FCC RF Test Report

APPLICANT	:	CT Asia (HK) Ltd.
EQUIPMENT	:	Smartphone
BRAND NAME	:	BLU
MODEL NAME	:	LIFE ONE X
FCC ID	:	YHLBLULIFEONE54
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 Oct. 09, 2015 and testing was completed on Oct. 15, 2015. 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-D-2010 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.

Prepared by: Andy Yeh / Manager

Approved by: Jones Tsai / Manager

Testing Laboratory
2353

SPORTON INTERNATIONAL (SHENZHEN) INC.

1F & 2F, Building A, Morning Business Center, No. 4003 ShiGu Rd., Xili Town, Nanshan District, Shenzhen, Guangdong, P. R. China

TABLE OF CONTENTS

1 GENERAL DESCRIPTION 5
1.1 Applicant 5
1.2 Manufacturer 5
1.3 Product Feature of Equipment Under Test 5
1.4 Product Specification subjective to this standard 6
1.5 Modification of EUT 7
1.6 Maximum ERP/EIRP Power, Frequency Tolerance, and Emission Designator 7
1.7 Testing Location 7
1.8 Applicable 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 13
2.4 Measurement Results Explanation Example 13

3 TEST RESULT 14
3.1 Conducted Output Power Measurement 14
3.2 Peak-to-Average Ratio 16
3.3 Effective Radiated Power and Effective Isotropic Radiated Power Measurement 32
3.4 99% Occupied Bandwidth and 26dB Bandwidth Measurement 36
3.5 Band Edge Measurement 61
3.6 Conducted Spurious Emission Measurement 69
3.7 Field Strength of Spurious Radiation Measurement 91
3.8 Frequency Stability Measurement 114

4 LIST OF MEASURING EQUIPMENT 120

5 UNCERTAINTY OF EVALUATION 121

APPENDIX A. SETUP PHOTOGRAPHS

REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG5O0914A	Rev. 01	Initial issue of report	Nov. 27, 2015

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	§2.1046	RSS-132 (5.4) RSS-133 (6.4) RSS-139 (6.5)	Conducted Output Power	Reporting Only	PASS	-
3.2	§24.232(d)	RSS-132 (5.4) RSS-133 (6.4) RSS-139 (6.5)	Peak-to-Average Ratio	< 13 dB	PASS	-
3.3	§22.913(a)(2)	RSS-132(5.4) SRSP-503(5.1.3)	Effective Radiated Power	< 7 Watts	PASS	-
	§24.232(c)	RSS-133 (6.4) SRSP-510(5.1.2)	Equivalent Isotropic Radiated Power	< 2 Watts	PASS	-
	§27.50(d)(4)	RSS-139 (6.5) SRSP-513(5.1.2)	Equivalent Isotropic Radiated Power	< 1 Watts	PASS	-
3.4	§2.1049	RSS-GEN(6.6) RSS-133(6.5) RSS-139 (3.1)	Occupied Bandwidth	Reporting Only	PASS	-
3.5	§2.1051 §22.917(a) §24.238(a) §27.53(h)	RSS-132 (5.5) RSS-133 (6.5) RSS-139 (6.6)	Band Edge Measurement	< 43+10log10(P[Watts])	PASS	-
3.6	§2.1051 §22.917(a) §24.238(a) §27.53(h)	RSS-132 (5.5) RSS-133 (6.5) RSS-139 (6.6)	Conducted Emission	< 43+10log10(P[Watts])	PASS	-
3.7	§2.1053 §22.917(a) §24.238(a) §27.53(h)	RSS-132 (5.5) RSS-133 (6.5) RSS-139 (6.6)	Field Strength of Spurious Radiation	< 43+10log10(P[Watts])	PASS	Under limit 7.07 dB at 5640.000 MHz
3.8	§2.1055 §22.355	RSS-GEN(6.11) RSS-132 (5.3)	Frequency Stability for Temperature & Voltage	< 2.5 ppm for Part 22 Within Authorized Band	PASS	-
	§2.1055 §24.235 §27.54	RSS-GEN(6.11) RSS-133 (6.3) RSS-139 (6.4)				

1 General Description

1.1 Applicant

CT Asia (HK) Ltd.
Unit1309-11, 13th Floor 9 Wing Hong Street Cheung Sha Wan Kowloon, Hong Kong

1.2 Manufacturer

CT Asia (HK) Ltd.
Unit1309-11, 13th Floor 9 Wing Hong Street Cheung Sha Wan Kowloon, Hong Kong

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Smartphone
Brand Name	BLU
Model Name	LIFE ONE X
FCC ID	YHLBLULIFEONE54
EUT supports Radios application	GSM/GPRS/EGPRS/WCDMA/HSPA/ HSPA+(16QAM uplink is not supported)/LTE/ WLAN2.4GHz 802.11b/g/n HT20/HT40/ Bluetooth v3.0+EDR/ Bluetooth v4.0 LE
IMEI Code	Conducted: 353919027679699/353919027689698 Radiation: 353919027679590/353919027689599 ERP&EIRP: 353919027679616/353919027689615
HW Version	V1.0
SW Version	BLU_5460_V03_GENERIC
EUT Stage	Pre-Production

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

1.4 Product Specification subjective to this standard

Product Specification subjective to this standard	
Tx Frequency	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz WCDMA Band IV : 1712.4 MHz ~ 1752.6 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz
Rx Frequency	GSM850: 869.2 MHz ~ 893.8 MHz GSM1900: 1930.2 MHz ~ 1989.8 MHz WCDMA Band V: 871.4 MHz ~ 891.6 MHz WCDMA Band IV : 2112.4 MHz ~ 2152.6 MHz WCDMA Band II: 1932.4 MHz ~ 1987.6 MHz
Maximum Output Power to Antenna	GSM850 : 32.33 dBm GSM1900 : 30.59 dBm WCDMA Band V : 22.36 dBm WCDMA Band IV : 22.39 dBm WCDMA Band II : 22.51 dBm
Antenna Type	PIFA Antenna
Type of Modulation	GSM: GMSK GPRS: GMSK EDGE: GMSK / 8PSK WCDMA : QPSK (Uplink) HSDPA : QPSK (Uplink) HSUPA : QPSK (Uplink) HSPA+ : 16QAM uplink is not supported

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	0.7379	0.0359	245KGXW
Part 22	GSM850 EDGE class 8	8PSK	0.1371	0.0299	246KG7W
Part 22	WCDMA Band V RMC 12.2Kbps	QPSK	0.0644	0.0155	4M21F9W
Part 24	GSM1900 GSM	GMSK	1.4859	0.0181	247KGXW
Part 24	GSM1900 EDGE class 8	8PSK	0.4159	0.0186	247KG7W
Part 24	WCDMA Band II RMC 12.2Kbps	QPSK	0.1648	0.0096	4M23F9W
Part 27	WCDMA Band IV RMC 12.2Kbps	QPSK	0.1552	0.0133	4M21F9W

1.7 Testing Location

Test Site	SPORTON INTERNATIONAL (SHENZHEN) INC.
Test Site Location	1F & 2F, Building A, Morning Business Center, No. 4003 ShiGu Rd., Xili Town, Nanshan District, Shenzhen, Guangdong, P. R. China TEL: +86-755-8637-9589 FAX: +86-755-8637-9595
Test Site No.	**Sporton Site No.**
	TH01-SZ

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. China TEL: +86-755- 3320-2398	
Test Site No.	**Sporton Site No.**	**FCC/IC Registration No.**
	03CH01-SZ	831040/4086F

Note: The test site complies with ANSI C63.4 2009 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-D-2010
- FCC KDB 971168 D01 Power Meas. License Digital Systems v02r02
- IC RSS-132 Issue 3
- IC RSS-133 Issue 6
- IC RSS-139 Issue 3
- IC RSS-Gen Issue 4

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 v02r02 with maximum output power.

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

Radiated emissions were investigated as following frequency range:

1. 30 MHz to 10th harmonic for GSM850 and WCDMA Band V.
2. 30 MHz to 10th harmonic for WCDMA Band IV
3. 30 MHz to 10th harmonic for GSM1900 and WCDMA Band II.

All modes and data rates and positions were investigated.

Test modes are chosen to be reported as the worst case configuration below:

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 and WCDMA band IV,

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

Conducted Power Measurement Results:

SIM 1:

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	**32.33**	32.22	32.18	30.29	30.35	**30.59**
GPRS class 8	32.30	32.21	32.15	30.28	30.33	30.57
GPRS class 10	31.80	31.72	31.63	29.43	29.60	29.91
GPRS class 11	30.23	30.14	30.05	27.30	27.64	28.15
GPRS class 12	29.16	29.06	29.00	26.29	26.65	27.18
EGPRS class 8	25.95	26.26	26.24	27.05	25.87	25.59
EGPRS class 10	24.94	25.27	25.22	26.16	24.92	24.56
EGPRS class 11	22.94	23.35	23.30	24.16	22.81	22.52
EGPRS class 12	21.88	22.22	22.21	23.01	21.65	21.36

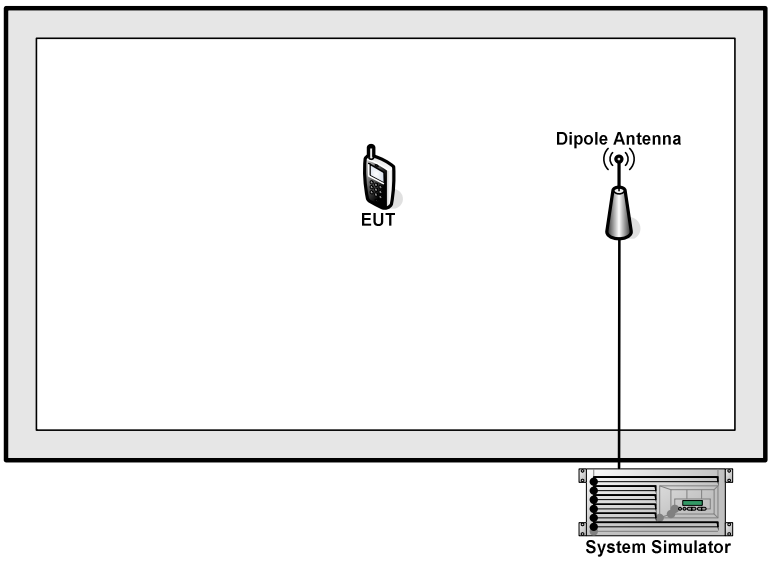
Conducted Power (*Unit: dBm)									
Band	**WCDMA Band V**			**WCDMA Band II**			**WCDMA Band IV**		
Channel	**4132**	**4182**	**4233**	**9262**	**9400**	**9538**	**1312**	**1413**	**1513**
Frequency	**826.4**	**836.4**	**846.6**	**1852.4**	**1880**	**1907.6**	**1712.4**	**1732.6**	**1752.6**
AMR 12.2K	22.35	22.33	22.15	22.28	22.50	22.37	22.20	22.24	22.38
RMC 12.2K	**22.36**	22.35	22.16	22.30	**22.51**	22.40	22.22	22.25	**22.39**
HSDPA Subtest-1	21.22	21.21	21.07	20.91	21.22	20.95	20.87	21.00	21.13
HSDPA Subtest-2	21.24	21.22	21.08	20.93	21.23	20.95	20.88	21.01	21.12
HSDPA Subtest-3	20.78	20.76	20.60	20.49	20.77	20.50	20.40	20.54	20.66
HSDPA Subtest-4	20.75	20.72	20.63	20.45	20.75	20.47	20.39	20.52	20.66
HSUPA Subtest-1	19.23	19.18	19.04	18.96	19.27	19.07	18.95	19.09	19.22
HSUPA Subtest-2	19.21	19.18	19.05	18.92	19.27	18.91	18.81	18.99	19.09
HSUPA Subtest-3	20.26	20.21	20.08	19.98	20.23	19.99	19.86	20.02	20.12
HSUPA Subtest-4	18.69	18.67	18.52	18.40	18.70	18.41	18.39	18.56	18.69
HSUPA Subtest-5	21.20	21.20	21.00	20.90	21.20	20.90	20.80	21.00	21.10

SIM 2:

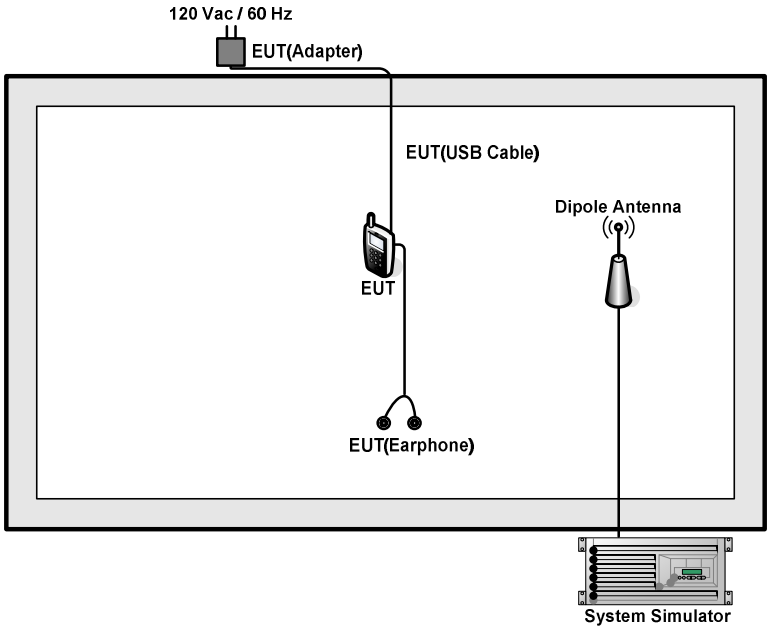
Conducted Power (*Unit: dBm)						
Band	**GSM850**			**GSM1900**		
Channel	**128**	**189**	**251**	**512**	**661**	**810**
Frequency	**824.2**	**836.4**	**848.8**	**1850.2**	**1880.0**	**1909.8**
GSM	**32.32**	32.21	32.14	30.28	30.34	**30.58**
GPRS class 8	32.28	32.20	32.12	30.26	30.31	30.56
GPRS class 10	31.78	31.70	31.61	29.40	29.57	29.90
GPRS class 11	30.20	30.10	30.04	27.27	27.63	28.12
GPRS class 12	29.14	29.03	28.99	26.18	26.52	27.14
EGPRS class 8	25.91	26.25	26.21	27.04	25.83	25.58
EGPRS class 10	24.92	25.25	25.20	26.13	24.90	24.55
EGPRS class 11	22.90	23.34	23.27	24.14	22.80	22.50
EGPRS class 12	21.87	22.20	22.20	23.00	21.61	21.31

2.2 Connection Diagram of Test System

For 22H/27L



For 24E



2.3 Support Unit used in test configuration

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	DC Power Supply	GW INSTEK	GPS-3030D	N/A	N/A	Unshielded, 1.8 m

2.4 Measurement Results Explanation Example

For all conducted test items:

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

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

Offset = RF cable loss + attenuator factor.

