



FCC RF Test Report

APPLICANT : VERTU Corporation Limited
EQUIPMENT : Cellular Telephone
BRAND NAME : VERTU
MODEL NAME : ASTER T
TYPE NAME : VM-01T
FCC ID : P7QVM-01T
STANDARD : FCC 47 CFR Part 2, 22(H), 24(E), 27
CLASSIFICATION : PCS Licensed Transmitter Held to Ear (PCE)

The product was received on Sep. 26, 2014 and testing was completed on Nov. 10, 2014. We, SPORTON INTERNATIONAL 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 INC., the test report shall not be reproduced except in full.

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL INC.

No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG492650A	Rev. 01	Initial issue of report	Dec. 22, 2014



SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	§2.1046	Conducted Output Power	Reporting Only	PASS	-
3.2	§24.232(d)	Peak-to-Average Ratio	< 13 dB	PASS	-
3.3	§22.913(a)(2)	Effective Radiated Power	< 7 Watts	PASS	-
	§24.232(c)	Equivalent Isotropic Radiated Power	< 2 Watts	PASS	-
	§27.50(d)(4)	Equivalent Isotropic Radiated Power	< 1 Watts	PASS	-
3.4	§2.1049 §22.917(b) §24.238(b) §27.53(g)	Occupied Bandwidth	Reporting Only	PASS	-
3.5	§2.1051 §22.917(a) §24.238(a) §27.53(h)	Band Edge Measurement	< 43+10log10(P[Watts])	PASS	-
3.6	§2.1051 §22.917(a) §24.238(a) §27.53(h)	Conducted Emission	< 43+10log10(P[Watts])	PASS	-
3.7	§2.1053 §22.917(a) §24.238(a) §27.53(h)	Field Strength of Spurious Radiation	< 43+10log10(P[Watts])	PASS	Under limit 3.37 dB at 5730.000 MHz
3.8	§2.1055 §22.355	Frequency Stability for Temperature & Voltage	< 2.5 ppm for Part 22 Within Authorized Band	PASS	-
	§2.1055 §24.235 §27.54				



1 General Description

1.1 Applicant

VERTU Corporation Limited

Beacon Hill Road, Church Crookham, Hampshire GU52 8DY, United Kingdom

1.2 Manufacturer

VERTU Corporation Limited

Beacon Hill Road, Church Crookham, Hampshire GU52 8DY, United Kingdom

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Cellular Telephone
Brand Name	VERTU
Model Name	ASTER T
Type Name	VM-01T
FCC ID	P7QVM-01T
EUT supports Radios application	GSM/EGPRS/WCDMA/HSPA/LTE/NFC WLAN 11a/b/g/n HT20/HT40 WLAN 11ac VHT20/VHT40/VHT80 Bluetooth v4.0 EDR/LE
HW Version	F2
EUT Stage	Identical Prototype

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

List of Accessory:

Specification of Accessory		
AC Adapter	Brand Name	VERTU
	Model Name	AC-32V
Battery	Brand Name	VERTU
	Model Name	BP-9V
Car Charger	Brand Name	VERTU
	Model Name	DC-30V
Portable Power Charger	Brand Name	VERTU
	Model Name	DC-15V
Earphone 1	Brand Name	VERTU
	Model Name	WH-4V
Earphone 2	Brand Name	VERTU
	Model Name	WH-5V
Earphone 3	Brand Name	VERTU
	Model Name	HP-1V
USB Cable	Brand Name	VERTU
	Model Name	CA-225DV
Wireless Charger	Brand Name	VERTU
	Model Name	AC-35V
Wireless Speaker	Brand Name	VERTU
	Model Name	SP-1V

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 : 32.29 dBm GSM1900 : 29.10 dBm WCDMA Band V : 22.95 dBm WCDMA Band IV : 23.39 dBm WCDMA Band II : 23.19 dBm
99% Occupied Bandwidth	GSM850: 0.248MHz GSM1900: 0.250MHz WCDMA Band V: 4.20MHz WCDMA Band IV: 4.22MHz WCDMA Band II: 4.20MHz
Antenna Type	Monopole+parasitic Antenna
Type of Modulation	GSM: GMSK GPRS: GMSK EDGE: GMSK / 8PSK WCDMA: QPSK (Uplink) HSDPA: 64QAM (Downlink) HSUPA: QPSK (Uplink)

1.5 Modification of EUT

No modifications are made to the EUT during all test items.

1.6 Maximum ERP/EIRP Power, Frequency Tolerance, and Emission Designator

FCC Rule	System	Type of Modulation	Maximum ERP/EIRP (W)	Frequency Tolerance (ppm)	Emission Designator
Part 22	GSM850 GSM	GMSK	0.7798	0.0311 ppm	248KGXW
Part 22	GSM850 EDGE class 8	8PSK	0.1746	0.0072 ppm	246KG7W
Part 22	WCDMA Band V RMC 12.2Kbps	QPSK	0.0703	0.0167 ppm	4M20F9W
Part 24	GSM1900 GSM	GMSK	0.5534	0.0059 ppm	250KGXW
Part 24	GSM1900 EDGE class 8	8PSK	0.2113	0.0021 ppm	246KG7W
Part 24	WCDMA Band II RMC 12.2Kbps	QPSK	0.1337	0.0085 ppm	4M20F9W
Part 27	WCDMA Band IV RMC 12.2Kbps	QPSK	0.1300	0.0231 ppm	4M22F9W

1.7 Testing Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1022 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978	
Test Site No.	Sporton Site No.	
	TH02-HY	03CH07-HY

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
- KDB 648474 D03 Handset Wireless Chargers Battery Covers v01r02

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 9000 MHz for GSM850 and WCDMA Band V.
2. 30 MHz to 18000 MHz for WCDMA Band IV
3. 30 MHz to 19000 MHz for GSM1900 and WCDMA Band II.

All modes and data rates and positions were investigated.

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

Test Modes		
Band	Radiated TCs	Conducted TCs
GSM 850	■ GSM Link	■ GSM Link
	■ EDGE class 8 Link with WPC Charging	■ EDGE class 8 Link
GSM 1900	■ GSM Link	■ GSM Link
	■ EDGE class 8 Link	■ EDGE class 8 Link
WCDMA Band V	■ RMC 12.2Kbps Link with WPC Charging	■ 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:

1. The maximum power levels are chosen to test as the worst case configuration as follows:
GSM mode for GMSK modulation,
EDGE multi-slot class 8 mode for 8PSK modulation,
RMC 12.2Kbps mode for WCDMA band V and WCDMA band IV,
RMC 12.2Kbps mode for WCDMA band II, only these modes were used for all tests.
2. For Radiated TCs items, all tests were performed with USB Cable 1, AC Adapter 1, and Earphone 1



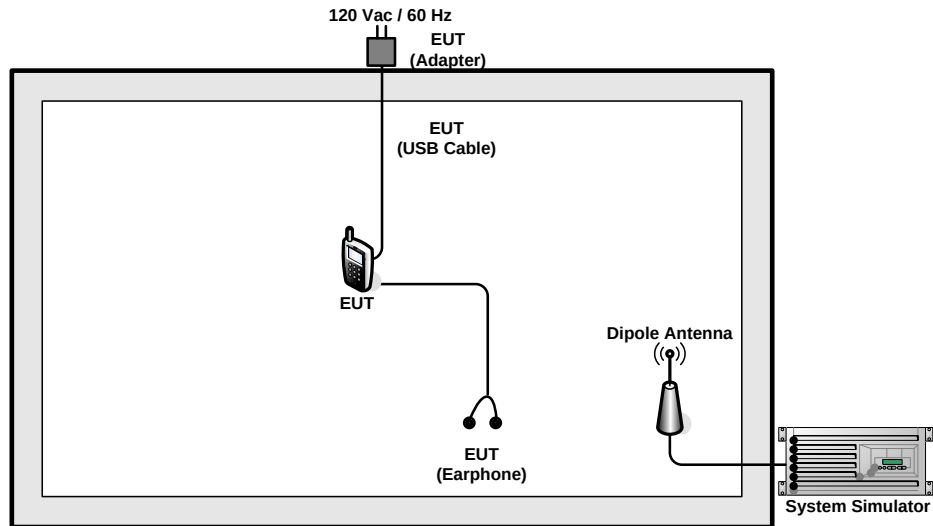
Conducted Power Measurement Results:

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	32.29	32.14	32.00	29.10	28.84	28.79
GPRS class 8	32.26	32.18	32.11	29.08	28.89	28.82
GPRS class 10	29.11	29.08	29.01	26.24	25.91	25.97
GPRS class 11	27.36	27.25	27.21	24.39	24.19	24.20
GPRS class 12	26.34	26.27	26.22	23.20	22.91	22.94
EGPRS class 8	25.94	25.69	25.77	25.33	25.00	25.11
EGPRS class 10	25.89	25.64	25.72	25.25	25.18	25.20
EGPRS class 11	26.00	25.88	25.95	25.12	25.05	25.08
EGPRS class 12	26.14	25.99	26.03	25.02	24.91	24.98

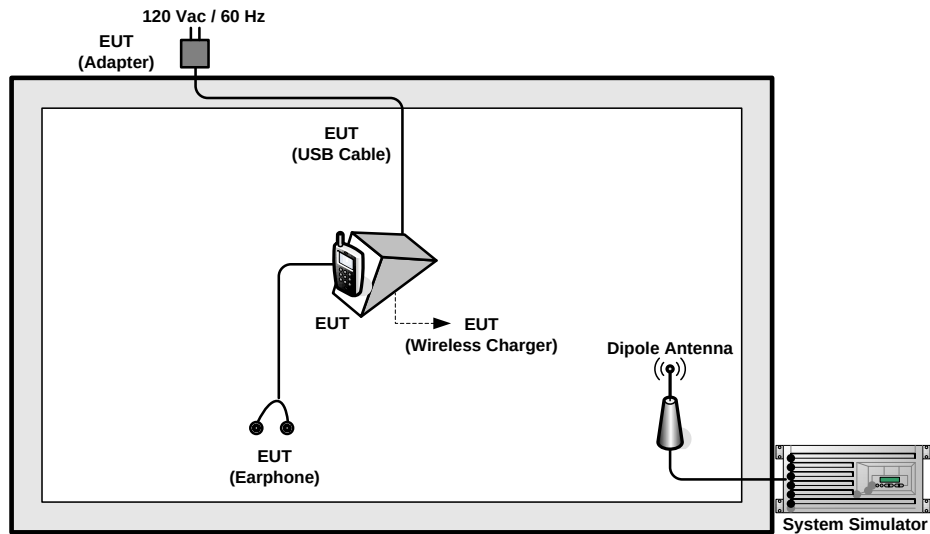
Conducted Power (*Unit: dBm)									
Band	WCDMA Band V			WCDMA Band II			WCDMA Band IV		
Channel	4132	4182	4233	9262	9400	9538	1312	1413	1513
Frequency	826.4	836.4	846.6	1852.4	1880	1907.6	1712.4	1732.6	1752.6
RMC 12.2K	22.89	22.95	22.78	22.34	23.19	23.12	23.39	22.96	22.89
HSDPA Subtest-1	21.97	22.03	21.95	21.31	22.14	22.14	22.41	22.00	21.85
HSDPA Subtest-2	21.99	21.98	21.89	21.35	22.22	22.13	22.42	22.06	21.89
HSDPA Subtest-3	21.41	21.56	21.94	20.81	21.65	21.64	21.94	21.53	21.27
HSDPA Subtest-4	21.47	21.46	21.30	20.79	21.62	21.55	21.92	21.51	21.23
HSUPA Subtest-1	21.53	21.51	21.69	21.20	21.95	21.73	22.42	22.33	22.28
HSUPA Subtest-2	20.80	20.41	20.30	20.23	20.95	20.35	20.94	20.88	20.85
HSUPA Subtest-3	20.43	20.39	20.31	20.00	20.55	20.74	20.88	20.82	20.73
HSUPA Subtest-4	20.67	21.39	20.60	20.72	21.13	21.33	21.42	21.36	21.32
HSUPA Subtest-5	21.80	22.00	21.70	21.20	22.00	22.00	22.40	22.35	22.31

2.2 Connection Diagram of Test System

<EUT with Adapter Mode>



<EUT with WPC charging mode>





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

2.4 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 4.2 dB and a 10dB attenuator.

Example :

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

3 Test Result

3.1 Conducted Output Power Measurement

3.1.1 Description of the Conducted Output Power Measurement

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

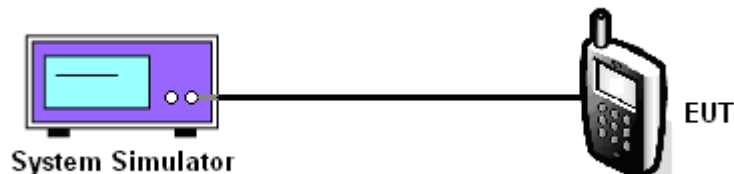
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

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

3.1.4 Test Setup



3.1.5 Test Result of Conducted Output Power

Cellular Band									
Modes	GSM850 (GSM)			GSM850 (EDGE class 8)			WCDMA Band V (RMC 12.2Kbps)		
Channel	128 (Low)	189 (Mid)	251 (High)	128 (Low)	189 (Mid)	251 (High)	4132 (Low)	4182 (Mid)	4233 (High)
Frequency (MHz)	824.2	836.4	848.8	824.2	836.4	848.8	826.4	836.4	846.6
Conducted Power (dBm)	32.29	32.14	32.00	25.94	25.69	25.77	22.89	22.95	22.78

PCS Band									
Modes	GSM1900 (GSM)			GSM1900 (EDGE class 8)			WCDMA Band II (RMC 12.2Kbps)		
Channel	512 (Low)	661 (Mid)	810 (High)	512 (Low)	661 (Mid)	810 (High)	9262 (Low)	9400 (Mid)	9538 (High)
Frequency (MHz)	1850.2	1880	1909.8	1850.2	1880	1909.8	1852.4	1880	1907.6
Conducted Power (dBm)	29.10	28.84	28.79	25.33	25.00	25.11	22.34	23.19	23.12

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)	23.39	22.96	22.89

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

3.2 Peak-to-Average Ratio

3.2.1 Description of the PAR Measurement

The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

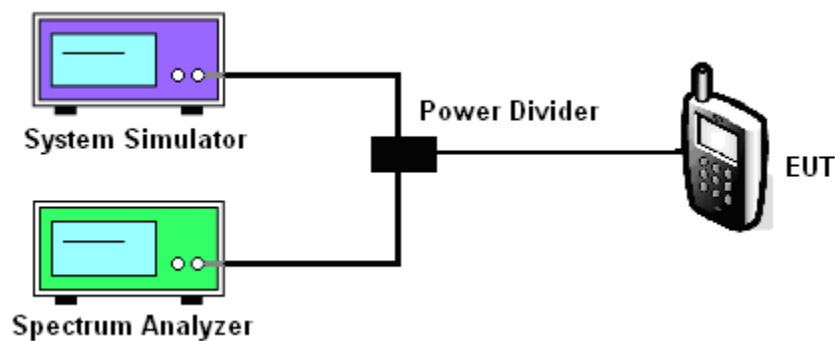
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. Set EUT to transmit at maximum output power.
3. When the duty cycle is less than 98%, then signal gating will be implemented on the spectrum analyzer by triggering from the system simulator.
4. Set the CCDF (Complementary Cumulative Distribution Function) option of the spectrum analyzer.
Record the maximum PAPR level associated with a probability of 0.1%.

3.2.4 Test Setup



3.2.5 Test Result of Peak-to-Average Ratio

Cellular Band									
Modes	GSM850 (GSM)			GSM850 (EDGE class 8)			WCDMA Band V (RMC 12.2Kbps)		
Channel	128 (Low)	189 (Mid)	251 (High)	128 (Low)	189 (Mid)	251 (High)	4132 (Low)	4182 (Mid)	4233 (High)
Frequency (MHz)	824.2	836.4	848.8	824.2	836.4	848.8	826.4	836.4	846.6
Peak-to-Average Ratio (dB)	0.28	0.28	0.32	3.12	3.12	3.28	3.60	3.60	3.20

PCS Band									
Modes	GSM1900 (GSM)			GSM1900 (EDGE class 8)			WCDMA Band II (RMC 12.2Kbps)		
Channel	512 (Low)	661 (Mid)	810 (High)	512 (Low)	661 (Mid)	810 (High)	9262 (Low)	9400 (Mid)	9538 (High)
Frequency (MHz)	1850.2	1880	1909.8	1850.2	1880	1909.8	1852.4	1880	1907.6
Peak-to-Average Ratio (dB)	0.24	0.24	0.24	3.20	3.12	3.08	3.56	3.60	3.56

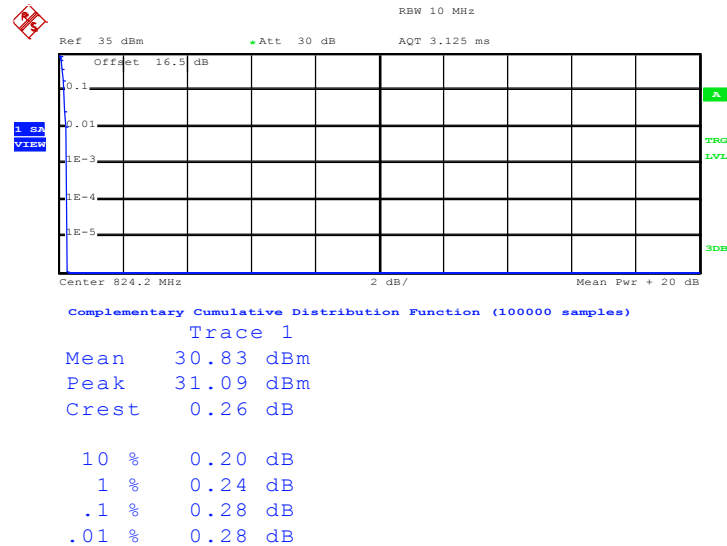
AWS Band			
Modes	WCDMA Band IV (RMC 12.2Kbps)		
Channel	1312 (Low)	1413 (Mid)	1513 (High)
Frequency (MHz)	1712.4	1732.6	1752.6
Peak-to-Average Ratio (dB)	3.32	3.40	3.20



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

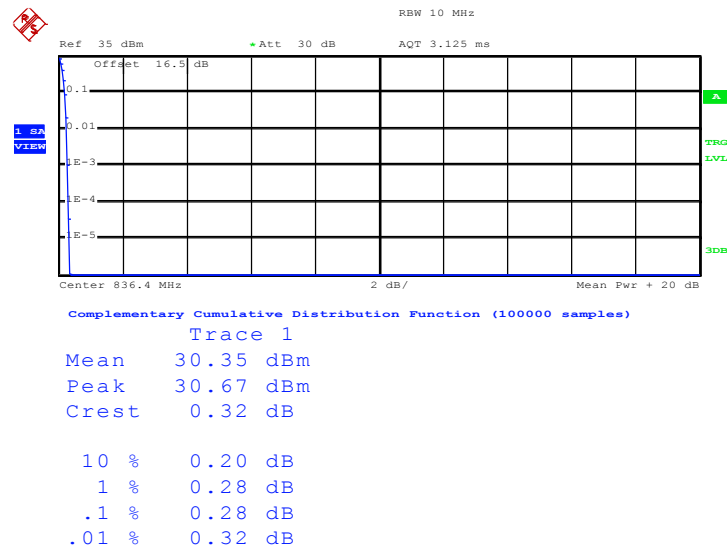
Band :	GSM 850	Test Mode :	GSM Link (GMSK)
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Peak-to-Average Ratio on Channel 128 (824.2 MHz)



Date: 24.OCT.2014 21:49:54

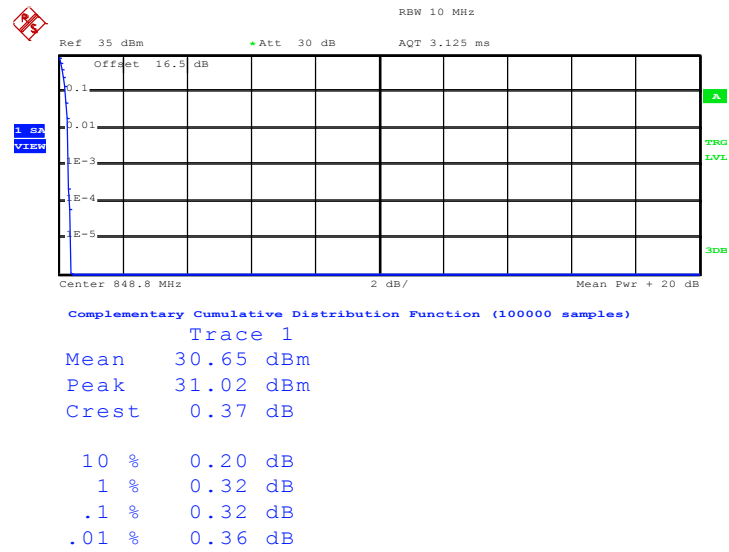
Peak-to-Average Ratio on Channel 189 (836.4 MHz)



Date: 24.OCT.2014 21:51:35



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

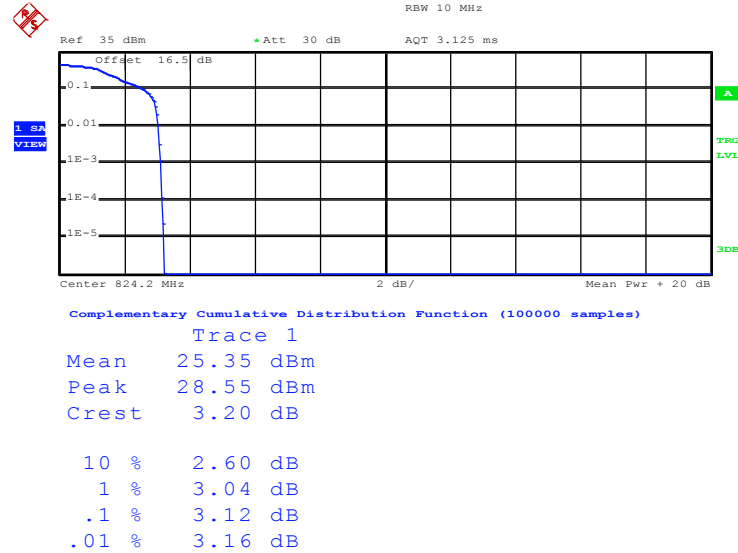


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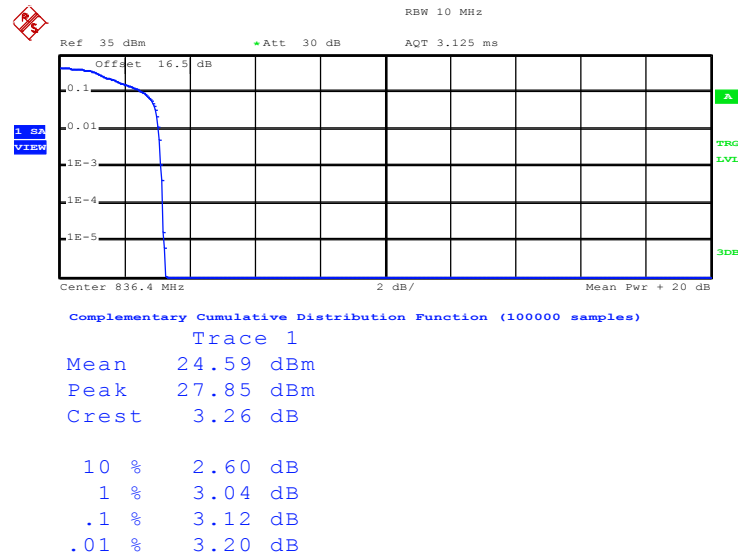
Band :	GSM 850	Test Mode :	EDGE class 8 Link (8PSK)
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Peak-to-Average Ratio on Channel 128 (824.2 MHz)



Date: 24.OCT.2014 22:29:17

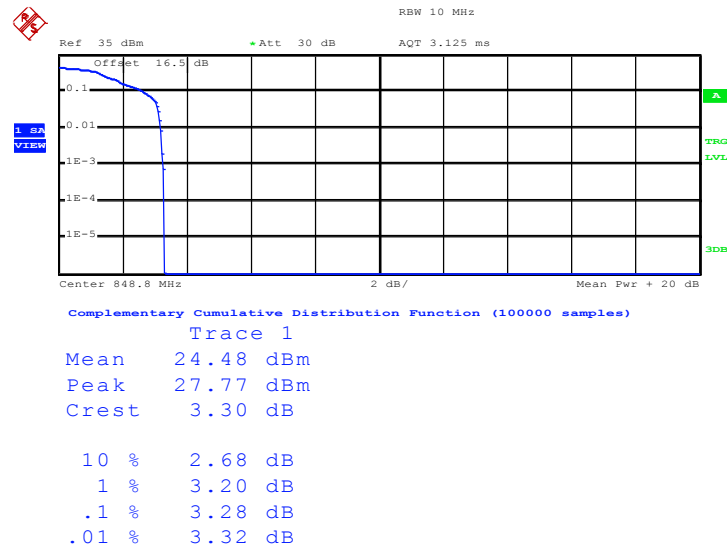
Peak-to-Average Ratio on Channel 189 (836.4 MHz)



Date: 24.OCT.2014 22:30:12



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

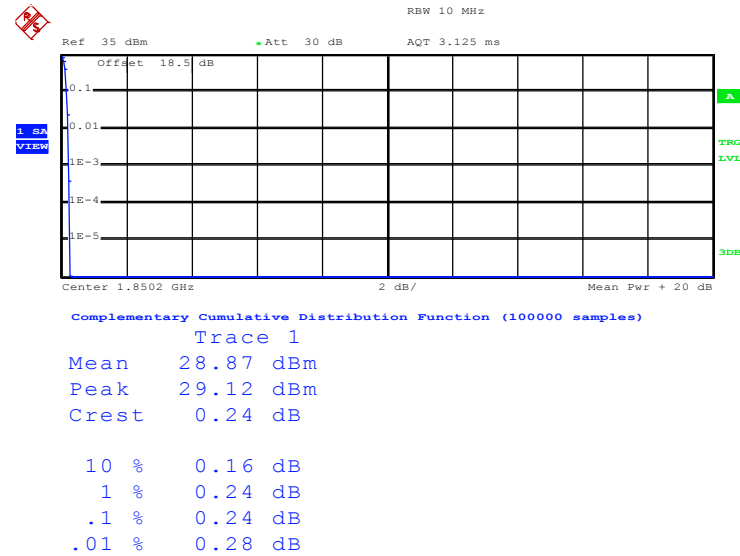


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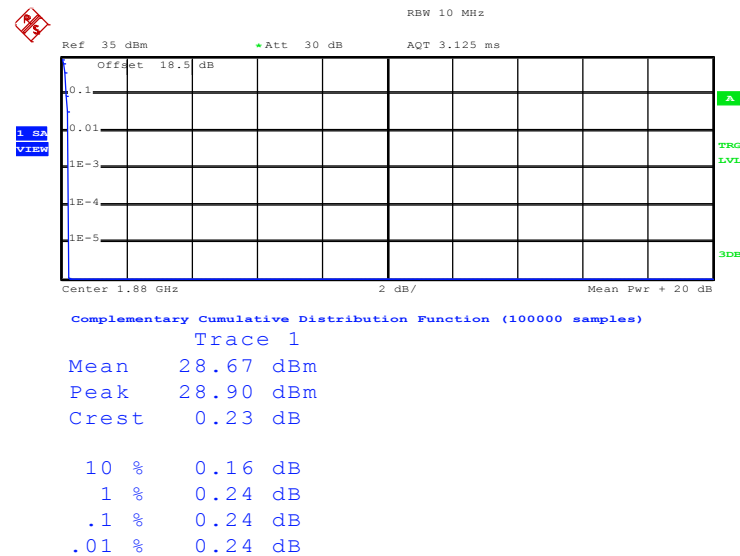
Band :	GSM 1900	Test Mode :	GSM Link (GMSK)
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Peak-to-Average Ratio on Channel 512 (1850.2 MHz)



Date: 24.OCT.2014 23:44:55

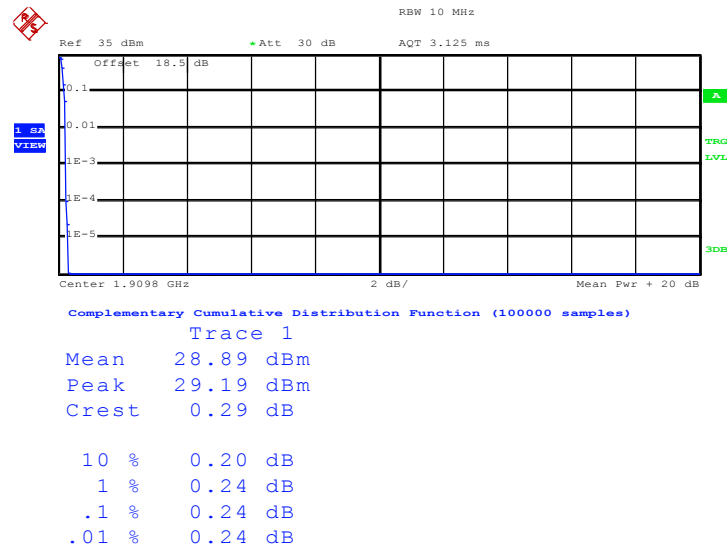
Peak-to-Average Ratio on Channel 661 (1880.0 MHz)



Date: 24.OCT.2014 23:46:03



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

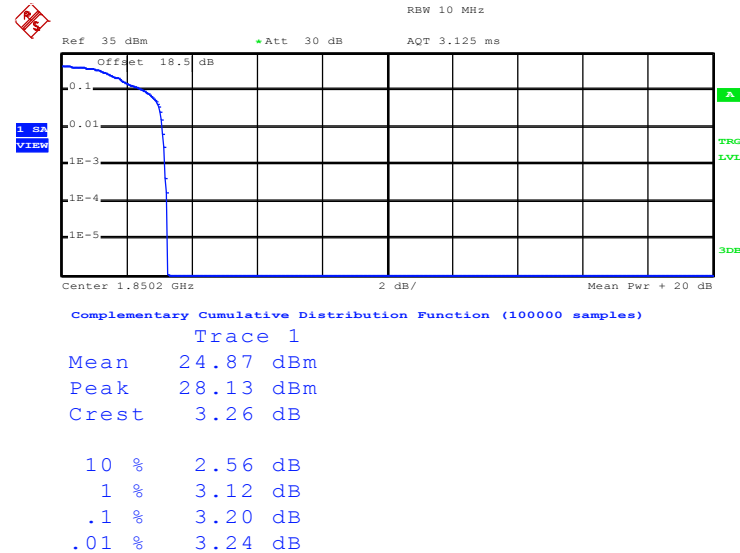


Date: 24.OCT.2014 23:47:04



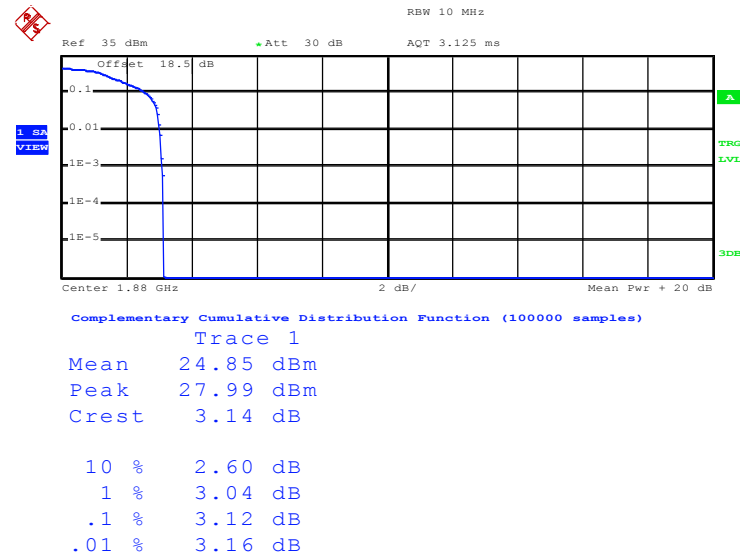
Band :	GSM 1900	Test Mode :	EDGE class 8 Link (8PSK)
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Peak-to-Average Ratio on Channel 512 (1850.2 MHz)



Date: 25.OCT.2014 00:10:09

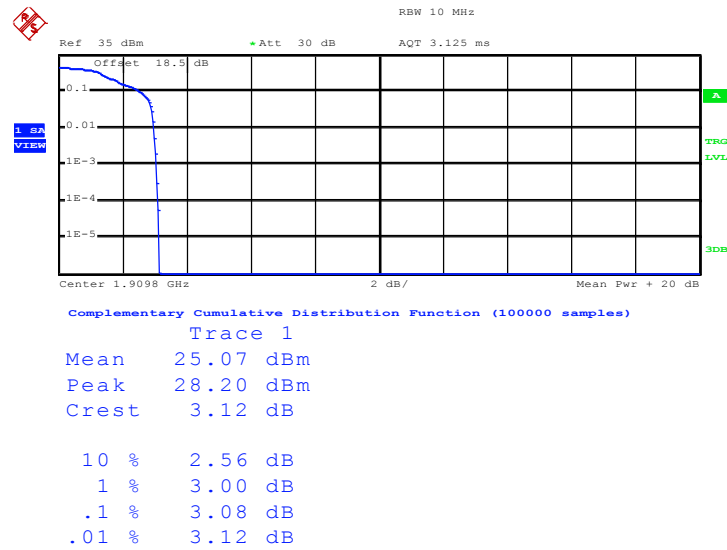
Peak-to-Average Ratio on Channel 661 (1880.0 MHz)



Date: 25.OCT.2014 00:11:31



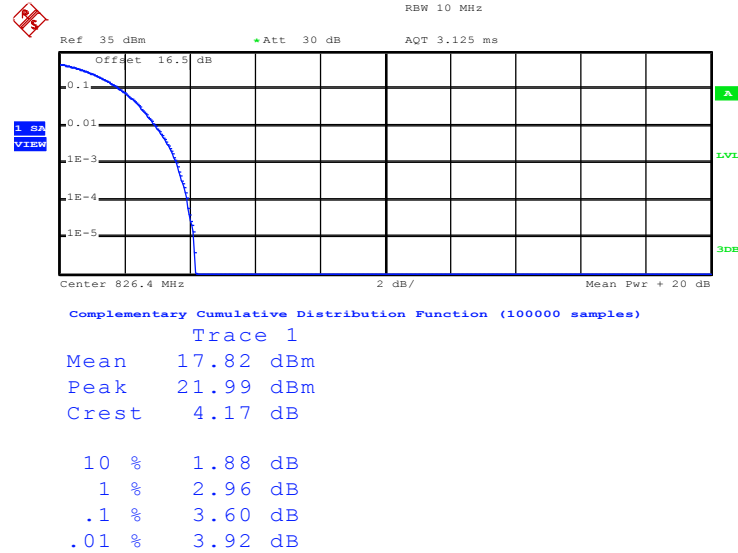
Peak-to-Average Ratio on Channel 810 (1909.8 MHz)



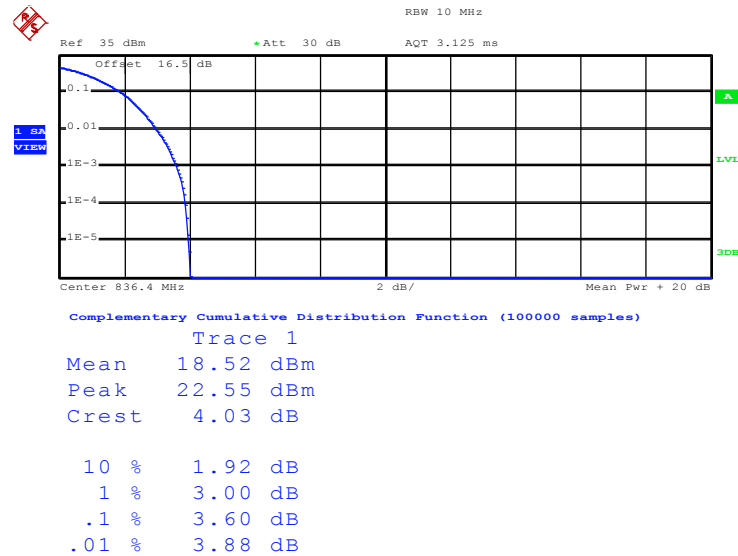
Date: 25.OCT.2014 00:12:55



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

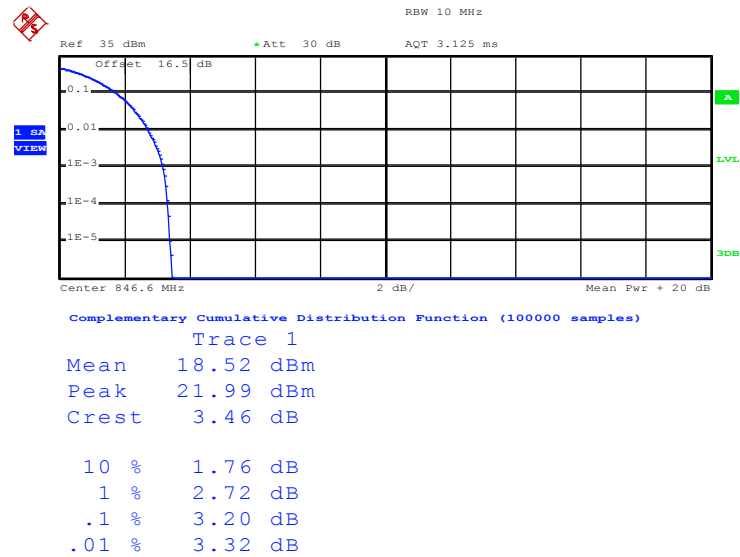
Date: 24.OCT.2014 23:17:43

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

Date: 24.OCT.2014 23:18:41



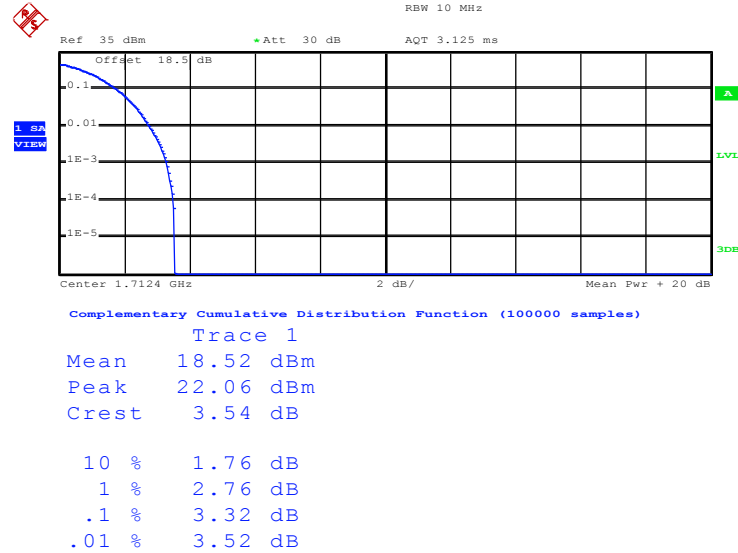
Peak-to-Average Ratio on Channel 4233 (846.6 MHz)



