



# FCC RF Test Report

**Product Name: UMTS/GPRS/GSM/EDGE Mobile Phone with  
Bluetooth**

**Model Number: U2801-53**

**Report No: SYBH(Z-RF)010032012-2006  
FCC ID: QISU2801-53**

**Reliability Laboratory of Huawei Technologies Co., Ltd.**

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## Notice

1. The laboratory has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS), and accreditation number: L0310.
2. The laboratory has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements. The site recognition number is 97456.
3. The laboratory has been listed by industry Canada to perform electromagnetic emission measurement. The site recognition number is 6369A-2.
4. The test report is invalid if not marked with "exclusive stamp for the test report".
5. The test report is invalid if not marked with the stamps or the signatures of the persons responsible for performing, revising and approving the test report.
6. The test report is invalid if there is any evidence of erasure and/or falsification.
7. If there is any dissidence for the test report, please file objection to the test centre within 15 days from the date of receiving the test report.
8. Normally, the test report is only responsible for the samples that have undergone the test.
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### Modification Record

Last Report No.	Date	Modification Description
SYBH(Z-RF) 010032012-2006	2012-7-25	First report.
SYBH(Z-RF) 010032012-2006	2012-9-04	1.CCDF plots have been removed from Annex A 2.PAR for GSM operation has been corrected at page 3 of Annex A. <b>3.Increase</b> Test Procedure for Peak-to-Average Power Ratio at page 12 of main report.



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# 1 General Information

## 1.1 Applied Standard

Applied Rules: 47 CFR FCC Part 2:2011, Subpart J  
47 CFR FCC Part 24:2011, Subpart E  
ANSI/TIA 603C:2004

## 1.2 Test Location

Test Location 1: Reliability Laboratory of Huawei Technologies Co., Ltd.  
Address: Huawei Base, Bantian, Longgang District, Shenzhen 518129, P.R.  
China

## 1.3 Test Environment Condition

Ambient Temperature: 20 – 25 °C  
Ambient Relative Humidity: 45 – 55 %  
Atmospheric Pressure: 101 kPa

## 2 Test Summary

PCS Band			
Test Case	FCC Part No.	Requirements	Result
Transmitter Output Power	2.1046 & 24.232	Peak EIRP not exceed 2 W	Pass
Modulation Characteristics	2.1047	Digital modulation	Pass
Occupied Bandwidth	2.1049	(Not specified)	Pass
Band Edges Compliance	2.1051 & 24.238	Below -13 dBm/1%*EBW, in 1 MHz range	Pass
Spurious Emission at Antenna Terminals	2.1051 & 24.238	Below -13 dBm/1 kHz, 9 kHz to 150 kHz Below -13 dBm/10 kHz, 150 kHz to 30 MHz Below -13 dBm/1 MHz, 30 MHz to 10 <sup>th</sup> harmonics	Pass
Field Strength of Spurious Radiation	2.1053 & 24.238	Below -13 dBm/1 MHz	Pass
Frequency Stability	2.1055 & 24.235	Stay within the authorized frequency block	Pass

### 3 Product Description

#### 3.1 Product Information

##### 3.1.1 General Description

UMTS/GPRS/GSM/EDGE Mobile Phone with Bluetooth U2801-53 is subscriber equipment in the WCDMA/GSM system. The UMTS frequency band is Band II, and the test data included in this report. The GSM/GPRS/EDGE frequency band includes GSM850 and DCS1800 and PCS1900, PCS1900 test data included in this report. The Mobile Phone implements such functions as RF signal receiving/transmitting, UMTS and GSM/GPRS/EDGE protocol processing, voice, MMS service, GPS etc. Externally it provides micro SD card interface, earphone port (to provide voice service) and USIM card interface. It also provides Bluetooth module to synchronize data between a PC and the phone, or to use the built-in modem of the phone to access the Internet with a PC, or to exchange data with other Bluetooth devices.

The difference between U2801-5 and U2801-53 is showed in the following table.

	U2801-53	U2801-5
Frequency Band	WCDMA1900 GSM/GPRS/EDGE850/1900	WCDMA850/1900 GSM/GPRS/EDGE850/1900
Others	The same	The same

So U2801-53 RF test data refer to U2801-5 RF test report.

##### 3.1.2 Board

Board Information

UMTS/GPRS/GSM/EDGE Mobile Phone with Bluetooth		
U2801-53		
Hardware Version	Software Version	Serial Number
Ver.A	U2801CCMB904	-

##### 3.1.3 Sub-Assembly

AC/DC Adapter Model:	HS-050040U6(02130875)	HS-050040U6(02130875)
Input Voltage:	~ 100-240V 50/60Hz	~ 100-240V 50/60Hz
Output Voltage;	=== 5.0 V	=== 5.0 V
Rated Power:	2W	2W

##### 3.1.4 Battery Technical Data

Name	Manufacture	Description
Rechargeable Li-ion	Huawei Technologies Co., Ltd.	Battery Model: HB5A2(24020752) Rated capacity: 1000mAh



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		Nominal Voltage:  +3.7V Charging Voltage:  +4.2V
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## 3.2 Test Description

### 3.2.1 Supported Frequency Range

Characteristics	Description
Downlink	1930 to 1990 MHz
Uplink	1850 to 1910MHz

### 3.2.2 Transmitter / Receiver Characteristics

Characteristics	Description
System Type	GSM UMTS
TX Output Power (per Antenna Port)	GSM system: 33dBm UMTS system: 24dBm;
Channel Spacing(s) / Bandwidth(s)	GSM system: 200 kHz UMTS system: 5 MHz
Designation of Emissions	GSM system: 247KGXW (GMSK modulation), 246KG7W (8PSK modulation)) UMTS system: 4M17F9W

### 3.2.3 Antenna Gain

Antenna Gain(dBi):	1.5
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### 3.2.4 Power Supply

	Description
Power Supply Type	Directly Connected to DC /AC Power Supply
Input to Adapter (DC power)	DC Voltage Nominal: $\approx$ +3.7V DC Voltage Range: $\approx$ +3.6 V to +4.2V

## 4 General Test Conditions / Configurations

### 4.1 RF Channels under Test

Test Mode	TX / RX	RF Channel		
		Bottom (B)	Middle (M)	Top (T)
TM1/TM2	TX	Channel 512	Channel 661	Channel 810
		1850.2MHz	1880.0MHz	1909.8MHz
	RX	Channel 512	Channel 661	Channel 810
		1930.2 MHz	1960.0 MHz	1989.8 MHz
TM3	TX	Channel 9262	Channel9400	Channel9538
		1852.4MHz	1880.0MHz	1907.6MHz
	RX	Channel 9662	Channel 9800	Channel 9938
		1932.4 MHz	1960.0 MHz	1987.6 MHz

### 4.2 Test Modes

Test Mode	Test Modes Description
TM1	GSM/GPRS, GMSK modulation
TM2	EDGE, 8PSK modulation
TM3	WCDMA QPSK modulation

### 4.3 Test Environments

Environment Parameter	Selected Values During Tests	
Relative Humidity	Ambient	
Temperature	TN	Ambient
Voltage	VL	3.6V
	VN	3.7V
	VH	4.2V

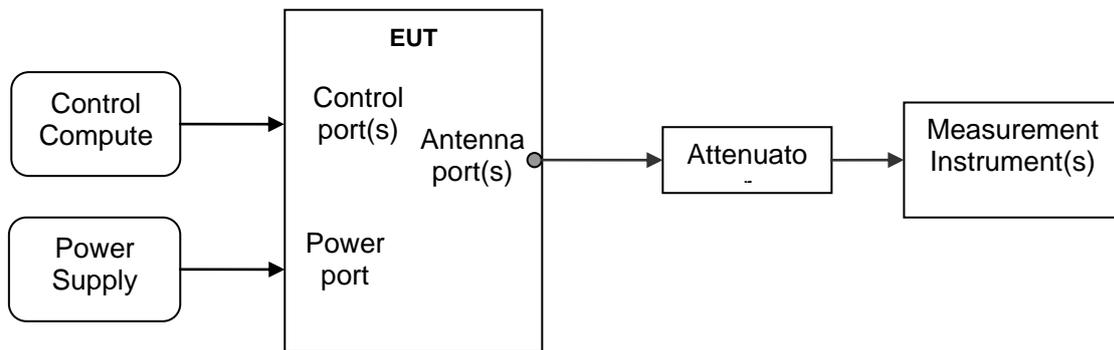
NOTE: VL= lower extreme test voltages  
VN= nominal voltage  
VH= upper extreme test voltage  
TN= nominal temperature

## 4.4 Test Setups

### 4.4.1 General Test Setup Configurations

Configuration	Description
Test Antenna Ports	Until otherwise declared, all TX tests are ONLY performed at the main Transmitter antenna port (e.g. TRXA, TXA and so on) of the EUT, and all RX tests are ONLY performed at the main Receiver antenna port (e.g. TRXA, RXA and so on) of the EUT.
Multiple RF Sources	Other than the tested RF source of the EUT, other RF source(s) are disabled or shutdown during measurements.

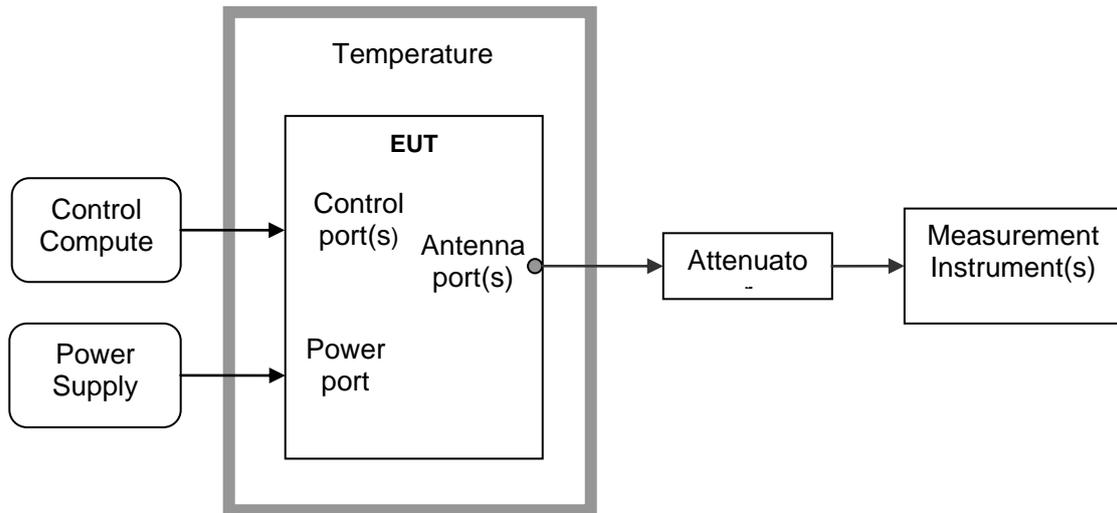
### 4.4.2 Test Setup 1



#### Note: Test Procedure for Peak-to-Average Power Ratio

Measurement Function	Preset to normal spectrum mode, use the "CCDF" measurement function.
Center Frequency	Signal Nominal Center Frequency (for each carrier of the carriers-configuration).
Meas BW/RBW	≥ Nominal Signal Channel Bandwidth.
Trigger	Trigger setting to ensure the measurement is only performed within burst-on duration (if the signal duty cycle X is not 100%).
Measurement Interval	Triggered duration length. For example, if the gate trigger is made on one-slot of the GSM signal (about 577μs), the trigger length and the measurement interval should be 577μs. (Note: FCC KDB 971168 require using 1 ms setting. This may result into error result especially for TDD or TDMA system)
Count Number	A value that stabilizes the measured CCDF curve (normally > 10E6).

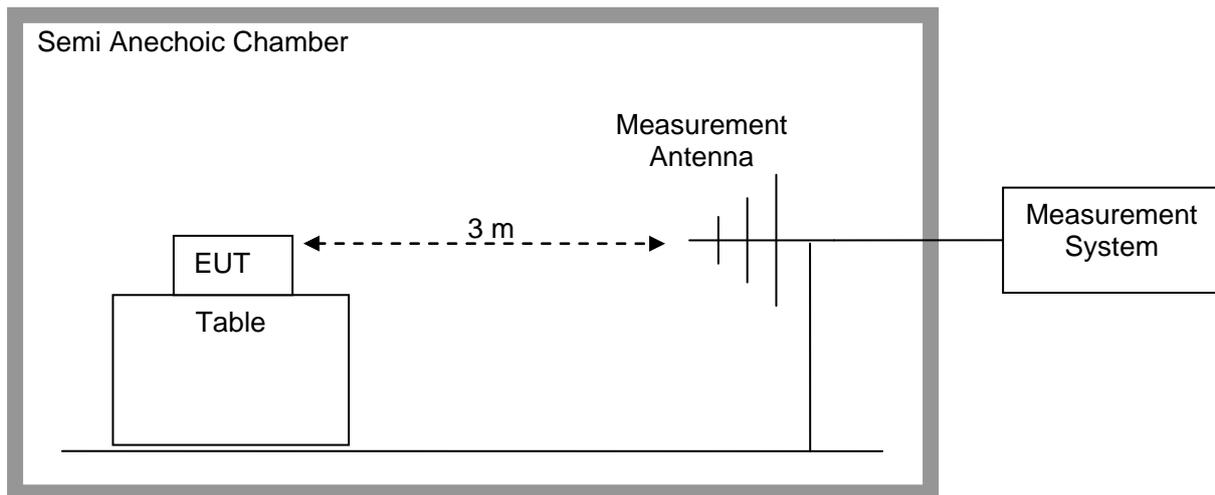
### 4.4.3 Test Setup 2



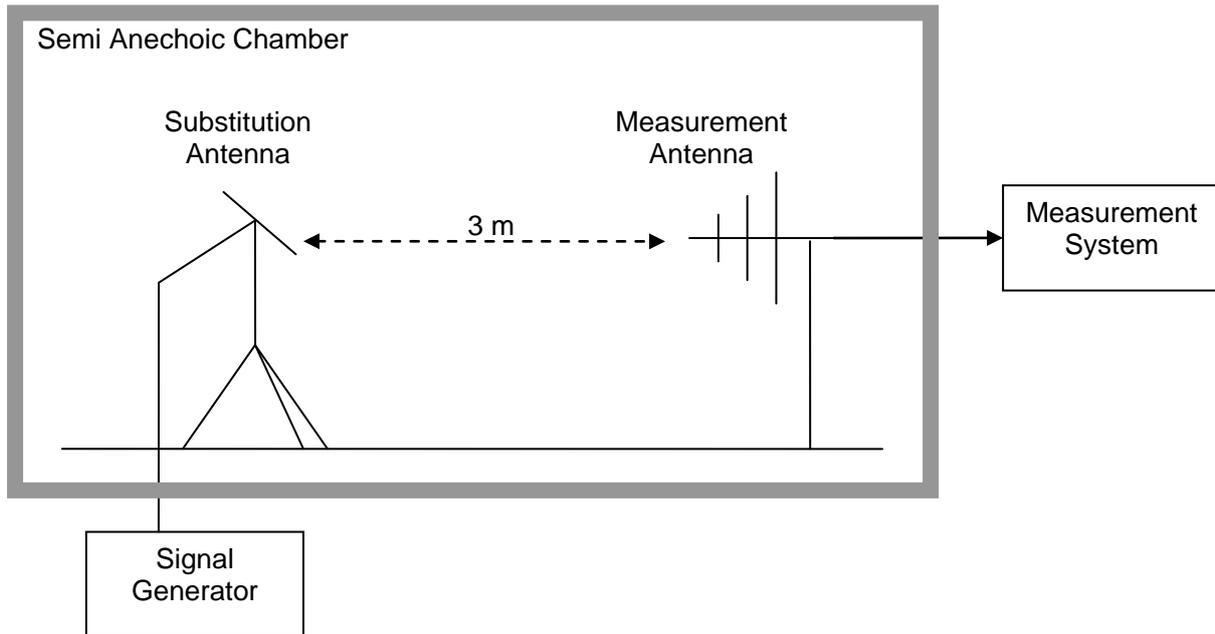
### 4.4.4 Test Setup 3

NOTE: Effective Isotropic radiated power (EIRP) refers to the radiation power output of the EUT, assuming all emissions are radiated from half-wave dipole antennas.

#### Step 1: Pre-test



#### Step 2: Substitution method to verify the maximum EIRP



## 4.5 Test Conditions

Test Case	Test Conditions	
Transmitter Output Power	Test Configuration	Ambient Temperature & Rated Voltage
	Test Setup	Test Setup 1/ Setup 3
	Detector	RMS
	RF Channels (TX)	B, M, T
	Test Mode	TM1/TM2/TM3
Modulation Characteristics	Test Configuration	Ambient Temperature & Rated Voltage
	Test Setup	Test Setup 1
	RF Channels (TX)	M
	Test Mode	TM1/TM2/TM3
Occupied Bandwidth	Test Configuration	Ambient Temperature & Rated Voltage
	Test Setup	Test Setup 1
	Detector	PK
	RF Channels (TX)	B, M, T
	Test Mode	TM1/TM2/TM3
Band Edges Compliance	Test Configuration	Ambient Temperature & Rated Voltage
	Test Setup	Test Setup 1
	Detector	RMS
	RF Channels (TX)	B, T
	Test Mode	TM1/TM2/TM3
Spurious Emission at Antenna Terminals	Test Configuration	Ambient Temperature & Rated Voltage
	Test Setup	Test Setup 1
	Detector	PK
	RF Channels (TX)	B, M, T
	Test Mode	TM1/TM2/TM3
Field Strength of Spurious Radiation	Test Configuration	Ambient Temperature & Rated Voltage
	Test Setup	Test Setup 3
	Detector	PK
	RF Channels (TX)	M
	Test Mode	TM1/TM2/TM3
Frequency Stability	Test Configuration	(1) -30 °C to +50 °C with step 10 °C at Rated Voltage; (2) 85%, 100% and 115% of Rated Voltage at Ambient Temperature.
	Test Setup	Test Setup 2
	RF Channels (TX)	M



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Test Case	Test Conditions	
	Test Mode	TM1/TM2/TM3

## 5 Main Test Instruments

Table 1 Main Test Equipments

Equipment Description	Manufacturer	Model	Serial Number	Calibrated until
Power supply	KEITHLEY	2303	1288003	Sep.27,2012
Universal Radio Communication Tester	R&S	CMU200	117341	Jan.12.2013
Universal Radio Communication Tester	Agilent	E5515C	MY50260239	Aug.31,2012
Spectrum Analyzer	Agilent	E4440A	MY49420179	Apr.20,2012
Signal Analyzer	R&S	FSQ31	200021	Sep.27,2012
Temperature Chamber	WEISS	WKL64	24600294	Jan.03,2013
Signal generator	Agilent	E8257D	MY49281095	Jul.9.2012
Test receiver	R&S	ESU26	100150	May.29.2012
Tunable Dipole	Schwarzbeck	D69250-UHAP/D69250-VHAP	919/1009	Jan.29.2013
Tunable Dipole	Schwarzbeck	D69250-UHAP/D69250-VHAP	979/917	Jan.29.2013
Horn Antenna	R & S	HF906	100683	May.15, 2012
Horn Antenna	R & S	HF906	100684	Jul.01, 2012
Broadband Antenna	Schwarzbeck	VULB 9163	9163-357	May.15, 2012
Broadband Antenna	Schwarzbeck	VULB 9163	9163-356	May.15, 2012



## 6 Test Results

No.	Test Item	Test Result
1	Transmitter Output Power	Appendix A
2	Modulation Characteristics	Appendix B
3	Occupied Bandwidth	Appendix C
4	Band Edges Compliance	Appendix D
5	Spurious Emission at Antenna Terminals	Appendix E
6	Field Strength of Spurious Radiation	Appendix F
7	Frequency Stability	Appendix G
8	Photos of Radiated Spurious Emissions	Appendix H

NOTE: The Appendix H only photos of Radiated Spurious Emissions, no test data.

## 7 Measurement Uncertainty

For a 95% confidence level ( $k=2$ ), the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 as following:

Test Item		Extended Uncertainty
Transmitter Output Power	Power (dBm)	U =0.39 dB
Occupied Bandwidth	Magnitude (%)	U=0.2%
Band Edge Compliance	Disturbance Power (dBm)	U=2.0 dB
Conducted Spurious Emissions	Disturbance Power (dBm)	U=2.0 dB
Field Strength of Spurious Radiation	ERP (dBm)	U=4.6 dB (30 MHz – 1GHz) U=3.0 dB (above 1 GHz)
Frequency Stability	Frequency Accuracy (ppm)	U=0.21 ppm

The END



# Appendix A

## Transmitter Output Power According to FCC Part 2.1046 & Part 24 Subpart E



## Conducted Power of Transmitter

Table 1 Measurement Results

TEST CONDITIONS	RF Output Power (Conducted)					
	Channel512(B)		Channel661(M)		Channel810(T)	
	1850.2MHz		1880.0MHz		1909.8MHz	
	dBm		dBm		dBm	
$T_{nom} / V_{nom}$	Measured	Limit	Measured	Limit	Measured	Limit
TM1	30.18	33	30.32	33	30.24	33
TM2	26.31	33	26.44	33	26.35	33
TEST CONDITIONS	Channel9262(B)		Channel9400(M)		Channel9538(T)	
	1852.4MHz		1880.0MHz		1907.6MHz	
	dBm		dBm		dBm	
	$T_{nom} / V_{nom}$	Measured	Limit	Measured	Limit	Measured
TM3	21.78	33	21.78	33	22.14	33



## Peak-to-Average Ratio

Table 1 Measurement Results

TEST CONDITIONS	Channel512(B)		Channel661(M)		Channel810(T)	
	1850.2MHz		1880.0MHz		1909.8MHz	
	dBm		dBm		dBm	
$T_{nom} / V_{nom}$	Measured	Limit	Measured	Limit	Measured	Limit
TM1	1.13	13.0	1.1	13.0	1.05	13.0
TM2	3.17	13.0	3.18	13.0	3.21	13.0
TEST CONDITIONS	Channel9262(B)		Channel9400(M)		Channel9538(T)	
	1852.4MHz		1880.0MHz		1907.6MHz	
	dBm		dBm		dBm	
$T_{nom} / V_{nom}$	Measured	Limit	Measured	Limit	Measured	Limit
TM3	4.03	13.0	4.04	13.0	4.23	13.0



## Efficient Isotropic Radiated Power(EIRP)

Table 2 Substitution Results

Test Mode	Freq. [MHz]	Meas. Level [dBm]	Substitution Antenna Type	SGP	Substitution Gain [dBi]	Cable Loss [dB]	Substitution Level (EIRP)	FCC limit [dBm]	Result
				[dBm]			[dBm]		
TM1	1850.2	31.68	Horn Ant.	28.12	4.5	1	31.62	33	Pass
TM1	1880.0	31.82	Horn Ant.	28.30	4.5	1	31.80	33	Pass
TM1	1909.8	31.74	Horn Ant.	27.97	4.8	1	31.77	33	Pass
TM2	1850.2	27.81	Horn Ant.	24.38	4.5	1	27.88	33	Pass
TM2	1880.0	27.94	Horn Ant.	24.44	4.5	1	27.94	33	Pass
TM2	1909.8	27.85	Horn Ant.	24.05	4.8	1	27.85	33	Pass
TM3	1852.4	23.28	Horn Ant.	19.72	4.5	1	23.22	33	Pass
TM3	1880.0	23.28	Horn Ant.	19.71	4.5	1	23.21	33	Pass
TM3	1907.6	23.64	Horn Ant.	19.80	4.8	1	23.60	33	Pass

