



FCC RF Test Report

APPLICANT : CT Asia
EQUIPMENT : Mobile phone
BRAND NAME : BLU
MODEL NAME : Dash 4.5
MARKETING NAME : Dash 4.5
FCC ID : YHLBLUDASH45
STANDARD : FCC 47 CFR Part 2, 22(H), 24(E)
CLASSIFICATION : PCS Licensed Transmitter Held to Ear (PCE)

The product was received on Apr. 25, 2013 and completely tested on May 07, 2013. We, SPORTON INTERNATIONAL (KUNSHAN) 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 (KUNSHAN) INC., the test report shall not be reproduced except in full.

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL (KUNSHAN) INC.
No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C.



TABLE OF CONTENTS

REVISION HISTORY.....	3
SUMMARY OF TEST RESULT	4
1 GENERAL DESCRIPTION.....	5
1.1 Applicant.....	5
1.2 Manufacturer	5
1.3 Feature of Equipment Under Test.....	5
1.4 Product Specification of Equipment Under Test	6
1.5 Modification of EUT	6
1.6 Maximum ERP/EIRP Power, Frequency Tolerance, and Emission Designator	7
1.7 Testing Site	7
1.8 Applied Standards	8
2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST.....	9
2.1 Test Mode.....	9
2.2 Connection Diagram of Test System	12
2.3 Support Unit used in test configuration and system.....	12
2.4 Measurement Results Explanation Example	12
3 TEST RESULT.....	13
3.1 Conducted Output Power Measurement.....	13
3.2 Peak-to-Average Ratio	15
3.3 Effective Radiated Power and Effective Isotropic Radiated Power Measurement	21
3.4 99% Occupied Bandwidth and 26dB Bandwidth Measurement.....	25
3.5 Band Edge Measurement.....	39
3.6 Conducted Spurious Emission Measurement.....	48
3.7 Field Strength of Spurious Radiation Measurement	59
3.8 Frequency Stability Measurement.....	69
4 LIST OF MEASURING EQUIPMENT.....	74
5 UNCERTAINTY OF EVALUATION.....	75

APPENDIX A. PHOTOGRAPHS OF EUT

APPENDIX B. SETUP PHOTOGRAPHS



REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG342511	Rev. 01	Initial issue of report	Jul. 01, 2013



SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	§2.1046	Conducted Output Power	N/A	PASS	-
3.2	§24.232(d)	Peak-to-Average Ratio	< 13 dB	PASS	-
3.3	§22.913(a)(2)	Effective Radiated Power	< 7 Watts	PASS	-
3.3	§24.232(c)	Equivalent Isotropic Radiated Power	< 2 Watts	PASS	-
3.4	§2.1049 §22.917(a) §24.238(b)	99% Occupied Bandwidth and 26dB Bandwidth	N/A	PASS	-
3.5	§2.1051 §22.917(a) §24.238(a)	Band Edge Measurement	< $43+10\log_{10}(P[\text{Watts}])$	PASS	-
3.6	§2.1051 §22.917(a) §24.238(a)	Conducted Spurious Emission	< $43+10\log_{10}(P[\text{Watts}])$	PASS	-
3.7	§2.1053 §22.917(a) §24.238(a)	Field Strength of Spurious Radiation	< $43+10\log_{10}(P[\text{Watts}])$	PASS	Under limit 12.85 dB at 5640.000 MHz
3.8	§2.1055 §22.355 §24.235	Frequency Stability for Temperature & Voltage	< 2.5 ppm	PASS	-



1 General Description

1.1 Applicant

CT Asia

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

1.2 Manufacturer

Ragentek Technology Group

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

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	Mobile phone
Brand Name	BLU
Model Name	Dash 4.5
Marketing Name	Dash 4.5
FCC ID	YHLBLUDASH45
EUT supports Radios application	GSM/GPRS/WCDMA/HSPA/HSPA+/WLAN 11bgn/Bluetooth 2.1/3.0/4.0
HW Version	V1.2
SW Version	BLU-D310-V05-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 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 : 31.36 dBm GSM1900 : 29.58 dBm WCDMA Band V : 22.87 dBm WCDMA Band II : 22.47 dBm
Antenna Type	PIFA Antenna
Antenna Gain	GSM850: 0 dBi GSM1900/WCDMA Band V/Band II: 1 dBi
Type of Modulation	GSM: GMSK GPRS: GMSK WCDMA: QPSK (Uplink) HSDPA: QPSK (Uplink) HSUPA: QPSK (Uplink) HSPA+: 16QAM (Uplink)

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 (%, Hz, ppm)	Emission Designator
Part 22	GSM850 GSM	GMSK	0.9126	0.05 ppm	250KGXW
Part 22	WCDMA Band V RMC 12.2Kbps	QPSK	0.1038	0.01 ppm	4M18F9W
Part 24	GSM1900 GSM	GMSK	1.8544	0.02 ppm	245KGXW
Part 24	WCDMA Band II RMC 12.2Kbps	QPSK	0.2828	0.01 ppm	4M18F9W

1.7 Testing Site

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/IC Registration No.
	TH01-SZ	03CH01-SZ	831040/4086F-1

Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.		
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C. TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958		
Test Site No.	Sporton Site No.		FCC/IC Registration No.
	03CH01-KS		149928/4086E-1



1.8 Applied Standards

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

- FCC 47 CFR Part 2, 22(H), 24(E)
- ANSI / TIA / EIA-603-C-2004
- FCC KDB 971168 D01 Power Meas. License Digital Systems v02

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

During all testing, EUT is in link mode with base station emulator at maximum power level. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT is rotated on three test planes to find out the worst emission (Z plane for 850 bands and Z plane for 1900 bands).

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	■ GSM Link	■ GSM Link
GSM 1900	■ GSM Link	■ GSM Link
WCDMA Band V	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link
WCDMA Band II	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link

Note:

1. The maximum power levels are GSM mode for GMSK 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:

For SIM1 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	31.36	31.32	31.27	29.55	29.57	29.58
GPRS class 8	31.35	31.27	31.24	29.54	29.55	29.57
GPRS class 10	29.78	29.67	29.64	28.90	28.91	28.92
GPRS class 11	27.55	27.44	27.36	27.45	27.47	27.50
GPRS class 12	26.86	26.79	26.67	26.58	26.59	26.68

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
AMR 12.2Kbps	22.42	22.85	22.60	21.95	22.42	22.26
RMC 12.2Kbps	22.43	22.87	22.62	21.96	22.47	22.26
HSDPA Subtest-1	20.97	21.24	21.10	20.78	21.05	20.89
HSDPA Subtest-2	20.85	21.10	20.97	20.59	20.85	20.67
HSDPA Subtest-3	20.64	20.85	20.71	20.43	20.69	20.54
HSDPA Subtest-4	20.50	20.76	20.65	20.38	20.58	20.43
HSUPA Subtest-1	20.04	20.34	20.15	20.22	20.08	19.90
HSUPA Subtest-2	18.82	19.12	18.93	18.86	18.72	18.54
HSUPA Subtest-3	19.82	20.12	19.93	20.03	19.89	19.71
HSUPA Subtest-4	18.78	19.08	18.89	18.93	18.79	18.61
HSUPA Subtest-5	20.15	20.45	20.26	20.42	20.28	20.10
HSPA+ (16QAM) Subtest-1	19.96	20.13	19.93	19.67	20.21	19.87

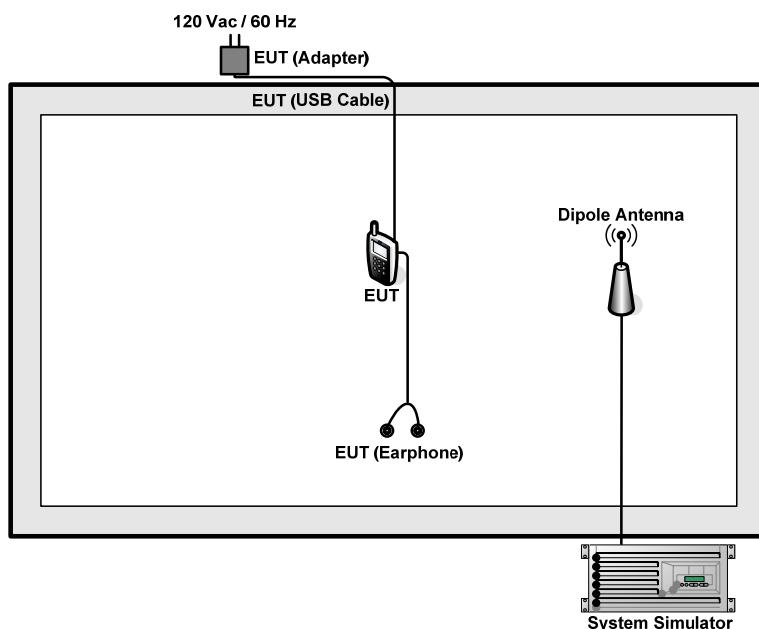


For SIM2 Card

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	31.33	31.32	31.29	29.53	29.55	29.57
GPRS class 8	31.32	31.29	31.27	29.53	29.52	29.55
GPRS class 10	29.75	29.63	29.65	28.91	28.89	28.90
GPRS class 11	27.56	27.45	27.39	27.44	27.45	27.51
GPRS class 12	26.82	26.75	26.69	26.58	26.60	26.65

