



# FCC RF Test Report

**Product Name:**  
HSPA+/HSUPA/HSDPA/UMTS/GSM/GPRS/EDGE Mobile Phone  
with Bluetooth

**Model Number:** HUAWEI U9200E, U9200E

**Report No:** SYBH(Z-RF)023072012 -2001  
**FCC ID:** QISU9200E

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

Huawei Base, Bantian, Longgang District, Shenzhen 518129, P.R. China  
Tel: +86 755 28780808 Fax: +86 755 89652518

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## Notice

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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.
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# 1 General Information

|   |   |
|---|---|
| <b>1.1 Applied Standard</b>             |   |
|   |   |
| Applied Rules:                          | 47 CFR FCC Part 2:2011, Subpart J<br>47 CFR FCC Part 22:2011, Subpart H<br>ANSI/TIA 603C:2004 |
|   |   |
| <b>1.2 Test Location</b>                |   |
|   |   |
| Test Location 1:                        | Reliability Laboratory of Huawei Technologies Co., Ltd.                                       |
| Address:                                | Huawei Base, Bantian, Longgang District, Shenzhen 518129, P.R. China                          |
|   |   |
| <b>1.3 Test Environmental Condition</b> |   |
|   |   |
| Ambient Temperature:                    | 20 – 25 °C  |
| Ambient Relative Humidity:              | 45 – 55 %   |
| Atmospheric Pressure:                   | 101 kPa   |
|   |   |

## 2 Summary

Table 1 Summary of results

| Test Case                              | FCC Part No.    | Requirements  | Result |
|--|-----------------|---|--------|
| Cellular Band                          |                 |   |        |
| Transmitter Output Power               | 2.1046 & 22.913 | ERP not exceed 7 W<br>Peak-to-average ratio not exceed 13 dB  | Pass   |
| Modulation Characteristics             | 2.1047          | Digital modulation  | Pass   |
| Occupied Bandwidth                     | 2.1049          | (Not specified)   | Pass   |
| Band Edges Compliance                  | 2.1051 & 917    | Below -13 dBm/1%*EBW, in 1 MHz range  | Pass   |
| Spurious Emission at Antenna Terminals | 2.1051 & 2.917  | Below -13 dBm/1 kHz, 9 kHz to 150 kHz<br>Below -13 dBm/10 kHz, 150 kHz to 30 MHz<br>Below -13 dBm/100 kHz, 30 MHz to 10 <sup>th</sup> harmonics | Pass   |
| Field Strength of Spurious Radiation   | 2.1053 & 22.917 | Below -13 dBm/100 kHz   | Pass   |
| Frequency Stability                    | 2.1055 & 22.355 | Maintained within the tolerances of $\pm 1.5$ ppm   | Pass   |

### 3 Product Description

#### 3.1 Product Information

##### 3.1.1 General Description

HUAWEI U9200E, U9200E is subscriber equipment in the WCDMA/GSM system. The HSPA+/HSUPA/HSDPA/UMTS frequency band is Band I, Band II, Band IV, Band V and Band VIII. Band II. The GSM/GPRS/EDGE frequency band includes GSM850 and GSM900 and DCS1800 and PCS1900, but only GSM850MHz and Band V bands test data included in this report. The Mobile Phone implements such functions as RF signal receiving/transmitting, HSPA+/HSUPA/HSDPA/UMTS and GSM/GPRS/EDGE protocol processing, voice, video, MMS service, GPS, AGPS and WIFI 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.

##### 3.1.2 Board Information

Table 2 Board Information

|  |                          |          |
|--|--------------------------|----------|
| HSPA+/HSUPA/HSDPA/UMTS/GSM/GPRS/EDGE Mobile Phone with Bluetooth |                          |          |
| HUAWEI U9200E, U9200E  |                          |          |
| Board and Module   |                          |          |
| Equipment Designation / Description                              | Software                 | Hardware |
| Main board of Mobile Phone                                       | U9200EV100R001CHNC00B116 | Ver.B    |

##### 3.1.3 Adapter Technical Data

|                    |   |
|--------------------|---|
| AC/DCAdapter Model | HW-050100U3W  |
| Input Voltage      | ~100-240V 50/60Hz 0.2A  |
| Output Voltage     | 5V  1A |
| Rated Power        | 5W  |



### 3.1.4 Battery Technical Data

| Name                | Manufacture                   | Description   |
|---------------------|-------------------------------|---|
| Rechargeable Li-ion | Huawei Technologies Co., Ltd. | Battery Model: HB5Q1HV<br>Rated capacity: 2600mAh<br>Nominal Voltage:  +3.75V<br>Charging Voltage:  +4.3V |



## 4 Test Description

### 4.1 Supported Frequency Range

| Characteristics | Description    |
|-----------------|----------------|
| Downlink        | 869 to 894 MHz |
| Uplink          | 824 to 849 MHz |

### 4.2 Transmitter / Receiver Characteristics

| Characteristics                    | Description   |
|------------------------------------|---|
| System Type                        | GSM<br>UMTS   |
| TX Output Power (per Antenna Port) | GSM system: 33dBm<br>UMTS system: 24dBm   |
| Channel Spacing(s) / Bandwidth(s)  | GSM system: 200 kHz<br>UMTS system: 5 MHz   |
| Designation of Emissions           | GSM system: 250KGXW (GMSK modulation),<br>253KG7W (8PSK modulation)<br>UMTS system: 4M09F9W |

### 4.3 Antenna Gain

|                   |       |
|-------------------|-------|
| Antenna Gain(dBi) | -2.7  |
| Antenna Gain(dBd) | -4.85 |

### 4.4 Power Supply

| Specification           | Description  |
|-------------------------|--|
| Power Supply Type       | Directly Connected to DC /AC Power Supply  |
| Input to EUT (DC power) | DC Voltage Nominal: $\approx$ +3.8 V<br>DC Voltage Range: $\approx$ +3.5 V to +4.3 V |
| Input to EUT (AC power) | AC Voltage Nominal: ~ 120 V (50/60 Hz)<br>AC Voltage Range: ~100-240V                |

## 5 General Test Conditions / Configurations

### 5.1 RF Channels under Test

| Test Mode   | TX / RX | RF Channel   |              |              |
|-------------|---------|--------------|--------------|--------------|
|             |         | Low (L)      | Middle (M)   | High (H)     |
| TM1/TM2     | TX      | Channel 128  | Channel 192  | Channel 251  |
|             |         | 824.2MHz     | 837.0MHz     | 848.8MHz     |
|             | RX      | Channel 128  | Channel 192  | Channel 251  |
|             |         | 869.2MHz     | 882.0MHz     | 893.8MHz     |
| TM3/TM4/TM5 | TX      | Channel 4132 | Channel 4182 | Channel 4233 |
|             |         | 826.4MHz     | 836.4MHz     | 846.6MHz     |
|             | RX      | Channel 4357 | Channel 4407 | Channel 4458 |
|             |         | 871.4MHz     | 881.4MHz     | 891.6MHz     |

### 5.2 Test Modes

| Test Mode | Test Modes Description    |
|-----------|---------------------------|
| TM1       | GSM/GPRS, GMSK modulation |
| TM2       | EDGE, 8PSK modulation     |
| TM3       | WCDMA, QPSK modulation    |
| TM4       | HSDPA, QPSK modulation    |
| TM5       | HSUPA, QPSK modulation    |

### 5.3 Test Environment

| Environment Parameter | Selected Values During Tests |         |
|-----------------------|------------------------------|---------|
| Relative Humidity     | Ambient                      |         |
| Temperature           | TN                           | Ambient |
| Voltage               | VL                           | 3.5V    |
|                       | VN                           | 3.8V    |
|                       | VH                           | 4.3V    |

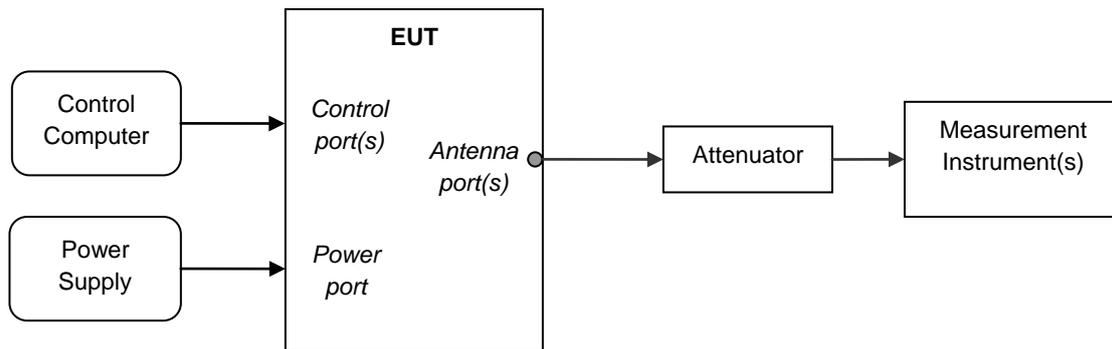
NOTE: VL= lower extreme test voltage  
 VN= nominal voltage  
 VH= upper extreme test voltage  
 TN= normal temperature

## 5.4 Test Setup

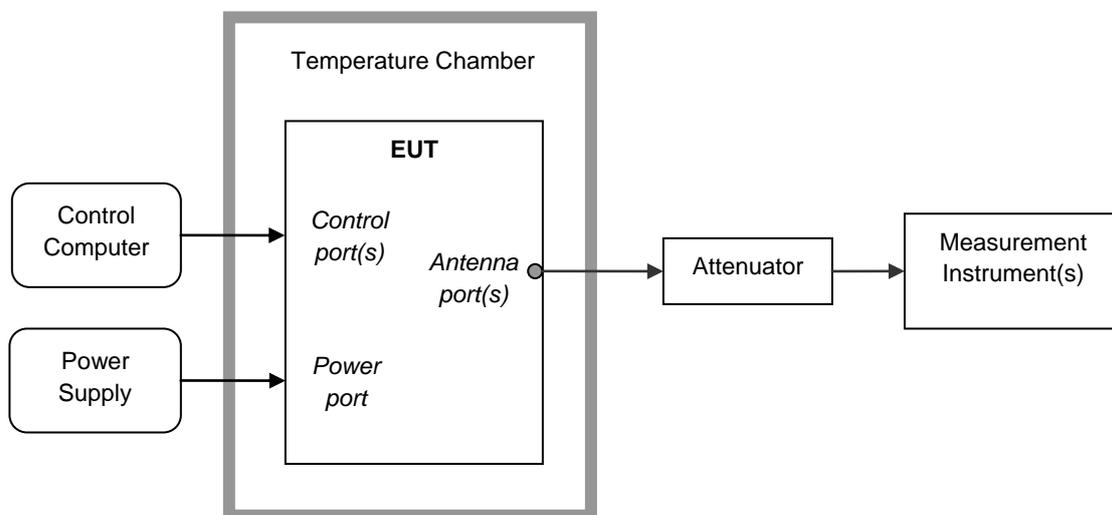
### 5.4.1 General Test Setup Configurations

| 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.   |

### 5.4.2 Test Setup 1



### 5.4.3 Test Setup 2



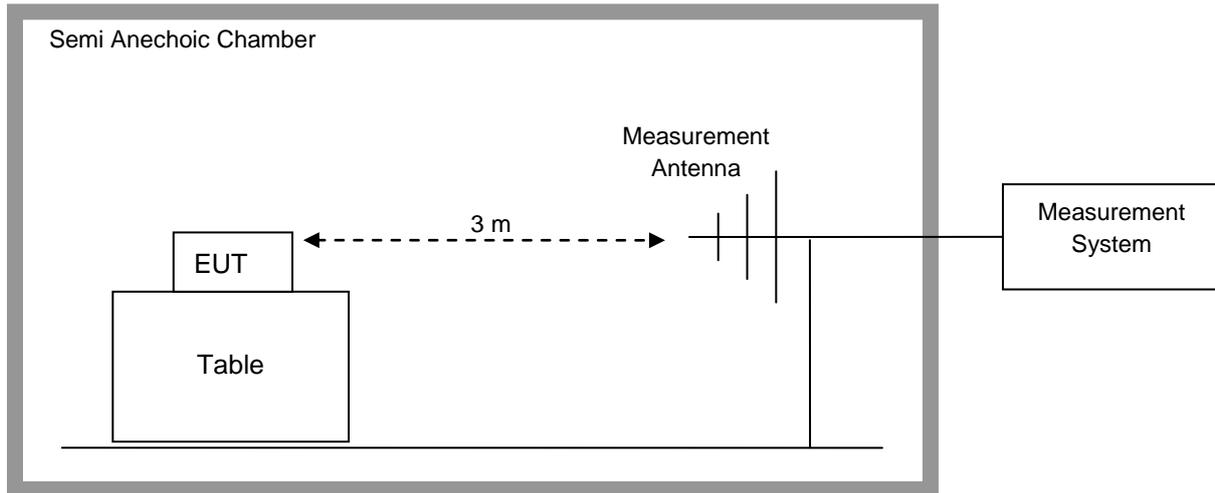
#### 5.4.4 Test Setup 3

NOTE1: Effective radiated power (ERP) or Effective Isotropic radiated power (EIRP) refers to the EUT radiation power output, assuming all emissions are radiated from half-wave dipole antennas or horn antennas.

NOTE2: The EUT was set on insulator 80cm above the Ground Plane. The setup and test methods were according to ANSI-TIA-603C 2004. The measurements were carried through with a Rohde and Schwarz Test Receiver and control software.

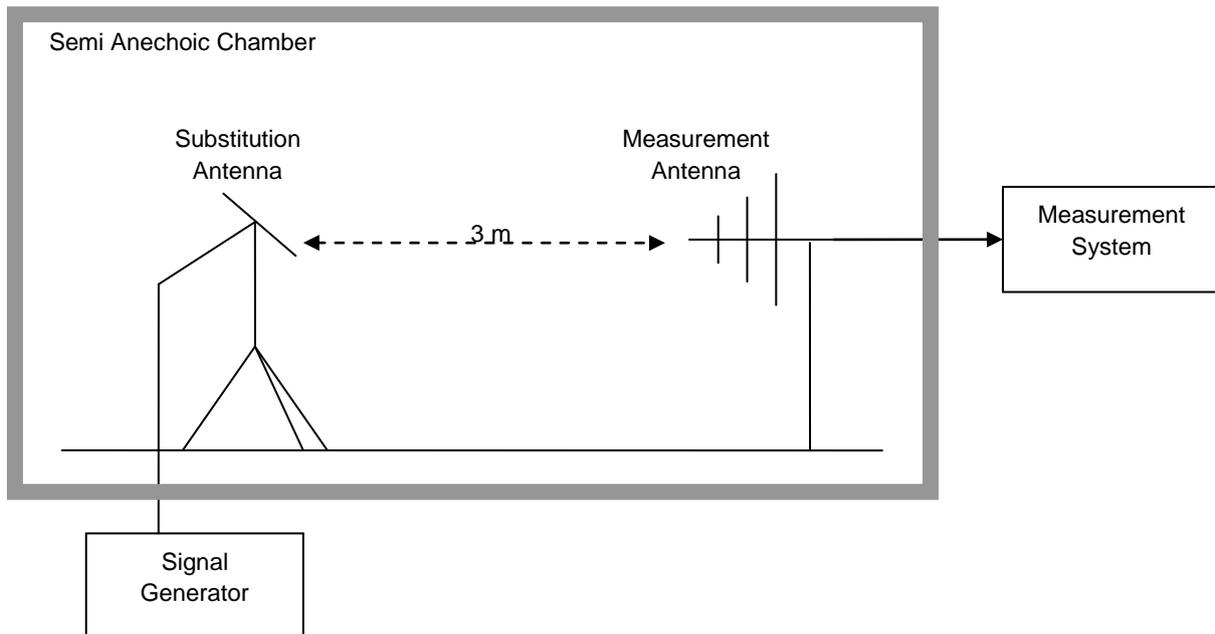
#### Step 1: Pre-test to find the Maximum ERP or EIRP

1. Connect the test system according to the following figure. EUT is running for 30 minutes before test, and measurement instruments are warming-up for 30 minutes.
2. Set up communication link between Universal radio communication tester and EUT, set EUT working frequency, and control EUT to transmit at maximum power.
3. Set the center frequency of the signal analyzer or receiver to the EUT's operating frequency, the RBW is equal to the emission bandwidth of the signal. Set RMS detector for the test, and the span is equal to 2 times of emission bandwidth, the other settings should remain automatic. Normally, the height range of antenna was 1m to 4m, the azimuth range of turntable was 0° to 360°. The receiver antenna has two polarizations V and H. A portable or small unlicensed wireless device shall be placed on a non-metallic test fixture or other non-metallic support during testing. The supporting fixture shall permit orientation of the EUT in each of three orthogonal (x, y, z) axis positions such that emissions from the EUT are maximized. Measure the EUT maximum RF power and record the result.
4. Changing EUT working frequency and measuring the RF power at channel T, M, B respectively.  
Complete the test data.



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

1. Measurement setup is according to the following figure. EUT was substituted by antenna, and the polarization is identical with the test antenna; the signal generator was connected to the substitution antenna.
2. The radiated output power, measured by signal analyzer set, is the same as recorded in above. Then this power level is matched by a signal from a calibrated signal generator which is substituted for EUT. The power supplied by the generator is then equal to the ERP or EIRP after corrected by the antenna gain and cable loss.



## 5.5 Test Conditions

| Test Case                              | Test Conditions    |   |
|--|--------------------|---|
| Transmitter Output Power               | Test Configuration | Ambient Temperature & Rated Voltage   |
|  | Test Setup         | Test Setup 1 & Test Setup 3   |
|  | Detector           | RMS   |
|  | RF Channels (TX)   | L, M, H   |
|  | Test Mode          | TM1/TM2/TM3/TM4/TM5   |
| 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)   | L, M, H   |
|  | Test Mode          | TM1/TM2/TM3   |
| Band Edges Compliance                  | Test Configuration | Ambient Temperature & Rated Voltage   |
|  | Test Setup         | Test Setup 1  |
|  | Detector           | RMS   |
|  | RF Channels (TX)   | L, H  |
|  | 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)   | L, M, H   |
|  | 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/TM4/TM5   |
| Frequency Stability                    | Test Configuration | (1) -30 °C to +50 °C with step 10 °C at Rated Voltage;<br>(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 |

## 6 Main Test Instruments

Table 3 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    | Jul.17,2013      |
| Signal Analyzer                                 | R&S          | FSQ31     | 200021        | Sep.27,2012      |
| Temperature Chamber                             | WEISS        | WKL64     | 24600294      | Feb.13,2013      |
| Signal generator                                | Agilent      | E8257D    | MY49281095    | Jul.09.2013      |
| Spectrum analyzer                               | R&S          | FSU3      | 200474        | Mar., 05, 2013   |
| Spectrum analyzer                               | R&S          | FSU43     | 100144        | Mar., 05, 2013   |
| Double-Ridged Waveguide Horn Antenna (1G~18GHz) | R&S          | HF907     | 100304        | Apr., 05, 2013   |
| Double-Ridged Waveguide Horn Antenna (1G~18GHz) | R&S          | HF907     | 100391        | Apr., 05, 2013   |
| Trilog Broadband Antenna (30M~3GHz)             | SCHWARZBECK  | VULB 9163 | 9163-521      | Jul., 07, 2013   |
| Pyramidal Horn Antenna(26GHz-40GHz)             | ETS-Lindgren | 3160-10   | 00123940      | Feb., 27, 2013   |
| Pyramidal Horn Antenna(18GHz-26.5GHz)           | ETS-Lindgren | 3160-09   | 00125912      | Feb.,27, 2013    |

## 7 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   | Radiated spurious emission             | Appendix F  |
| 7   | Frequency Stability                    | Appendix G  |
| 8   | Photos of Radiated spurious emission   | Appendix H  |

NOTE: There is no test data in Appendix H, only Photos of Test Setup for Field Strength of Spurious Radiation.

## 8 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)<br>U=3.0 dB (above 1 GHz) |
| Frequency Stability                  | Frequency Accuracy (ppm) | U=0.21 ppm   |

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



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# Appendix A

## Transmitter Output Power According to FCC Part 2.1046 & Part22.913



## Conducted Power of Transmitter

| TEST CONDITIONS     |       | RF Output Power (Conducted) |       |                |       |                |       |
|---------------------|-------|-----------------------------|-------|----------------|-------|----------------|-------|
|                     |       | Channel128(L)               |       | Channel192(M)  |       | Channel251(H)  |       |
|                     |       | 824.2MHz                    |       | 837.0MHz       |       | 848.8MHz       |       |
|                     |       | dBm                         |       | dBm            |       | dBm            |       |
| $T_{nom} / V_{nom}$ |       | Measured                    | Limit | Measured       | Limit | Measured       | Limit |
| TM1                 |       | 33.07                       | 38.5  | 32.96          | 38.5  | 32.99          | 38.5  |
| TM2                 |       | 27.16                       | 38.5  | 27.12          | 38.5  | 27.18          | 38.5  |
| TEST CONDITIONS     |       | Channel4132(L)              |       | Channel4182(M) |       | Channel4233(H) |       |
|                     |       | 826.4MHz                    |       | 836.4MHz       |       | 846.6MHz       |       |
|                     |       | dBm                         |       | dBm            |       | dBm            |       |
| $T_{nom} / V_{nom}$ |       | Measured                    | Limit | Measured       | Limit | Measured       | Limit |
| TM3                 |       | 23.59                       | 38.5  | 23.55          | 38.5  | 23.56          | 38.5  |
| TM4                 | Case1 | 23.41                       | 38.5  | 23.28          | 38.5  | 23.29          | 38.5  |
|                     | Case2 | 22.04                       | 38.5  | 21.93          | 38.5  | 21.91          | 38.5  |
|                     | Case3 | 21.62                       | 38.5  | 21.67          | 38.5  | 21.64          | 38.5  |
|                     | Case4 | 21.42                       | 38.5  | 21.31          | 38.5  | 21.32          | 38.5  |
| TM5                 | Case1 | 22.18                       | 38.5  | 22.08          | 38.5  | 22.07          | 38.5  |
|                     | Case2 | 20.17                       | 38.5  | 20.03          | 38.5  | 20.13          | 38.5  |
|                     | Case3 | 20.87                       | 38.5  | 20.81          | 38.5  | 20.78          | 38.5  |
|                     | Case4 | 20.38                       | 38.5  | 20.30          | 38.5  | 20.37          | 38.5  |
|                     | Case5 | 22.41                       | 38.5  | 22.32          | 38.5  | 22.31          | 38.5  |



### Effective Radiated Power of Transmitter (ERP)

| Test Mode | Freq. [MHz] | Meas. Level [dBm] | Substitution Antenna Type | SGP [dBm] | Substitution Gain [dBi] | Cable Loss [dB] | Substitution Level (ERP) | FCC limit [dBm] | Result |
|-----------|-------------|-------------------|---------------------------|-----------|-------------------------|-----------------|--------------------------|-----------------|--------|
|           |             |                   |                           |           |                         |                 | [dBm]                    |                 |        |
| TM1       | 824.2       | 28.22             | Dipole Ant.               | 31.58     | -2.75                   | 0.6             | 28.23                    | 38.5            | Pass   |
| TM1       | 837.0       | 28.11             | Dipole Ant.               | 31.61     | -2.87                   | 0.6             | 28.14                    | 38.5            | Pass   |
| TM1       | 848.8       | 28.14             | Dipole Ant.               | 31.58     | -2.85                   | 0.6             | 28.13                    | 38.5            | Pass   |
| TM2       | 824.2       | 22.31             | Dipole Ant.               | 25.67     | -2.75                   | 0.6             | 22.32                    | 38.5            | Pass   |
| TM2       | 837.0       | 22.27             | Dipole Ant.               | 25.75     | -2.87                   | 0.6             | 22.28                    | 38.5            | Pass   |
| TM2       | 848.8       | 22.33             | Dipole Ant.               | 25.80     | -2.85                   | 0.6             | 22.35                    | 38.5            | Pass   |
| TM3       | 826.4       | 18.74             | Dipole Ant.               | 22.10     | -2.75                   | 0.6             | 18.75                    | 38.5            | Pass   |
| TM3       | 836.4       | 18.70             | Dipole Ant.               | 22.19     | -2.87                   | 0.6             | 18.72                    | 38.5            | Pass   |
| TM3       | 846.6       | 18.71             | Dipole Ant.               | 22.15     | -2.85                   | 0.6             | 18.70                    | 38.5            | Pass   |

Note: a, For getting the ERP (Efficient Radiated Power) in substitution method, the following formula should be taken to calculate it,

