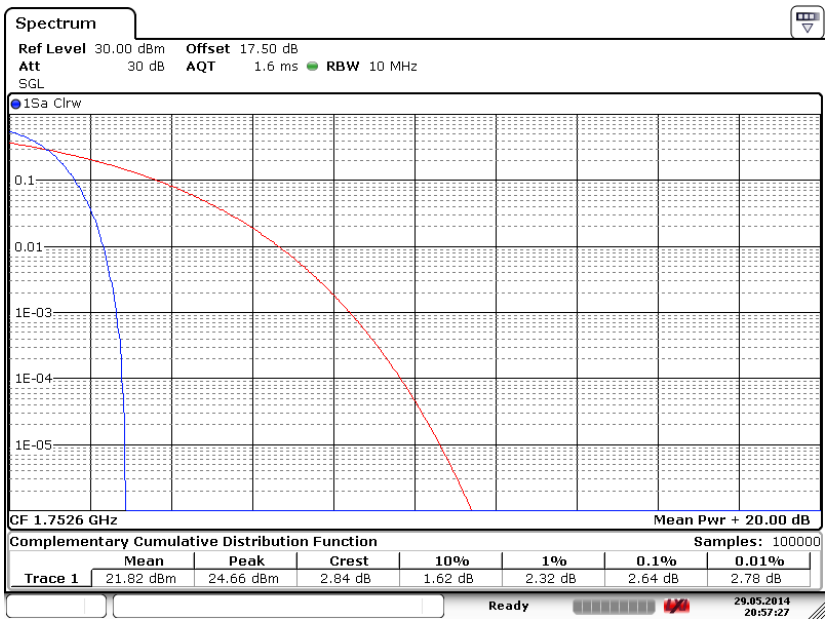
Date: 29.MAY.2014 20:59:48

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



Date: 29.MAY.2014 20:58:57

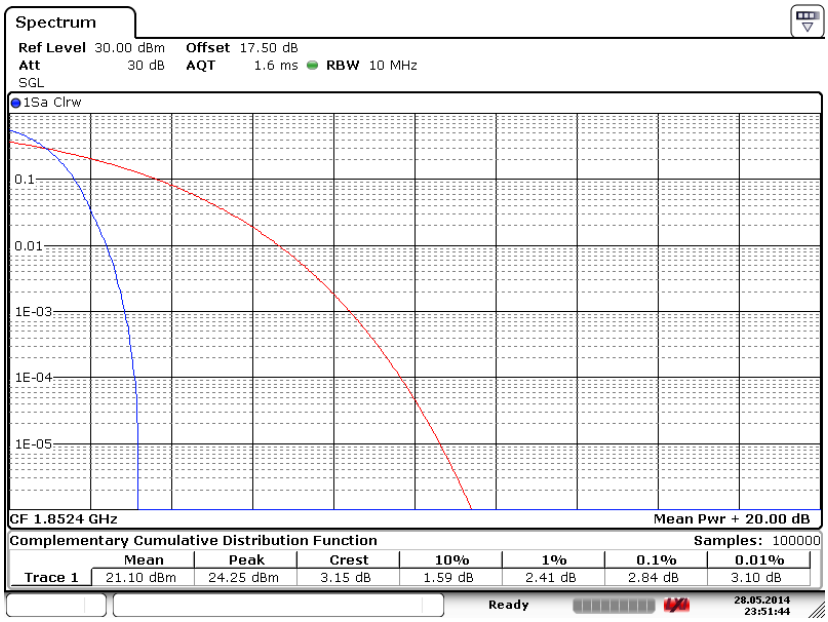
Peak-to-Average Ratio on Channel 1513 (1752.6 MHz)



Date: 29.MAY.2014 20:57:27

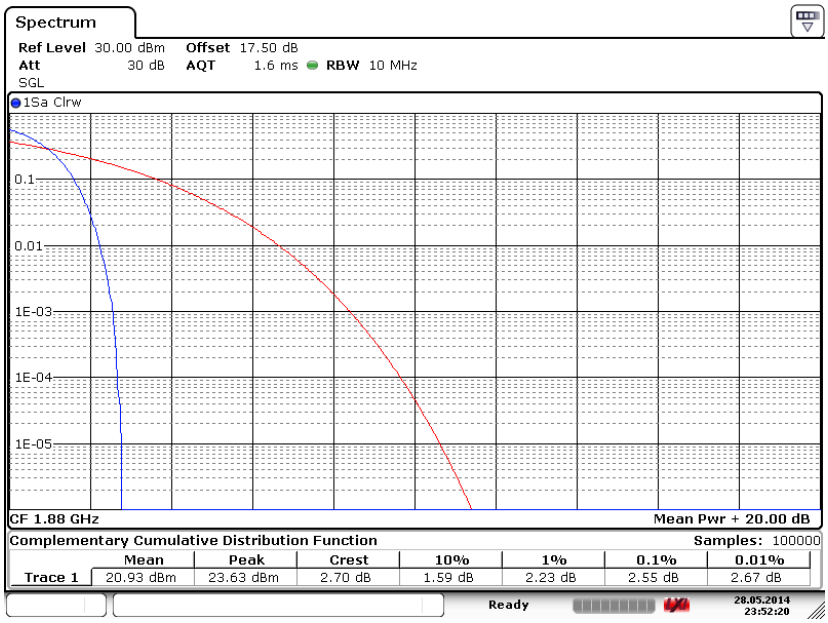
Band :	WCDMA Band II	Test Mode :	RMC 12.2Kbps Link (QPSK)

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



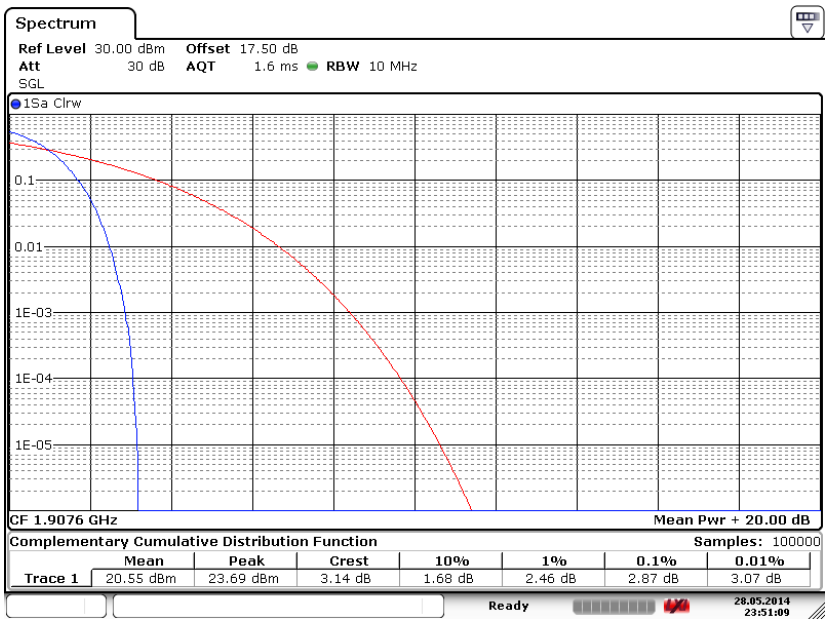
Date: 28.MAY.2014 23:51:43

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



Date: 28.MAY.2014 23:52:20

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



Date: 28.MAY.2014 23:51:09

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).

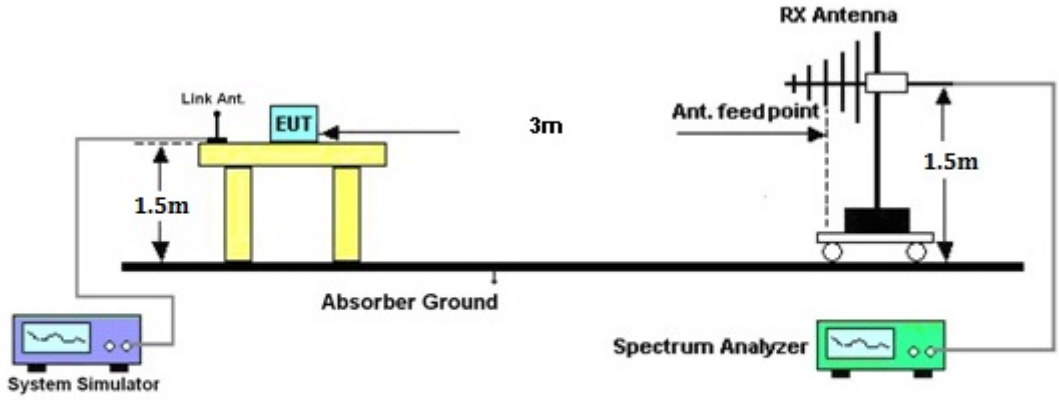
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

1. The EUT was placed on a turntable 1.5 meters high in a fully anechoic chamber.
2. The EUT was placed 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. 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.
4. The table was rotated 360 degrees to determine the position of the highest radiated power.
5. The height of the receiving antenna is adjusted to look for the maximum ERP/EIRP.
6. Taking the record of maximum ERP/EIRP.
7. A dipole antenna was substituted in place of the EUT and was driven by a signal generator.
8. The conducted power at the terminal of the dipole antenna is measured.
9. Repeat step 3 to step 5 to get the maximum ERP/EIRP of the substitution antenna.
10. 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	-18.51	-48.12	0.00	-1.08	28.53	0.7128
836.40	-19.20	-48.28	0.00	-0.93	28.15	0.6536
848.80	-19.27	-48.35	0.00	-0.76	28.32	0.6791
Vertical Polarization						
Frequency (MHz)	**Rt (dBm)**	**Rs (dBm)**	**Ps (dBm)**	**Gs (dBd)**	**ERP (dBm)**	**ERP (W)**
824.20	-33.66	-47.97	0.00	-1.08	13.23	0.0210
836.40	-34.06	-48.01	0.00	-0.93	13.02	0.0200
848.80	-34.10	-48.05	0.00	-0.76	13.19	0.0208

GSM850 (EDGE class 8) Radiated Power ERP						
Horizontal Polarization						
Frequency (MHz)	**Rt (dBm)**	**Rs (dBm)**	**Ps (dBm)**	**Gs (dBd)**	**ERP (dBm)**	**ERP (W)**
824.20	-24.15	-48.12	0.00	-1.08	22.89	0.1945
836.40	-24.03	-48.28	0.00	-0.93	23.32	0.2149
848.80	-24.51	-48.35	0.00	-0.76	23.08	0.2031
Vertical Polarization						
Frequency (MHz)	**Rt (dBm)**	**Rs (dBm)**	**Ps (dBm)**	**Gs (dBd)**	**ERP (dBm)**	**ERP (W)**
824.20	-38.88	-47.97	0.00	-1.08	8.01	0.0063
836.40	-38.91	-48.01	0.00	-0.93	8.17	0.0066
848.80	-38.95	-48.05	0.00	-0.76	8.34	0.0068

WCDMA Band V (RMC 12.2Kbps) Radiated Power ERP						
Horizontal Polarization						
Frequency (MHz)	**Rt (dBm)**	**Rs (dBm)**	**Ps (dBm)**	**Gs (dBd)**	**ERP (dBm)**	**ERP (W)**
826.40	-29.20	-48.12	0.00	-1.08	17.84	0.0609
836.40	-29.30	-48.28	0.00	-0.93	18.05	0.0639
846.60	-28.94	-48.35	0.00	-0.76	18.65	0.0733
Vertical Polarization						
Frequency (MHz)	**Rt (dBm)**	**Rs (dBm)**	**Ps (dBm)**	**Gs (dBd)**	**ERP (dBm)**	**ERP (W)**
826.40	-44.16	-47.97	0.00	-1.08	2.73	0.0019
836.40	-44.26	-48.01	0.00	-0.93	2.82	0.0019
846.60	-43.66	-48.05	0.00	-0.76	3.63	0.0023

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	-22.93	-51.88	0.00	1.96	30.91	1.2343
1880.00	-23.76	-52.99	0.00	2.00	31.23	1.3272
1909.80	-24.77	-54.28	0.00	1.98	31.49	1.4078
Vertical Polarization						
Frequency (MHz)	**Rt (dBm)**	**Rs (dBm)**	**Ps (dBm)**	**Gs (dBi)**	**EIRP (dBm)**	**EIRP (W)**
1850.20	-22.85	-52.13	0.00	1.96	31.24	1.3298
1880.00	-24.08	-53.17	0.00	2.00	31.09	1.2845
1909.80	-24.44	-54.13	0.00	1.98	31.67	1.4676

GSM1900 (EDGE class 8) Radiated Power EIRP						
Horizontal Polarization						
Frequency (MHz)	**Rt (dBm)**	**Rs (dBm)**	**Ps (dBm)**	**Gs (dBi)**	**EIRP (dBm)**	**EIRP (W)**
1850.20	-25.83	-51.88	0.00	1.96	28.01	0.6325
1880.00	-26.27	-52.99	0.00	2.00	28.72	0.7448
1909.80	-27.08	-54.28	0.00	1.98	29.18	0.8271
Vertical Polarization						
Frequency (MHz)	**Rt (dBm)**	**Rs (dBm)**	**Ps (dBm)**	**Gs (dBi)**	**EIRP (dBm)**	**EIRP (W)**
1850.20	-26.01	-52.13	0.00	1.96	28.08	0.6420
1880.00	-26.65	-53.17	0.00	2.00	28.52	0.7105
1909.80	-26.80	-54.13	0.00	1.98	29.31	0.8530

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	-32.48	-51.88	0.00	1.96	21.36	0.1369
1732.60	-32.78	-52.99	0.00	2.00	22.21	0.1662
1752.60	-33.79	-54.28	0.00	1.98	22.47	0.1765
Vertical Polarization						
Frequency (MHz)	**Rt (dBm)**	**Rs (dBm)**	**Ps (dBm)**	**Gs (dBi)**	**EIRP (dBm)**	**EIRP (W)**
1712.40	-32.34	-52.13	0.00	1.96	21.75	0.1497
1732.60	-32.86	-53.17	0.00	2.00	22.31	0.1701
1752.60	-33.56	-54.13	0.00	1.98	22.55	0.1797

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	-30.94	-51.88	0.00	1.96	22.90	0.1950
1880.00	-32.32	-52.99	0.00	2.00	22.67	0.1847
1907.60	-33.38	-54.28	0.00	1.98	22.88	0.1940
Vertical Polarization						
Frequency (MHz)	**Rt (dBm)**	**Rs (dBm)**	**Ps (dBm)**	**Gs (dBi)**	**EIRP (dBm)**	**EIRP (W)**
1852.40	-30.87	-52.13	0.00	1.96	23.22	0.2097
1880.00	-32.69	-53.17	0.00	2.00	22.48	0.1771
1907.60	-33.08	-54.13	0.00	1.98	23.03	0.2008

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.

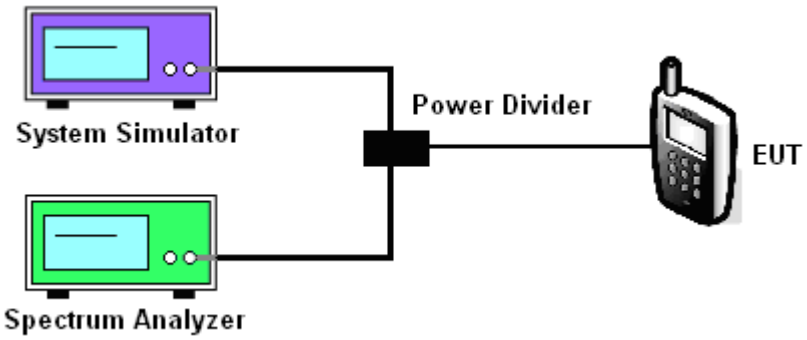
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

1. The EUT was connected to the spectrum analyzer and system simulator via a power divider.
2. 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.
3. The 99% occupied bandwidth were measured, set RBW= 1% of span, VBW= 3*RBW, sample detector, trace maximum hold.
4. 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 99% Occupied Bandwidth and 26dB Bandwidth

Cellular Band						
Modes	**GSM850 (GSM)**			**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)	248.91	244.57	244.57	246.02	248.91	247.47
26dB BW (kHz)	305.40	311.10	308.20	308.20	311.10	308.20

PCS Band						
Modes	**GSM1900 (GSM)**			**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)	247.47	246.02	246.02	248.91	248.91	248.91
26dB BW (kHz)	305.40	311.10	308.20	308.20	311.10	311.10

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)	4.168	4.139	4.153
26dB BW (MHz)	4.689	4.689	4.674

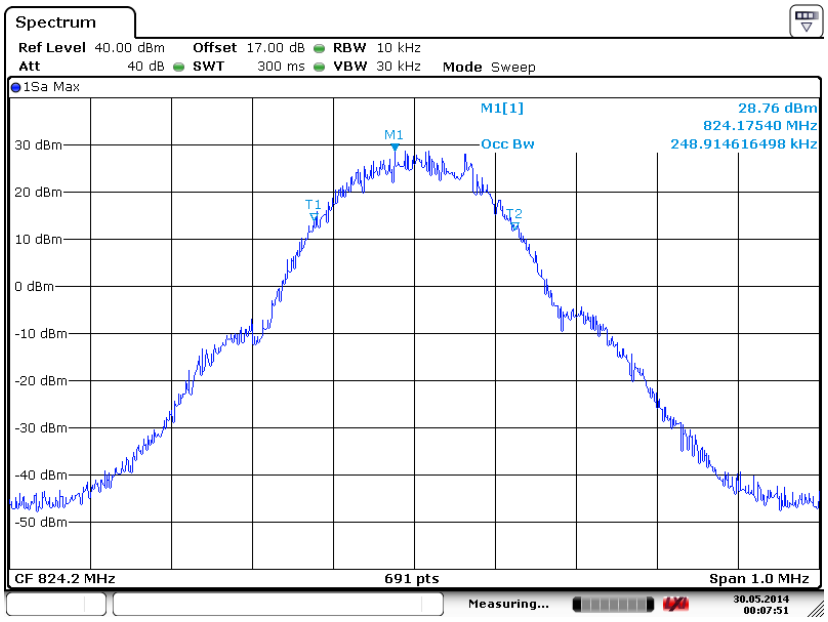
AWS Band			
Modes	**WCDMA Band IV (RMC 12.2Kbps)**		
Channel	**1312(Low)**	**1413 (Mid)**	**1513 (High)**
Frequency (MHz)	**1712.4**	**1732.6**	**1752.6**
99% OBW (MHz)	4.153	4.182	4.168
26dB BW (MHz)	4.689	4.689	4.703

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)	4.182	4.168	4.153
26dB BW (MHz)	4.718	4.718	4.689

3.4.6 Test Result (Plots) of 99% Occupied Bandwidth and 26dB Bandwidth

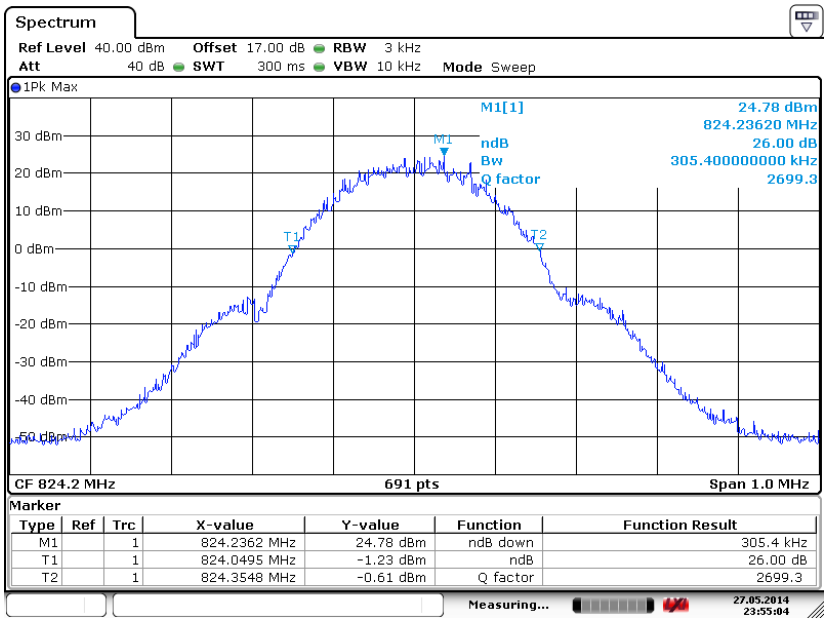
Band :	GSM 850	Test Mode :	GSM Link (GMSK)

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



Date: 30.MAY.2014 00:07:51

26dB Bandwidth Plot on Channel 128 (824.2 MHz)

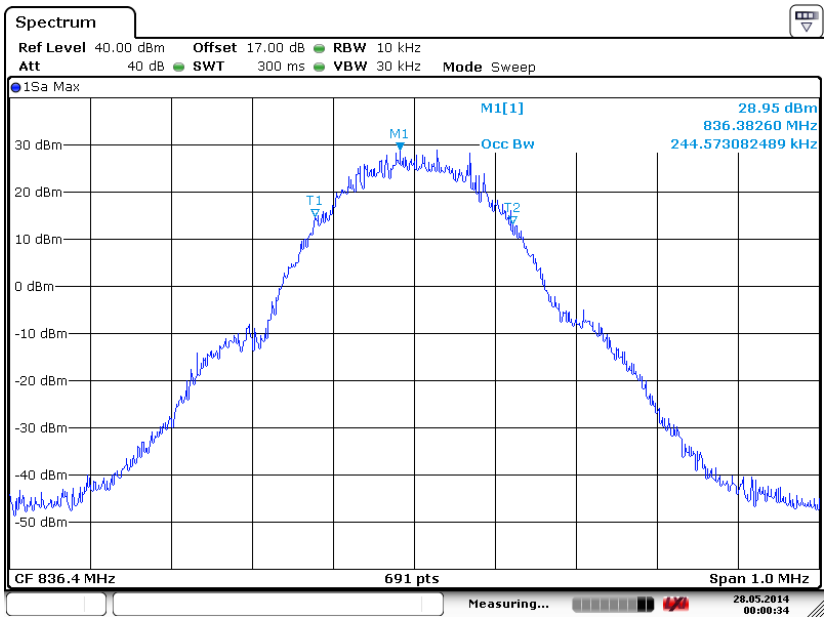


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	824.2362 MHz	24.78 dBm	ndB down	305.4 kHz
T1		1	824.0495 MHz	-1.23 dBm	ndB	26.00 dB
T2		1	824.3548 MHz	-0.61 dBm	Q factor	2699.3

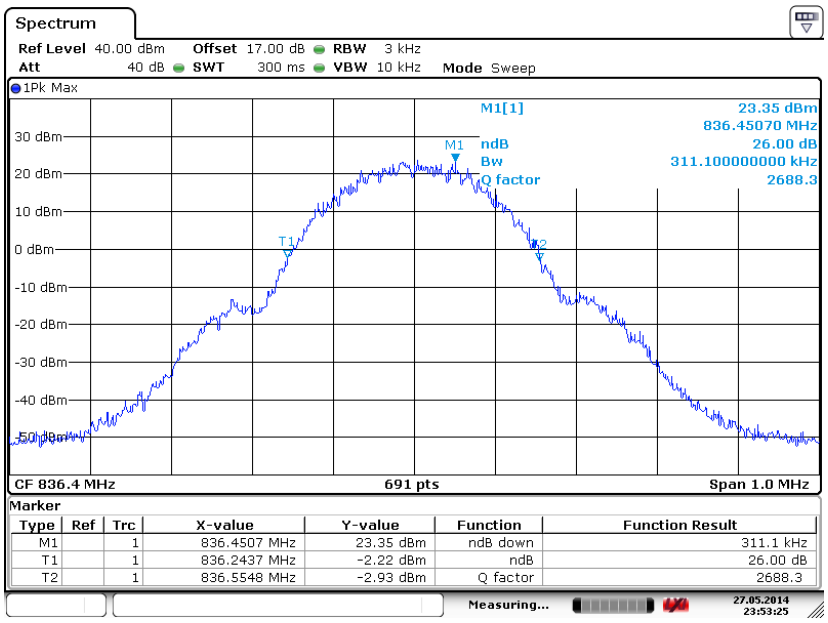
Date: 27.MAY.2014 23:55:04

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



Date: 28.MAY.2014 00:00:34

26dB Bandwidth Plot on Channel 189 (836.4 MHz)

