FCC RF Test Report

APPLICANT	:	**ZTE CORPORATION**
EQUIPMENT	:	**WCDMA/LTE Multi-Mode Digital Mobile Phone**
BRAND NAME	:	**ZTE**
MODEL NAME	:	**A1**
FCC ID	:	**SRQ-ZTEA1**
STANDARD	:	**FCC 47 CFR Part 2, 22(H), 24(E), 27(L)**
CLASSIFICATION	:	**PCS Licensed Transmitter Held to Ear (PCE)**

The product was received on Jul. 21, 2015 and testing was completed on Aug. 20, 2015. We, SPORTON INTERNATIONAL (KUNSHAN) 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 (KUNSHAN) INC., the test report shall not be reproduced except in full.

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager

Testing Laboratory
2627

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No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P. R. China

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG572101A	Rev. 01	Initial issue of report	Aug. 21, 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 25.01 dB at 2472.600 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

ZTE CORPORATION

ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P. R. China

1.2 Manufacturer

ZTE CORPORATION

ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P. R. China

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	WCDMA/LTE Multi-Mode Digital Mobile Phone
Brand Name	ZTE
Model Name	A1
FCC ID	SRQ-ZTEA1
EUT supports Radios application	GSM/GPRS/EGPRS/WCDMA/HSPA/DC-HSDPA HSPA+(Downlink Only)/LTE/NFC WLAN 2.4GHz 802.11b/g/n HT20/ WLAN 5GHz 802.11ac VHT20/VHT40/VHT80 Bluetooth v2.1 + EDR/Bluetooth v4.0 LE
IMEI Code	Conducted: 567239027005954 Radiation: 867239027004759 ERP&EIRP: N/A
HW Version	wsjB
SW Version	P897A10V1.0.0B01
EUT Stage	Production Unit

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

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 : 32.50 dBm GSM1900 : 30.50 dBm WCDMA Band V : 23.84 dBm WCDMA Band IV : 24.09 dBm WCDMA Band II : 24.00 dBm
Antenna Type	IFA Antenna
Type of Modulation	GSM: GMSK GPRS: GMSK EDGE: GMSK / 8PSK WCDMA : QPSK (Uplink) HSDPA/DC-HSDPA : QPSK (Uplink) HSUPA : QPSK (Uplink) HSPA+ : 16QAM (Downlink Only) DC-HSDPA : 64QAM

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 GPRS class 8	GMSK	0.5361	0.0634 ppm	246KGXW
Part 22	GSM850 EDGE class 8	8PSK	0.1633	0.0526 ppm	244KG7W
Part 22	WCDMA Band V RMC 12.2Kbps	QPSK	0.0715	0.0849 ppm	4M18F9W
Part 24	GSM1900 GPRS class 8	GMSK	1.2060	0.0250 ppm	244KGXW
Part 24	GSM1900 EDGE class 8	8PSK	0.4131	0.0207 ppm	246KG7W
Part 24	WCDMA Band II RMC 12.2Kbps	QPSK	0.3790	0.0309 ppm	4M18F9W
Part 27	WCDMA Band IV RMC 12.2Kbps	QPSK	0.2533	0.0277 ppm	4M16F9W

1.7 Testing Location

Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.	
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P. R. China TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958	
Test Site No.	**Sporton Site No.**	
	TH01-KS	

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-C-2004
- 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	■ GPRS class 8 Link ■ EDGE class 8 Link	■ GPRS class 8 Link ■ EDGE class 8 Link
GSM 1900	■ GPRS class 8 Link ■ EDGE class 8 Link	■ GPRS class 8 Link ■ EDGE class 8 Link
WCDMA Band V	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link
WCDMA Band II	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link
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:

GPRS multi-slot class 8 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,

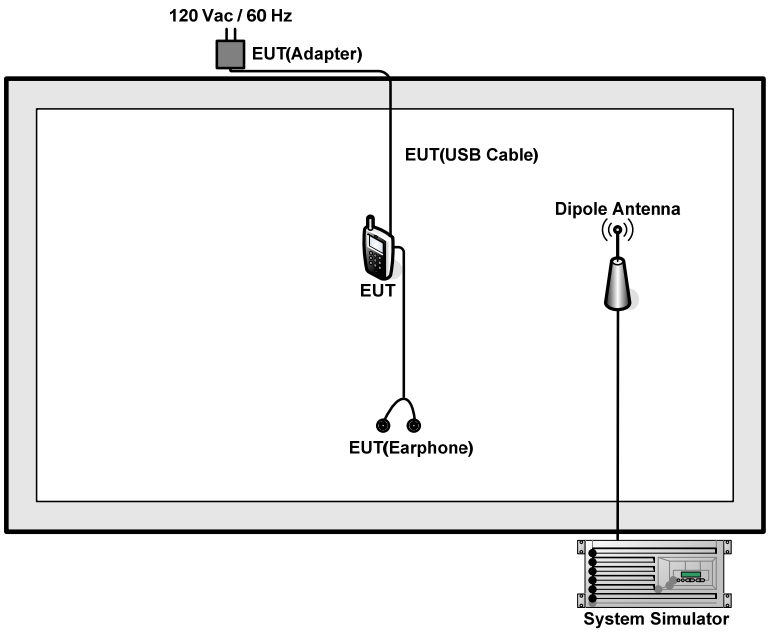
RMC 12.2Kbps mode for WCDMA band II, only these modes were used for all tests.

Conducted Power Measurement Results:

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	32.01	32.43	32.49	30.09	30.37	30.48
GPRS class 8	32.01	32.41	**32.50**	30.12	30.42	**30.50**
GPRS class 10	31.83	32.29	32.27	30.08	30.20	30.32
GPRS class 11	30.60	30.98	30.99	29.93	29.96	30.04
GPRS class 12	29.41	29.85	30.00	29.59	29.86	29.78
EGPRS class 8	26.35	26.49	26.53	25.98	26.01	26.01
EGPRS class 10	26.26	26.38	26.36	25.86	25.89	25.87
EGPRS class 11	26.09	26.23	26.25	25.74	25.75	25.76
EGPRS class 12	25.92	26.02	26.04	25.55	25.54	25.48

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	23.66	23.83	23.52	23.48	23.99	23.39	23.65	23.74	24.07
RMC 12.2K	23.67	**23.84**	23.54	23.50	**24.00**	23.40	23.66	23.75	**24.09**
HSDPA Subtest-1	22.90	23.19	22.69	22.90	23.38	22.84	22.88	22.94	23.19
HSDPA Subtest-2	22.78	23.24	22.72	22.95	23.39	22.89	22.94	22.96	23.16
HSDPA Subtest-3	22.43	22.67	22.22	22.44	22.90	22.32	22.41	22.47	22.82
HSDPA Subtest-4	22.30	22.64	22.23	22.47	22.92	22.38	22.46	22.48	22.75
HSUPA Subtest-1	22.39	22.66	22.39	22.36	23.00	22.35	22.69	22.90	22.47
HSUPA Subtest-2	21.79	22.00	21.56	21.71	21.99	21.86	21.93	21.74	22.00
HSUPA Subtest-3	21.56	22.05	21.28	21.76	21.78	21.40	21.80	21.36	21.95
HSUPA Subtest-4	21.97	22.00	21.99	21.90	22.00	21.95	21.84	22.00	21.91
HSUPA Subtest-5	22.39	22.82	22.30	22.52	23.05	22.45	22.51	22.60	22.84
DC-HSDPA Subtest-1	22.85	23.18	22.65	22.84	23.34	22.83	23.90	22.78	22.85
DC-HSDPA Subtest-2	22.70	23.18	22.70	22.90	23.37	22.81	23.94	22.86	22.88
DC-HSDPA Subtest-3	22.34	22.64	22.14	22.40	22.85	22.28	23.47	22.39	22.39
DC-HSDPA Subtest-4	22.24	22.61	22.16	22.39	22.88	22.33	23.46	22.43	22.44

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration

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

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

Offset = RF cable loss + attenuator factor.

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

Example :

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

= 5.2 + 10 = 15.2 (dB)

3 Test Result

3.1 Conducted Output Power Measurement

3.1.1 Description of the Conducted Output Power Measurement

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

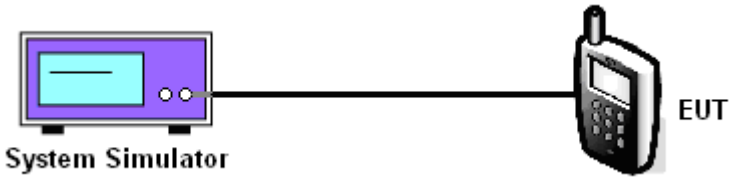
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

1. The transmitter output port was connected to the system simulator.
2. Set EUT at maximum power through system simulator.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure the maximum burst average power for GSM and maximum average power for other modulation signal.

3.1.4 Test Setup



3.1.5 Test Result of Conducted Output Power

Cellular Band									
Modes	GSM850 (GPRS class 8)			GSM850 (EDGE class 8)			WCDMA Band V (RMC 12.2Kbps)		
Channel	128 (Low)	189 (Mid)	251 (High)	128 (Low)	189 (Mid)	251 (High)	4132 (Low)	4182 (Mid)	4233 (High)
Frequency (MHz)	824.2	836.4	848.8	824.2	836.4	848.8	826.4	836.4	846.6
Conducted Power (dBm)	32.01	32.41	32.50	26.35	26.49	26.53	23.67	23.84	23.54

PCS Band									
Modes	GSM1900 (GPRS class 8)			GSM1900 (EDGE class 8)			WCDMA Band II (RMC 12.2Kbps)		
Channel	512 (Low)	661 (Mid)	810 (High)	512 (Low)	661 (Mid)	810 (High)	9262 (Low)	9400 (Mid)	9538 (High)
Frequency (MHz)	1850.2	1880	1909.8	1850.2	1880	1909.8	1852.4	1880	1907.6
Conducted Power (dBm)	30.12	30.42	30.50	25.98	26.01	26.01	23.50	24.00	23.40

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)	23.66	23.75	24.09

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.

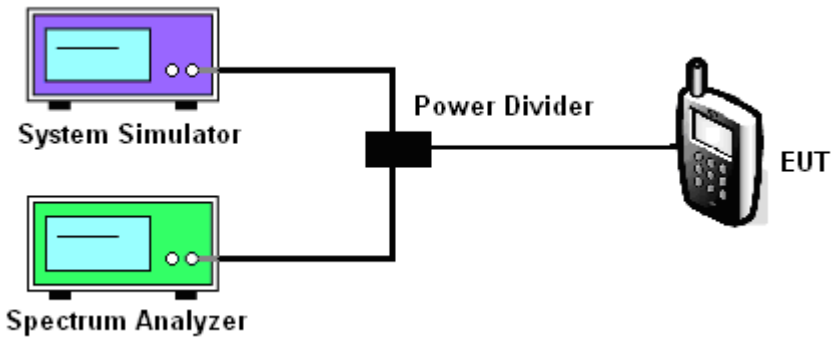
3.2.2 Measuring Instruments

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 (GPRS class 8)			GSM850 (EDGE class 8)			WCDMA Band V (RMC 12.2Kbps)		
Channel	128 (Low)	189 (Mid)	251 (High)	128 (Low)	189 (Mid)	251 (High)	4132 (Low)	4182 (Mid)	4233 (High)
Frequency (MHz)	824.2	836.4	848.8	824.2	836.4	848.8	826.4	836.4	846.6
Peak-to-Average Ratio (dB)	0.36	0.34	0.35	2.93	3.03	2.87	2.88	2.84	2.80

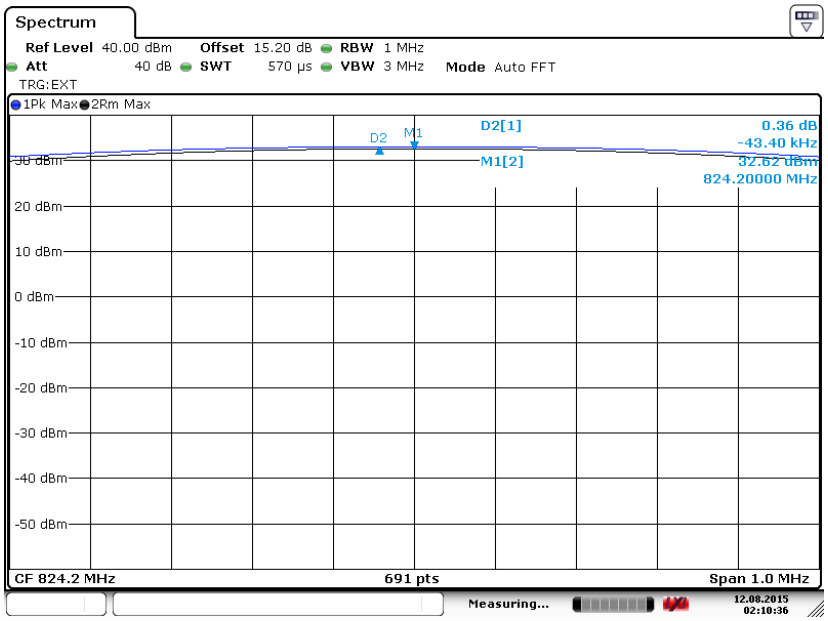
PCS Band									
Modes	GSM1900 (GPRS class 8)			GSM1900 (EDGE class 8)			WCDMA Band II (RMC 12.2Kbps)		
Channel	512 (Low)	661 (Mid)	810 (High)	512 (Low)	661 (Mid)	810 (High)	9262 (Low)	9400 (Mid)	9538 (High)
Frequency (MHz)	1850.2	1880	1909.8	1850.2	1880	1909.8	1852.4	1880	1907.6
Peak-to-Average Ratio (dB)	0.44	0.45	0.48	2.77	2.97	2.88	2.92	3.16	3.04

AWS Band			
Modes	WCDMA Band IV (RMC 12.2Kbps)		
Channel	1312(Low)	1413 (Mid)	1513 (High)
Frequency (MHz)	1712.4	1732.6	1752.6
Peak-to-Average Ratio (dB)	3.24	2.88	3.20

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

Band :	GSM 850	Test Mode :	GPRS class 8 Link (GMSK)

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



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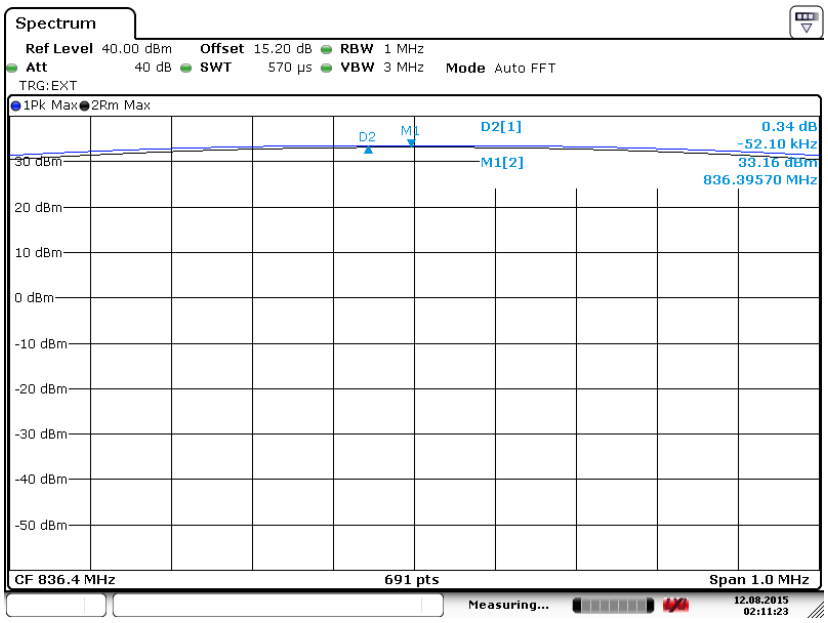
Peak-to-Average Ratio on Channel 189 (836.4 MHz)



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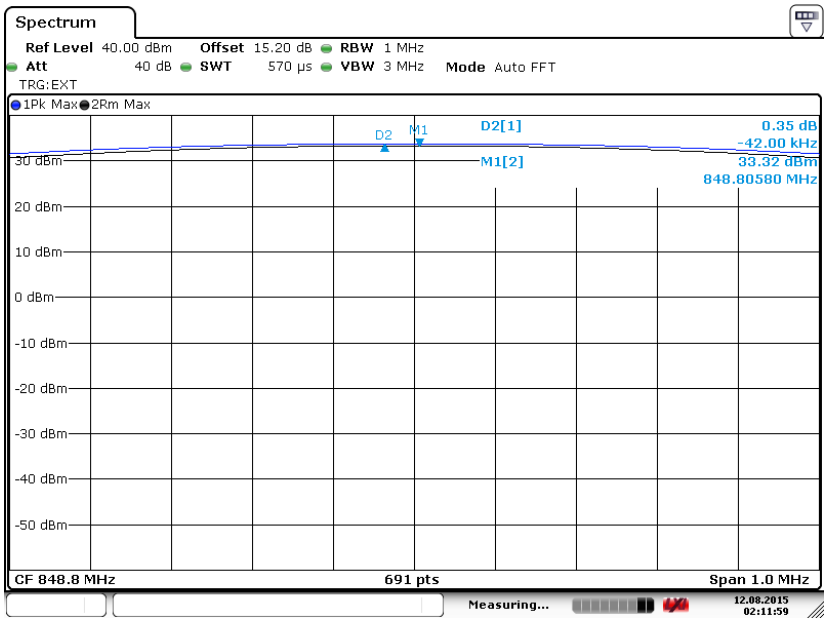
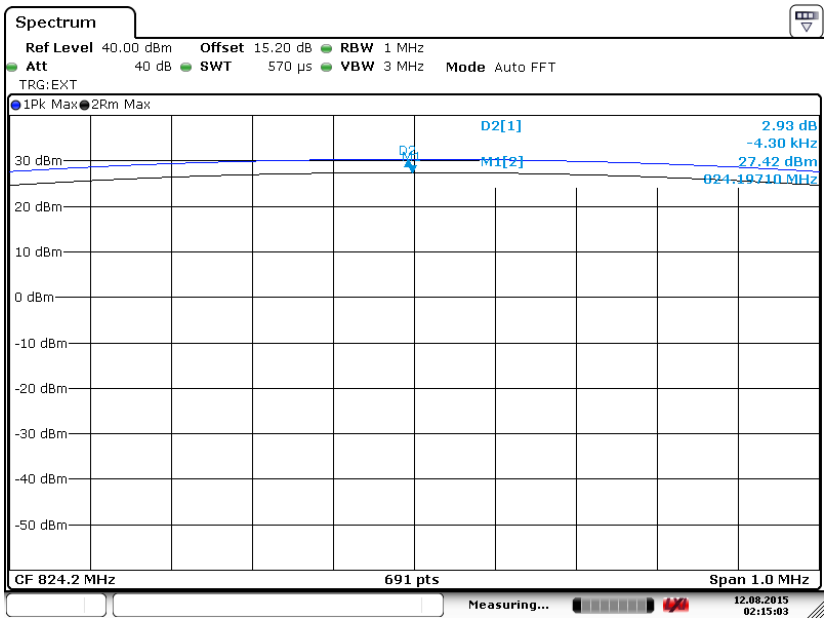
Peak-to-Average Ratio on Channel 251 (848.8 MHz)



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

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



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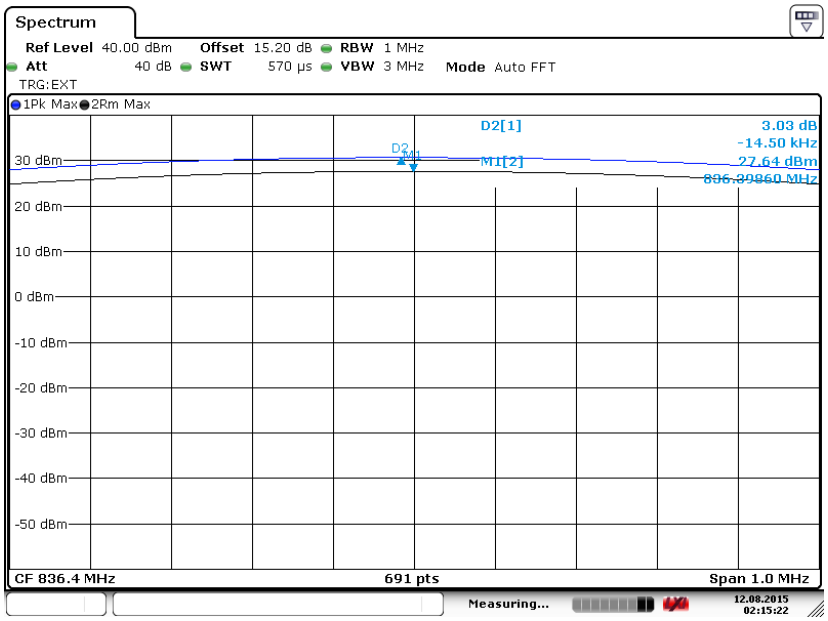
Peak-to-Average Ratio on Channel 189 (836.4 MHz)



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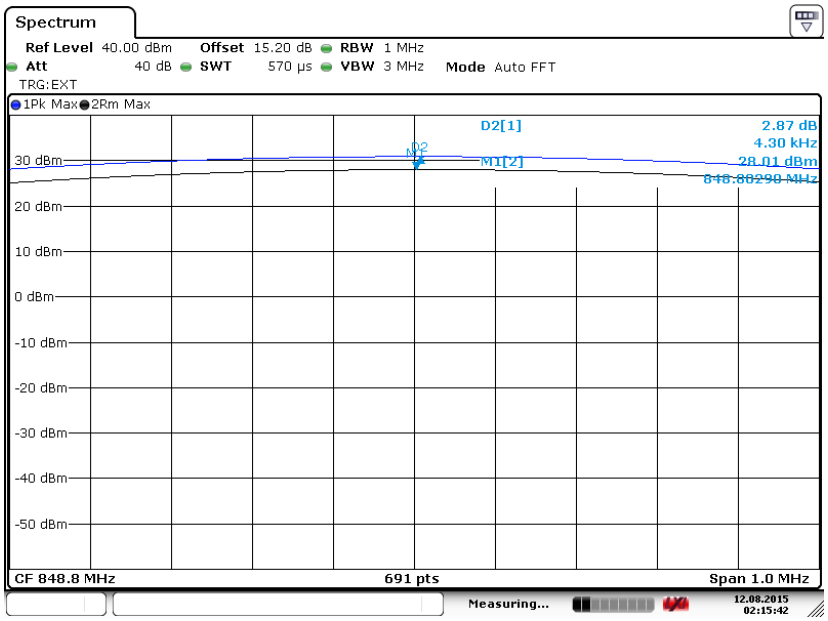
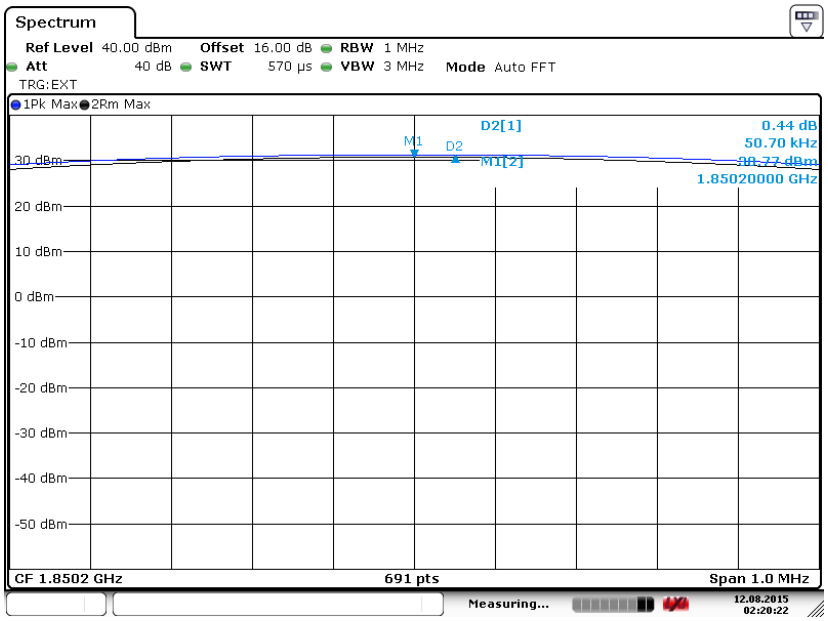
Peak-to-Average Ratio on Channel 251 (848.8 MHz)



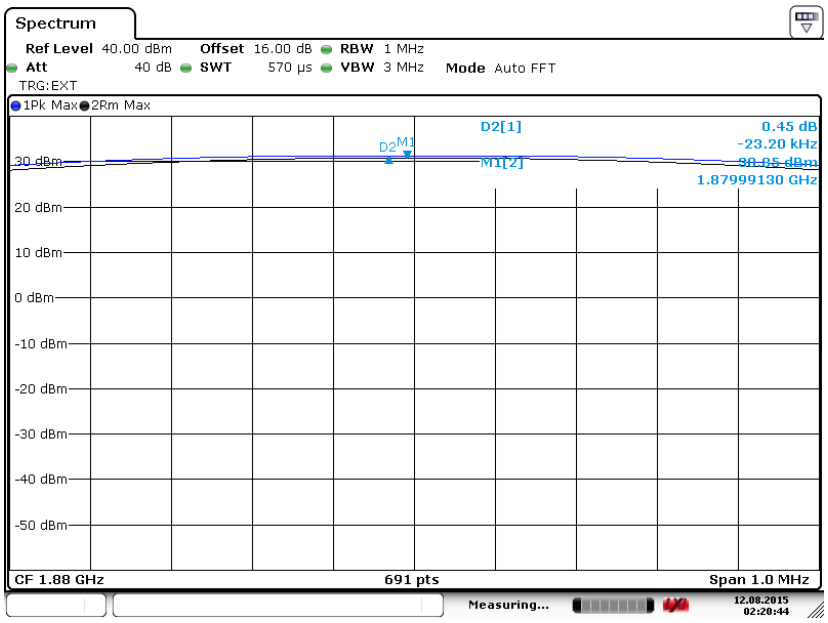
Band :	GSM 1900	Test Mode :	GPRS class 8 Link (GMSK)

