# FCC
# RF Test Report

**Product Name: Mobile WiFi**

**Model Number: E586Es-5**

**Report No: SYBH(Z-RF)006022012-2001**
**FCC ID：QISE586ES-5**


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

Huawei Base, Bantian, Longgang District, Shenzhen 518129, P.R. China

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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.
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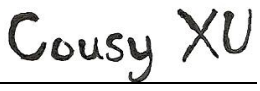
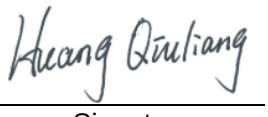
5. The test report is invalid if not marked with the stamps or the signatures of the persons responsible for performing, revising and approving the test report.
6. The test report is invalid if there is any evidence of erasure and/or falsification.
7. If there is any dissidence for the test report, please 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.
9. Context of the test report cannot be used partially or in full for publicity and/or promotional purposes without previous written approval of the laboratory.

| | |
|---|---|
| **Applicant:** | Huawei Technologies Co., Ltd. |
| **Address:** | Huawei Base, Bantian, Longgang District, Shenzhen 518129, P.R. China |
| **Date of Receipt Test Item:** | Feb.08, 2012 |
| **Start Date of Test:** | Feb.08, 2012 |
| **End Date of Test:** | Feb.14, 2012 |
| **Test Result:** | Pass |

| | Date | Name | Signature |
|---|---|---|---|
| Approved By Senior Engineer | Feb.16, 2012 | Dai Linjun |  |
| Reviewed By | Feb.16, 2012 | Cousy Xu |  |
| Operator | Feb.16, 2012 | Huang Qiuliang |  |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# Contents

# 1 General Information

## 1.1 Applied Standard

| | |
|---|---|
| Applied Rules: | 47 CFR FCC Part 2:2010, Subpart J<br>47 CFR FCC Part 22:2010, Subpart H<br>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 Summary

Table 1 Summary of results

| Cellular Band | | | |
|---|---|---|---|
| Test Case | FCC Part No. | Requirements | Result |
| Transmitter Output Power | 2.1046 & 22.913 | ERP not exceed 7 W | Pass |
| Modulation Characteristics | 2.1047 | Digital modulation | Pass |
| Occupied Bandwidth | 2.1049 | (Not specified) | Pass |
| Band Edges Compliance | 2.1051 & 22.917 | Below -13 dBm/1%*EBW, in 1 MHz range | Pass |
| Spurious Emission at Antenna Terminals | 2.1051 & 22.917 | 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$^{th}$ 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 ±2.5ppm | Pass |

# 3 Product Description

## 3.1 Production Information

### 3.1.1 General Description

E586Es-5 HSPA+/2100M/1900M/AWS/850M/EDGE Quad Band is subscriber equipment in the UMTS/GSM system. E586Es-5 implement such functions as RF signal receiving/ transmitting, HSPA/WCDMA protocol processing, data service etc, and it can act as a Wi-Fi hot-point for user accessing to internet. Externally it provides USB interface (to connect to the notebook etc.), USIM card interface and Micro SD card interface. E586Es-5 has 3 internal antennas as default Wi-Fi , diversity, and main antenna.

### 3.1.2 Board

Table 2 Board Information

| Mobile WiFi | | |
|---|---|---|
| E586Es-5 | | |
| Hardware Version | Software Version | Serial Number |
| CH1E586E | 11.322.03.00.00 | X8Z01B9211500004 |

### 3.1.3 Sub-Assembly

| | |
|---|---|
| AC/DCAdapter Model | HW-050100U1W |
| Manufacturer | HUAWEI |
| Input Voltage | ~100-240V 50/60Hz |
| Output Voltage | 5V ⎓ 1.0A |
| Rated Power | 5W |

| Name | Manufacture | Description |
|---|---|---|
| USB Cable | HUAWEI | Terminal Accessory, Data Cable, USB A male to Micro USB 120cm ,Black no Braid, Can Not Meet USB2.0 standard, Terminal Dedicated |

### 3.1.4 Battery Technical Data

| Name | Manufacture | Description |
|---|---|---|
| Li-ion Battery | FMT | Battery Model: HB4F1<br>Rated capacity: 1500mAh<br>Nominal Voltage: ⎓ +3.7V<br>Charging Voltage: ⎓ +4.2V |
| Li-ion Cell | SONY | Battery Model: US454261A8T-1530mAh<br>Rated capacity: 1530mAh |

| | | |
|---|---|---|
| | | Nominal Voltage: ⎓ +3.7V<br>Charging Voltage: ⎓ +4.2V |

## 3.2 Test Description

### 3.2.1 Supported Frequency Range

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

### 3.2.2 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: 200kHz<br>UMTS system: 5MHz |
| Designation of Emissions | GSM system: 246KGXW (GMSK modulation)<br>262KG7W (8PSK modulation))<br>UMTS system: 4M17F9W |

### 3.2.3 Antenna Gain

| | |
|---|---|
| Antenna Gain(dBi): | -3.2 |
| Antenna Gain(dBd): | -5.35 |

### 3.2.4 Power Supply

| | Description |
|---|---|
| Power Supply Type | Directly Connected to DC /AC Power Supply |
| Input to Adapter (DC power) | DC Voltage Nominal: ⎓ +3.7V<br>DC Voltage Range: ⎓ +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 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 |

## 4.2 Test Modes

| Test Mode | Test Modes Description |
|---|---|
| TM1 | GSM/GPRS, GMSK modulation |
| TM2 | EDGE, 8PSK modulation |
| TM3 | WCDMA QPSK modulation |
| TM4 | HSDPA 16QAM modulation |
| TM5 | HSUPA 16QAM 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 |

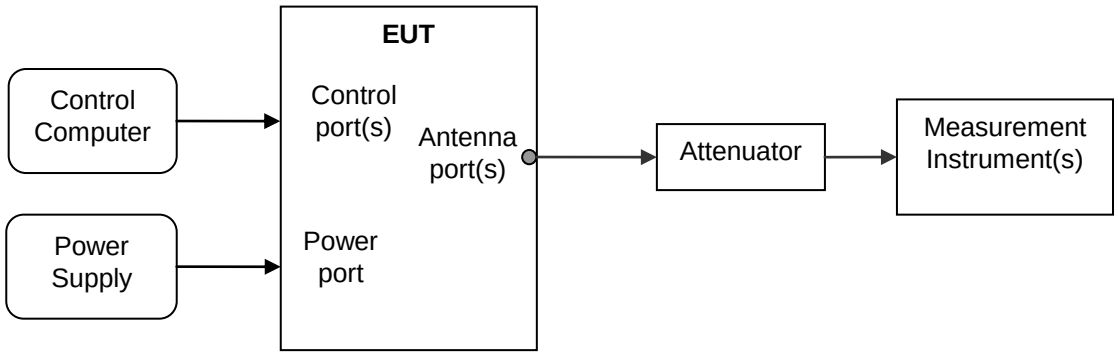
NOTE: VL= lower extreme test voltages
VN= nominal voltage
VH= upper extreme test voltage
TN= nominal temperature

## 4.4 Test Setups

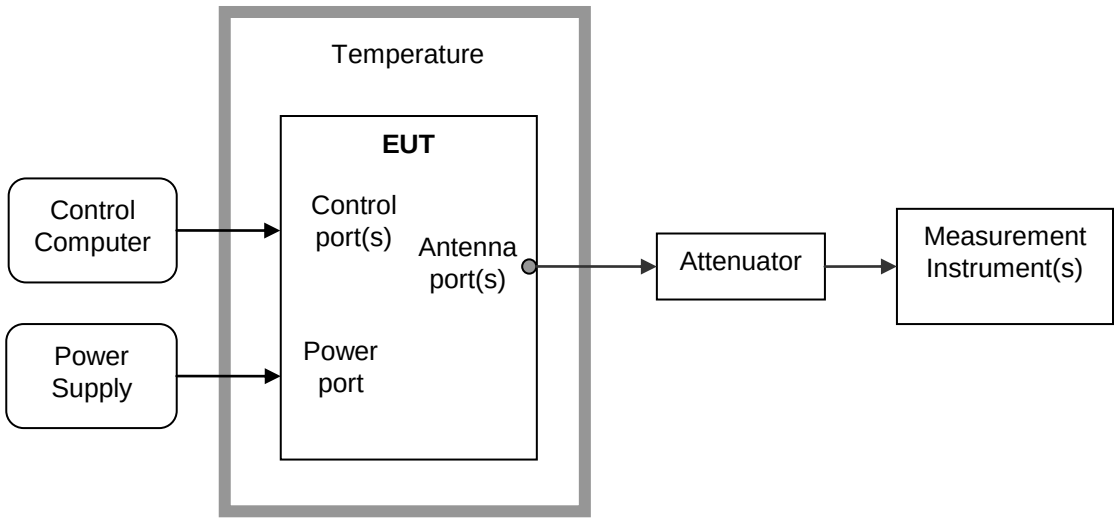
### 4.4.1 General Test Setup Configurations

| 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



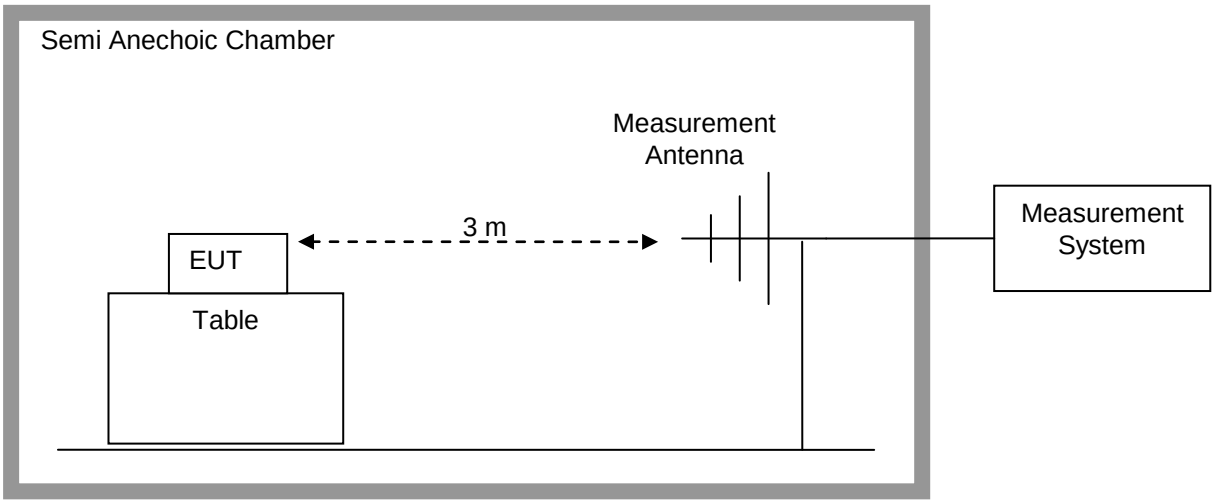

### 4.4.3 Test Setup 2



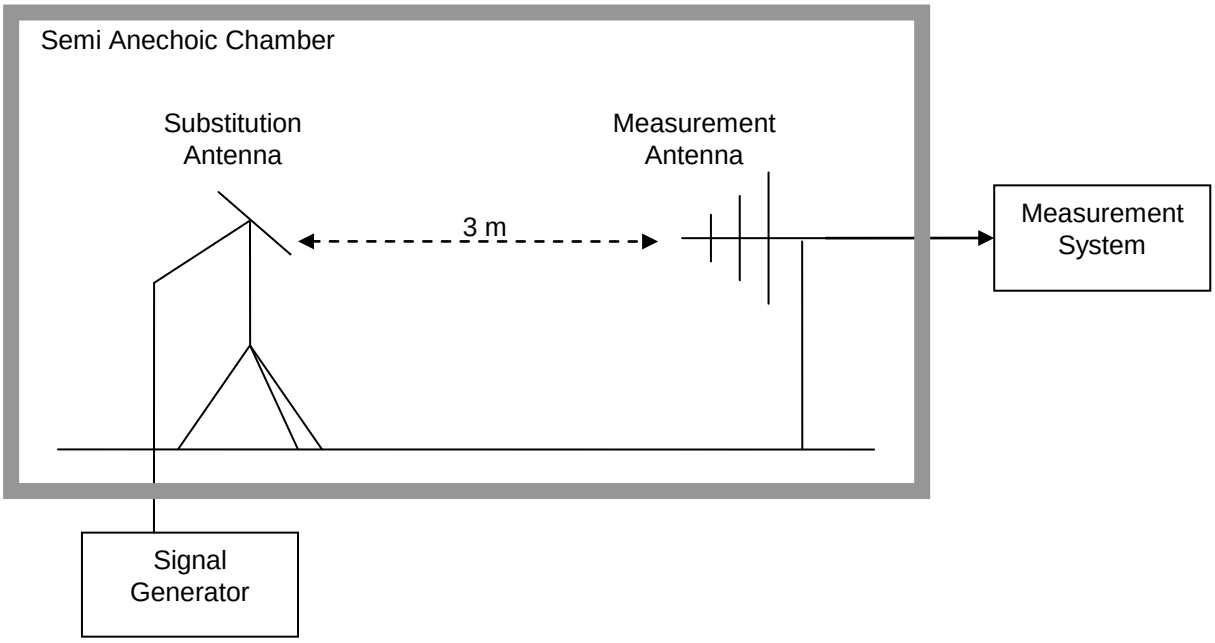
### 4.4.4 Test Setup 3

NOTE: Effective radiated power (ERP) 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 ERP**