The following shows an offset computation example with RF cable loss 5.0 dB and a 10dB attenuator.

Example :

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

= 5.0 + 10 = 15.0 (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.

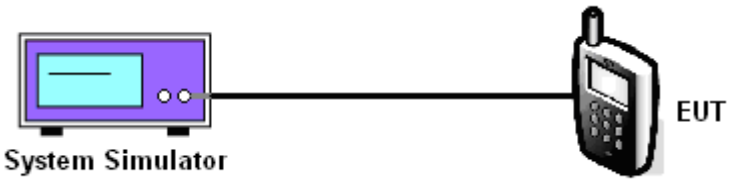
3.1.2 Measuring Instruments

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)	32.33	32.22	32.18	25.95	26.26	26.24	22.36	22.35	22.16

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)	30.29	30.35	30.59	27.05	25.87	25.59	22.30	22.51	22.40

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)	22.22	22.25	22.39

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.

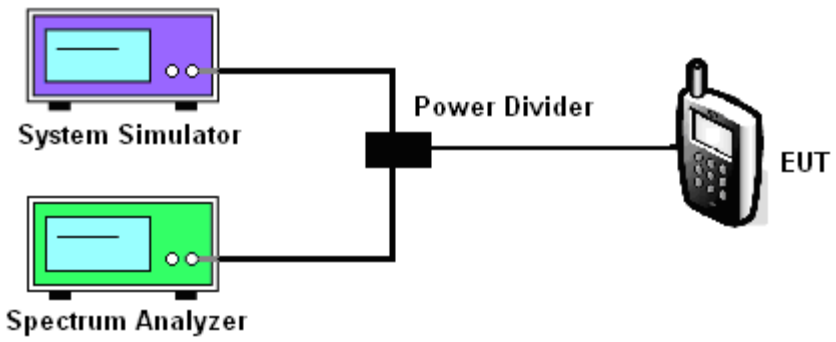
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

1. The testing follows FCC KDB 971168 v02r02 Section 5.7.1.
2. The EUT was connected to the spectrum analyzer and system simulator via a power divider.
3. For GSM/EGPRS operating modes:
   a. Set EUT in maximum power output.
   b. Set the RBW = 1MHz, VBW = 3MHz, Peak detector on spectrum analyzer for first trace.
   c. Set the RBW = 1MHz, VBW = 3MHz, RMS detector on spectrum analyzer for second trace.
   d. The wanted burst signal is triggered by spectrum analyzer, and measured respectively the peak level and Mean level without burst-off time, after system simulator has synchronized with the spectrum analyzer.
4. For UMTS operating modes:
   a. Set the CCDF (Complementary Cumulative Distribution Function) option on the spectrum analyzer.
   b. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.
5. Record the deviation as Peak to Average Ratio.

3.2.4 Test Setup



3.2.5 Test Result of Peak-to-Average Ratio

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
Peak-to-Average Ratio (dB)	0.29	0.29	0.28	2.89	2.81	2.78	2.72	2.58	2.81

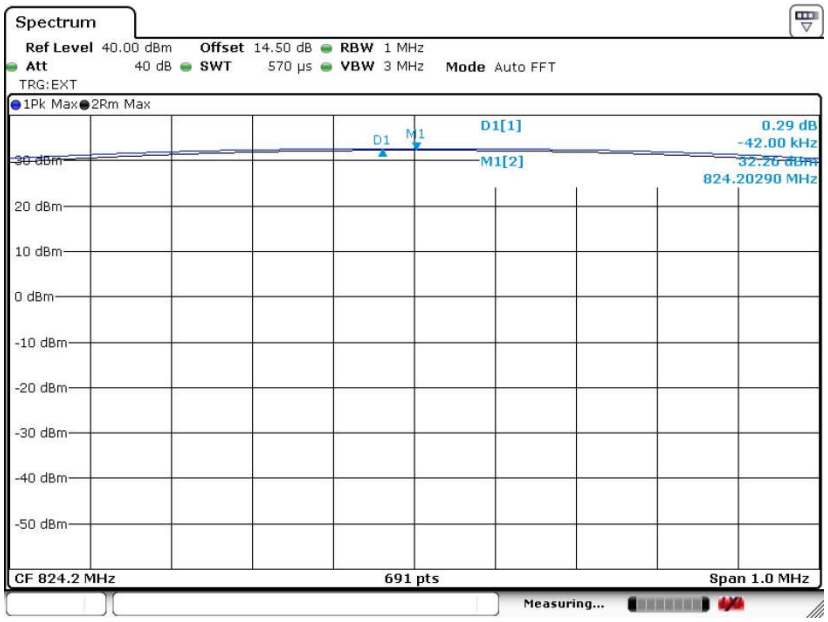
PCS Band									
Modes	GSM1900 (GSM)			GSM1900 (EDGE class 8)			WCDMA Band II (RMC 12.2Kbps)		
Channel	512 (Low)	661 (Mid)	810 (High)	512 (Low)	661 (Mid)	810 (High)	9262 (Low)	9400 (Mid)	9538 (High)
Frequency (MHz)	1850.2	1880	1909.8	1850.2	1880	1909.8	1852.4	1880	1907.6
Peak-to-Average Ratio (dB)	0.26	0.26	0.26	2.85	2.96	2.89	2.55	2.29	2.55

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)	2.41	2.58	2.41

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

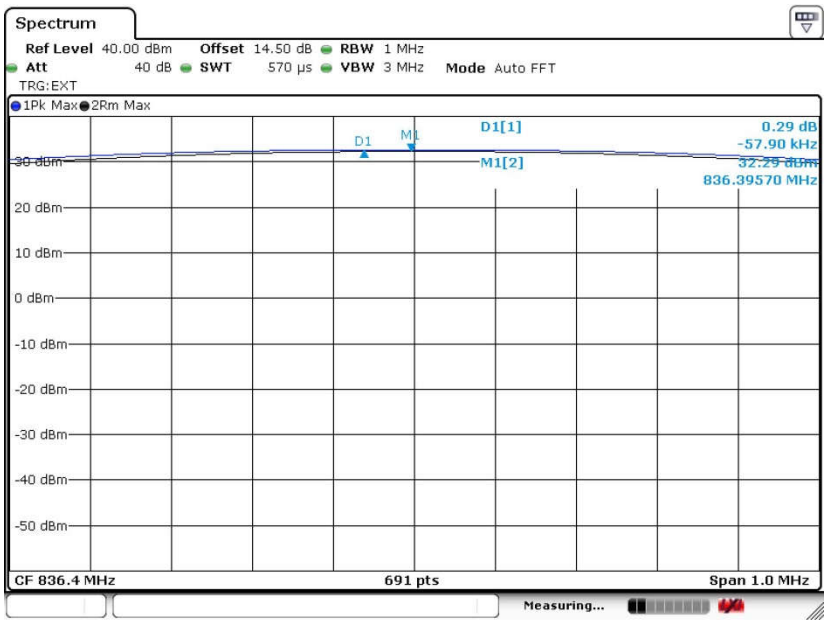
Band :	GSM 850	Test Mode :	GSM Link (GMSK)

Peak-to-Average Ratio on Channel 128 (824.2 MHz)



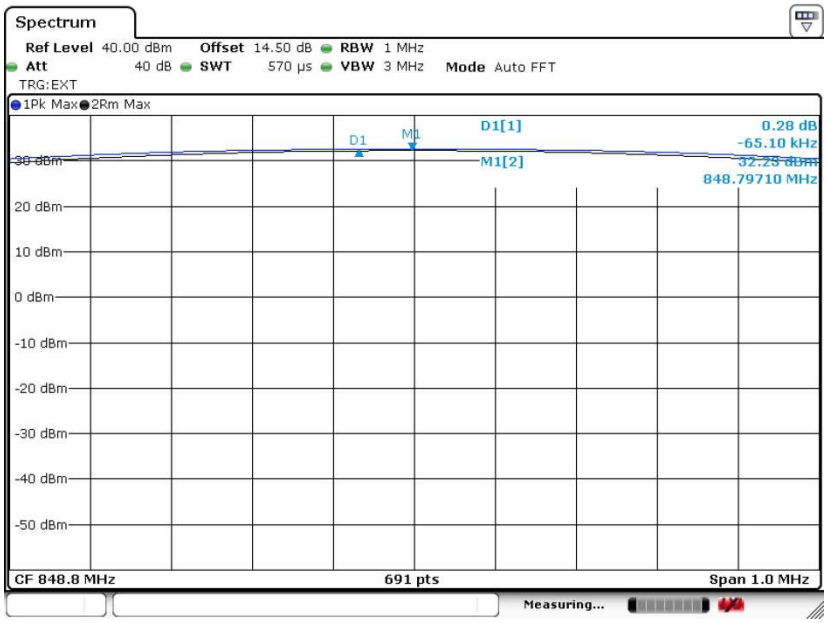
Date: 13.OCT.2015 21:18:22

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



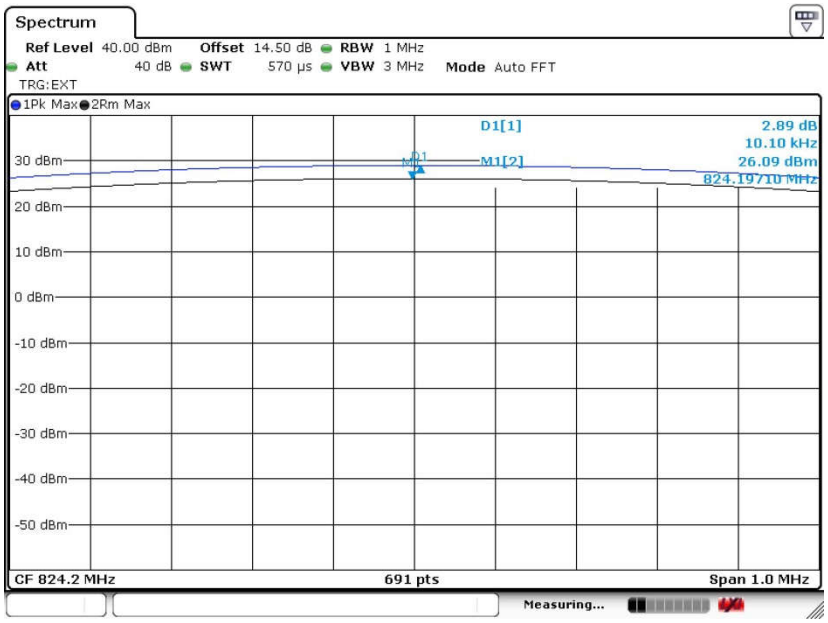
Date: 13.OCT.2015 21:19:00

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



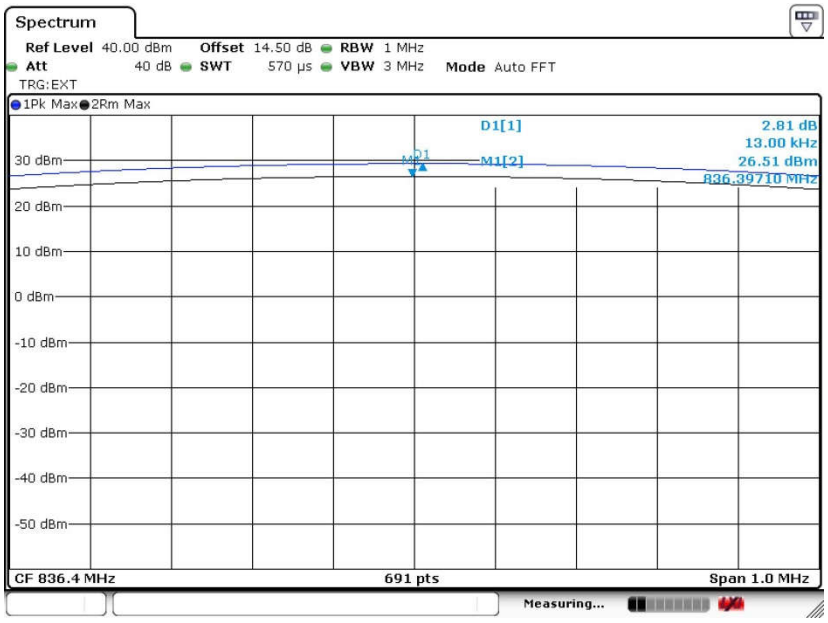
Band :	GSM 850	Test Mode :	EDGE class 8 Link (8PSK)

