



# FCC RF Test Report

**APPLICANT** : Sony Mobile Communications Inc.  
**EQUIPMENT** : Smart phone  
**BRAND NAME** : SONY  
**TYPE NAME** : PM-0633-BV  
**FCC ID** : PY7-PM0633  
**STANDARD** : FCC 47 CFR Part 2, 22(H), 24(E)  
**CLASSIFICATION** : PCS Licensed Transmitter Held to Ear (PCE)

The product was received on Oct. 21, 2014 and testing was completed on Oct. 30, 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.**

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SPORTON INTERNATIONAL INC.

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FCC ID : PY7-PM0633

Page Number : 1 of 136

Report Issued Date : Dec. 24, 2014

Report Version : Rev. 01

Report Template No.: BU5-FG22/24 Version 1.1



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### REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG402136	Rev. 01	Initial issue of report	Dec. 24, 2014



## SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	§2.1046	Conducted Output Power	N/A	PASS	-
3.2	§24.232(d)	Peak-to-Average Ratio	<13 dB	PASS	-
3.3	§22.913(a)(2)	Effective Radiated Power	< 7 Watts	PASS	-
	§24.232(c)	Equivalent Isotropic Radiated Power	< 2 Watts	PASS	-
3.4	§2.1049 §22.917(b) §24.238(b)	Occupied Bandwidth	N/A	PASS	-
3.5	§2.1051 §22.917(a) §24.238(a)	Band Edge Measurement	< 43+10log <sub>10</sub> (P[Watts])	PASS	-
3.6	§2.1051 §22.917(a) §24.238(a)	Conducted Spurious Emission	< 43+10log <sub>10</sub> (P[Watts])	PASS	-
3.7	§2.1053 §22.917(a) §24.238(a)	Field Strength of Spurious Radiation	< 43+10log <sub>10</sub> (P[Watts])	PASS	Under limit 12.58 dB at 3756.000 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				



# 1 General Description

## 1.1 Applicant

**Sony Mobile Communications Inc.**  
Nya Vattentorget, 22188 Lund, Sweden

## 1.2 Manufacturer

**Arima Communications Corp.**  
6F, No. 866, Jhongjheng Rd., Jhonghe Dist., New Taipei City 23586, Taiwan

## 1.3 Product Feature of Equipment Under Test

The Equipment Under Test (hereafter called: EUT) is Smart phone supporting, GSM / WCDMA, Wi-Fi 2.4GHz 802.11b/g/n, Bluetooth with FM Receiver, and GPS features, and below is details of information.

Product Feature	
Equipment	Smart phone
Brand Name	SONY
Type Name	PM-0633-BV
FCC ID	PY7-PM0633
GSM Operating Band(s)	GSM 850/900/1800/1900MHz
GPRS / EGPRS Multi Slot Class	GPRS Class 12, EGPRS Class 12
WCDMA Operating Band(s)	FDD Band I / II / V
WCDMA Rel. Version	Rel. 7
Wi-Fi Specification	802.11b/g/n (HT20/HT40)
Bluetooth Version	v3.0 + EDR / v4.0 - LE
Power Supply	Battery / AC Adapter / Car Charger

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



### 1.4 Product Specification subjective to this standard

Product Specification subjective to this standard	
<b>Tx Frequency</b>	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz
<b>Rx Frequency</b>	GSM850: 869.2 MHz ~ 893.8 MHz GSM1900: 1930.2 MHz ~ 1989.8 MHz WCDMA Band V: 871.4 MHz ~ 891.6 MHz WCDMA Band II: 1932.4 MHz ~ 1987.6 MHz
<b>Maximum Output Power to Antenna</b>	GSM850 : 32.99 dBm GSM1900 : 29.84 dBm WCDMA Band V : 23.49 dBm WCDMA Band II : 23.55 dBm
<b>Antenna Type / Gain</b>	GSM850: IFA Antenna / -0.50 dBi GSM1900: IFA Antenna / 0.40 dBi WCDMA Band V: IFA Antenna / -0.50 dBi WCDMA Band II: IFA Antenna / 0.40 dBi
<b>Type of Modulation</b>	GSM: GMSK GPRS: GMSK EDGE: GMSK / 8PSK WCDMA: QPSK (Uplink) HSDPA: 64QAM (Downlink) HSUPA: QPSK (Uplink)

EUT Information List				
IMEI	HW Version	SW Version	S/N	Performed Test Item
IMEI1: 004402147947992 IMEI2: 004402147948008	A	24.0.B.0.16	FR4A10D08549	Conducted Measurement
IMEI 1: 004402147947851 IMEI 2: 004402147947869			FR4A12D59274	Radiated Spurious Emission ERP /EIRP Test



Accessory List	
AC Adapter	Model No. : EP800
	Type No. : AC-0030-US
	S/N : 3113W46622717
Battery	Model No. : Charles
Earphone	Model No. : MH410c
	Type No. : AG-1103
	S/N : 1411204600BC914
USB Cable 1	Model No. : EC450
	Type No. : AI-0700
	S/N : 1412D1122420A

**Note:**

1. Above EUT list and accessory list used are electrically identical per declared by manufacturer.
2. Above the accessories list are used to exercise the EUT during test.
3. For other wireless features of this EUT, test report will be issued separately.

### 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	0.5260	0.0108 ppm	246KGXW
Part 22	GSM850 EDGE class 8	8PSK	0.1626	0.0096 ppm	256KG7W
Part 22	WCDMA Band V RMC 12.2Kbps	QPSK	0.0774	0.0036 ppm	4M16F9W
Part 24	GSM1900 GSM	GMSK	1.0328	0.0383 ppm	250KGXW
Part 24	GSM1900 EDGE class 8	8PSK	0.4093	0.0048 ppm	248KG7W
Part 24	WCDMA Band II RMC 12.2Kbps	QPSK	0.2541	0.0064 ppm	4M18F9W

### 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.

<b>Test Site</b>	SPORTON INTERNATIONAL INC.	
<b>Test Site Location</b>	No. 52, Hwa Ya 1 <sup>st</sup> 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	
<b>Test Site No.</b>	<b>Sporton Site No.</b>	
	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:

- ♦ FCC 47 CFR Part 2, 22(H), 24(E)
- ♦ ANSI / TIA / EIA-603-C-2004
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v02r02

### **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 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	<ul style="list-style-type: none"> <li>■ GSM Link</li> <li>■ EDGE class 8 Link</li> </ul>	<ul style="list-style-type: none"> <li>■ GSM Link</li> <li>■ EDGE class 8 Link</li> </ul>
GSM 1900	<ul style="list-style-type: none"> <li>■ GSM Link</li> <li>■ EDGE class 8 Link</li> </ul>	<ul style="list-style-type: none"> <li>■ GSM Link</li> <li>■ EDGE class 8 Link</li> </ul>
WCDMA Band V	<ul style="list-style-type: none"> <li>■ RMC 12.2Kbps Link</li> </ul>	<ul style="list-style-type: none"> <li>■ RMC 12.2Kbps Link</li> </ul>
WCDMA Band II	<ul style="list-style-type: none"> <li>■ RMC 12.2Kbps Link</li> </ul>	<ul style="list-style-type: none"> <li>■ RMC 12.2Kbps Link</li> </ul>

**Note:** The maximum power levels are chosen to test as the worst case configuration as follows:

- GSM mode for GMSK modulation,
- EDGE multi-slot class 8 mode for 8PSK modulation,
- RMC 12.2Kbps mode for WCDMA band V,
- RMC 12.2Kbps mode for WCDMA band II, only these modes were used for all tests.

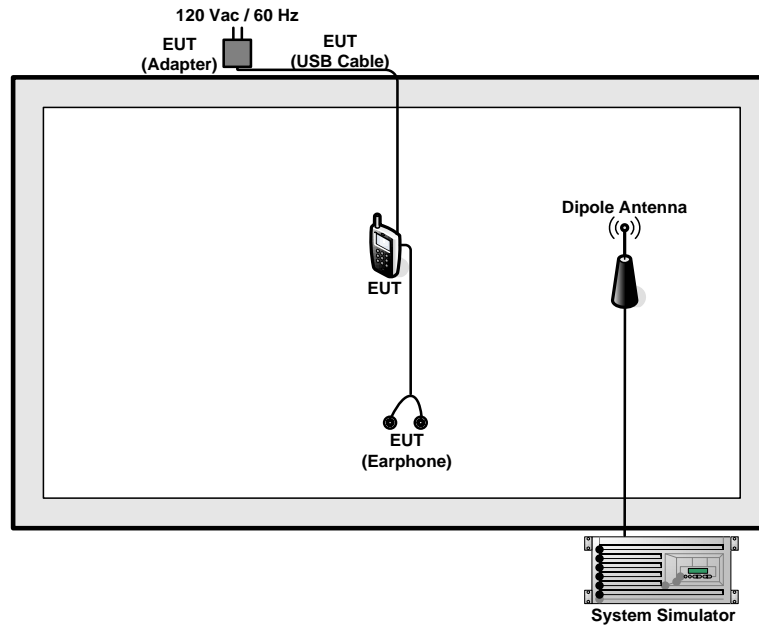


Conducted Power Measurement Results:

Conducted Power (*Unit: dBm)						
Band	GSM850			GSM1900		
Channel	128	189	251	512	661	810
Frequency	824.2	836.4	848.8	1850.2	1880.0	1909.8
GSM	32.93	32.95	32.99	29.84	29.82	29.77
GPRS class 8	32.91	32.93	32.98	29.82	29.79	29.72
GPRS class 10	28.89	28.90	28.90	26.95	26.94	26.86
GPRS class 11	27.36	27.35	27.35	24.77	24.77	24.69
GPRS class 12	27.08	27.07	27.07	24.51	24.53	24.46
EGPRS class 8	27.66	27.73	27.77	26.95	26.91	26.80
EGPRS class 10	25.93	25.87	25.89	24.50	24.47	24.24
EGPRS class 11	25.98	25.93	25.86	23.97	23.94	23.66
EGPRS class 12	25.95	25.93	25.74	22.50	22.45	22.38

Conducted Power (*Unit: dBm)						
Band	WCDMA Band V			WCDMA Band II		
Channel	4132	4182	4233	9262	9400	9538
Frequency	826.4	836.4	846.6	1852.4	1880.0	1907.6
RMC 12.2K	23.46	23.49	23.48	23.55	22.49	23.52
HSDPA Subtest-1	22.48	22.56	22.42	22.42	22.54	22.52
HSDPA Subtest-2	22.47	22.52	22.41	22.41	22.53	22.49
HSDPA Subtest-3	22.02	22.06	21.96	21.99	22.03	22.01
HSDPA Subtest-4	21.99	22.04	21.95	21.95	22.00	21.98
HSUPA Subtest-1	20.51	20.58	20.95	20.51	20.54	20.59
HSUPA Subtest-2	20.48	20.43	20.46	20.48	20.49	20.47
HSUPA Subtest-3	21.48	21.50	21.45	20.92	21.02	20.96
HSUPA Subtest-4	19.98	20.01	19.93	20.00	20.11	20.06
HSUPA Subtest-5	22.46	22.48	22.40	22.41	22.48	22.49

## 2.2 Connection Diagram of Test System



## 2.3 Support Unit used in test configuration

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

## 2.4 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.

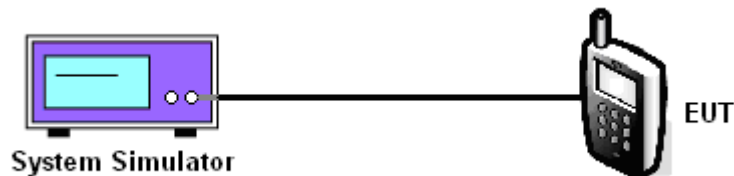
##### **3.1.2 Measuring Instruments**

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**





3.1.6 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)	32.93	32.95	32.99	27.66	27.73	27.77	23.46	23.49	23.48

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)	29.84	29.82	29.77	26.95	26.91	26.80	23.55	22.49	23.52

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

## 3.2 Peak-to-Average Ratio

### 3.2.1 Description of the PAR Measurement

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

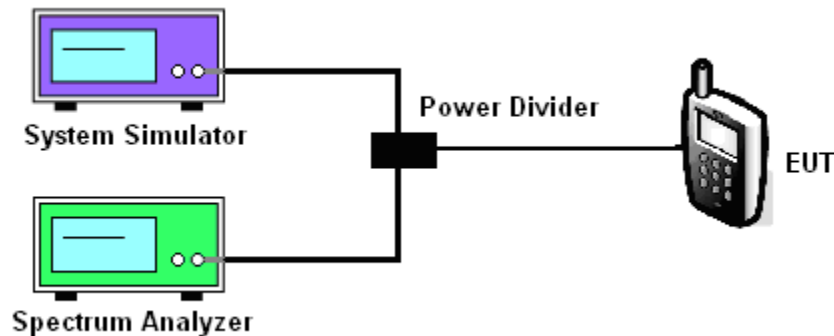
### 3.2.2 Measuring Instruments

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

### 3.2.3 Test Procedures

1. The testing follows FCC KDB 971168 v02r02 Section 5.7.1.
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)	0.16	0.16	0.20	3.08	3.16	3.20	3.08	3.00	2.88

PCS Band									
Modes	GSM1900 (GSM)			GSM1900 (EDGE class 8)			WCDMA Band II (RMC 12.2Kbps)		
Channel	512 (Low)	661 (Mid)	810 (High)	512 (Low)	661 (Mid)	810 (High)	9262 (Low)	9400 (Mid)	9538 (High)
Frequency (MHz)	1850.2	1880	1909.8	1850.2	1880	1909.8	1852.4	1880	1907.6
Peak-to-Average Ratio (dB)	0.28	0.24	0.24	3.16	3.24	3.20	2.64	2.96	2.68

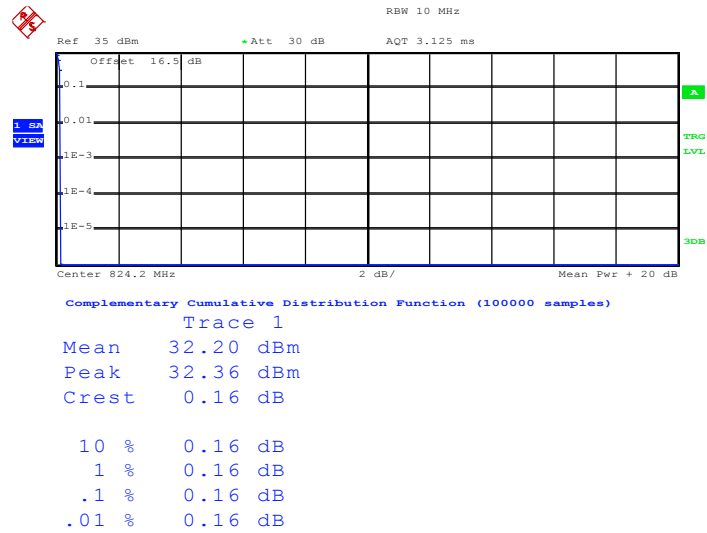




### 3.2.6 Test Result (Plots) of Peak-to-Average Ratio

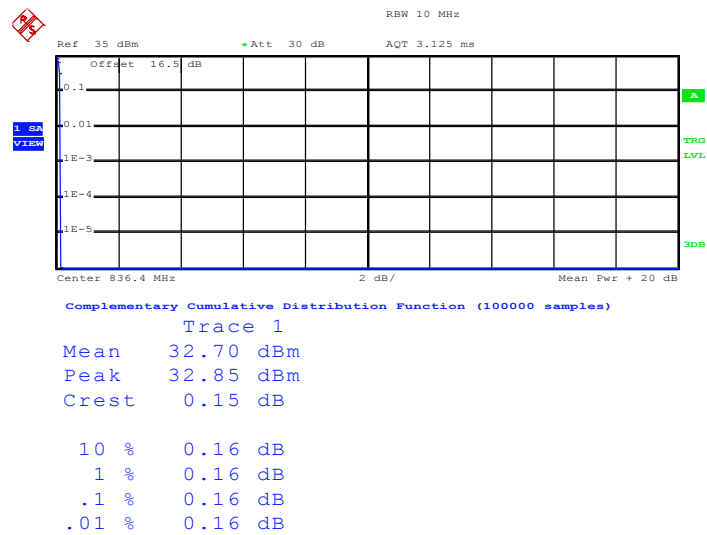
Band :	GSM 850	Test Mode :	GSM Link (GMSK)
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#### Peak-to-Average Ratio on Channel 128 (824.2 MHz)



Date: 28.OCT.2014 10:17:36

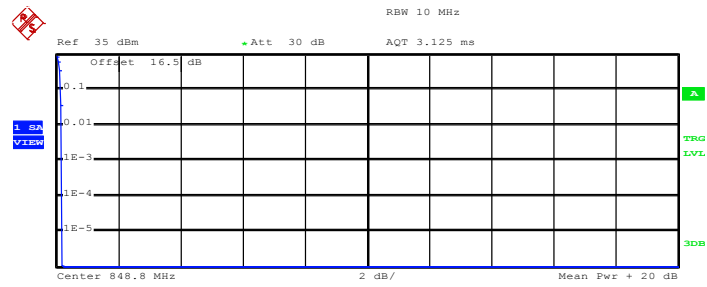
#### Peak-to-Average Ratio on Channel 189 (836.4 MHz)



Date: 28.OCT.2014 10:18:02



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



Complementary Cumulative Distribution Function (100000 samples)

Trace 1  
 Mean 33.11 dBm  
 Peak 33.28 dBm  
 Crest 0.16 dB

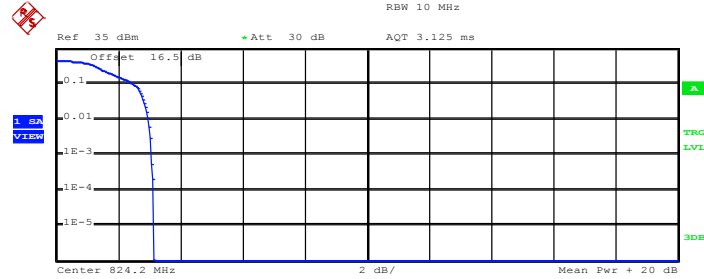
10 %	0.16 dB
1 %	0.20 dB
.1 %	0.20 dB
.01 %	0.20 dB

Date: 28.OCT.2014 10:18:28



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



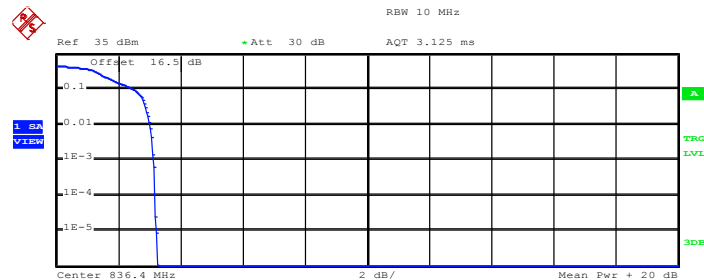
Complementary Cumulative Distribution Function (100000 samples)

Trace 1

Mean	26.53 dBm
Peak	29.68 dBm
Crest	3.15 dB
10 %	2.52 dB
1 %	2.96 dB
.1 %	3.08 dB
.01 %	3.16 dB

Date: 28.OCT.2014 10:42:32

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



Complementary Cumulative Distribution Function (100000 samples)

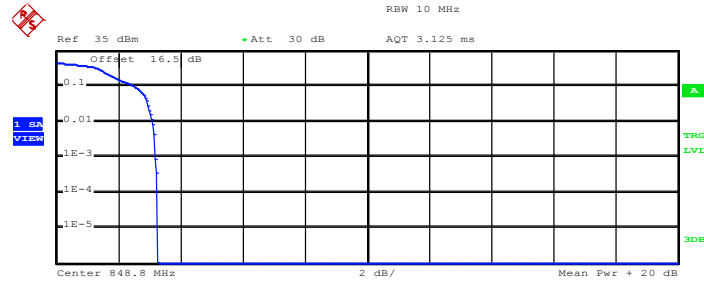
Trace 1

Mean	26.56 dBm
Peak	29.82 dBm
Crest	3.26 dB
10 %	2.52 dB
1 %	3.04 dB
.1 %	3.16 dB
.01 %	3.20 dB

Date: 28.OCT.2014 10:43:08



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



Complementary Cumulative Distribution Function (100000 samples)

Trace 1

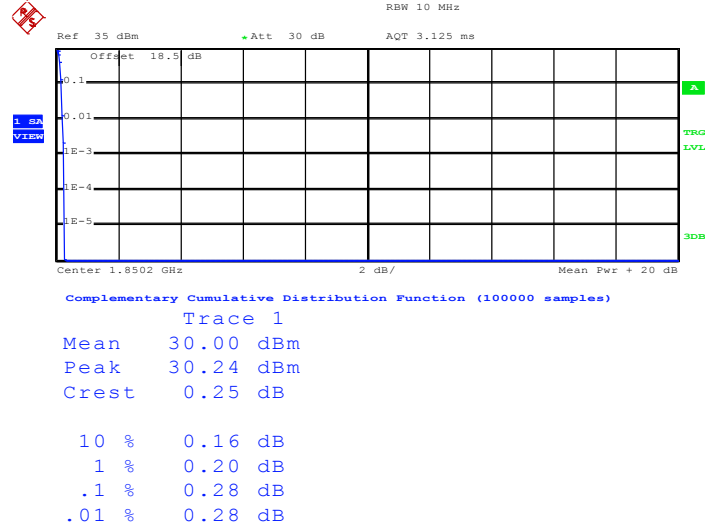
Mean	26.98 dBm
Peak	30.24 dBm
Crest	3.26 dB
10 %	2.56 dB
1 %	3.12 dB
.1 %	3.20 dB
.01 %	3.28 dB

Date: 28.OCT.2014 10:43:49



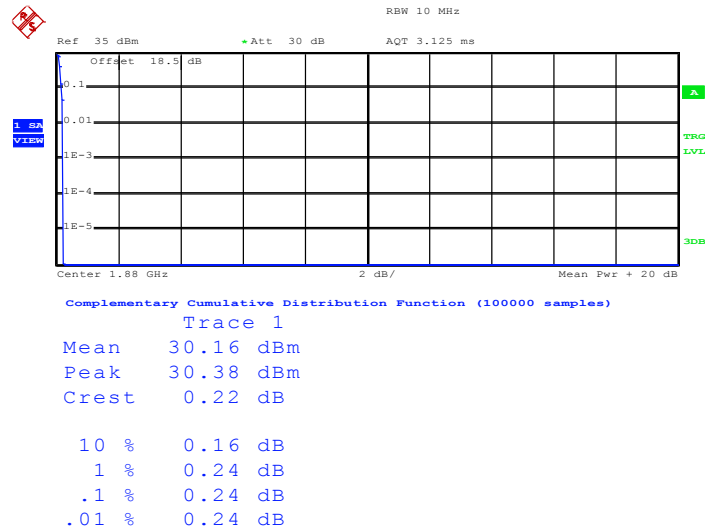
<b>Band :</b>	GSM 1900	<b>Test Mode :</b>	GSM Link (GMSK)
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**Peak-to-Average Ratio on Channel 512 (1850.2 MHz)**



Date: 28.OCT.2014 11:13:28

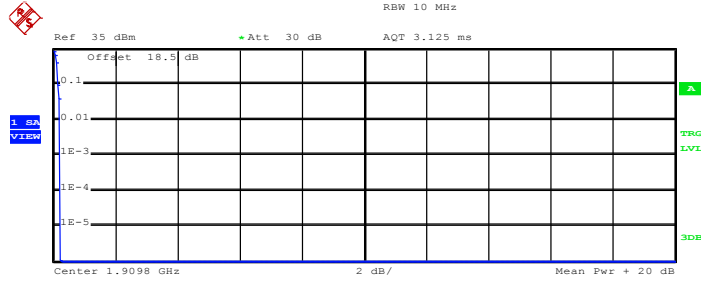
**Peak-to-Average Ratio on Channel 661 (1880.0 MHz)**



Date: 28.OCT.2014 11:14:03



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



Complementary Cumulative Distribution Function (100000 samples)

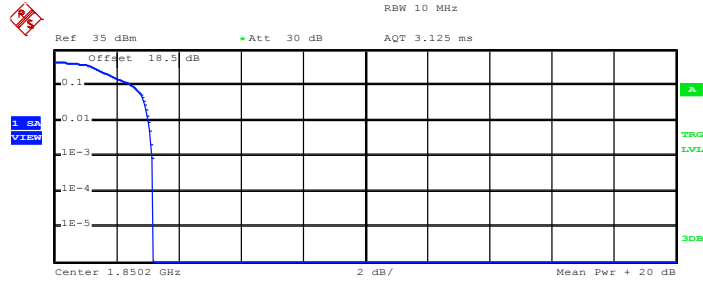
Trace 1	
Mean	30.08 dBm
Peak	30.31 dBm
Crest	0.23 dB
10 %	0.16 dB
1 %	0.24 dB
.1 %	0.24 dB
.01 %	0.24 dB

Date: 28.OCT.2014 11:14:37



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



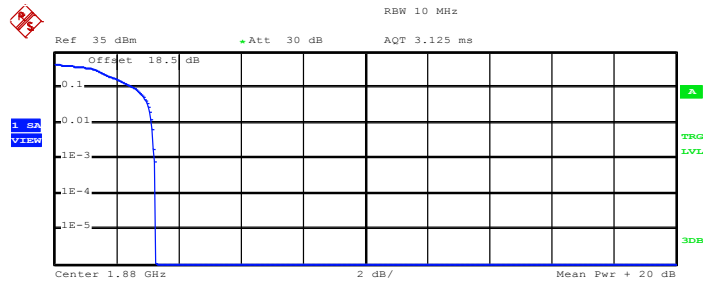
Complementary Cumulative Distribution Function (100000 samples)

Trace 1

Mean	26.42 dBm
Peak	29.61 dBm
Crest	3.19 dB
10 %	2.52 dB
1 %	3.04 dB
.1 %	3.16 dB
.01 %	3.20 dB

Date: 28.OCT.2014 11:59:48

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



Complementary Cumulative Distribution Function (100000 samples)

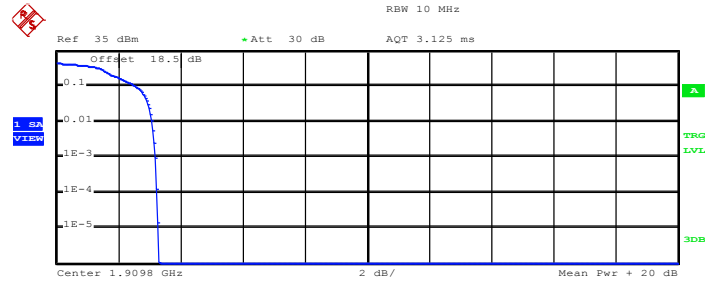
Trace 1

Mean	26.63 dBm
Peak	29.89 dBm
Crest	3.26 dB
10 %	2.60 dB
1 %	3.12 dB
.1 %	3.24 dB
.01 %	3.28 dB

Date: 28.OCT.2014 12:00:48



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



Complementary Cumulative Distribution Function (100000 samples)

Trace 1

Mean	26.72 dBm
Peak	30.03 dBm
Crest	3.31 dB
10 %	2.60 dB
1 %	3.08 dB
.1 %	3.20 dB
.01 %	3.24 dB

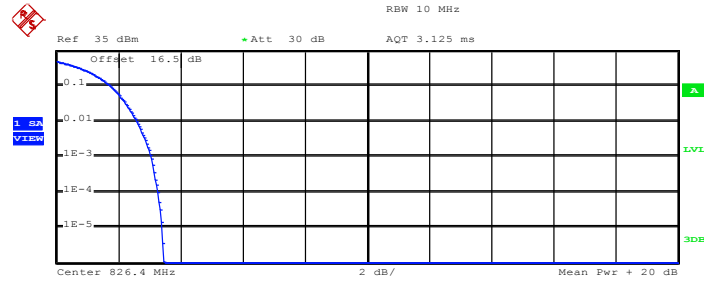
Date: 28.OCT.2014 12:01:15





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



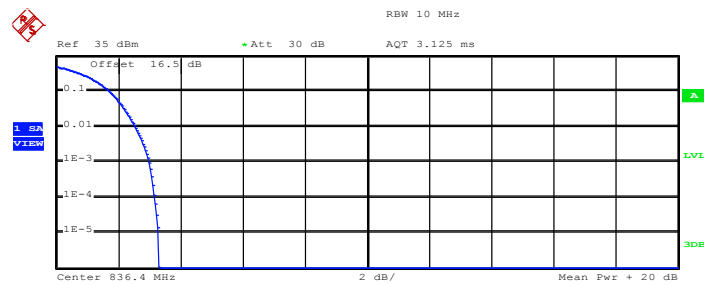
Complementary Cumulative Distribution Function (100000 samples)

Trace 1

Mean	22.49 dBm
Peak	25.94 dBm
Crest	3.45 dB
10 %	1.76 dB
1 %	2.60 dB
.1 %	3.08 dB
.01 %	3.28 dB

Date: 28.OCT.2014 15:00:54

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



Complementary Cumulative Distribution Function (100000 samples)

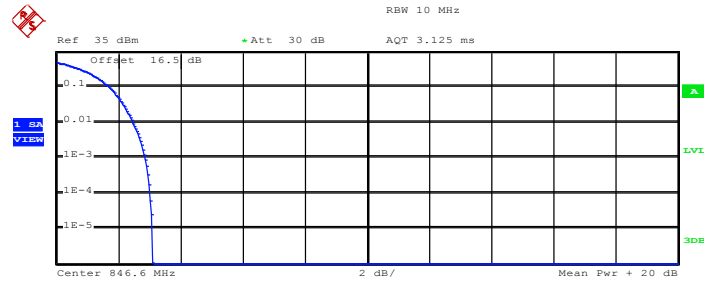
Trace 1

Mean	23.05 dBm
Peak	26.36 dBm
Crest	3.31 dB
10 %	1.72 dB
1 %	2.56 dB
.1 %	3.00 dB
.01 %	3.16 dB

Date: 28.OCT.2014 15:01:23



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



Complementary Cumulative Distribution Function (100000 samples)

Trace 1

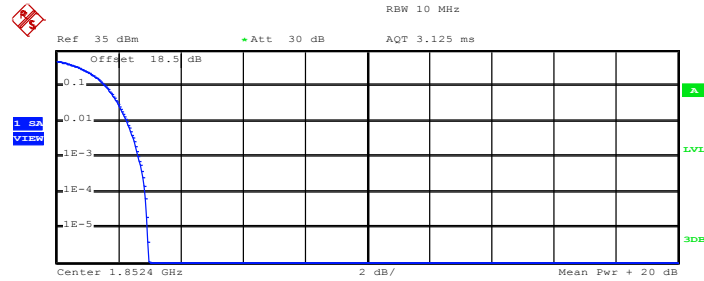
Mean	23.25 dBm
Peak	26.36 dBm
Crest	3.11 dB
10 %	1.72 dB
1 %	2.48 dB
.1 %	2.88 dB
.01 %	3.04 dB

Date: 28.OCT.2014 15:01:53



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



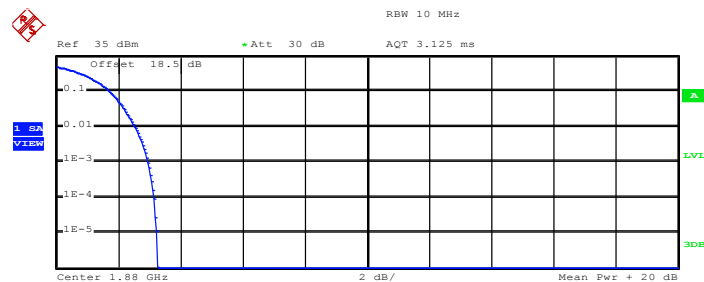
Complementary Cumulative Distribution Function (100000 samples)

Trace 1

Mean	23.47 dBm
Peak	26.43 dBm
Crest	2.96 dB
10 %	1.60 dB
1 %	2.28 dB
.1 %	2.64 dB
.01 %	2.88 dB

Date: 28.OCT.2014 14:33:16

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



Complementary Cumulative Distribution Function (100000 samples)

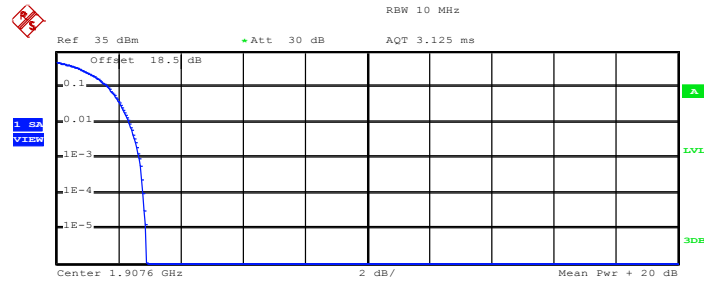
Trace 1

Mean	22.89 dBm
Peak	26.15 dBm
Crest	3.26 dB
10 %	1.72 dB
1 %	2.56 dB
.1 %	2.96 dB
.01 %	3.16 dB

Date: 28.OCT.2014 14:33:39



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



Complementary Cumulative Distribution Function (100000 samples)

Trace 1	
Mean	22.89 dBm
Peak	25.80 dBm
Crest	2.91 dB
10 %	1.68 dB
1 %	2.36 dB
.1 %	2.68 dB
.01 %	2.80 dB

Date: 28.OCT.2014 14:34:14



### 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 and the EIRP of mobile transmitters are limited to 2 Watts.

#### 3.3.2 Measuring Instruments

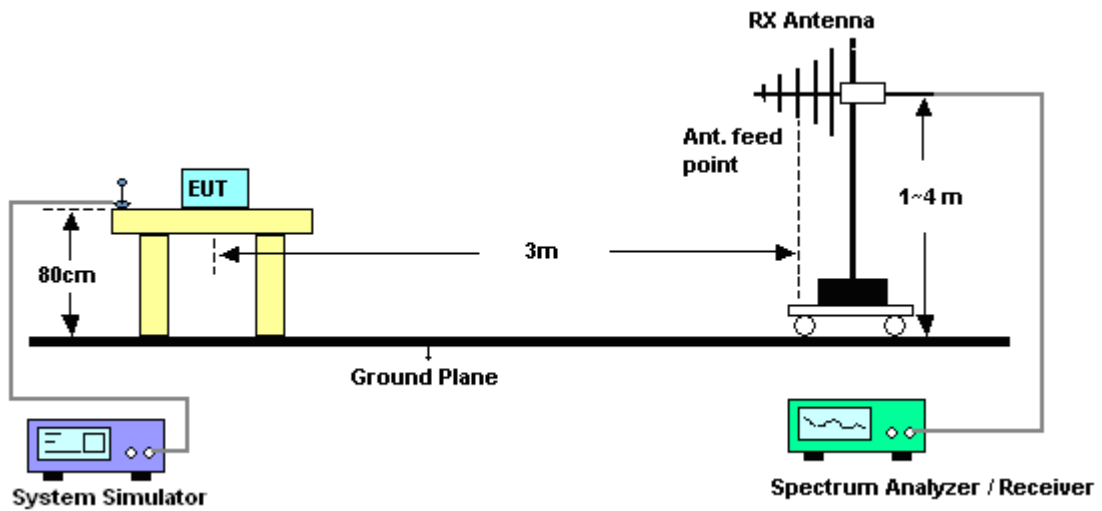
The measuring equipment is listed in the section 4 of this test report.