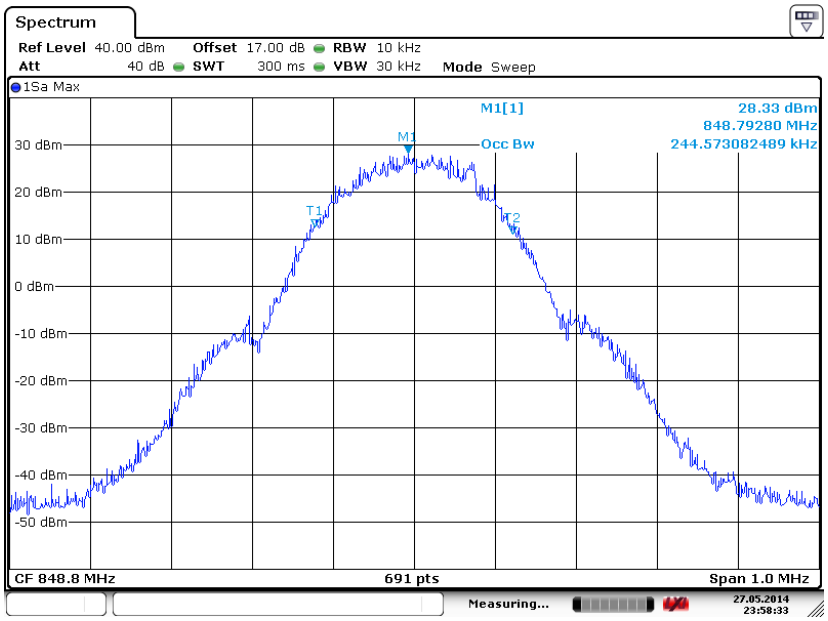


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	836.4507 MHz	23.35 dBm	ndB down	311.1 kHz
T1		1	836.2437 MHz	-2.22 dBm	ndB	26.00 dB
T2		1	836.5548 MHz	-2.93 dBm	Q factor	2688.3

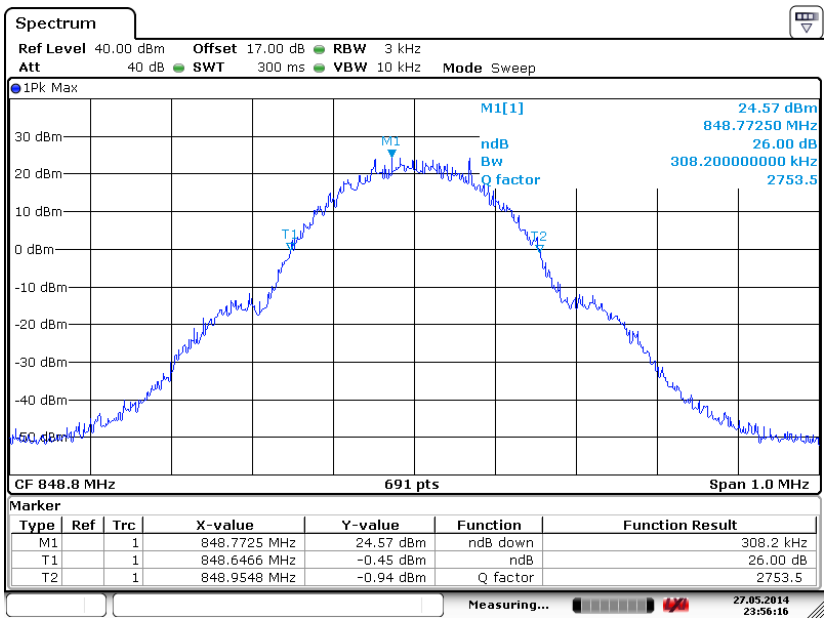
Date: 27.MAY.2014 23:53:25

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



Date: 27.MAY.2014 23:58:33

26dB Bandwidth Plot on Channel 251 (848.8 MHz)



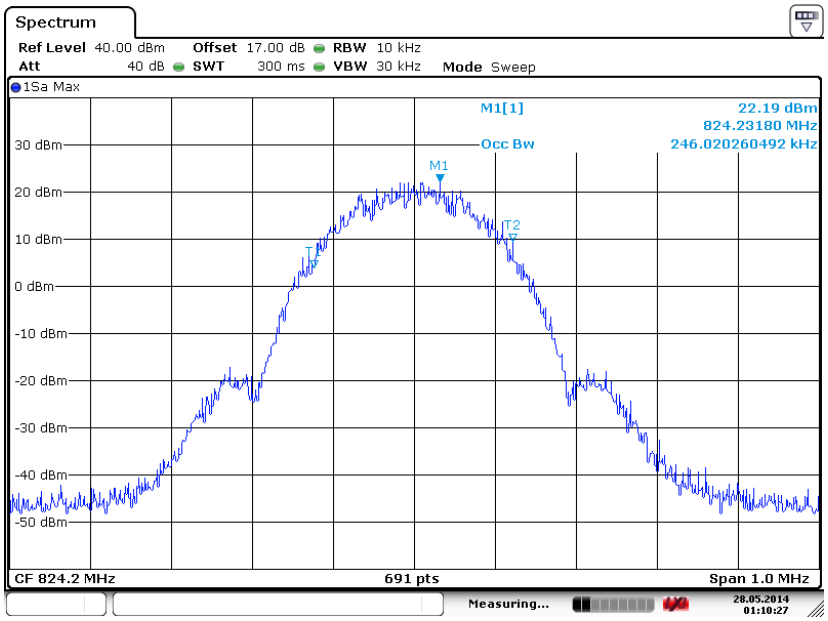
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	848.7725 MHz	24.57 dBm	ndB down	308.2 kHz
T1		1	848.6466 MHz	-0.45 dBm	ndB	26.00 dB
T2		1	848.9548 MHz	-0.94 dBm	Q factor	2753.5

Date: 27.MAY.2014 23:56:17

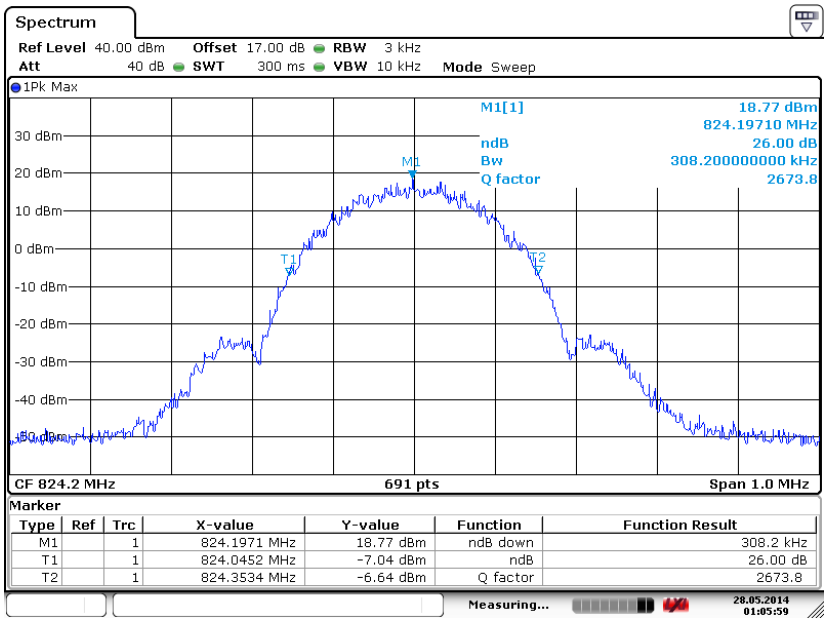
Band :	GSM 850	Test Mode :	EDGE class 8 Link (8PSK)

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



Date: 28.MAY.2014 01:10:27

26dB Bandwidth Plot on Channel 128 (824.2 MHz)

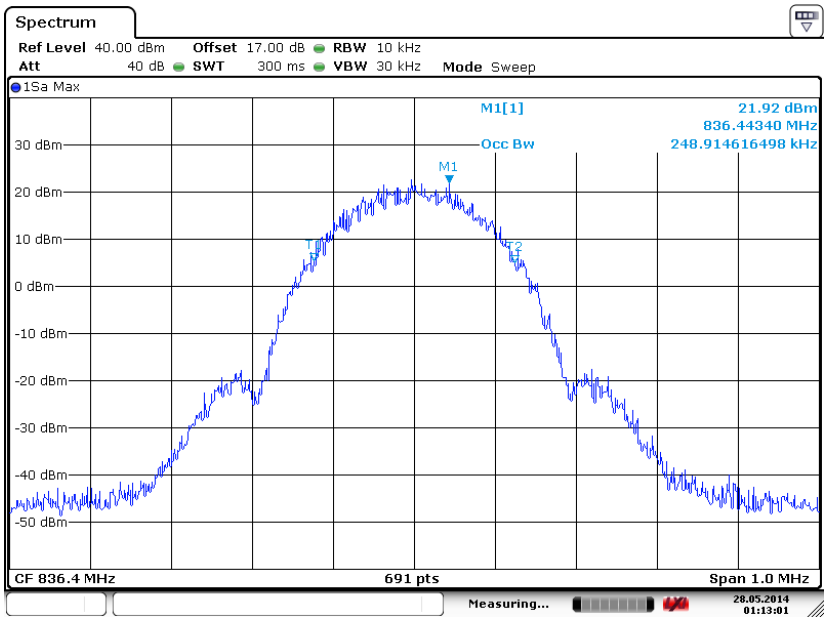


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	824.1971 MHz	18.77 dBm	ndB down	308.2 kHz
T1		1	824.0452 MHz	-7.04 dBm	ndB	26.00 dB
T2		1	824.3534 MHz	-6.64 dBm	Q factor	2673.8

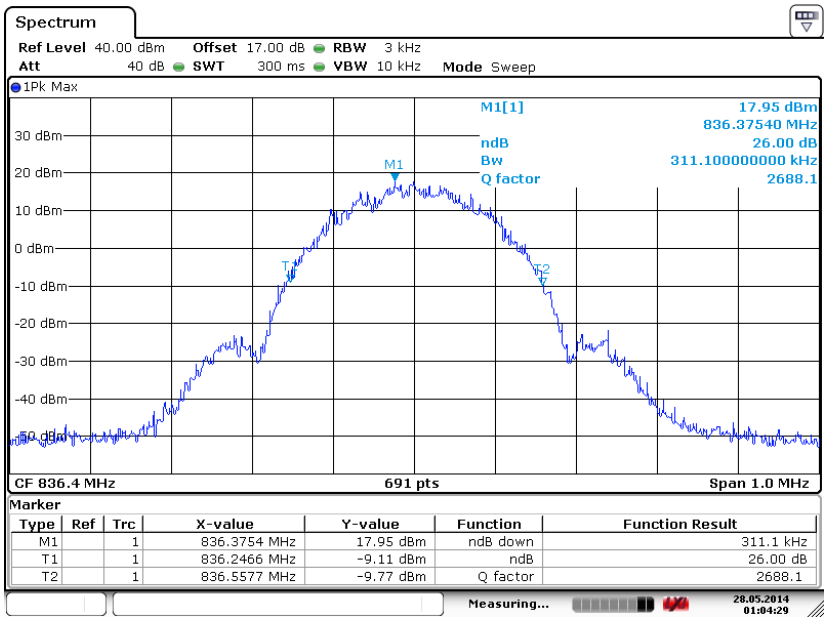
Date: 28.MAY.2014 01:05:59

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



Date: 28.MAY.2014 01:13:01

26dB Bandwidth Plot on Channel 189 (836.4 MHz)

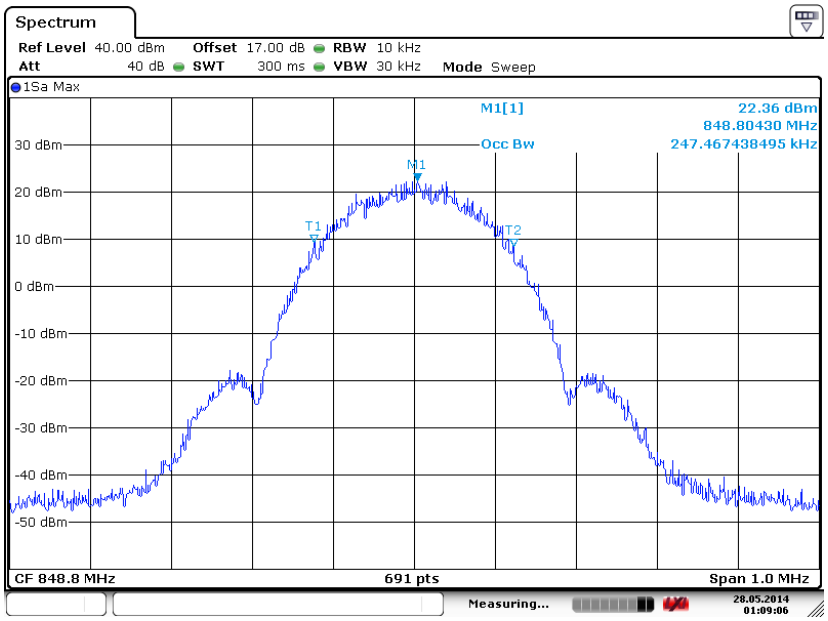


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	836.3754 MHz	17.95 dBm	ndB down	311.1 kHz
T1		1	836.2466 MHz	-9.11 dBm	ndB	26.00 dB
T2		1	836.5577 MHz	-9.77 dBm	Q factor	2688.1

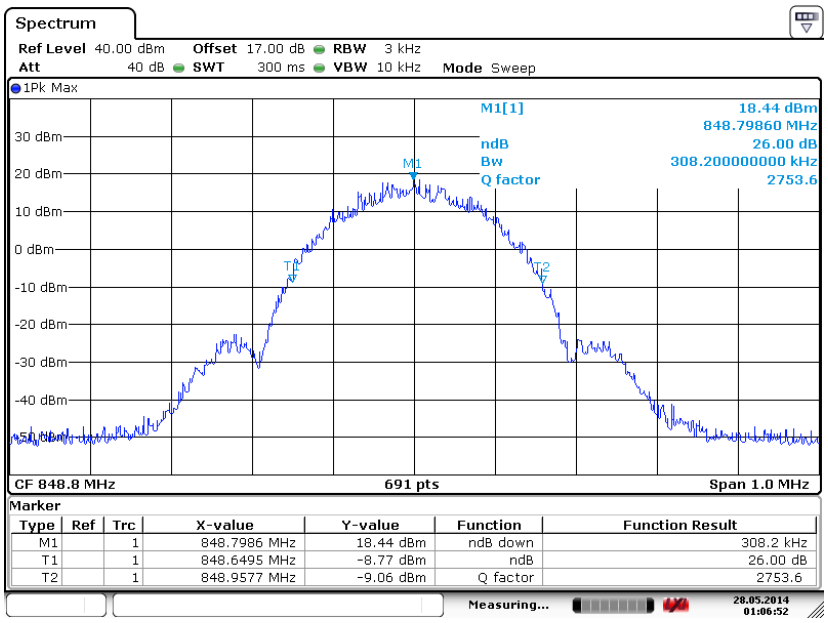
Date: 28.MAY.2014 01:04:29

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



Date: 28.MAY.2014 01:09:06

26dB Bandwidth Plot on Channel 251 (848.8 MHz)



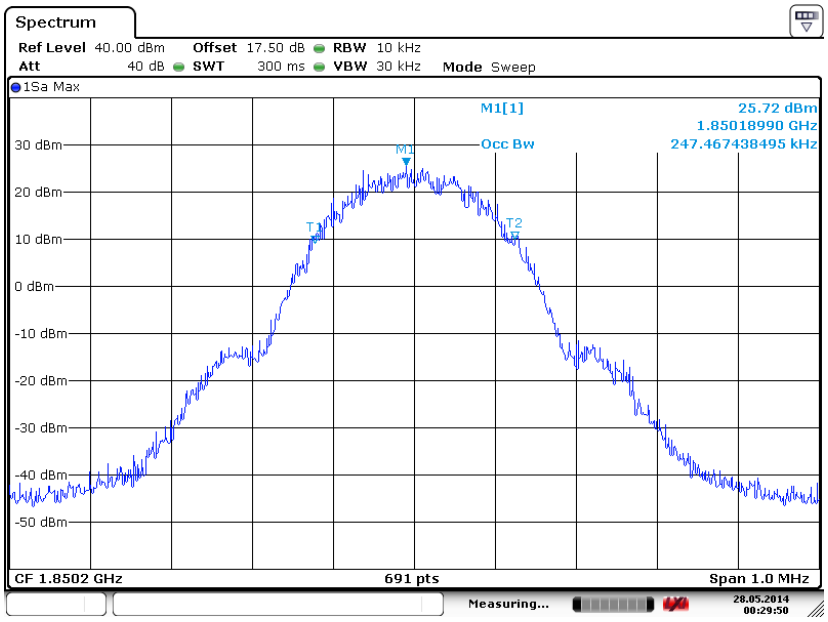
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	848.7986 MHz	18.44 dBm	ndB down	308.2 kHz
T1		1	848.6495 MHz	-8.77 dBm	ndB	26.00 dB
T2		1	848.9577 MHz	-9.06 dBm	Q factor	2753.6

Date: 28.MAY.2014 01:06:52

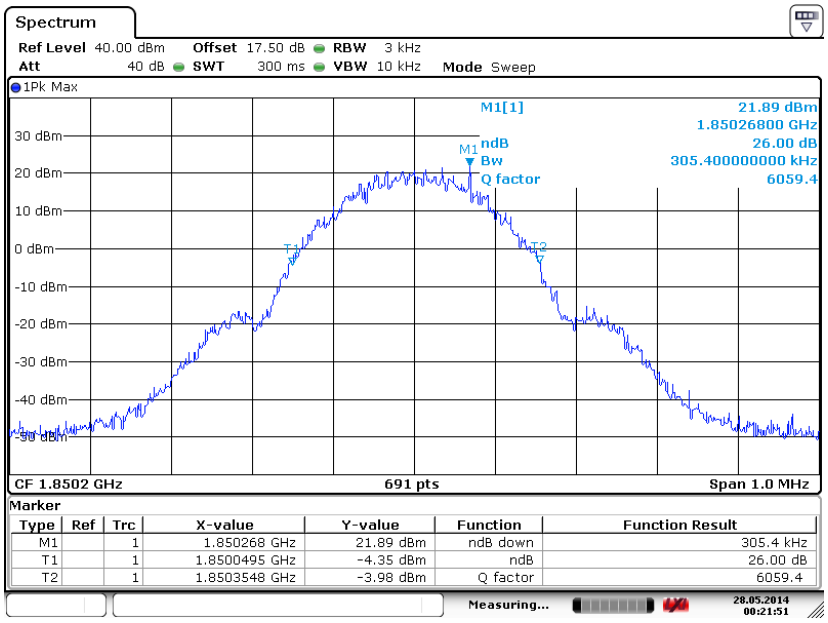
Band :	GSM 1900	Test Mode :	GSM Link (GMSK)

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



Date: 28.MAY.2014 00:29:50

26dB Bandwidth Plot on Channel 512 (1850.2 MHz)

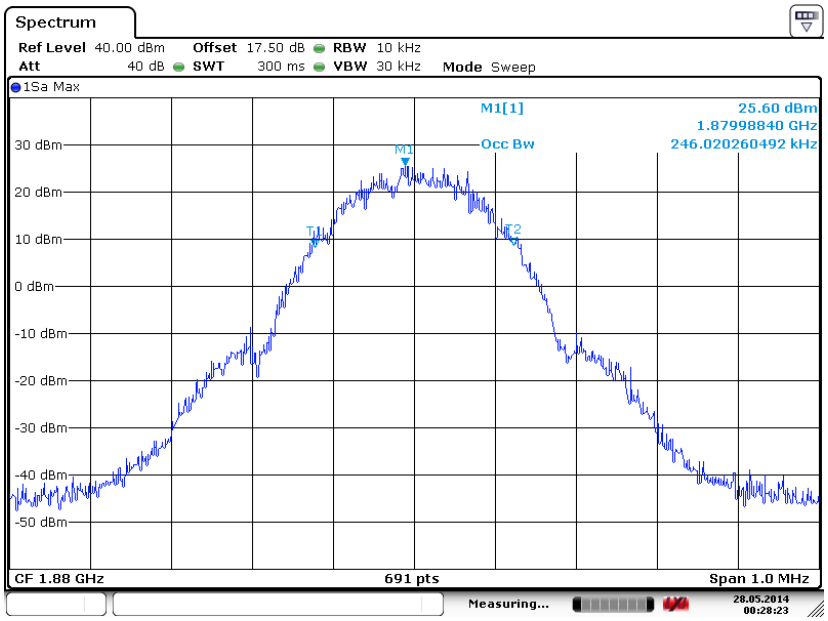


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.850268 GHz	21.89 dBm	ndB down	305.4 kHz
T1		1	1.8500495 GHz	-4.35 dBm	ndB	26.00 dB
T2		1	1.8503548 GHz	-3.98 dBm	Q factor	6059.4

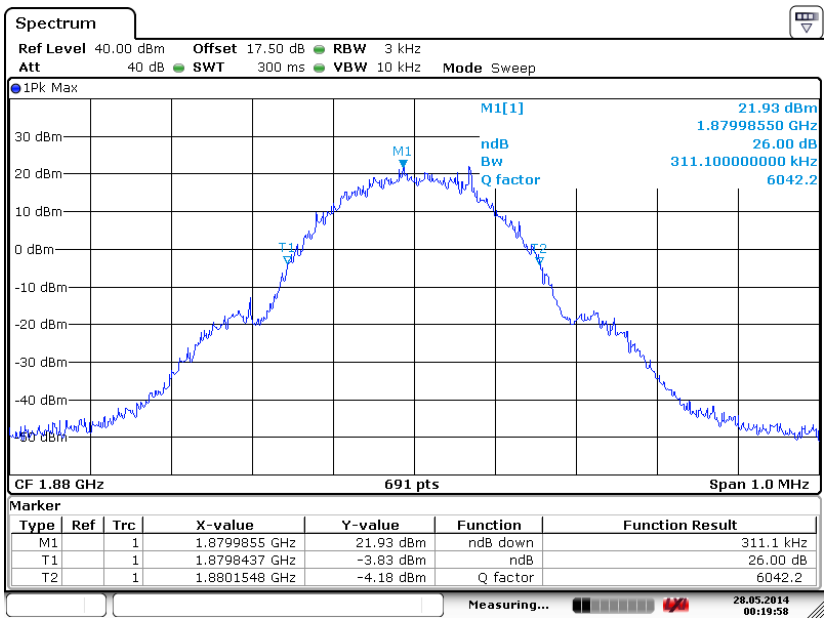
Date: 28.MAY.2014 00:21:51

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



Date: 28.MAY.2014 00:28:23

26dB Bandwidth Plot on Channel 661 (1880.0 MHz)

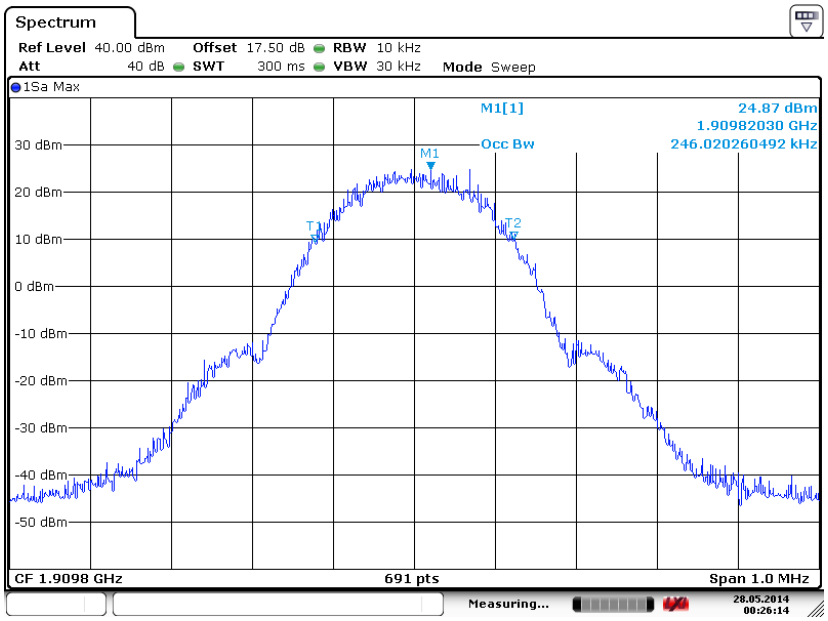


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.8799855 GHz	21.93 dBm	ndB down	311.1 kHz
T1		1	1.8798437 GHz	-3.83 dBm	ndB	26.00 dB
T2		1	1.8801548 GHz	-4.18 dBm	Q factor	6042.2

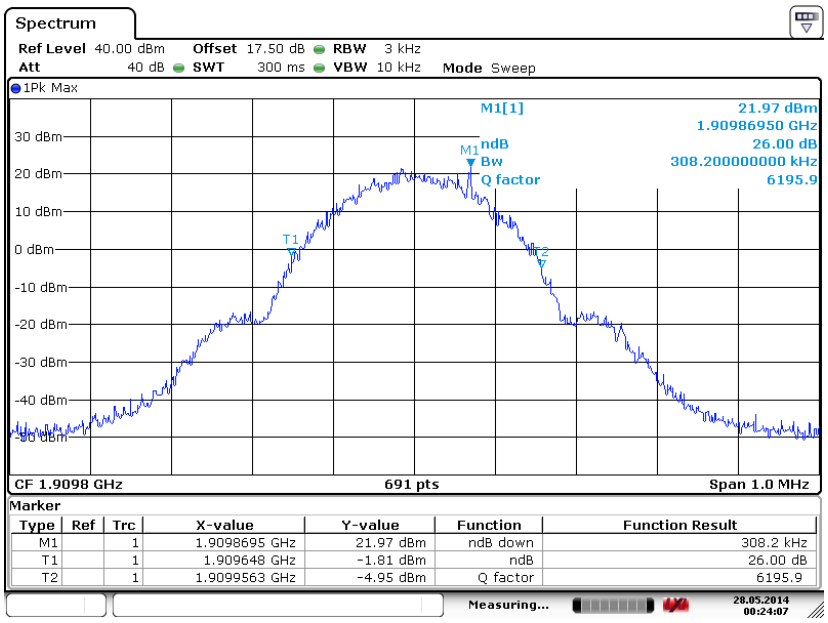
Date: 28.MAY.2014 00:19:58

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



Date: 28.MAY.2014 00:26:14

26dB Bandwidth Plot on Channel 810 (1909.8 MHz)