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
AMR 12.2Kbps	22.40	22.83	22.61	21.95	22.37	22.21
RMC 12.2Kbps	22.42	22.86	22.64	21.94	22.43	22.22
HSDPA Subtest-1	20.96	21.22	21.12	20.77	21.04	20.87
HSDPA Subtest-2	20.86	21.12	20.99	20.57	20.84	20.63
HSDPA Subtest-3	20.63	20.83	20.70	20.41	20.67	20.51
HSDPA Subtest-4	20.49	20.77	20.64	20.34	20.57	20.42
HSUPA Subtest-1	20.02	20.33	20.16	20.21	20.09	19.89
HSUPA Subtest-2	18.84	19.10	18.95	18.84	18.73	18.53
HSUPA Subtest-3	19.80	20.11	19.93	20.01	19.89	19.69
HSUPA Subtest-4	18.80	19.07	18.90	18.91	18.78	18.60
HSUPA Subtest-5	20.14	20.43	20.27	20.39	20.27	20.08
HSPA+ (16QAM) Subtest-1	19.94	20.09	19.90	19.62	20.20	19.84

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.	System Simulator	Agilent	E5515C	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 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 Measurement

3.1.1 Description of the Conducted Output Power Measurement

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

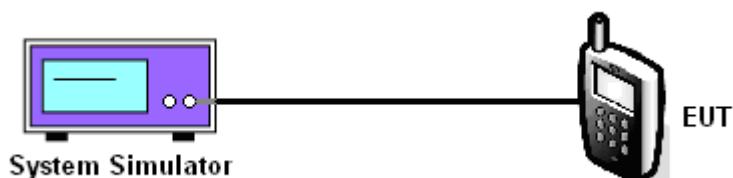
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The transmitter output port was connected to base station.
2. 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						
Modes	GSM850 (GSM)			WCDMA Band V (RMC 12.2Kbps)		
Channel	128 (Low)	189 (Mid)	251 (High)	4132 (Low)	4182 (Mid)	4233 (High)
Frequency (MHz)	824.2	836.4	848.8	826.4	836.4	846.6
Conducted Power (dBm)	31.36	31.32	31.27	22.43	22.87	22.62
Conducted Power (Watts)	1.37	1.36	1.34	0.17	0.19	0.18

PCS Band						
Modes	GSM1900 (GSM)			WCDMA Band II (RMC 12.2Kbps)		
Channel	512 (Low)	661 (Mid)	810 (High)	9262 (Low)	9400 (Mid)	9538 (High)
Frequency (MHz)	1850.2	1880	1909.8	1852.4	1880	1907.6
Conducted Power (dBm)	29.55	29.57	29.58	21.96	22.47	22.26
Conducted Power (Watts)	0.90	0.91	0.91	0.16	0.18	0.17

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.

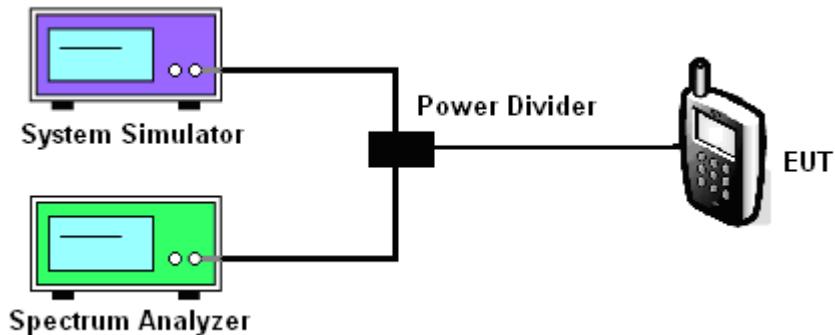
3.2.2 Measuring Instruments

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

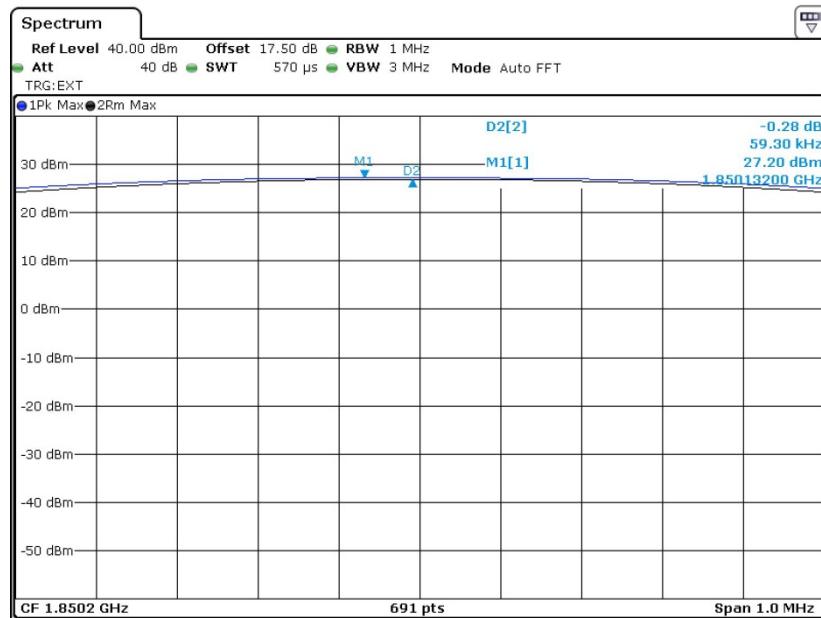
PCS Band						
Modes	GSM1900 (GSM)			WCDMA Band II (RMC 12.2Kbps)		
Channel	512 (Low)	661 (Mid)	810 (High)	9262 (Low)	9400 (Mid)	9538 (High)
Frequency (MHz)	1850.2	1880	1909.8	1852.4	1880	1907.6
Peak-to-Average Ratio (dB)	0.28	0.28	0.28	3.07	3.13	2.58



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

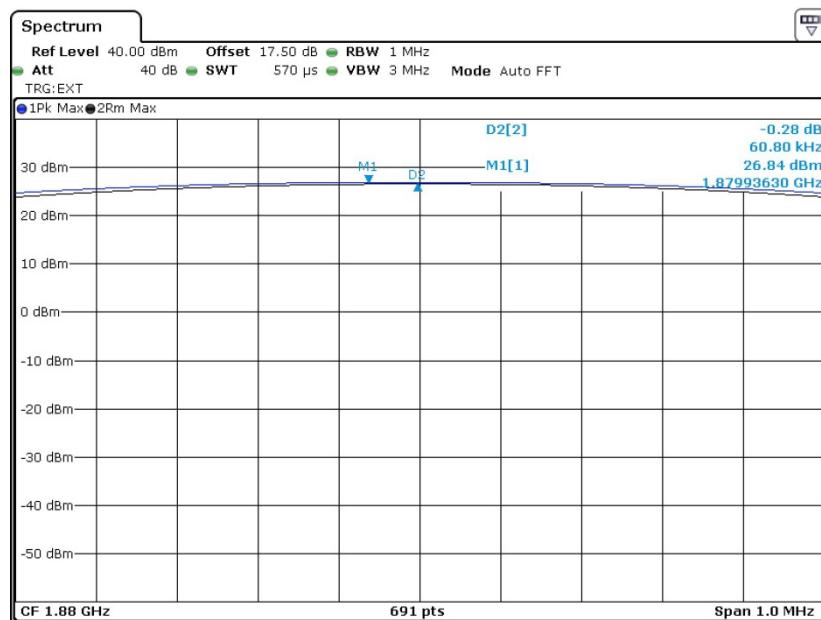
Band :	GSM 1900	Test Mode :	GSM Link (GMSK)
--------	----------	-------------	-----------------

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



Date: 6.MAY.2013 04:06:24

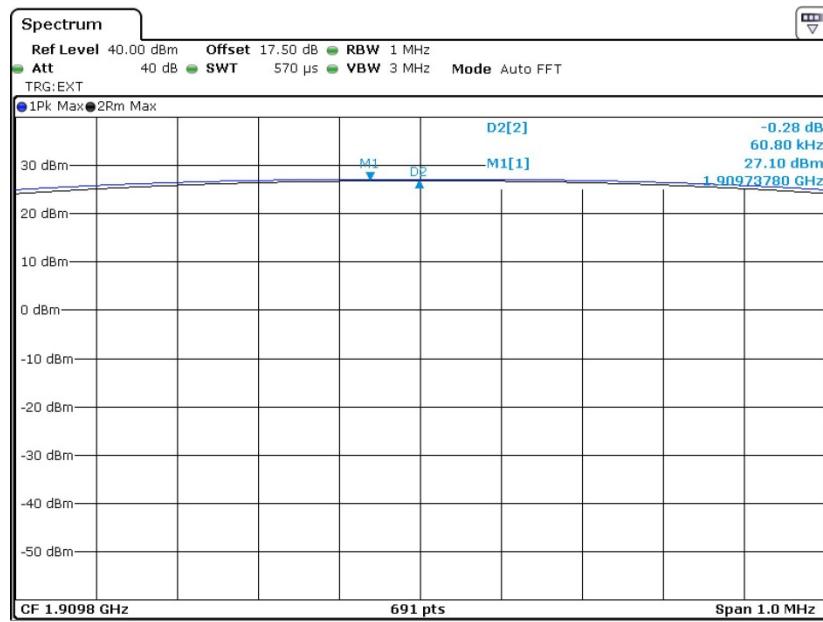
Peak-to-Average Ratio on Channel 661 (1880.0 MHz)