#### 3.3.3 Test Procedures

1. The testing follows FCC KDB 971168 v02r02 Section 5.2.1. (for CDMA/WCDMA), Section 5.2.2.2 (for GSM/GPRS/EDGE) and ANSI / TIA-603-C-2004 Section 2.2.17.
2. The EUT was placed on a non-conductive rotating platform 0.8 meters high in a semi-anechoic chamber. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and a spectrum analyzer with RMS detector per section 5. of KDB 971168 D01.
3. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power. The maximum emission was recorded from analyzer power level (LVL) from the 360 degrees rotation of the turntable and the test antenna raised and lowered over a range from 1 to 4 meters in both horizontally and vertically polarized orientations.
4. Effective Isotropic Radiated Power (EIRP) was measured by substitution method according to TIA/EIA-603-C. The EUT was replaced by 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	-3.13	31.54	26.26	0.4227
836.4	-2.81	32.04	27.08	0.5105
848.8	-3.23	32.59	27.21	0.5260
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
824.2	-11.84	32.93	18.94	0.0783
836.4	-12.15	32.82	18.52	0.0711
848.8	-12.28	33.62	19.19	0.0830

\* 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	-7.65	31.54	21.74	0.1493
836.4	-7.78	32.04	22.11	0.1626
848.8	-8.41	32.59	22.03	0.1596
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
824.2	-16.62	32.93	14.16	0.0261
836.4	-17.15	32.82	13.52	0.0225
848.8	-17.64	33.62	13.83	0.0242

\* 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	-11.56	31.44	17.73	0.0593
836.4	-11.00	32.04	18.89	0.0774
846.6	-11.78	32.63	18.70	0.0741
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
826.4	-19.50	32.78	11.13	0.0130
836.4	-19.01	32.82	11.66	0.0147
846.6	-19.35	33.4	11.90	0.0155

\* 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	-13.55	43.69	30.14	1.0328
1880.0	-14.73	44.79	30.06	1.0139
1909.8	-13.77	43.59	29.82	0.9594
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1850.2	-21.10	45.72	24.62	0.2897
1880.0	-22.25	46.78	24.53	0.2838
1909.8	-21.90	46.77	24.87	0.3069

\* 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	-18.37	43.69	25.32	0.3404
1880.0	-18.67	44.79	26.12	0.4093
1909.8	-18.66	43.59	24.93	0.3112
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1850.2	-25.29	45.72	20.43	0.1104
1880.0	-26.38	46.78	20.40	0.1096
1909.8	-26.78	46.77	19.99	0.0998

\* 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	-20.36	43.69	23.33	0.2153
1880.0	-20.74	44.79	24.05	0.2541
1907.6	-20.49	43.59	23.10	0.2042
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1852.4	-29.00	45.72	16.72	0.0470
1880.0	-30.54	46.78	16.24	0.0421
1907.6	-29.31	46.77	17.46	0.0557

\* 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.

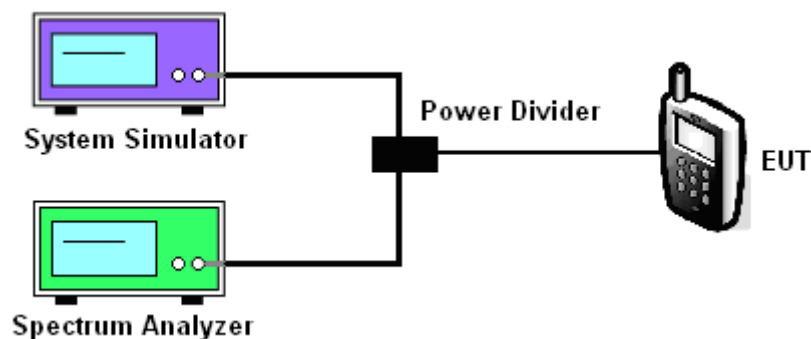
### 3.4.2 Measuring Instruments

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)	244.00	242.00	246.00	254.00	256.00	252.00
26dB BW (kHz)	316.00	314.00	310.00	314.00	310.00	310.00

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)	246.00	248.00	250.00	246.00	246.00	248.00
26dB BW (kHz)	314.00	316.00	316.00	308.00	314.00	310.00

Cellular Band			
Modes	WCDMA Band V (RMC 12.2Kbps)		
Channel	4132 (Low)	4182 (Mid)	4233 (High)
Frequency (MHz)	826.4	836.4	846.6
99% OBW (MHz)	4.16	4.16	4.16
26dB BW (MHz)	4.70	4.68	4.72

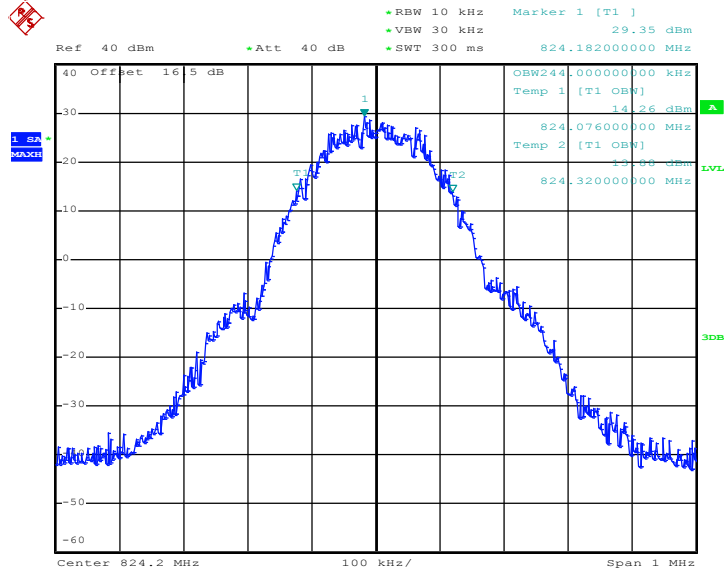
PCS Band			
Modes	WCDMA Band II (RMC 12.2Kbps)		
Channel	9262 (Low)	9400 (Mid)	9538 (High)
Frequency (MHz)	1852.4	1880	1907.6
99% OBW (MHz)	4.14	4.18	4.16
26dB BW (MHz)	4.68	4.68	4.72



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

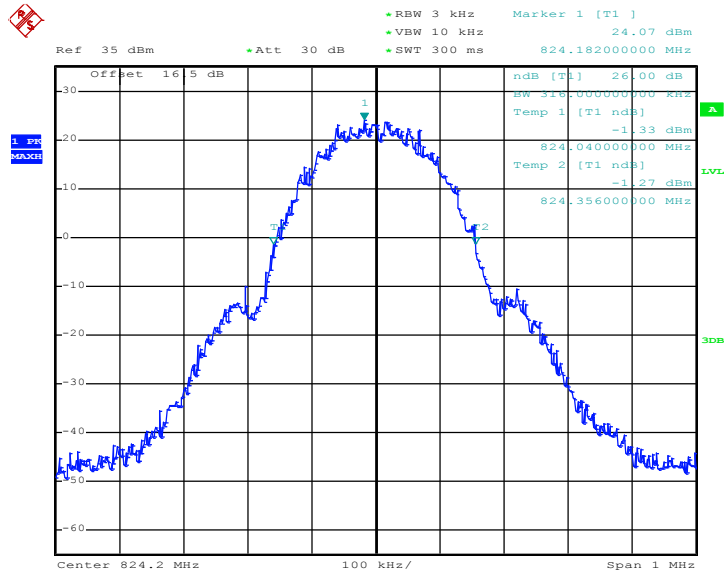
<b>Band :</b>	GSM 850	<b>Test Mode :</b>	GSM Link (GMSK)
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#### 99% Occupied Bandwidth Plot on Channel 128 (824.2 MHz)



Date: 28.OCT.2014 10:14:47

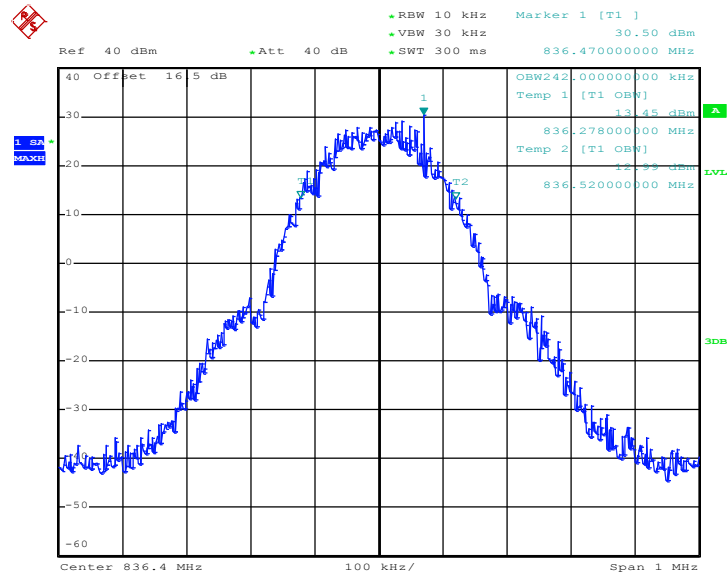
#### 26dB Bandwidth Plot on Channel 128 (824.2 MHz)



Date: 28.OCT.2014 10:07:12

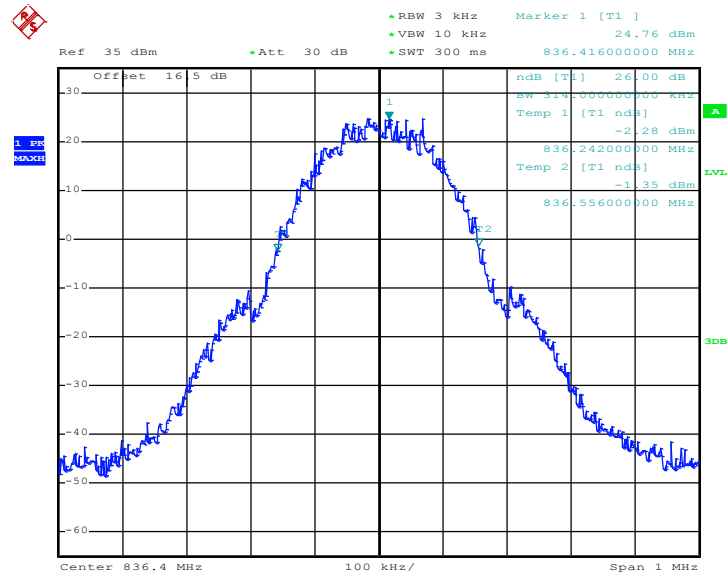


99% Occupied Bandwidth Plot on Channel 189 (836.4 MHz)



Date: 28.OCT.2014 10:09:48

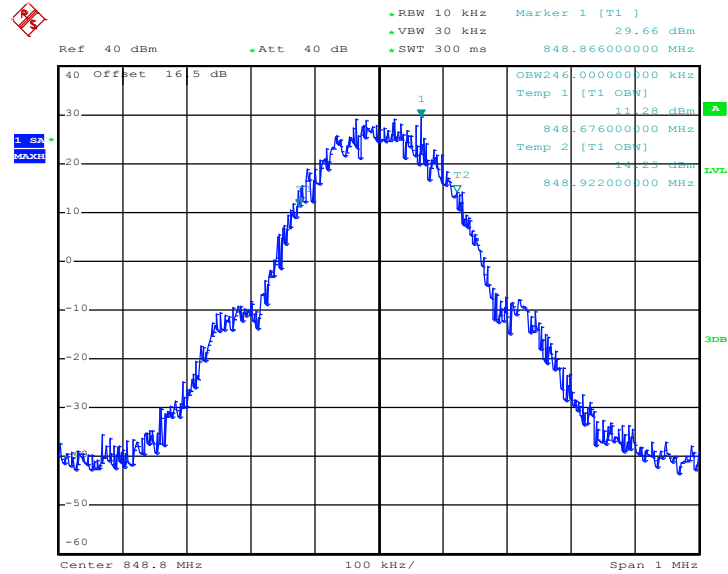
26dB Bandwidth Plot on Channel 189 (836.4 MHz)



Date: 28.OCT.2014 10:07:44

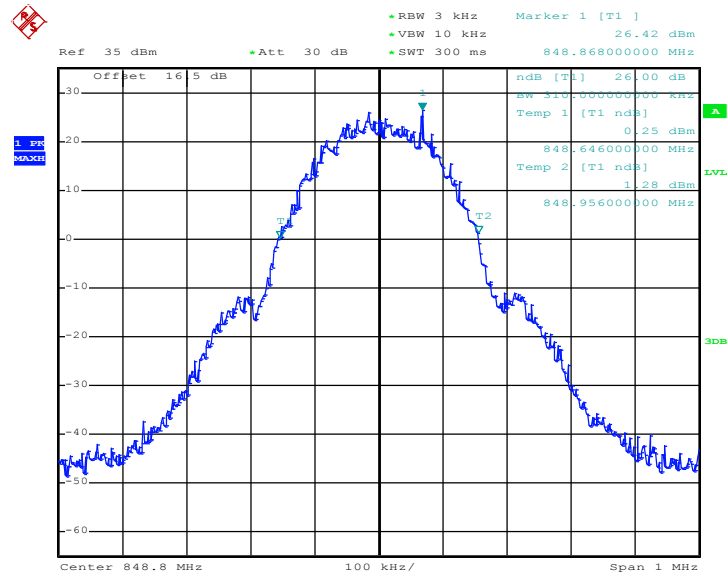


99% Occupied Bandwidth Plot on Channel 251 (848.8 MHz)



Date: 28.OCT.2014 10:12:42

26dB Bandwidth Plot on Channel 251 (848.8 MHz)

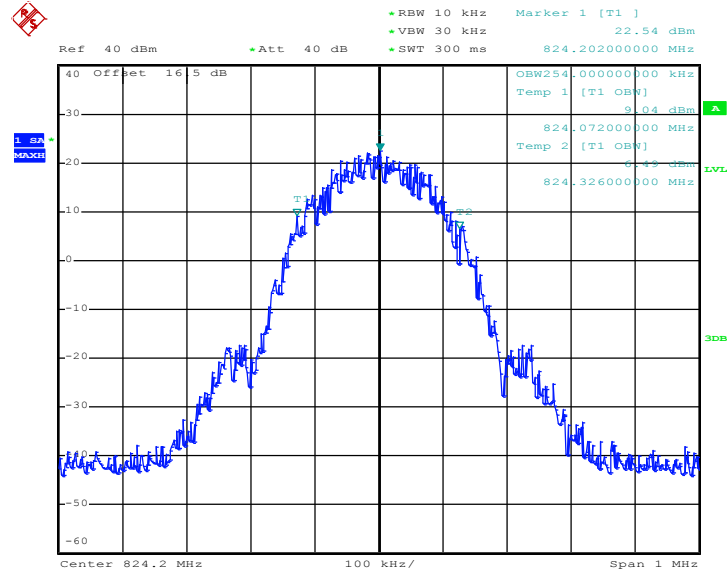


Date: 28.OCT.2014 10:08:17



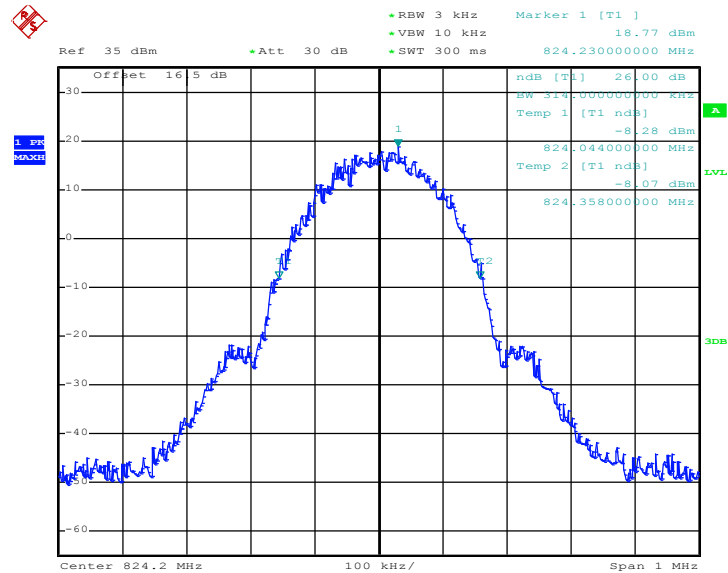
<b>Band :</b>	GSM 850	<b>Test Mode :</b>	EDGE class 8 Link (8PSK)
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99% Occupied Bandwidth Plot on Channel 128 (824.2 MHz)



Date: 28.OCT.2014 10:47:08

26dB Bandwidth Plot on Channel 128 (824.2 MHz)

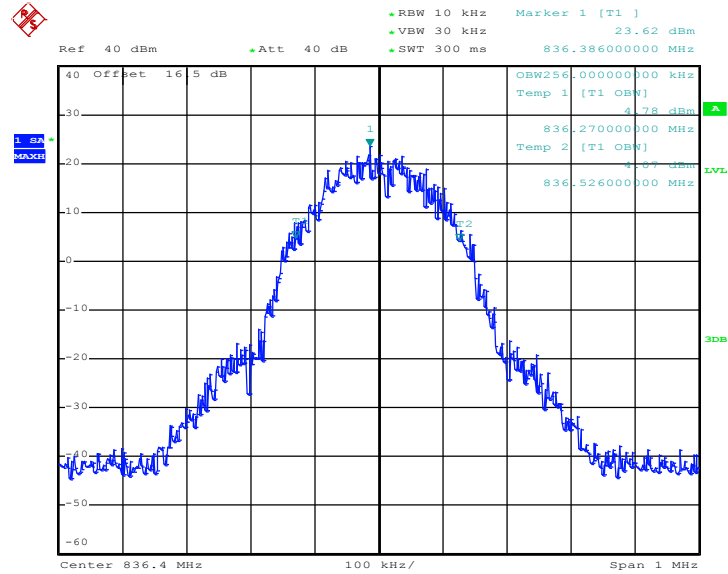


Date: 28.OCT.2014 10:45:09



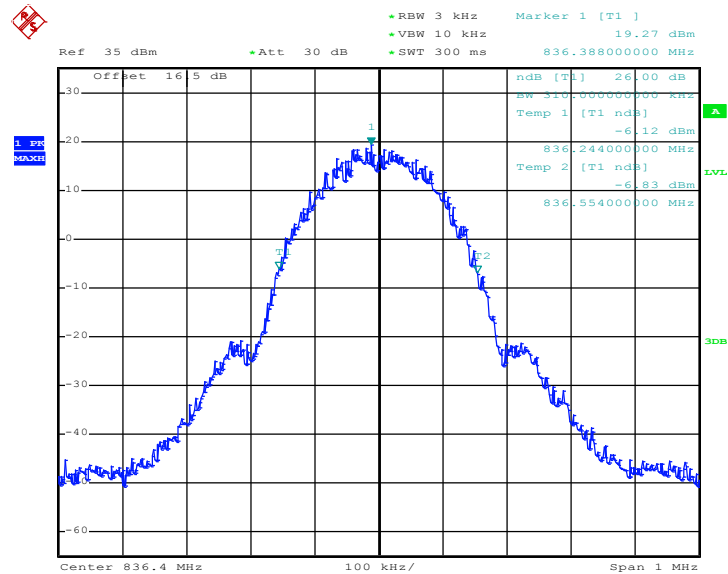


99% Occupied Bandwidth Plot on Channel 189 (836.4 MHz)



Date: 28.OCT.2014 10:47:44

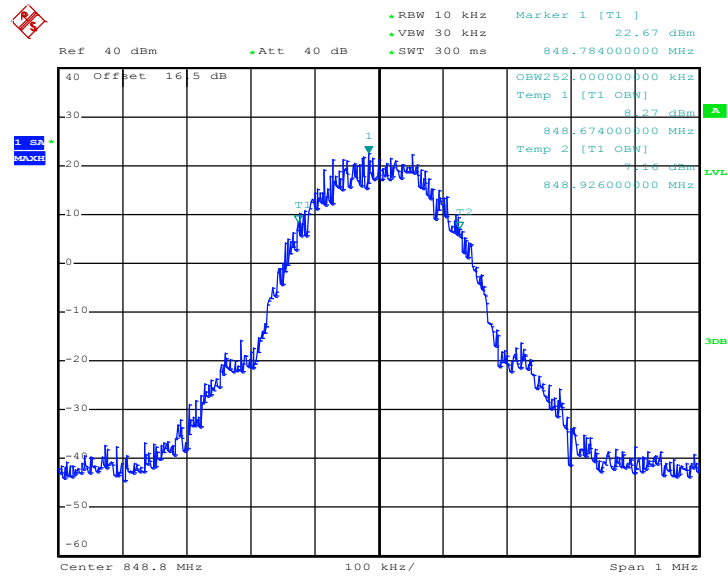
26dB Bandwidth Plot on Channel 189 (836.4 MHz)



Date: 28.OCT.2014 10:45:42

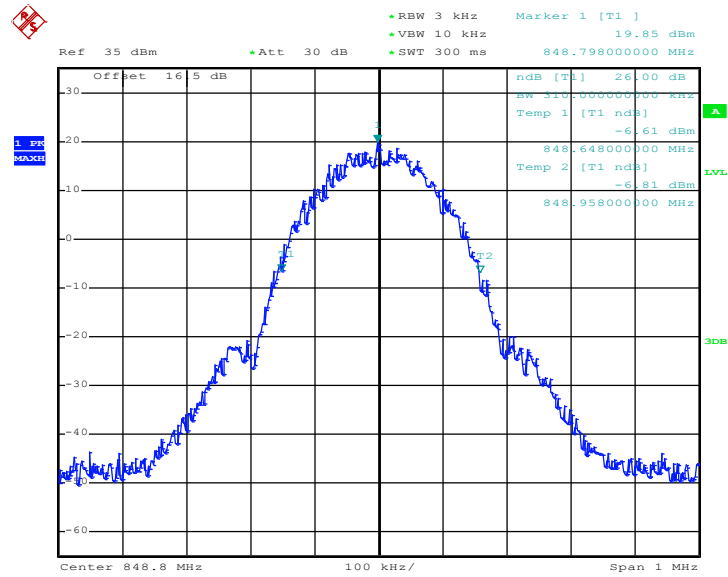


### 99% Occupied Bandwidth Plot on Channel 251 (848.8 MHz)



Date: 28.OCT.2014 10:48:18

### 26dB Bandwidth Plot on Channel 251 (848.8 MHz)

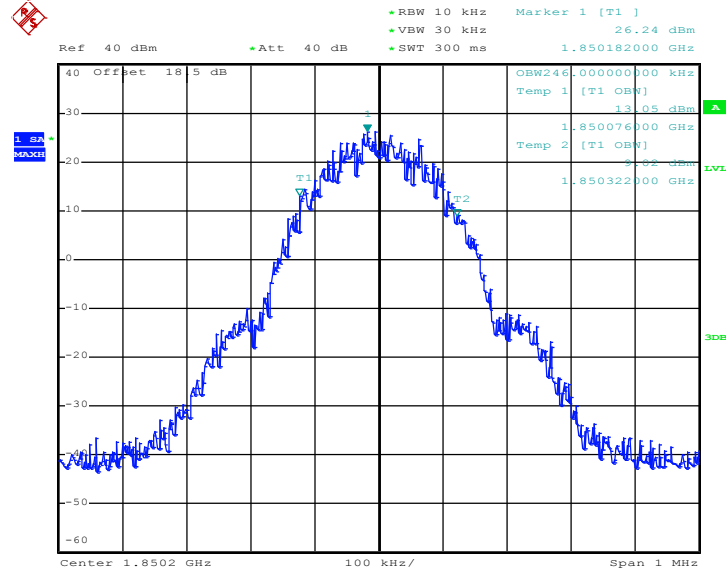


Date: 28.OCT.2014 10:46:16



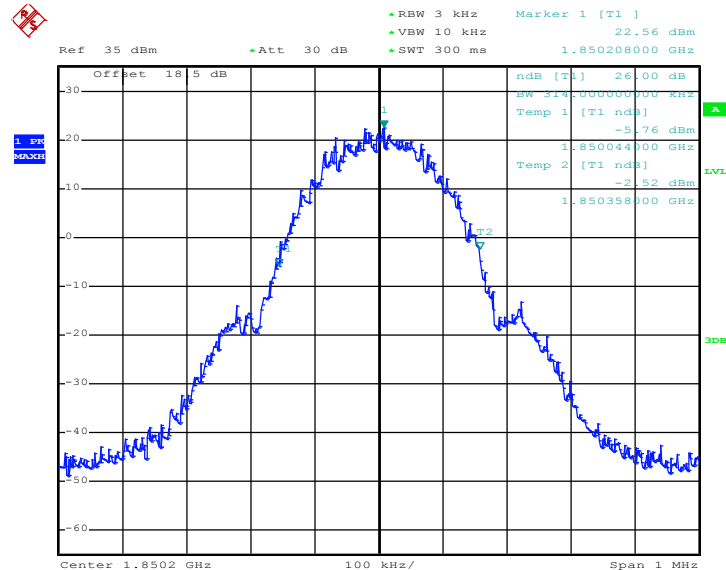
<b>Band :</b>	GSM 1900	<b>Test Mode :</b>	GSM Link (GMSK)
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99% Occupied Bandwidth Plot on Channel 512 (1850.2 MHz)



Date: 28.OCT.2014 11:20:52

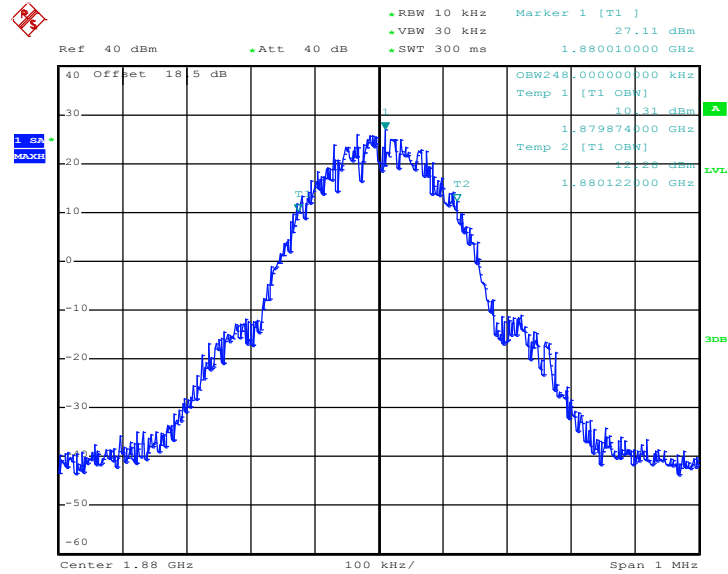
26dB Bandwidth Plot on Channel 512 (1850.2 MHz)



Date: 28.OCT.2014 11:18:42

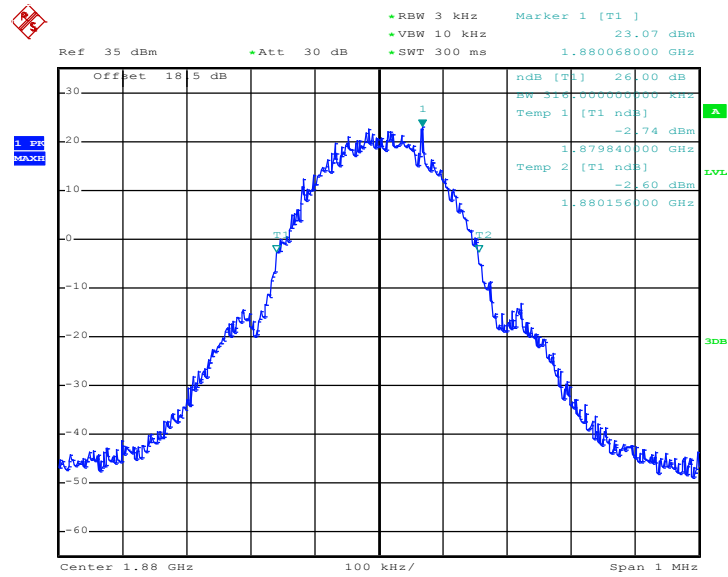


99% Occupied Bandwidth Plot on Channel 661 (1880.0 MHz)



Date: 28.OCT.2014 11:21:27

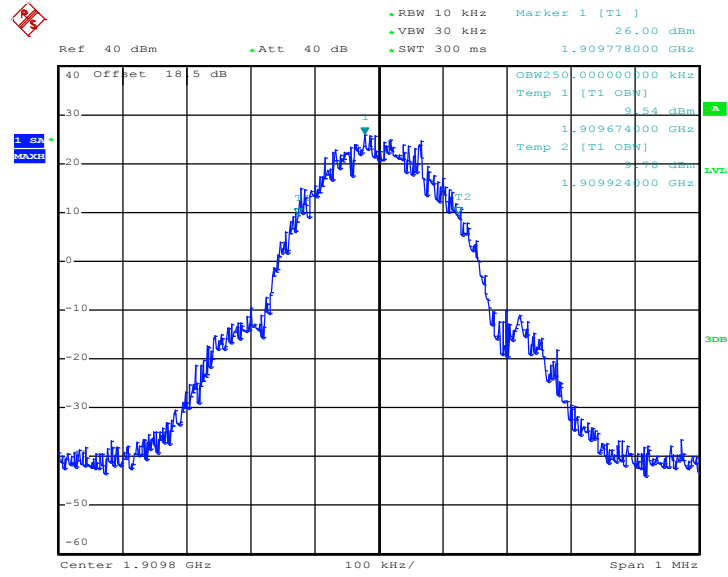
26dB Bandwidth Plot on Channel 661 (1880.0 MHz)



Date: 28.OCT.2014 11:19:16

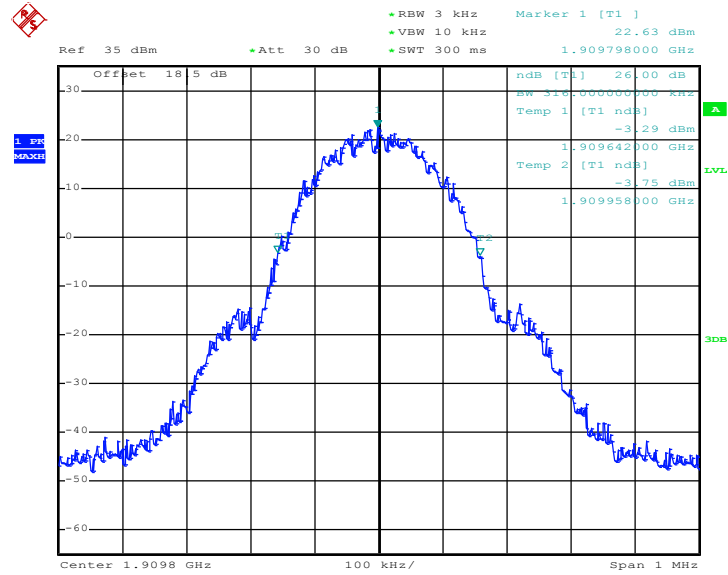


99% Occupied Bandwidth Plot on Channel 810 (1909.8 MHz)