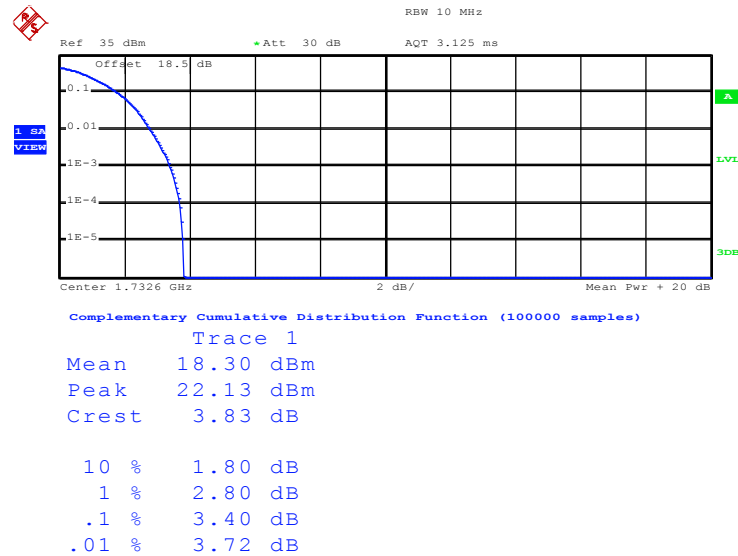
Date: 24.OCT.2014 23:19:34



Band :	WCDMA Band IV	Test Mode :	RMC 12.2Kbps Link (QPSK)
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Peak-to-Average Ratio on Channel 1312 (1712.4 MHz)

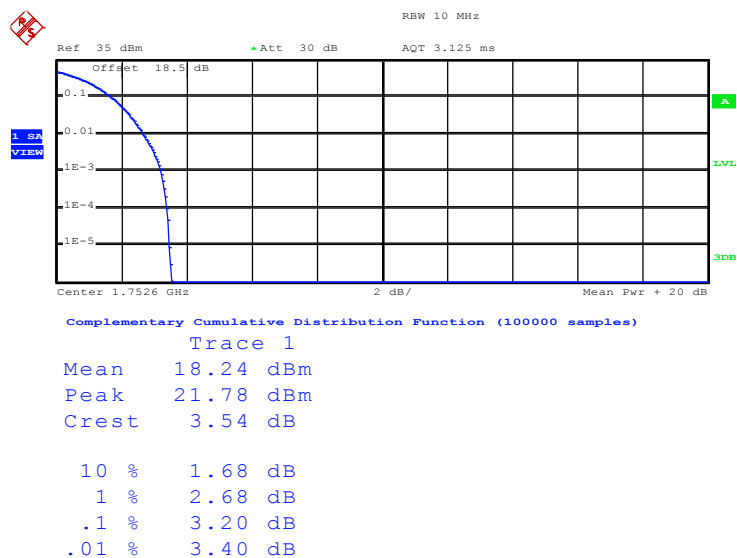
Date: 25.OCT.2014 01:04:14

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

Date: 25.OCT.2014 01:05:14



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

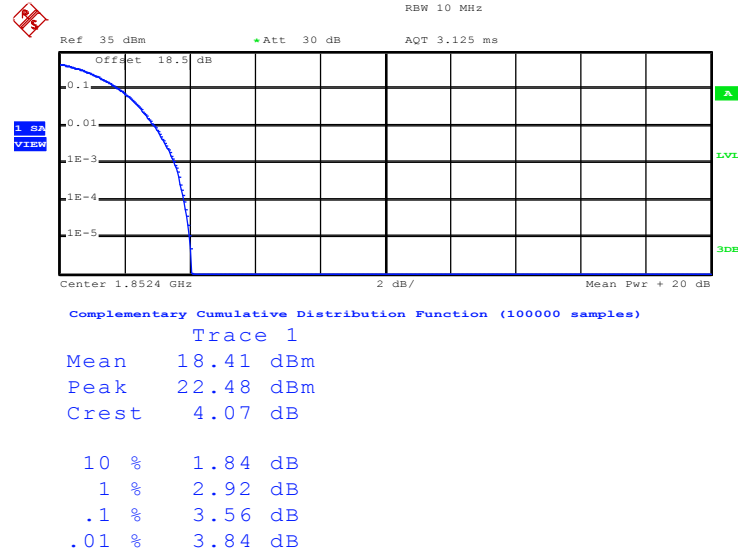


Date: 25.OCT.2014 01:06:05



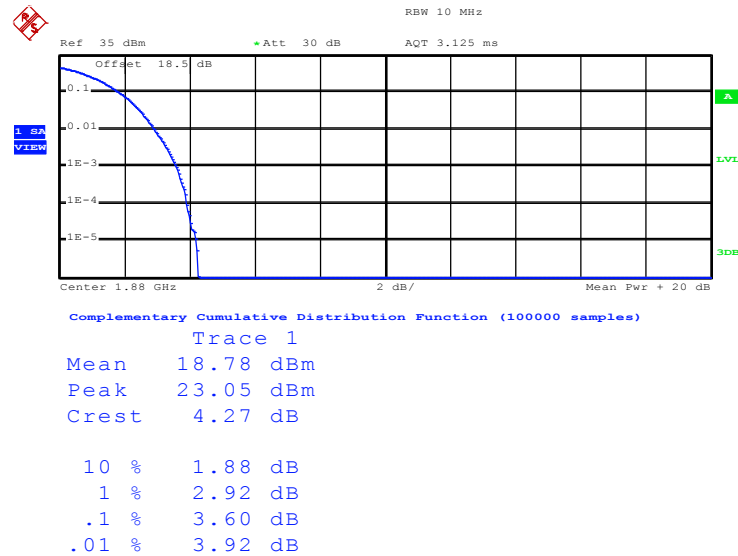
Band :	WCDMA Band II	Test Mode :	RMC 12.2Kbps Link (QPSK)
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Peak-to-Average Ratio on Channel 9262 (1852.4 MHz)



Date: 25.OCT.2014 00:37:47

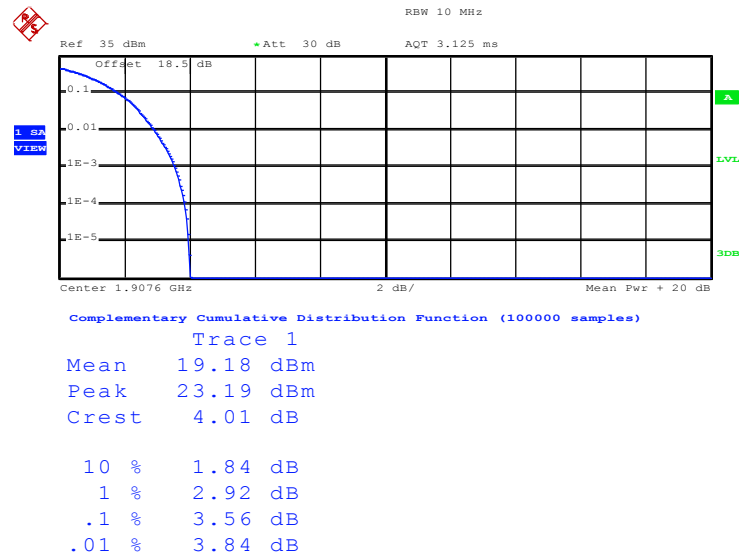
Peak-to-Average Ratio on Channel 9400 (1880.0 MHz)



Date: 25.OCT.2014 00:38:42



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



Date: 25.OCT.2014 00:41:50

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

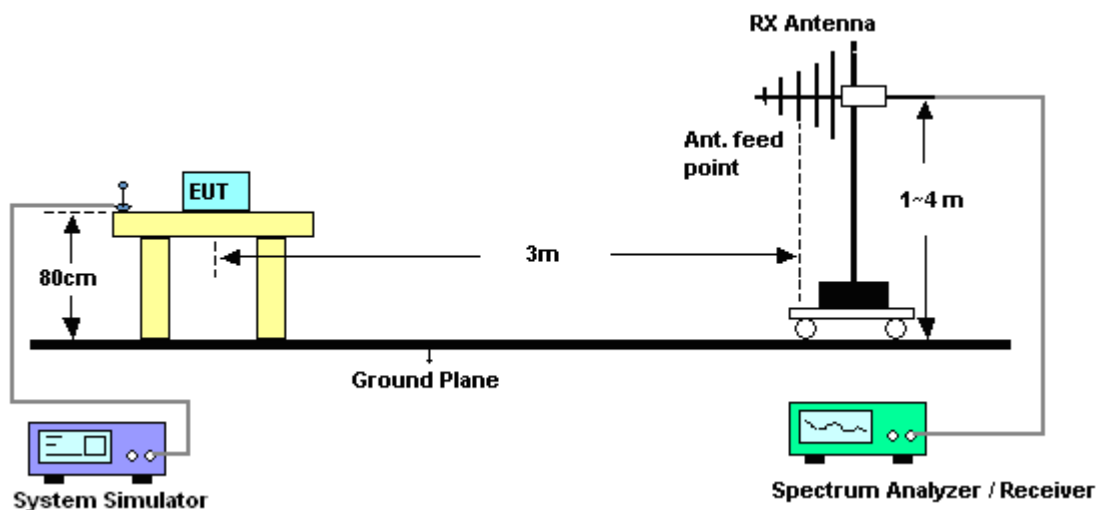
The measuring equipment is listed in the section 4 of this test report.

3.3.3 Test Procedures

1. The 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.
2. 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.
3. Effective Isotropic Radiated Power (EIRP) was measured by substitution method according to TIA/EIA-603-C. The EUT was replaced by dipole antenna (substitution antenna) at the 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, $EIRP = LVL + \text{Correction factor}$ and $ERP = EIRP - 2.15$.

	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 Setup



3.3.5 Test Result of ERP

GSM850 (GSM) Radiated Power ERP				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
824.2	-0.48	31.54	28.91	0.7780
836.4	-0.97	32.04	28.92	0.7798
848.8	-2.12	32.59	28.32	0.6792
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
824.2	-11.16	32.93	19.62	0.0916
836.4	-10.62	32.82	20.05	0.1012
848.8	-11.45	33.62	20.02	0.1005

* ERP = LVL (dBm) + Correction Factor (dB) – 2.15

GSM850 (EDGE class 8) Radiated Power ERP				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
824.2	-7.12	31.54	22.27	0.1687
836.4	-7.54	32.04	22.35	0.1718
848.8	-8.02	32.59	22.42	0.1746
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
824.2	-18.04	32.93	12.74	0.0188
836.4	-17.75	32.82	12.92	0.0196
848.8	-17.86	33.62	13.61	0.0230

* ERP = LVL (dBm) + Correction Factor (dB) – 2.15



WCDMA Band V (RMC 12.2Kbps) Radiated Power ERP				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
826.4	-11.73	31.44	17.56	0.0570
836.4	-12.04	32.04	17.85	0.0610
846.6	-12.01	32.63	18.47	0.0703
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
826.4	-21.55	32.78	9.08	0.0081
836.4	-21.67	32.82	9.00	0.0079
846.6	-21.75	33.4	9.50	0.0089

* ERP = LVL (dBm) + Correction Factor (dB) – 2.15

3.3.6 Test Result of EIRP

GSM1900 (GSM) Radiated Power EIRP				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1850.2	-18.30	45.34	27.04	0.5058
1880.0	-18.61	46.01	27.40	0.5495
1909.8	-18.38	45.81	27.43	0.5534
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1850.2	-22.42	49.22	26.80	0.4786
1880.0	-23.64	50.42	26.78	0.4764
1909.8	-22.50	49.00	26.50	0.4467

* EIRP = LVL (dBm) + Correction Factor (dB)

GSM1900 (EDGE class 8) Radiated Power EIRP				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1850.2	-22.18	45.34	23.16	0.2070
1880.0	-22.76	46.01	23.25	0.2113
1909.8	-23.37	45.81	22.44	0.1754
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1850.2	-27.02	49.22	22.20	0.1660
1880.0	-28.38	50.42	22.04	0.1600
1909.8	-27.73	49.00	21.27	0.1340

* EIRP = LVL (dBm) + Correction Factor (dB)



WCDMA Band IV (RMC 12.2Kbps) Radiated Power EIRP				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1712.4	-22.22	43.22	21.00	0.1259
1732.6	-22.44	43.49	21.05	0.1274
1752.6	-22.40	43.54	21.14	0.1300
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1712.4	-25.75	46.53	20.78	0.1197
1732.6	-25.55	46.43	20.88	0.1225
1752.6	-27.15	48.05	20.90	0.1230

* EIRP = LVL (dBm) + Correction Factor (dB)

WCDMA Band II (RMC 12.2Kbps) Radiated Power EIRP				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1852.4	-24.62	45.37	20.75	0.1189
1880.0	-24.76	46.01	21.25	0.1334
1907.6	-24.61	45.87	21.26	0.1337
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1852.4	-29.06	49.23	20.17	0.1040
1880.0	-30.81	50.42	19.61	0.0914
1907.6	-30.30	49.04	18.74	0.0748

* EIRP = LVL (dBm) + Correction Factor (dB)

3.4 99% Occupied Bandwidth and 26dB Bandwidth Measurement

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

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

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

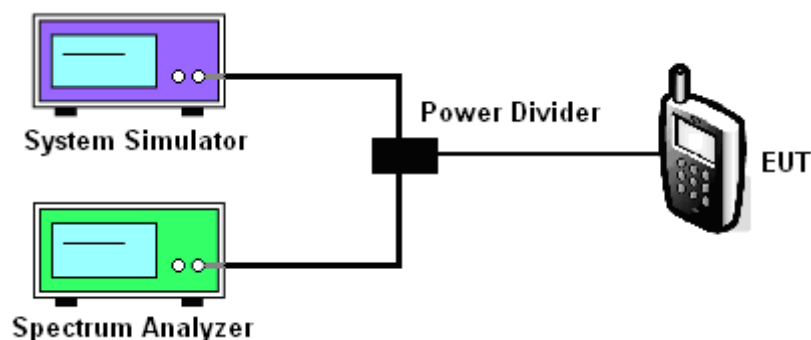
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

1. The testing follows FCC KDB 971168 v02r02 Section 4.2.
2. The EUT was connected to the spectrum analyzer and system simulator via a power divider.
3. 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.
4. The 99% occupied bandwidth were measured, set RBW= 1% of span, VBW= 3*RBW, sample detector, trace maximum hold.
5. The 26dB bandwidth were measured, set RBW= 1% of EBW, VBW= 3*RBW, peak detector, trace maximum hold.

3.4.4 Test Setup





3.4.5 Test Result of Occupied Bandwidth and 26dB Bandwidth

Cellular Band						
Modes	GSM850 (GSM)			GSM850 (EDGE class 8)		
Channel	128 (Low)	189 (Mid)	251 (High)	128 (Low)	189 (Mid)	251 (High)
Frequency (MHz)	824.2	836.4	848.8	824.2	836.4	848.8
99% OBW (kHz)	248.00	246.00	248.00	242.00	246.00	246.00
26dB BW (kHz)	292.00	310.00	314.00	304.00	298.00	308.00

PCS Band						
Modes	GSM1900 (GSM)			GSM1900 (EDGE class 8)		
Channel	512 (Low)	661 (Mid)	810 (High)	512 (Low)	661 (Mid)	810 (High)
Frequency (MHz)	1850.2	1880	1909.8	1850.2	1880	1909.8
99% OBW (kHz)	248.00	242.00	250.00	246.00	246.00	246.00
26dB BW (kHz)	314.00	302.00	312.00	312.00	310.00	308.00

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)	4.20	4.20	4.20
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)	4.22	4.20	4.20
26dB BW (MHz)	4.68	4.68	4.68



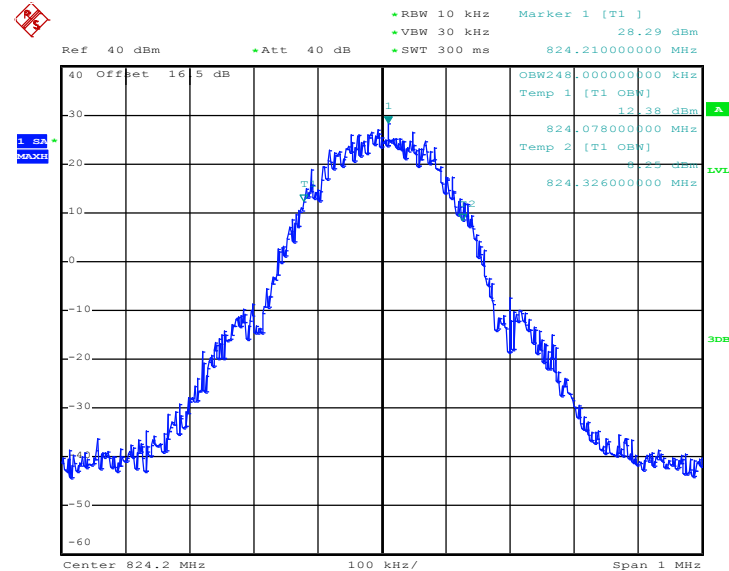
PCS Band			
Modes	WCDMA Band II (RMC 12.2Kbps)		
Channel	9262 (Low)	9400 (Mid)	9538 (High)
Frequency (MHz)	1852.4	1880	1907.6
99% OBW (MHz)	4.20	4.18	4.20
26dB BW (MHz)	4.68	4.68	4.68



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

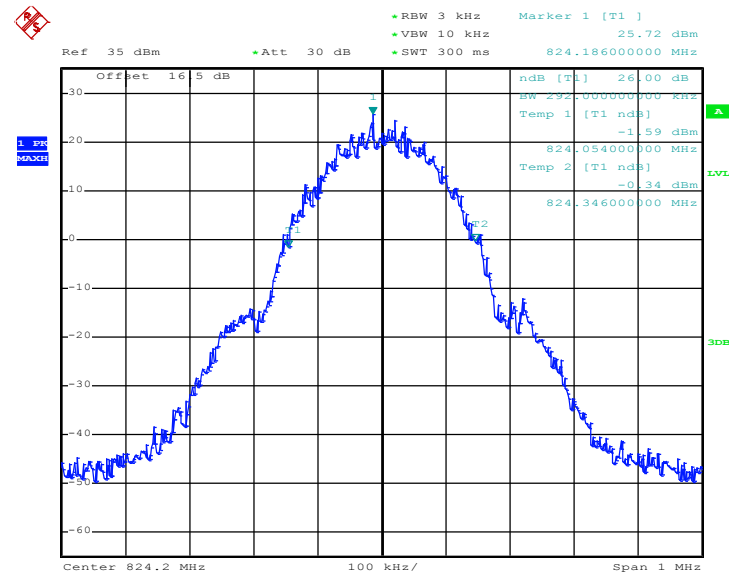
Band :	GSM 850	Test Mode :	GSM Link (GMSK)
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99% Occupied Bandwidth Plot on Channel 128 (824.2 MHz)



Date: 29.OCT.2014 15:20:30

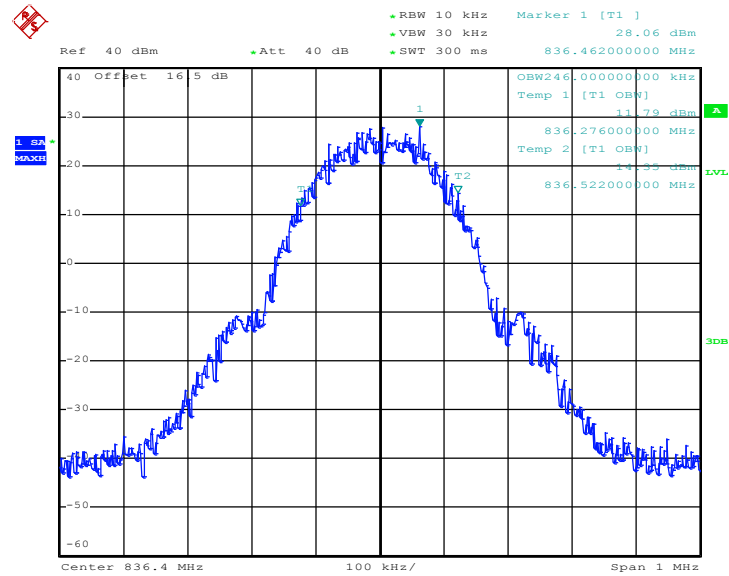
26dB Bandwidth Plot on Channel 128 (824.2 MHz)



Date: 24.OCT.2014 21:29:18

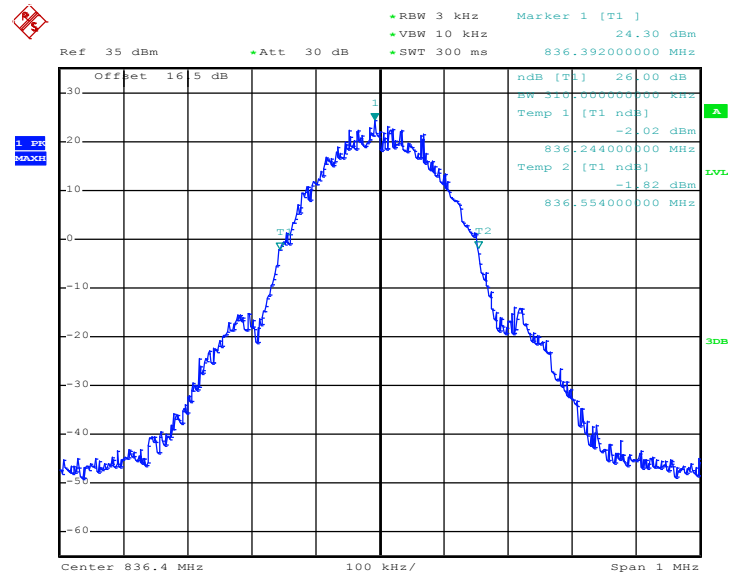


99% Occupied Bandwidth Plot on Channel 189 (836.4 MHz)

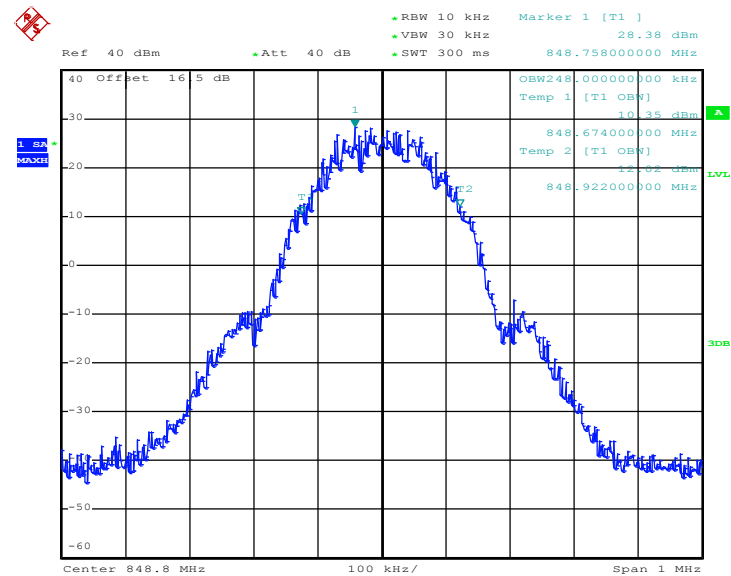


Date: 29.OCT.2014 15:21:03

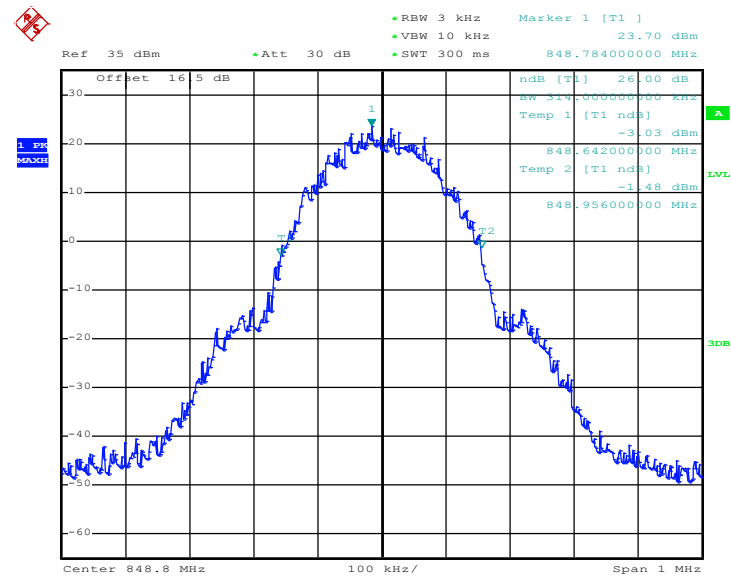
26dB Bandwidth Plot on Channel 189 (836.4 MHz)



Date: 24.OCT.2014 21:29:53

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


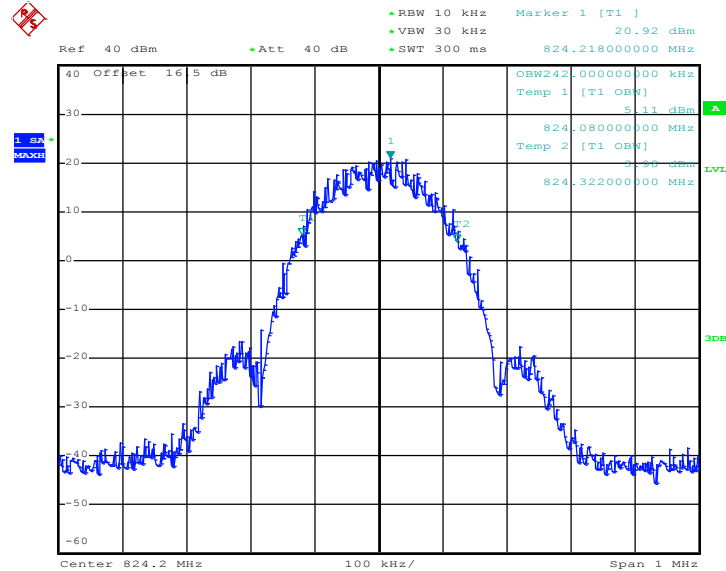
Date: 29.OCT.2014 15:21:36

26dB Bandwidth Plot on Channel 251 (848.8 MHz)


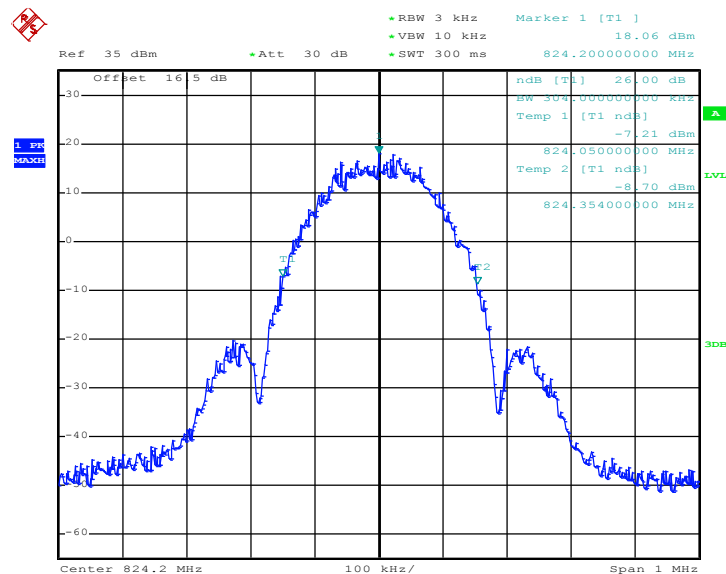
Date: 24.OCT.2014 21:30:27



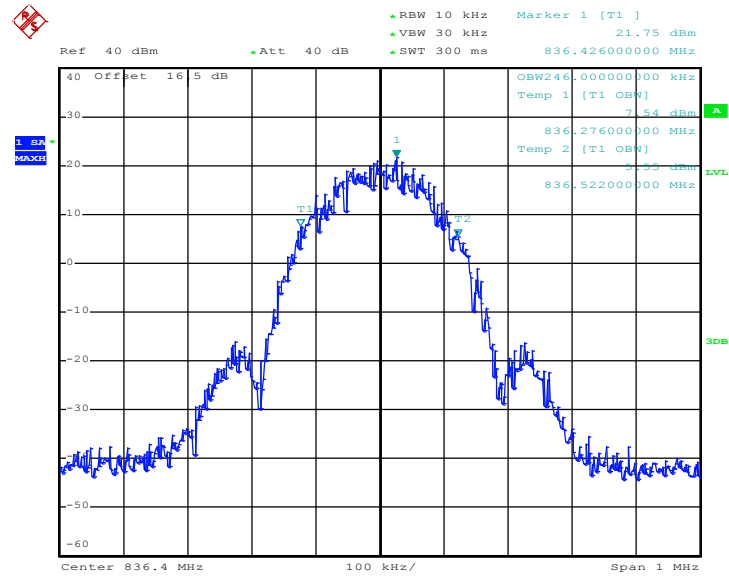
Band :	GSM 850	Test Mode :	EDGE class 8 Link (8PSK)
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99% Occupied Bandwidth Plot on Channel 128 (824.2 MHz)

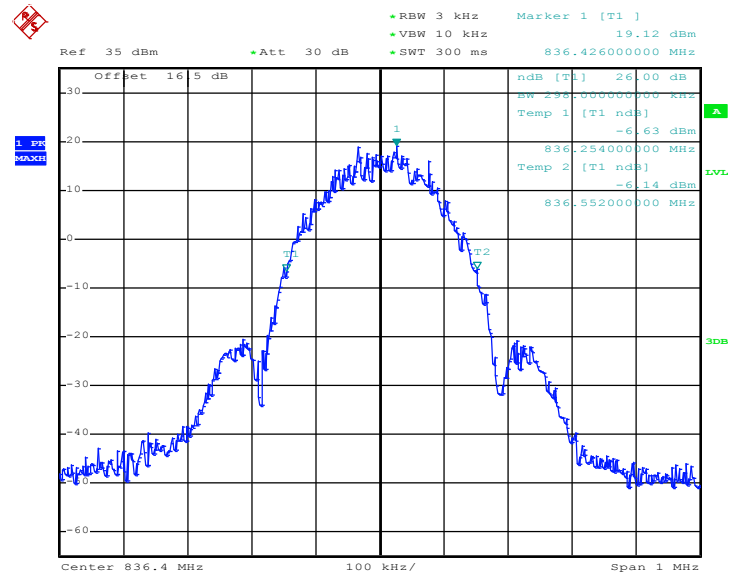
Date: 29.OCT.2014 15:28:28

26dB Bandwidth Plot on Channel 128 (824.2 MHz)

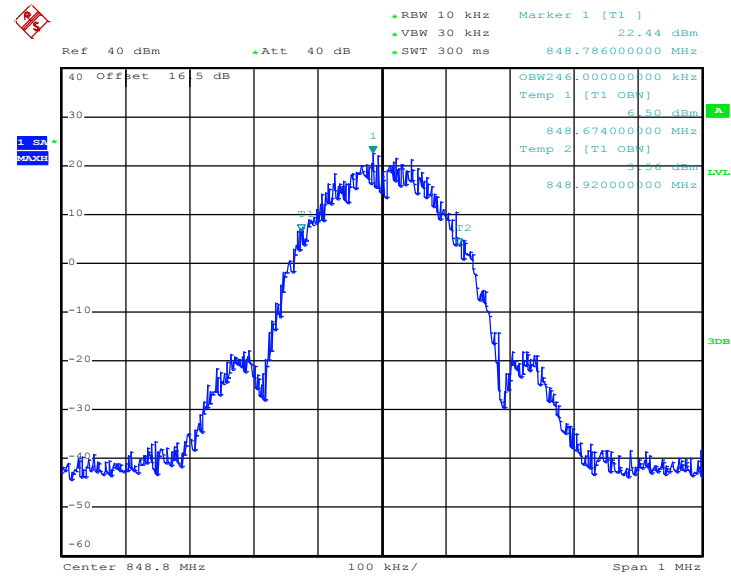
Date: 29.OCT.2014 15:31:46

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


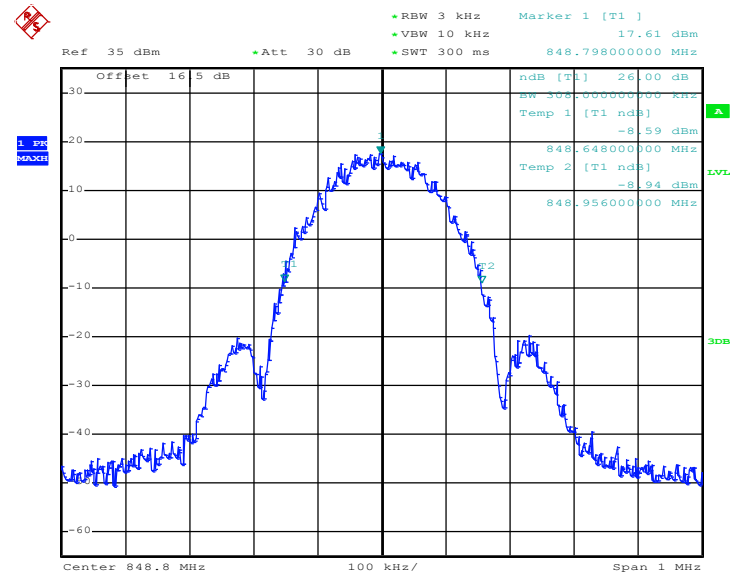
Date: 29.OCT.2014 15:29:02

26dB Bandwidth Plot on Channel 189 (836.4 MHz)


Date: 29.OCT.2014 15:32:21

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


Date: 29.OCT.2014 15:29:37

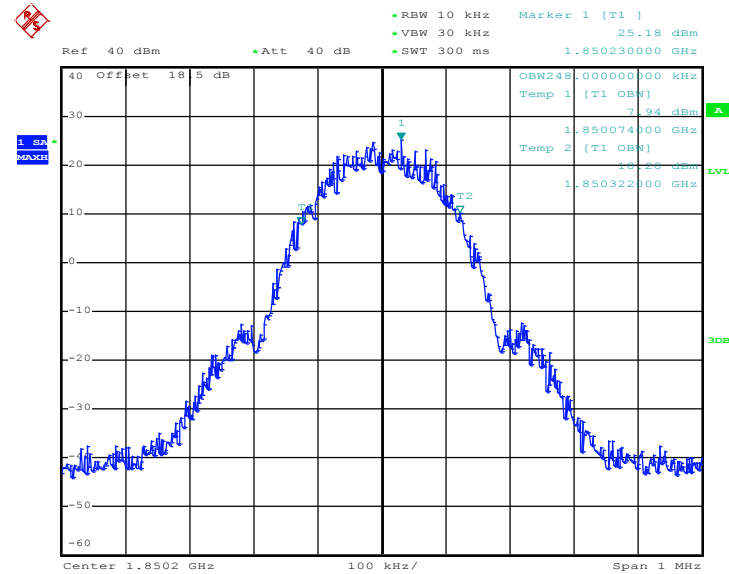
26dB Bandwidth Plot on Channel 251 (848.8 MHz)


Date: 29.OCT.2014 15:32:59



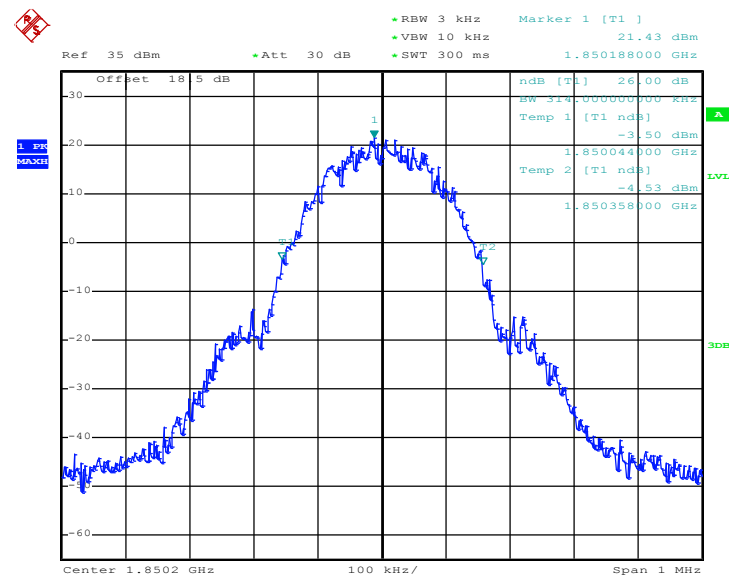
Band :	GSM 1900	Test Mode :	GSM Link (GMSK)
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99% Occupied Bandwidth Plot on Channel 512 (1850.2 MHz)