Peak-to-Average Ratio on Channel 128 (824.2 MHz)



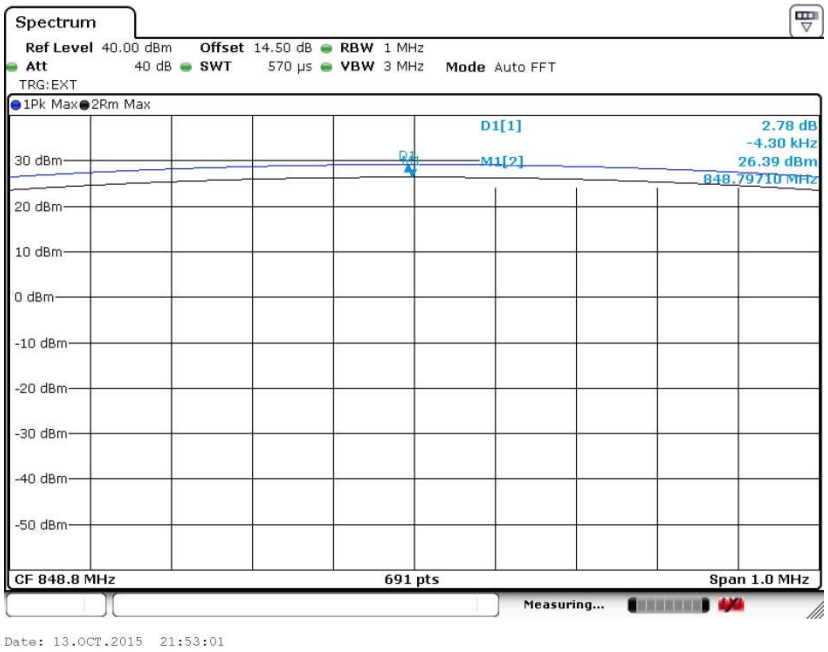
Date: 13.OCT.2015 21:51:30

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



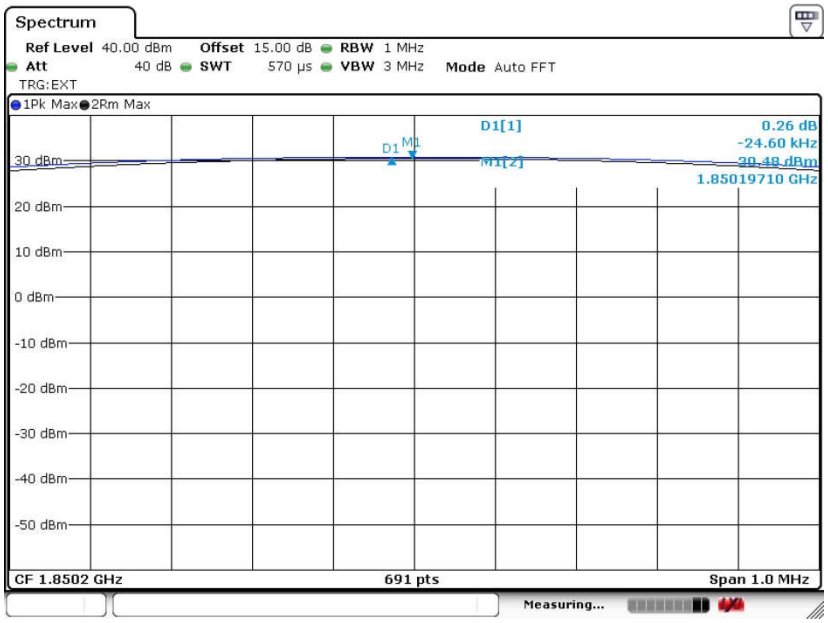
Date: 13.OCT.2015 21:52:10

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



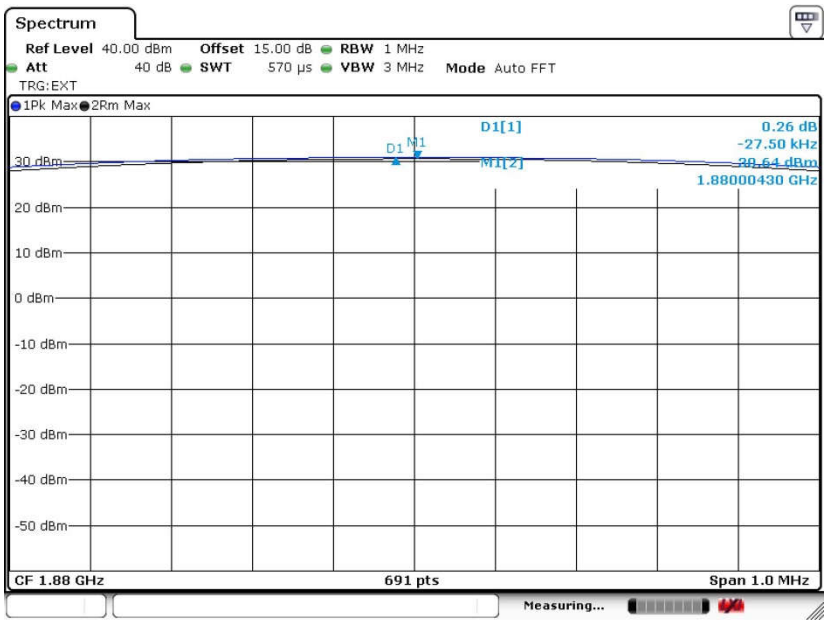
Band :	GSM 1900	Test Mode :	GSM Link (GMSK)

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



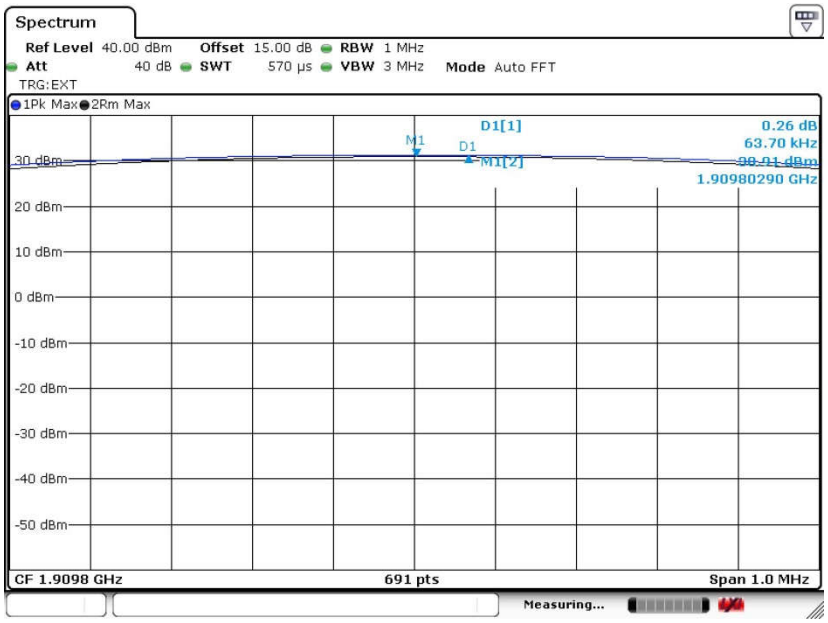
Date: 13.OCT.2015 22:45:26

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



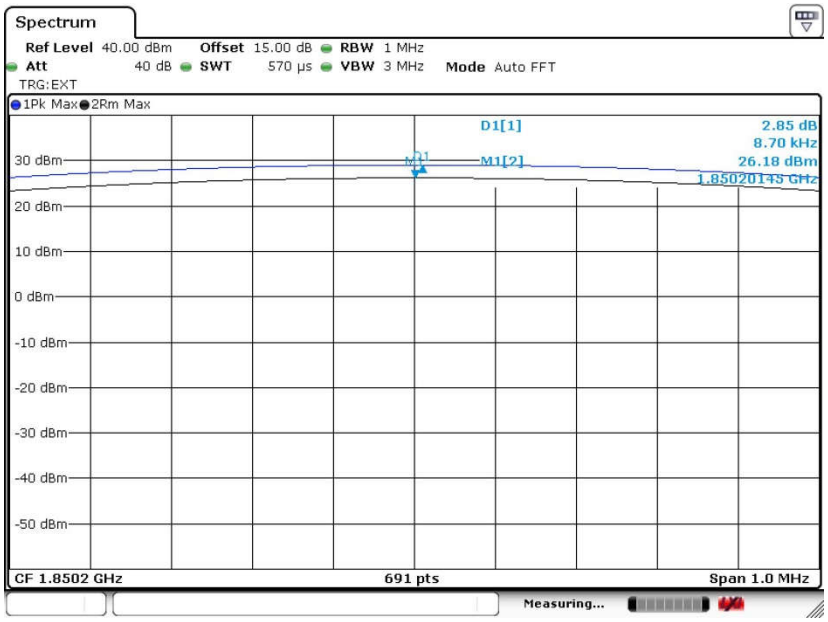
Date: 13.OCT.2015 22:47:03

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



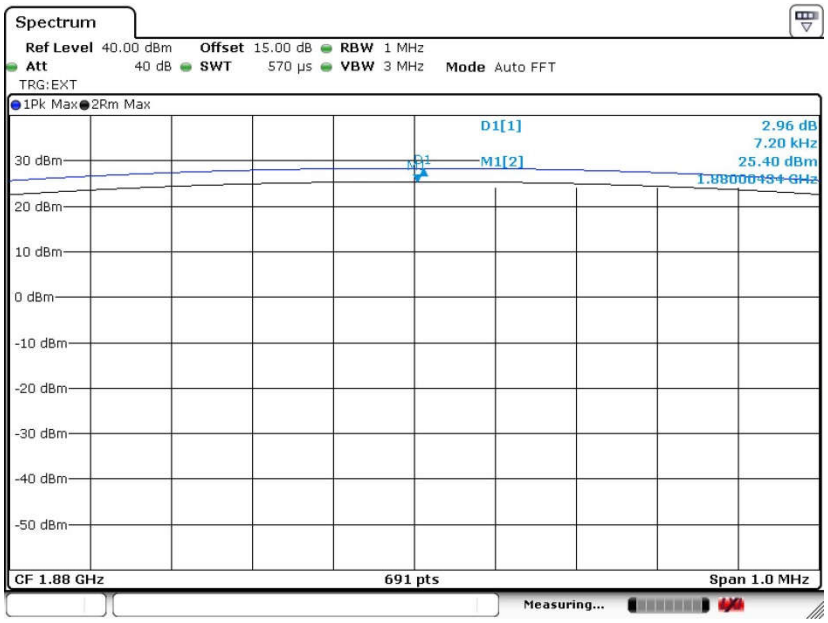
Band :	GSM 1900	Test Mode :	EDGE class 8 Link (8PSK)