## 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/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) | 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/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 |

| Test Case | Test Conditions | |
|---|---|---|
| | Test Mode | TM1/TM2/TM3 |

# 5 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 | 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 Field Strength of Spurious Radiation, 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)<br>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 &Part22.913

# Conducted Power of Transmitter

Table 1 Measurement Results

| TEST CONDITIONS | | RF Output Power (Conducted) | | | | | |
|---|---|---|---|---|---|---|---|
| | | Channel128(B) 824.2MHz | | Channel192(M) 837.0MHz | | Channel251(T) 848.8MHz | |
| | | dBm | | dBm | | dBm | |
| $T_{nom}$ / $V_{nom}$ | | Measured | Limit | Measured | Limit | Measured | Limit |
| TM1 | | 32.64 | 38.50 | 32.61 | 38.50 | 32.73 | 38.50 |
| TM2 | | 25.63 | 38.50 | 25.73 | 38.50 | 25.62 | 38.50 |
| TEST CONDITIONS | | Channel4132(B) 826.4MHz | | Channel4182(M) 836.4MHz | | Channel4233(T) 846.6MHz | |
| | | dBm | | dBm | | dBm | |
| $T_{nom}$ / $V_{nom}$ | | Measured | Limit | Measured | Limit | Measured | Limit |
| TM3 | | 22.18 | 38.50 | 22.32 | 38.50 | 22.26 | 38.50 |
| TM4 | Case1 | 21.64 | 38.50 | 21.78 | 38.50 | 21.71 | 38.50 |
| | Case2 | 21.66 | 38.50 | 21.79 | 38.50 | 21.74 | 38.50 |
| | Case3 | 20.81 | 38.50 | 21.01 | 38.50 | 21.02 | 38.50 |
| | Case4 | 20.84 | 38.50 | 21.04 | 38.50 | 21.05 | 38.50 |
| TM5 | Case1 | 21.24 | 38.50 | 21.38 | 38.50 | 21.25 | 38.50 |
| | Case2 | 18.49 | 38.50 | 18.84 | 38.50 | 18.79 | 38.50 |
| | Case3 | 19.35 | 38.50 | 19.54 | 38.50 | 19.56 | 38.50 |
| | Case4 | 18.38 | 38.50 | 18.71 | 38.50 | 18.66 | 38.50 |
| | Case5 | 21.21 | 38.50 | 21.44 | 38.50 | 21.22 | 38.50 |

# Effective Radiated Power of Transmitter (ERP)

Table 2 Substitution Results

| Test Mode | Freq. [MHz] | Meas. Level [dBm] | Substitution Antenna Type | SGP [dBm] | Substitution Gain [dBd] | Cable Loss [dB] | Substitution Level (ERP) [dBm] | FCC limit [dBm] | Result |
|---|---|---|---|---|---|---|---|---|---|
| TM1 | 824.2 | 27.29 | Dipole Ant. | 30.66 | -2.75 | 0.6 | 27.31 | 38.5 | Pass |
| TM1 | 837.0 | 27.26 | Dipole Ant. | 30.76 | -2.87 | 0.6 | 27.29 | 38.5 | Pass |
| TM1 | 848.8 | 27.38 | Dipole Ant. | 30.9 | -2.85 | 0.6 | 27.45 | 38.5 | Pass |
| TM2 | 824.2 | 20.28 | Dipole Ant. | 23.68 | -2.75 | 0.6 | 20.33 | 38.5 | Pass |
| TM2 | 837.0 | 20.38 | Dipole Ant. | 23.9 | -2.87 | 0.6 | 20.43 | 38.5 | Pass |
| TM2 | 848.8 | 20.27 | Dipole Ant. | 23.74 | -2.85 | 0.6 | 20.29 | 38.5 | Pass |
| TM3 | 826.4 | 16.83 | Dipole Ant. | 20.21 | -2.75 | 0.6 | 16.86 | 38.5 | Pass |
| TM3 | 836.4 | 16.97 | Dipole Ant. | 20.51 | -2.87 | 0.6 | 17.04 | 38.5 | Pass |
| TM3 | 846.6 | 16.91 | Dipole Ant. | 20.45 | -2.85 | 0.6 | 17.00 | 38.5 | Pass |

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

ERP [dBm] = SGP [dBm] – Cable Loss [dB] + Gain [dBd]