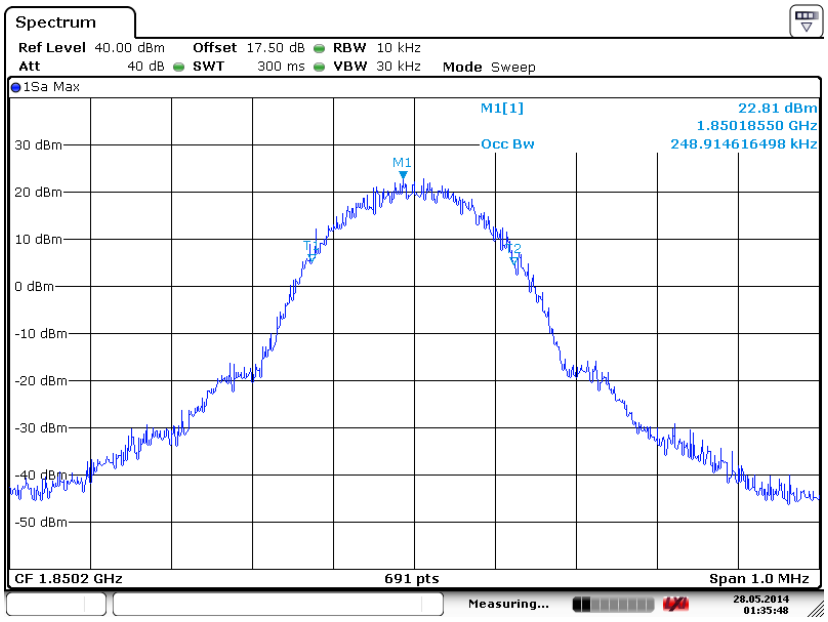
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.9098695 GHz	21.97 dBm	ndB down	308.2 kHz
T1		1	1.909648 GHz	-1.81 dBm	ndB	26.00 dB
T2		1	1.9099563 GHz	-4.95 dBm	Q factor	6195.9

Date: 28.MAY.2014 00:24:07

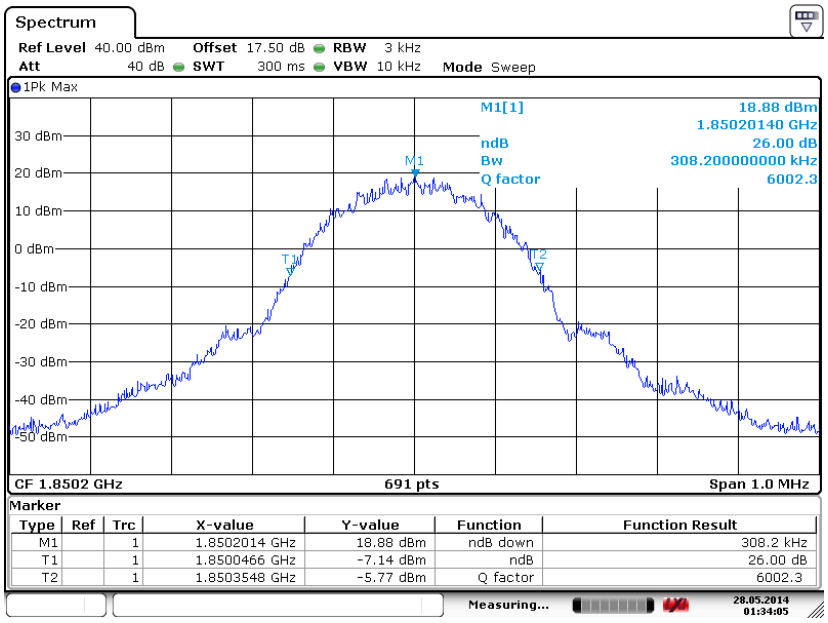
Band :	GSM 1900	Test Mode :	EDGE class 8 Link (8PSK)

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



Date: 28.MAY.2014 01:35:48

26dB Bandwidth Plot on Channel 512 (1850.2 MHz)

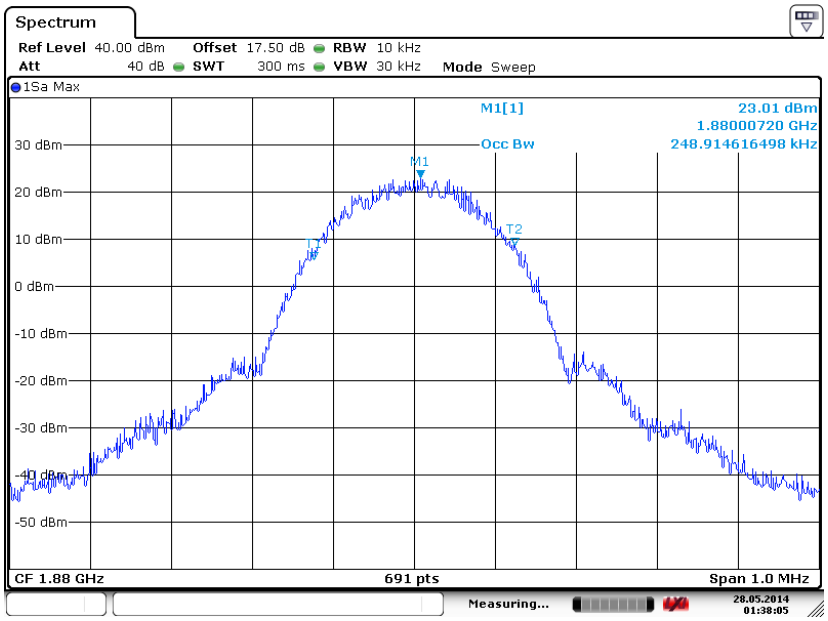


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.8502014 GHz	18.88 dBm	ndB down	308.2 kHz
T1		1	1.8500466 GHz	-7.14 dBm	ndB	26.00 dB
T2		1	1.8503548 GHz	-5.77 dBm	Q factor	6002.3

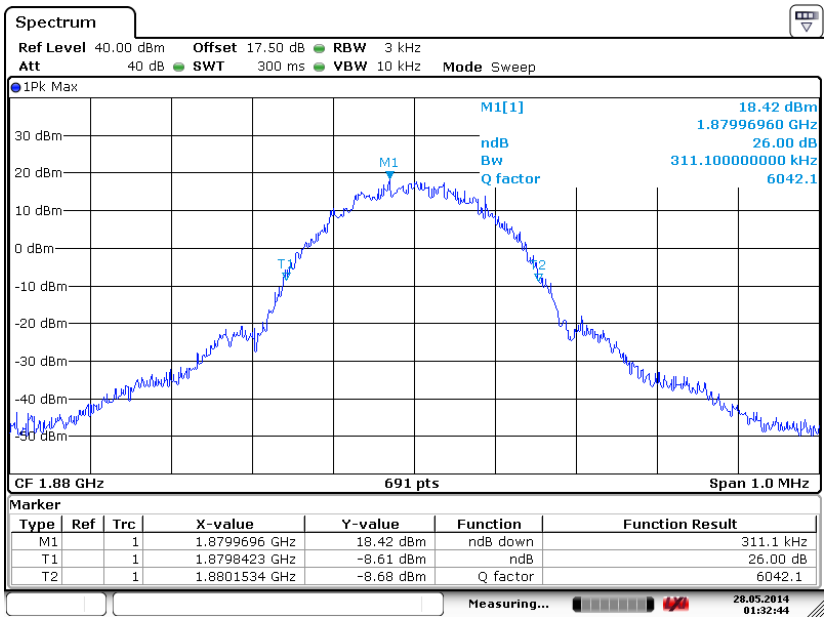
Date: 28.MAY.2014 01:34:05

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



Date: 28.MAY.2014 01:38:05

26dB Bandwidth Plot on Channel 661 (1880.0 MHz)

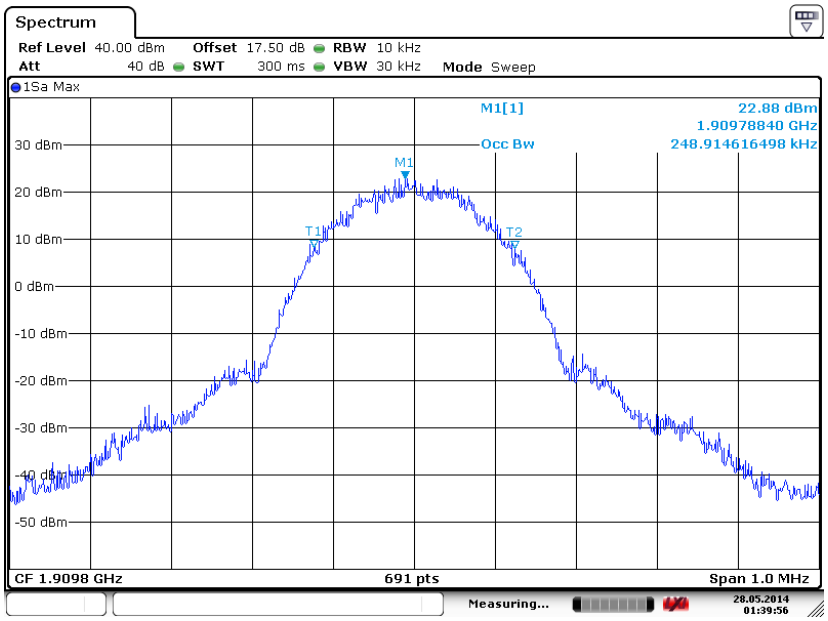


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.8799696 GHz	18.42 dBm	ndB down	311.1 kHz
T1		1	1.8798423 GHz	-8.61 dBm	ndB	26.00 dB
T2		1	1.8801534 GHz	-8.68 dBm	Q factor	6042.1

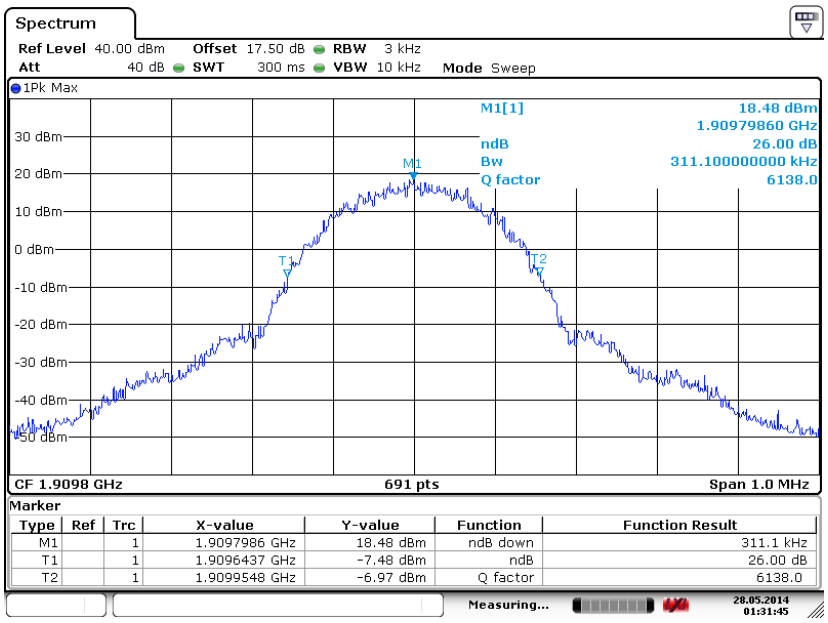
Date: 28.MAY.2014 01:32:44

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



Date: 28.MAY.2014 01:39:56

26dB Bandwidth Plot on Channel 810 (1909.8 MHz)



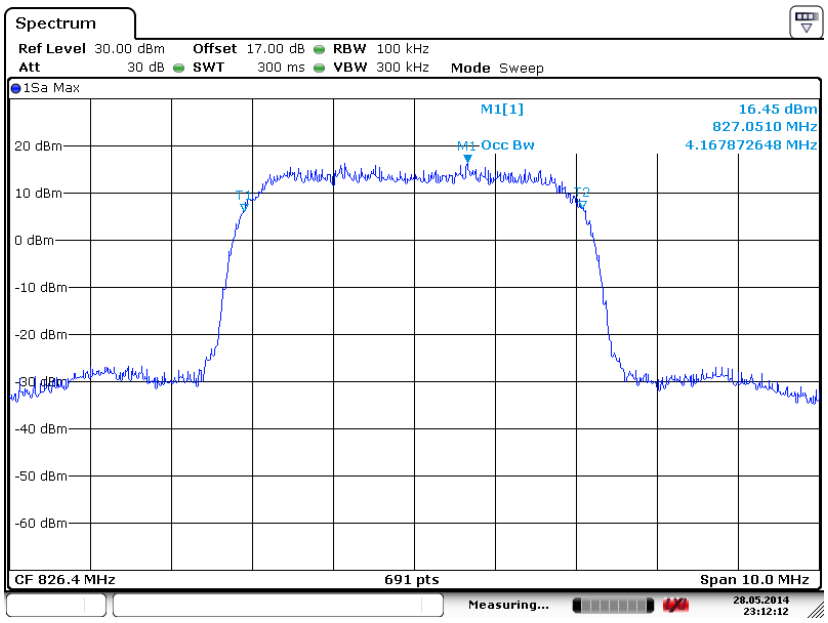
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.9097986 GHz	18.48 dBm	ndB down	311.1 kHz
T1		1	1.9096437 GHz	-7.48 dBm	ndB	26.00 dB
T2		1	1.9099548 GHz	-6.97 dBm	Q factor	6138.0

Date: 28.MAY.2014 01:31:45

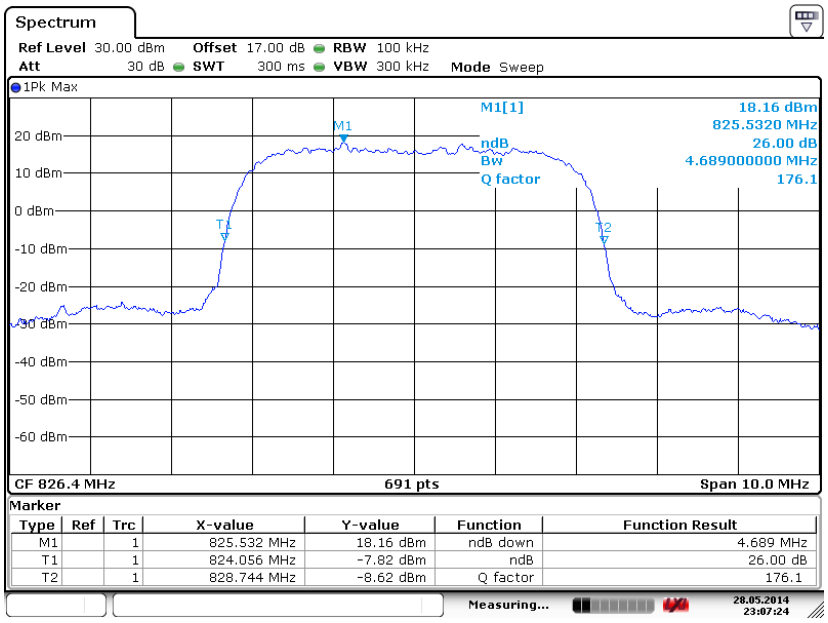
Band :	WCDMA Band V	Test Mode :	RMC 12.2Kbps Link (QPSK)

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



Date: 28.MAY.2014 23:12:12

26dB Bandwidth Plot on Channel 4132 (826.4 MHz)

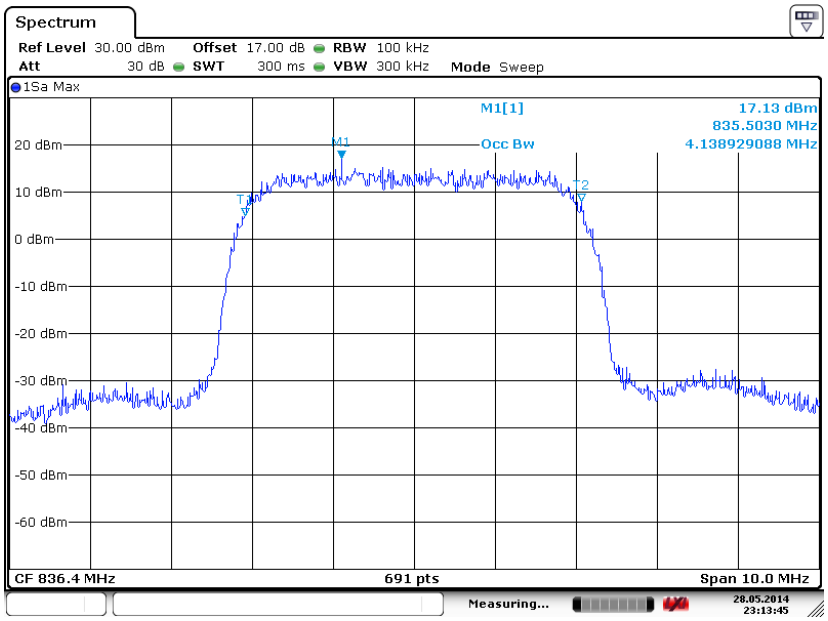


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	825.532 MHz	18.16 dBm	ndB down	4.689 MHz
T1		1	824.056 MHz	-7.82 dBm	ndB	26.00 dB
T2		1	828.744 MHz	-8.62 dBm	Q factor	176.1

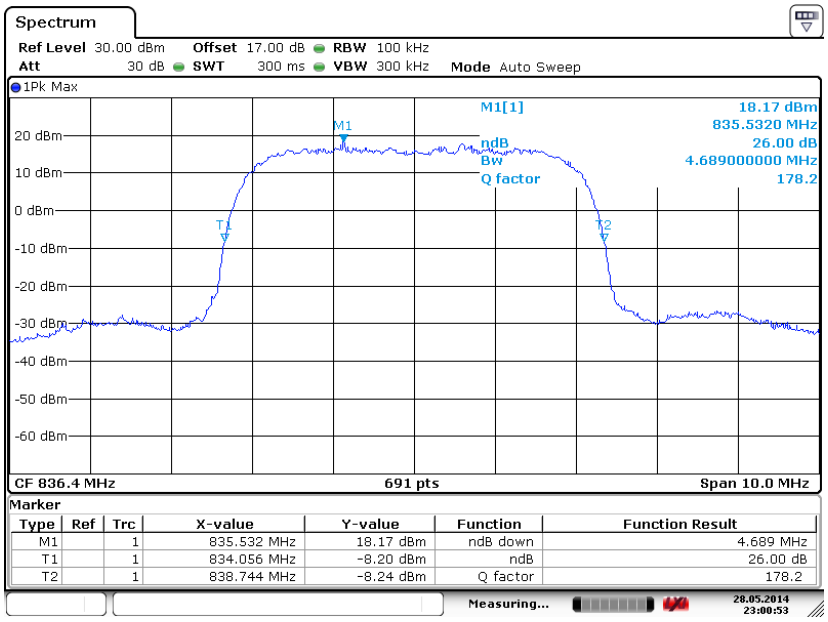
Date: 28.MAY.2014 23:07:23

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



Date: 28.MAY.2014 23:13:44

26dB Bandwidth Plot on Channel 4182 (836.4 MHz)

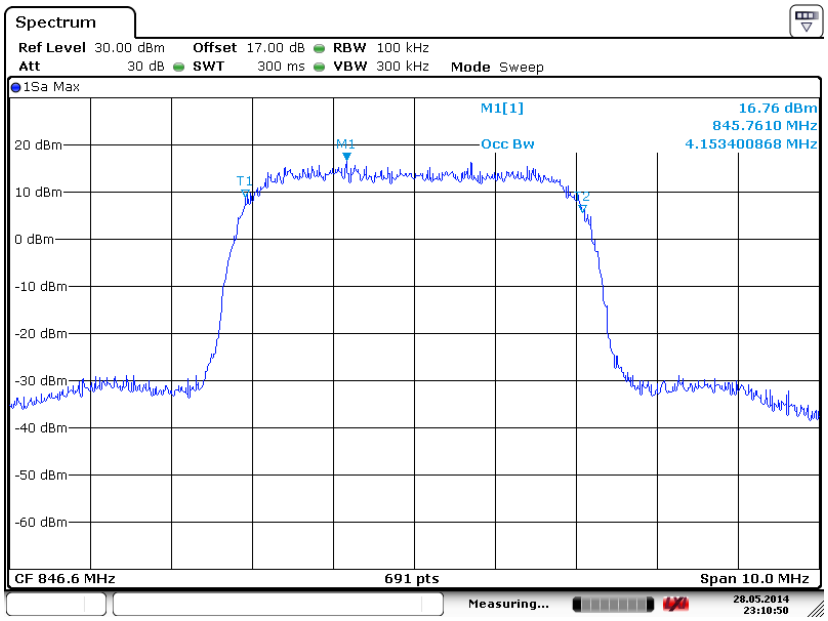


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	835.532 MHz	18.17 dBm	ndB down	4.689 MHz
T1		1	834.056 MHz	-8.20 dBm	ndB	26.00 dB
T2		1	838.744 MHz	-8.24 dBm	Q factor	178.2

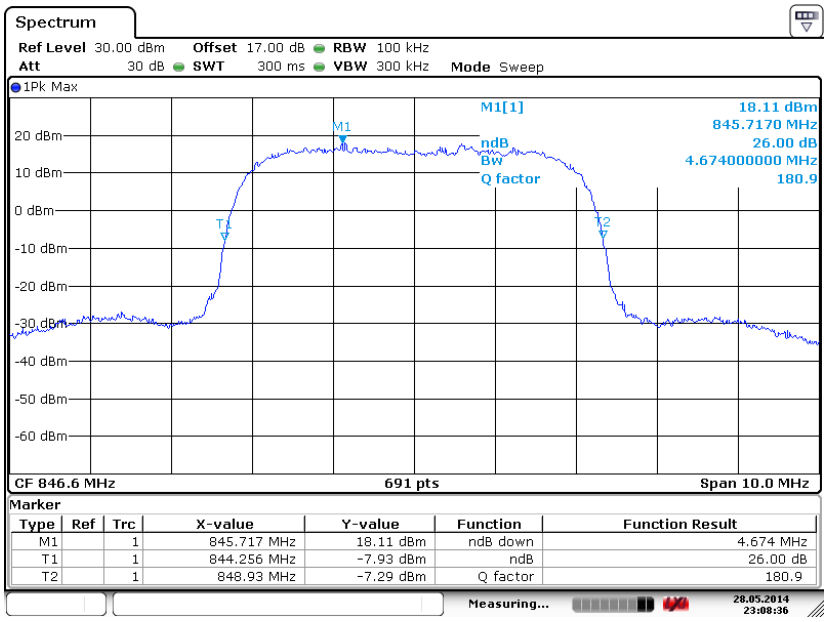
Date: 28.MAY.2014 23:00:53

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



Date: 28.MAY.2014 23:10:50

26dB Bandwidth Plot on Channel 4233 (846.6 MHz)



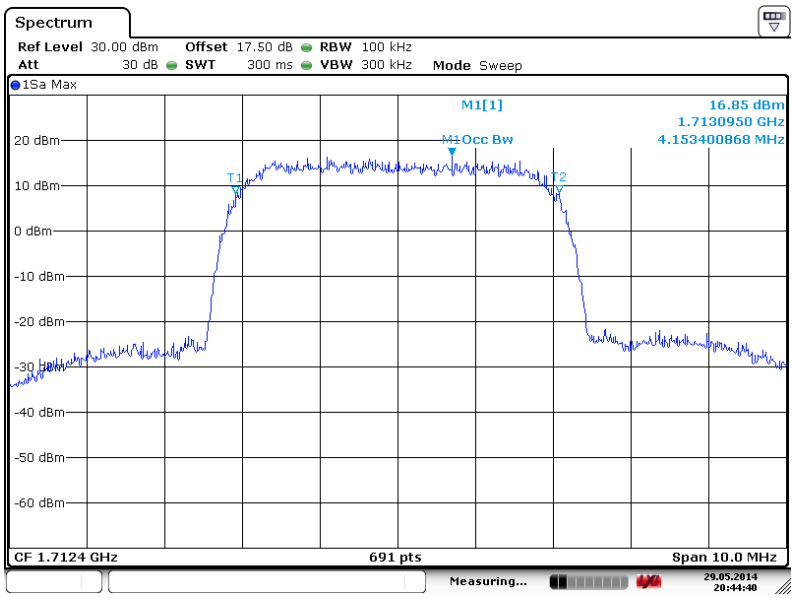
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	845.717 MHz	18.11 dBm	ndB down	4.674 MHz
T1		1	844.256 MHz	-7.93 dBm	ndB	26.00 dB
T2		1	848.93 MHz	-7.29 dBm	Q factor	180.9