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



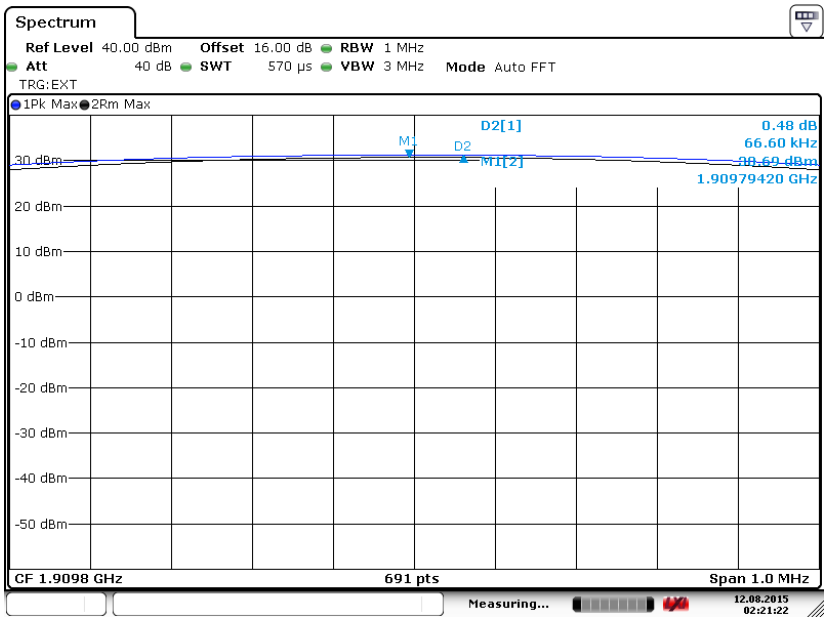
Date:12.AUG.2015 02:20:22

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



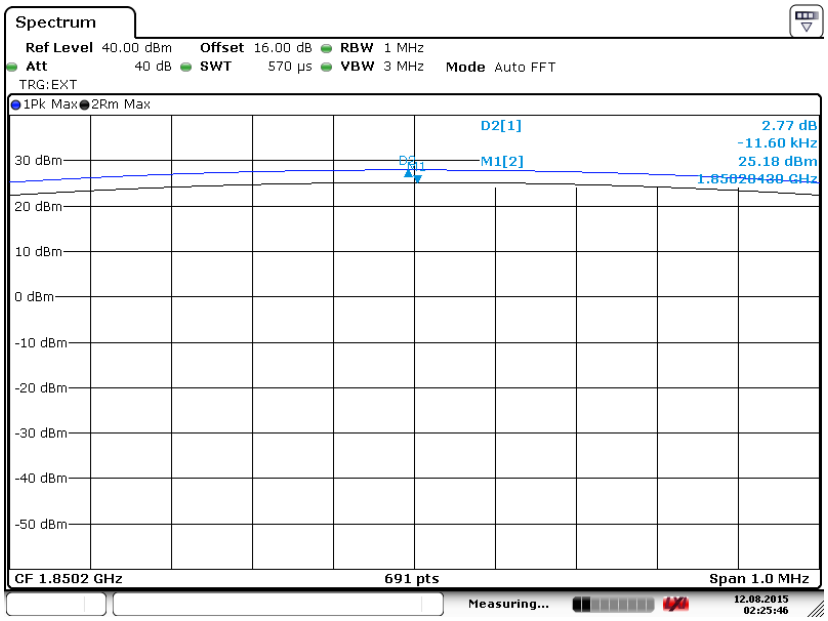
Date:12.AUG.2015 02:20:44

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



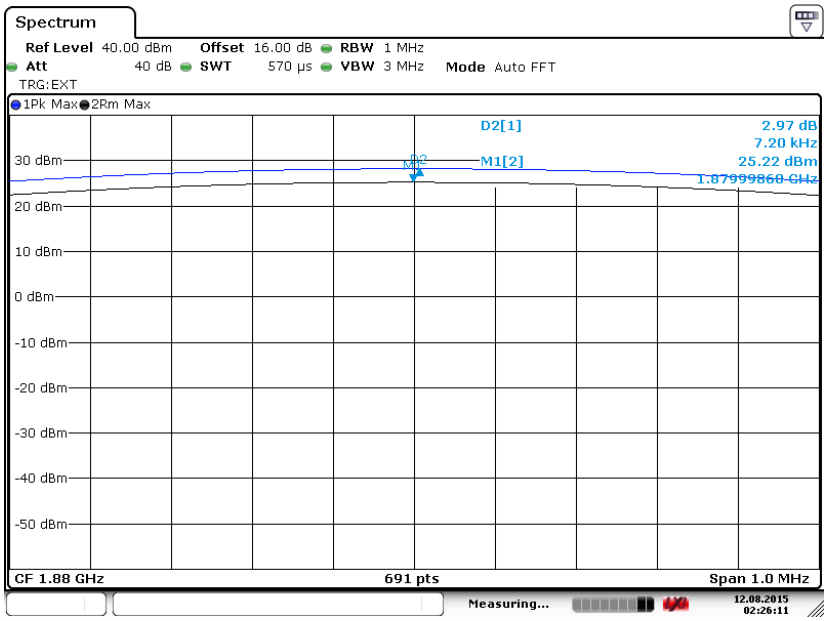
Band :	GSM 1900	Test Mode :	EDGE class 8 Link (8PSK)

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



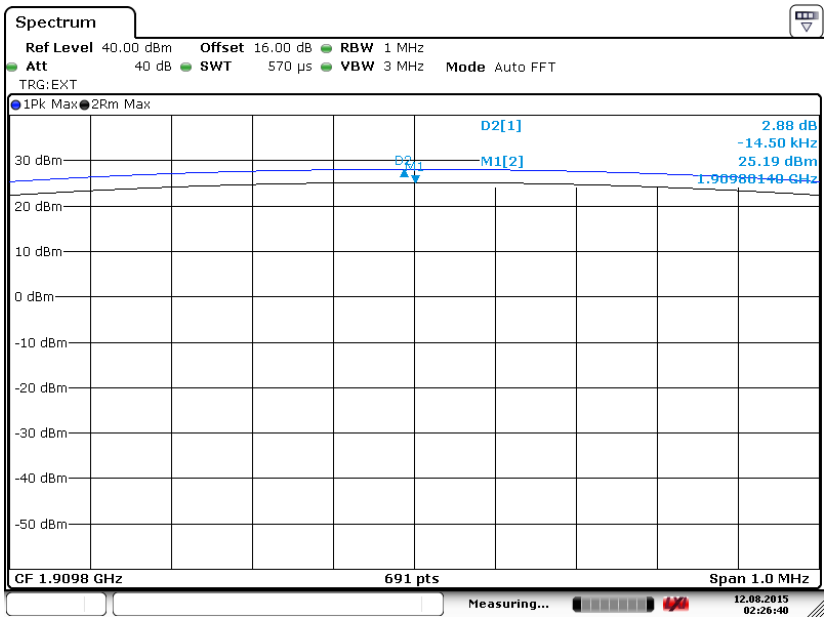
Date:12.AUG.2015 02:25:46

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



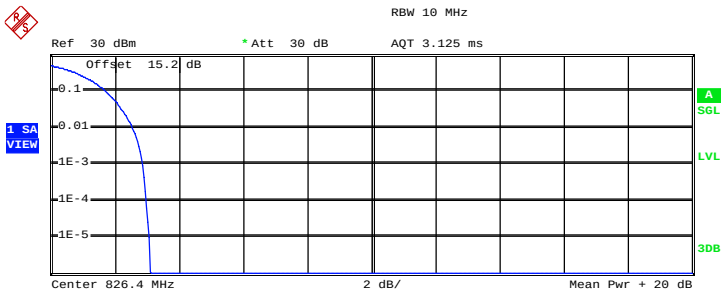
Date:12.AUG.2015 02:26:12

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)

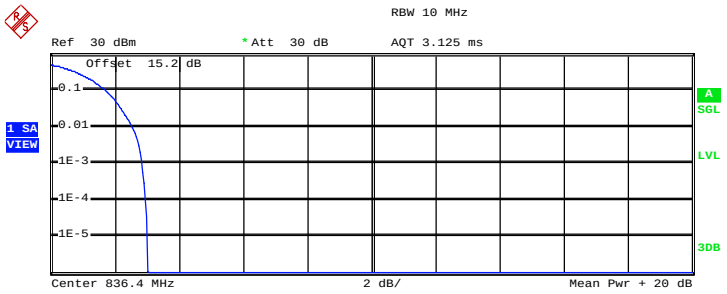


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	25.10 dBm
Peak	28.21 dBm
Crest	3.11 dB
10 %	1.72 dB
1 %	2.56 dB
.1 %	2.88 dB
.01 %	3.00 dB

Date: 30.JUL.2015 16:44:40

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

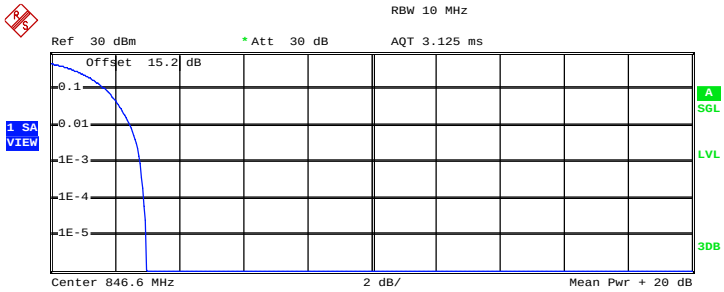


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	25.98 dBm
Peak	28.99 dBm
Crest	3.01 dB
10 %	1.72 dB
1 %	2.56 dB
.1 %	2.84 dB
.01 %	2.96 dB

Date: 30.JUL.2015 16:44:10

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



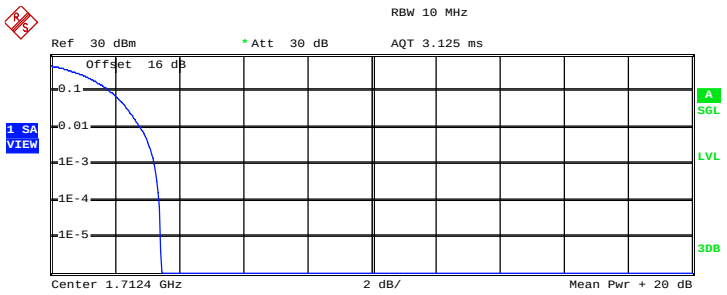
Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	25.45 dBm
Peak	28.43 dBm
Crest	2.98 dB
10 %	1.72 dB
1 %	2.48 dB
.1 %	2.80 dB
.01 %	2.92 dB

Date: 30.JUL.2015 16:43:46

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

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

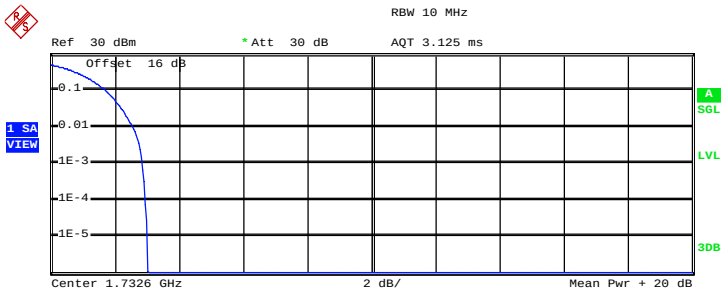


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	25.13 dBm
Peak	28.57 dBm
Crest	3.44 dB
10 %	1.88 dB
1 %	2.80 dB
.1 %	3.24 dB
.01 %	3.40 dB

Date: 30.JUL.2015 17:28:25

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

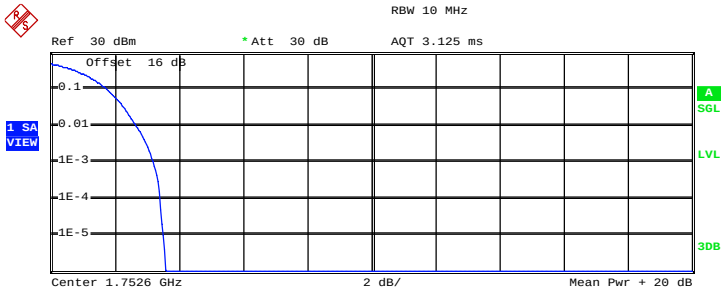


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	23.78 dBm
Peak	26.80 dBm
Crest	3.02 dB
10 %	1.72 dB
1 %	2.56 dB
.1 %	2.88 dB
.01 %	2.96 dB

Date: 30.JUL.2015 17:27:52

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



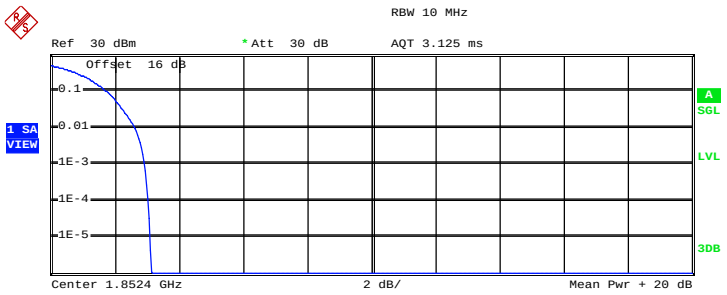
Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	23.22 dBm
Peak	26.80 dBm
Crest	3.58 dB
10 %	1.76 dB
1 %	2.68 dB
.1 %	3.20 dB
.01 %	3.44 dB

Date: 30.JUL.2015 17:27:20

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

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

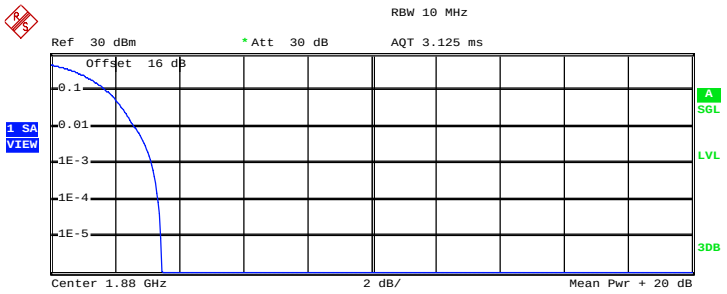


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	22.91 dBm
Peak	26.03 dBm
Crest	3.12 dB
10 %	1.76 dB
1 %	2.64 dB
.1 %	2.92 dB
.01 %	3.04 dB

Date: 30.JUL.2015 16:55:56

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

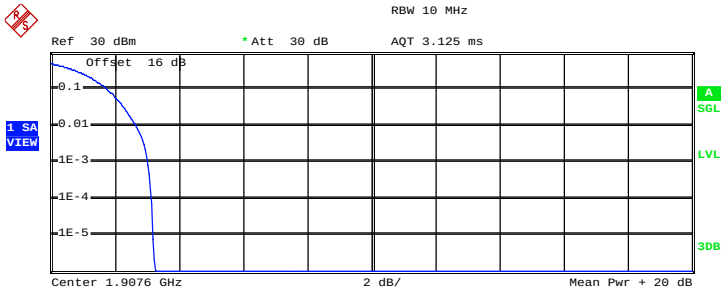


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	23.71 dBm
Peak	27.16 dBm
Crest	3.44 dB
10 %	1.76 dB
1 %	2.64 dB
.1 %	3.16 dB
.01 %	3.36 dB

Date: 30.JUL.2015 16:55:32

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



Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	24.54 dBm
Peak	27.79 dBm
Crest	3.25 dB
10 %	1.76 dB
1 %	2.68 dB
.1 %	3.04 dB
.01 %	3.16 dB

Date: 30.JUL.2015 16:55:10

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 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-C-2004 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-C. 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 (GPRS class 8) Radiated Power ERP					
Channel	Frequency (MHz)	Horizontal		Vertical	
		ERP(dBm)	ERP(W)	ERP(dBm)	ERP(W)
Lowest	824.2	27.29	0.5361	12.08	0.0161
Middle	836.4	26.99	0.4997	12.65	0.0184
Highest	848.8	26.41	0.4373	13.00	0.0199
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	21.60	0.1445	6.71	0.0047
Middle	836.4	22.13	0.1633	7.58	0.0057
Highest	848.8	21.52	0.1418	8.06	0.0064
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	17.99	0.0629	3.18	0.0021
Middle	836.4	18.54	0.0715	4.99	0.0032
Highest	846.6	17.47	0.0559	4.71	0.0030
Limit	ERP < 7W	Result		PASS	

3.3.5 Test Result of EIRP

GSM1900 (GPRS class 8) Radiated Power EIRP					
Channel	Frequency (MHz)	Horizontal		Vertical	
		EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	1850.2	29.81	0.9577	29.46	0.8840
Middle	1880.0	30.81	1.2060	30.53	1.1309
Highest	1909.8	29.70	0.9330	29.74	0.9426
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	25.21	0.3315	24.80	0.3020
Middle	1880.0	26.16	0.4131	25.84	0.3833
Highest	1909.8	25.67	0.3691	25.72	0.3736
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	24.26	0.2666	24.11	0.2578
Middle	1880.0	25.79	0.3790	25.43	0.3493
Highest	1907.6	23.81	0.2403	23.91	0.2463
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	24.04	0.2533	23.86	0.2433
Middle	1732.6	23.53	0.2255	23.84	0.2422
Highest	1752.6	23.03	0.2008	23.70	0.2343
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.

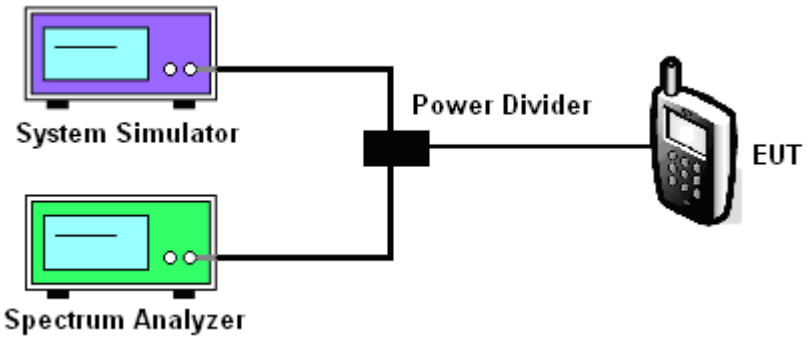
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

5. The testing follows FCC KDB 971168 v02r02 Section 4.2.
6. The EUT was connected to the spectrum analyzer and system simulator via a power divider.
7. 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.
8. The 99% occupied bandwidth were measured, set RBW= 1% of span, VBW= 3*RBW, peak detector, trace maximum hold.
9. 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 (GPRS class 8)			GSM850 (EDGE class 8)		
Channel	128 (Low)	189 (Mid)	251 (High)	128 (Low)	189 (Mid)	251 (High)
Frequency (MHz)	824.2	836.4	848.8	824.2	836.4	848.8
99% OBW (kHz)	243.00	244.00	246.00	244.00	244.00	244.00
26dB BW (kHz)	316.00	311.00	314.00	312.00	306.00	304.00

PCS Band						
Modes	GSM1900 (GPRS class 8)			GSM1900 (EDGE class 8)		
Channel	512 (Low)	661 (Mid)	810 (High)	512 (Low)	661 (Mid)	810 (High)
Frequency (MHz)	1850.2	1880	1909.8	1850.2	1880	1909.8
99% OBW (kHz)	244.00	242.00	244.00	246.00	244.00	244.00
26dB BW (kHz)	316.00	310.00	316.00	312.00	314.00	316.00

Cellular Band			
Modes	WCDMA Band V (RMC 12.2Kbps)		
Channel	4132 (Low)	4182 (Mid)	4233 (High)
Frequency (MHz)	826.4	836.4	846.6
99% OBW (MHz)	4.16	4.18	4.16
26dB BW (MHz)	4.68	4.68	4.68

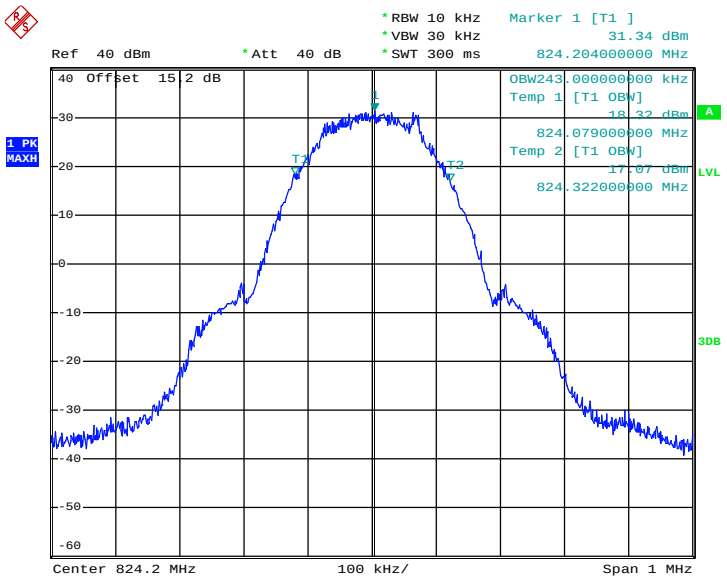
AWS Band			
Modes	WCDMA Band IV (RMC 12.2Kbps)		
Channel	1312(Low)	1413 (Mid)	1513 (High)
Frequency (MHz)	1712.4	1732.6	1752.6
99% OBW (MHz)	4.16	4.16	4.16
26dB BW (MHz)	4.68	4.70	4.68

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)	4.18	4.18	4.16
26dB BW (MHz)	4.68	4.68	4.68

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

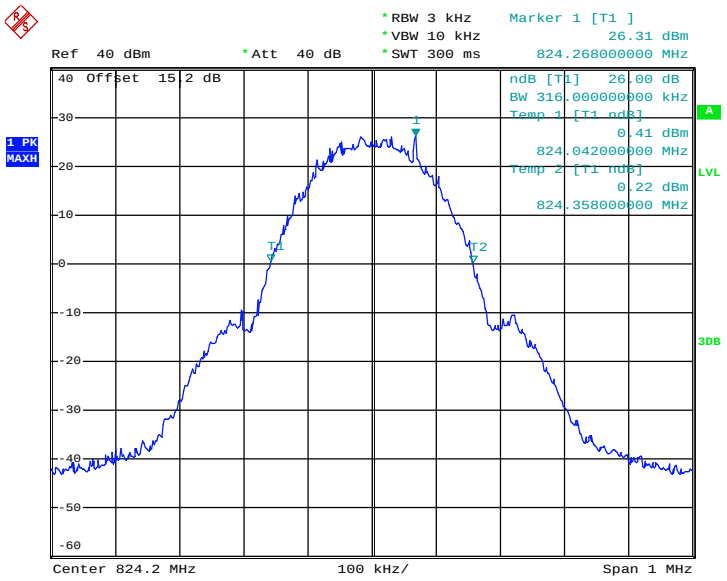
Band :	GSM 850	Test Mode :	GPRS class 8 Link (GMSK)

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



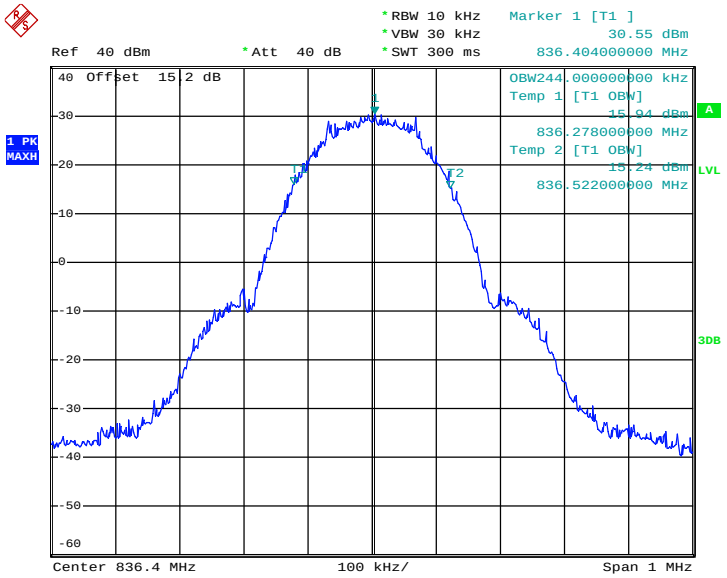
Date: 30.JUL.2015 15:22:54

26dB Bandwidth Plot on Channel 128 (824.2 MHz)