Date: 28.OCT.2014 11:22:00

26dB Bandwidth Plot on Channel 810 (1909.8 MHz)

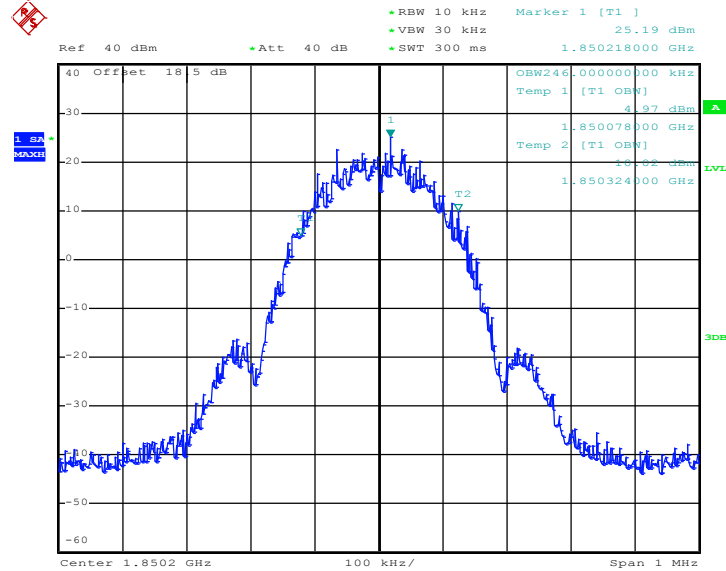


Date: 28.OCT.2014 11:19:49



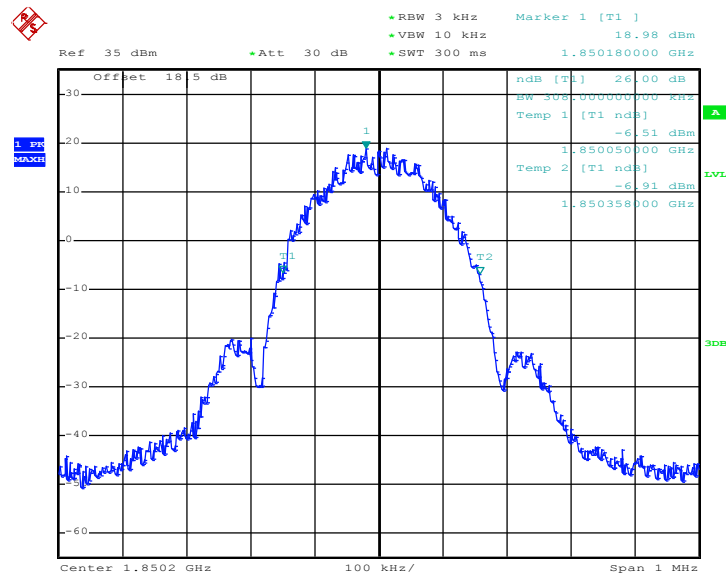
<b>Band :</b>	GSM 1900	<b>Test Mode :</b>	EDGE class 8 Link (8PSK)
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99% Occupied Bandwidth Plot on Channel 512 (1850.2 MHz)



Date: 28.OCT.2014 13:54:05

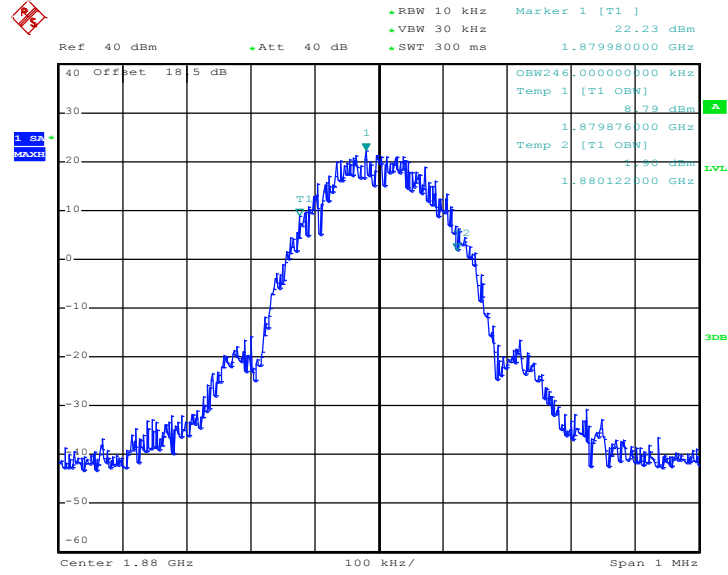
26dB Bandwidth Plot on Channel 512 (1850.2 MHz)



Date: 28.OCT.2014 13:38:42

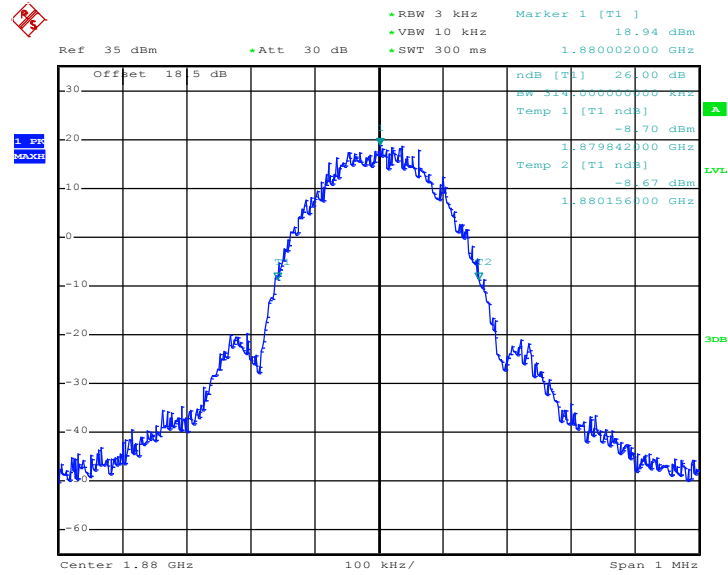


99% Occupied Bandwidth Plot on Channel 661 (1880.0 MHz)



Date: 28.OCT.2014 13:54:43

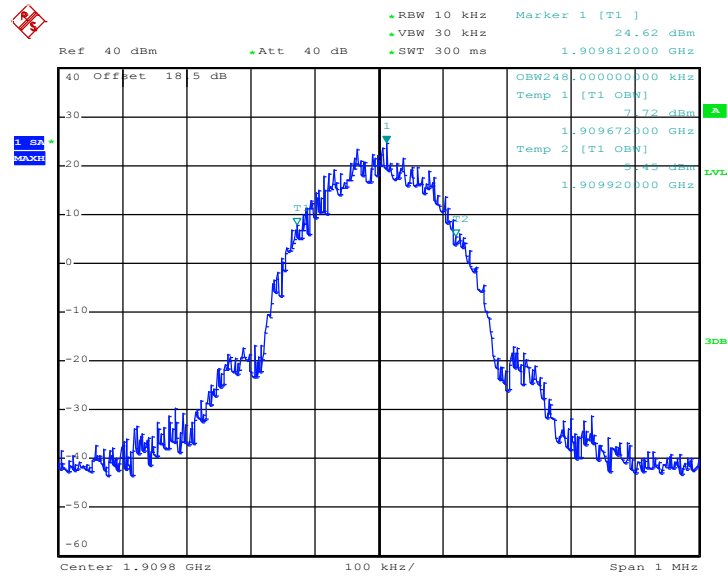
26dB Bandwidth Plot on Channel 661 (1880.0 MHz)



Date: 28.OCT.2014 13:39:17

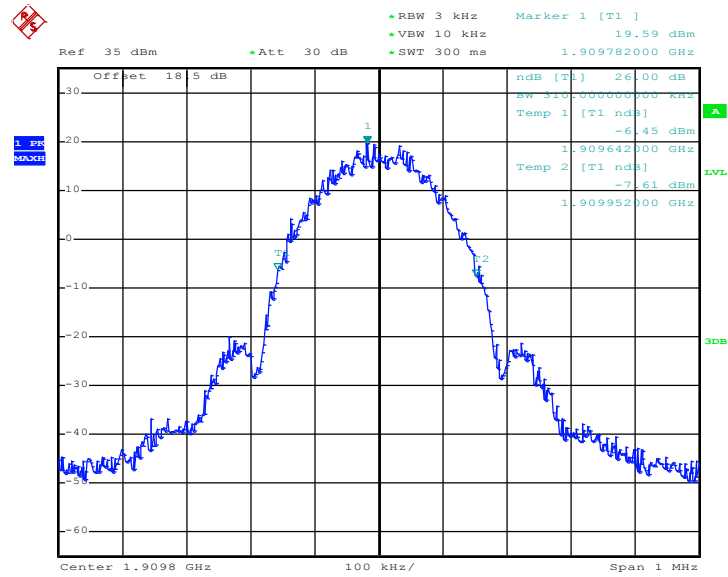


99% Occupied Bandwidth Plot on Channel 810 (1909.8 MHz)



Date: 28.OCT.2014 13:55:19

26dB Bandwidth Plot on Channel 810 (1909.8 MHz)



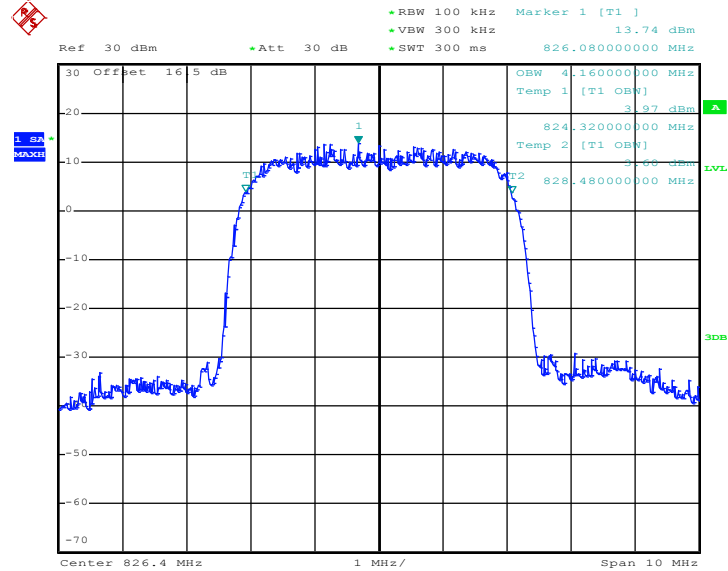
Date: 28.OCT.2014 13:39:50





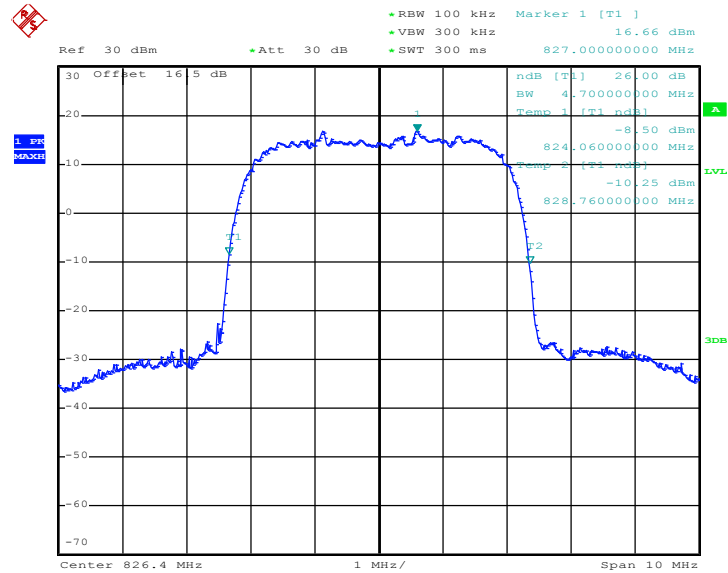
<b>Band :</b>	WCDMA Band V	<b>Test Mode :</b>	RMC 12.2Kbps Link (QPSK)
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99% Occupied Bandwidth Plot on Channel 4132 (826.4 MHz)



Date: 28.OCT.2014 15:09:44

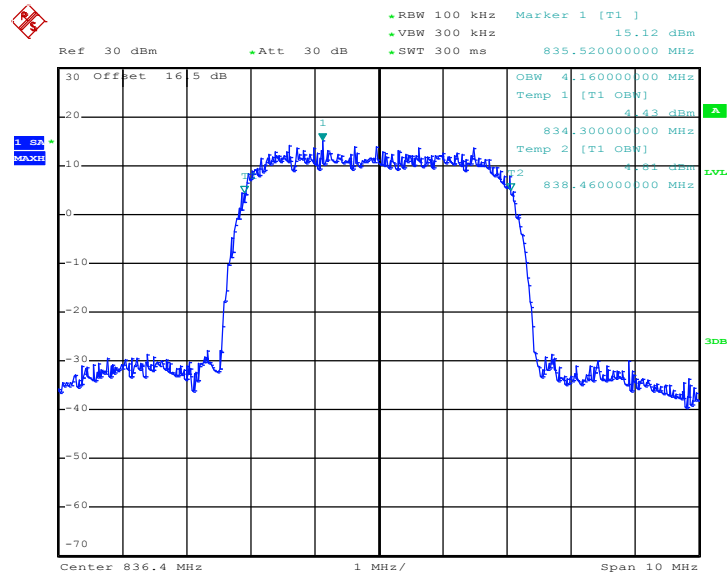
26dB Bandwidth Plot on Channel 4132 (826.4 MHz)



Date: 28.OCT.2014 15:06:13

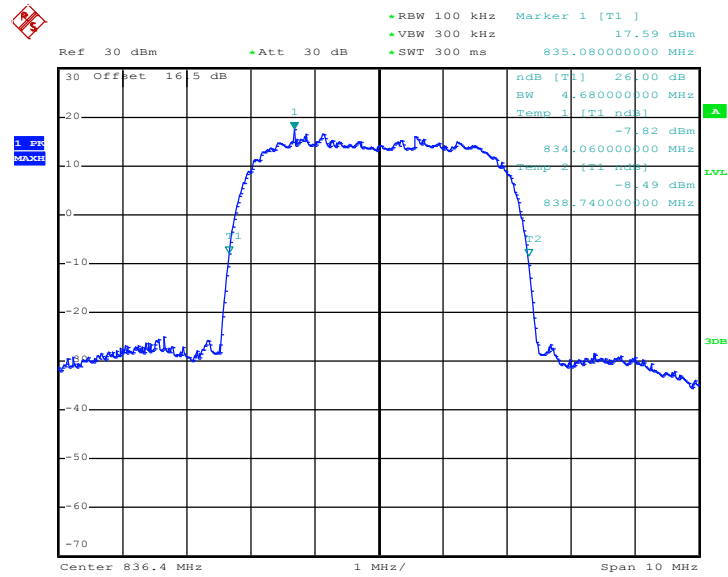


99% Occupied Bandwidth Plot on Channel 4182 (836.4 MHz)



Date: 28.OCT.2014 15:10:13

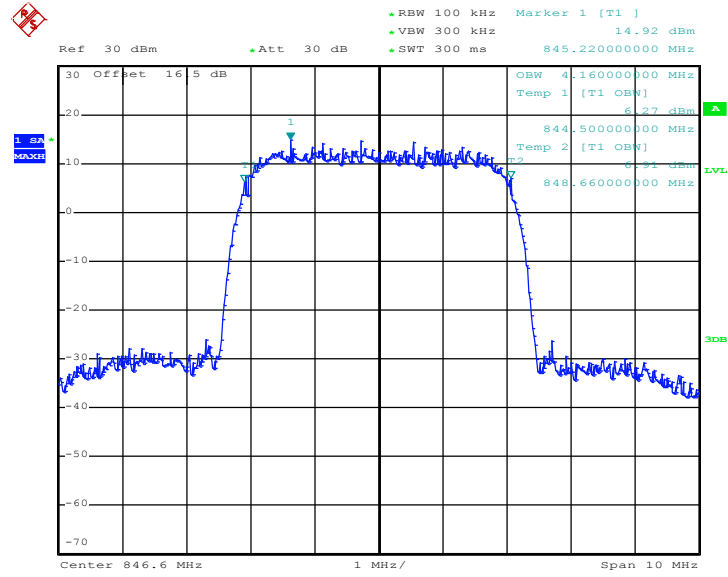
26dB Bandwidth Plot on Channel 4182 (836.4 MHz)



Date: 28.OCT.2014 15:06:42

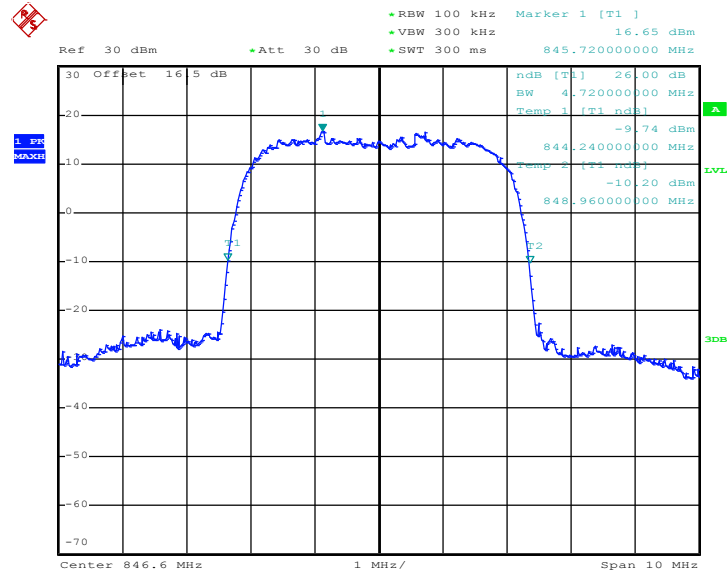


99% Occupied Bandwidth Plot on Channel 4233 (846.6 MHz)



Date: 28.OCT.2014 15:10:41

26dB Bandwidth Plot on Channel 4233 (846.6 MHz)

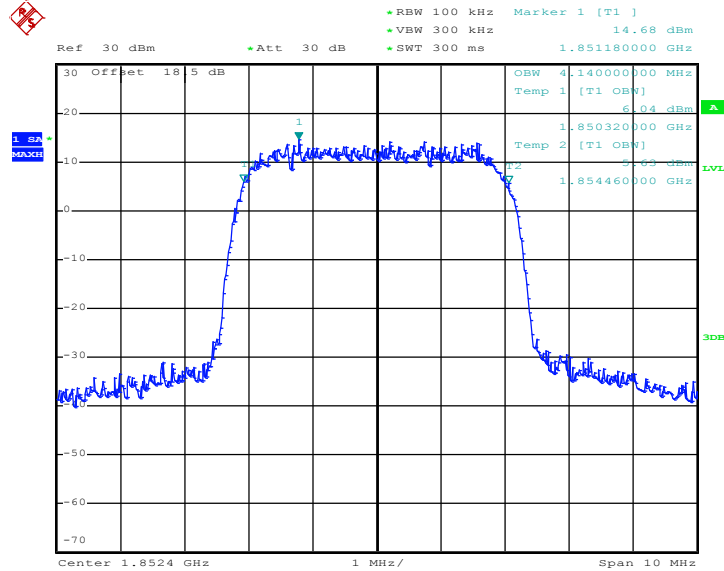


Date: 28.OCT.2014 15:07:10



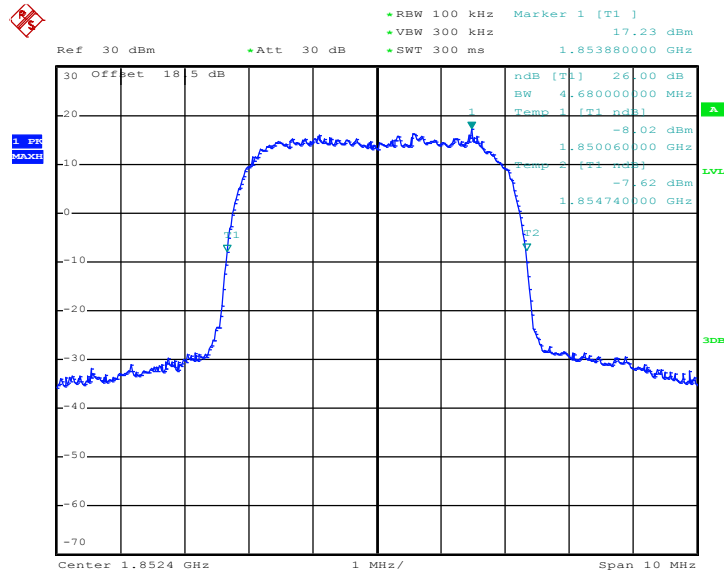
<b>Band :</b>	WCDMA Band II	<b>Test Mode :</b>	RMC 12.2Kbps Link (QPSK)
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99% Occupied Bandwidth Plot on Channel 9262 (1852.4 MHz)



Date: 28.OCT.2014 14:37:42

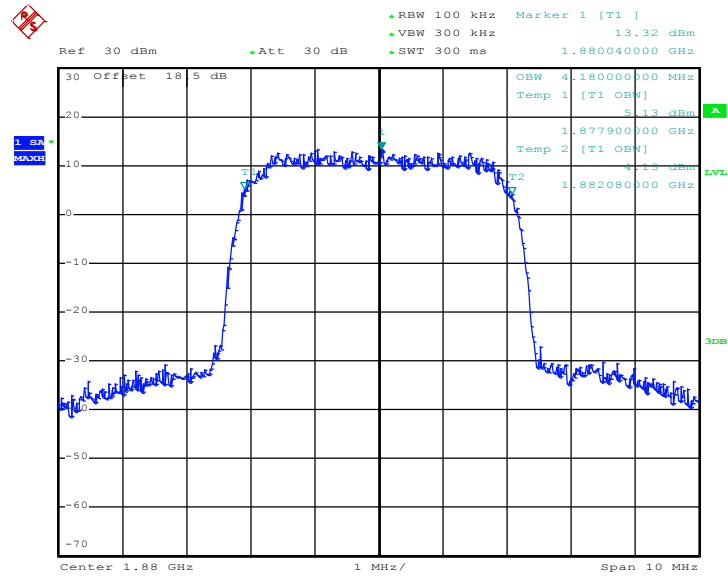
26dB Bandwidth Plot on Channel 9262 (1852.4 MHz)



Date: 28.OCT.2014 14:35:54

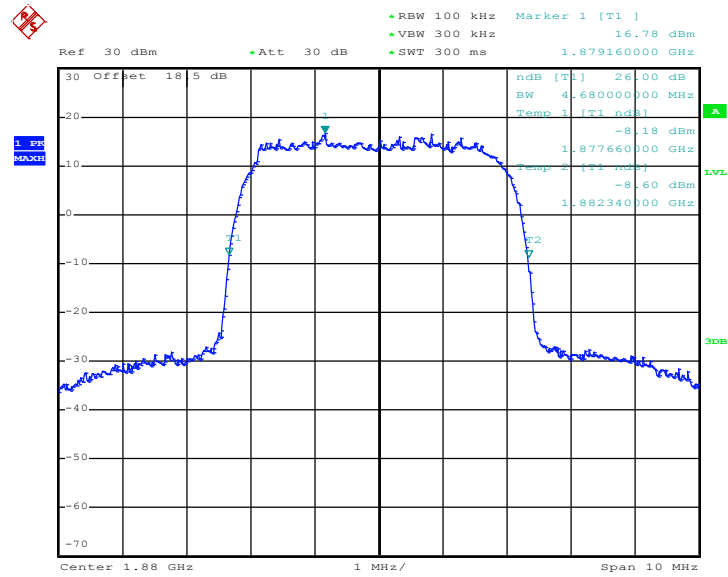


### 99% Occupied Bandwidth Plot on Channel 9400 (1880.0 MHz)



Date: 28.OCT.2014 14:38:11

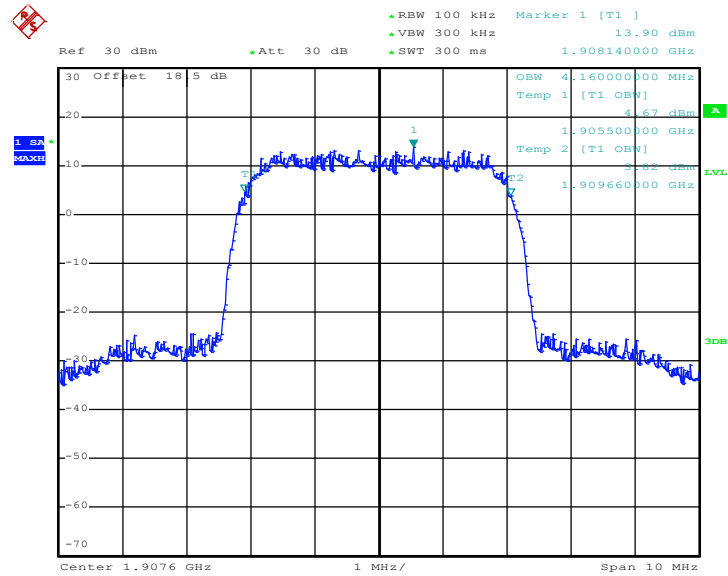
### 26dB Bandwidth Plot on Channel 9400 (1880.0 MHz)



Date: 28.OCT.2014 14:36:22

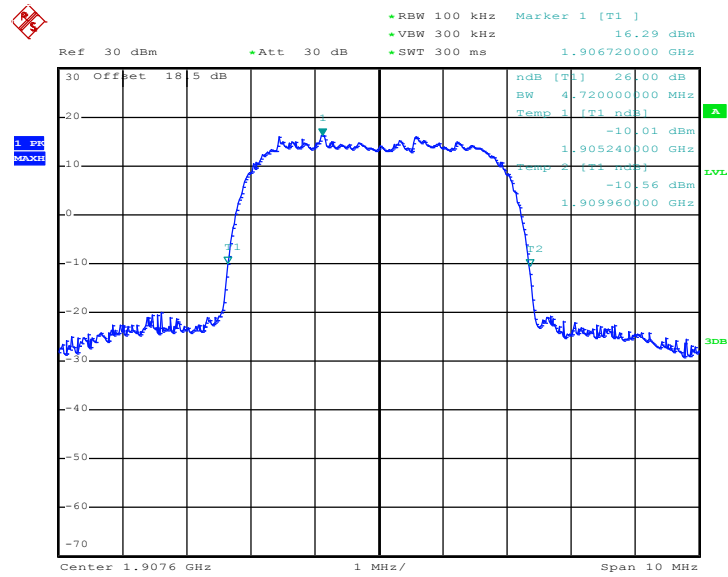


### 99% Occupied Bandwidth Plot on Channel 9538 (1907.6 MHz)



Date: 28.OCT.2014 14:38:39

### 26dB Bandwidth Plot on Channel 9538 (1907.6 MHz)



Date: 28.OCT.2014 14:36:51



### 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

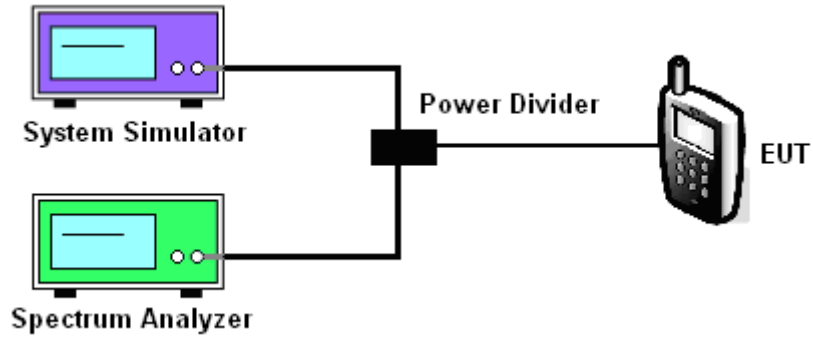
The measuring equipment is listed in the section 4 of this test report.

#### 3.5.3 Test Procedures

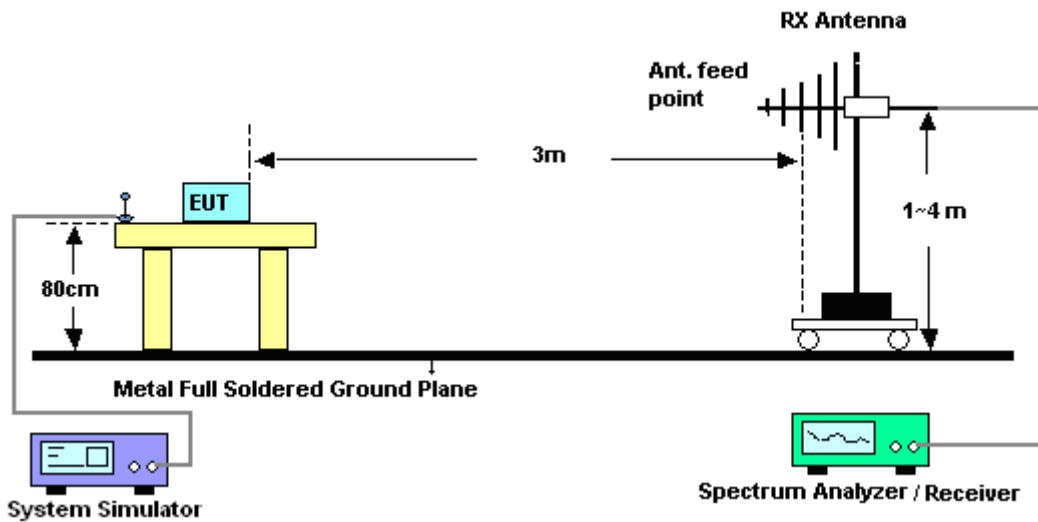
1. The testing follows FCC KDB 971168 v02r02 Section 6.0.
2. The EUT was connected to the spectrum analyzer and system simulator via a power divider.
3. The RF output of EUT was connected to the spectrum analyzer by an RF cable and attenuator. The path loss was compensated to the results for each measurement.
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)  
=  $P(W) - [43 + 10\log(P)]$  (dB)  
=  $[30 + 10\log(P)]$  (dBm) -  $[43 + 10\log(P)]$  (dB)  
= -13dBm.