Note: a, For getting the EIRP (Efficient Isotropic Radiated Power) in substitution method, the following formula should take to calculate it,

$$\text{EIRP [dBm]} = \text{SGP [dBm]} - \text{Cable Loss [dB]} + \text{Gain [dBi]}$$

b, SGP=Signal Generator Level

The END



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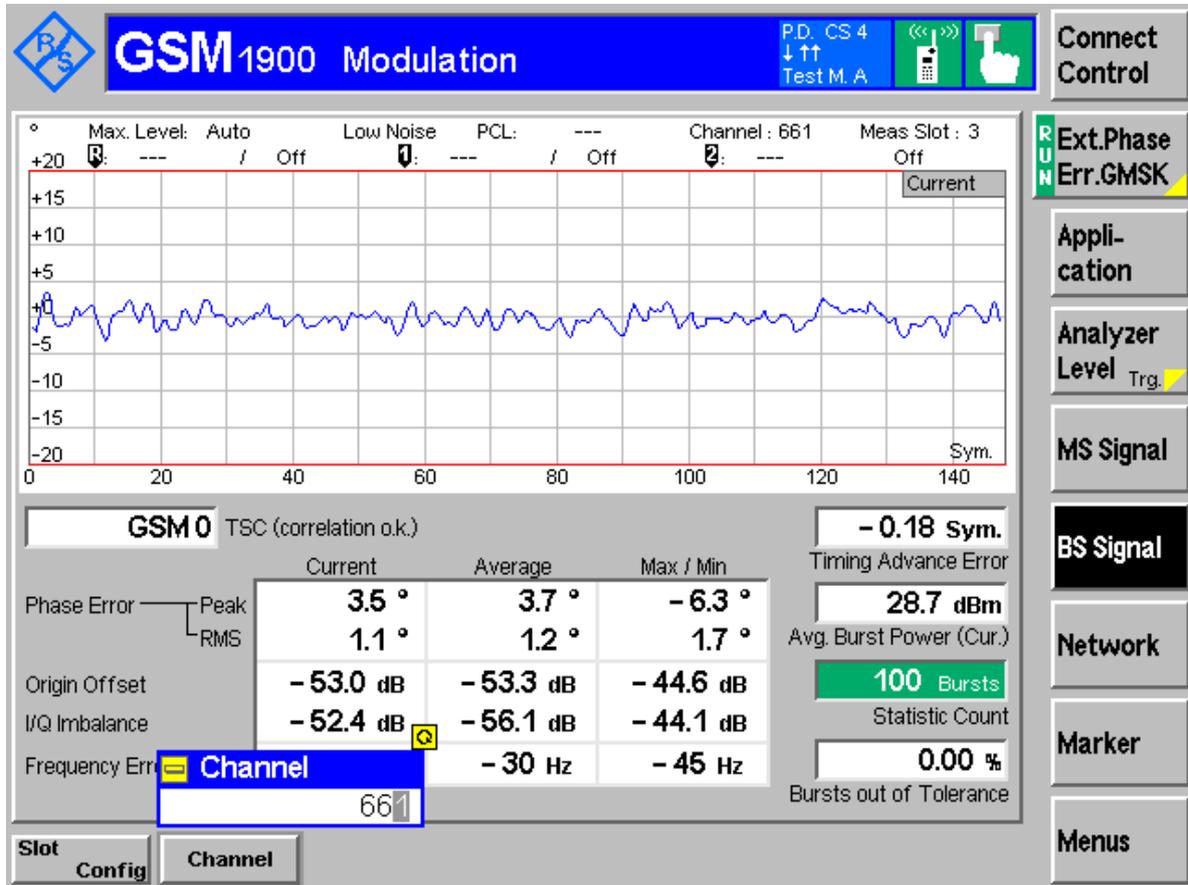
## **Appendix B**

# Modulation Characteristics

According to FCC Part 2.1047 & Part24 Subpart E

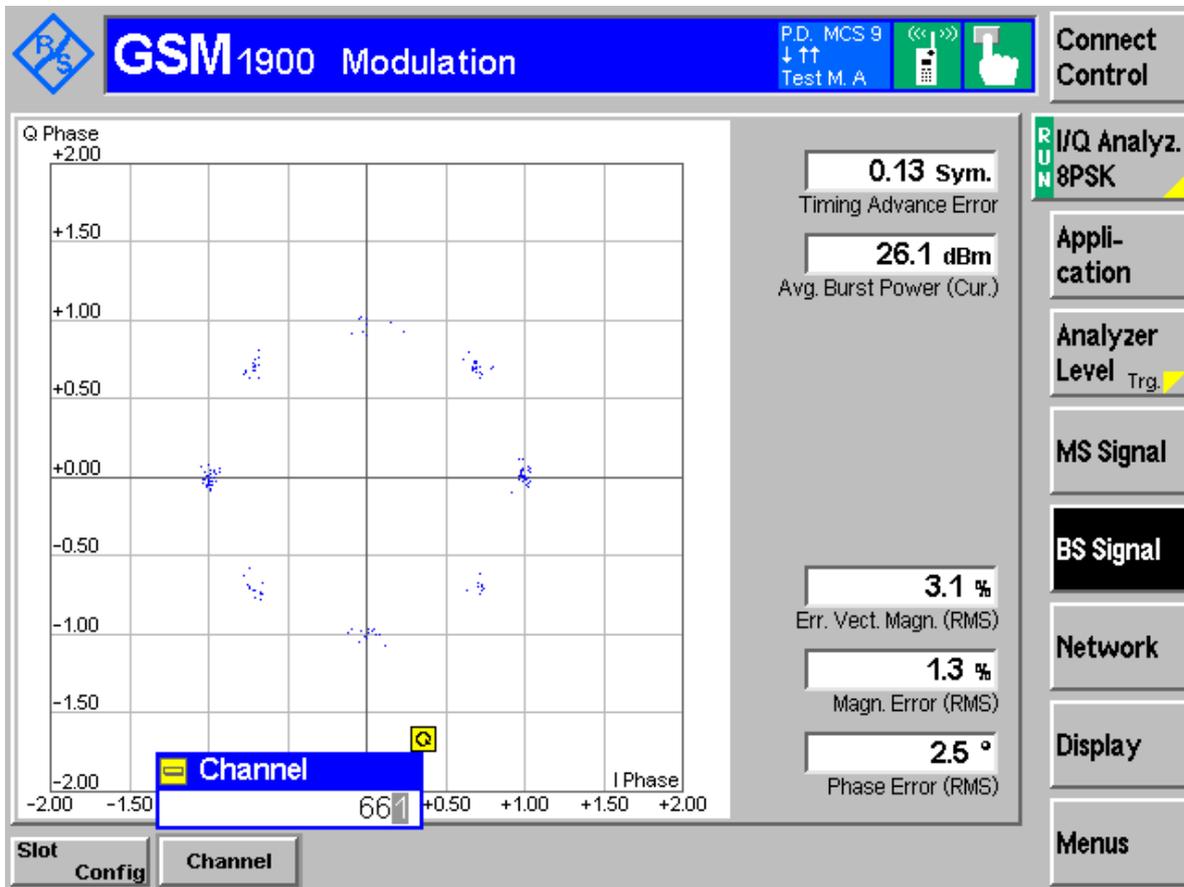


## TM1:GPRS/GSM Channel 661



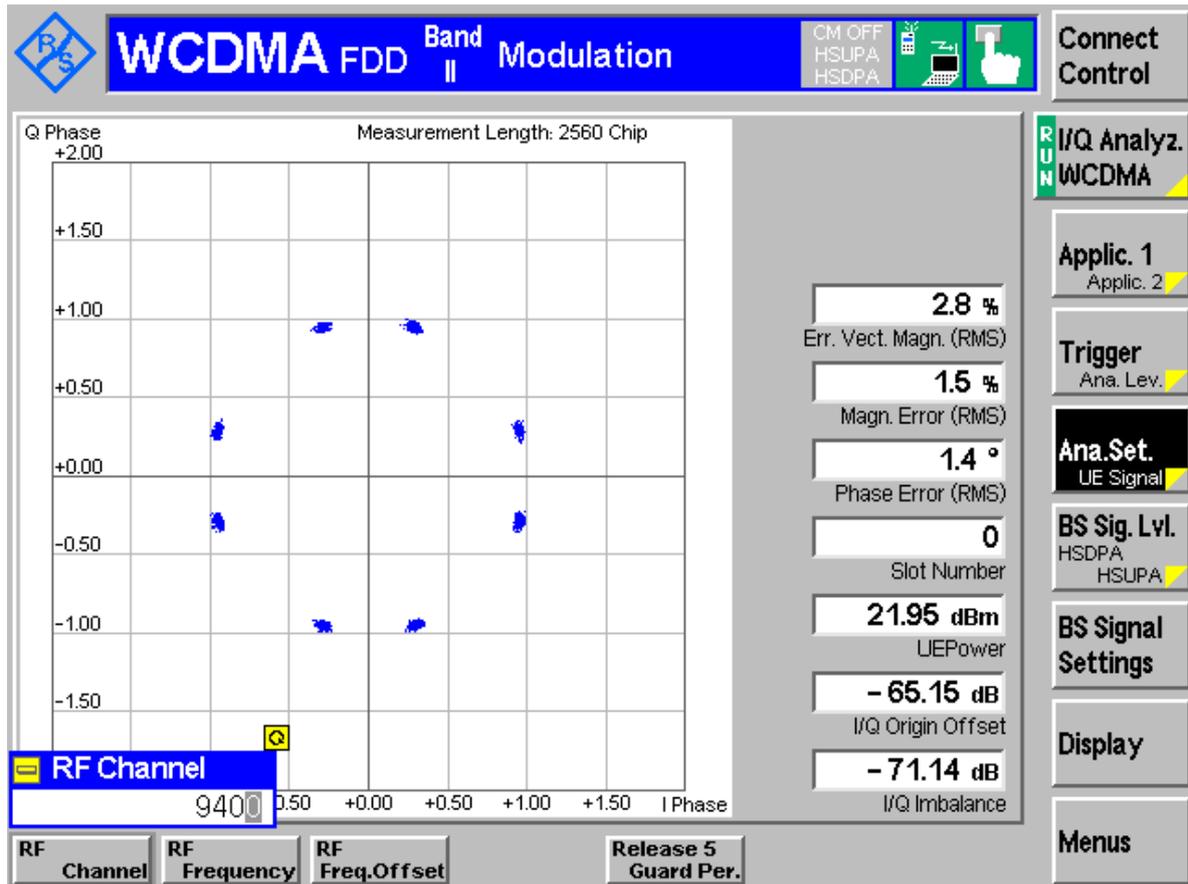


# TM2:EDGE Channel 661





## TM3: WCDMA Channel 9400



-----The END-----



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## Appendix C

# Occupied Bandwidth

According to FCC Part 2.1049 & Part 24 Subpart E

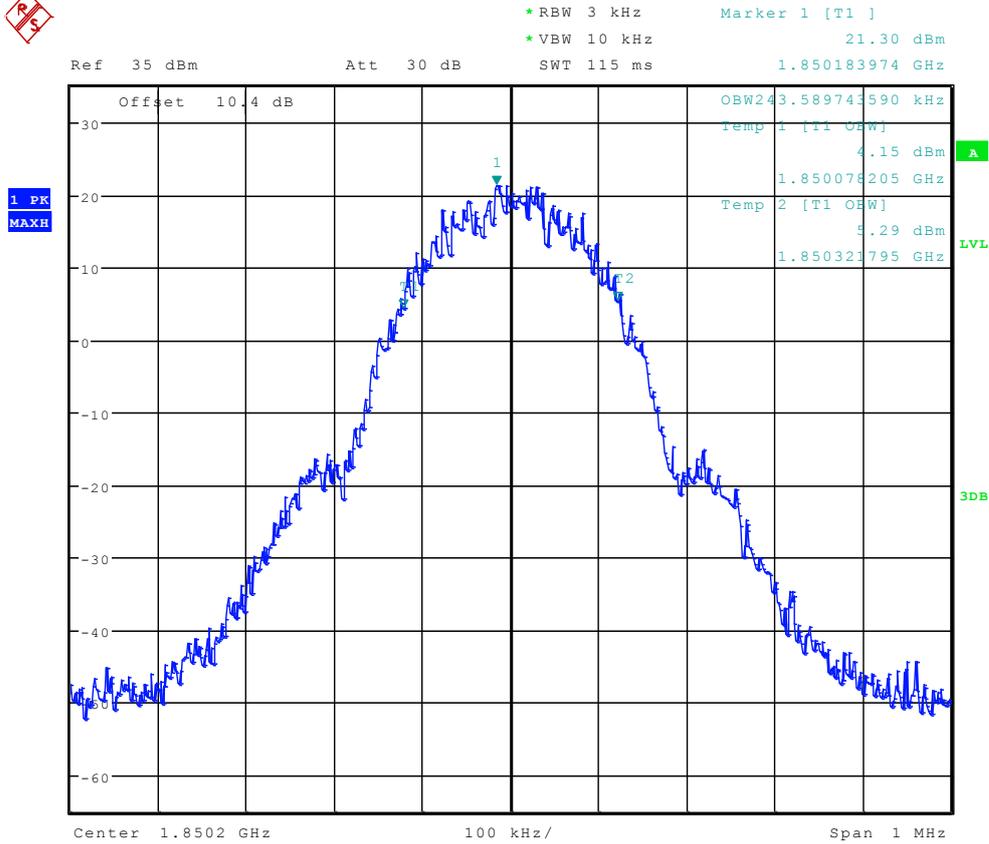


Table 1 Measurement Results

Test Mode	RF Channel	Occupied Bandwidth [kHz]	Verdict
TM1	512	243.6	Pass
	661	245.2	Pass
	810	245.2	Pass
TM2	512	245.2	Pass
	661	243.6	Pass
	810	240.4	Pass
Test Mode	RF Channel	Occupied Bandwidth [MHz]	Verdict
TM3	9262	4.170	Pass
	9400	4.170	Pass
	9538	4.170	Pass