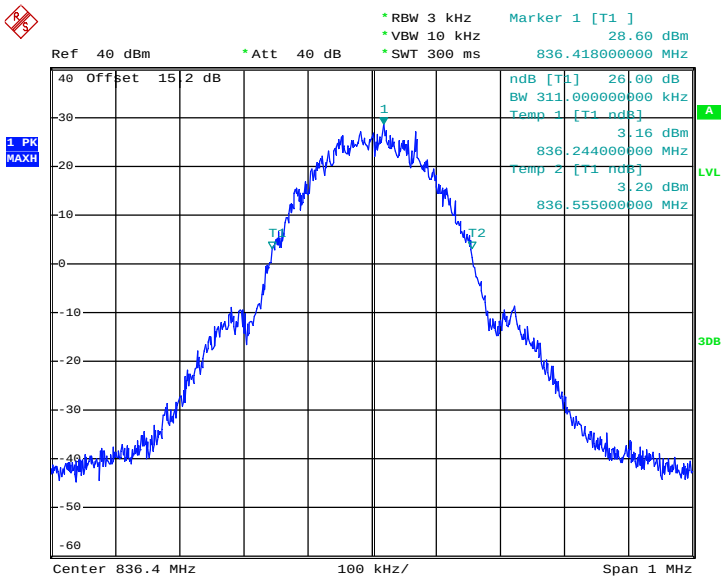
Date: 31.JUL.2015 12:57:50

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



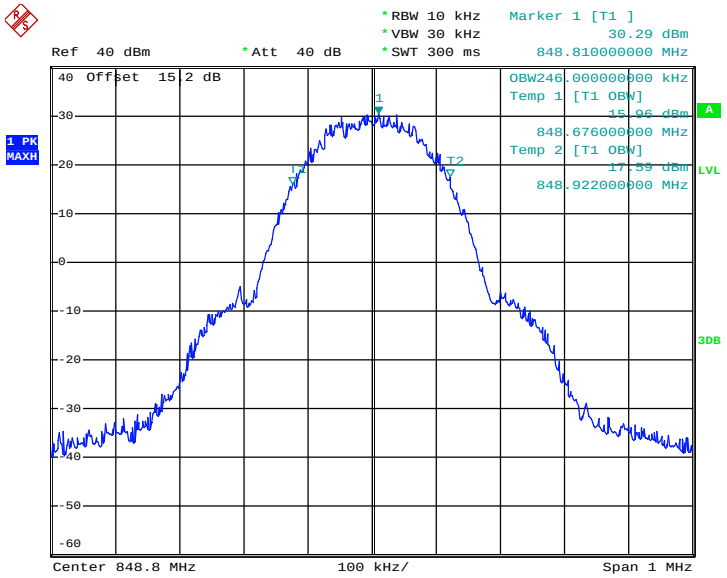
Date: 31.JUL.2015 13:10:00

26dB Bandwidth Plot on Channel 189 (836.4 MHz)



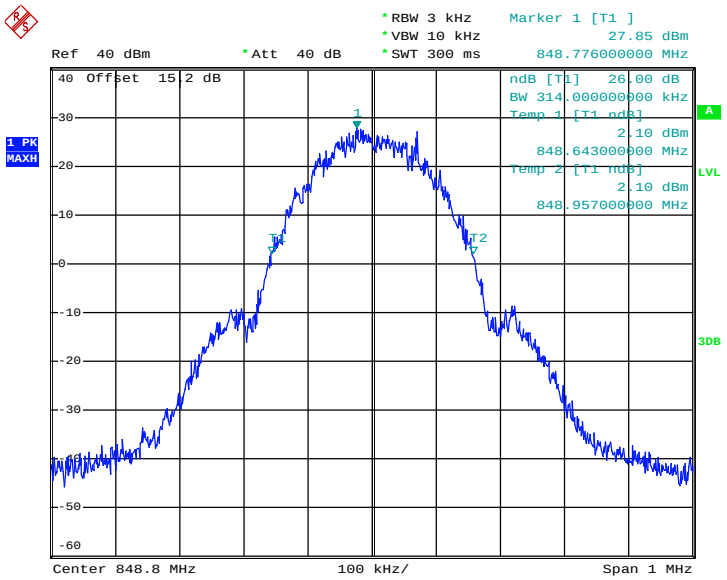
Date: 30.JUL.2015 15:09:57

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



Date: 31.JUL.2015 13:02:59

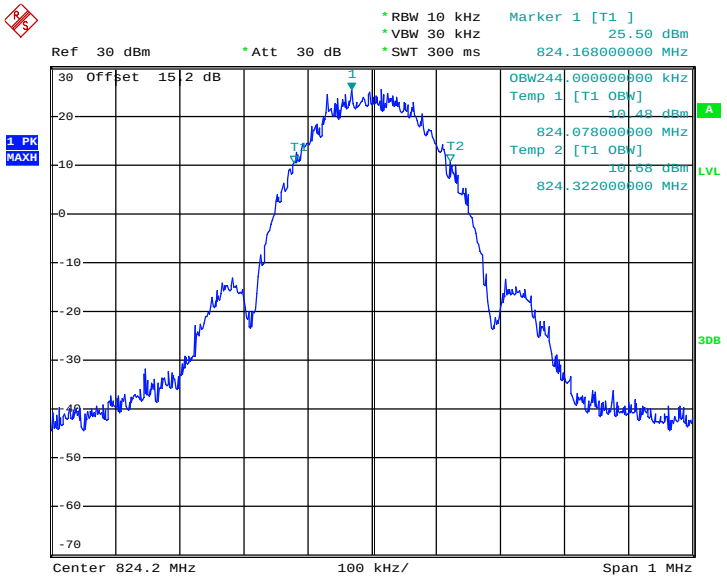
26dB Bandwidth Plot on Channel 251 (848.8 MHz)



Date: 30.JUL.2015 15:08:55

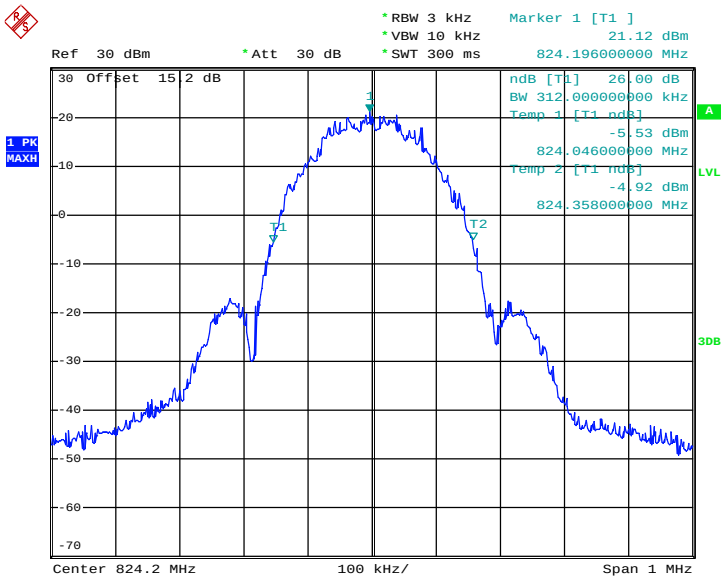
Band :	GSM 850	Test Mode :	EDGE class 8 Link (8PSK)

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



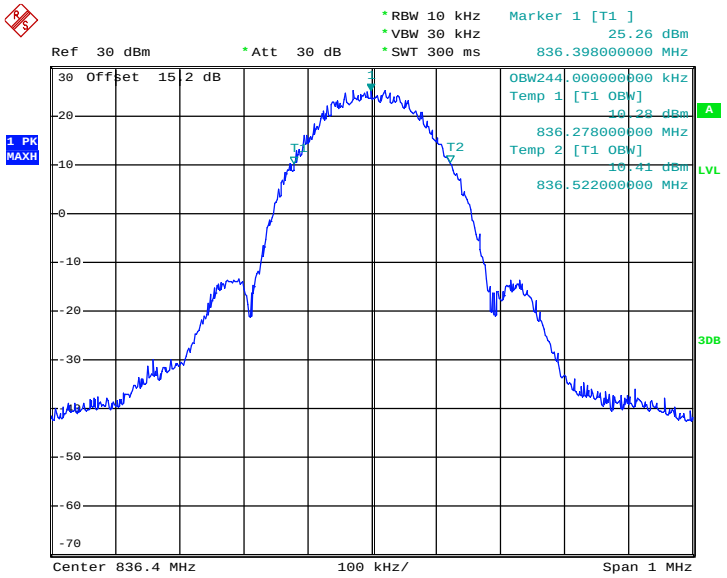
Date: 30.JUL.2015 15:57:27

26dB Bandwidth Plot on Channel 128 (824.2 MHz)



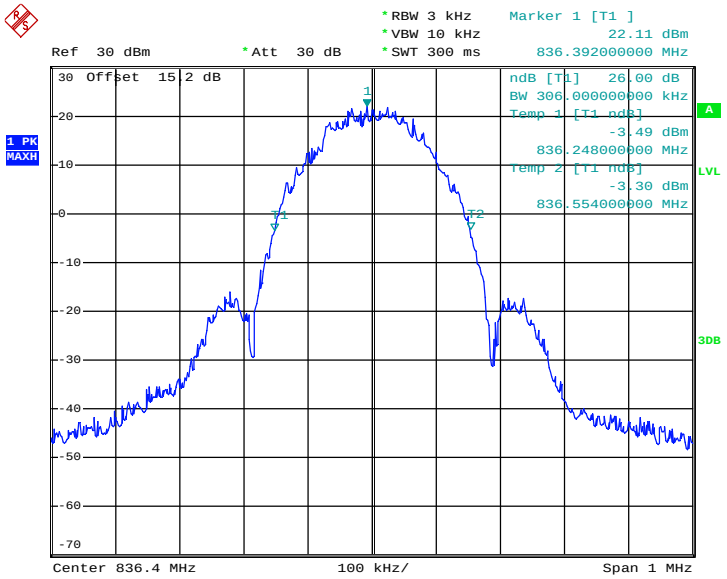
Date: 30.JUL.2015 15:51:32

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



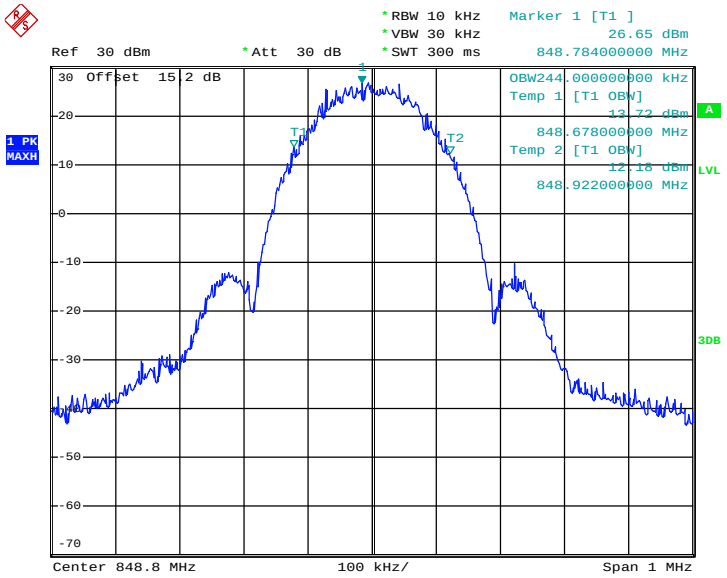
Date: 31.JUL.2015 12:32:23

26dB Bandwidth Plot on Channel 189 (836.4 MHz)



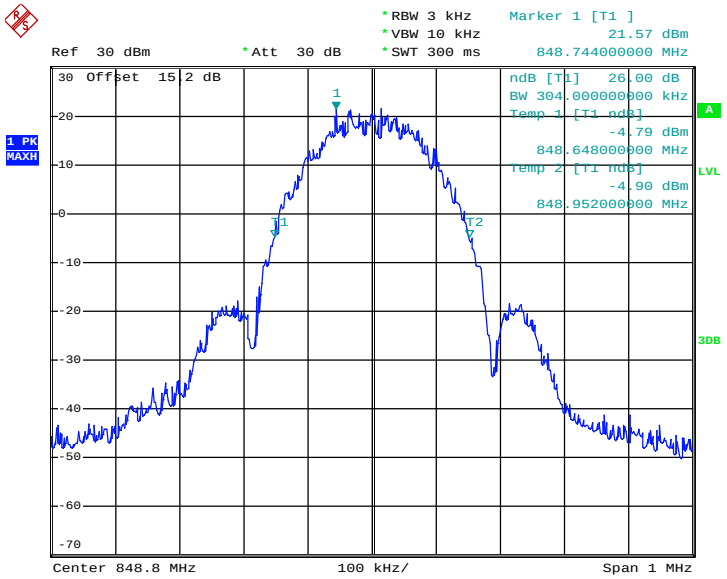
Date: 30.JUL.2015 15:53:32

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



Date: 30.JUL.2015 15:56:18

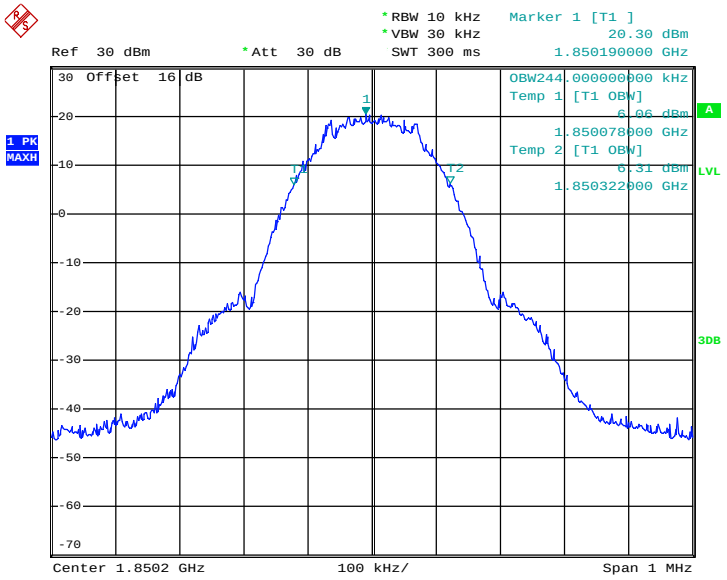
26dB Bandwidth Plot on Channel 251 (848.8 MHz)



Date: 30.JUL.2015 15:54:18

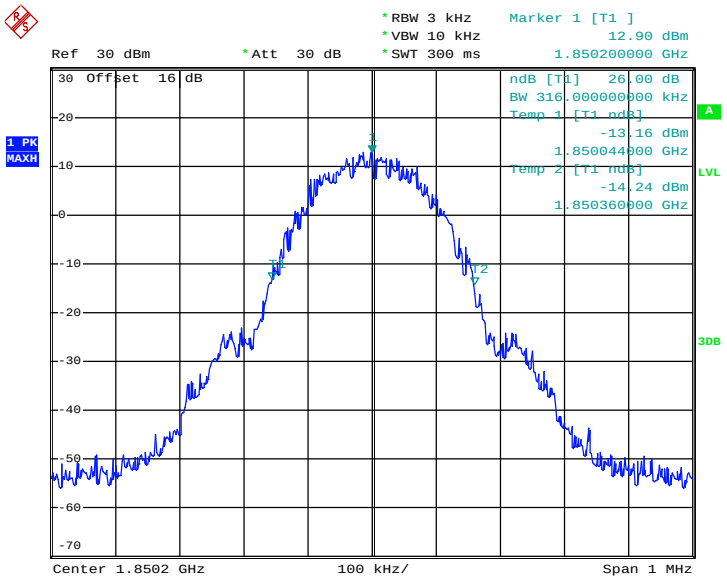
Band :	GSM 1900	Test Mode :	GPRS class 8 Link (GMSK)

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



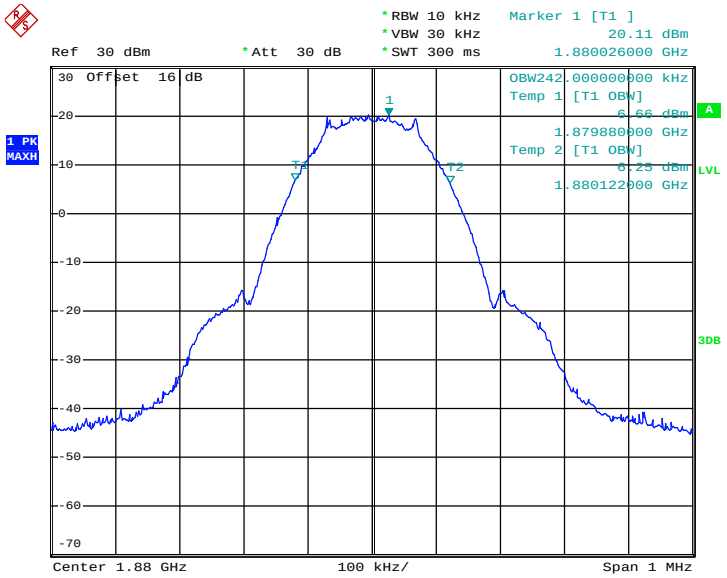
Date: 31.JUL.2015 13:26:49

26dB Bandwidth Plot on Channel 512 (1850.2 MHz)



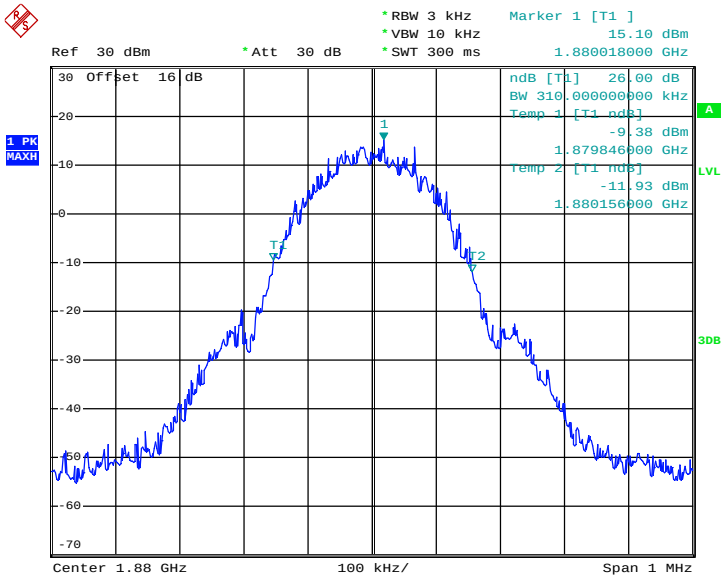
Date: 30.JUL.2015 18:26:31

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



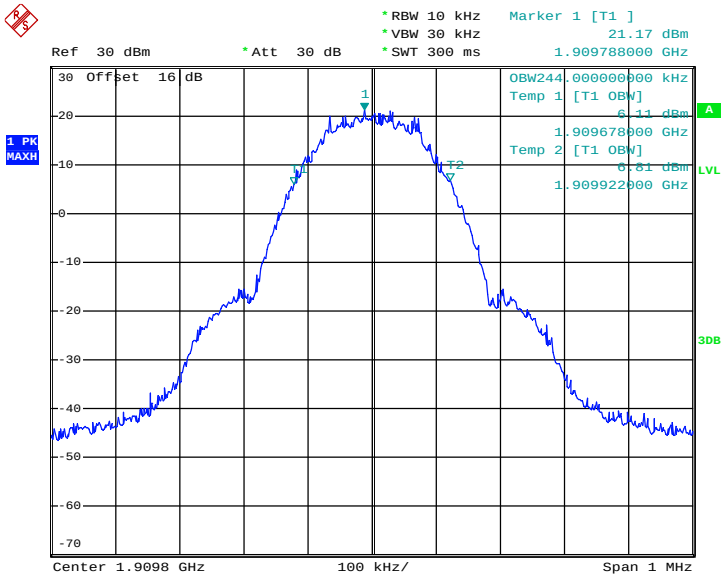
Date: 30.JUL.2015 18:19:02

26dB Bandwidth Plot on Channel 661 (1880.0 MHz)



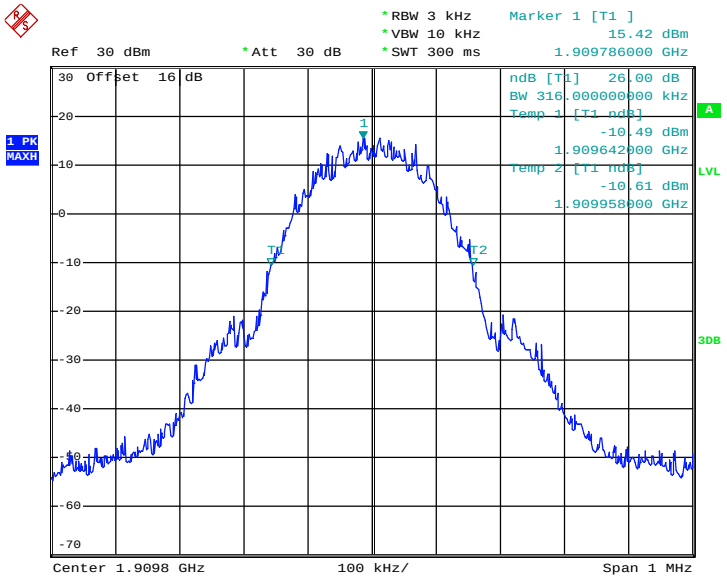
Date: 31.JUL.2015 12:38:47

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



Date: 30.JUL.2015 18:03:19

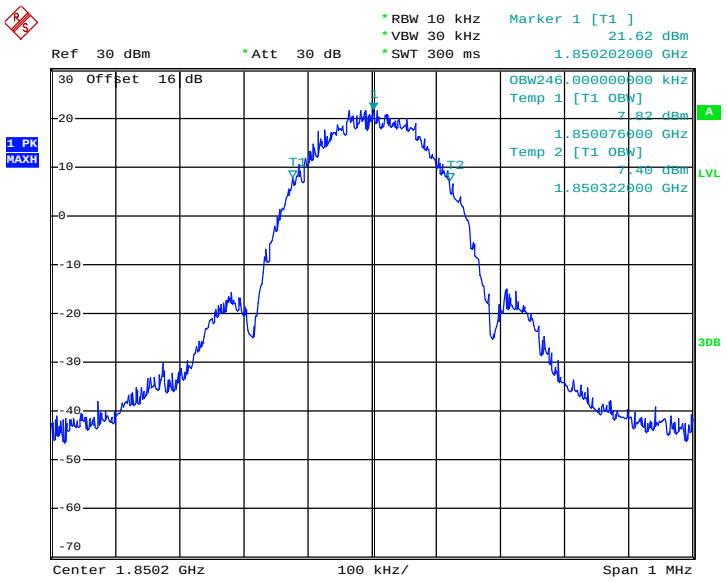
26dB Bandwidth Plot on Channel 810 (1909.8 MHz)



Date: 30.JUL.2015 18:25:36

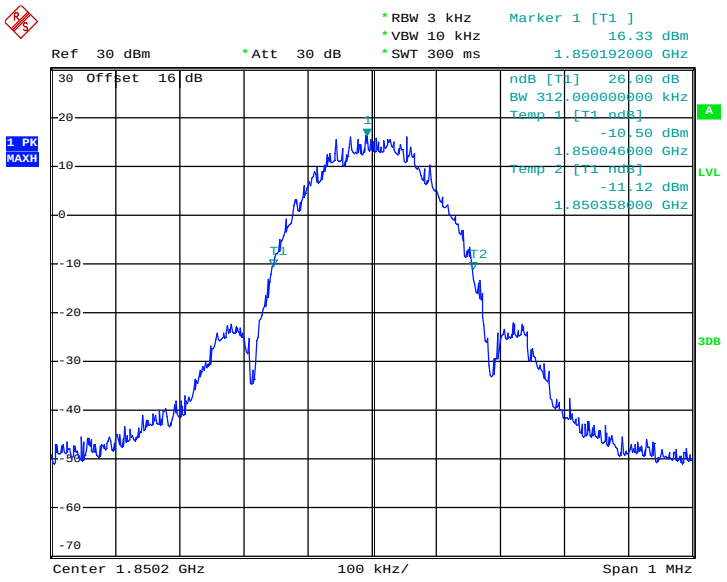
Band :	GSM 1900	Test Mode :	EDGE class 8 Link (8PSK)

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



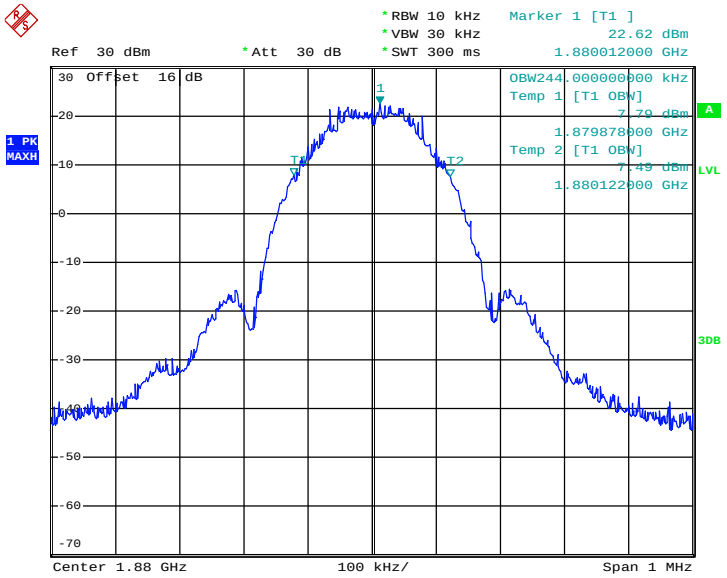
Date: 30.JUL.2015 19:16:09

26dB Bandwidth Plot on Channel 512 (1850.2 MHz)