b, SGP=Signal Generator Level

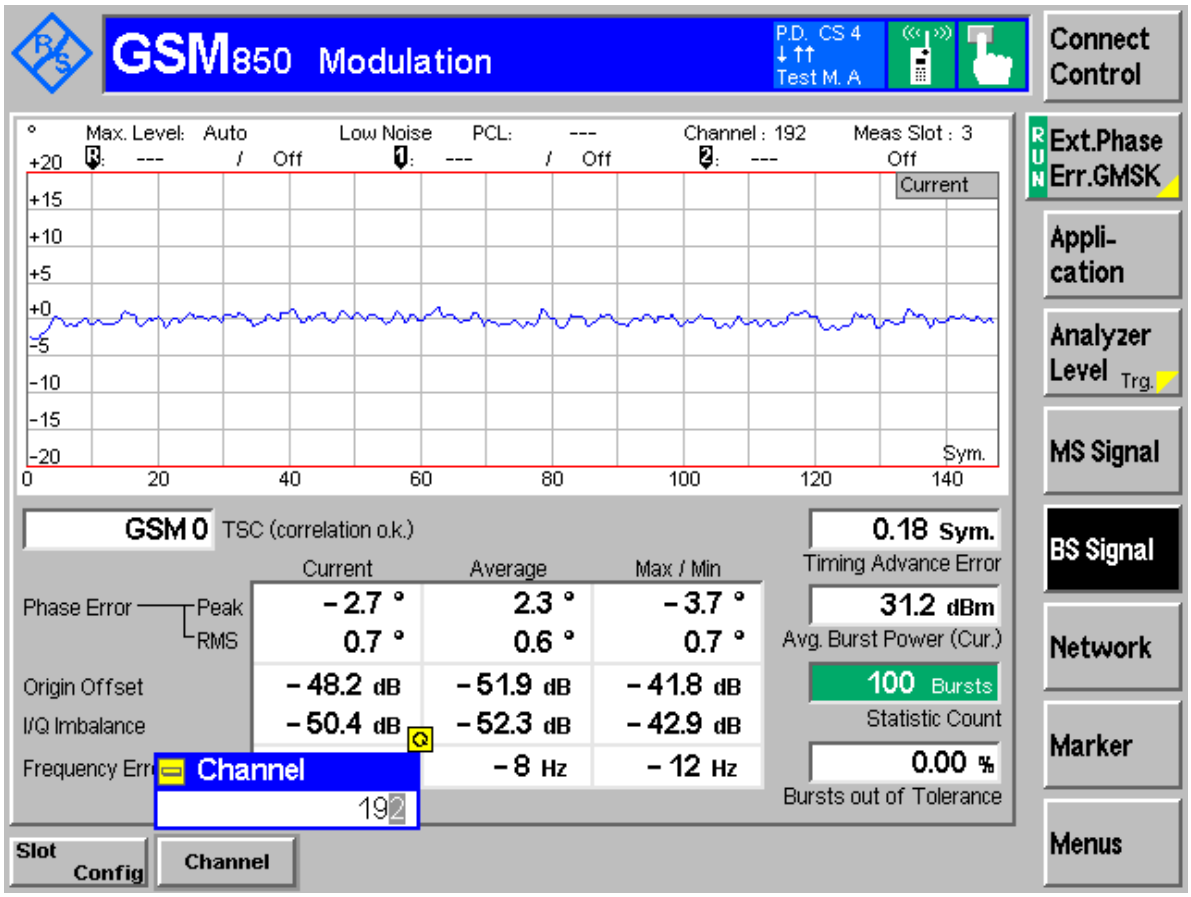
----------The END----------

# Appendix B

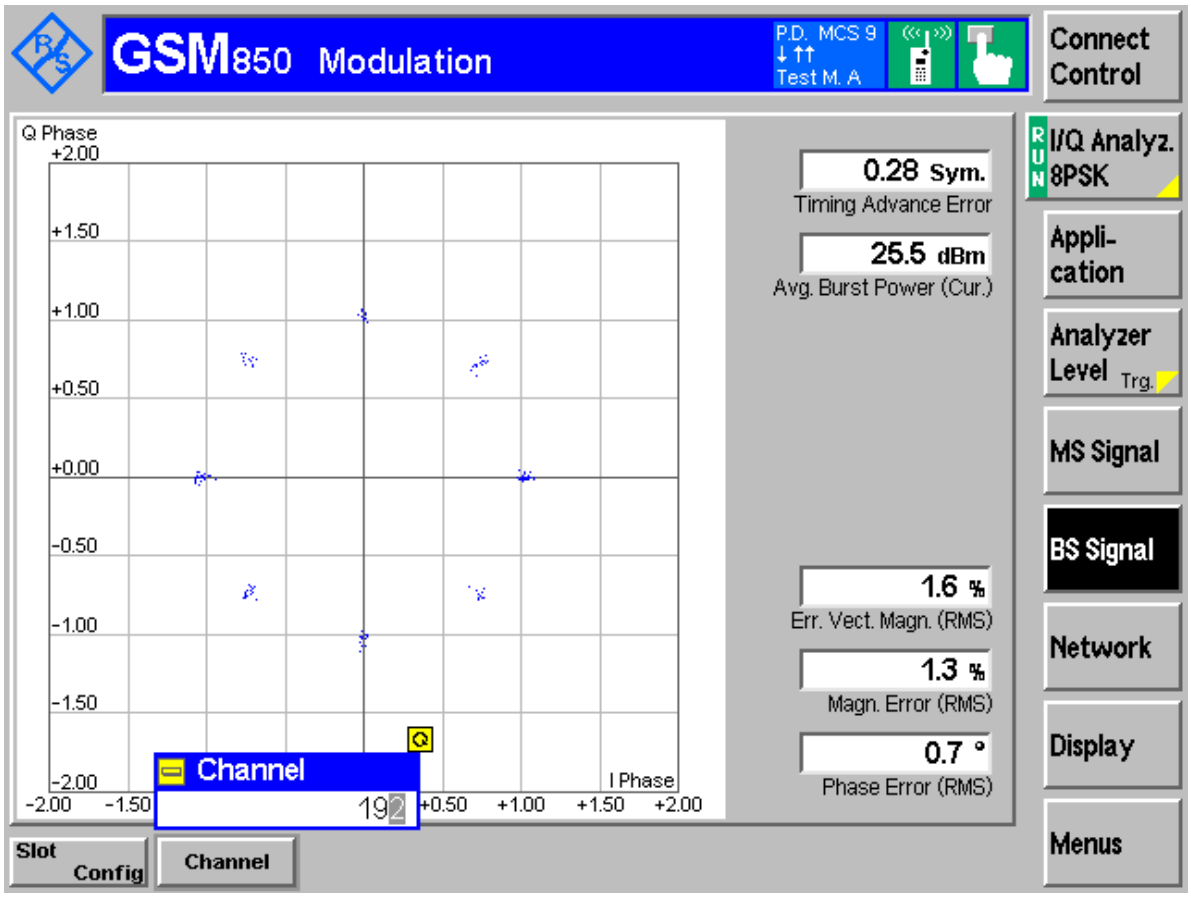
## Modulation Characteristics

According to FCC Part 2.1047 & Part22 Subpart H

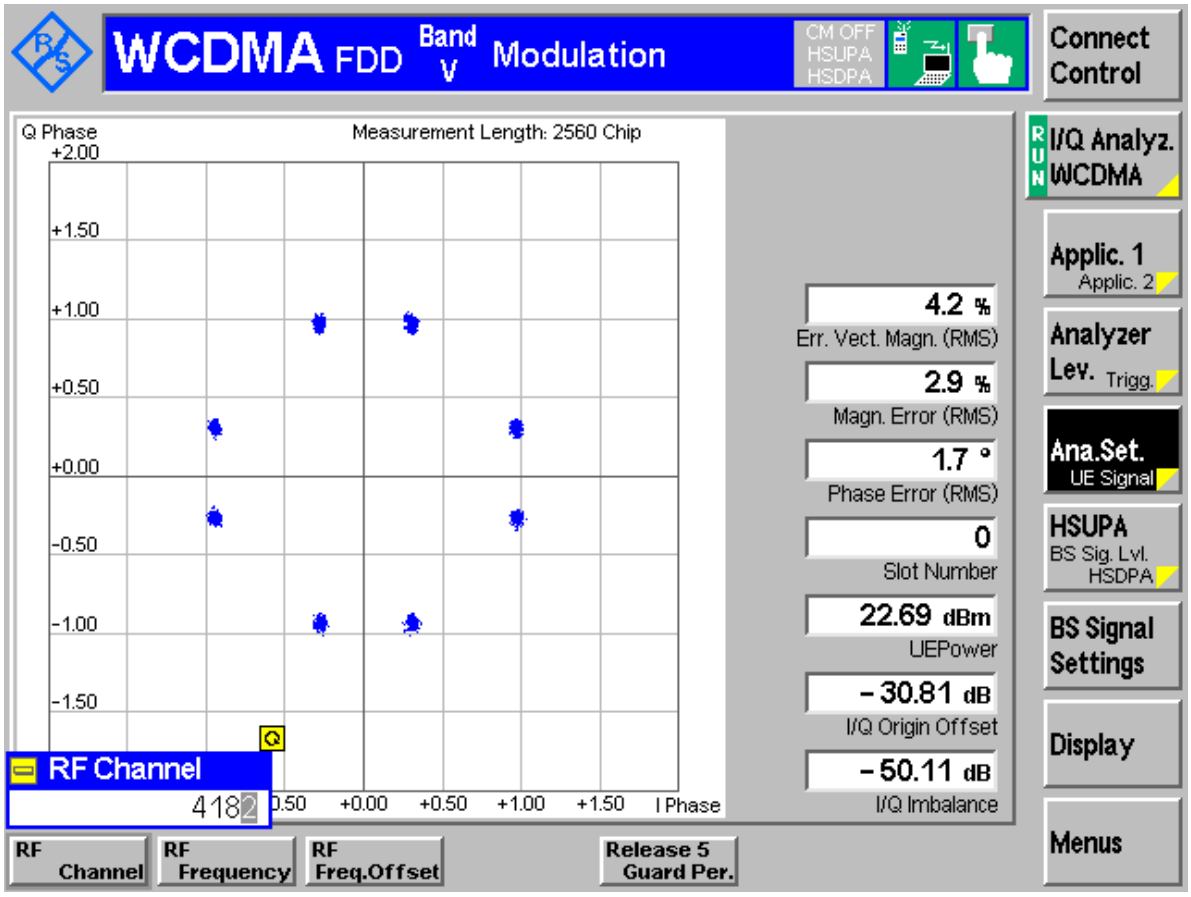
# Channel 192（TM1:GPRS/GSM）



# Channel 192（TM2:EDGE）



# Channel 4182（TM3: WCDMA）

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# Appendix C

## Occupied Bandwidth

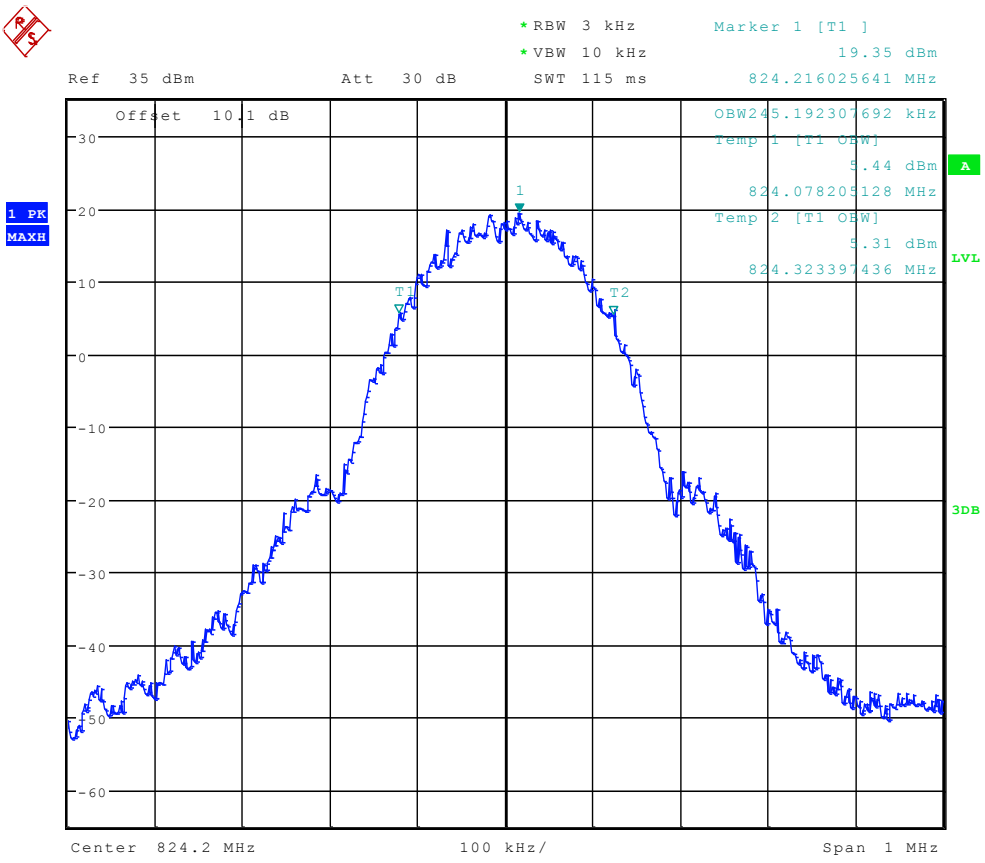
According to FCC Part 2.1049 & Part 22 Subpart H

Result Table

Table 1 Measurement Results

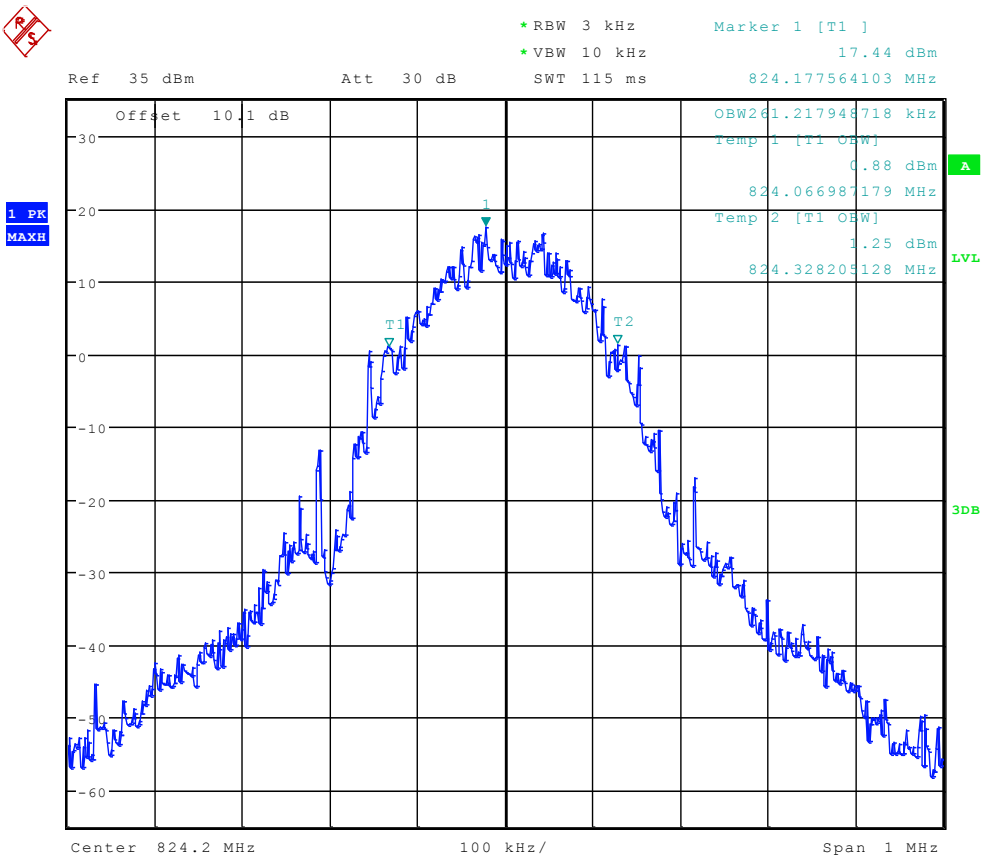
| Test Mode | RF Channel | Occupied Bandwidth [kHz] | Verdict |
|---|---|---|---|
| TM1 | 128 | 245.19 | Pass |
| | 192 | 245.19 | Pass |
| | 251 | 245.19 | Pass |
| TM2 | 128 | 261.22 | Pass |
| | 192 | 241.99 | Pass |
| | 251 | 238.78 | Pass |
| Test Mode | RF Channel | Occupied Bandwidth [MHz] | Verdict |
| TM3 | 4132 | 4.167 | Pass |
| | 4182 | 4.151 | Pass |
| | 4233 | 4.167 | Pass |