### 3.5.4 Test Setup

#### <Conducted Band Edge >



#### <Radiated Band Edge>



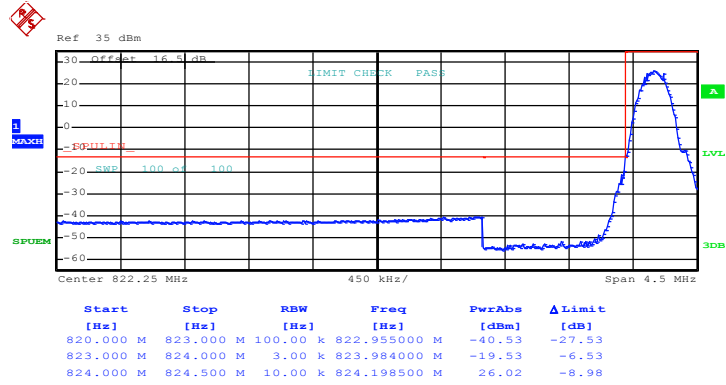




### 3.5.5 Test Result (Plots) of Conducted Band Edge

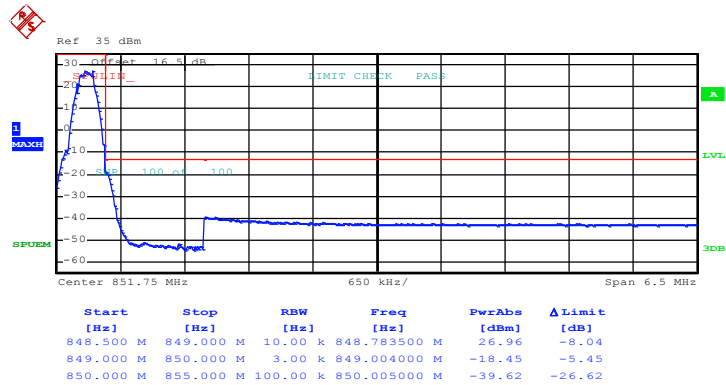
Band :	GSM850	Test Mode :	GSM Link (GMSK)
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#### Lower Band Edge Plot on Channel 128 (824.2 MHz)



Date: 27.OCT.2014 16:23:34

#### Higher Band Edge Plot on Channel 251 (848.8 MHz)

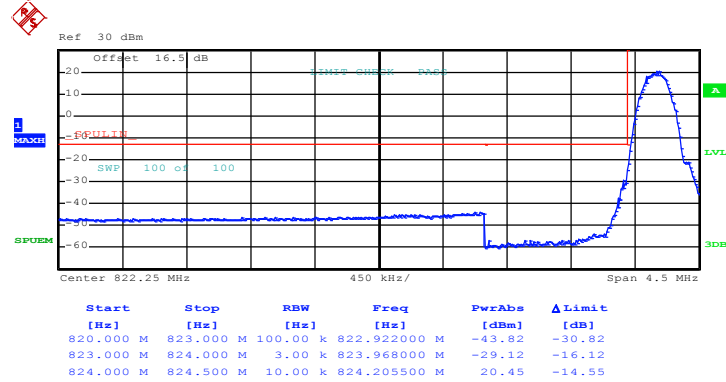


Date: 27.OCT.2014 16:10:21



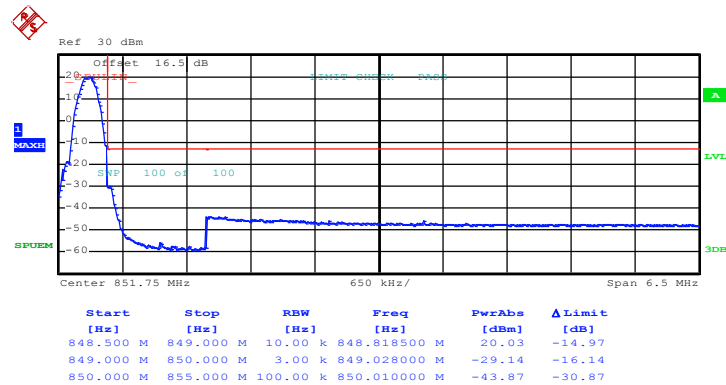
Band :	GSM850	Test Mode :	EDGE class 8 Link (8PSK)
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Lower Band Edge Plot on Channel 128 (824.2 MHz)



Date: 27.OCT.2014 19:02:07

Higher Band Edge Plot on Channel 251 (848.8 MHz)

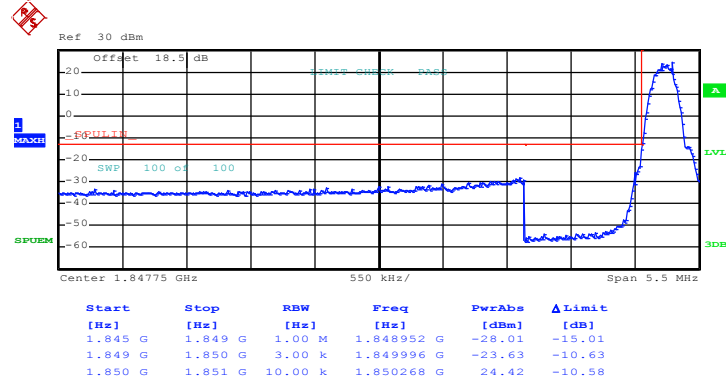


Date: 27.OCT.2014 18:55:59



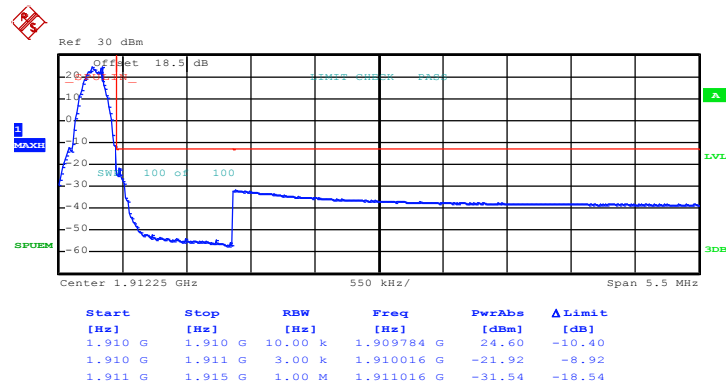
Band :	GSM1900	Test Mode :	GSM Link (GMSK)
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Lower Band Edge Plot on Channel 512 (1850.2 MHz)



Date: 28.OCT.2014 11:09:58

Higher Band Edge Plot on Channel 810 (1909.8 MHz)

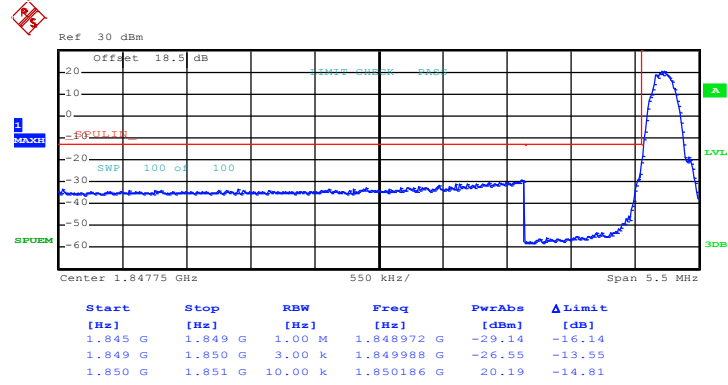


Date: 28.OCT.2014 11:06:34



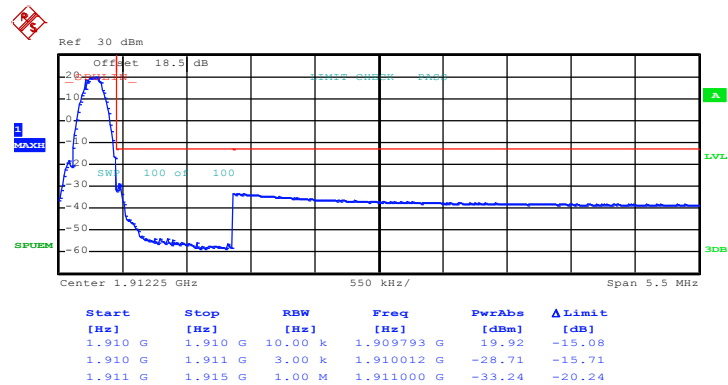
Band :	GSM1900	Test Mode :	EDGE class 8 Link (8PSK)
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Lower Band Edge Plot on Channel 512 (1850.2 MHz)



Date: 28.OCT.2014 11:49:28

Higher Band Edge Plot on Channel 810 (1909.8 MHz)

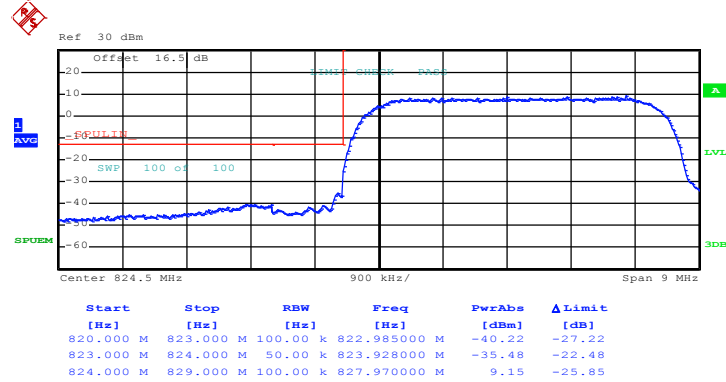


Date: 28.OCT.2014 11:43:41



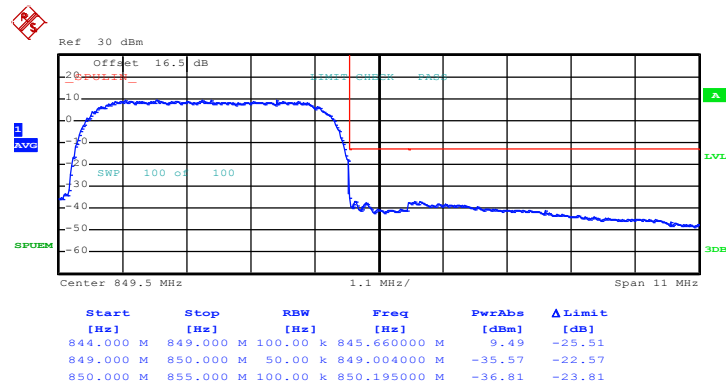
Band :	WCDMA Band V	Test Mode :	RMC 12.2Kbps Link (QPSK)
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Lower Band Edge Plot on Channel 4132 (826.4 MHz)



Date: 28.OCT.2014 14:58:09

Higher Band Edge Plot on Channel 4233 (846.6 MHz)

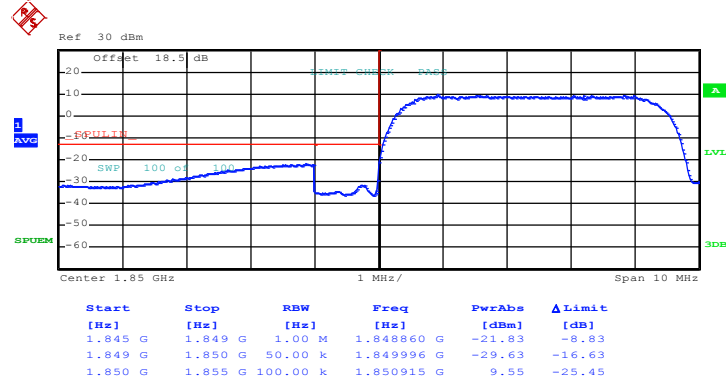


Date: 28.OCT.2014 14:55:08



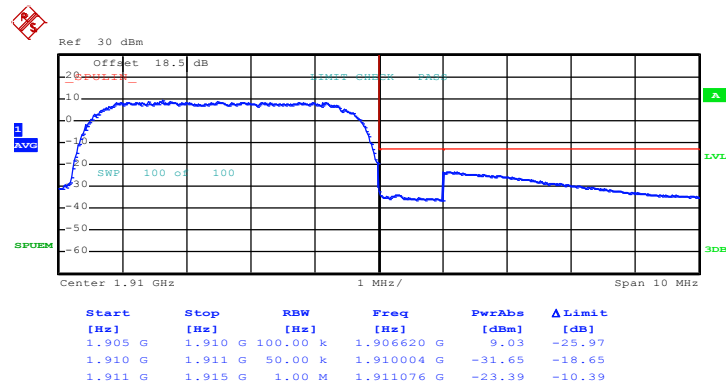
<b>Band :</b>	WCDMA Band II	<b>Test Mode :</b>	RMC 12.2Kbps Link (QPSK)
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Lower Band Edge Plot on Channel 9262 (1852.4 MHz)



Date: 28.OCT.2014 14:25:13

Higher Band Edge Plot on Channel 9538 (1907.6 MHz)



Date: 28.OCT.2014 14:14:12



### 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 10<sup>th</sup> harmonic.

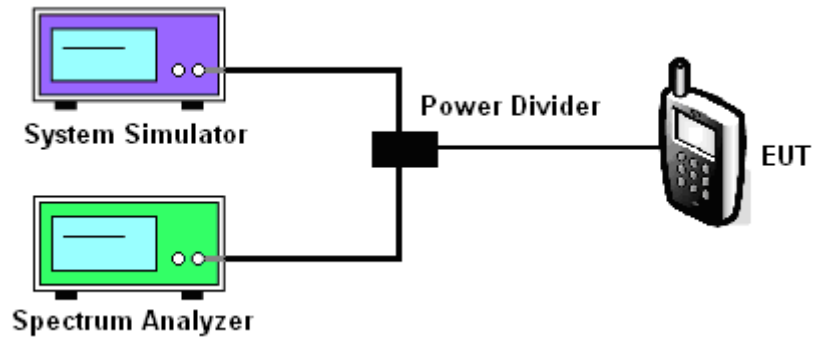
#### 3.6.2 Measuring Instruments

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)  
= -13dBm.

### 3.6.4 Test Setup



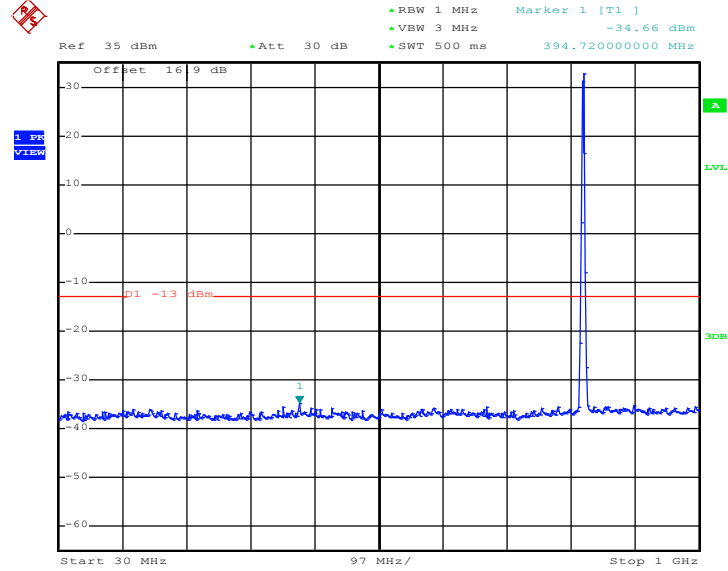




### 3.6.5 Test Result (Plots) of Conducted Spurious Emission

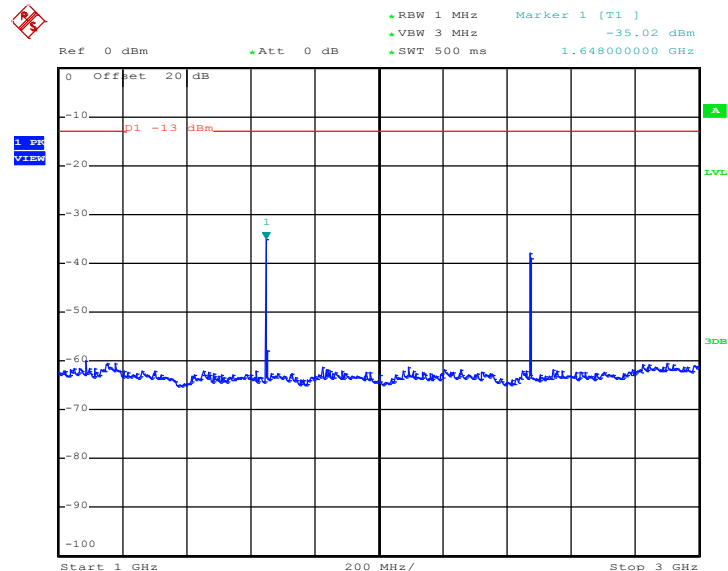
Band :	GSM850	Channel :	CH128
Test Mode :	GSM Link (GMSK)	Frequency :	824.2 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



Date: 28.OCT.2014 10:22:37

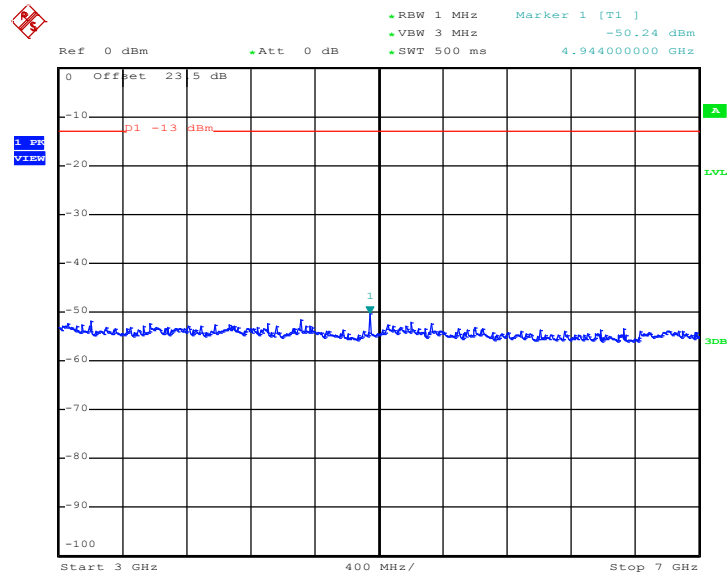
Conducted Spurious Emission Plot between 1GHz ~ 3GHz



Date: 28.OCT.2014 10:22:47

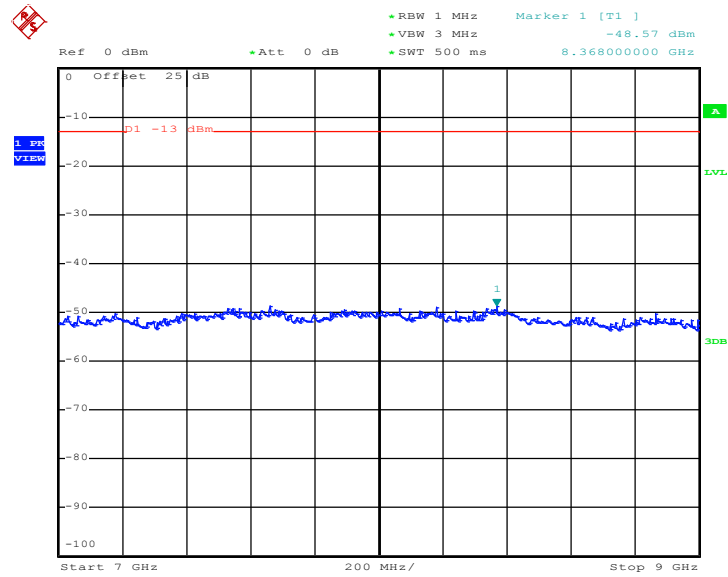


### Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 28.OCT.2014 10:22:56

### Conducted Spurious Emission Plot between 7GHz ~ 9GHz

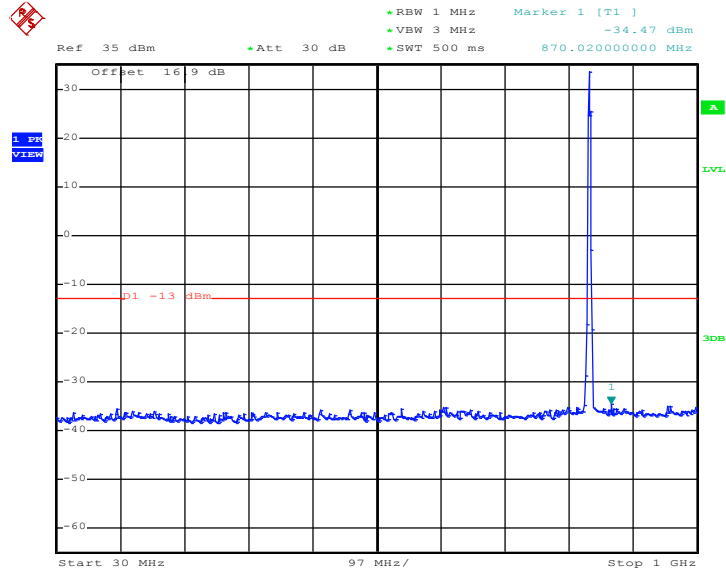


Date: 28.OCT.2014 10:23:04



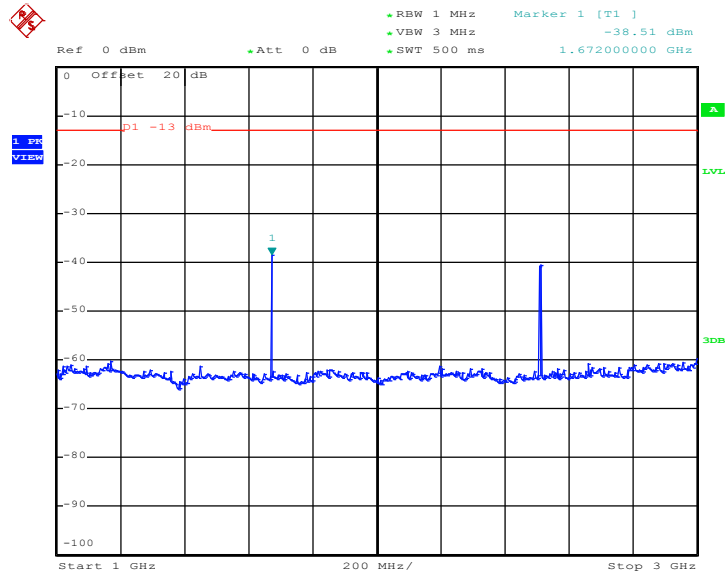
<b>Band :</b>	GSM850	<b>Channel :</b>	CH189
<b>Test Mode :</b>	GSM Link (GMSK)	<b>Frequency :</b>	836.4 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



Date: 28.OCT.2014 10:26:26

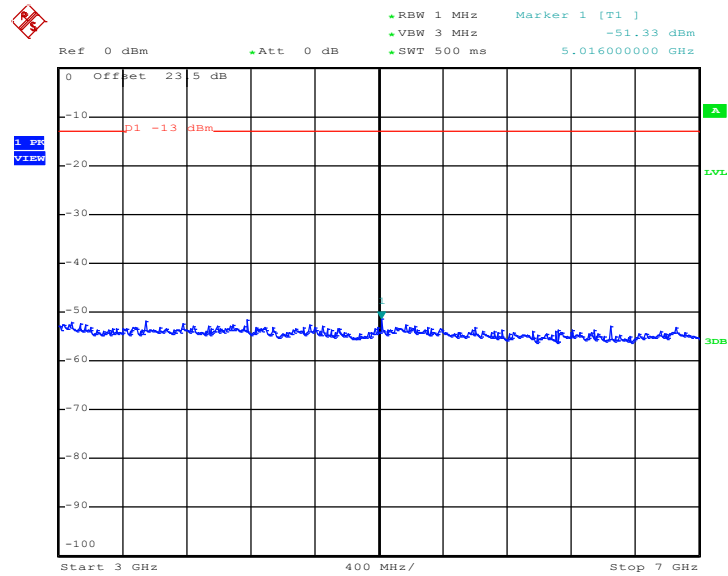
Conducted Spurious Emission Plot between 1GHz ~ 3GHz



Date: 28.OCT.2014 10:26:37

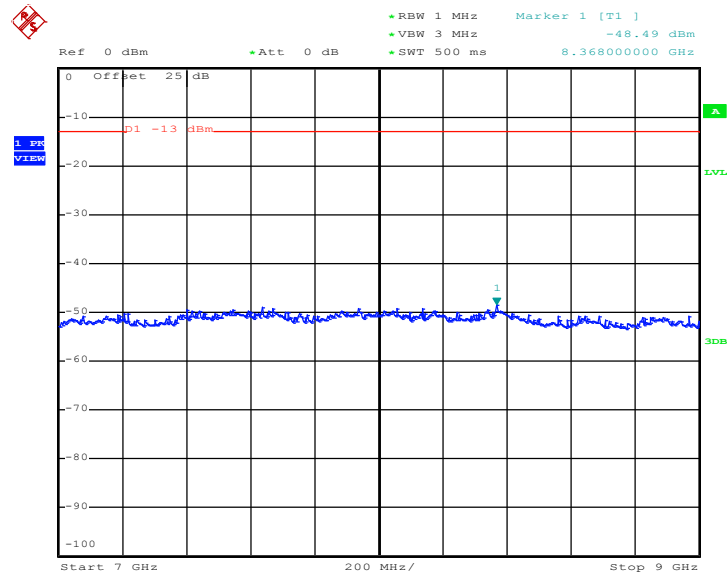


### Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 28.OCT.2014 10:25:42

### Conducted Spurious Emission Plot between 7GHz ~ 9GHz

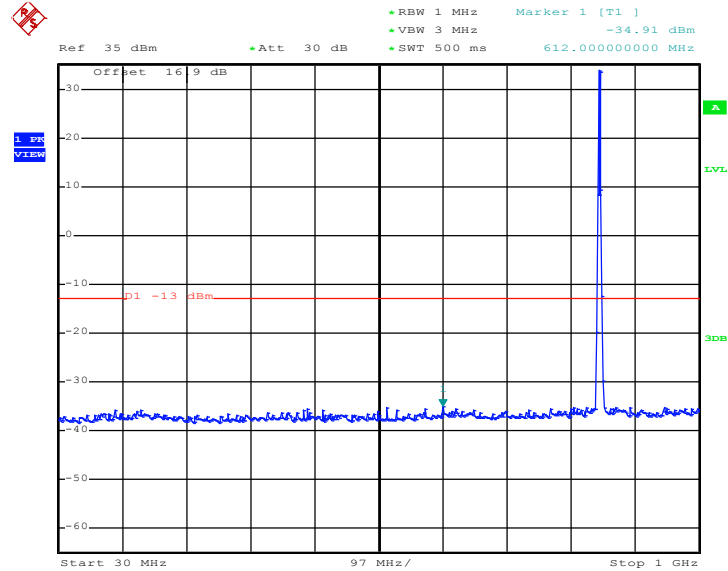


Date: 28.OCT.2014 10:25:51



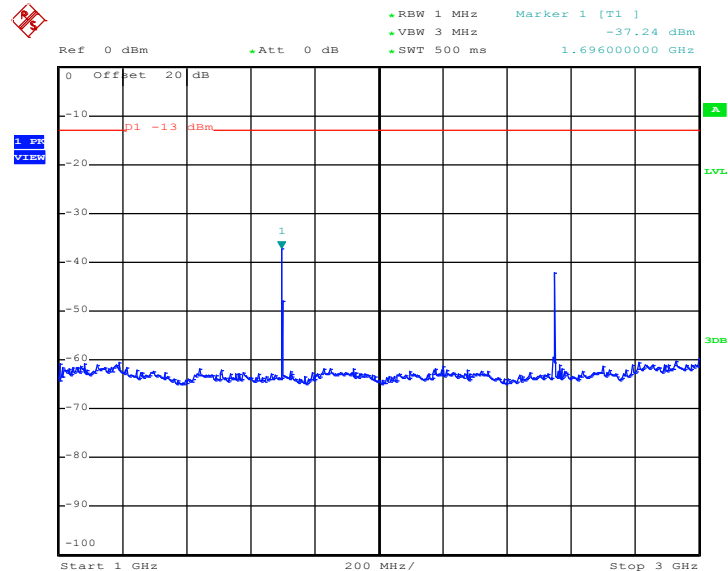
<b>Band :</b>	GSM850	<b>Channel :</b>	CH251
<b>Test Mode :</b>	GSM Link (GMSK)	<b>Frequency :</b>	848.8 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



Date: 28.OCT.2014 10:32:19

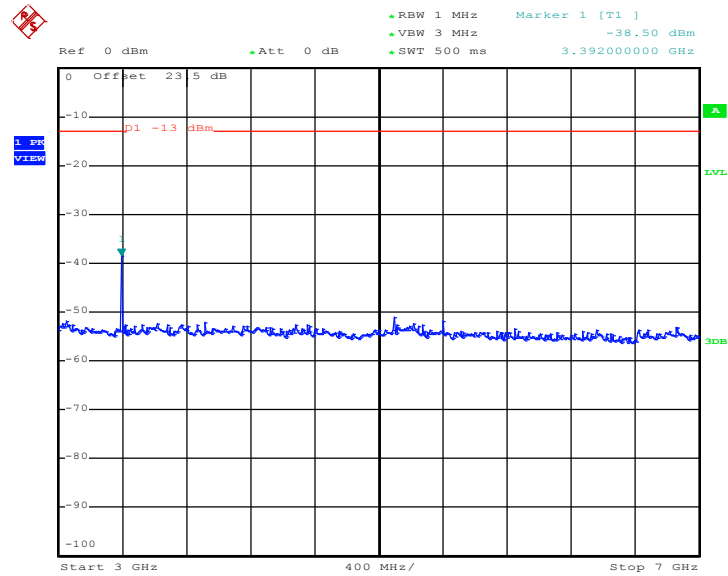
Conducted Spurious Emission Plot between 1GHz ~ 3GHz



Date: 28.OCT.2014 10:32:29

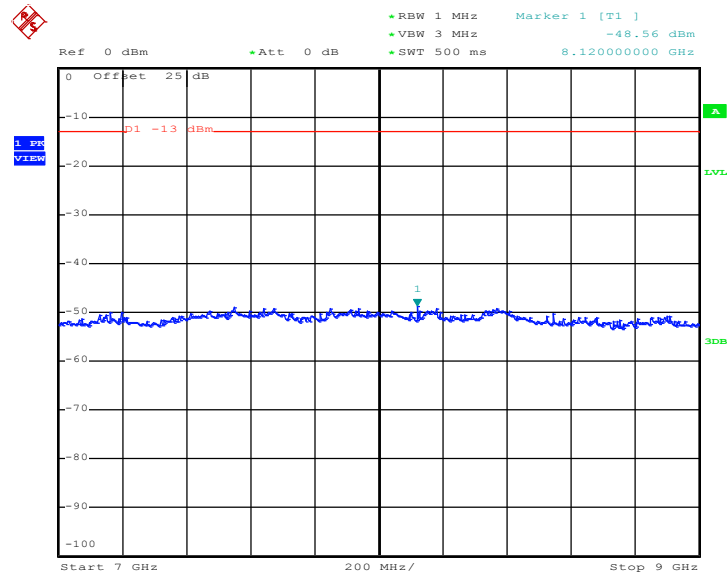


### Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 28.OCT.2014 10:32:37

### Conducted Spurious Emission Plot between 7GHz ~ 9GHz

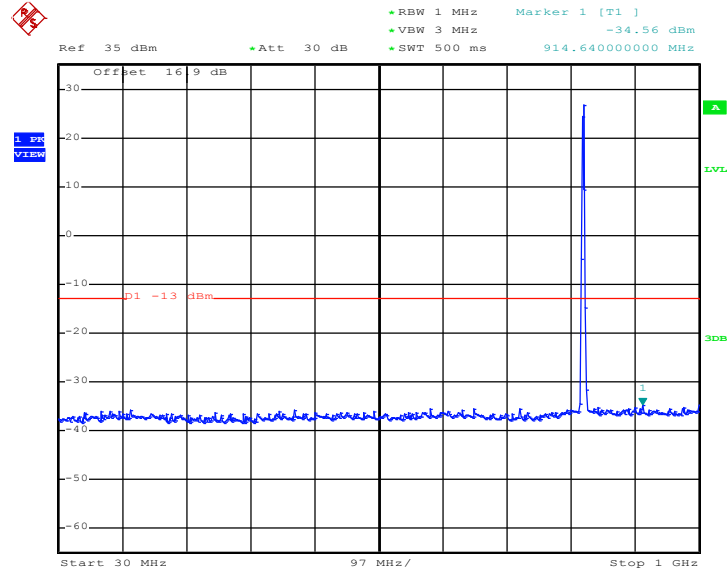


Date: 28.OCT.2014 10:32:46



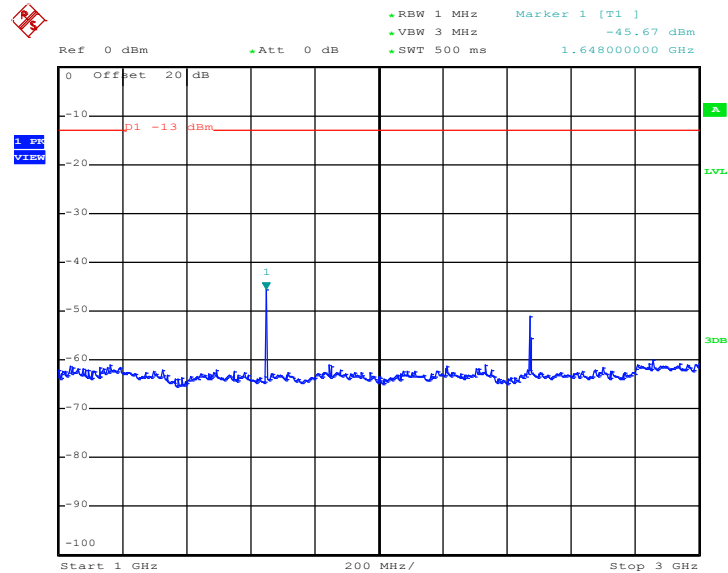
<b>Band :</b>	GSM850	<b>Channel :</b>	CH128
<b>Test Mode :</b>	EDGE class 8 Link (8PSK)	<b>Frequency :</b>	824.2 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



Date: 28.OCT.2014 10:49:33

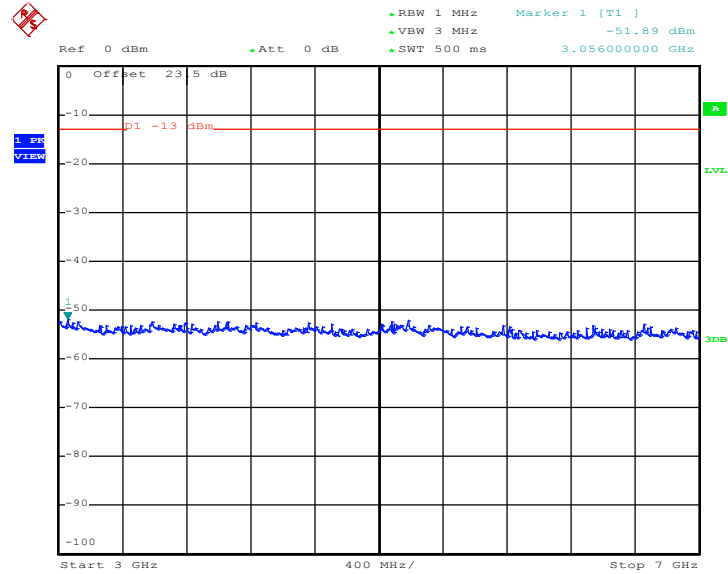
Conducted Spurious Emission Plot between 1GHz ~ 3GHz