Date: 6.MAY.2013 04:07:03



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

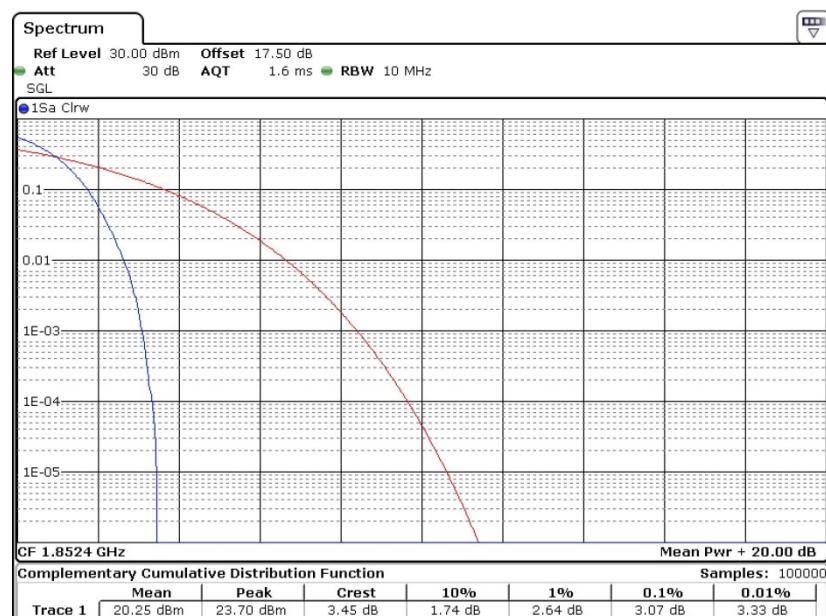


Date: 6.MAY.2013 04:07:37

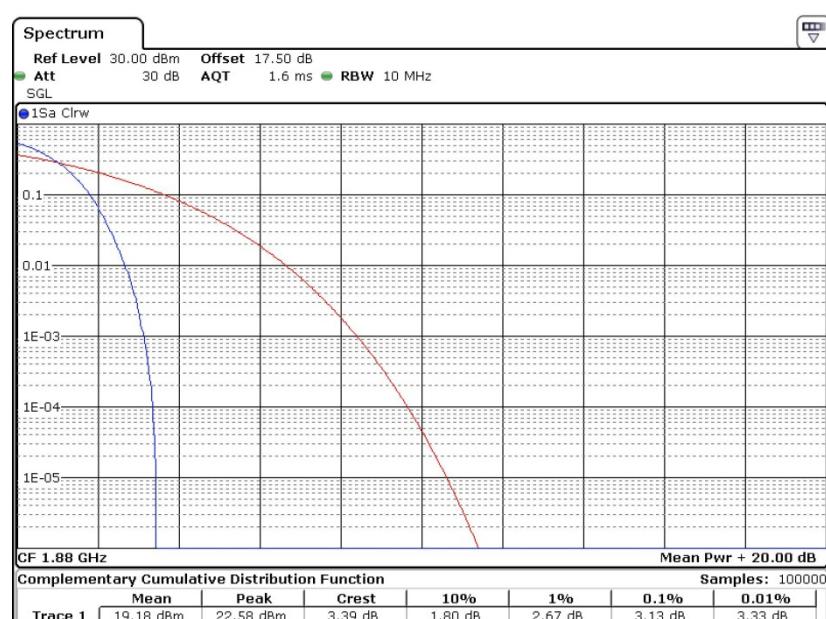


Band :	WCDMA Band II	Test Mode :	RMC 12.2Kbps Link (QPSK)
--------	---------------	-------------	--------------------------

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

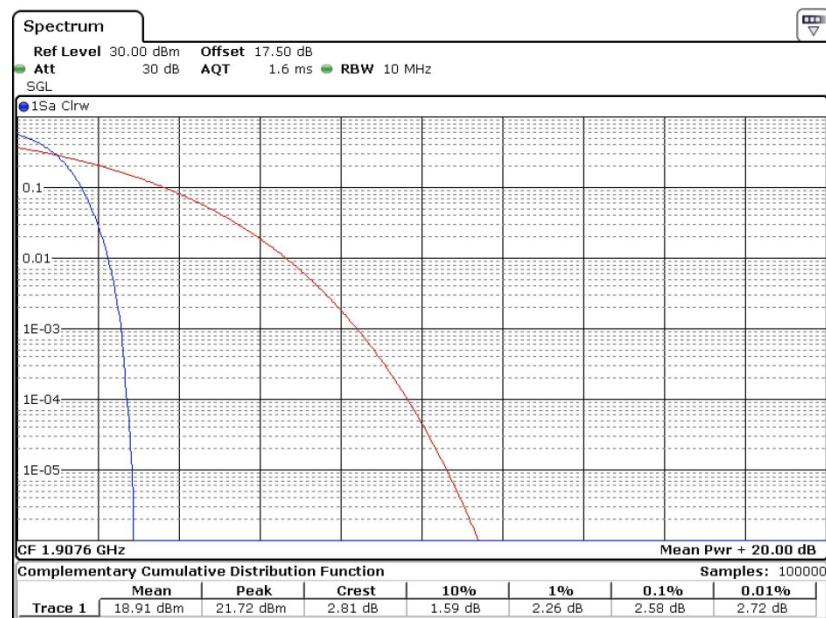


Peak-to-Average Ratio on Channel 9400 (1880.0 MHz)





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



Date: 4.MAY.2013 10:39:12



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 v02. The ERP of mobile transmitters must not exceed 7 Watts and the EIRP of mobile transmitters are limited to 2 Watts.

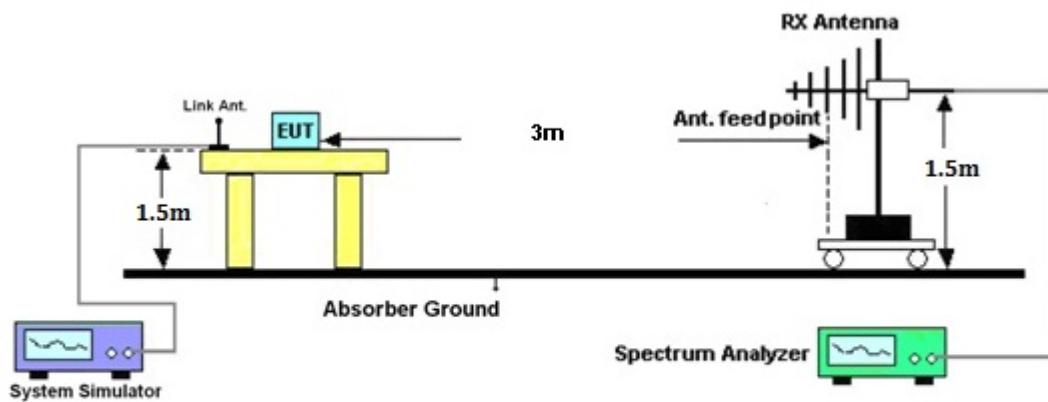
3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

1. The EUT was placed on a turntable with 1.5 meter height in a fully anechoic chamber.
2. The EUT was set at 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. $\text{ERP/EIRP} = \text{Ps} + \text{Et} - \text{Es} + \text{Gs} = \text{Ps} + \text{Rt} - \text{Rs} + \text{Gs}$
 Ps (dBm) : Input power to substitution antenna.
 Gs (dBi or dBd) : Substitution antenna Gain.
 $\text{Et} = \text{Rt} + \text{AF}$
 $\text{Es} = \text{Rs} + \text{AF}$
 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	-18.70	-48.12	0.00	-1.08	28.34	0.6824
836.40	-17.89	-48.28	0.00	-0.93	29.46	0.8832
848.80	-17.99	-48.35	0.00	-0.76	29.60	0.9126

Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.20	-35.50	-47.97	0.00	-1.08	11.39	0.0138
836.40	-34.99	-48.01	0.00	-0.93	12.09	0.0162
848.80	-35.01	-48.05	0.00	-0.76	12.28	0.0169

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	-28.28	-48.12	0.00	-1.08	18.76	0.0752
836.40	-27.38	-48.28	0.00	-0.93	19.97	0.0994
846.60	-27.43	-48.35	0.00	-0.76	20.16	0.1038

Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
826.40	-45.55	-47.97	0.00	-1.08	1.34	0.0014
836.40	-45.02	-48.01	0.00	-0.93	2.06	0.0016
846.60	-45.40	-48.05	0.00	-0.76	1.89	0.0015



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	-22.02	-51.88	0.00	1.96	31.82	1.5217
1880.00	-23.48	-52.99	0.00	2.00	31.51	1.4160
1909.80	-24.03	-54.28	0.00	1.98	32.23	1.6693

Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.20	-21.62	-52.13	0.00	1.96	32.47	1.7673
1880.00	-23.13	-53.17	0.00	2.00	32.04	1.5990
1909.80	-23.43	-54.13	0.00	1.98	32.68	1.8544

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	-30.66	-51.88	0.00	1.96	23.18	0.2080
1880.00	-31.46	-52.99	0.00	2.00	23.53	0.2252
1907.60	-32.10	-54.28	0.00	1.98	24.16	0.2604

Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1852.40	-30.35	-52.13	0.00	1.96	23.74	0.2367
1880.00	-30.99	-53.17	0.00	2.00	24.18	0.2620
1907.60	-31.60	-54.13	0.00	1.98	24.51	0.2828

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.