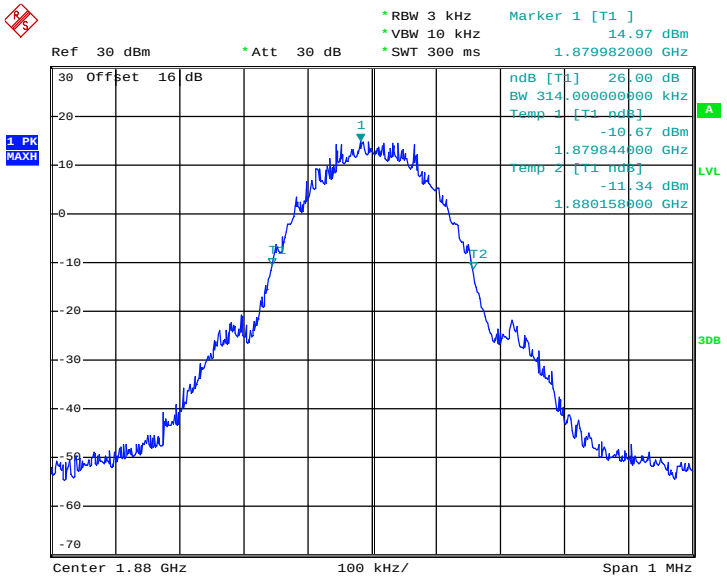
Date: 30.JUL.2015 19:04:12

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



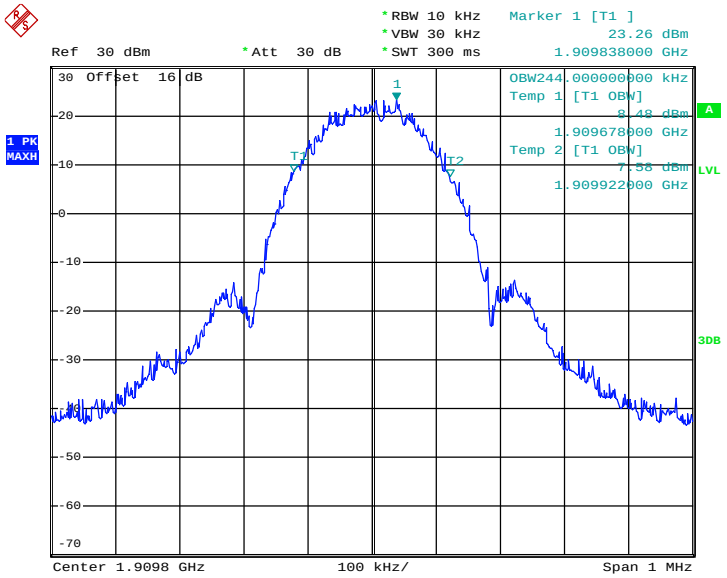
Date: 30.JUL.2015 19:10:10

26dB Bandwidth Plot on Channel 661 (1880.0 MHz)



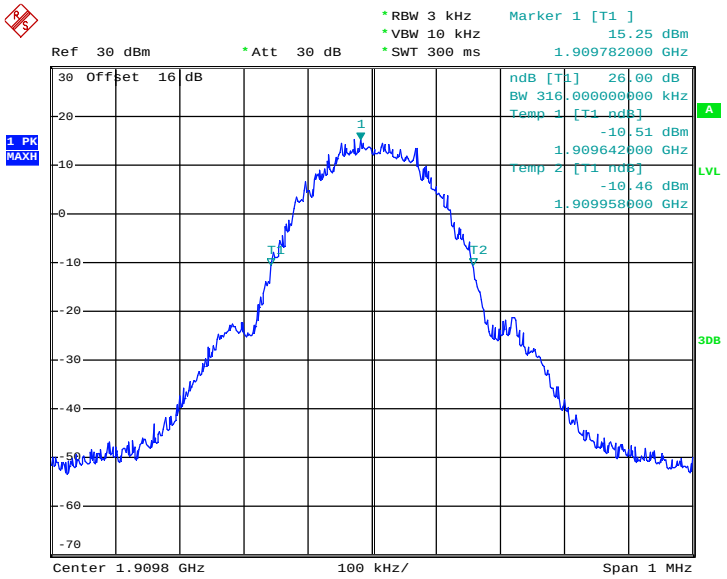
Date: 31.JUL.2015 13:32:22

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



Date: 30.JUL.2015 19:09:25

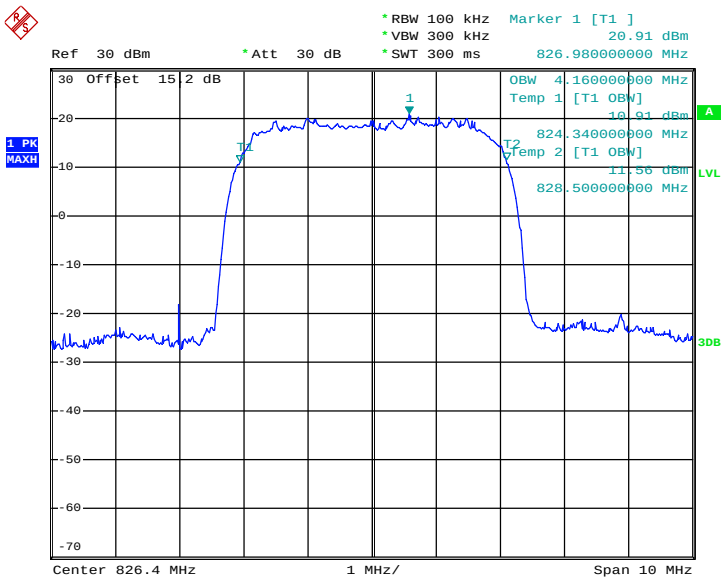
26dB Bandwidth Plot on Channel 810 (1909.8 MHz)



Date: 31.JUL.2015 13:33:45

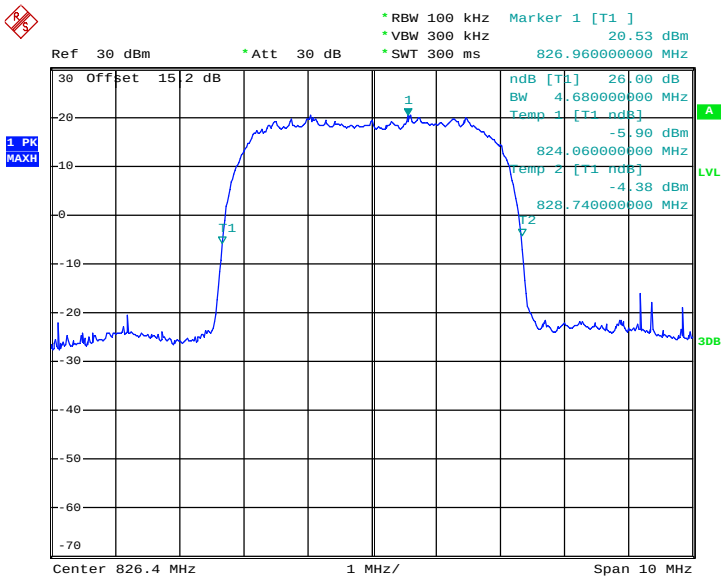
Band :	WCDMA Band V	Test Mode :	RMC 12.2Kbps Link (QPSK)

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



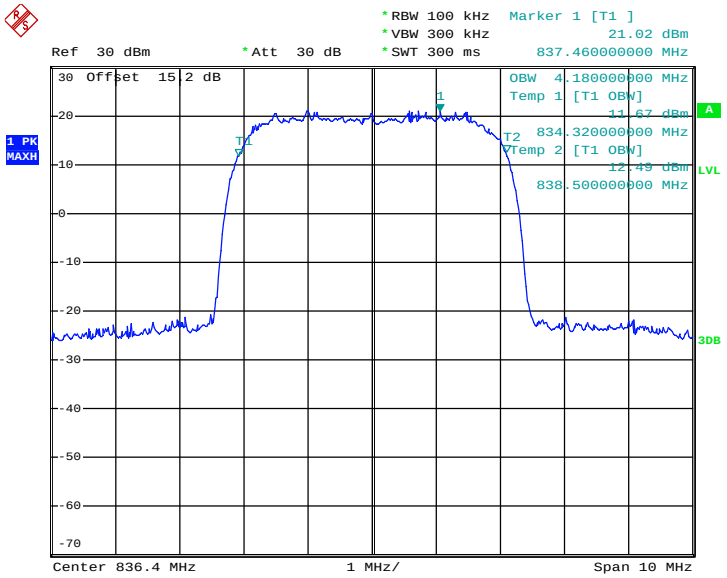
Date: 30.JUL.2015 16:34:38

26dB Bandwidth Plot on Channel 4132 (826.4 MHz)



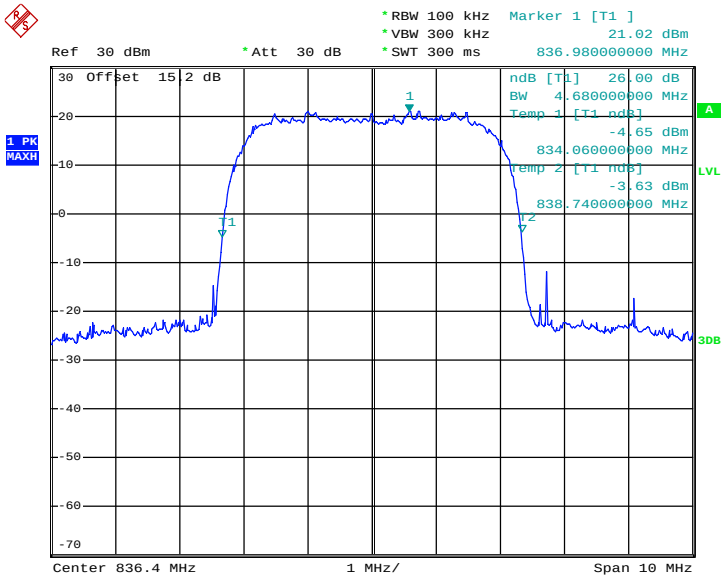
Date: 30.JUL.2015 16:32:37

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



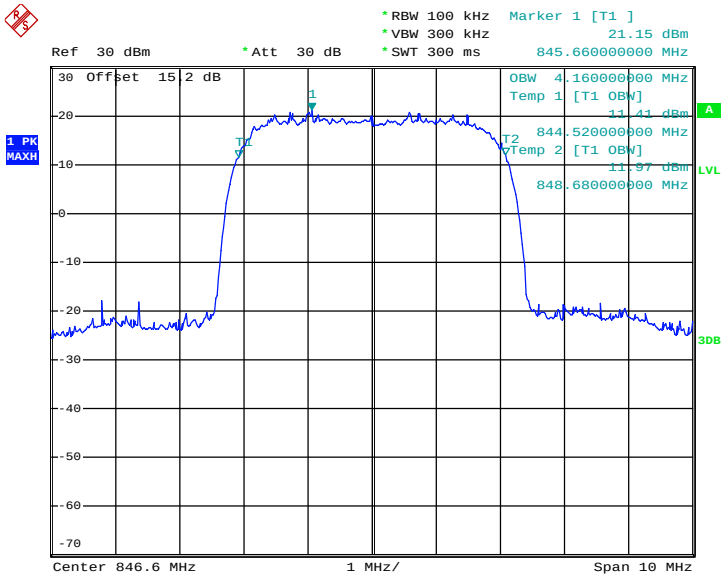
Date: 30.JUL.2015 16:34:55

26dB Bandwidth Plot on Channel 4182 (836.4 MHz)



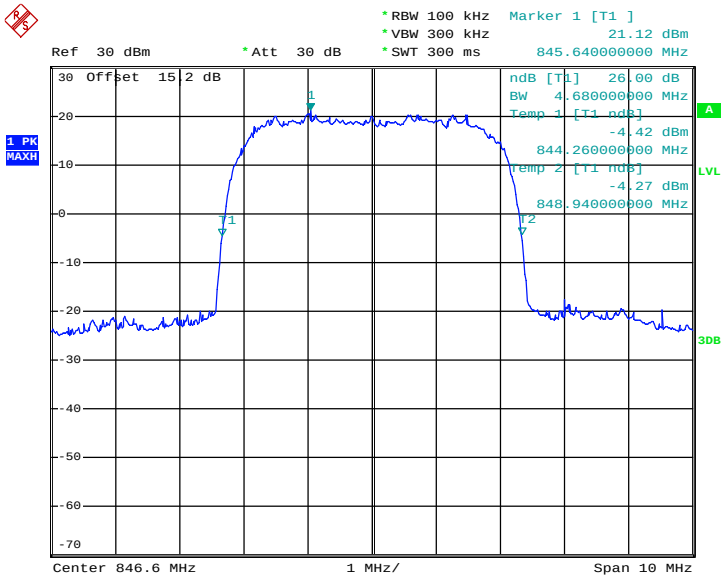
Date: 30.JUL.2015 16:33:39

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



Date: 30.JUL.2015 16:35:13

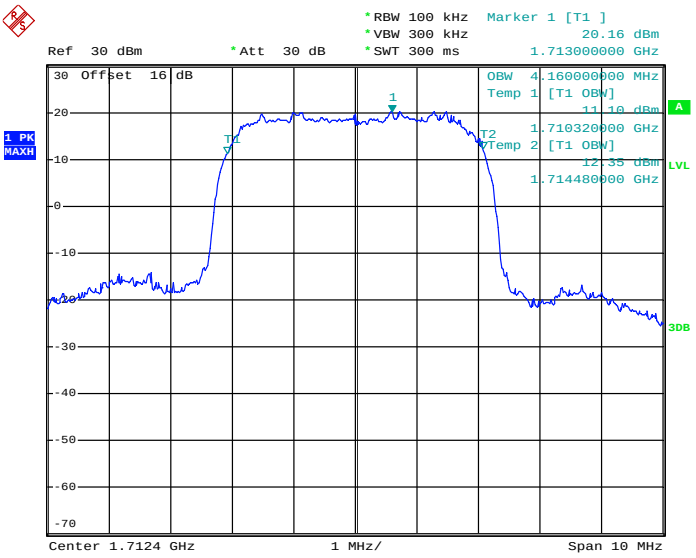
26dB Bandwidth Plot on Channel 4233 (846.6 MHz)



Date: 30.JUL.2015 16:33:22

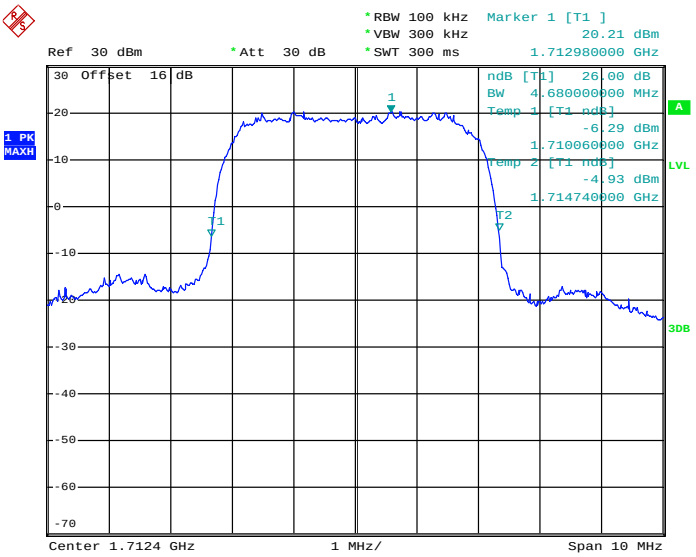
Band :	WCDMA Band IV	Test Mode :	RMC 12.2Kbps Link (QPSK)

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



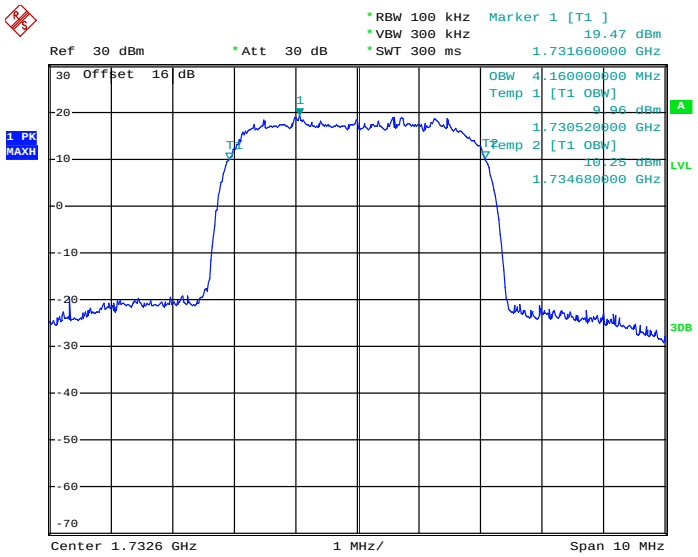
Date: 30.JUL.2015 17:25:02

26dB Bandwidth Plot on Channel 1312 (1712.4 MHz)



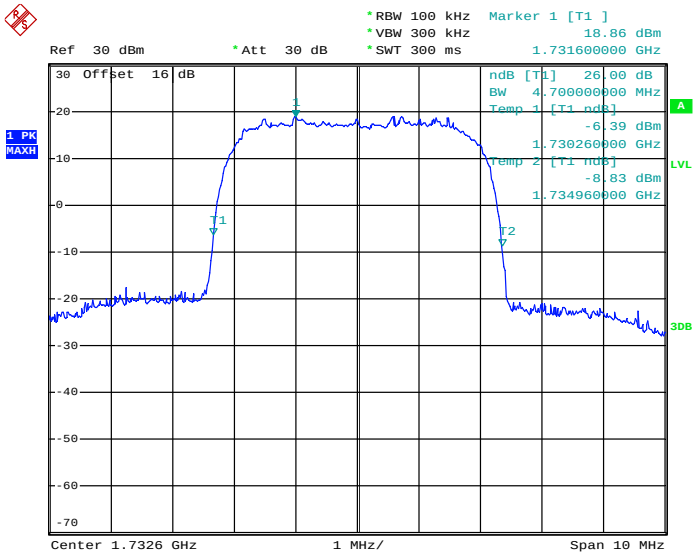
Date: 30.JUL.2015 17:23:17

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



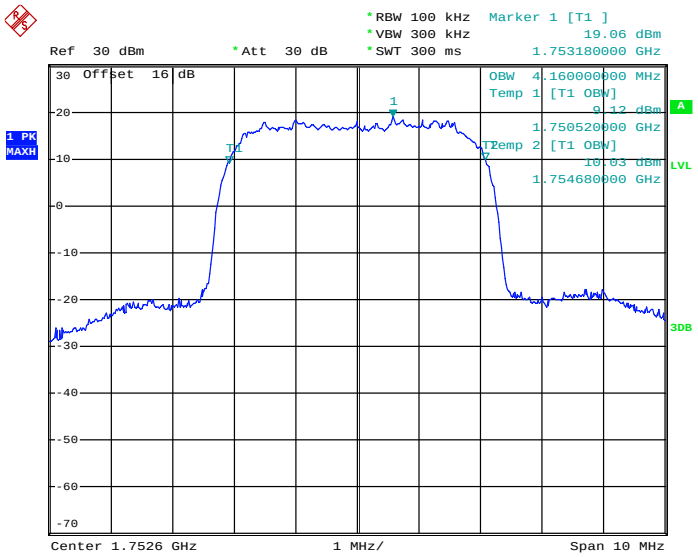
Date: 30.JUL.2015 17:24:44

26dB Bandwidth Plot on Channel 1413 (1732.6 MHz)



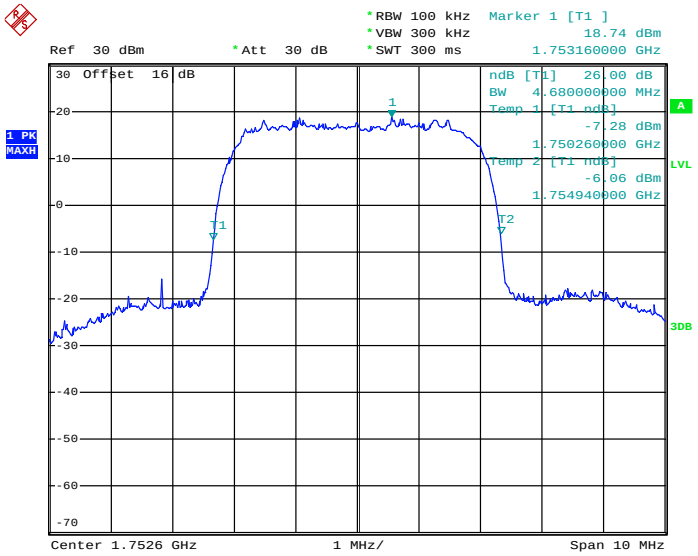
Date: 30.JUL.2015 17:23:37

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



Date: 30.JUL.2015 17:24:27

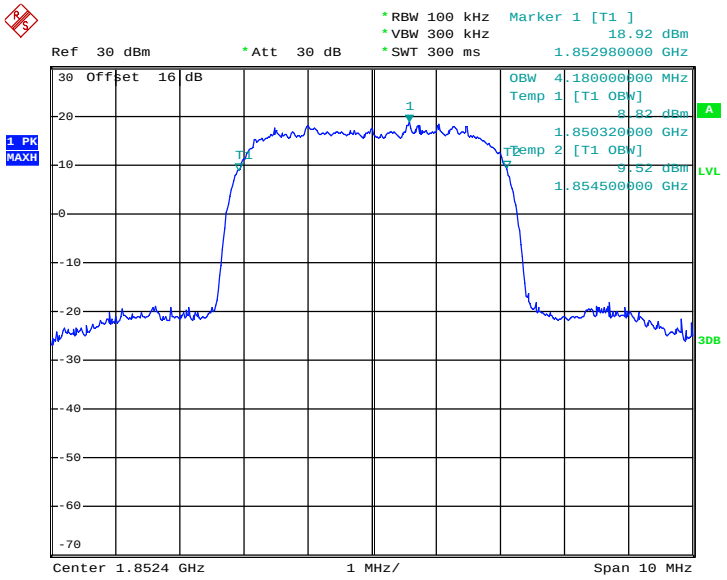
26dB Bandwidth Plot on Channel 1513 (1752.6 MHz)



Date: 30.JUL.2015 17:23:57

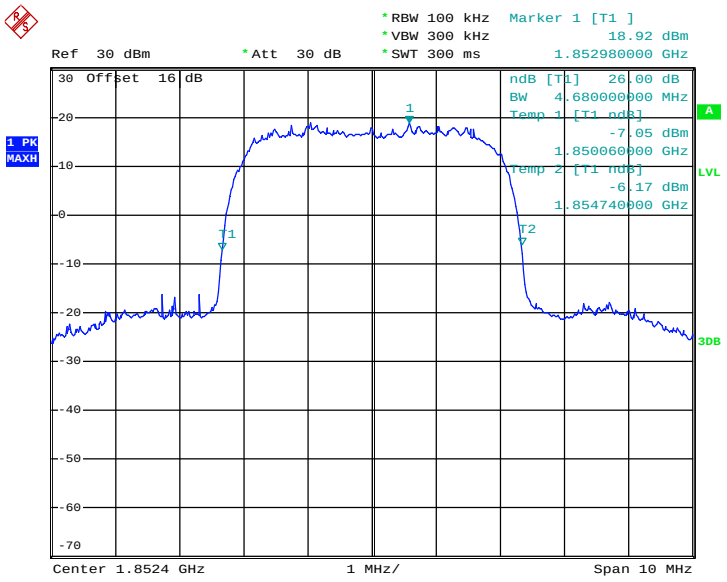
Band :	WCDMA Band II	Test Mode :	RMC 12.2Kbps Link (QPSK)

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



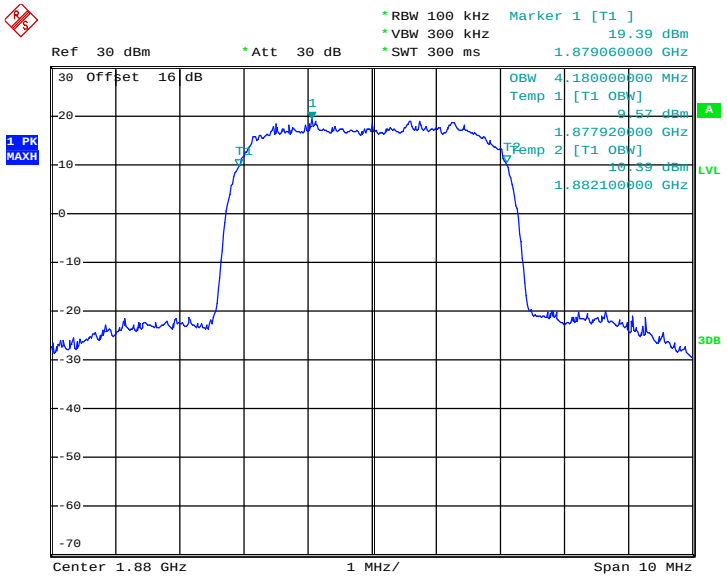
Date: 30.JUL.2015 16:52:27

26dB Bandwidth Plot on Channel 9262 (1852.4 MHz)