Date: 28.MAY.2014 23:08:35

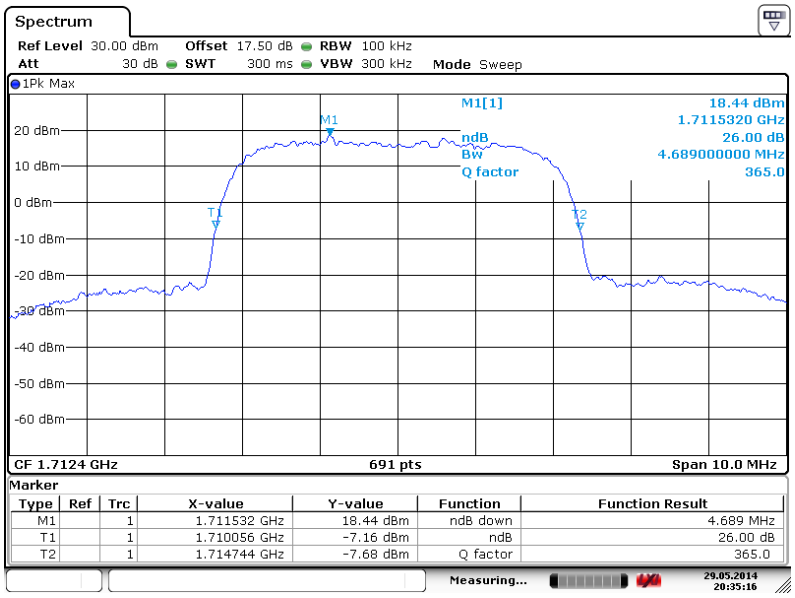
Band :	WCDMA Band IV	Test Mode :	RMC 12.2Kbps Link (QPSK)

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



Date: 29.MAY.2014 20:44:40

26dB Bandwidth Plot on Channel 1312 (1712.4 MHz)

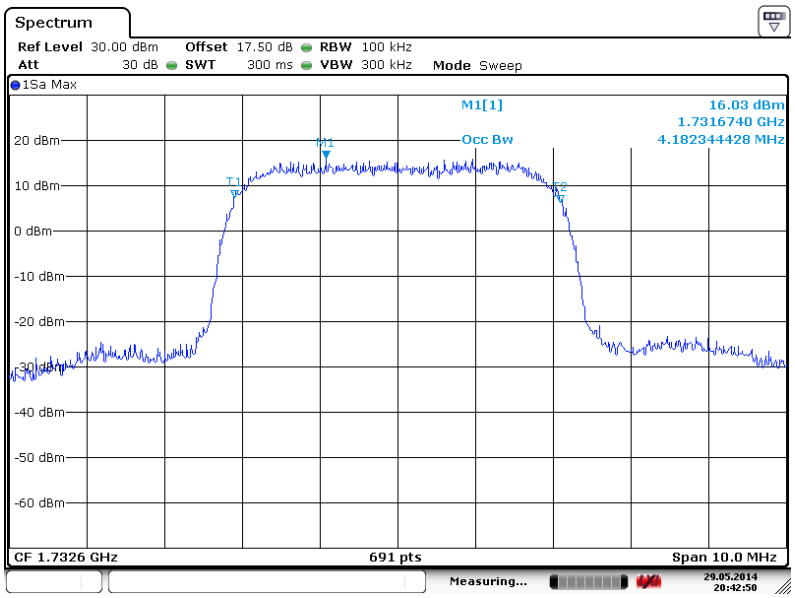


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.711532 GHz	18.44 dBm	ndB down	4.689 MHz
T1		1	1.710056 GHz	-7.16 dBm	ndB	26.00 dB
T2		1	1.714744 GHz	-7.68 dBm	Q factor	365.0

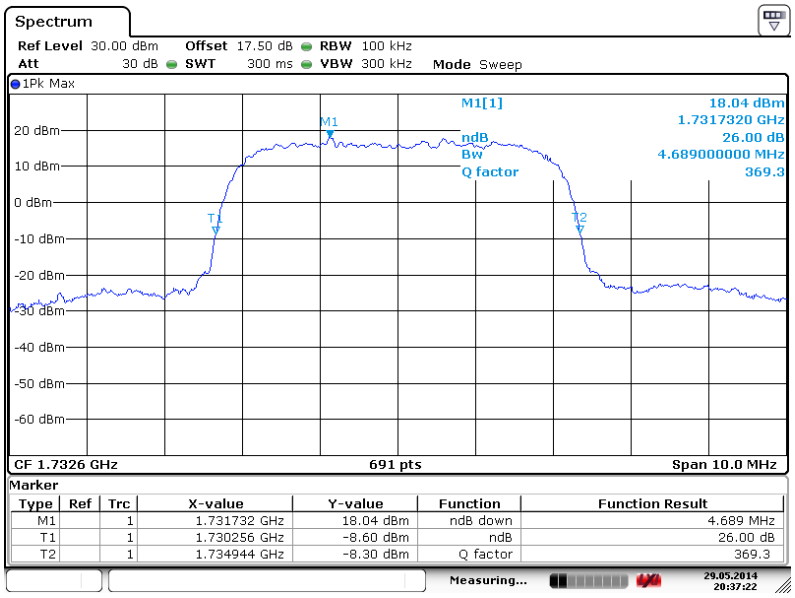
Date: 29.MAY.2014 20:35:16

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



Date: 29.MAY.2014 20:42:50

26dB Bandwidth Plot on Channel 1413 (1732.6 MHz)

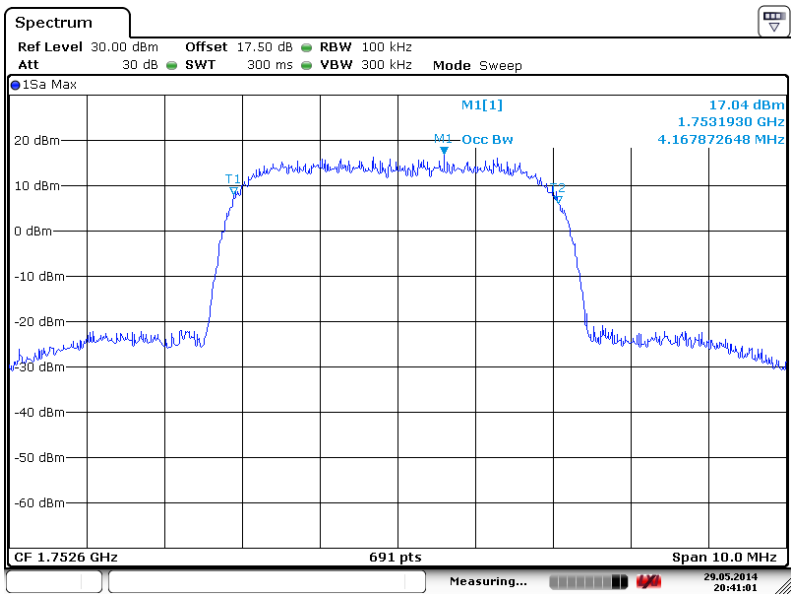


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.731732 GHz	18.04 dBm	ndB down	4.689 MHz
T1		1	1.730256 GHz	-8.60 dBm	ndB	26.00 dB
T2		1	1.734944 GHz	-8.30 dBm	Q factor	369.3

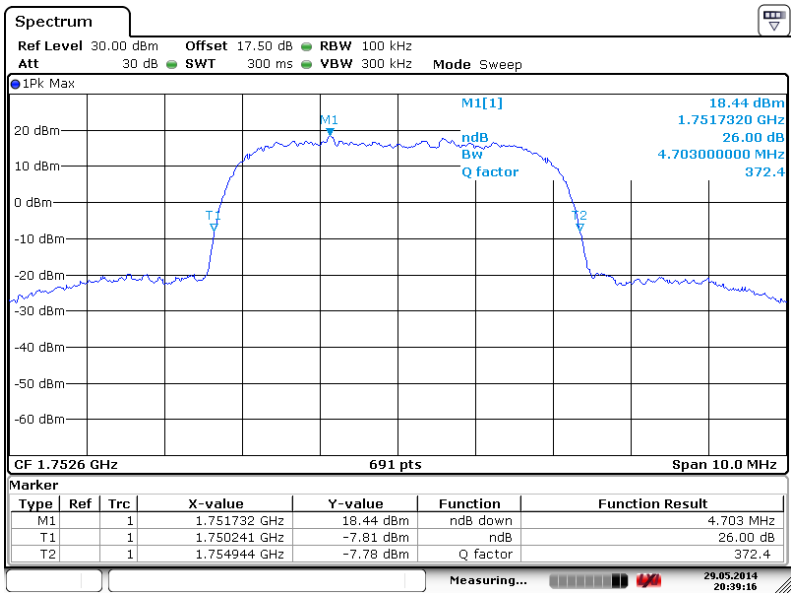
Date: 29.MAY.2014 20:37:22

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



Date: 29.MAY.2014 20:41:01

26dB Bandwidth Plot on Channel 1513 (1752.6 MHz)



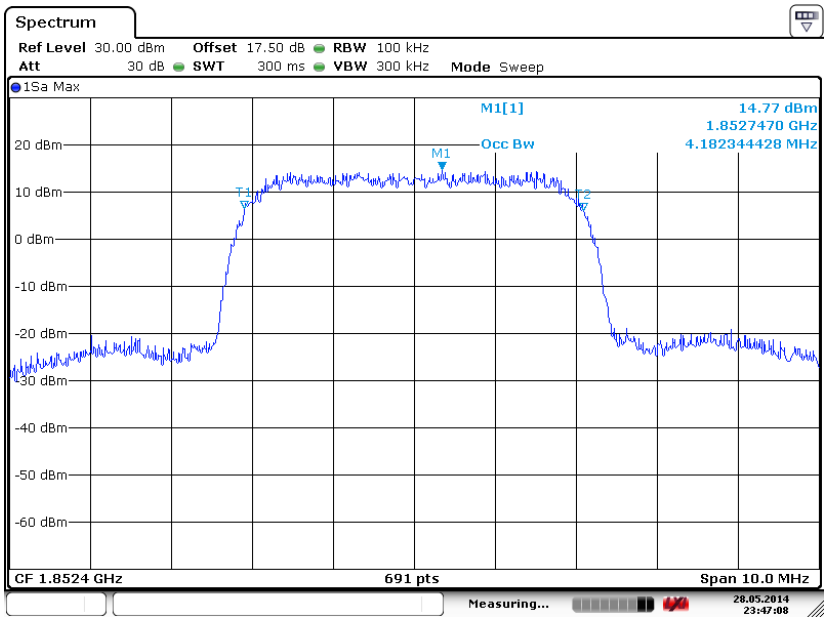
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.751732 GHz	18.44 dBm	ndB down	4.703 MHz
T1		1	1.750241 GHz	-7.81 dBm	ndB	26.00 dB
T2		1	1.754944 GHz	-7.78 dBm	Q factor	372.4

Date: 29.MAY.2014 20:39:16

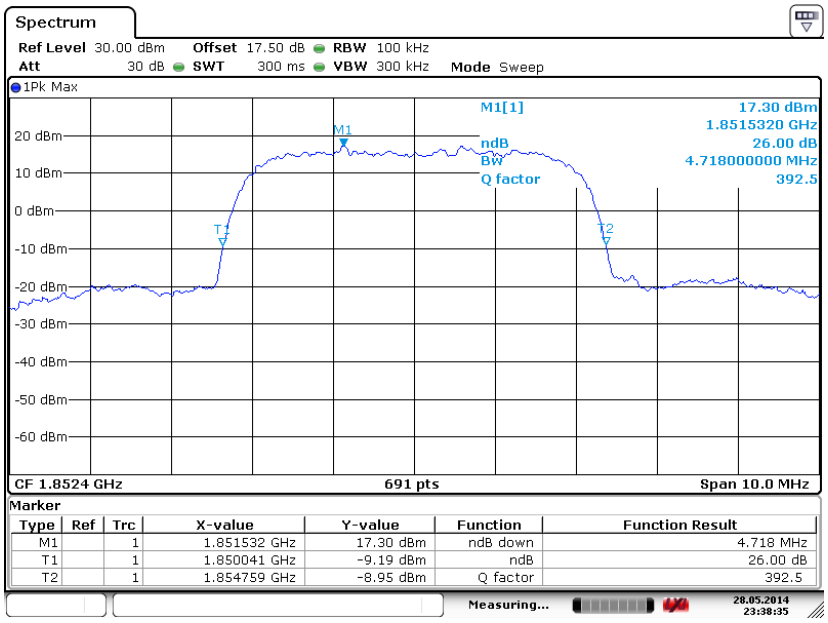
Band :	WCDMA Band II	Test Mode :	RMC 12.2Kbps Link (QPSK)

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



Date: 28.MAY.2014 23:47:08

26dB Bandwidth Plot on Channel 9262 (1852.4 MHz)

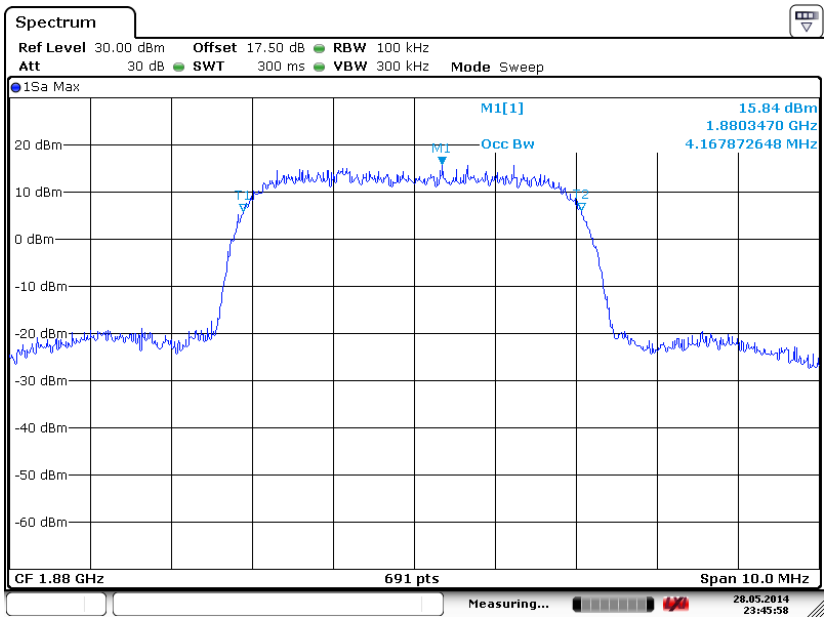


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.851532 GHz	17.30 dBm	ndB down	4.718 MHz
T1		1	1.850041 GHz	-9.19 dBm	ndB	26.00 dB
T2		1	1.854759 GHz	-8.95 dBm	Q factor	392.5

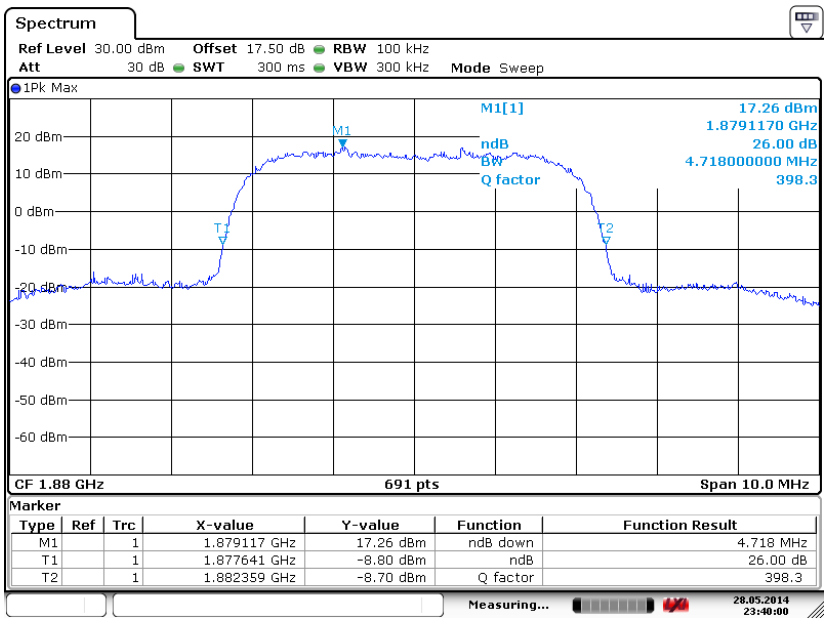
Date: 28.MAY.2014 23:38:35

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



Date: 28.MAY.2014 23:45:57

26dB Bandwidth Plot on Channel 9400 (1880.0 MHz)

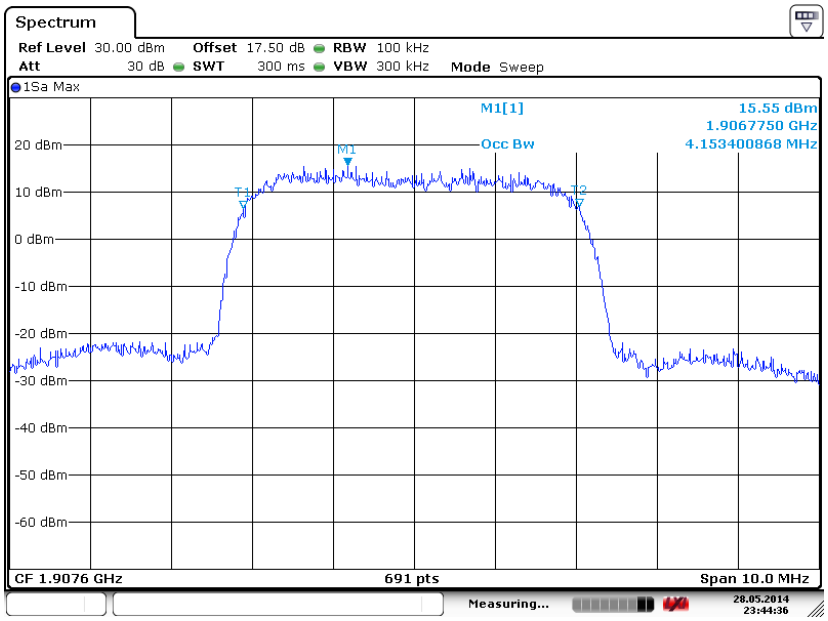


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.879117 GHz	17.26 dBm	ndB down	4.718 MHz
T1		1	1.877641 GHz	-8.80 dBm	ndB	26.00 dB
T2		1	1.882359 GHz	-8.70 dBm	Q factor	398.3

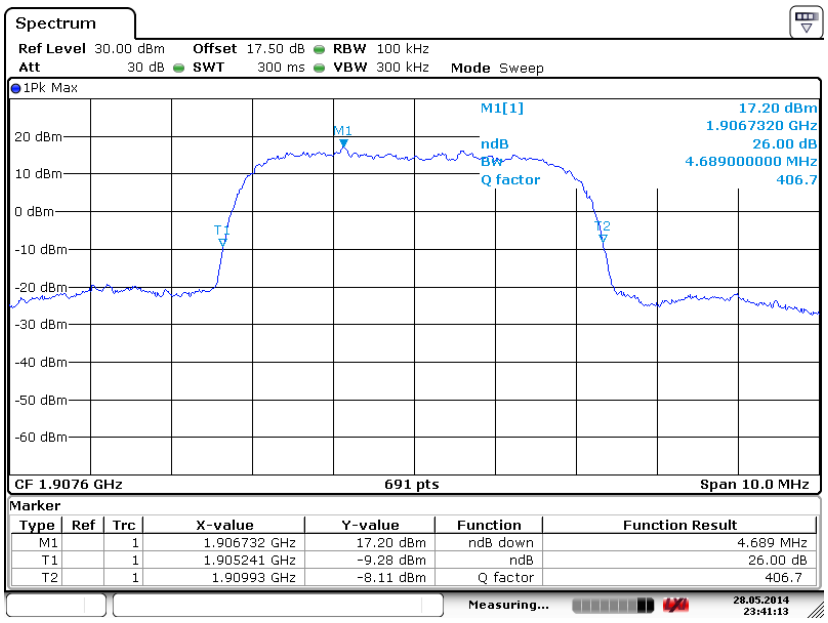
Date: 28.MAY.2014 23:40:00

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



Date: 28.MAY.2014 23:44:36

26dB Bandwidth Plot on Channel 9538 (1907.6 MHz)



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.906732 GHz	17.20 dBm	ndB down	4.689 MHz
T1		1	1.905241 GHz	-9.28 dBm	ndB	26.00 dB
T2		1	1.90993 GHz	-8.11 dBm	Q factor	406.7

Date: 28.MAY.2014 23:41:13

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.

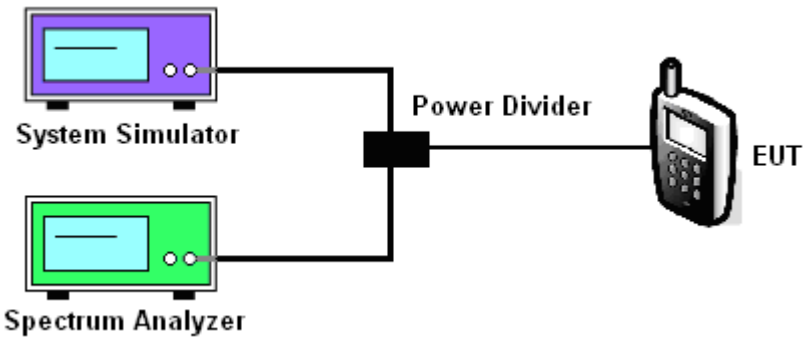
3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

1. The EUT was connected to the spectrum analyzer and system simulator via a power divider.
2. 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.
3. The band edges of low and high channels for the highest RF powers were measured.
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 + 10log(P) dB below the transmitter power P(Watts)
   = P(W) - [43 + 10log(P)] (dB)
   = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
   = -13dBm.