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

b, SGP=Signal Generator Level

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



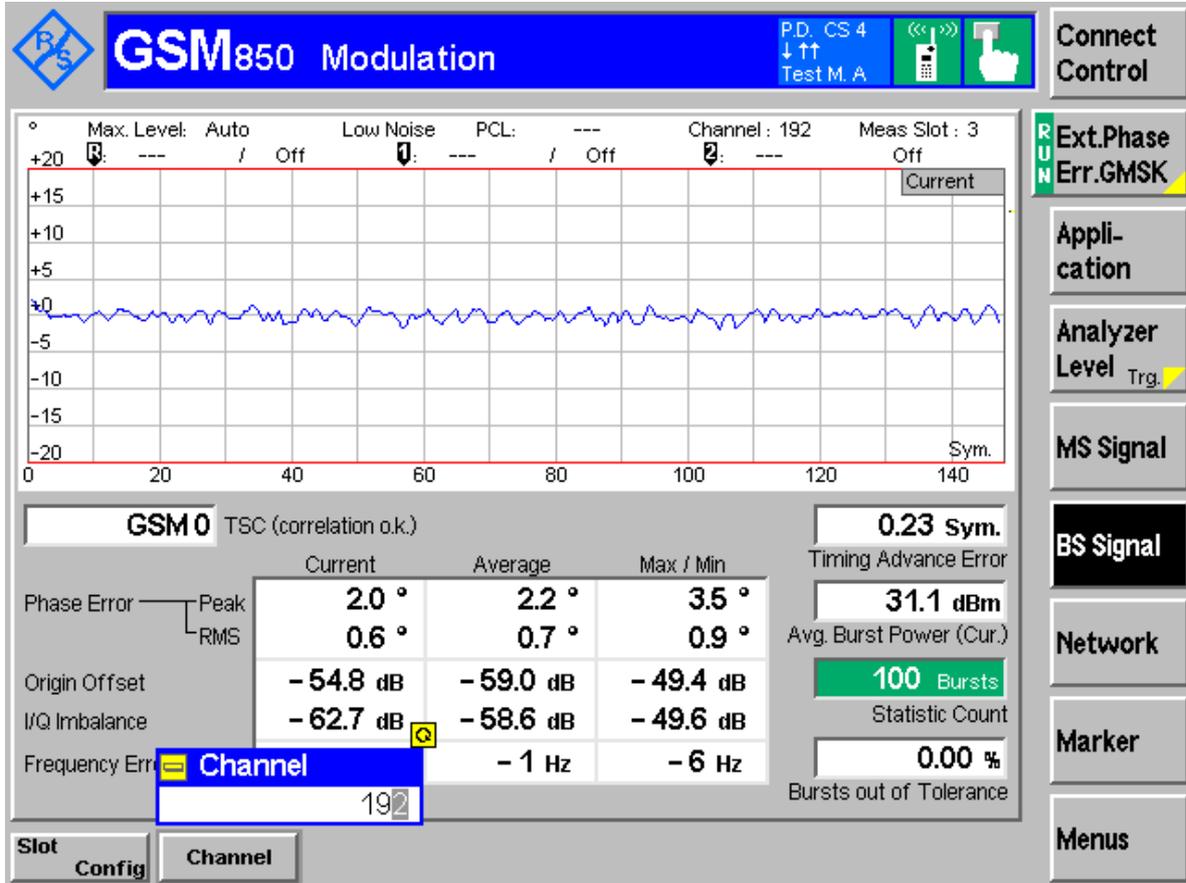
## Appendix B

# Modulation Characteristics

According to FCC Part 2.1047 & Part22 Subpart H

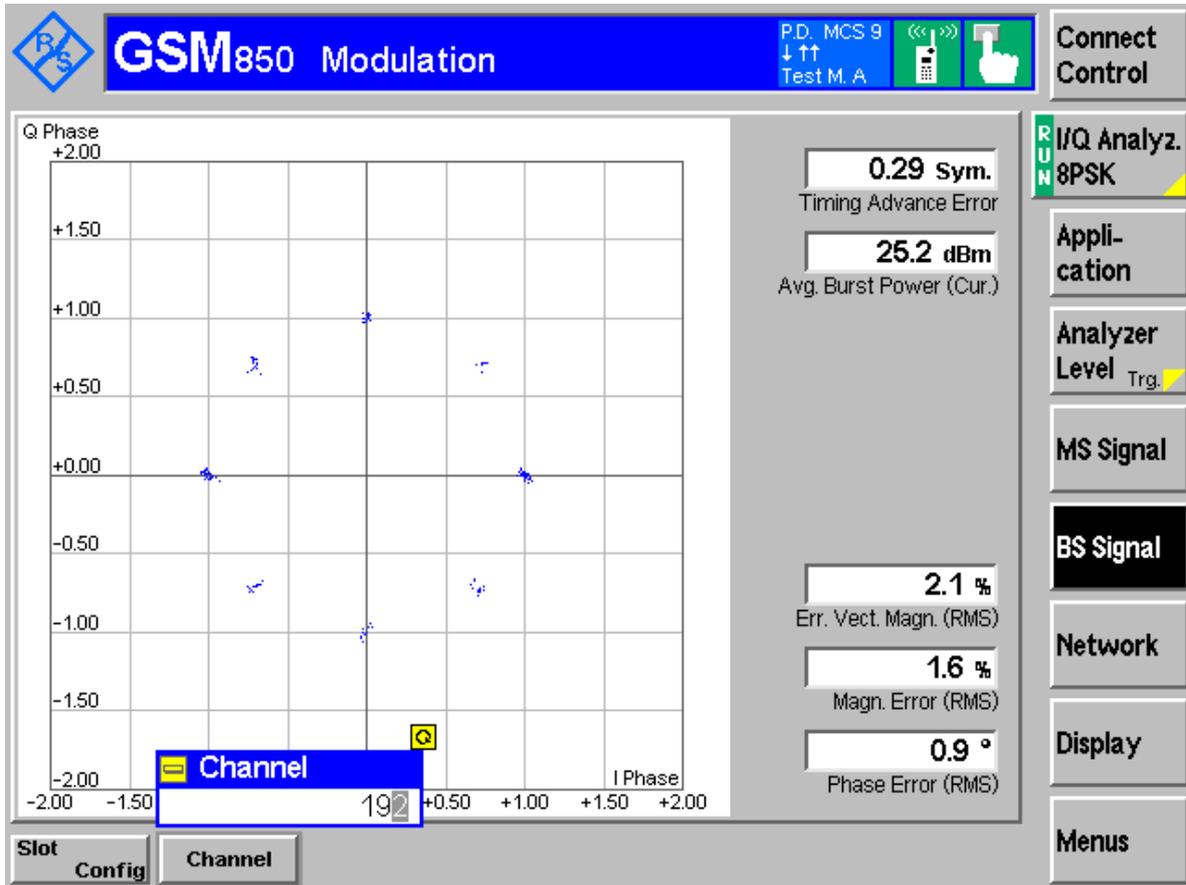


## Channel 192 (TM1:GPRS/GSM)



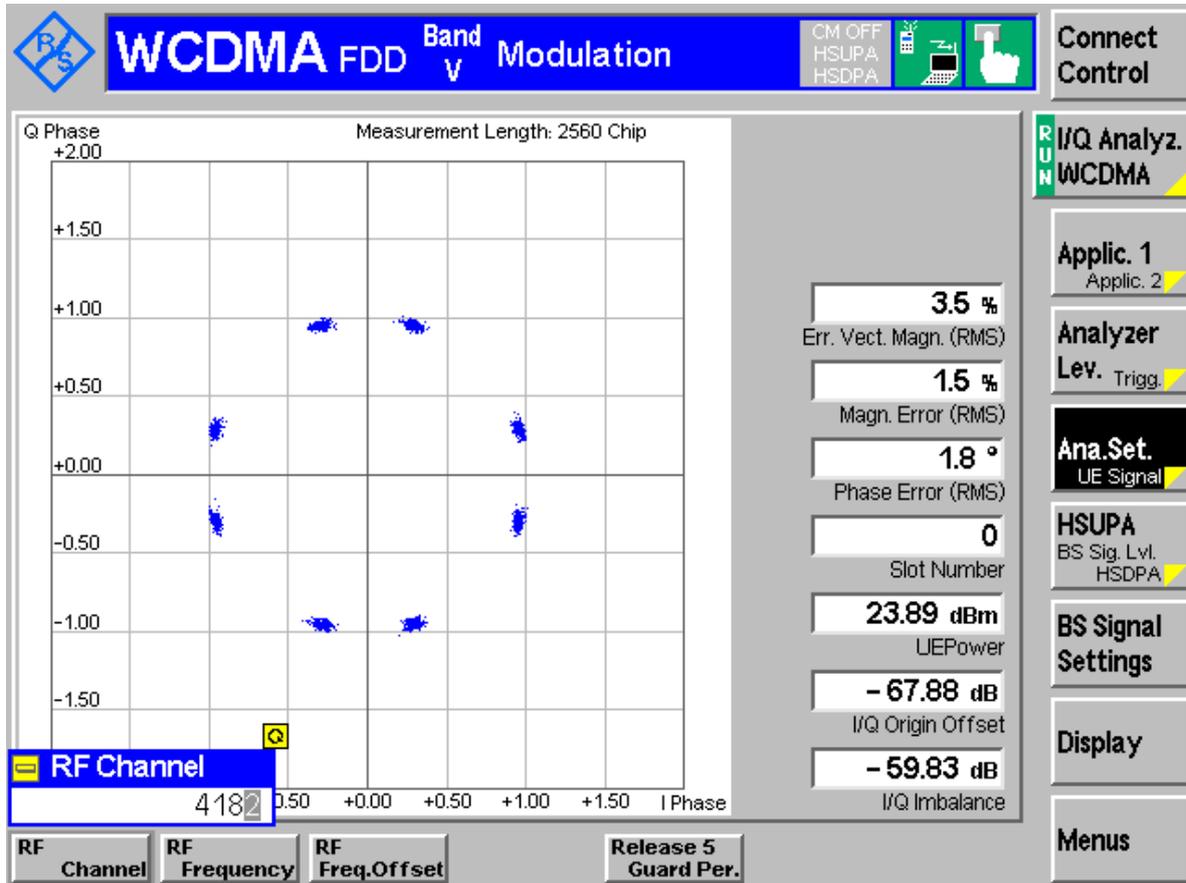


## Channel 192 (TM2:EDGE)





## Channel 4182 (TM3: WCDMA)



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



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# Appendix C

## Occupied Bandwidth According to FCC Part 2.1049 & Part 22 Subpart H



## Result Table

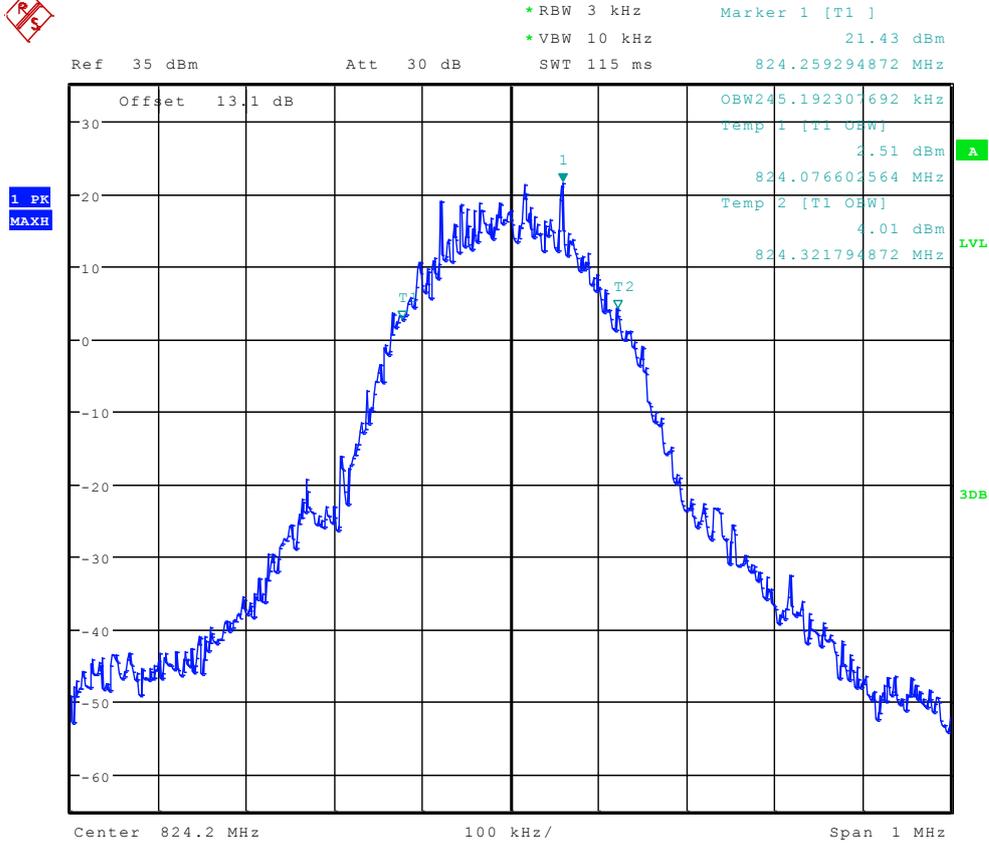
Table 1 Measurement Results

| Test Mode | RF Channel | Occupied Bandwidth [kHz] | Verdict |
|-----------|------------|--------------------------|---------|
| TM1       | 128        | 243.59                   | Pass    |
|           | 192        | 250.00                   | Pass    |
|           | 251        | 245.19                   | Pass    |
| TM2       | 128        | 245.19                   | Pass    |
|           | 192        | 251.60                   | Pass    |
|           | 251        | 253.21                   | Pass    |
| Test Mode | RF Channel | Occupied Bandwidth [MHz] | Verdict |
| TM3       | 4132       | 4.07                     | Pass    |
|           | 4182       | 4.09                     | Pass    |
|           | 4233       | 4.09                     | Pass    |





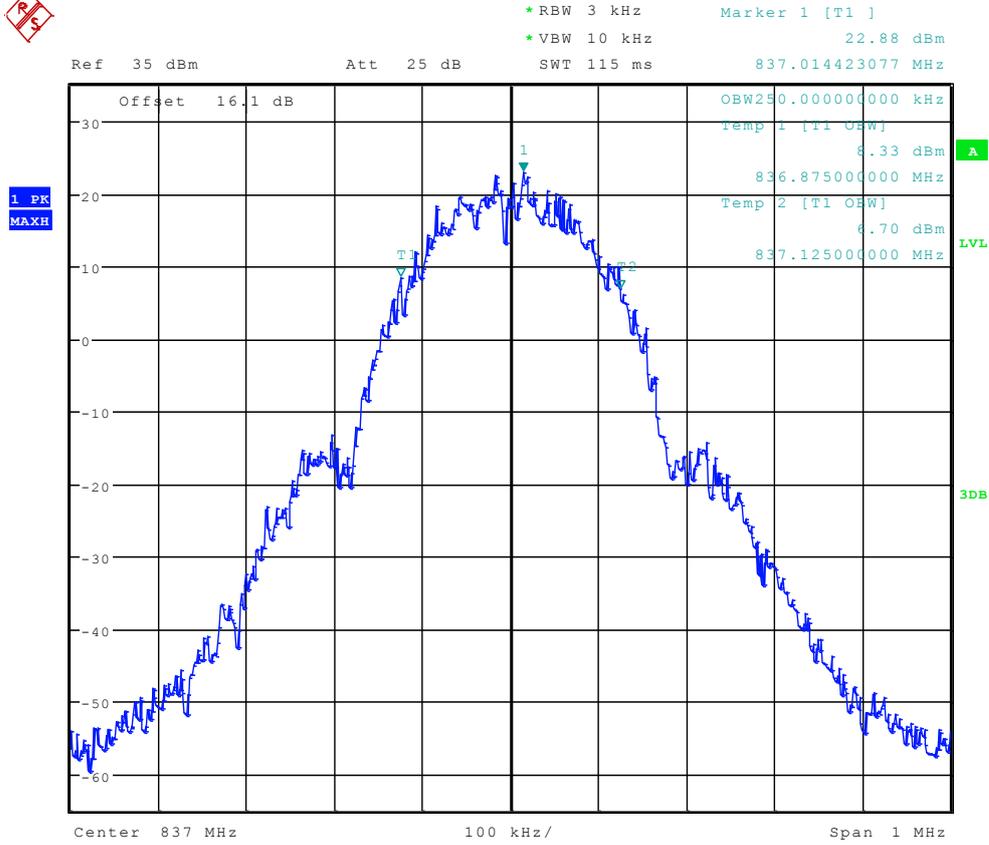
## Channel 128 (TM2:EDGE)





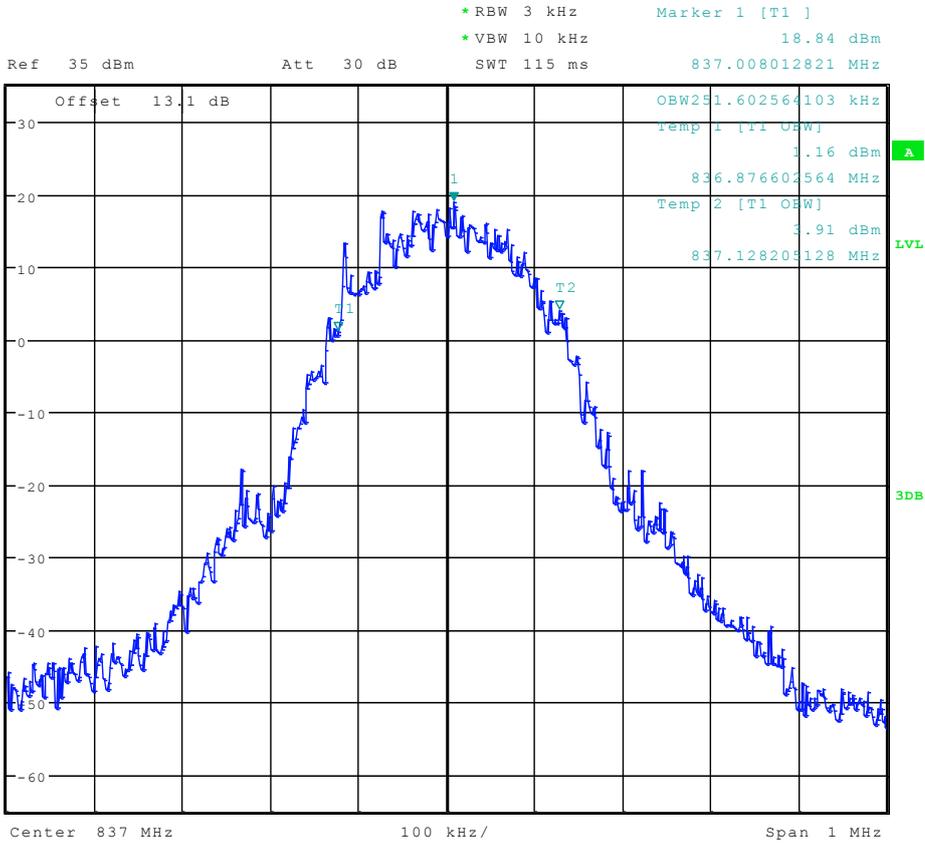


### Channel 192 (TM1:GPRS/GSM)





### Channel 192 (TM2:EDGE)

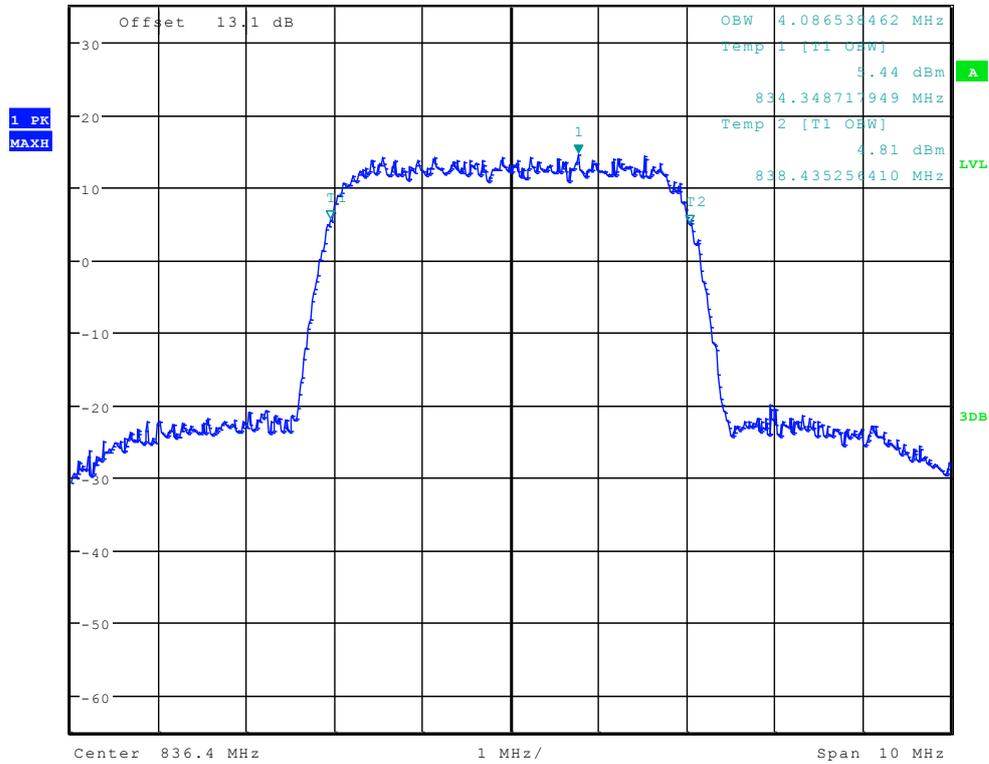




### Channel 4182 (TM3: WCDMA)



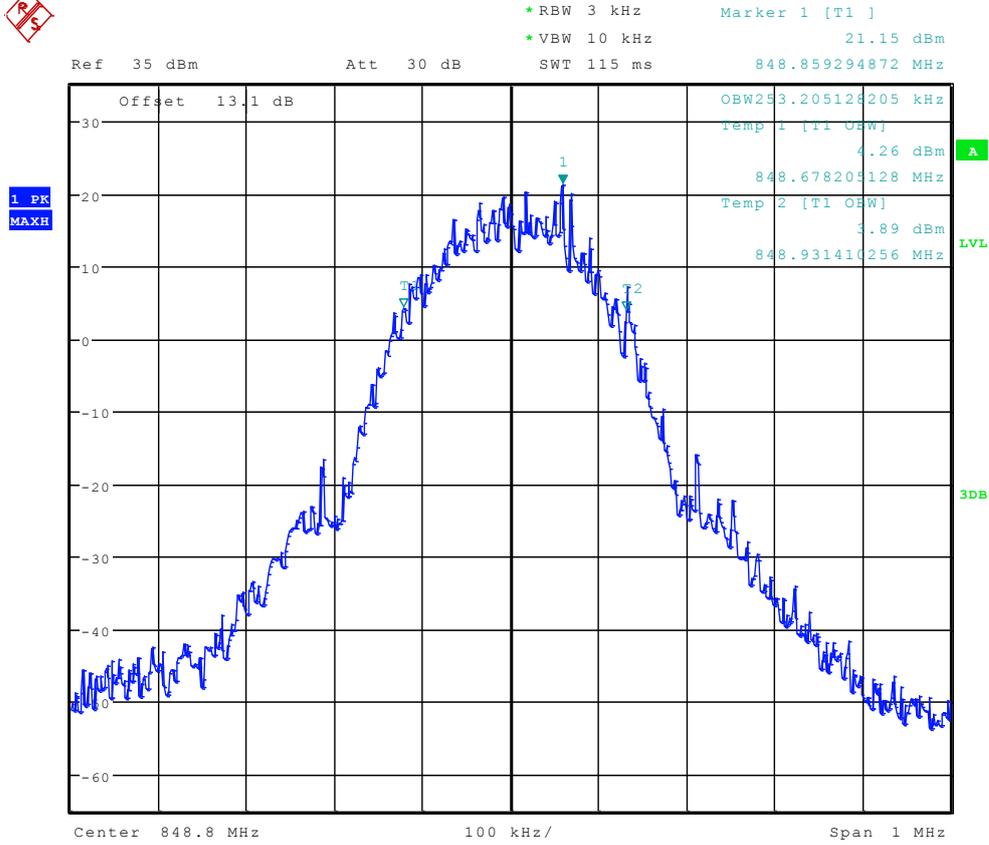
Ref 35 dBm      Att 30 dB      \*RBW 50 kHz      Marker 1 [T1]      14.54 dBm  
 \*VBW 500 kHz      837.169230769 MHz  
 SWT 5 ms