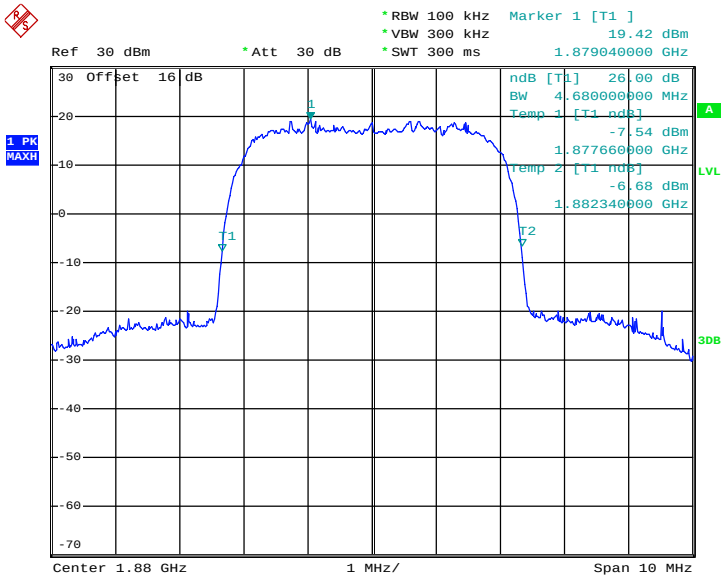
Date: 30.JUL.2015 16:50:24

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



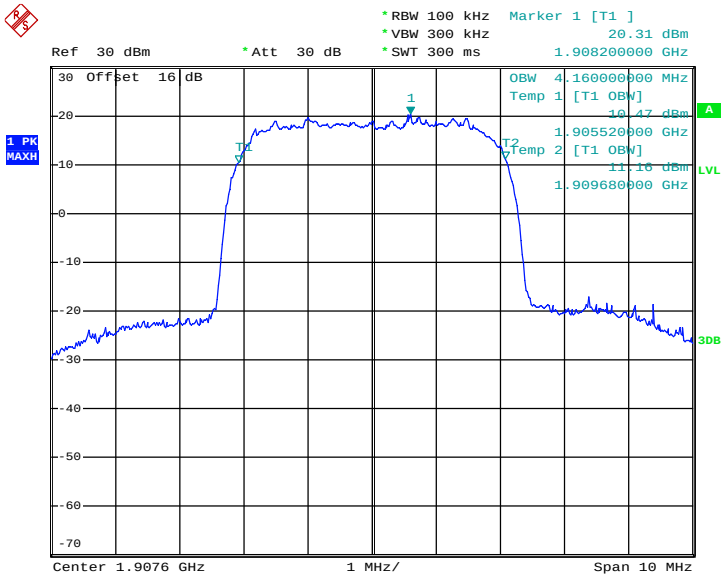
Date: 30.JUL.2015 16:52:05

26dB Bandwidth Plot on Channel 9400 (1880.0 MHz)



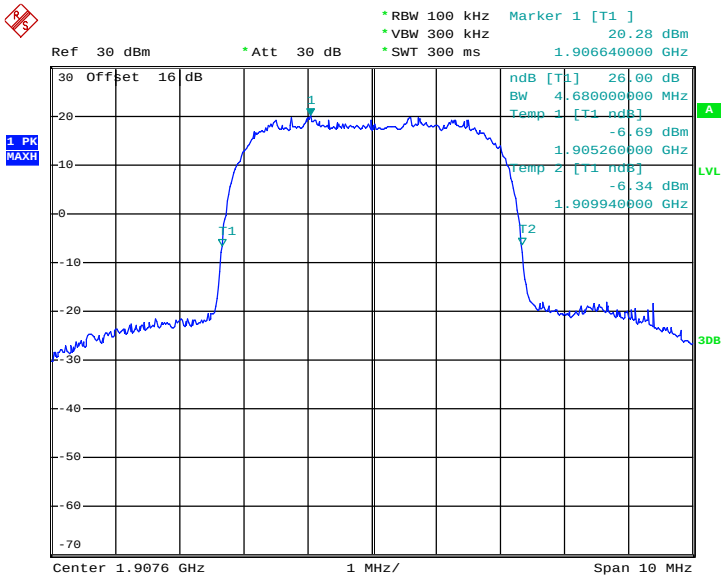
Date: 30.JUL.2015 16:50:47

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



Date: 30.JUL.2015 16:51:49

26dB Bandwidth Plot on Channel 9538 (1907.6 MHz)



Date: 30.JUL.2015 16:51:16

3.5 Band Edge Measurement

3.5.1 Description of Band Edge Measurement

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

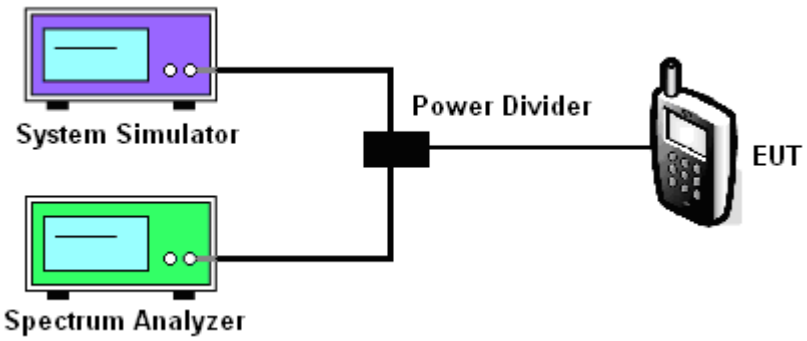
3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

1. The testing follows FCC KDB 971168 v02r02 Section 6.0.
2. The EUT was connected to the spectrum analyzer and system simulator via a power divider.
3. The RF output of EUT was connected to the spectrum analyzer by an RF cable and attenuator. The path loss was compensated to the results for each measurement.
4. The band edges of low and high channels for the highest RF powers were measured.
5. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
6. The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts)
   = P(W) - [43 + 10log(P)] (dB)
   = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
   = -13dBm.

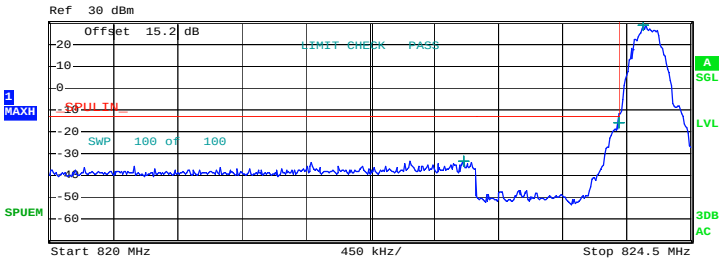
3.5.4 Test Setup



3.5.5 Test Result (Plots) of Conducted Band Edge

Band :	GSM850	Test Mode :	GPRS class 8 Link (GMSK)

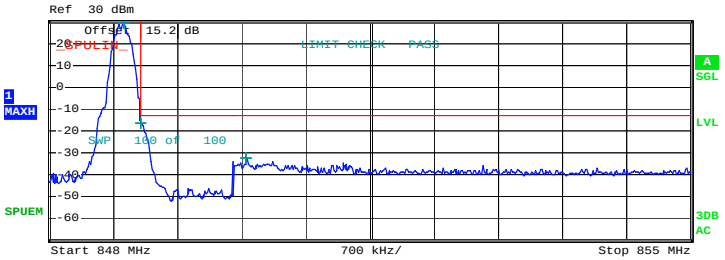
Lower Band Edge Plot on Channel 128 (824.2 MHz)



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
820.000 M	823.000 M	100.00 k	822.908500 M	-33.24	-20.24
823.000 M	824.000 M	3.00 k	823.997000 M	-15.68	-2.68
824.000 M	824.500 M	10.00 k	824.169250 M	28.46	-11.54

Date: 16.AUG.2015 14:09:51

Higher Band Edge Plot on Channel 251 (848.8 MHz)

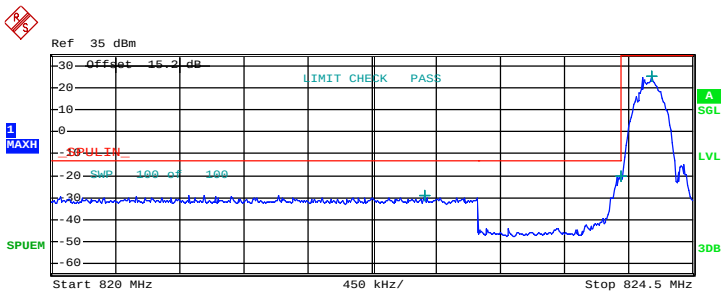


Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
848.000 M	849.000 M	10.00 k	848.805500 M	29.01	-10.99
849.000 M	850.000 M	3.00 k	849.000500 M	-16.29	-3.29
850.000 M	855.000 M	100.00 k	850.147500 M	-32.35	-19.35

Date: 16.AUG.2015 14:06:23

Band :	GSM850	Test Mode :	EDGE class 8 Link (8PSK)

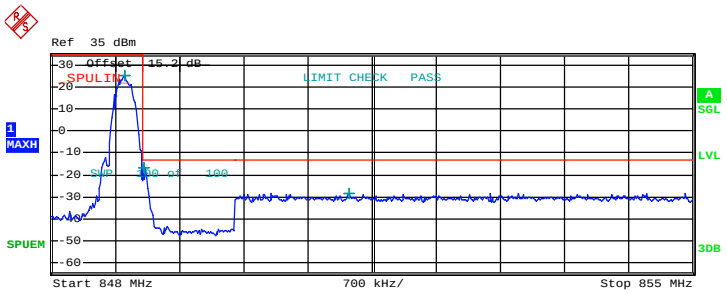
Lower Band Edge Plot on Channel 128 (824.2 MHz)



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
820.000 M	823.000 M	100.00 k	822.616000 M	-28.95	-15.95
823.000 M	824.000 M	3.00 k	823.999500 M	-20.52	-7.52
824.000 M	824.500 M	10.00 k	824.209250 M	25.22	-9.78

Date: 30.JUL.2015 15:49:08

Higher Band Edge Plot on Channel 251 (848.8 MHz)

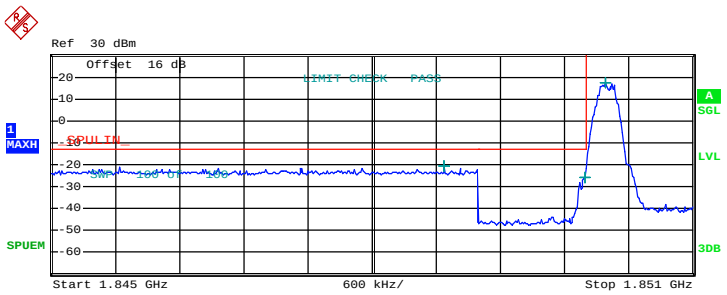


Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
848.000 M	849.000 M	10.00 k	848.803500 M	25.40	-9.60
849.000 M	850.000 M	3.00 k	849.014000 M	-16.46	-3.46
850.000 M	855.000 M	100.00 k	851.250000 M	-28.45	-15.45

Date: 30.JUL.2015 15:47:24

Band :	GSM1900	Test Mode :	GPRS class 8 Link (GMSK)

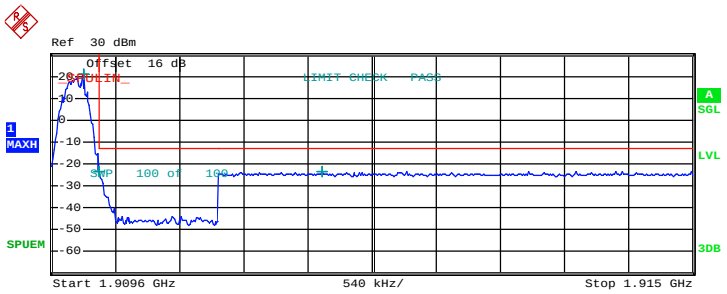
Lower Band Edge Plot on Channel 512 (1850.2 MHz)



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.845 G	1.849 G	1.00 M	1.848672 G	-20.42	-7.42
1.849 G	1.850 G	3.00 k	1.849987 G	-26.12	-13.12
1.850 G	1.851 G	10.00 k	1.850180 G	17.44	-17.56

Date: 30.JUL.2015 18:29:35

Higher Band Edge Plot on Channel 810 (1909.8 MHz)

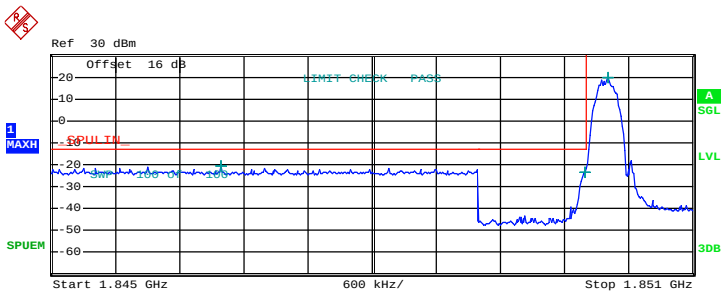


Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.910 G	1.910 G	10.00 k	1.909865 G	20.66	-14.34
1.910 G	1.911 G	3.00 k	1.910001 G	-23.48	-10.48
1.911 G	1.915 G	1.00 M	1.911874 G	-23.22	-10.22

Date: 30.JUL.2015 18:31:14

Band :	GSM1900	Test Mode :	EDGE class 8 Link (8PSK)

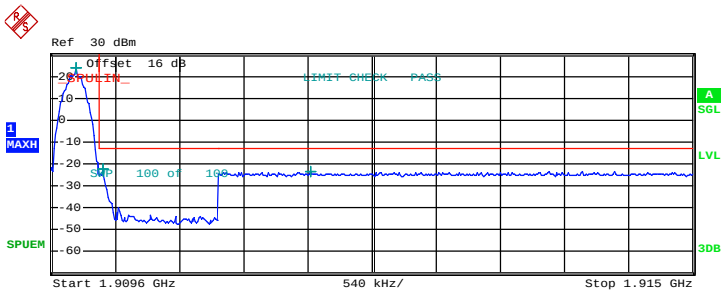
Lower Band Edge Plot on Channel 512 (1850.2 MHz)



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.845 G	1.849 G	1.00 M	1.846580 G	-20.80	-7.80
1.849 G	1.850 G	3.00 k	1.849995 G	-23.42	-10.42
1.850 G	1.851 G	10.00 k	1.850212 G	19.56	-15.44

Date: 30.JUL.2015 19:02:56

Higher Band Edge Plot on Channel 810 (1909.8 MHz)

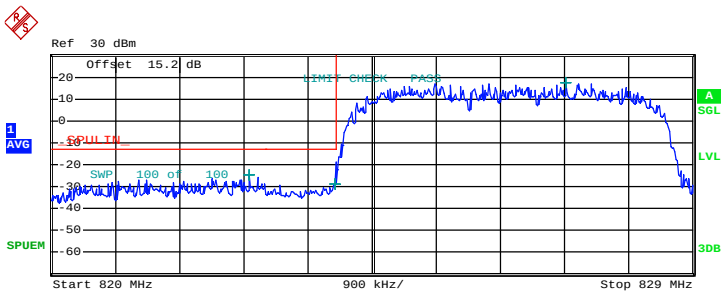


Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.910 G	1.910 G	10.00 k	1.909810 G	23.81	-11.19
1.910 G	1.911 G	3.00 k	1.910033 G	-22.49	-9.49
1.911 G	1.915 G	1.00 M	1.911784 G	-23.54	-10.54

Date: 30.JUL.2015 19:01:26

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

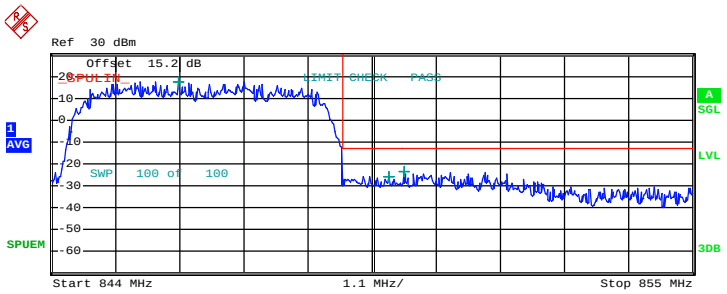
Lower Band Edge Plot on Channel 4132 (826.4 MHz)



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
820.000 M	823.000 M	100.00 k	822.776500 M	-24.64	-11.64
823.000 M	824.000 M	50.00 k	823.975000 M	-29.01	-16.01
824.000 M	829.000 M	100.00 k	827.222500 M	17.62	-17.38

Date: 30.JUL.2015 16:40:56

Higher Band Edge Plot on Channel 4233 (846.6 MHz)

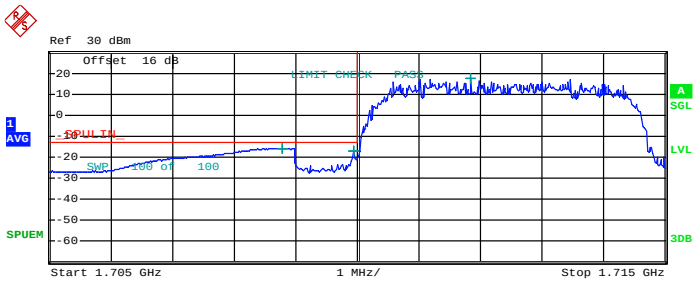


Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
844.000 M	849.000 M	100.00 k	846.182500 M	17.39	-17.61
849.000 M	850.000 M	50.00 k	849.780000 M	-25.58	-12.58
850.000 M	855.000 M	100.00 k	850.057500 M	-23.29	-10.29

Date: 30.JUL.2015 16:42:12

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

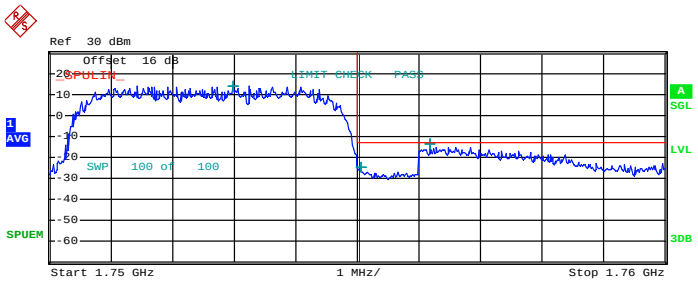
Lower Band Edge Plot on Channel 1312 (1712.4 MHz)



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.705 G	1.709 G	1.00 M	1.708782 G	-15.73	-2.73
1.709 G	1.710 G	50.00 k	1.709942 G	-17.14	-4.14
1.710 G	1.715 G	100.00 k	1.711845 G	17.19	-17.81

Date: 30.JUL.2015 17:22:11

Higher Band Edge Plot on Channel 1513 (1752.6 MHz)

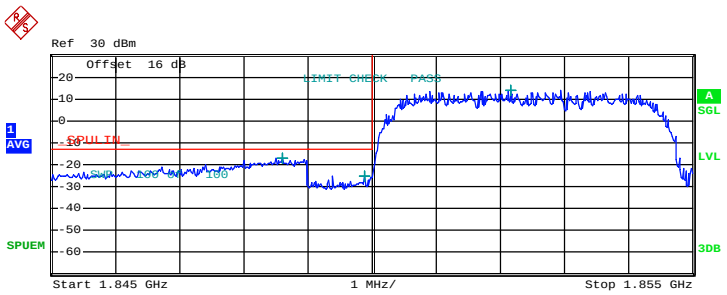


Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.750 G	1.755 G	100.00 k	1.752987 G	14.16	-20.84
1.755 G	1.756 G	50.00 k	1.755065 G	-24.78	-11.78
1.756 G	1.760 G	1.00 M	1.756172 G	-13.83	-0.83

Date: 30.JUL.2015 17:15:06

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

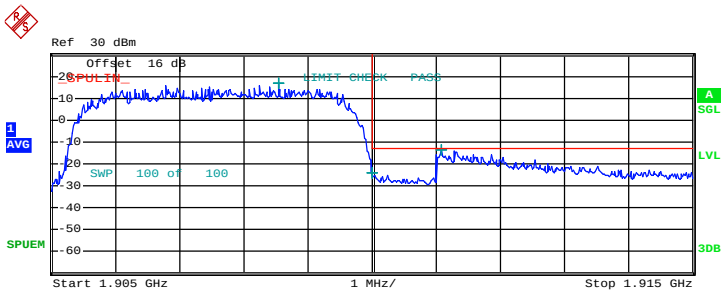
Lower Band Edge Plot on Channel 9262 (1852.4 MHz)



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.845 G	1.849 G	1.00 M	1.848594 G	-16.92	-3.92
1.849 G	1.850 G	50.00 k	1.849878 G	-25.12	-12.12
1.850 G	1.855 G	100.00 k	1.852153 G	13.74	-21.26

Date: 30.JUL.2015 16:58:27

Higher Band Edge Plot on Channel 9538 (1907.6 MHz)



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.905 G	1.910 G	100.00 k	1.908548 G	16.62	-18.38
1.910 G	1.911 G	50.00 k	1.910005 G	-23.82	-10.82
1.911 G	1.915 G	1.00 M	1.911084 G	-13.68	-0.68

Date: 30.JUL.2015 17:00:31

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.

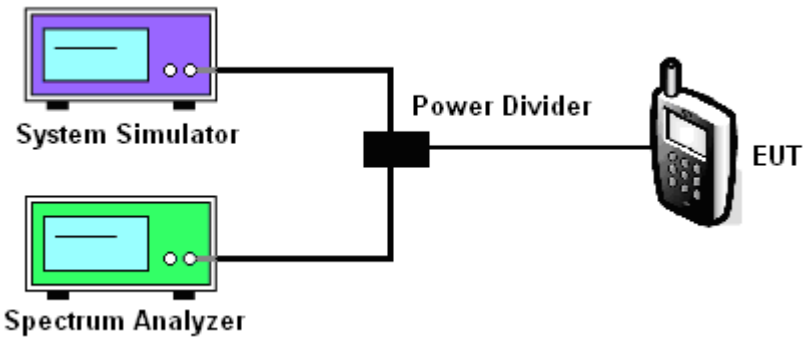
3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

1. The testing follows FCC KDB 971168 v02r02 Section 6.0.
2. The EUT was connected to the spectrum analyzer and system simulator via a power divider.
3. The RF output of EUT was connected to the spectrum analyzer by an RF cable and attenuator. The path loss was compensated to the results for each measurement.
4. The middle channel for the highest RF power within the transmitting frequency was measured.
5. The conducted spurious emission for the whole frequency range was taken.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
7. The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts)
   = P(W) - [43 + 10log(P)] (dB)
   = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
   = -13dBm.