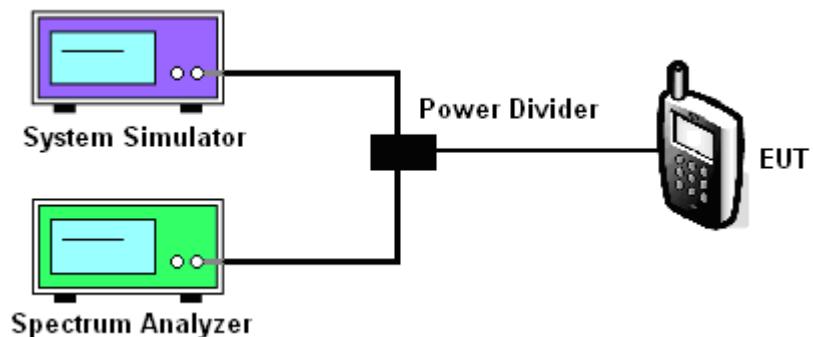
3.4.2 Measuring Instruments

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 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 Occupied Bandwidth and 26dB Bandwidth

Cellular Band			
Modes	GSM850 (GSM)		
Channel	128 (Low)	189 (Mid)	251 (High)
Frequency (MHz)	824.2	836.4	848.8
99% OBW (kHz)	250.36	246.02	247.47
26dB BW (kHz)	315.50	316.90	314.00

PCS Band			
Modes	GSM1900 (GSM)		
Channel	512 (Low)	661 (Mid)	810 (High)
Frequency (MHz)	1850.2	1880	1909.8
99% OBW (kHz)	244.57	244.57	244.57
26dB BW (kHz)	312.60	316.90	309.70

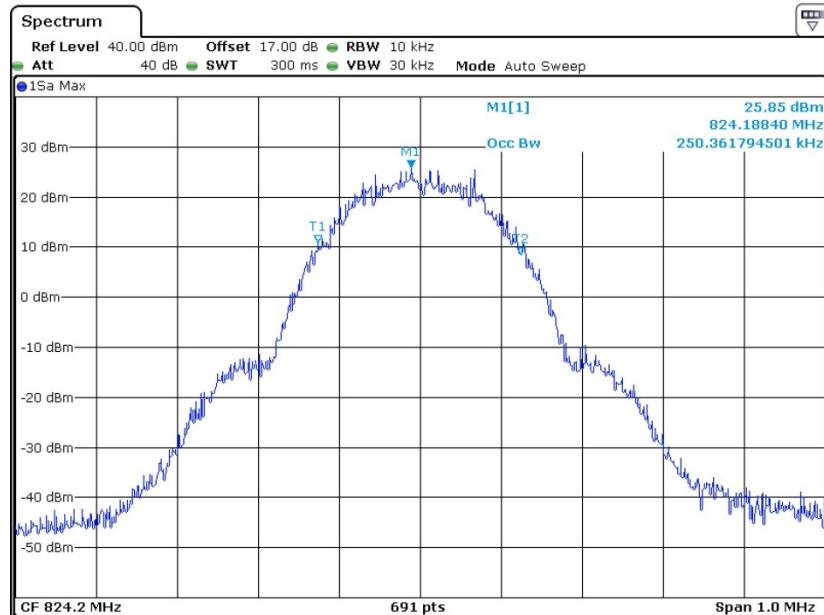
Cellular Band			
Modes	WCDMA Band V (RMC 12.2Kbps)		
Channel	4132 (Low)	4182 (Mid)	4233 (High)
Frequency (MHz)	826.4	836.4	846.6
99% OBW (MHz)	4.168	4.182	4.168
26dB BW (MHz)	4.689	4.718	4.689

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	4.182
26dB BW (MHz)	4.689	4.689	4.718

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

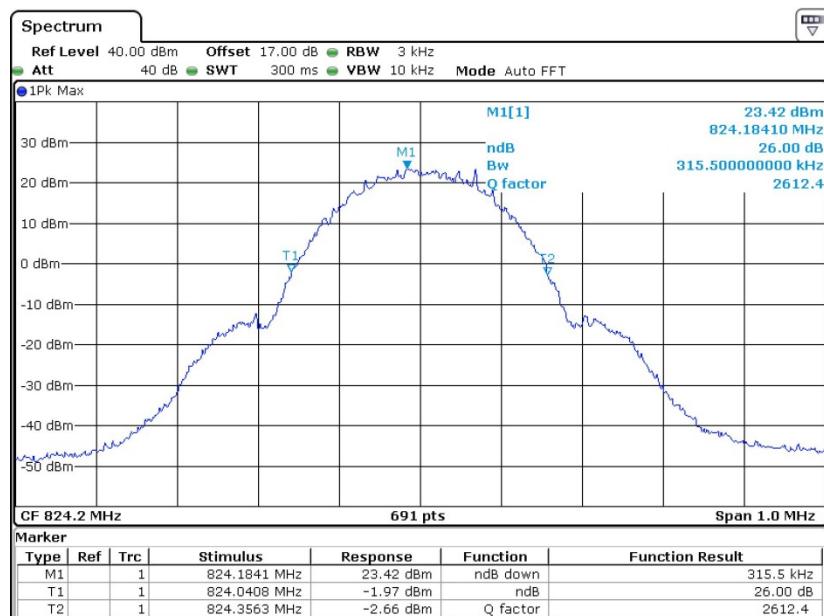
Band :	GSM 850	Test Mode :	GSM Link (GMSK)
---------------	---------	--------------------	-----------------

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



Date: 5.MAY.2013 05:59:50

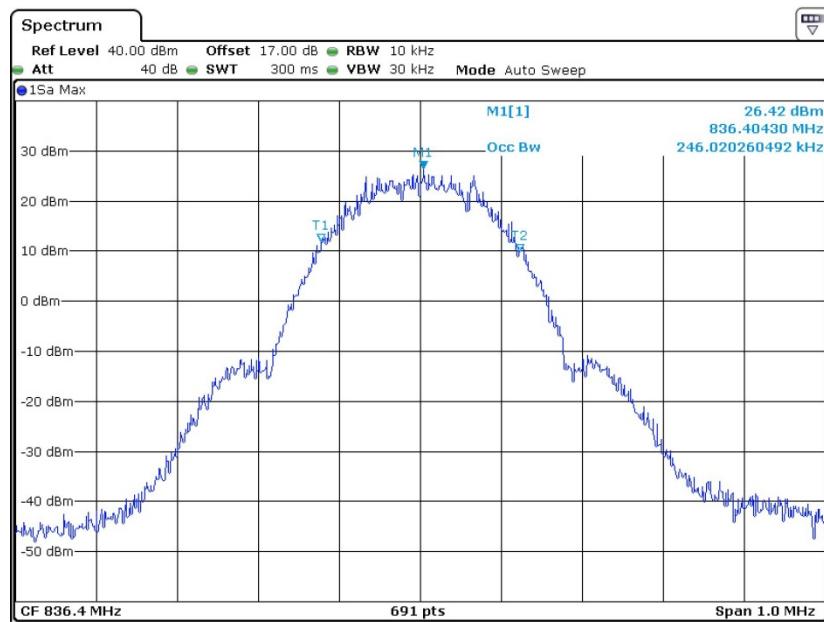
26dB Bandwidth Plot on Channel 128 (824.2 MHz)



Date: 5.MAY.2013 05:45:37

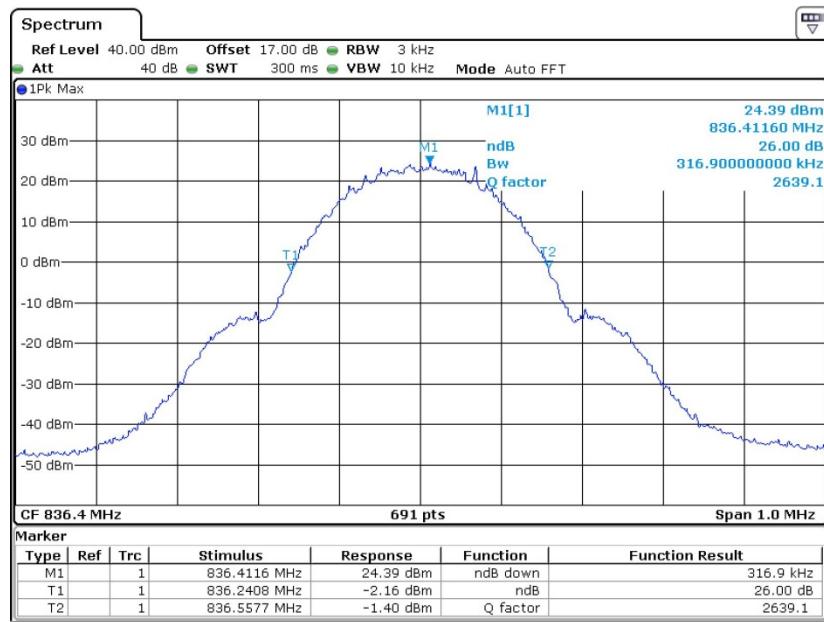


99% Occupied Bandwidth Plot on Channel 189 (836.4 MHz)