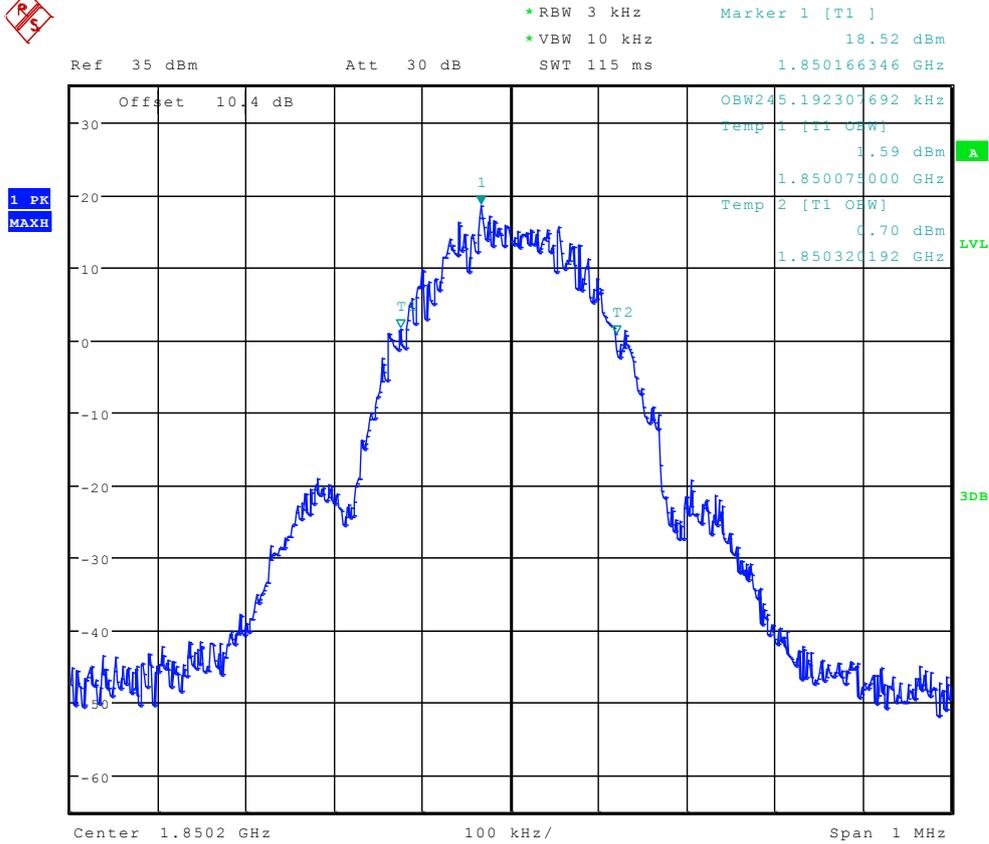
# TM1:GPRS/GSM Channel 512



Date: 5.MAR.2012 10:22:21



# TM2:EDGE Channel 512

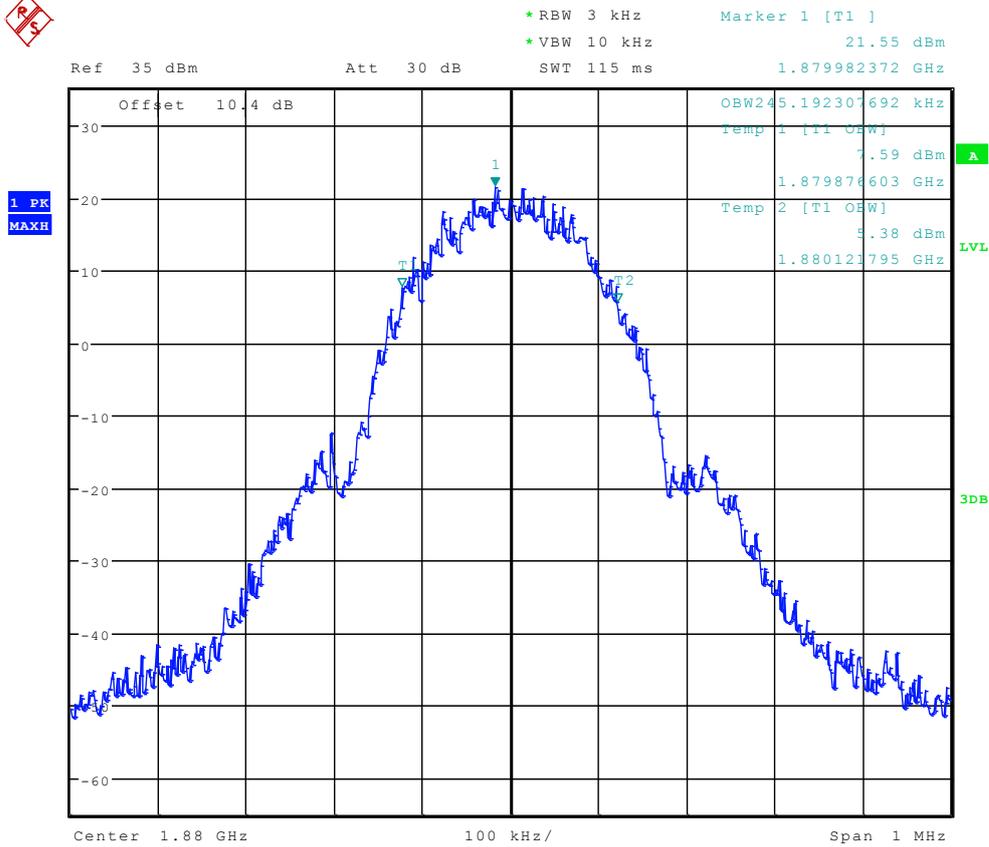


Date: 5.MAR.2012 10:30:00





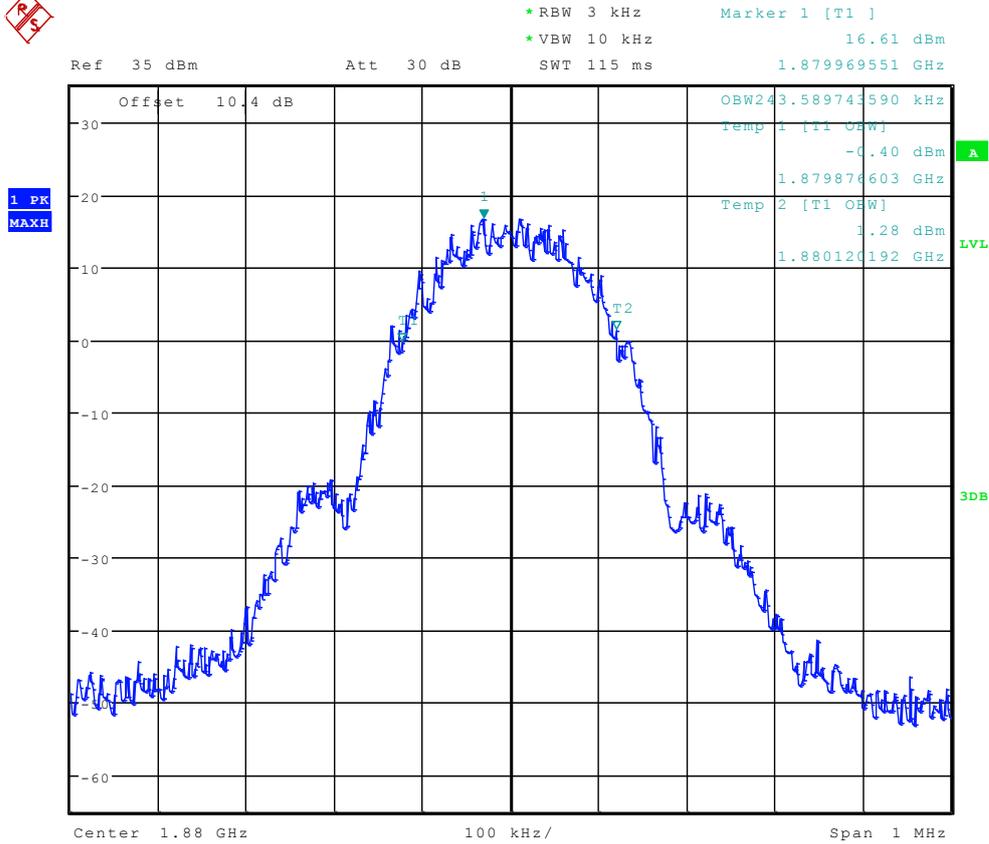
# TM1:GPRS/GSM Channel 661



Date: 5.MAR.2012 10:22:35



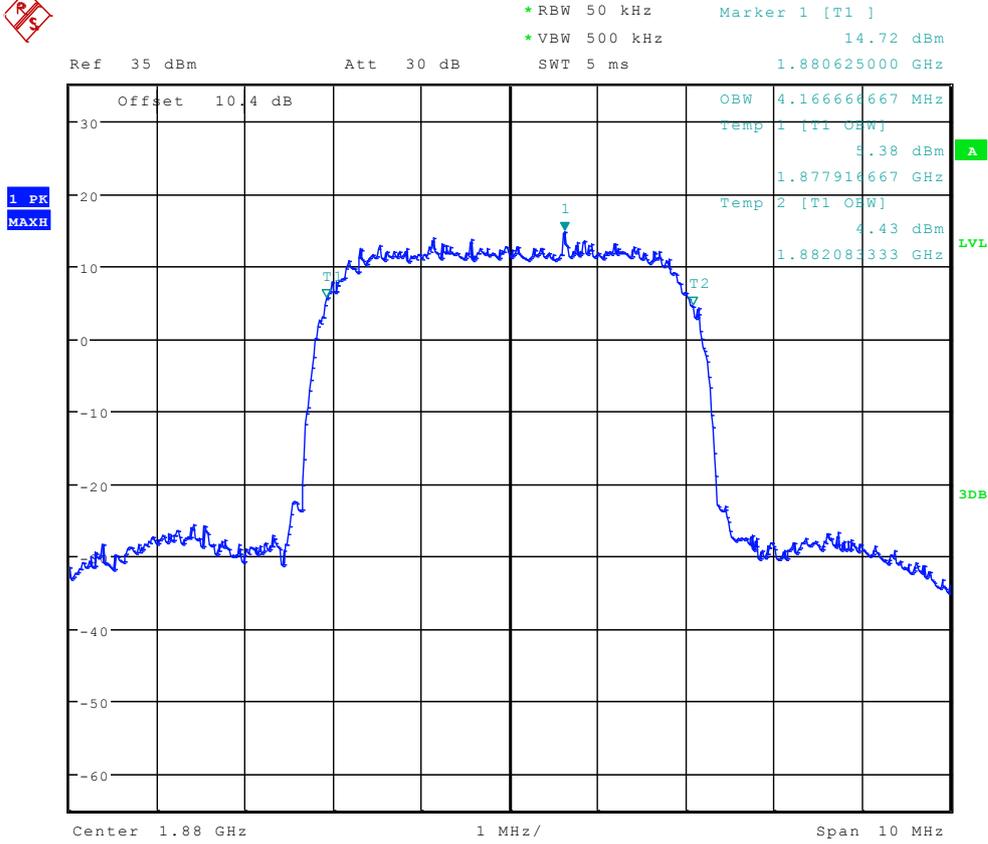
# TM2:EDGE Channel 661



Date: 5.MAR.2012 10:30:14



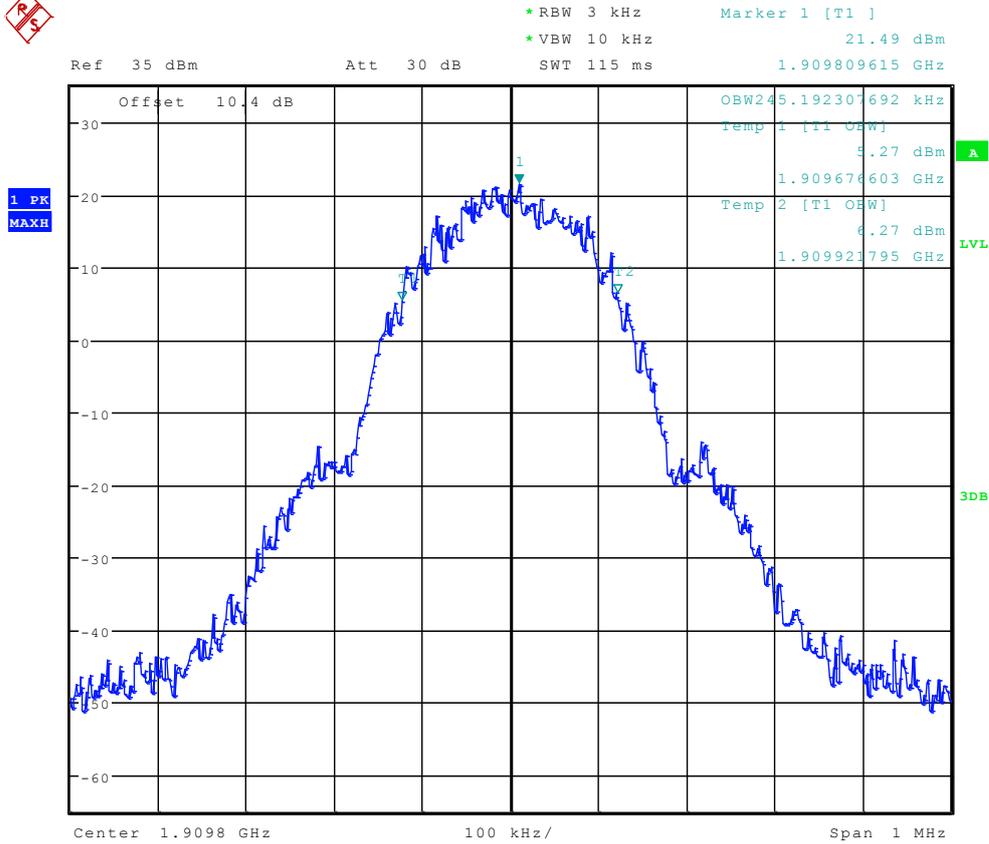
# TM3: WCDMA Channel 9400



Date: 5.MAR.2012 10:35:46



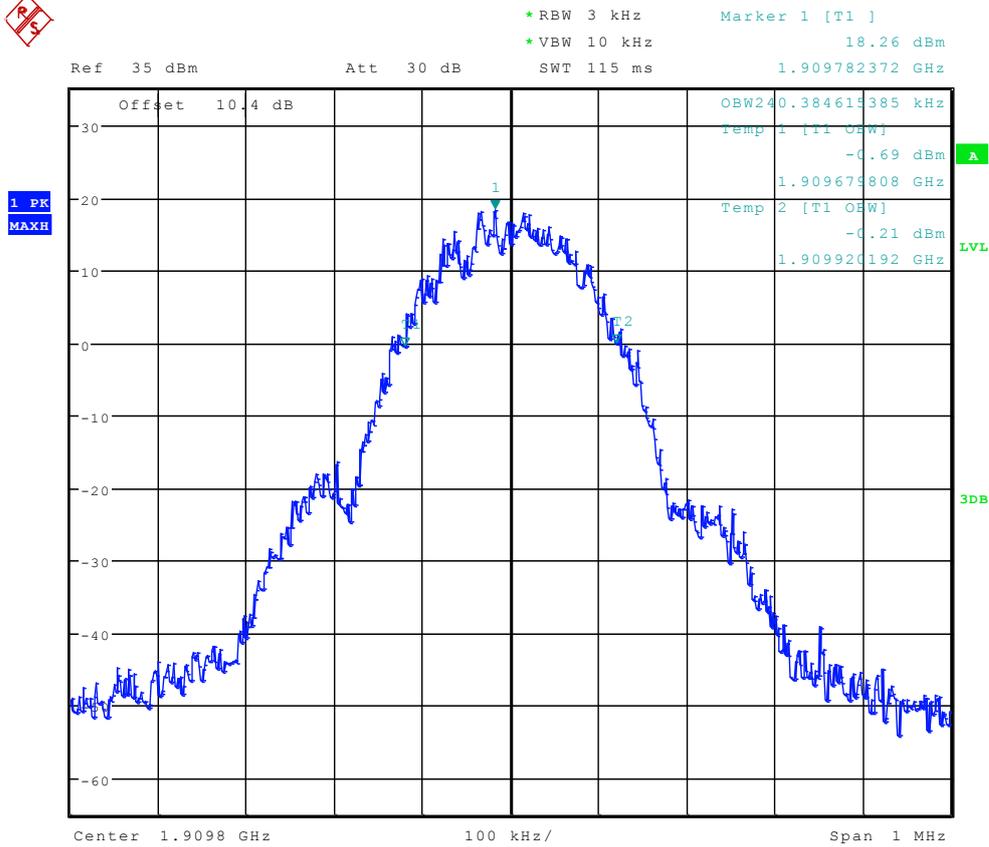
# TM1:GPRS/GSM Channel 810



Date: 5.MAR.2012 10:22:48



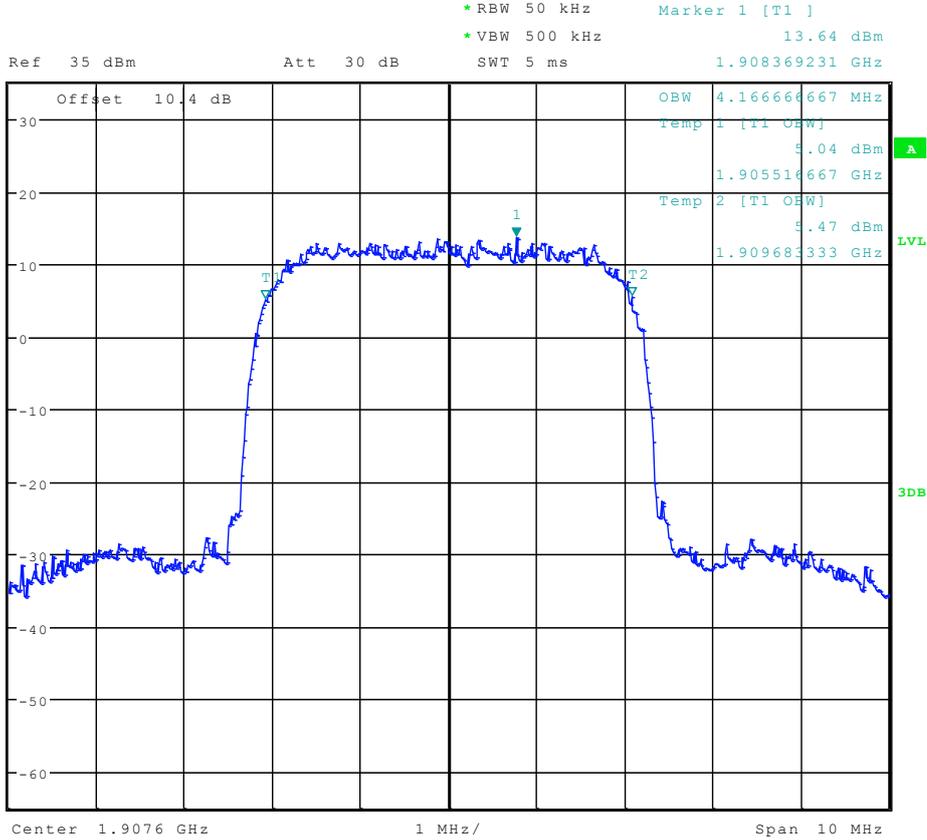
# TM2:EDGE Channel 810



Date: 5.MAR.2012 10:30:28



# TM3: WCDMA Channel 9538



Date: 5.MAR.2012 10:35:59

The END



## Appendix D

# Band Edges Compliance

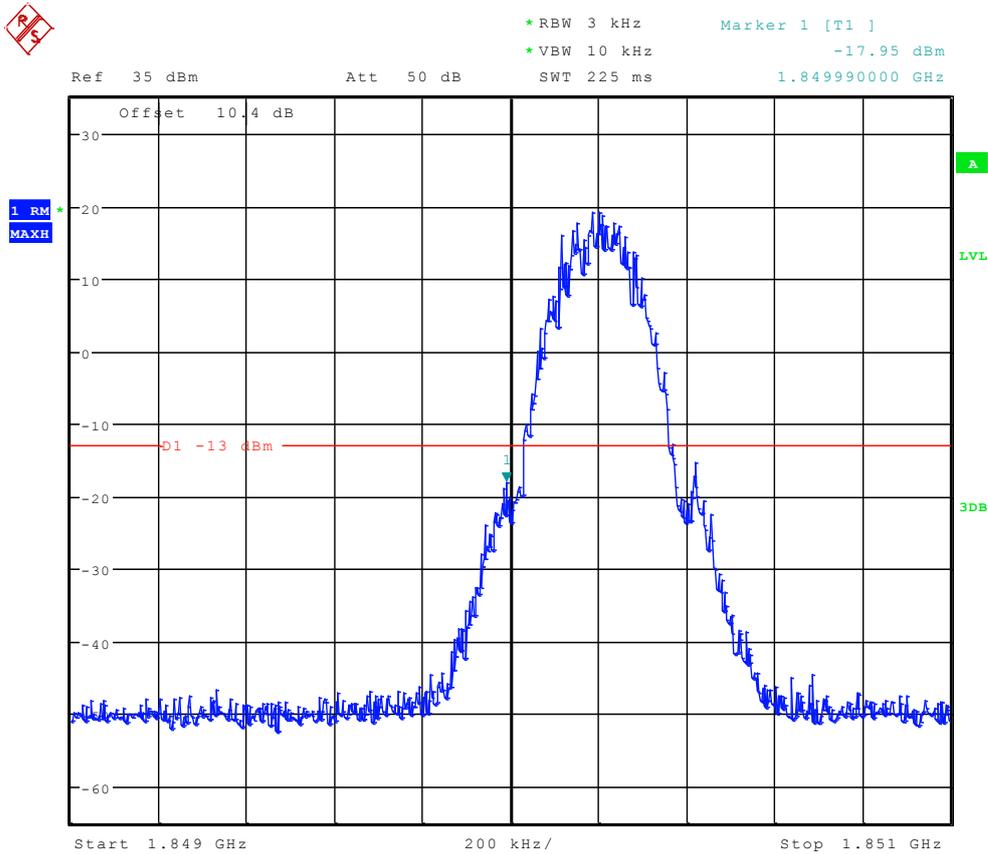
According to FCC Part 2.1051 & 24.238



# TM1:GPRS/GSM

## Left Edge

### Channel 512



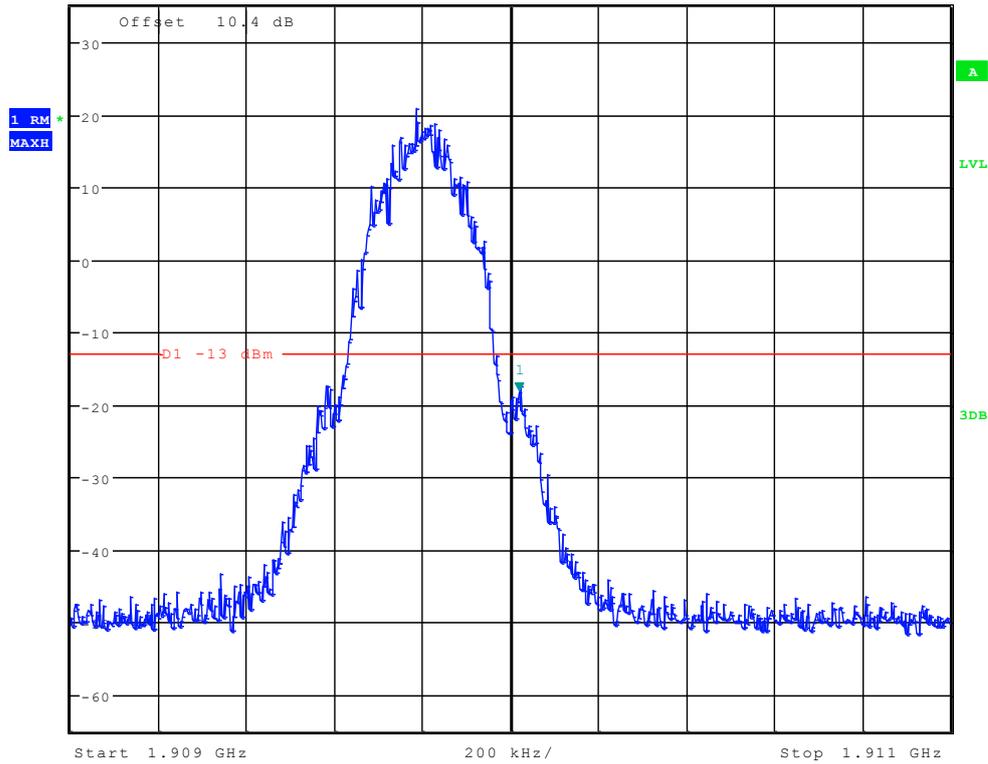
Date: 5.MAR.2012 10:25:20



## Right Edge Channel 810



Ref 35 dBm      Att 50 dB      RBW 3 kHz      Marker 1 [T1]      -18.21 dBm  
 VBW 10 kHz      1.910020000 GHz  
 SWT 225 ms



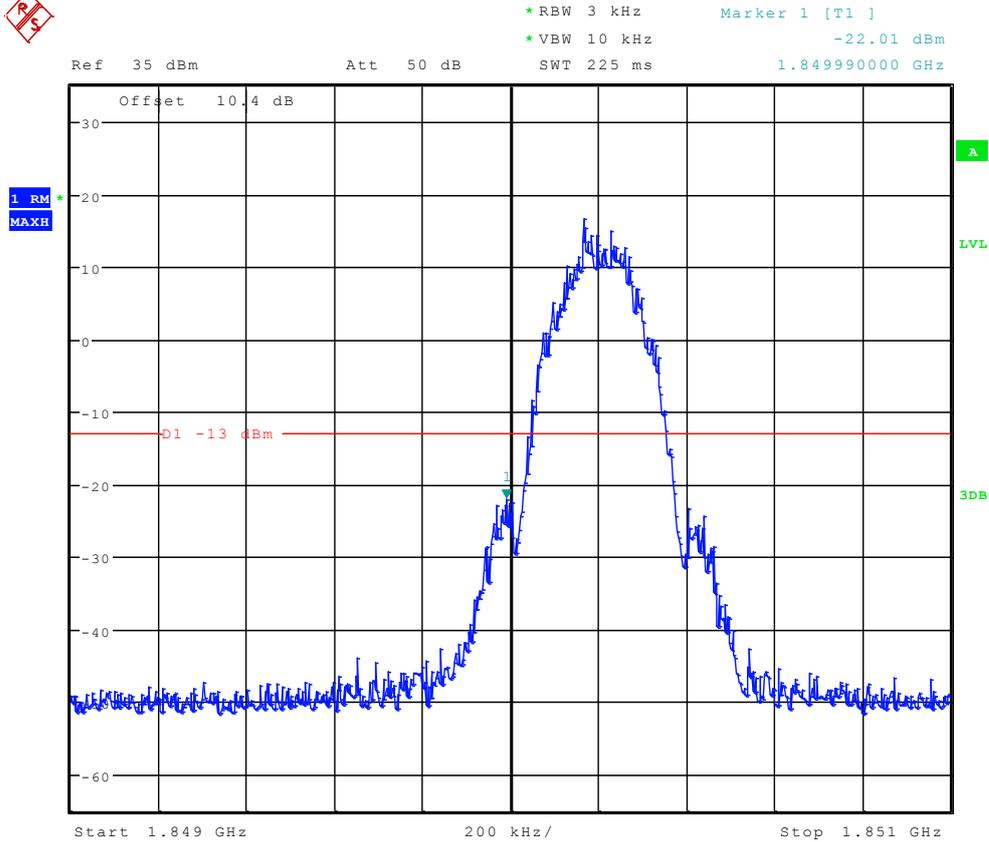
Date: 5.MAR.2012 10:25:41



# TM2:EDGE

## Left Edge

### Channel 512



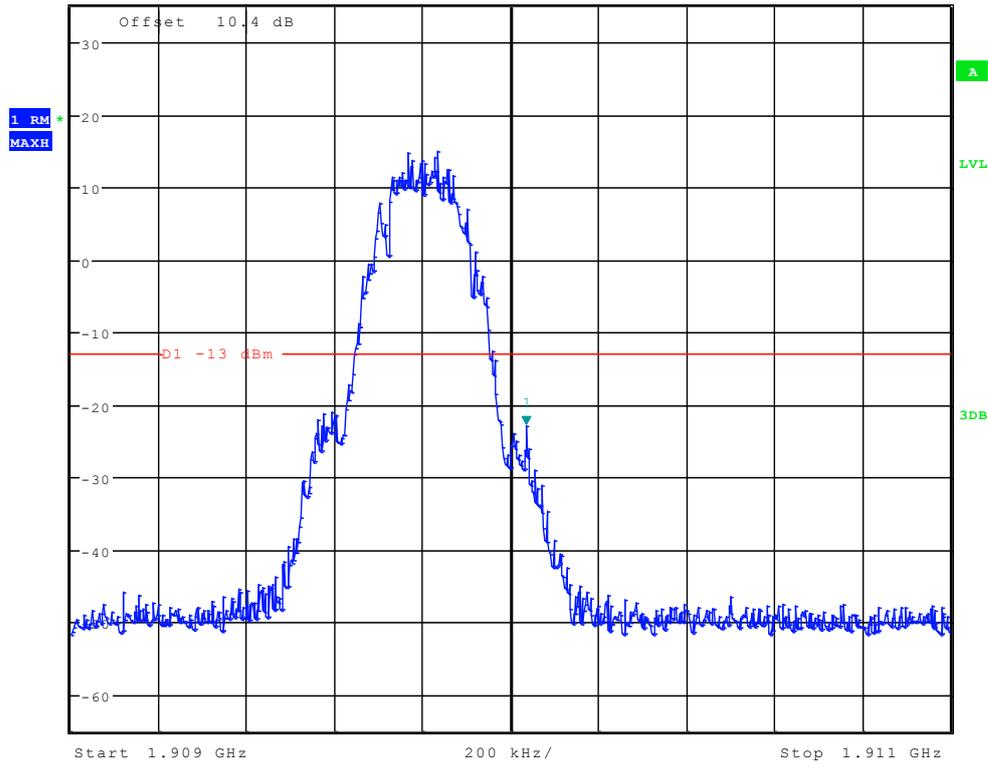
Date: 5.MAR.2012 10:29:31



## Right Edge Channel 810



Ref 35 dBm      Att 50 dB      RBW 3 kHz      Marker 1 [T1]      -22.92 dBm  
SWT 225 ms      1.910035000 GHz