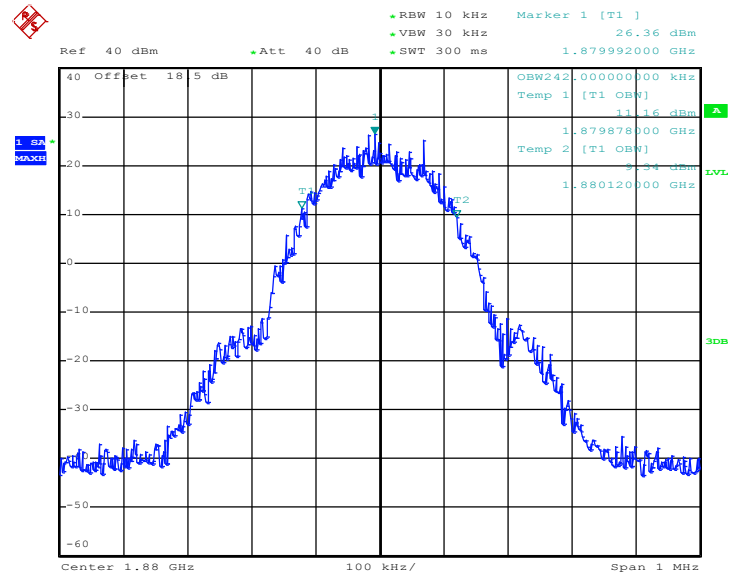


Date: 24.OCT.2014 23:28:36

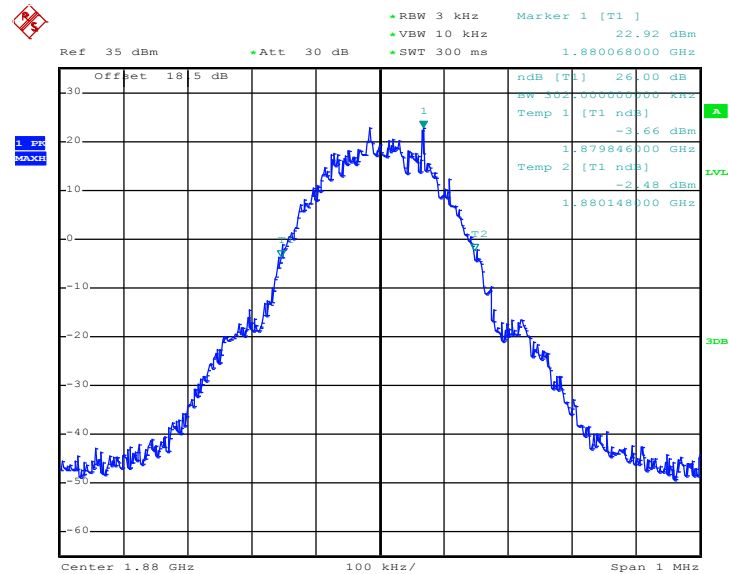
26dB Bandwidth Plot on Channel 512 (1850.2 MHz)



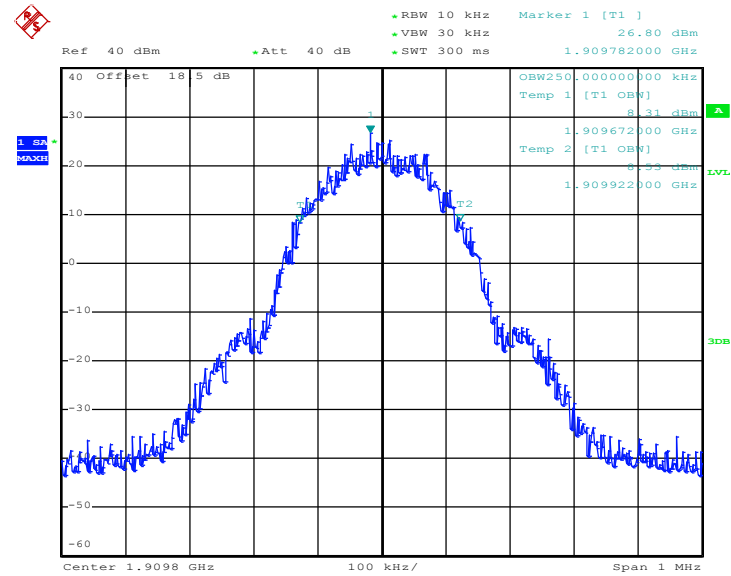
Date: 29.OCT.2014 16:12:53

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


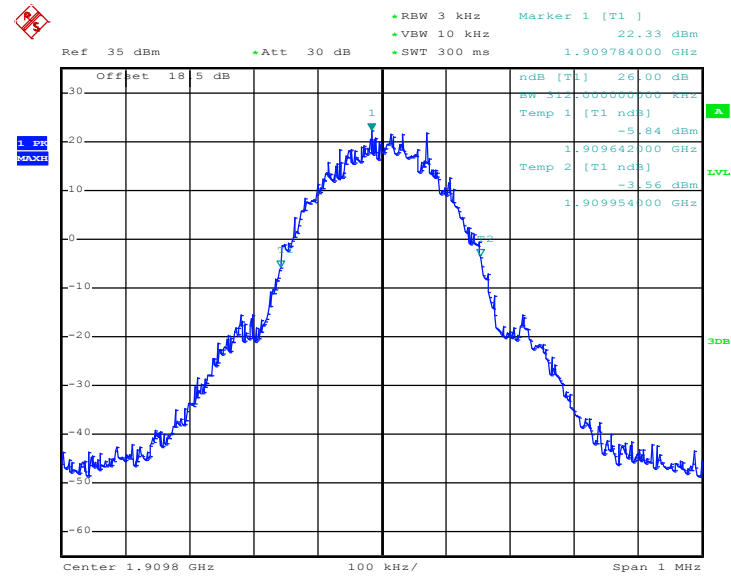
Date: 24.OCT.2014 23:29:12

26dB Bandwidth Plot on Channel 661 (1880.0 MHz)


Date: 29.OCT.2014 16:13:29

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


Date: 24.OCT.2014 23:29:49

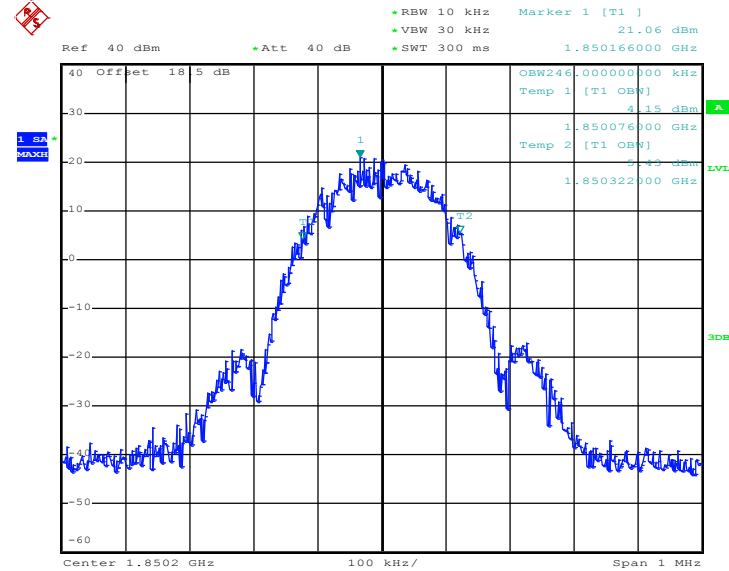
26dB Bandwidth Plot on Channel 810 (1909.8 MHz)


Date: 29.OCT.2014 16:14:02



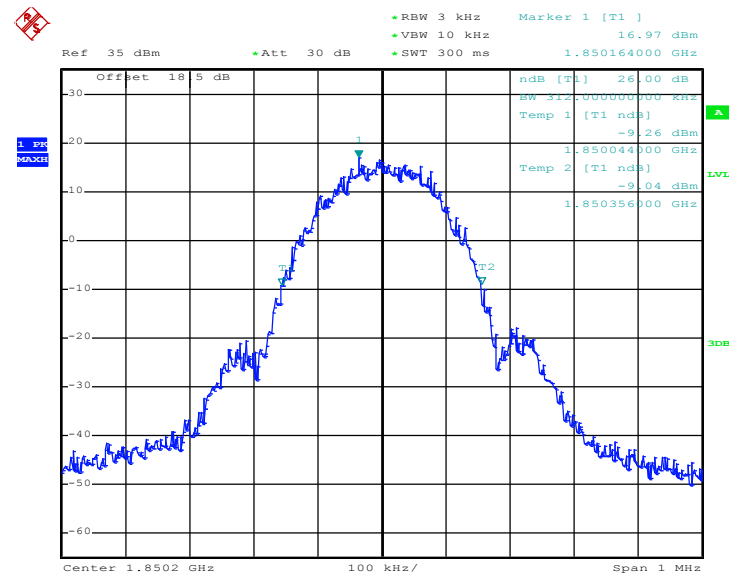
Band :	GSM 1900	Test Mode :	EDGE class 8 Link (8PSK)
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99% Occupied Bandwidth Plot on Channel 512 (1850.2 MHz)



Date: 24.OCT.2014 23:53:55

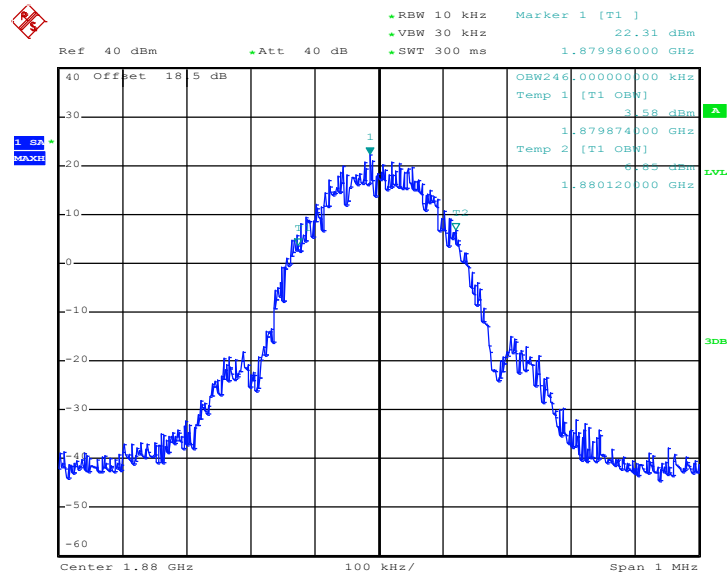
26dB Bandwidth Plot on Channel 512 (1850.2 MHz)



Date: 29.OCT.2014 16:25:52

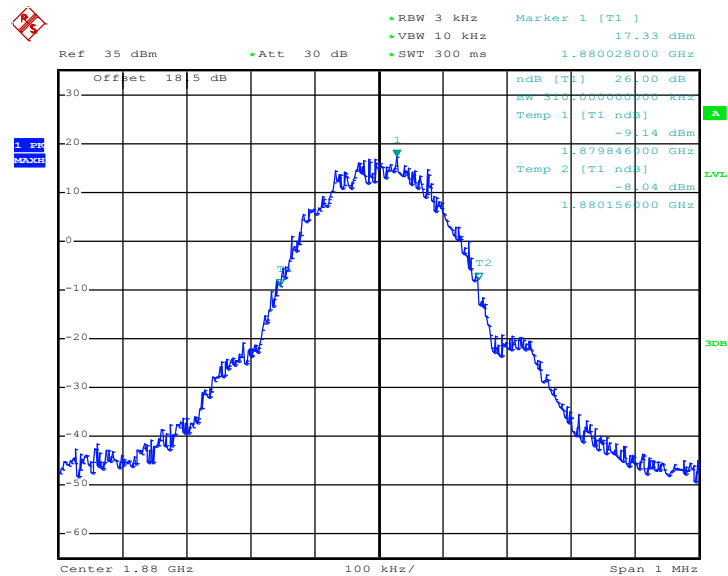


99% Occupied Bandwidth Plot on Channel 661 (1880.0 MHz)



Date: 24.OCT.2014 23:54:36

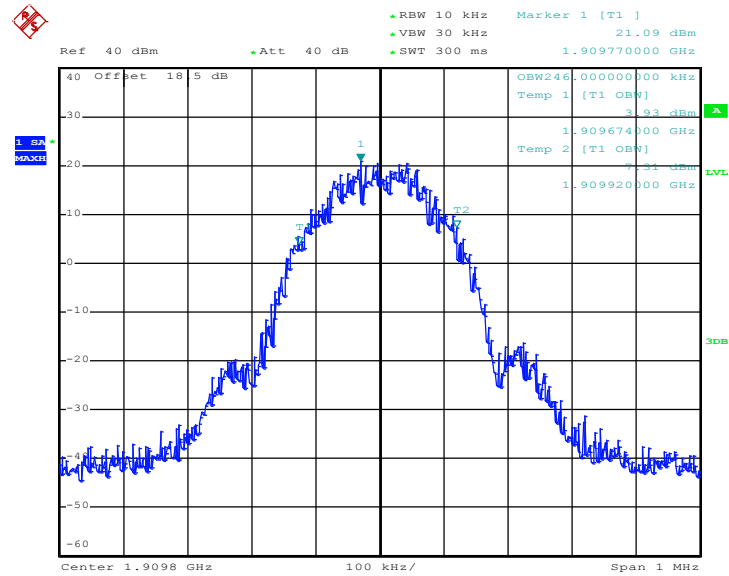
26dB Bandwidth Plot on Channel 661 (1880.0 MHz)



Date: 29.OCT.2014 16:26:26

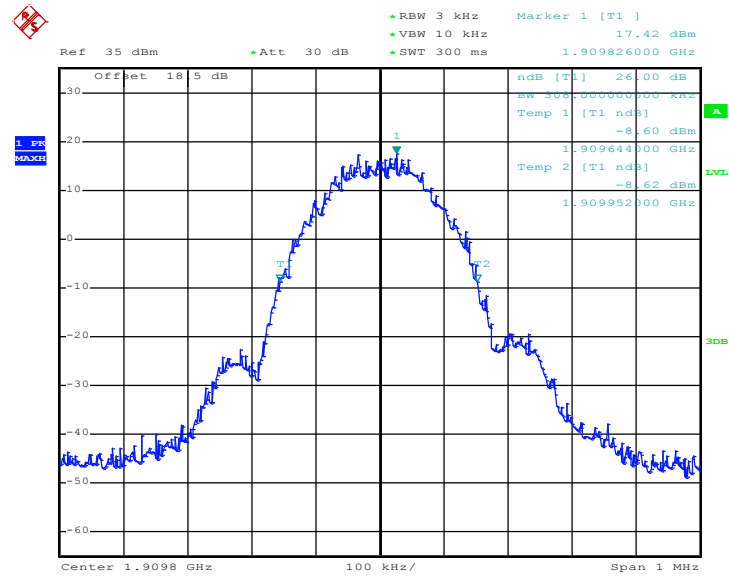


99% Occupied Bandwidth Plot on Channel 810 (1909.8 MHz)



Date: 24.OCT.2014 23:55:19

26dB Bandwidth Plot on Channel 810 (1909.8 MHz)

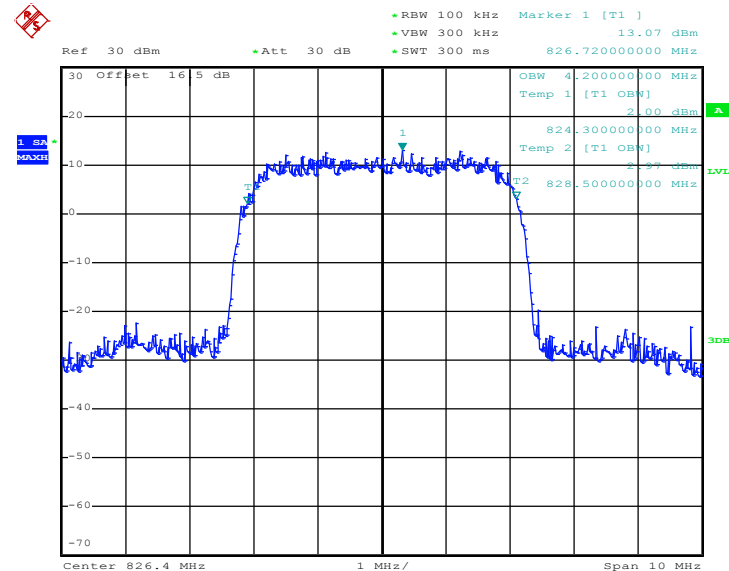


Date: 29.OCT.2014 16:27:00



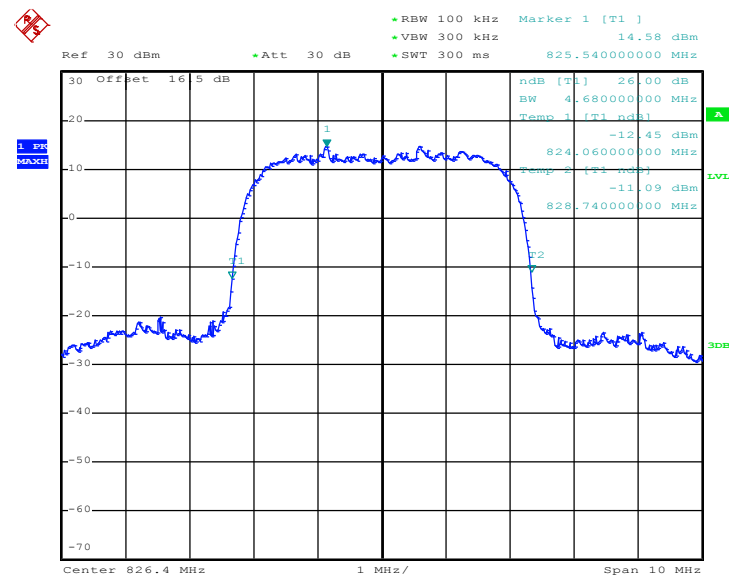
Band :	WCDMA Band V	Test Mode :	RMC 12.2Kbps Link (QPSK)
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99% Occupied Bandwidth Plot on Channel 4132 (826.4 MHz)

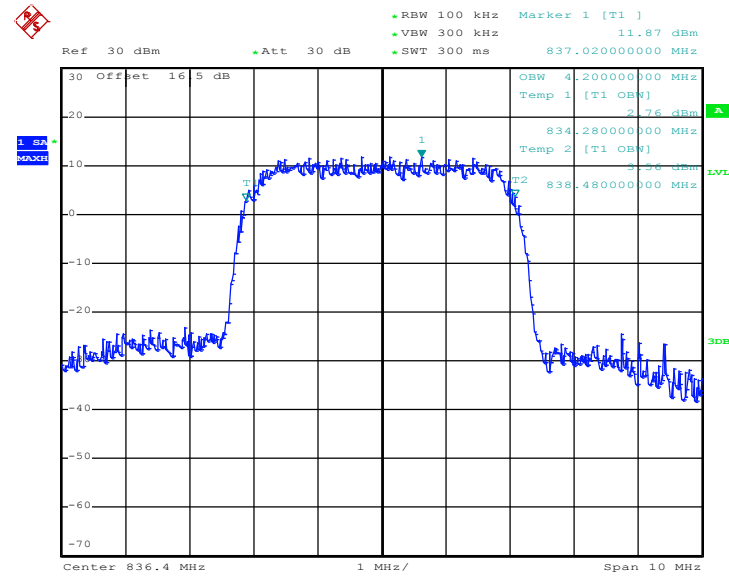


Date: 24.OCT.2014 22:54:59

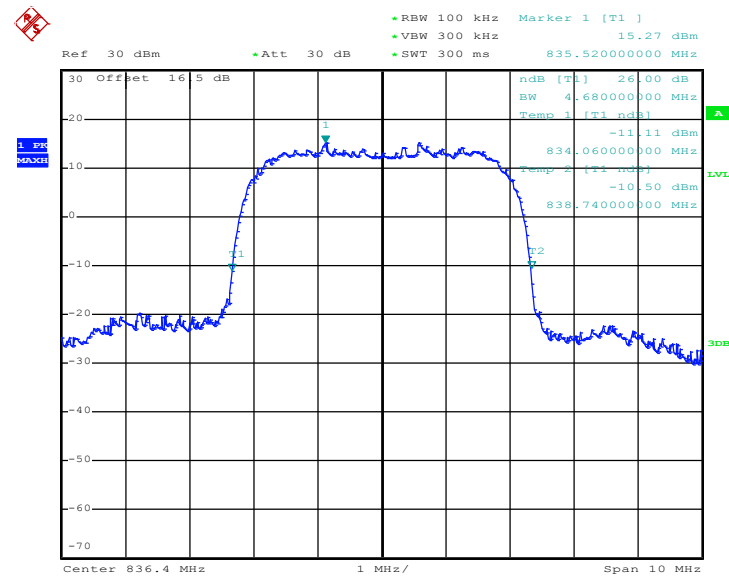
26dB Bandwidth Plot on Channel 4132 (826.4 MHz)



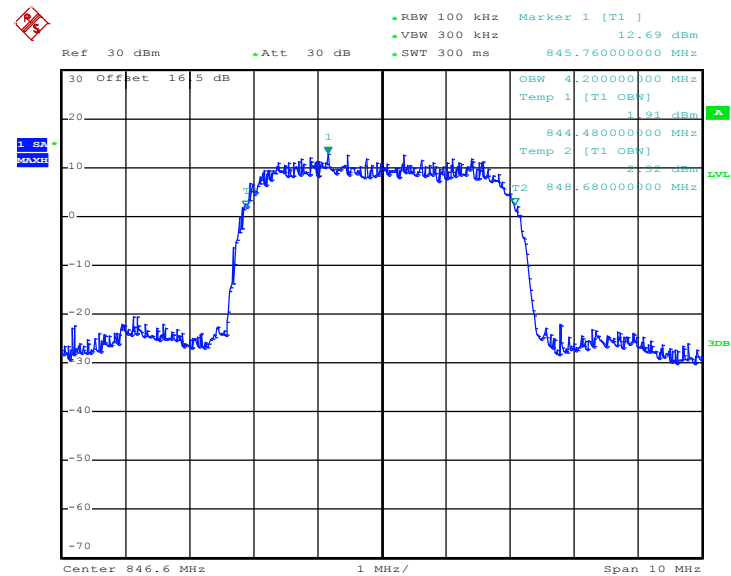
Date: 24.OCT.2014 22:52:27

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


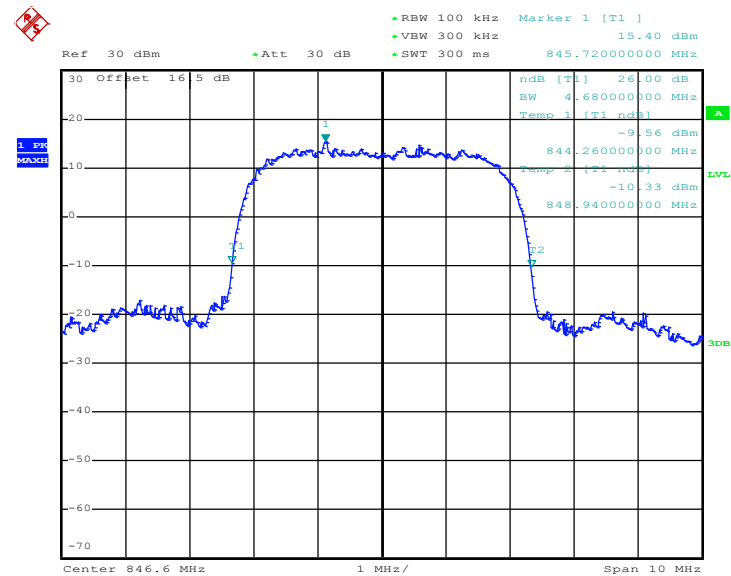
Date: 24.OCT.2014 22:55:54

26dB Bandwidth Plot on Channel 4182 (836.4 MHz)


Date: 24.OCT.2014 22:53:08

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


Date: 24.OCT.2014 22:56:36

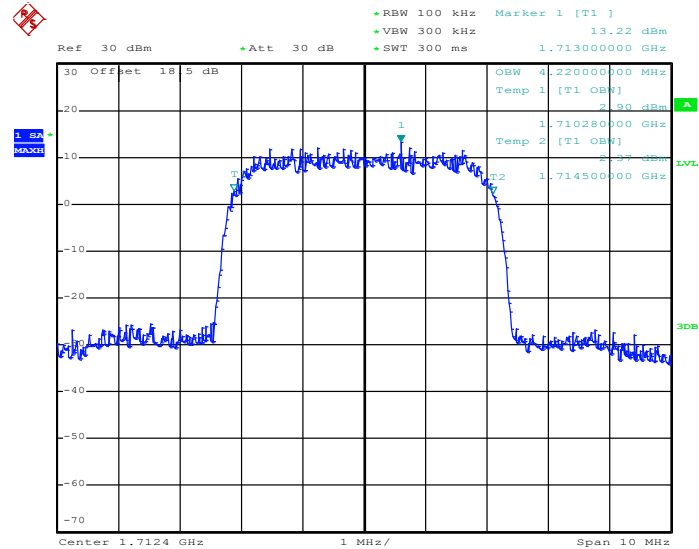
26dB Bandwidth Plot on Channel 4233 (846.6 MHz)


Date: 24.OCT.2014 22:53:58



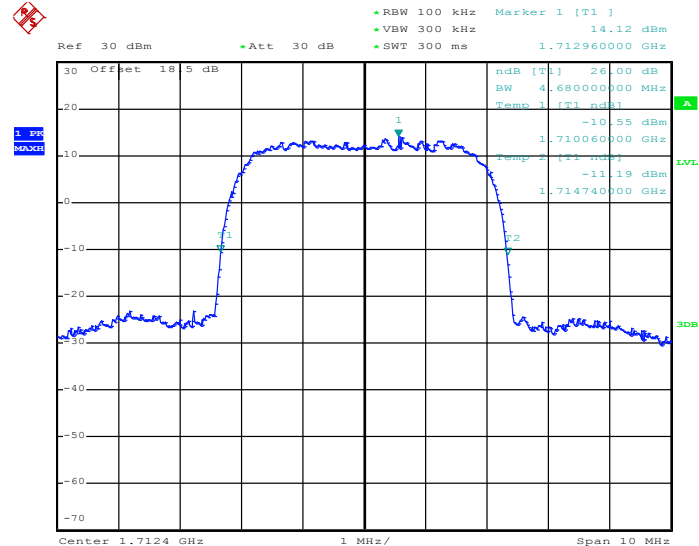
Band :	WCDMA Band IV	Test Mode :	RMC 12.2Kbps Link (QPSK)
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99% Occupied Bandwidth Plot on Channel 1312 (1712.4 MHz)



Date: 25.OCT.2014 00:47:10

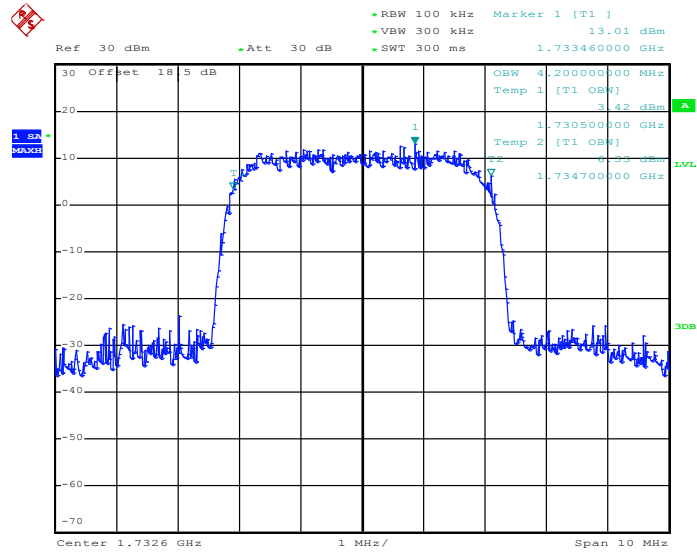
26dB Bandwidth Plot on Channel 1312 (1712.4 MHz)



Date: 25.OCT.2014 00:44:42

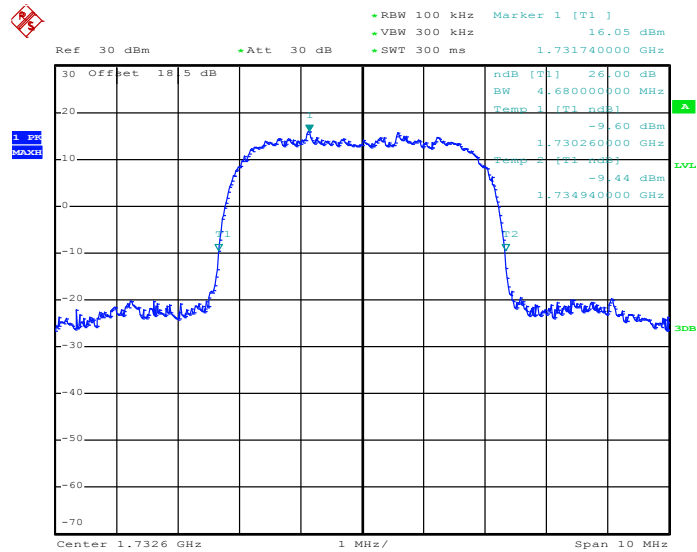


99% Occupied Bandwidth Plot on Channel 1413 (1732.6 MHz)



Date: 25.OCT.2014 00:47:45

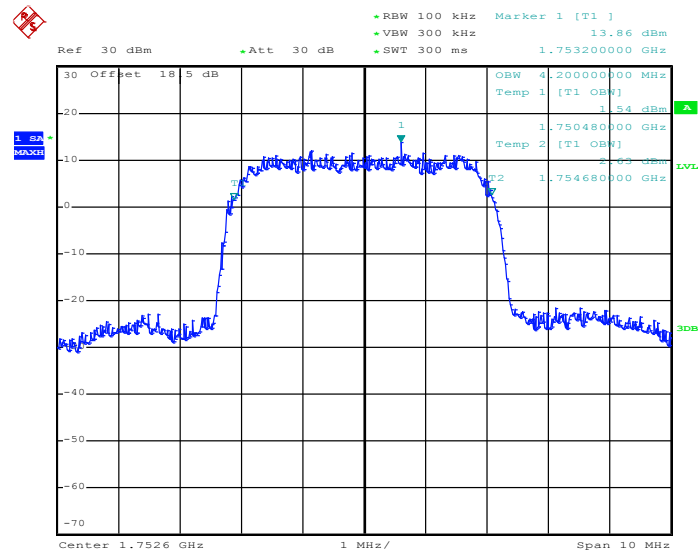
26dB Bandwidth Plot on Channel 1413 (1732.6 MHz)



Date: 25.OCT.2014 00:45:16

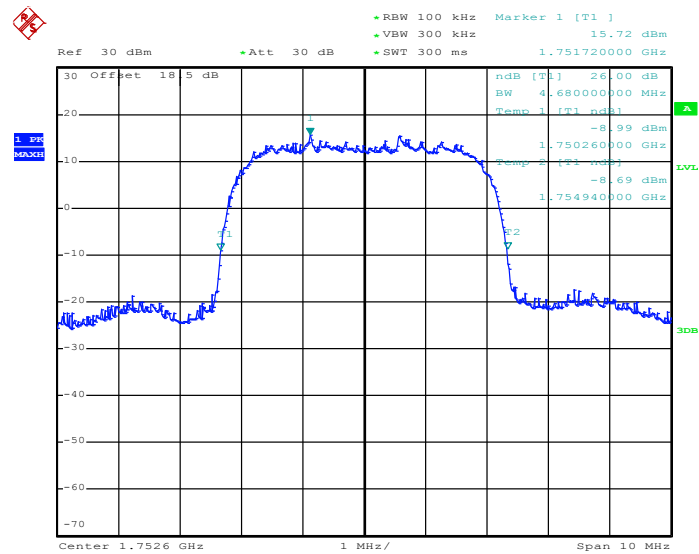


99% Occupied Bandwidth Plot on Channel 1513 (1752.6 MHz)



Date: 25.OCT.2014 00:48:22

26dB Bandwidth Plot on Channel 1513 (1752.6 MHz)

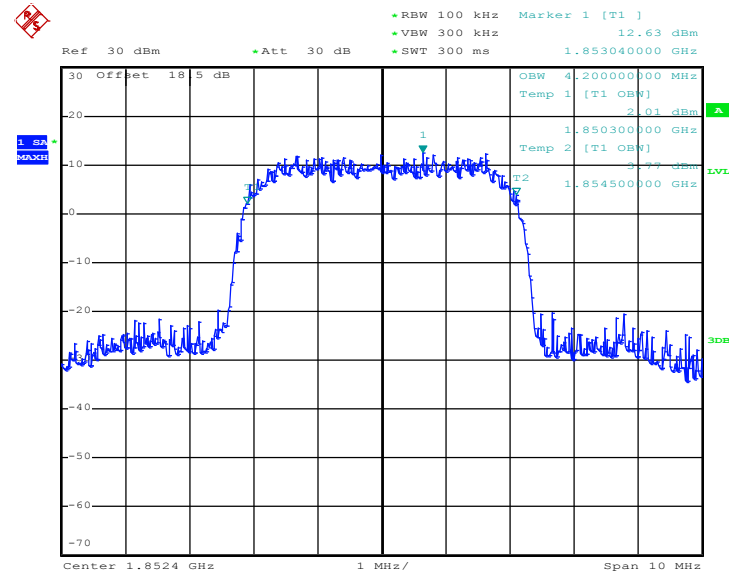


Date: 25.OCT.2014 00:46:03



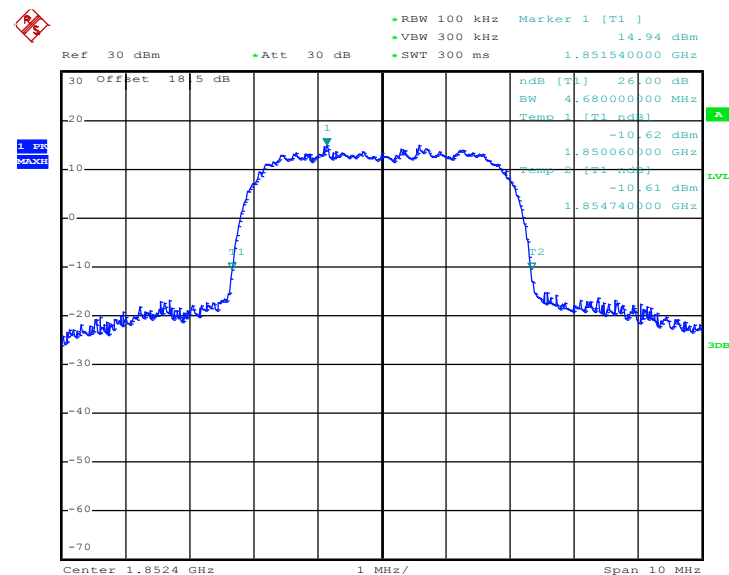
Band :	WCDMA Band II	Test Mode :	RMC 12.2Kbps Link (QPSK)
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99% Occupied Bandwidth Plot on Channel 9262 (1852.4 MHz)



Date: 25.OCT.2014 00:21:03

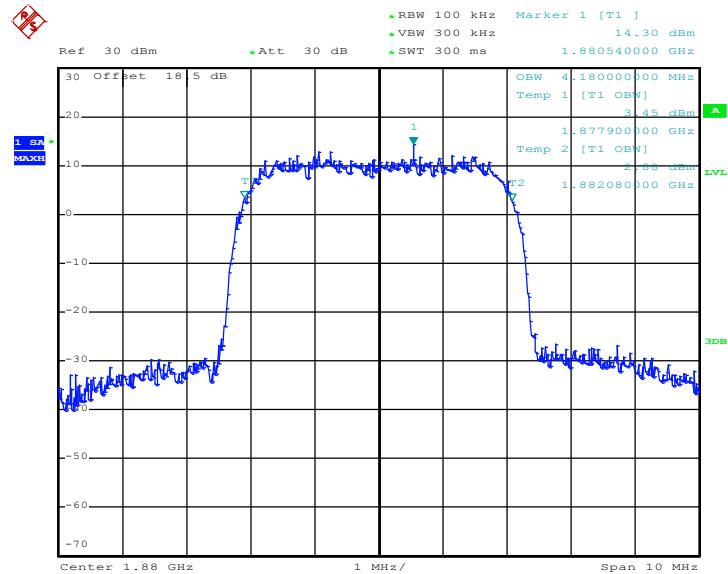
26dB Bandwidth Plot on Channel 9262 (1852.4 MHz)



Date: 25.OCT.2014 00:18:29

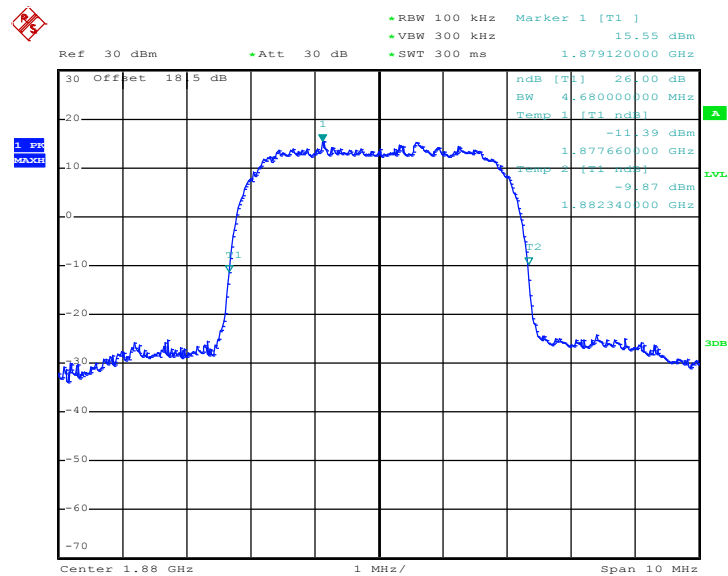


99% Occupied Bandwidth Plot on Channel 9400 (1880.0 MHz)



Date: 25.OCT.2014 00:21:37

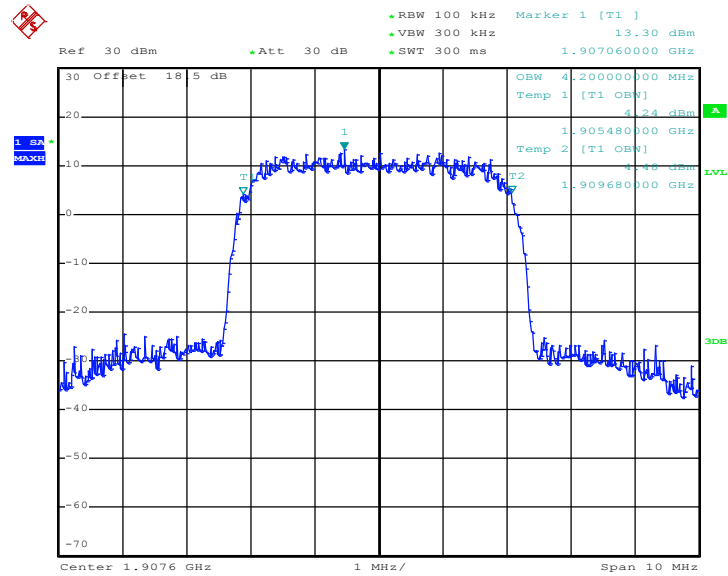
26dB Bandwidth Plot on Channel 9400 (1880.0 MHz)



Date: 25.OCT.2014 00:19:15

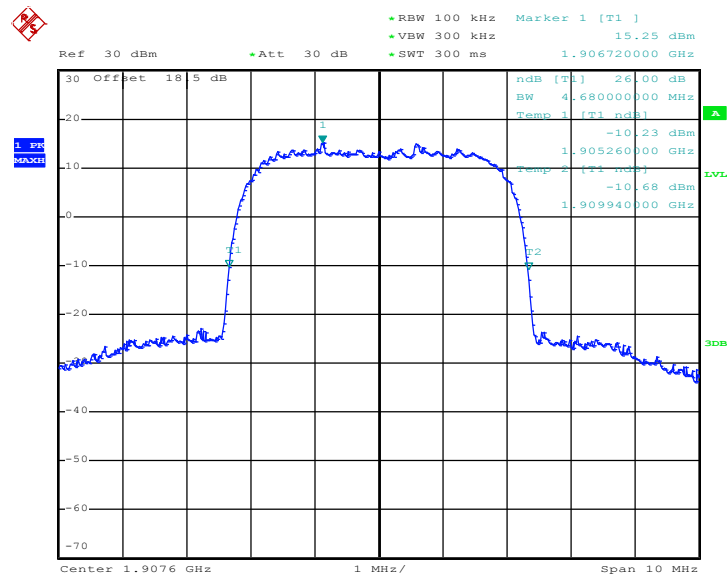


99% Occupied Bandwidth Plot on Channel 9538 (1907.6 MHz)



Date: 25.OCT.2014 00:22:13

26dB Bandwidth Plot on Channel 9538 (1907.6 MHz)



Date: 25.OCT.2014 00:20:03

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

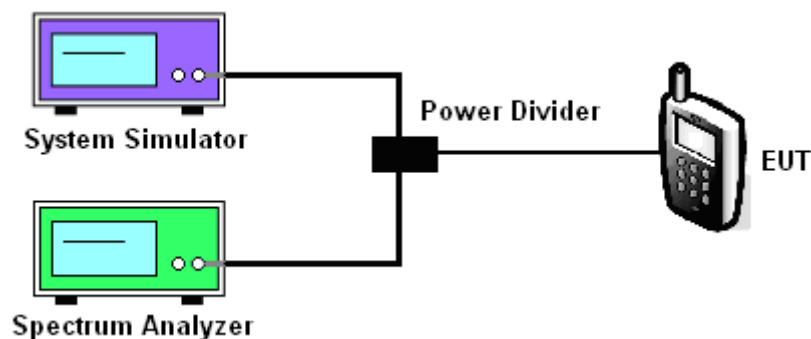
The measuring equipment is listed in the section 4 of this test report.