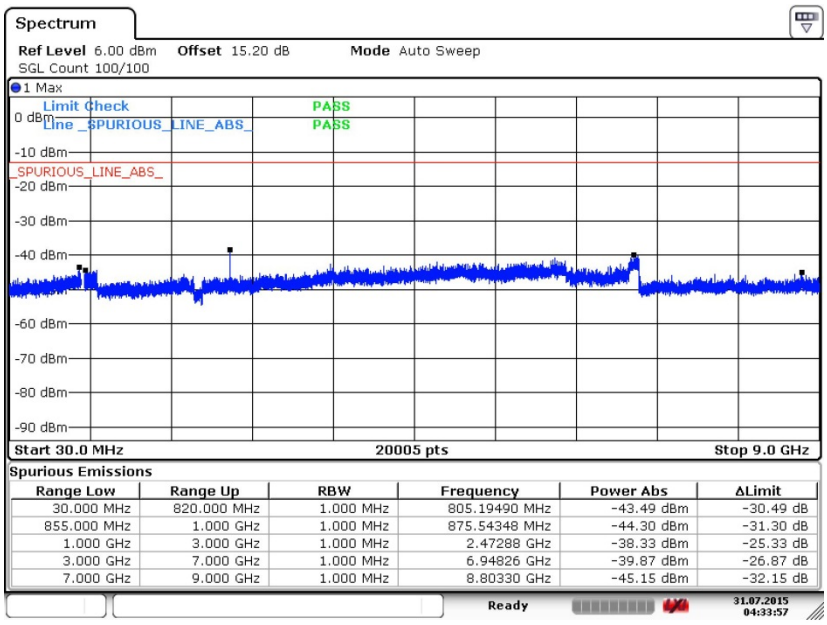
3.6.4 Test Setup



3.6.5 Test Result (Plots) of Conducted Spurious Emission

Band :	GSM850	Channel :	CH128
Test Mode :	GPRS class 8 Link (GMSK)	Frequency :	824.2 MHz

Conducted Spurious Emission Plot between 30MHz ~ 9GHz



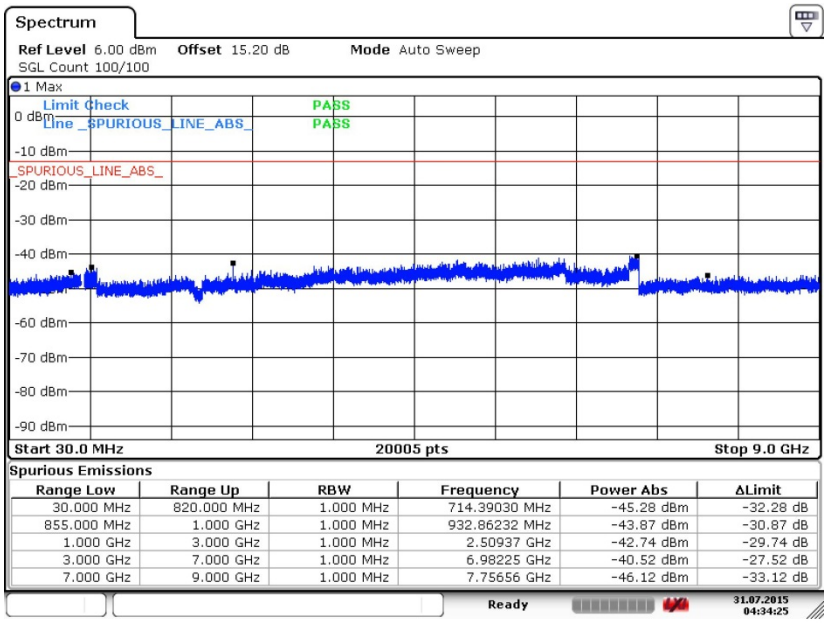
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	805.19490 MHz	-43.49 dBm	-30.49 dB
855.000 MHz	1.000 GHz	1.000 MHz	875.54348 MHz	-44.30 dBm	-31.30 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.47288 GHz	-38.33 dBm	-25.33 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.94826 GHz	-39.87 dBm	-26.87 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.80330 GHz	-45.15 dBm	-32.15 dB

Date: 31.JUL.2015 04:33:57

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

Conducted Spurious Emission Plot between 30MHz ~ 9GHz



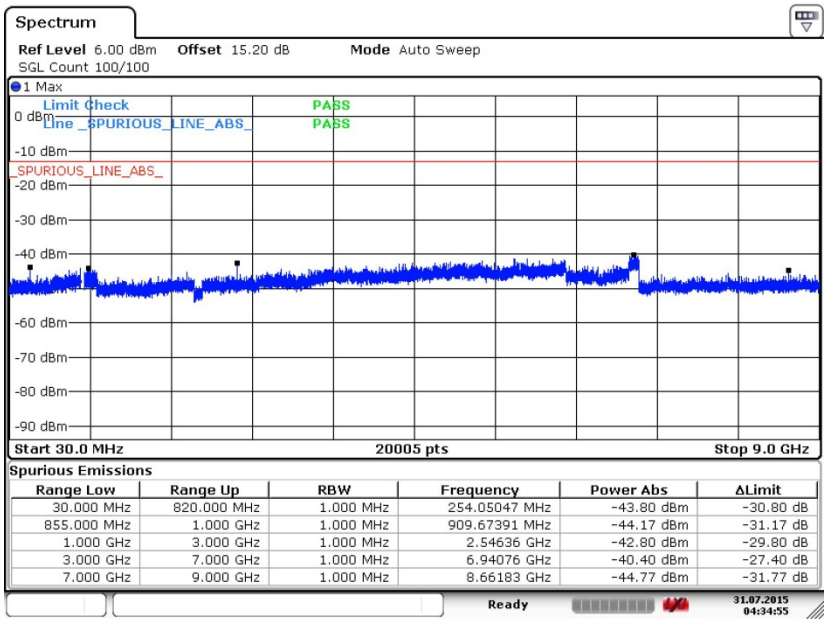
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	714.39030 MHz	-45.28 dBm	-32.28 dB
855.000 MHz	1.000 GHz	1.000 MHz	932.86232 MHz	-43.87 dBm	-30.87 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.50937 GHz	-42.74 dBm	-29.74 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.98225 GHz	-40.52 dBm	-27.52 dB
7.000 GHz	9.000 GHz	1.000 MHz	7.75656 GHz	-46.12 dBm	-33.12 dB

Date: 31.JUL.2015 04:34:25

Band :	GSM850	Channel :	CH 251
Test Mode :	GPRS class 8 Link (GMSK)	Frequency :	848.8 MHz

Conducted Spurious Emission Plot between 30MHz ~ 9GHz



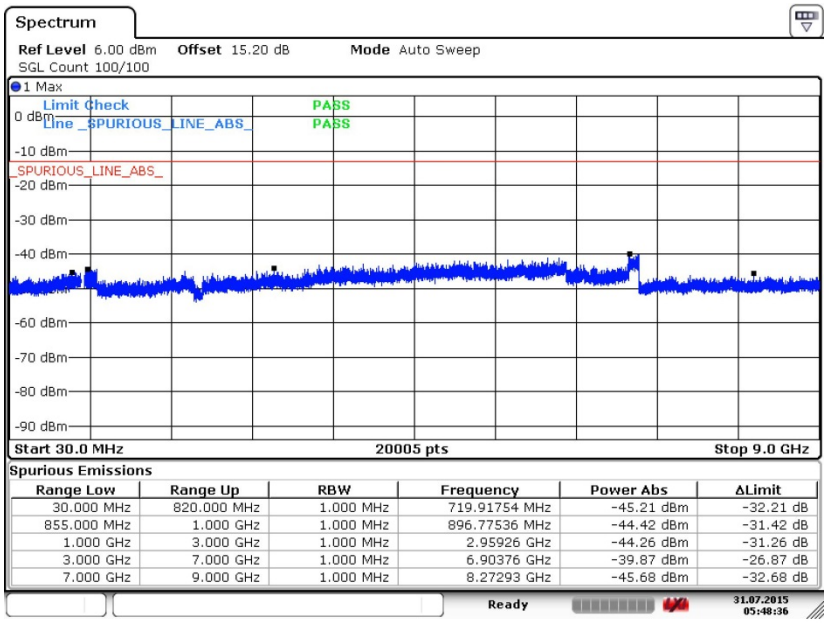
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	254.05047 MHz	-43.80 dBm	-30.80 dB
855.000 MHz	1.000 GHz	1.000 MHz	909.67391 MHz	-44.17 dBm	-31.17 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.54636 GHz	-42.80 dBm	-29.80 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.94076 GHz	-40.40 dBm	-27.40 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.66183 GHz	-44.77 dBm	-31.77 dB

Date: 31.JUL.2015 04:34:56

Band :	GSM850	Channel :	CH128
Test Mode :	EDGE class 8 Link (8PSK)	Frequency :	824.2 MHz

Conducted Spurious Emission Plot between 30MHz ~ 9GHz



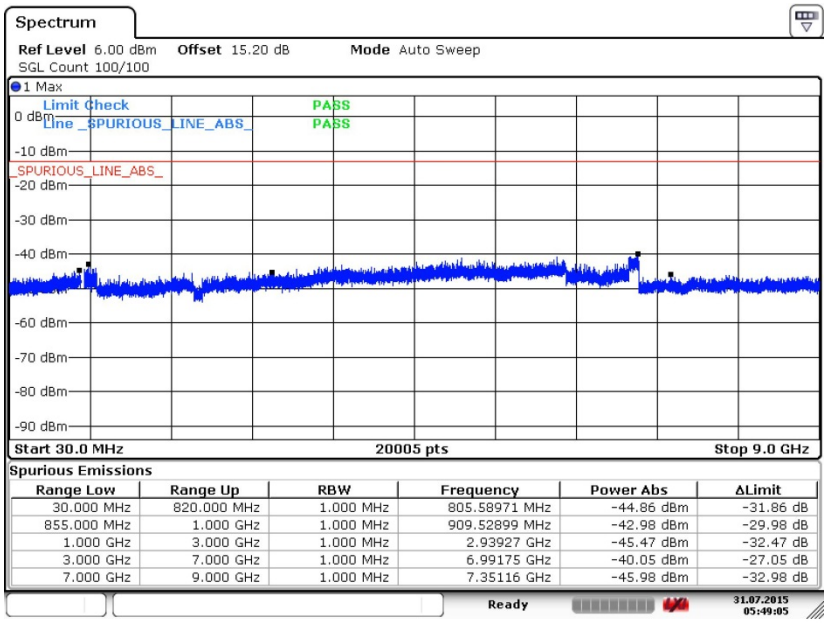
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	719.91754 MHz	-45.21 dBm	-32.21 dB
855.000 MHz	1.000 GHz	1.000 MHz	896.77536 MHz	-44.42 dBm	-31.42 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.95926 GHz	-44.26 dBm	-31.26 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.90376 GHz	-39.87 dBm	-26.87 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.27293 GHz	-45.68 dBm	-32.68 dB

Date: 31.JUL.2015 05:48:37

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

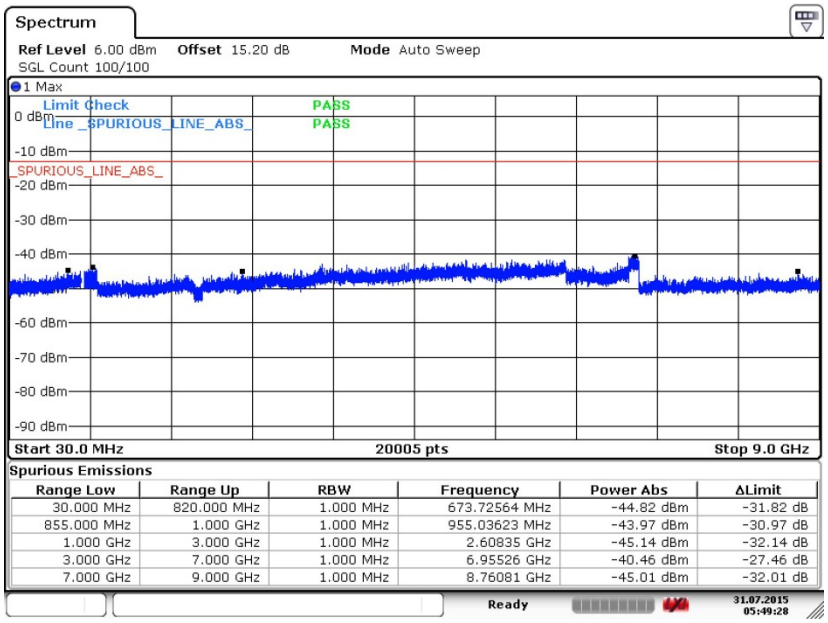
Conducted Spurious Emission Plot between 30MHz ~ 9GHz



Date: 31.JUL.2015 05:49:05

Band :	GSM850	Channel :	CH251
Test Mode :	EDGE class 8 Link (8PSK)	Frequency :	848.8 MHz

Conducted Spurious Emission Plot between 30MHz ~ 9GHz



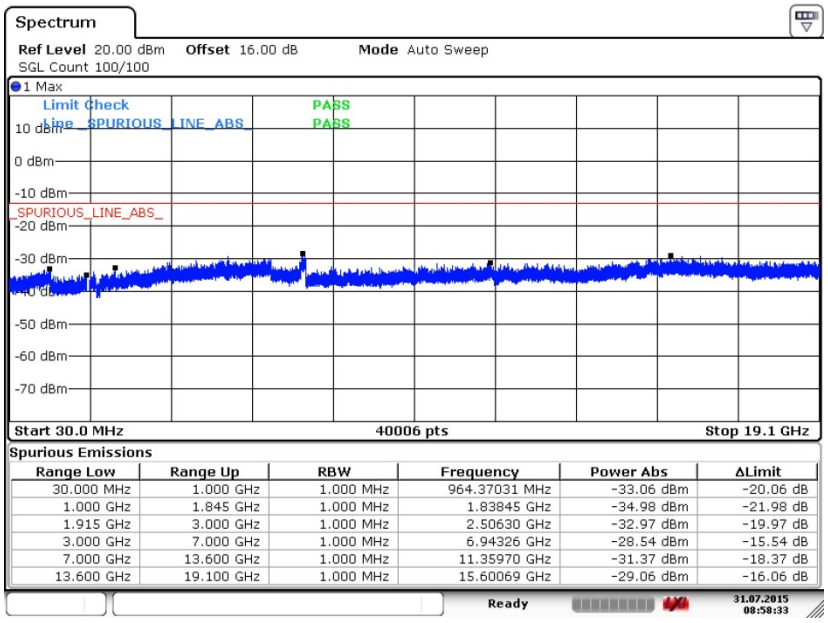
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	673.72564 MHz	-44.82 dBm	-31.82 dB
855.000 MHz	1.000 GHz	1.000 MHz	955.03623 MHz	-43.97 dBm	-30.97 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.60835 GHz	-45.14 dBm	-32.14 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.95526 GHz	-40.46 dBm	-27.46 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.76081 GHz	-45.01 dBm	-32.01 dB

Date: 31.JUL.2015 05:49:28

Band :	GSM1900	Channel :	CH512
Test Mode :	GPRS class 8 Link (GMSK)	Frequency :	1850.2 MHz

Conducted Spurious Emission Plot between 30MHz ~ 19.1GHz



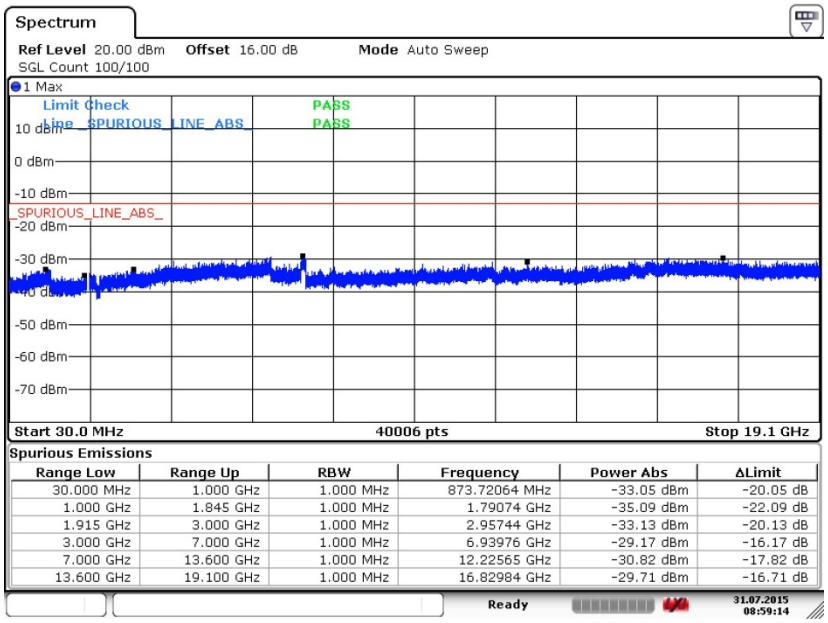
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	964.37031 MHz	-33.06 dBm	-20.06 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.83845 GHz	-34.98 dBm	-21.98 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.50630 GHz	-32.97 dBm	-19.97 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.94326 GHz	-28.54 dBm	-15.54 dB
7.000 GHz	13.600 GHz	1.000 MHz	11.35970 GHz	-31.37 dBm	-18.37 dB
13.600 GHz	19.100 GHz	1.000 MHz	15.60069 GHz	-29.06 dBm	-16.06 dB

Date: 31.JUL.2015 08:58:33

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

Conducted Spurious Emission Plot between 30MHz ~ 19.1GHz



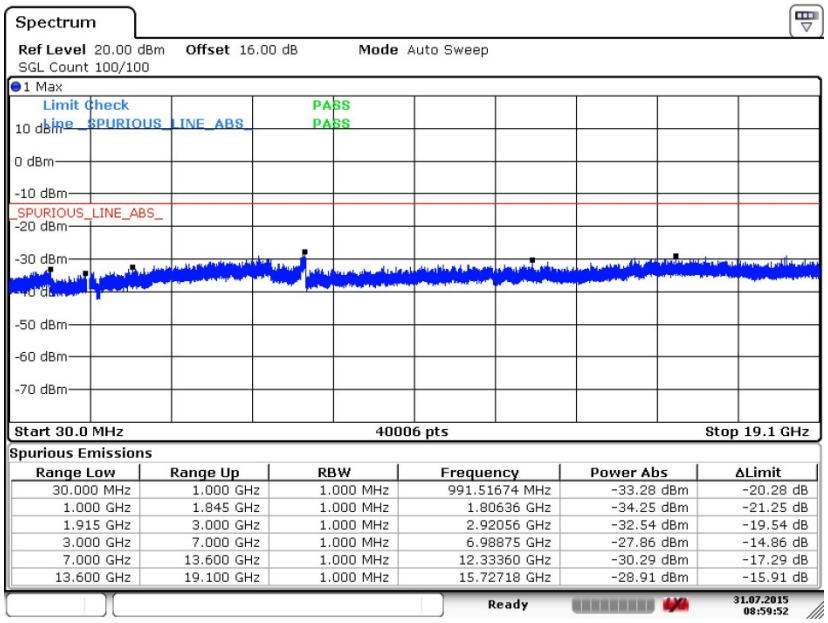
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	873.72064 MHz	-33.05 dBm	-20.05 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.79074 GHz	-35.09 dBm	-22.09 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.95744 GHz	-33.13 dBm	-20.13 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.93976 GHz	-29.17 dBm	-16.17 dB
7.000 GHz	13.600 GHz	1.000 MHz	12.22565 GHz	-30.82 dBm	-17.82 dB
13.600 GHz	19.100 GHz	1.000 MHz	16.82984 GHz	-29.71 dBm	-16.71 dB

Date: 31.JUL.2015 08:59:13

Band :	GSM1900	Channel :	CH810
Test Mode :	GPRS class 8 Link (GMSK)	Frequency :	1909.8 MHz

Conducted Spurious Emission Plot between 30MHz ~ 19.1GHz



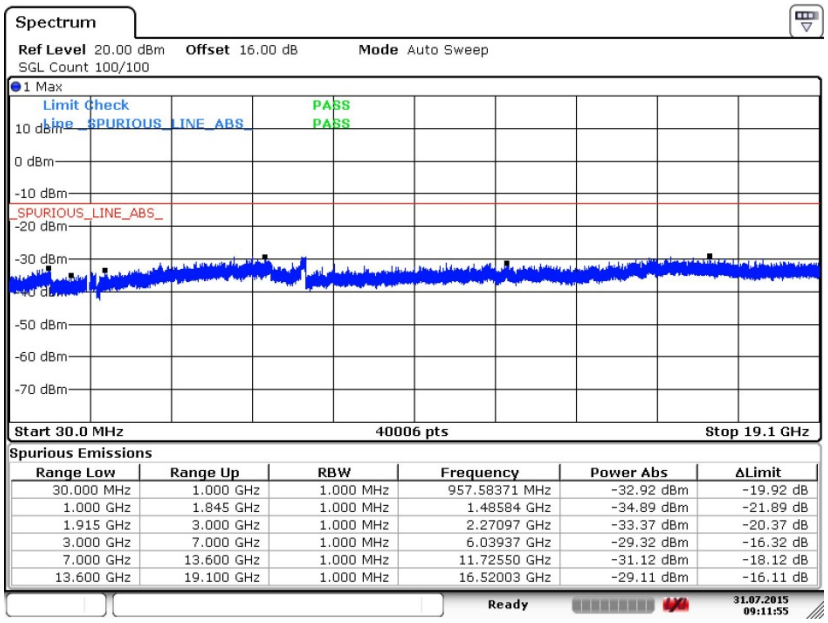
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	991.51674 MHz	-33.28 dBm	-20.28 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.80636 GHz	-34.25 dBm	-21.25 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.92056 GHz	-32.54 dBm	-19.54 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.98875 GHz	-27.86 dBm	-14.86 dB
7.000 GHz	13.600 GHz	1.000 MHz	12.33360 GHz	-30.29 dBm	-17.29 dB
13.600 GHz	19.100 GHz	1.000 MHz	15.72718 GHz	-28.91 dBm	-15.91 dB

Date: 31.JUL.2015 08:59:52

Band :	GSM1900	Channel :	CH512
Test Mode :	EDGE class 8 Link (8PSK)	Frequency :	1850.2 MHz

Conducted Spurious Emission Plot between 30MHz ~ 19.1GHz



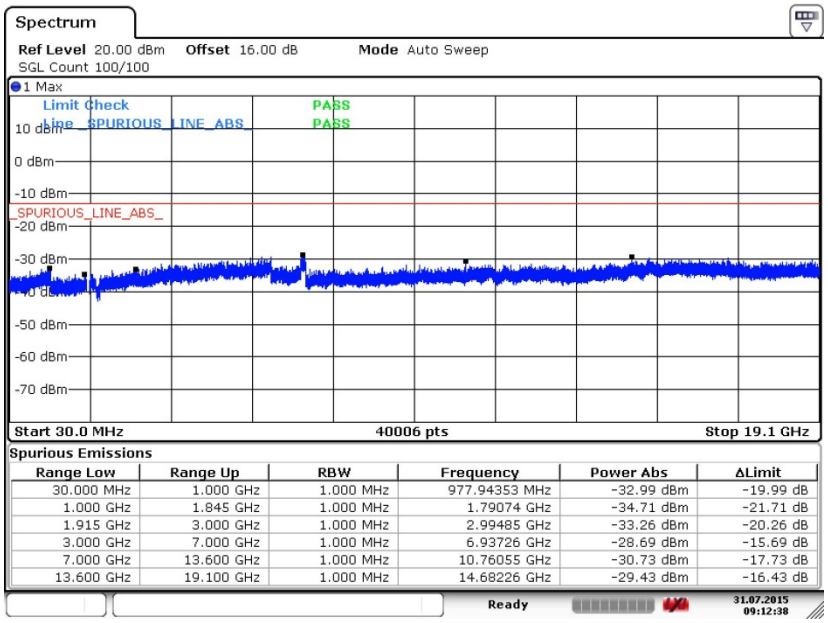
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	957.58371 MHz	-32.92 dBm	-19.92 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.48584 GHz	-34.89 dBm	-21.89 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.27097 GHz	-33.37 dBm	-20.37 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.03937 GHz	-29.32 dBm	-16.32 dB
7.000 GHz	13.600 GHz	1.000 MHz	11.72550 GHz	-31.12 dBm	-18.12 dB
13.600 GHz	19.100 GHz	1.000 MHz	16.52003 GHz	-29.11 dBm	-16.11 dB

Date: 31.JUL.2015 09:11:55

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

Conducted Spurious Emission Plot between 30MHz ~ 19.1GHz



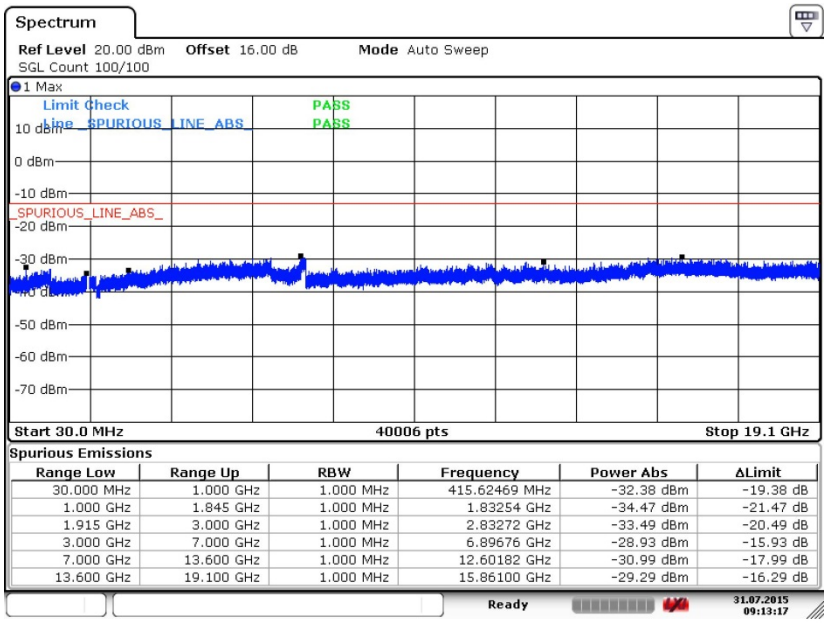
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	977.94353 MHz	-32.99 dBm	-19.99 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.79074 GHz	-34.71 dBm	-21.71 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.99485 GHz	-33.26 dBm	-20.26 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.93726 GHz	-28.69 dBm	-15.69 dB
7.000 GHz	13.600 GHz	1.000 MHz	10.76055 GHz	-30.73 dBm	-17.73 dB
13.600 GHz	19.100 GHz	1.000 MHz	14.68226 GHz	-29.43 dBm	-16.43 dB

Date: 31.JUL.2015 09:12:38

Band :	GSM1900	Channel :	CH810
Test Mode :	EDGE class 8 Link (8PSK)	Frequency :	1909.8 MHz