Date: 5.MAR.2012 10:29:46



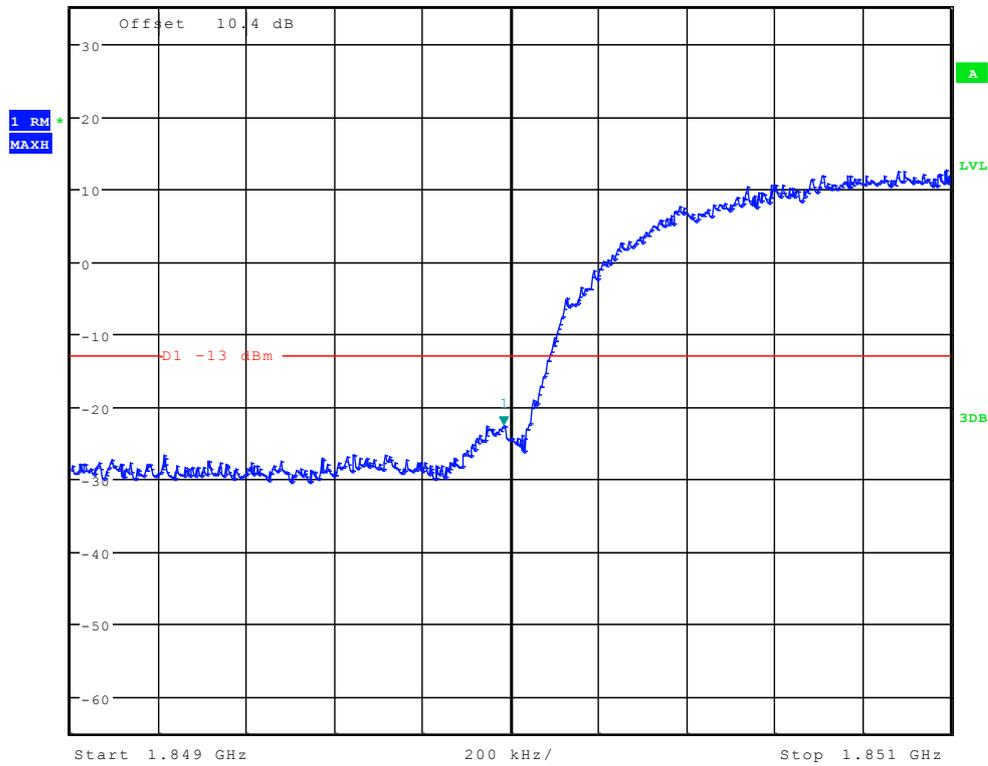
# TM3: WCDMA

## Left Edge

### Channel 9262



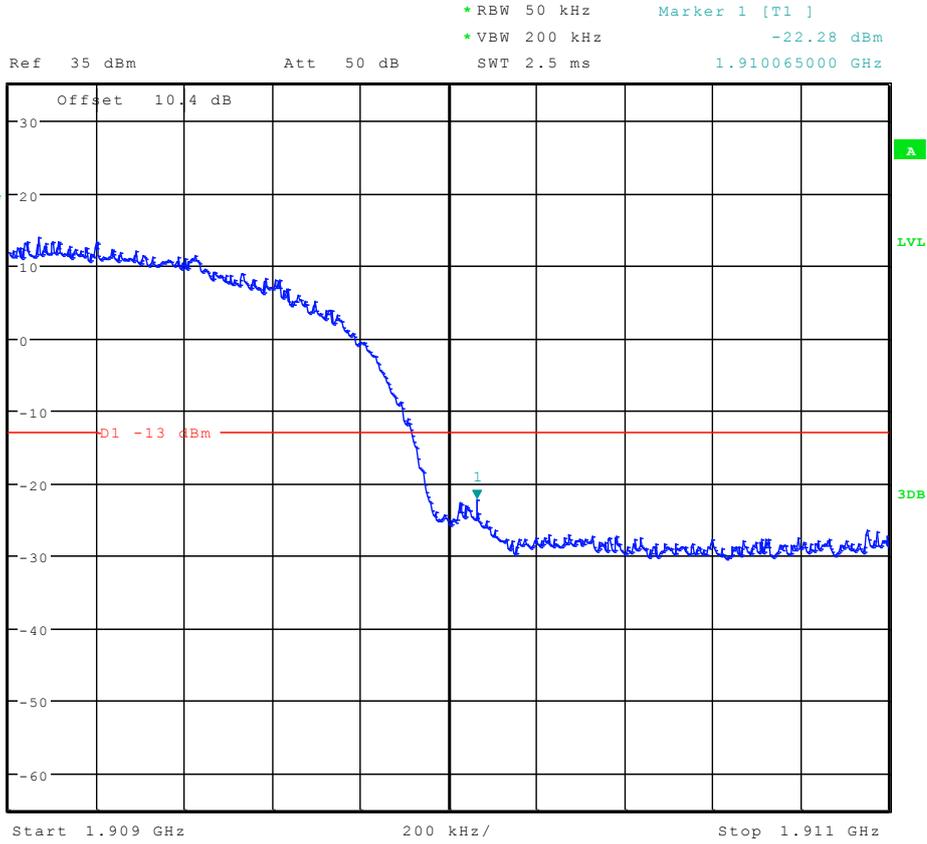
Ref 35 dBm      Att 50 dB      SWT 2.5 ms      Marker 1 [T1]      -22.61 dBm  
\* RBW 50 kHz  
\* VBW 200 kHz      1.849985000 GHz



Date: 5.MAR.2012 10:36:14



## Right Edge Channel 9538



Date: 5.MAR.2012 10:36:28

The END



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## Appendix E

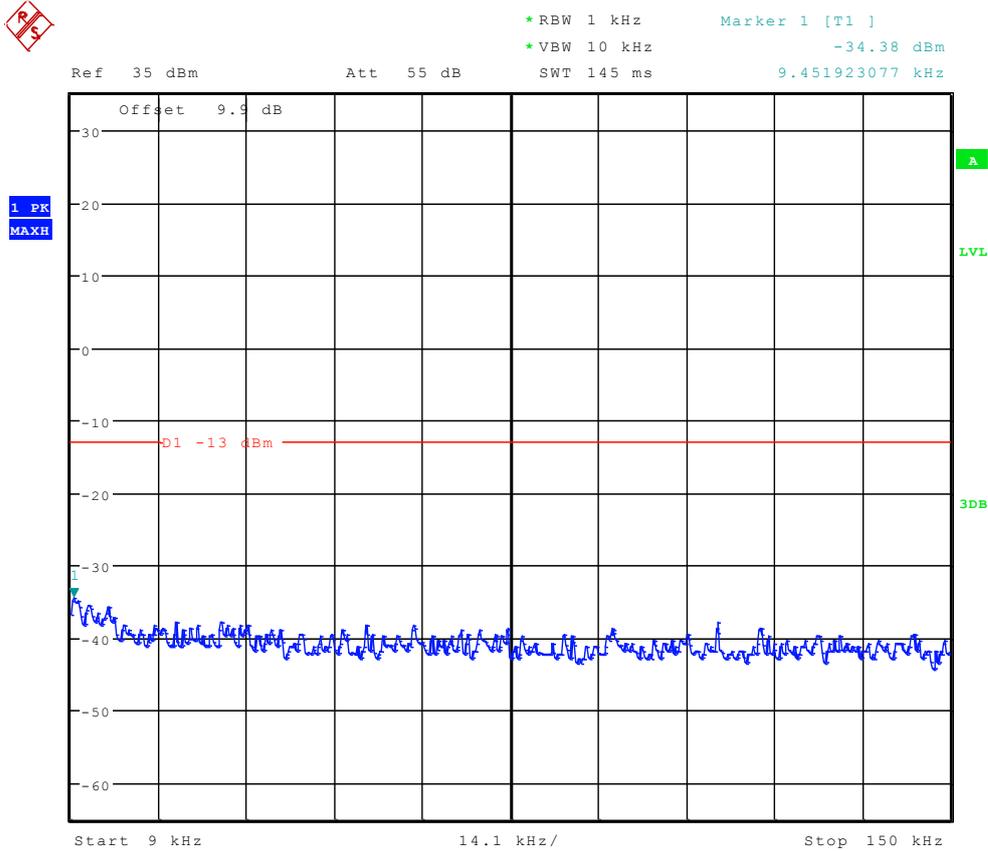
# Spurious Emission at Antenna Terminal

According to FCC Part 2.1051 & 24.238



# TM1:GPRS/GSM

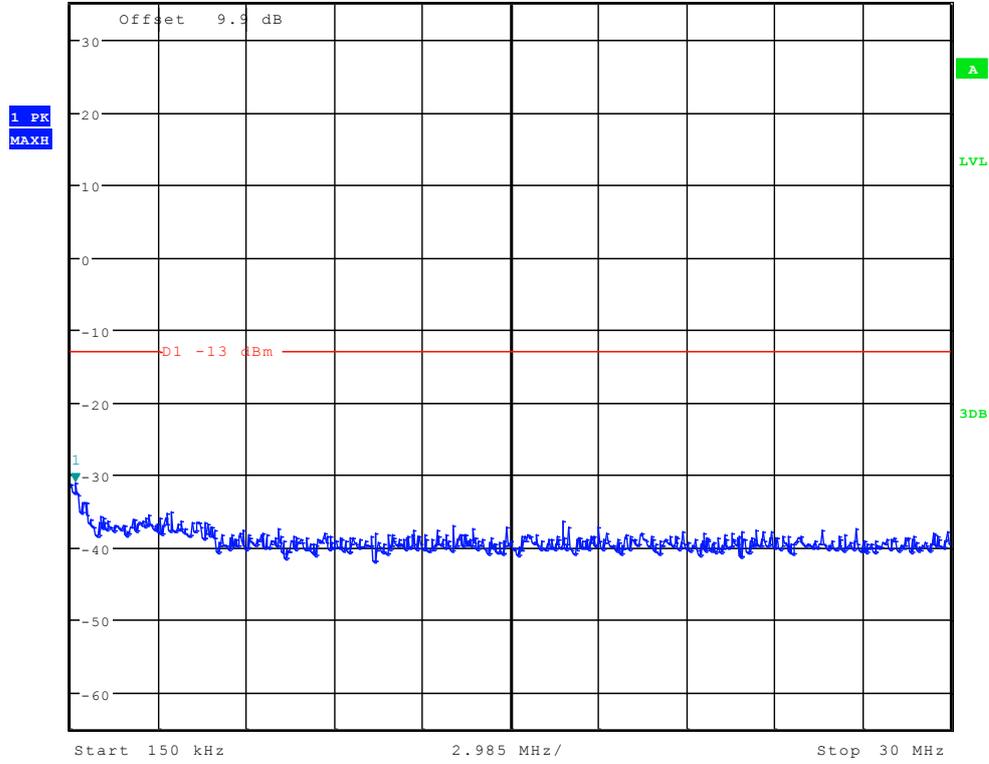
## Channel 512



Date: 5.MAR.2012 10:23:03



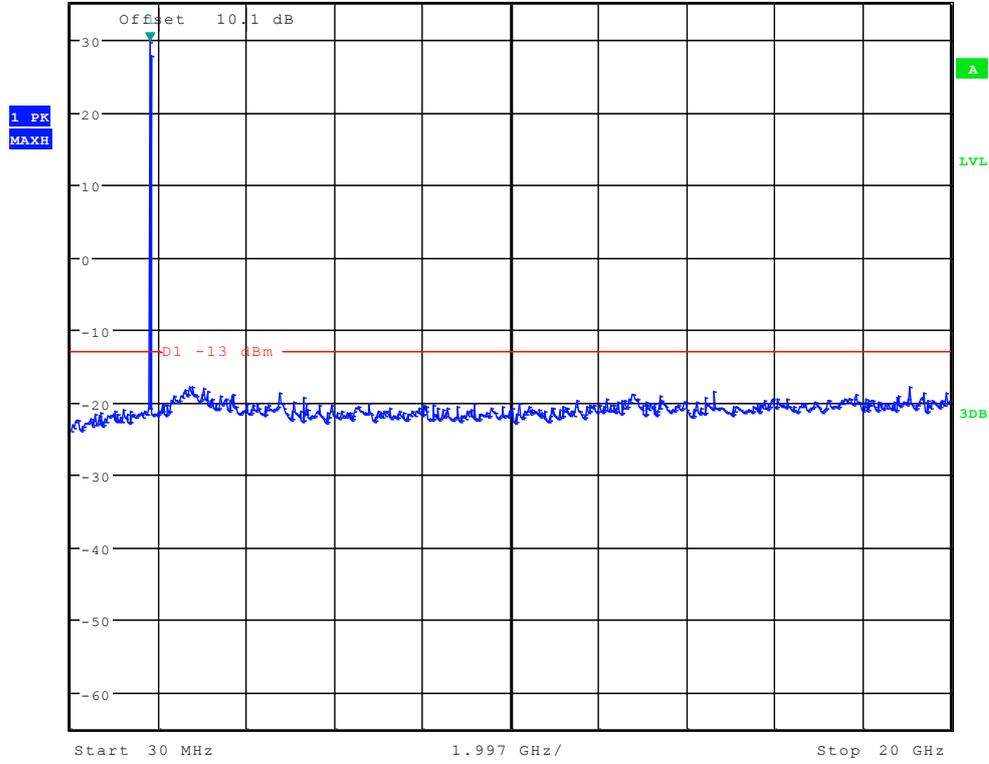
Ref 35 dBm Att 55 dB SWT 300 ms 293.509615385 kHz  
\*RBW 10 kHz Marker 1 [T1 ]  
\*VBW 30 kHz -31.11 dBm



Date: 5.MAR.2012 10:23:53



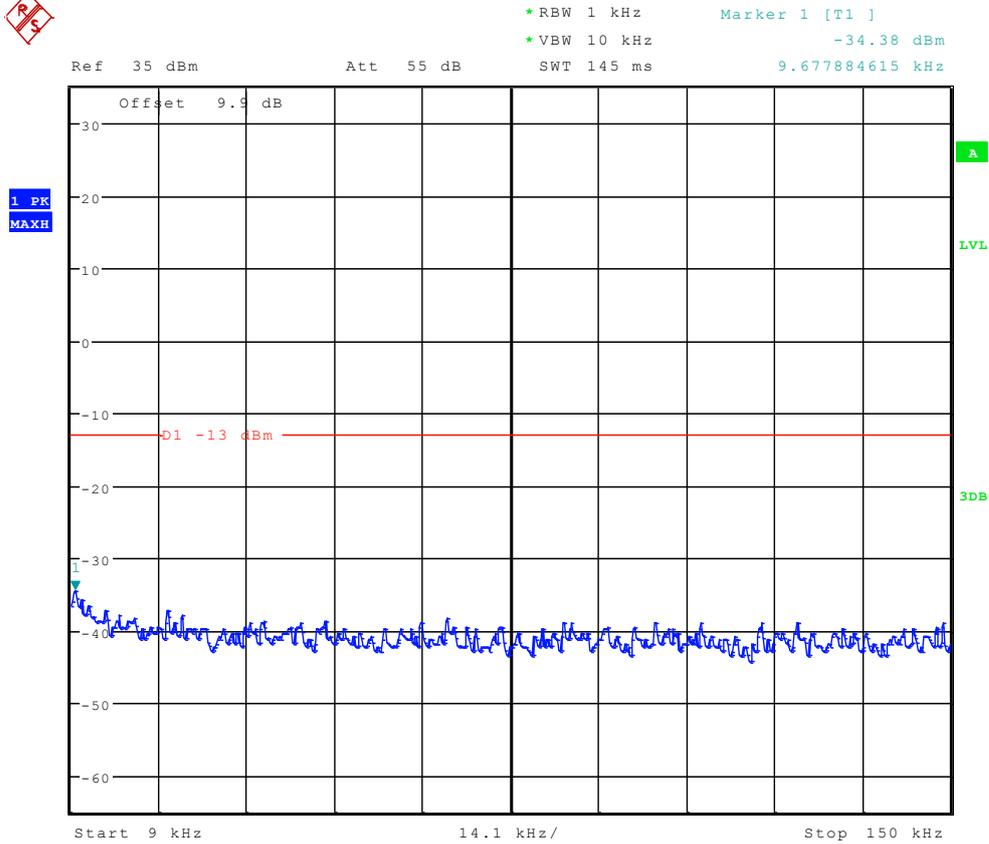
Ref 35 dBm Att 50 dB SWT 115 ms Marker 1 [T1] 29.70 dBm  
\*RBW 1 MHz \*VBW 3 MHz 1.822179487 GHz



Date: 5.MAR.2012 10:24:37



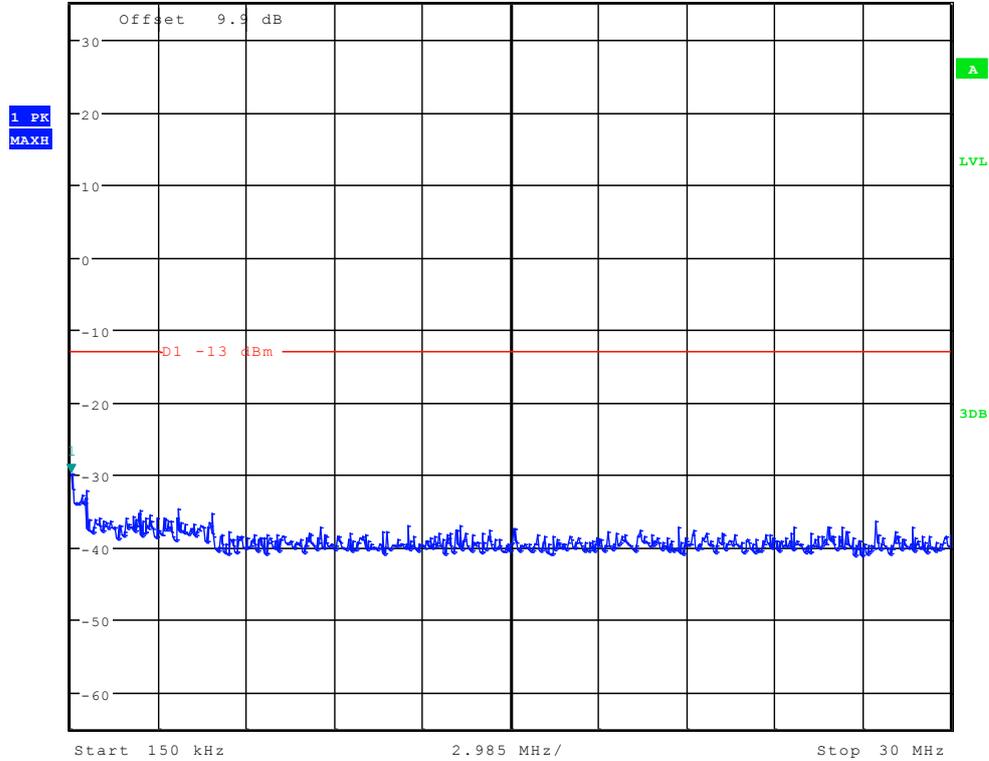
# Channel 661



Date: 5.MAR.2012 10:23:18



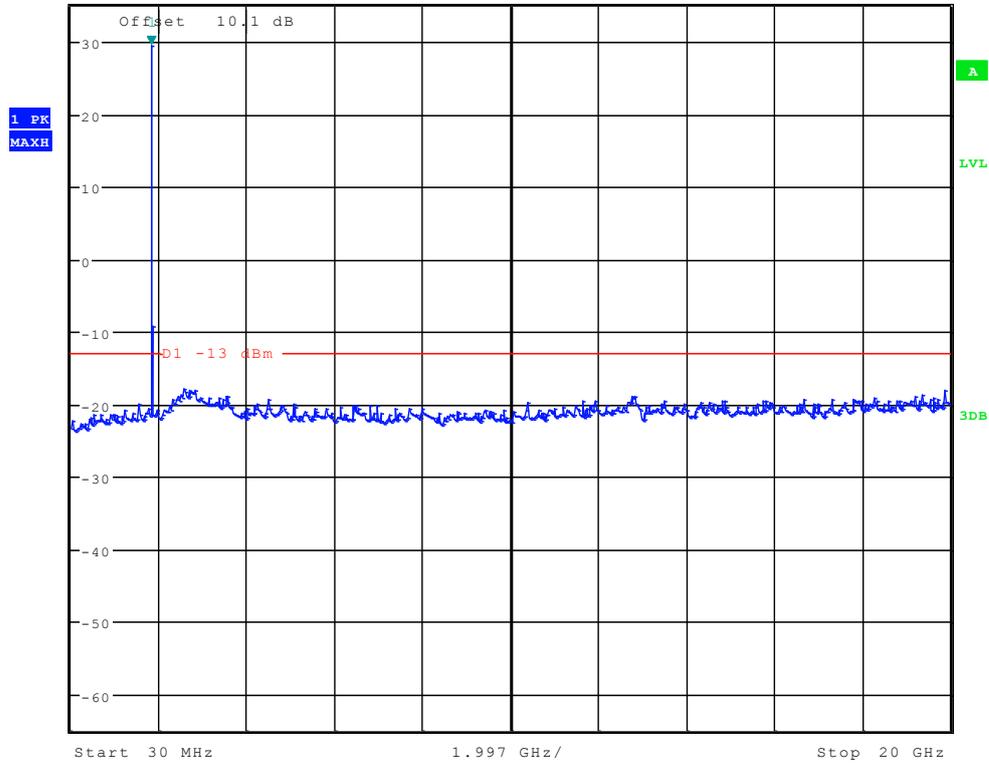
Ref 35 dBm Att 55 dB SWT 300 ms 150.00000000 kHz  
\*RBW 10 kHz Marker 1 [T1 ]  
\*VBW 30 kHz -29.76 dBm



Date: 5.MAR.2012 10:24:07



Ref 35 dBm Att 50 dB SWT 115 ms Marker 1 [T1 ]  
\*RBW 1 MHz 29.48 dBm  
\*VBW 3 MHz 1.854182692 GHz



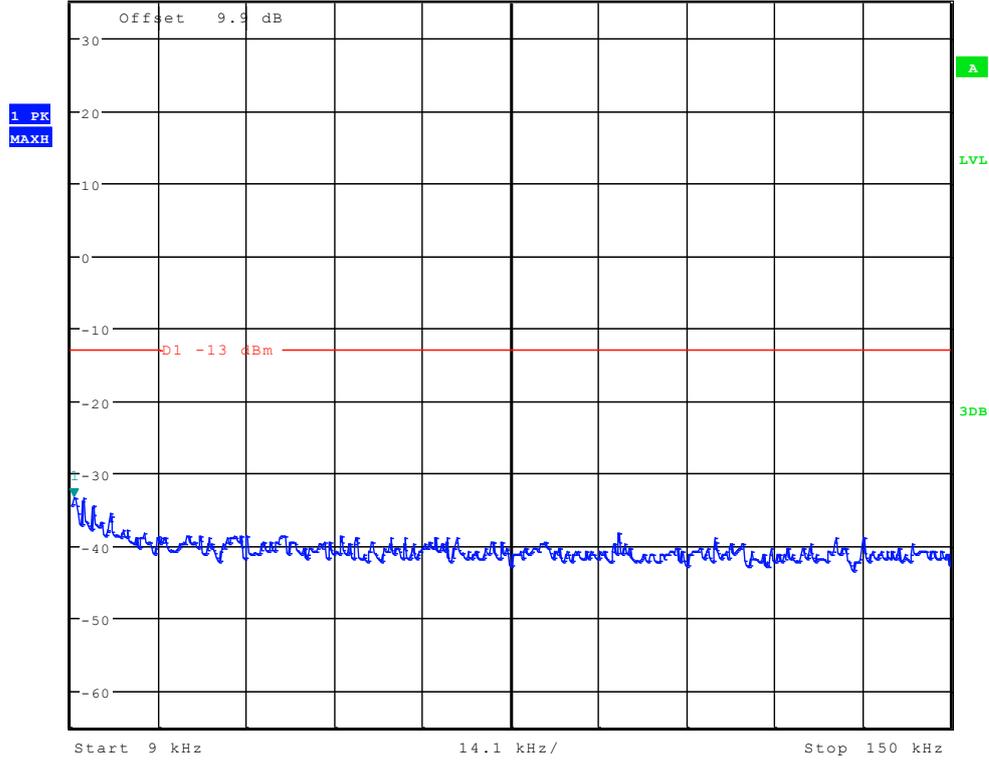
Date: 5.MAR.2012 10:24:51



# Channel 810



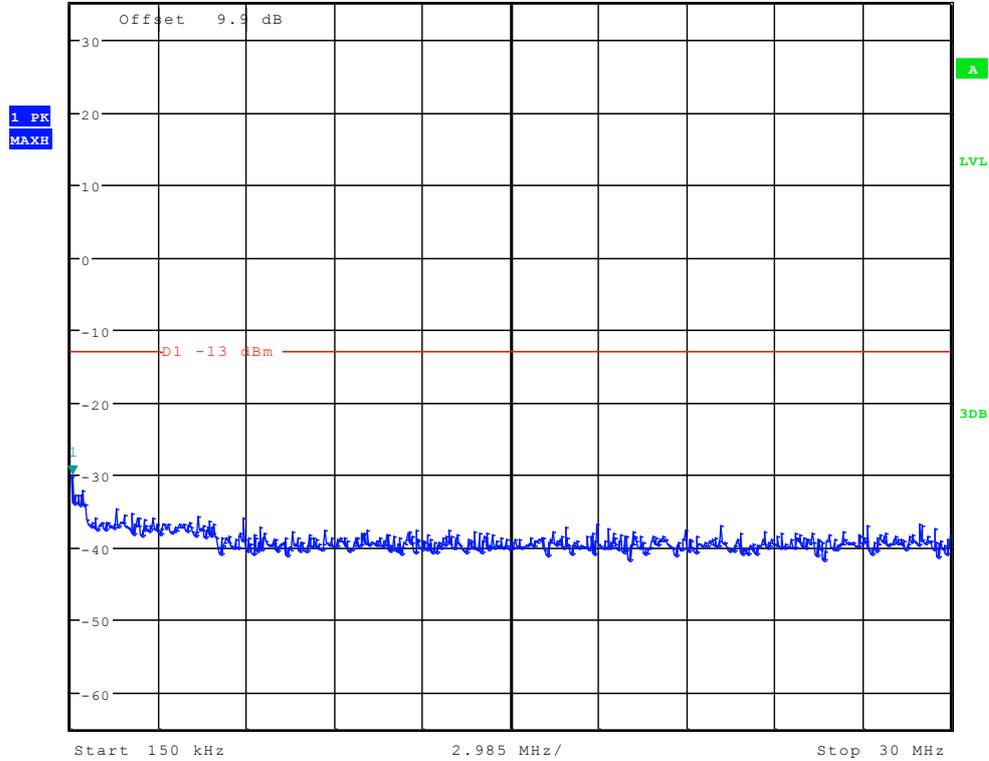
Ref 35 dBm      Att 55 dB      SWT 145 ms      Marker 1 [T1]      -33.31 dBm  
 \*RBW 1 kHz  
 \*VBW 10 kHz      9.451923077 kHz