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 $43 + 10\log(P)$ dB below the transmitter power P(Watts)
 $= P(W) - [43 + 10\log(P)] \text{ (dB)}$
 $= [30 + 10\log(P)] \text{ (dBm)} - [43 + 10\log(P)] \text{ (dB)}$
 $= -13\text{dBm}.$

3.5.4 Test Setup

<Conducted Band Edge >

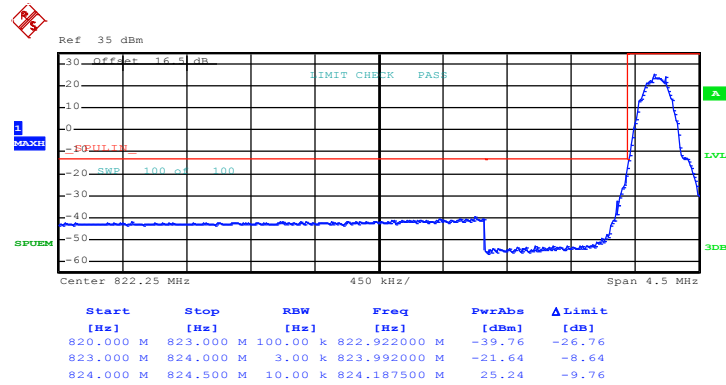




3.5.5 Test Result (Plots) of Conducted Band Edge

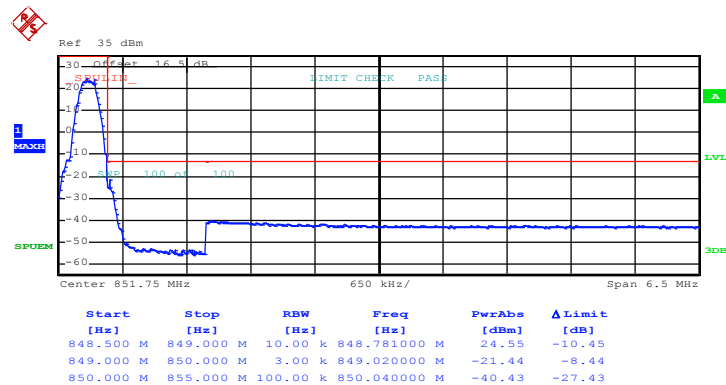
Band :	GSM850	Test Mode :	GSM Link (GMSK)
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Lower Band Edge Plot on Channel 128 (824.2 MHz)



Date: 24.OCT.2014 21:59:23

Higher Band Edge Plot on Channel 251 (848.8 MHz)

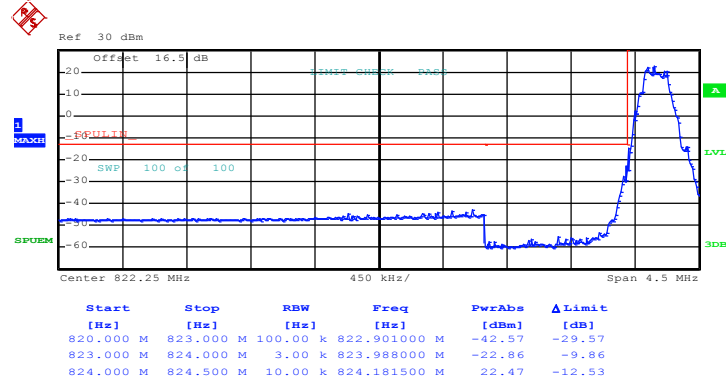


Date: 24.OCT.2014 21:56:09



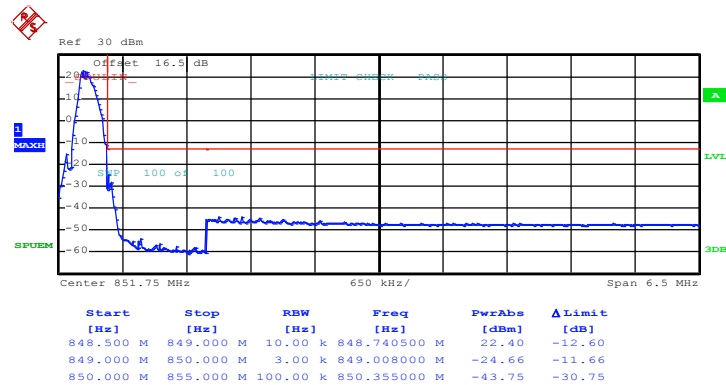
Band :	GSM850	Test Mode :	EDGE class 8 Link (8PSK)
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Lower Band Edge Plot on Channel 128 (824.2 MHz)



Date: 24.OCT.2014 22:27:38

Higher Band Edge Plot on Channel 251 (848.8 MHz)

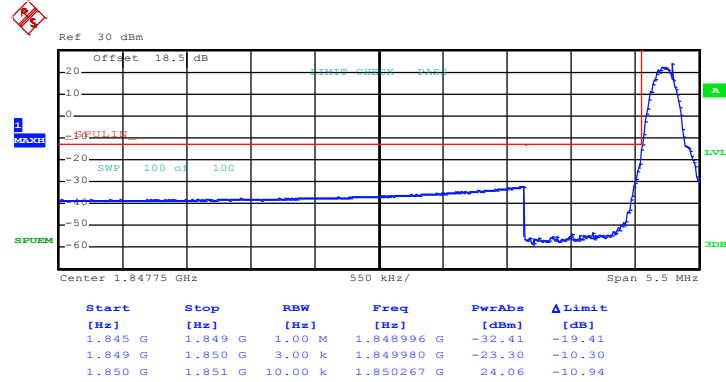


Date: 24.OCT.2014 22:24:02



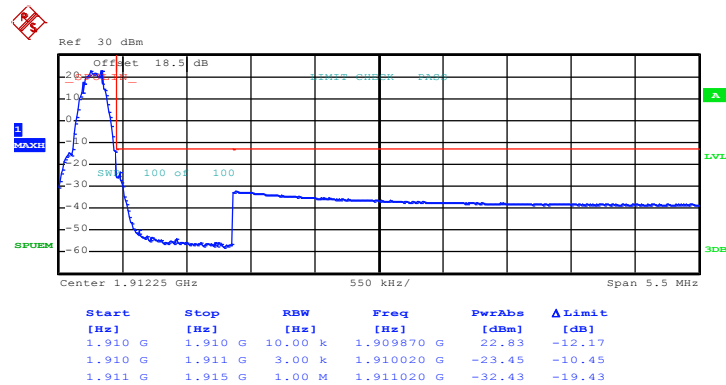
Band :	GSM1900	Test Mode :	GSM Link (GMSK)
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Lower Band Edge Plot on Channel 512 (1850.2 MHz)



Date: 24.OCT.2014 23:43:28

Higher Band Edge Plot on Channel 810 (1909.8 MHz)

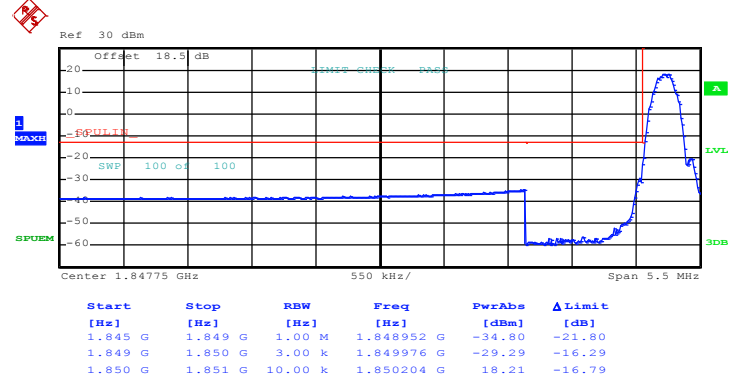


Date: 24.OCT.2014 23:40:33



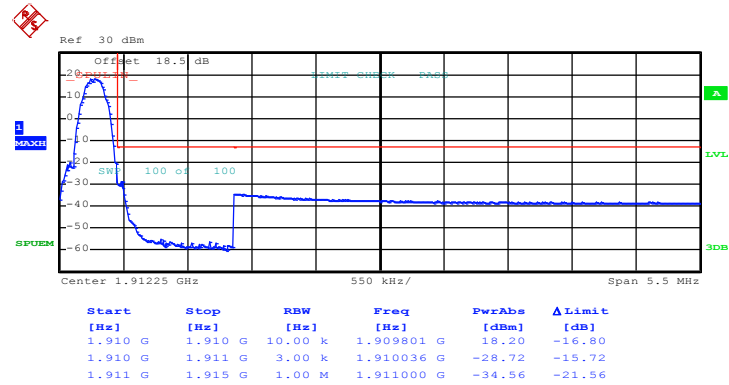
Band : GSM1900 Test Mode : EDGE class 8 Link (8PSK)

Lower Band Edge Plot on Channel 512 (1850.2 MHz)



Date: 25.OCT.2014 00:08:55

Higher Band Edge Plot on Channel 810 (1909.8 MHz)

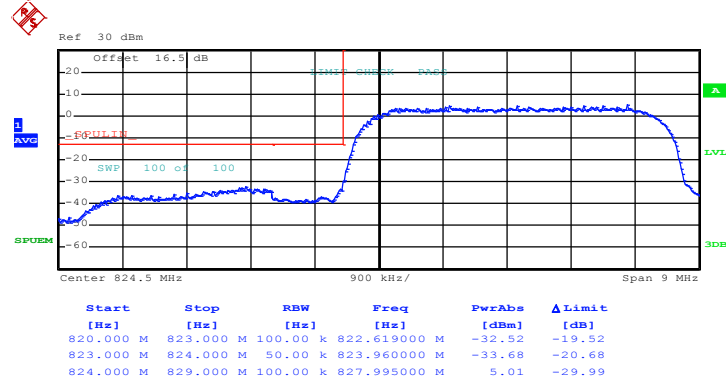


Date: 25.OCT.2014 00:05:44



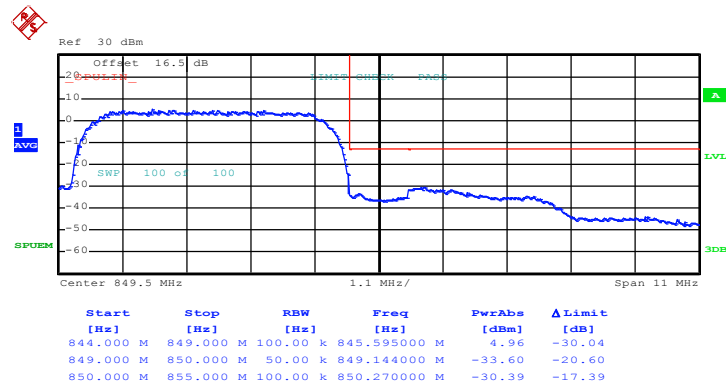
Band :	WCDMA Band V	Test Mode :	RMC 12.2Kbps Link (QPSK)
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Lower Band Edge Plot on Channel 4132 (826.4 MHz)



Date: 24.OCT.2014 23:16:12

Higher Band Edge Plot on Channel 4233 (846.6 MHz)

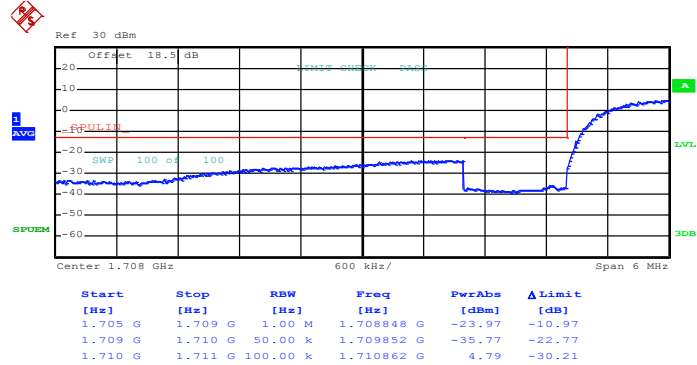


Date: 24.OCT.2014 23:13:04



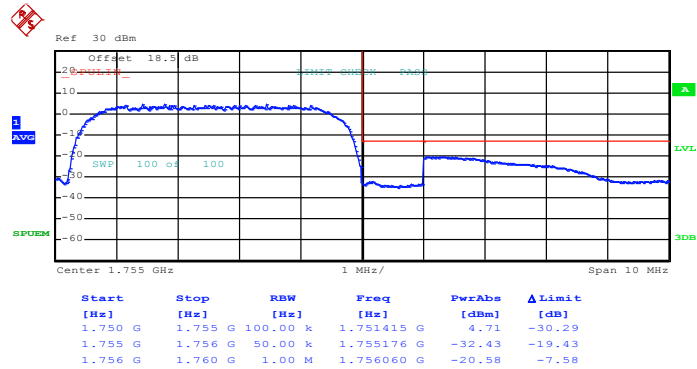
Band :	WCDMA Band IV	Test Mode :	RMC 12.2Kbps Link (QPSK)
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Lower Band Edge Plot on Channel 1312 (1712.4 MHz)



Date: 25.OCT.2014 01:03:18

Higher Band Edge Plot on Channel 1513 (1752.6 MHz)

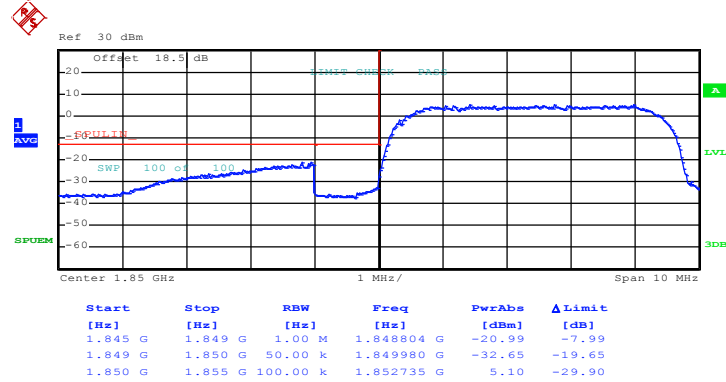


Date: 25.OCT.2014 00:57:28



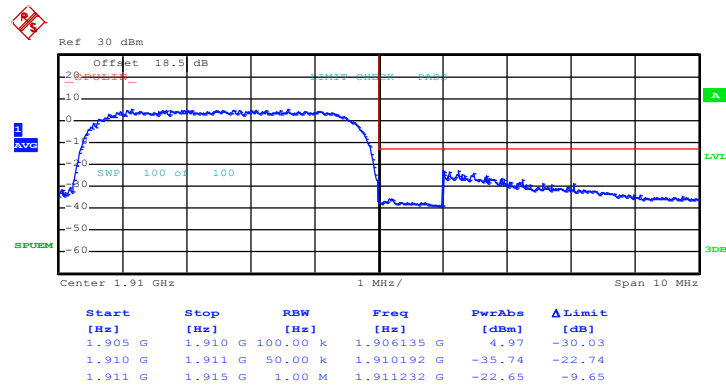
Band :	WCDMA Band II	Test Mode :	RMC 12.2Kbps Link (QPSK)
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Lower Band Edge Plot on Channel 9262 (1852.4 MHz)



Date: 25.OCT.2014 00:36:35

Higher Band Edge Plot on Channel 9538 (1907.6 MHz)



Date: 25.OCT.2014 00:32:19

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.

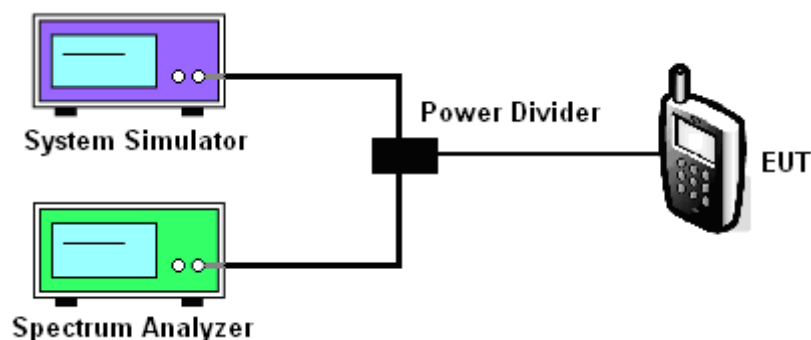
3.6.2 Measuring Instruments

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 $43 + 10\log(P)$ dB below the transmitter power P(Watts)
 $= P(W) - [43 + 10\log(P)]$ (dB)
 $= [30 + 10\log(P)]$ (dBm) - $[43 + 10\log(P)]$ (dB)
 $= -13\text{dBm}$.

3.6.4 Test Setup

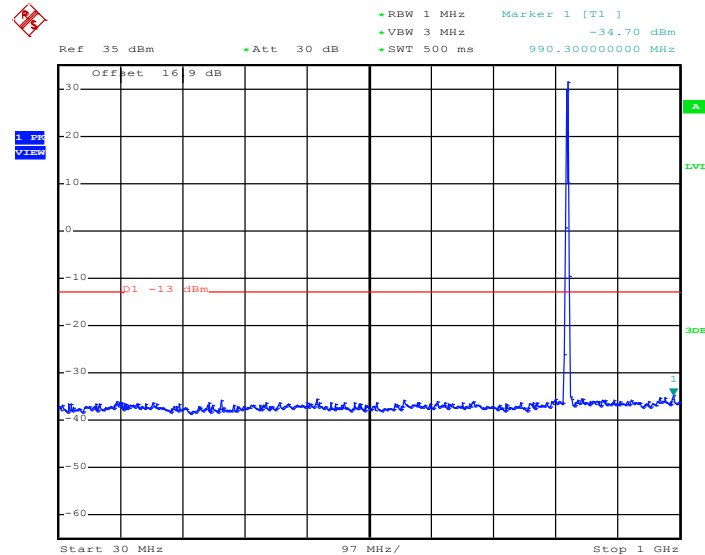




3.6.5 Test Result (Plots) of Conducted Spurious Emission

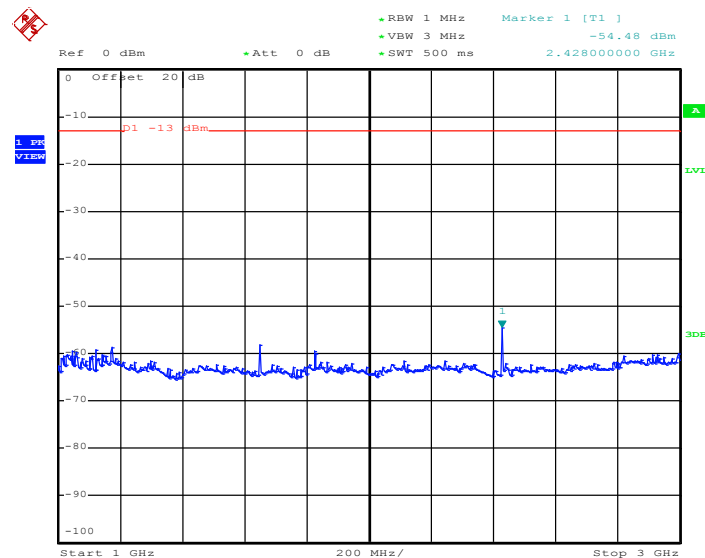
Band :	GSM850	Channel :	CH128
Test Mode :	GSM Link (GMSK)	Frequency :	824.2 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



Date: 24.OCT.2014 21:36:10

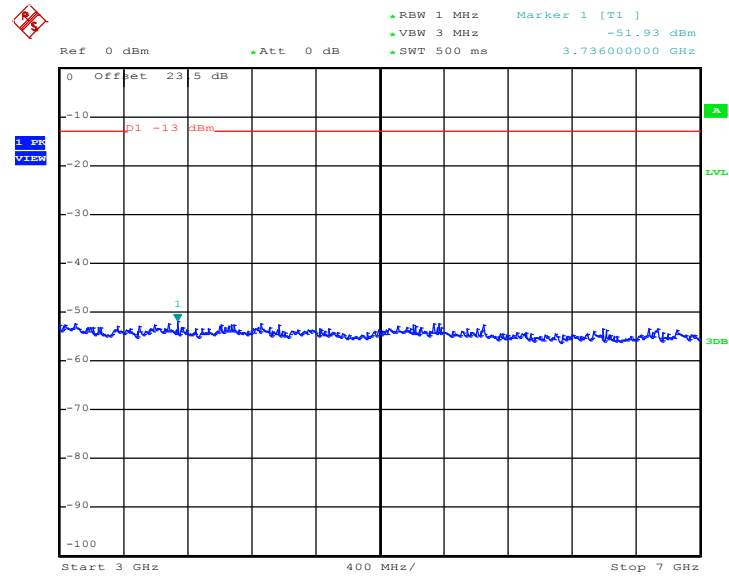
Conducted Spurious Emission Plot between 1GHz ~ 3GHz



Date: 24.OCT.2014 21:36:26

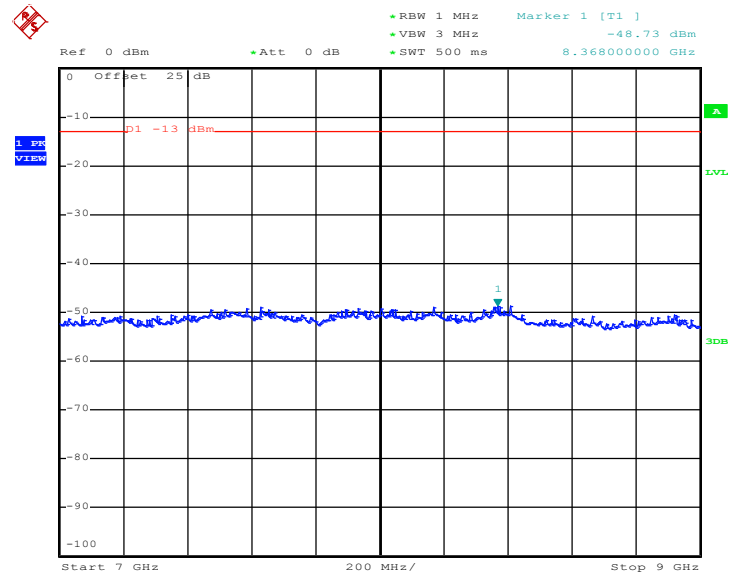


Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 24.OCT.2014 21:36:34

Conducted Spurious Emission Plot between 7GHz ~ 9GHz

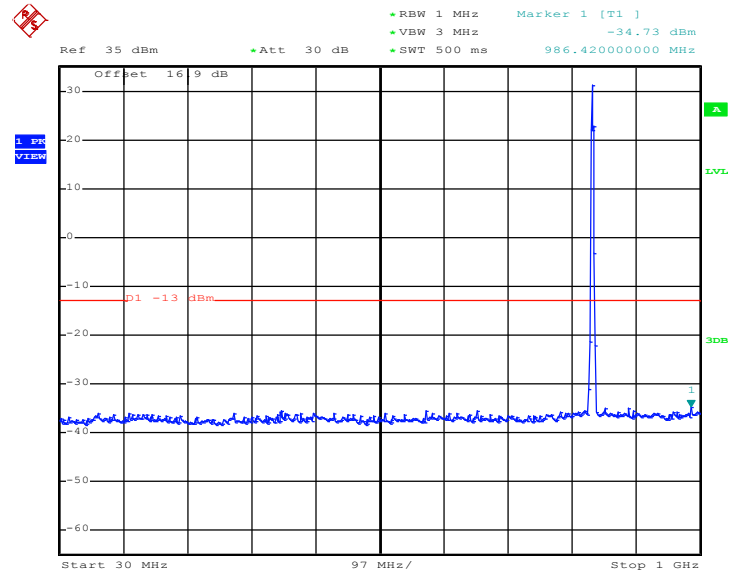


Date: 24.OCT.2014 21:36:42



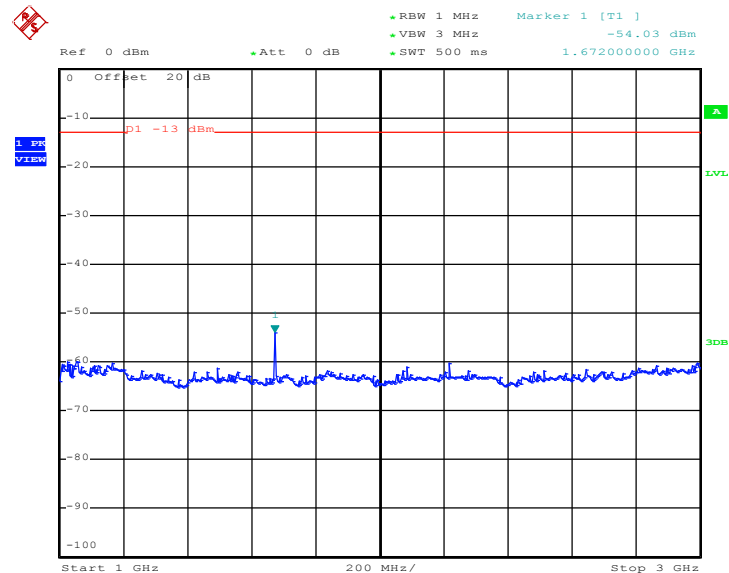
Band :	GSM850	Channel :	CH189
Test Mode :	GSM Link (GMSK)	Frequency :	836.4 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



Date: 24.OCT.2014 21:37:19

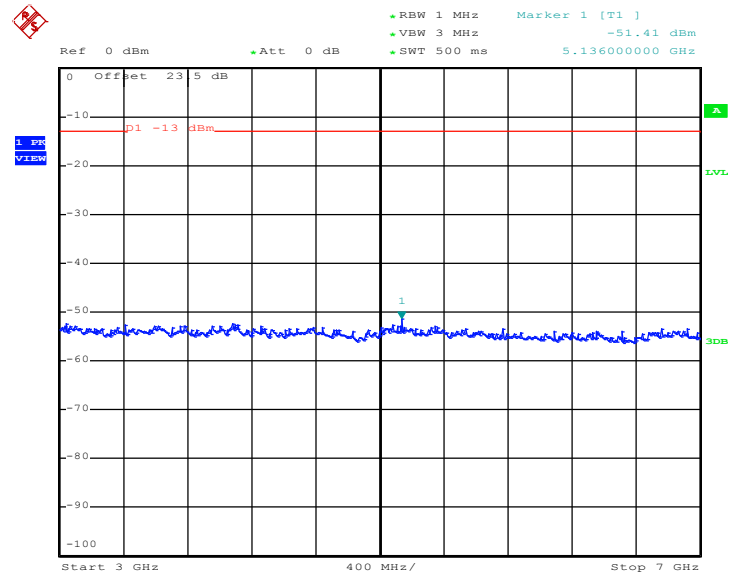
Conducted Spurious Emission Plot between 1GHz ~ 3GHz



Date: 24.OCT.2014 21:37:35

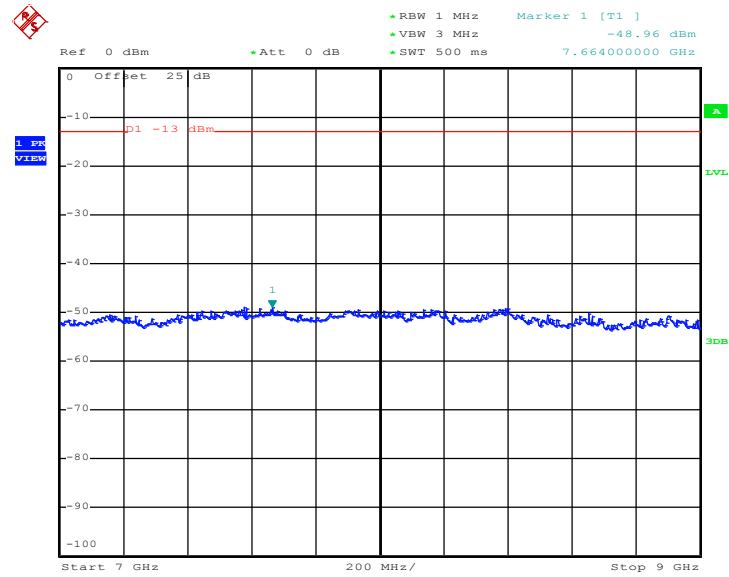


Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 24.OCT.2014 21:37:44

Conducted Spurious Emission Plot between 7GHz ~ 9GHz

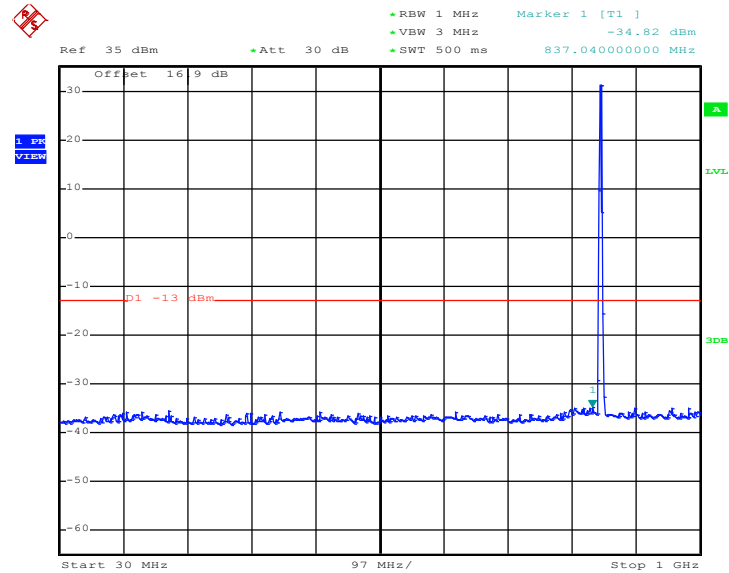


Date: 24.OCT.2014 21:37:52



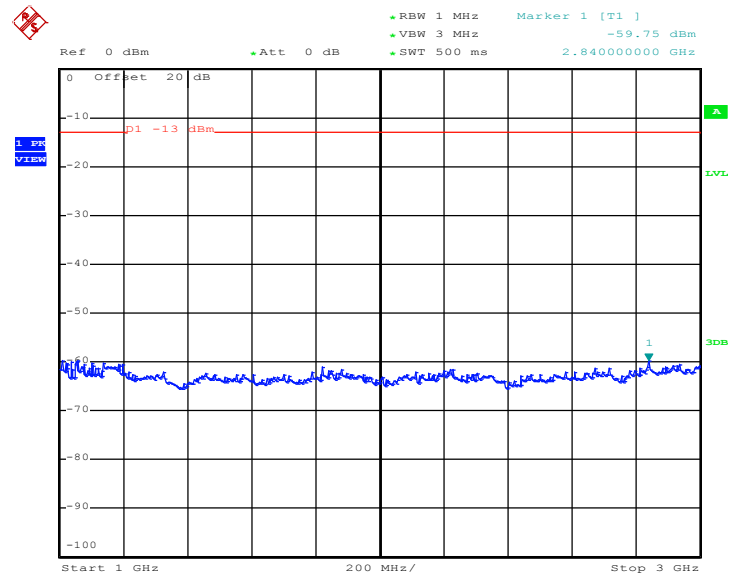
Band :	GSM850	Channel :	CH251
Test Mode :	GSM Link (GMSK)	Frequency :	848.8 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



Date: 24.OCT.2014 21:33:59

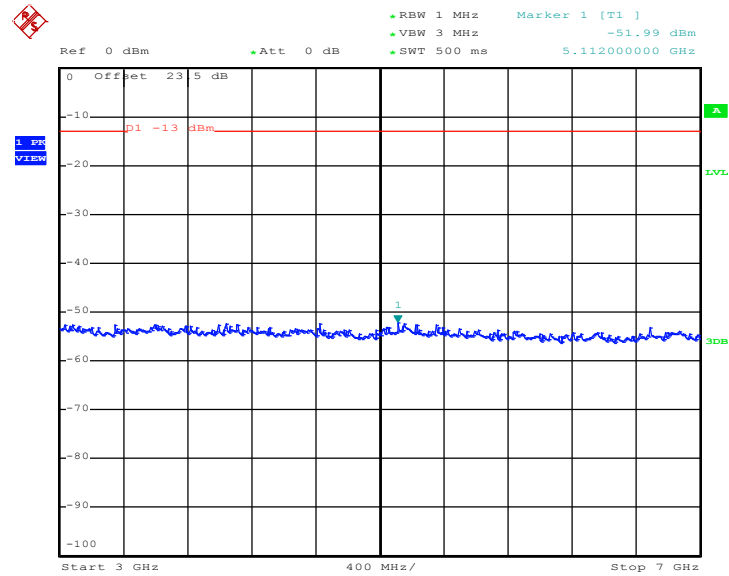
Conducted Spurious Emission Plot between 1GHz ~ 3GHz