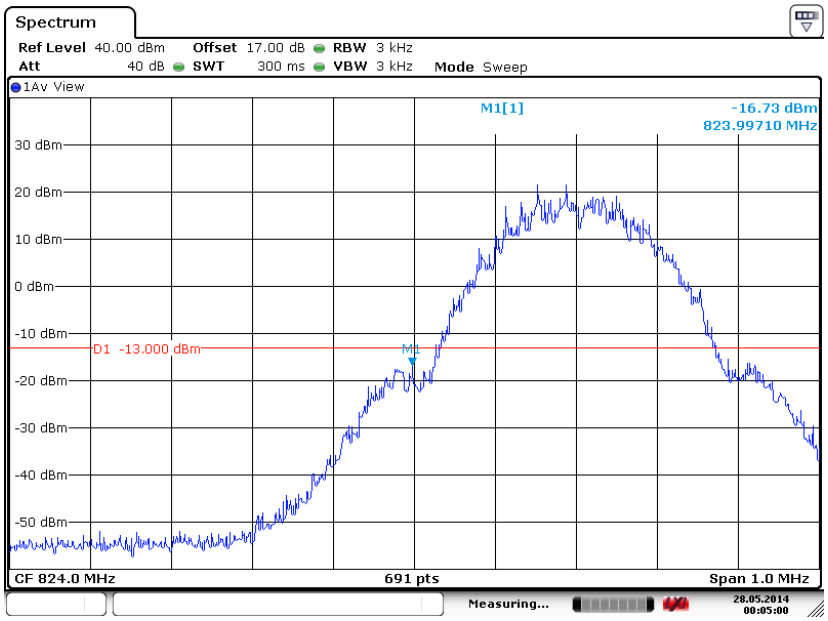
3.5.4 Test Setup



3.5.5 Test Result (Plots) of Conducted Band Edge

Band :	GSM850	**Test Mode :**	GSM Link (GMSK)
Correction Factor :	0.16dB	**Maximum 26dB Bandwidth :**	0.311MHz
Band Edge :	-16.57dBm	**Measurement Value :**	-16.73dBm

Lower Band Edge Plot on Channel 128 (824.2 MHz)



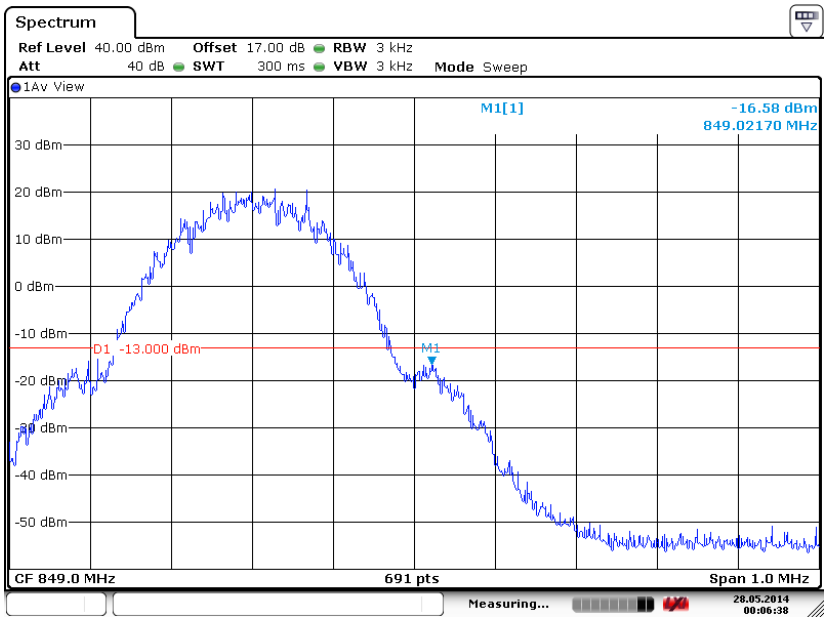
Date: 28.MAY.2014 00:05:01

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 :	0.16dB	Maximum 26dB Bandwidth :	0.311MHz
Band Edge :	-16.42dBm	Measurement Value :	-16.58dBm

Higher Band Edge Plot on Channel 251 (848.8 MHz)

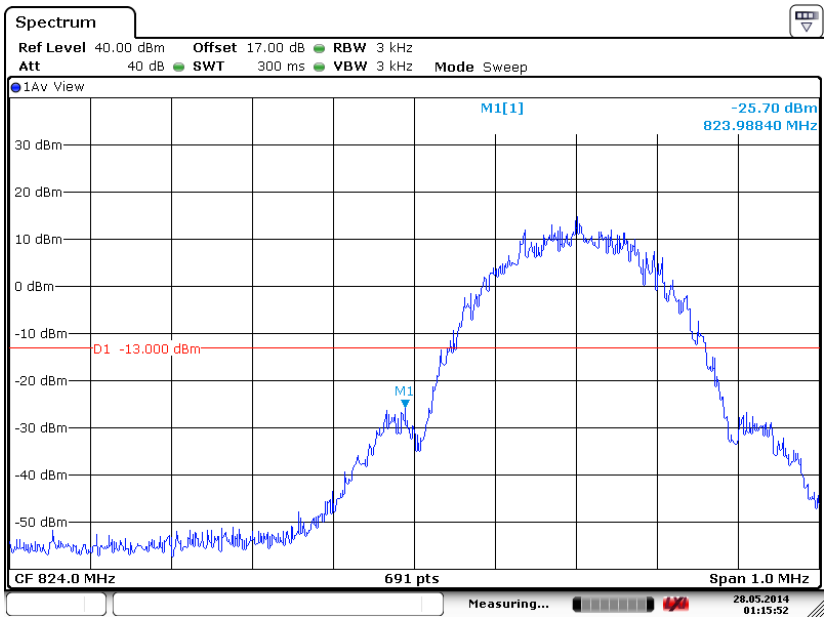


1. Correction Factor(dB)= 10log(1% Emission BW/RBW)

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

Band :	GSM850	Test Mode :	EDGE class 8 Link (8PSK)
Correction Factor :	0.16dB	Maximum 26dB Bandwidth :	0.311MHz
Band Edge :	-25.54dBm	Measurement Value :	-25.70dBm

Lower Band Edge Plot on Channel 128 (824.2 MHz)

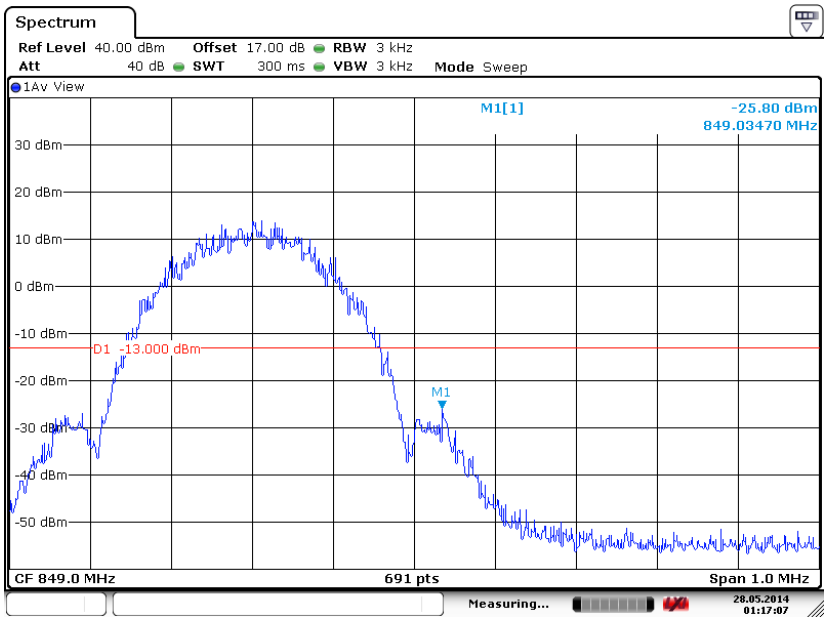


1. Correction Factor(dB)= 10log(1% Emission BW/RBW)

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

Band :	GSM850	Test Mode :	EDGE class 8 Link (8PSK)
Correction Factor :	0.16dB	Maximum 26dB Bandwidth :	0.311MHz
Band Edge :	-25.64dBm	Measurement Value :	-25.80dBm

Higher Band Edge Plot on Channel 251 (848.8 MHz)

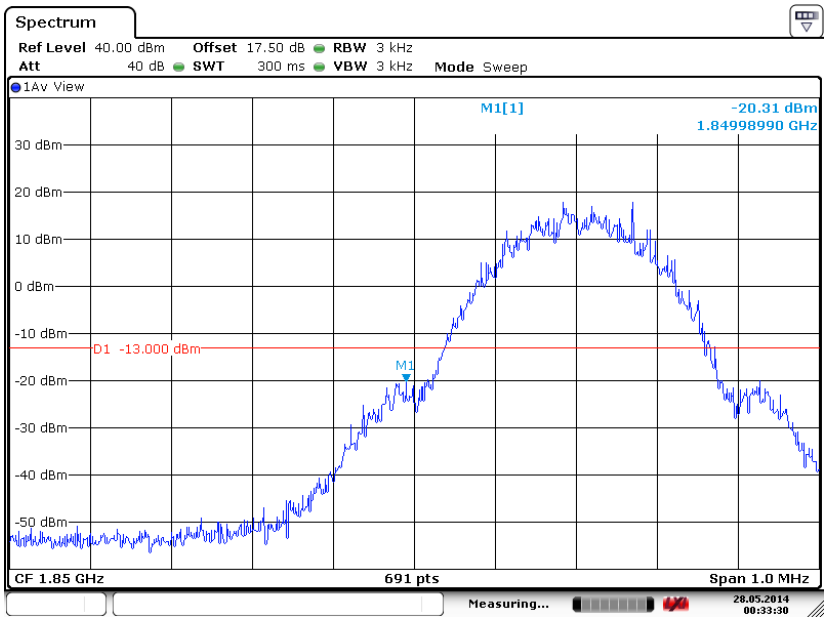


1. Correction Factor(dB)= 10log(1% Emission BW/RBW)

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

Band :	GSM1900	**Test Mode :**	GSM Link (GMSK)
Correction Factor :	0.16dB	**Maximum 26dB Bandwidth :**	0.311MHz
Band Edge :	-20.15dBm	**Measurement Value :**	-20.31dBm

Lower Band Edge Plot on Channel 512 (1850.2 MHz)

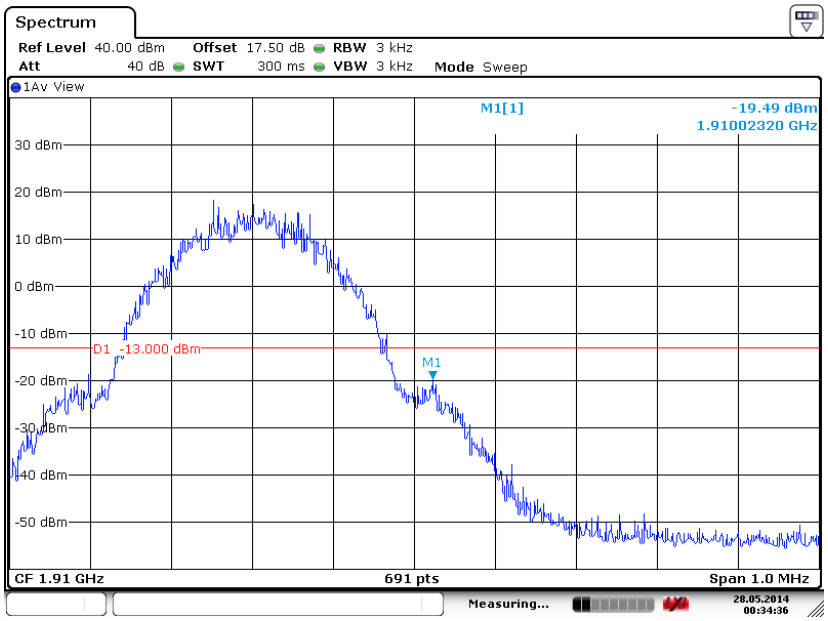


1. Correction Factor(dB)= 10log(1% Emission BW/RBW)

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

Band :	GSM1900	**Test Mode :**	GSM Link (GMSK)
Correction Factor :	0.16dB	**Maximum 26dB Bandwidth :**	0.311MHz
Band Edge :	-19.33dBm	**Measurement Value :**	-19.49dBm

Higher Band Edge Plot on Channel 810 (1909.8 MHz)

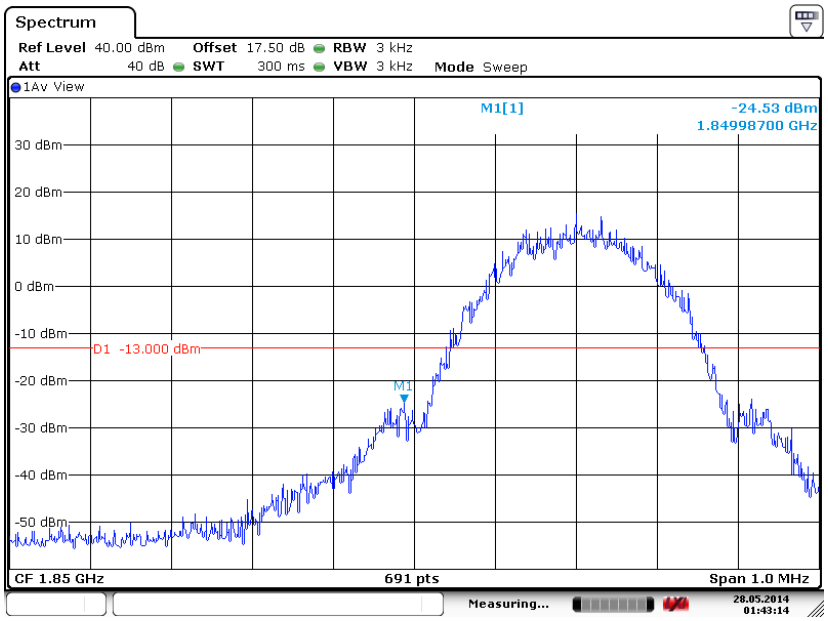


1. Correction Factor(dB)= 10log(1% Emission BW/RBW)

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

Band :	GSM1900	**Test Mode :**	EDGE class 8 Link (8PSK)
Correction Factor :	0.16dB	**Maximum 26dB Bandwidth :**	0.311MHz
Band Edge :	-24.37dBm	**Measurement Value :**	-24.53dBm

Lower Band Edge Plot on Channel 512 (1850.2 MHz)

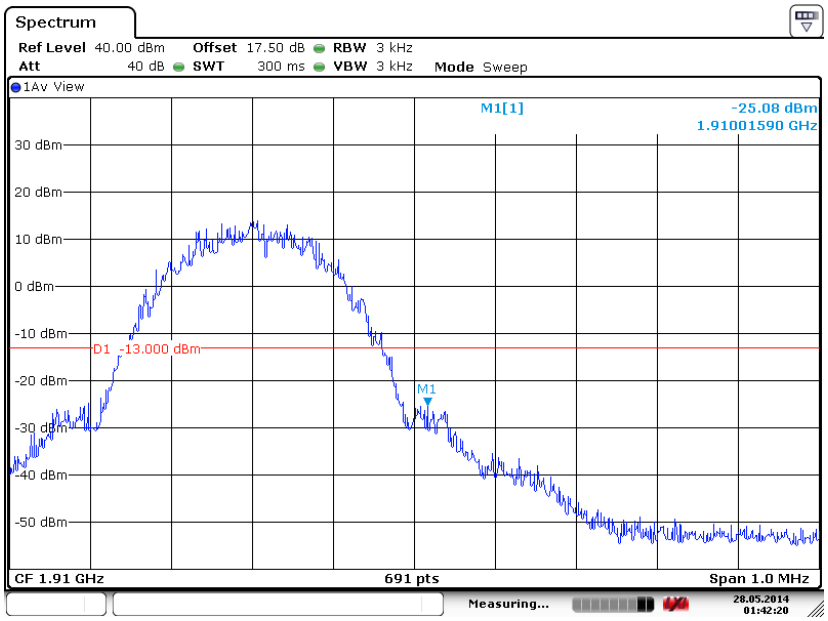


1. Correction Factor(dB)= 10log(1% Emission BW/RBW)

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

Band :	GSM1900	Test Mode :	EDGE class 8 Link (8PSK)
Correction Factor :	0.16dB	Maximum 26dB Bandwidth :	0.311MHz
Band Edge :	-24.92dBm	Measurement Value :	-25.08dBm

Higher Band Edge Plot on Channel 810 (1909.8 MHz)

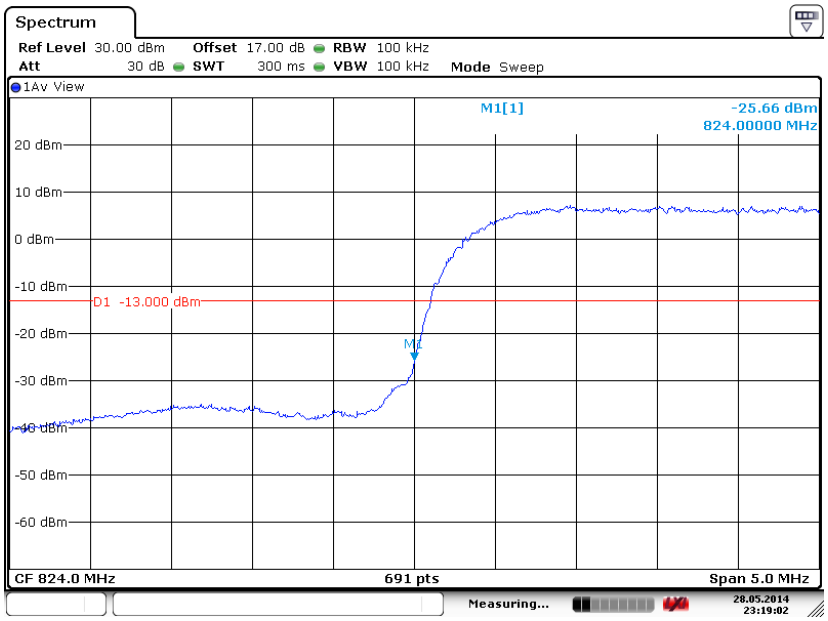


1. Correction Factor(dB)= 10log(1% Emission BW/RBW)

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

Band :	WCDMA Band V	Test Mode :	RMC 12.2Kbps Link (QPSK)
Correction Factor :	-3.29dB	Maximum 26dB Bandwidth :	4.689MHz
Band Edge :	-28.95dBm	Measurement Value :	-25.66dBm

Lower Band Edge Plot on Channel 4132 (826.4 MHz)

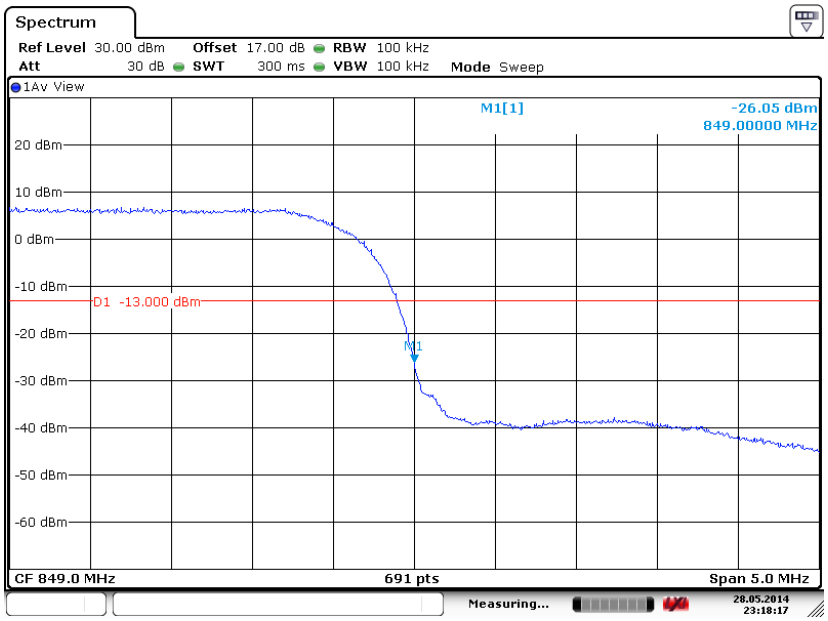


1. Correction Factor(dB)= 10log(1% Emission BW/RBW)

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

Band :	WCDMA Band V	**Test Mode :**	RMC 12.2Kbps Link (QPSK)
Correction Factor :	-3.29dB	**Maximum 26dB Bandwidth :**	4.689MHz
Band Edge :	-29.34dBm	**Measurement Value :**	-26.05dBm

Higher Band Edge Plot on Channel 4233 (846.6 MHz)

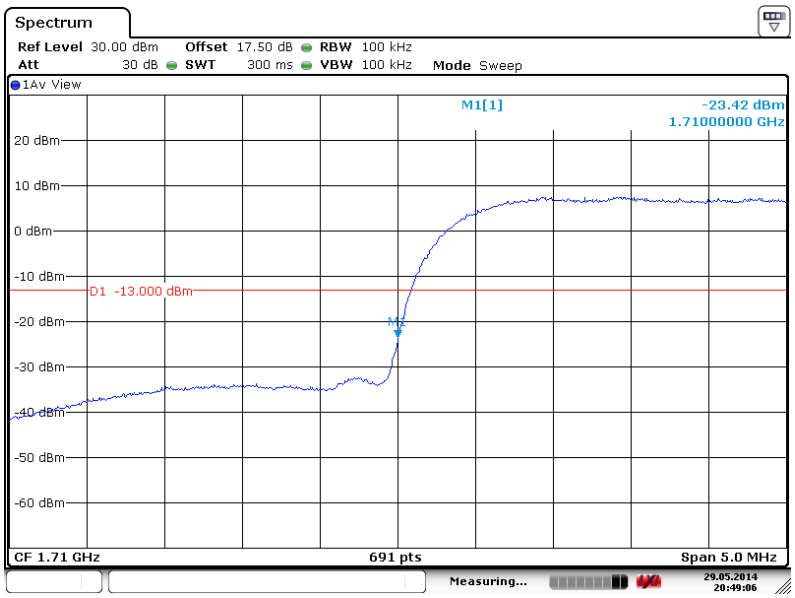


1. Correction Factor(dB)= 10log(1% Emission BW/RBW)

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

Band :	WCDMA Band IV	**Test Mode :**	RMC 12.2Kbps Link (QPSK)
Correction Factor :	-3.28dB	**Maximum 26dB Bandwidth :**	4.703MHz
Band Edge :	-26.70dBm	**Measurement Value :**	-23.42dBm

Lower Band Edge Plot on Channel 1312 (1712.4 MHz)



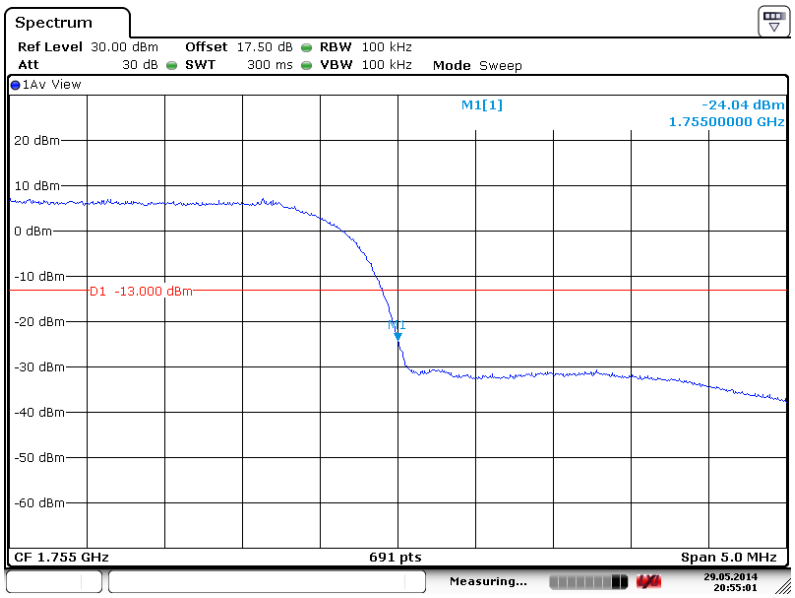
Date: 29.MAY.2014 20:49:06

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 :	-3.28dB	Maximum 26dB Bandwidth :	4.703MHz
Band Edge :	-27.32dBm	Measurement Value :	-24.04dBm

Higher Band Edge Plot on Channel 1513 (1752.6 MHz)

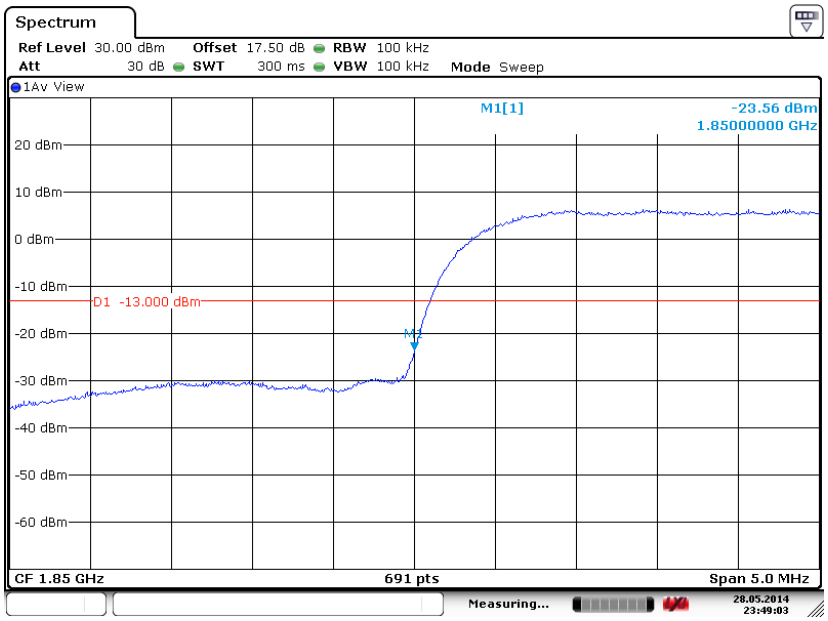


1. Correction Factor(dB)= 10log(1% Emission BW/RBW)

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

Band :	WCDMA Band II	**Test Mode :**	RMC 12.2Kbps Link (QPSK)
Correction Factor :	-3.26dB	**Maximum 26dB Bandwidth :**	4.718MHz
Band Edge :	-26.82dBm	**Measurement Value :**	-23.56dBm

Lower Band Edge Plot on Channel 9262 (1852.4 MHz)

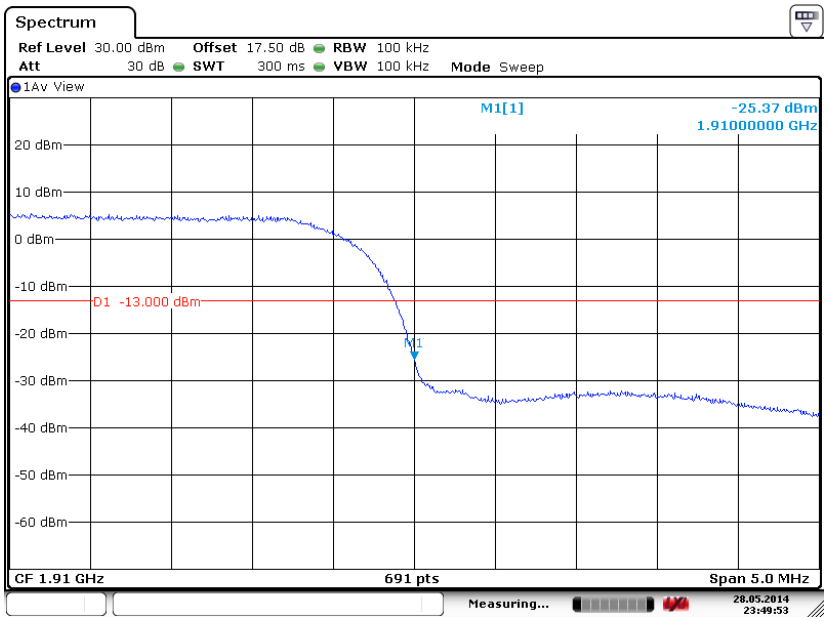


1. Correction Factor(dB)= 10log(1% Emission BW/RBW)

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

Band :	WCDMA Band II	**Test Mode :**	RMC 12.2Kbps Link (QPSK)
Correction Factor :	-3.26dB	**Maximum 26dB Bandwidth :**	4.718MHz
Band Edge :	-28.63dBm	**Measurement Value :**	-25.37dBm

Higher Band Edge Plot on Channel 9538 (1907.6 MHz)



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

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

3.6 Conducted Spurious Emission Measurement

3.6.1 Description of Conducted Spurious Emission Measurement

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

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

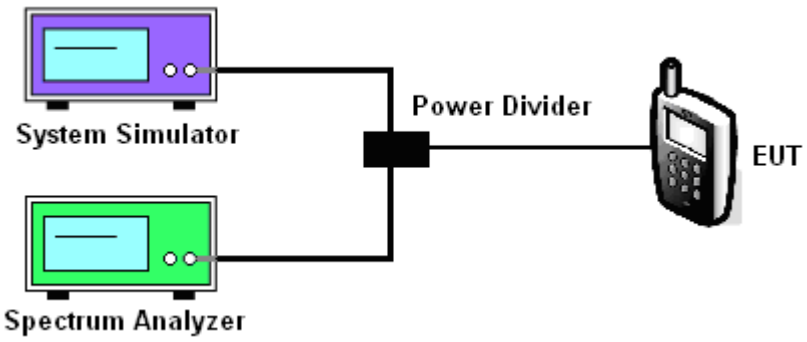
3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

1. The EUT was connected to the spectrum analyzer and system simulator via a power divider.
2. 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.
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 + 10log(P) dB below the transmitter power P(Watts)
   = P(W) - [43 + 10log(P)] (dB)
   = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
   = -13dBm.