Date: 5.MAY.2013 05:57:23

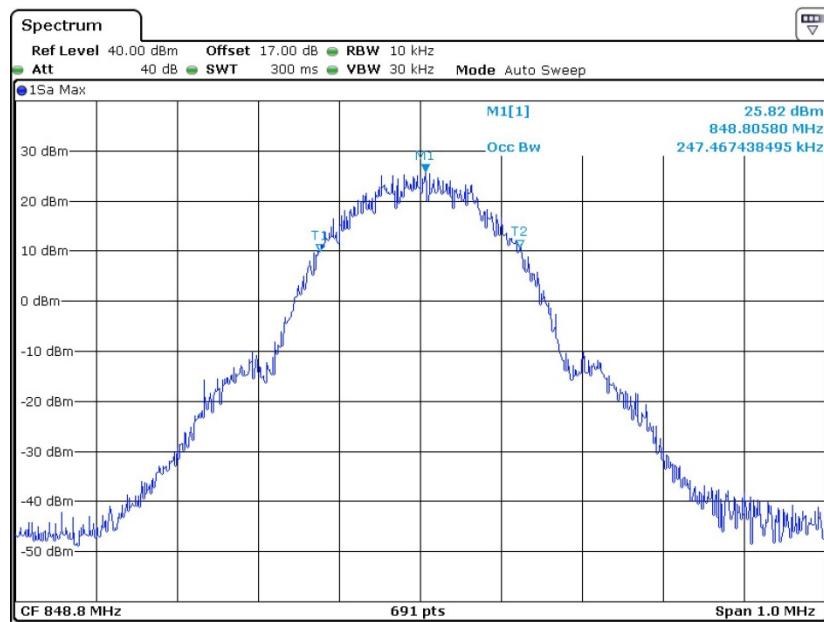
26dB Bandwidth Plot on Channel 189 (836.4 MHz)



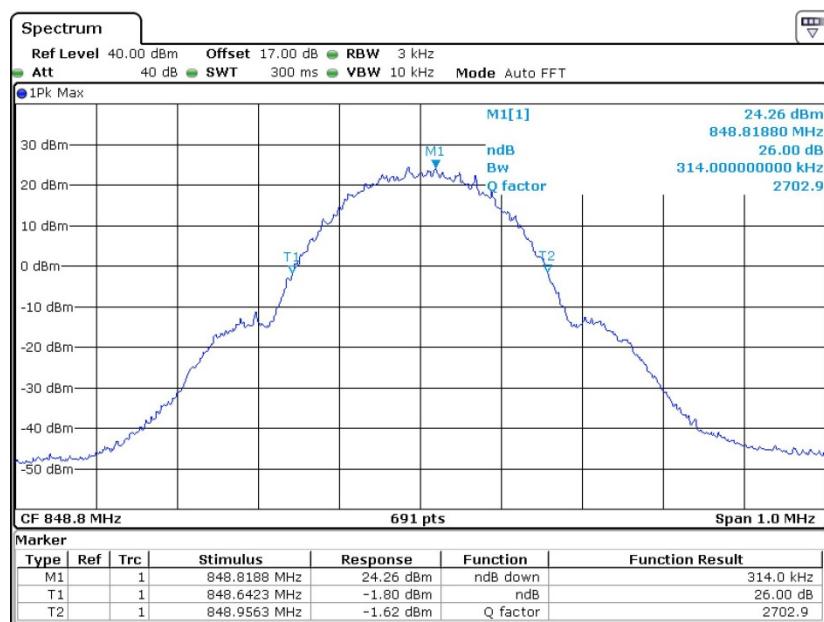
Date: 5.MAY.2013 05:43:34



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



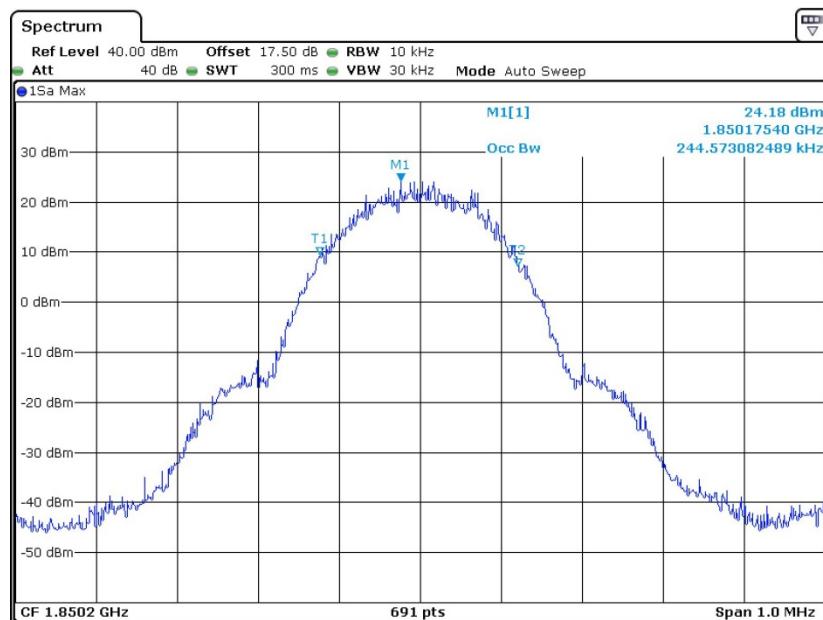
26dB Bandwidth Plot on Channel 251 (848.8 MHz)





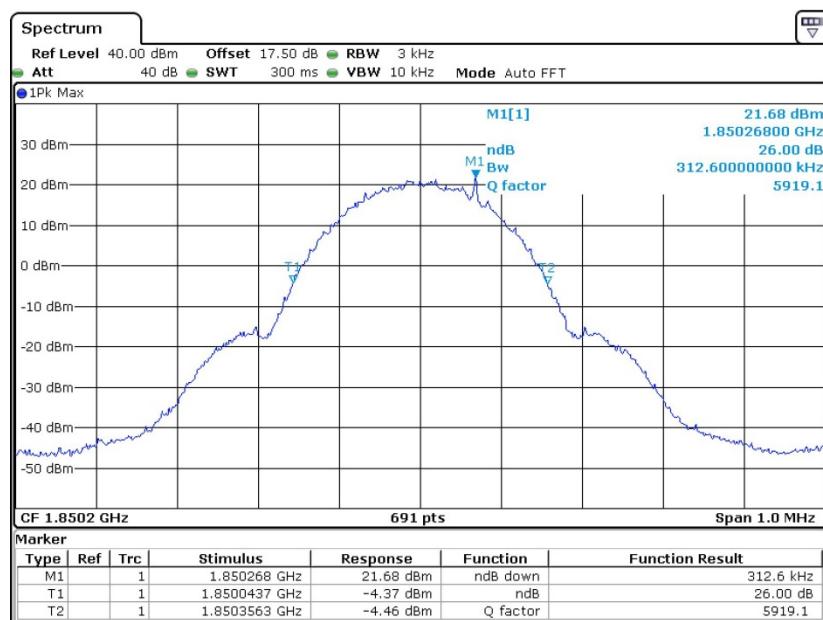
Band :	GSM 1900	Test Mode :	GSM Link (GMSK)
--------	----------	-------------	-----------------

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



Date: 5.MAY.2013 06:52:31

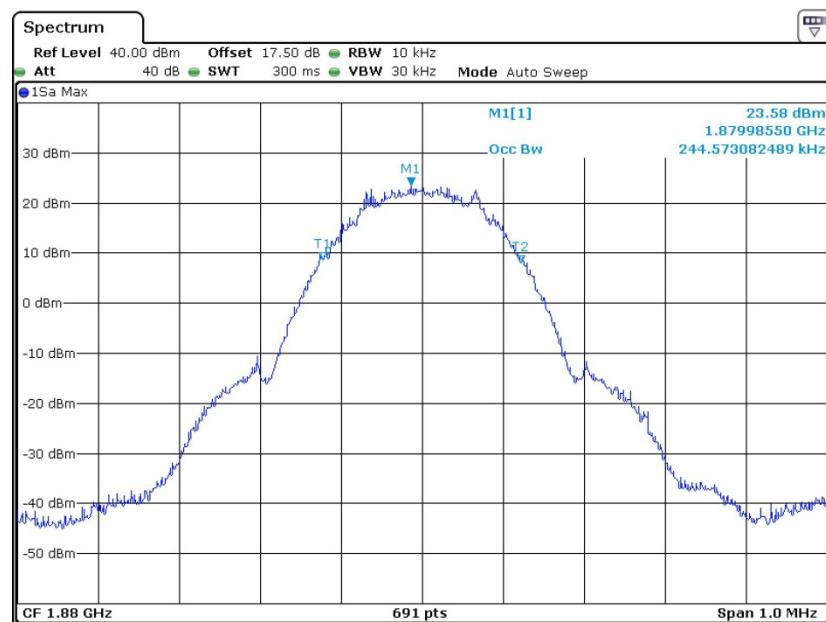
26dB Bandwidth Plot on Channel 512 (1850.2 MHz)