Date: 28.OCT.2014 10:49:43

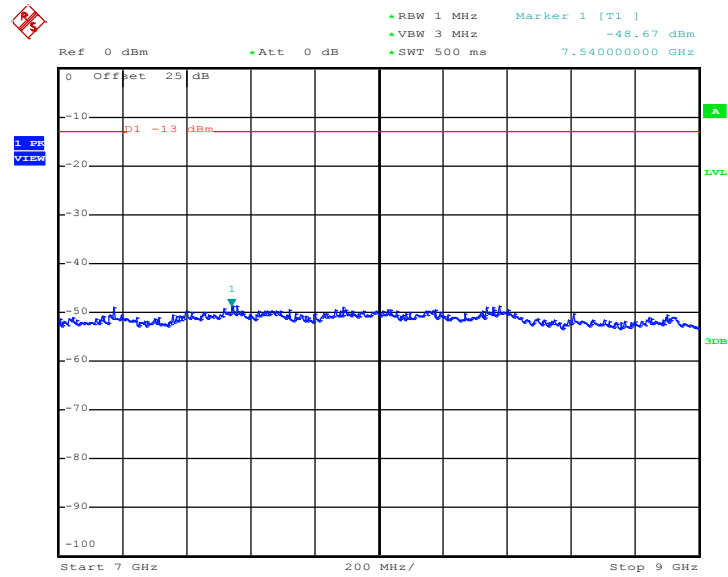


### Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 28.OCT.2014 10:49:51

### Conducted Spurious Emission Plot between 7GHz ~ 9GHz



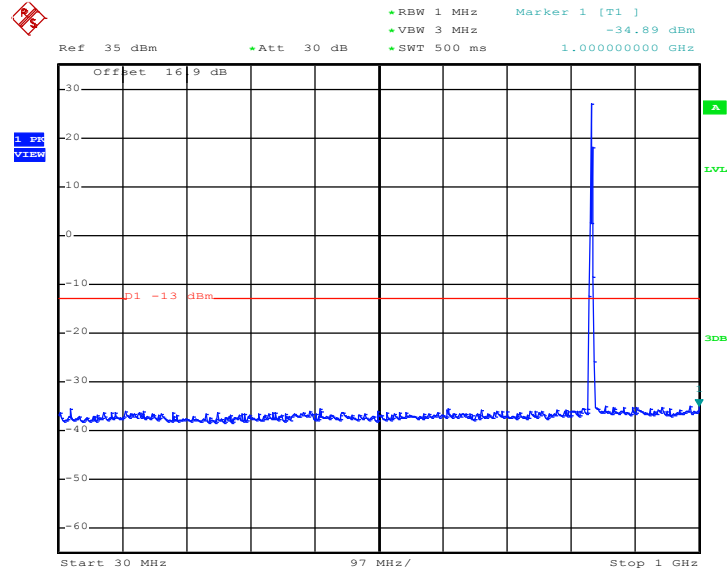
Date: 28.OCT.2014 10:49:59





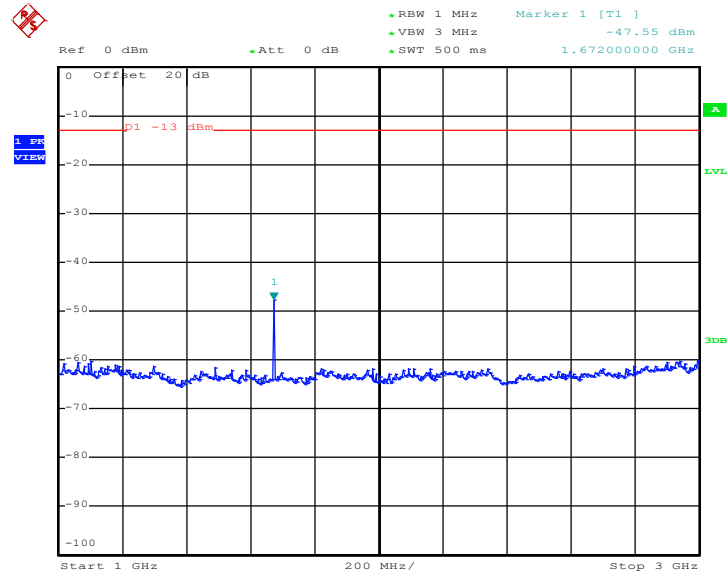
Band :	GSM850	Channel :	CH189
Test Mode :	EDGE class 8 Link (8PSK)	Frequency :	836.4 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



Date: 28.OCT.2014 10:50:56

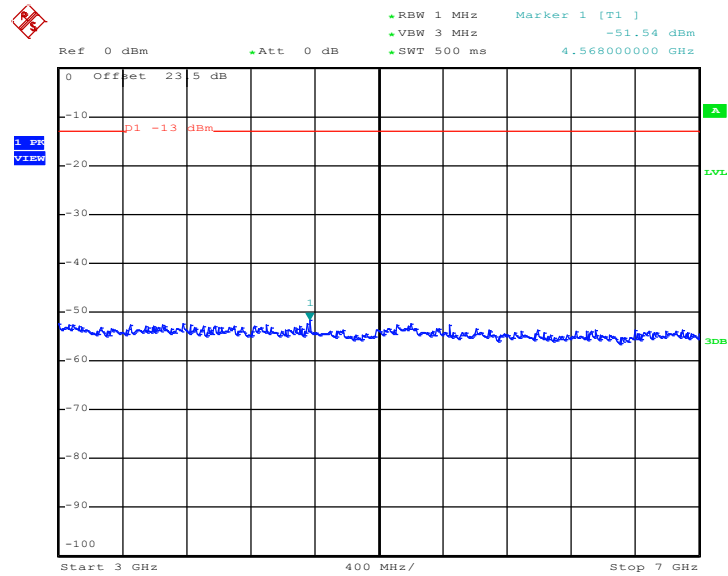
Conducted Spurious Emission Plot between 1GHz ~ 3GHz



Date: 28.OCT.2014 10:52:03

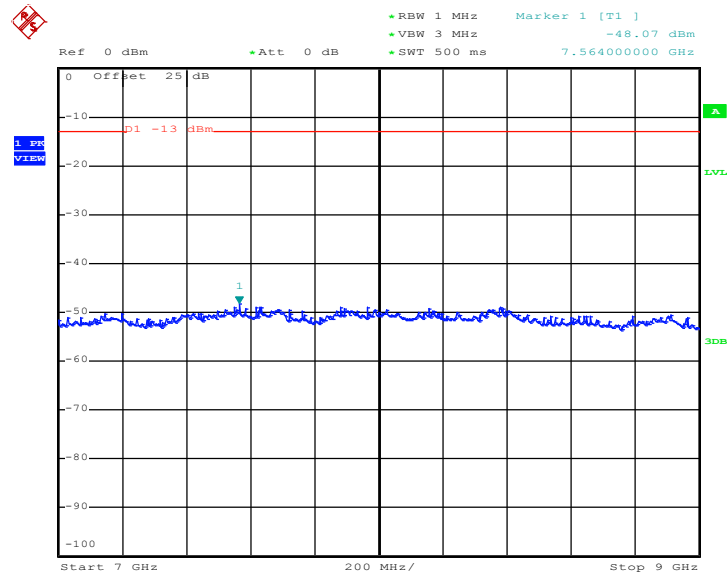


### Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 28.OCT.2014 10:52:11

### Conducted Spurious Emission Plot between 7GHz ~ 9GHz

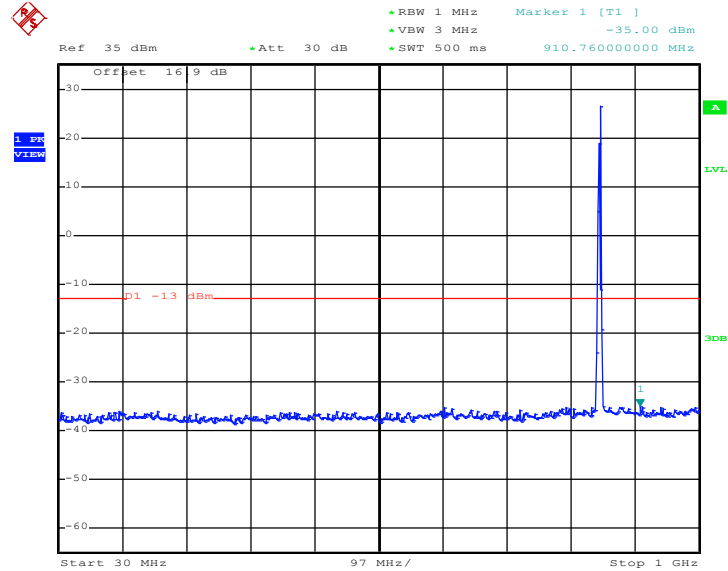


Date: 28.OCT.2014 10:52:20



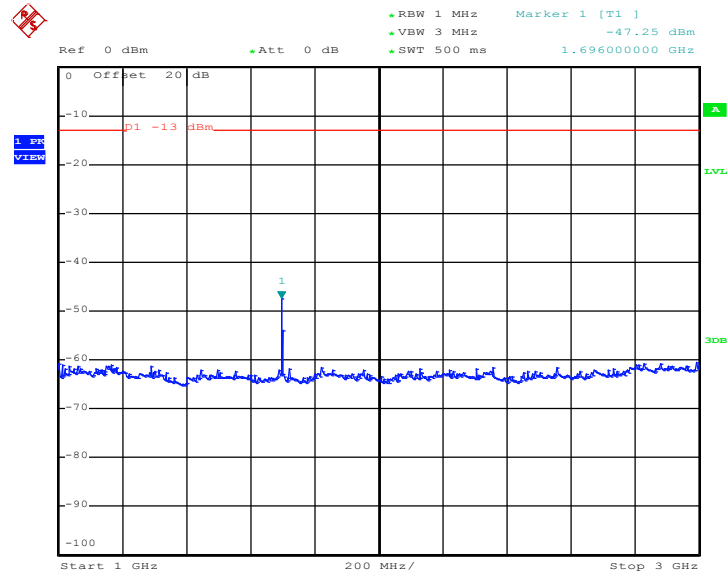
Band :	GSM850	Channel :	CH251
Test Mode :	EDGE class 8 Link (8PSK)	Frequency :	848.8 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



Date: 28.OCT.2014 10:53:20

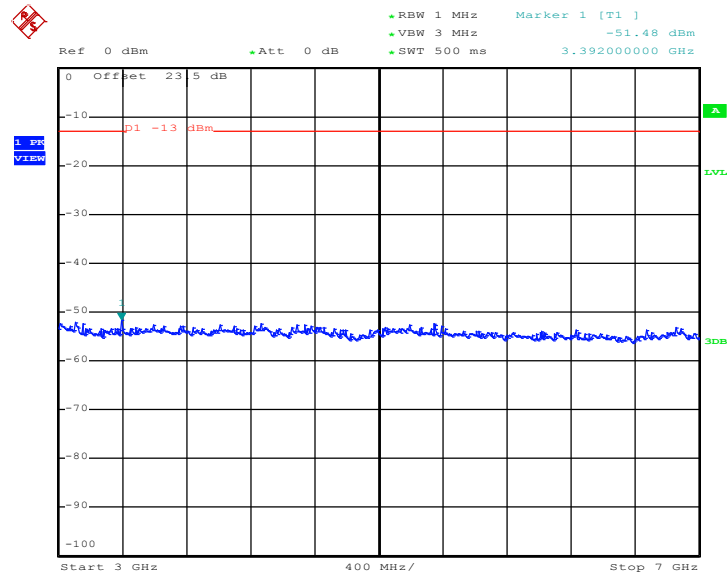
Conducted Spurious Emission Plot between 1GHz ~ 3GHz



Date: 28.OCT.2014 10:53:30

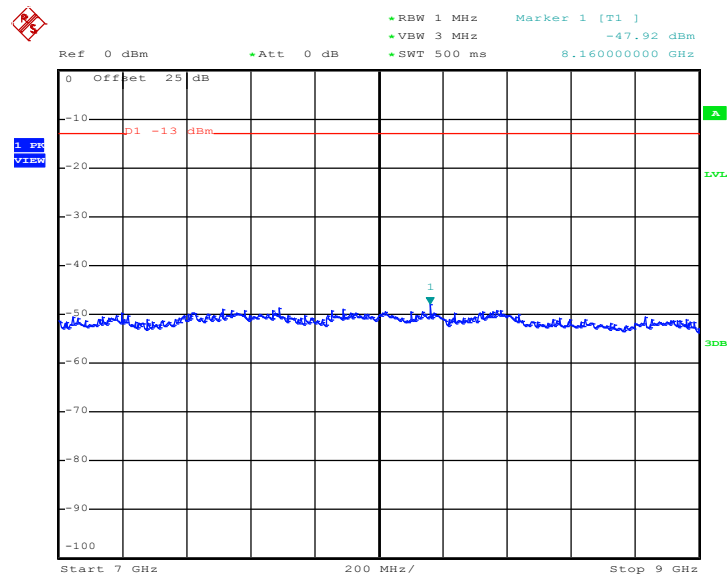


### Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 28.OCT.2014 10:53:39

### Conducted Spurious Emission Plot between 7GHz ~ 9GHz

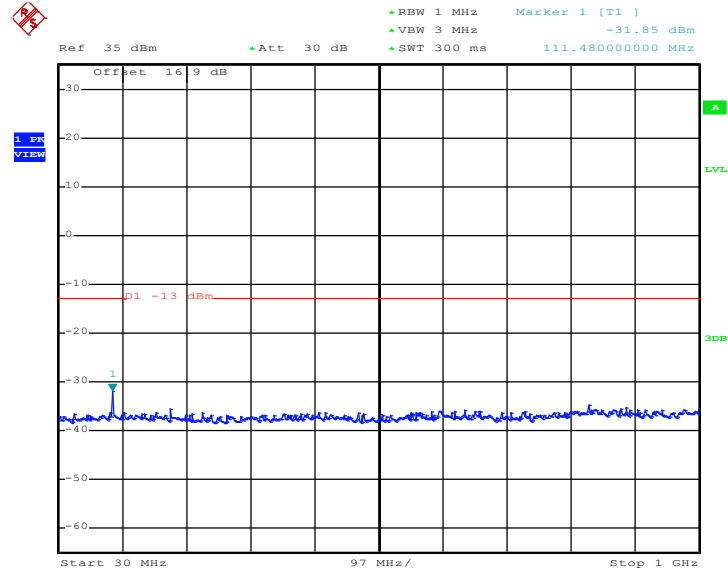


Date: 28.OCT.2014 10:53:47



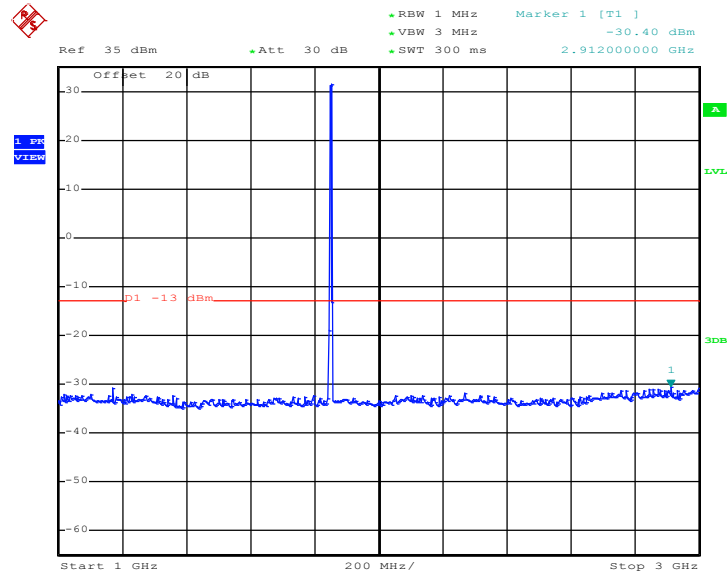
Band :	GSM1900	Channel :	CH512
Test Mode :	GSM Link (GMSK)	Frequency :	1850.2 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



Date: 28.OCT.2014 11:31:50

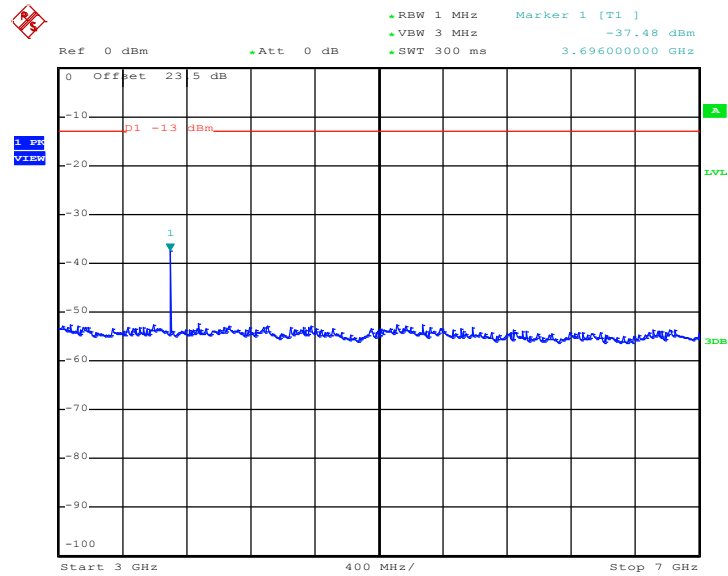
Conducted Spurious Emission Plot between 1GHz ~ 3GHz



Date: 28.OCT.2014 11:31:58

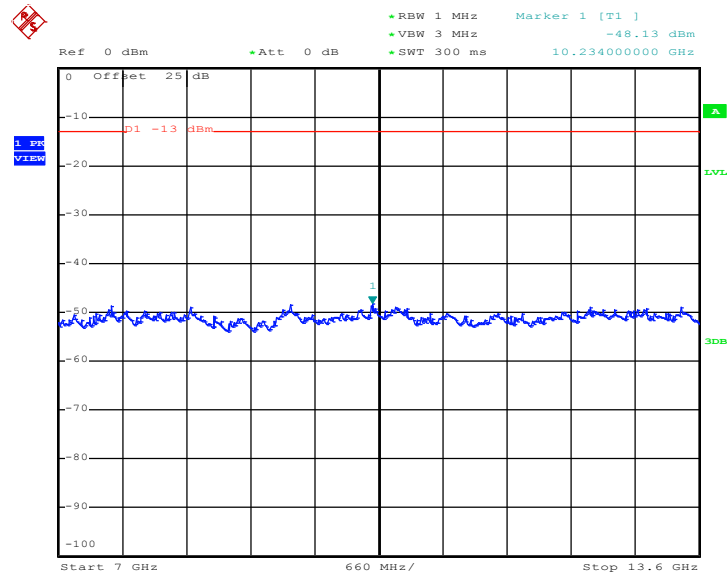


### Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 28.OCT.2014 11:32:09

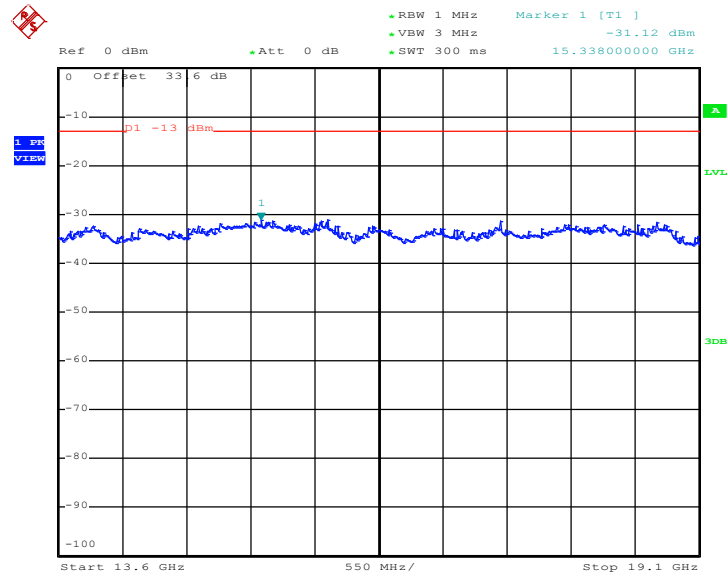
### Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz



Date: 28.OCT.2014 11:32:17



Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz

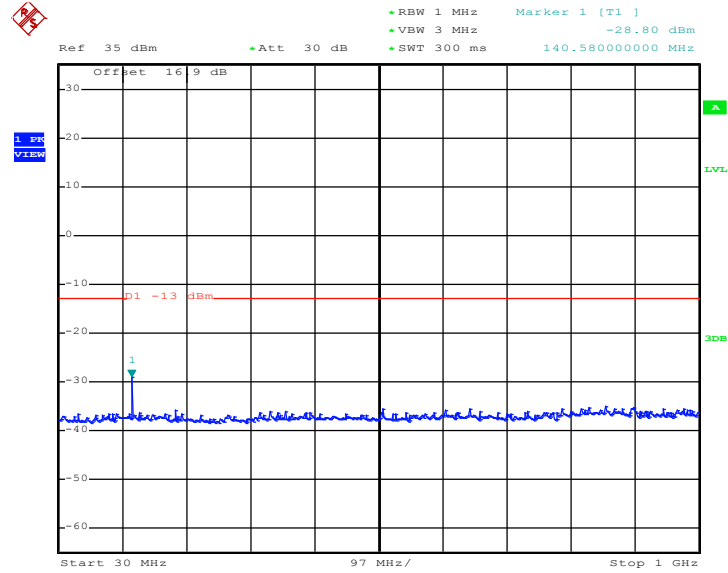


Date: 28.OCT.2014 11:32:26



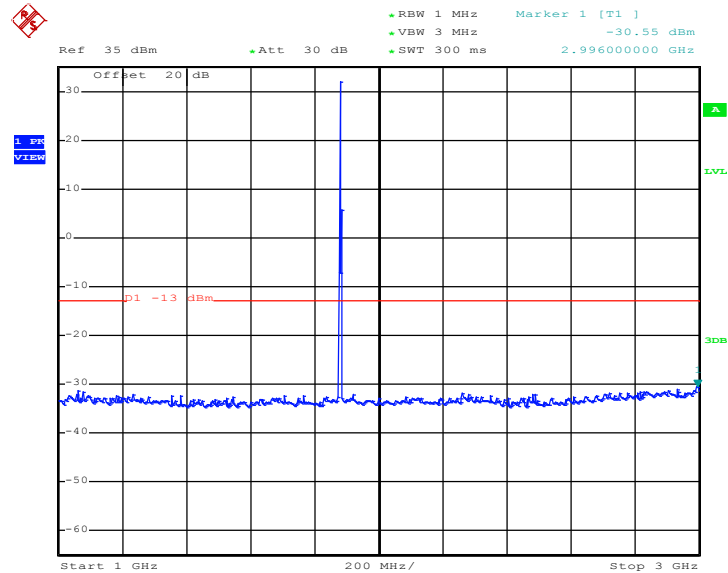
<b>Band :</b>	GSM1900	<b>Channel :</b>	CH661
<b>Test Mode :</b>	GSM Link (GMSK)	<b>Frequency :</b>	1880.0 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



Date: 28.OCT.2014 11:34:52

Conducted Spurious Emission Plot between 1GHz ~ 3GHz

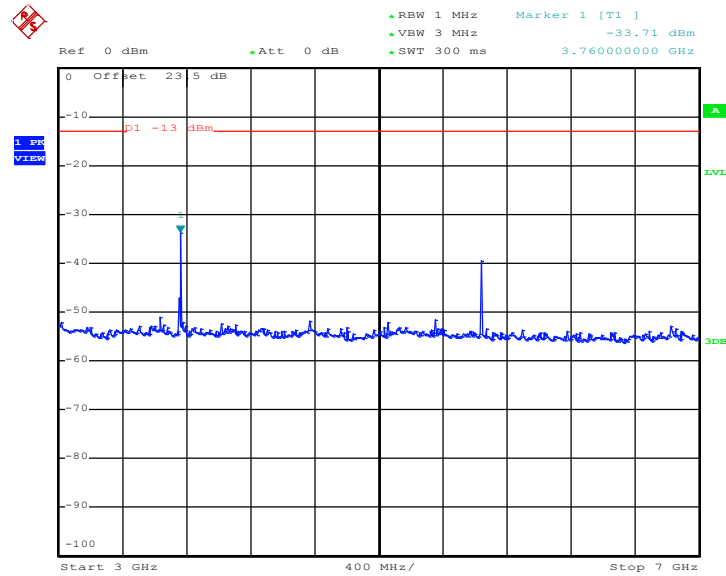


Date: 28.OCT.2014 11:35:01



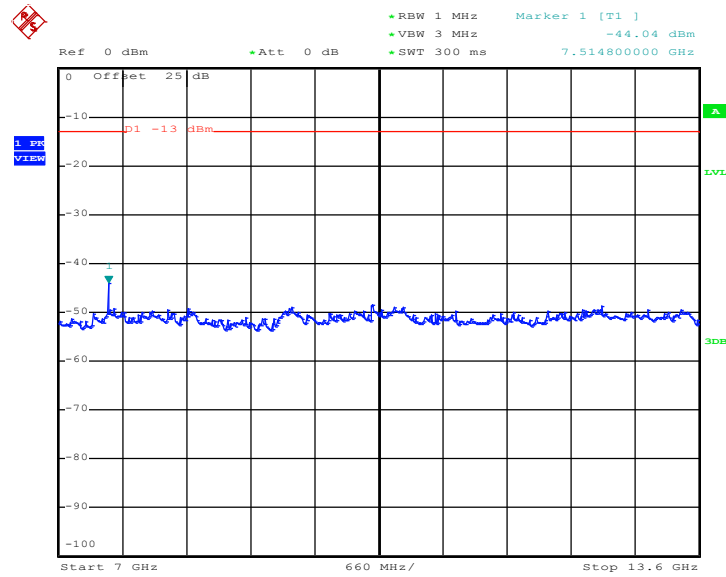


### Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 28.OCT.2014 11:35:11

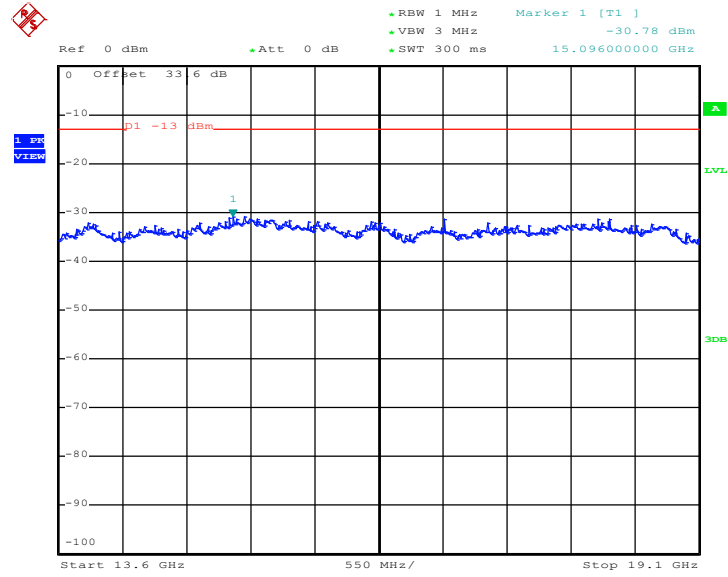
### Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz



Date: 28.OCT.2014 11:35:20



Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz

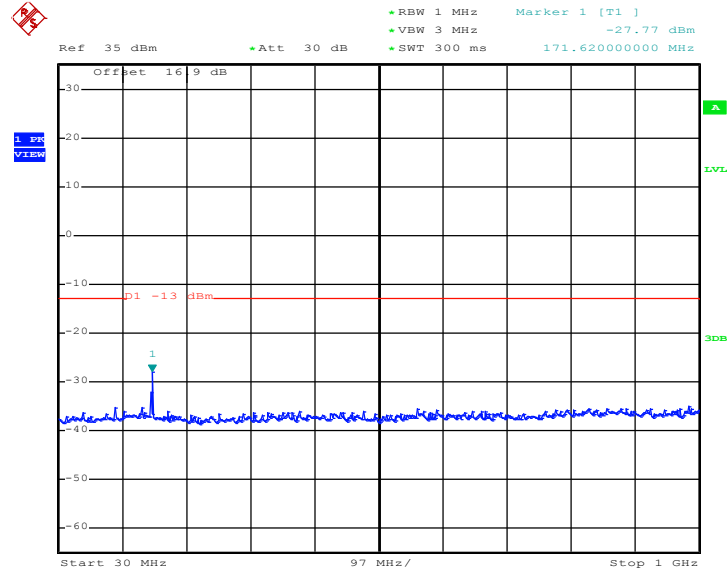


Date: 28.OCT.2014 11:35:28



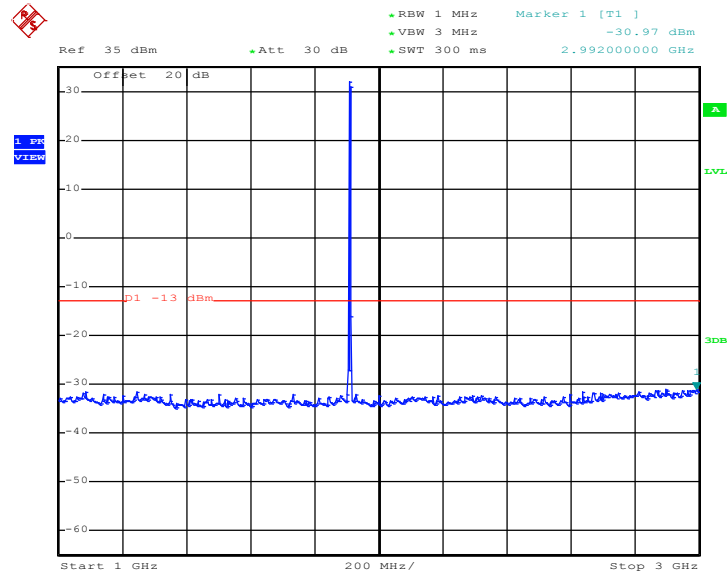
<b>Band :</b>	GSM1900	<b>Channel :</b>	CH810
<b>Test Mode :</b>	GSM Link (GMSK)	<b>Frequency :</b>	1909.8 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



Date: 28.OCT.2014 11:37:06

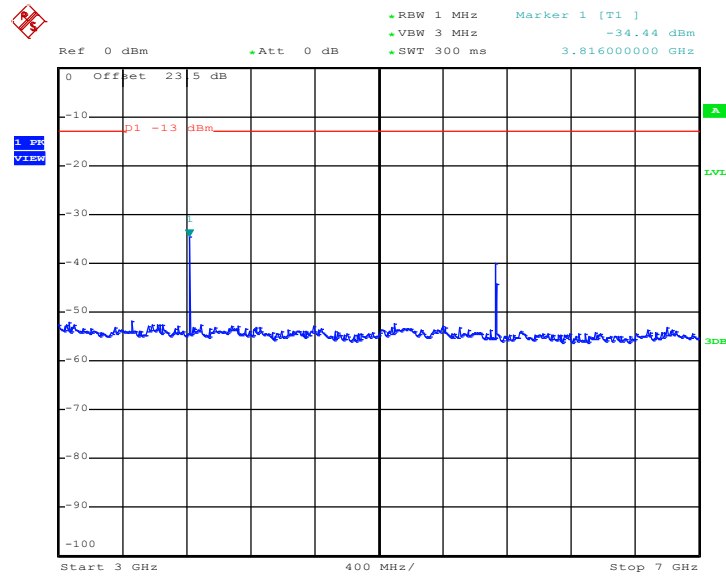
Conducted Spurious Emission Plot between 1GHz ~ 3GHz