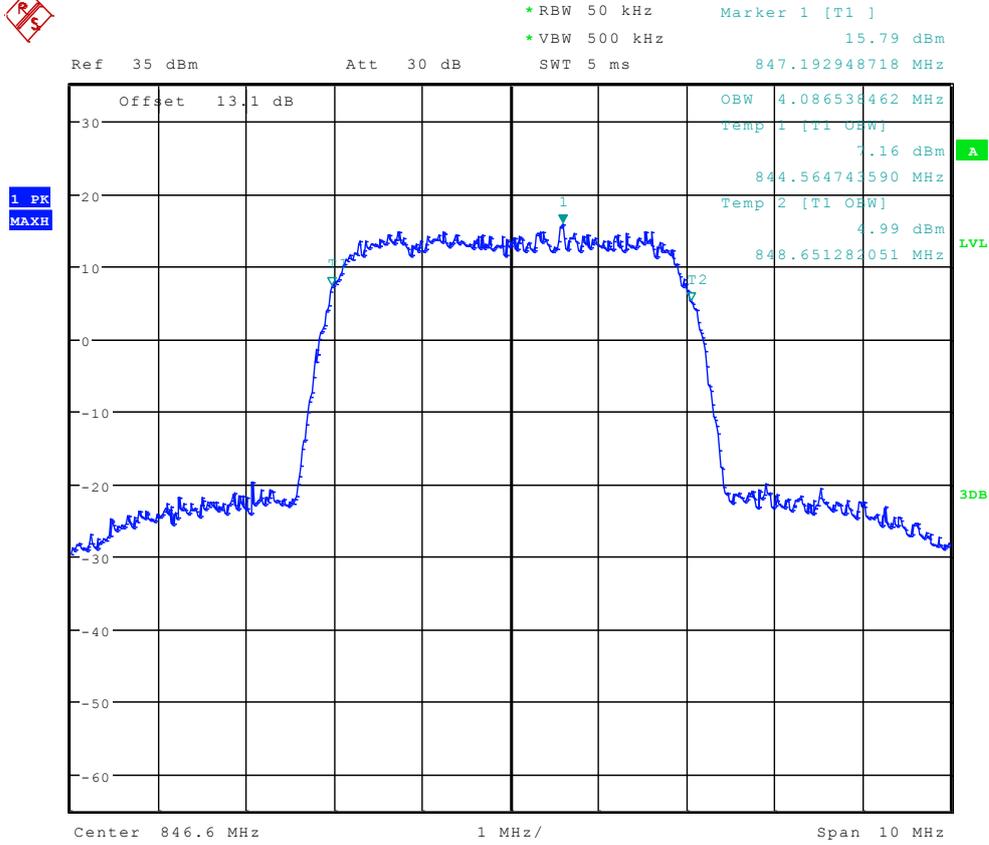


### Channel 251 (TM2:EDGE)





## Channel 4233 (TM3: WCDMA)



The END



# Appendix D

## Band Edges Compliance

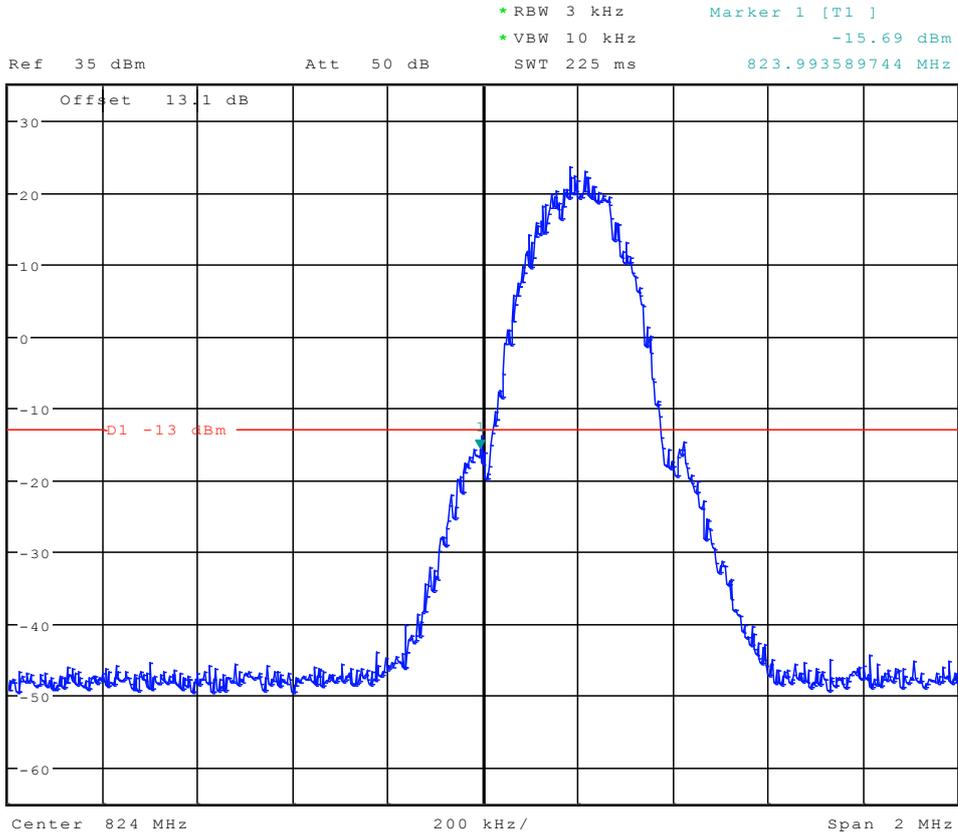
According to FCC Part 2.1051 & Part 22 Subpart H



# TM1:GPRS/GSM

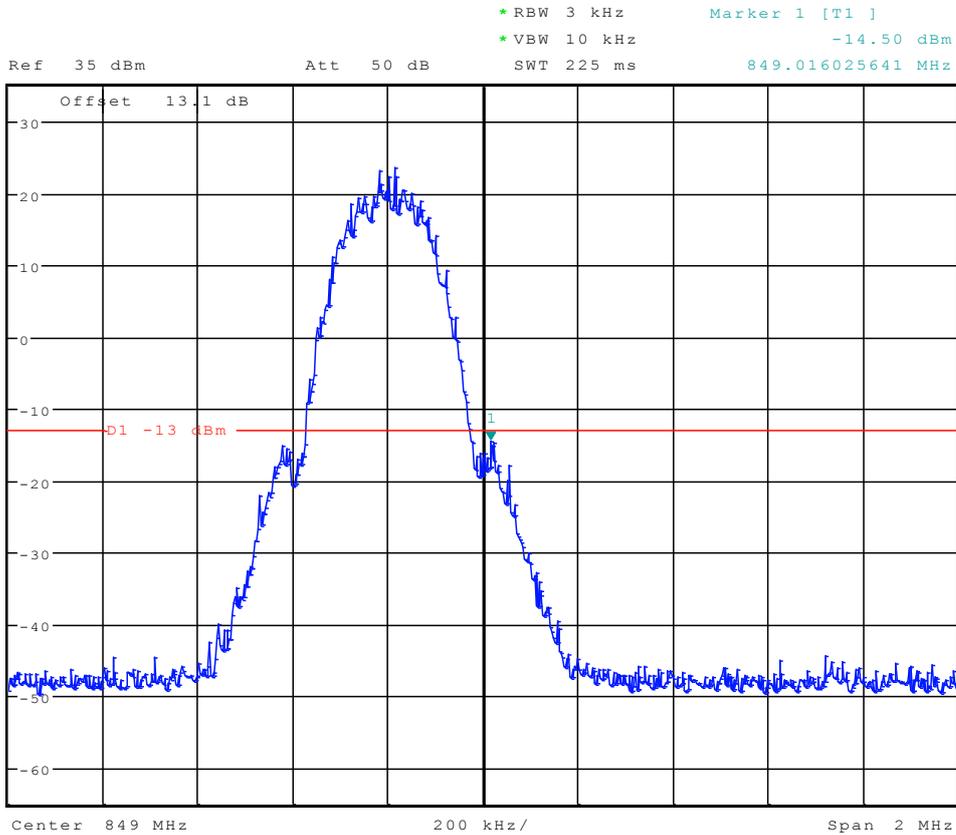
## Left Edge

### Channel 128





## Right Edge Channel 251

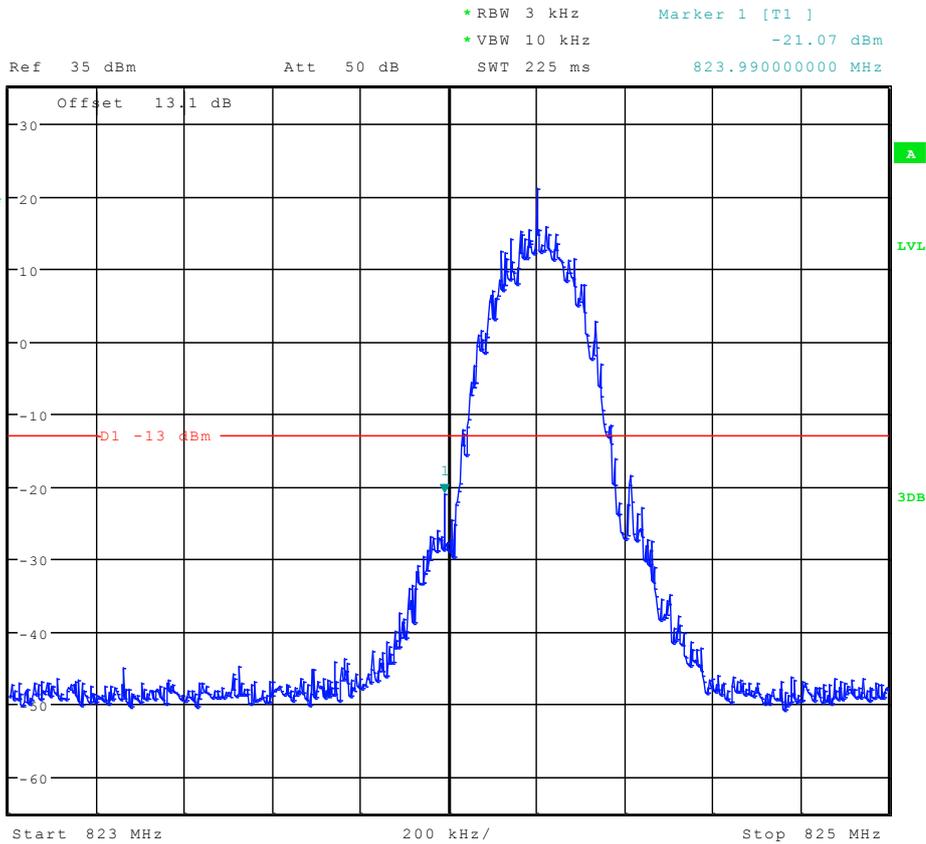




# TM2:EDGE

## Left Edge

### Channel 128

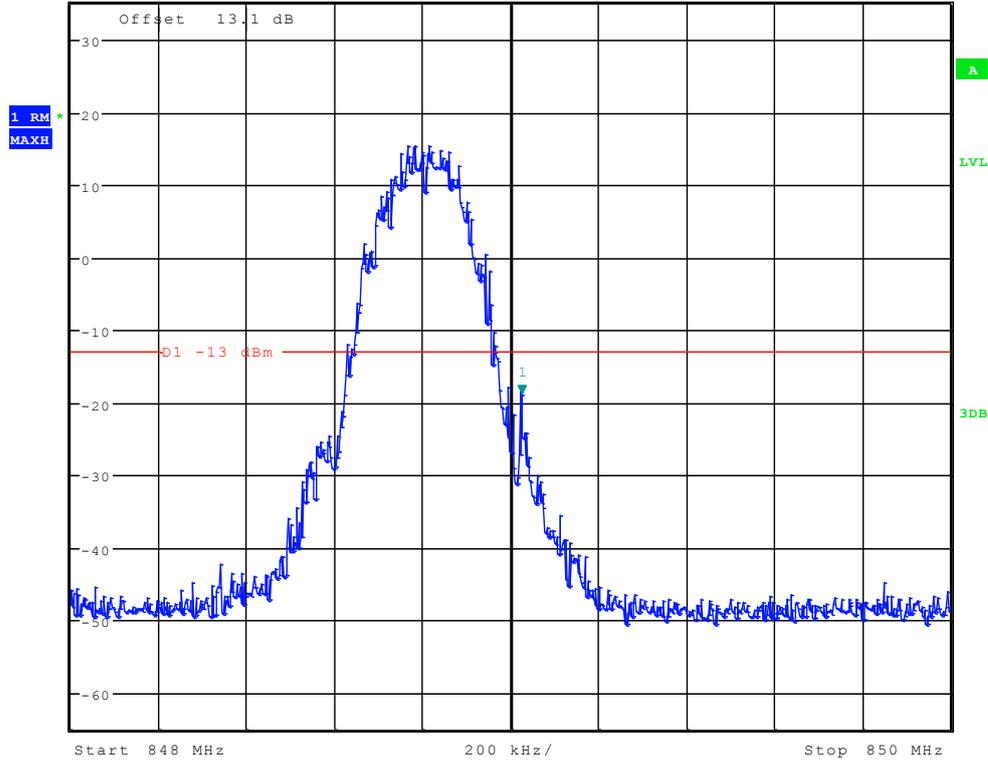




# Right Edge Channel 251



Ref 35 dBm      Att 50 dB      RBW 3 kHz      Marker 1 [T1]      -18.87 dBm  
SWT 225 ms      849.02500000 MHz

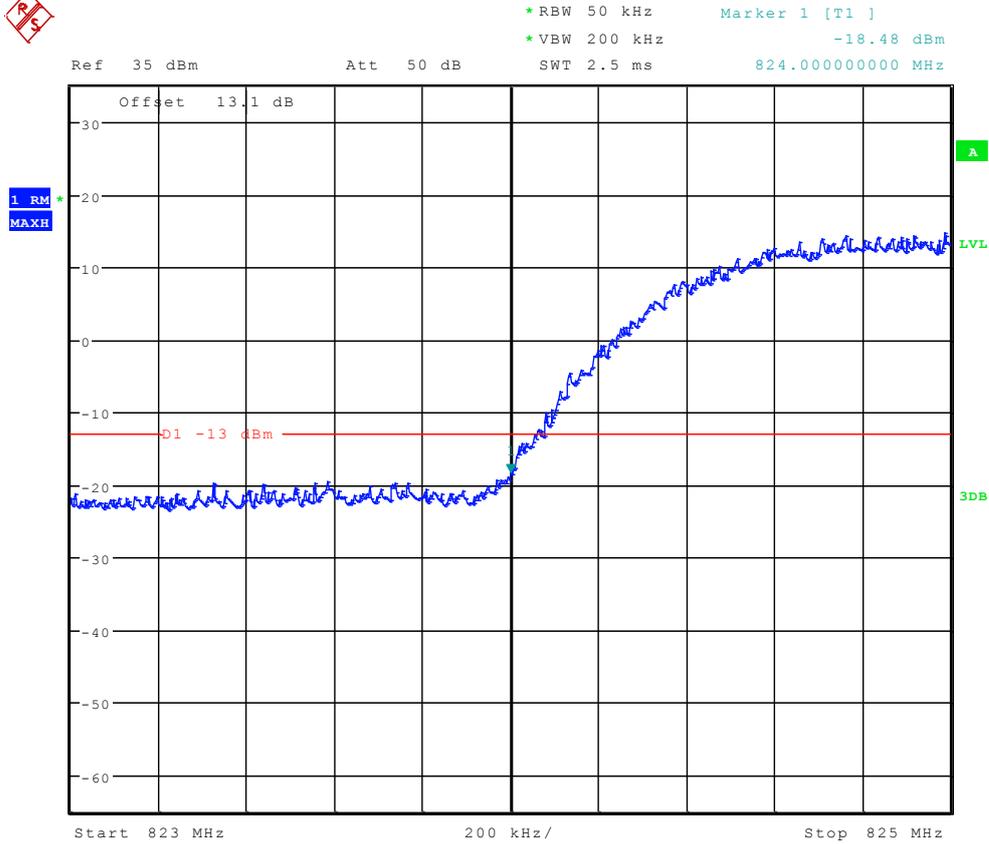




# TM3: WCDMA

## Left Edge

### Channel 4132

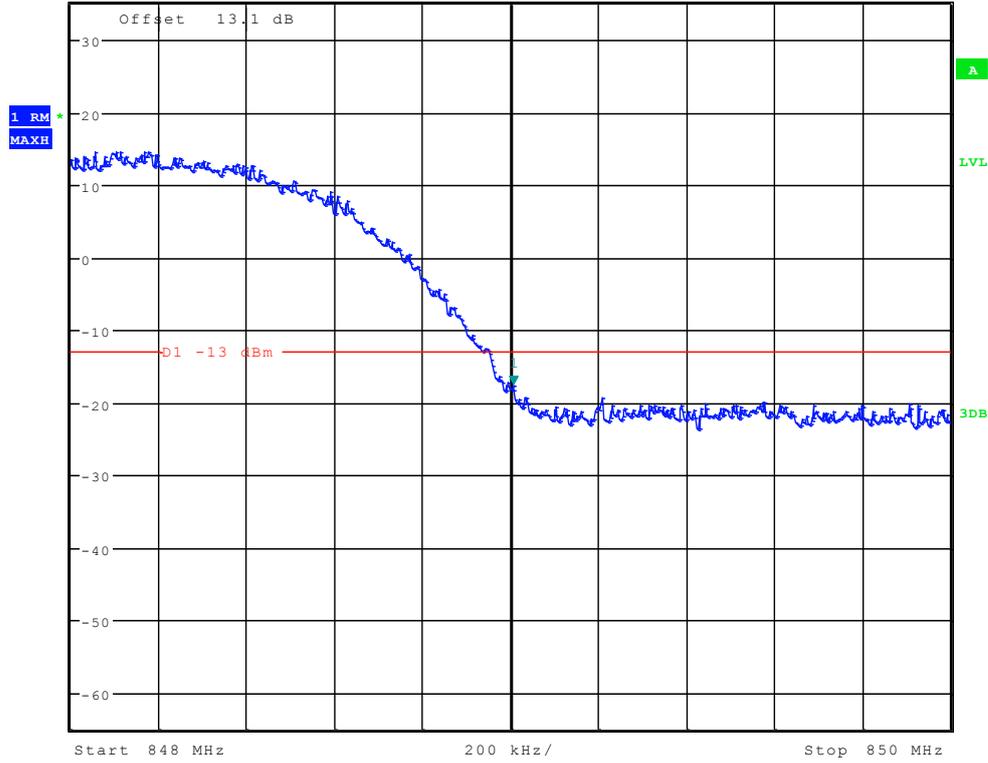




## Right Edge Channel 4233



Ref 35 dBm Att 50 dB SWT 2.5 ms 849.005000000 MHz  
\*RBW 50 kHz Marker 1 [T1] -17.52 dBm  
\*VBW 200 kHz



The END



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## Appendix E

# Spurious Emission at Antenna Terminal

According to FCC Part 2.1051 & Part 22 Subpart H

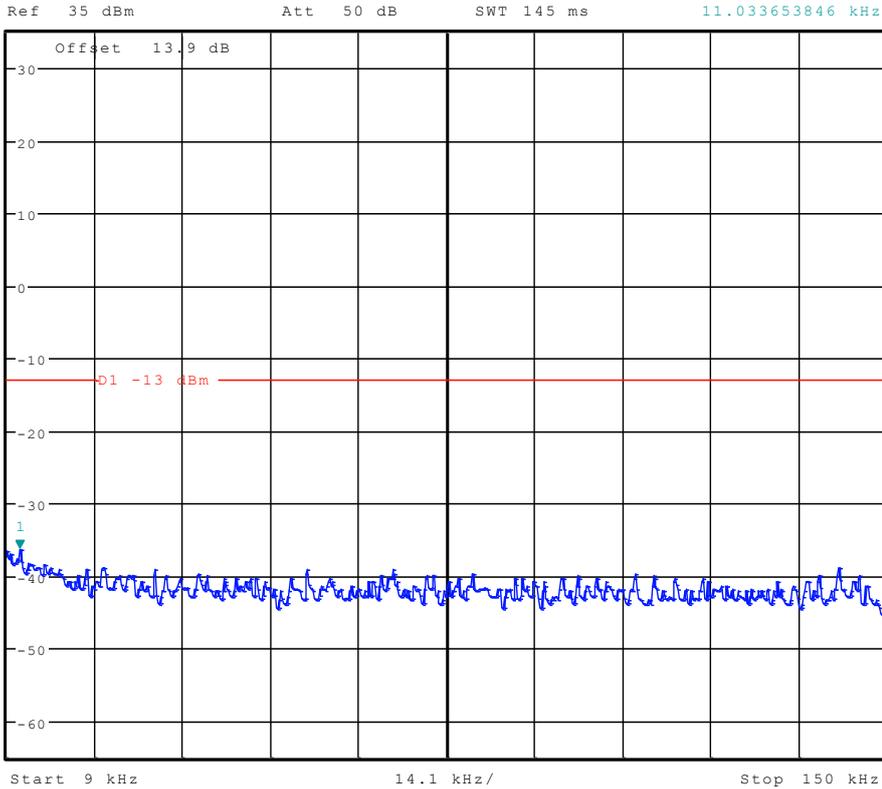


# TM1:GPRS/GSM

## Channel 128

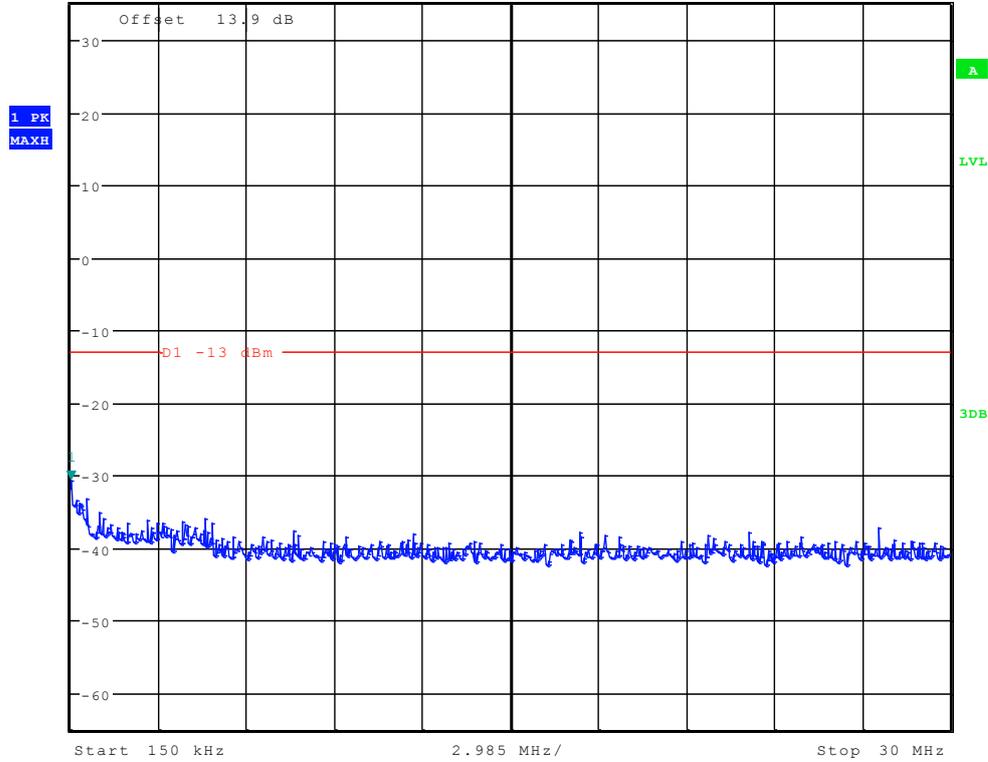


\*RBW 1 kHz      Marker 1 [T1 ]  
\*VBW 10 kHz      -36.39 dBm  
SWT 145 ms      11.033653846 kHz



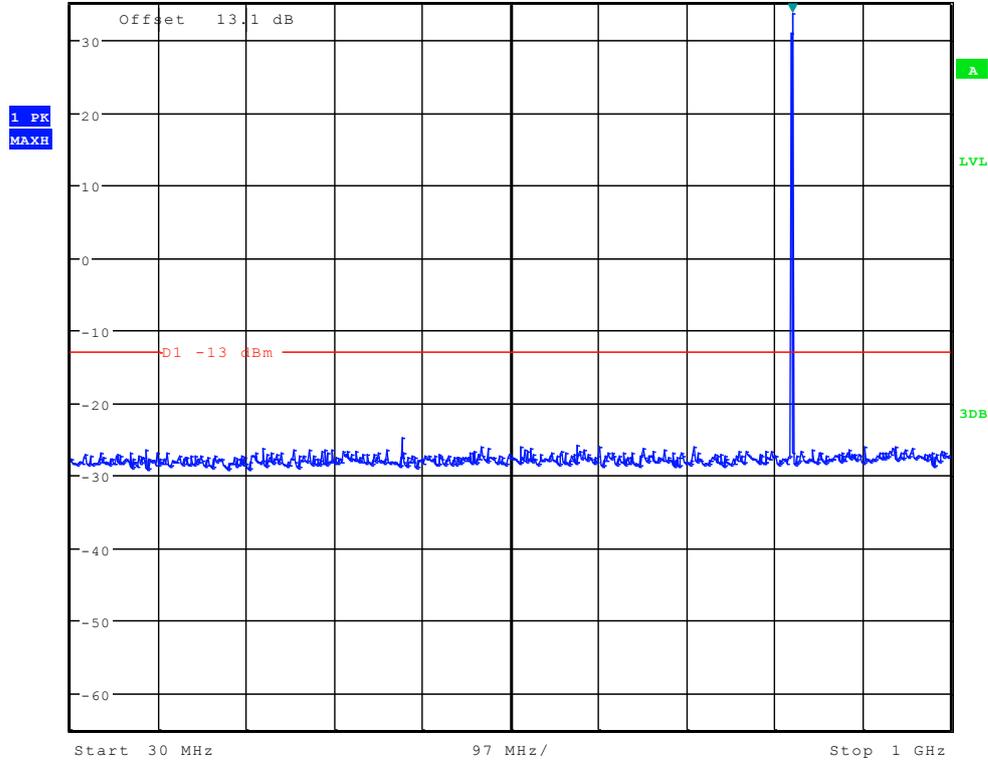


\*RBW 10 kHz      Marker 1 [T1 ]  
\*VBW 30 kHz      -30.64 dBm  
Ref 35 dBm      Att 50 dB      SWT 300 ms      150.00000000 kHz



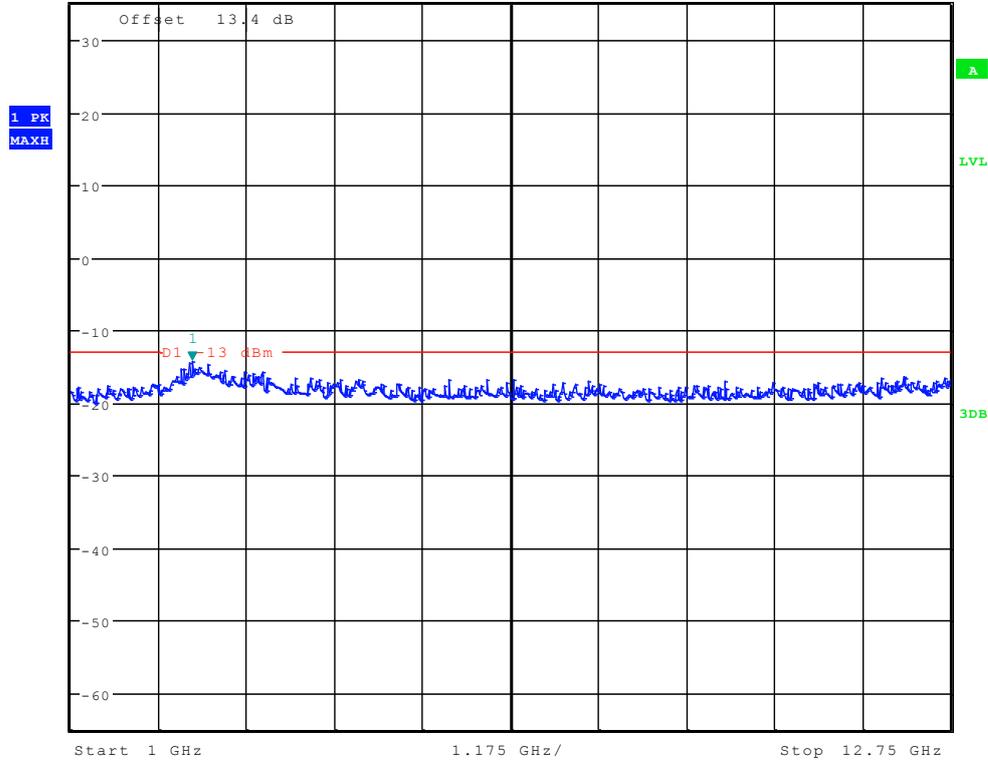


Ref 35 dBm Att 50 dB SWT 100 ms  
\*RBW 100 kHz Marker 1 [T1] 33.57 dBm  
\*VBW 300 kHz 825.897435897 MHz