Date: 5.MAY.2013 07:01:49

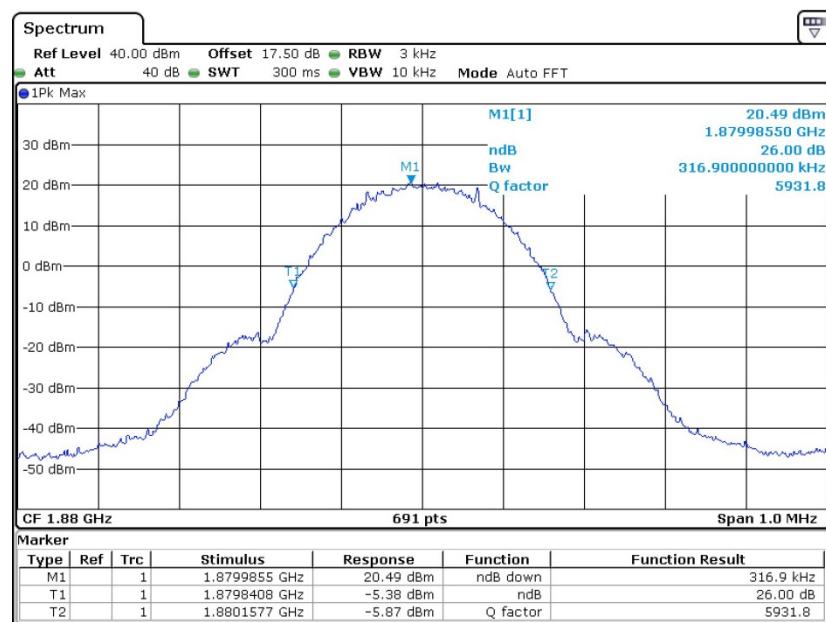


99% Occupied Bandwidth Plot on Channel 661 (1880.0 MHz)



Date: 5.MAY.2013 06:48:46

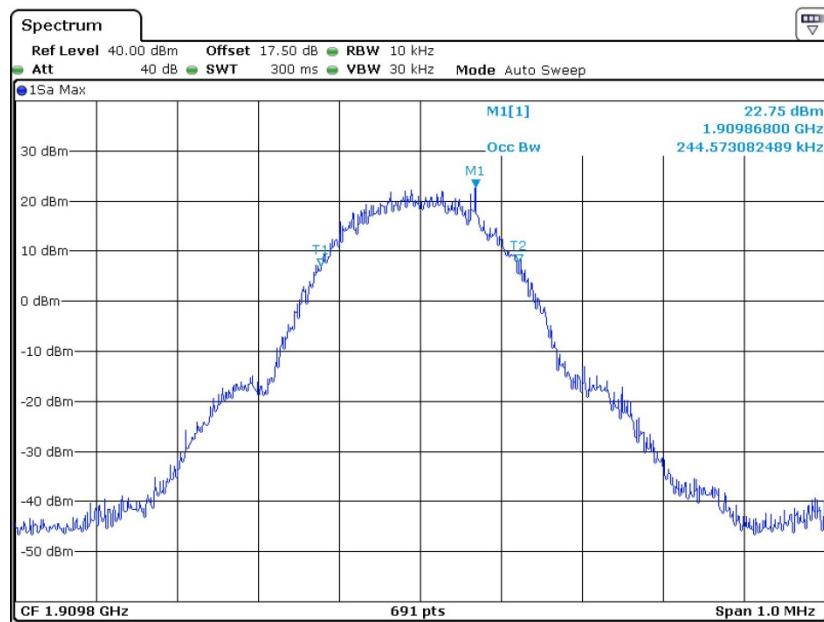
26dB Bandwidth Plot on Channel 661 (1880.0 MHz)



Date: 5.MAY.2013 07:03:36

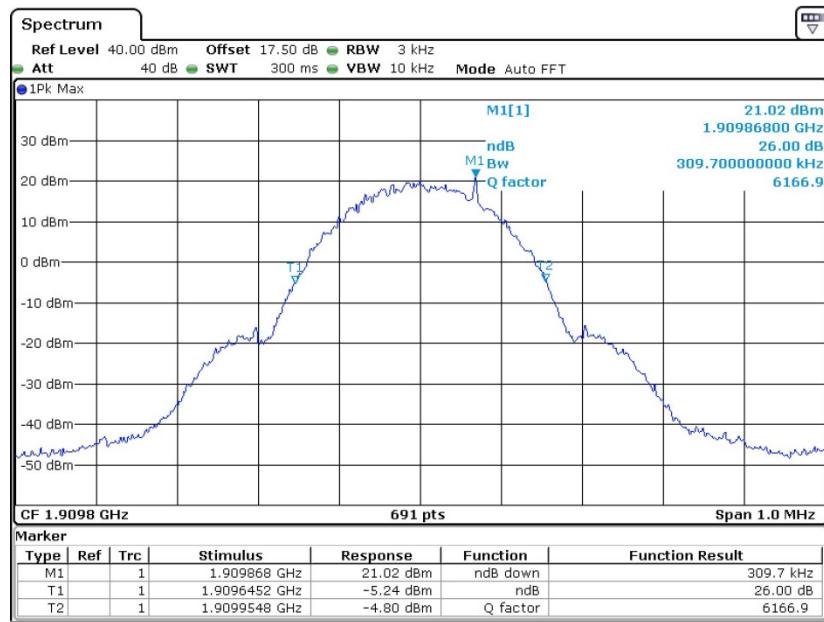


99% Occupied Bandwidth Plot on Channel 810 (1909.8 MHz)



Date: 5.MAY.2013 06:30:31

26dB Bandwidth Plot on Channel 810 (1909.8 MHz)

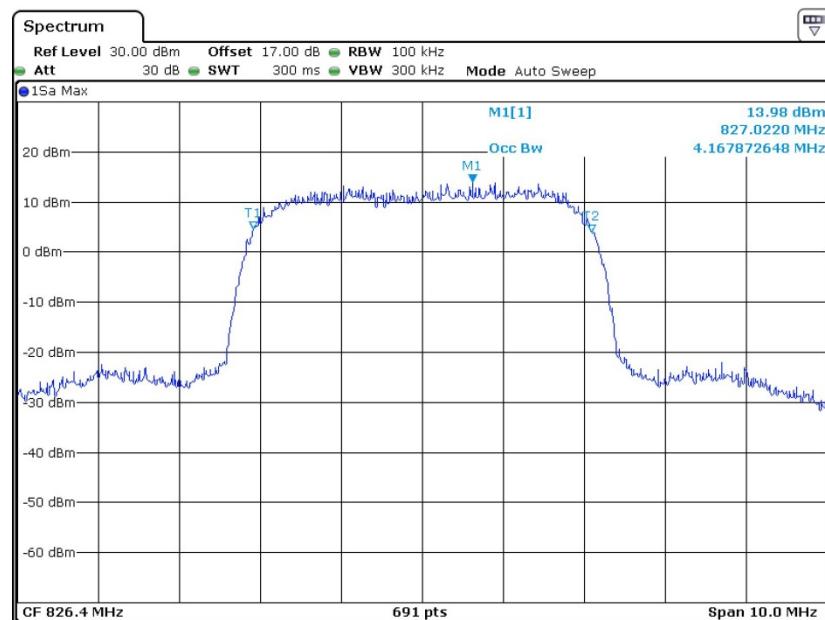


Date: 5.MAY.2013 07:04:35



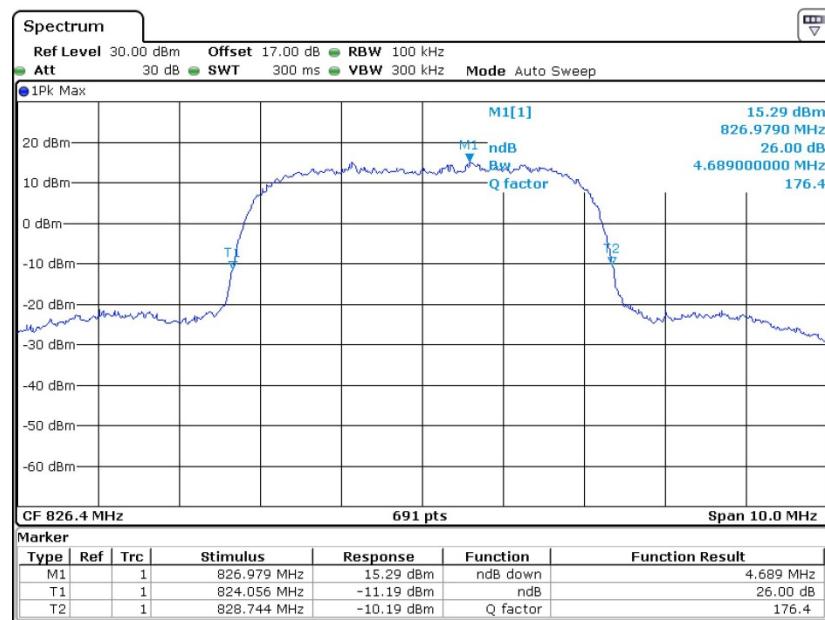
Band :	WCDMA Band V	Test Mode :	RMC 12.2Kbps Link (QPSK)
--------	--------------	-------------	--------------------------