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



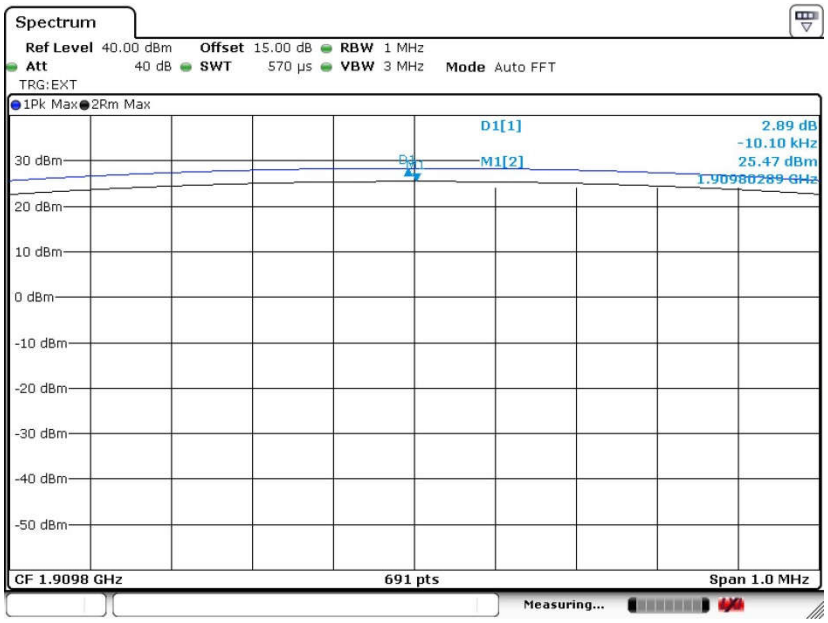
Date: 14.OCT.2015 23:26:11

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



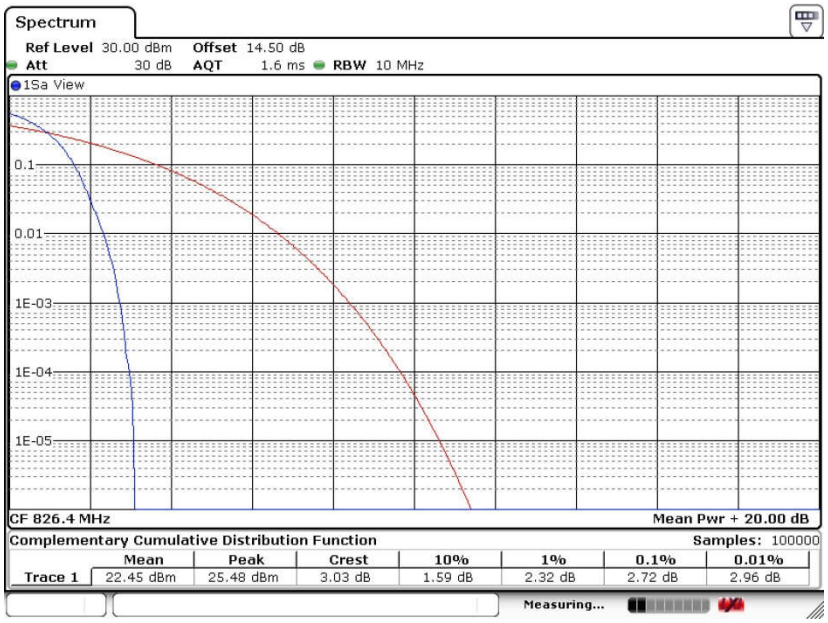
Date: 14.OCT.2015 23:26:54

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



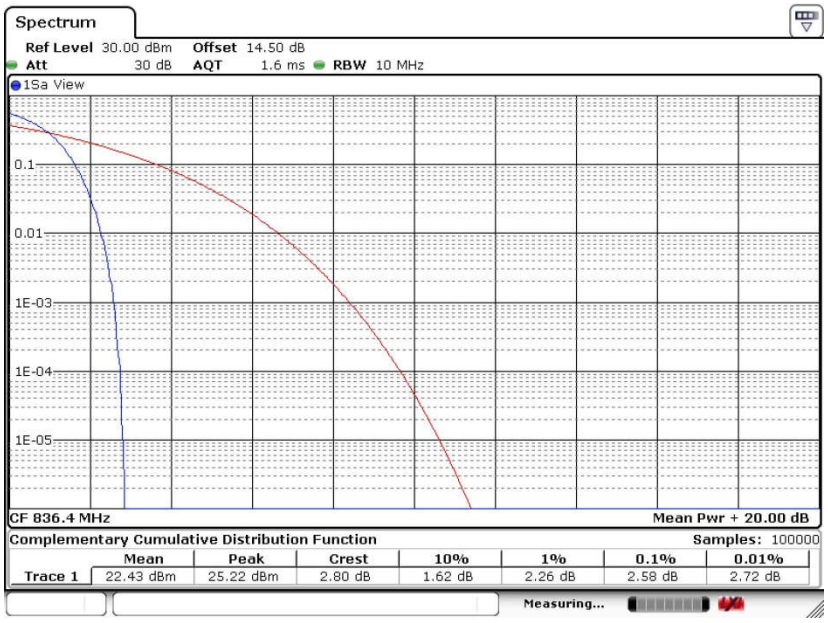
Band :	WCDMA Band V	Test Mode :	RMC 12.2Kbps Link (QPSK)

Peak-to-Average Ratio on Channel 4132 (826.4 MHz)



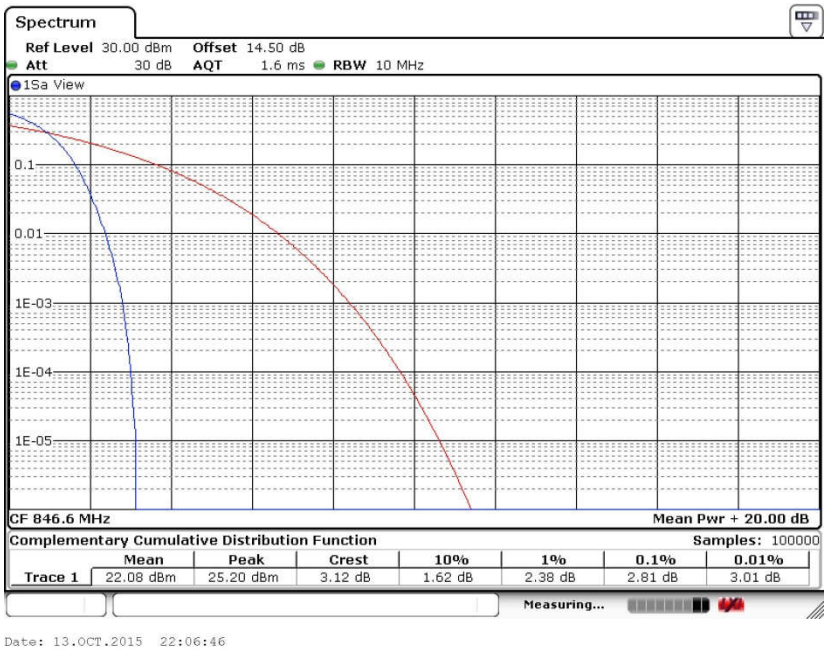
Date: 13.OCT.2015 22:05:59

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



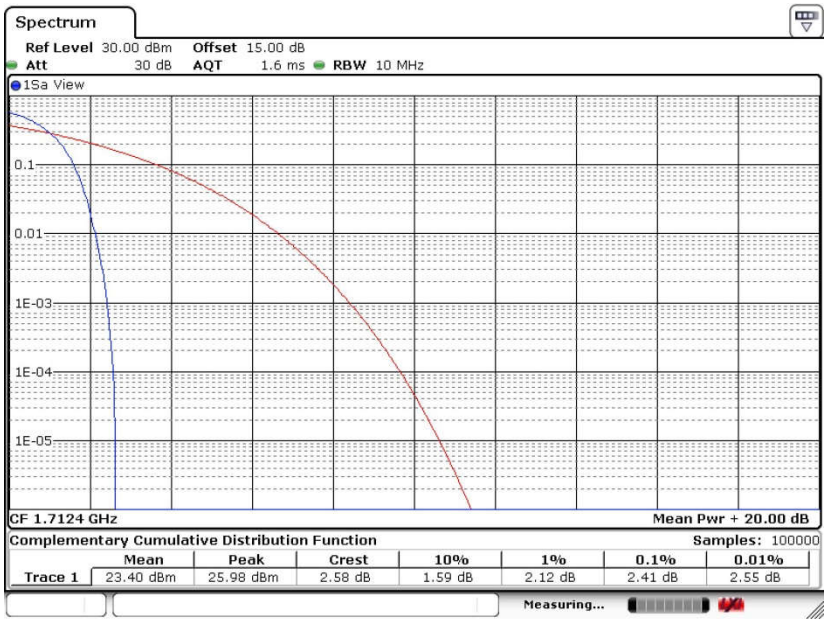
Date: 13.OCT.2015 22:06:19

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



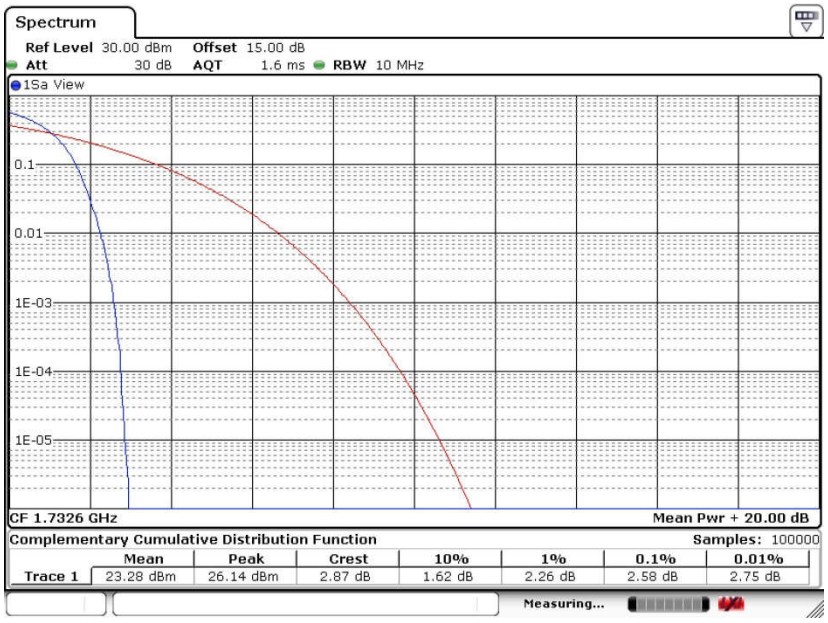
Band :	WCDMA Band IV	Test Mode :	RMC 12.2Kbps Link (QPSK)

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



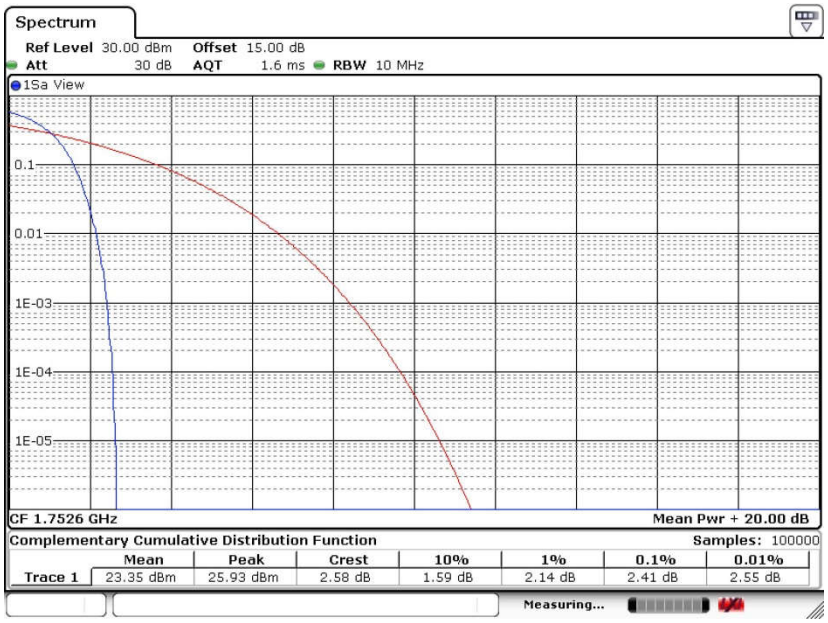
Date: 14.OCT.2015 00:19:46

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



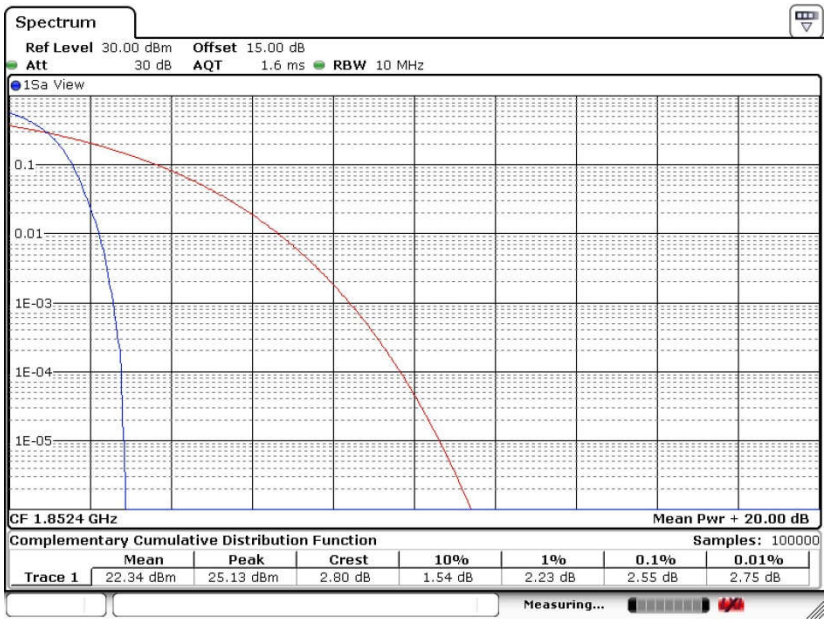
Date: 14.OCT.2015 00:20:15

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



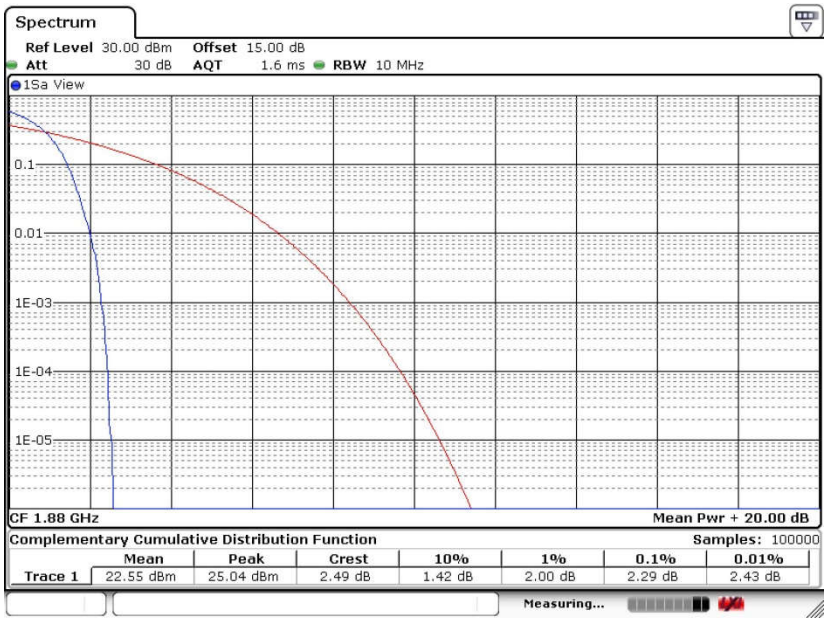
Band :	WCDMA Band II	Test Mode :	RMC 12.2Kbps Link (QPSK)

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



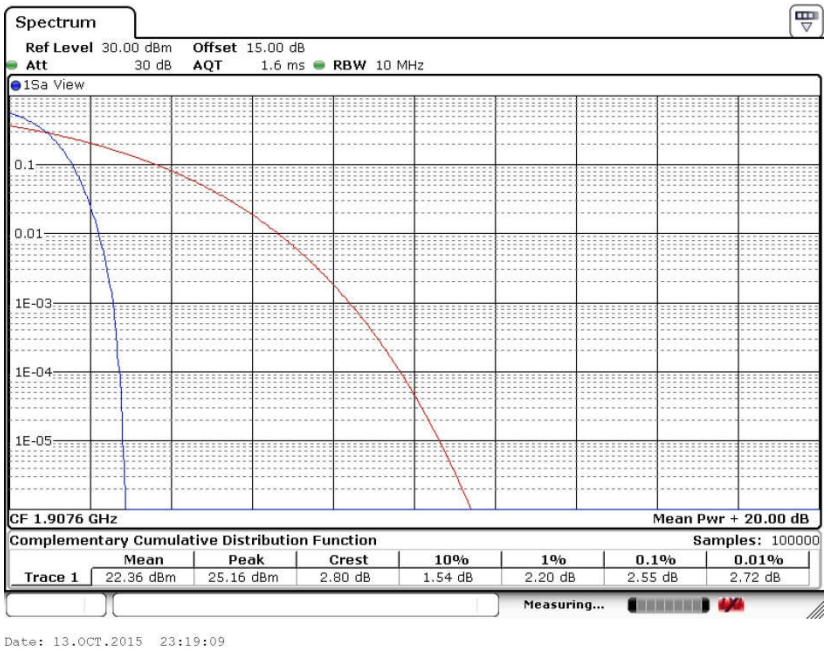
Date: 13.OCT.2015 23:18:27

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



Date: 13.OCT.2015 23:18:42

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



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-D-2010, was used for ERP/EIRP measurement, and the spectrum analyzer configuration follows KDB 971168 D01 Power Meas. License Digital Systems v02r02. The ERP of mobile transmitters must not exceed 7 Watts (Cellular Band) and the EIRP of mobile transmitters are limited to 2 Watts (PCS Band) and 1 Watts (AWS Band).