# Channel 128（TM1:GPRS/GSM）



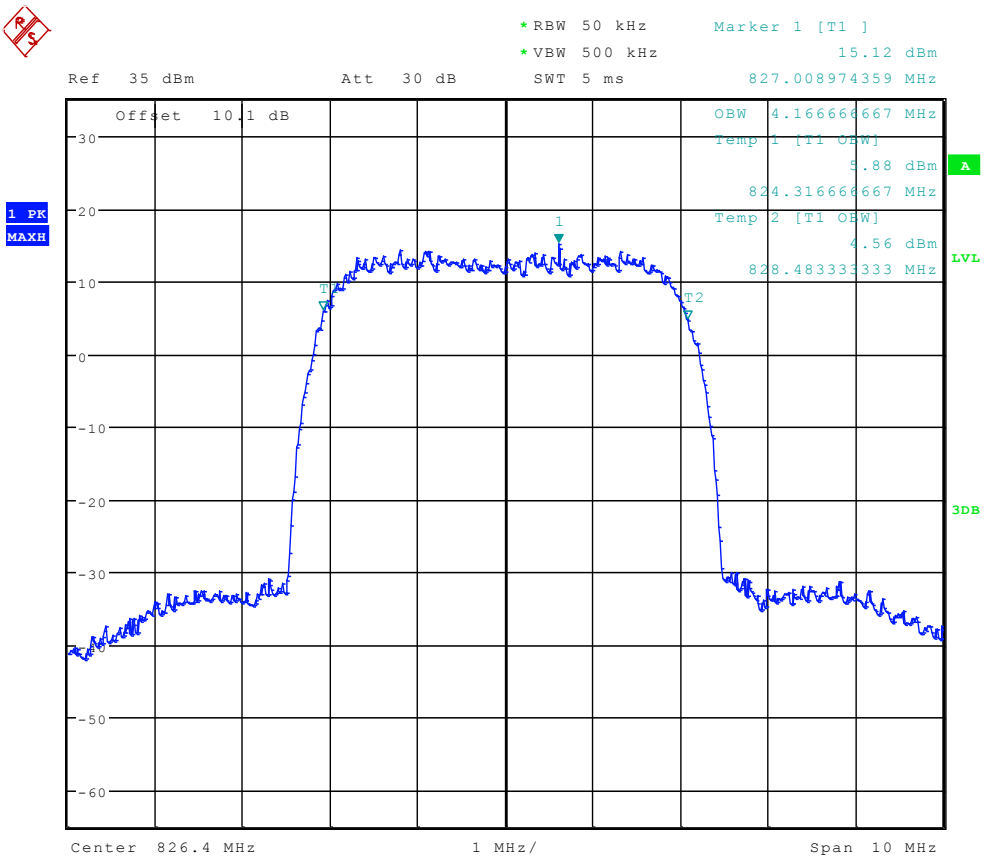

Date: 10.FEB.2012 17:55:53

# Channel 128（TM2:EDGE）



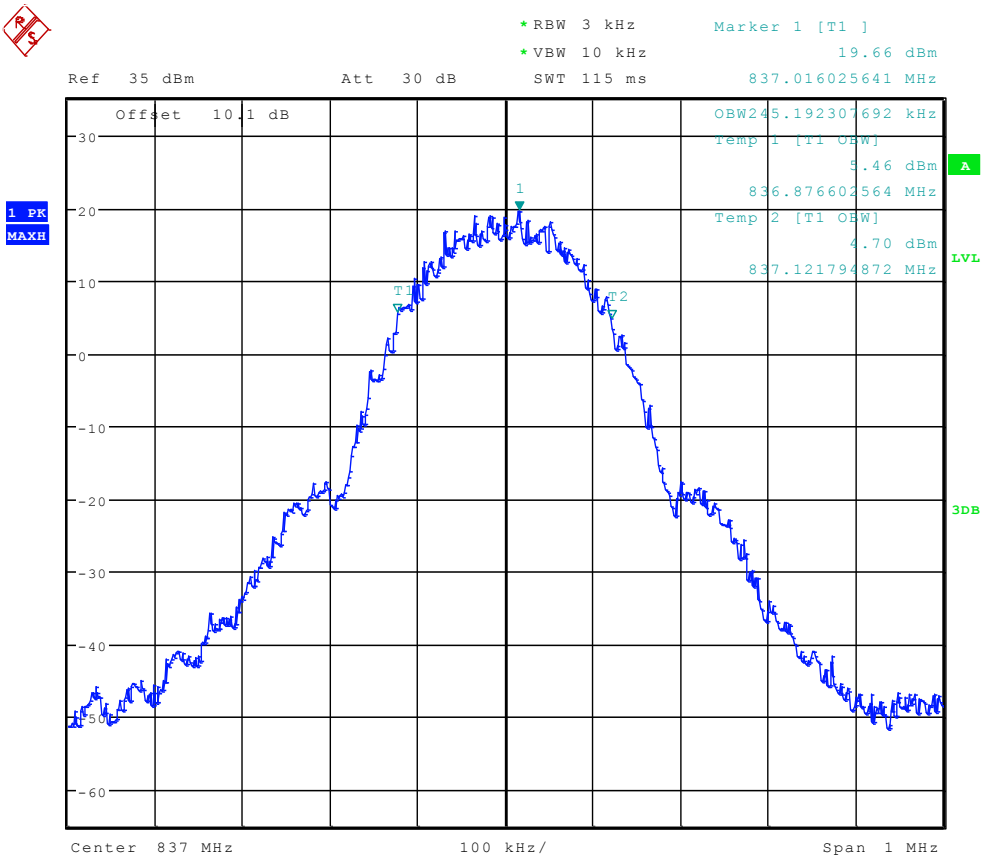

Date: 10.FEB.2012 16:46:36

# Channel 4132（TM3: WCDMA）



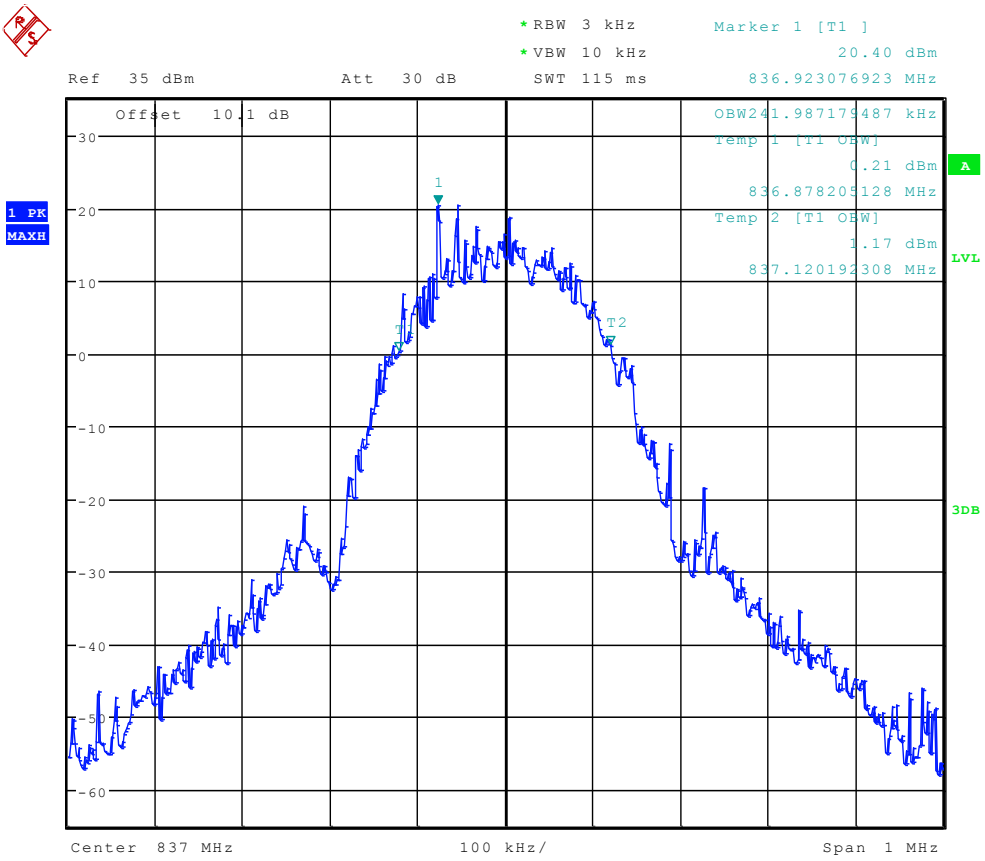

Date: 10.FEB.2012 16:54:11

# Channel 192（TM1:GPRS/GSM）



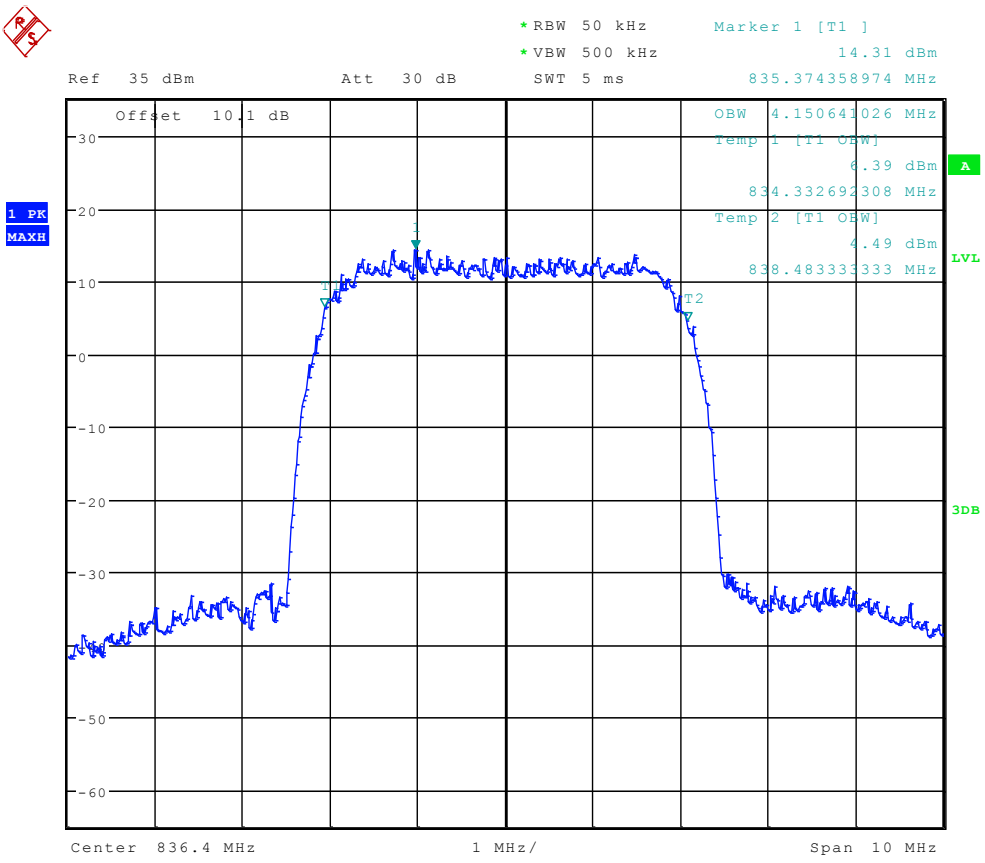

Date: 10.FEB.2012 17:56:06

# Channel 192（TM2:EDGE）



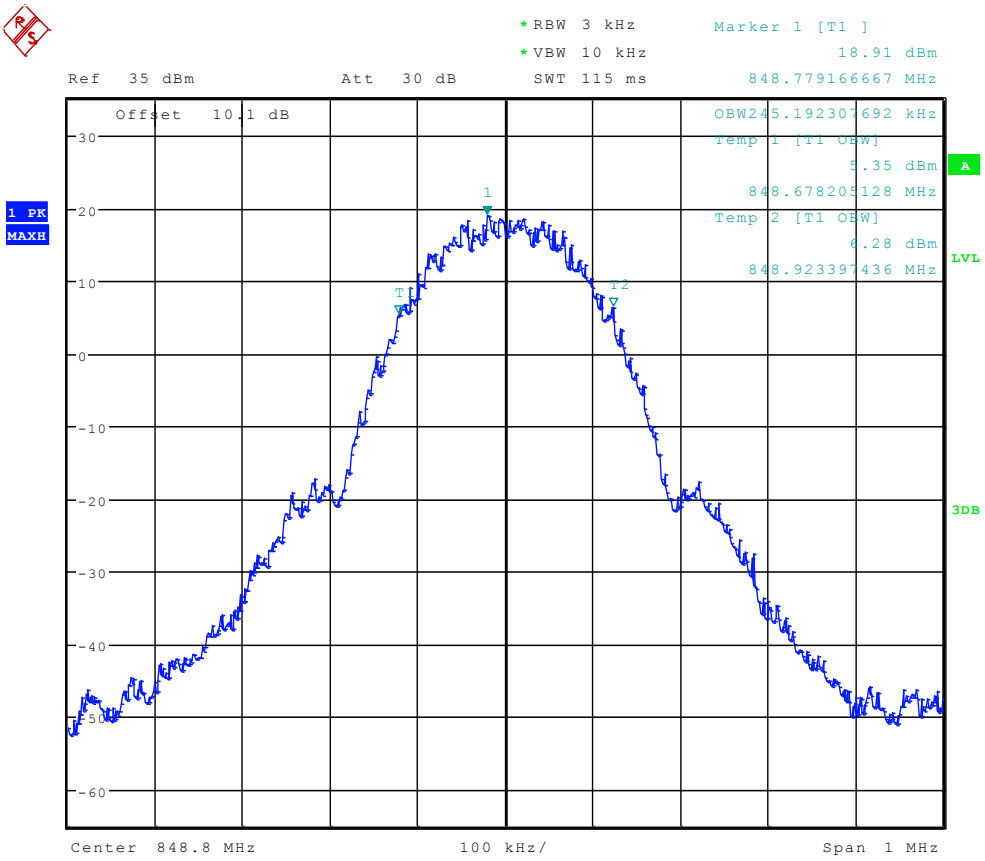

Date: 10.FEB.2012 16:46:50