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



Date: 4.MAY.2013 11:13:41

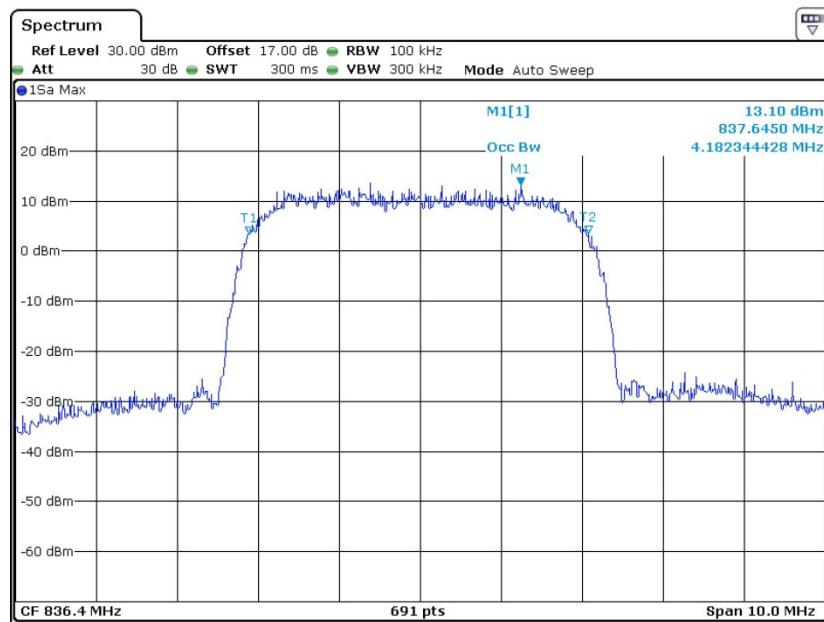
26dB Bandwidth Plot on Channel 4132 (826.4 MHz)



Date: 4.MAY.2013 11:14:33

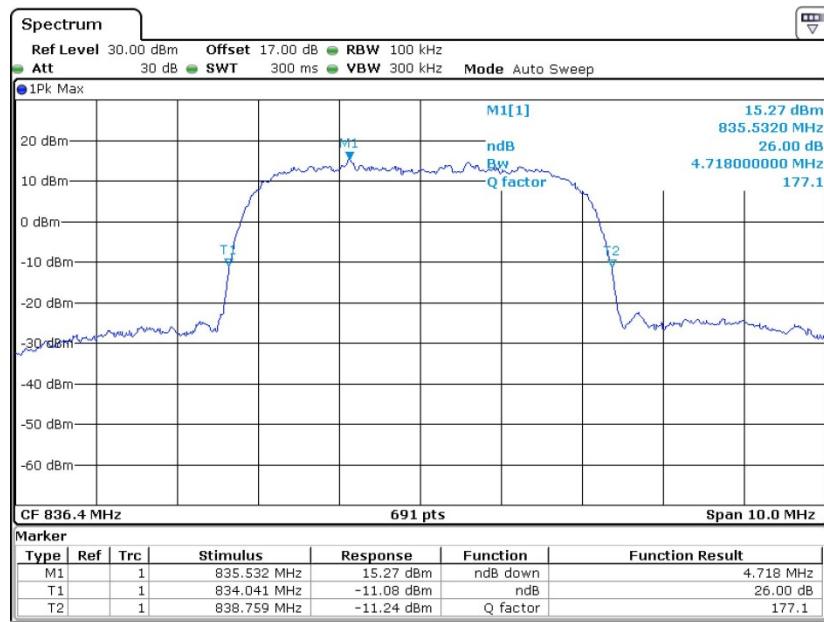


99% Occupied Bandwidth Plot on Channel 4182 (836.4 MHz)



Date: 4.MAY.2013 11:10:21

26dB Bandwidth Plot on Channel 4182 (836.4 MHz)



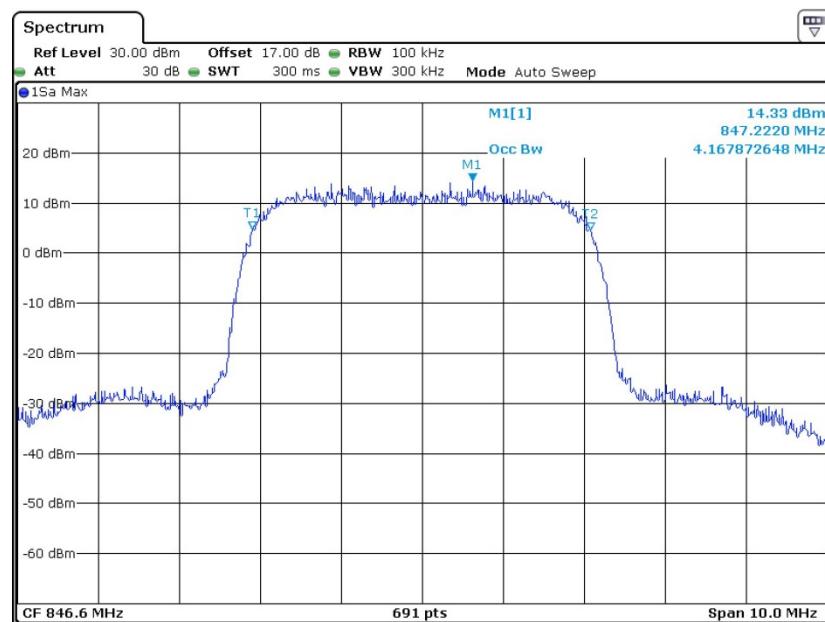
Date: 4.MAY.2013 11:16:48

Marker

Type	Ref	Trc	Stimulus	Response	Function	Function Result
M1	1		835.532 MHz	15.27 dBm	ndB down	4.718 MHz
T1	1		834.041 MHz	-11.08 dBm	ndB	26.00 dB
T2	1		838.759 MHz	-11.24 dBm	Q factor	177.1

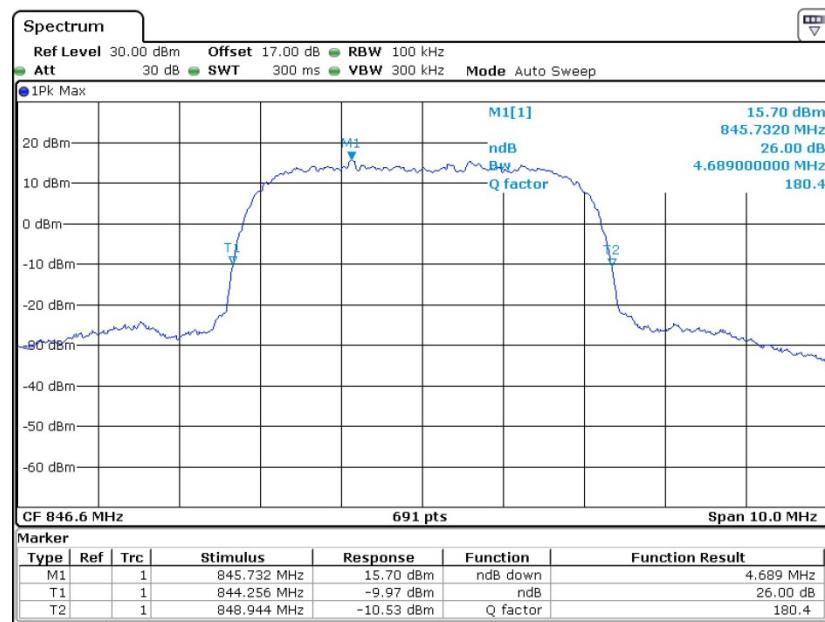


99% Occupied Bandwidth Plot on Channel 4233 (846.6 MHz)



Date: 4.MAY.2013 11:11:41

26dB Bandwidth Plot on Channel 4233 (846.6 MHz)