Date: 24.OCT.2014 21:34:11

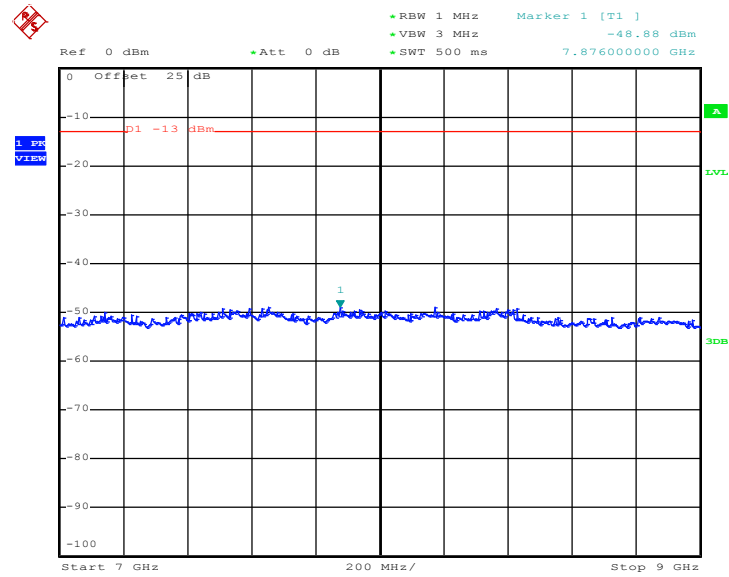


Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 24.OCT.2014 21:34:20

Conducted Spurious Emission Plot between 7GHz ~ 9GHz

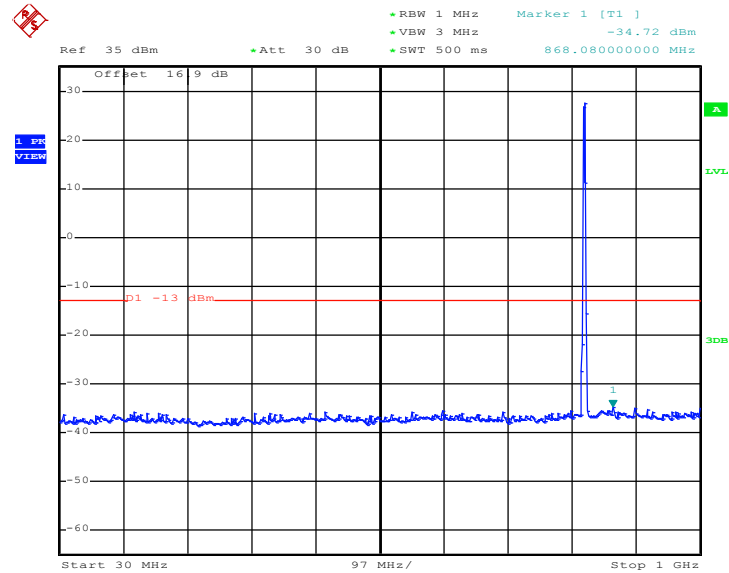


Date: 24.OCT.2014 21:34:28



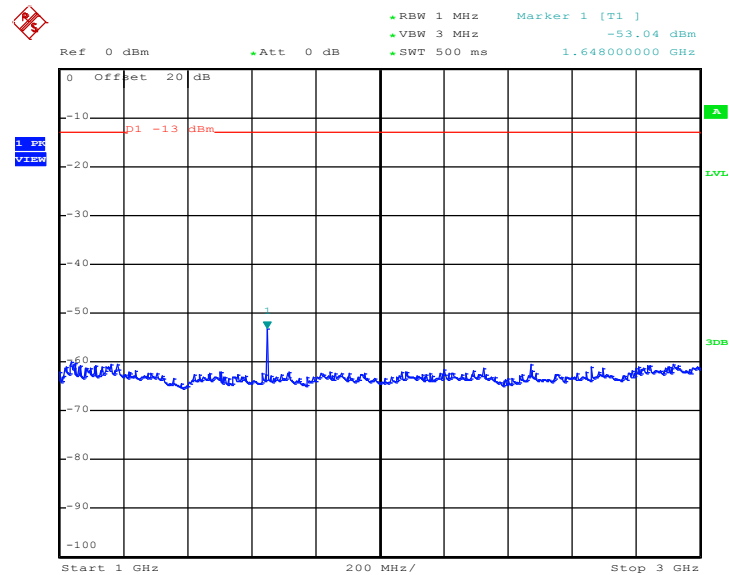
Band :	GSM850	Channel :	CH128
Test Mode :	EDGE class 8 Link (8PSK)	Frequency :	824.2 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



Date: 24.OCT.2014 22:16:04

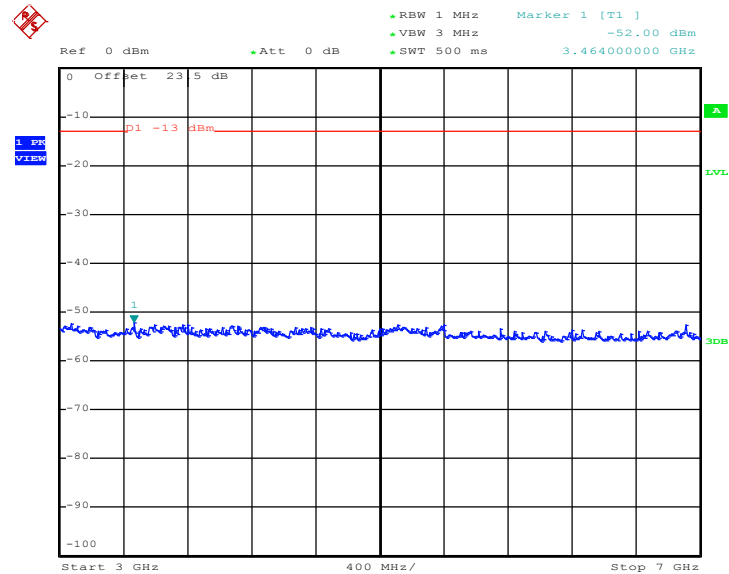
Conducted Spurious Emission Plot between 1GHz ~ 3GHz



Date: 24.OCT.2014 22:16:15

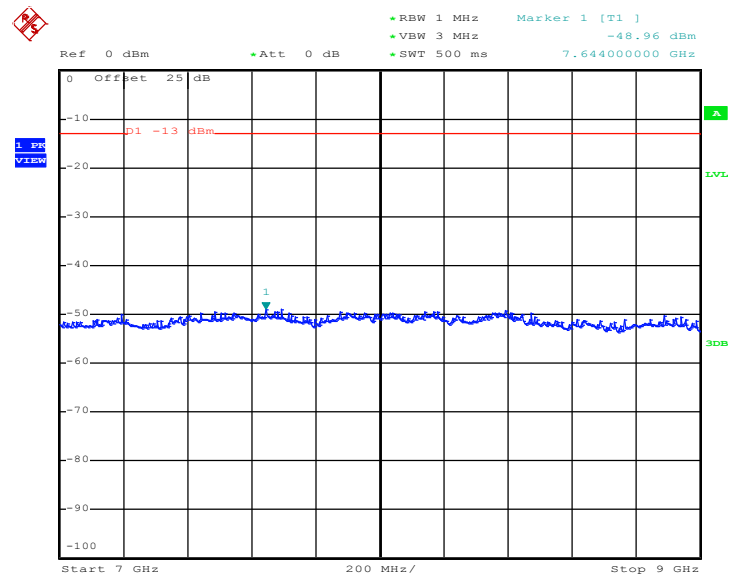


Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 24.OCT.2014 22:16:24

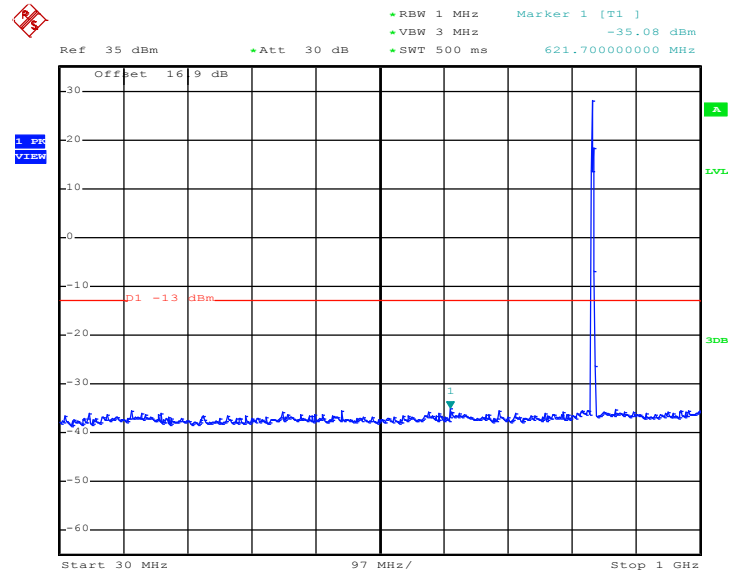
Conducted Spurious Emission Plot between 7GHz ~ 9GHz



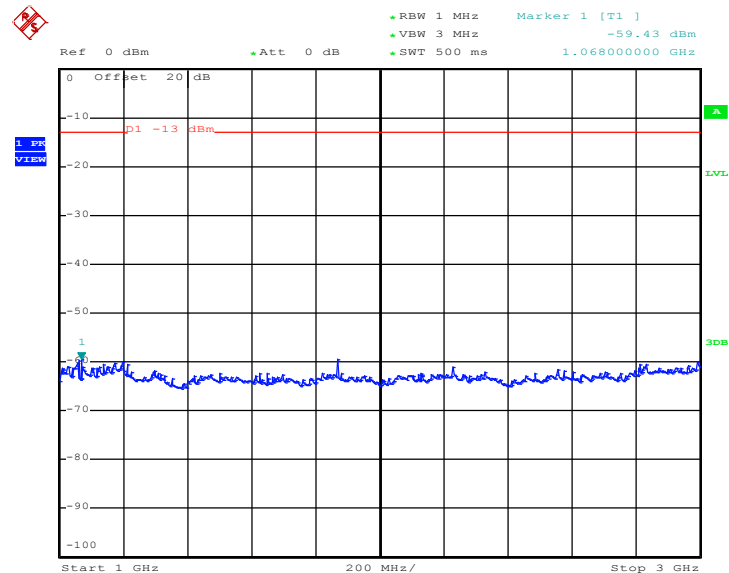
Date: 24.OCT.2014 22:16:32



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

Conducted Spurious Emission Plot between 30MHz ~ 1GHz

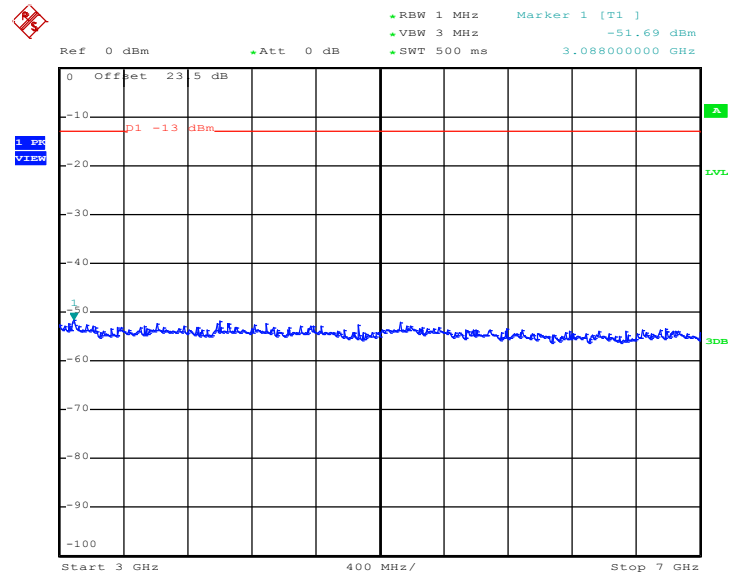
Date: 24.OCT.2014 22:18:14

Conducted Spurious Emission Plot between 1GHz ~ 3GHz

Date: 24.OCT.2014 22:18:26

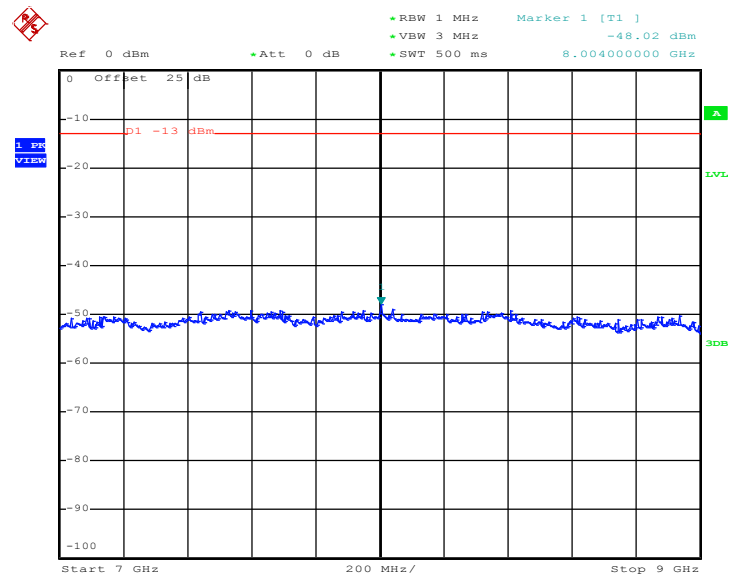


Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 24.OCT.2014 22:18:35

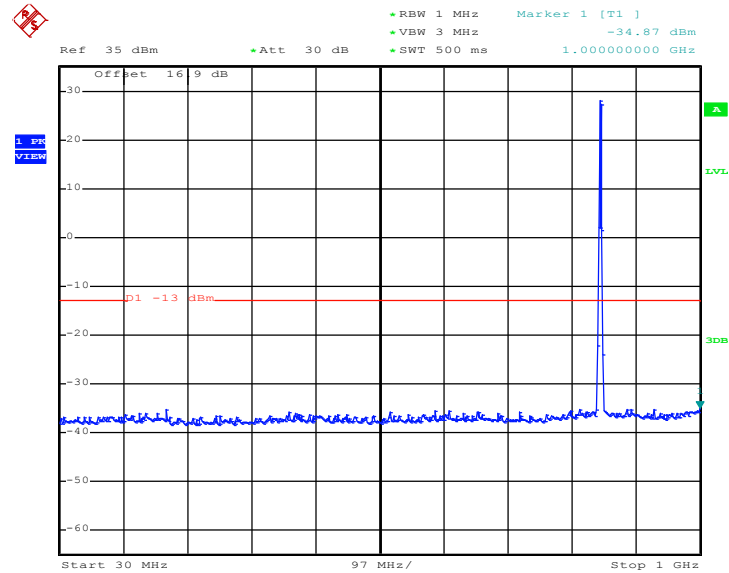
Conducted Spurious Emission Plot between 7GHz ~ 9GHz



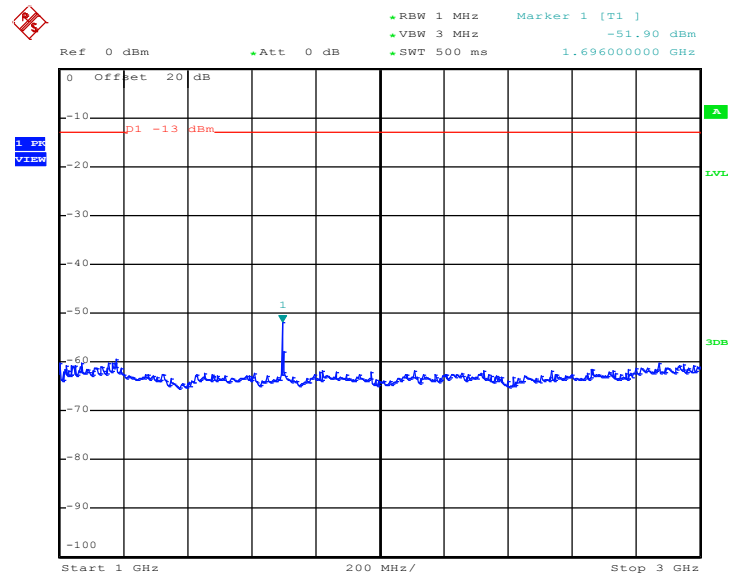
Date: 24.OCT.2014 22:18:43



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

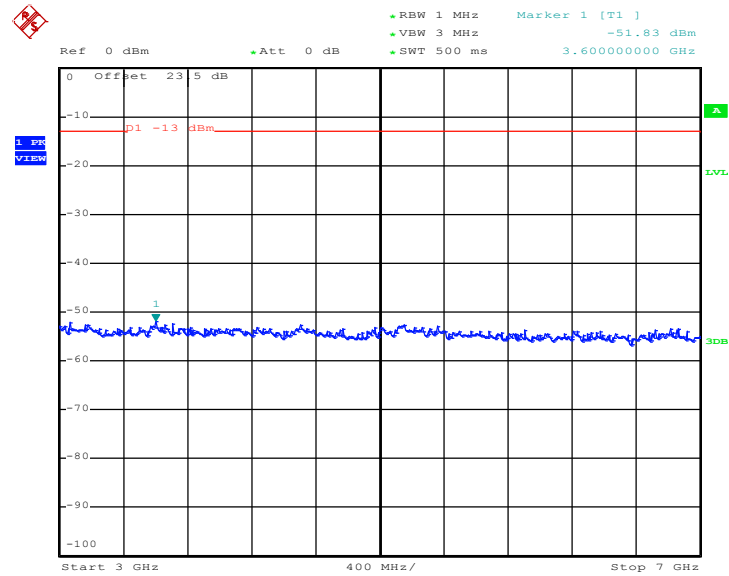
Conducted Spurious Emission Plot between 30MHz ~ 1GHz

Date: 24.OCT.2014 22:11:53

Conducted Spurious Emission Plot between 1GHz ~ 3GHz

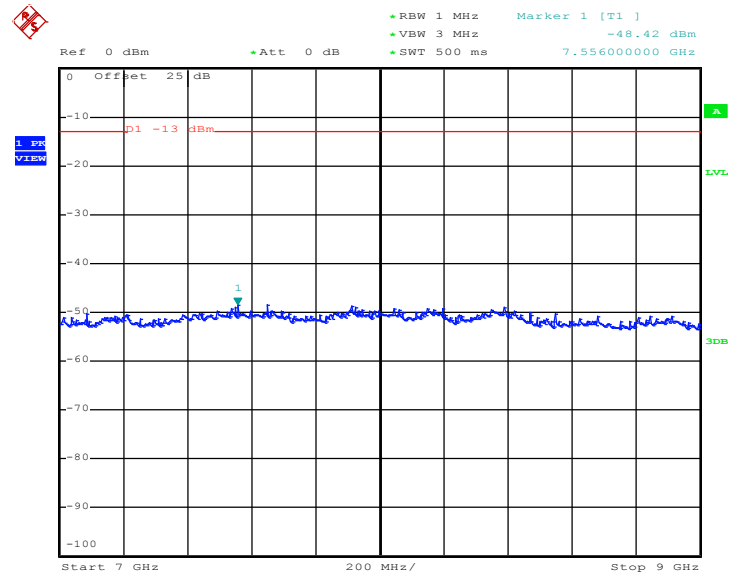
Date: 24.OCT.2014 22:12:33

Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 24.OCT.2014 22:12:42

Conducted Spurious Emission Plot between 7GHz ~ 9GHz

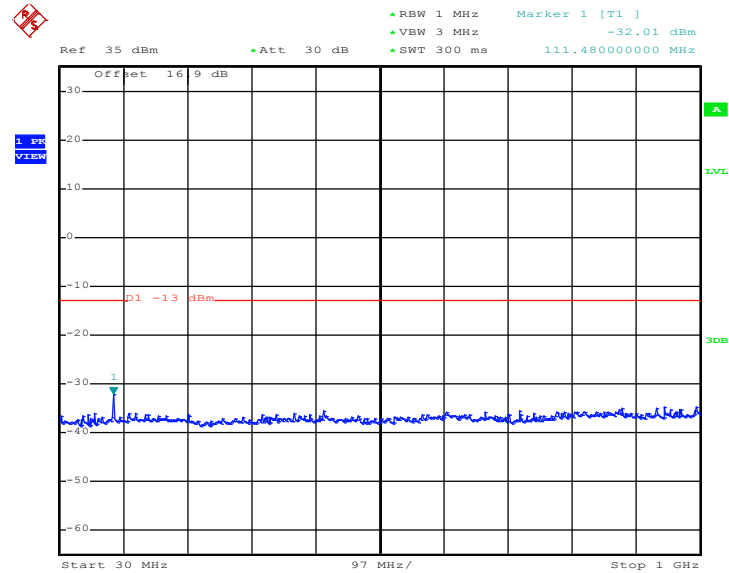


Date: 24.OCT.2014 22:12:50



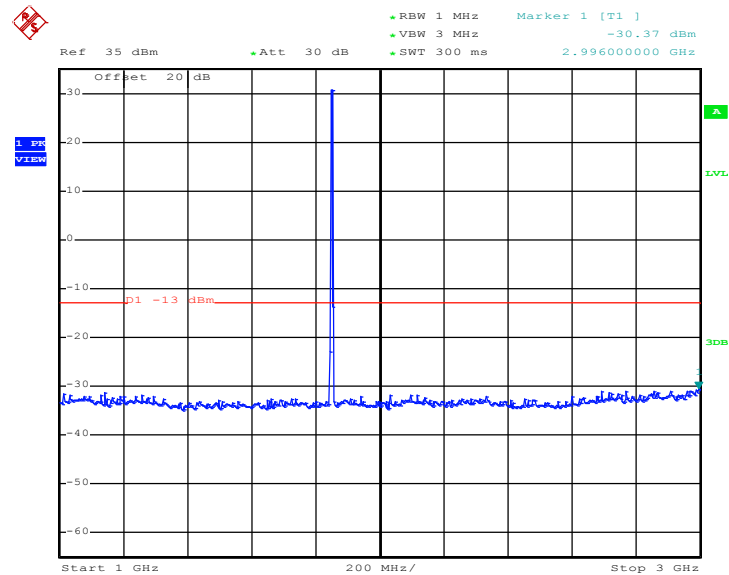
Band :	GSM1900	Channel :	CH512
Test Mode :	GSM Link (GMSK)	Frequency :	1850.2 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



Date: 24.OCT.2014 23:34:00

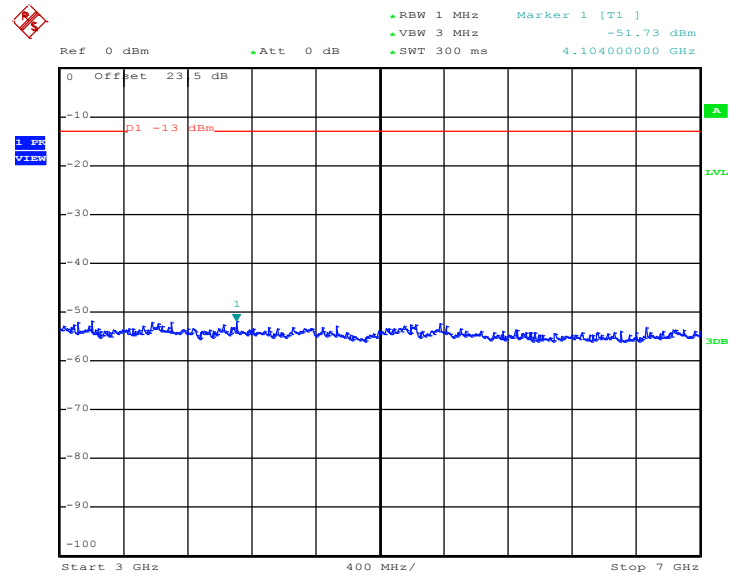
Conducted Spurious Emission Plot between 1GHz ~ 3GHz



Date: 24.OCT.2014 23:34:08

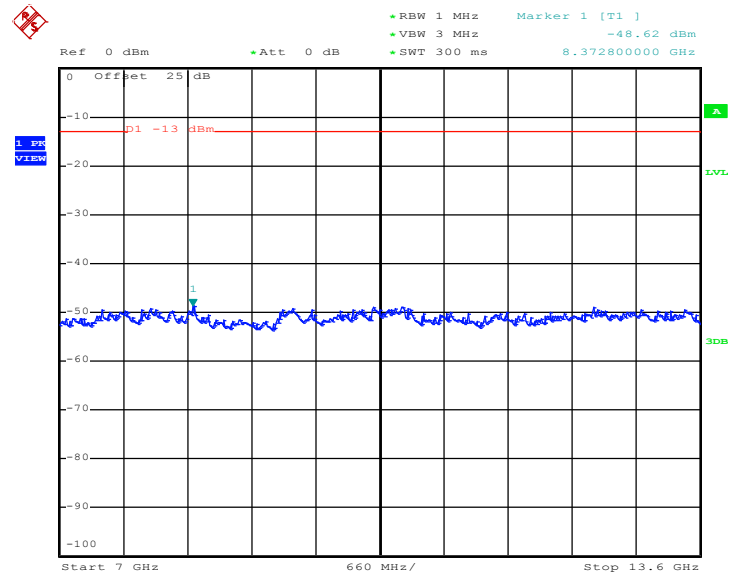


Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 24.OCT.2014 23:34:27

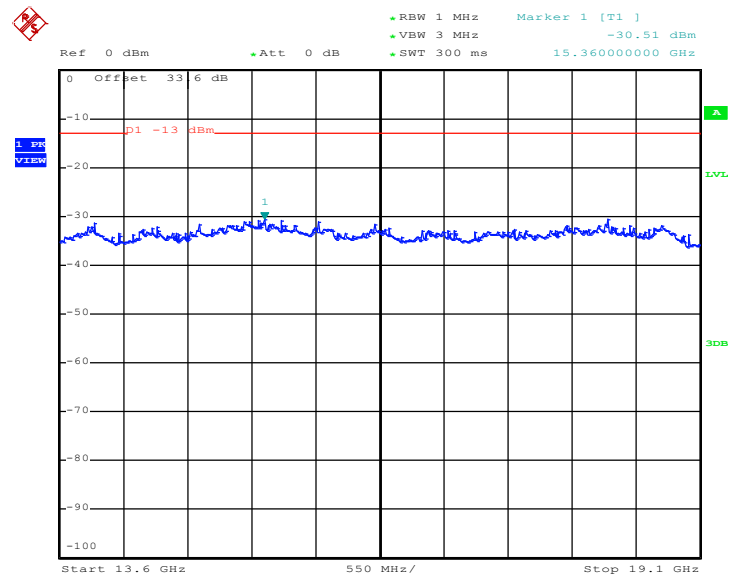
Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz



Date: 24.OCT.2014 23:34:36



Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz

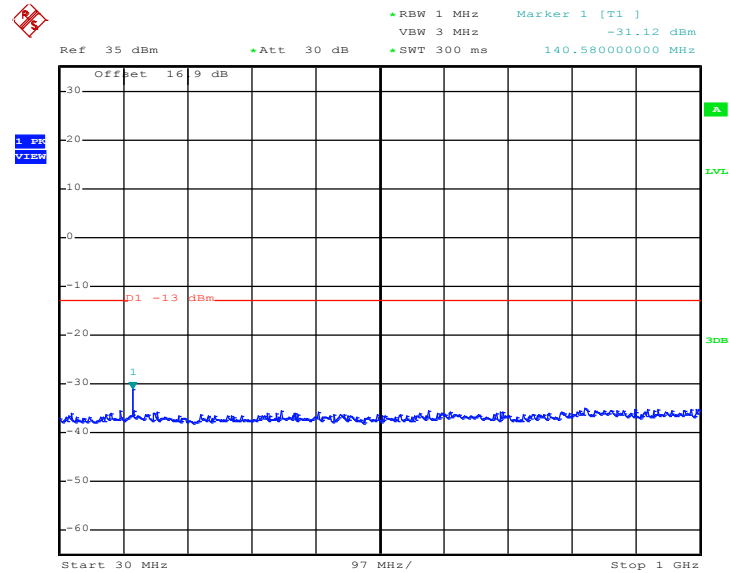


Date: 24.OCT.2014 23:34:44



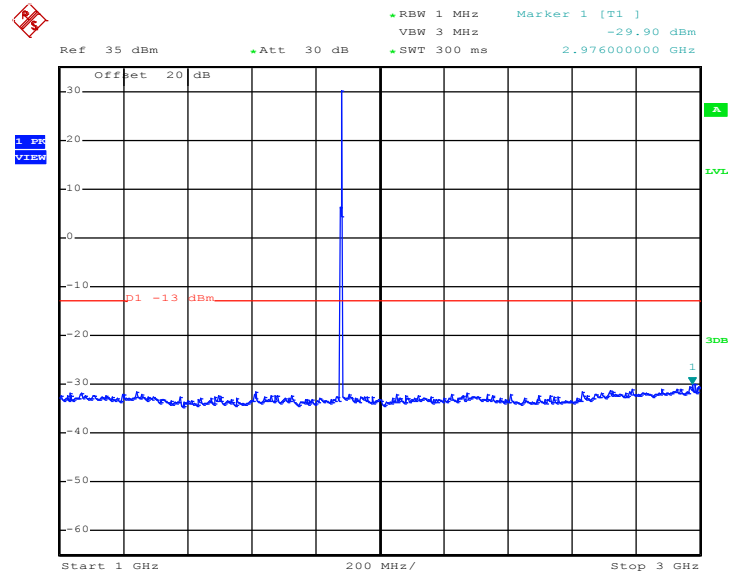
Band :	GSM1900	Channel :	CH661
Test Mode :	GSM Link (GMSK)	Frequency :	1880.0 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



Date: 29.OCT.2014 16:07:10

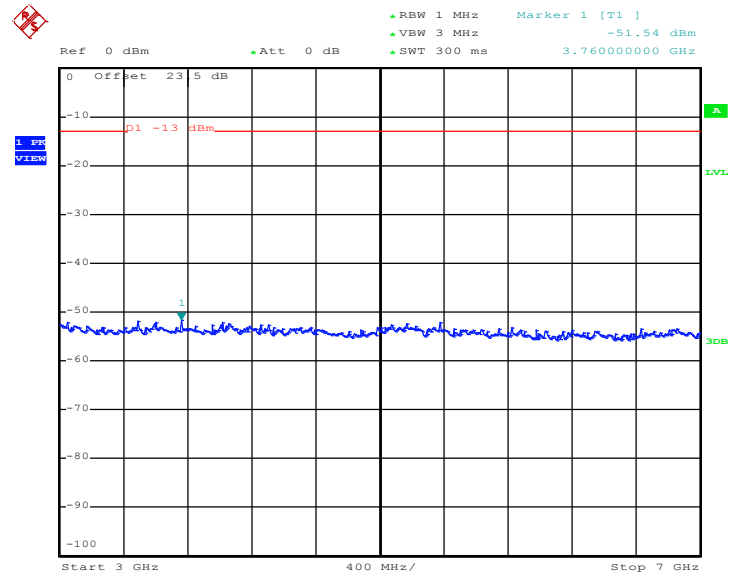
Conducted Spurious Emission Plot between 1GHz ~ 3GHz



Date: 29.OCT.2014 16:08:50

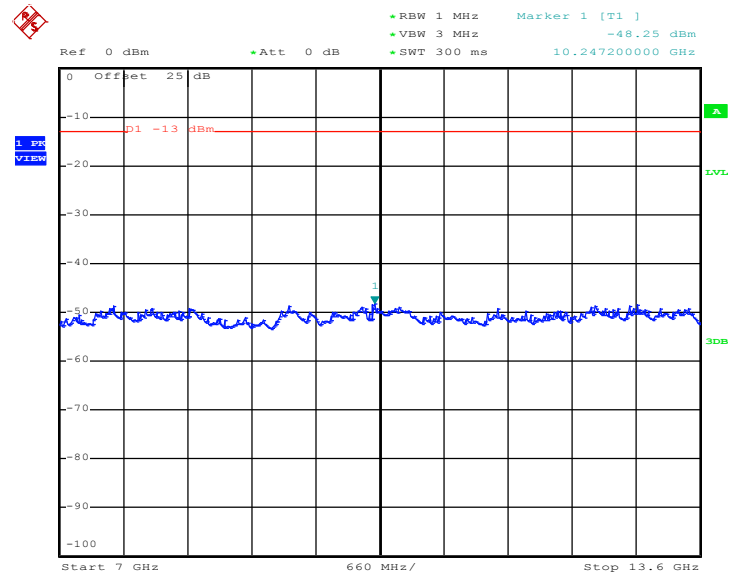


Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 29.OCT.2014 16:03:51

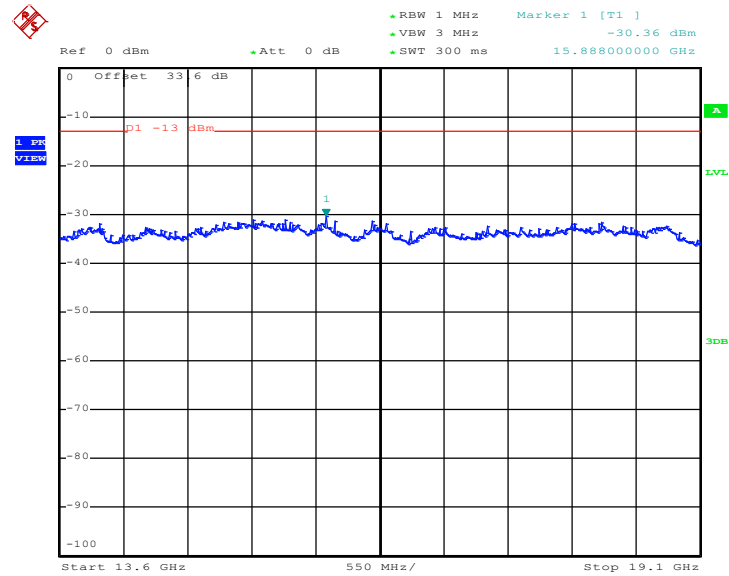
Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz



Date: 29.OCT.2014 16:04:35



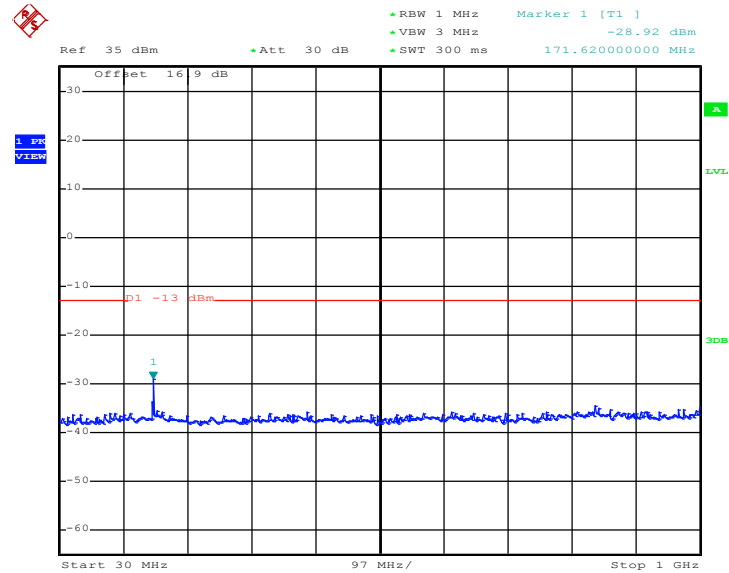
Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz



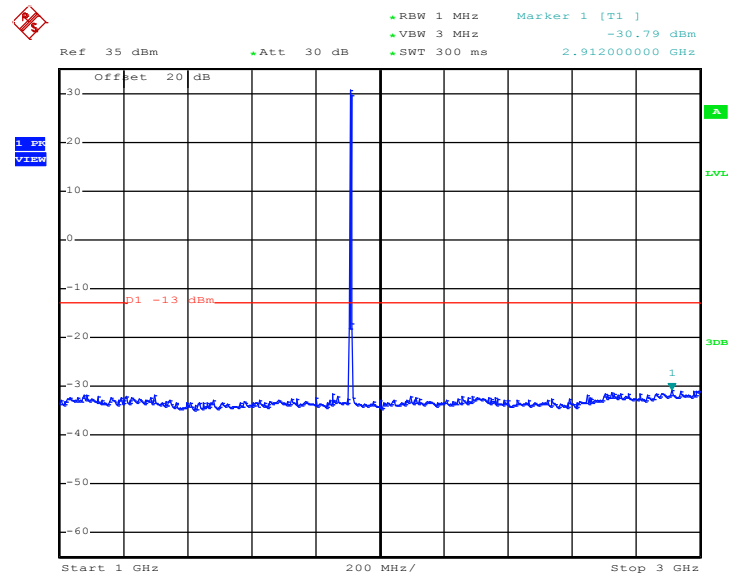
Date: 29.OCT.2014 16:05:55



Band :	GSM1900	Channel :	CH810
Test Mode :	GSM Link (GMSK)	Frequency :	1909.8 MHz

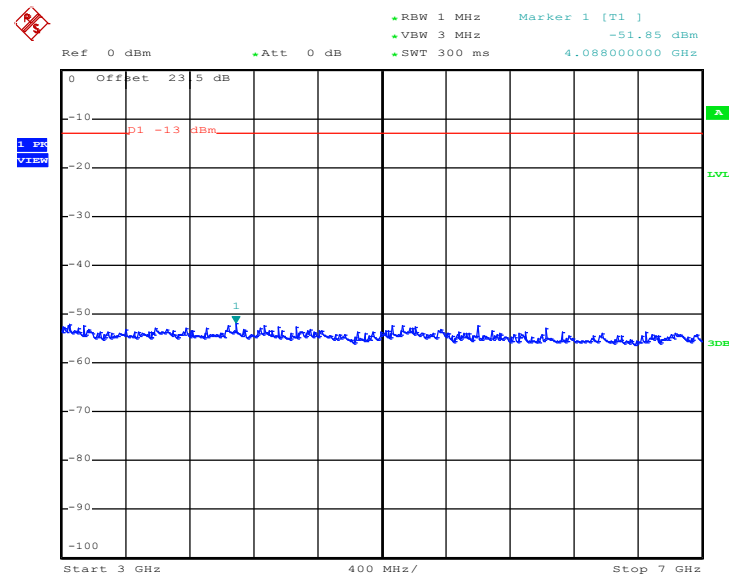
Conducted Spurious Emission Plot between 30MHz ~ 1GHz