3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

1. The testing follows FCC KDB 971168 v02r02 Section 5.2.1. (for CDMA/WCDMA), Section 5.2.2.2 (for GSM/GPRS/EDGE) and ANSI / TIA-603-D-2010 Section 2.2.17.
2. The EUT was placed on a non-conductive rotating platform 0.8 meters high in a semi-anechoic chamber. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and a spectrum analyzer with RMS detector per section 5. of KDB 971168 D01.
3. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power. The maximum emission was recorded from analyzer power level (LVL) from the 360 degrees rotation of the turntable and the test antenna raised and lowered over a range from 1 to 4 meters in both horizontally and vertically polarized orientations.
4. Effective Isotropic Radiated Power (EIRP) was measured by substitution method according to TIA/EIA-603-D. The EUT was replaced by the substitution antenna at same location, and then a known power from S.G. was applied into the dipole antenna through a Tx cable, and then recorded the maximum Analyzer reading through raised and lowered the test antenna. The correction factor (in dB) = S.G. - Tx Cable loss + Substitution antenna gain - Analyzer reading. Then the EUT's EIRP was calculated with the correction factor, EIRP = LVL + Correction factor and ERP = EIRP - 2.15. Take the record of the output power at substitution antenna.

	GSM/GPRS/EDGE	WCDMA/HSPA
SPAN	500kHz	10MHz
RBW	10kHz	100kHz
VBW	30kHz	300kHz
Detector	RMS	RMS
Trace	Average	Average
Average Type	Power	Power
Sweep Count	100	100

3.3.4 Test Result of ERP

GSM850 (GSM) Radiated Power ERP					
Channel	Frequency (MHz)	Horizontal		Vertical	
		ERP(dBm)	ERP(W)	ERP(dBm)	ERP(W)
Lowest	824.2	28.38	0.6887	28.17	0.6561
Middle	836.4	28.68	0.7379	27.99	0.6295
Highest	848.8	28.22	0.6637	28.13	0.6501
Limit	ERP < 7W	Result		PASS	

GSM850 (EDGE class 8) Radiated Power ERP					
Channel	Frequency (MHz)	Horizontal		Vertical	
		ERP(dBm)	ERP(W)	ERP(dBm)	ERP(W)
Lowest	824.2	21.20	0.1318	21.13	0.1297
Middle	836.4	20.99	0.1256	20.83	0.1211
Highest	848.8	20.98	0.1253	21.37	0.1371
Limit	ERP < 7W	Result		PASS	

WCDMA Band V (RMC 12.2Kbps) Radiated Power ERP					
Channel	Frequency (MHz)	Horizontal		Vertical	
		ERP(dBm)	ERP(W)	ERP(dBm)	ERP(W)
Lowest	826.4	17.92	0.0619	15.16	0.0328
Middle	836.4	18.09	0.0644	15.54	0.0358
Highest	846.6	17.20	0.0525	15.59	0.0362
Limit	ERP < 7W	Result		PASS	

3.3.5 Test Result of EIRP

GSM1900 (GSM) Radiated Power EIRP					
Channel	Frequency (MHz)	Horizontal		Vertical	
		EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	1850.2	31.72	1.4859	29.83	0.9616
Middle	1880.0	30.86	1.2190	28.46	0.7015
Highest	1909.8	30.76	1.1912	28.72	0.7447
Limit	EIRP < 2W	Result		PASS	

GSM1900 (EDGE class 8) Radiated Power EIRP					
Channel	Frequency (MHz)	Horizontal		Vertical	
		EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	1850.2	26.19	0.4159	26.12	0.4093
Middle	1880.0	25.12	0.3251	25.08	0.3221
Highest	1909.8	25.35	0.3428	25.35	0.3428
Limit	EIRP < 2W	Result		PASS	

WCDMA Band II (RMC 12.2Kbps) Radiated Power EIRP					
Channel	Frequency (MHz)	Horizontal		Vertical	
		EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	1852.4	21.44	0.1393	21.26	0.1337
Middle	1880.0	21.80	0.1514	21.12	0.1294
Highest	1907.6	21.91	0.1552	22.17	0.1648
Limit	EIRP < 2W	Result		PASS	

WCDMA Band IV(RMC 12.2Kbps) Radiated Power EIRP					
Channel	Frequency (MHz)	Horizontal		Vertical	
		EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	1712.4	21.91	0.1552	21.75	0.1496
Middle	1732.6	21.28	0.1343	21.29	0.1346
Highest	1752.6	21.54	0.1426	20.63	0.1156
Limit	EIRP < 1W	Result		PASS	

3.4 99% Occupied Bandwidth and 26dB Bandwidth Measurement

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

The 99% occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean transmitted power.

The emission bandwidth is defined as the width of the signal between two points, located at the 2 sides of the carrier frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

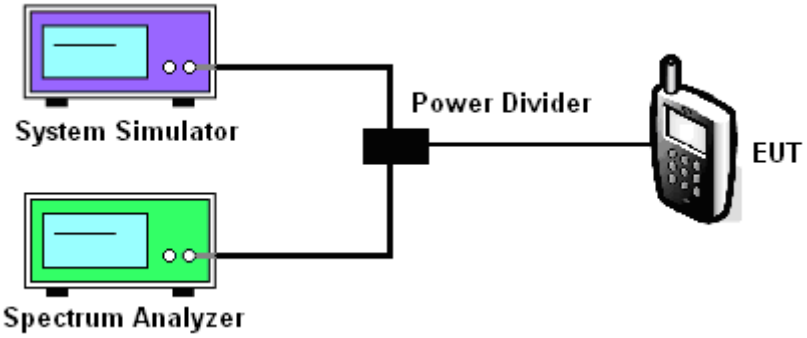
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

1. The testing follows FCC KDB 971168 v02r02 Section 4.2.
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be between two and five times the anticipated OBW.
4. The nominal resolution bandwidth (RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
5. Set the detection mode to peak, and the trace mode to max hold.
6. Determine the reference value: Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace. (this is the reference value)
7. Determine the “-26 dB down amplitude” as equal to (Reference Value – X).
8. Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the “–X dB down amplitude” determined in step 6. If a marker is below this “-X dB down amplitude” value it shall be placed as close as possible to this value. The OBW is the positive frequency difference between the two markers.
9. Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

3.4.4 Test Setup



3.4.5 Test Result of 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)	244.57	244.57	244.57	246.02	243.13	246.02
26dB BW (kHz)	316.90	315.50	316.90	314.00	315.50	316.90

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)	244.57	247.47	247.47	247.47	246.02	246.02
26dB BW (kHz)	316.90	319.80	318.40	312.60	312.60	312.60

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)	4.21	4.21	4.20
26dB BW (MHz)	4.91	4.89	4.88

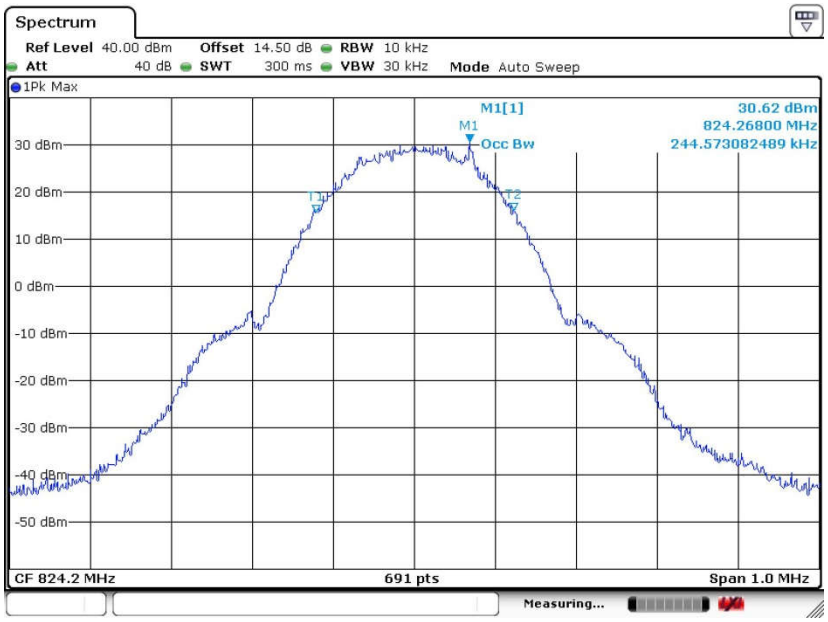
AWS Band			
Modes	WCDMA Band IV (RMC 12.2Kbps)		
Channel	1312(Low)	1413 (Mid)	1513 (High)
Frequency (MHz)	1712.4	1732.6	1752.6
99% OBW (MHz)	4.21	4.21	4.21
26dB BW (MHz)	4.89	4.86	4.89

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)	4.21	4.23	4.21
26dB BW (MHz)	4.91	4.94	4.91

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

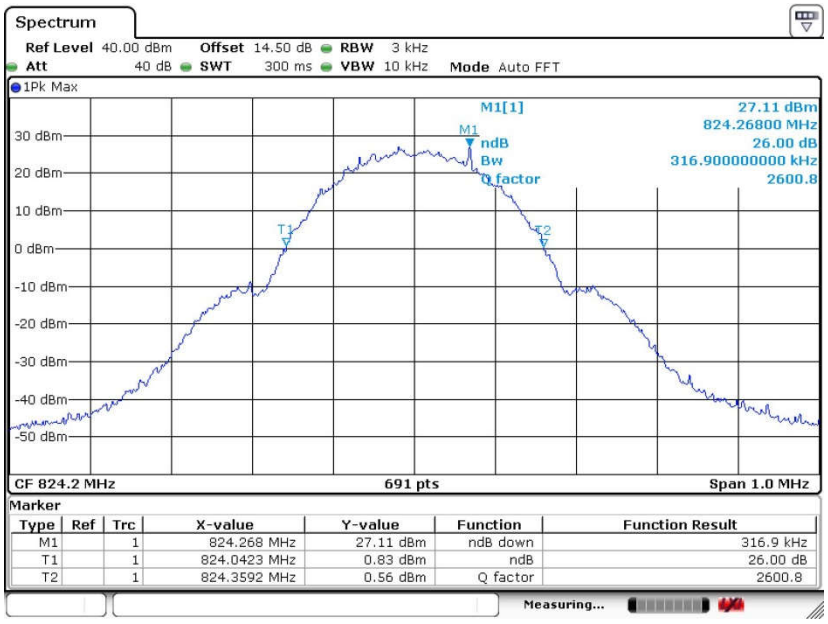
Band :	GSM 850	Test Mode :	GSM Link (GMSK)

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



Date: 13.OCT.2015 20:43:13

26dB Bandwidth Plot on Channel 128 (824.2 MHz)

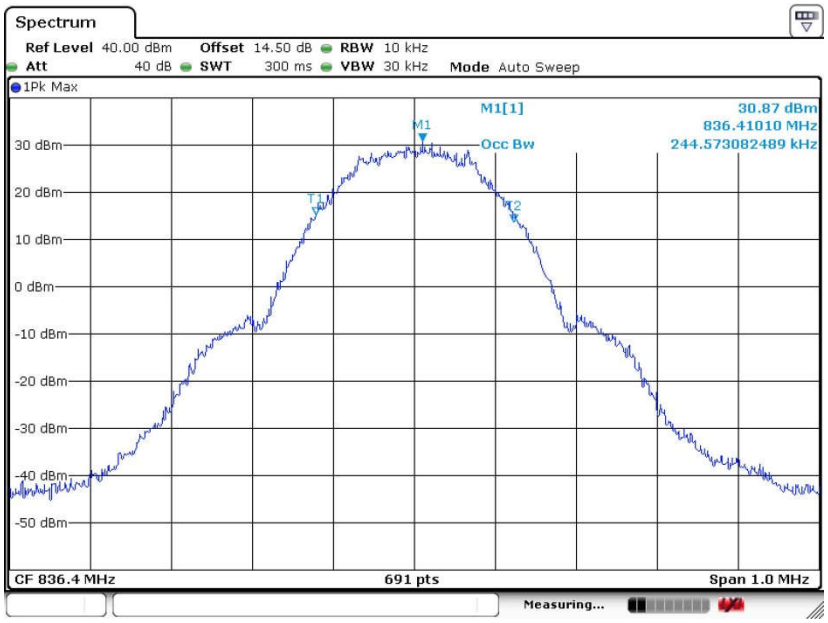


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	824.268 MHz	27.11 dBm	ndB down	316.9 kHz
T1		1	824.0423 MHz	0.83 dBm	ndB	26.00 dB
T2		1	824.3592 MHz	0.56 dBm	Q factor	2600.8