# Channel 4182（TM3: WCDMA）



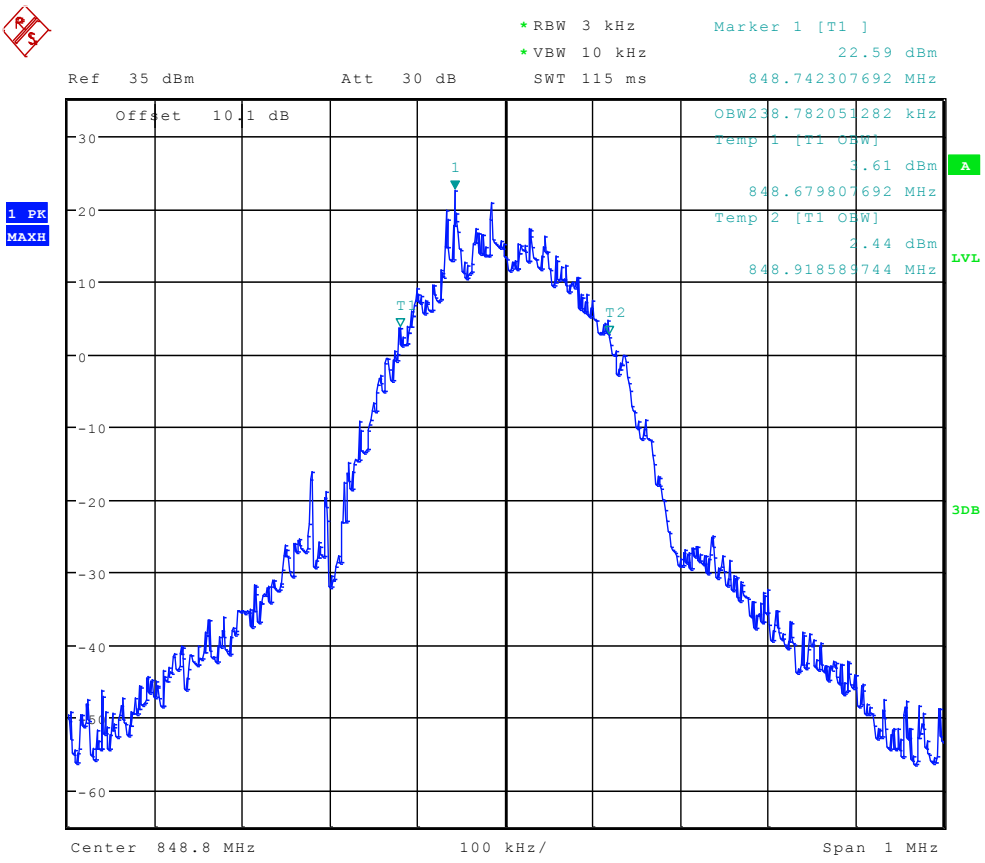

Date: 10.FEB.2012 16:54:25

# Channel 251（TM1:GPRS/GSM）



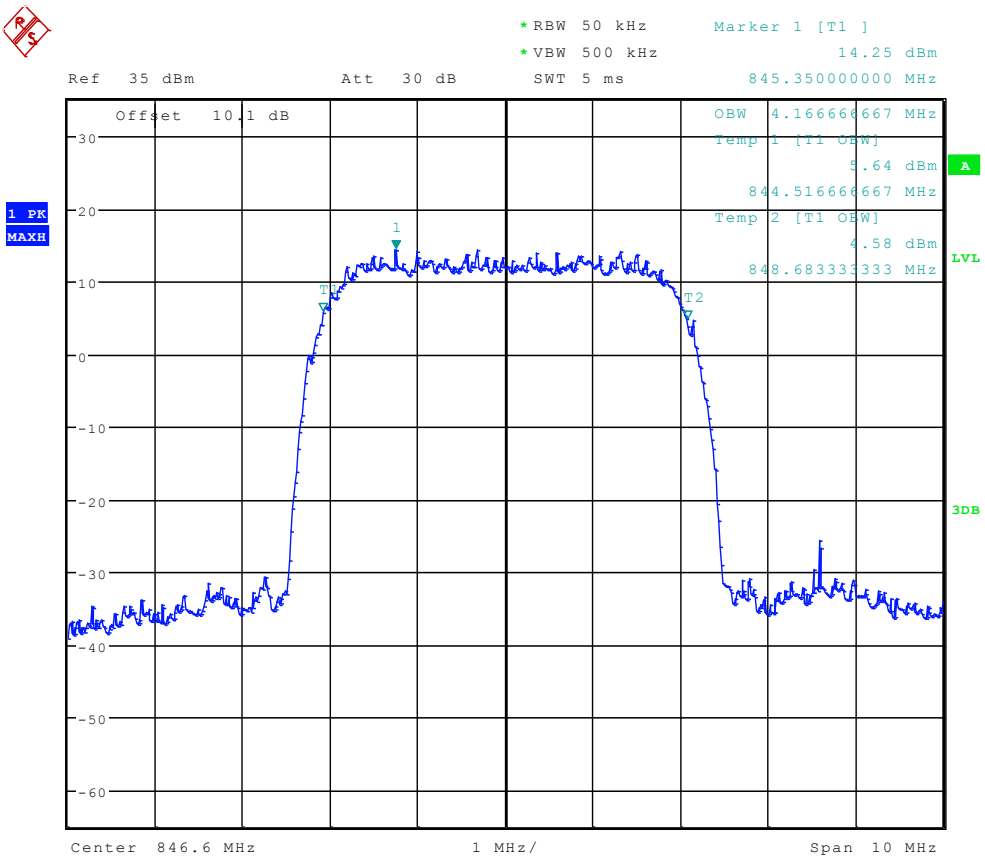

Date: 10.FEB.2012 17:56:20

# Channel 251（TM2:EDGE）




Date: 10.FEB.2012 16:47:04

# Channel 4233（TM3: WCDMA）




Date: 10.FEB.2012 16:54:38

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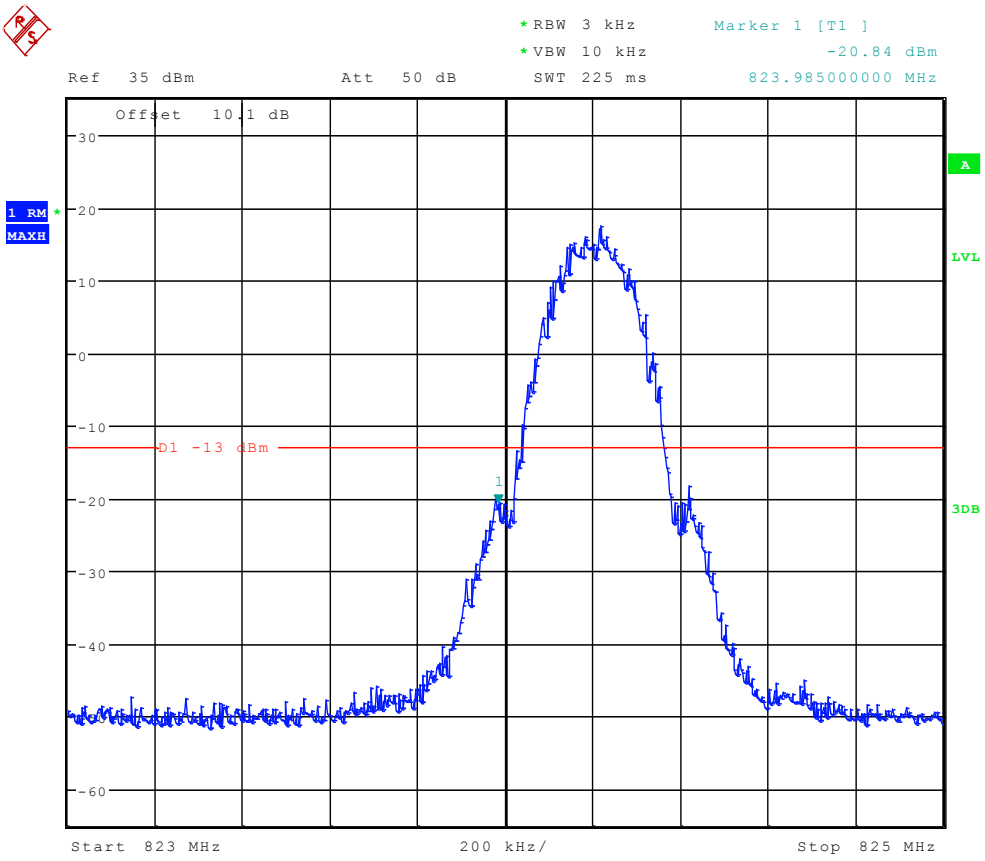
# Appendix D

## Band Edges Compliance

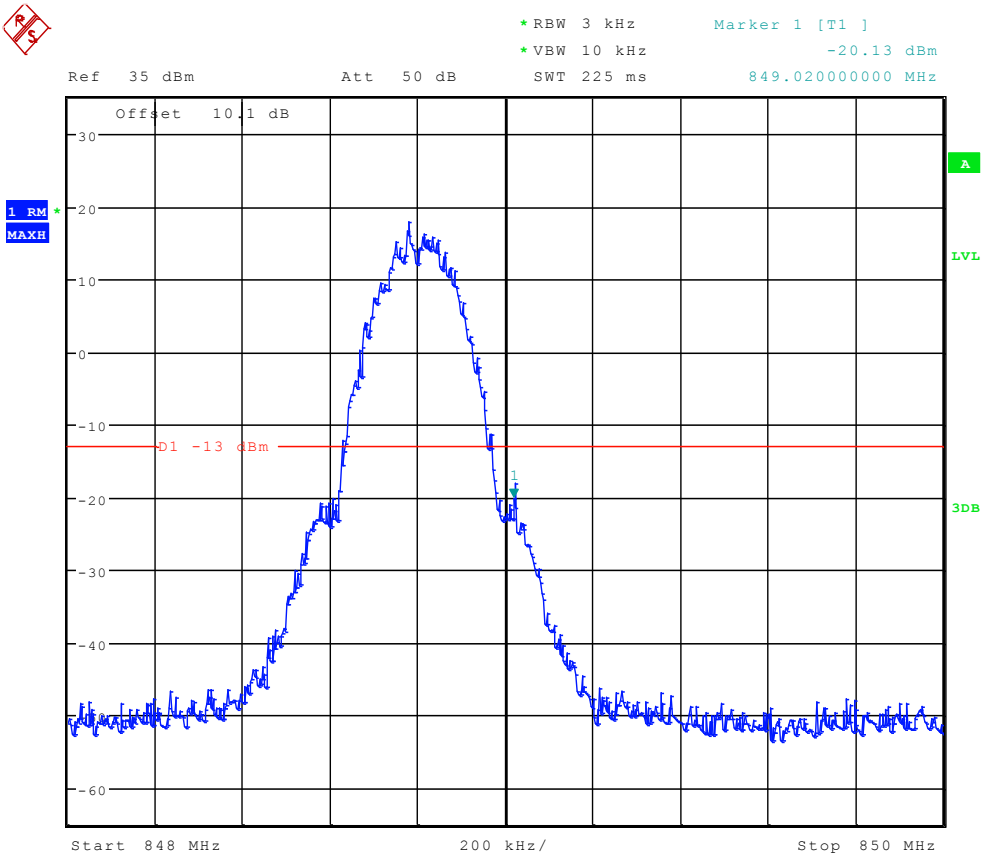
According to FCC Part 2.1051 & Part 22 Subpart H