Conducted Spurious Emission Plot between 30MHz ~ 19.1GHz



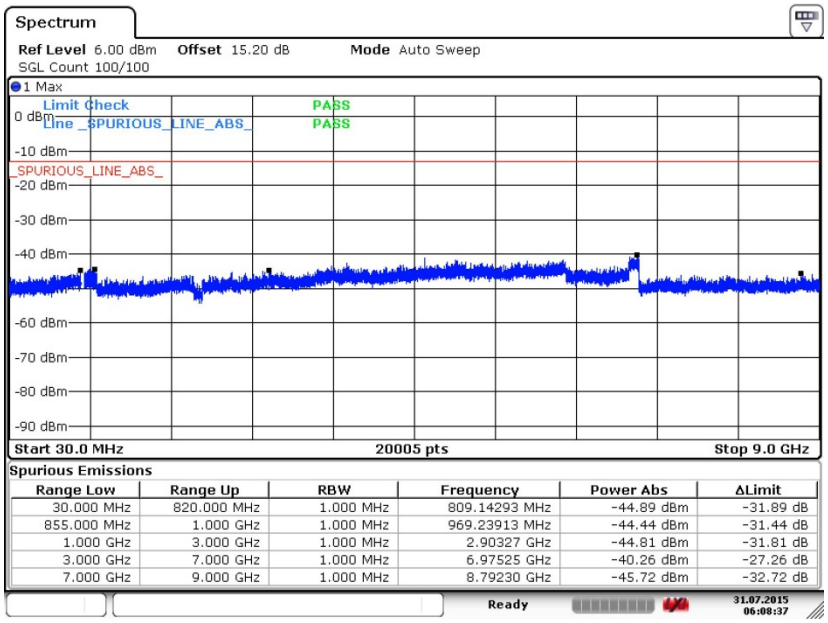
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	415.62469 MHz	-32.38 dBm	-19.38 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.83254 GHz	-34.47 dBm	-21.47 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.83272 GHz	-33.49 dBm	-20.49 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.89676 GHz	-28.93 dBm	-15.93 dB
7.000 GHz	13.600 GHz	1.000 MHz	12.60182 GHz	-30.99 dBm	-17.99 dB
13.600 GHz	19.100 GHz	1.000 MHz	15.86100 GHz	-29.29 dBm	-16.29 dB

Date: 31.JUL.2015 09:13:17

Band :	WCDMA Band V	Channel :	CH4132
Test Mode :	RMC 12.2Kbps Link (QPSK)	Frequency :	826.4 MHz

Conducted Spurious Emission Plot between 30MHz ~ 9GHz



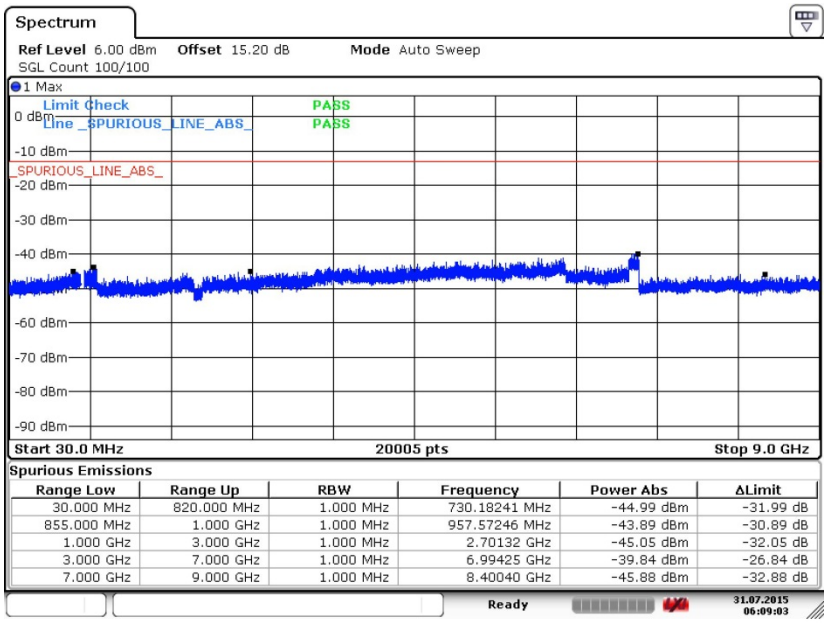
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	809.14293 MHz	-44.89 dBm	-31.89 dB
855.000 MHz	1.000 GHz	1.000 MHz	969.23913 MHz	-44.44 dBm	-31.44 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.90327 GHz	-44.81 dBm	-31.81 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.97525 GHz	-40.26 dBm	-27.26 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.79230 GHz	-45.72 dBm	-32.72 dB

Date: 31.JUL.2015 06:08:37

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

Conducted Spurious Emission Plot between 30MHz ~ 9GHz



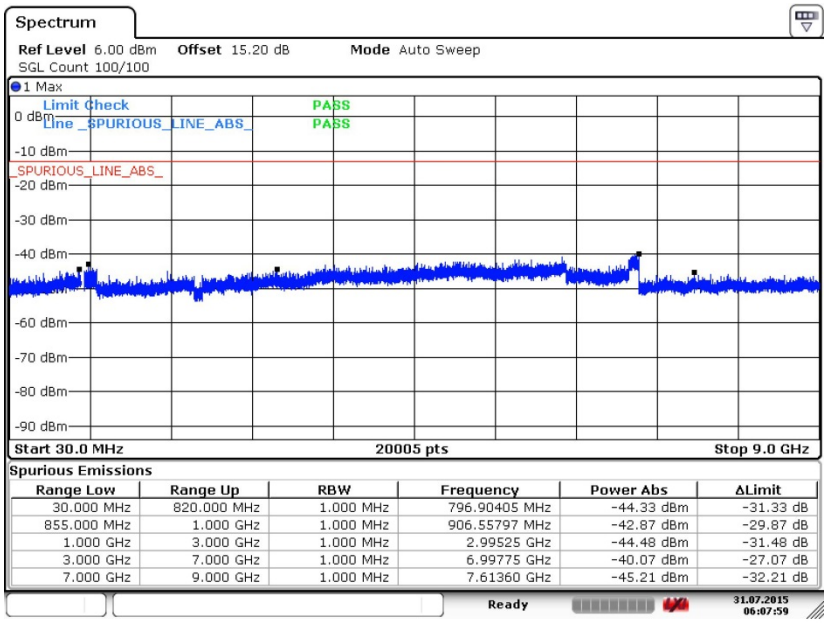
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	730.18241 MHz	-44.99 dBm	-31.99 dB
855.000 MHz	1.000 GHz	1.000 MHz	957.57246 MHz	-43.89 dBm	-30.89 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.70132 GHz	-45.05 dBm	-32.05 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.99425 GHz	-39.84 dBm	-26.84 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.40040 GHz	-45.88 dBm	-32.88 dB

Date: 31.JUL.2015 06:09:03

Band :	WCDMA Band V	Channel :	CH4233
Test Mode :	RMC 12.2Kbps Link (QPSK)	Frequency :	846.6 MHz

Conducted Spurious Emission Plot between 30MHz ~ 9GHz



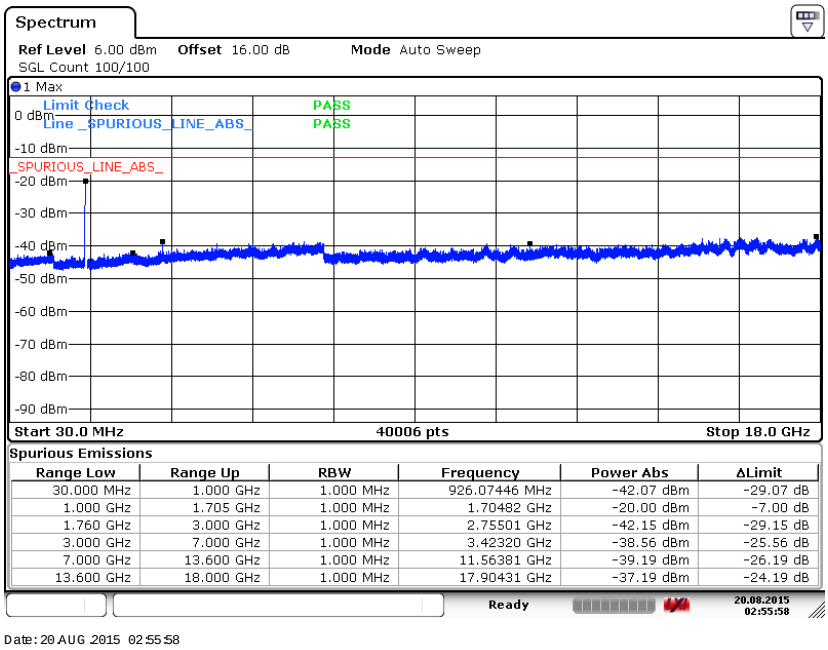
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	796.90405 MHz	-44.33 dBm	-31.33 dB
855.000 MHz	1.000 GHz	1.000 MHz	906.55797 MHz	-42.87 dBm	-29.87 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.99525 GHz	-44.48 dBm	-31.48 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.99775 GHz	-40.07 dBm	-27.07 dB
7.000 GHz	9.000 GHz	1.000 MHz	7.61360 GHz	-45.21 dBm	-32.21 dB

Date: 31.JUL.2015 06:07:58

Band :	WCDMA Band IV	Channel :	CH1312
Test Mode :	RMC 12.2Kbps Link (QPSK)	Frequency :	1712.4 MHz

Conducted Spurious Emission Plot between 30MHz ~ 18GHz

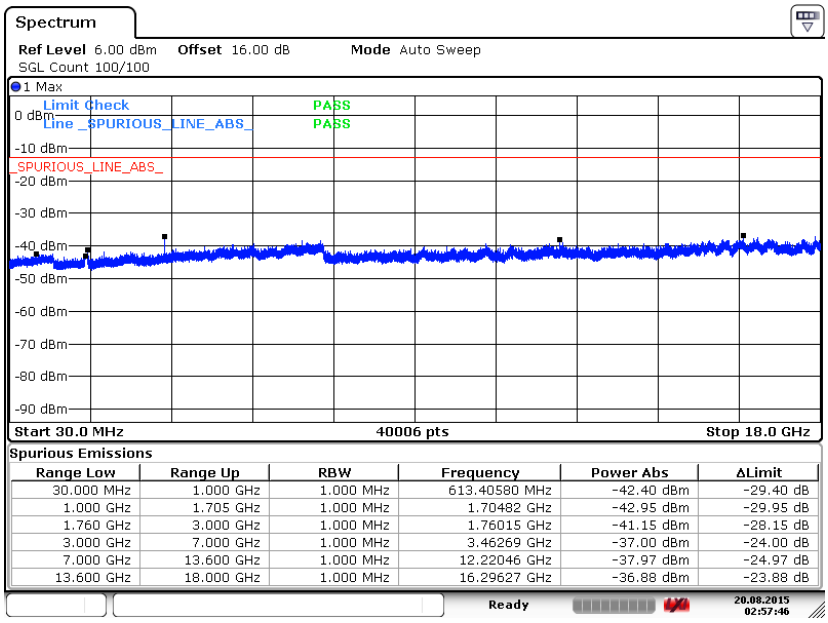


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	926.07446 MHz	-42.07 dBm	-29.07 dB
1.000 GHz	1.705 GHz	1.000 MHz	1.70482 GHz	-20.00 dBm	-7.00 dB
1.760 GHz	3.000 GHz	1.000 MHz	2.75501 GHz	-42.15 dBm	-29.15 dB
3.000 GHz	7.000 GHz	1.000 MHz	3.42320 GHz	-38.56 dBm	-25.56 dB
7.000 GHz	13.600 GHz	1.000 MHz	11.56381 GHz	-39.19 dBm	-26.19 dB
13.600 GHz	18.000 GHz	1.000 MHz	17.90431 GHz	-37.19 dBm	-24.19 dB

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

Conducted Spurious Emission Plot between 30MHz ~ 18GHz

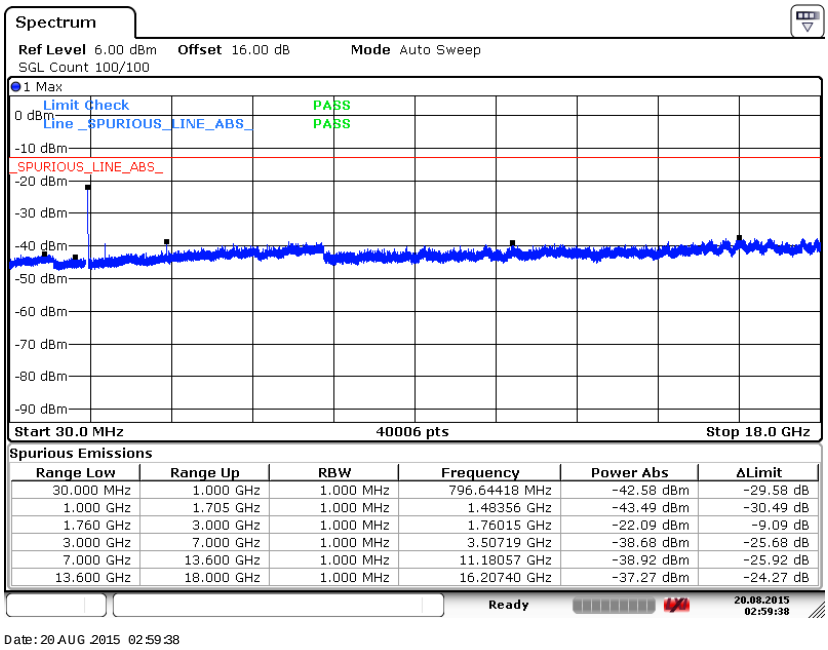


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	613.40580 MHz	-42.40 dBm	-29.40 dB
1.000 GHz	1.705 GHz	1.000 MHz	1.70482 GHz	-42.95 dBm	-29.95 dB
1.760 GHz	3.000 GHz	1.000 MHz	1.76015 GHz	-41.15 dBm	-28.15 dB
3.000 GHz	7.000 GHz	1.000 MHz	3.46269 GHz	-37.00 dBm	-24.00 dB
7.000 GHz	13.600 GHz	1.000 MHz	12.22046 GHz	-37.97 dBm	-24.97 dB
13.600 GHz	18.000 GHz	1.000 MHz	16.29627 GHz	-36.88 dBm	-23.88 dB

Band :	WCDMA Band IV	Channel :	CH1513
Test Mode :	RMC 12.2Kbps Link (QPSK)	Frequency :	1752.6 MHz

Conducted Spurious Emission Plot between 30MHz ~ 18GHz

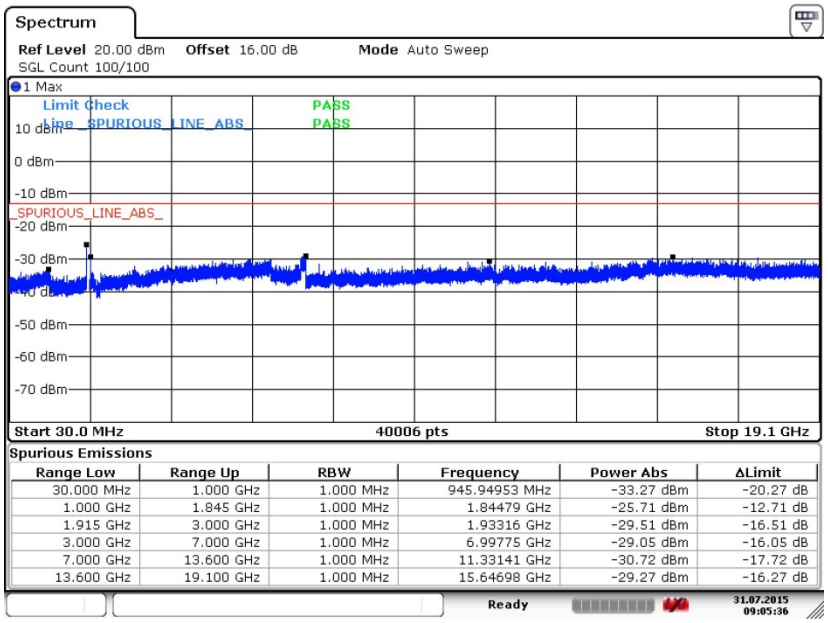


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	796.64418 MHz	-42.58 dBm	-29.58 dB
1.000 GHz	1.705 GHz	1.000 MHz	1.48356 GHz	-43.49 dBm	-30.49 dB
1.760 GHz	3.000 GHz	1.000 MHz	1.76015 GHz	-22.09 dBm	-9.09 dB
3.000 GHz	7.000 GHz	1.000 MHz	3.50719 GHz	-38.68 dBm	-25.68 dB
7.000 GHz	13.600 GHz	1.000 MHz	11.18057 GHz	-38.92 dBm	-25.92 dB
13.600 GHz	18.000 GHz	1.000 MHz	16.20740 GHz	-37.27 dBm	-24.27 dB

Band :	WCDMA Band II	Channel :	CH9262
Test Mode :	RMC 12.2Kbps Link (QPSK)	Frequency :	1852.4MHz

Conducted Spurious Emission Plot between 30MHz ~ 19.1GHz



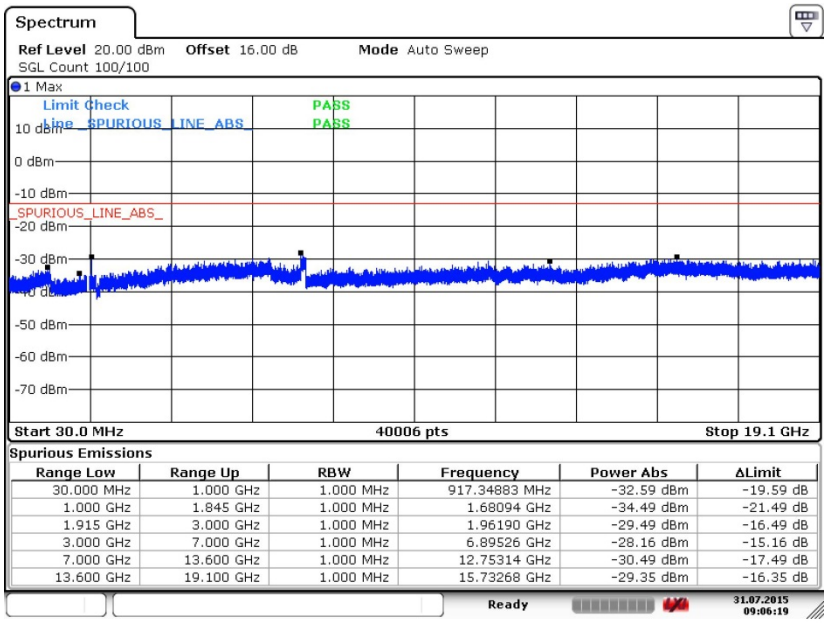
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	945.94953 MHz	-33.27 dBm	-20.27 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.84479 GHz	-25.71 dBm	-12.71 dB
1.915 GHz	3.000 GHz	1.000 MHz	1.93316 GHz	-29.51 dBm	-16.51 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.99775 GHz	-29.05 dBm	-16.05 dB
7.000 GHz	13.600 GHz	1.000 MHz	11.33141 GHz	-30.72 dBm	-17.72 dB
13.600 GHz	19.100 GHz	1.000 MHz	15.64698 GHz	-29.27 dBm	-16.27 dB

Date: 31.JUL.2015 09:05:36

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

Conducted Spurious Emission Plot between 30MHz ~ 19.1GHz



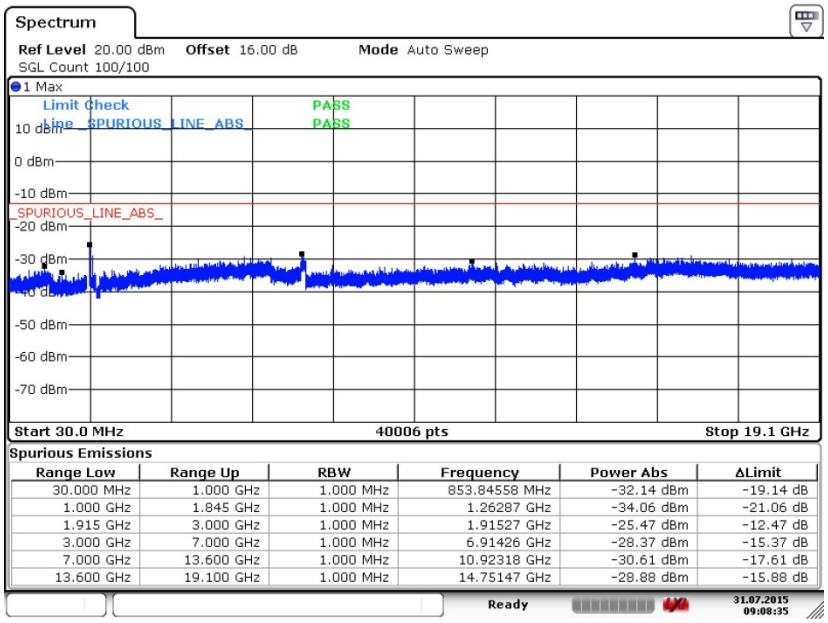
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	917.34883 MHz	-32.59 dBm	-19.59 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.68094 GHz	-34.49 dBm	-21.49 dB
1.915 GHz	3.000 GHz	1.000 MHz	1.96190 GHz	-29.49 dBm	-16.49 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.89526 GHz	-28.16 dBm	-15.16 dB
7.000 GHz	13.600 GHz	1.000 MHz	12.75314 GHz	-30.49 dBm	-17.49 dB
13.600 GHz	19.100 GHz	1.000 MHz	15.73268 GHz	-29.35 dBm	-16.35 dB

Date: 31.JUL.2015 09:06:19

Band :	WCDMA Band II	Channel :	CH9538
Test Mode :	RMC 12.2Kbps Link (QPSK)	Frequency :	1907.6 MHz

Conducted Spurious Emission Plot between 30MHz ~ 19.1GHz



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	853.84558 MHz	-32.14 dBm	-19.14 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.26287 GHz	-34.06 dBm	-21.06 dB
1.915 GHz	3.000 GHz	1.000 MHz	1.91527 GHz	-25.47 dBm	-12.47 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.91426 GHz	-28.37 dBm	-15.37 dB
7.000 GHz	13.600 GHz	1.000 MHz	10.92318 GHz	-30.61 dBm	-17.61 dB
13.600 GHz	19.100 GHz	1.000 MHz	14.75147 GHz	-28.88 dBm	-15.88 dB

Date: 31.JUL.2015 09:08:36

3.7 Field Strength of Spurious Radiation Measurement

3.7.1 Description of Field Strength of Spurious Radiated Measurement

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least 43 + 10 log (P) dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

3.7.2 Measuring Instruments

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

3.7.3 Test Procedures

1. The testing follows FCC KDB 971168 v02r02 Section 5.8 and ANSI / TIA-603-C-2004 Section 2.2.12.
2. The EUT was placed on a rotatable wooden table 0.8 meters above the ground.
3. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest spurious emission.
5. The height of the receiving antenna is varied between one meter and four meters to search for the maximum spurious emission for both horizontal and vertical polarizations.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking record of maximum spurious emission.
7. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
8. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
9. Taking the record of output power at antenna port.
10. Repeat step 7 to step 8 for another polarization.
11. EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain
12. ERP (dBm) = EIRP - 2.15
13. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
14. The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts)

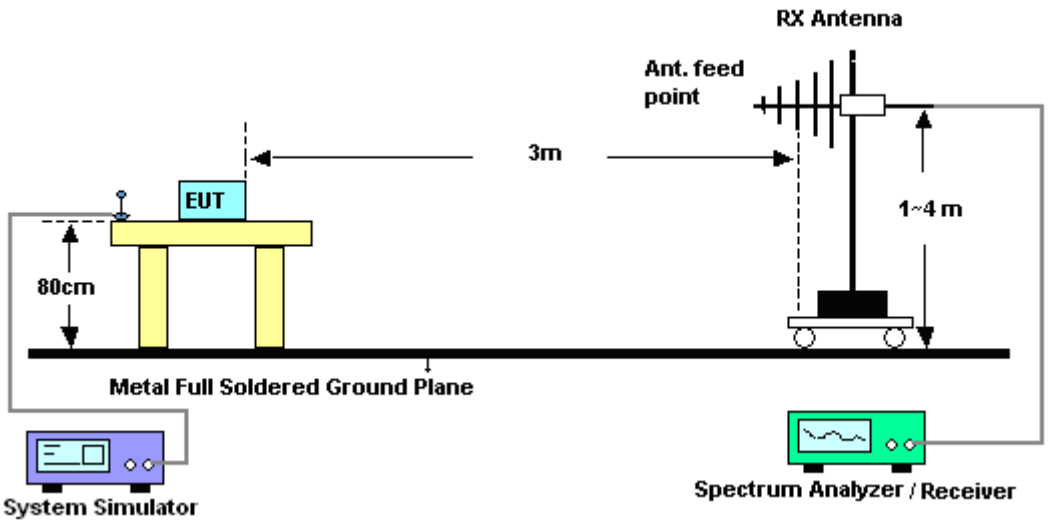
    = P(W) - [43 + 10log(P)] (dB)

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

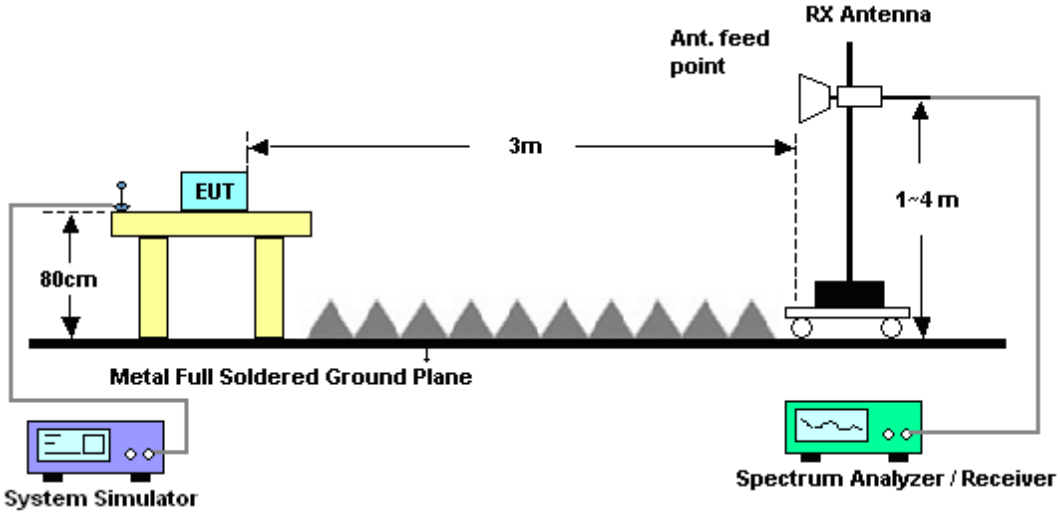
    = -13dBm.