Date: 24.OCT.2014 23:30:56

Conducted Spurious Emission Plot between 1GHz ~ 3GHz

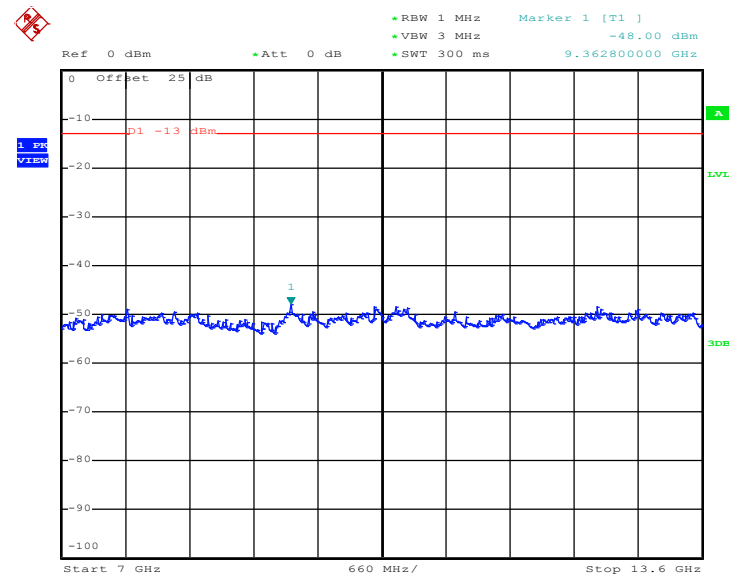
Date: 24.OCT.2014 23:31:05

Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 24.OCT.2014 23:31:21

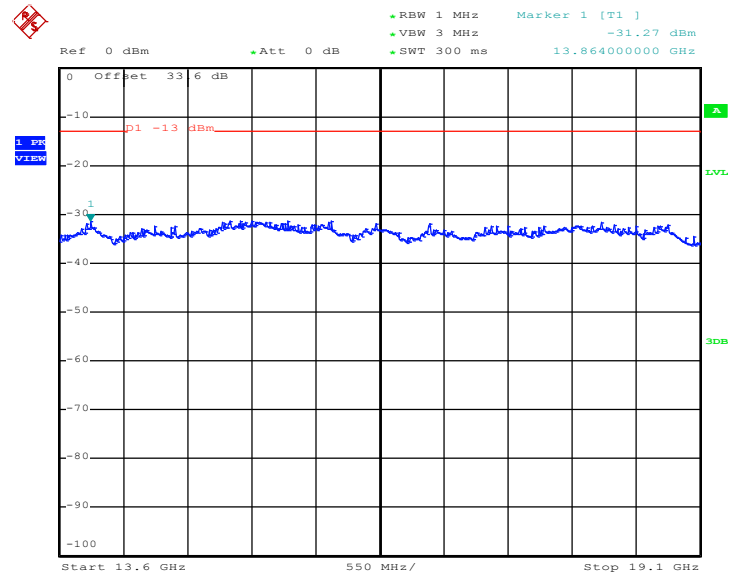
Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz



Date: 24.OCT.2014 23:31:30



Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz

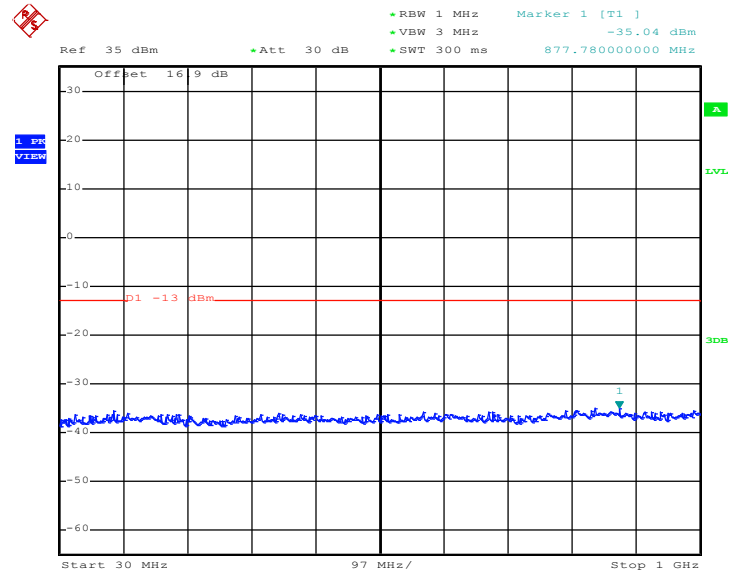


Date: 24.OCT.2014 23:31:38



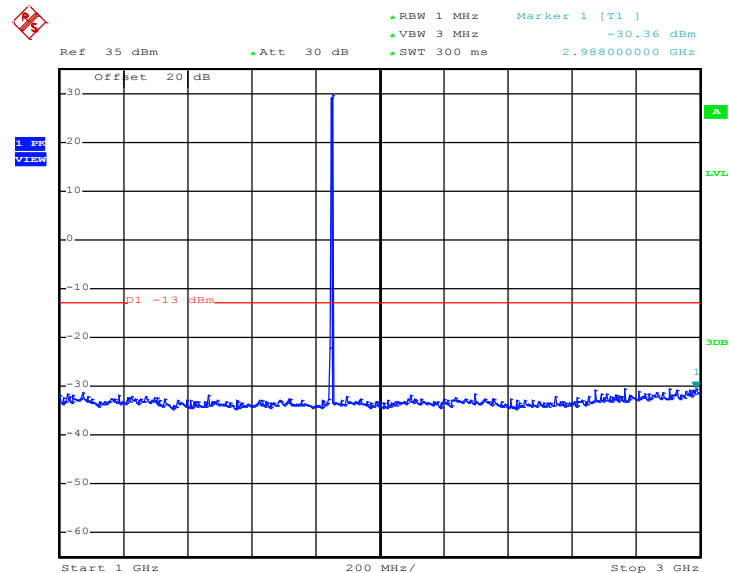
Band :	GSM1900	Channel :	CH512
Test Mode :	EDGE class 8 Link (8PSK)	Frequency :	1850.2 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



Date: 24.OCT.2014 23:59:38

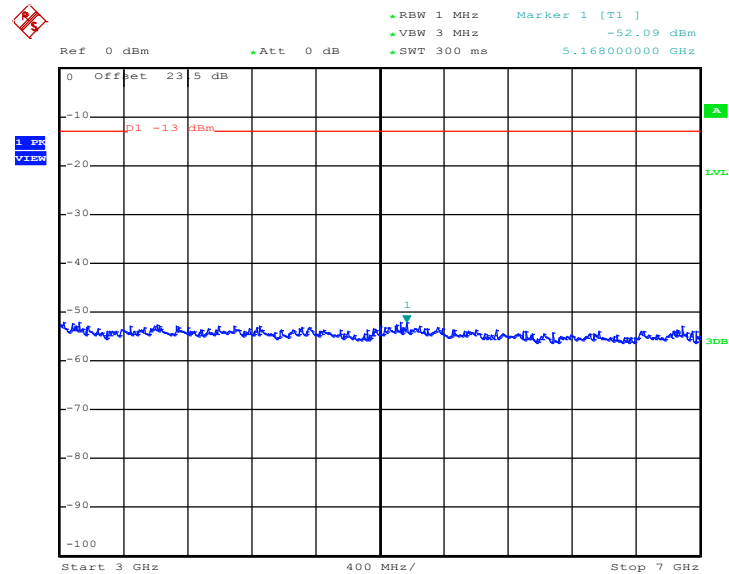
Conducted Spurious Emission Plot between 1GHz ~ 3GHz



Date: 24.OCT.2014 23:59:46

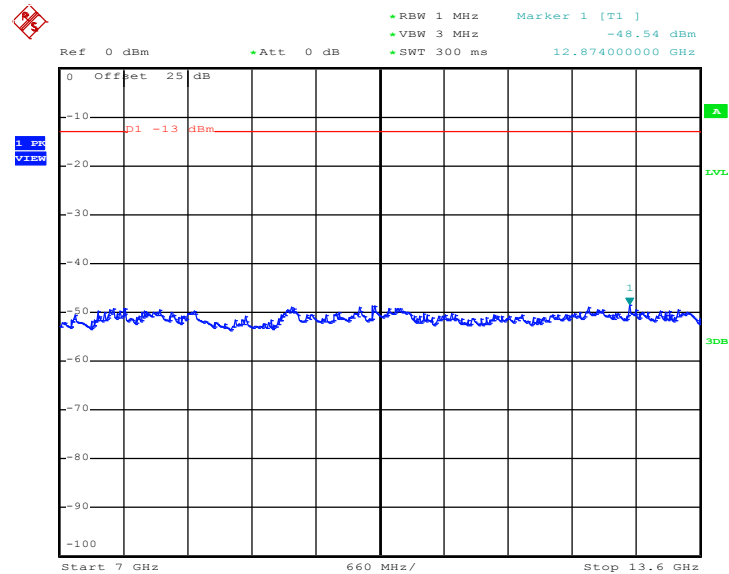


Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 25.OCT.2014 00:00:07

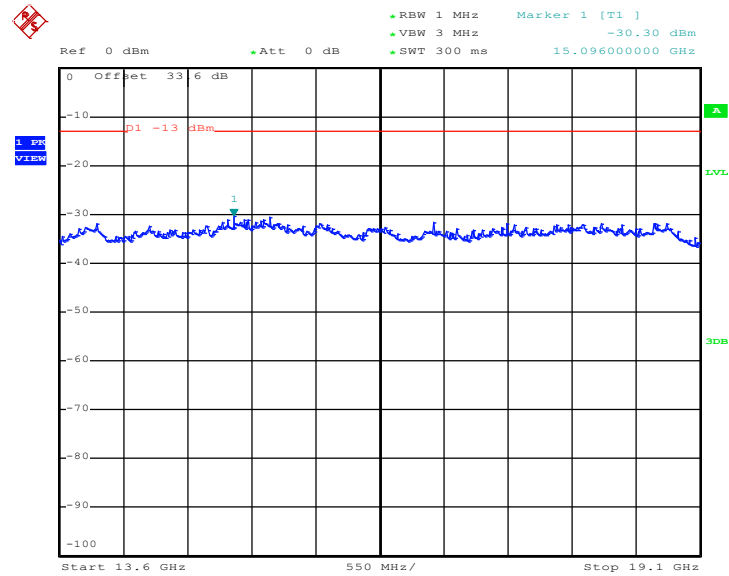
Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz



Date: 25.OCT.2014 00:00:15



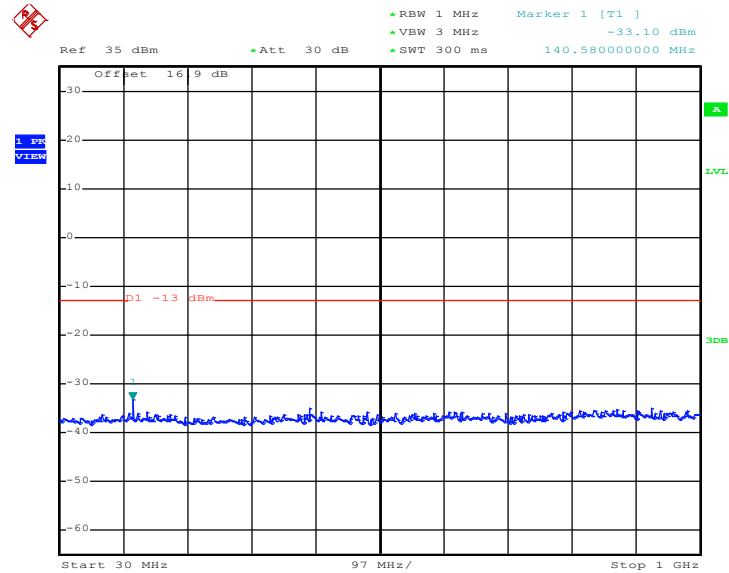
Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz



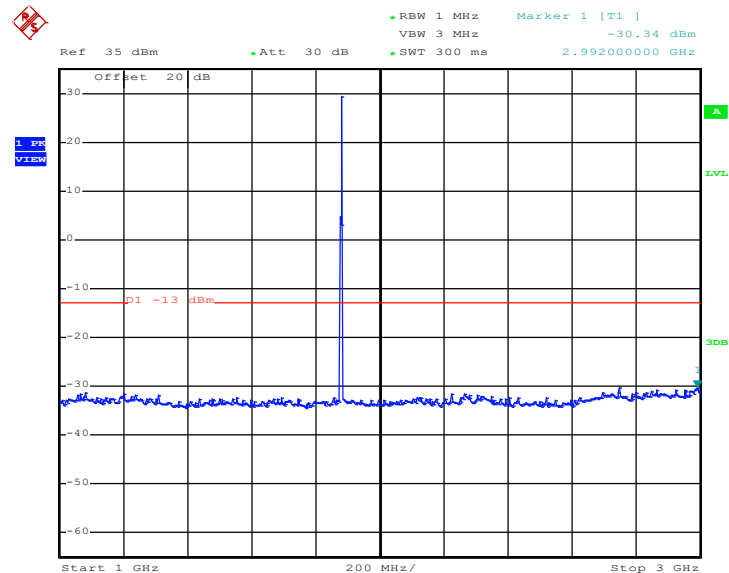
Date: 25.OCT.2014 00:00:23



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

Conducted Spurious Emission Plot between 30MHz ~ 1GHz

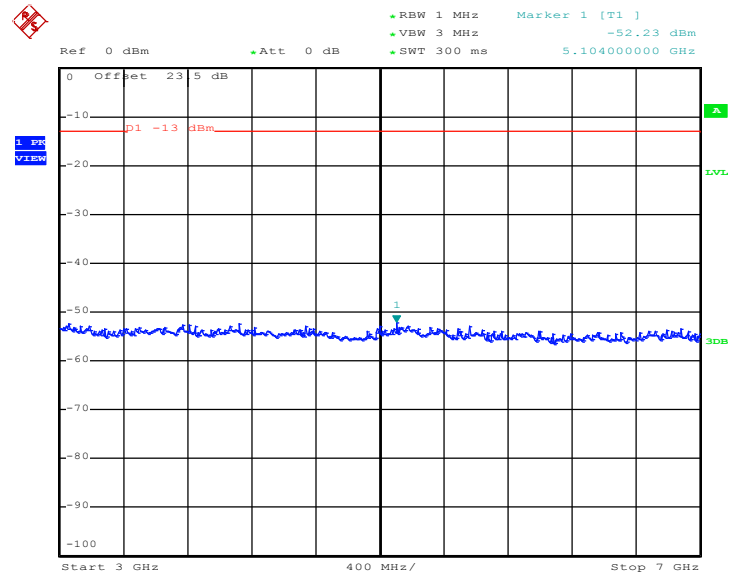
Date: 25.OCT.2014 00:00:52

Conducted Spurious Emission Plot between 1GHz ~ 3GHz

Date: 25.OCT.2014 00:01:48

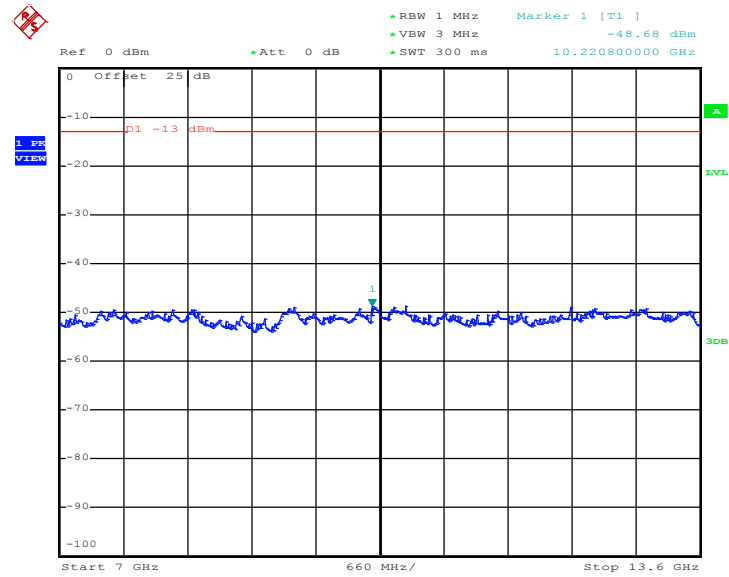


Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 25.OCT.2014 00:01:19

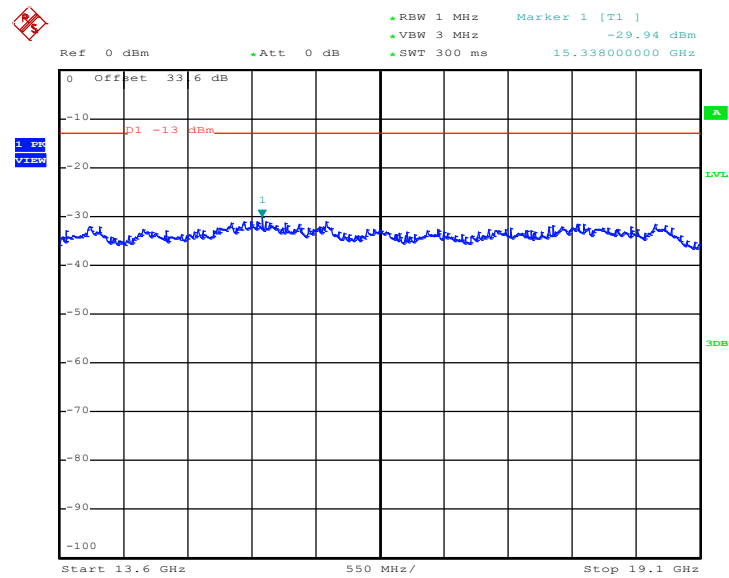
Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz



Date: 25.OCT.2014 00:01:27



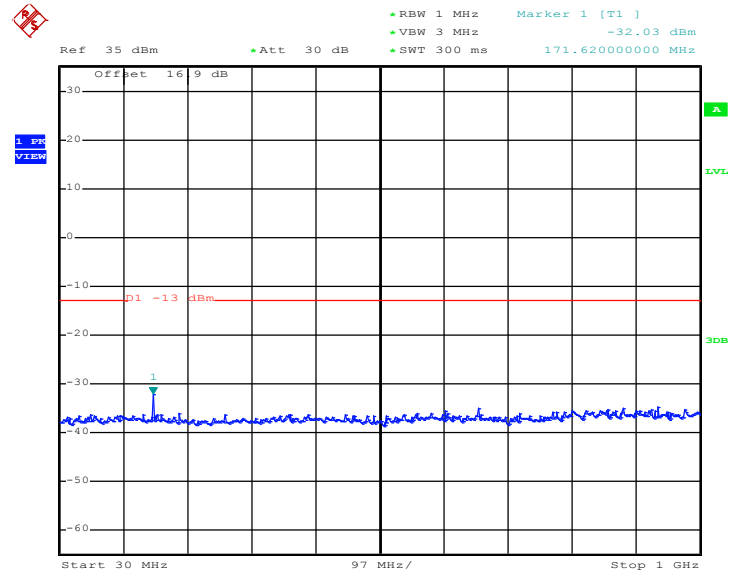
Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz



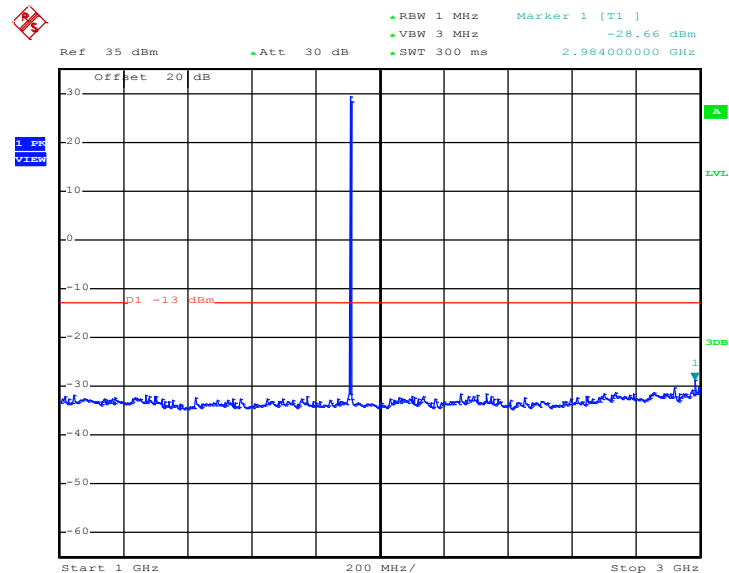
Date: 25.OCT.2014 00:01:35



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

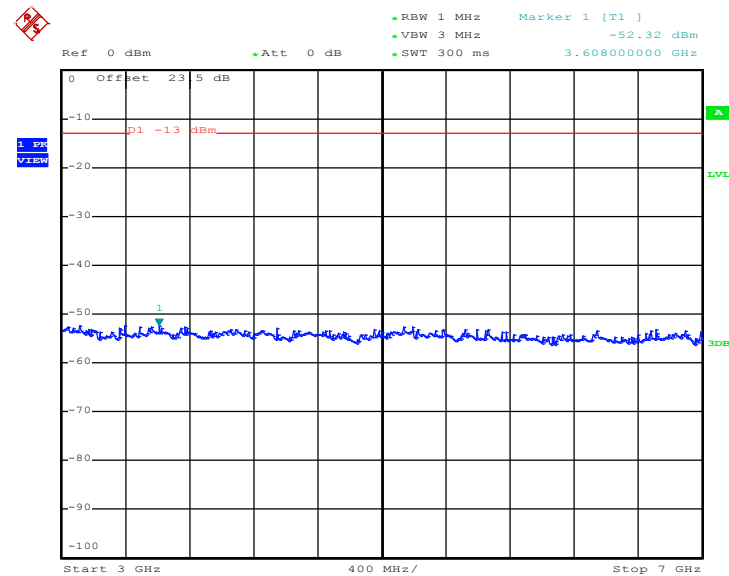
Conducted Spurious Emission Plot between 30MHz ~ 1GHz

Date: 24.OCT.2014 23:57:34

Conducted Spurious Emission Plot between 1GHz ~ 3GHz

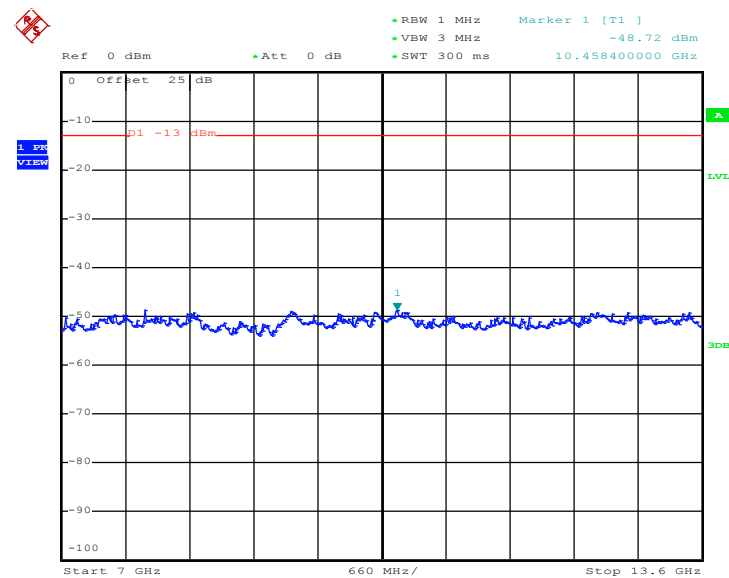
Date: 24.OCT.2014 23:57:42

Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 24.OCT.2014 23:58:18

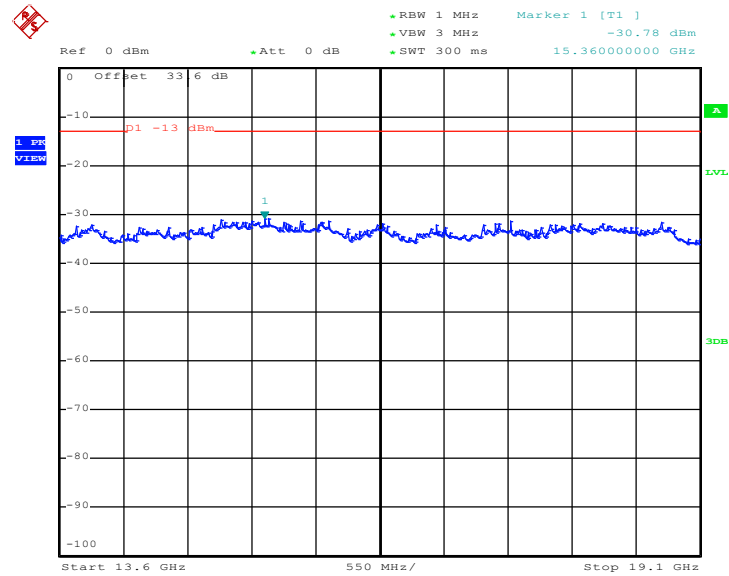
Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz



Date: 24.OCT.2014 23:58:26



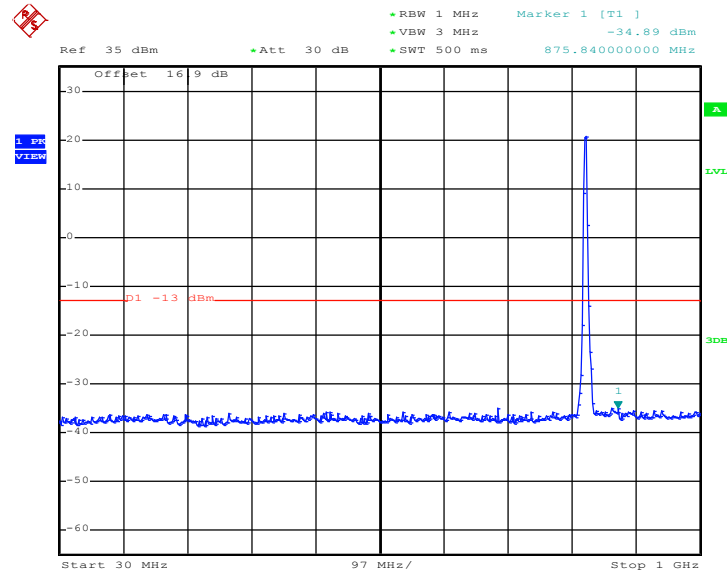
Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz



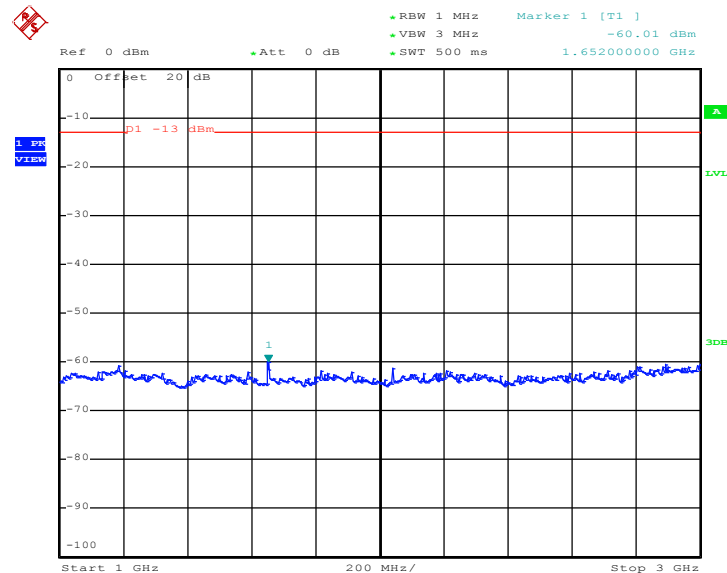
Date: 24.OCT.2014 23:58:35



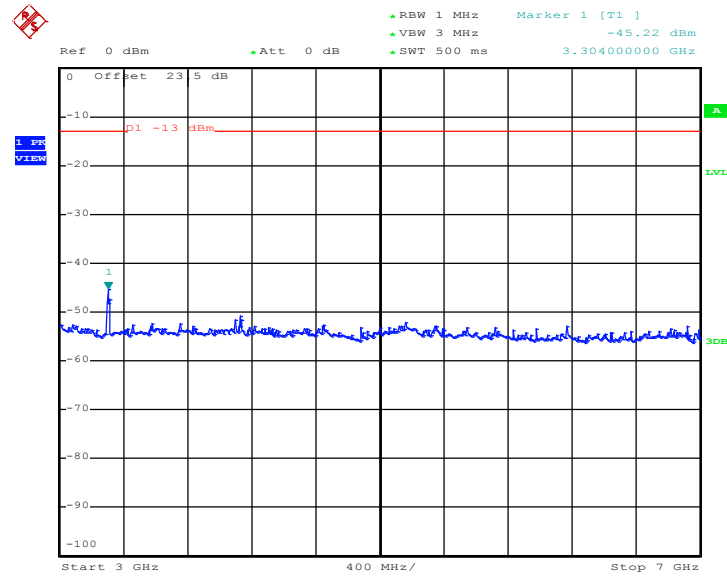
Band :	WCDMA Band V	Channel :	CH4132
Test Mode :	RMC 12.2Kbps Link (QPSK)	Frequency :	826.4 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz

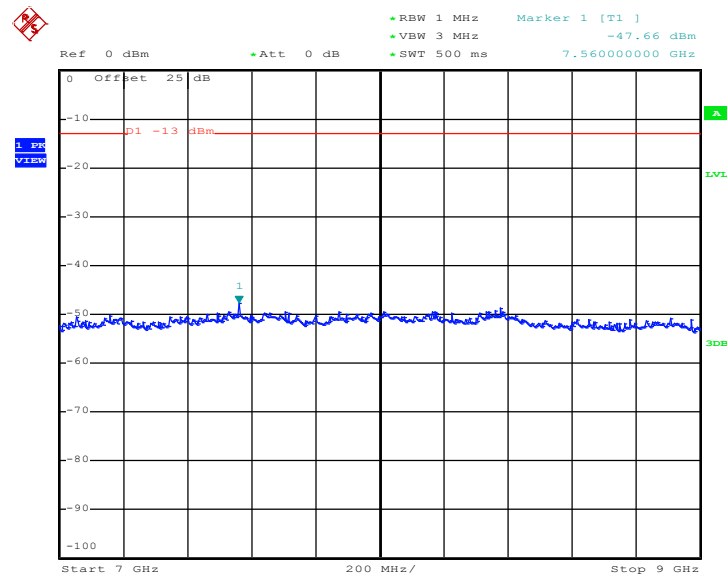
Date: 29.OCT.2014 15:44:32

Conducted Spurious Emission Plot between 1GHz ~ 3GHz

Date: 29.OCT.2014 15:44:42

Conducted Spurious Emission Plot between 3GHz ~ 7GHz


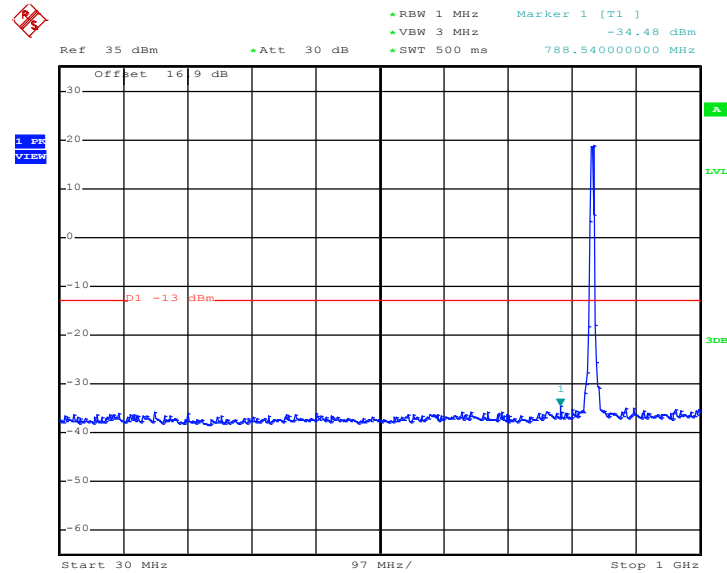
Date: 29.OCT.2014 15:44:50

Conducted Spurious Emission Plot between 7GHz ~ 9GHz


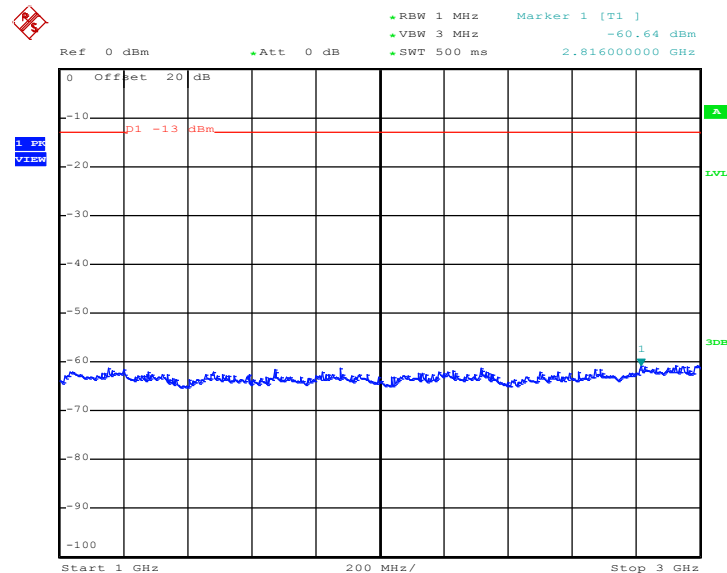
Date: 29.OCT.2014 15:44:59



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

Conducted Spurious Emission Plot between 30MHz ~ 1GHz

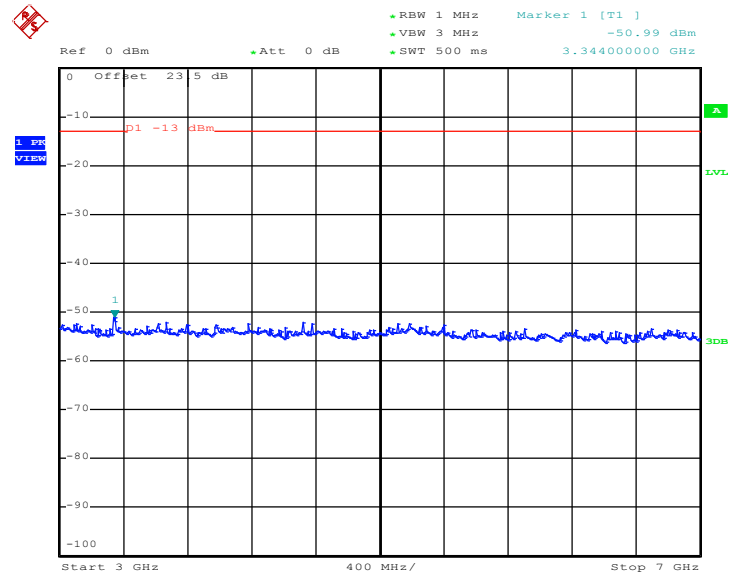
Date: 24.OCT.2014 23:08:48

Conducted Spurious Emission Plot between 1GHz ~ 3GHz

Date: 24.OCT.2014 23:08:59

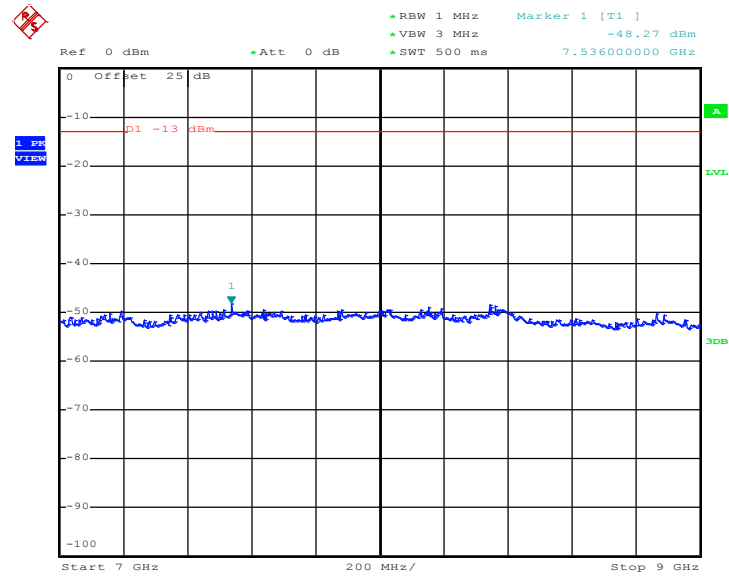


Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 24.OCT.2014 23:09:07

Conducted Spurious Emission Plot between 7GHz ~ 9GHz

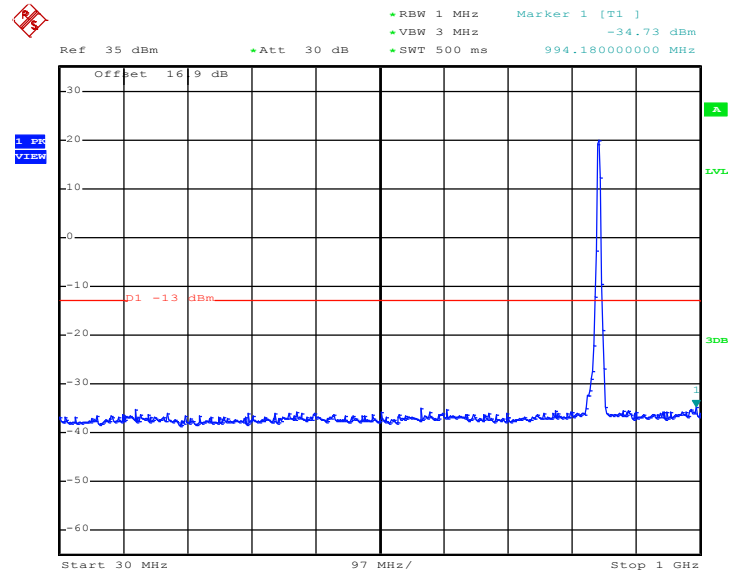


Date: 24.OCT.2014 23:09:16



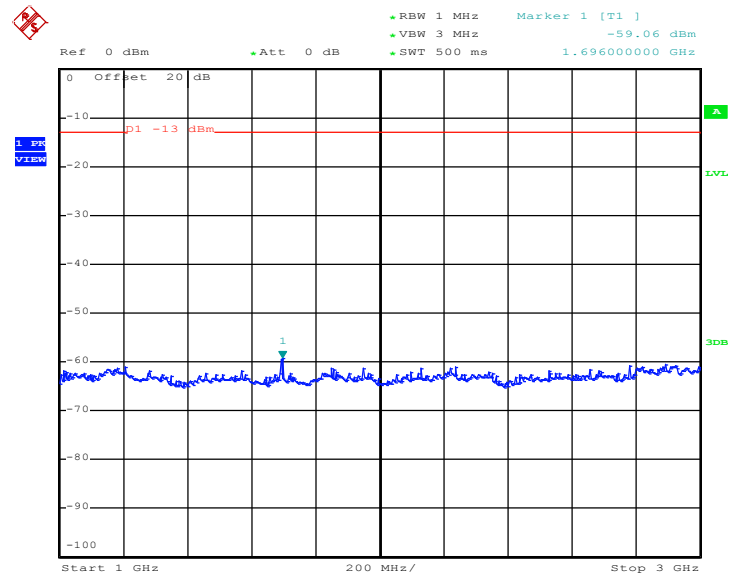
Band :	WCDMA Band V	Channel :	CH4233
Test Mode :	RMC 12.2Kbps Link (QPSK)	Frequency :	846.6 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