# TM1:GPRS/GSM
## Left Edge
## Channel 128



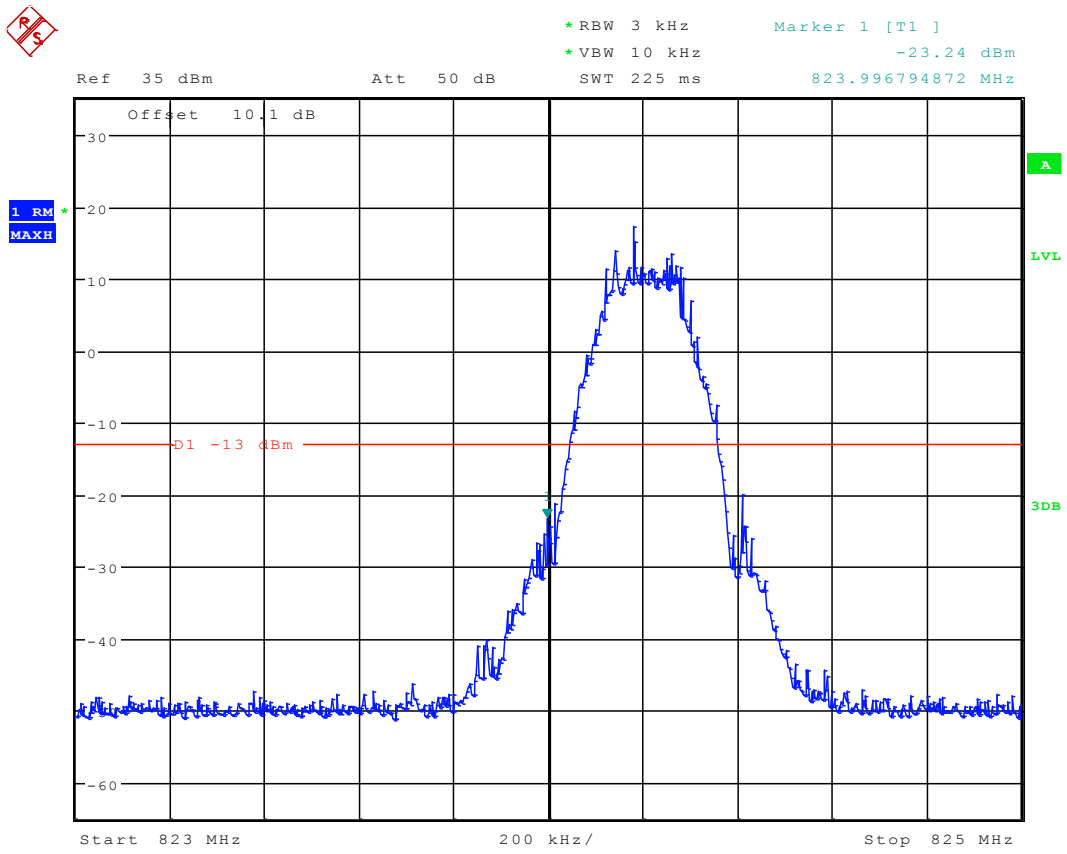

Date: 10.FEB.2012 16:41:44

# Right Edge
# Channel 251



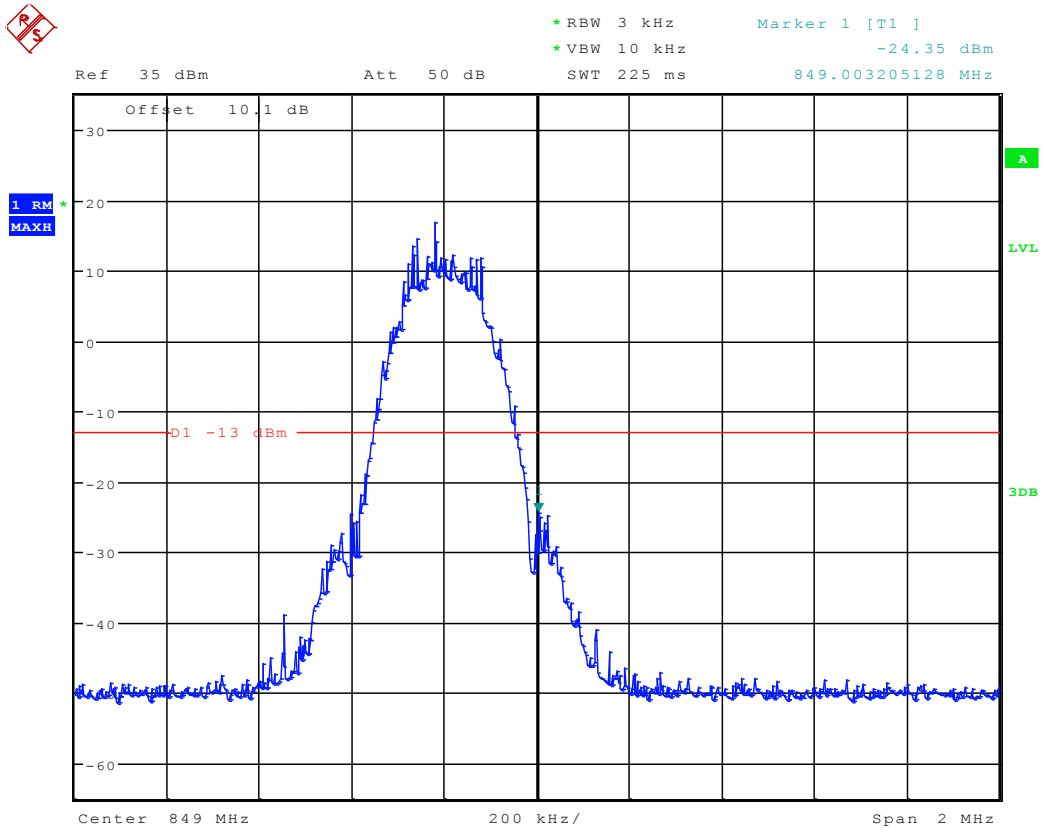

Date: 10.FEB.2012 16:41:58

# TM2:EDGE
## Left Edge
## Channel 128




Date: 12.FEB.2012 11:05:56

# Right Edge
# Channel 251

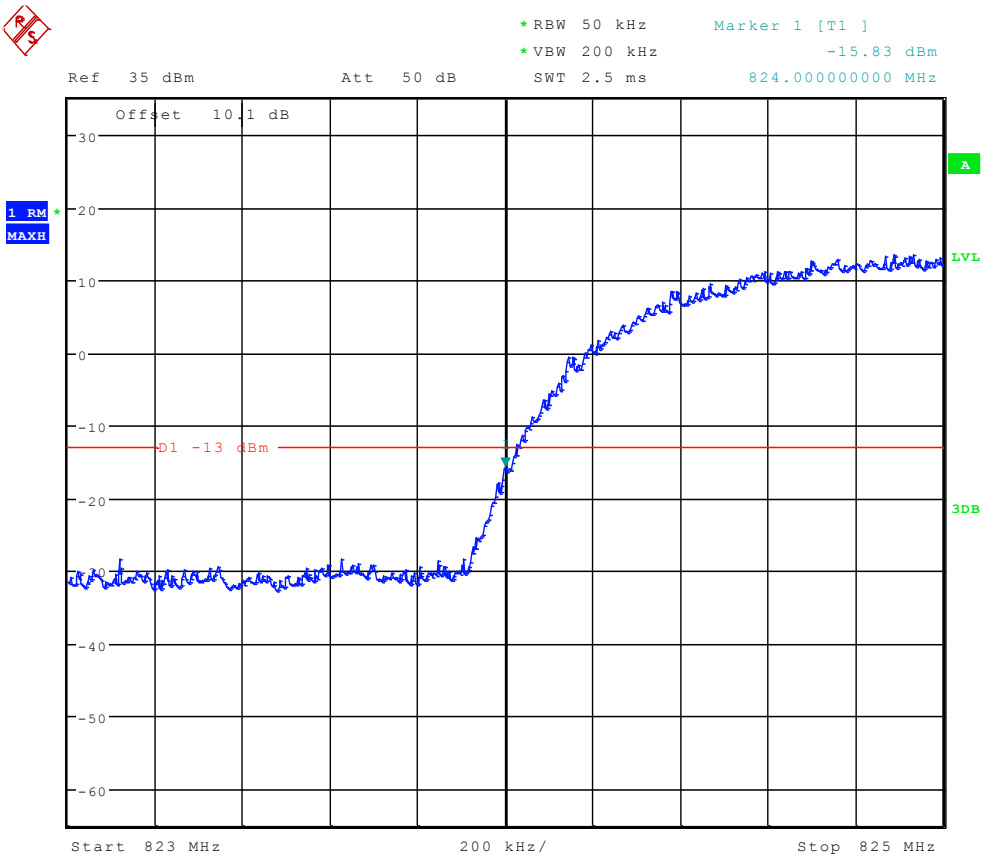



Date: 12.FEB.2012 11:08:12

# TM3: WCDMA

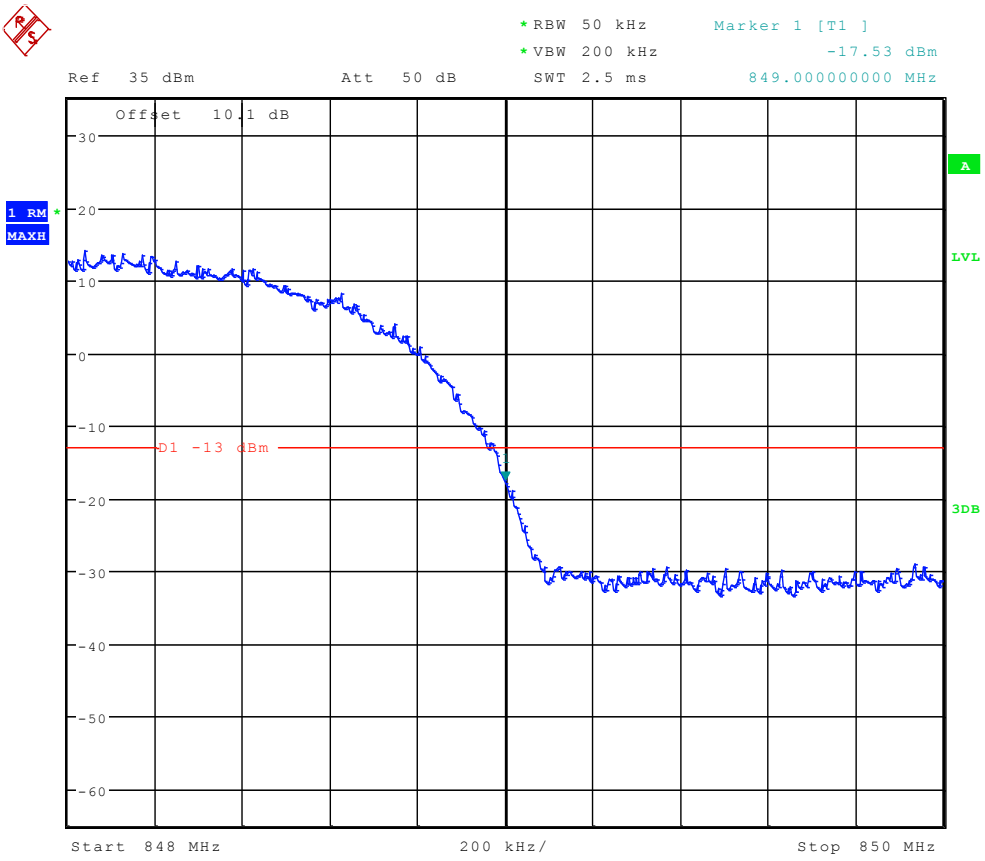
## Left Edge

## Channel 4132




Date: 10.FEB.2012 16:54:53

# Right Edge
# Channel 4233




Date: 10.FEB.2012 16:55:06

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

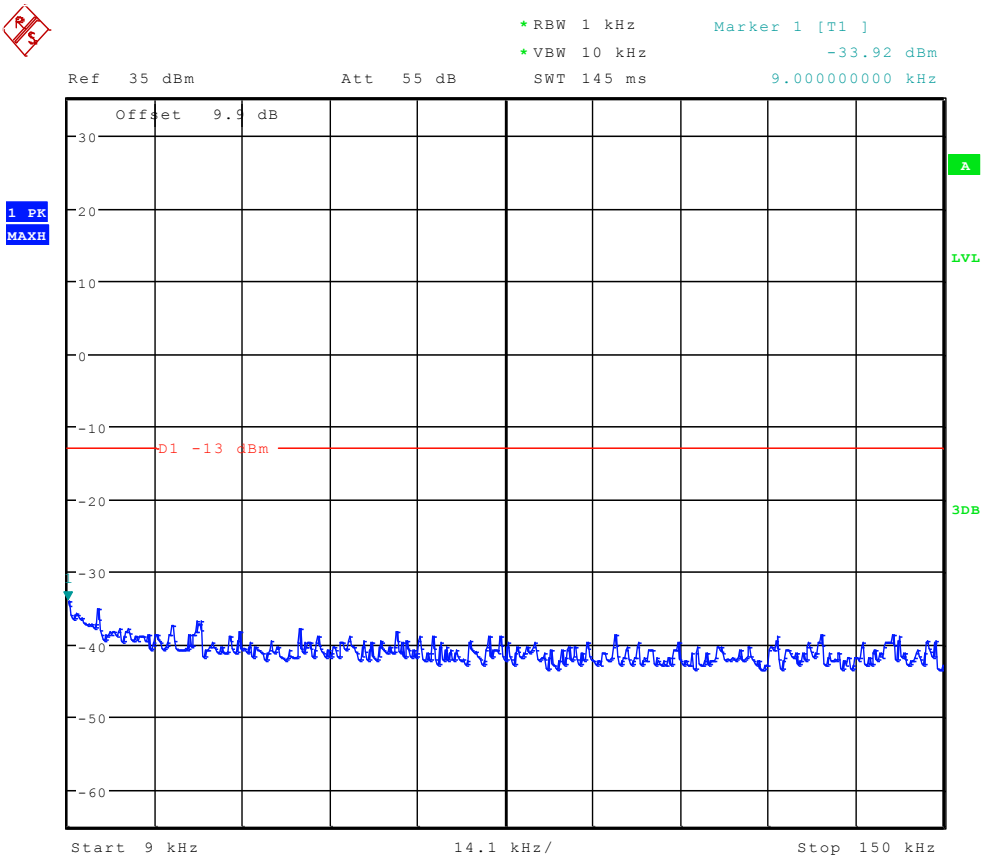
# Appendix E

## Spurious Emission at Antenna Terminal

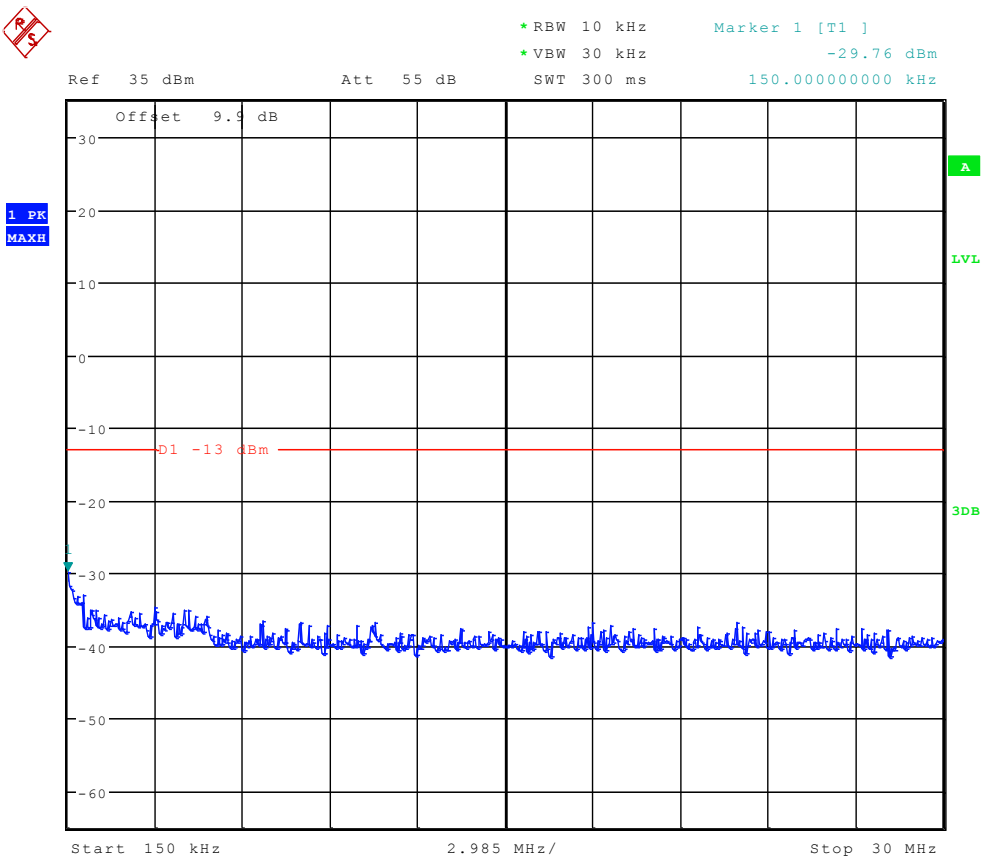
According to FCC Part 2.1051 & Part 22 Subpart H