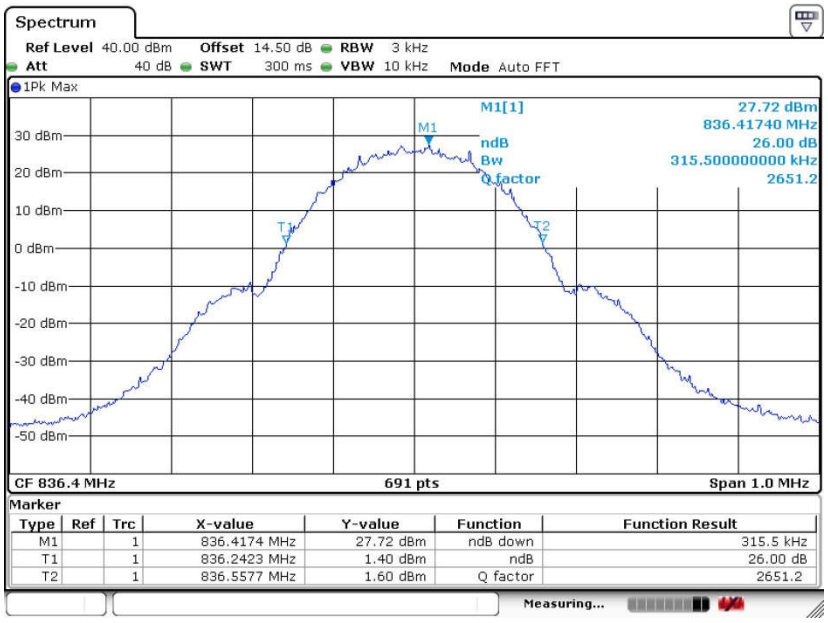
Date: 13.OCT.2015 21:13:28

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



Date: 13.OCT.2015 21:09:06

26dB Bandwidth Plot on Channel 189 (836.4 MHz)

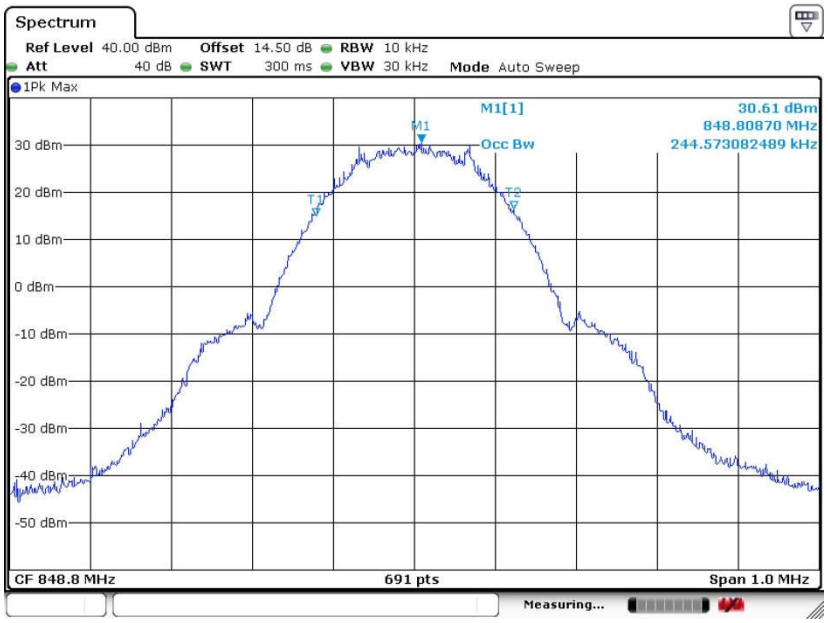


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	836.4174 MHz	27.72 dBm	ndB down	315.5 kHz
T1		1	836.2423 MHz	1.40 dBm	ndB	26.00 dB
T2		1	836.5577 MHz	1.60 dBm	Q factor	2651.2

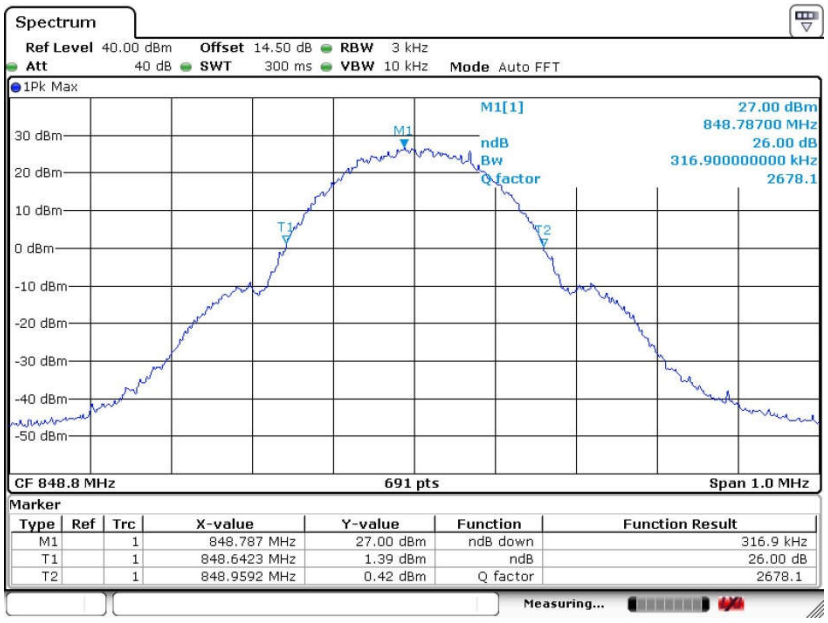
Date: 13.OCT.2015 21:14:27

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



Date: 13.OCT.2015 21:12:47

26dB Bandwidth Plot on Channel 251 (848.8 MHz)



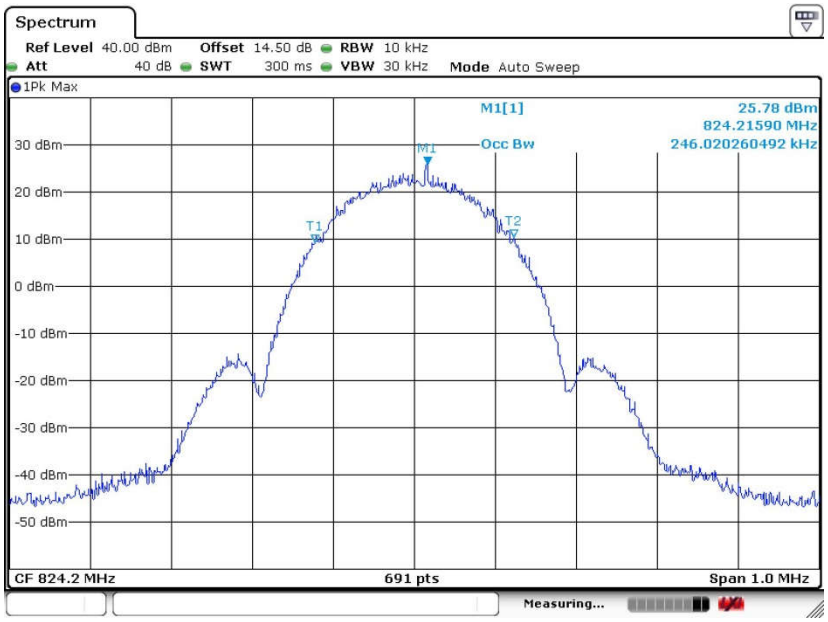
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	848.787 MHz	27.00 dBm	ndB down	316.9 kHz
T1		1	848.6423 MHz	1.39 dBm	ndB	26.00 dB
T2		1	848.9592 MHz	0.42 dBm	Q factor	2678.1

Date: 13.OCT.2015 21:17:07

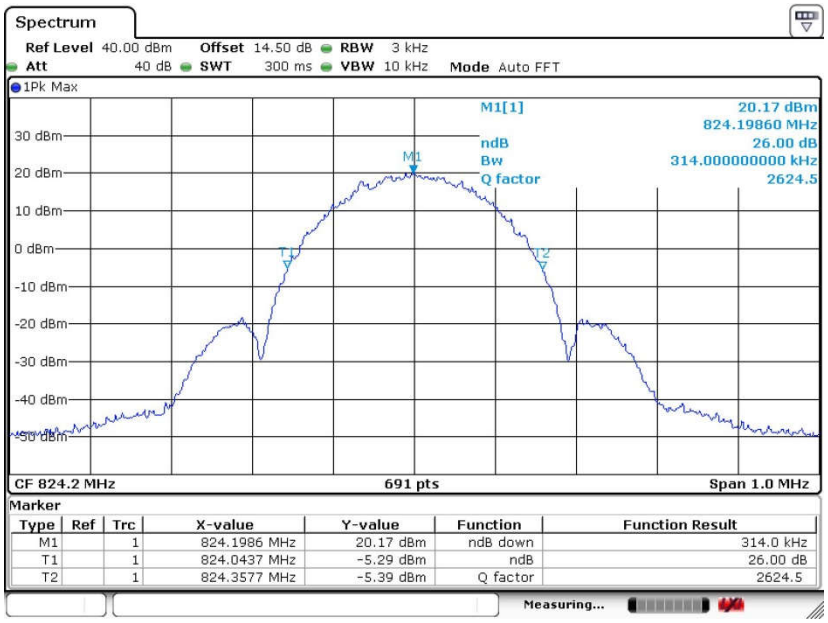
Band :	GSM 850	Test Mode :	EDGE class 8 Link (8PSK)

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



Date: 14.OCT.2015 19:47:53

26dB Bandwidth Plot on Channel 128 (824.2 MHz)

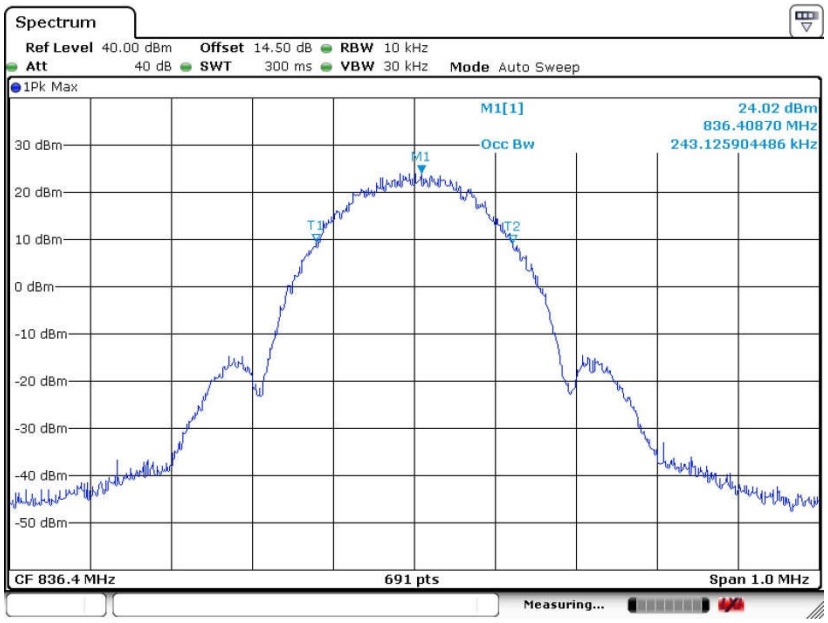


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	824.1986 MHz	20.17 dBm	ndB down	314.0 kHz
T1		1	824.0437 MHz	-5.29 dBm	ndB	26.00 dB
T2		1	824.3577 MHz	-5.39 dBm	Q factor	2624.5

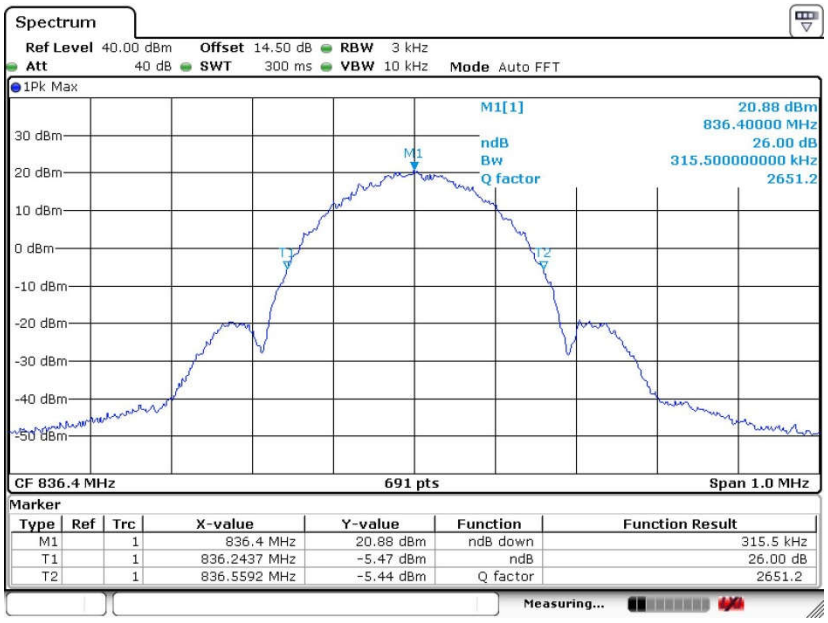
Date: 14.OCT.2015 19:53:24

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



Date: 14.OCT.2015 19:48:57

26dB Bandwidth Plot on Channel 189 (836.4 MHz)