\*RBW 1 MHz      Marker 1 [T1 ]  
 \*VBW 3 MHz      -14.16 dBm  
 Ref 35 dBm      Att 50 dB      SWT 70 ms      2.619391026 GHz

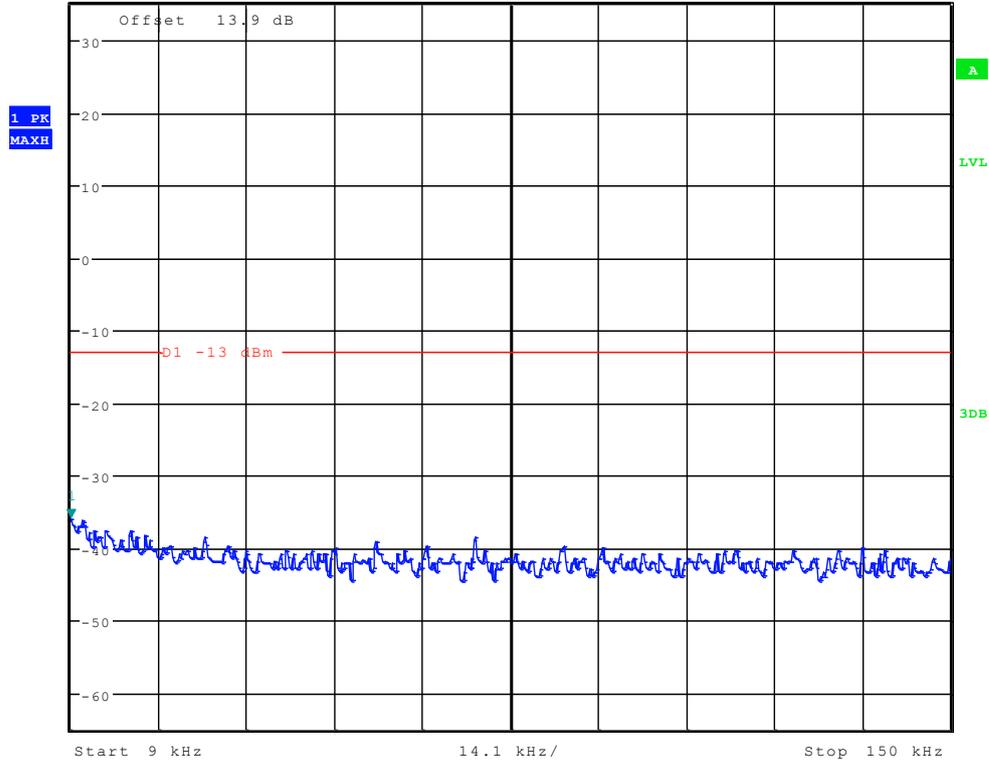




## Channel 192

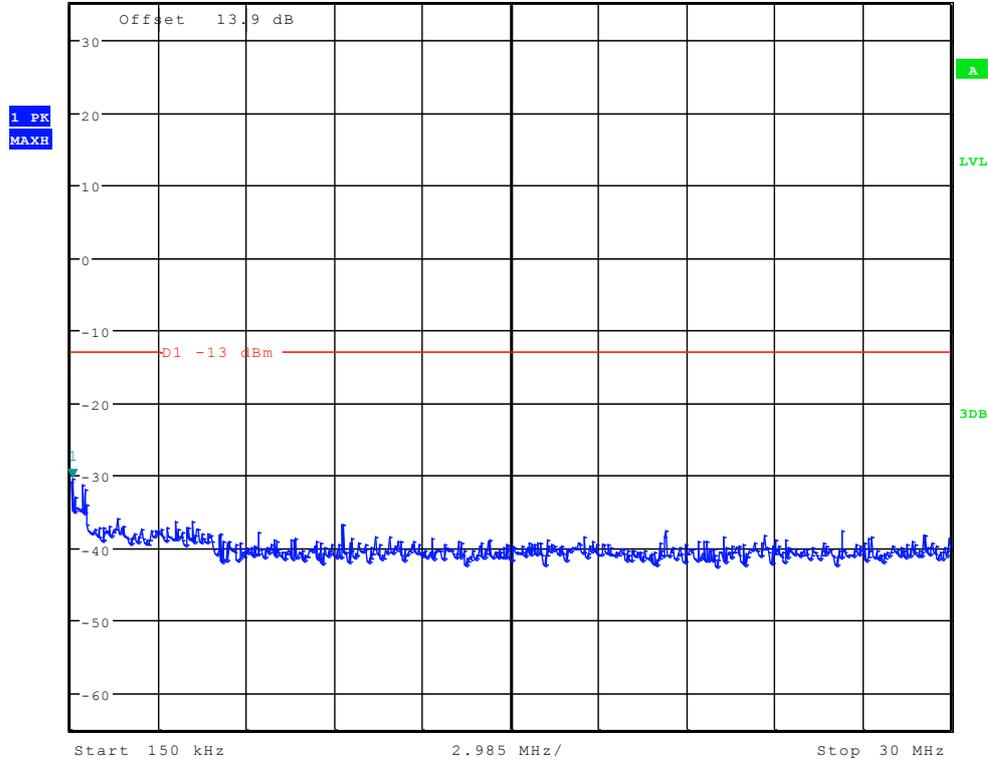


Ref 35 dBm      Att 50 dB      \*RBW 1 kHz      Marker 1 [T1]      -35.87 dBm  
\*VBW 10 kHz      SWT 145 ms      9.000000000 kHz





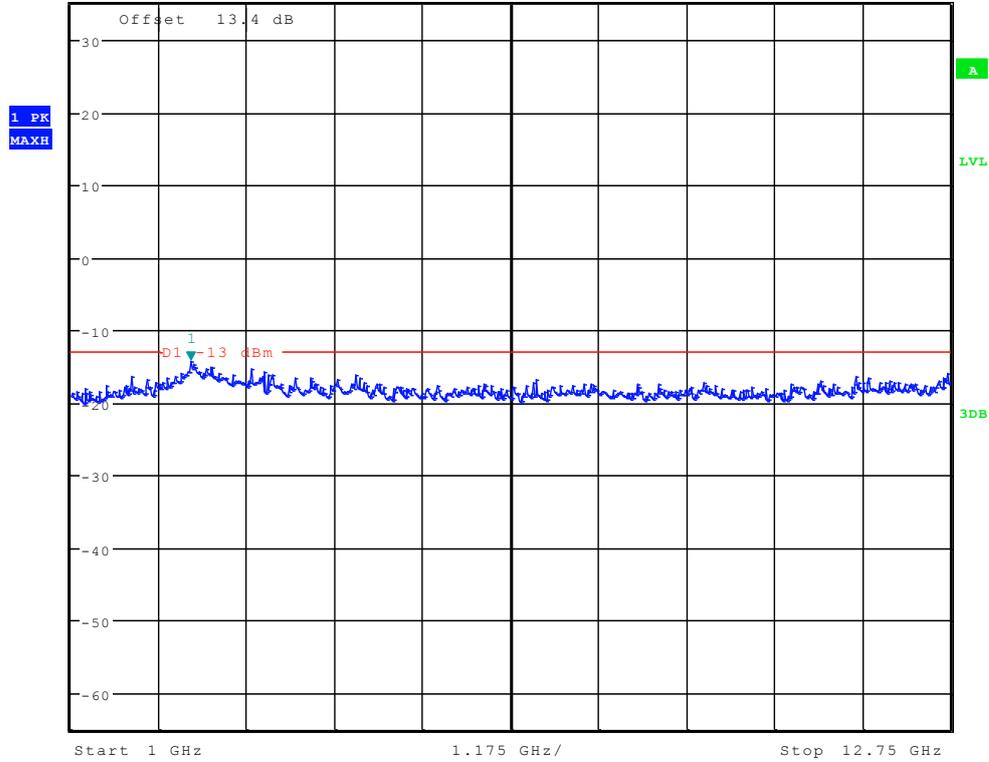
\*RBW 10 kHz      Marker 1 [T1 ]  
\*VBW 30 kHz      -30.43 dBm  
Ref 35 dBm      Att 50 dB      SWT 300 ms      197.836538462 kHz







\*RBW 1 MHz      Marker 1 [T1 ]  
 \*VBW 3 MHz      -14.18 dBm  
 Ref 35 dBm      Att 50 dB      SWT 70 ms      2.600560897 GHz





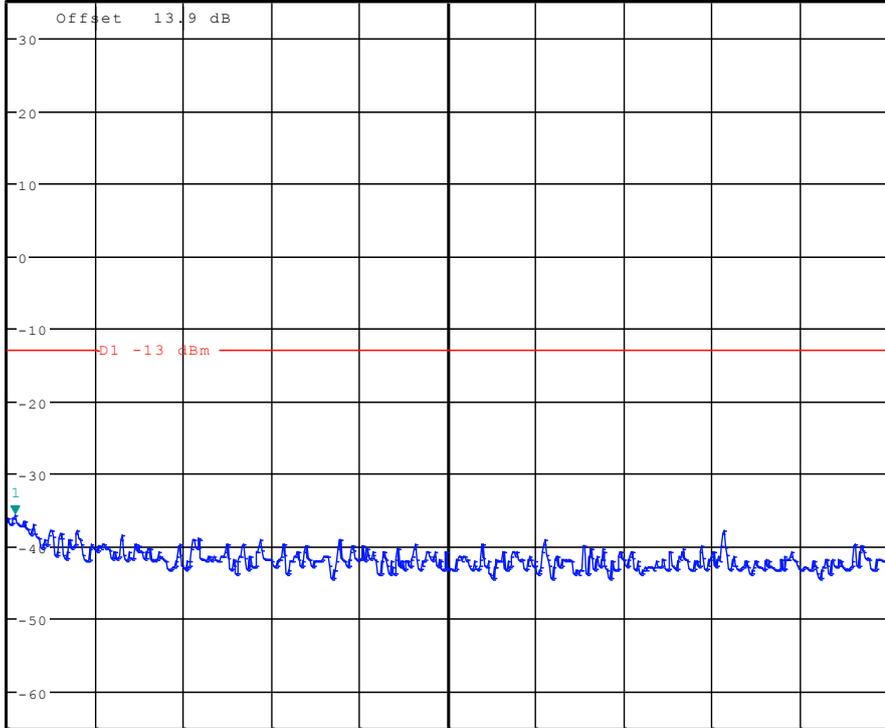
## Channel 251



\*RBW 1 kHz      Marker 1 [T1 ]  
\*VBW 10 kHz      -35.67 dBm  
SWT 145 ms      10.129807692 kHz

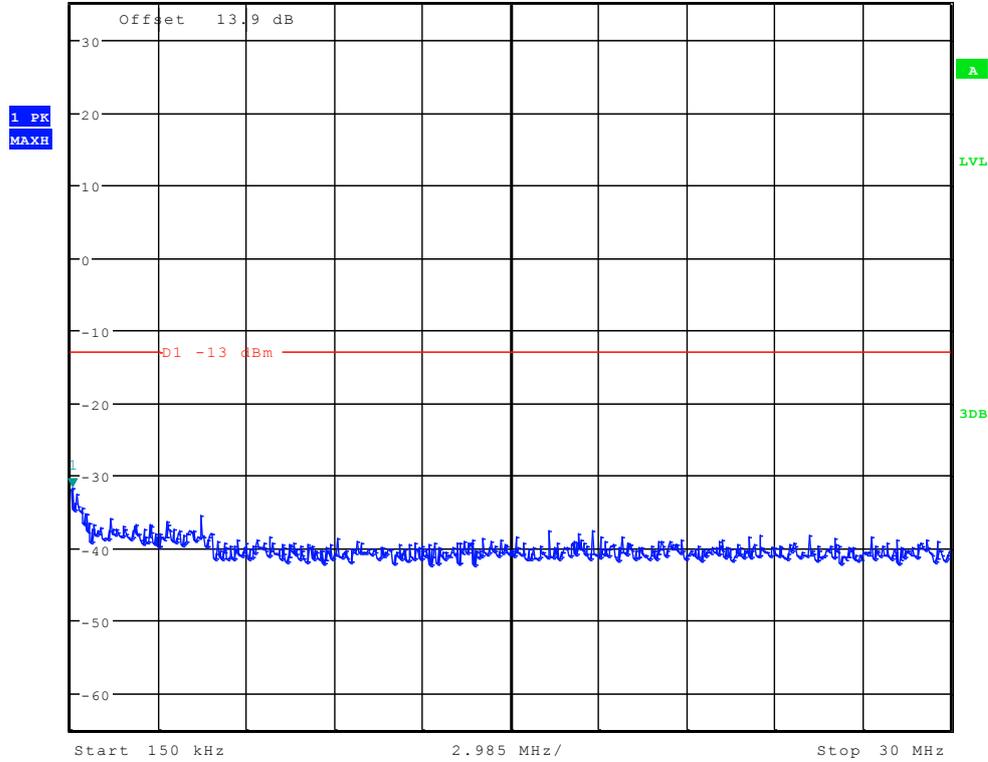
Ref 35 dBm      Att 50 dB

1 PK  
MAXH



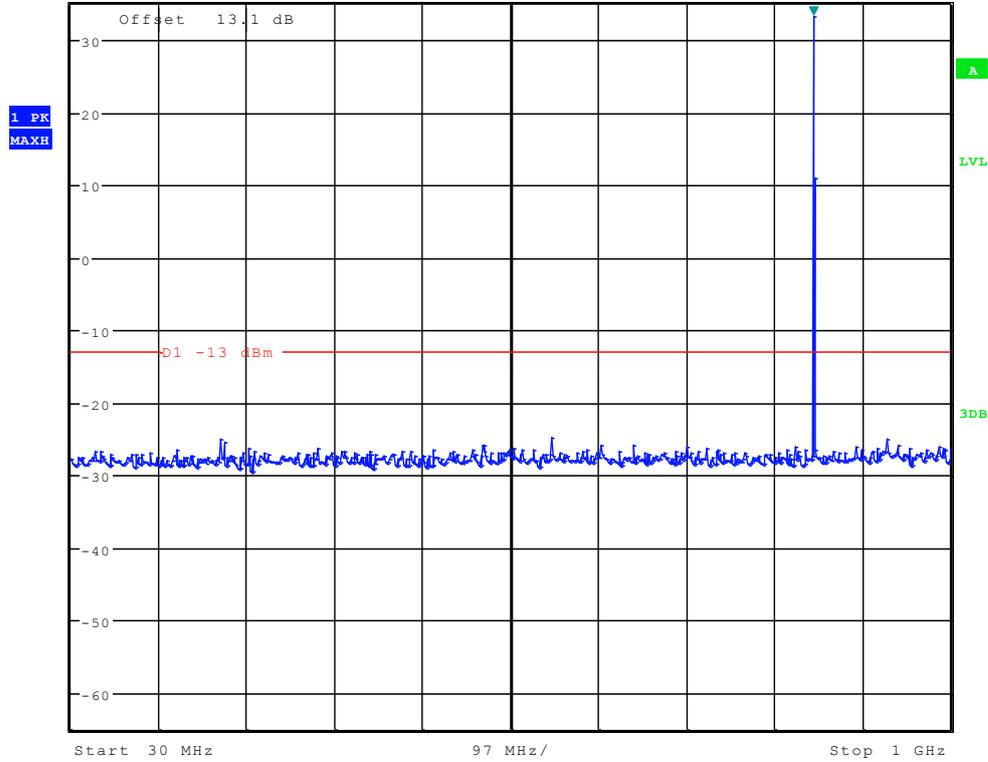


\*RBW 10 kHz      Marker 1 [T1 ]  
\*VBW 30 kHz      -31.76 dBm  
Ref 35 dBm      Att 50 dB      SWT 300 ms      197.836538462 kHz



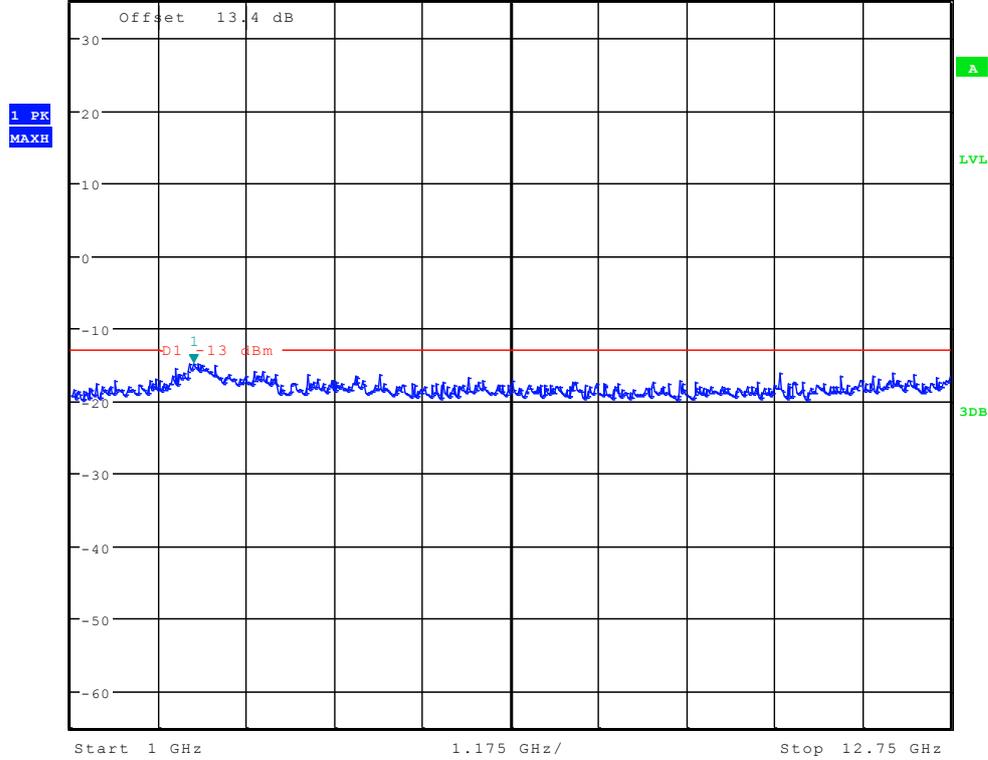


Ref 35 dBm Att 50 dB SWT 100 ms  
\*RBW 100 kHz Marker 1 [T1] 33.32 dBm  
\*VBW 300 kHz 849.214743590 MHz





\*RBW 1 MHz      Marker 1 [T1 ]  
 \*VBW 3 MHz      -14.83 dBm  
 Ref 35 dBm      Att 50 dB      SWT 70 ms      2.638221154 GHz



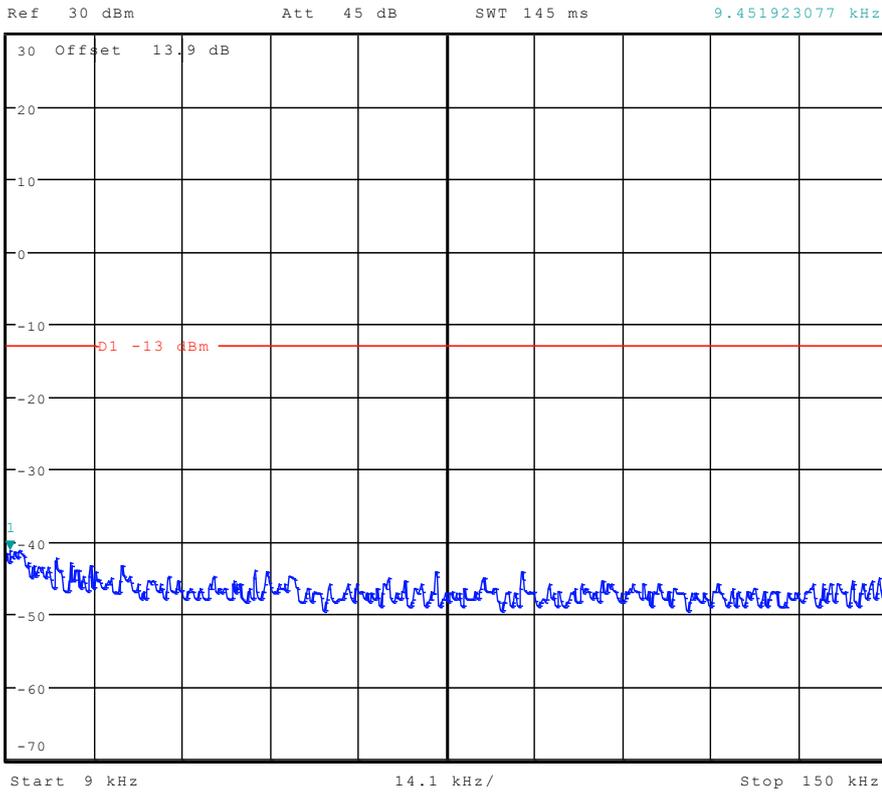


# TM2:EDGE

## Channel 128

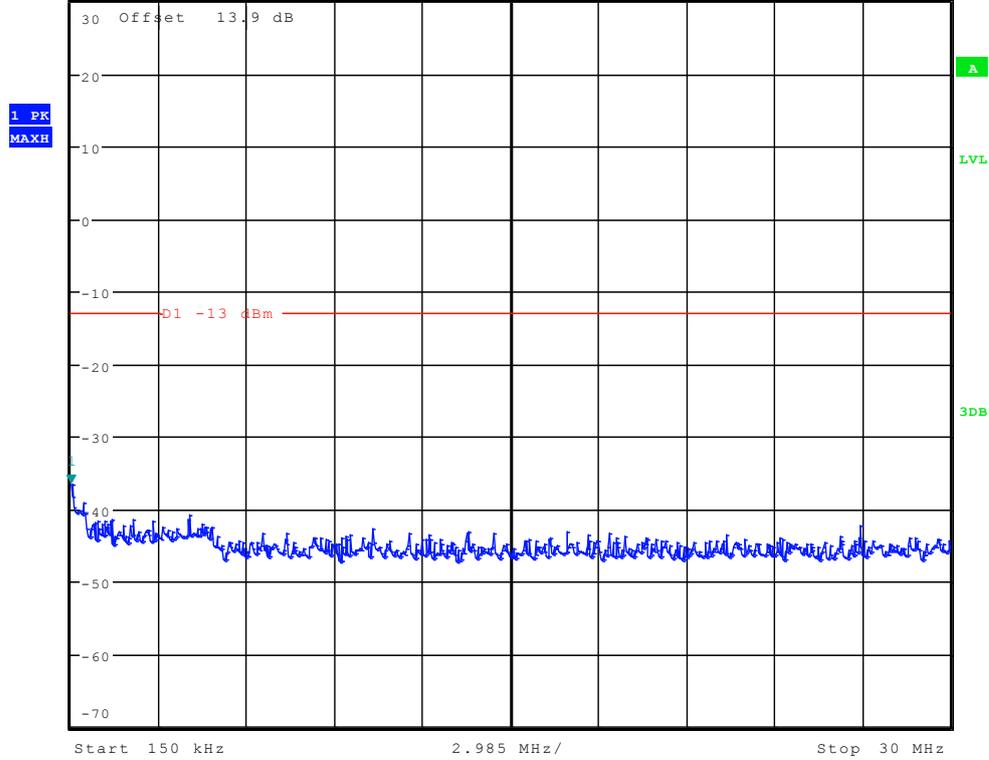


\*RBW 1 kHz      Marker 1 [T1 ]  
\*VBW 10 kHz      -41.08 dBm  
SWT 145 ms      9.451923077 kHz



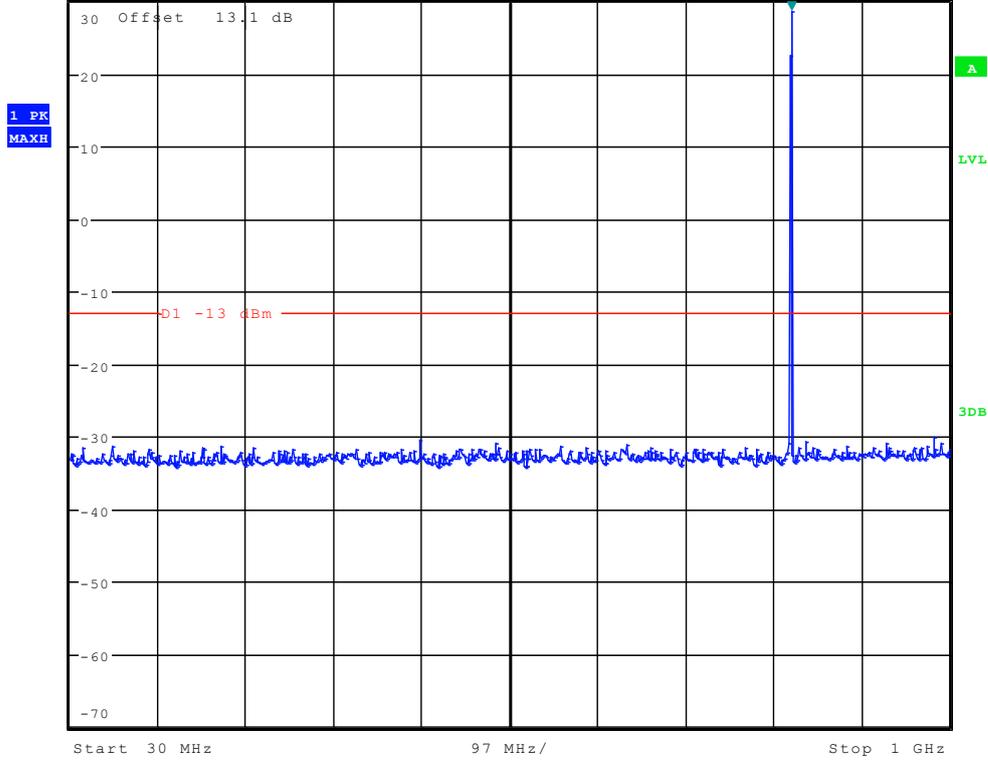


\*RBW 10 kHz      Marker 1 [T1 ]  
\*VBW 30 kHz      -36.52 dBm  
Ref 30 dBm      Att 45 dB      SWT 300 ms      150.00000000 kHz