Date: 24.OCT.2014 23:00:09

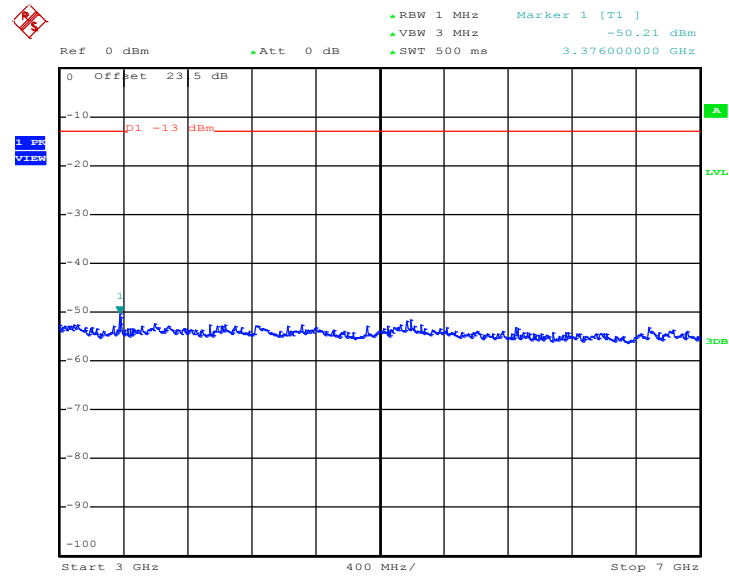
Conducted Spurious Emission Plot between 1GHz ~ 3GHz



Date: 24.OCT.2014 23:00:20

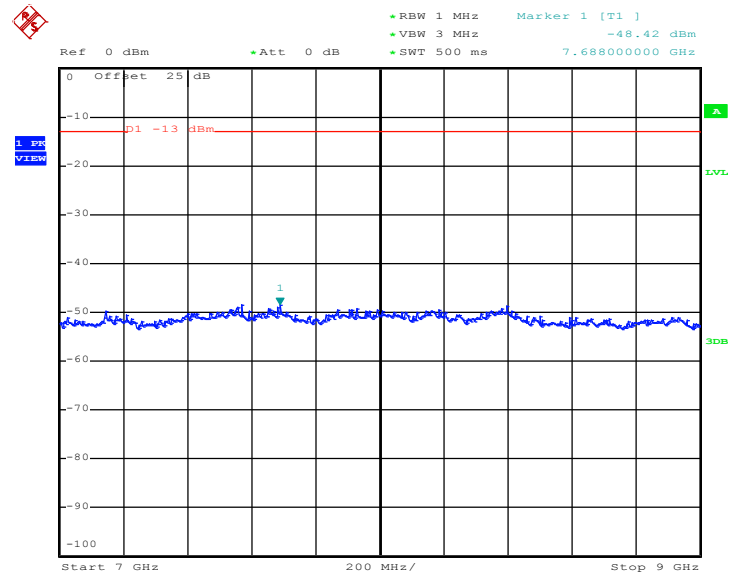


Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 24.OCT.2014 23:00:28

Conducted Spurious Emission Plot between 7GHz ~ 9GHz

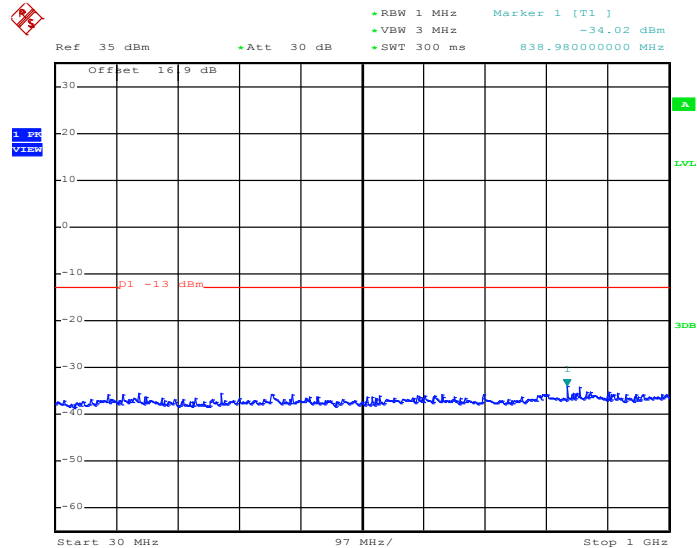


Date: 24.OCT.2014 23:00:36



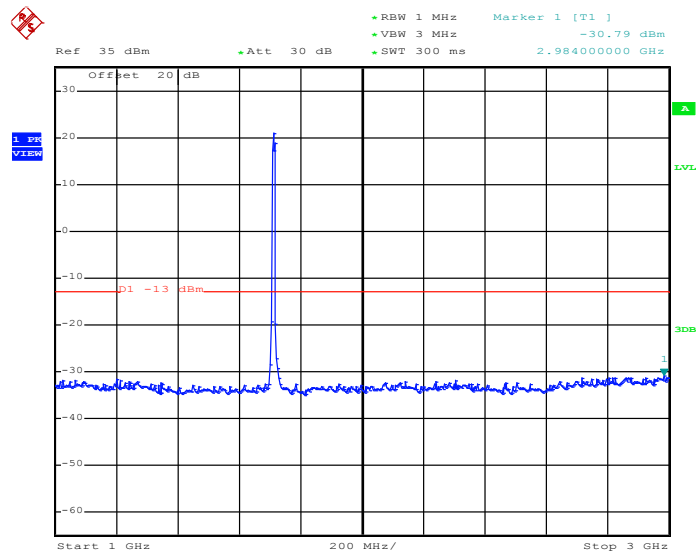
Band :	WCDMA Band IV	Channel :	CH1312
Test Mode :	RMC 12.2Kbps Link (QPSK)	Frequency :	1712.4 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



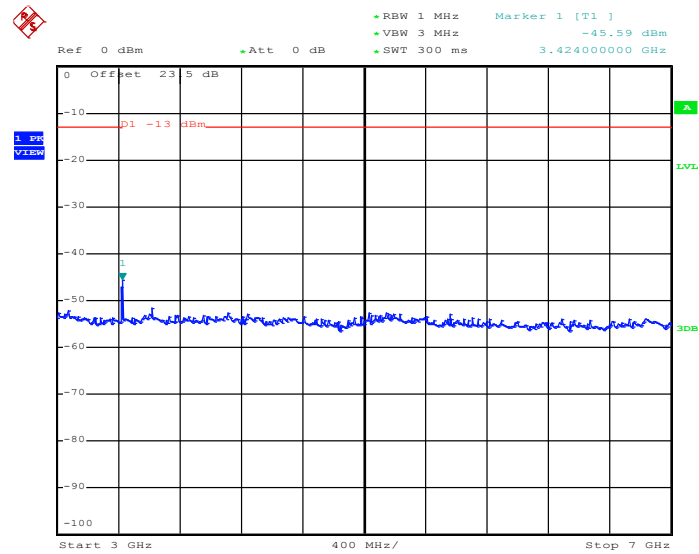
Date: 25.OCT.2014 00:50:13

Conducted Spurious Emission Plot between 1GHz ~ 3GHz



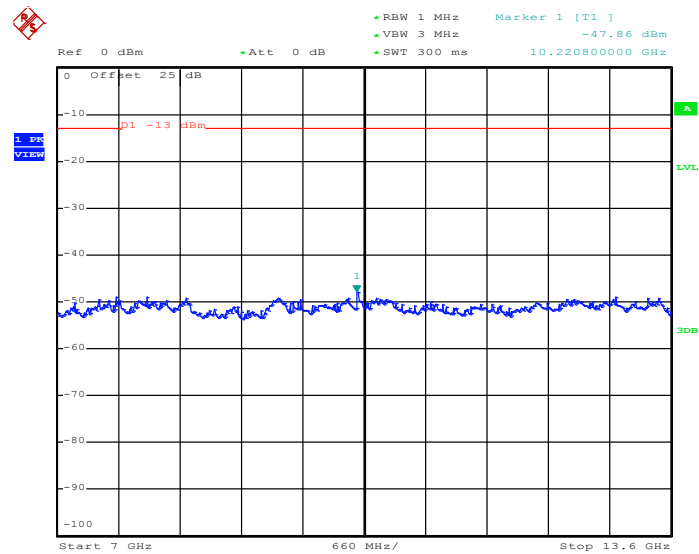
Date: 25.OCT.2014 00:50:22

Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 25.OCT.2014 00:50:40

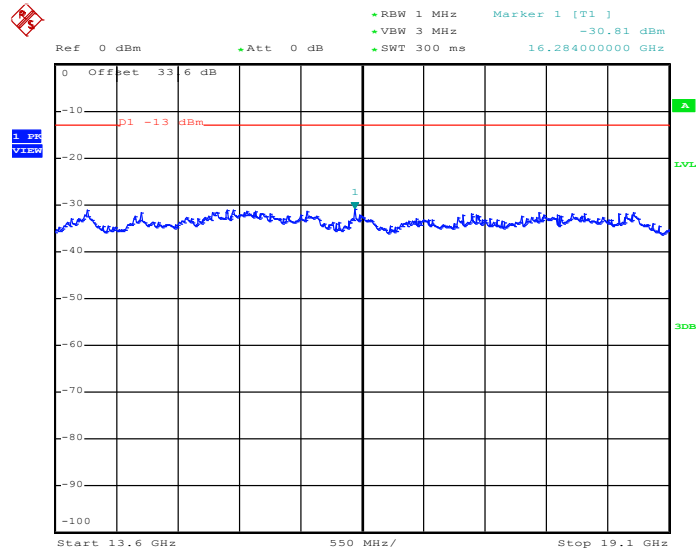
Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz



Date: 25.OCT.2014 00:50:49



Conducted Spurious Emission Plot between 13.6GHz ~ 18GHz

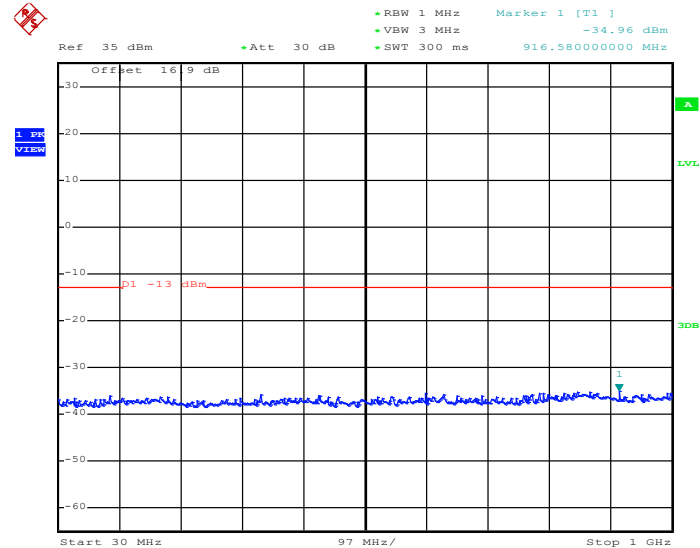


Date: 25.OCT.2014 00:50:57



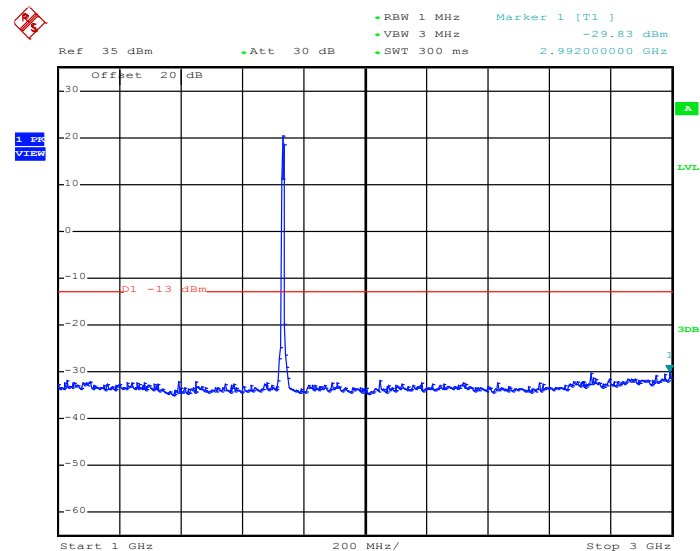
Band :	WCDMA Band IV	Channel :	CH1413
Test Mode :	RMC 12.2Kbps Link (QPSK)	Frequency :	1732.6 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



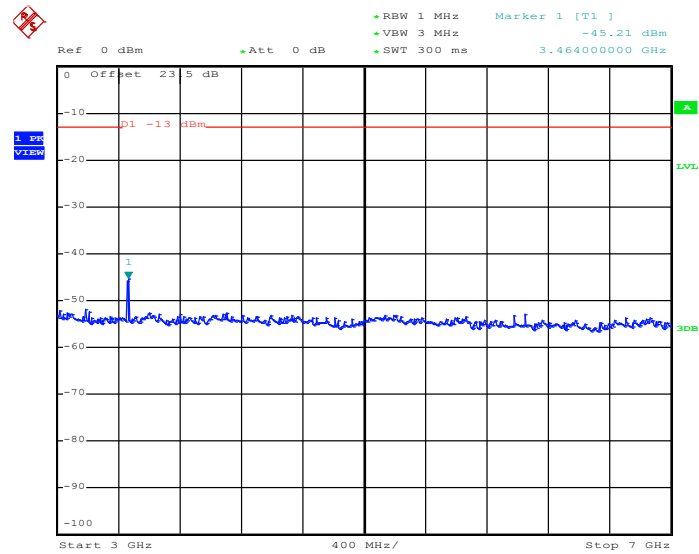
Date: 25.OCT.2014 00:51:32

Conducted Spurious Emission Plot between 1GHz ~ 3GHz



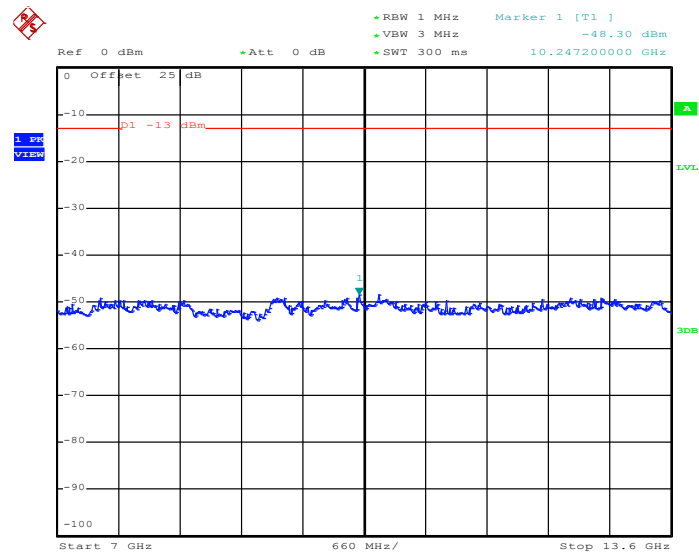
Date: 25.OCT.2014 00:51:41

Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 25.OCT.2014 00:51:56

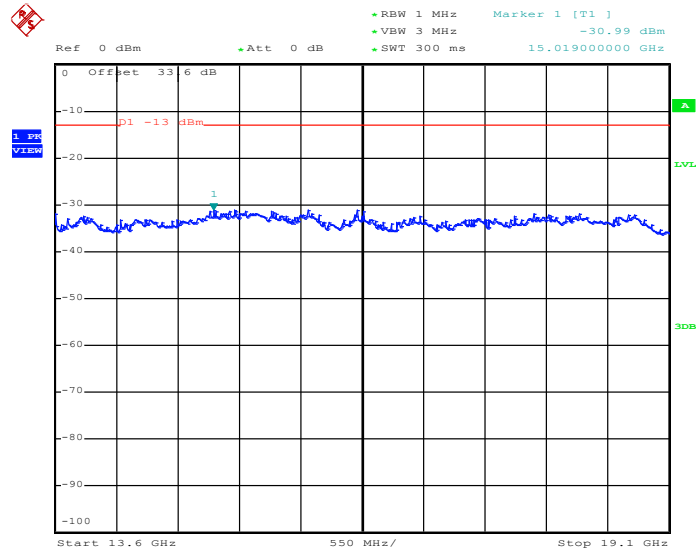
Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz



Date: 25.OCT.2014 00:52:04



Conducted Spurious Emission Plot between 13.6GHz ~ 18GHz

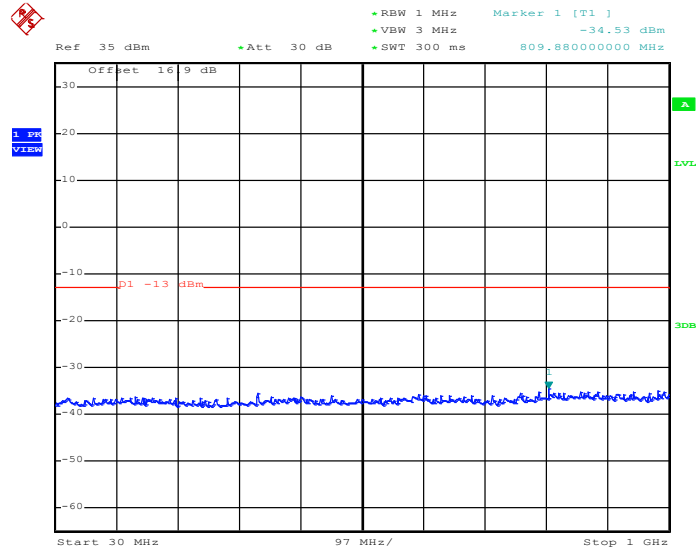


Date: 25.OCT.2014 00:52:13



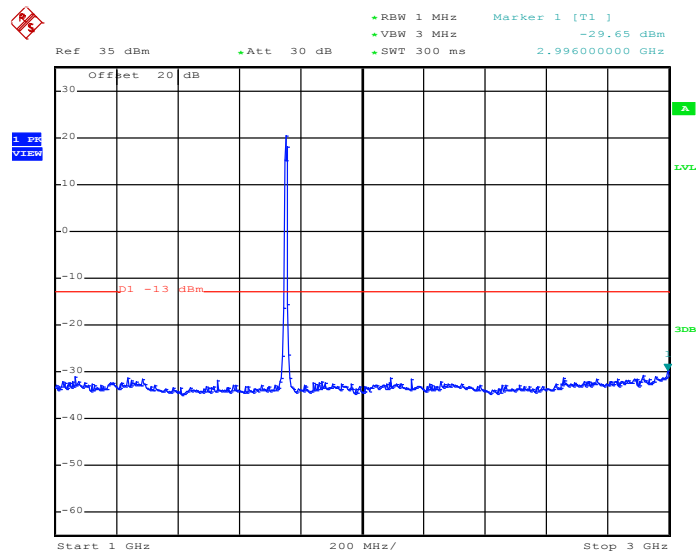
Band :	WCDMA Band IV	Channel :	CH1513
Test Mode :	RMC 12.2Kbps Link (QPSK)	Frequency :	1752.6 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



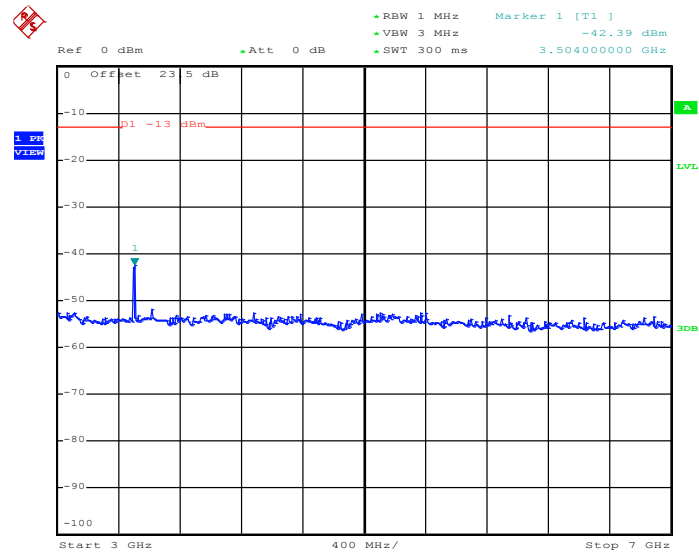
Date: 25.OCT.2014 00:49:07

Conducted Spurious Emission Plot between 1GHz ~ 3GHz



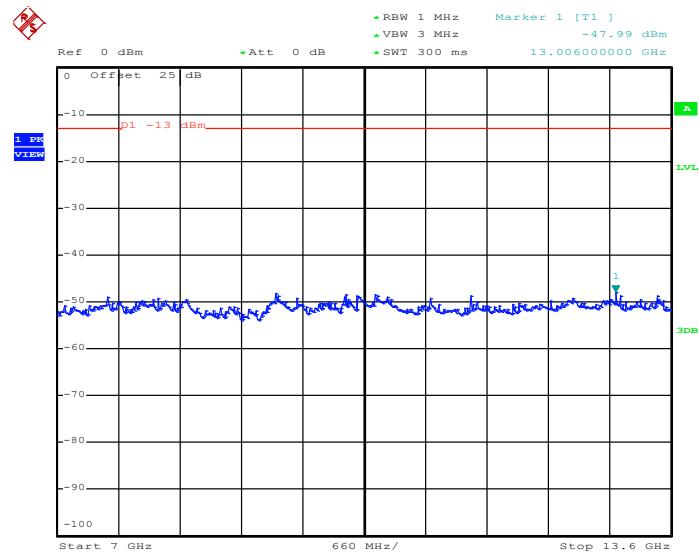
Date: 25.OCT.2014 00:49:16

Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 25.OCT.2014 00:49:27

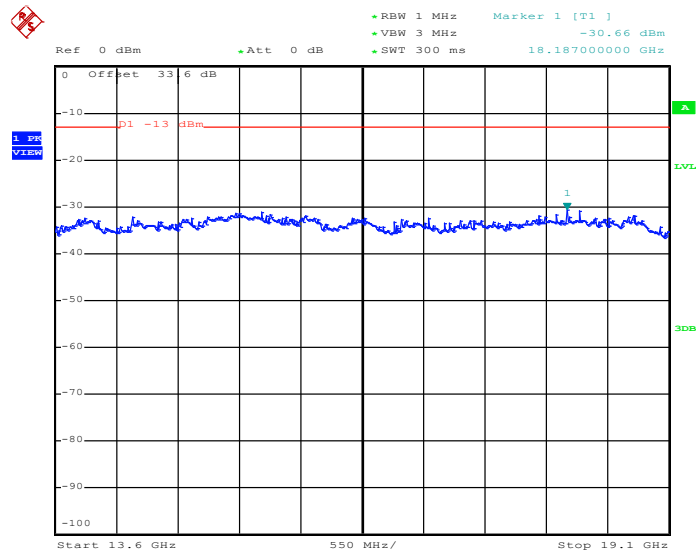
Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz



Date: 25.OCT.2014 00:49:36



Conducted Spurious Emission Plot between 13.6GHz ~ 18GHz

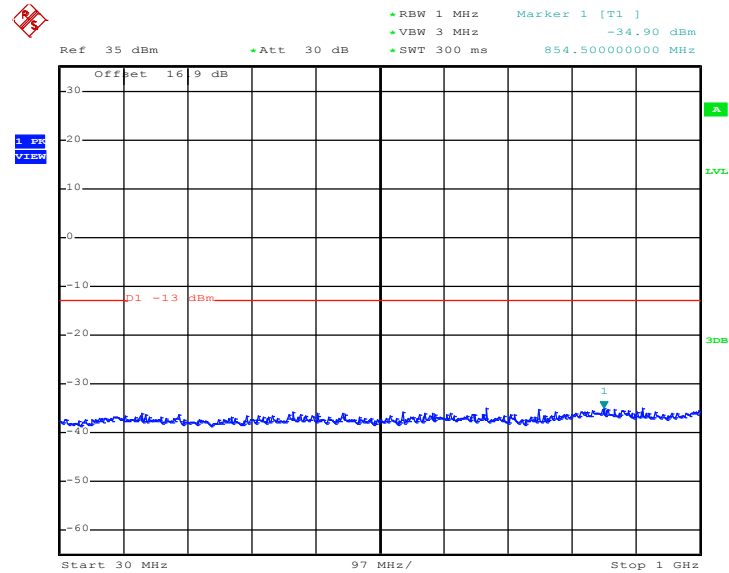


Date: 25.OCT.2014 00:49:44



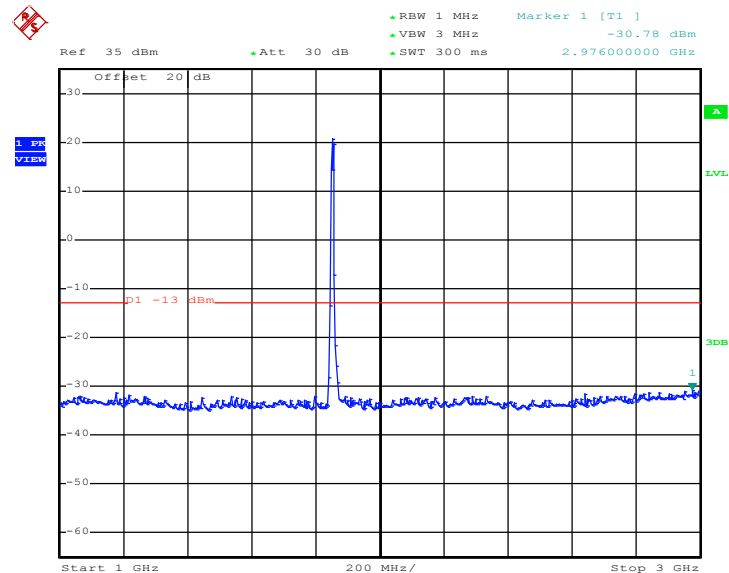
Band :	WCDMA Band II	Channel :	CH9262
Test Mode :	RMC 12.2Kbps Link (QPSK)	Frequency :	1852.4 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz

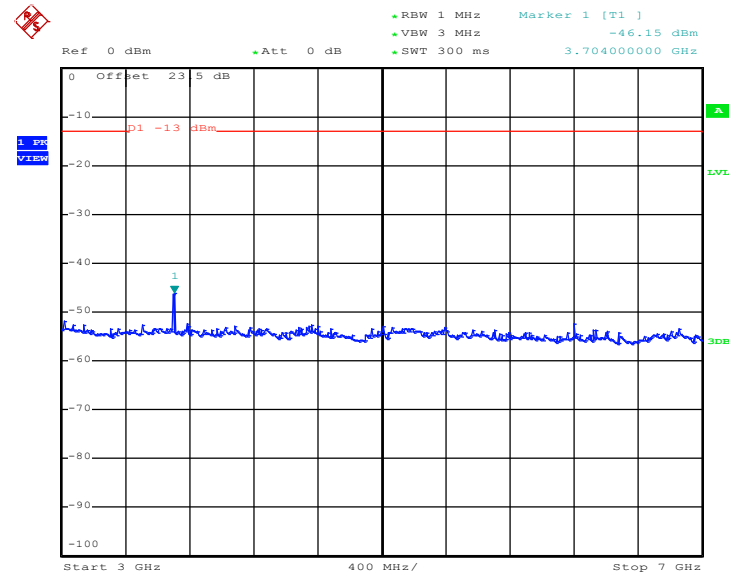


Date: 25.OCT.2014 00:24:39

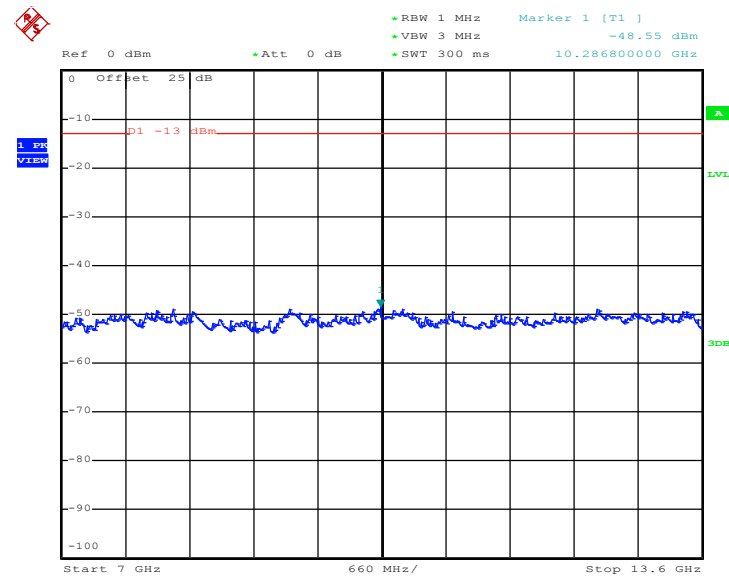
Conducted Spurious Emission Plot between 1GHz ~ 3GHz



Date: 25.OCT.2014 00:24:47

Conducted Spurious Emission Plot between 3GHz ~ 7GHz


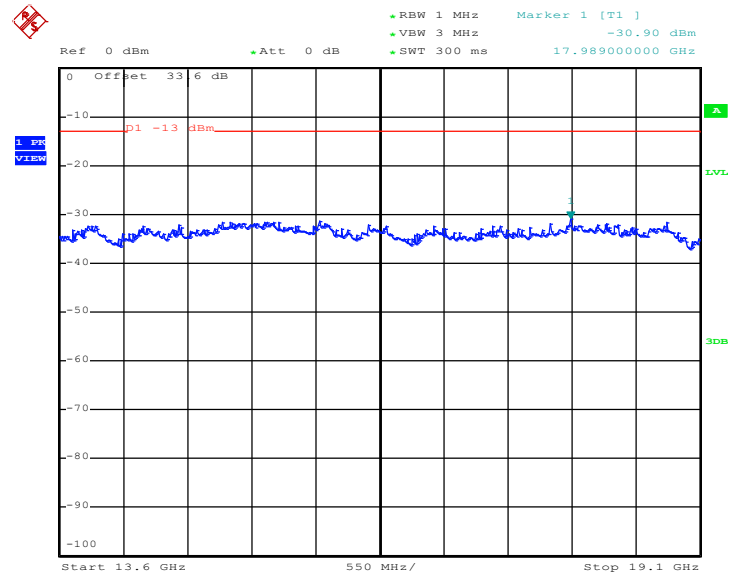
Date: 25.OCT.2014 00:25:03

Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz


Date: 25.OCT.2014 00:25:11

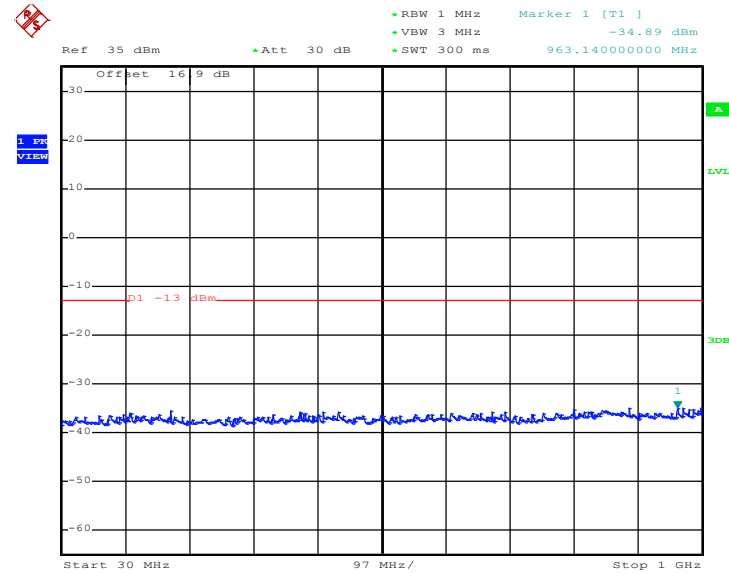


Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz

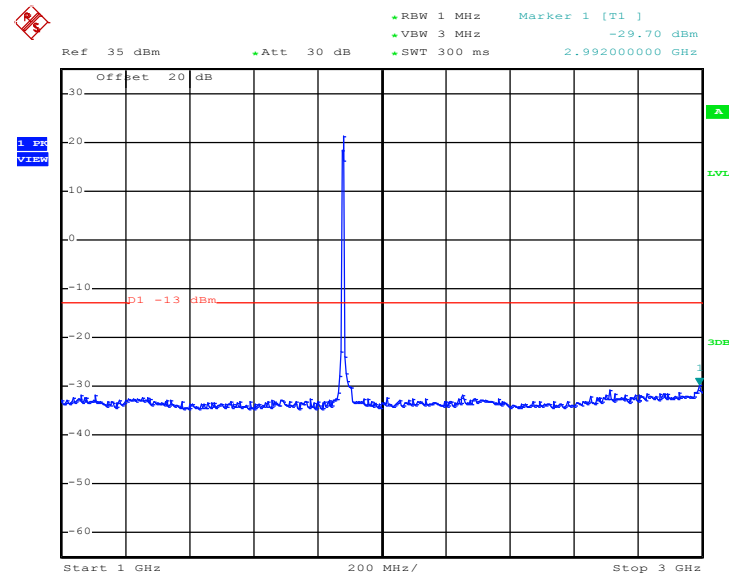


Date: 25.OCT.2014 00:25:19

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

Conducted Spurious Emission Plot between 30MHz ~ 1GHz


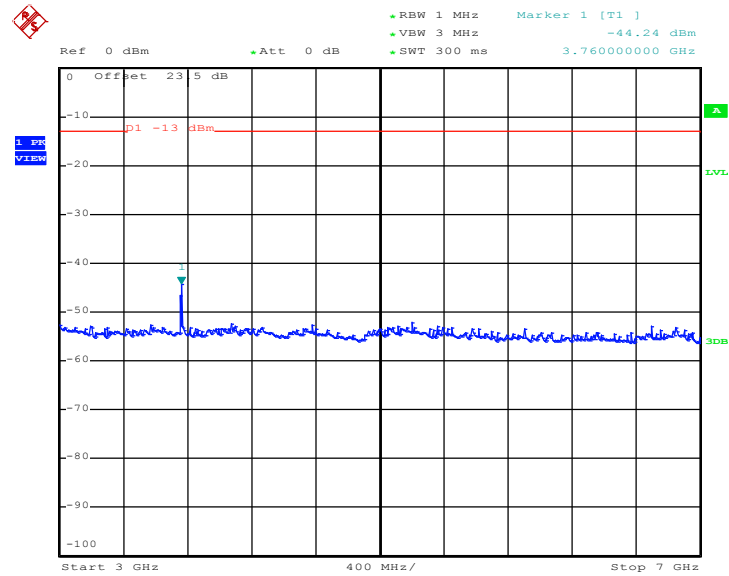
Date: 25.OCT.2014 00:28:19

Conducted Spurious Emission Plot between 1GHz ~ 3GHz


Date: 25.OCT.2014 00:28:27

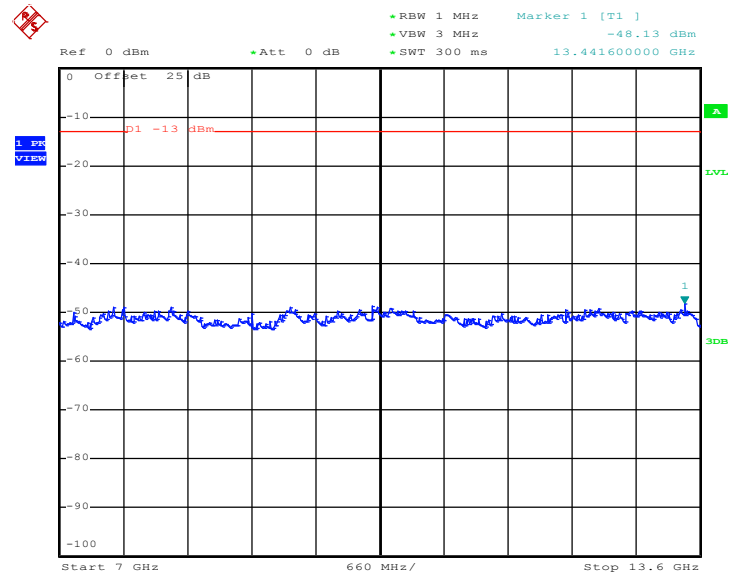


Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 25.OCT.2014 00:28:39

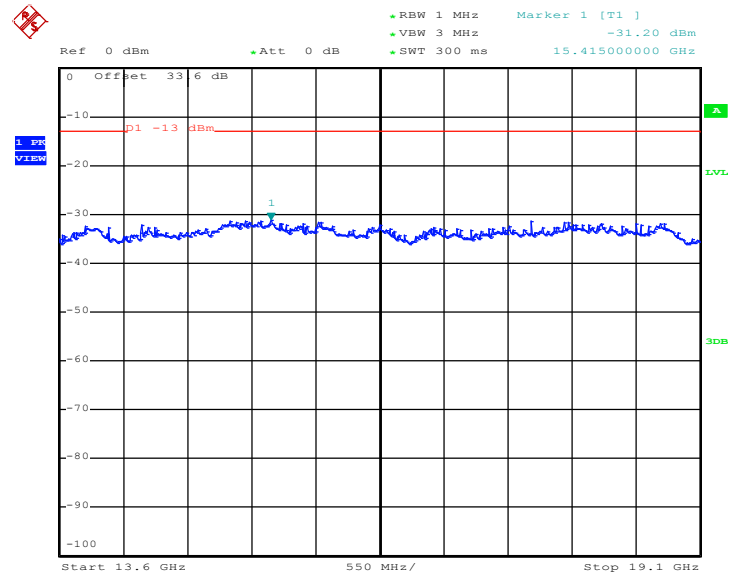
Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz



Date: 25.OCT.2014 00:28:47



Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz

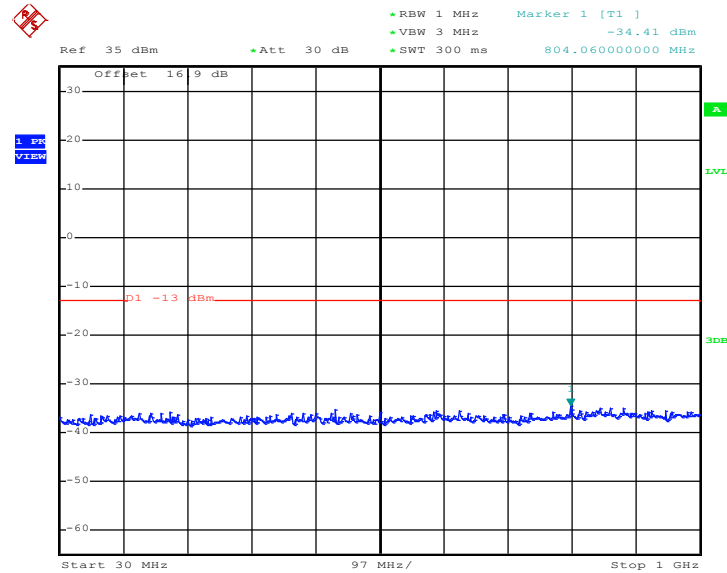


Date: 25.OCT.2014 00:28:56



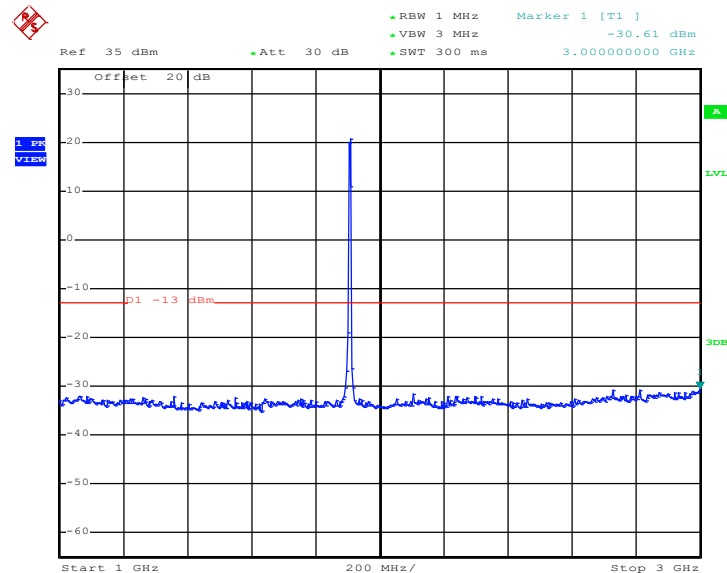
Band :	WCDMA Band II	Channel :	CH9538
Test Mode :	RMC 12.2Kbps Link (QPSK)	Frequency :	1907.6 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



Date: 25.OCT.2014 00:23:03

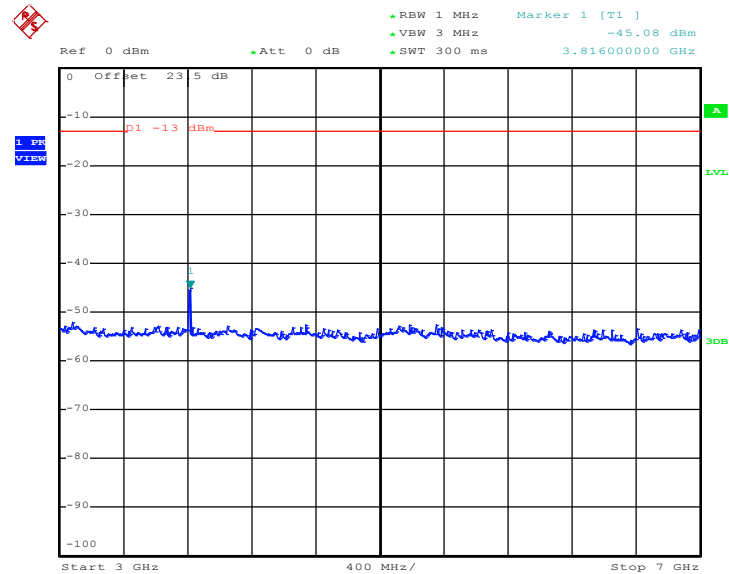
Conducted Spurious Emission Plot between 1GHz ~ 3GHz



Date: 25.OCT.2014 00:23:11

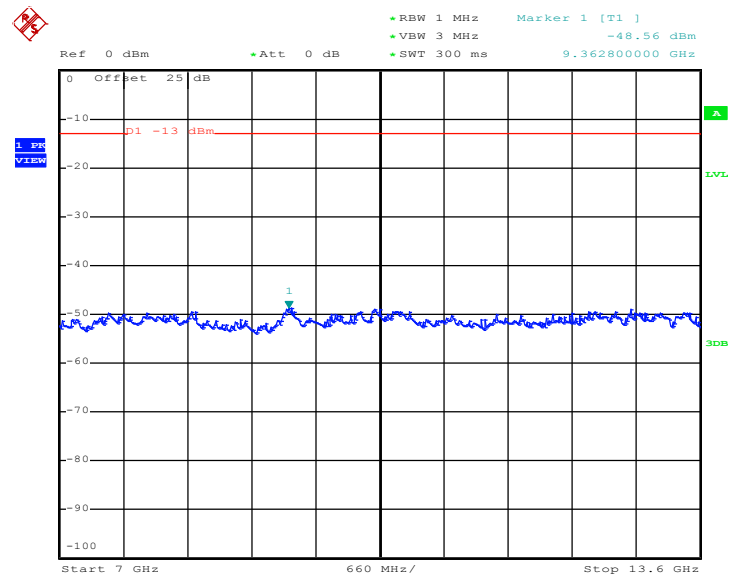


Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 25.OCT.2014 00:23:24

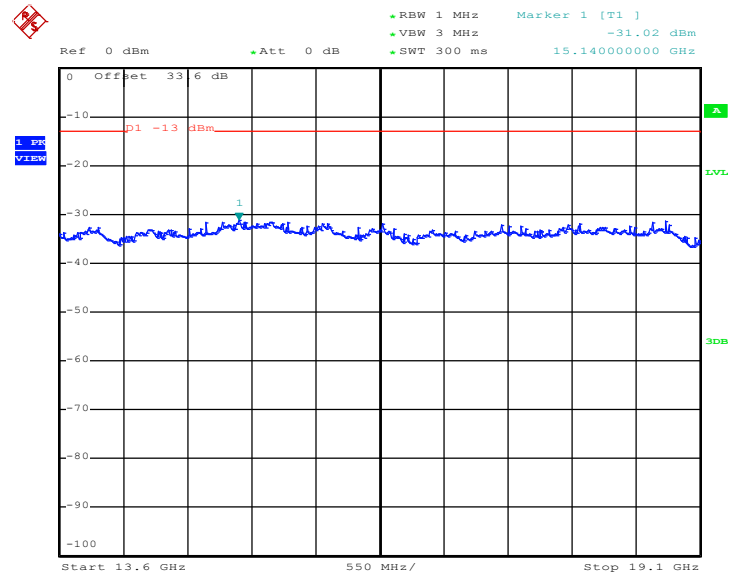
Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz



Date: 25.OCT.2014 00:23:32



Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz



Date: 25.OCT.2014 00:23:40



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

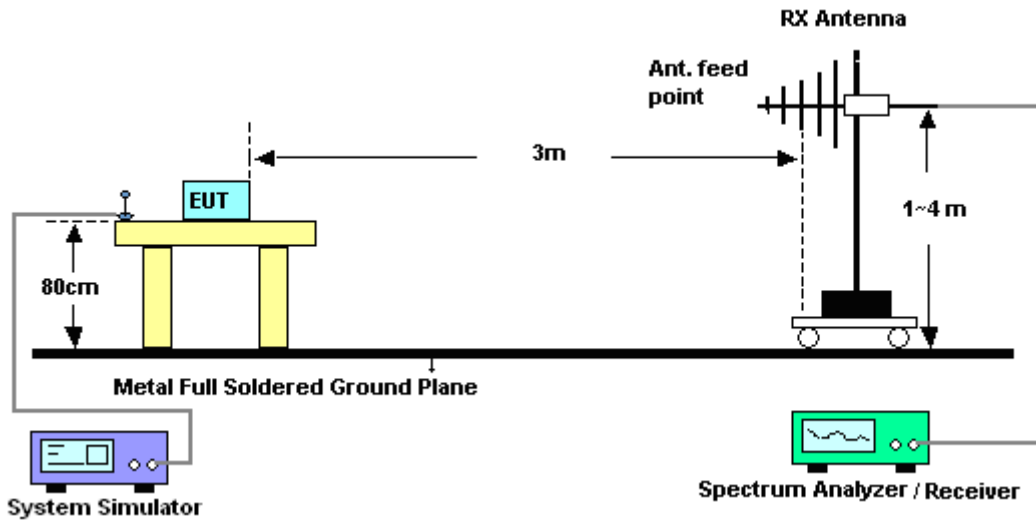
The measuring equipment is listed in the section 4 of this test report.

3.7.3 Test Procedures

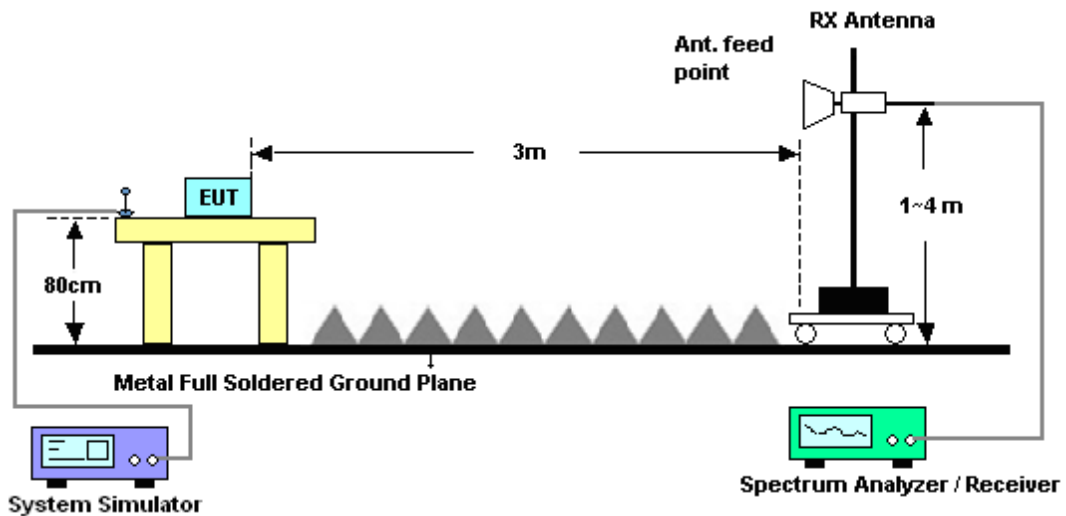
1. The testing follows FCC KDB 971168 v02r02 Section 5.8 and ANSI / TIA-603-C-2004 Section 2.2.12.
2. The EUT was placed on a rotatable wooden table 0.8 meters above the ground.
3. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
4. The table was rotated 360 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. $EIRP \text{ (dBm)} = S.G. \text{ Power} - Tx \text{ Cable Loss} + Tx \text{ Antenna Gain}$
12. $ERP \text{ (dBm)} = EIRP - 2.15$
13. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
14. The limit line is derived from $43 + 10\log(P)$ dB below the transmitter power P(Watts)
 $= P(W) - [43 + 10\log(P)] \text{ (dB)}$
 $= [30 + 10\log(P)] \text{ (dBm)} - [43 + 10\log(P)] \text{ (dB)}$
 $= -13\text{dBm}.$

3.7.4 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

<Low Channel>

Band :	GSM850	Temperature :	23~25°C						
Test Mode :	GSM Link (GMSK)	Relative Humidity :	46~48%						
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen	Polarization :	Horizontal						
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	ERP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
			Limit	Reading	Power	loss	Gain		
(MHz)	(dBm)	(dBm)	(dB)	(dBm)	(dBm)	(dB)	(dBi)	(H/V)	
1648	-37.06	-13	-24.06	-47.96	-38.82	0.98	4.89	H	Pass
2472	-47.58	-13	-34.58	-62.71	-49.46	1.28	5.32	H	Pass
3296	-50.01	-13	-37.01	-66.26	-53.42	1.54	7.10	H	Pass

Band :	GSM850						Temperature :	23~25°C	
Test Mode :	GSM Link (GMSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Vertical	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	ERP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	Limit (dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
1648	-40.01	-13	-27.01	-52.73	-41.77	0.98	4.89	V	Pass
2472	-46.79	-13	-33.79	-62.87	-48.67	1.28	5.32	V	Pass
3296	-49.13	-13	-36.13	-66.62	-52.54	1.54	7.10	V	Pass

**<Middle Channel>**

Band :	GSM850						Temperature :	23~25°C	
Test Mode :	GSM Link (GMSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Horizontal	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	ERP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	Limit (dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
1672	-41.93	-13	-28.93	-52.94	-43.61	0.99	4.82	H	Pass
2512	-46.75	-13	-33.75	-62.18	-48.72	1.29	5.41	H	Pass
3344	-49.84	-13	-36.84	-66.87	-53.45	1.56	7.31	H	Pass

Band :	GSM850						Temperature :	23~25°C	
Test Mode :	GSM Link (GMSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Vertical	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	ERP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	Limit (dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
1672	-40.64	-13	-27.64	-53.92	-42.32	0.99	4.82	V	Pass
2512	-45.92	-13	-32.92	-62.12	-47.89	1.29	5.41	V	Pass
3344	-49.53	-13	-36.53	-67.12	-53.14	1.56	7.31	V	Pass

**<High Channel>**

Band :	GSM850						Temperature :	23~25°C	
Test Mode :	GSM Link (GMSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Horizontal	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	ERP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	Limit (dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
1697	-41.71	-13	-28.71	-53.17	-43.31	1.00	4.75	H	Pass
2544	-48.88	-13	-35.88	-64.36	-50.86	1.30	5.44	H	Pass
3392	-50.96	-13	-37.96	-67.44	-54.76	1.57	7.52	H	Pass

Band :	GSM850						Temperature :	23~25°C	
Test Mode :	GSM Link (GMSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Vertical	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	ERP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	Limit (dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
1696	-41.58	-13	-28.58	-55.05	-43.18	1.00	4.75	V	Pass
2544	-47.63	-13	-34.63	-63.6	-49.61	1.30	5.44	V	Pass
3392	-49.68	-13	-36.68	-67.6	-53.48	1.57	7.52	V	Pass

**<Low Channel>**

Band :	GSM850						Temperature :	23~25℃	
Test Mode :	EDGE class 8 Link (8PSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Horizontal	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	ERP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	Limit (dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
1648	-47.57	-13	-34.57	-58.47	-49.33	0.98	4.89	H	Pass
2472	-50.58	-13	-37.58	-66.22	-52.46	1.28	5.32	H	Pass
3296	-50.87	-13	-37.87	-66.99	-54.28	1.54	7.10	H	Pass

Band :	GSM850						Temperature :	23~25℃	
Test Mode :	EDGE class 8 Link (8PSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Vertical	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	ERP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
			Limit	Reading	Power	loss	Gain		
(MHz)	(dBm)	(dBm)	(dB)	(dBm)	(dBm)	(dB)	(dBi)	(H/V)	
1648	-45.87	-13	-32.87	-58.64	-47.63	0.98	4.89	V	Pass
2472	-50.61	-13	-37.61	-66.42	-52.49	1.28	5.32	V	Pass
3296	-49.07	-13	-36.07	-67.09	-52.48	1.54	7.10	V	Pass

**<Middle Channel>**

Band :	GSM850						Temperature :	23~25°C	
Test Mode :	EDGE class 8 Link (8PSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Horizontal	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	ERP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	Limit (dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
1672	-48.69	-13	-35.69	-59.57	-50.37	0.99	4.82	H	Pass
2512	-51.89	-13	-38.89	-67.18	-53.86	1.29	5.41	H	Pass
3344	-51.57	-13	-38.57	-67.74	-55.18	1.56	7.31	H	Pass

Band :	GSM850						Temperature :	23~25°C	
Test Mode :	EDGE class 8 Link (8PSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Vertical	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	ERP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	Limit (dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
1672	-48.43	-13	-35.43	-61.75	-50.11	0.99	4.82	V	Pass
2512	-50.72	-13	-37.72	-66.9	-52.69	1.29	5.41	V	Pass
3344	-49.87	-13	-36.87	-67.16	-53.48	1.56	7.31	V	Pass

**<High Channel>**

Band :	GSM850						Temperature :	23~25℃	
Test Mode :	EDGE class 8 Link (8PSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Horizontal	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	ERP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	Limit (dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
1696	-47.04	-13	-34.04	-58.14	-48.64	1.00	4.75	H	Pass
2544	-51.50	-13	-38.50	-66.88	-53.48	1.30	5.44	H	Pass
3392	-51.07	-13	-38.07	-67.23	-54.87	1.57	7.52	H	Pass

Band :	GSM850						Temperature :	23~25°C	
Test Mode :	EDGE class 8 Link (8PSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Vertical	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	ERP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	Limit (dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
1696	-50.15	-13	-37.15	-63.25	-51.75	1.00	4.75	V	Pass
2544	-51.00	-13	-38.00	-66.49	-55.13	1.30	5.44	V	Pass
3392	-48.84	-13	-35.84	-66.84	-54.79	1.57	7.52	V	Pass

**<Low Channel>**

Band :	GSM1900						Temperature :	23~25°C	
Test Mode :	GSM Link (GMSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Horizontal	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	EIRP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	Limit (dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
3700	-48.33	-13	-35.33	-65.99	-54.9	1.67	8.24	H	Pass
5548	-41.73	-13	-28.73	-64.65	-48.8	2.65	9.72	H	Pass
7401	-36.96	-13	-23.96	-66.88	-46.1	2.46	11.60	H	Pass

Band :	GSM1900						Temperature :	23~25°C	
Test Mode :	GSM Link (GMSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Vertical	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	EIRP	Limit	Over Limit	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	(dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
3700	-47.13	-13	-34.13	-65.97	-53.7	1.67	8.24	V	Pass
5548	-38.43	-13	-25.43	-61.39	-45.5	2.65	9.72	V	Pass
7401	-37.56	-13	-24.56	-67.05	-46.7	2.46	11.60	V	Pass

**<Middle Channel>**

Band :	GSM1900	Temperature :	23~25°C						
Test Mode :	GSM Link (GMSK)	Relative Humidity :	46~48%						
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen	Polarization :	Horizontal						
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	EIRP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
			Limit	Reading	Power	loss	Gain		
(MHz)	(dBm)	(dBm)	(dB)	(dBm)	(dBm)	(dB)	(dBi)	(H/V)	
3756	-46.48	-13	-33.48	-64.53	-53.1	1.68	8.31	H	Pass
5639	-21.45	-13	-8.45	-45.16	-28.5	2.71	9.76	H	Pass
7520	-37.71	-13	-24.71	-67.66	-47.1	2.42	11.81	H	Pass

Band :	GSM1900	Temperature :	23~25°C						
Test Mode :	GSM Link (GMSK)	Relative Humidity :	46~48%						
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen	Polarization :	Vertical						
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	EIRP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	Limit (dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
3756	-44.28	-13	-31.28	-63.56	-50.9	1.68	8.31	V	Pass
5639	-25.05	-13	-12.05	-48.19	-32.1	2.71	9.76	V	Pass
7520	-37.51	-13	-24.51	-67.6	-46.9	2.42	11.81	V	Pass

**<High Channel>**

Band :	GSM1900						Temperature :	23~25°C	
Test Mode :	GSM Link (GMSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Horizontal	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	EIRP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	Limit	Reading	Power	loss	Gain	(H/V)	
3819	-48.02	-13	-35.02	-66.38	-54.7	1.70	8.38	H	Pass
5730	-16.77	-13	-3.77	-40.14	-23.8	2.76	9.79	H	Pass
7639	-30.50	-13	-17.50	-66.88	-40	2.38	11.88	H	Pass

Band :	GSM1900						Temperature :	23~25°C	
Test Mode :	GSM Link (GMSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Vertical	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	EIRP	Limit	Over Limit	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	(dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
3819	-47.12	-13	-34.12	-66.29	-53.8	1.70	8.38	V	Pass
5730	-16.37	-13	-3.37	-39.92	-23.4	2.76	9.79	V	Pass
7639	-38.60	-13	-25.60	-67.65	-48.1	2.38	11.88	V	Pass

**<Low Channel>**

Band :	GSM1900						Temperature :	23~25°C	
Test Mode :	EDGE class 8 Link (8PSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Horizontal	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	EIRP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	Limit (dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
3700	-47.53	-13	-34.53	-65.47	-54.1	1.67	8.24	H	Pass
5548	-43.53	-13	-30.53	-66.67	-50.6	2.65	9.72	H	Pass
7403	-38.05	-13	-25.05	-68.27	-47.2	2.46	11.61	H	Pass

Band :	GSM1900						Temperature :	23~25°C	
Test Mode :	EDGE class 8 Link (8PSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Vertical	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	EIRP	Limit	Over Limit	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	(dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
3700	-47.53	-13	-34.53	-66.49	-54.1	1.67	8.24	V	Pass
5548	-44.43	-13	-31.43	-67.58	-51.5	2.65	9.72	V	Pass
7400	-37.96	-13	-24.96	-67.6	-47.1	2.46	11.60	V	Pass

**<Middle Channel>**

Band :	GSM1900						Temperature :	23~25°C	
Test Mode :	EDGE class 8 Link (8PSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Horizontal	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	EIRP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	Limit (dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
3763	-49.17	-13	-36.17	-66.99	-55.8	1.69	8.32	H	Pass
5639	-42.15	-13	-29.15	-65.69	-49.2	2.71	9.76	H	Pass
7522	-38.11	-13	-25.11	-68.23	-47.5	2.42	11.81	H	Pass

Band :	GSM1900						Temperature :	23~25°C	
Test Mode :	EDGE class 8 Link (8PSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Vertical	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	EIRP	Limit	Over Limit	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	(dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
3763	-47.27	-13	-34.27	-66.54	-53.9	1.69	8.32	V	Pass
5639	-41.55	-13	-28.55	-64.71	-48.6	2.71	9.76	V	Pass
7522	-37.81	-13	-24.81	-67.78	-47.2	2.42	11.81	V	Pass

**<High Channel>**

Band :	GSM1900						Temperature :	23~25°C	
Test Mode :	EDGE class 8 Link (8PSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Horizontal	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	EIRP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	Limit (dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
3819	-48.92	-13	-35.92	-67.5	-55.6	1.70	8.38	H	Pass
5730	-35.47	-13	-22.47	-59.37	-42.5	2.76	9.79	H	Pass
7638	-38.10	-13	-25.10	-67.02	-47.6	2.38	11.88	H	Pass

Band :	GSM1900						Temperature :	23~25°C	
Test Mode :	EDGE class 8 Link (8PSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Vertical	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	EIRP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	Limit (dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
3819	-48.12	-13	-35.12	-67.34	-54.8	1.70	8.38	V	Pass
5730	-34.37	-13	-21.37	-58.16	-41.4	2.76	9.79	V	Pass
7639	-37.80	-13	-24.80	-66.74	-47.3	2.38	11.88	V	Pass

**<Low Channel>**

Band :	WCDMA Band V						Temperature :	23~25°C	
Test Mode :	RMC 12.2Kbps Link (QPSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Horizontal	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	ERP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	Limit (dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
1652	-53.74	-13	-40.74	-64.82	-55.48	0.98	4.87	H	Pass
2480	-50.22	-13	-37.22	-65.69	-52.13	1.28	5.34	H	Pass
3304	-50.90	-13	-37.90	-66.85	-54.34	1.54	7.14	H	Pass

Band :	WCDMA Band V						Temperature :	23~25°C	
Test Mode :	RMC 12.2Kbps Link (QPSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Vertical	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	ERP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	Limit (dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
1656	-51.64	-13	-38.64	-65.1	-53.37	0.98	4.86	V	Pass
2480	-50.50	-13	-37.50	-66.47	-52.41	1.28	5.34	V	Pass
3304	-49.95	-13	-36.95	-67.17	-53.39	1.54	7.14	V	Pass

**<Middle Channel>**

Band :	WCDMA Band V						Temperature :	23~25°C	
Test Mode :	RMC 12.2Kbps Link (QPSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Horizontal	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	ERP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	Limit (dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
1672	-53.45	-13	-40.45	-64.42	-55.13	0.99	4.82	H	Pass
2512	-50.51	-13	-37.51	-65.89	-52.48	1.29	5.41	H	Pass
3344	-50.84	-13	-37.84	-66.8	-54.45	1.56	7.31	H	Pass

Band :	WCDMA Band V						Temperature :	23~25°C	
Test Mode :	RMC 12.2Kbps Link (QPSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Vertical	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	ERP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	Limit (dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
1672	-51.80	-13	-38.80	65.31	-53.48	0.99	4.82	V	Pass
2512	-49.72	-13	-36.72	-65.6	-51.69	1.29	5.41	V	Pass
3344	-48.96	-13	-35.96	-66.95	-52.57	1.56	7.31	V	Pass

**<High Channel>**

Band :	WCDMA Band V						Temperature :	23~25°C	
Test Mode :	RMC 12.2Kbps Link (QPSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Horizontal	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	ERP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	Limit (dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
1696	-53.88	-13	-40.88	-64.85	-55.48	1.00	4.75	H	Pass
2536	-49.91	-13	-36.91	-65.63	-51.89	1.30	5.43	H	Pass
3384	-50.35	-13	-37.35	-66.66	-54.12	1.57	7.49	H	Pass

Band :	WCDMA Band V						Temperature :	23~25°C	
Test Mode :	RMC 12.2Kbps Link (QPSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Vertical	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	ERP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	Limit (dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
1696	-51.88	-13	-38.88	-64.93	-53.48	1.00	4.75	V	Pass
2536	-49.98	-13	-36.98	-66.12	-51.96	1.30	5.43	V	Pass
3384	-48.71	-13	-35.71	-66.35	-52.48	1.57	7.49	V	Pass

**<Low Channel>**

Band :	WCDMA Band IV						Temperature :	23~25°C	
Test Mode :	RMC 12.2Kbps Link (QPSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Horizontal	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	EIRP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	Limit (dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
3427	-44.19	-13	-31.19	-60.07	-50.29	1.58	7.68	H	Pass
5135	-47.05	-13	-34.05	-67.46	-54.34	2.41	9.70	H	Pass
6850	-39.87	-13	-26.87	-67.43	-47.85	2.64	10.62	H	Pass

Band :	WCDMA Band IV						Temperature :	23~25°C	
Test Mode :	RMC 12.2Kbps Link (QPSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Vertical	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	EIRP	Limit	Over Limit	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	(dB)	(dBm)	(dBm)	loss (dB)	Gain (dBi)	(H/V)	
3427	-47.37	-13	-34.37	-64.89	-53.47	1.58	7.68	V	Pass
5135	-47.45	-13	-34.45	-67.66	-54.74	2.41	9.70	V	Pass
6850	-39.51	-13	-26.51	-66.67	-47.49	2.64	10.62	V	Pass

**<Middle Channel>**

Band :	WCDMA Band IV						Temperature :	23~25°C	
Test Mode :	RMC 12.2Kbps Link (QPSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Horizontal	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	EIRP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	Limit (dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
3462	-42.00	-13	-29.00	-58.47	-48.24	1.59	7.83	H	Pass
5198	-46.02	-13	-33.02	-67.17	-53.27	2.45	9.70	H	Pass
6927	-39.26	-13	-26.26	-67.24	-47.36	2.61	10.71	H	Pass

Band :	WCDMA Band IV						Temperature :	23~25°C	
Test Mode :	RMC 12.2Kbps Link (QPSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Vertical	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	EIRP	Limit	Over Limit	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	(dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
3462	-46.24	-13	-33.24	-63.69	-52.48	1.59	7.83	V	Pass
5198	-47.02	-13	-34.02	-67.75	-54.27	2.45	9.70	V	Pass
6930	-40.02	-13	-27.02	-67.1	-48.12	2.61	10.72	V	Pass

**<High Channel>**

Band :	WCDMA Band IV						Temperature :	23~25°C	
Test Mode :	RMC 12.2Kbps Link (QPSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Horizontal	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	EIRP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	Limit (dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
3504	-43.81	-13	-30.81	-60.58	-50.21	1.61	8.00	H	Pass
5254	-46.97	-13	-33.97	-67.98	-54.19	2.48	9.70	H	Pass
7011	-39.15	-13	-26.15	-67.9	-47.39	2.59	10.82	H	Pass

Band :	WCDMA Band IV						Temperature :	23~25°C	
Test Mode :	RMC 12.2Kbps Link (QPSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Vertical	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	EIRP	Limit	Over Limit	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	(dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
3504	-46.46	-13	-33.46	-64.1	-52.86	1.61	8.00	V	Pass
5254	-46.95	-13	-33.95	-67.85	-54.17	2.48	9.70	V	Pass
7011	-38.97	-13	-25.97	-66.46	-47.21	2.59	10.82	V	Pass

**<Low Channel>**

Band :	WCDMA Band II						Temperature :	23~25°C	
Test Mode :	RMC 12.2Kbps Link (QPSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Horizontal	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	EIRP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	Limit (dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
3700	-46.63	-13	-33.63	-64.55	-53.2	1.67	8.24	H	Pass
5558	-43.64	-13	-30.64	-66.52	-50.7	2.66	9.72	H	Pass
7410	-37.84	-13	-24.84	-67.44	-47	2.46	11.62	H	Pass

Band :	WCDMA Band II						Temperature :	23~25°C	
Test Mode :	RMC 12.2Kbps Link (QPSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Vertical	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	EIRP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	Limit (dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
3707	-44.32	-13	-31.32	-63.44	-50.9	1.67	8.25	V	Pass
5558	-45.14	-13	-32.14	-67.75	-52.2	2.66	9.72	V	Pass
7410	-38.44	-13	-25.44	-67.68	-47.6	2.46	11.62	V	Pass

**<Middle Channel>**

Band :	WCDMA Band II						Temperature :	23~25°C	
Test Mode :	RMC 12.2Kbps Link (QPSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Horizontal	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	EIRP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	Limit (dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
3763	-45.87	-13	-32.87	-63.71	-52.5	1.69	8.32	H	Pass
5640	-43.75	-13	-30.75	-66.78	-50.8	2.71	9.76	H	Pass
7520	-38.51	-13	-25.51	-68.13	-47.9	2.42	11.81	H	Pass

Band :	WCDMA Band II						Temperature :	23~25°C	
Test Mode :	RMC 12.2Kbps Link (QPSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Vertical	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	EIRP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	Limit (dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
3756	-45.98	-13	-32.98	-64.77	-52.6	1.68	8.31	V	Pass
5640	-43.25	-13	-30.25	-65.86	-50.3	2.71	9.76	V	Pass
7520	-38.31	-13	-25.31	-67.75	-47.7	2.42	11.81	V	Pass

**<High Channel>**

Band :	WCDMA Band II						Temperature :	23~25°C	
Test Mode :	RMC 12.2Kbps Link (QPSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Horizontal	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	EIRP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	Limit (dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
3812	-45.93	-13	-32.93	-64.3	-52.6	1.70	8.37	H	Pass
5723	-43.66	-13	-30.66	-67.54	-50.7	2.75	9.79	H	Pass
7630	-39.61	-13	-26.61	-68.14	-49.1	2.39	11.88	H	Pass

Band :	WCDMA Band II						Temperature :	23~25°C	
Test Mode :	RMC 12.2Kbps Link (QPSK)						Relative Humidity :	46~48%	
Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and Derreck Chen						Polarization :	Vertical	
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency	EIRP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	Limit (dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
3819	-47.62	-13	-34.62	-66.85	-54.3	1.70	8.38	V	Pass
5723	-43.36	-13	-30.36	-66.94	-50.4	2.75	9.79	V	Pass
7630	-38.81	-13	-25.81	-67.65	-48.3	2.39	11.88	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 $\pm 0.00025\%$ ($\pm 2.5\text{ppm}$) of the center frequency.

3.8.2 Measuring Instruments

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

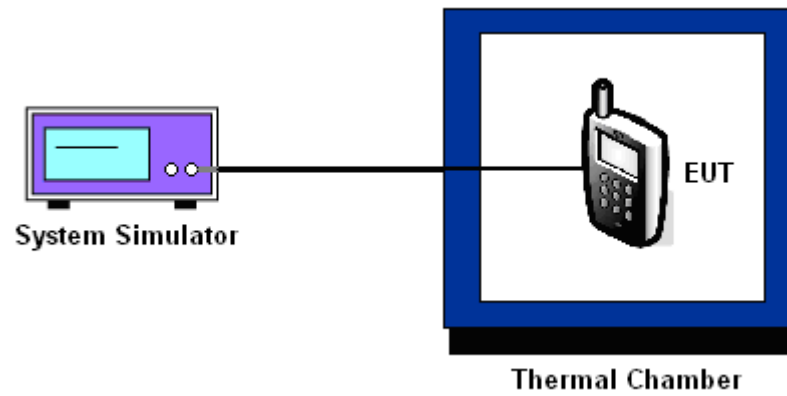
3.8.3 Test Procedures for Temperature Variation

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 $25\pm 5^{\circ}\text{C}$ 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)	GSM	EDGE class 8	Result
	Deviation (ppm)	Deviation (ppm)	
50	0.0048	0.0048	PASS
40	0.0060	0.0024	
30	0.0012	0.0048	
20(Ref.)	0.0000	0.0000	
10	0.0036	0.0036	
0	0.0036	0.0060	
-10	0.0012	0.0000	
-20	0.0000	0.0060	
-30	0.0024	0.0036	

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



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

Temperature (°C)	GSM	EDGE class 8	Result
	Deviation (ppm)	Deviation (ppm)	
50	0.0053	0.0016	PASS
40	0.0032	0.0011	
30	0.0048	0.0021	
20(Ref.)	0.0000	0.0000	
10	0.0005	0.0021	
0	0.0027	0.0005	
-10	0.0037	0.0005	
-20	0.0043	0.0005	
-30	0.0027	0.0016	

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	Result
	Deviation (ppm)	
50	0.0012	PASS
40	0.0000	
30	0.0024	
20(Ref.)	0.0000	
10	0.0167	
0	0.0024	
-10	0.0132	
-20	0.0120	
-30	0.0155	

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

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

Temperature (°C)	RMC 12.2Kbps	Result
	Deviation (ppm)	
50	0.0231	PASS
40	0.0214	
30	0.0225	
20(Ref.)	0.0000	
10	0.0006	
0	0.0012	
-10	0.0006	
-20	0.0029	
-30	0.0000	

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	0.0080	PASS
40	0.0085	
30	0.0074	
20(Ref.)	0.0000	
10	0.0011	
0	0.0021	
-10	0.0011	
-20	0.0005	
-30	0.0021	

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	GSM	4.35	0.0311	2.5 Note 3.	PASS
		3.8	0.0024		
		BEP	0.0048		
	EDGE class 8	4.35	0.0024		
		3.8	0.0048		
		BEP	0.0072		
GSM 1900 CH661	GSM	4.35	0.0059		
		3.8	0.0043		
		BEP	0.0032		
	EDGE class 8	4.35	0.0021		
		3.8	0.0000		
		BEP	0.0016		
WCDMA Band V CH4182	RMC 12.2Kbps	4.35	0.0012		
		3.8	0.0036		
		BEP	0.0096		
WCDMA Band IV CH1413	RMC 12.2Kbps	4.35	0.0167		
		3.8	0.0156		
		BEP	0.0144		
WCDMA Band II CH9400	RMC 12.2Kbps	4.35	0.0080		
		3.8	0.0069		
		BEP	0.0053		

Note:

1. Normal Voltage = 3.8V.
2. Battery End Point (BEP) = 3.5 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
System Simulator	Rohde & Schwarz	CMU200	117995	N/A	Jul. 29, 2014	Oct. 20, 2014 ~ Oct. 29, 2014	Jul. 28, 2015	Conducted (TH02-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz~40GHz	Jun. 09, 2014	Oct. 20, 2014 ~ Oct. 29, 2014	Jun. 08, 2015	Conducted (TH02-HY)
Thermal Chamber	Ten Billion	TTH-D3SP	TBN-930701	N/A	Jul. 17, 2014	Oct. 20, 2014 ~ Oct. 29, 2014	Jul. 16, 2015	Conducted (TH02-HY)
Spectrum Analyzer	Rohde & Schwarz	FSV30	101749	10Hz ~ 30GHz	Feb. 10, 2014	Nov. 03, 2014 ~ Nov. 10, 2014	Feb. 09, 2015	Radiation (03CH07-HY)
Bilog Antenna	Schaffner	CBL6111C	2726	30MHz ~ 1GHz	Sep. 27, 2014	Nov. 03, 2014 ~ Nov. 10, 2014	Sep. 26, 2015	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	75962	1GHz~18GHz	Aug. 19, 2014	Nov. 03, 2014 ~ Nov. 10, 2014	Aug. 18, 2015	Radiation (03CH07-HY)
Preamplifier	COM-POWER	PA-103A	161241	10 MHz ~ 1000MHz	Mar. 17, 2014	Nov. 03, 2014 ~ Nov. 10, 2014	Mar. 16, 2015	Radiation (03CH07-HY)
Preamplifier	Agilent	8449B	3008A02362	1 GHz~26.5 GHz	Nov. 29, 2013	Nov. 03, 2014 ~ Nov. 10, 2014	Nov. 28, 2014	Radiation (03CH07-HY)
Turn Table	ChainTek	ChainTek 3000	N/A	0 ~ 360 degree	N/A	Nov. 03, 2014 ~ Nov. 10, 2014	N/A	Radiation (03CH07-HY)
Antenna Mast	ChainTek	M-400-0	114/8000604/L	N/A	N/A	Nov. 03, 2014 ~ Nov. 10, 2014	N/A	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	18GHz~40GHz	Oct. 02, 2014	Nov. 03, 2014 ~ Nov. 10, 2014	Oct. 01, 2015	Radiation (03CH07-HY)



5 Uncertainty of Evaluation

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	4.50
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