Date: 28.OCT.2014 11:37:14

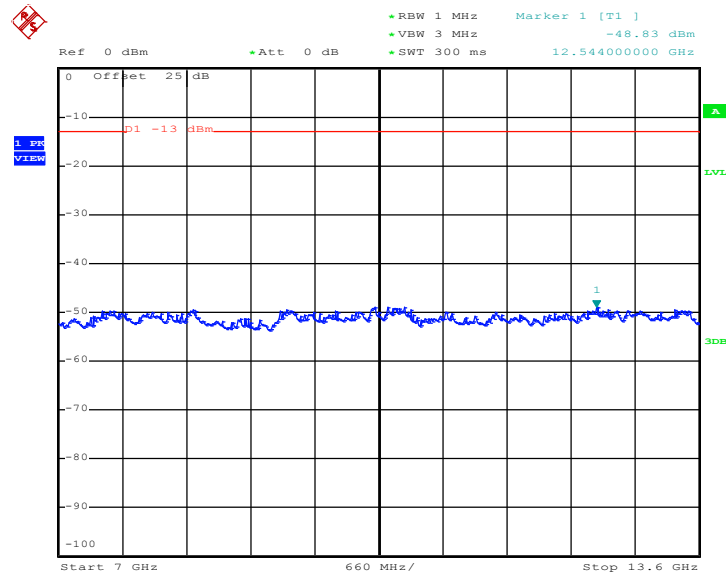


### Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 28.OCT.2014 11:37:26

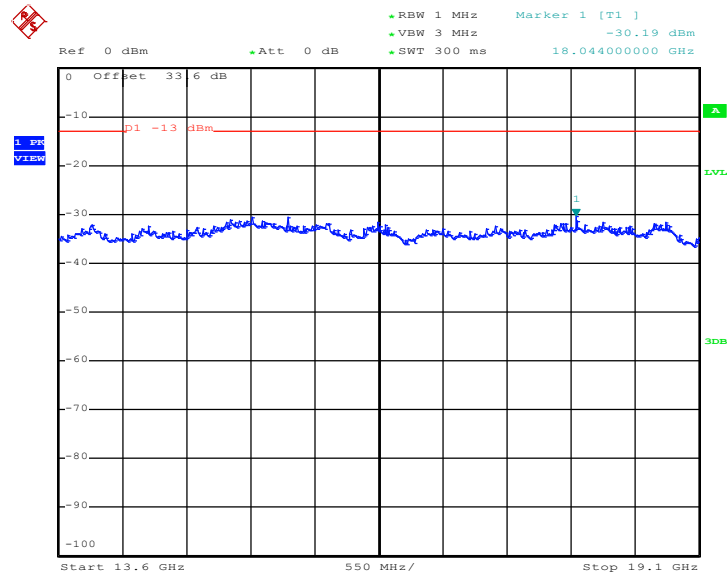
### Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz



Date: 28.OCT.2014 11:37:34



Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz

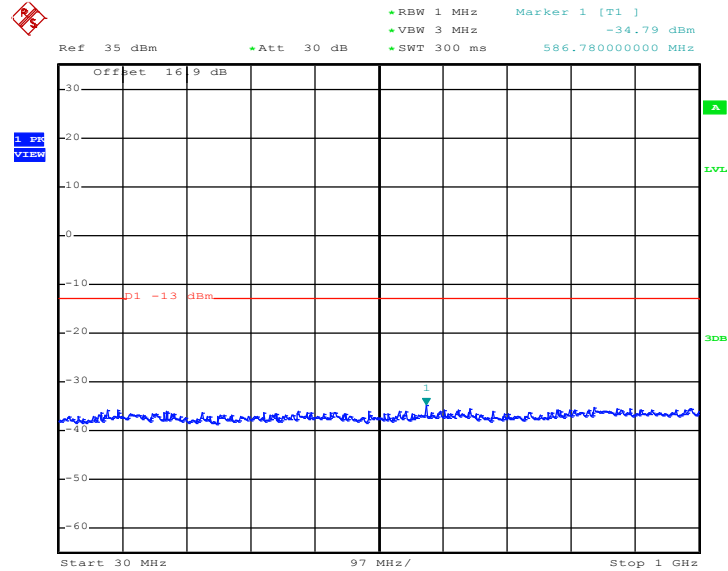


Date: 28.OCT.2014 11:37:43



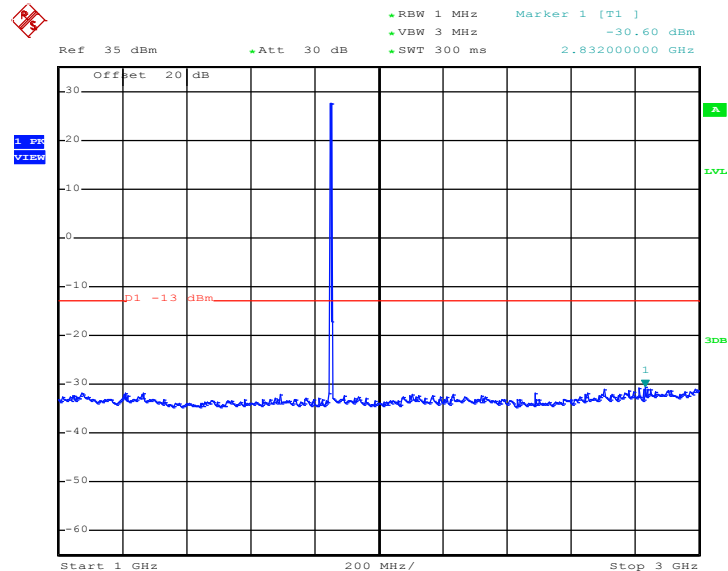
<b>Band :</b>	GSM1900	<b>Channel :</b>	CH512
<b>Test Mode :</b>	EDGE class 8 Link (8PSK)	<b>Frequency :</b>	1850.2 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



Date: 28.OCT.2014 13:59:23

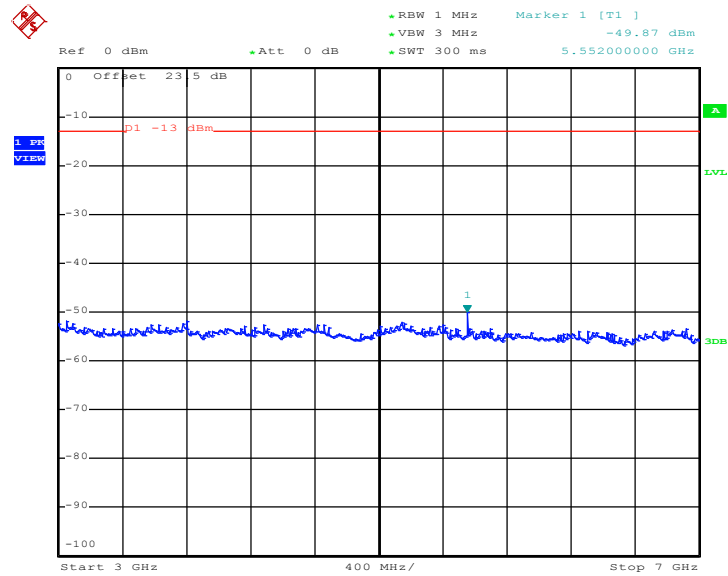
Conducted Spurious Emission Plot between 1GHz ~ 3GHz



Date: 28.OCT.2014 13:59:31

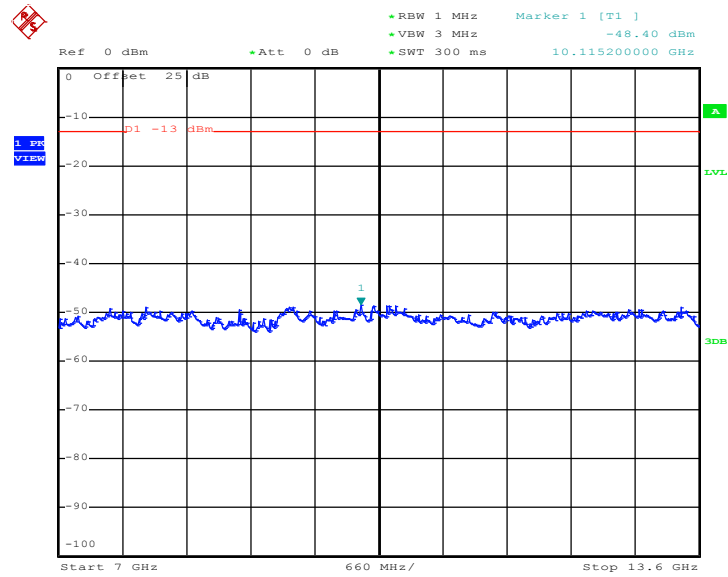


### Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 28.OCT.2014 13:59:43

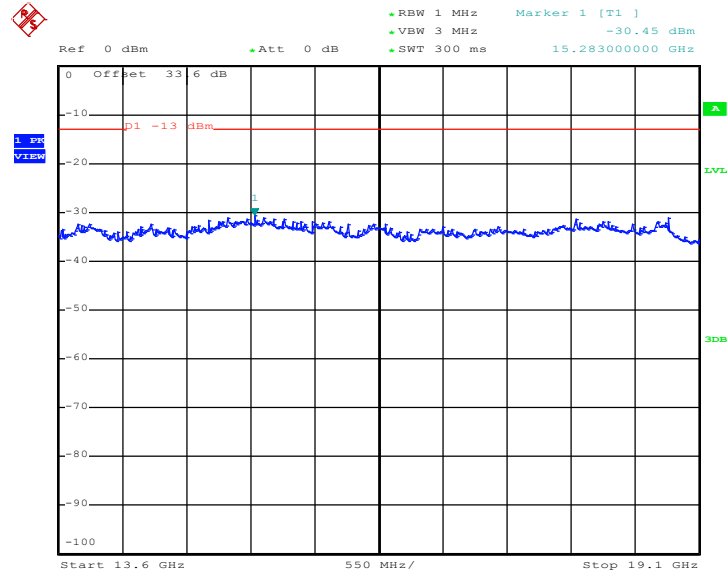
### Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz



Date: 28.OCT.2014 13:59:51



Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz



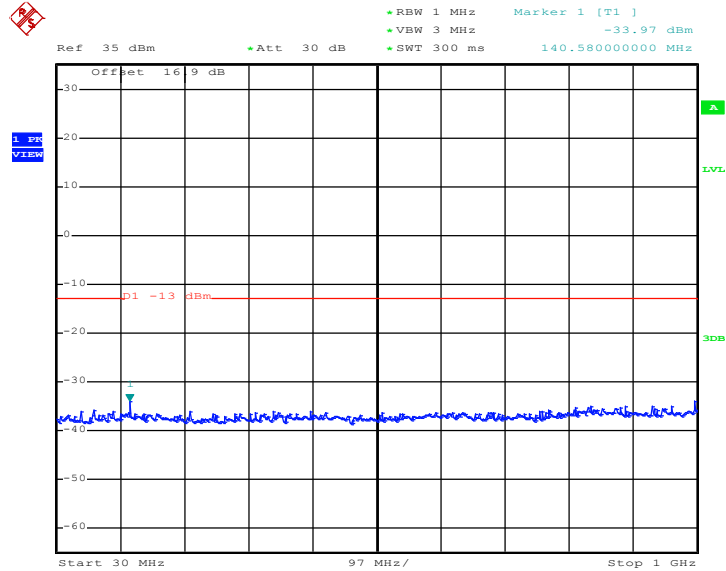
Date: 28.OCT.2014 14:00:00





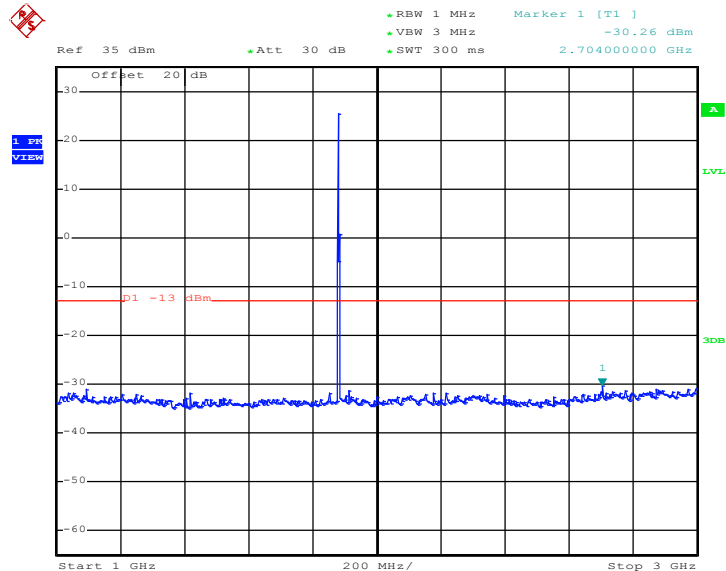
<b>Band :</b>	GSM1900	<b>Channel :</b>	CH661
<b>Test Mode :</b>	EDGE class 8 Link (8PSK)	<b>Frequency :</b>	1880.0 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



Date: 28.OCT.2014 14:01:01

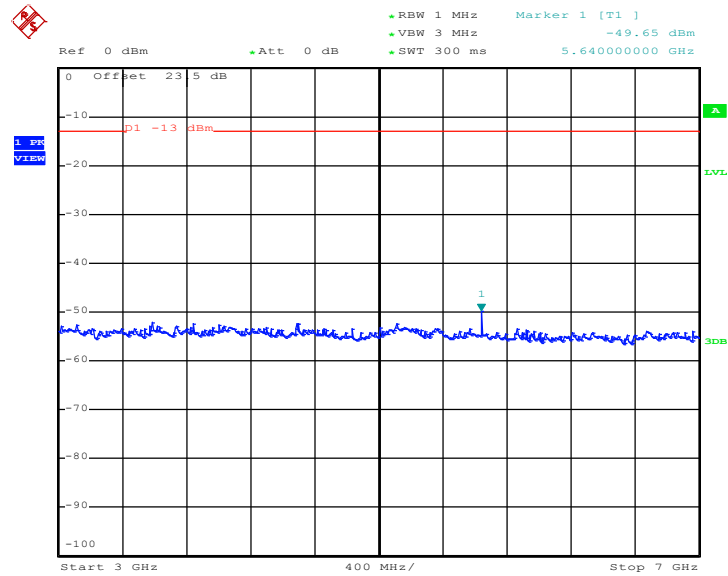
Conducted Spurious Emission Plot between 1GHz ~ 3GHz



Date: 28.OCT.2014 14:01:09

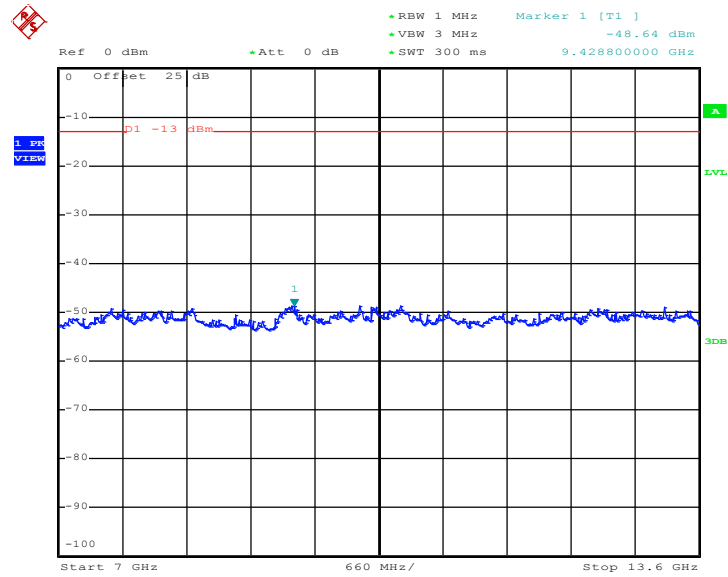


### Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 28.OCT.2014 14:01:20

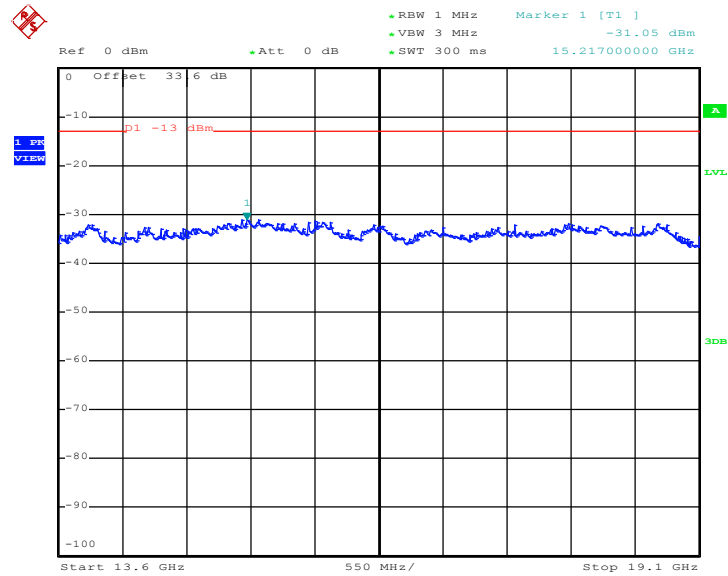
### Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz



Date: 28.OCT.2014 14:01:28



Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz

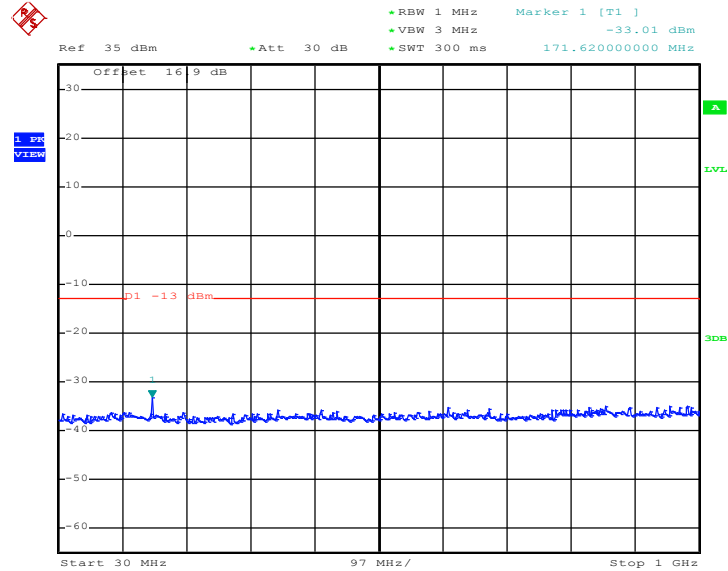


Date: 28.OCT.2014 14:01:37



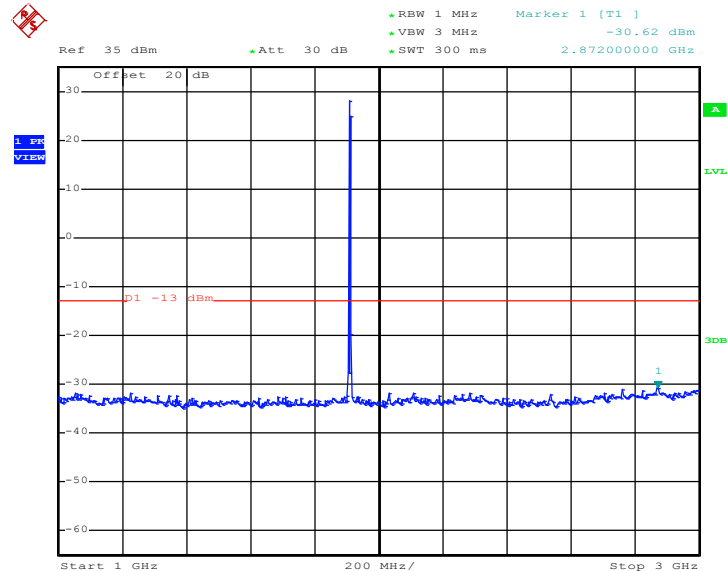
Band :	GSM1900	Channel :	CH810
Test Mode :	EDGE class 8 Link (8PSK)	Frequency :	1909.8 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



Date: 28.OCT.2014 14:02:19

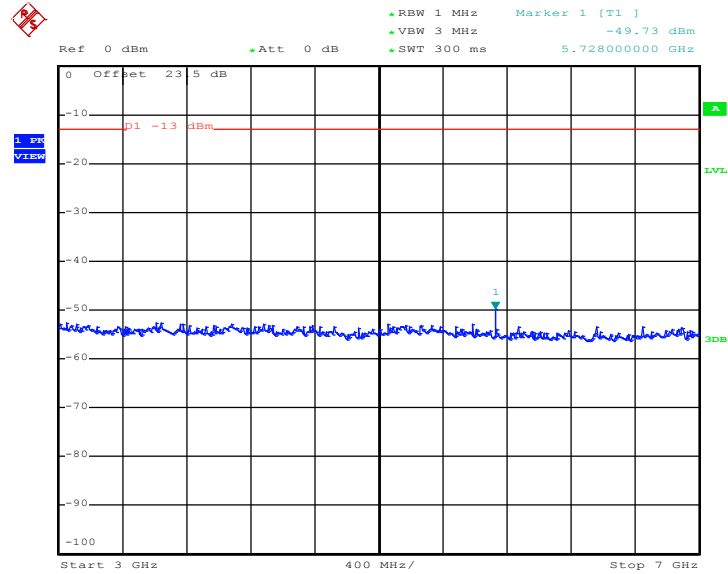
Conducted Spurious Emission Plot between 1GHz ~ 3GHz



Date: 28.OCT.2014 14:02:27

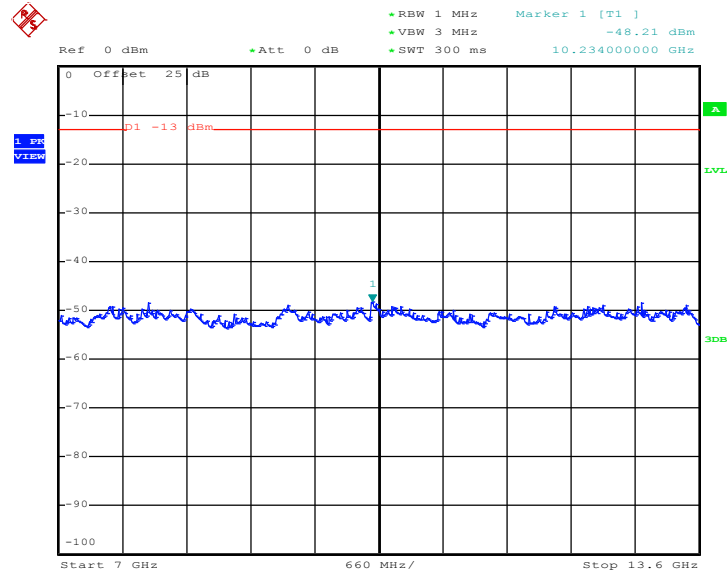


Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 28.OCT.2014 14:02:37

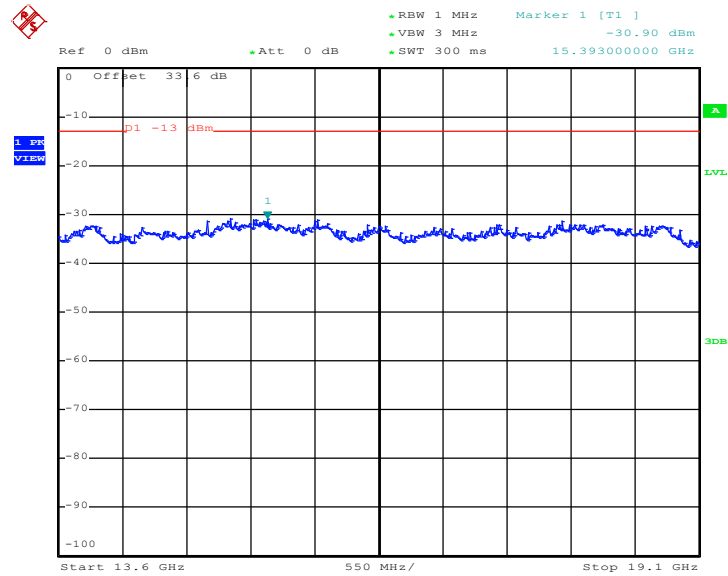
Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz



Date: 28.OCT.2014 14:02:45



Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz

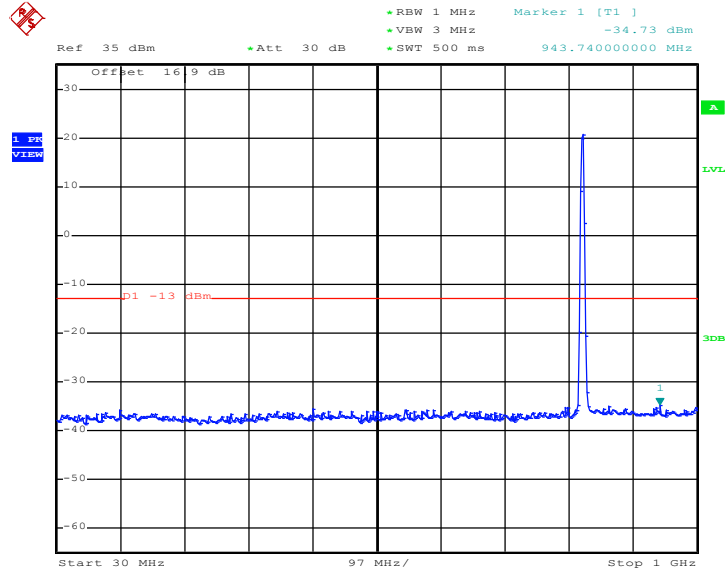


Date: 28.OCT.2014 14:02:54



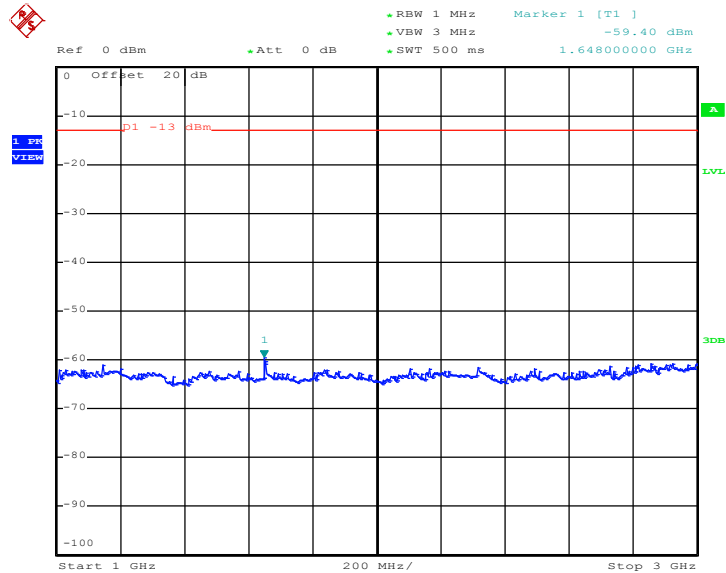
Band :	WCDMA Band V	Channel :	CH4132
Test Mode :	RMC 12.2Kbps Link (QPSK)	Frequency :	826.4 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



Date: 28.OCT.2014 15:12:18

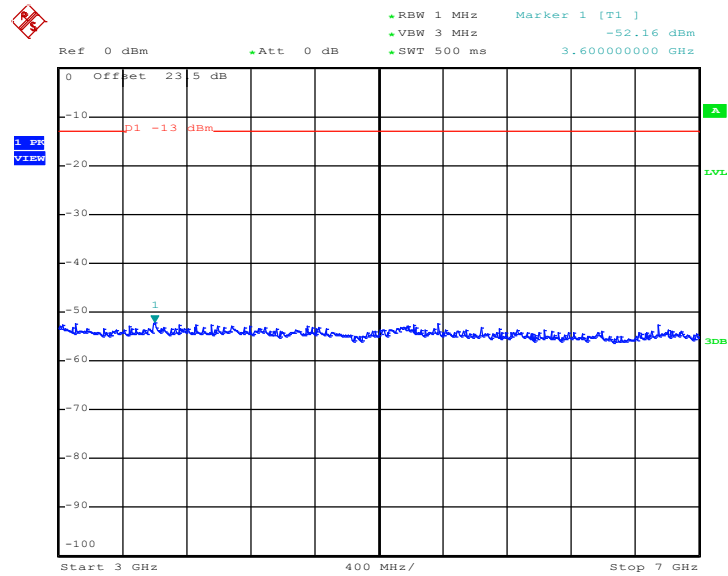
Conducted Spurious Emission Plot between 1GHz ~ 3GHz



Date: 28.OCT.2014 15:12:29

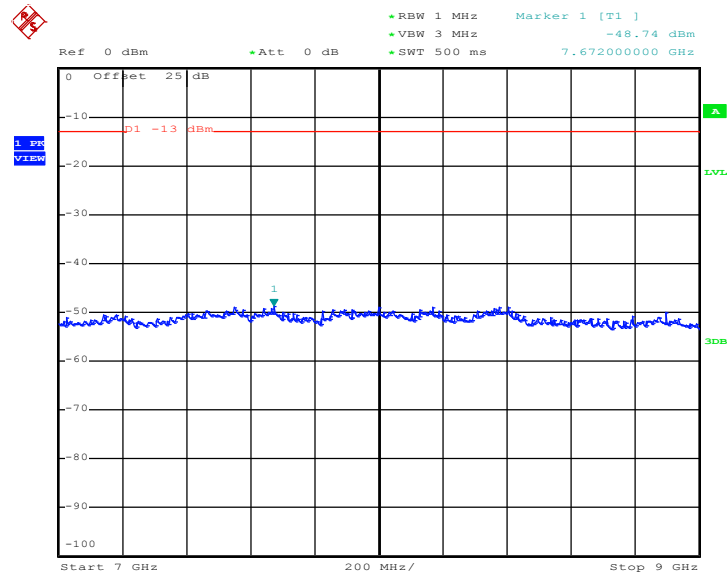


### Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 28.OCT.2014 15:12:37

### Conducted Spurious Emission Plot between 7GHz ~ 9GHz



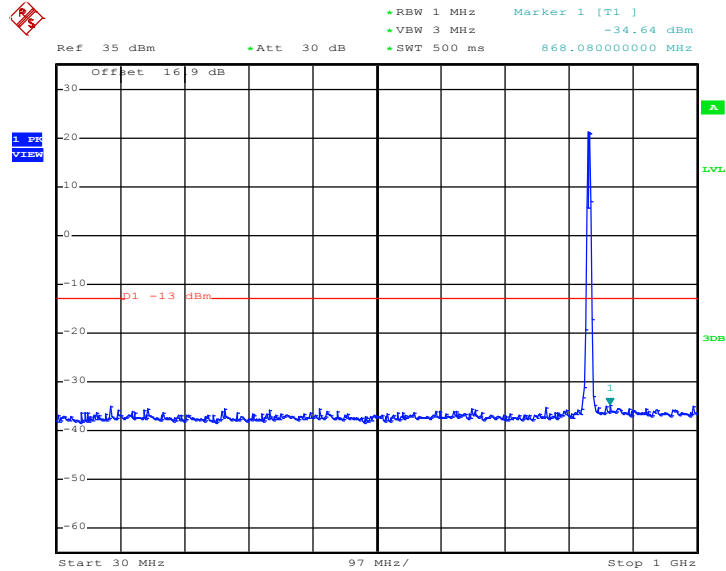
Date: 28.OCT.2014 15:12:46





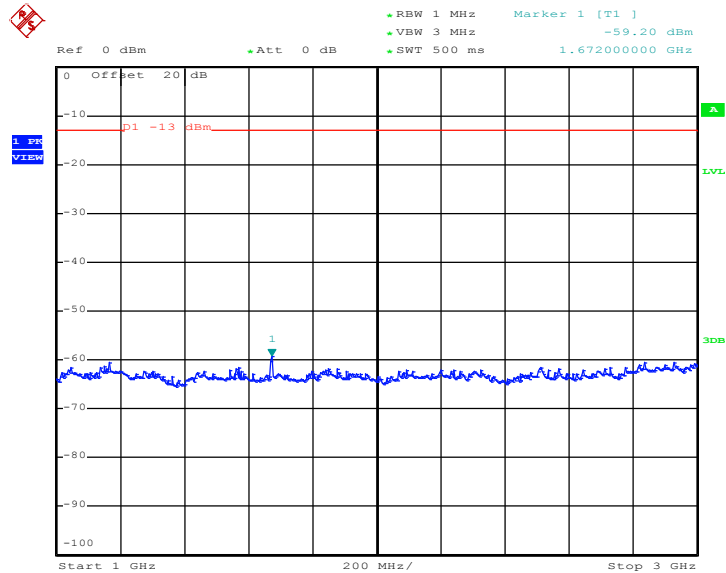
<b>Band :</b>	WCDMA Band V	<b>Channel :</b>	CH4182
<b>Test Mode :</b>	RMC 12.2Kbps Link (QPSK)	<b>Frequency :</b>	836.4 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



Date: 28.OCT.2014 15:11:17

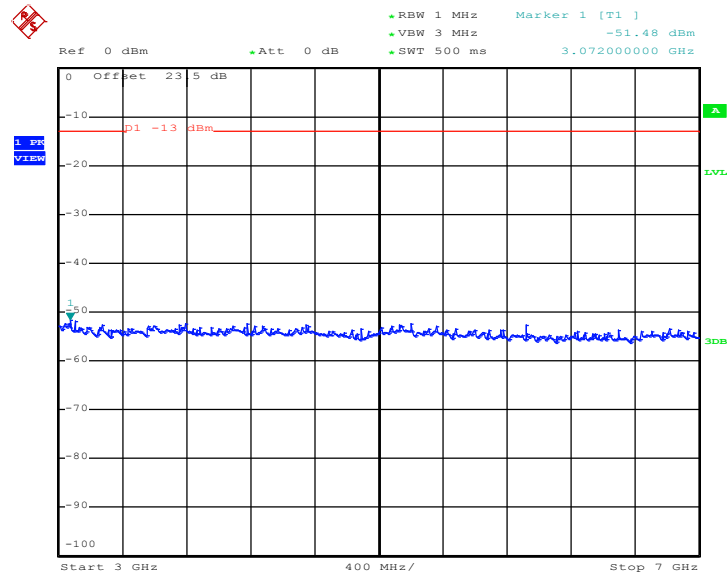
Conducted Spurious Emission Plot between 1GHz ~ 3GHz