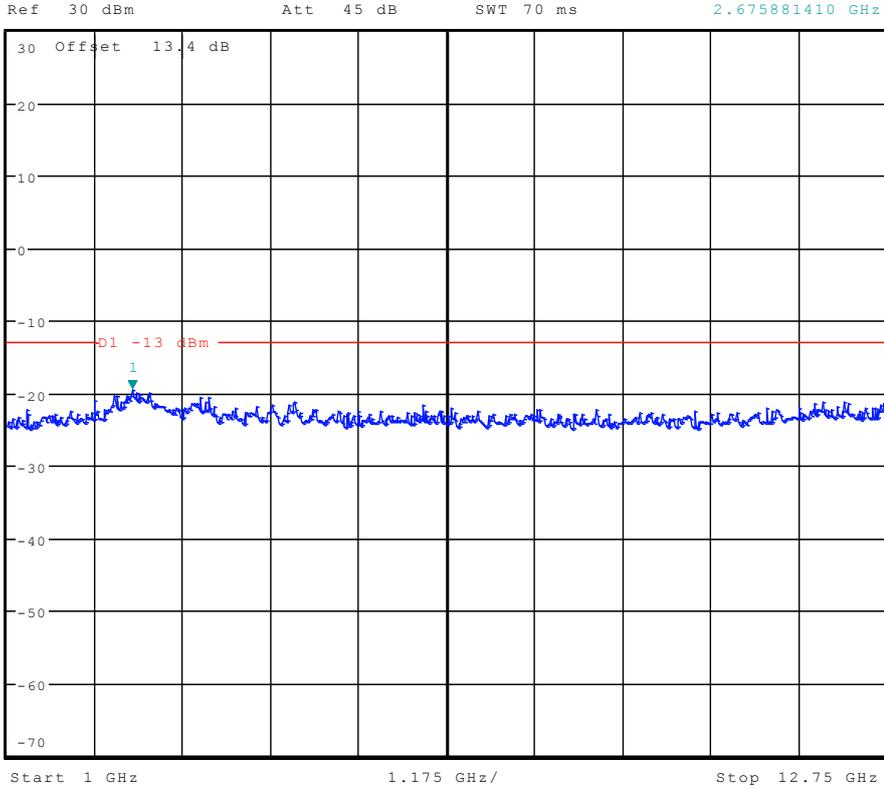


\* RBW 100 kHz      Marker 1 [T1 ]  
\* VBW 300 kHz      28.55 dBm  
Ref 30 dBm      Att 45 dB      SWT 100 ms      825.897435897 MHz





\*RBW 1 MHz      Marker 1 [T1 ]  
\*VBW 3 MHz      -19.39 dBm  
SWT 70 ms      2.675881410 GHz



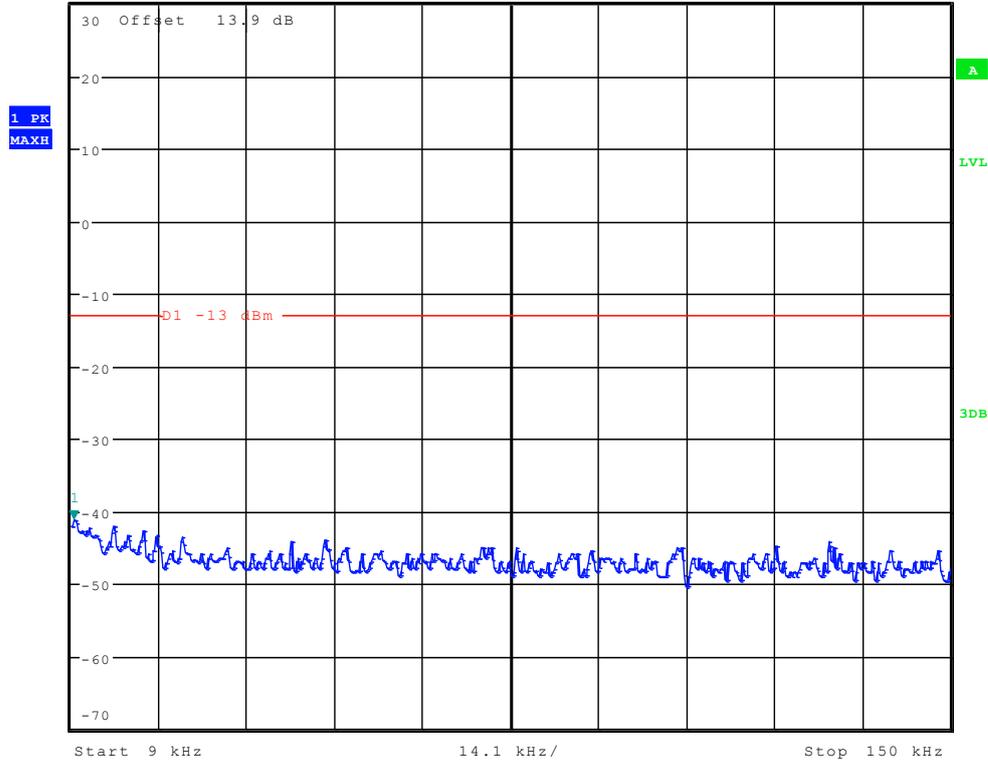


## Channel 192



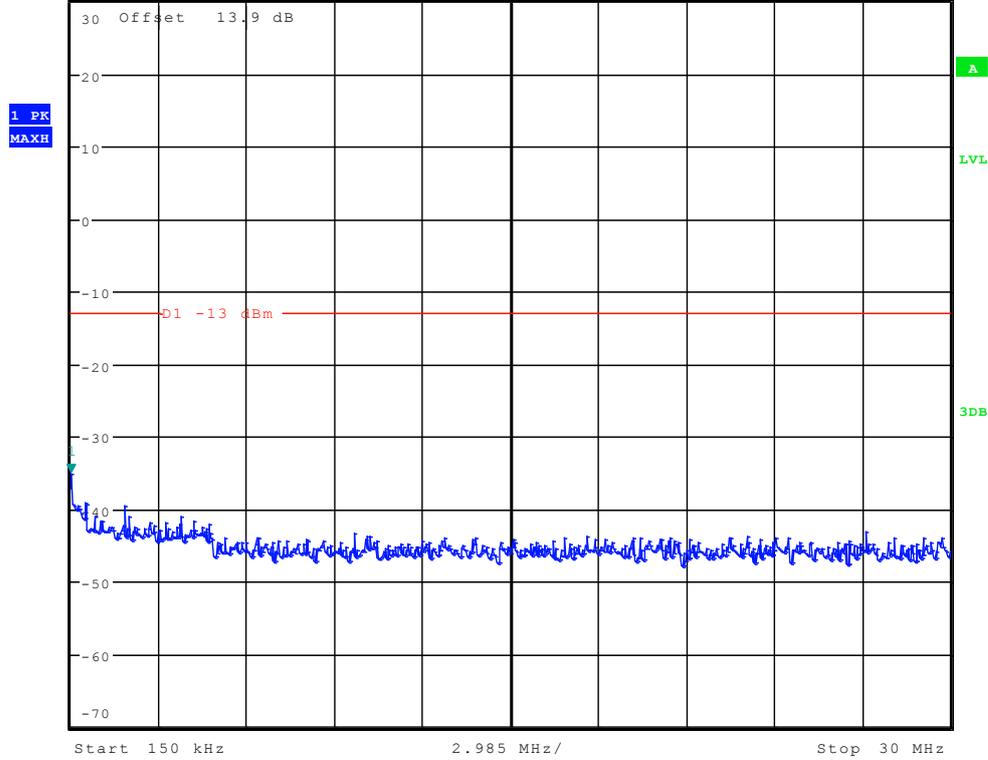
\*RBW 1 kHz      Marker 1 [T1 ]  
\*VBW 10 kHz      -41.08 dBm  
SWT 145 ms      9.451923077 kHz

Ref 30 dBm      Att 45 dB



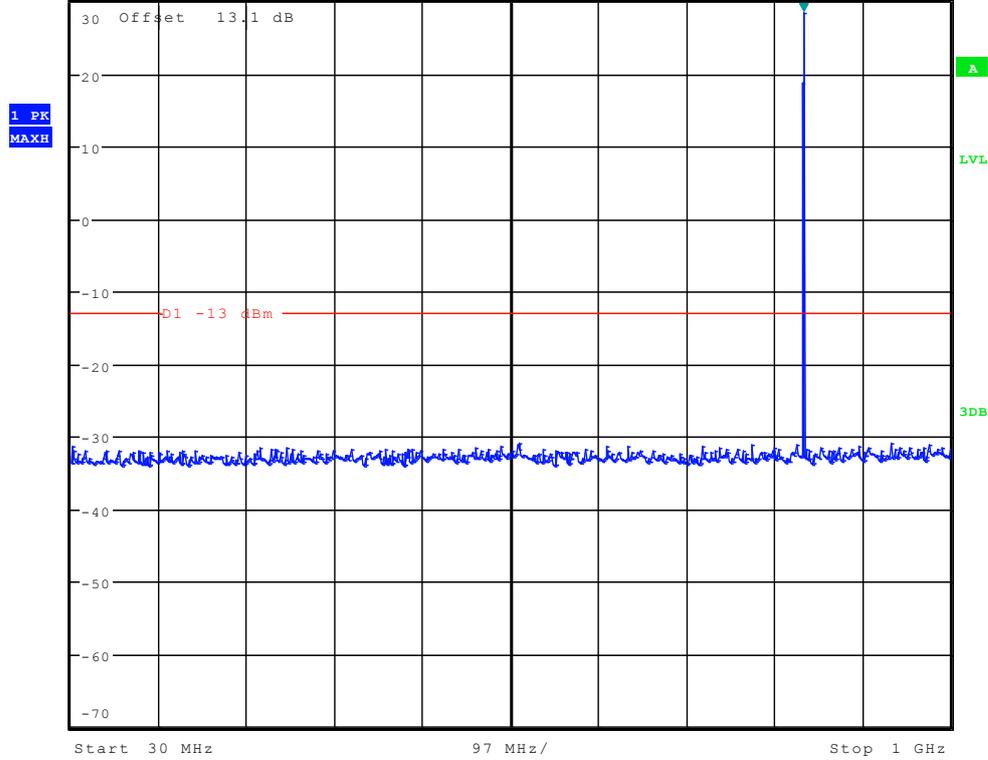


\*RBW 10 kHz      Marker 1 [T1 ]  
\*VBW 30 kHz      -35.06 dBm  
Ref 30 dBm      Att 45 dB      SWT 300 ms      150.00000000 kHz



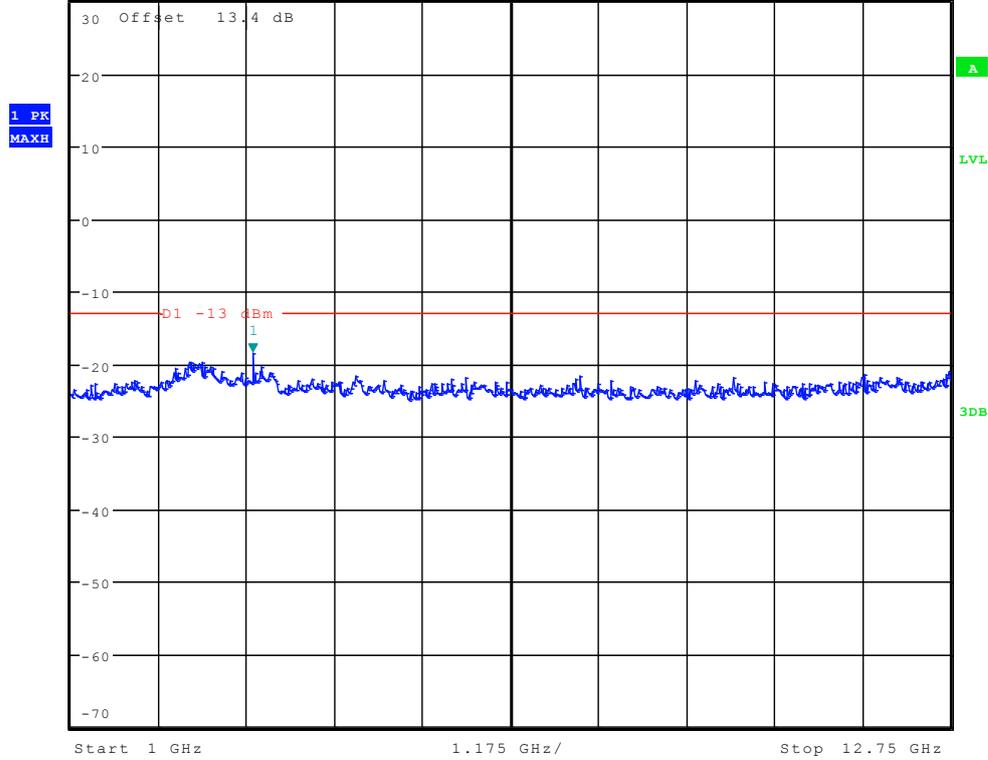


\*RBW 100 kHz      Marker 1 [T1 ]  
 \*VBW 300 kHz      28.50 dBm  
 Ref 30 dBm      Att 45 dB      SWT 100 ms      838.333333333 MHz





\* RBW 1 MHz      Marker 1 [T1 ]  
 \* VBW 3 MHz      -18.48 dBm  
 Ref 30 dBm      Att 45 dB      SWT 70 ms      3.429086538 GHz



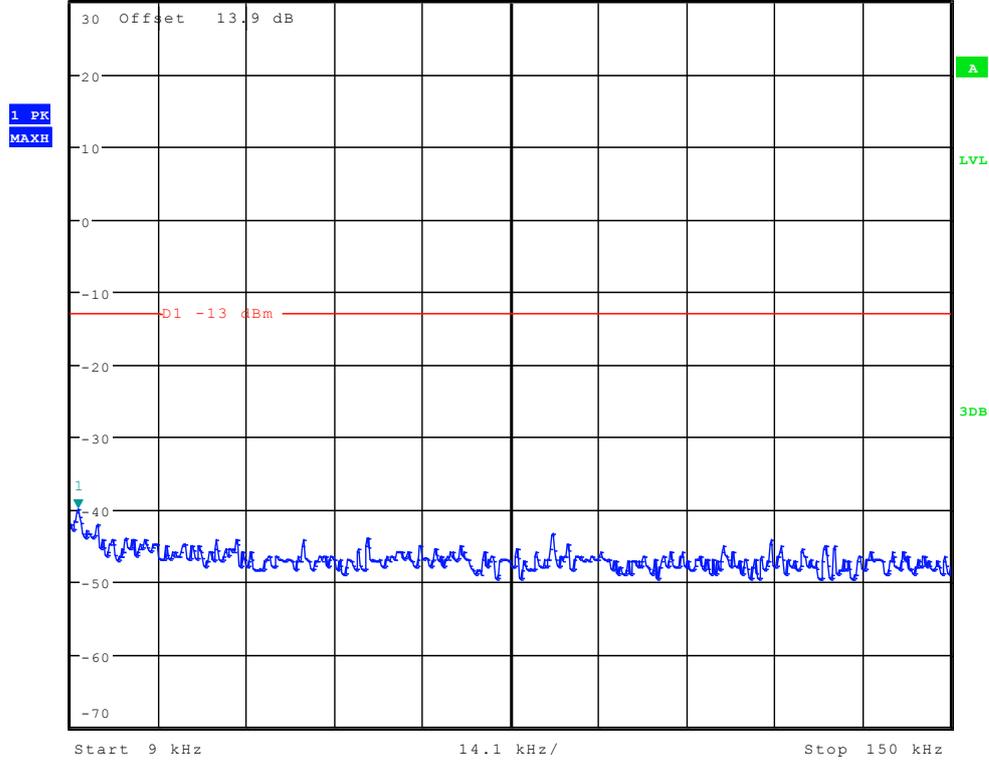


## Channel 251



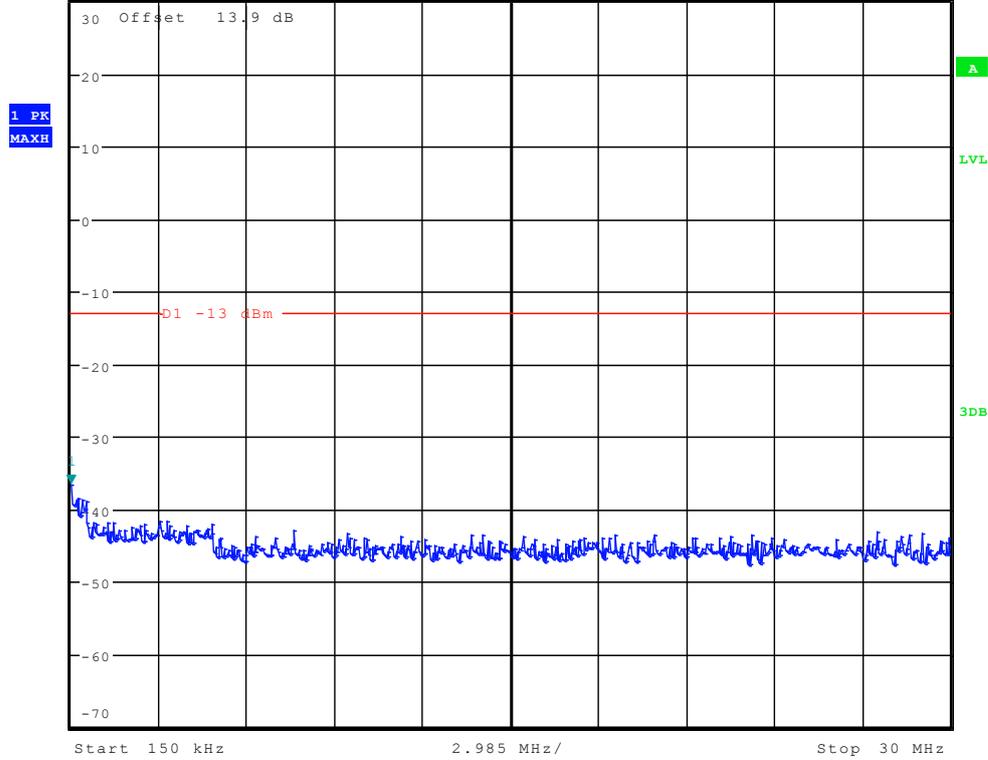
\* RBW 1 kHz      Marker 1 [T1 ]  
 \* VBW 10 kHz      -39.92 dBm  
 SWT 145 ms      10.129807692 kHz

Ref 30 dBm      Att 45 dB



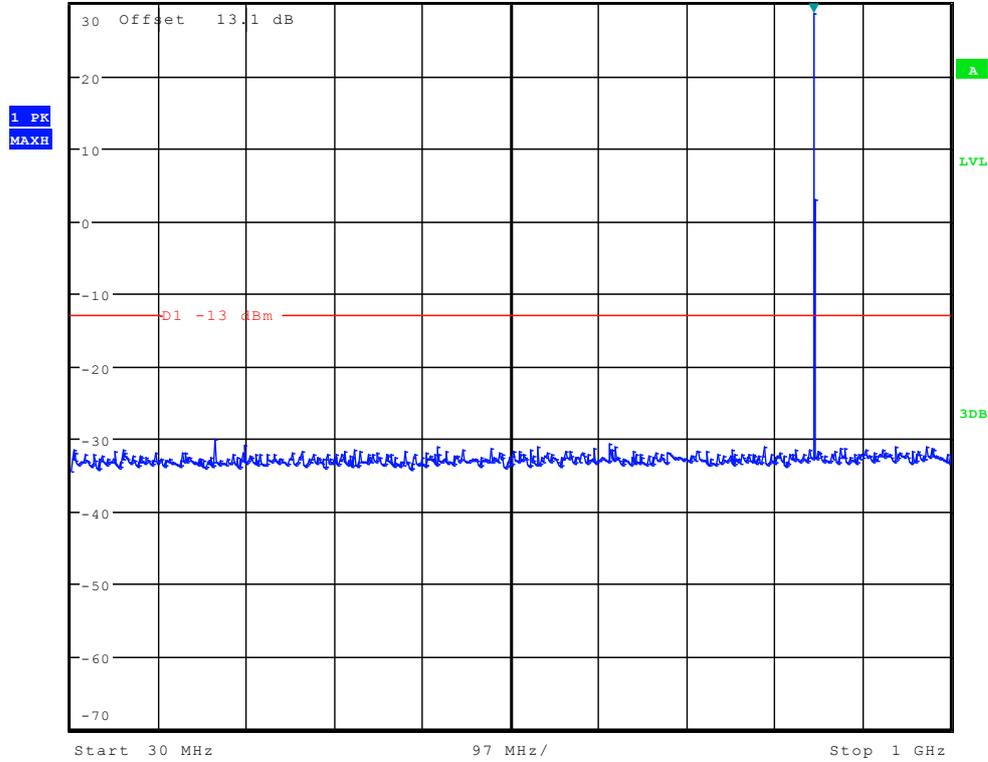


\*RBW 10 kHz      Marker 1 [T1 ]  
\*VBW 30 kHz      -36.52 dBm  
Ref 30 dBm      Att 45 dB      SWT 300 ms      150.00000000 kHz



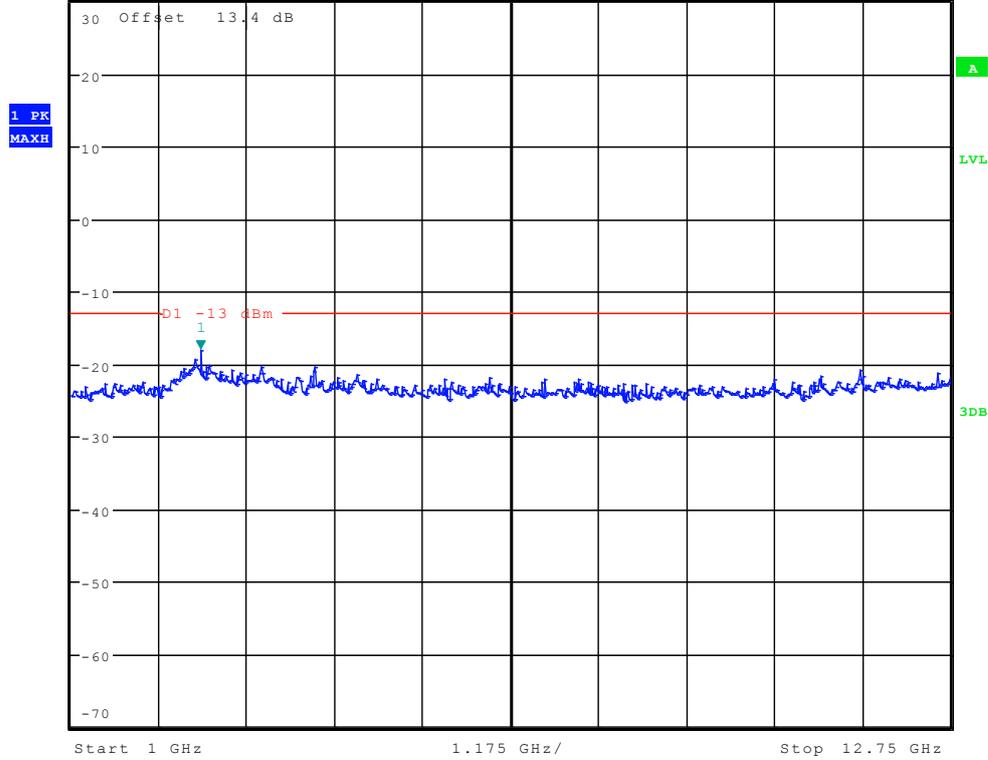


\*RBW 100 kHz      Marker 1 [T1 ]  
\*VBW 300 kHz      28.68 dBm  
Ref 30 dBm      Att 45 dB      SWT 100 ms      849.214743590 MHz





\*RBW 1 MHz      Marker 1 [T1 ]  
 \*VBW 3 MHz      -17.90 dBm  
 Ref 30 dBm      Att 45 dB      SWT 70 ms      2.732371795 GHz