3.7.4 Test Setup

For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.7.5 Test Result of Field Strength of Spurious Radiated

Band :	GSM850 for CH128	**Temperature :**	23~25°C
Test Mode :	GPRS class 8 Link (GMSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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
1648.4	-57.70	-13	-44.70	-60.25	-61.52	0.53	6.50	H	Pass
2472.6	-48.85	-13	-35.85	-54.75	-51.72	0.68	5.70	H	Pass
3296.8	-56.13	-13	-43.13	-66.15	-61.17	0.81	8.00	H	Pass

Band :	GSM850 for CH128	**Temperature :**	23~25°C
Test Mode :	GPRS class 8 Link (GMSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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
1648.4	-52.88	-13	-39.88	-56.27	-56.70	0.53	6.50	V	Pass
2472.6	-38.01	-13	-25.01	-45.34	-40.88	0.68	5.70	V	Pass
3296.8	-56.54	-13	-43.54	-65.55	-61.58	0.81	8.00	V	Pass

Band :	GSM850 for CH189	**Temperature :**	23~25°C
Test Mode :	GPRS class 8 Link (GMSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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	-60.22	-13	-47.22	-62.77	-64.04	0.53	6.50	H	Pass
2510	-51.78	-13	-38.78	-57.18	-54.65	0.68	5.70	H	Pass
3346	-55.23	-13	-42.23	-65.25	-60.27	0.81	8.00	H	Pass

Band :	GSM850 for CH189	**Temperature :**	23~25°C
Test Mode :	GPRS class 8 Link (GMSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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	-59.20	-13	-46.20	-62.11	-63.02	0.53	6.50	V	Pass
2510	-50.82	-13	-37.82	-55.65	-53.69	0.68	5.70	V	Pass
3346	-54.47	-13	-41.47	-63.48	-59.51	0.81	8.00	V	Pass

Band :	GSM850 for CH251	**Temperature :**	23~25°C
Test Mode :	GPRS class 8 Link (GMSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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
1697.6	-59.38	-13	-46.38	-61.93	-63.20	0.53	6.50	H	Pass
2546.4	-52.77	-13	-39.77	-58.19	-55.64	0.68	5.70	H	Pass
3395.2	-54.92	-13	-41.92	-64.94	-59.96	0.81	8.00	H	Pass

Band :	GSM850 for CH251	**Temperature :**	23~25°C
Test Mode :	GPRS class 8 Link (GMSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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
1697.6	-57.61	-13	-44.61	-60.52	-61.43	0.53	6.50	V	Pass
2546.4	-52.79	-13	-39.79	-57.18	-55.66	0.68	5.70	V	Pass
3395.2	-54.84	-13	-41.84	-63.85	-59.88	0.81	8.00	V	Pass

Band :	GSM850 for CH128	**Temperature :**	23~25°C
Test Mode :	EDGE class 8 Link (8PSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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
1648.4	-58.24	-13	-45.24	-60.79	-62.06	0.53	6.50	H	Pass
2472.6	-52.01	-13	-39.01	-57.43	-54.88	0.68	5.70	H	Pass
3296.8	-56.26	-13	-43.26	-66.28	-61.30	0.81	8.00	H	Pass

Band :	GSM850 for CH128	**Temperature :**	23~25°C
Test Mode :	EDGE class 8 Link (8PSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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
1648.4	-57.10	-13	-44.10	-60.01	-60.92	0.53	6.50	V	Pass
2472.6	-46.35	-13	-33.35	-52.43	-49.22	0.68	5.70	V	Pass
3296.8	-56.61	-13	-43.61	-65.62	-61.65	0.81	8.00	V	Pass

Band :	GSM850 for CH189	**Temperature :**	23~25°C
Test Mode :	EDGE class 8 Link (8PSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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	-58.05	-13	-45.05	-60.60	-61.87	0.53	6.50	H	Pass
2510	-50.02	-13	-37.02	-55.47	-52.89	0.68	5.70	H	Pass
3346	-55.96	-13	-42.96	-65.98	-61.00	0.81	8.00	H	Pass

Band :	GSM850 for CH189	**Temperature :**	23~25°C
Test Mode :	EDGE class 8 Link (8PSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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	-57.95	-13	-44.95	-60.86	-61.77	0.53	6.50	V	Pass
2510	-43.12	-13	-30.12	-50.06	-45.99	0.68	5.70	V	Pass
3346	-54.46	-13	-41.46	-63.47	-59.50	0.81	8.00	V	Pass

Band :	GSM850 for CH251	**Temperature :**	23~25°C
Test Mode :	EDGE class 8 Link (8PSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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
1697.6	-55.77	-13	-42.77	-58.32	-59.59	0.53	6.50	H	Pass
2546.4	-44.90	-13	-31.90	-51.71	-47.77	0.68	5.70	H	Pass
3395.2	-55.25	-13	-42.25	-65.27	-60.29	0.81	8.00	H	Pass

Band :	GSM850 for CH251	**Temperature :**	23~25°C
Test Mode :	EDGE class 8 Link (8PSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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
1697.6	-53.91	-13	-40.91	-57.21	-57.73	0.53	6.50	V	Pass
2546.4	-49.55	-13	-36.55	-54.74	-52.42	0.68	5.70	V	Pass
3395.2	-53.14	-13	-40.14	-62.15	-58.18	0.81	8.00	V	Pass

Band :	GSM1900 for CH512	**Temperature :**	23~25°C
Test Mode :	GPRS class 8 Link (GMSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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
3700.4	-50.77	-13	-37.77	-63.54	-57.96	0.81	8.00	H	Pass
5550.6	-48.65	-13	-35.65	-67.40	-58.64	1.01	11.00	H	Pass
7400.8	-46.24	-13	-33.24	-68.41	-58.48	1.46	13.70	H	Pass

Band :	GSM1900 for CH512	**Temperature :**	23~25°C
Test Mode :	GPRS class 8 Link (GMSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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
3700.4	-50.61	-13	-37.61	-63.68	-57.80	0.81	8	V	Pass
5550.6	-48.80	-13	-35.80	-67.86	-58.79	1.01	11	V	Pass
7400.8	-45.67	-13	-32.67	-68.16	-57.91	1.46	13.7	V	Pass

Band :	GSM1900 for CH661	**Temperature :**	23~25°C
Test Mode :	GPRS class 8 Link (GMSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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	-50.02	-13	-37.02	-62.79	-57.21	0.81	8.00	H	Pass
5640	-49.01	-13	-36.01	-67.76	-59.00	1.01	11.00	H	Pass
7520	-46.18	-13	-33.18	-68.35	-58.42	1.46	13.70	H	Pass

Band :	GSM1900 for CH661	**Temperature :**	23~25°C
Test Mode :	GPRS class 8 Link (GMSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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	-49.58	-13	-36.58	-62.65	-56.77	0.81	8	V	Pass
5640	-48.91	-13	-35.91	-67.97	-58.90	1.01	11	V	Pass
7520	-45.54	-13	-32.54	-68.03	-57.78	1.46	13.7	V	Pass

Band :	GSM1900 for CH810	**Temperature :**	23~25°C
Test Mode :	GPRS class 8 Link (GMSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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
3819.6	-48.92	-13	-35.92	-61.69	-56.11	0.81	8.00	H	Pass
5729.4	-49.80	-13	-36.80	-68.55	-59.79	1.01	11.00	H	Pass
7639.2	-46.09	-13	-33.09	-68.26	-58.33	1.46	13.70	H	Pass

Band :	GSM1900 for CH810	**Temperature :**	23~25°C
Test Mode :	GPRS class 8 Link (GMSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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
3819.6	-49.76	-13	-36.76	-62.83	-56.95	0.81	8	V	Pass
5729.4	-49.09	-13	-36.09	-68.15	-59.08	1.01	11	V	Pass
7639.2	-46.19	-13	-33.19	-68.68	-58.43	1.46	13.7	V	Pass

Band :	GSM1900 for CH512	**Temperature :**	23~25°C
Test Mode :	EDGE class 8 Link (8PSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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
3700.4	-52.50	-13	-39.50	-65.27	-59.69	0.81	8.00	H	Pass
5550.6	-48.09	-13	-35.09	-66.84	-58.08	1.01	11.00	H	Pass
7400.8	-45.84	-13	-32.84	-68.01	-58.08	1.46	13.70	H	Pass

Band :	GSM1900 for CH512	**Temperature :**	23~25°C
Test Mode :	EDGE class 8 Link (8PSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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
3700.4	-52.29	-13	-39.29	-65.36	-59.48	0.81	8	V	Pass
5550.6	-48.57	-13	-35.57	-67.63	-58.56	1.01	11	V	Pass
7400.8	-46.07	-13	-33.07	-68.56	-58.31	1.46	13.7	V	Pass

Band :	GSM1900 for CH661	**Temperature :**	23~25°C
Test Mode :	EDGE class 8 Link (8PSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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	-53.32	-13	-40.32	-66.09	-60.51	0.81	8.00	H	Pass
5640	-49.32	-13	-36.32	-68.07	-59.31	1.01	11.00	H	Pass
7520	-46.87	-13	-33.87	-69.04	-59.11	1.46	13.70	H	Pass

Band :	GSM1900 for CH661	**Temperature :**	23~25°C
Test Mode :	EDGE class 8 Link (8PSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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	-53.40	-13	-40.40	-66.47	-60.59	0.81	8	V	Pass
5640	-48.57	-13	-35.57	-67.63	-58.56	1.01	11	V	Pass
7520	-45.25	-13	-32.25	-67.74	-57.49	1.46	13.7	V	Pass

Band :	GSM1900 for CH810	**Temperature :**	23~25°C
Test Mode :	EDGE class 8 Link (8PSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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
3819.6	-53.23	-13	-40.23	-66.00	-60.42	0.81	8.00	H	Pass
5729.4	-49.22	-13	-36.22	-67.97	-59.21	1.01	11.00	H	Pass
7639.2	-46.06	-13	-33.06	-68.23	-58.30	1.46	13.70	H	Pass

Band :	GSM1900 for CH810	**Temperature :**	23~25°C
Test Mode :	EDGE class 8 Link (8PSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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
3819.6	-53.45	-13	-40.45	-66.52	-60.64	0.81	8	V	Pass
5729.4	-49.63	-13	-36.63	-68.69	-59.62	1.01	11	V	Pass
7639.2	-46.18	-13	-33.18	-68.67	-58.42	1.46	13.7	V	Pass

Band :	WCDMA Band V for CH4132	**Temperature :**	23~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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
1652.8	-60.12	-13	-47.12	-62.67	-63.94	0.53	6.50	H	Pass
2479.2	-58.36	-13	-45.36	-63.78	-61.23	0.68	5.70	H	Pass
3305.6	-55.93	-13	-42.93	-65.95	-60.97	0.81	8.00	H	Pass

Band :	WCDMA Band V for CH4132	**Temperature :**	23~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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
1652.8	-60.16	-13	-47.16	-63.07	-63.98	0.53	6.50	V	Pass
2479.2	-59.60	-13	-46.60	-63.92	-62.47	0.68	5.70	V	Pass
3305.6	-56.62	-13	-43.62	-65.63	-61.66	0.81	8.00	V	Pass

Band :	WCDMA Band V for CH4182	**Temperature :**	23~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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	-60.65	-13	-47.65	-63.20	-64.47	0.53	6.50	H	Pass
2510	-56.19	-13	-43.19	-61.61	-59.06	0.68	5.70	H	Pass
3346	-55.18	-13	-42.18	-65.20	-60.22	0.81	8.00	H	Pass

Band :	WCDMA Band V for CH4182	**Temperature :**	23~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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	-60.45	-13	-47.45	-63.36	-64.27	0.53	6.50	V	Pass
2510	-52.44	-13	-39.44	-56.94	-55.31	0.68	5.70	V	Pass
3346	-56.02	-13	-43.02	-65.03	-61.06	0.81	8.00	V	Pass

Band :	WCDMA Band V for CH4233	**Temperature :**	23~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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
1693.2	-61.34	-13	-48.34	-63.89	-65.16	0.53	6.50	H	Pass
2539.8	-58.64	-13	-45.64	-64.06	-61.51	0.68	5.70	H	Pass
3386.4	-54.77	-13	-41.77	-64.79	-59.81	0.81	8.00	H	Pass

Band :	WCDMA Band V for CH4233	**Temperature :**	23~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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
1693.2	-60.82	-13	-47.82	-63.73	-64.64	0.53	6.50	V	Pass
2539.8	-57.45	-13	-44.45	-61.77	-60.32	0.68	5.70	V	Pass
3386.4	-57.06	-13	-44.06	-66.07	-62.10	0.81	8.00	V	Pass

Band :	WCDMA Band IV for CH1312	**Temperature :**	23~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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
3424.8	-44.81	-13	-31.81	-71.44	-56.60	0.81	12.60	H	Pass
5137.2	-43.05	-13	-30.05	-72.57	-54.80	0.95	12.70	H	Pass
6849.6	-44.35	-13	-31.35	-74.75	-54.92	1.13	11.70	H	Pass

Band :	WCDMA Band IV for CH1312	**Temperature :**	23~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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
3424.8	-49.43	-13	-36.43	-71.71	-61.22	0.81	12.6	V	Pass
5137.2	-48.27	-13	-35.27	-72.8	-60.02	0.95	12.7	V	Pass
6849.6	-42.91	-13	-29.91	-74.72	-53.48	1.13	11.7	V	Pass

Band :	WCDMA Band IV for CH1413	**Temperature :**	23~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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
3465.2	-44.11	-13	-31.11	-70.74	-55.90	0.81	12.60	H	Pass
5197.8	-43.01	-13	-30.01	-72.53	-54.76	0.95	12.70	H	Pass
6930.4	-43.83	-13	-30.83	-74.23	-54.40	1.13	11.70	H	Pass

Band :	WCDMA Band IV for CH1413	**Temperature :**	23~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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
3465.2	-48.38	-13	-35.38	-70.66	-60.17	0.81	12.6	V	Pass
5197.8	-47.56	-13	-34.56	-72.09	-59.31	0.95	12.7	V	Pass
6930.4	-42.85	-13	-29.85	-74.66	-53.42	1.13	11.7	V	Pass

Band :	WCDMA Band IV for CH1513	**Temperature :**	23~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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
3505.2	-44.30	-13	-31.30	-70.93	-56.09	0.81	12.60	H	Pass
5257.8	-43.38	-13	-30.38	-72.90	-55.13	0.95	12.70	H	Pass
7010.4	-44.34	-13	-31.34	-74.74	-54.91	1.13	11.70	H	Pass

Band :	WCDMA Band IV for CH1513	**Temperature :**	23~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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
3505.2	-48.31	-13	-35.31	-70.59	-60.10	0.81	12.6	V	Pass
5257.8	-47.99	-13	-34.99	-72.52	-59.74	0.95	12.7	V	Pass
7010.4	-42.67	-13	-29.67	-74.48	-53.24	1.13	11.7	V	Pass

Band :	WCDMA Band II for CH9296	**Temperature :**	23~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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
3704.8	-45.72	-13	-32.72	-58.49	-52.91	0.81	8.00	H	Pass
5557.2	-49.15	-13	-36.15	-67.90	-59.14	1.01	11.00	H	Pass
7409.6	-46.17	-13	-33.17	-68.34	-58.41	1.46	13.70	H	Pass

Band :	WCDMA Band II for CH9296	**Temperature :**	23~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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
3704.8	-46.72	-13	-33.72	-59.79	-53.91	0.81	8	V	Pass
5557.2	-48.97	-13	-35.97	-68.03	-58.96	1.01	11	V	Pass
7409.6	-46.26	-13	-33.26	-68.75	-58.50	1.46	13.7	V	Pass

Band :	WCDMA Band II for CH9400	**Temperature :**	23~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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	-45.58	-13	-32.58	-58.35	-52.77	0.81	8.00	H	Pass
5640	-48.77	-13	-35.77	-67.52	-58.76	1.01	11.00	H	Pass
7520	-46.47	-13	-33.47	-68.64	-58.71	1.46	13.70	H	Pass

Band :	WCDMA Band II for CH9400	**Temperature :**	23~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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	-47.75	-13	-34.75	-60.82	-54.94	0.81	8	V	Pass
5640	-49.40	-13	-36.40	-68.46	-59.39	1.01	11	V	Pass
7520	-46.13	-13	-33.13	-68.62	-58.37	1.46	13.7	V	Pass

Band :	WCDMA Band II for CH9538	**Temperature :**	23~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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
3815.2	-49.11	-13	-36.11	-61.88	-56.30	0.81	8.00	H	Pass
5722.8	-49.54	-13	-36.54	-68.29	-59.53	1.01	11.00	H	Pass
7630.4	-46.21	-13	-33.21	-68.38	-58.45	1.46	13.70	H	Pass

Band :	WCDMA Band II for CH9538	**Temperature :**	23~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	**Relative Humidity :**	48~52%
Test Engineer :	Sam Li	**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
3815.2	-51.05	-13	-38.05	-64.12	-58.24	0.81	8	V	Pass
5722.8	-49.35	-13	-36.35	-68.41	-59.34	1.01	11	V	Pass
7630.4	-45.91	-13	-32.91	-68.4	-58.15	1.46	13.7	V	Pass

3.8 Frequency Stability Measurement

3.8.1 Description of Frequency Stability Measurement

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

3.8.2 Measuring Instruments

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

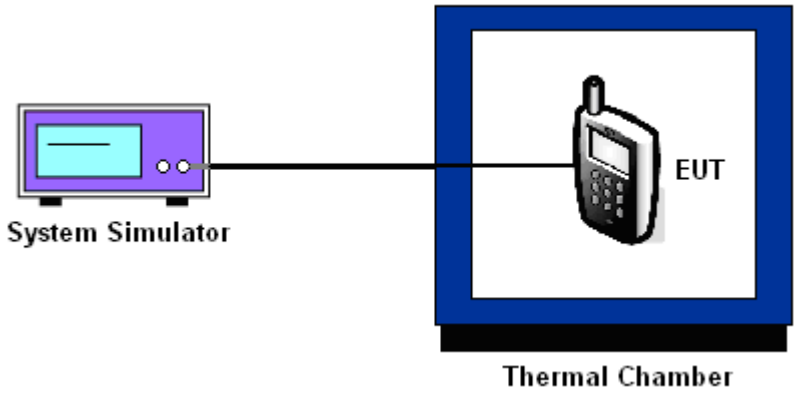
3.8.3 Test Procedures for Temperature Variation

1. The testing follows FCC KDB 971168 v02r02 Section 9.0.
2. The EUT was set up in the thermal chamber and connected with the system simulator.
3. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
4. With power OFF, the temperature was raised in 10°C steps up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.

3.8.4 Test Procedures for Voltage Variation

1. The testing follows FCC KDB 971168 v02r02 Section 9.0.
2. The EUT was placed in a temperature chamber at 25±5° C and connected with the system simulator.
3. The power supply voltage to the EUT was varied from BEP to 115% of the nominal value measured at the input to the EUT.
4. The variation in frequency was measured for the worst case.

3.8.5 Test Setup



3.8.6 Test Result of Temperature Variation

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

Temperature (°C)	GPRS class 8	EDGE class 8	Result
	Deviation (ppm)	Deviation (ppm)	
50	0.0562	0.0502	PASS
40	0.0167	0.0526	
30	0.0096	0.0072	
20(Ref.)	0.0000	0.0000	
10	0.0383	0.0060	
0	0.0227	0.0191	
-10	0.0108	0.0407	
-20	0.0215	0.0359	
-30	0.0634	0.0251	

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

Temperature (°C)	GPRS class 8	EDGE class 8	Result
	Deviation (ppm)	Deviation (ppm)	
50	0.0250	0.0207	PASS
40	0.0122	0.0138	
30	0.0191	0.0165	
20(Ref.)	0.0000	0.0000	
10	0.0037	0.0021	
0	0.0016	0.0122	
-10	0.0027	0.0032	
-20	0.0011	0.0112	
-30	0.0101	0.0090	

Note: The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.

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

Temperature (°C)	RMC 12.2Kbps Deviation (ppm)	Result
50	0.0681	PASS
40	0.0849	
30	0.0203	
20(Ref.)	0.0000	
10	0.0143	
0	0.0454	
-10	0.0490	
-20	0.0610	
-30	0.0526	

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

Temperature (°C)	RMC 12.2Kbps Deviation (ppm)	Result
50	0.0248	PASS
40	0.0277	
30	0.0121	
20(Ref.)	0.0000	
10	0.0063	
0	0.0115	
-10	0.0133	
-20	0.0139	
-30	0.0046	

Note: The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.

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

Temperature (°C)	RMC 12.2Kbps	Result
	Deviation (ppm)	
50	0.0309	PASS
40	0.0287	
30	0.0250	
20(Ref.)	0.0000	
10	0.0090	
0	0.0032	
-10	0.0197	
-20	0.0154	
-30	0.0160	

Note: The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.

3.8.7 Test Result of Voltage Variation

Band & Channel	Mode	Voltage (Volt)	Deviation (ppm)	Limit (ppm)	Result
GSM 850 CH189	GPRS class 8	4.2	0.0203	2.5	PASS
		3.8	0.0430		
		BEP	0.0120		
	EDGE class 8	4.2	0.0287		
		3.8	0.0084		
		BEP	0.0263		
GSM 1900 CH661	GPRS class 8	4.2	0.0085	(Note 3.)	
		3.8	0.0043		
		BEP	0.0176		
	EDGE class 8	4.2	0.0048		
		3.8	0.0059		
		BEP	0.0112		
WCDMA Band V CH4182	RMC 12.2Kbps	4.2	0.0323	2.5	
		3.8	0.0287		
		BEP	0.0658		
WCDMA Band IV CH1413	RMC 12.2Kbps	4.2	0.0190	(Note 3.)	
		3.8	0.0150		
		BEP	0.0006		
WCDMA Band II CH9400	RMC 12.2Kbps	4.2	0.0101	(Note 3.)	
		3.8	0.0016		
		BEP	0.0186		

Note:

1. Normal Voltage = 3.8V.
2. Battery End Point (BEP) = 3.6 V.
3. The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Oct. 28, 2014	Jul. 30, 2015~ Aug. 20, 2015	Oct. 27, 2015	Conducted (TH01-KS)
Spectrum Analyzer	R&S	FSV30	101338	9kHz~30GHz	May 04, 2015	Jul. 30, 2015~ Aug. 20, 2015	May 03, 2016	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-960502	-40~+150°C	Oct. 25, 2014	Jul. 30, 2015~ Aug. 20, 2015	Oct. 24, 2015	Conducted (TH01-KS)
EMI Test Receiver&SA	Agilent Technologies	N9038A	MY52260185	20Hz~26.5GHz	May 26, 2015	Aug. 07, 2015~ Aug. 15, 2015	May 25, 2016	Radiation (03CH01-SZ)
Spectrum Analyzer	R&S	FSV40	101041	10kHz~40GHz;Max 30dBm	Sep. 25, 2014	Aug. 07, 2015~ Aug. 15, 2015	Sep. 24, 2015	Radiation (03CH01-SZ)
Bilog Antenna	TeseQ	CBL6112D	23188	30MHz~2GHz	Nov. 07, 2014	Aug. 07, 2015~ Aug. 15, 2015	Nov. 06, 2015	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00119436	1GHz~18GHz	Oct. 15, 2014	Aug. 07, 2015~ Aug. 15, 2015	Oct. 14, 2015	Radiation (03CH01-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18GHz~40GHz	Sep. 04, 2014	Aug. 07, 2015~ Aug. 15, 2015	Sep. 03, 2015	Radiation (03CH01-SZ)
Amplifier	ADVANTEST	BB525C	E9007003	9kHz~3000MHz / 30 dB	Jan. 28, 2015	Aug. 07, 2015~ Aug. 15, 2015	Jan. 27, 2016	Radiation (03CH01-SZ)
Amplifier	Yiai	AV3860B	04030	2GHz~26.5GHz	May 05, 2015	Aug. 07, 2015~ Aug. 15, 2015	May 04, 2016	Radiation (03CH01-SZ)
Amplifier	Agilent Technologies	83017A	MY39501302	500MHz~26.5GHz	Jan. 28, 2015	Aug. 07, 2015~ Aug. 15, 2015	Jan. 27, 2016	Radiation (03CH01-SZ)
AC Power Source	Chroma	61601	616010001985	N/A	NCR	Aug. 07, 2015~ Aug. 15, 2015	NCR	Radiation (03CH01-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Aug. 07, 2015~ Aug. 15, 2015	NCR	Radiation (03CH01-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Aug. 07, 2015~ Aug. 15, 2015	NCR	Radiation (03CH01-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))	**3.9dB**