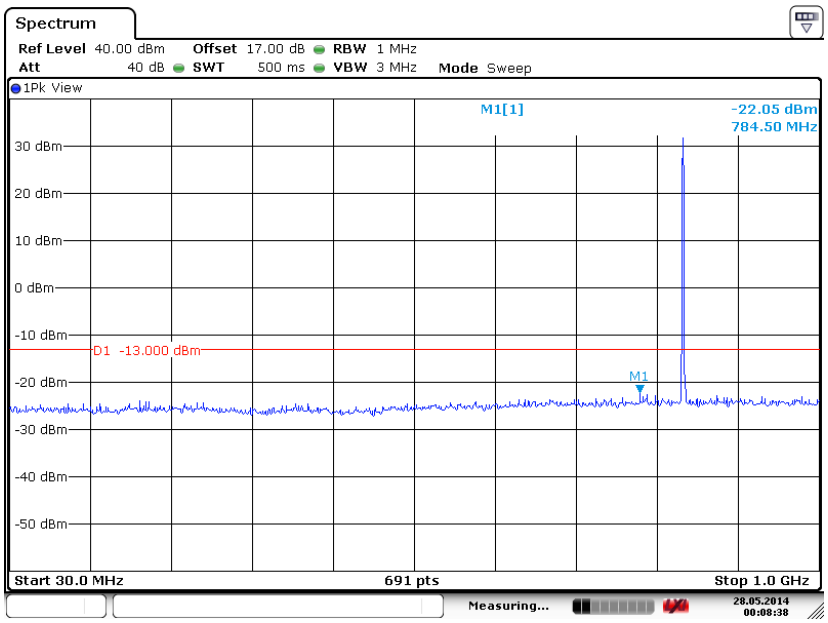
3.6.4 Test Setup



3.6.5 Test Result (Plots) of Conducted Spurious Emission

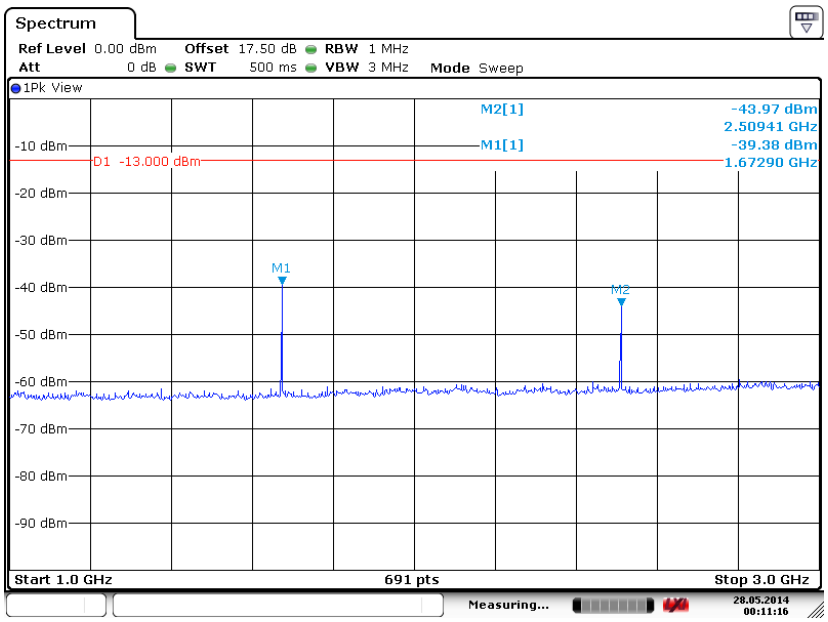
Band :	GSM850	Channel :	CH189
Test Mode :	GSM Link (GMSK)	Frequency :	836.4 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



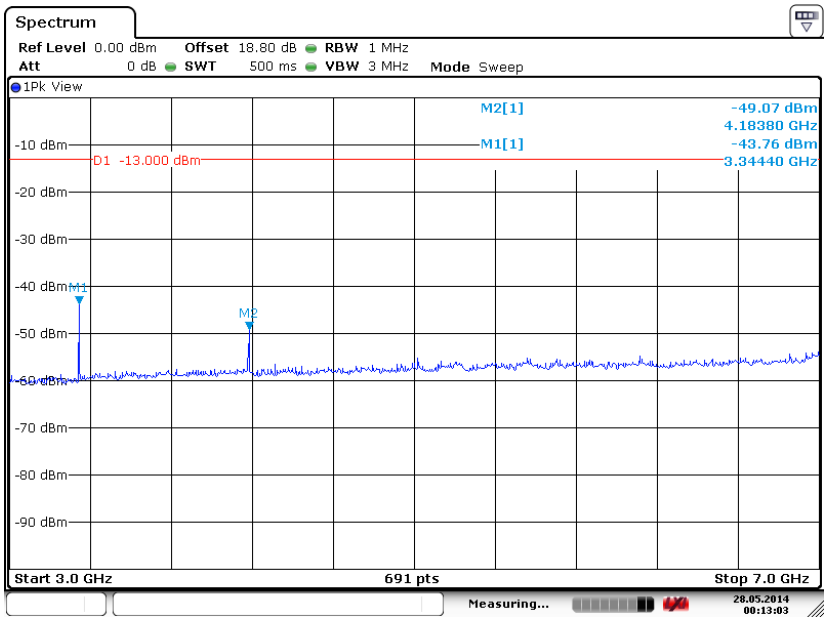
Date: 28.MAY.2014 00:08:38

Conducted Spurious Emission Plot between 1GHz ~ 3GHz



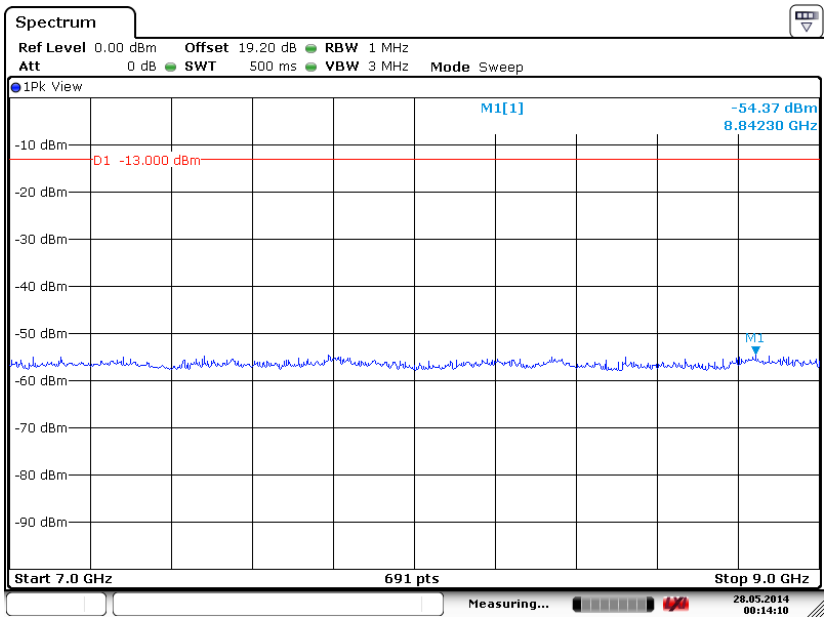
Date: 28.MAY.2014 00:11:17

Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 28.MAY.2014 00:13:03

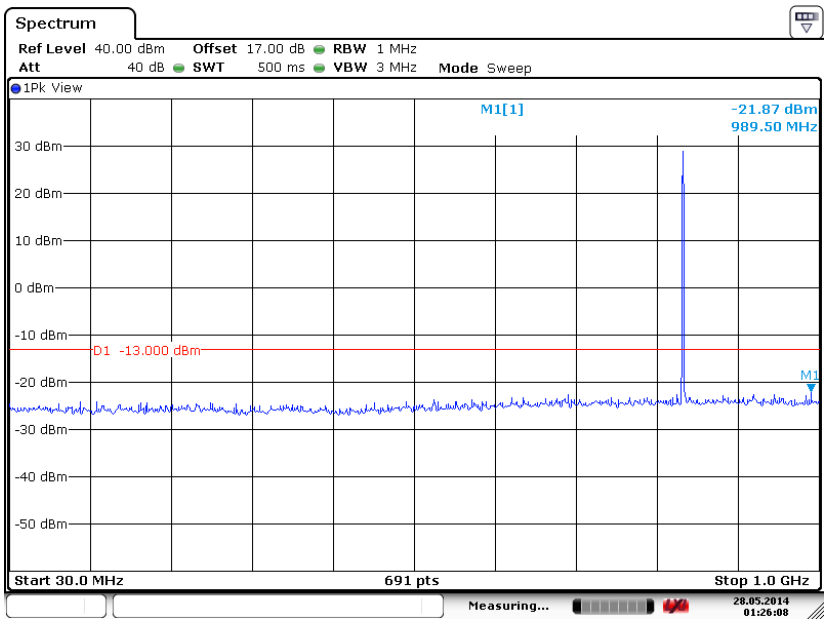
Conducted Spurious Emission Plot between 7GHz ~ 9GHz



Date: 28.MAY.2014 00:14:10

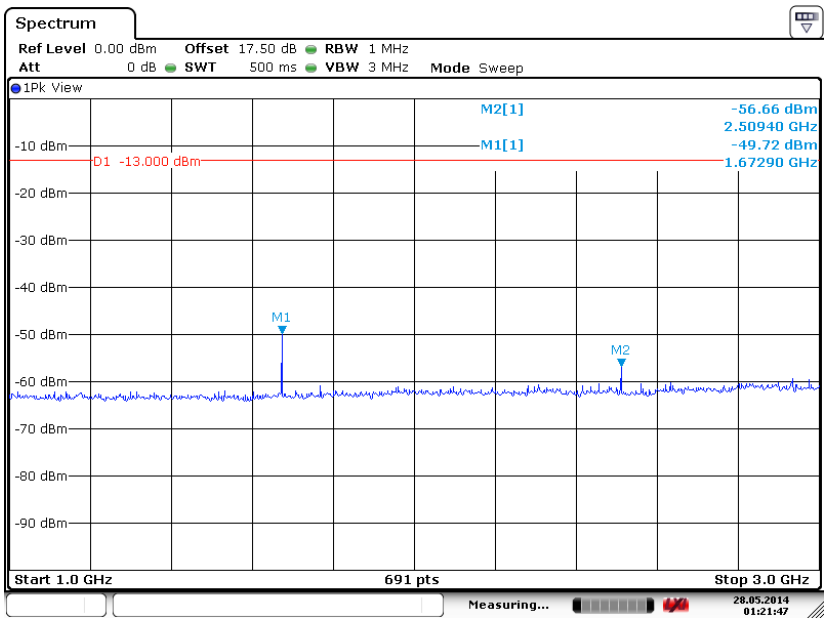
Band :	GSM850	Channel :	CH189
Test Mode :	EDGE class 8 Link (8PSK)	Frequency :	836.4 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



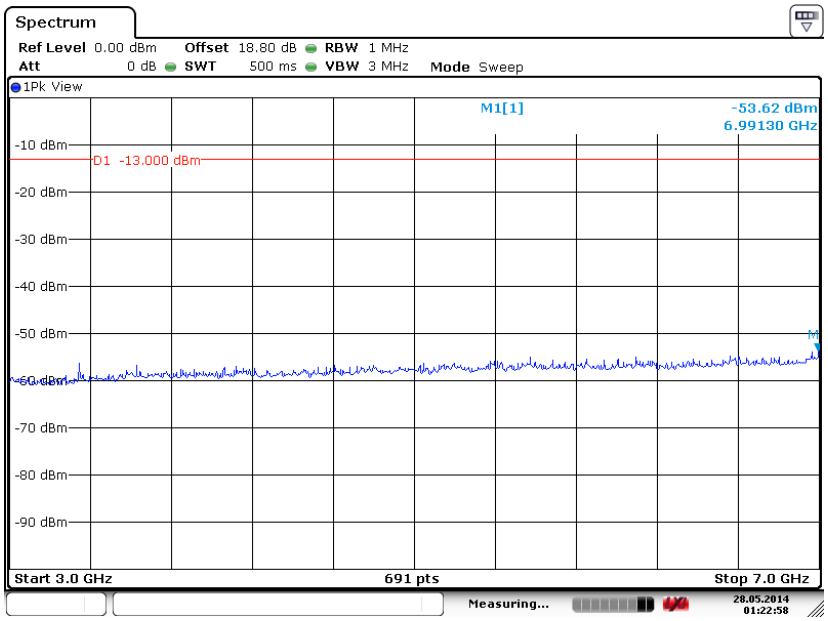
Date: 28.MAY.2014 01:26:08

Conducted Spurious Emission Plot between 1GHz ~ 3GHz



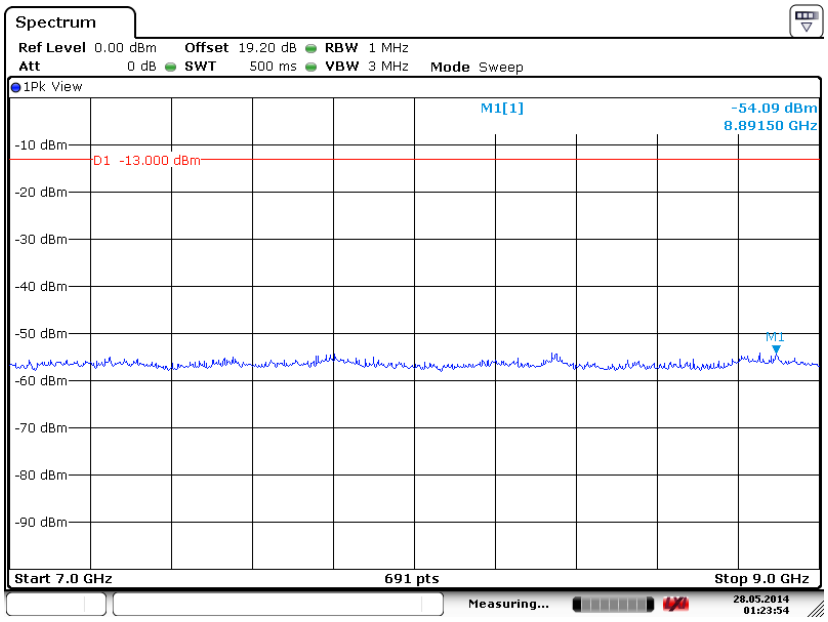
Date: 28.MAY.2014 01:21:47

Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 28.MAY.2014 01:22:58

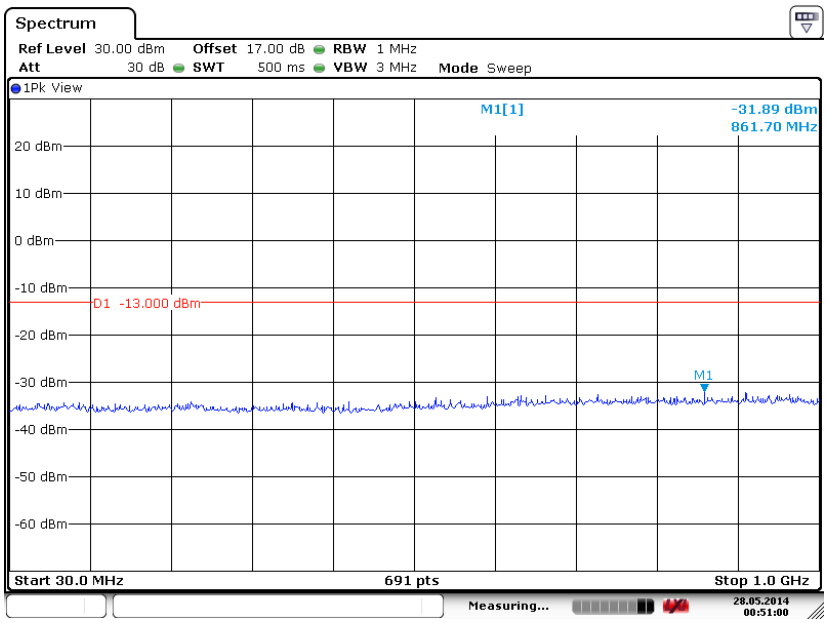
Conducted Spurious Emission Plot between 7GHz ~ 9GHz



Date: 28.MAY.2014 01:23:54

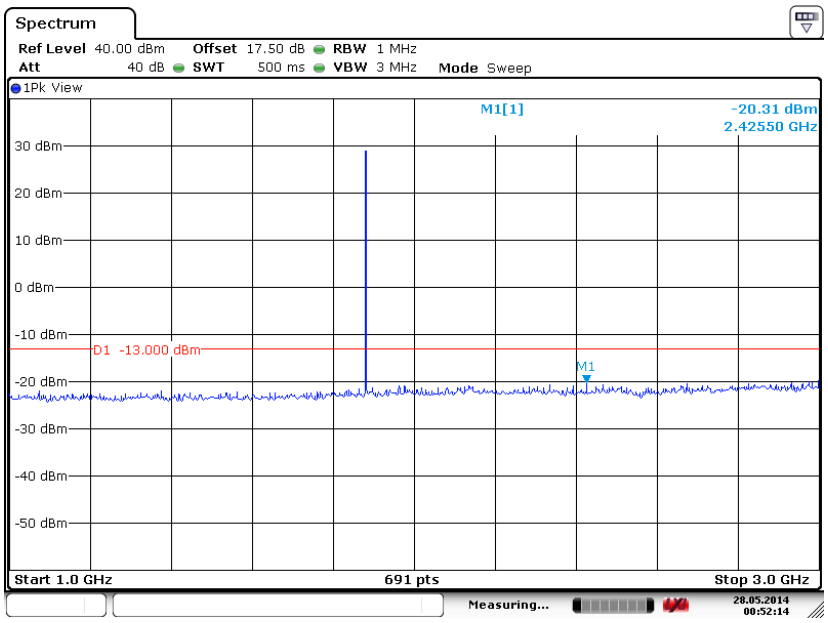
Band :	GSM1900	Channel :	CH661
Test Mode :	GSM Link (GMSK)	Frequency :	1880.0 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



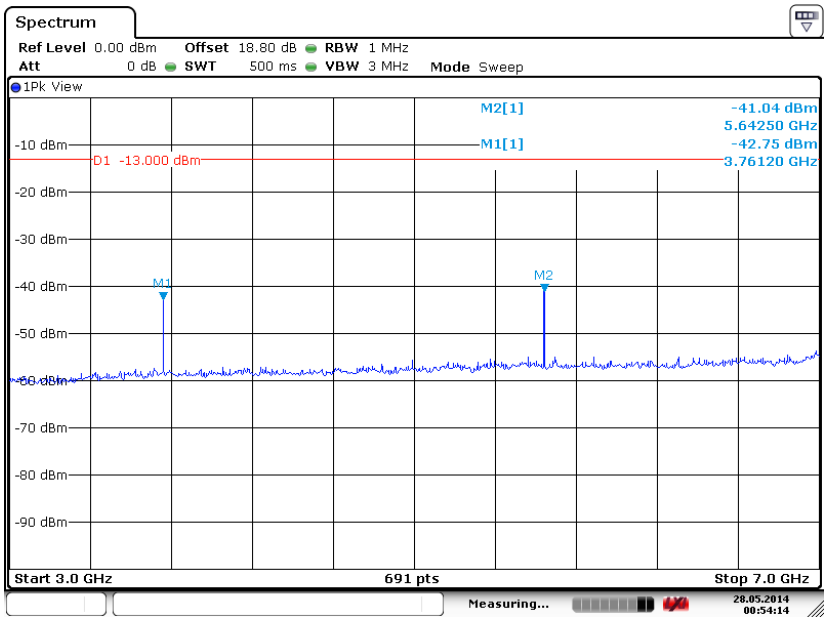
Date: 28.MAY.2014 00:51:00

Conducted Spurious Emission Plot between 1GHz ~ 3GHz



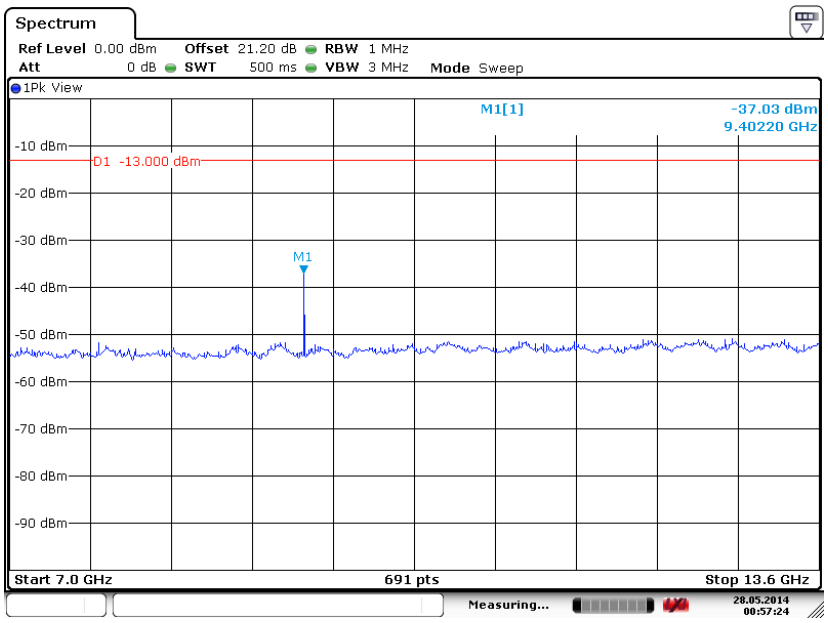
Date: 28.MAY.2014 00:52:14

Conducted Spurious Emission Plot between 3GHz ~ 7GHz



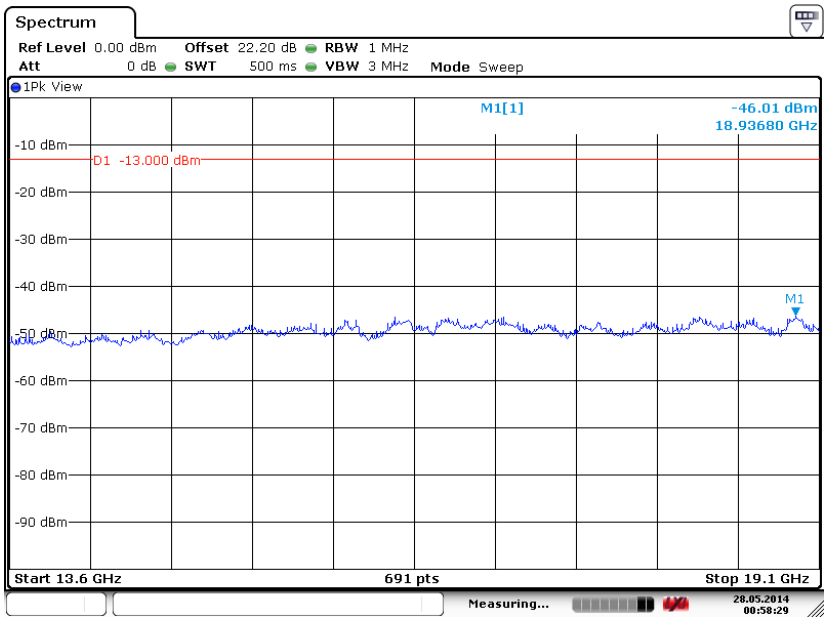
Date: 28.MAY.2014 00:54:14

Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz



Date: 28.MAY.2014 00:57:24

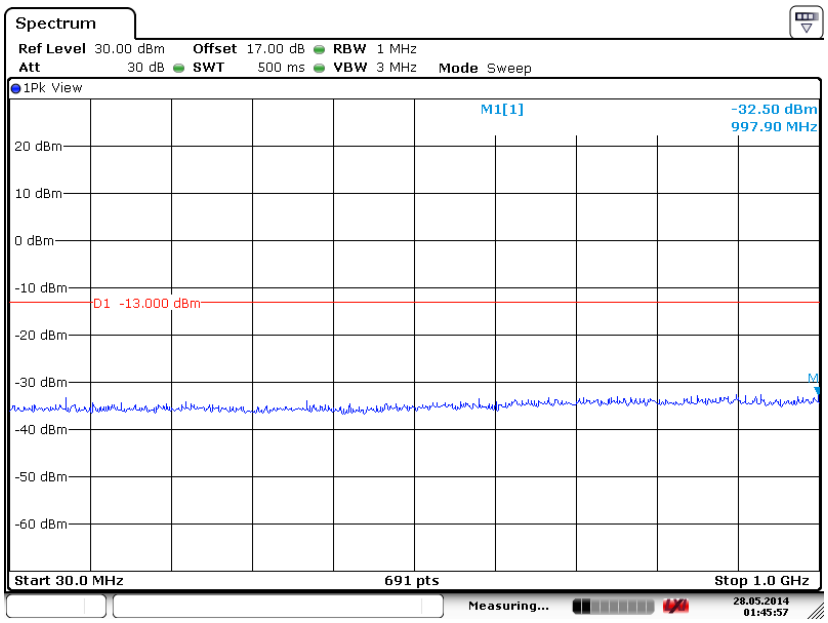
Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz