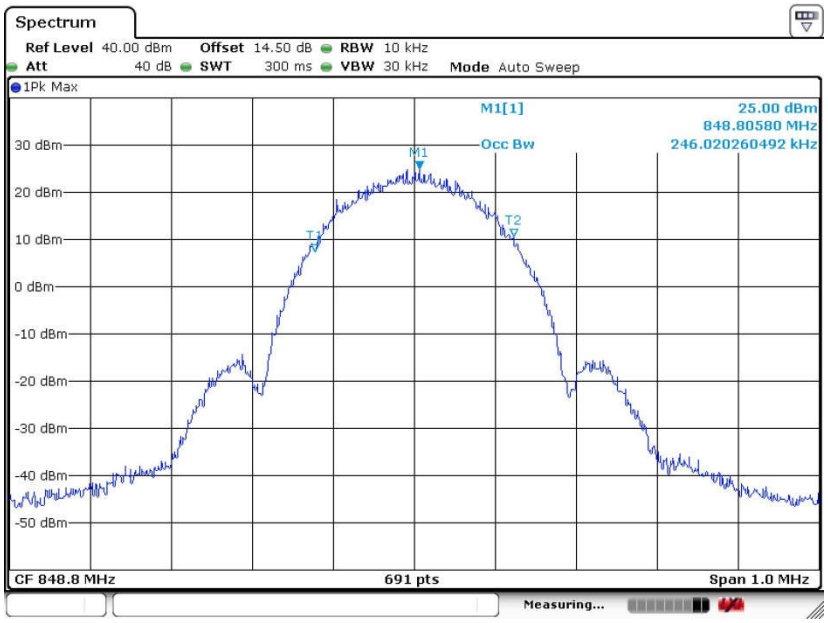


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	836.4 MHz	20.88 dBm	ndB down	315.5 kHz
T1		1	836.2437 MHz	-5.47 dBm	ndB	26.00 dB
T2		1	836.5592 MHz	-5.44 dBm	Q factor	2651.2

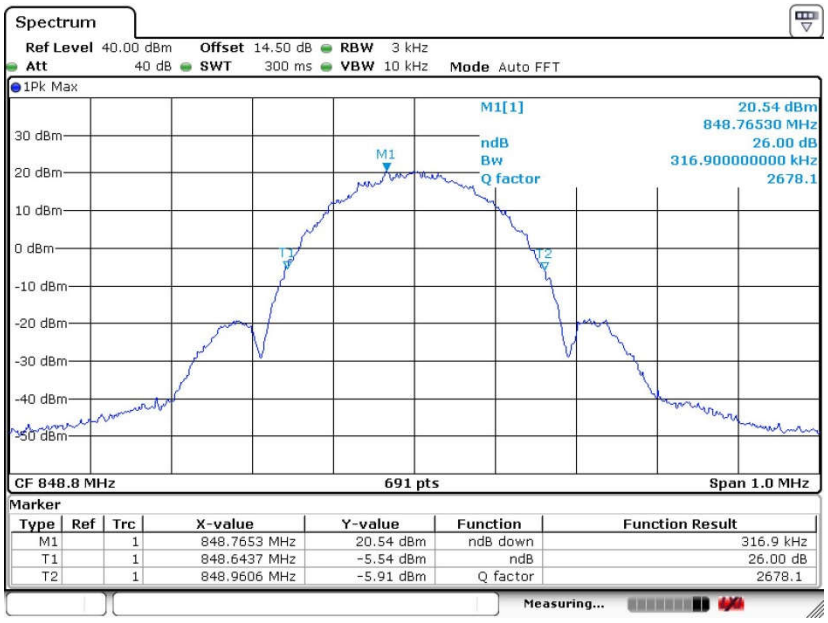
Date: 14.OCT.2015 19:54:03

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



Date: 14.OCT.2015 19:50:06

26dB Bandwidth Plot on Channel 251 (848.8 MHz)



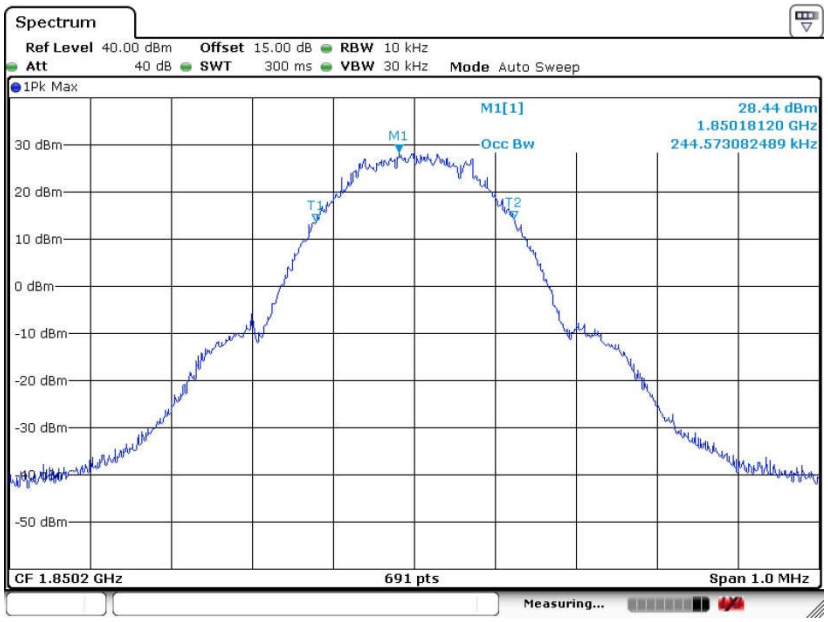
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	848.7653 MHz	20.54 dBm	ndB down	316.9 kHz
T1		1	848.6437 MHz	-5.54 dBm	ndB	26.00 dB
T2		1	848.9606 MHz	-5.91 dBm	Q factor	2678.1

Date: 14.OCT.2015 19:54:55

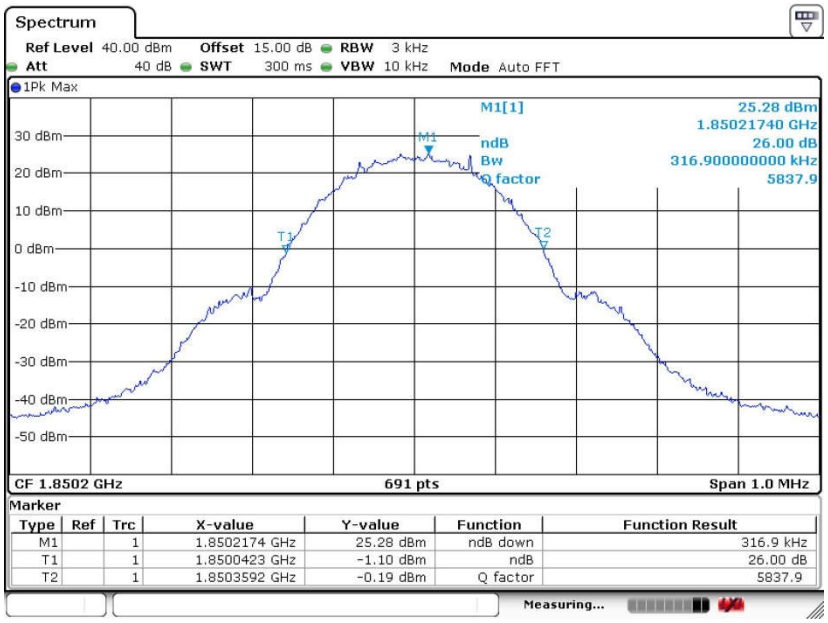
Band :	GSM 1900	Test Mode :	GSM Link (GMSK)

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



Date: 14.OCT.2015 20:21:21

26dB Bandwidth Plot on Channel 512 (1850.2 MHz)

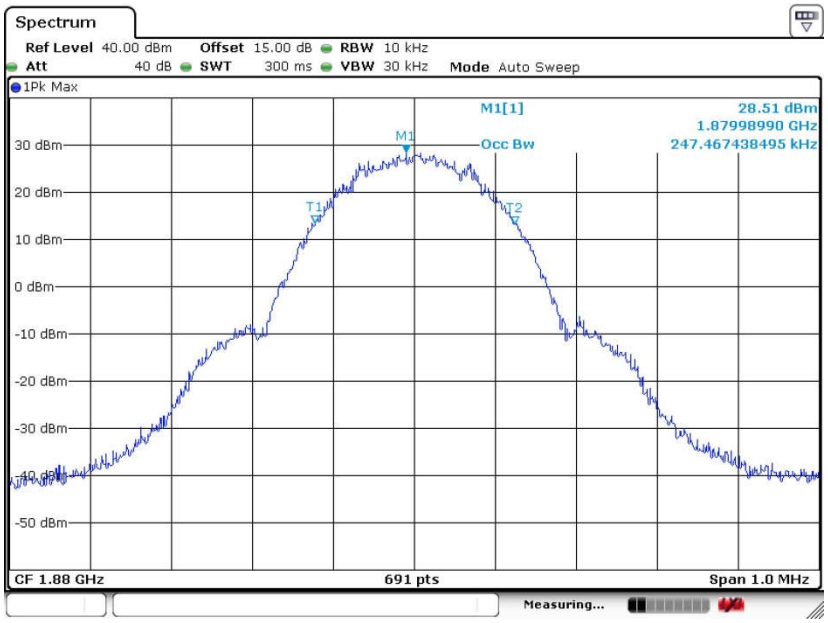


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.8502174 GHz	25.28 dBm	ndB down	316.9 kHz
T1		1	1.8500423 GHz	-1.10 dBm	ndB	26.00 dB
T2		1	1.8503592 GHz	-0.19 dBm	Q factor	5837.9

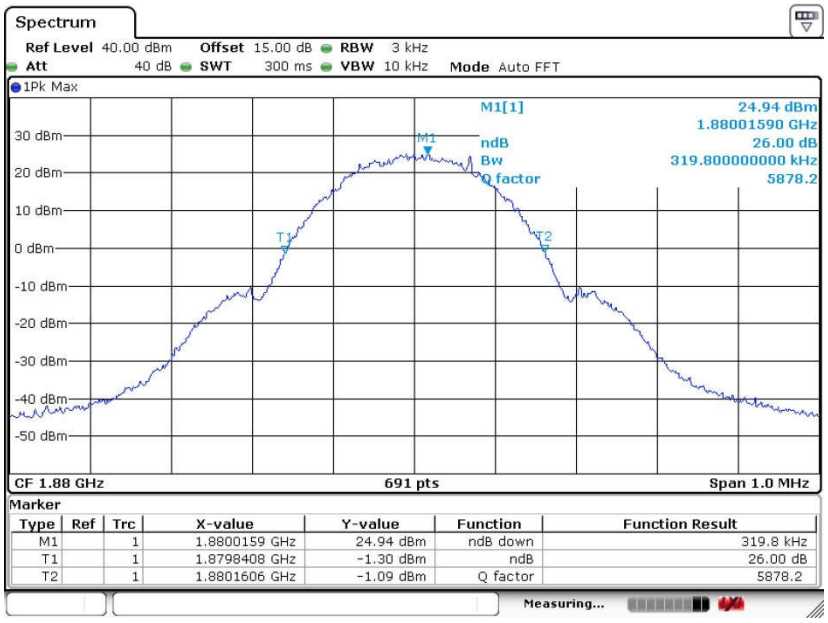
Date: 13.OCT.2015 22:40:04

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



Date: 14.OCT.2015 20:22:13

26dB Bandwidth Plot on Channel 661 (1880.0 MHz)

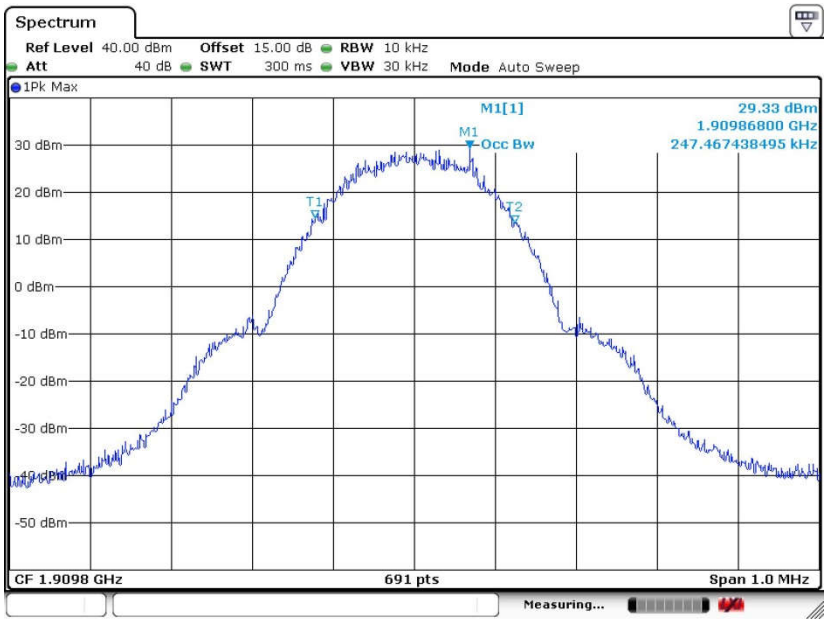


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.8800159 GHz	24.94 dBm	ndB down	319.8 kHz
T1		1	1.8798408 GHz	-1.30 dBm	ndB	26.00 dB
T2		1	1.8801606 GHz	-1.09 dBm	Q factor	5878.2