Date: 5.MAR.2012 10:23:38



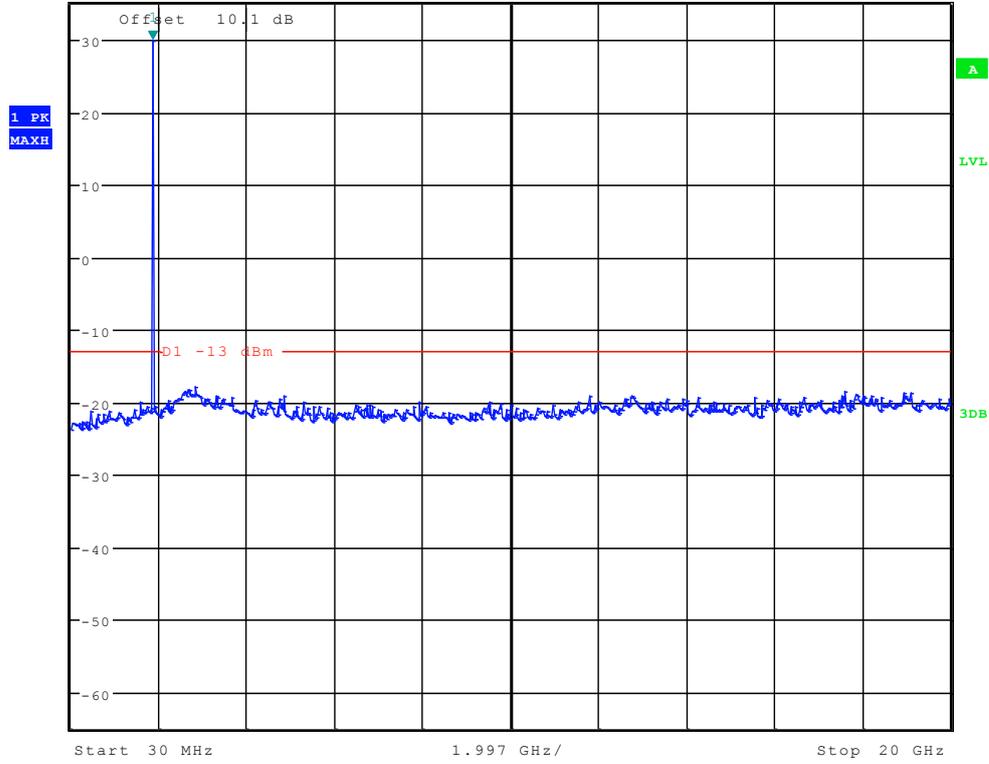
Ref 35 dBm Att 55 dB SWT 300 ms 197.836538462 kHz  
\*RBW 10 kHz Marker 1 [T1 ]  
\*VBW 30 kHz -30.10 dBm



Date: 5.MAR.2012 10:24:22



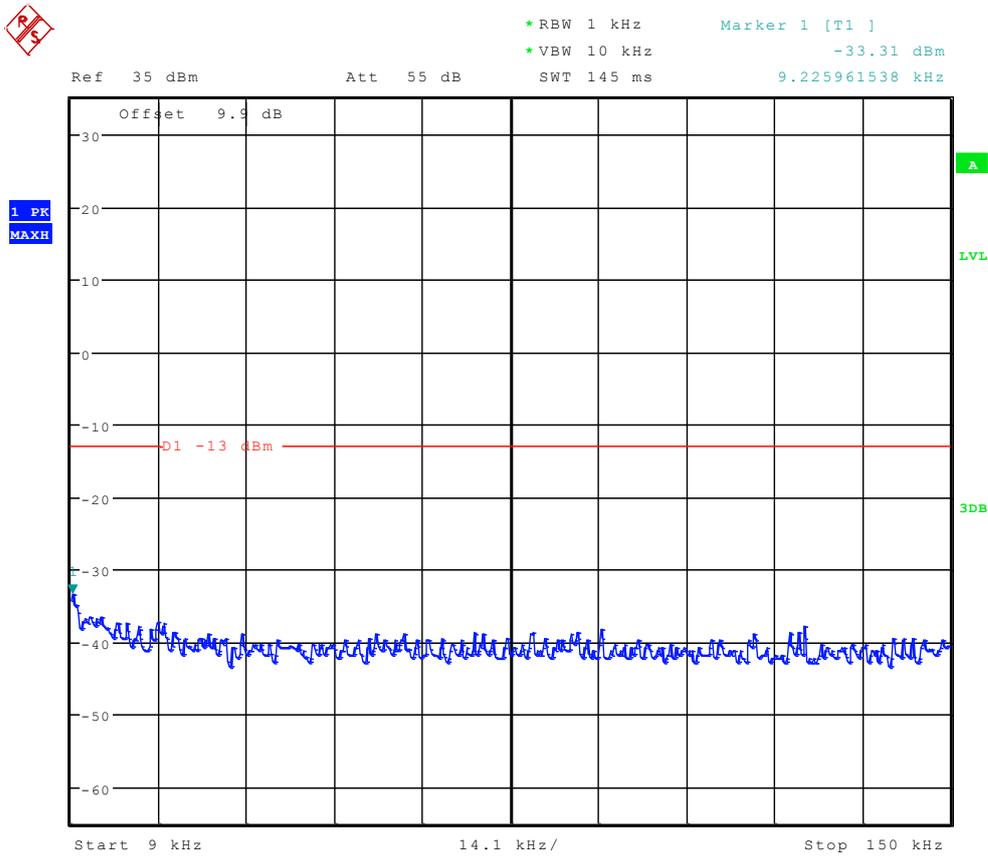
Ref 35 dBm      Att 50 dB      SWT 115 ms      Marker 1 [T1]      29.96 dBm  
\*RBW 1 MHz      \*VBW 3 MHz



Date: 5.MAR.2012 10:25:06



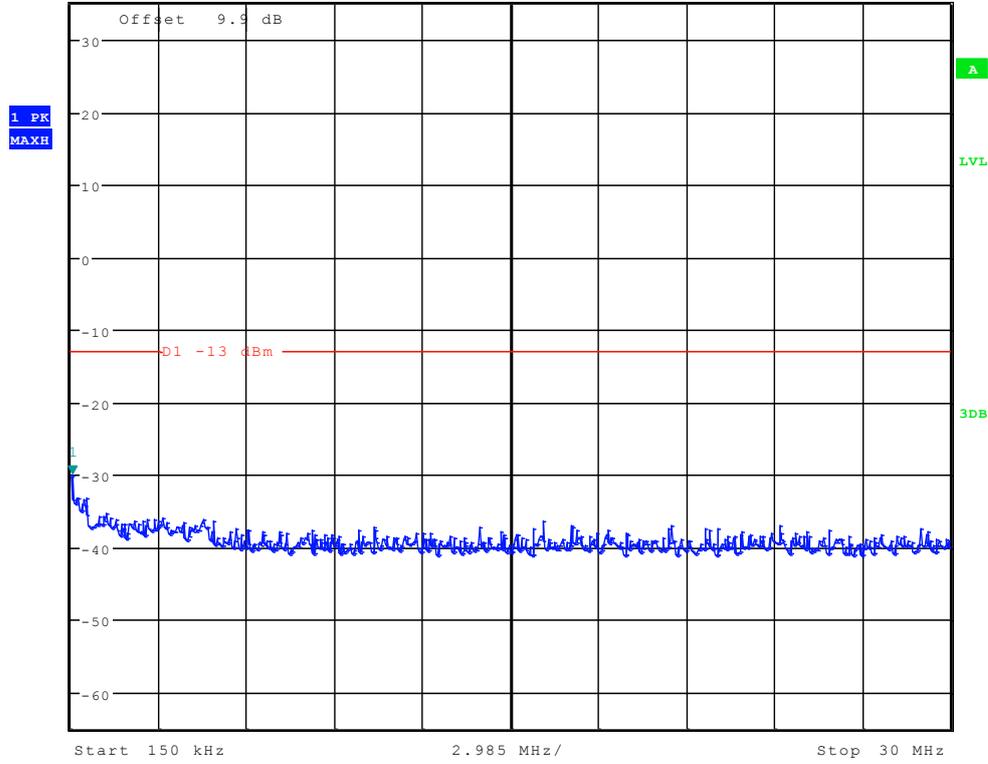
# TM2:EDGE Channel 512



Date: 5.MAR.2012 10:30:43



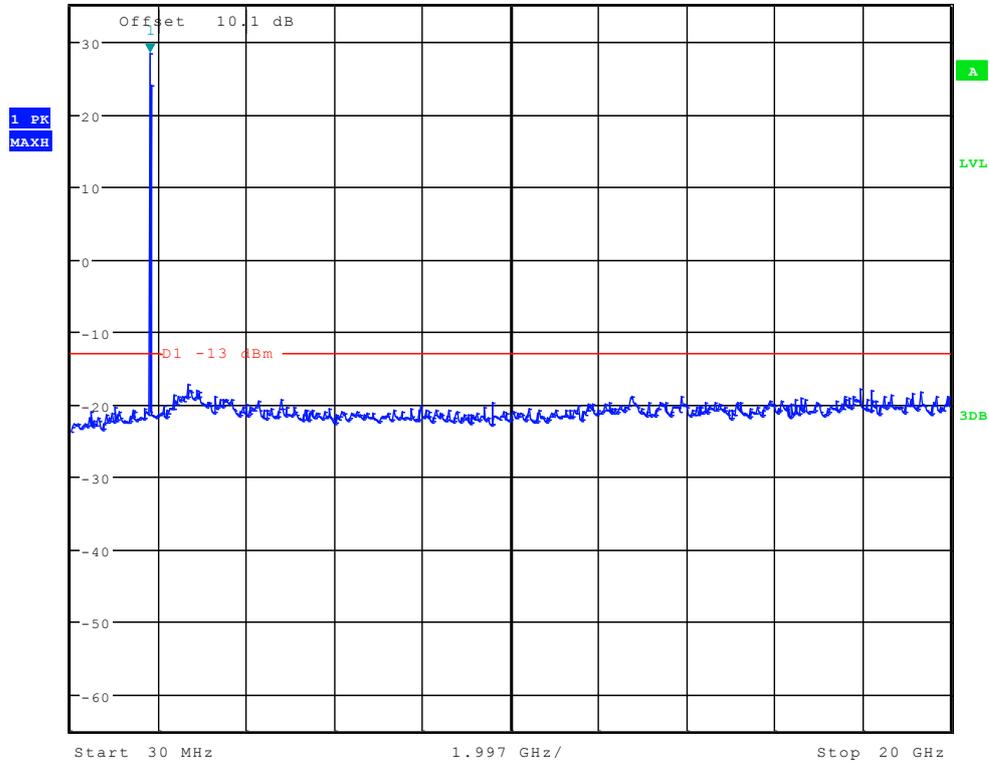
Ref 35 dBm Att 55 dB SWT 300 ms 197.836538462 kHz  
 \*RBW 10 kHz Marker 1 [T1 ]  
 \*VBW 30 kHz -30.04 dBm



Date: 5.MAR.2012 10:31:26



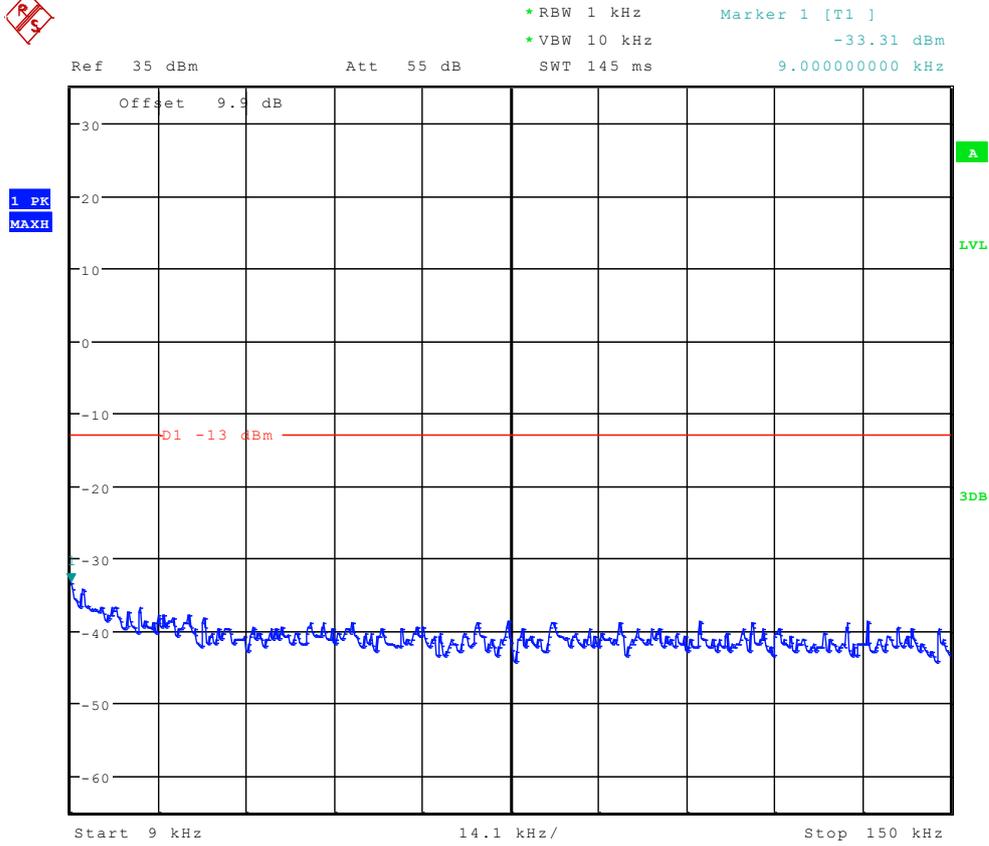
Ref 35 dBm Att 50 dB SWT 115 ms  
\*RBW 1 MHz Marker 1 [T1] 28.41 dBm  
\*VBW 3 MHz 1.822179487 GHz



Date: 5.MAR.2012 10:32:10



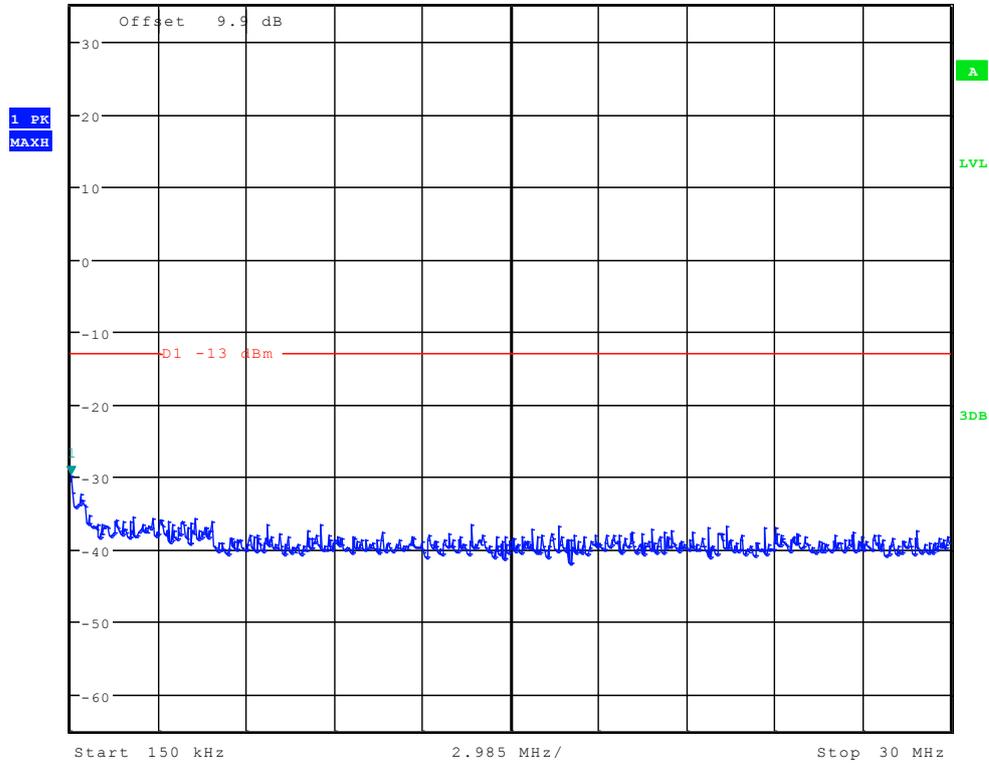
# Channel 661



Date: 5.MAR.2012 10:30:57



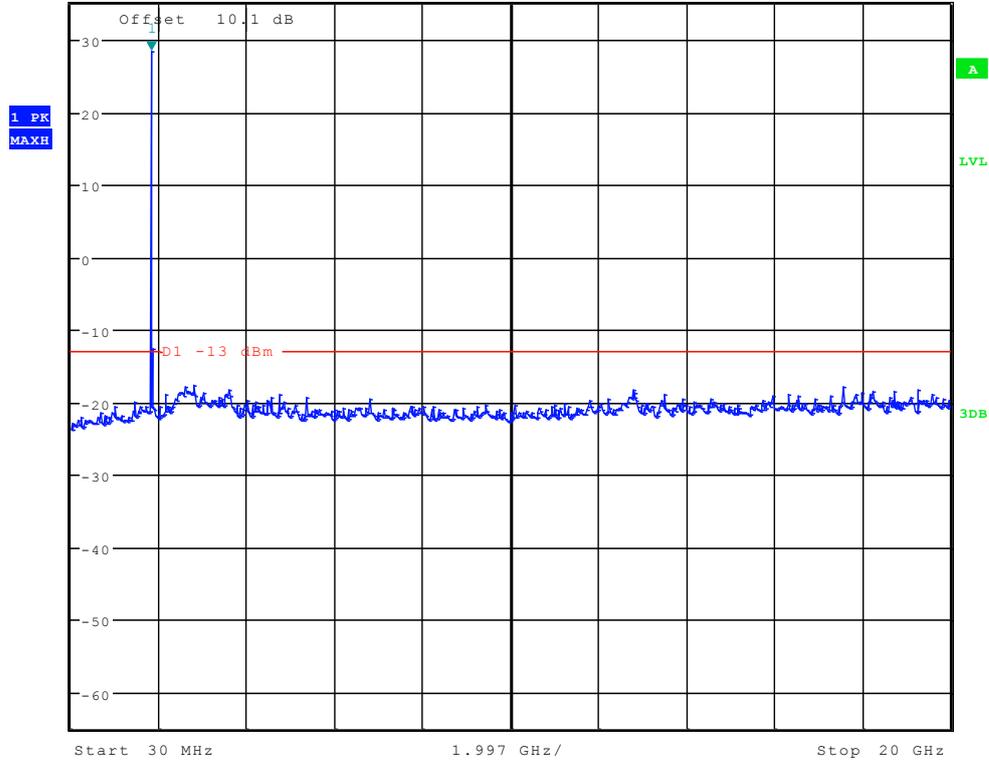
Ref 35 dBm Att 55 dB SWT 300 ms 150.00000000 kHz  
\*RBW 10 kHz Marker 1 [T1 ]  
\*VBW 30 kHz -29.76 dBm



Date: 5.MAR.2012 10:31:41



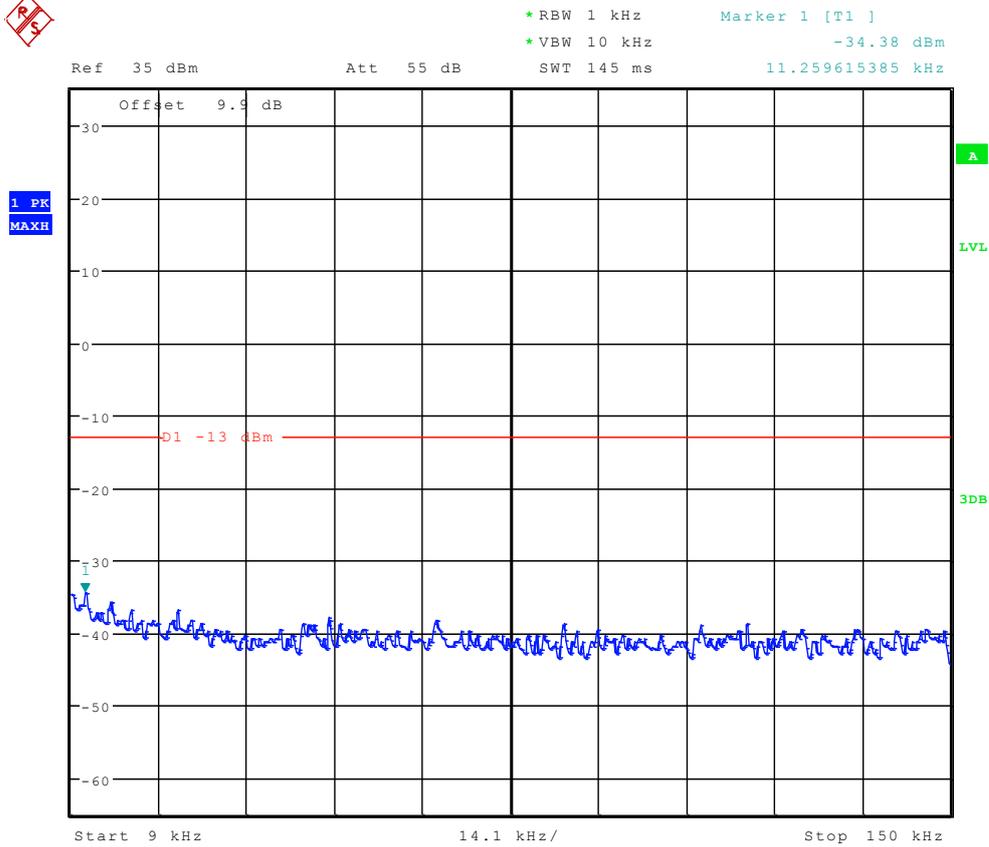
Ref 35 dBm Att 50 dB SWT 115 ms Marker 1 [T1 ]  
\*RBW 1 MHz 28.47 dBm  
\*VBW 3 MHz 1.854182692 GHz