Date: 28.MAY.2014 00:58:29

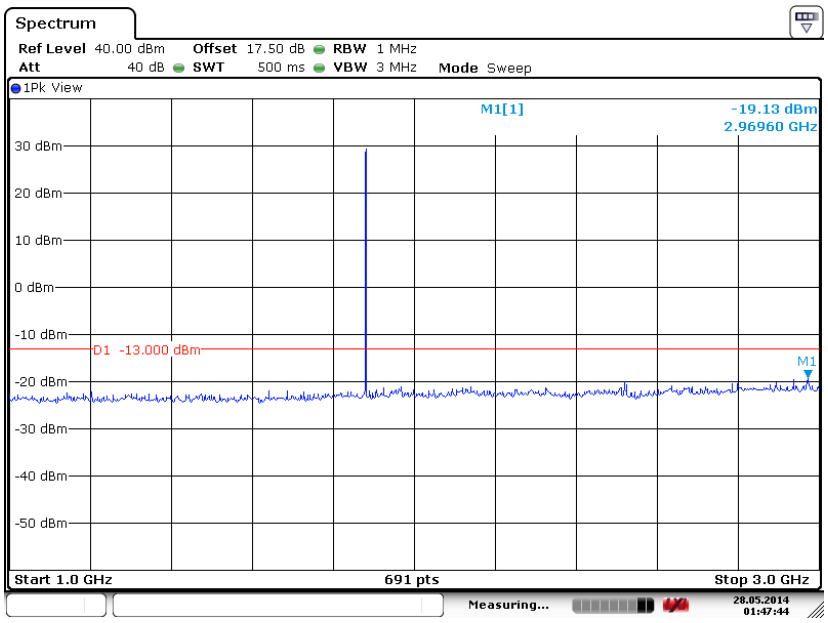
Band :	GSM1900	Channel :	CH661
Test Mode :	EDGE class 8 Link (8PSK)	Frequency :	1880.0 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



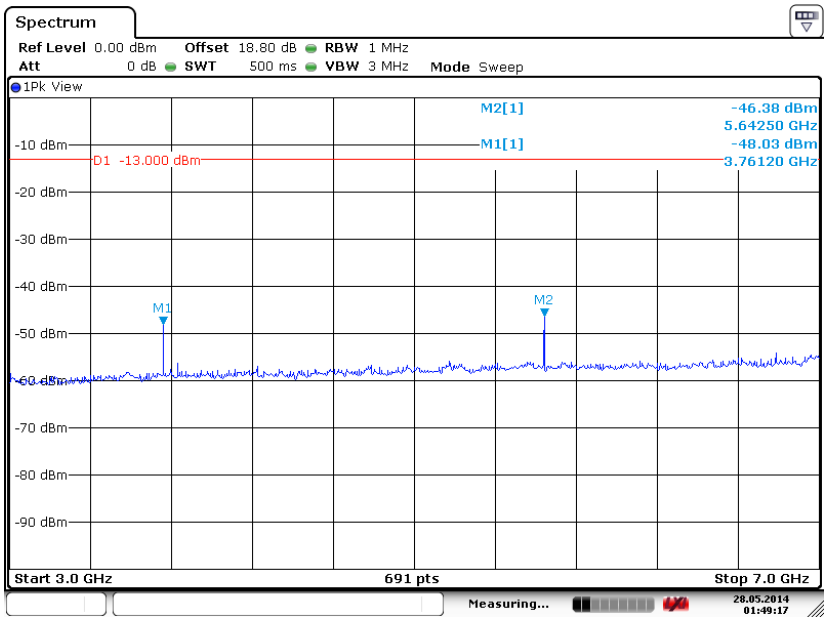
Date: 28.MAY.2014 01:45:57

Conducted Spurious Emission Plot between 1GHz ~ 3GHz



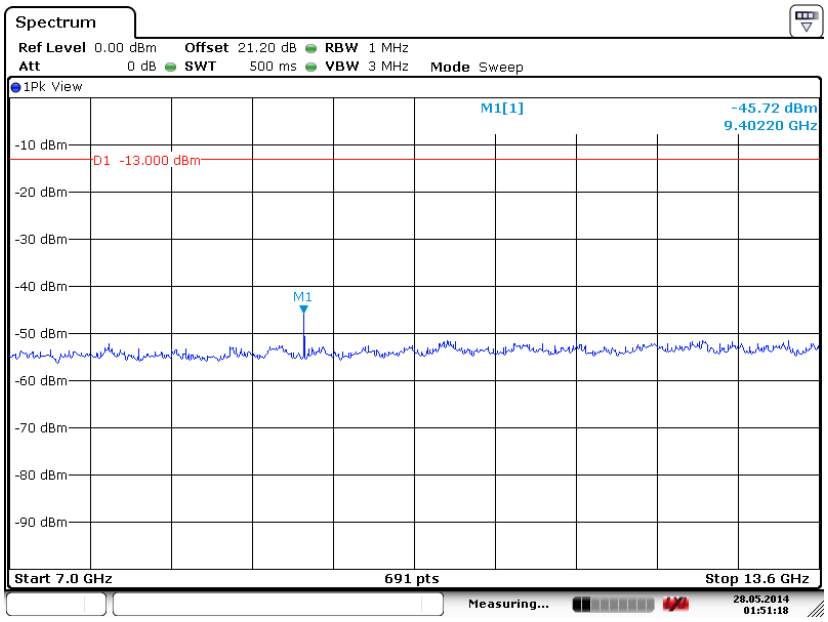
Date: 28.MAY.2014 01:47:44

Conducted Spurious Emission Plot between 3GHz ~ 7GHz



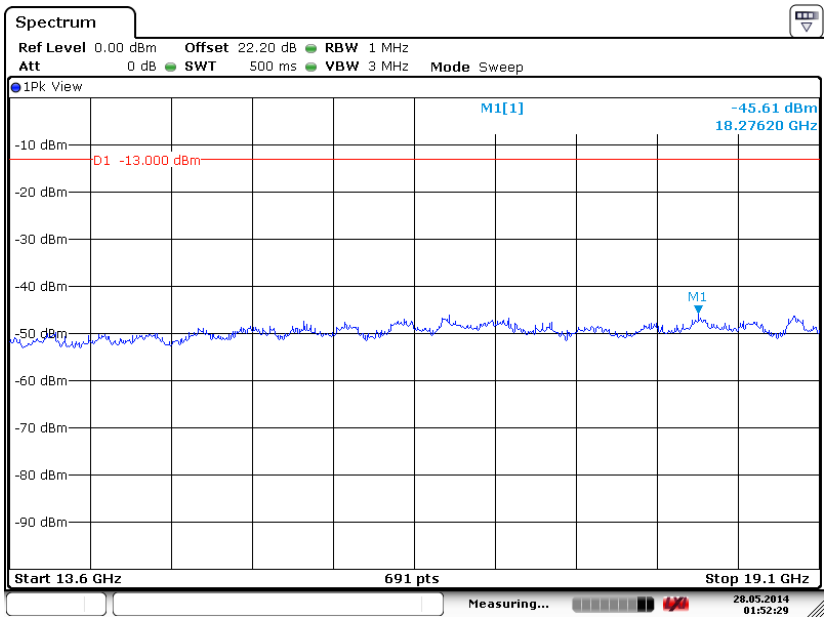
Date: 28.MAY.2014 01:49:17

Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz



Date: 28.MAY.2014 01:51:18

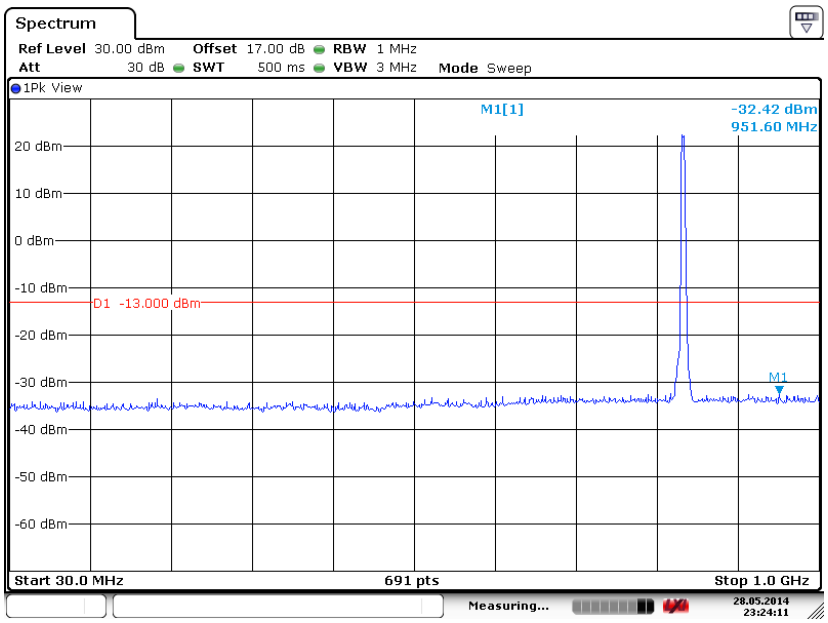
Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz



Date: 28.MAY.2014 01:52:29

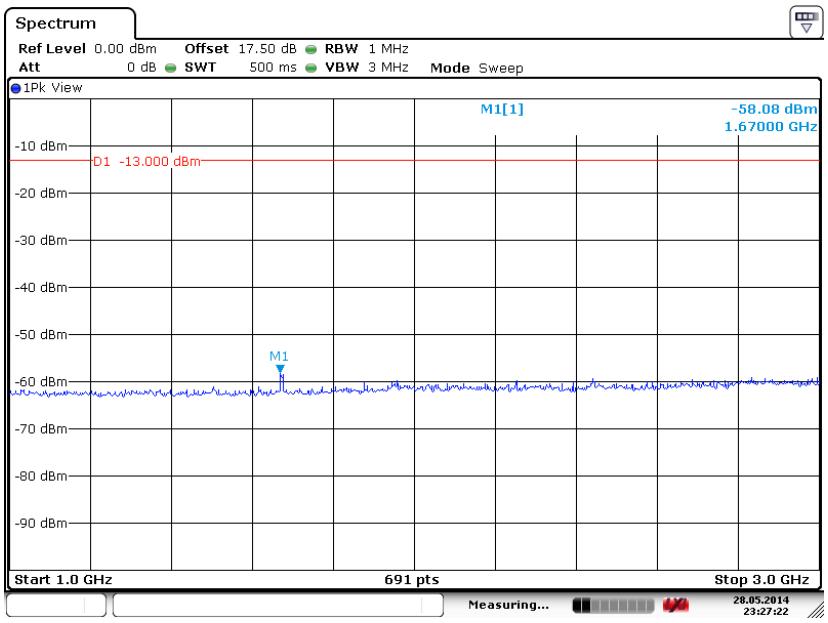
Band :	WCDMA Band V	Channel :	CH4182
Test Mode :	RMC 12.2Kbps Link (QPSK)	Frequency :	836.4 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



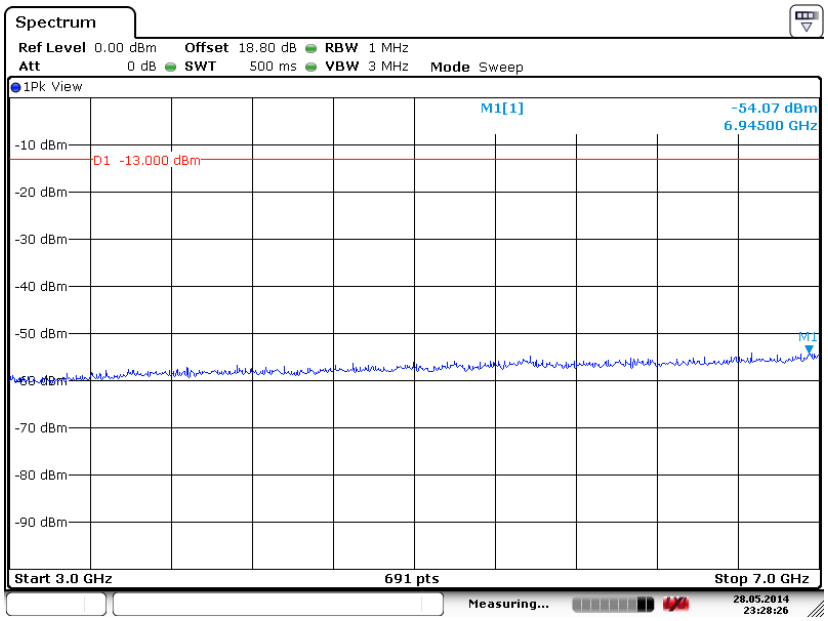
Date: 28.MAY.2014 23:24:11

Conducted Spurious Emission Plot between 1GHz ~ 3GHz



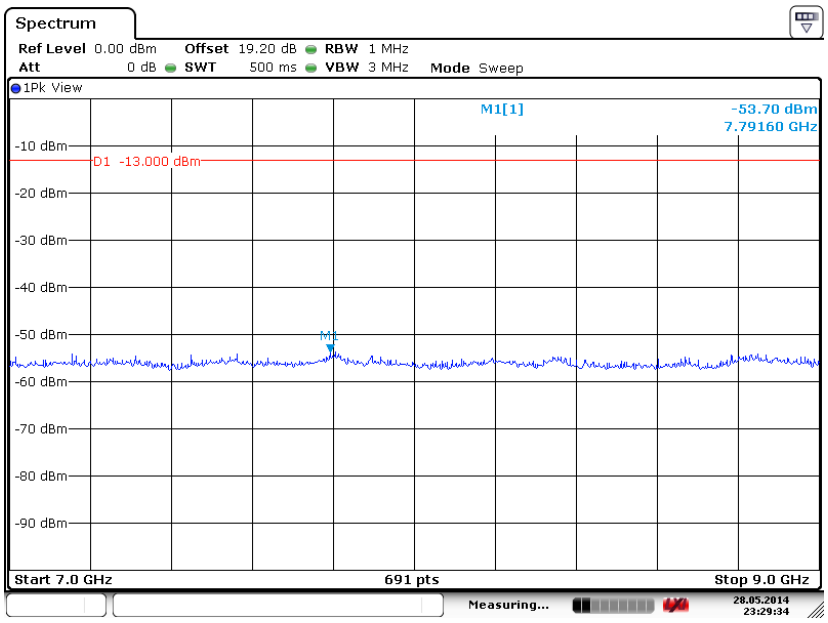
Date: 28.MAY.2014 23:27:22

Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 28.MAY.2014 23:28:26

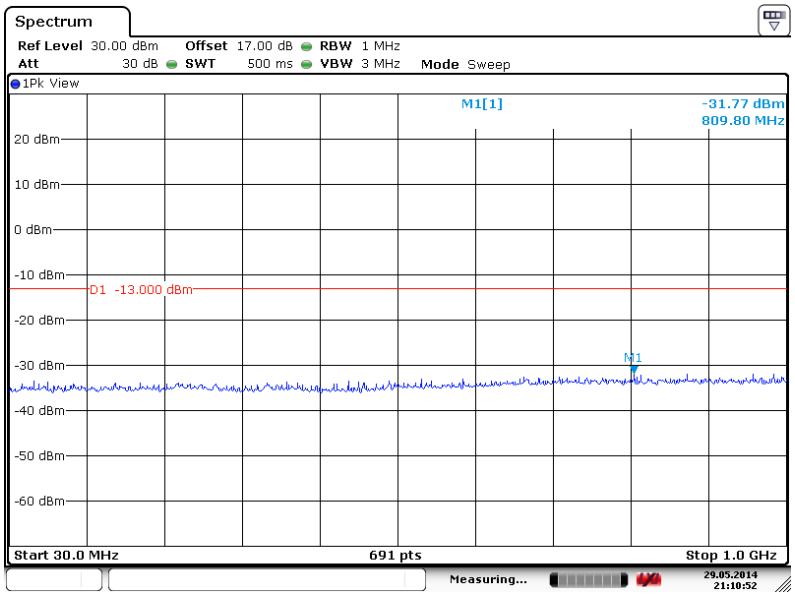
Conducted Spurious Emission Plot between 7GHz ~ 9GHz



Date: 28.MAY.2014 23:29:34

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

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



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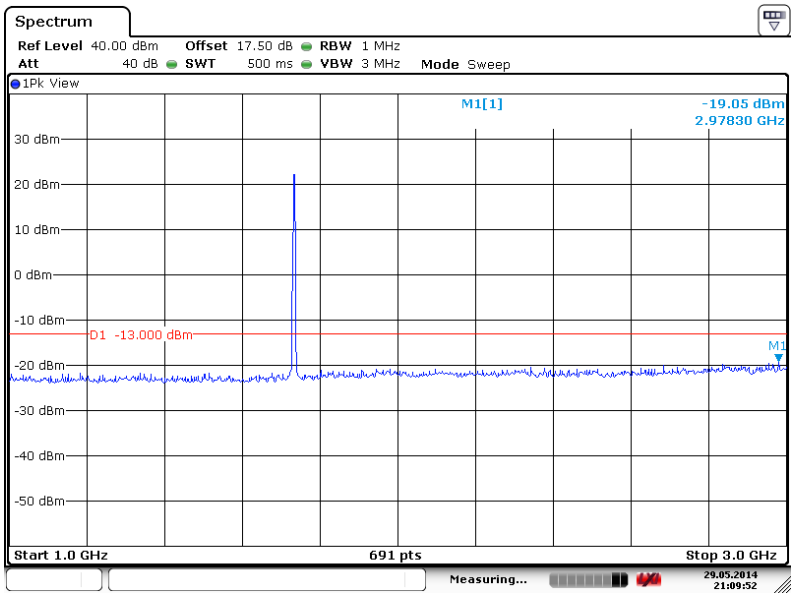
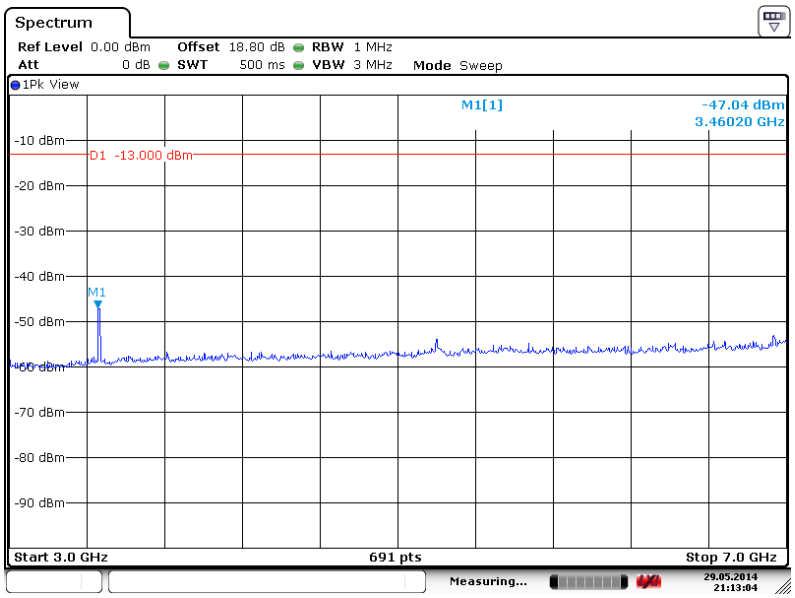
Conducted Spurious Emission Plot between 1GHz ~ 3GHz



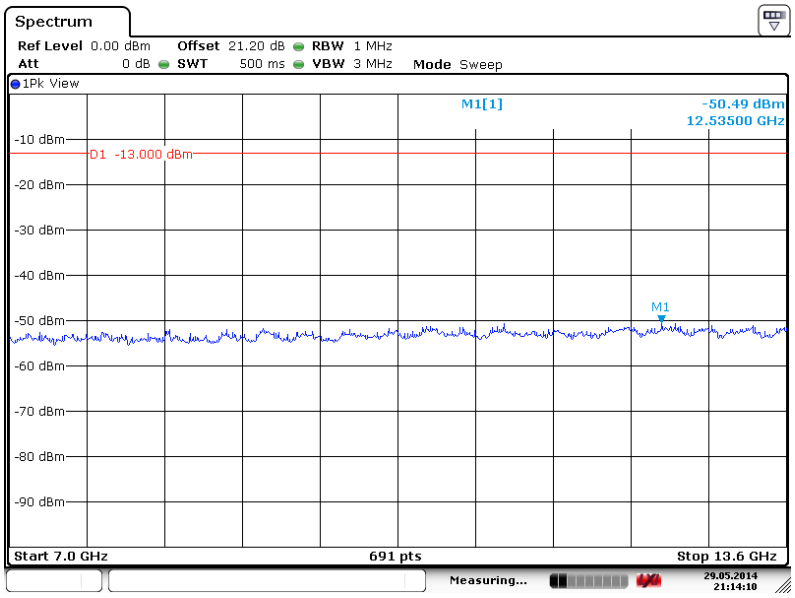
Date: 29.MAY.2014 21:09:51

Conducted Spurious Emission Plot between 3GHz ~ 7GHz



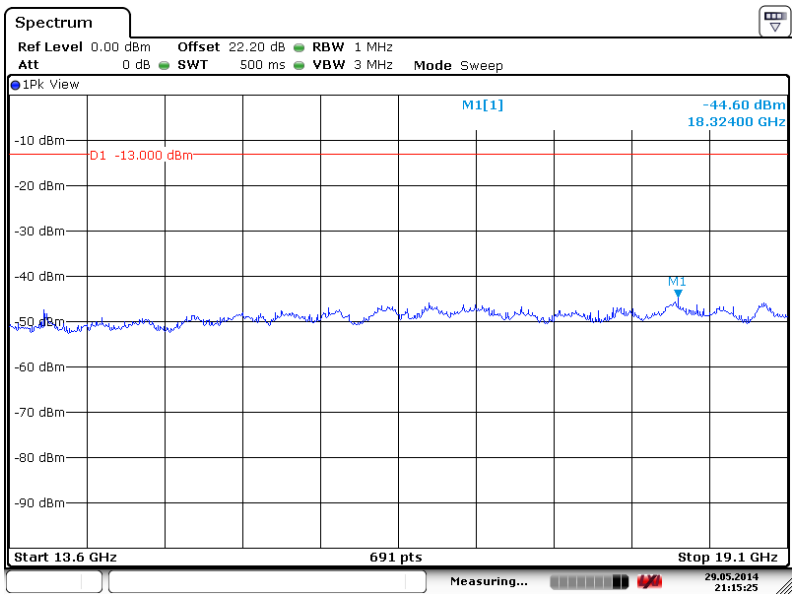
Date: 29.MAY.2014 21:13:04

Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz



Date: 29.MAY.2014 21:14:10

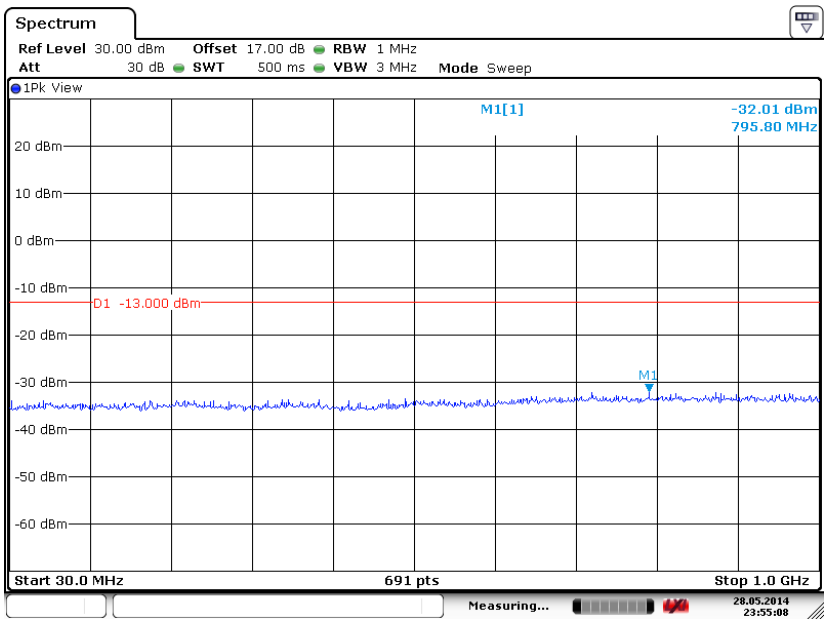
Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz



Date: 29.MAY.2014 21:15:25

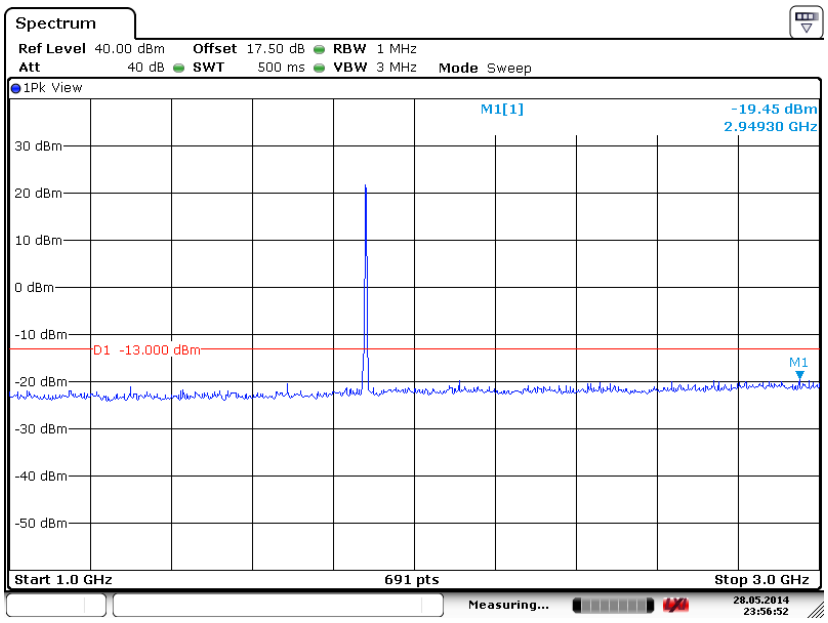
Band :	WCDMA Band II	Channel :	CH9400
Test Mode :	RMC 12.2Kbps Link (QPSK)	Frequency :	1880.0 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



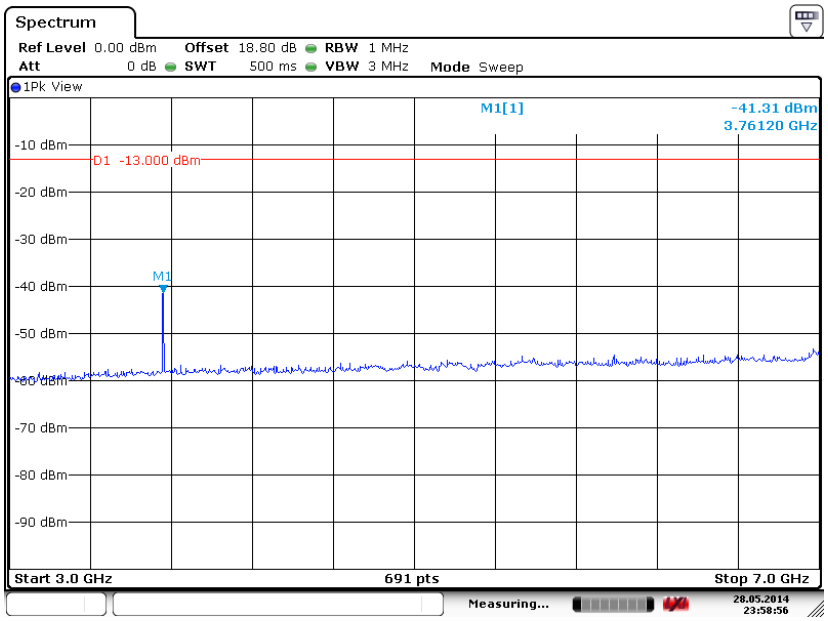
Date: 28.MAY.2014 23:55:07

Conducted Spurious Emission Plot between 1GHz ~ 3GHz



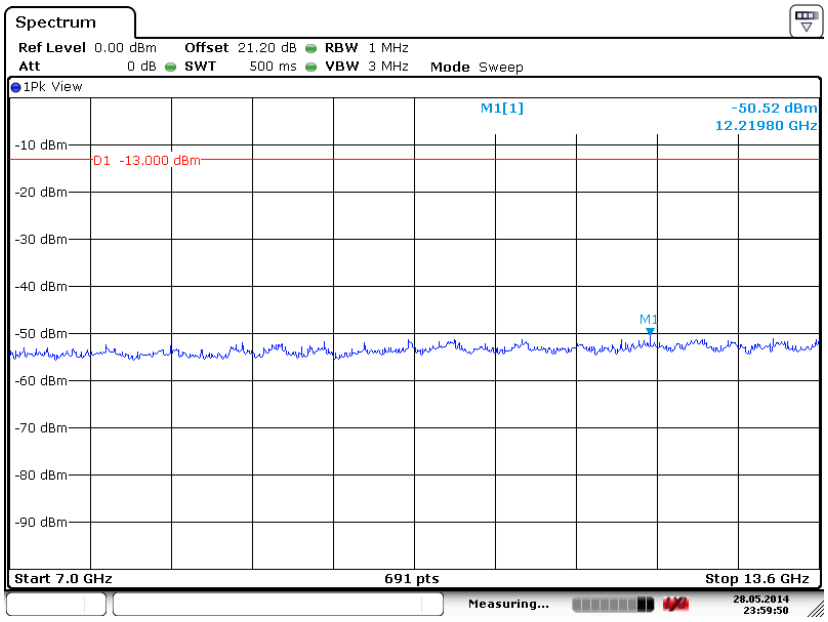
Date: 28.MAY.2014 23:56:51

Conducted Spurious Emission Plot between 3GHz ~ 7GHz



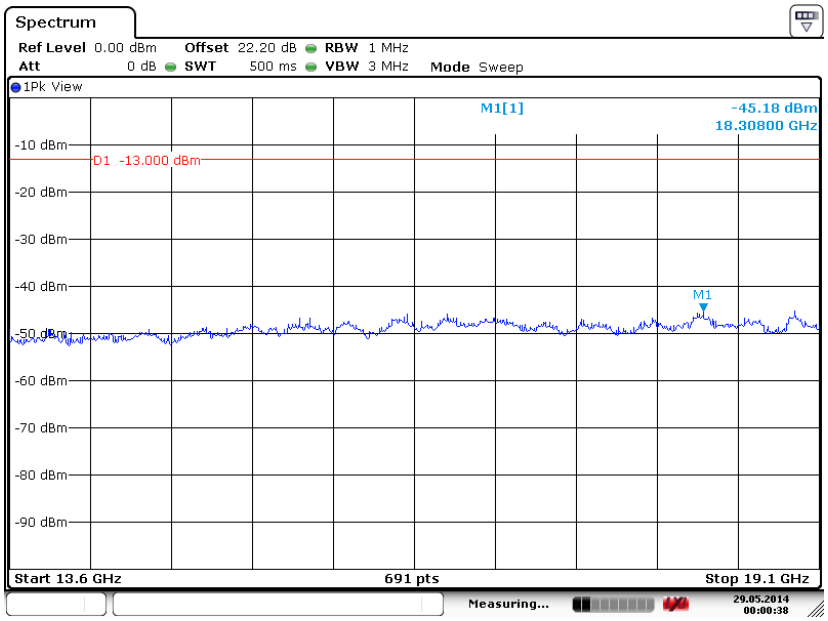
Date: 28.MAY.2014 23:58:55

Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz



Date: 28.MAY.2014 23:59:49

Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz



Date: 29.MAY.2014 00:00:37

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 EUT was placed on a rotatable wooden table 0.8 meters above the 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 for the maximum spurious emission for both horizontal and vertical polarizations.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking 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 (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain
11. ERP (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 + 10log(P) dB below the transmitter power P(Watts)

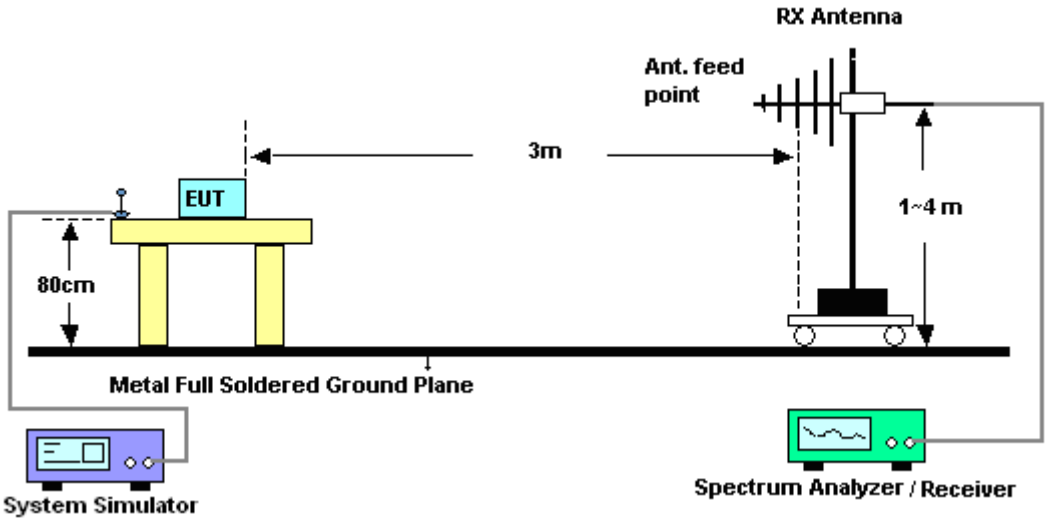
    = P(W) - [43 + 10log(P)] (dB)

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

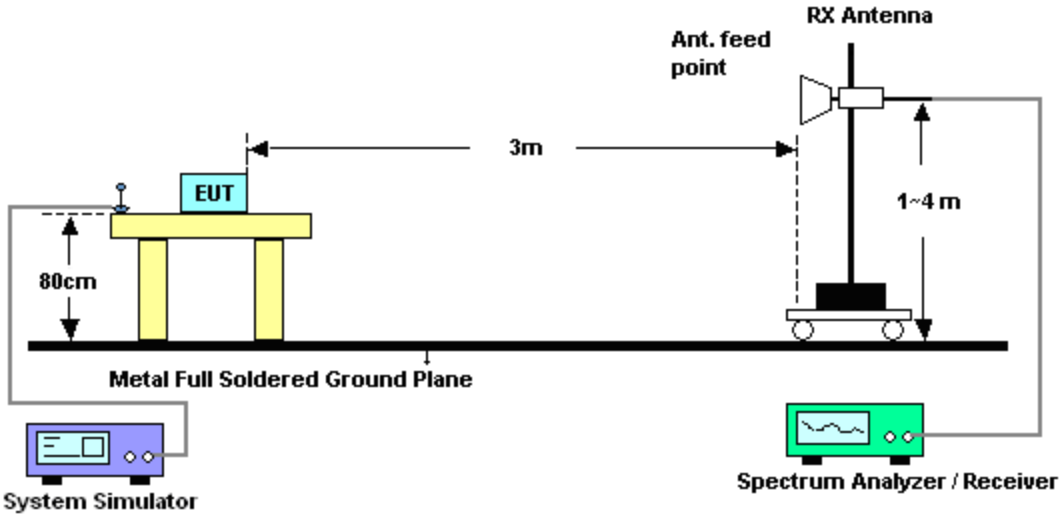
    = -13dBm.

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 :**	24~25°C
Test Mode :	GSM Link (GMSK)	**Relative Humidity :**	48~49%
Test Engineer :	Leo Liao	**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	-39.18	-13	-26.18	-55.85	-42.15	0.88	6.00	H	Pass
2510	-37.42	-13	-24.42	-62.12	-40.03	1.08	5.84	H	Pass
3346	-58.93	-13	-45.93	-69.53	-63.30	1.14	7.66	H	Pass

Band :	GSM850	**Temperature :**	24~25°C
Test Mode :	GSM Link (GMSK)	**Relative Humidity :**	48~49%
Test Engineer :	Leo Liao	**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	-37.31	-13	-24.31	-51.26	-40.28	0.88	6.00	V	Pass
2510	-45.91	-13	-32.91	-66.92	-48.52	1.08	5.84	V	Pass
3346	-54.88	-13	-41.88	-66.71	-59.25	1.14	7.66	V	Pass

Band :	GSM850	**Temperature :**	24~25°C
Test Mode :	EDGE class 8 Link (8PSK)	**Relative Humidity :**	48~49%
Test Engineer :	Leo Liao	**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	-39.85	-13	-26.85	-56.52	-42.82	0.88	6.00	H	Pass
2510	-35.74	-13	-22.74	-60.59	-38.35	1.08	5.84	H	Pass
3346	-59.35	-13	-46.35	-69.95	-63.72	1.14	7.66	H	Pass

Band :	GSM850	**Temperature :**	24~25°C
Test Mode :	EDGE class 8 Link (8PSK)	**Relative Humidity :**	48~49%
Test Engineer :	Leo Liao	**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	-39.80	-13	-26.80	-53.33	-42.77	0.88	6.00	V	Pass
2510	-44.20	-13	-31.20	-65.60	-46.81	1.08	5.84	V	Pass
3346	-56.87	-13	-43.87	-68.70	-61.24	1.14	7.66	V	Pass

Band :	GSM1900	**Temperature :**	24~25°C
Test Mode :	GSM Link (GMSK)	**Relative Humidity :**	48~49%
Test Engineer :	Leo Liao	**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	-61.04	-13	-48.04	-73.19	-67.78	1.28	8.02	H	Pass
5640	-55.25	-13	-42.25	-73.24	-63.67	1.58	10.00	H	Pass
7520	-53.77	-13	-40.77	-75.71	-64.09	1.78	12.10	H	Pass

Band :	GSM1900	**Temperature :**	24~25°C
Test Mode :	GSM Link (GMSK)	**Relative Humidity :**	48~49%
Test Engineer :	Leo Liao	**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	-57.78	-13	-44.78	-72.81	-64.52	1.28	8.02	V	Pass
5640	-56.03	-13	-43.03	-73.11	-64.45	1.58	10	V	Pass
7520	-51.98	-13	-38.98	-74.23	-62.30	1.78	12.1	V	Pass

Band :	GSM1900	**Temperature :**	24~25°C
Test Mode :	EDGE class 8 Link (8PSK)	**Relative Humidity :**	48~49%
Test Engineer :	Leo Liao	**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	-60.24	-13	-47.24	-72.39	-66.98	1.28	8.02	H	Pass
5640	-55.14	-13	-42.14	-73.13	-63.56	1.58	10.00	H	Pass
7520	-53.60	-13	-40.60	-75.54	-63.92	1.78	12.10	H	Pass

Band :	GSM1900	**Temperature :**	24~25°C
Test Mode :	EDGE class 8 Link (8PSK)	**Relative Humidity :**	48~49%
Test Engineer :	Leo Liao	**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	-57.74	-13	-44.74	-72.77	-64.48	1.28	8.02	V	Pass
5640	-55.87	-13	-42.87	-72.95	-64.29	1.58	10	V	Pass
7520	-53.23	-13	-40.23	-75.48	-63.55	1.78	12.1	V	Pass

Band :	WCDMA Band V	**Temperature :**	24~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	**Relative Humidity :**	48~49%
Test Engineer :	Leo Liao	**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	-55.60	-13	-42.60	-68.52	-58.57	0.88	6.00	H	Pass
2510	-49.15	-13	-36.15	-70.60	-51.76	1.08	5.84	H	Pass
3346	-60.15	-13	-47.15	-70.75	-64.52	1.14	7.66	H	Pass

Band :	WCDMA Band V	**Temperature :**	24~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	**Relative Humidity :**	48~49%
Test Engineer :	Leo Liao	**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	-57.92	-13	-44.92	-68.55	-60.89	0.88	6.00	V	Pass
2510	-50.67	-13	-37.67	-70.27	-53.28	1.08	5.84	V	Pass
3346	-60.65	-13	-47.65	-72.48	-65.02	1.14	7.66	V	Pass

Band :	WCDMA Band IV	**Temperature :**	24~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	**Relative Humidity :**	48~49%
Test Engineer :	Leo Liao	**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	-50.54	-13	-37.54	-63.86	-57.44	1.4	8.30	H	Pass
5197.5	-53.96	-13	-40.96	-72.40	-62.61	1.65	10.30	H	Pass
6930	-52.68	-13	-39.68	-74.92	-63.23	1.85	12.40	H	Pass

Band :	WCDMA Band IV	**Temperature :**	24~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	**Relative Humidity :**	48~49%
Test Engineer :	Leo Liao	**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
3465	-48.92	-13	-35.92	-64.21	-55.82	1.4	8.3	V	Pass
5197.5	-54.89	-13	-41.89	-72.42	-63.54	1.65	10.3	V	Pass
6930	-52.44	-13	-39.44	-74.99	-62.99	1.85	12.4	V	Pass

Band :	WCDMA Band II	**Temperature :**	24~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	**Relative Humidity :**	48~49%
Test Engineer :	Leo Liao	**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	-61.72	-13	-48.72	-73.87	-68.46	1.28	8.02	H	Pass
5640	-55.23	-13	-42.23	-73.22	-63.65	1.58	10.00	H	Pass
7520	-53.82	-13	-40.82	-75.76	-64.14	1.78	12.10	H	Pass

Band :	WCDMA Band II	**Temperature :**	24~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	**Relative Humidity :**	48~49%
Test Engineer :	Leo Liao	**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	-58.36	-13	-45.36	-73.39	-65.10	1.28	8.02	V	Pass
5640	-56.15	-13	-43.15	-73.23	-64.57	1.58	10	V	Pass
7520	-53.14	-13	-40.14	-75.39	-63.46	1.78	12.1	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.

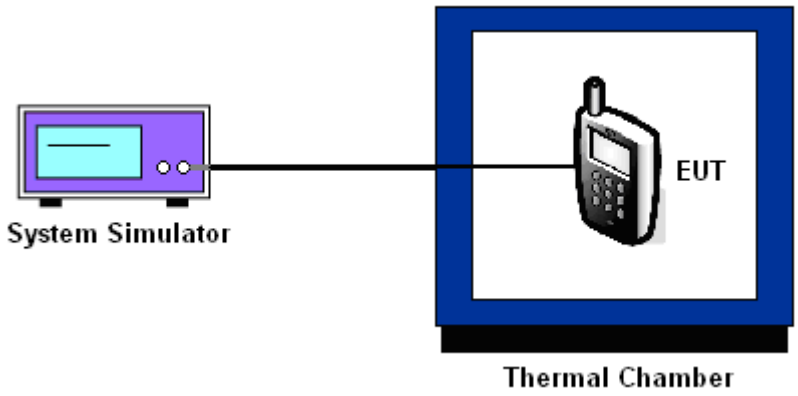
3.8.3 Test Procedures for Temperature Variation

1. The EUT was set up in the thermal chamber and connected with the system simulator.
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 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 EUT was placed in a temperature chamber at 25±5° C and connected with the system simulator.
2. The power supply voltage to the EUT was varied from BEP to 115% of the nominal value measured at the input to the EUT.
3. The variation in frequency was measured for the worst case.

3.8.5 Test Setup



3.8.6 Test Result of Temperature Variation

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

Temperature (°C)	GSM		EDGE class 8		Result
	Freq. Dev. (Hz)	Deviation (ppm)	Freq. Dev. (Hz)	Deviation (ppm)	
-30	13	+0.015	23	+0.027	PASS
-20	12	+0.014	21	+0.025	
-10	11	+0.013	20	+0.024	
0	11	+0.013	22	+0.026	
10	9	+0.011	21	+0.025	
20(Ref.)	10	+0.012	20	+0.024	
30	11	+0.013	21	+0.025	
40	12	+0.014	22	+0.026	
50	13	+0.015	23	+0.027	

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

Temperature (°C)	GSM		EDGE class 8		Result
	Freq. Dev. (Hz)	Deviation (ppm)	Freq. Dev. (Hz)	Deviation (ppm)	
-30	39	+0.021	45	+0.024	PASS
-20	38	+0.020	41	+0.022	
-10	38	+0.020	42	+0.022	
0	36	+0.019	41	+0.022	
10	35	+0.018	38	+0.020	
20(Ref.)	37	+0.019	39	+0.021	
30	38	+0.020	42	+0.022	
40	39	+0.021	43	+0.023	
50	40	+0.021	45	+0.024	

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	7	+0.008	PASS
-20	6	+0.007	
-10	5	+0.006	
0	6	+0.007	
10	4	+0.005	
20(Ref.)	5	+0.006	
30	6	+0.007	
40	5	+0.006	
50	7	+0.008	

Band :	WCDMA Band IV	Channel :	1413
Limit (ppm) :	2.5	Frequency :	1732.6 MHz

Temperature (°C)	RMC 12.2Kbps		Result
	Freq. Dev. (Hz)	Deviation (ppm)	
-30	10	+0.006	PASS
-20	9	+0.005	
-10	8	+0.005	
0	8	+0.005	
10	7	+0.004	
20(Ref.)	6	+0.004	
30	8	+0.005	
40	8	+0.005	
50	10	+0.006	

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	14	+0.007	PASS
-20	13	+0.007	
-10	11	+0.006	
0	10	+0.005	
10	11	+0.006	
20(Ref.)	11	+0.006	
30	12	+0.006	
40	12	+0.006	
50	13	+0.007	

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	12	+0.014	2.5	PASS
		BEP	11	+0.013		
		4.2	13	+0.015		
	EDGE class 8	3.7	20	+0.024		
		BEP	21	+0.025		
		4.2	23	+0.027		
GSM 1900 CH661	GSM	3.7	39	+0.021		
		BEP	37	+0.019		
		4.2	40	+0.021		
	EDGE class 8	3.7	42	+0.022		
		BEP	41	+0.022		
		4.2	44	+0.023		
WCDMA Band V CH4182	RMC 12.2Kbps	3.7	5	+0.006		
		BEP	6	+0.007		
		4.2	6	+0.007		
WCDMA Band IV CH1413	RMC 12.2Kbps	3.7	7	+0.004		
		BEP	6	+0.004		
		4.2	8	+0.005		
WCDMA Band II CH9400	RMC 12.2Kbps	3.7	12	+0.006		
		BEP	11	+0.006		
		4.2	13	+0.007		

Note:

1. Normal Voltage = 3.7V.
2. Battery End Point (BEP) = 3.6 V.

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101078	10Hz~40GHz	Jun. 17, 2013	May 27, 2014~ Jun. 02, 2014	Jun. 16, 2014	Conducted (TH01-SZ)
Thermal Chamber	Hongzhan	LP-150U	HD20120425	-40℃~150℃	Feb. 21, 2014	May 27, 2014~ Jun. 02, 2014	Feb. 20, 2015	Conducted (TH01-SZ)
ESCIO TEST Receiver	R&S	ESCI	100724	9kHz~3GHz	Feb. 21, 2014	May 30, 2014~ Jun. 01, 2014	Feb. 20, 2015	Radiation (03CH01-SZ)
Spectrum Analyzer	Agilent Technologies	N9038A	MY52260185	20Hz~26.5GHz	May 26, 2014	May 30, 2014~ Jun. 01, 2014	May 25, 2015	Radiation (03CH01-SZ)
Bilog Antenna	TESEQ	CBL 6112D	23188	30MHz~2GHz	Oct. 26, 2013	May 30, 2014~ Jun. 01, 2014	Oct. 25, 2014	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS Lindgren	3117	00119436	1GHz~18GHz	Oct. 26, 2013	May 30, 2014~ Jun. 01, 2014	Oct. 25, 2014	Radiation (03CH01-SZ)
Double Ridged Horn Antenna	COM-POWER	AH-840	101073	18GHz~40GHz	Jan. 27, 2014	May 30, 2014~ Jun. 01, 2014	Jan. 26, 2015	Radiation (03CH01-SZ)
Amplifier	ADVANTEST	BB525C	E9007003	9kHz~3000MHz	Feb. 21, 2014	May 30, 2014~ Jun. 01, 2014	Feb. 20, 2015	Radiation (03CH01-SZ)
Amplifier	Yiai	AV3860B	04030	2GHz~26.5GHz	May 08, 2014	May 30, 2014~ Jun. 01, 2014	May 07, 2015	Radiation (03CH01-SZ)
AC Source(AVR)	Chroma	61601	616010001985	100Vac~250Vac	Mar. 25, 2014	May 30, 2014~ Jun. 01, 2014	Mar. 24, 2015	Radiation (03CH01-SZ)
Turn Table	EM Electronics	EM 1000	N/A	0~360 degree	NCR	May 30, 2014~ Jun. 01, 2014	NCR	Radiation (03CH01-SZ)
Antenna Mast	EM Electronics	EM 1000	N/A	1 m~4 m	NCR	May 30, 2014~ Jun. 01, 2014	NCR	Radiation (03CH01-SZ)
Spectrum Analyzer	R&S	FSP 7	100818	9kHz~7GHz	Sep. 03, 2013	May 30, 2014~ Jun. 01, 2014	Sep. 02, 2014	ERP/EIRP (OTA01-SZ)
Quad-Ridged Horn	ETS-Lindgren	3164-08	00102954	700MHz~10000MHz	NCR	May 30, 2014~ Jun. 01, 2014	NCR	ERP/EIRP (OTA01-SZ)
Multi-Devices Controller	ETS-Lindgren	2090-OPT1	00108147	N/A	NCR	May 30, 2014~ Jun. 01, 2014	NCR	ERP/EIRP (OTA01-SZ)
Switch Control Mainframe	Agilent	3499A	MY42005451	N/A	NCR	May 30, 2014~ Jun. 01, 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))	3.90