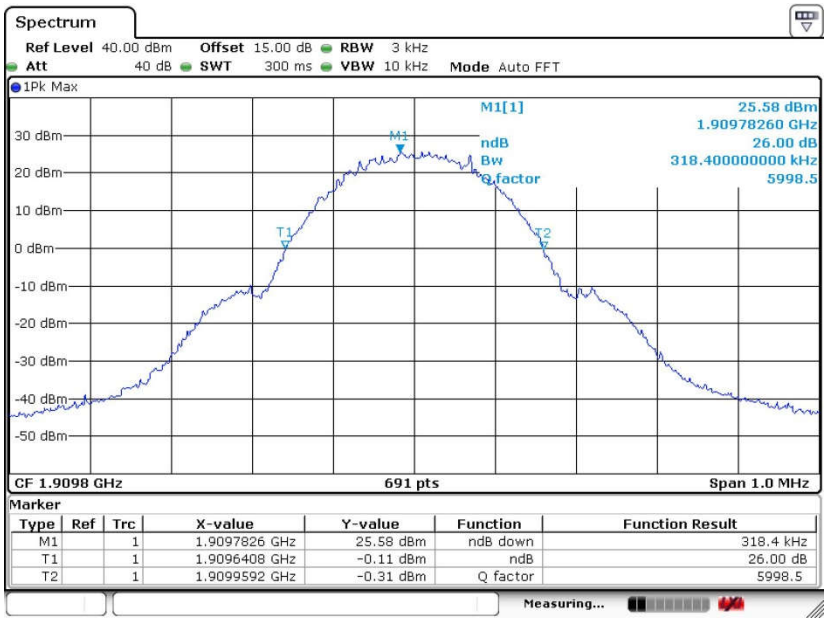
Date: 13.OCT.2015 22:41:19

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



Date: 14.OCT.2015 20:23:50

26dB Bandwidth Plot on Channel 810 (1909.8 MHz)



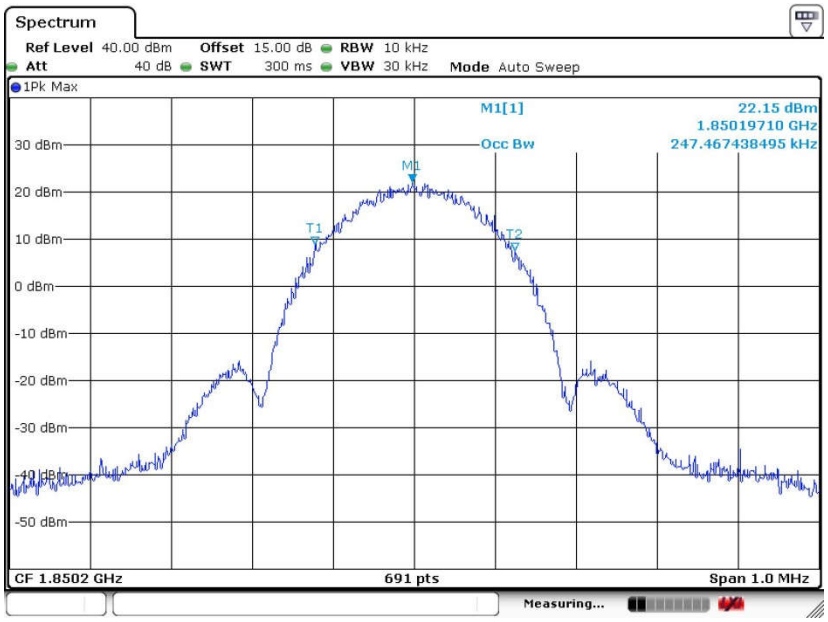
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.9097826 GHz	25.58 dBm	ndB down	318.4 kHz
T1		1	1.9096408 GHz	-0.11 dBm	ndB	26.00 dB
T2		1	1.9099592 GHz	-0.31 dBm	Q factor	5998.5

Date: 13.OCT.2015 22:43:06

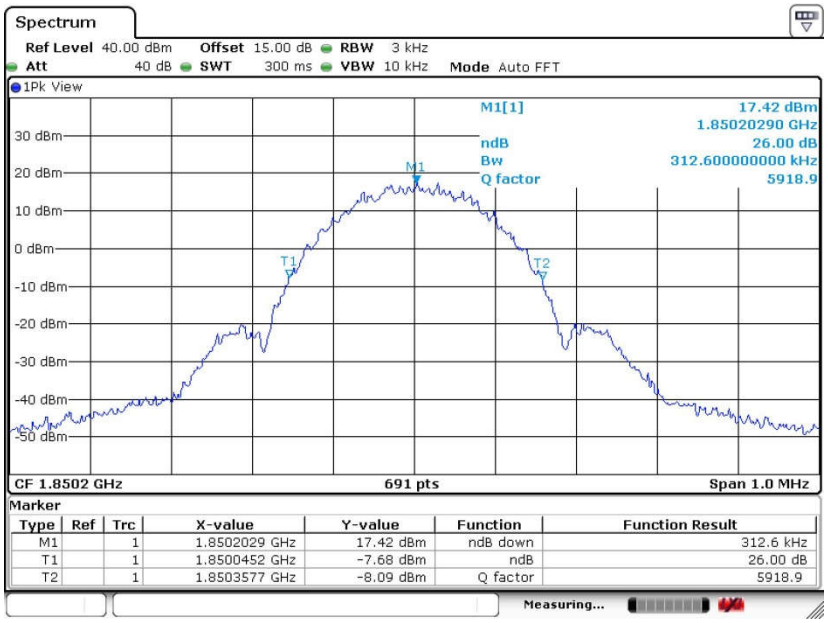
Band :	GSM 1900	Test Mode :	EDGE class 8 Link (8PSK)

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



Date: 15.OCT.2015 00:29:44

26dB Bandwidth Plot on Channel 512 (1850.2 MHz)

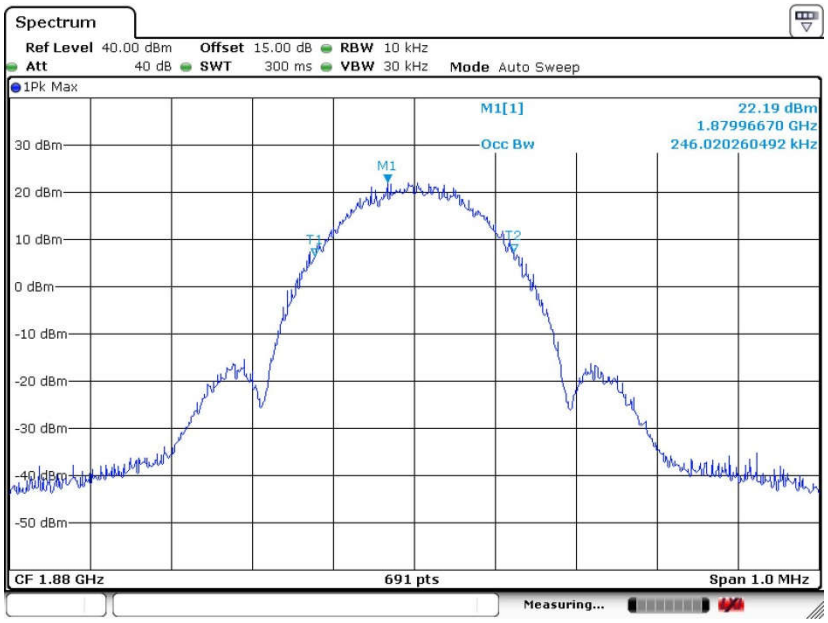


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.8502029 GHz	17.42 dBm	ndB down	312.6 kHz
T1		1	1.8500452 GHz	-7.68 dBm	ndB	26.00 dB
T2		1	1.8503577 GHz	-8.09 dBm	Q factor	5918.9

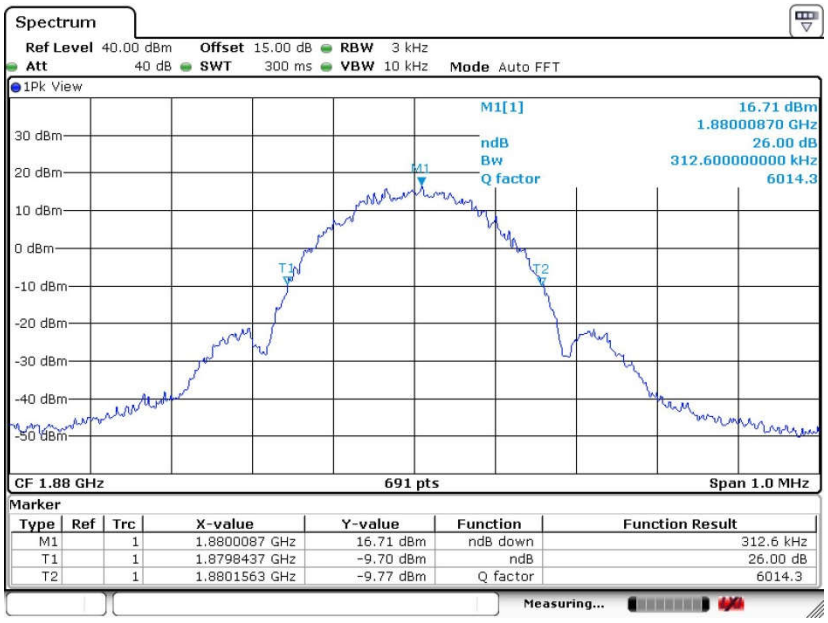
Date: 13.OCT.2015 23:35:31

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



Date: 15.OCT.2015 00:31:01

26dB Bandwidth Plot on Channel 661 (1880.0 MHz)

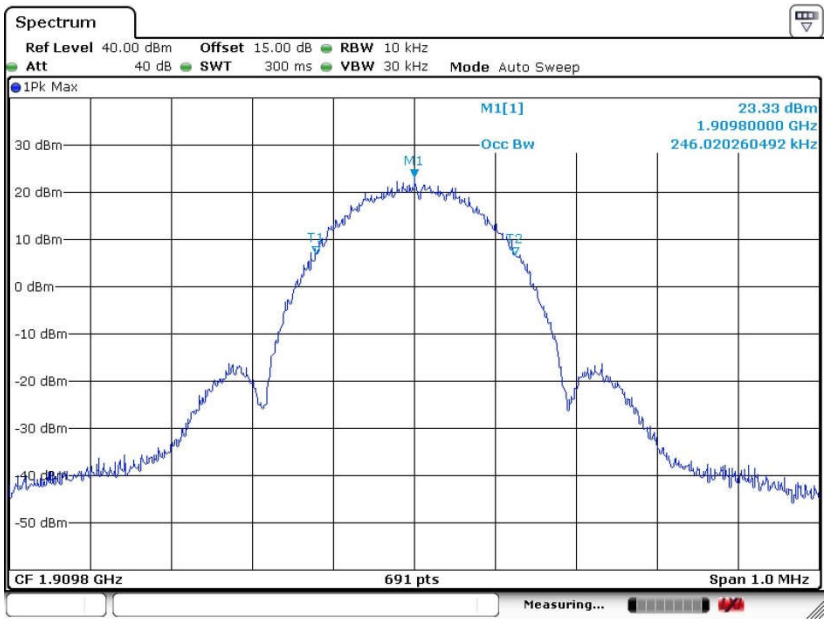


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.8800087 GHz	16.71 dBm	ndB down	312.6 kHz
T1		1	1.8798437 GHz	-9.70 dBm	ndB	26.00 dB
T2		1	1.8801563 GHz	-9.77 dBm	Q factor	6014.3

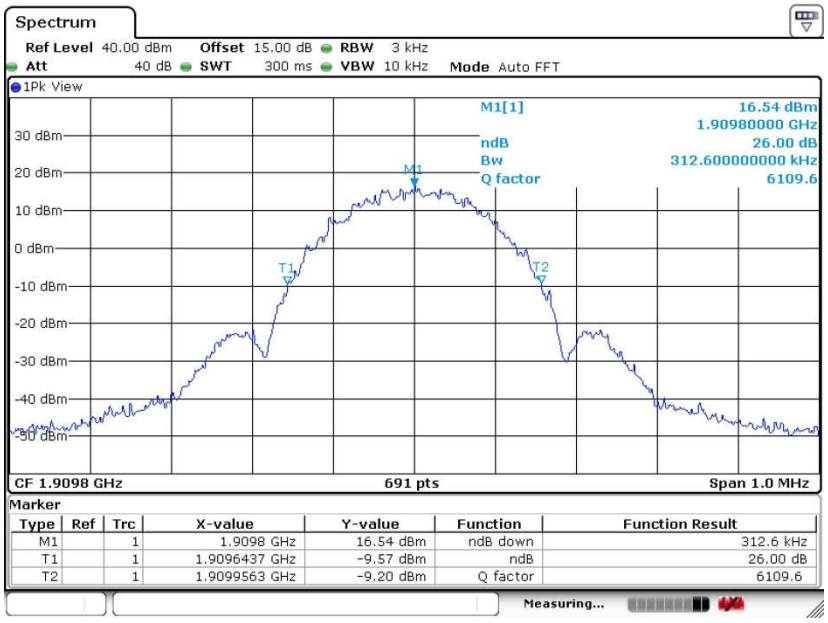
Date: 13.OCT.2015 23:36:14

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



Date: 15.OCT.2015 00:32:55

26dB Bandwidth Plot on Channel 810 (1909.8 MHz)



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.9098 GHz	16.54 dBm	ndB down	312.6 kHz
T1		1	1.9096437 GHz	-9.57 dBm	ndB	26.00 dB
T2		1	1.9099563 GHz	-9.20 dBm	Q factor	6109.6

Date: 13.OCT.2015 23:37:15