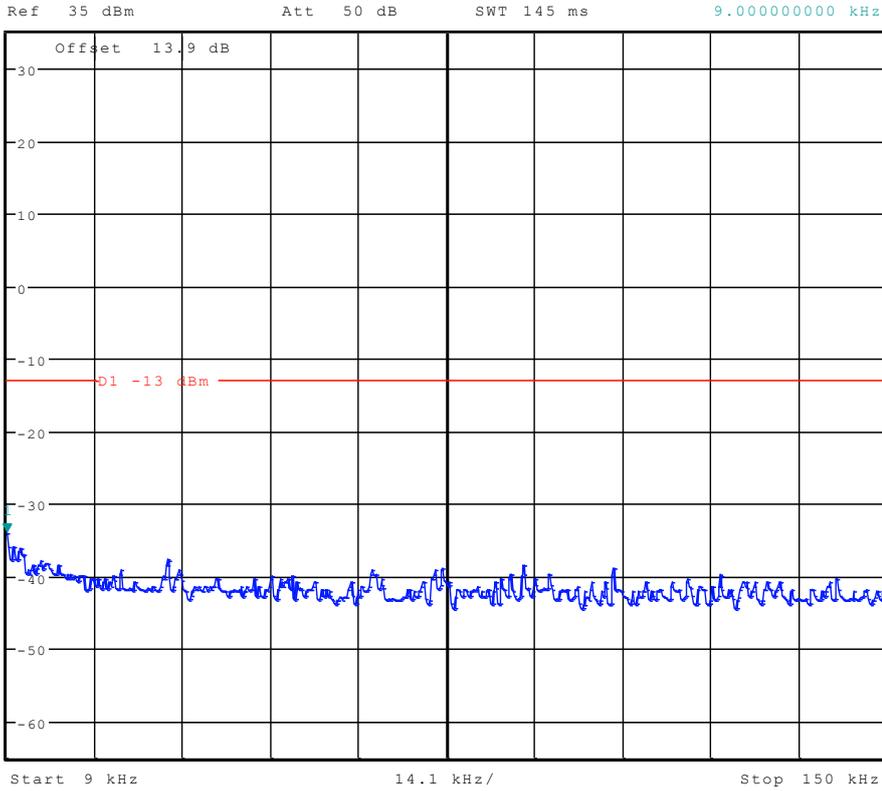


# TM3: WCDMA

## Channel 4132

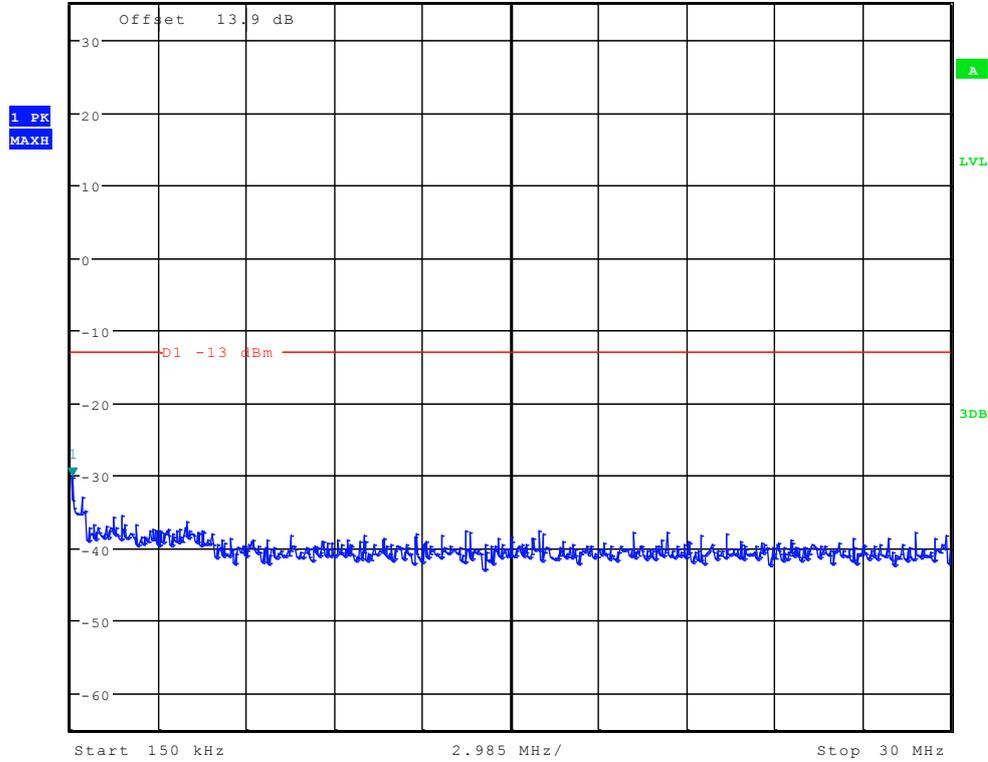


\*RBW 1 kHz      Marker 1 [T1 ]  
\*VBW 10 kHz      -34.06 dBm  
SWT 145 ms      9.000000000 kHz





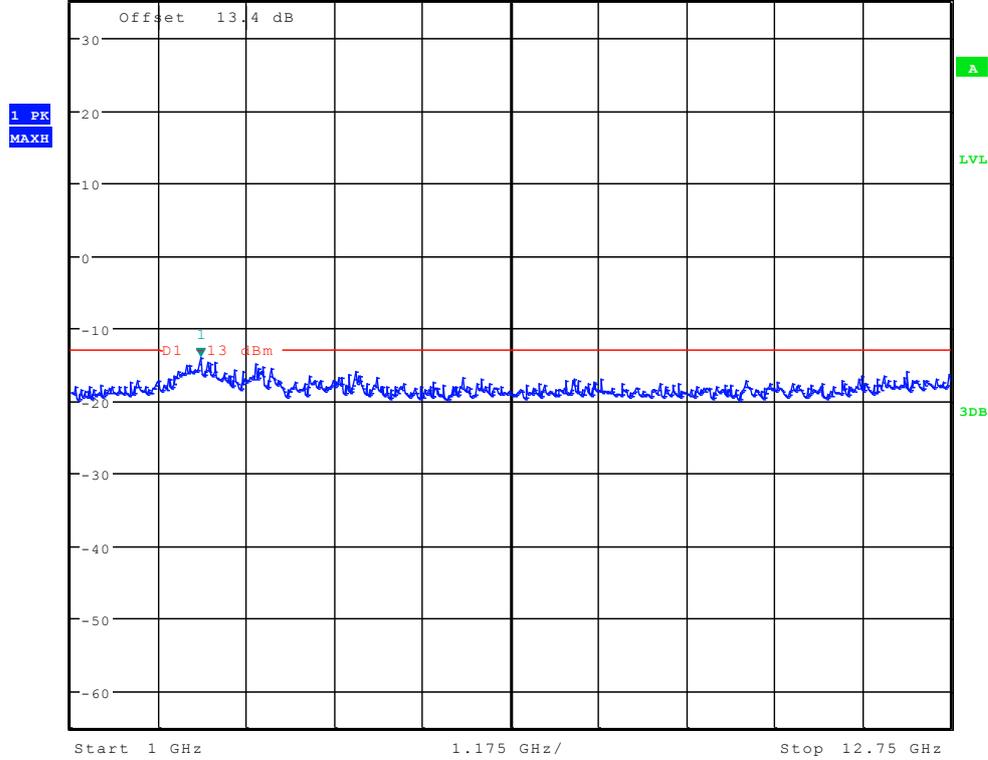
\*RBW 10 kHz      Marker 1 [T1 ]  
 \*VBW 30 kHz      -30.27 dBm  
 Ref 35 dBm      Att 50 dB      SWT 300 ms      197.836538462 kHz







\*RBW 1 MHz      Marker 1 [T1 ]  
 \*VBW 3 MHz      -14.06 dBm  
 Ref 35 dBm      Att 50 dB      SWT 70 ms      2.732371795 GHz

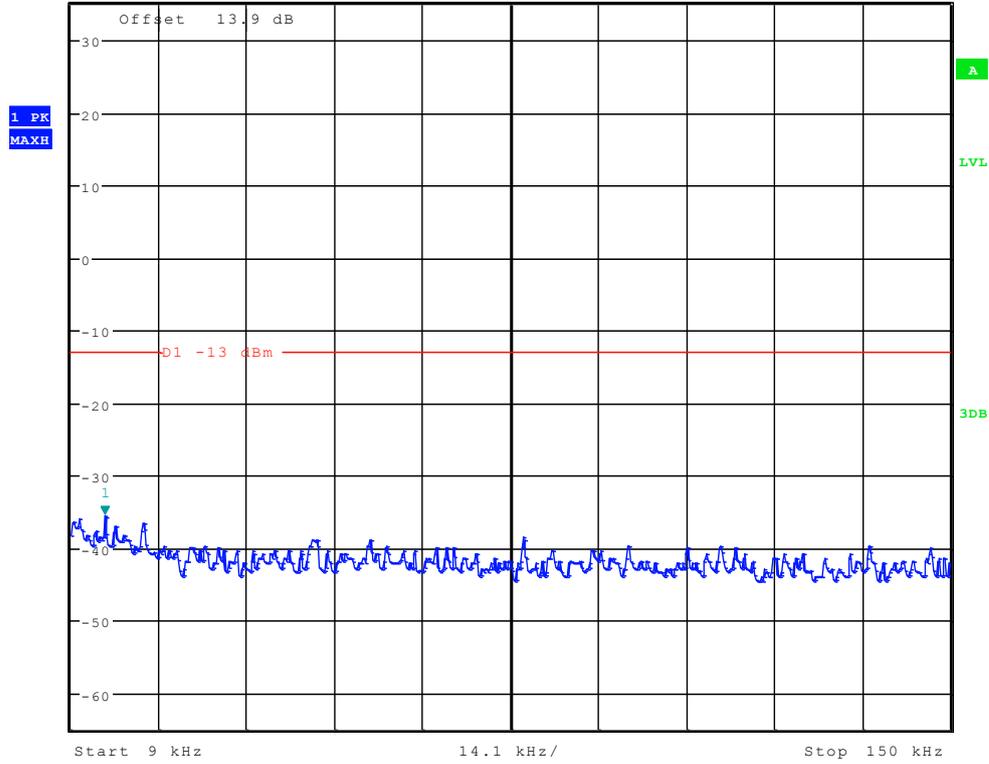




## Channel 4182

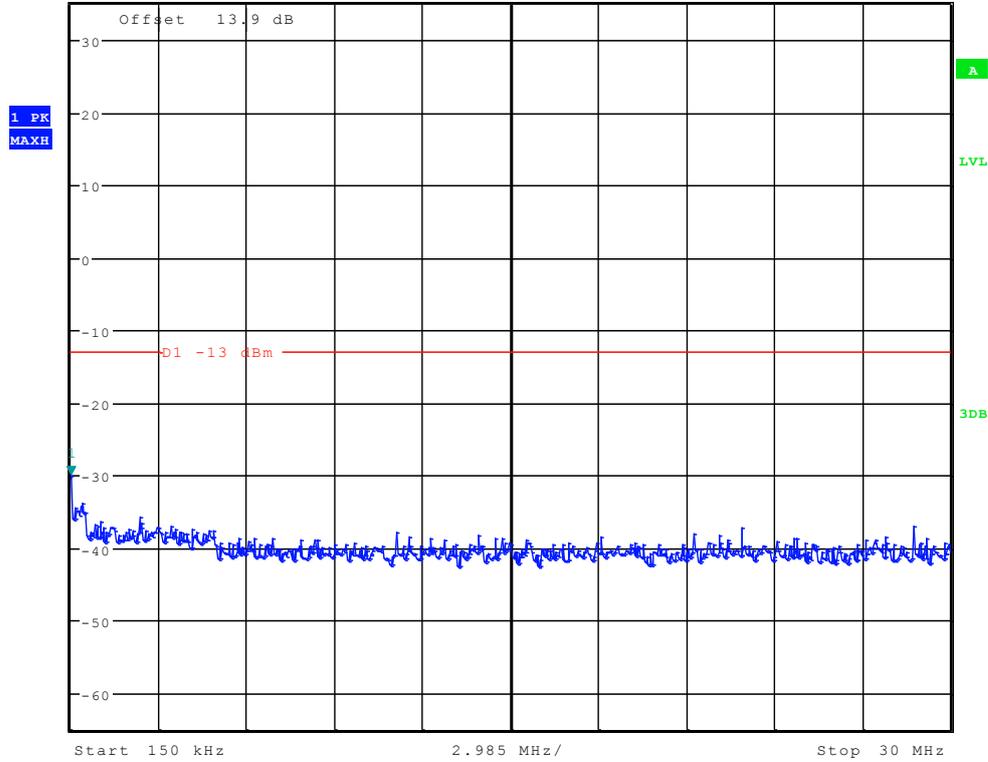


\*RBW 1 kHz      Marker 1 [T1 ]  
 \*VBW 10 kHz      -35.38 dBm  
 Ref 35 dBm      Att 50 dB      SWT 145 ms      14.423076923 kHz



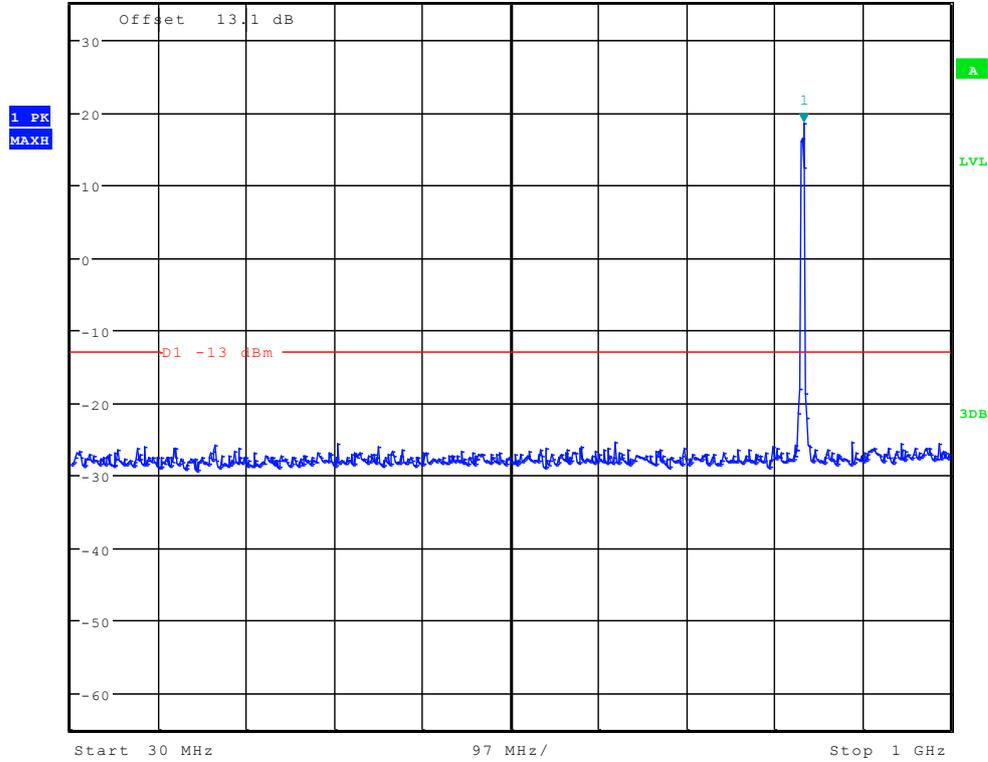


\*RBW 10 kHz      Marker 1 [T1 ]  
 \*VBW 30 kHz      -30.00 dBm  
 Ref 35 dBm      Att 50 dB      SWT 300 ms      150.000000000 kHz



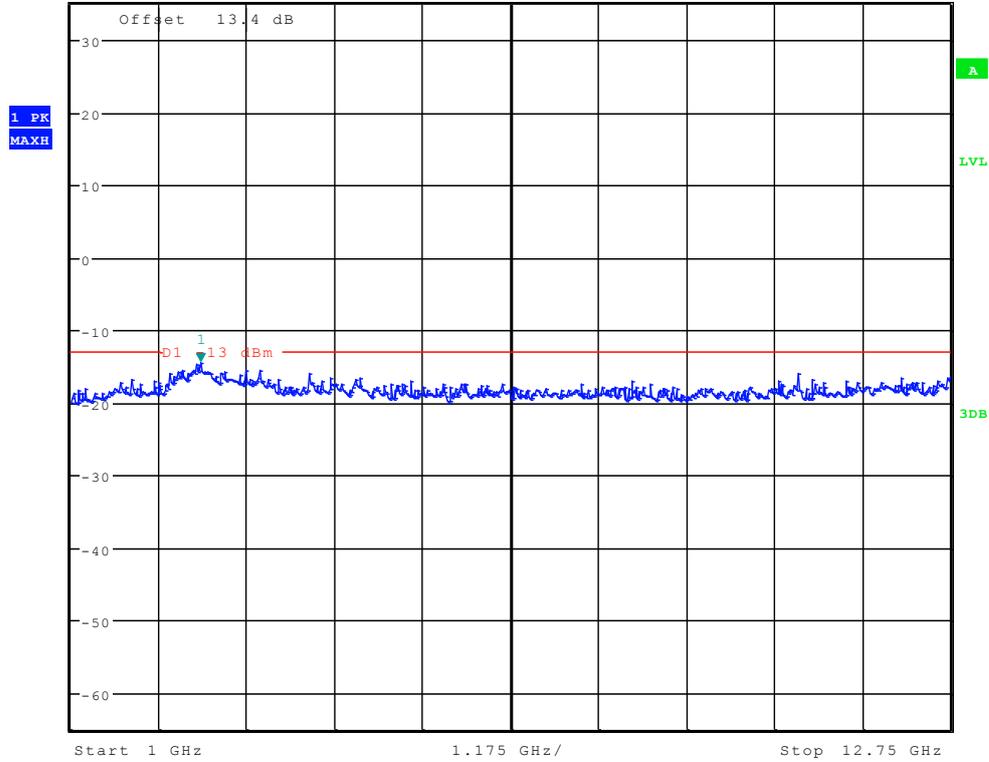


\*RBW 100 kHz      Marker 1 [T1 ]  
\*VBW 300 kHz      18.54 dBm  
Ref 35 dBm      Att 50 dB      SWT 100 ms      838.333333333 MHz





\*RBW 1 MHz      Marker 1 [T1 ]  
 \*VBW 3 MHz      -14.57 dBm  
 Ref 35 dBm      Att 50 dB      SWT 70 ms      2.732371795 GHz

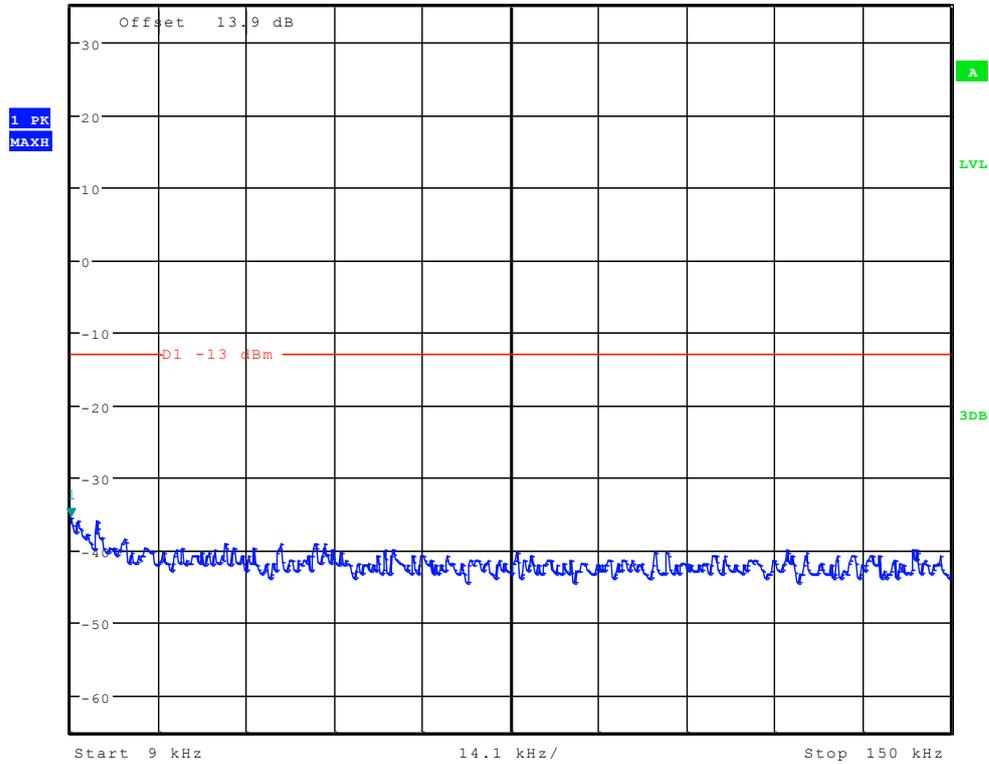




### Channel 4233

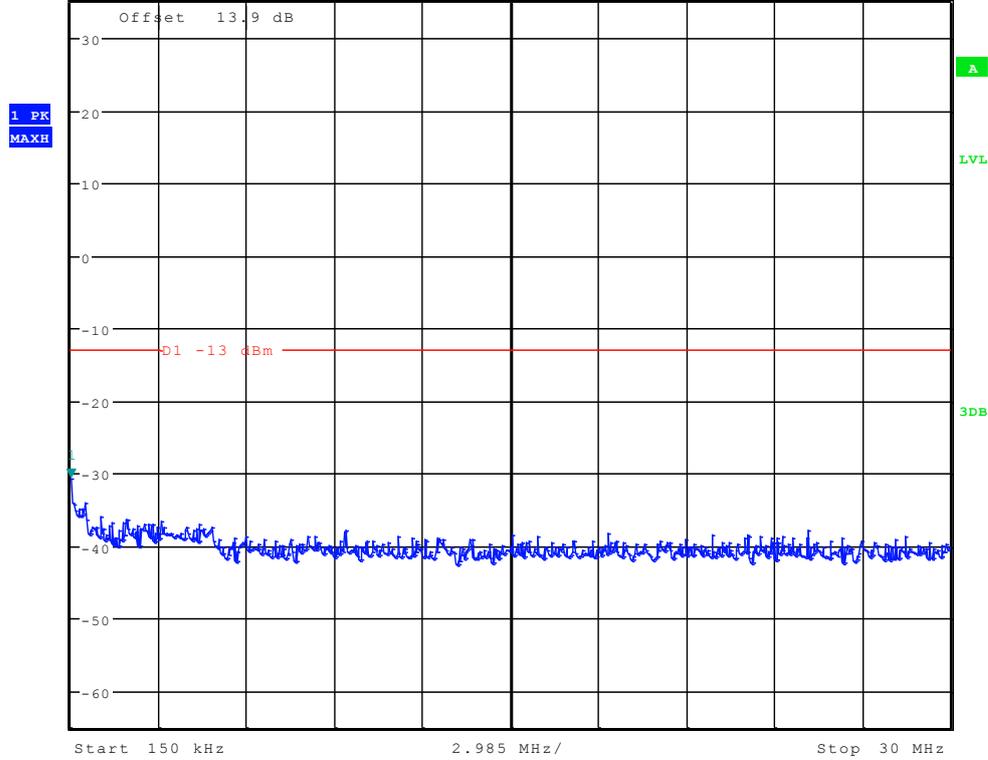


Ref 35 dBm      Att 50 dB      \*RBW 1 kHz      Marker 1 [T1]      -35.38 dBm  
\*VBW 10 kHz      SWT 145 ms      9.000000000 kHz



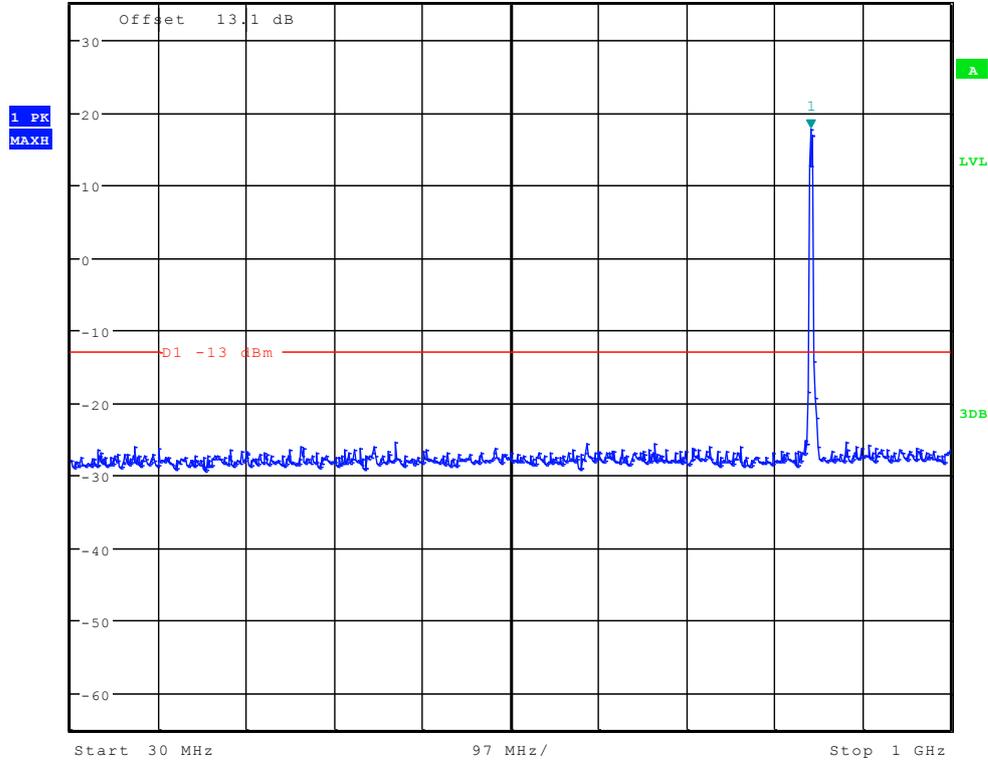


\*RBW 10 kHz      Marker 1 [T1 ]  
 \*VBW 30 kHz      -30.76 dBm  
 Ref 35 dBm      Att 50 dB      SWT 300 ms      150.00000000 kHz