TM1:GPRS/GSM

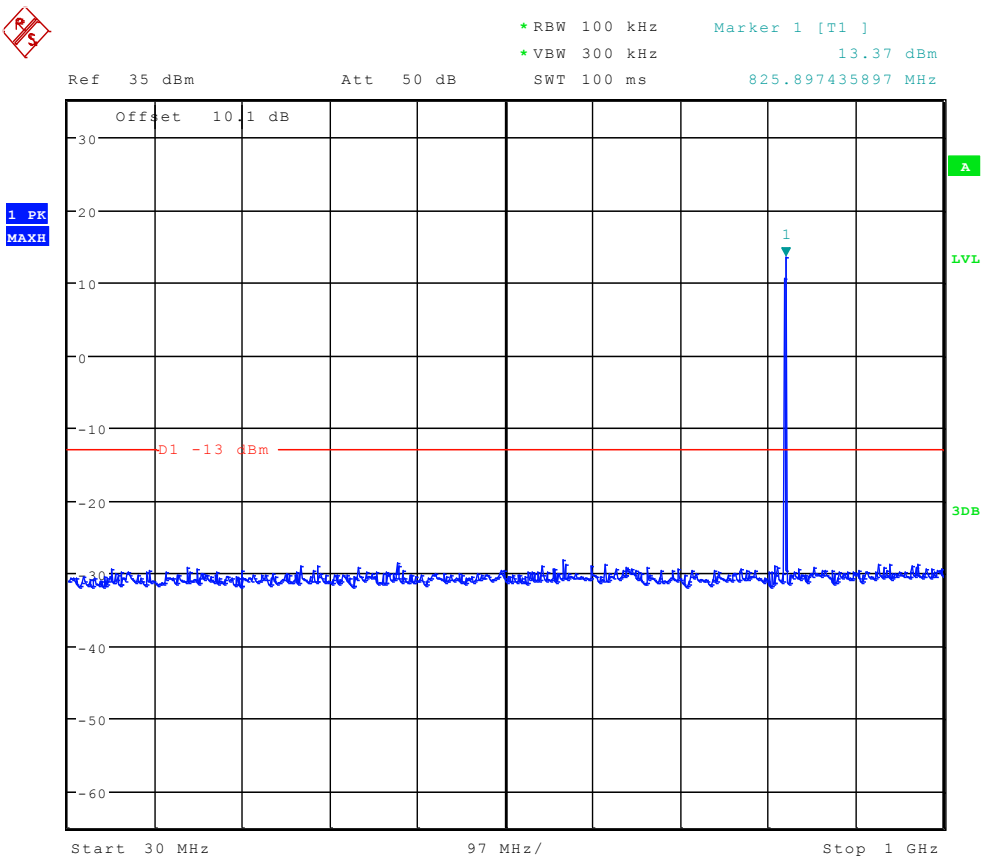
# Channel 128



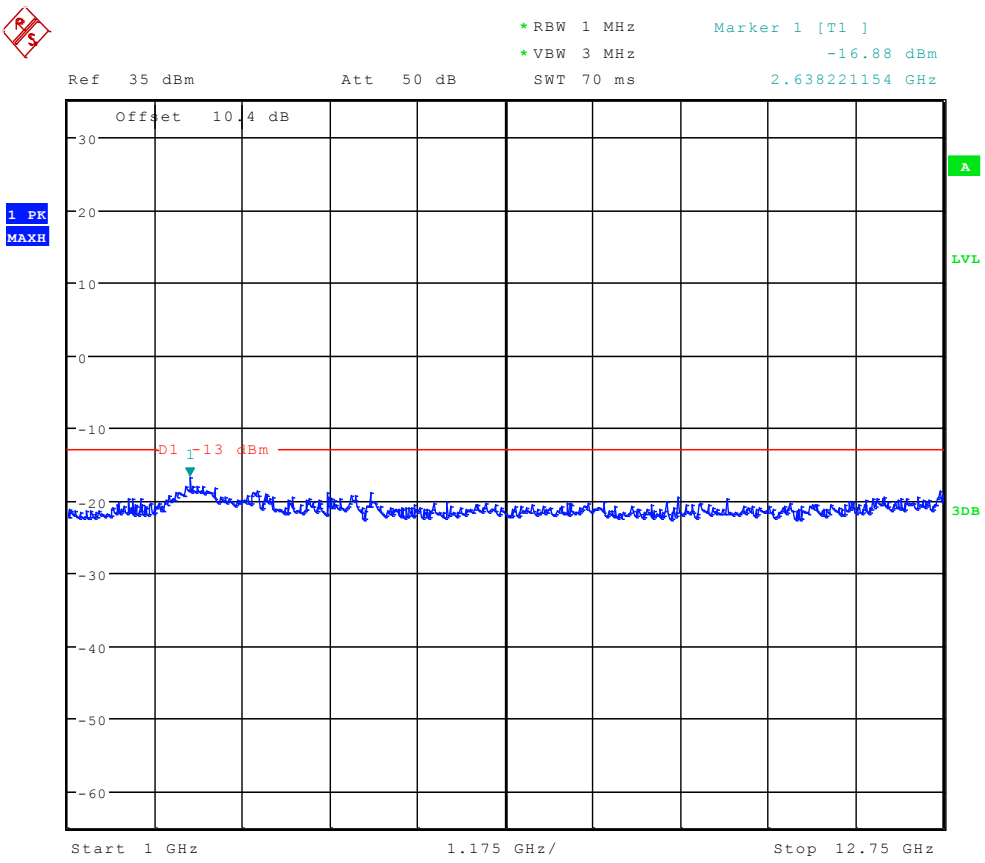

Date: 10.FEB.2012 16:37:39




Date: 10.FEB.2012 16:38:23

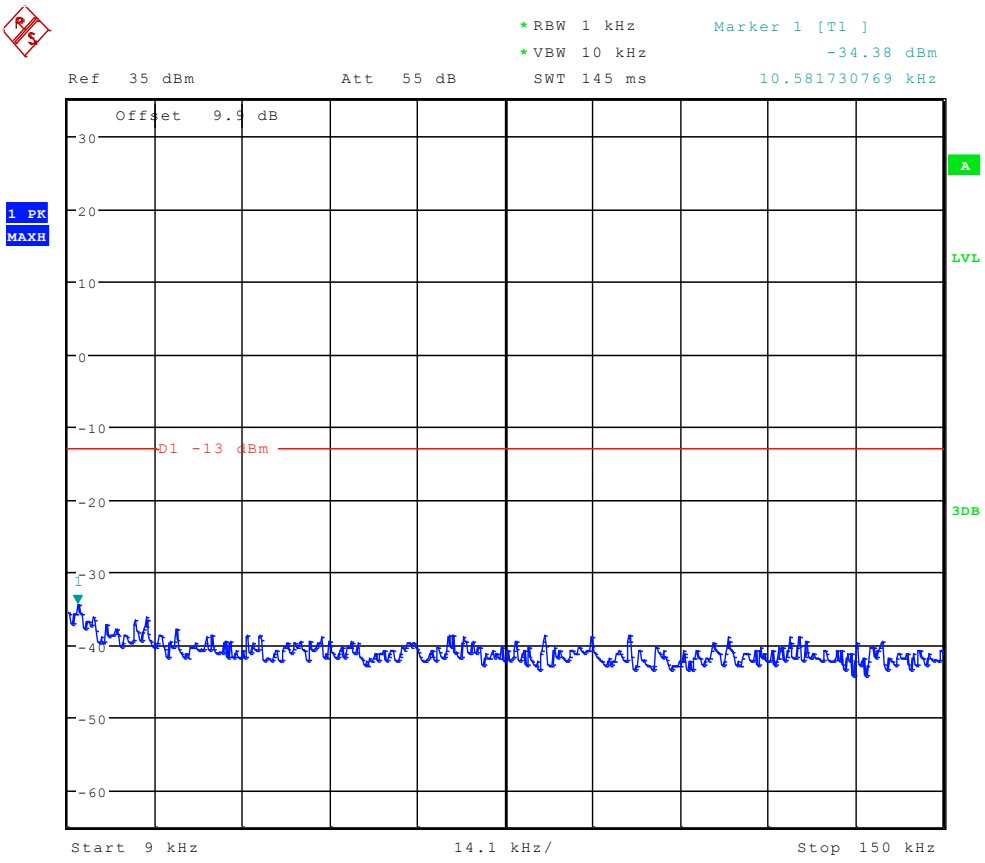



Date: 10.FEB.2012 16:39:07

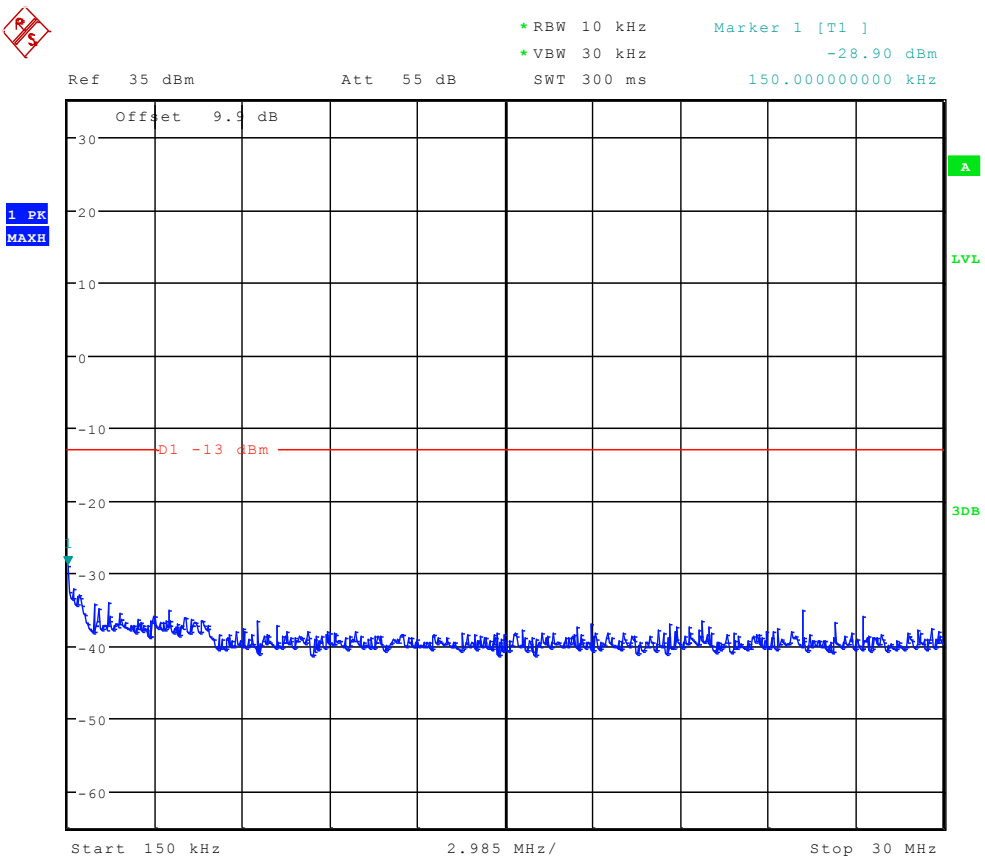



Date: 10.FEB.2012 16:39:51

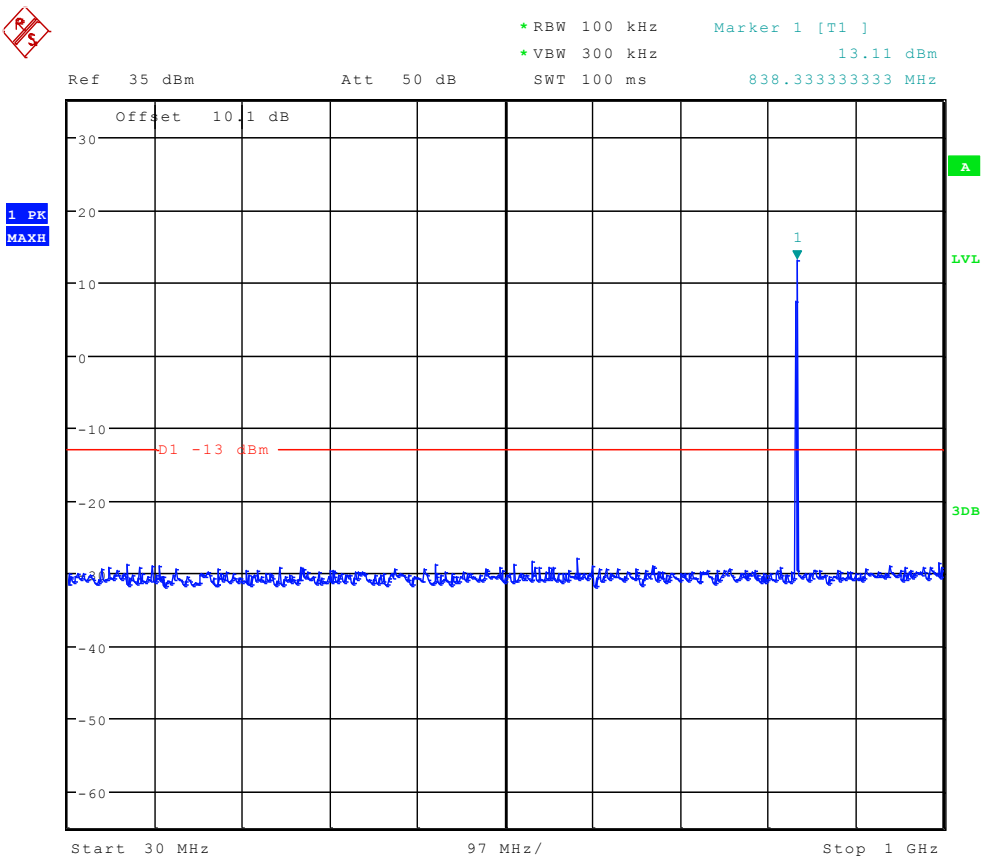
# Channel 192



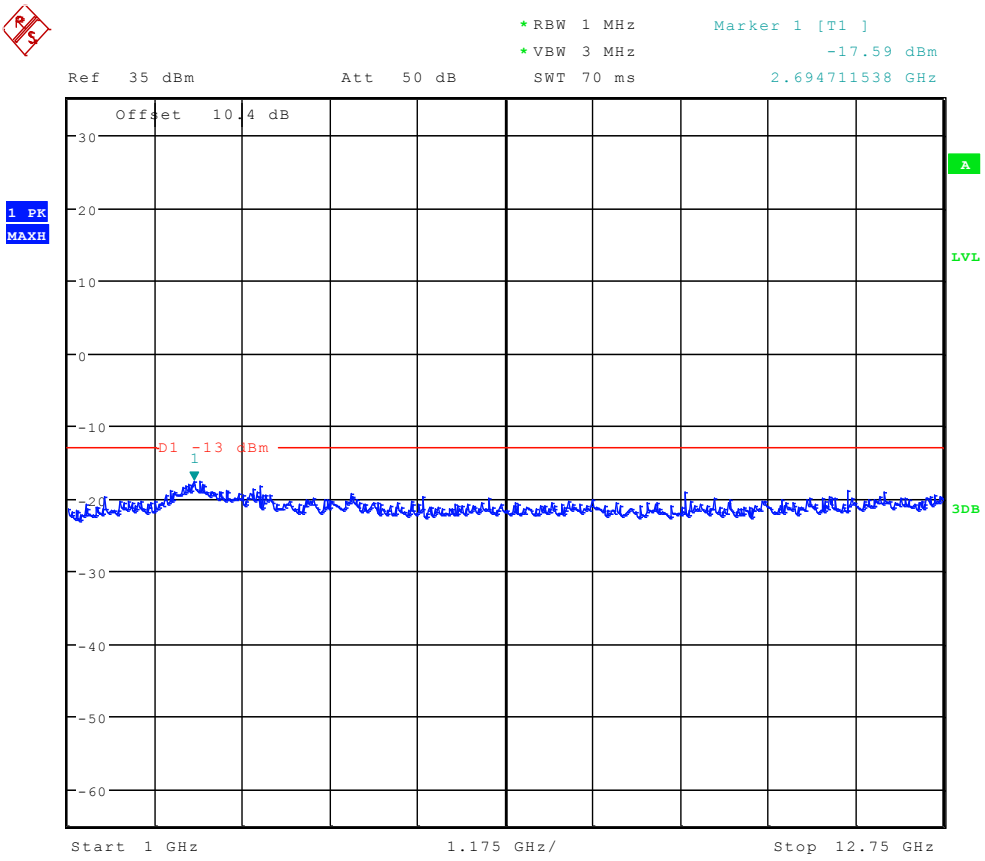