Date: 5.MAR.2012 10:32:25



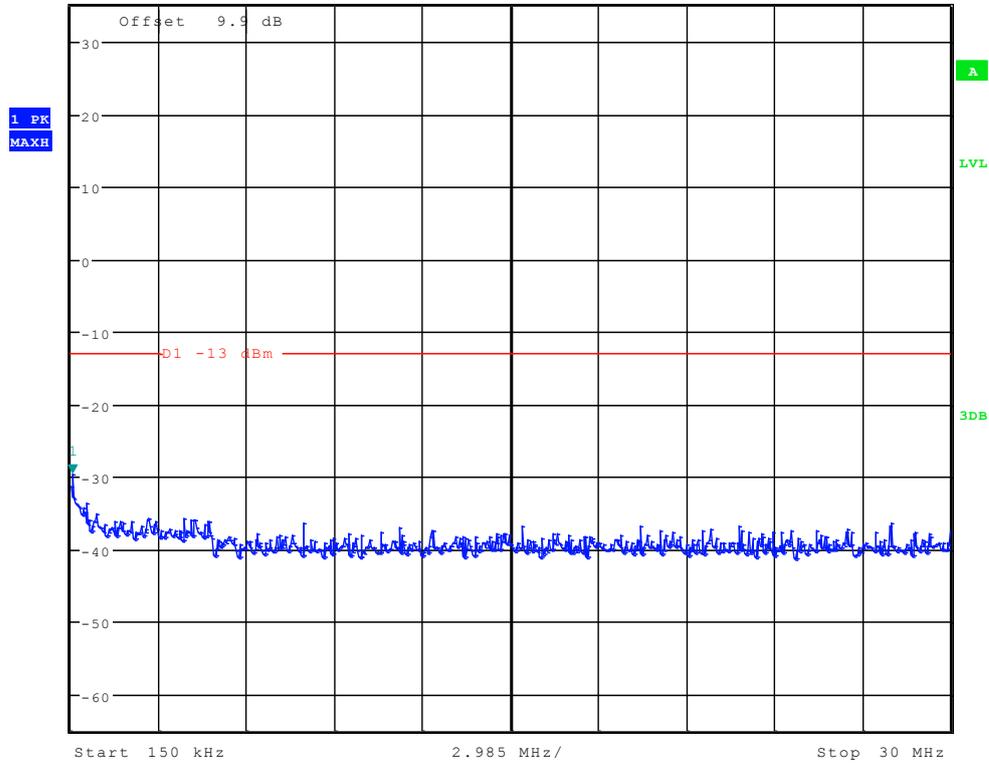
# Channel 810



Date: 5.MAR.2012 10:31:11



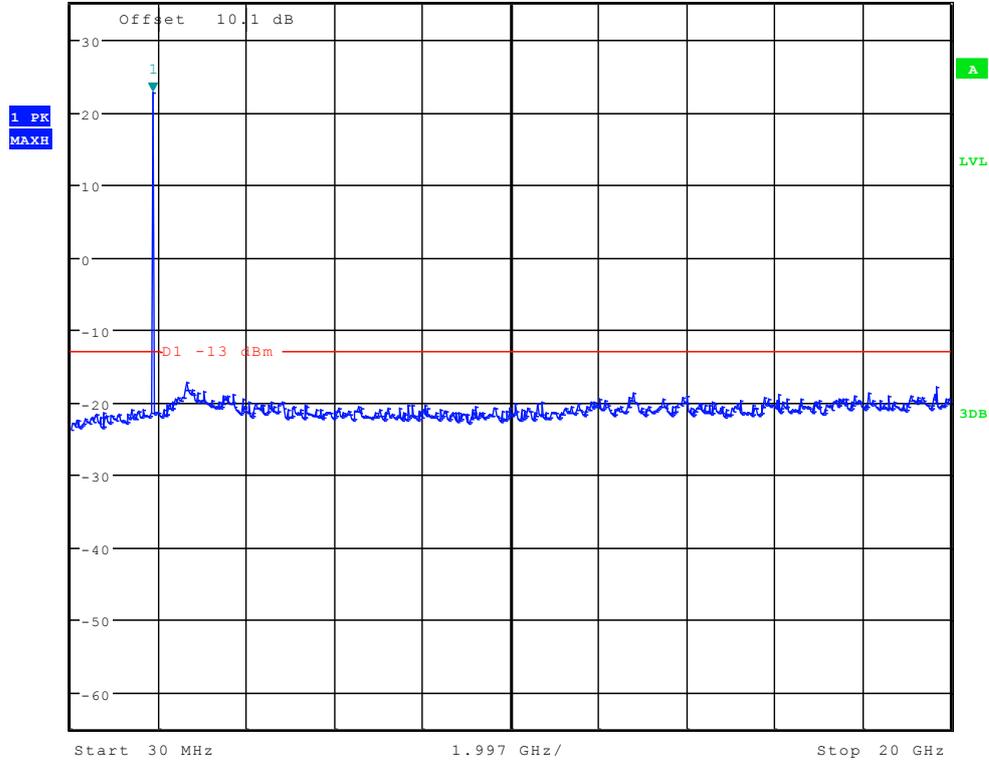
Ref 35 dBm Att 55 dB SWT 300 ms 197.836538462 kHz  
\*RBW 10 kHz Marker 1 [T1 ]  
\*VBW 30 kHz -29.53 dBm



Date: 5.MAR.2012 10:31:55



Ref 35 dBm Att 50 dB SWT 115 ms  
\*RBW 1 MHz Marker 1 [T1] 22.67 dBm  
\*VBW 3 MHz 1.886185897 GHz

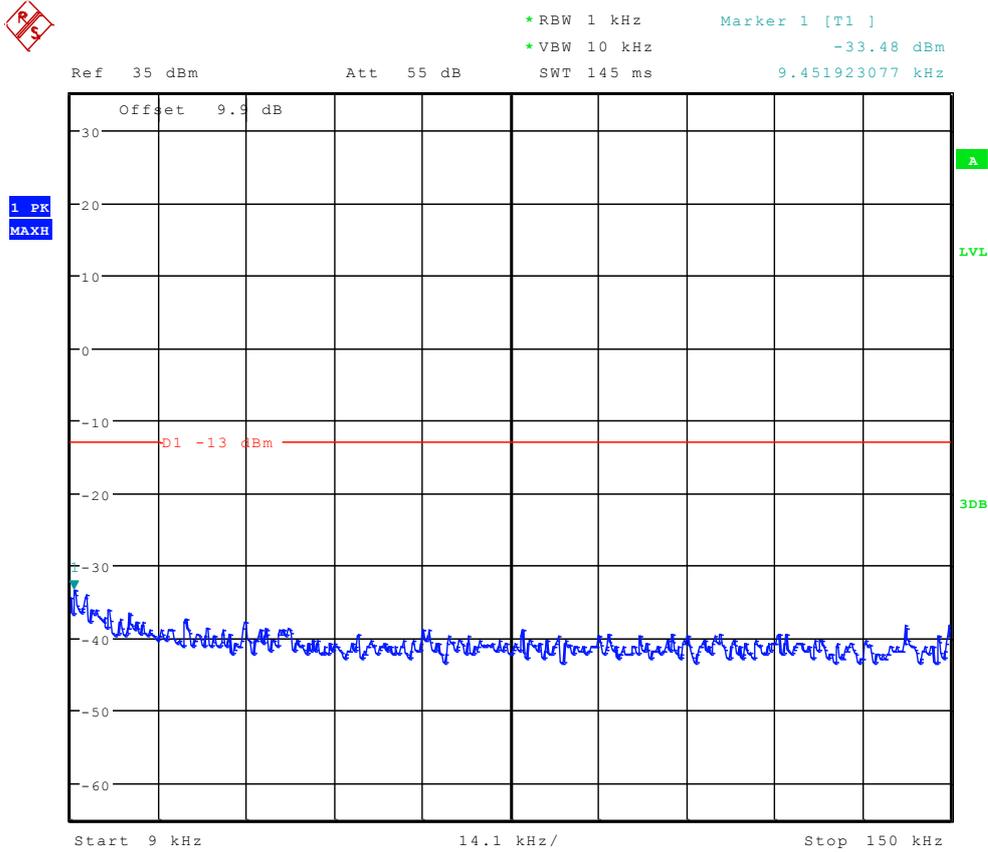


Date: 5.MAR.2012 10:32:39



# TM3: WCDMA

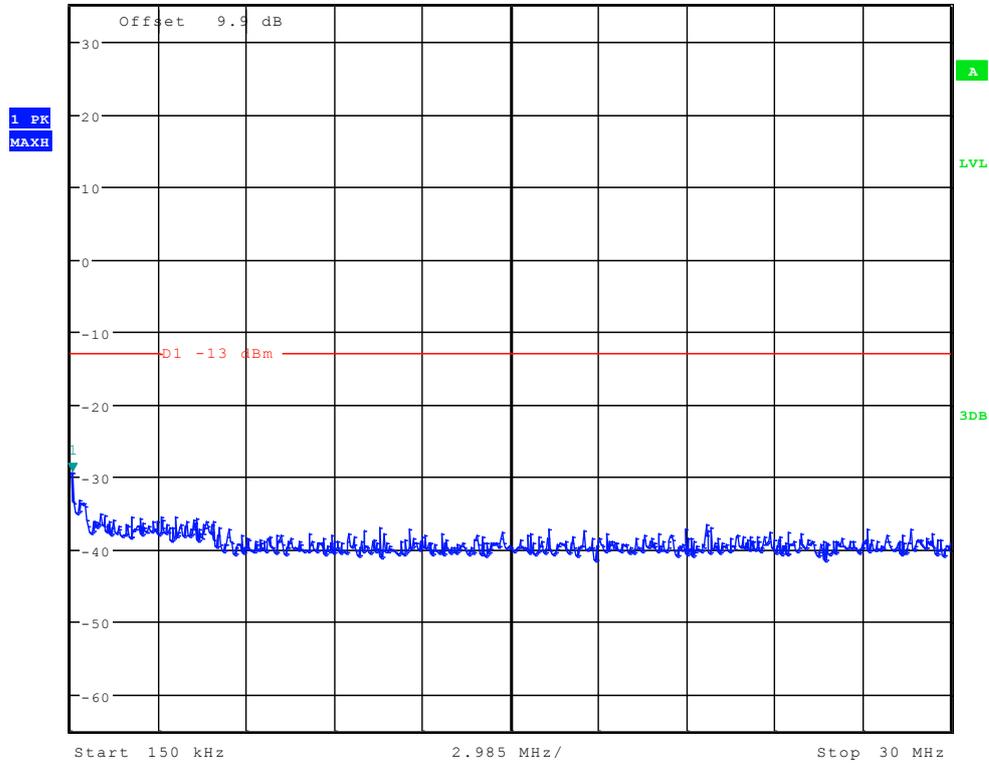
## Channel 9262



Date: 5.MAR.2012 10:36:42



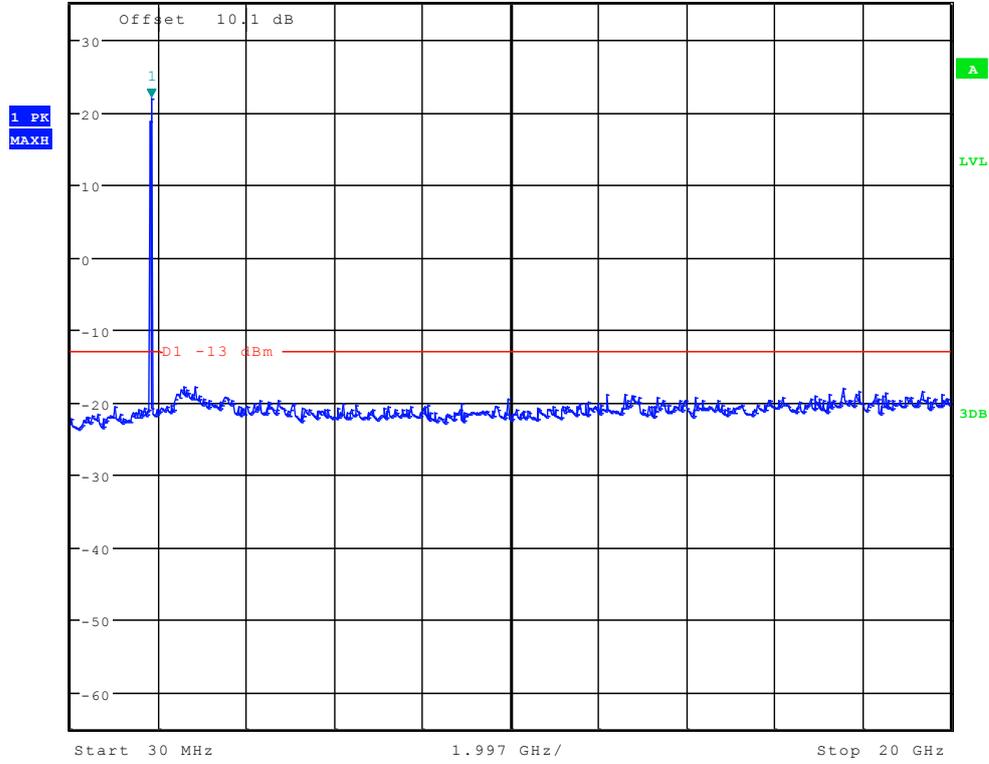
Ref 35 dBm Att 55 dB SWT 300 ms 197.836538462 kHz  
\*RBW 10 kHz Marker 1 [T1 ]  
\*VBW 30 kHz -29.32 dBm



Date: 5.MAR.2012 10:37:26



Ref 35 dBm Att 50 dB SWT 115 ms  
\*RBW 1 MHz Marker 1 [T1] 21.92 dBm  
\*VBW 3 MHz 1.854182692 GHz



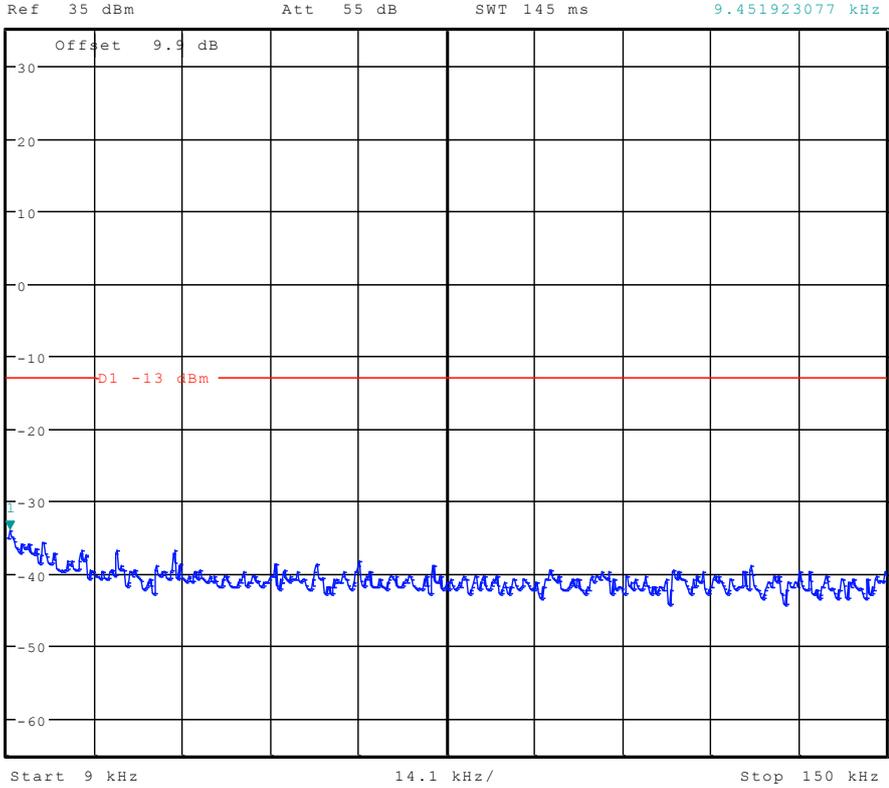
Date: 5.MAR.2012 10:38:10



# Channel 9400



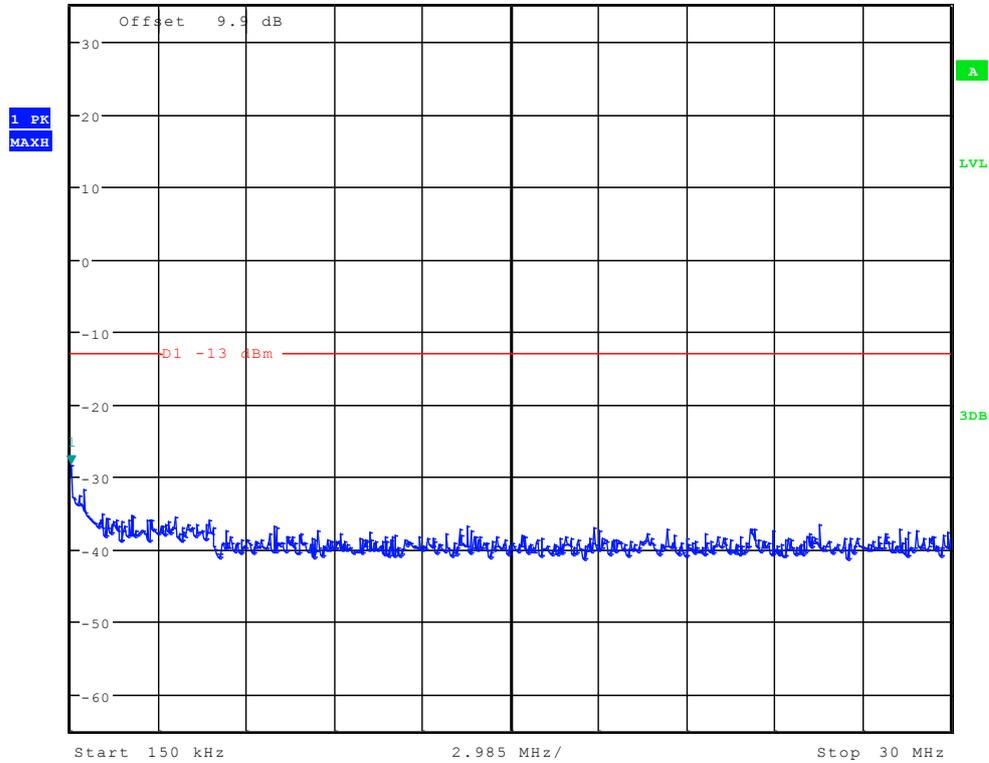
\*RBW 1 kHz      Marker 1 [T1 ]  
\*VBW 10 kHz      -33.92 dBm  
SWT 145 ms      9.451923077 kHz



Date: 5.MAR.2012 10:36:57



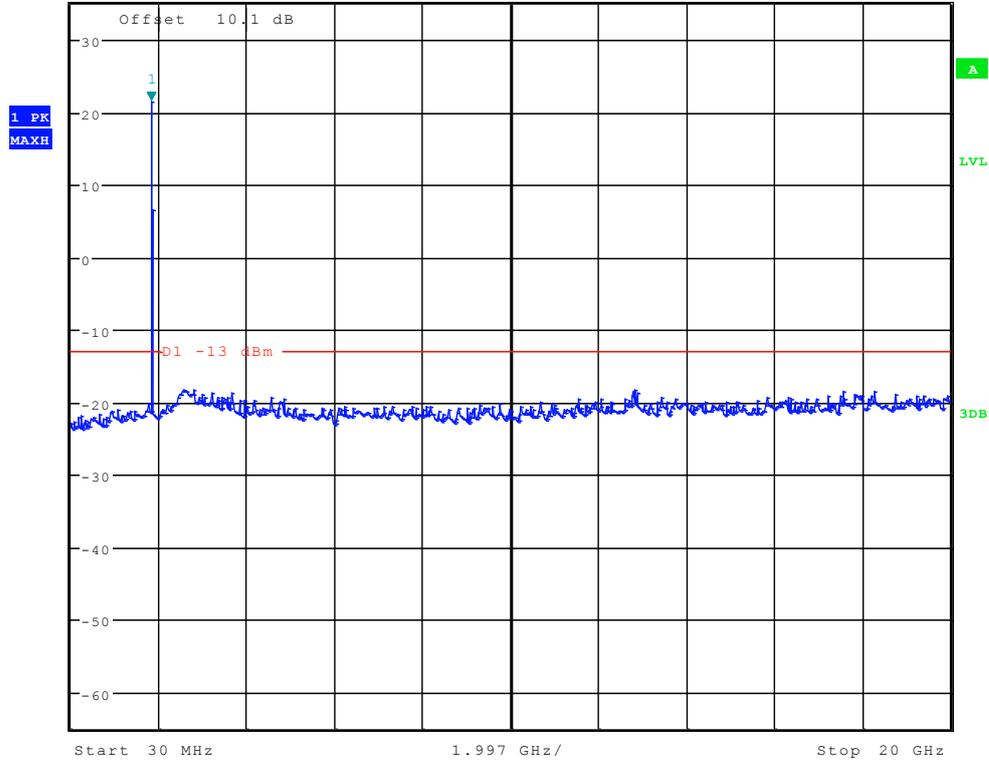
Ref 35 dBm Att 55 dB SWT 300 ms 150.00000000 kHz  
\*RBW 10 kHz Marker 1 [T1 ]  
\*VBW 30 kHz -28.36 dBm



Date: 5.MAR.2012 10:37:40



Ref 35 dBm Att 50 dB SWT 115 ms  
\*RBW 1 MHz Marker 1 [T1] 21.44 dBm  
\*VBW 3 MHz 1.854182692 GHz



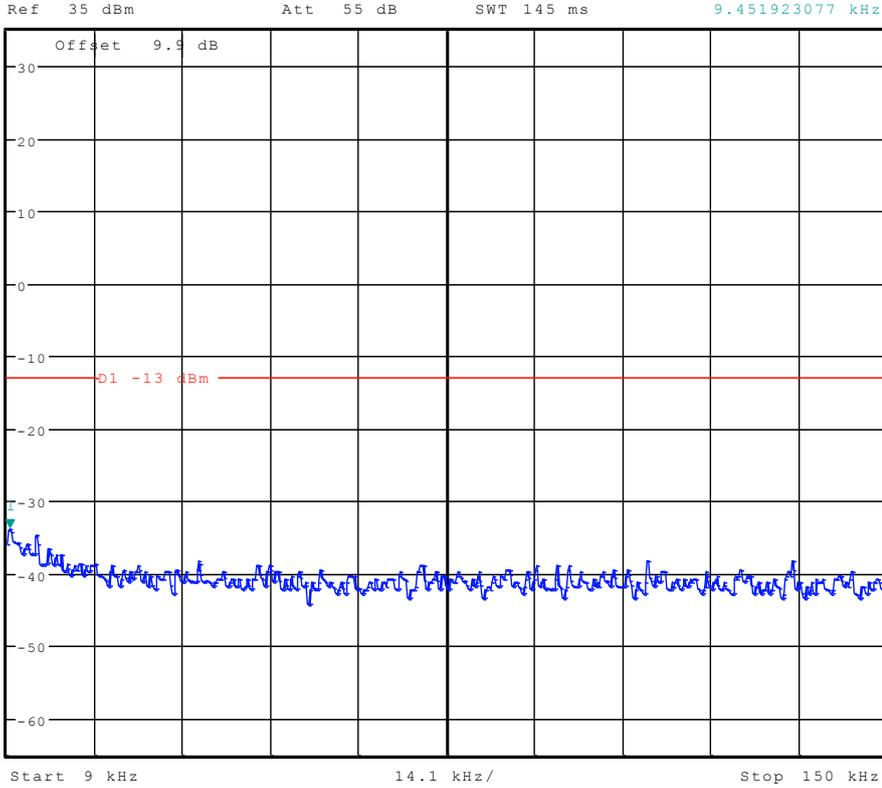
Date: 5.MAR.2012 10:38:25



# Channel 9538



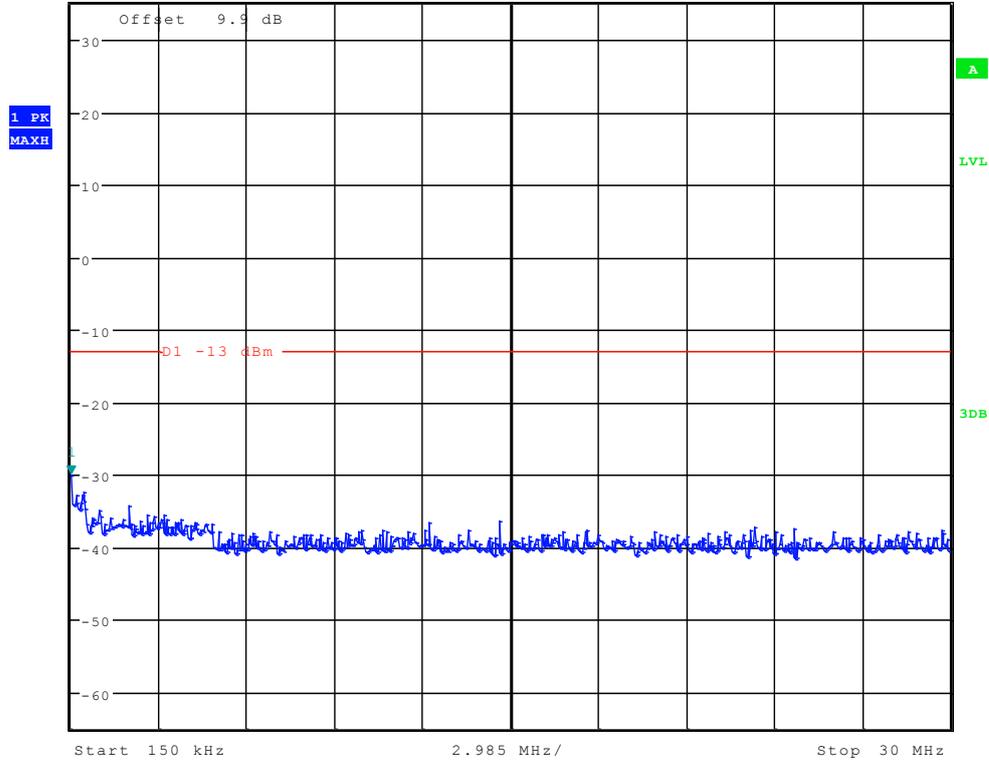
\*RBW 1 kHz      Marker 1 [T1 ]  
\*VBW 10 kHz      -33.74 dBm  
SWT 145 ms      9.451923077 kHz