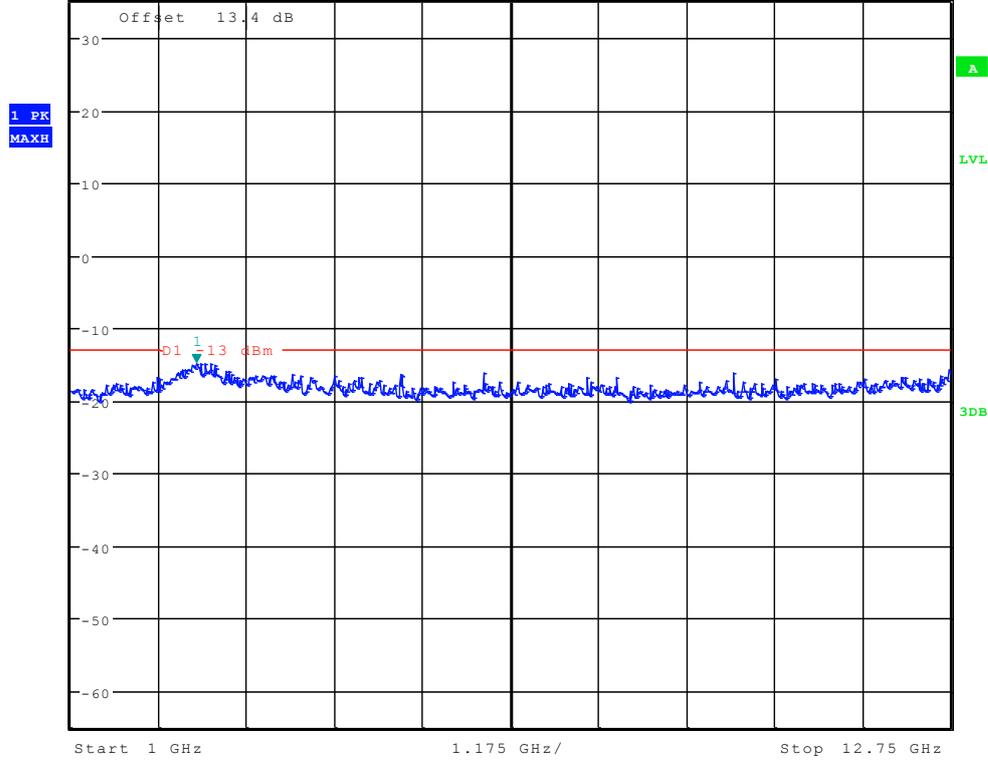


\*RBW 100 kHz      Marker 1 [T1 ]  
\*VBW 300 kHz      17.59 dBm  
Ref 35 dBm      Att 50 dB      SWT 100 ms      846.105769231 MHz





\*RBW 1 MHz      Marker 1 [T1 ]  
 \*VBW 3 MHz      -14.85 dBm  
 Ref 35 dBm      Att 50 dB      SWT 70 ms      2.675881410 GHz



The END

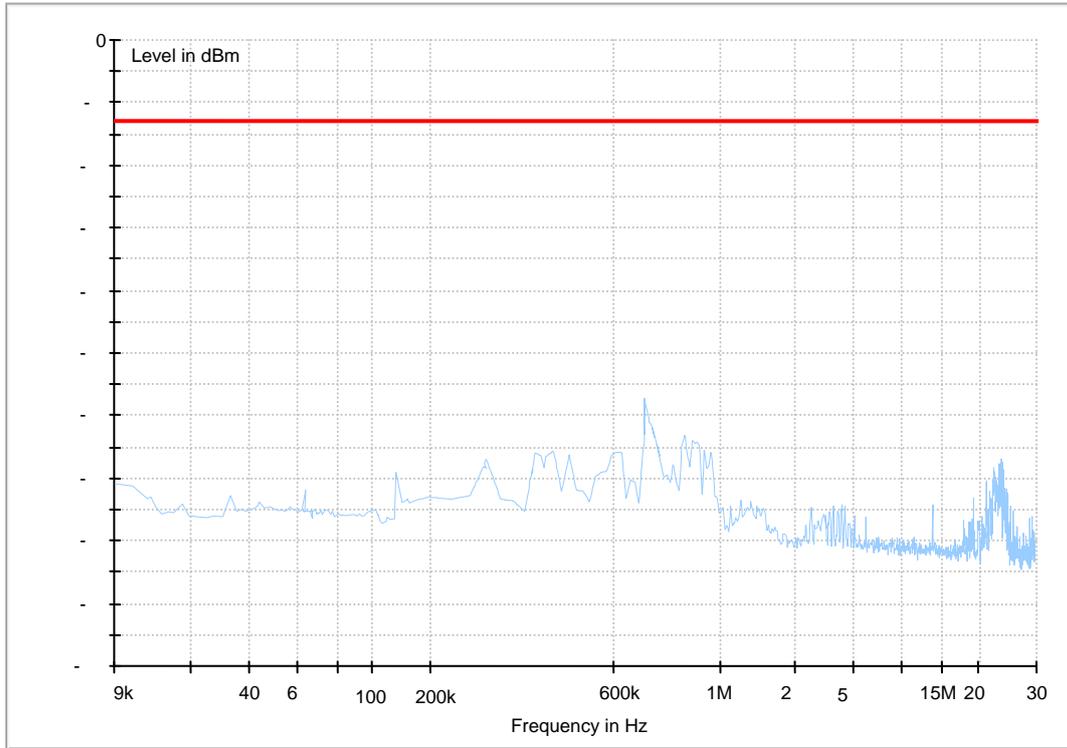
# Appendix F

## Radiated spurious emission

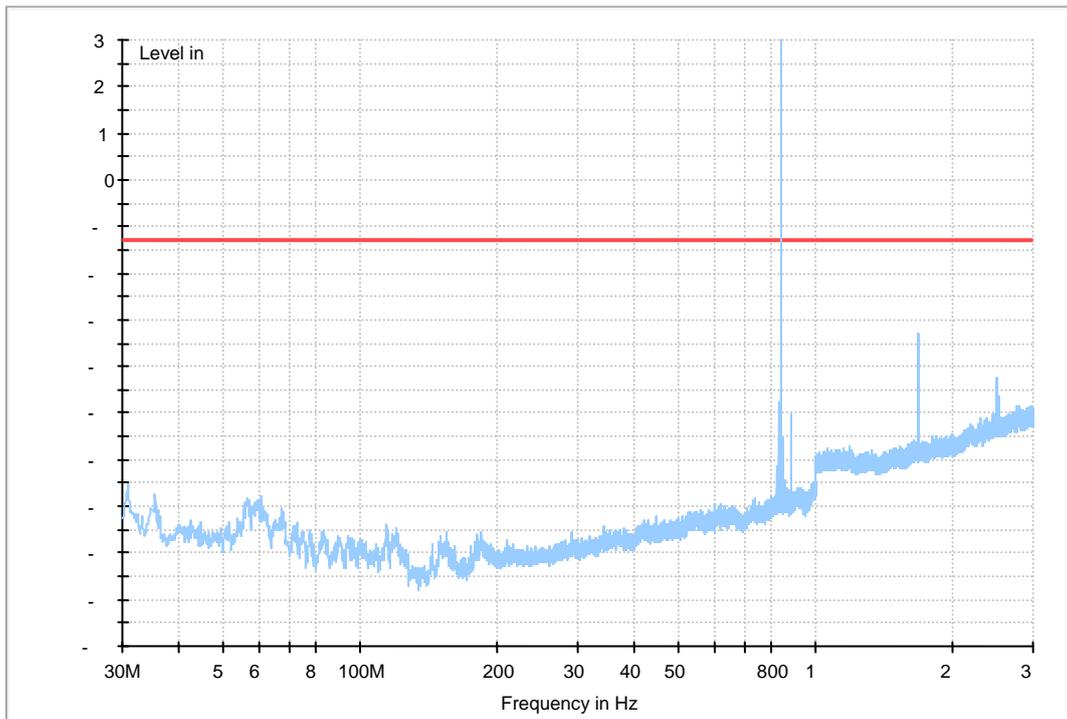
According to FCC Part 2.1053 & Part22.917

# GSM 850

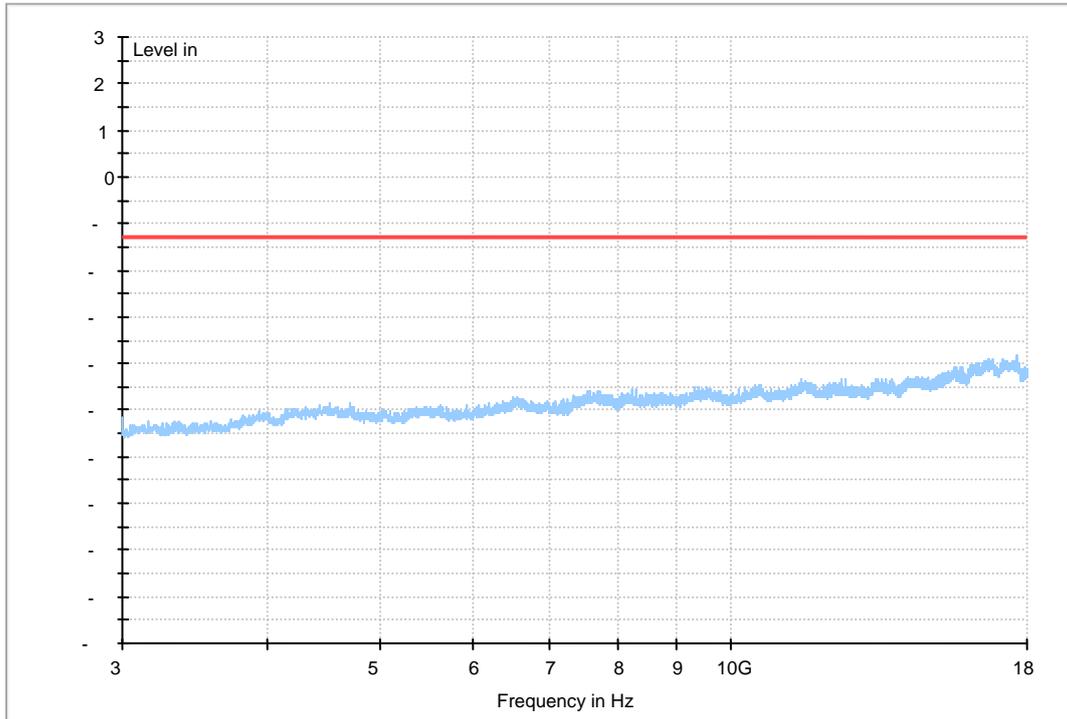
Traffic Mode (9kHz-30MHz)



Traffic Mode (30MHz-3GHz)

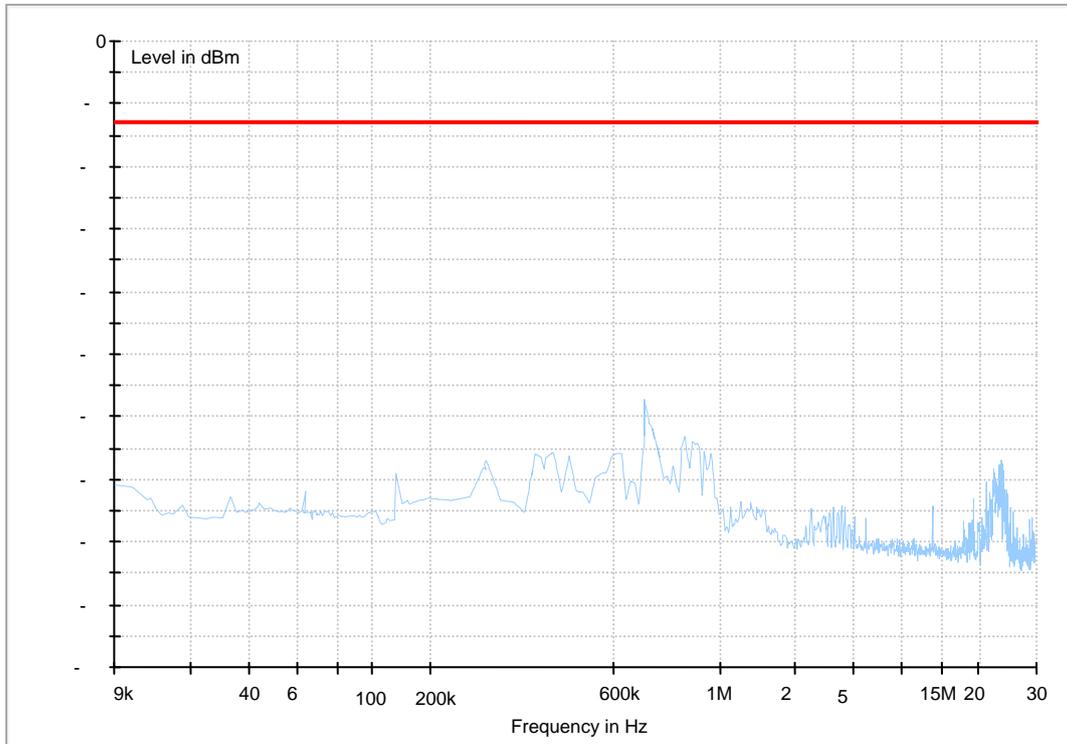


### Traffic Mode (3GHz-18GHz)

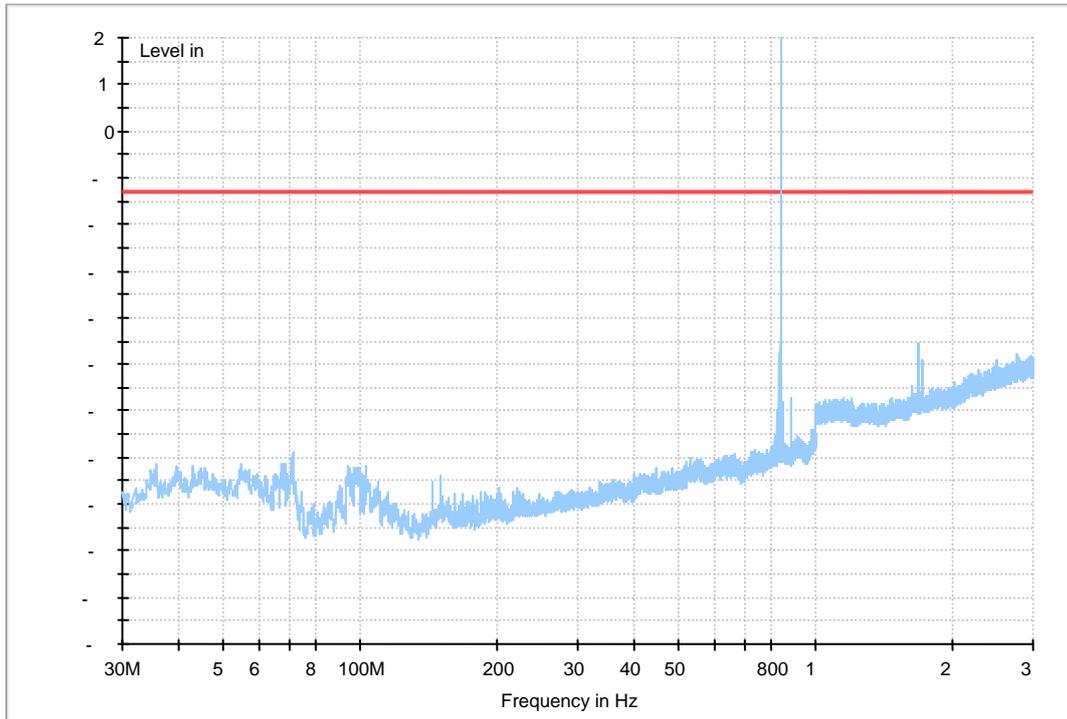


### GPRS 850

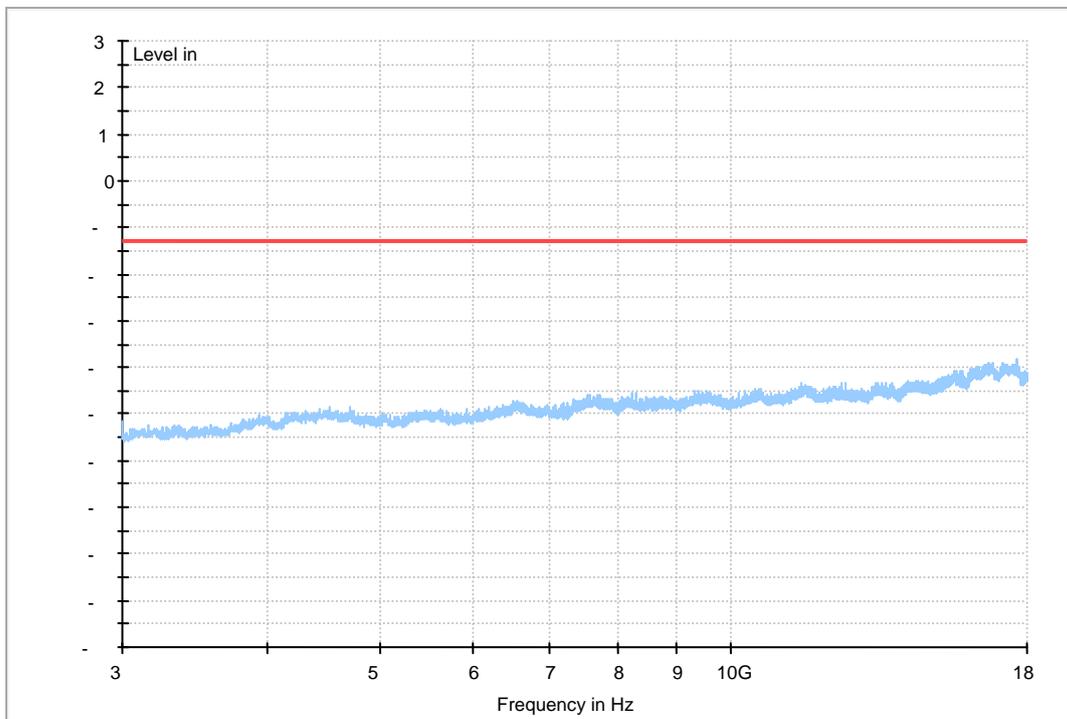
#### Traffic Mode (9kHz-30MHz)



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

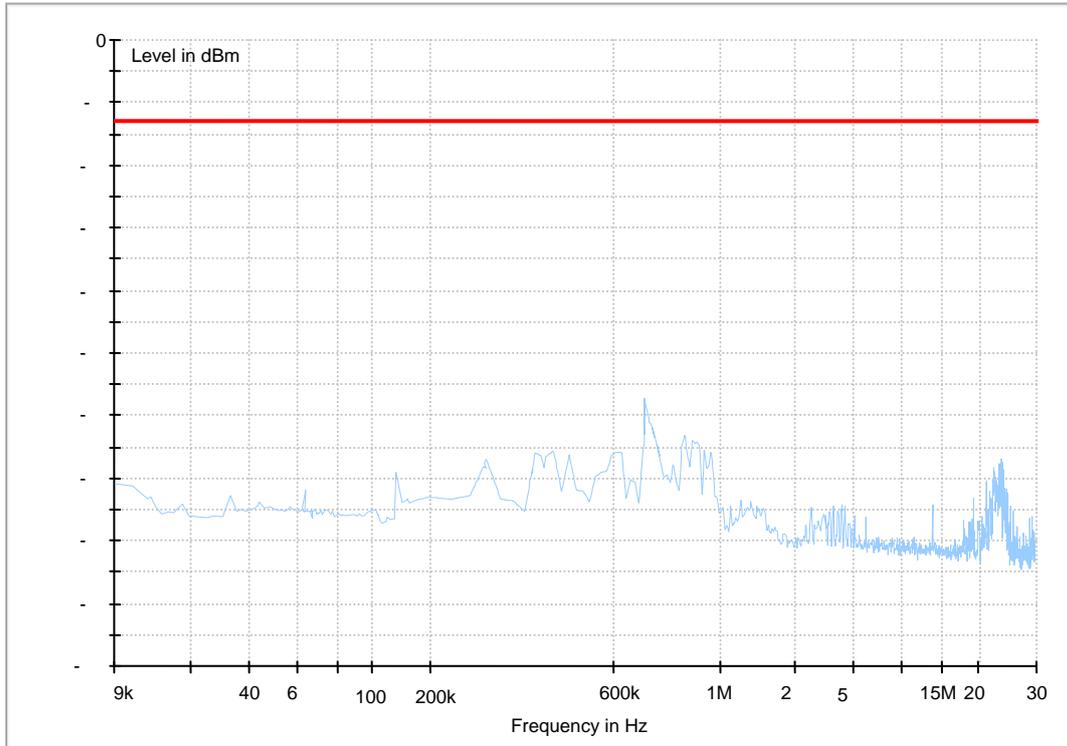


### Traffic Mode (3GHz-18GHz)

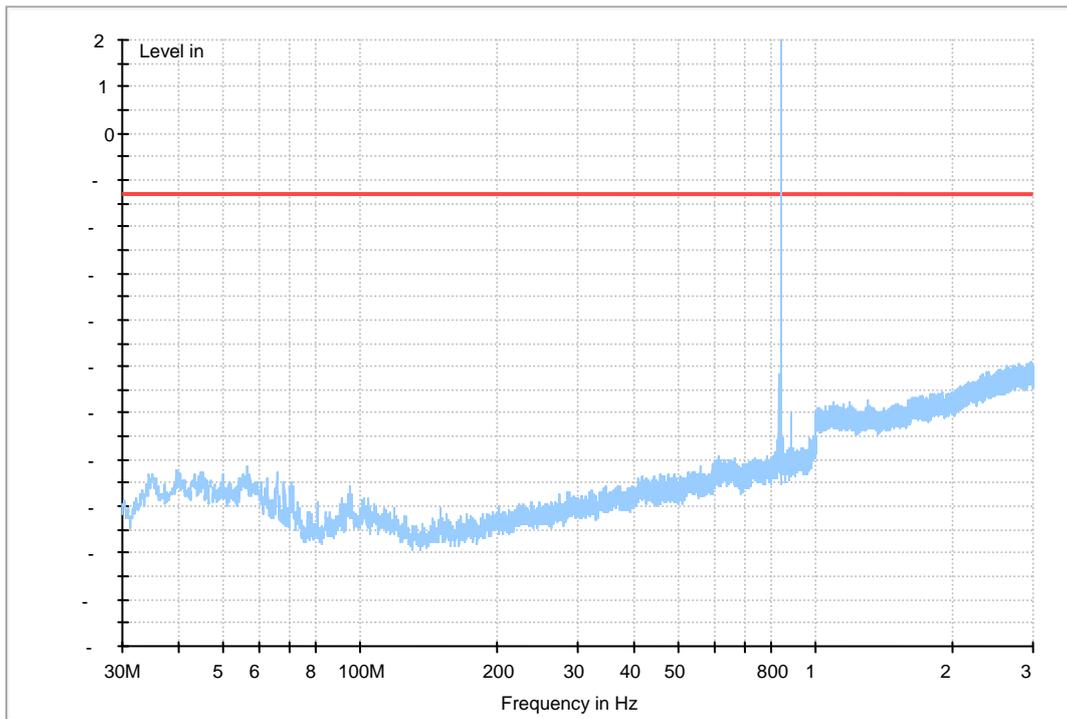


## EDGE 850

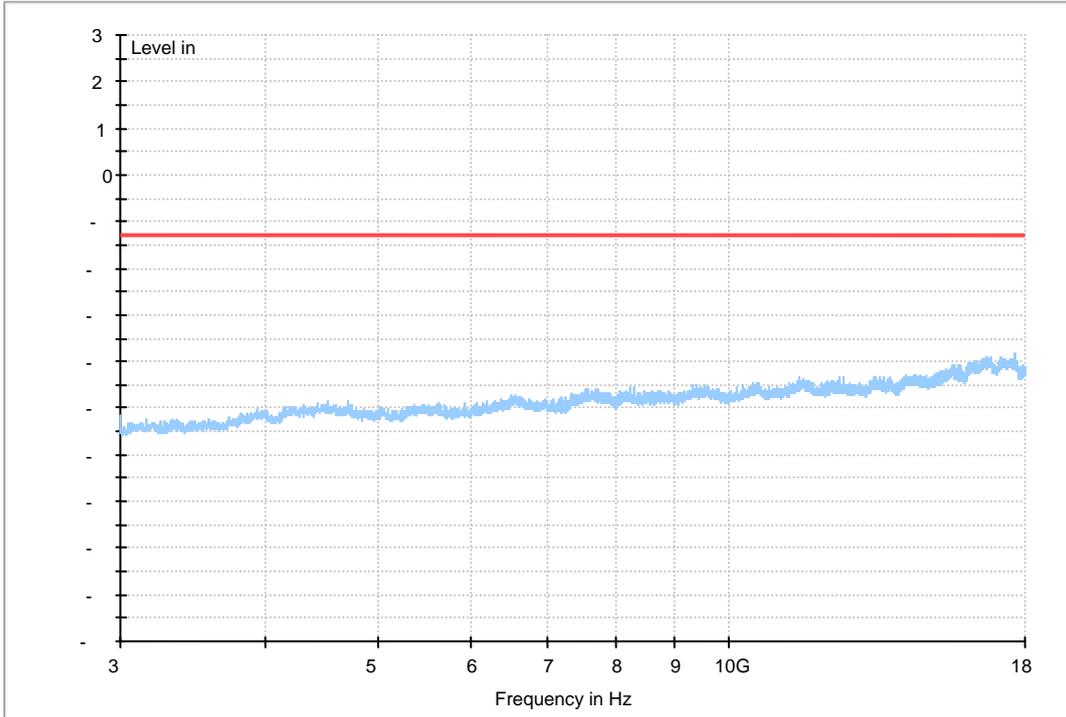
### Traffic Mode (9kHz-30MHz)