Date: 28.OCT.2014 15:11:28

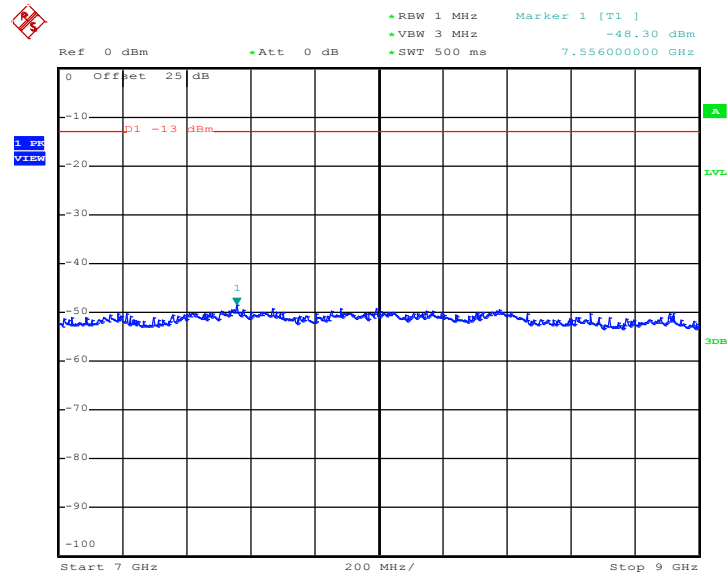


Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 28.OCT.2014 15:11:36

Conducted Spurious Emission Plot between 7GHz ~ 9GHz

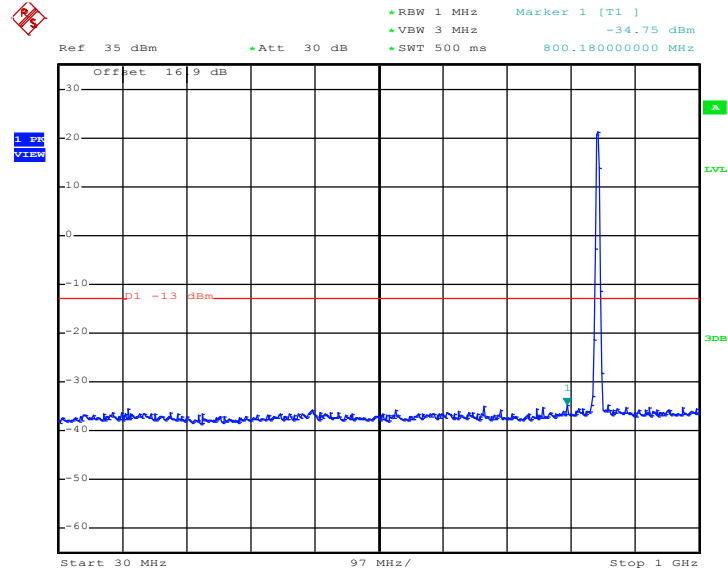


Date: 28.OCT.2014 15:11:44



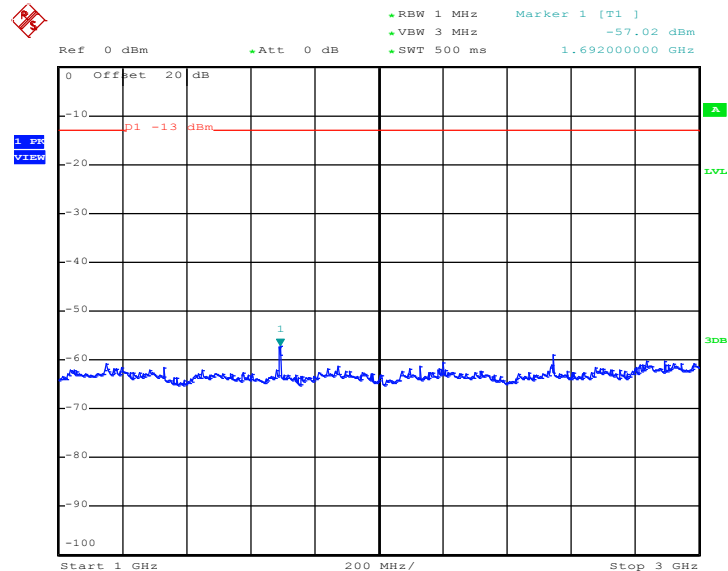
<b>Band :</b>	WCDMA Band V	<b>Channel :</b>	CH4233
<b>Test Mode :</b>	RMC 12.2Kbps Link (QPSK)	<b>Frequency :</b>	846.6 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



Date: 28.OCT.2014 15:16:02

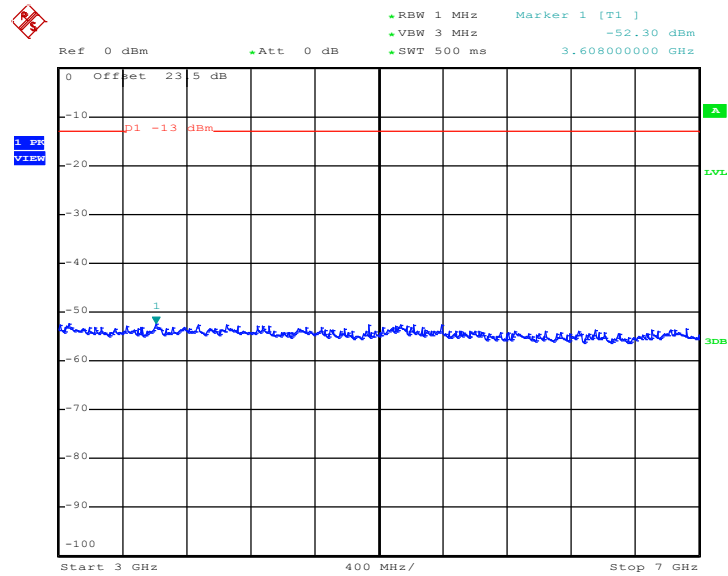
Conducted Spurious Emission Plot between 1GHz ~ 3GHz



Date: 28.OCT.2014 15:16:14

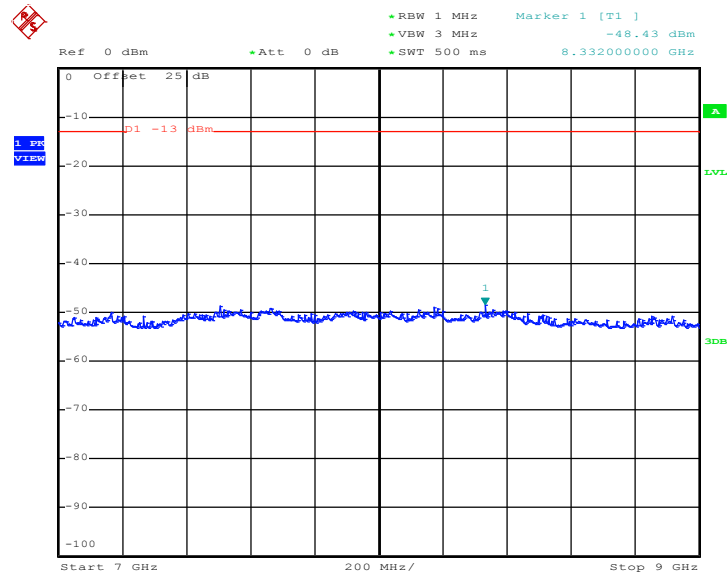


### Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 28.OCT.2014 15:16:22

### Conducted Spurious Emission Plot between 7GHz ~ 9GHz

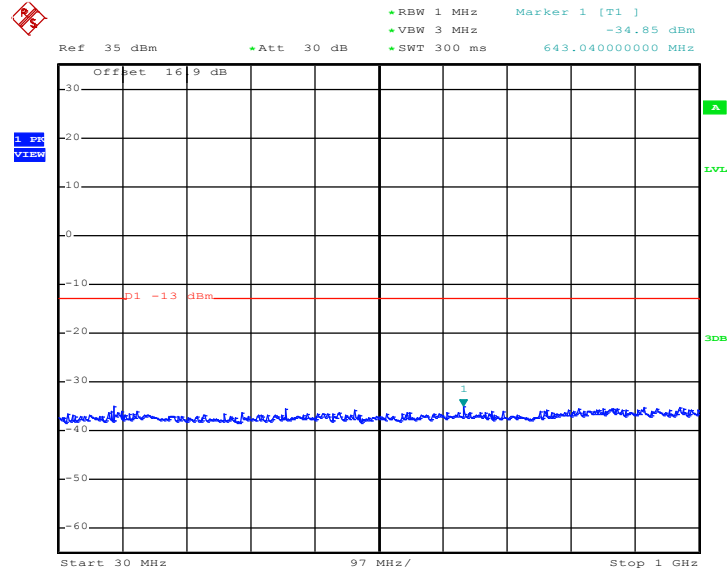


Date: 28.OCT.2014 15:16:31



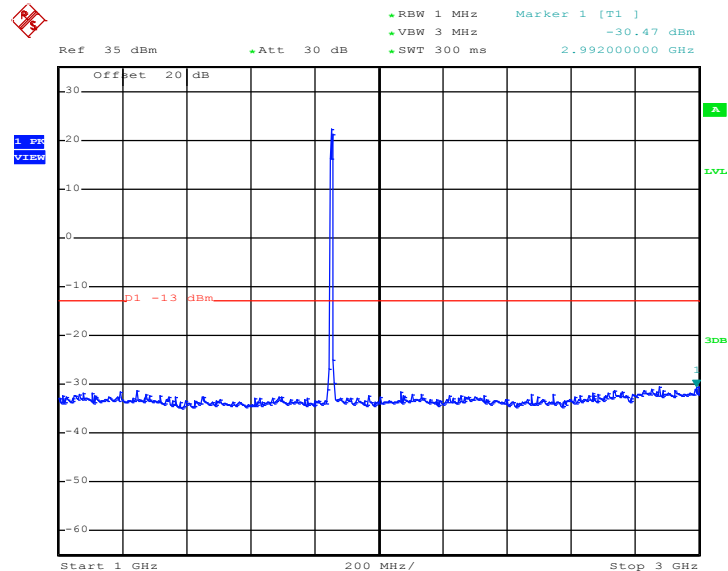
<b>Band :</b>	WCDMA Band II	<b>Channel :</b>	CH9262
<b>Test Mode :</b>	RMC 12.2Kbps Link (QPSK)	<b>Frequency :</b>	1852.4 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



Date: 28.OCT.2014 14:45:29

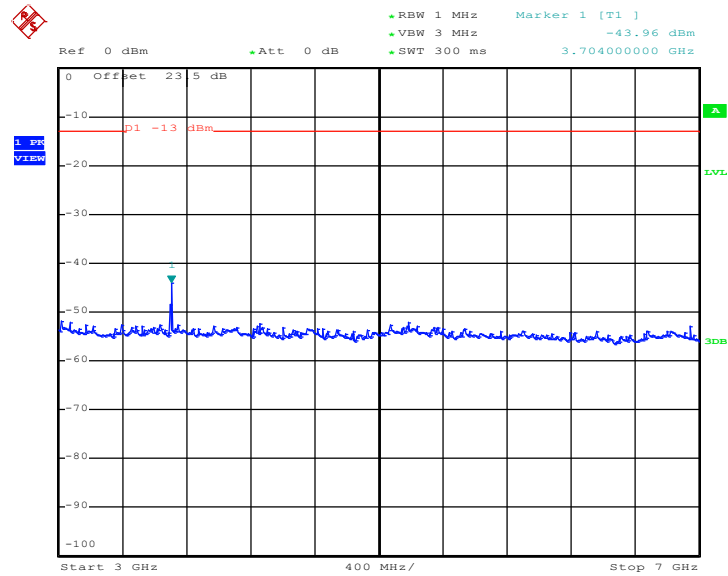
Conducted Spurious Emission Plot between 1GHz ~ 3GHz



Date: 28.OCT.2014 14:45:37

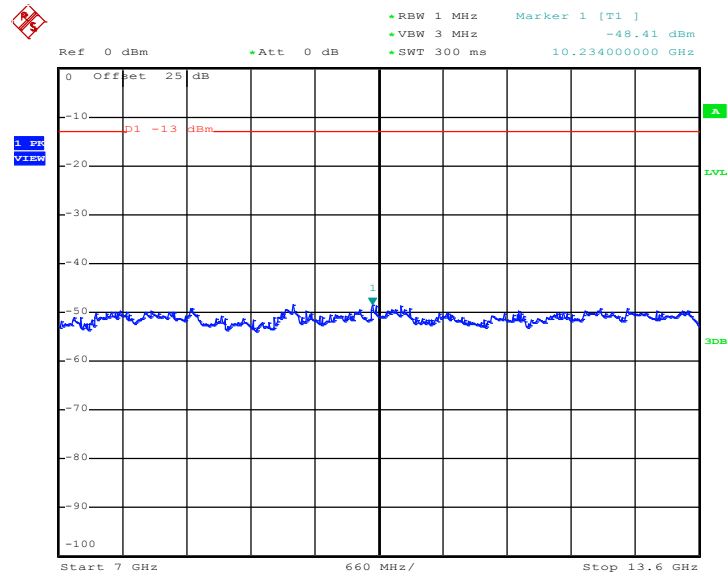


### Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 28.OCT.2014 14:45:48

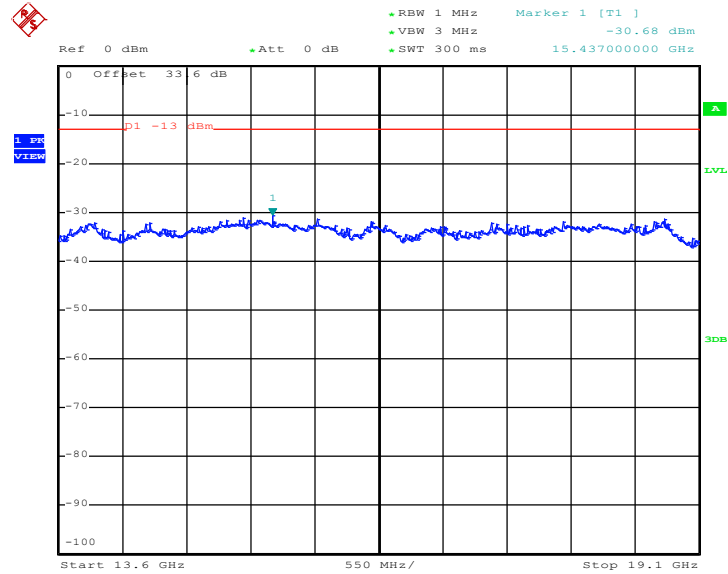
### Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz



Date: 28.OCT.2014 14:45:56



Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz

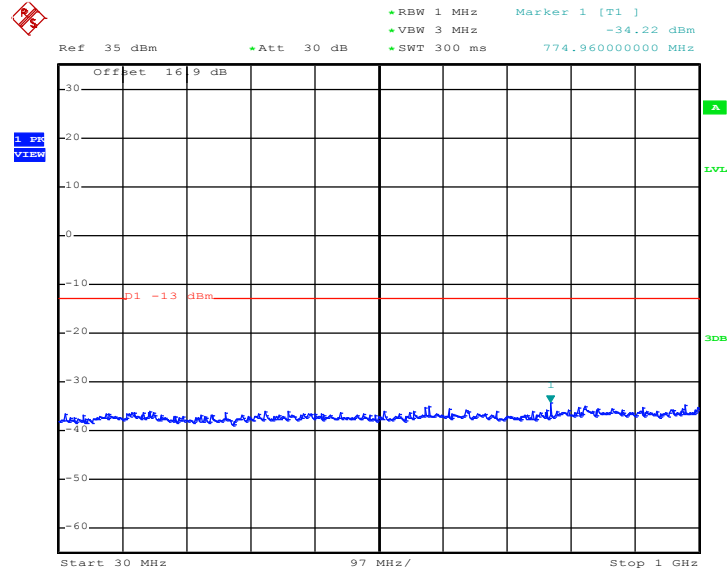


Date: 28.OCT.2014 14:46:05



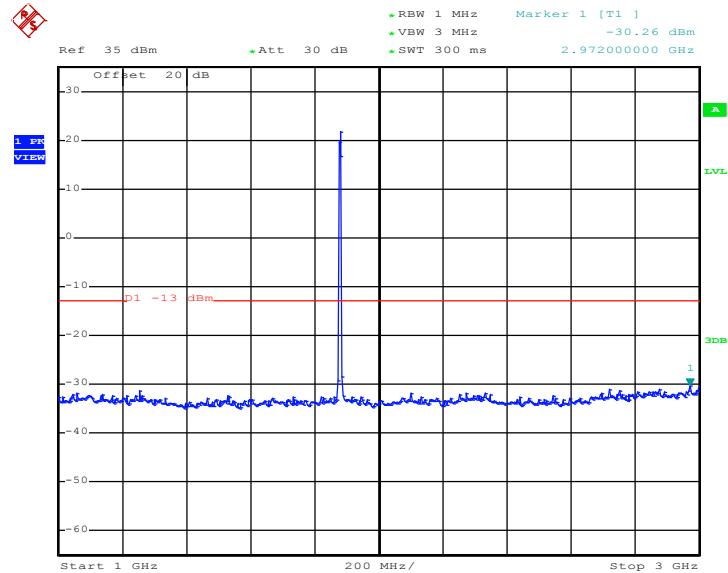
<b>Band :</b>	WCDMA Band II	<b>Channel :</b>	CH9400
<b>Test Mode :</b>	RMC 12.2Kbps Link (QPSK)	<b>Frequency :</b>	1880.0 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



Date: 28.OCT.2014 14:44:17

Conducted Spurious Emission Plot between 1GHz ~ 3GHz

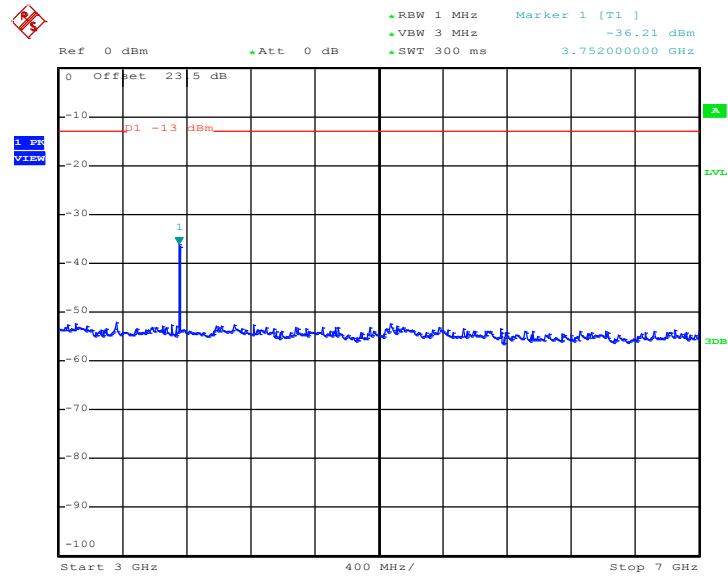


Date: 28.OCT.2014 14:44:25



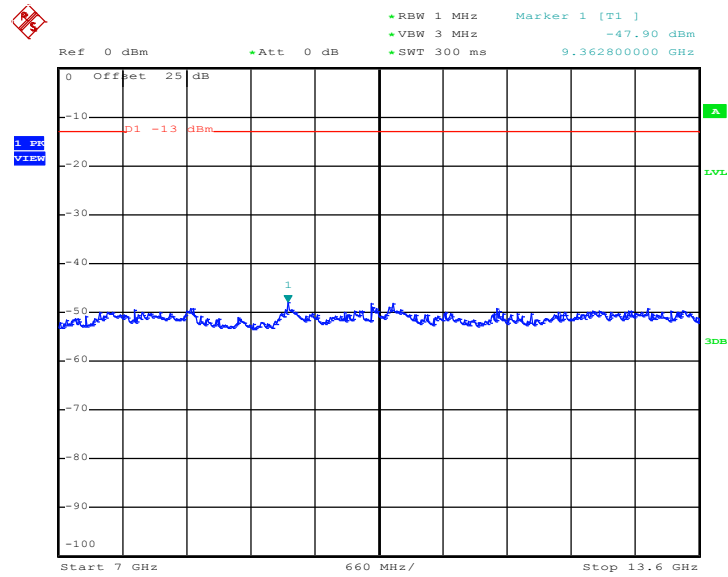


### Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 28.OCT.2014 14:44:36

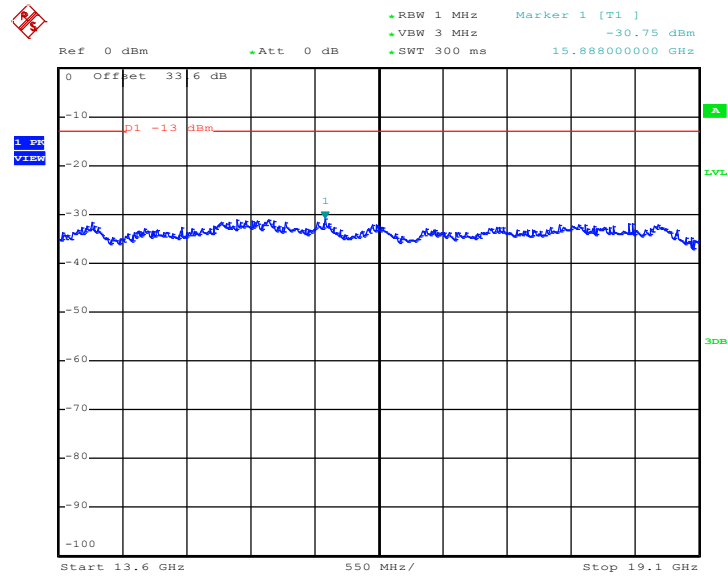
### Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz



Date: 28.OCT.2014 14:44:44



Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz

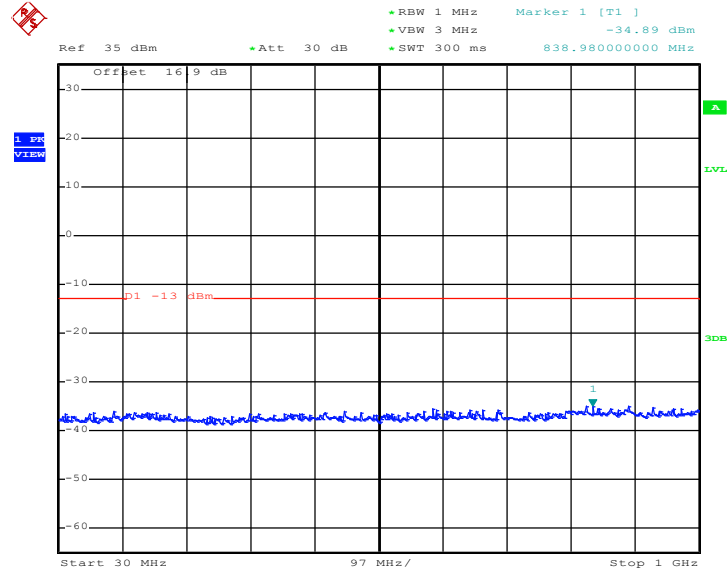


Date: 28.OCT.2014 14:44:53



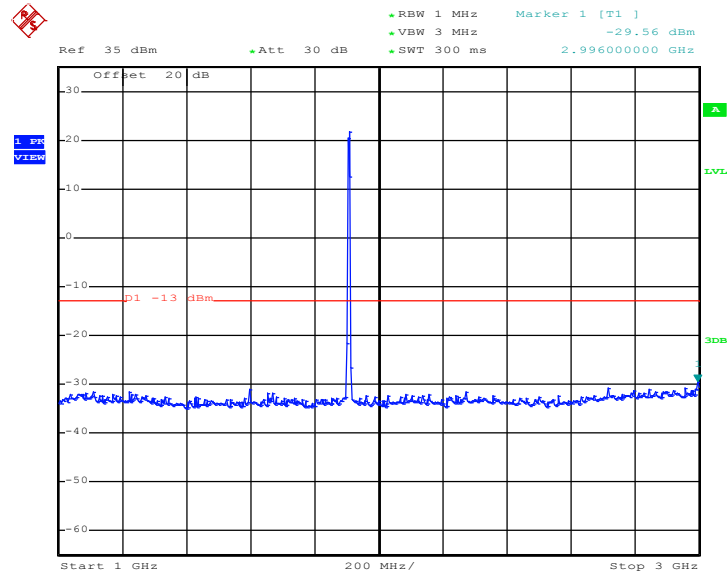
<b>Band :</b>	WCDMA Band II	<b>Channel :</b>	CH9538
<b>Test Mode :</b>	RMC 12.2Kbps Link (QPSK)	<b>Frequency :</b>	1907.6 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



Date: 28.OCT.2014 14:48:43

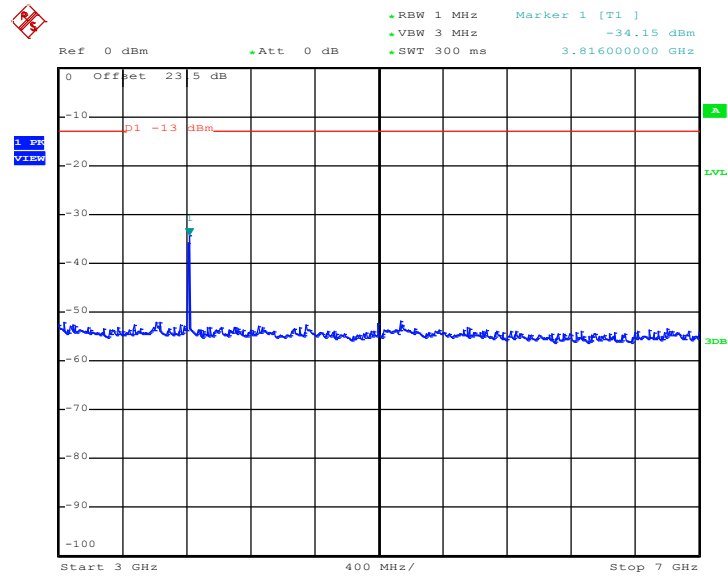
Conducted Spurious Emission Plot between 1GHz ~ 3GHz



Date: 28.OCT.2014 14:48:52

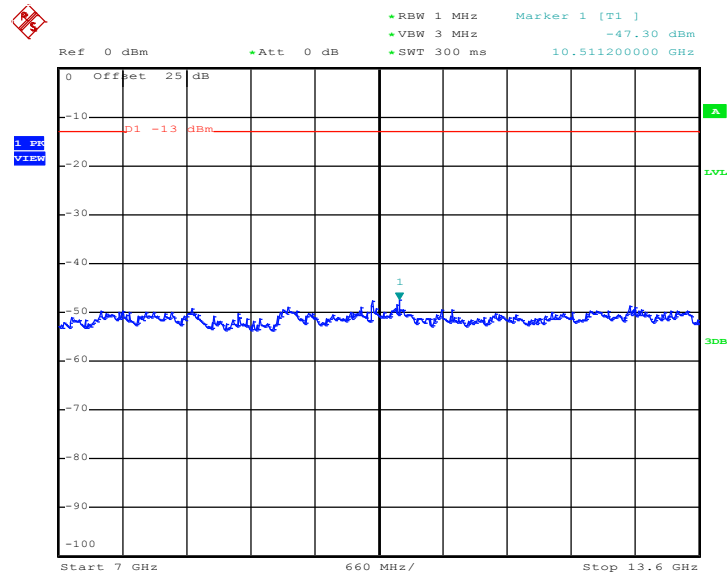


### Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 28.OCT.2014 14:49:03

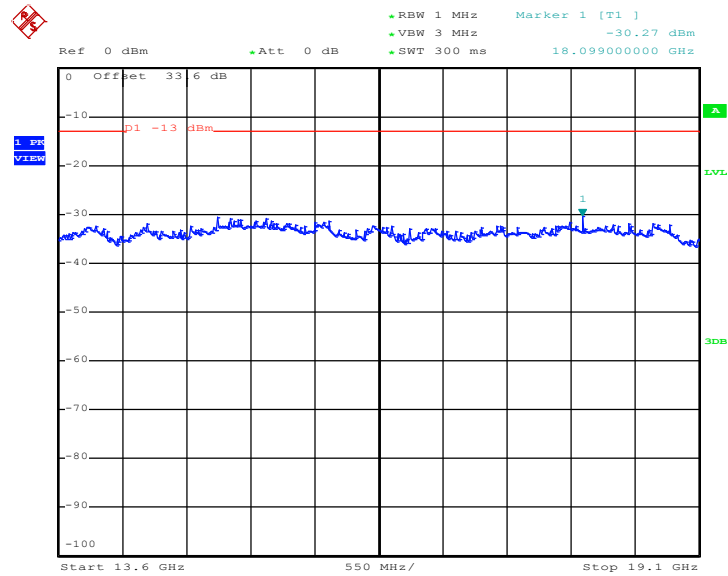
### Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz



Date: 28.OCT.2014 14:49:12



Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz



Date: 28.OCT.2014 14:49:20



## 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

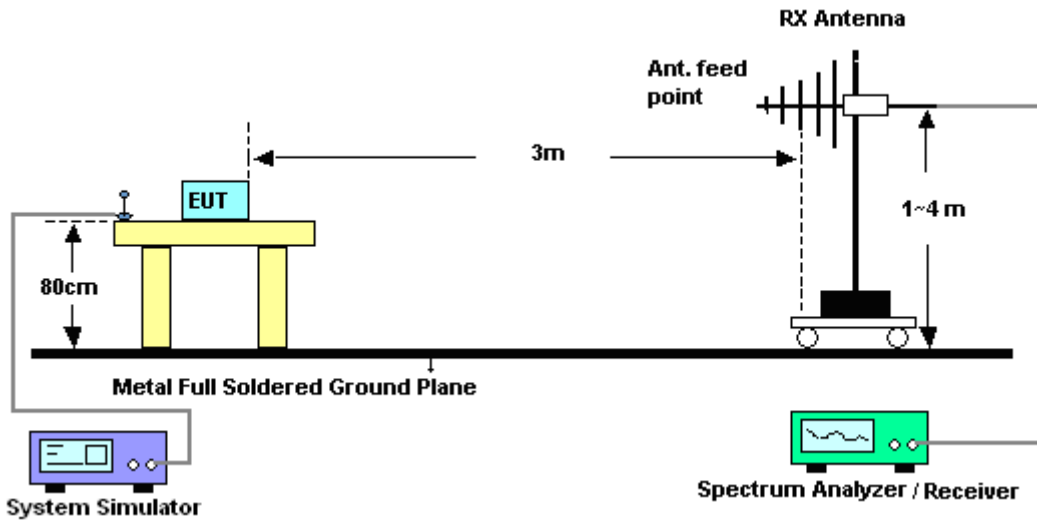
The measuring equipment is listed in the section 4 of this test report.