Date: 5.MAR.2012 10:37:11



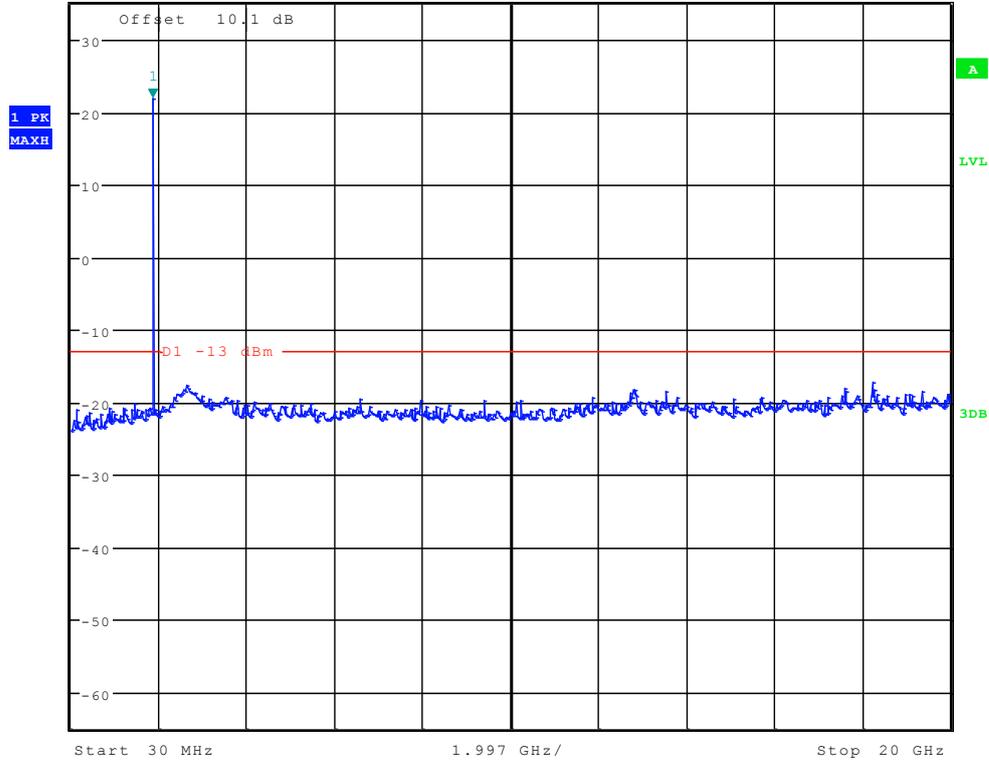
Ref 35 dBm Att 55 dB SWT 300 ms 150.00000000 kHz  
\*RBW 10 kHz Marker 1 [T1 ]  
\*VBW 30 kHz -30.10 dBm



Date: 5.MAR.2012 10:37:55



Ref 35 dBm Att 50 dB SWT 115 ms  
\*RBW 1 MHz Marker 1 [T1] 21.89 dBm  
\*VBW 3 MHz  
1.886185897 GHz



Date: 5.MAR.2012 10:38:39

The END



## **Appendix F**

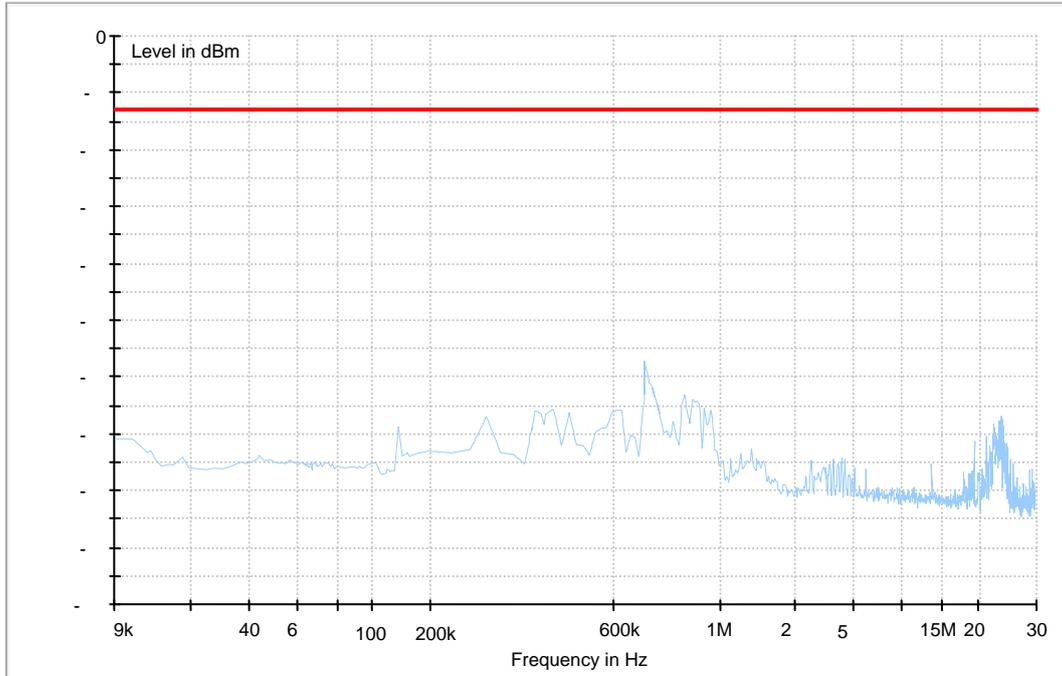
# **Field Strength of Spurious Emissions**

According to FCC Part 2.1053 & Part24.238



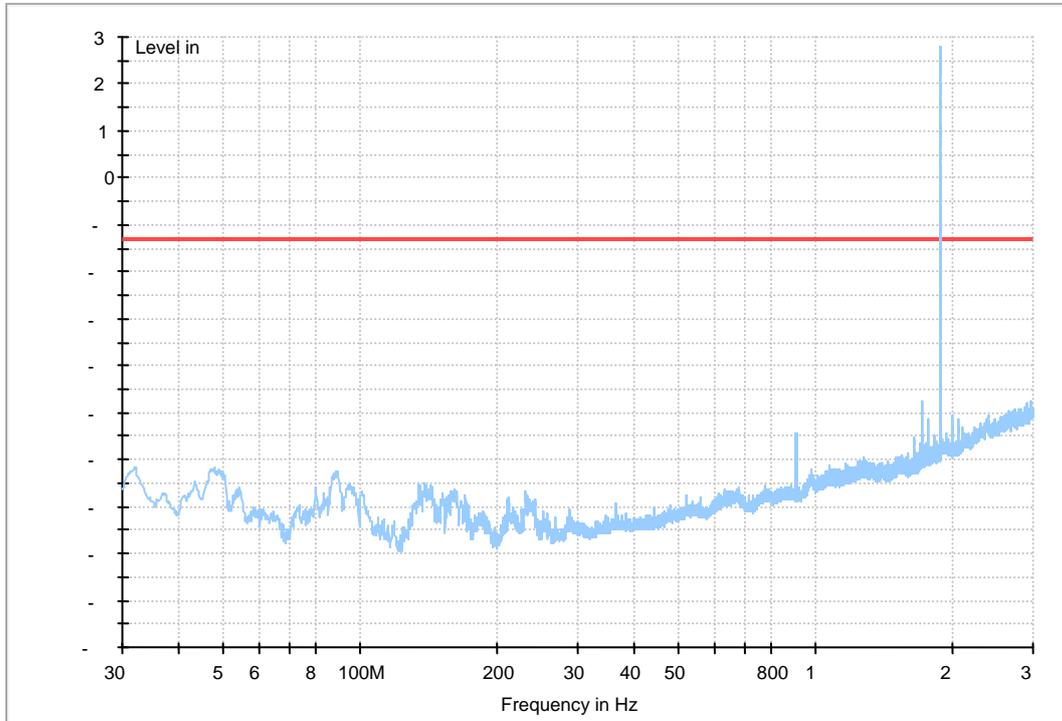
## GSM 1900

Traffic Mode (9kHz-30MHz)



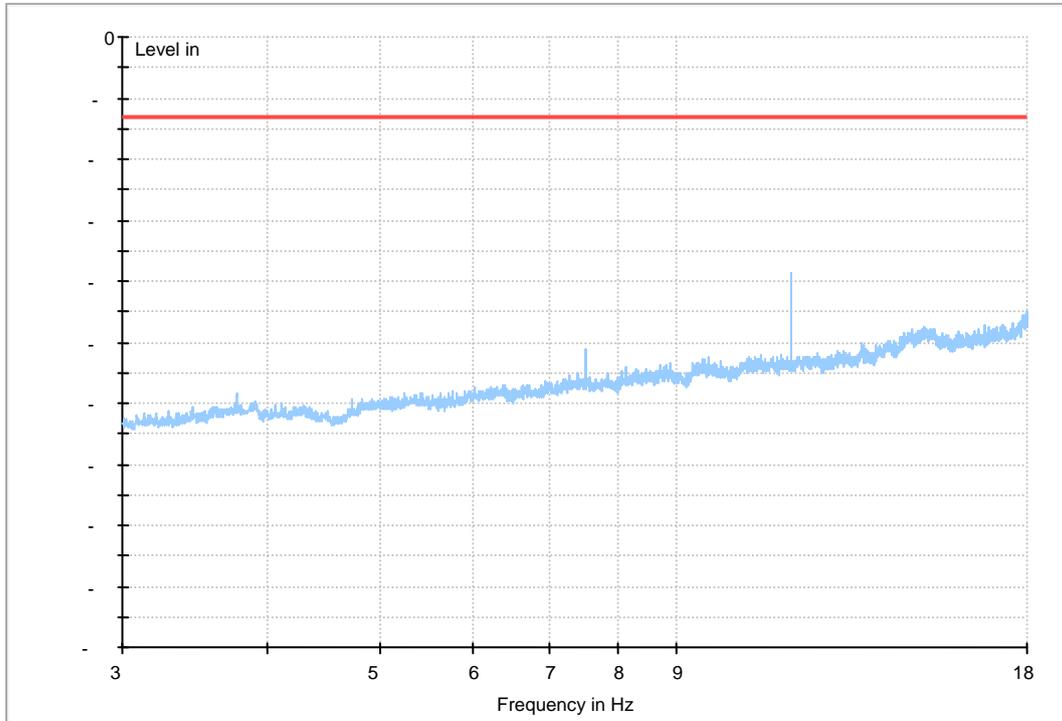


Traffic Mode (30MHz-3GHz)



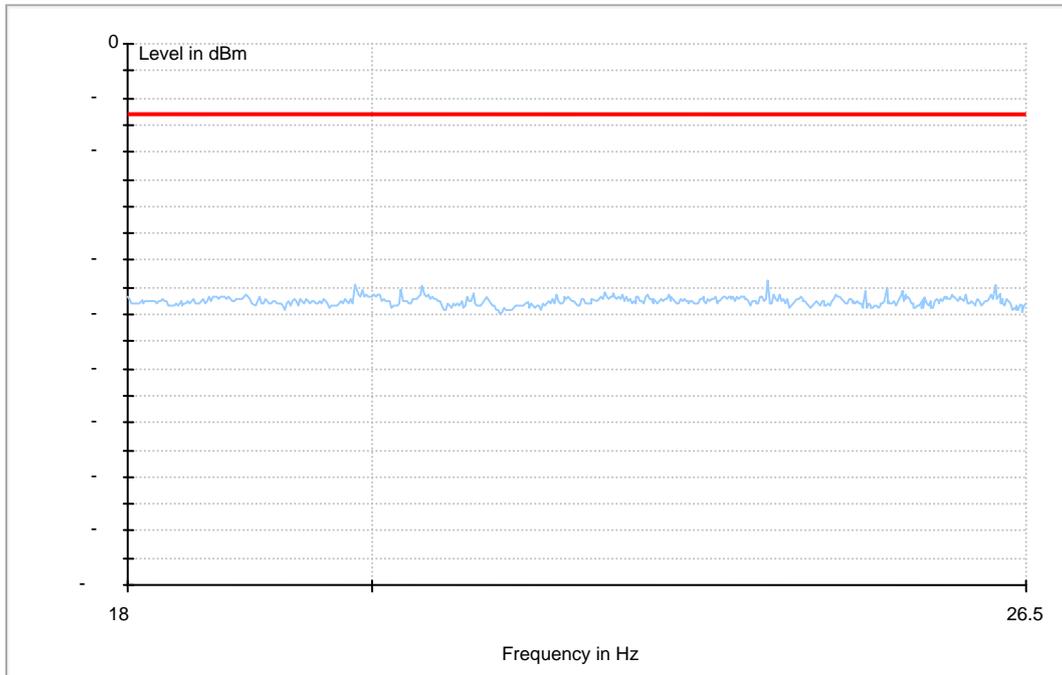


Traffic Mode (3GHz-18GHz)





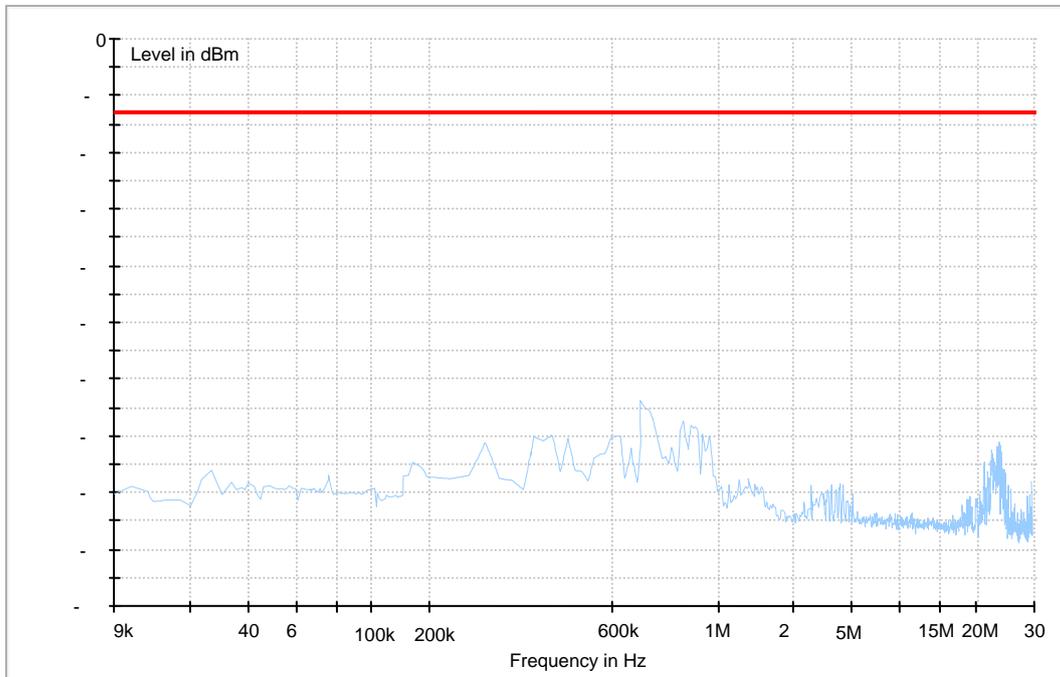
Traffic Mode (18GHz-26.5GHz)





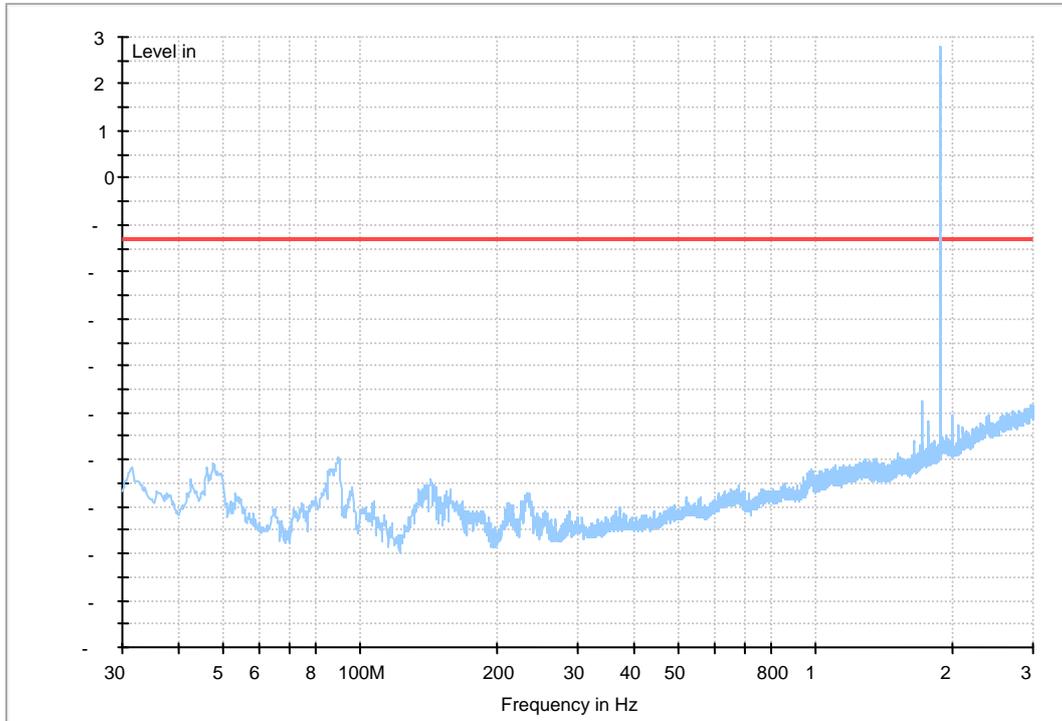
## GPRS1900

Traffic Mode (9kHz-30MHz)



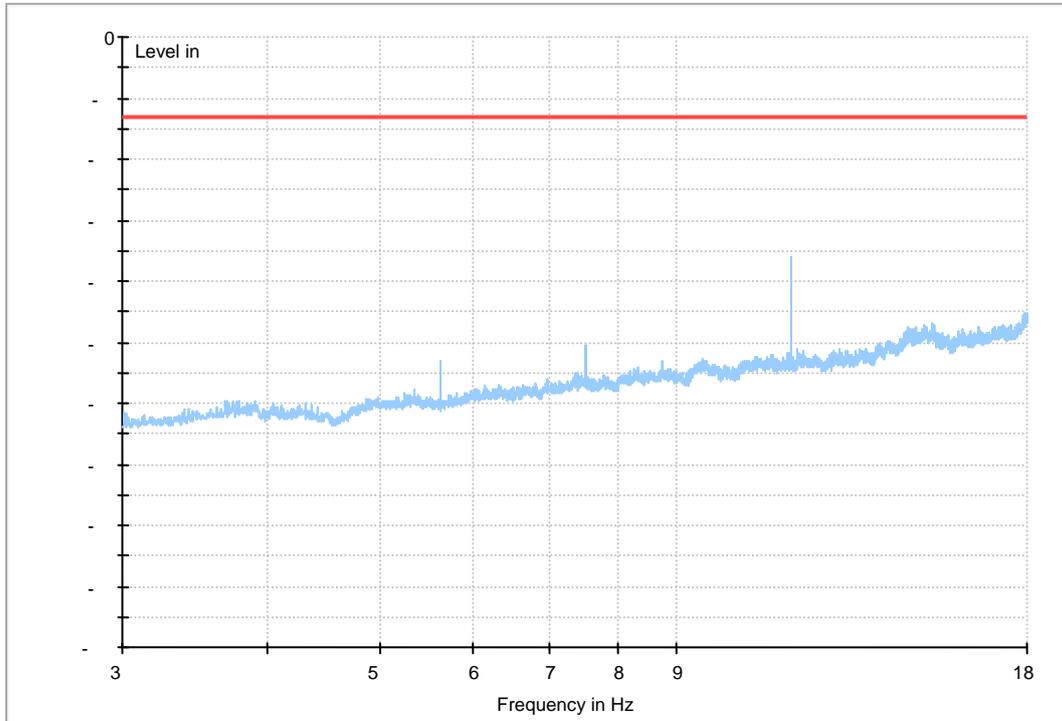


Traffic Mode (30MHz-3GHz)