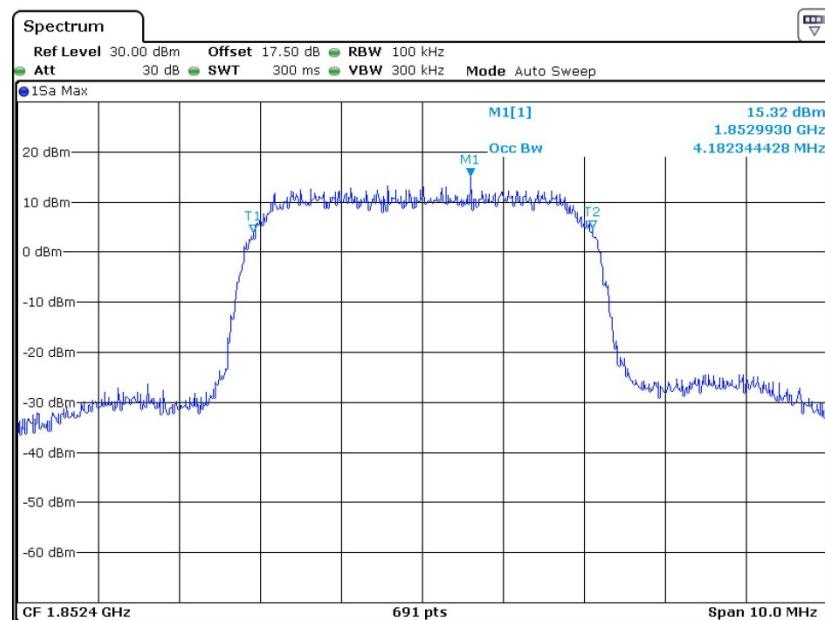


Date: 4.MAY.2013 11:15:55



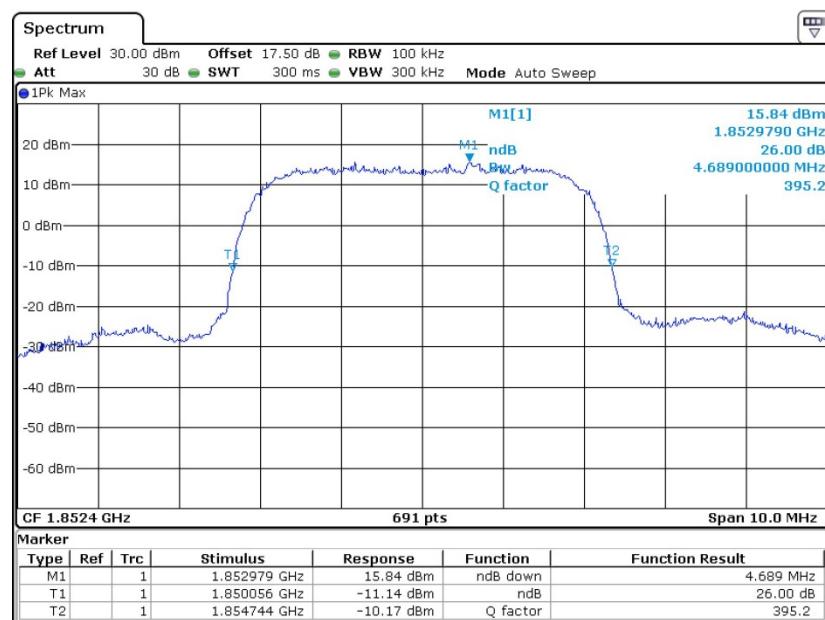
Band :	WCDMA Band II	Test Mode :	RMC 12.2Kbps Link (QPSK)
--------	---------------	-------------	--------------------------

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



Date: 4.MAY.2013 10:35:32

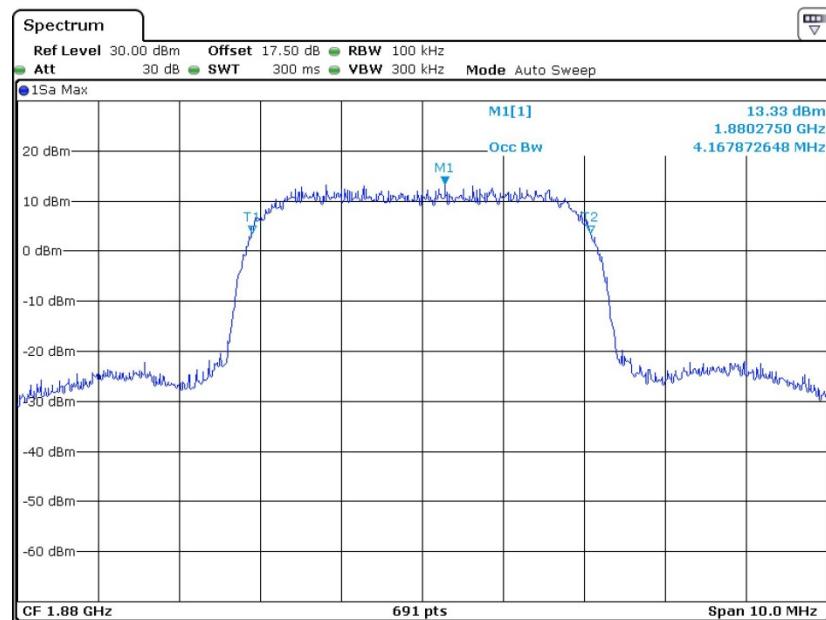
26dB Bandwidth Plot on Channel 9262 (1852.4 MHz)



Date: 4.MAY.2013 10:36:01

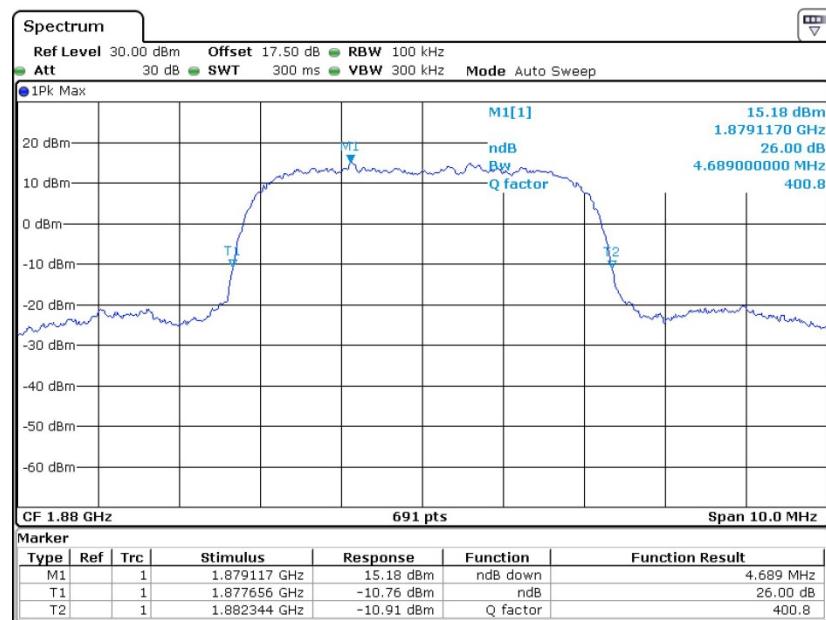


99% Occupied Bandwidth Plot on Channel 9400 (1880.0 MHz)



Date: 4.MAY.2013 10:34:22

26dB Bandwidth Plot on Channel 9400 (1880.0 MHz)



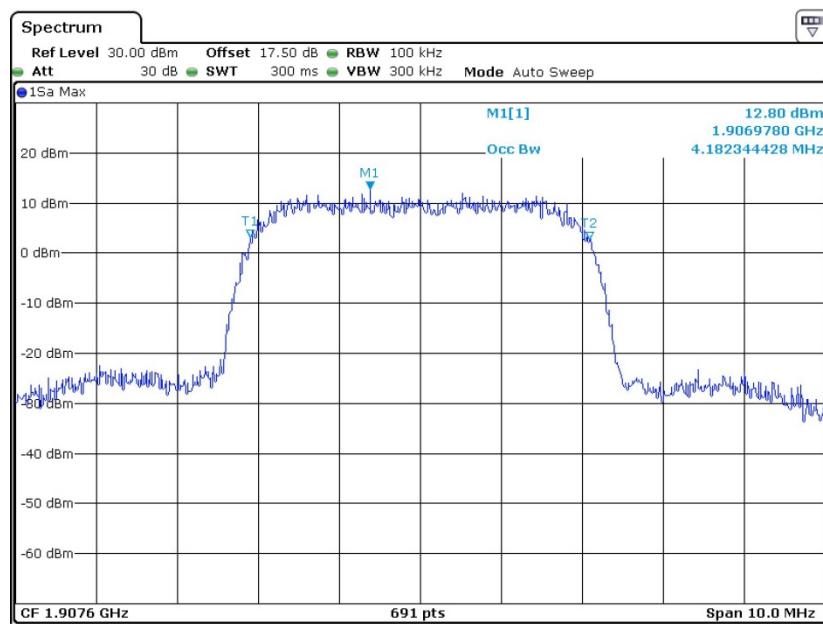
Date: 4.MAY.2013 10:37:59

Marker

Type	Ref	Trc	Stimulus	Response	Function	Function Result
M1	1		1.879117 GHz	15.18 dBm	ndB down	4.689 MHz
T1	1		1.877656 GHz	-10.76 dBm	ndB	26.00 dB
T2	1		1.882344 GHz	-10.91 dBm	Q factor	400.8

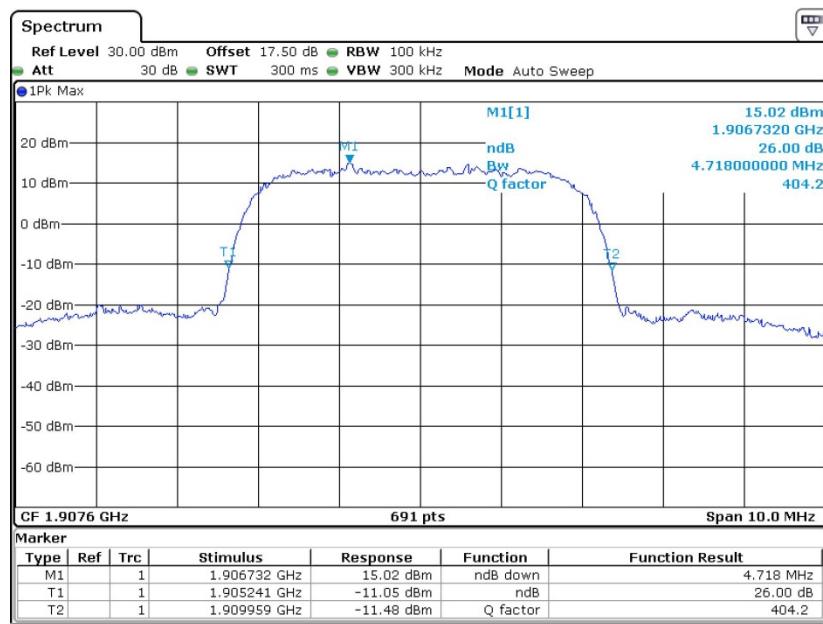


99% Occupied Bandwidth Plot on Channel 9538 (1907.6 MHz)



Date: 4.MAY.2013 10:34:54

26dB Bandwidth Plot on Channel 9538 (1907.6 MHz)



Date: 4.MAY.2013 10:36:54