### 3.7.3 Test Procedures

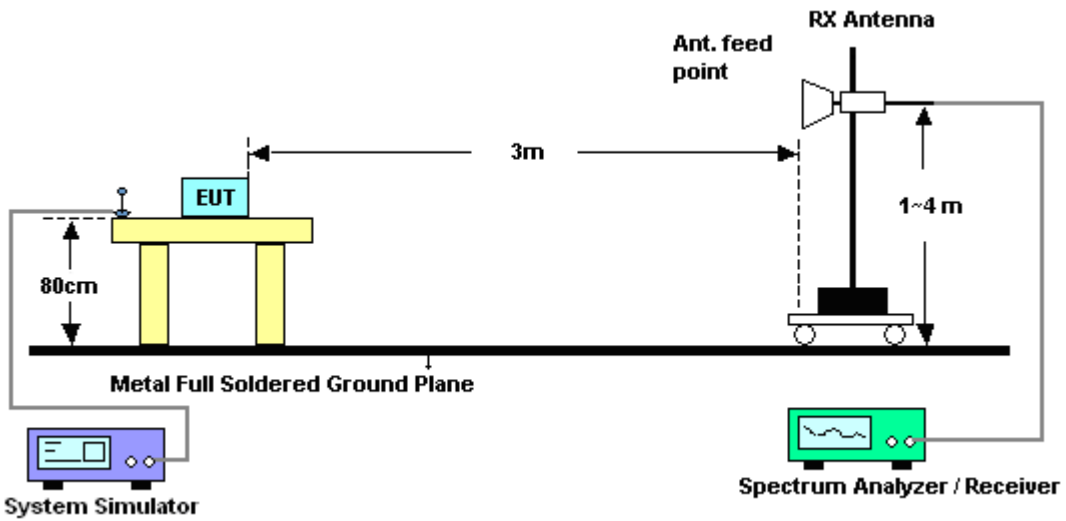
1. The testing follows FCC KDB 971168 v02r02 Section 5.8 and ANSI / TIA-603-C-2004 Section 2.2.12.
2. The EUT was placed on a rotatable wooden table 0.8 meters above the ground.
3. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
4. The table was rotated 360 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)  
 $= P(W) - [43 + 10\log(P)] \text{ (dB)}$   
 $= [30 + 10\log(P)] \text{ (dBm)} - [43 + 10\log(P)] \text{ (dB)}$   
 $= -13dBm.$

### 3.7.4 Test Setup

For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz





3.7.5 Test Result of Field Strength of Spurious Radiated

<Low Channel>

<b>Band :</b>	GSM850		<b>Temperature :</b>	23~24°C					
<b>Test Mode :</b>	GSM Link (GMSK)		<b>Relative Humidity :</b>	46~48%					
<b>Test Engineer :</b>	Nick Yu, Derreck Chen, and Ken Wu		<b>Polarization :</b>	Horizontal					
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
1648	-42.44	-13	-29.44	-54.2	-44.2	0.98	4.89	H	Pass
2472	-45.72	-13	-32.72	-61.63	-47.6	1.28	5.32	H	Pass
3296	-44.19	-13	-31.19	-60.78	-47.6	1.54	7.10	H	Pass

<b>Band :</b>	GSM850		<b>Temperature :</b>	23~24°C					
<b>Test Mode :</b>	GSM Link (GMSK)		<b>Relative Humidity :</b>	46~48%					
<b>Test Engineer :</b>	Nick Yu, Derreck Chen, and Ken Wu		<b>Polarization :</b>	Vertical					
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
1648	-33.54	-13	-20.54	-47.41	-35.3	0.98	4.89	V	Pass
2472	-46.42	-13	-33.42	-62.69	-48.3	1.28	5.32	V	Pass
3296	-46.19	-13	-33.19	-64.33	-49.6	1.54	7.10	V	Pass





<Middle Channel>

<b>Band :</b>	GSM850				<b>Temperature :</b>	23~24°C			
<b>Test Mode :</b>	GSM Link (GMSK)				<b>Relative Humidity :</b>	46~48%			
<b>Test Engineer :</b>	Nick Yu, Derreck Chen, and Ken Wu				<b>Polarization :</b>	Horizontal			
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
1672	-41.02	-13	-28.02	-52.61	-42.7	0.99	4.82	H	Pass
2512	-44.43	-13	-31.43	-60.41	-46.4	1.29	5.41	H	Pass
3344	-44.49	-13	-31.49	-61.33	-48.1	1.56	7.31	H	Pass

<b>Band :</b>	GSM850				<b>Temperature :</b>	23~24°C			
<b>Test Mode :</b>	GSM Link (GMSK)				<b>Relative Humidity :</b>	46~48%			
<b>Test Engineer :</b>	Nick Yu, Derreck Chen, and Ken Wu				<b>Polarization :</b>	Vertical			
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
1672	-33.52	-13	-20.52	-47.39	-35.2	0.99	4.82	V	Pass
2512	-46.63	-13	-33.63	-63.19	-48.6	1.29	5.41	V	Pass
3344	-46.79	-13	-33.79	-64.99	-50.4	1.56	7.31	V	Pass



<High Channel>

<b>Band :</b>	GSM850				<b>Temperature :</b>	23~24°C			
<b>Test Mode :</b>	GSM Link (GMSK)				<b>Relative Humidity :</b>	46~48%			
<b>Test Engineer :</b>	Nick Yu, Derreck Chen, and Ken Wu				<b>Polarization :</b>	Horizontal			
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
1696	-41.20	-13	-28.20	-52.55	-42.8	1.00	4.75	H	Pass
2544	-42.12	-13	-29.12	-58.12	-44.1	1.30	5.44	H	Pass
3392	-44.50	-13	-31.50	-61.28	-48.3	1.57	7.52	H	Pass

<b>Band :</b>	GSM850				<b>Temperature :</b>	23~24°C			
<b>Test Mode :</b>	GSM Link (GMSK)				<b>Relative Humidity :</b>	46~48%			
<b>Test Engineer :</b>	Nick Yu, Derreck Chen, and Ken Wu				<b>Polarization :</b>	Vertical			
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
1696	-37.20	-13	-24.20	-50.96	-38.8	1.00	4.75	V	Pass
2544	-45.22	-13	-32.22	-61.88	-47.2	1.30	5.44	V	Pass
3392	-47.80	-13	-34.80	-66.03	-51.6	1.57	7.52	V	Pass



<Low Channel>

<b>Band :</b>	GSM850					<b>Temperature :</b>	23~24°C		
<b>Test Mode :</b>	EDGE class 8 Link (8PSK)					<b>Relative Humidity :</b>	46~48%		
<b>Test Engineer :</b>	Nick Yu, Derreck Chen, and Ken Wu					<b>Polarization :</b>	Horizontal		
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
1648	-48.84	-13	-35.84	-60.27	-50.6	0.98	4.89	H	Pass
2472	-50.12	-13	-37.12	-65.77	-52	1.28	5.32	H	Pass
3296	-50.69	-13	-37.69	-66.77	-54.1	1.54	7.10	H	Pass

<b>Band :</b>	GSM850					<b>Temperature :</b>	23~24°C		
<b>Test Mode :</b>	EDGE class 8 Link (8PSK)					<b>Relative Humidity :</b>	46~48%		
<b>Test Engineer :</b>	Nick Yu, Derreck Chen, and Ken Wu					<b>Polarization :</b>	Vertical		
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
1648	-41.34	-13	-28.34	-55.05	-43.1	0.98	4.89	V	Pass
2472	-49.92	-13	-36.92	-65.99	-51.8	1.28	5.32	V	Pass
3296	-48.69	-13	-35.69	-66.45	-52.1	1.54	7.10	V	Pass



<Middle Channel>

<b>Band :</b>	GSM850				<b>Temperature :</b>	23~24°C			
<b>Test Mode :</b>	EDGE class 8 Link (8PSK)				<b>Relative Humidity :</b>	46~48%			
<b>Test Engineer :</b>	Nick Yu, Derreck Chen, and Ken Wu				<b>Polarization :</b>	Horizontal			
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
1672	-48.42	-13	-35.42	-59.83	-50.1	0.99	4.82	H	Pass
2512	-49.53	-13	-36.53	-65.25	-51.5	1.29	5.41	H	Pass
3344	-50.59	-13	-37.59	-67.04	-54.2	1.56	7.31	H	Pass

<b>Band :</b>	GSM850				<b>Temperature :</b>	23~24°C			
<b>Test Mode :</b>	EDGE class 8 Link (8PSK)				<b>Relative Humidity :</b>	46~48%			
<b>Test Engineer :</b>	Nick Yu, Derreck Chen, and Ken Wu				<b>Polarization :</b>	Vertical			
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
1672	-41.62	-13	-28.62	-55.81	-43.3	0.99	4.82	V	Pass
2512	-49.93	-13	-36.93	-66.13	-51.9	1.29	5.41	V	Pass
3344	-49.69	-13	-36.69	-67.22	-53.3	1.56	7.31	V	Pass



<High Channel>

<b>Band :</b>	GSM850					<b>Temperature :</b>	23~24°C		
<b>Test Mode :</b>	EDGE class 8 Link (8PSK)					<b>Relative Humidity :</b>	46~48%		
<b>Test Engineer :</b>	Nick Yu, Derreck Chen, and Ken Wu					<b>Polarization :</b>	Horizontal		
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
1696	-47.60	-13	-34.60	-59.42	-49.2	1.00	4.75	H	Pass
2544	-50.12	-13	-37.12	-65.88	-52.1	1.30	5.44	H	Pass
3392	-50.20	-13	-37.20	-66.92	-54	1.57	7.52	H	Pass

<b>Band :</b>	GSM850					<b>Temperature :</b>	23~24°C		
<b>Test Mode :</b>	EDGE class 8 Link (8PSK)					<b>Relative Humidity :</b>	46~48%		
<b>Test Engineer :</b>	Nick Yu, Derreck Chen, and Ken Wu					<b>Polarization :</b>	Vertical		
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
1696	-43.50	-13	-30.50	-57.53	-45.1	1.00	4.75	V	Pass
2544	-49.77	-13	-36.77	-66.44	-53.9	1.30	5.44	V	Pass
3392	-48.85	-13	-35.85	-66.73	-54.8	1.57	7.52	V	Pass



<Low Channel>

<b>Band :</b>	GSM1900				<b>Temperature :</b>	23~24°C			
<b>Test Mode :</b>	GSM Link (GMSK)				<b>Relative Humidity :</b>	46~48%			
<b>Test Engineer :</b>	Nick Yu, Derreck Chen, and Ken Wu				<b>Polarization :</b>	Horizontal			
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
3700	-44.23	-13	-31.23	-62.15	-50.8	1.67	8.24	H	Pass
5548	-38.43	-13	-25.43	-61.5	-45.5	2.65	9.72	H	Pass
7403	-30.45	-13	-17.45	-60.62	-39.6	2.46	11.61	H	Pass

<b>Band :</b>	GSM1900				<b>Temperature :</b>	23~24°C			
<b>Test Mode :</b>	GSM Link (GMSK)				<b>Relative Humidity :</b>	46~48%			
<b>Test Engineer :</b>	Nick Yu, Derreck Chen, and Ken Wu				<b>Polarization :</b>	Vertical			
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
3700	-43.53	-13	-30.53	-62.35	-50.1	1.67	8.24	V	Pass
5548	-35.73	-13	-22.73	-58.71	-42.8	2.65	9.72	V	Pass
7403	-35.05	-13	-22.05	-64.79	-44.2	2.46	11.61	V	Pass



<Middle Channel>

<b>Band :</b>	GSM1900				<b>Temperature :</b>	23~24°C			
<b>Test Mode :</b>	GSM Link (GMSK)				<b>Relative Humidity :</b>	46~48%			
<b>Test Engineer :</b>	Nick Yu, Derreck Chen, and Ken Wu				<b>Polarization :</b>	Horizontal			
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
3756	-40.08	-13	-27.08	-58.17	-46.7	1.68	8.31	H	Pass
5639	-37.15	-13	-24.15	-60.52	-44.2	2.71	9.76	H	Pass
7522	-32.31	-13	-19.31	-62.2	-41.7	2.42	11.81	H	Pass

<b>Band :</b>	GSM1900				<b>Temperature :</b>	23~24°C			
<b>Test Mode :</b>	GSM Link (GMSK)				<b>Relative Humidity :</b>	46~48%			
<b>Test Engineer :</b>	Nick Yu, Derreck Chen, and Ken Wu				<b>Polarization :</b>	Vertical			
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
3756	-40.88	-13	-27.88	-59.68	-47.5	1.68	8.31	V	Pass
5639	-31.25	-13	-18.25	-54.55	-38.3	2.71	9.76	V	Pass
7522	-35.51	-13	-22.51	-65.34	-44.9	2.42	11.81	V	Pass



<High Channel>

<b>Band :</b>	GSM1900				<b>Temperature :</b>	23~24°C			
<b>Test Mode :</b>	GSM Link (GMSK)				<b>Relative Humidity :</b>	46~48%			
<b>Test Engineer :</b>	Nick Yu, Derreck Chen, and Ken Wu				<b>Polarization :</b>	Horizontal			
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
3819	-36.62	-13	-23.62	-55.05	-43.3	1.70	8.38	H	Pass
5730	-34.37	-13	-21.37	-58.09	-41.4	2.76	9.79	H	Pass
7641	-32.10	-13	-19.10	-61.07	-41.6	2.38	11.88	H	Pass

<b>Band :</b>	GSM1900				<b>Temperature :</b>	23~24°C			
<b>Test Mode :</b>	GSM Link (GMSK)				<b>Relative Humidity :</b>	46~48%			
<b>Test Engineer :</b>	Nick Yu, Derreck Chen, and Ken Wu				<b>Polarization :</b>	Vertical			
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
3819	-38.92	-13	-25.92	-58.11	-45.6	1.70	8.38	V	Pass
5730	-30.07	-13	-17.07	-53.52	-37.1	2.76	9.79	V	Pass
7641	-34.30	-13	-21.30	-63.16	-43.8	2.38	11.88	V	Pass





<Low Channel>

<b>Band :</b>	GSM1900				<b>Temperature :</b>	23~24°C			
<b>Test Mode :</b>	EDGE class 8 Link (8PSK)				<b>Relative Humidity :</b>	46~48%			
<b>Test Engineer :</b>	Nick Yu, Derreck Chen, and Ken Wu				<b>Polarization :</b>	Horizontal			
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
3700	-45.23	-13	-32.23	-63.32	-51.8	1.67	8.24	H	Pass
5548	-42.53	-13	-29.53	-65.67	-49.6	2.65	9.72	H	Pass
7401	-36.46	-13	-23.46	-66.88	-45.6	2.46	11.60	H	Pass

<b>Band :</b>	GSM1900				<b>Temperature :</b>	23~24°C			
<b>Test Mode :</b>	EDGE class 8 Link (8PSK)				<b>Relative Humidity :</b>	46~48%			
<b>Test Engineer :</b>	Nick Yu, Derreck Chen, and Ken Wu				<b>Polarization :</b>	Vertical			
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
3700	-44.23	-13	-31.23	-63.44	-50.8	1.67	8.24	V	Pass
5548	-40.93	-13	-27.93	-63.82	-48	2.65	9.72	V	Pass
7401	-37.56	-13	-24.56	-67.4	-46.7	2.46	11.60	V	Pass



<Middle Channel>

<b>Band :</b>	GSM1900					<b>Temperature :</b>	23~24°C		
<b>Test Mode :</b>	EDGE class 8 Link (8PSK)					<b>Relative Humidity :</b>	46~48%		
<b>Test Engineer :</b>	Nick Yu, Derreck Chen, and Ken Wu					<b>Polarization :</b>	Horizontal		
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
3756	-41.78	-13	-28.78	-59.8	-48.4	1.68	8.31	H	Pass
5639	-41.05	-13	-28.05	-64.51	-48.1	2.71	9.76	H	Pass
7522	-36.41	-13	-23.41	-66.19	-45.8	2.42	11.81	H	Pass

<b>Band :</b>	GSM1900					<b>Temperature :</b>	23~24°C		
<b>Test Mode :</b>	EDGE class 8 Link (8PSK)					<b>Relative Humidity :</b>	46~48%		
<b>Test Engineer :</b>	Nick Yu, Derreck Chen, and Ken Wu					<b>Polarization :</b>	Vertical		
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
3756	-42.98	-13	-29.98	-62.09	-49.6	1.68	8.31	V	Pass
5639	-35.45	-13	-22.45	-58.95	-42.5	2.71	9.76	V	Pass
7522	-36.91	-13	-23.91	-66.83	-46.3	2.42	11.81	V	Pass



<High Channel>

<b>Band :</b>	GSM1900				<b>Temperature :</b>	23~24°C			
<b>Test Mode :</b>	EDGE class 8 Link (8PSK)				<b>Relative Humidity :</b>	46~48%			
<b>Test Engineer :</b>	Nick Yu, Derreck Chen, and Ken Wu				<b>Polarization :</b>	Horizontal			
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
3819	-39.42	-13	-26.42	-57.69	-46.1	1.70	8.38	H	Pass
5730	-38.07	-13	-25.07	-61.73	-45.1	2.76	9.79	H	Pass
7641	-33.80	-13	-20.80	-63.01	-43.3	2.38	11.88	H	Pass

<b>Band :</b>	GSM1900				<b>Temperature :</b>	23~24°C			
<b>Test Mode :</b>	EDGE class 8 Link (8PSK)				<b>Relative Humidity :</b>	46~48%			
<b>Test Engineer :</b>	Nick Yu, Derreck Chen, and Ken Wu				<b>Polarization :</b>	Vertical			
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
3819	-41.42	-13	-28.42	-60.54	-48.1	1.70	8.38	V	Pass
5730	-34.37	-13	-21.37	-57.53	-41.4	2.76	9.79	V	Pass
7641	-36.10	-13	-23.10	-65	-45.6	2.38	11.88	V	Pass



<Low Channel>

<b>Band :</b>	WCDMA Band V				<b>Temperature :</b>	23~24°C			
<b>Test Mode :</b>	RMC 12.2Kbps Link (QPSK)				<b>Relative Humidity :</b>	46~48%			
<b>Test Engineer :</b>	Nick Yu, Derreck Chen, and Ken Wu				<b>Polarization :</b>	Horizontal			
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
1656	-47.87	-13	-34.87	-59.33	-49.6	0.98	4.86	H	Pass
2479	-50.20	-13	-37.20	-65.62	-52.1	1.28	5.34	H	Pass
3306	-50.25	-13	-37.25	-66.83	-53.7	1.54	7.15	H	Pass

<b>Band :</b>	WCDMA Band V				<b>Temperature :</b>	23~24°C			
<b>Test Mode :</b>	RMC 12.2Kbps Link (QPSK)				<b>Relative Humidity :</b>	46~48%			
<b>Test Engineer :</b>	Nick Yu, Derreck Chen, and Ken Wu				<b>Polarization :</b>	Vertical			
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
1648	-40.44	-13	-27.44	-54.04	-42.2	0.98	4.89	V	Pass
2479	-48.80	-13	-35.80	-65.05	-50.7	1.28	5.34	V	Pass
3306	-47.05	-13	-34.05	-65.03	-50.5	1.54	7.15	V	Pass



<Middle Channel>

<b>Band :</b>	WCDMA Band V				<b>Temperature :</b>	23~24°C			
<b>Test Mode :</b>	RMC 12.2Kbps Link (QPSK)				<b>Relative Humidity :</b>	46~48%			
<b>Test Engineer :</b>	Nick Yu, Derreck Chen, and Ken Wu				<b>Polarization :</b>	Horizontal			
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
1672	-49.62	-13	-36.62	-60.93	-51.3	0.99	4.82	H	Pass
2512	-50.53	-13	-37.53	-66.22	-52.5	1.29	5.41	H	Pass
3344	-50.79	-13	-37.79	-67.26	-54.4	1.56	7.31	H	Pass

<b>Band :</b>	WCDMA Band V				<b>Temperature :</b>	23~24°C			
<b>Test Mode :</b>	RMC 12.2Kbps Link (QPSK)				<b>Relative Humidity :</b>	46~48%			
<b>Test Engineer :</b>	Nick Yu, Derreck Chen, and Ken Wu				<b>Polarization :</b>	Vertical			
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
1672	-42.92	-13	-29.92	-56.67	-44.6	0.99	4.82	V	Pass
2512	-49.33	-13	-36.33	-65.42	-51.3	1.29	5.41	V	Pass
3344	-48.89	-13	-35.89	-66.96	-52.5	1.56	7.31	V	Pass



<High Channel>

<b>Band :</b>	WCDMA Band V		<b>Temperature :</b>	23~24°C					
<b>Test Mode :</b>	RMC 12.2Kbps Link (QPSK)		<b>Relative Humidity :</b>	46~48%					
<b>Test Engineer :</b>	Nick Yu, Derreck Chen, and Ken Wu		<b>Polarization :</b>	Horizontal					
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
1688	-47.97	-13	-34.97	-59.46	-49.6	1.00	4.77	H	Pass
2540	-49.52	-13	-36.52	-65.25	-51.5	1.30	5.43	H	Pass
3386	-49.62	-13	-36.62	-66.18	-53.4	1.57	7.50	H	Pass

<b>Band :</b>	WCDMA Band V		<b>Temperature :</b>	23~24°C					
<b>Test Mode :</b>	RMC 12.2Kbps Link (QPSK)		<b>Relative Humidity :</b>	46~48%					
<b>Test Engineer :</b>	Nick Yu, Derreck Chen, and Ken Wu		<b>Polarization :</b>	Vertical					
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
1688	-41.47	-13	-28.47	-55.51	-43.1	1.00	4.77	V	Pass
2540	-48.72	-13	-35.72	-65.05	-50.7	1.30	5.43	V	Pass
3386	-49.02	-13	-36.02	-66.93	-52.8	1.57	7.50	V	Pass



<Low Channel>

<b>Band :</b>	WCDMA Band II				<b>Temperature :</b>	23~24°C			
<b>Test Mode :</b>	RMC 12.2Kbps Link (QPSK)				<b>Relative Humidity :</b>	46~48%			
<b>Test Engineer :</b>	Nick Yu, Derreck Chen, and Ken Wu				<b>Polarization :</b>	Horizontal			
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
3700	-34.73	-13	-21.73	-52.71	-41.3	1.67	8.24	H	Pass
5555	-41.13	-13	-28.13	-64.72	-48.2	2.66	9.72	H	Pass
7410	-36.04	-13	-23.04	-66.13	-45.2	2.46	11.62	H	Pass

<b>Band :</b>	WCDMA Band II				<b>Temperature :</b>	23~24°C			
<b>Test Mode :</b>	RMC 12.2Kbps Link (QPSK)				<b>Relative Humidity :</b>	46~48%			
<b>Test Engineer :</b>	Nick Yu, Derreck Chen, and Ken Wu				<b>Polarization :</b>	Vertical			
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
3700	-26.53	-13	-13.53	-45.65	-33.1	1.67	8.24	V	Pass
5555	-40.43	-13	-27.43	-63.71	-47.5	2.66	9.72	V	Pass
7410	-36.84	-13	-23.84	-66.42	-46	2.46	11.62	V	Pass



<Middle Channel>

<b>Band :</b>	WCDMA Band II				<b>Temperature :</b>	23~24°C			
<b>Test Mode :</b>	RMC 12.2Kbps Link (QPSK)				<b>Relative Humidity :</b>	46~48%			
<b>Test Engineer :</b>	Nick Yu, Derreck Chen, and Ken Wu				<b>Polarization :</b>	Horizontal			
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
3756	-29.58	-13	-16.58	-47.69	-36.2	1.68	8.31	H	Pass
5646	-39.25	-13	-26.25	-62.68	-46.3	2.71	9.76	H	Pass
7522	-35.91	-13	-22.91	-65.81	-45.3	2.42	11.81	H	Pass

<b>Band :</b>	WCDMA Band II				<b>Temperature :</b>	23~24°C			
<b>Test Mode :</b>	RMC 12.2Kbps Link (QPSK)				<b>Relative Humidity :</b>	46~48%			
<b>Test Engineer :</b>	Nick Yu, Derreck Chen, and Ken Wu				<b>Polarization :</b>	Vertical			
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
3756	-25.58	-13	-12.58	-44.97	-32.2	1.68	8.31	V	Pass
5639	-36.15	-13	-23.15	-59.47	-43.2	2.71	9.76	V	Pass
7520	-38.01	-13	-25.01	-67.44	-47.4	2.42	11.81	V	Pass





<High Channel>

<b>Band :</b>	WCDMA Band II				<b>Temperature :</b>	23~24°C			
<b>Test Mode :</b>	RMC 12.2Kbps Link (QPSK)				<b>Relative Humidity :</b>	46~48%			
<b>Test Engineer :</b>	Nick Yu, Derreck Chen, and Ken Wu				<b>Polarization :</b>	Horizontal			
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
3819	-28.52	-13	-15.52	-47.03	-35.2	1.70	8.38	H	Pass
5723	-40.16	-13	-27.16	-64.11	-47.2	2.75	9.79	H	Pass
7634	-37.41	-13	-24.41	-66.77	-46.9	2.39	11.88	H	Pass

<b>Band :</b>	WCDMA Band II				<b>Temperature :</b>	23~24°C			
<b>Test Mode :</b>	RMC 12.2Kbps Link (QPSK)				<b>Relative Humidity :</b>	46~48%			
<b>Test Engineer :</b>	Nick Yu, Derreck Chen, and Ken Wu				<b>Polarization :</b>	Vertical			
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
3819	-25.62	-13	-12.62	-44.87	-32.3	1.70	8.38	V	Pass
5723	-35.46	-13	-22.46	-59.13	-42.5	2.75	9.79	V	Pass
7630	-37.01	-13	-24.01	-66.87	-46.5	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.

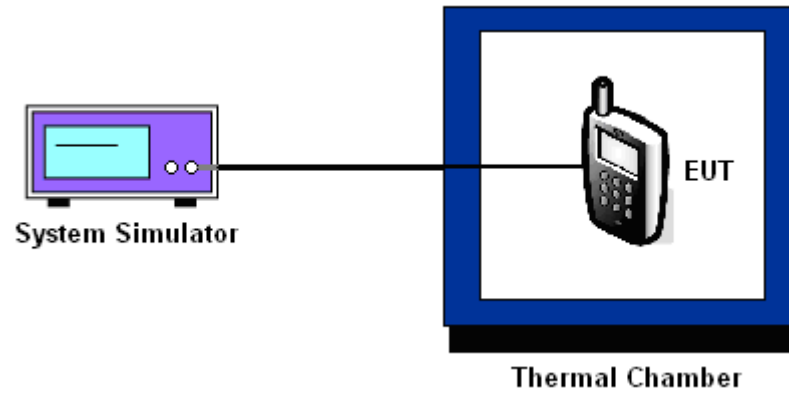
#### 3.8.3 Test Procedures for Temperature Variation

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  $-30^{\circ}\text{C}$  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  $10^{\circ}\text{C}$  steps up to  $50^{\circ}\text{C}$ . 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

<b>Band :</b>	GSM 850	<b>Channel :</b>	189
<b>Limit (ppm) :</b>	2.5	<b>Frequency :</b>	836.4 MHz

Temperature (°C)	GSM		EDGE class 8		Result
	Freq. Dev. (Hz)	Deviation (ppm)	Freq. Dev. (Hz)	Deviation (ppm)	
50	-40	0.0108	27	0.0096	PASS
40	-38	0.0084	24	0.0060	
30	-39	0.0096	26	0.0084	
20(Ref.)	-31	0.0000	19	0.0000	
10	-34	0.0036	18	0.0012	
0	-32	0.0012	17	0.0024	
-10	-36	0.0060	18	0.0012	
-20	-35	0.0048	21	0.0024	
-30	-37	0.0072	20	0.0012	

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

Temperature (°C)	GSM		EDGE class 8		Result
	Freq. Dev. (Hz)	Deviation (ppm)	Freq. Dev. (Hz)	Deviation (ppm)	
50	49	0.0064	37	0.0048	PASS
40	45	0.0043	34	0.0032	
30	39	0.0011	31	0.0016	
20(Ref.)	37	0.0000	28	0.0000	
10	31	0.0032	30	0.0011	
0	35	0.0011	32	0.0021	
-10	38	0.0005	31	0.0016	
-20	43	0.0032	33	0.0027	
-30	46	0.0048	29	0.0005	

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



<b>Band :</b>	WCDMA Band V	<b>Channel :</b>	4182
<b>Limit (ppm) :</b>	2.5	<b>Frequency :</b>	836.4 MHz

Temperature (°C)	RMC 12.2Kbps		Result
	Freq. Dev. (Hz)	Deviation (ppm)	
50	11	0.0024	PASS
40	12	0.0036	
30	10	0.0012	
20(Ref.)	9	0.0000	
10	8	0.0012	
0	11	0.0024	
-10	7	0.0024	
-20	10	0.0012	
-30	9	0.0000	

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

Temperature (°C)	RMC 12.2Kbps		Result
	Freq. Dev. (Hz)	Deviation (ppm)	
50	27	0.0064	PASS
40	21	0.0032	
30	22	0.0037	
20(Ref.)	15	0.0000	
10	18	0.0016	
0	17	0.0011	
-10	20	0.0027	
-20	19	0.0021	
-30	21	0.0032	

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)	Freq. Dev. (Hz)	Deviation (ppm)	Limit (ppm)	Result
GSM 850 CH189	GSM	4.1	-32	0.0012	2.5	PASS
		3.7	-30	0.0012		
		BEP	-35	0.0048		
	EDGE class 8	4.1	22	0.0036		
		3.7	24	0.0060		
		BEP	26	0.0084		
GSM 1900 CH661	GSM	4.1	-26	0.0335	(Note 3.)	
		3.7	-35	0.0383		
		BEP	28	0.0048		
	EDGE class 8	4.1	24	0.0021		
		3.7	31	0.0016		
		BEP	34	0.0032		
WCDMA Band V CH4182	RMC 12.2Kbps	4.1	6	0.0036	2.5	
		3.7	8	0.0012		
		BEP	10	0.0012		
WCDMA Band II CH9400	RMC 12.2Kbps	4.1	18	0.0016	(Note 3.)	
		3.7	20	0.0027		
		BEP	16	0.0005		

Note:

1. Normal Voltage = 3.7V.
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	GSM / GPRS / WCDMA / CDMA	Jul. 29, 2014	Oct. 27, 2014~ Oct. 28, 2014	Jul. 28, 2015	Conducted (TH02-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP30	101329	9kHz~30GHz	Jun. 14, 2014	Oct. 27, 2014~ Oct. 28, 2014	Jun. 13, 2015	Conducted (TH02-HY)
Temperature Chamber	ESPEC	SU-641	92013721	-30°C ~70°C	Dec. 03, 2013	Oct. 27, 2014~ Oct. 28, 2014	Dec. 02, 2014	Conducted (TH02-HY)
Hygrometer	Testo	608-H1	34897199	N/A	May. 06, 2014	Oct. 27, 2014~ Oct. 28, 2014	May. 05, 2015	Conducted (TH02-HY)
RF cable	WOKEN	S05	S05-130708-038	N/A	Jan. 22, 2014	Oct. 27, 2014~ Oct. 28, 2014	Jan. 21, 2015	Conducted (TH02-HY)
Spectrum Analyzer	Rohde & Schwarz	FSV30	101749	10Hz ~ 30GHz	Feb. 10, 2014	Oct. 30, 2014	Feb. 09, 2015	Radiation (03CH07-HY)
Bilog Antenna	Schaffner	CBL6111C	2726	30MHz ~ 1GHz	Sep. 27, 2014	Oct. 30, 2014	Sep. 26, 2015	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	75962	1GHz~18GHz	Aug. 19, 2014	Oct. 30, 2014	Aug. 18, 2015	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	18GHz~40GHz	Oct. 02, 2014	Oct. 30, 2014	Oct. 01, 2015	Radiation (03CH07-HY)
Preamplifier	COM-POWER	PA-103A	161241	10 MHz ~ 1000MHz	Mar. 17, 2014	Oct. 30, 2014	Mar. 16, 2015	Radiation (03CH07-HY)
Preamplifier	Agilent	8449B	3008A02362	1 GHz~26.5 GHz	Nov. 29, 2013	Oct. 30, 2014	Nov. 28, 2014	Radiation (03CH07-HY)
Turn Table	ChainTek	ChainTek 3000	N/A	0 ~ 360 degree	N/A	Oct. 30, 2014	N/A	Radiation (03CH07-HY)
Antenna Mast	ChainTek	M-400-0	114/8000604/L	N/A	N/A	Oct. 30, 2014	N/A	Radiation (03CH07-HY)
Hygrometer	Testo	608-H1	34897197	N/A	May 06, 2014	Oct. 30, 2014	May 05, 2015	Radiation (03CH07-HY)
HF RF Cable	HUBER SUHNER	SUCOFLEX 104	38411/6	1GHz ~ 18GHz	Nov. 28, 2013	Oct. 30, 2014	Nov. 27, 2014	Radiation (03CH07-HY)
LF RF Cable	Warison+HUBER SUHNER	WCBA-WC 04NM.NM2	N/A	30MHz ~ 1GHz	Nov. 28, 2013	Oct. 30, 2014	Nov. 27, 2014	Radiation (03CH07-HY)
Test Software	Audix	E3	Version 6.2009-08-24	N/A	N/A	Oct. 30, 2014	N/A	Radiation (03CH07-HY)
Notch Filter	Wainwright	WRCG 824/849/81	SN35	GSM850 / WCDMA 850	Nov. 28, 2013	Oct. 30, 2014	Nov. 27, 2014	Radiation (03CH07-HY)
Notch Filter	Wainwright	WRCT1850/1910-40/8S	SN21	1900 (L/M/H channel)	Oct. 01, 2014	Oct. 30, 2014	Sep. 30, 2015	(03CH07-HY)
Filter	Microwave Circuits	H1G013G1	SN477215	1GHz HPF	Nov. 28, 2013	Oct. 30, 2014	Nov. 27, 2014	Radiation (03CH07-HY)
Filter	Wainwright Instruments	WLKS1200-8SS	SN3	1.2GHz LPF	Nov. 28, 2013	Oct. 30, 2014	Nov. 27, 2014	Radiation (03CH07-HY)
Filter	Microwave Circuits	H3G018G1	SN477220	3GHz HPF	Nov. 28, 2013	Oct. 30, 2014	Nov. 27, 2014	Radiation (03CH07-HY)

**Note:** Test equipment calibration is traceable to the procedure of ISO17025.



## 5 Uncertainty of Evaluation

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

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