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

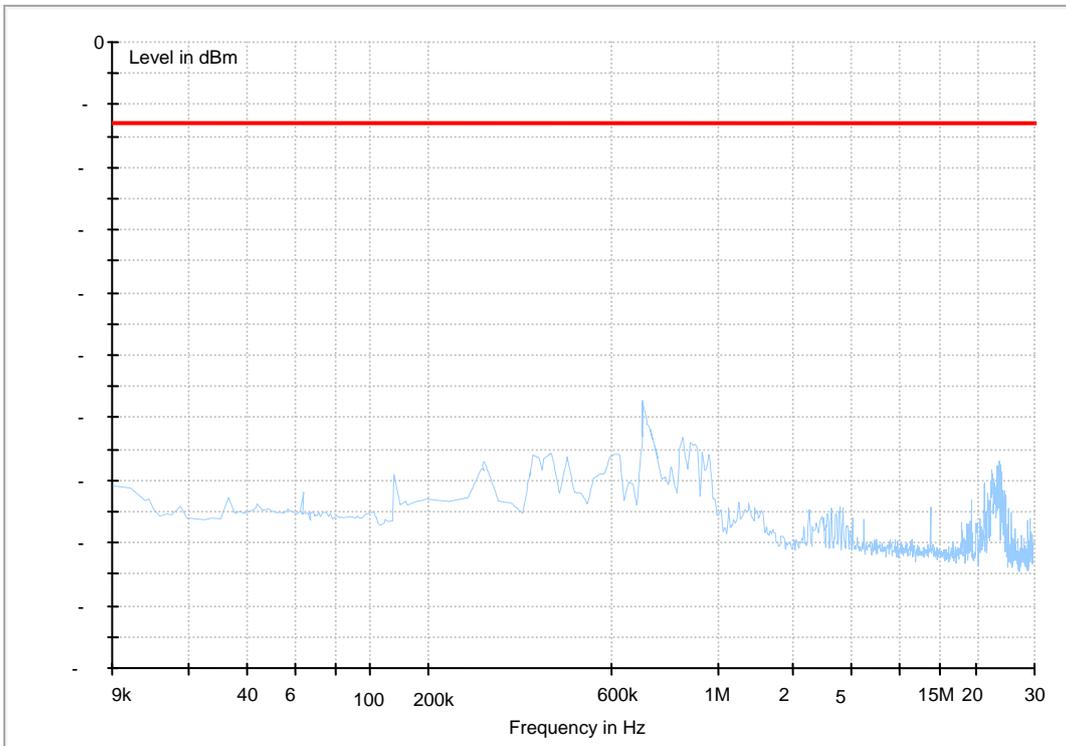


### Traffic Mode (3GHz-18GHz)

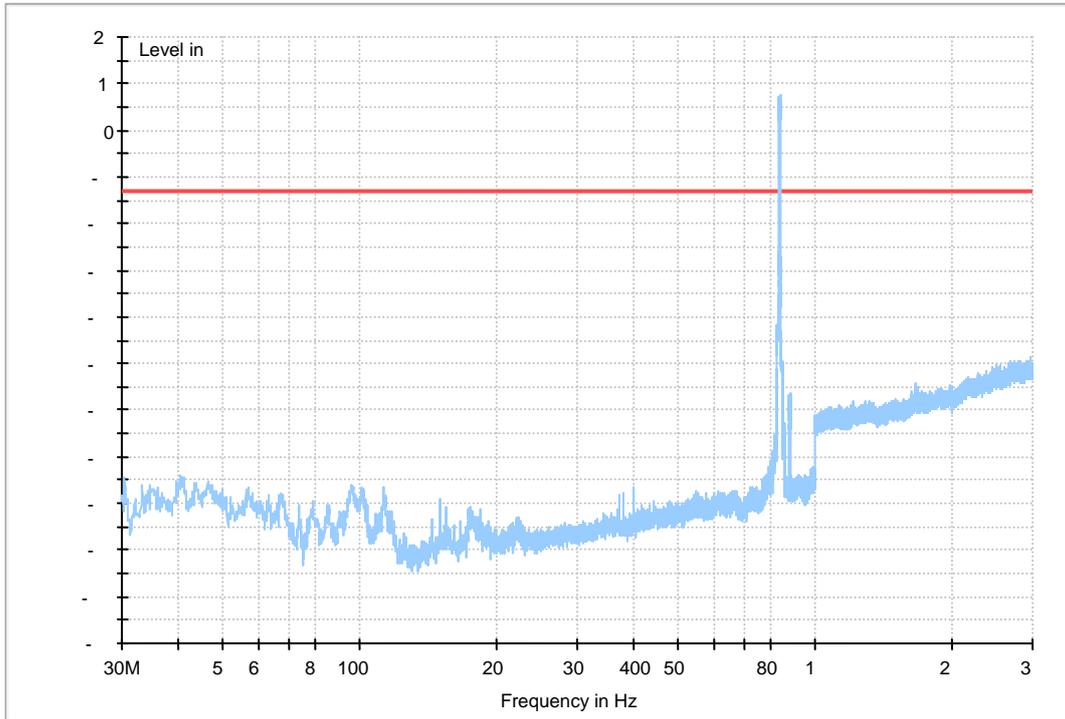


### WCDMA Band V

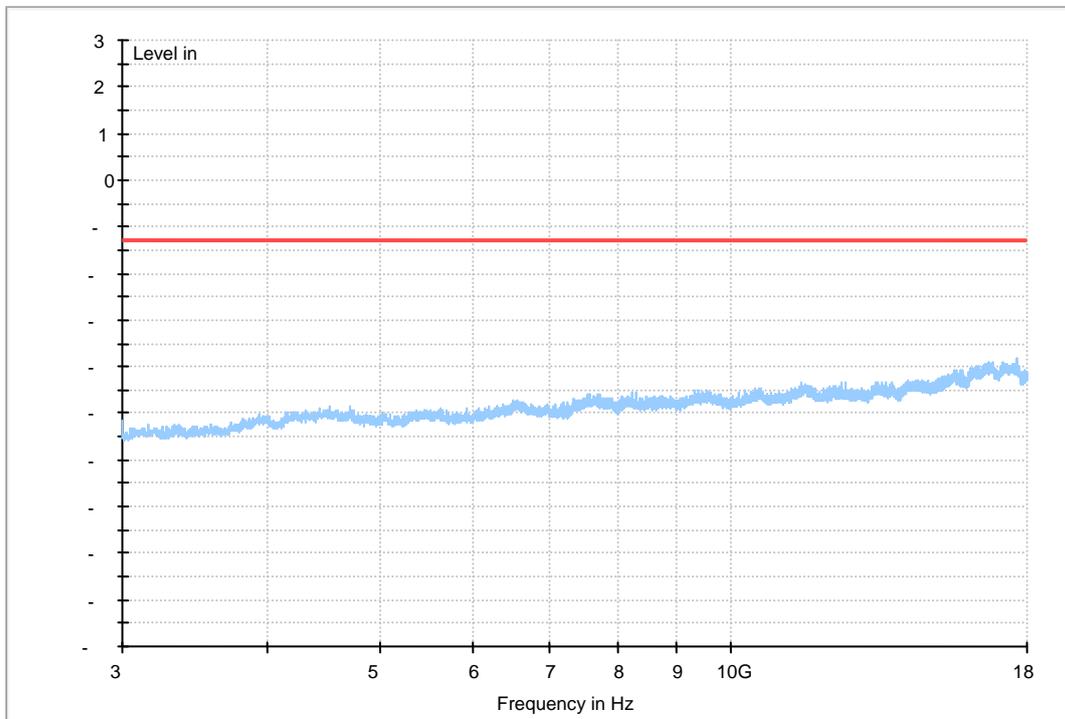
#### Traffic Mode (9kHz-30MHz)



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

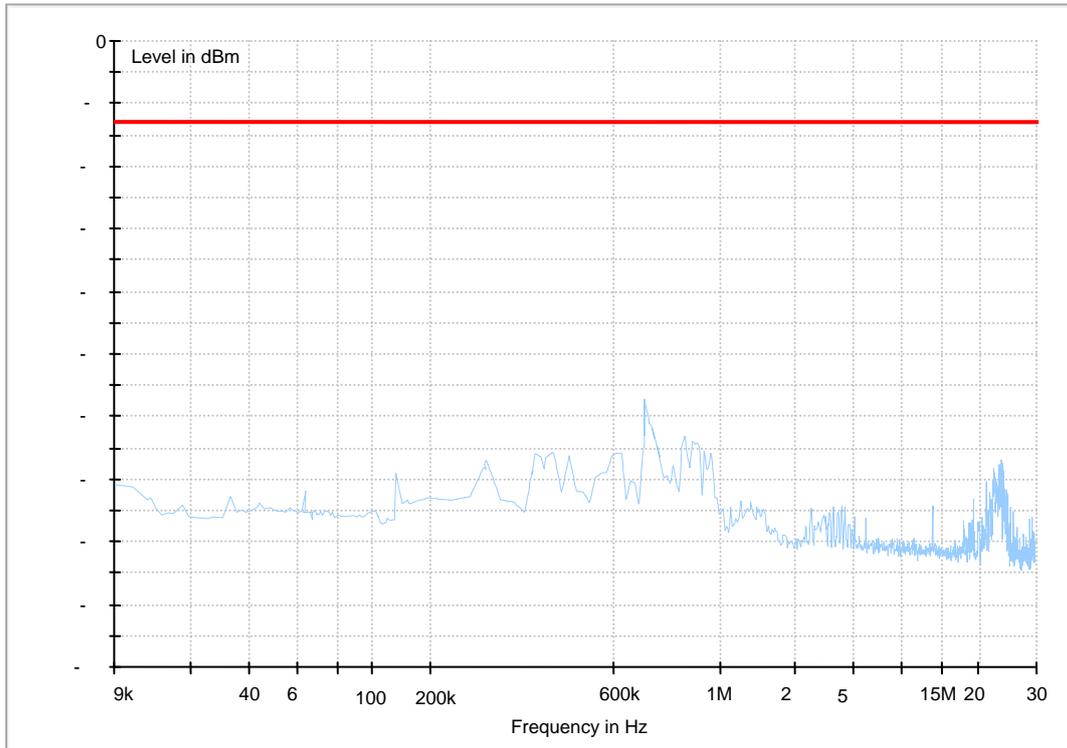


### Traffic Mode (3GHz-18GHz)

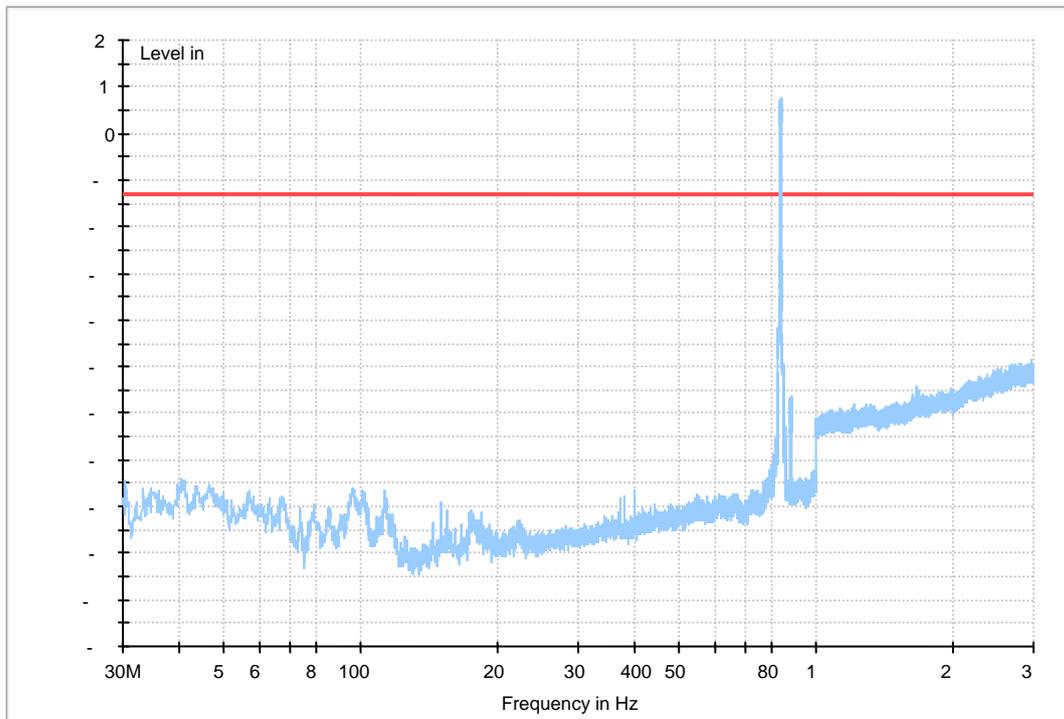


## HSDPA Band V

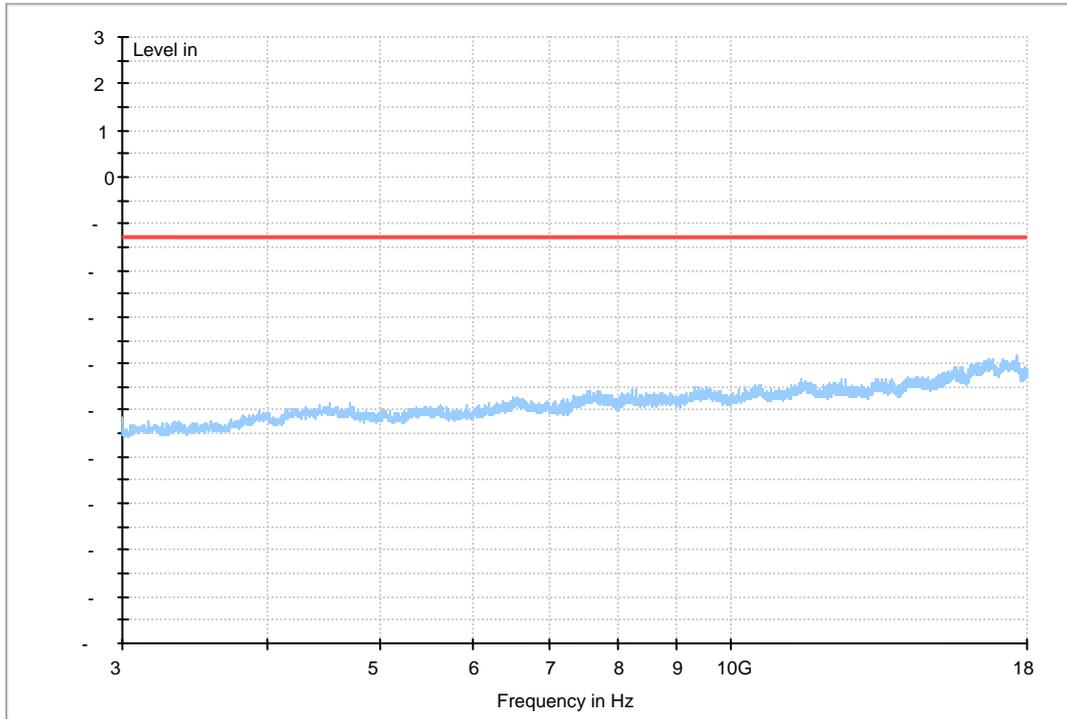
Traffic Mode (9kHz-30MHz)



Traffic Mode (30MHz-3GHz)

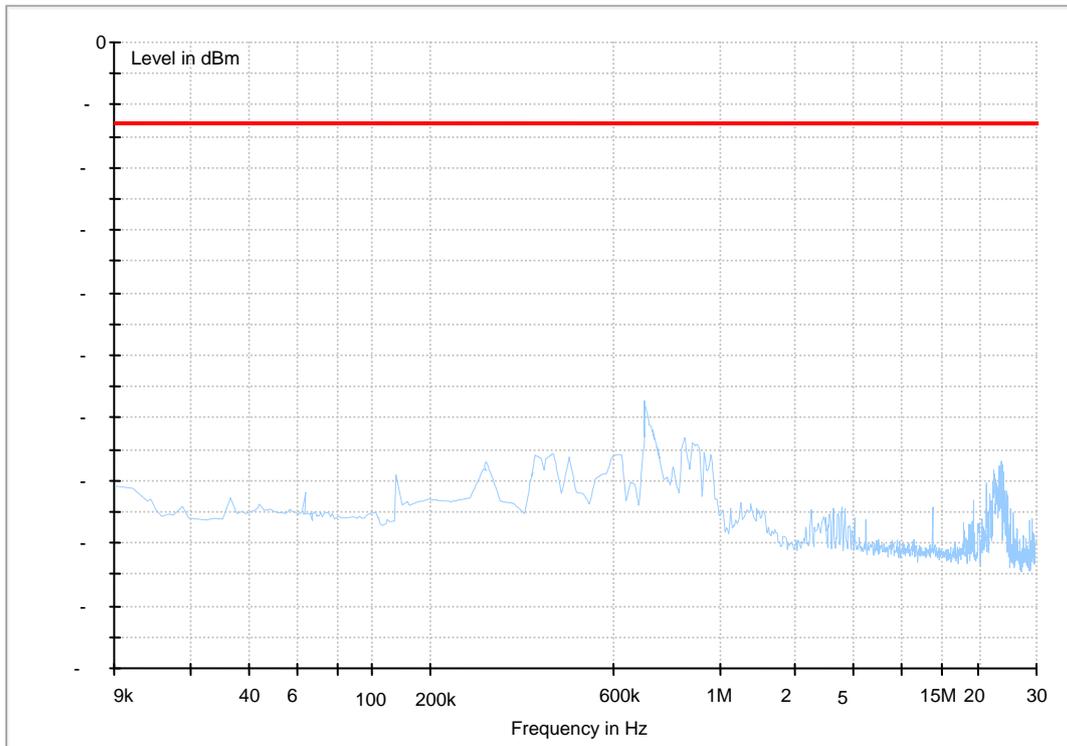


### Traffic Mode (3GHz-18GHz)

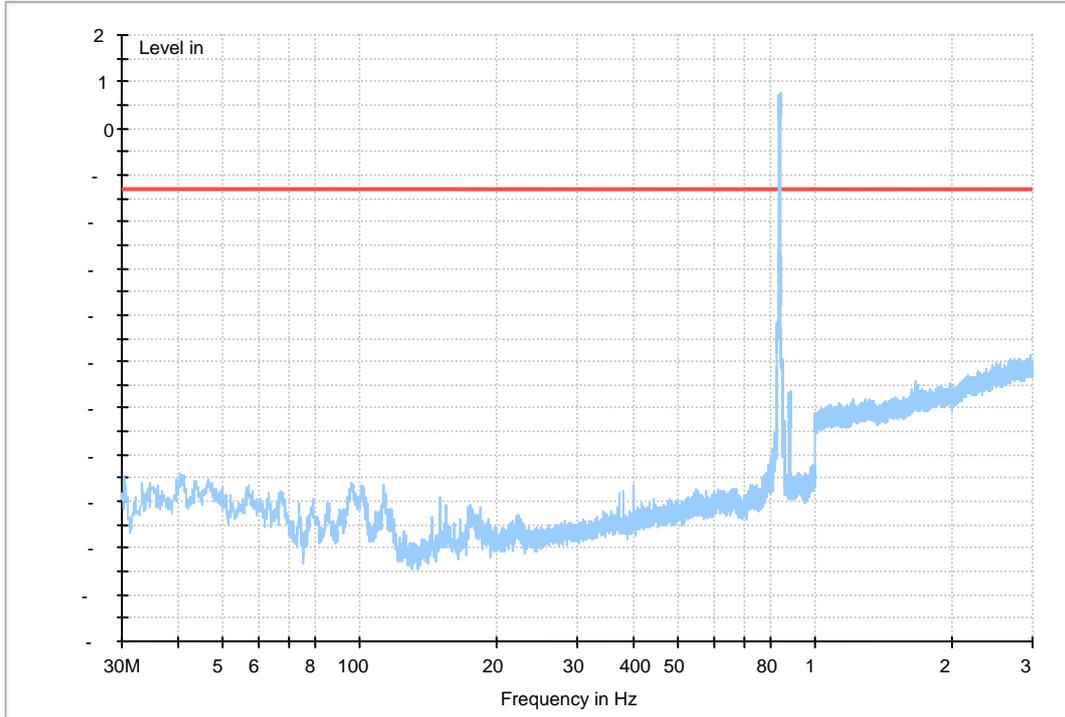


### HSUPA Band V

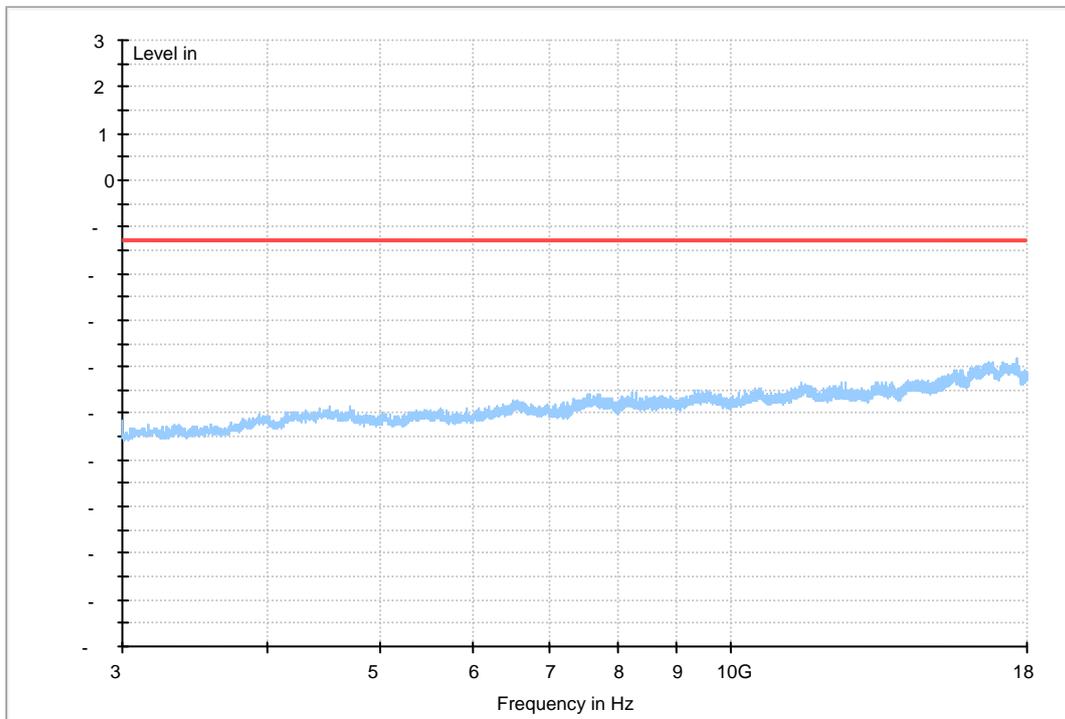
#### Traffic Mode (9kHz-30MHz)



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



### Traffic Mode (3GHz-18GHz)



The END



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# Appendix G

## Frequency Stability

According to FCC Part 2.1055 & Part 22.355



## 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      | VN    | -30 °C | -8               | -0.00956              | ---                   | ±2.5        | Pass    |
|           |        |       | -20 °C | -20              | -0.02389              | ---                   | ±2.5        | Pass    |
|           |        |       | -10 °C | -12              | -0.01434              | ---                   | ±2.5        | Pass    |
|           |        |       | 0 °C   | -17              | -0.02031              | ---                   | ±2.5        | Pass    |
|           |        |       | 10 °C  | -10              | -0.01195              | ---                   | ±2.5        | Pass    |
|           |        |       | 20 °C  | 17               | 0.02031               | ---                   | ±2.5        | Pass    |
|           |        |       | 30 °C  | -13              | -0.01553              | ---                   | ±2.5        | Pass    |
|           |        |       | 40 °C  | 22               | 0.02628               | ---                   | ±2.5        | Pass    |
|           |        |       | 50 °C  | 23               | 0.02748               | ---                   | ±2.5        | Pass    |
| TM 2      | M      | VN    | -30 °C | -19              | -0.02270              | ---                   | ±2.5        | Pass    |
|           |        |       | -20 °C | -6               | -0.00717              | ---                   | ±2.5        | Pass    |
|           |        |       | -10 °C | 19               | 0.02270               | ---                   | ±2.5        | Pass    |
|           |        |       | 0 °C   | 11               | 0.01314               | ---                   | ±2.5        | Pass    |
|           |        |       | 10 °C  | -9               | -0.01075              | ---                   | ±2.5        | Pass    |
|           |        |       | 20 °C  | 7                | 0.00836               | ---                   | ±2.5        | Pass    |
|           |        |       | 30 °C  | -13              | -0.01553              | ---                   | ±2.5        | Pass    |
|           |        |       | 40 °C  | 12               | 0.01434               | ---                   | ±2.5        | Pass    |
|           |        |       | 50 °C  | 22               | 0.02628               | ---                   | ±2.5        | Pass    |
| TM 3      | M      | VN    | -30 °C | -13              | -0.01553              | ---                   | ±2.5        | Pass    |
|           |        |       | -20 °C | 8                | 0.00956               | ---                   | ±2.5        | Pass    |
|           |        |       | -10 °C | -14              | -0.01673              | ---                   | ±2.5        | Pass    |
|           |        |       | 0 °C   | 11               | 0.01314               | ---                   | ±2.5        | Pass    |
|           |        |       | 10 °C  | -18              | -0.02151              | ---                   | ±2.5        | Pass    |
|           |        |       | 20 °C  | -9               | -0.01075              | ---                   | ±2.5        | Pass    |
|           |        |       | 30 °C  | 23               | 0.02748               | ---                   | ±2.5        | Pass    |
|           |        |       | 40 °C  | 19               | 0.02270               | ---                   | ±2.5        | Pass    |
|           |        |       | 50 °C  | -8               | -0.00956              | ---                   | ±2.5        | Pass    |



## Frequency Error vs. Voltage:

| Test Mode | RF Ch. | Temp. | Volt. | Freq. Error [Hz] | Freq. vs. rated [ppm] | Freq. vs. 20 °C [ppm] | Limit [ppm] | Verdict |
|-----------|--------|-------|-------|------------------|-----------------------|-----------------------|-------------|---------|
| TM 1      | M      | TN    | VL    | 27               | 0.03226               | ---                   | ±2.5        | Pass    |
|           |        |       | VN    | 13               | 0.01553               | ---                   | ±2.5        | Pass    |
|           |        |       | VH    | 21               | 0.02509               | ---                   | ±2.5        | Pass    |
| TM 2      | M      | TN    | VL    | 14               | 0.01673               | ---                   | ±2.5        | Pass    |
|           |        |       | VN    | -23              | -0.02748              | ---                   | ±2.5        | Pass    |
|           |        |       | VH    | 12               | 0.01434               | ---                   | ±2.5        | Pass    |
| TM 3      | M      | TN    | VL    | -11              | -0.01314              | ---                   | ±2.5        | Pass    |
|           |        |       | VN    | 28               | 0.03345               | ---                   | ±2.5        | Pass    |
|           |        |       | VH    | -23              | -0.02748              | ---                   | ±2.5        | Pass    |

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

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