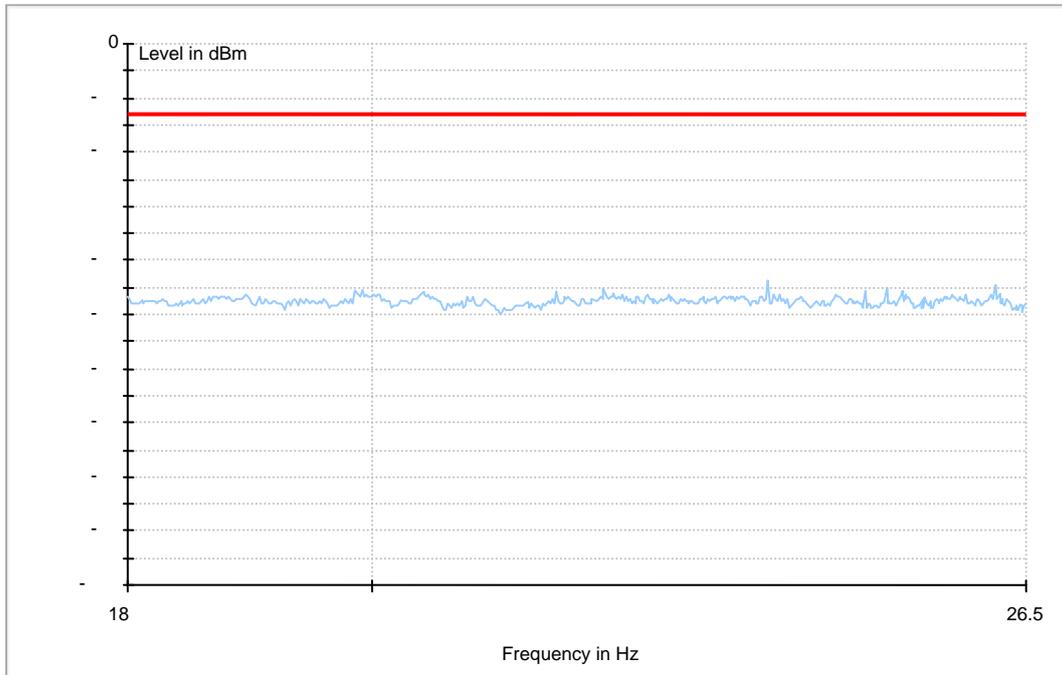


Traffic Mode (3GHz-18GHz)





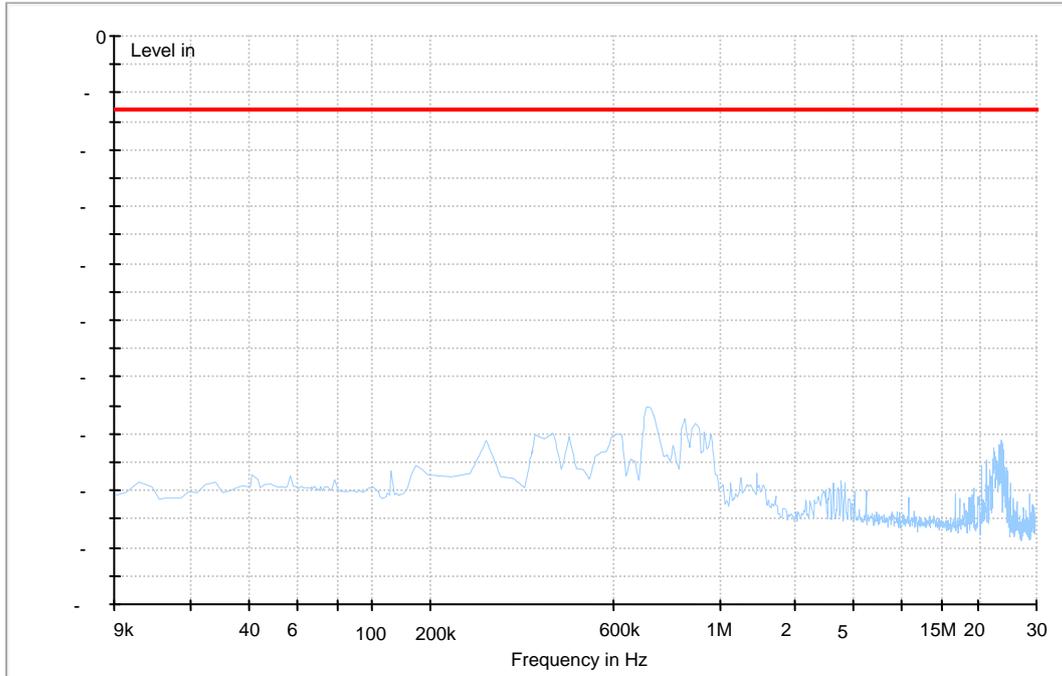
### Traffic Mode (18GHz-26.5GHz)





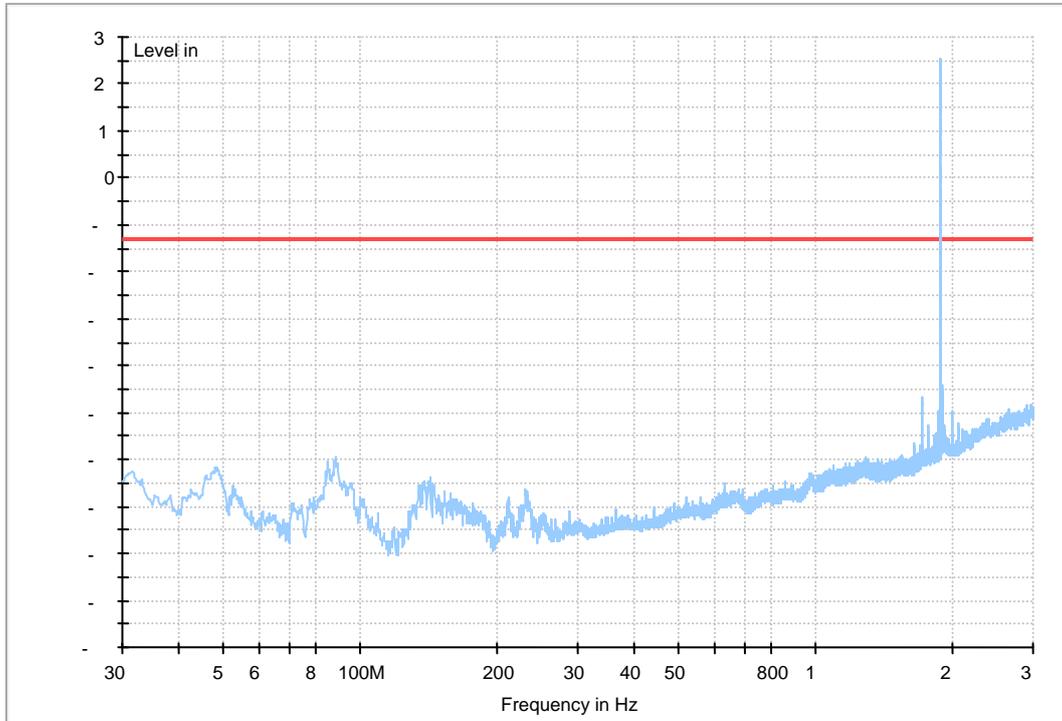
## EDGE 1900

Traffic Mode (9kHz-30MHz)



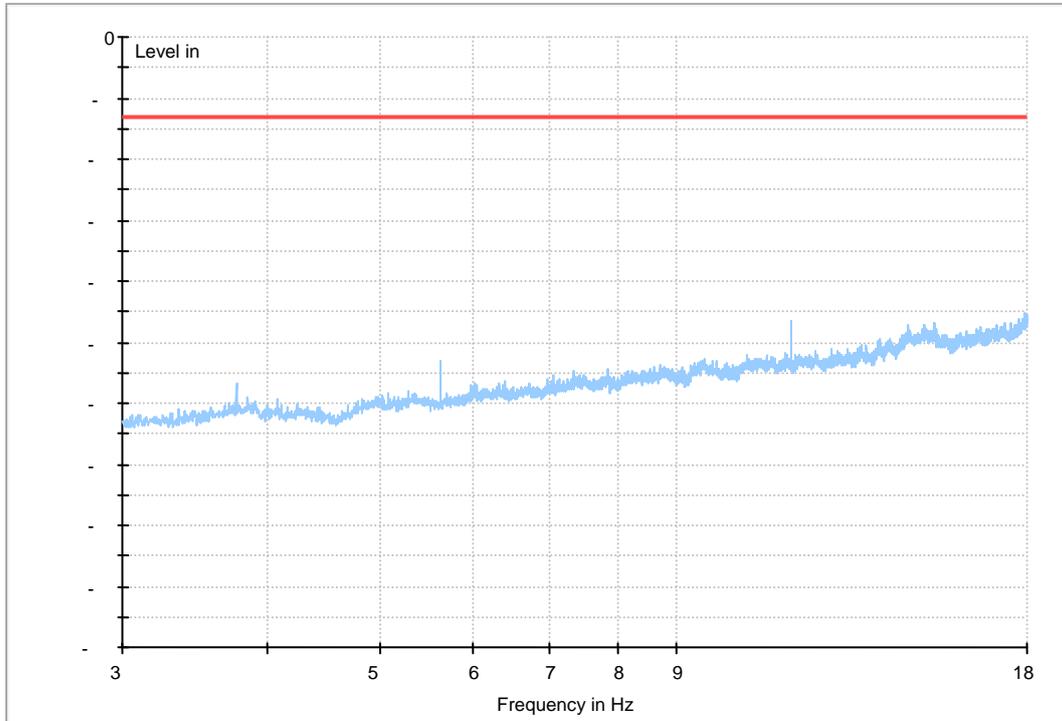


### Traffic Mode (30MHz-3GHz)



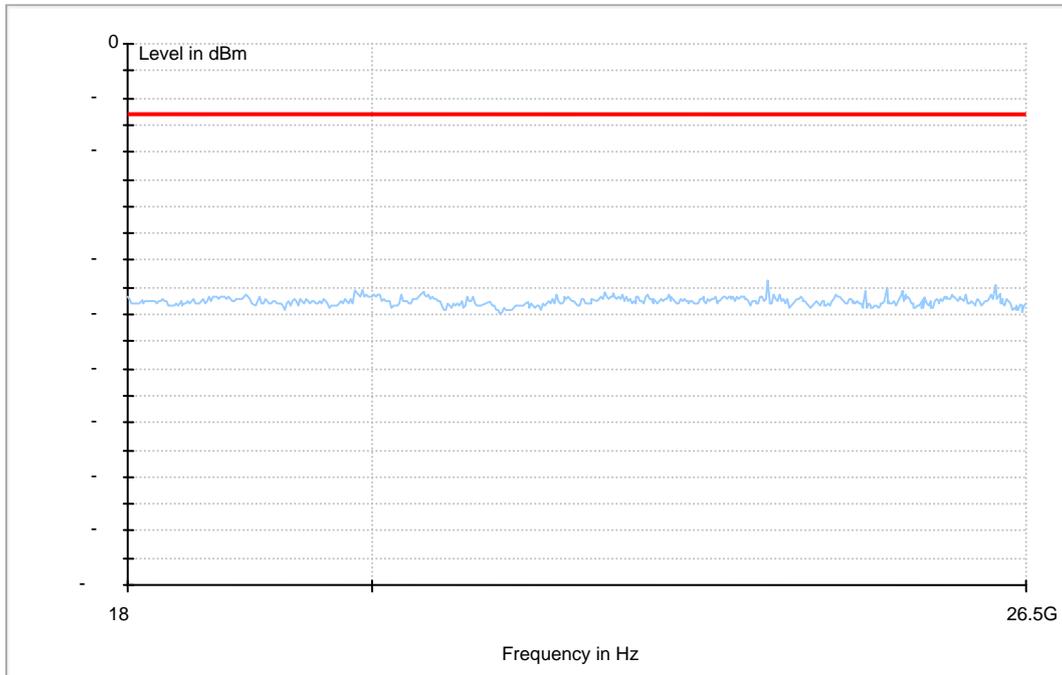


Traffic Mode (3GHz-18GHz)





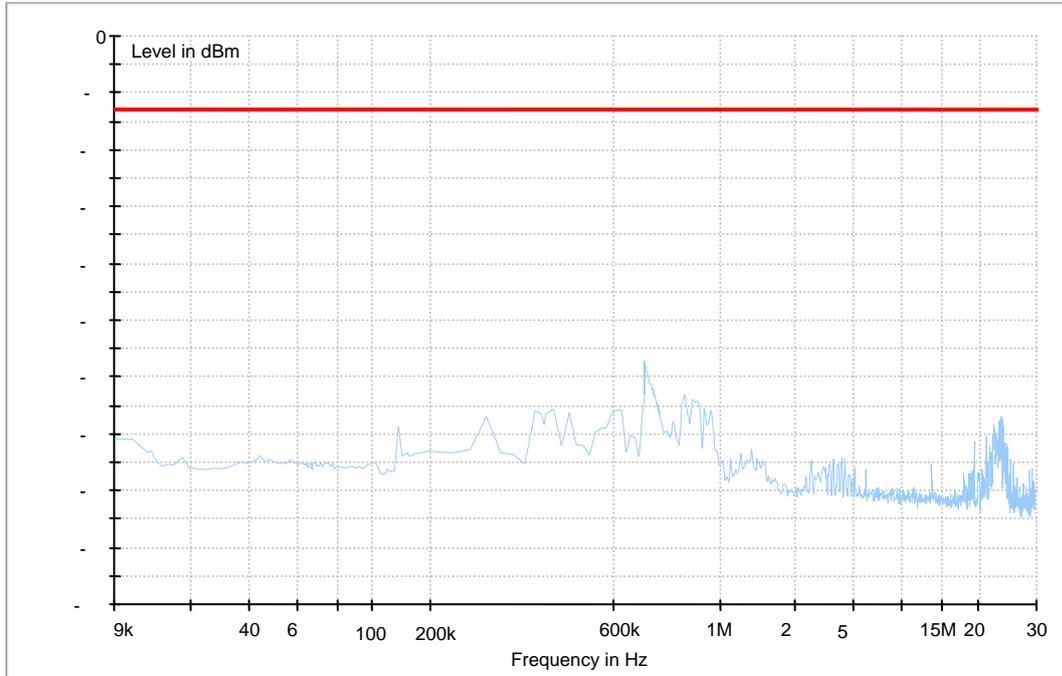
### Traffic Mode (18GHz-26.5GHz)





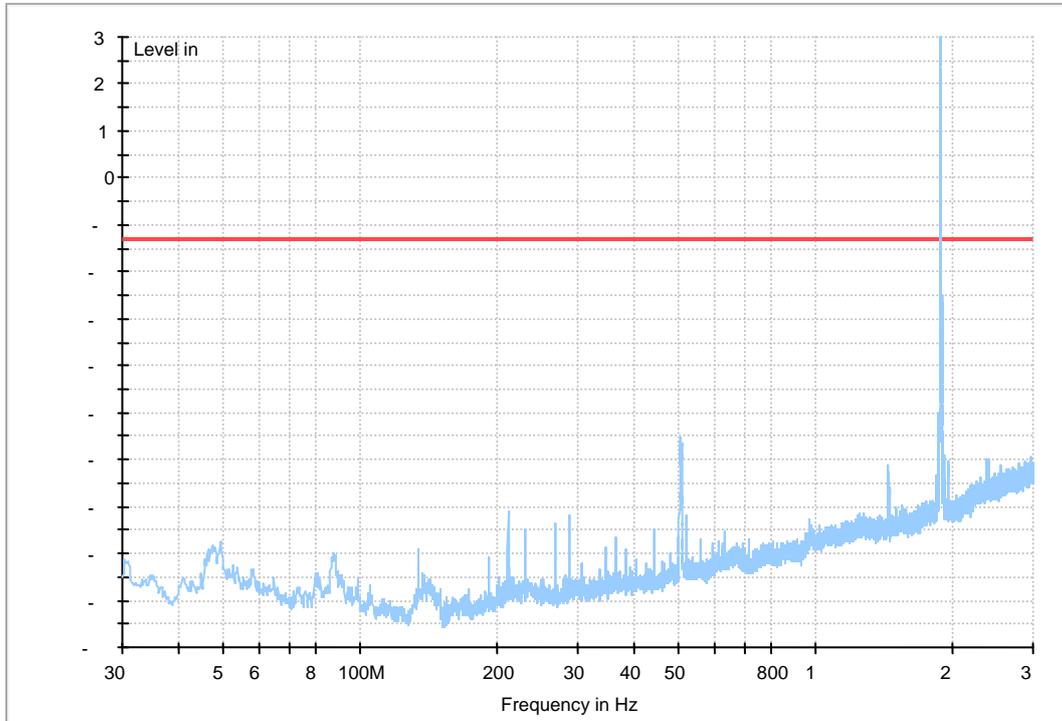
## WCDMA 1900

Traffic Mode (9kHz-30MHz)



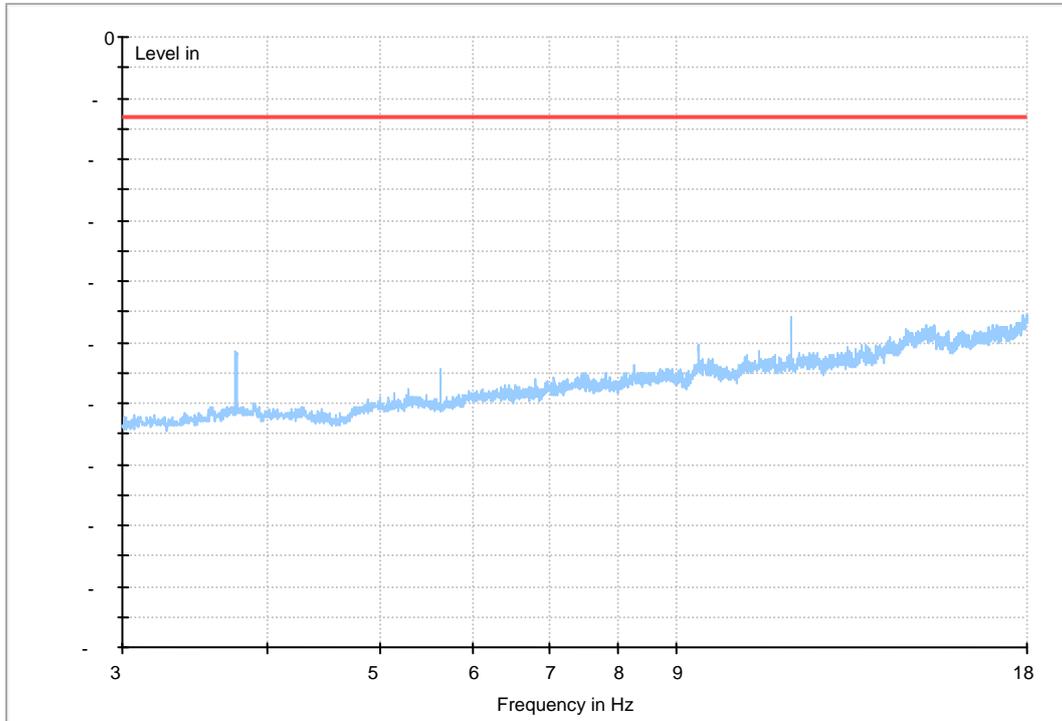


Traffic Mode (30MHz-3GHz)



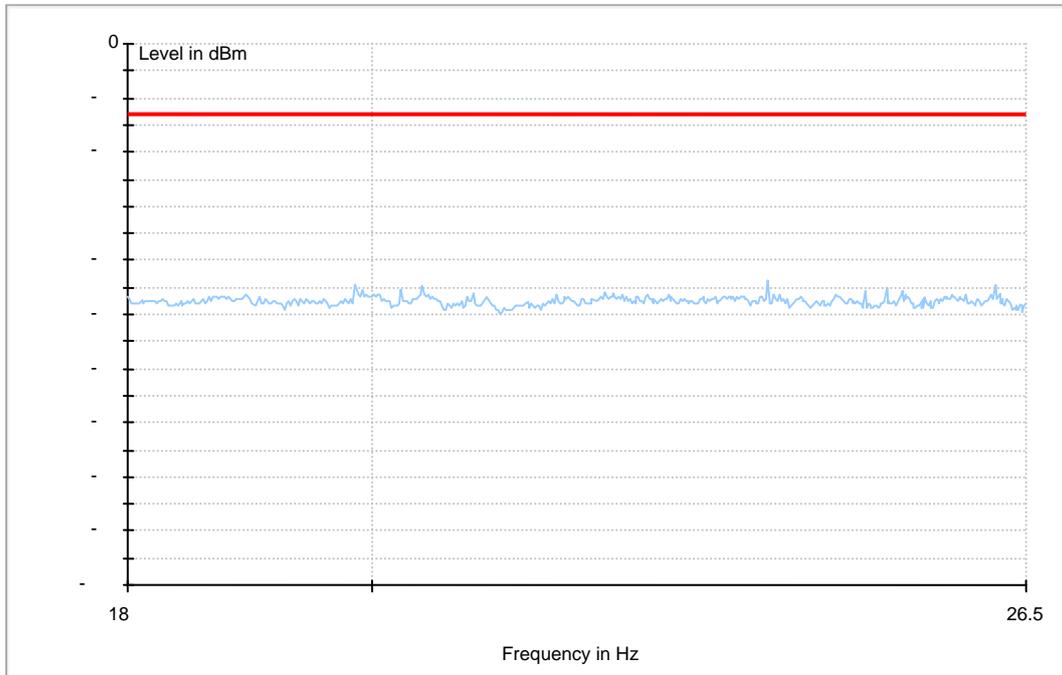


Traffic Mode (3GHz-18GHz)





Traffic Mode (18GHz-26.5GHz)



The END



FCC Test Report of U2801-53  
FCC ID: QISU2801-53



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# Appendix G

## Frequency Stability

According to FCC Part 2.1055& Part 24.235



## Frequency Error vs. Temperature:

Test Mode	RF Ch.	Volt.	Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Freq. vs. 20 °C [ppm]	Limit [ppm]	Verdict
TM 1	M	100%	-30 °C	13	0.006915	---	±2.5	Pass
			-20 °C	18	0.009574	---	±2.5	Pass
			-10 °C	-13	-0.00691	---	±2.5	Pass
			0 °C	11	0.005851	---	±2.5	Pass
			10 °C	17	0.009043	---	±2.5	Pass
			20 °C	-12	-0.00638	---	±2.5	Pass
			30 °C	-14	-0.00745	---	±2.5	Pass
			40 °C	14	0.007447	---	±2.5	Pass
			50 °C	-16	-0.00851	---	±2.5	Pass
TM 2	M	100%	-30 °C	12	0.006383	---	±2.5	Pass
			-20 °C	-15	-0.00798	---	±2.5	Pass
			-10 °C	12	0.006383	---	±2.5	Pass
			0 °C	-16	-0.00851	---	±2.5	Pass
			10 °C	12	0.006383	---	±2.5	Pass
			20 °C	13	0.006915	---	±2.5	Pass
			30 °C	-10	-0.00532	---	±2.5	Pass
			40 °C	13	0.006915	---	±2.5	Pass
			50 °C	13	0.006915	---	±2.5	Pass
TM 3	M	100%	-30 °C	9	0.004787	---	±2.5	Pass
			-20 °C	13	0.006915	---	±2.5	Pass
			-10 °C	-11	-0.00585	---	±2.5	Pass
			0 °C	10	0.005319	---	±2.5	Pass
			10 °C	-20	-0.01064	---	±2.5	Pass
			20 °C	-19	-0.01011	---	±2.5	Pass
			30 °C	-12	-0.00638	---	±2.5	Pass
			40 °C	11	0.005851	---	±2.5	Pass
			50 °C	-16	-0.00851	---	±2.5	Pass



## Frequency Error vs. Voltage:

Test Mode	RF Ch.	Temp.	Volt.[V]	Freq. Error [Hz]	Freq. vs. rated [ppm]	Freq. vs. 20 °C [ppm]	Limit [ppm]	Verdict
TM 1	M	20 °C	3.6	15	0.007979	---	±2.5	Pass
			3.7	14	0.007447	---	±2.5	Pass
			4.2	9	0.004787	---	±2.5	Pass
TM 2	M	20 °C	3.6	-13	-0.00691	---	±2.5	Pass
			3.7	-17	-0.00904	---	±2.5	Pass
			4.2	12	0.006383	---	±2.5	Pass
TM 3	M	20 °C	3.6	-19	-0.01011	---	±2.5	Pass
			3.7	14	0.007447	---	±2.5	Pass
			4.2	-16	-0.00851	---	±2.5	Pass

The END