Date: 10.FEB.2012 16:37:54




Date: 10.FEB.2012 16:38:38

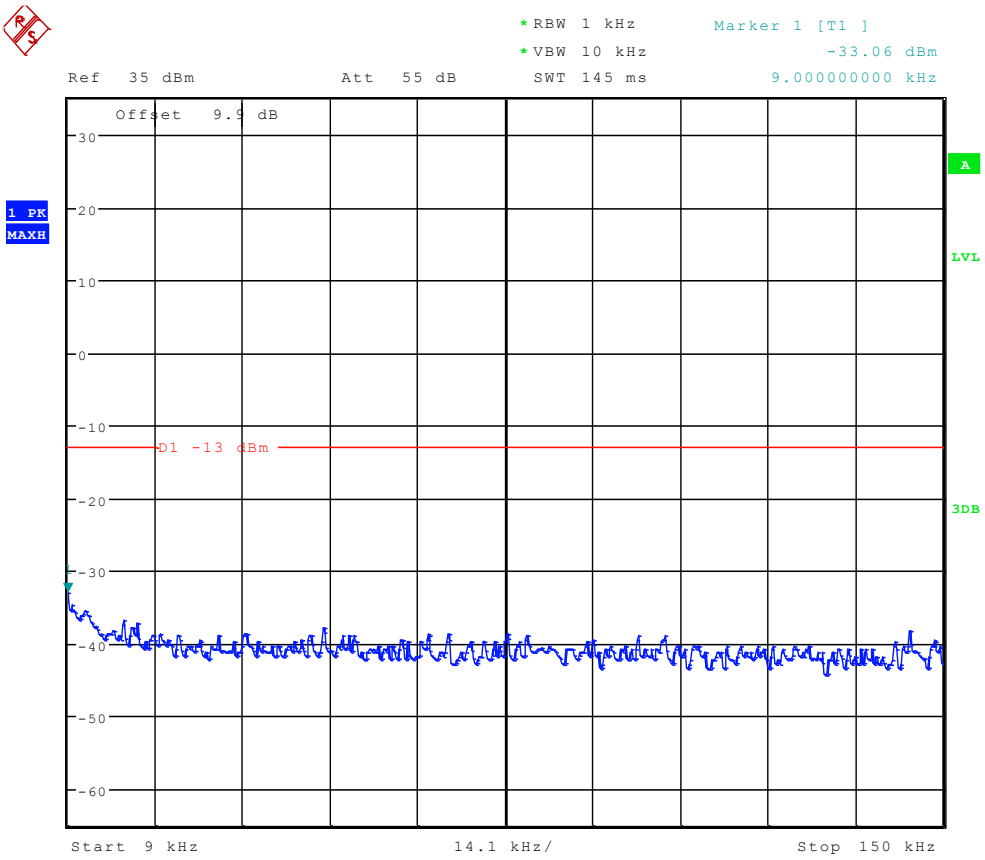



Date: 10.FEB.2012 16:39:22

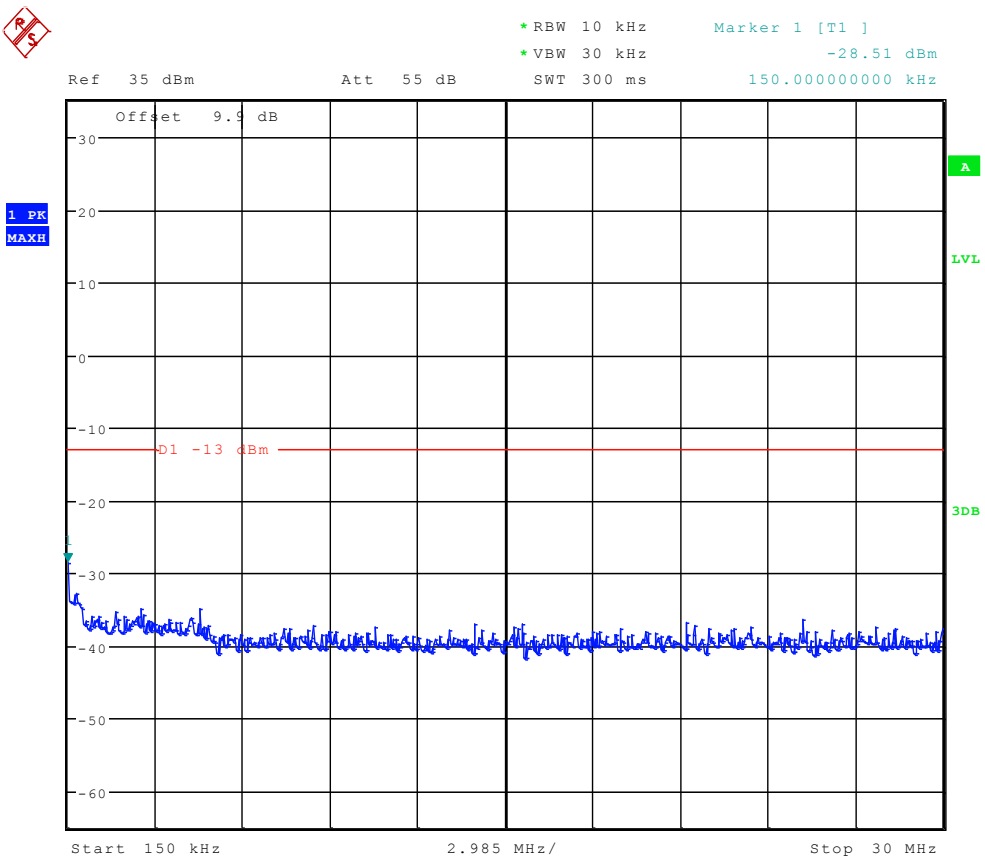



Date: 10.FEB.2012 16:40:06

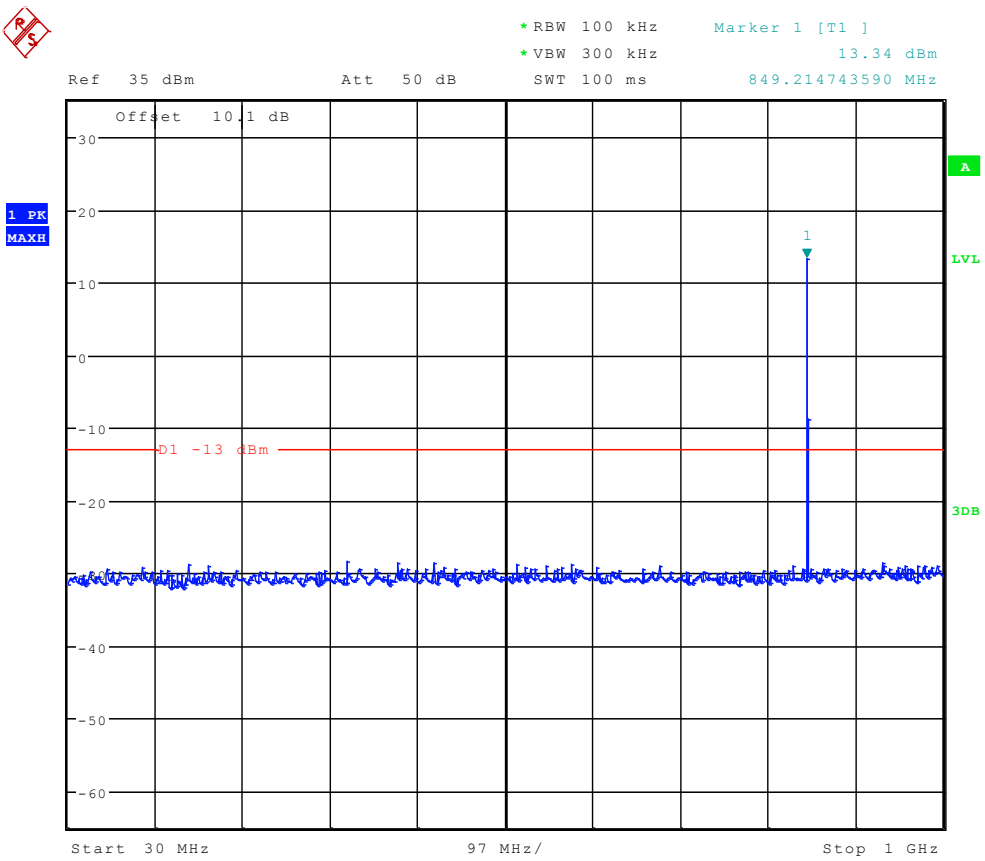
# Channel 251



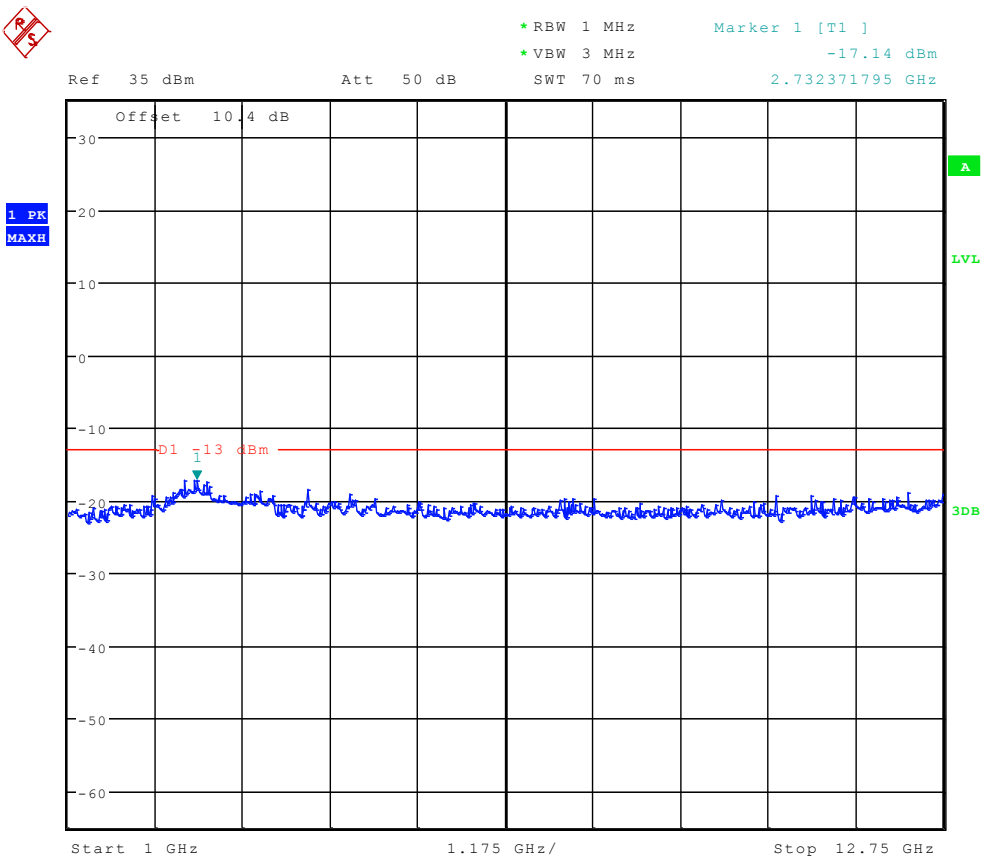

Date: 10.FEB.2012 16:38:08




Date: 10.FEB.2012 16:38:52

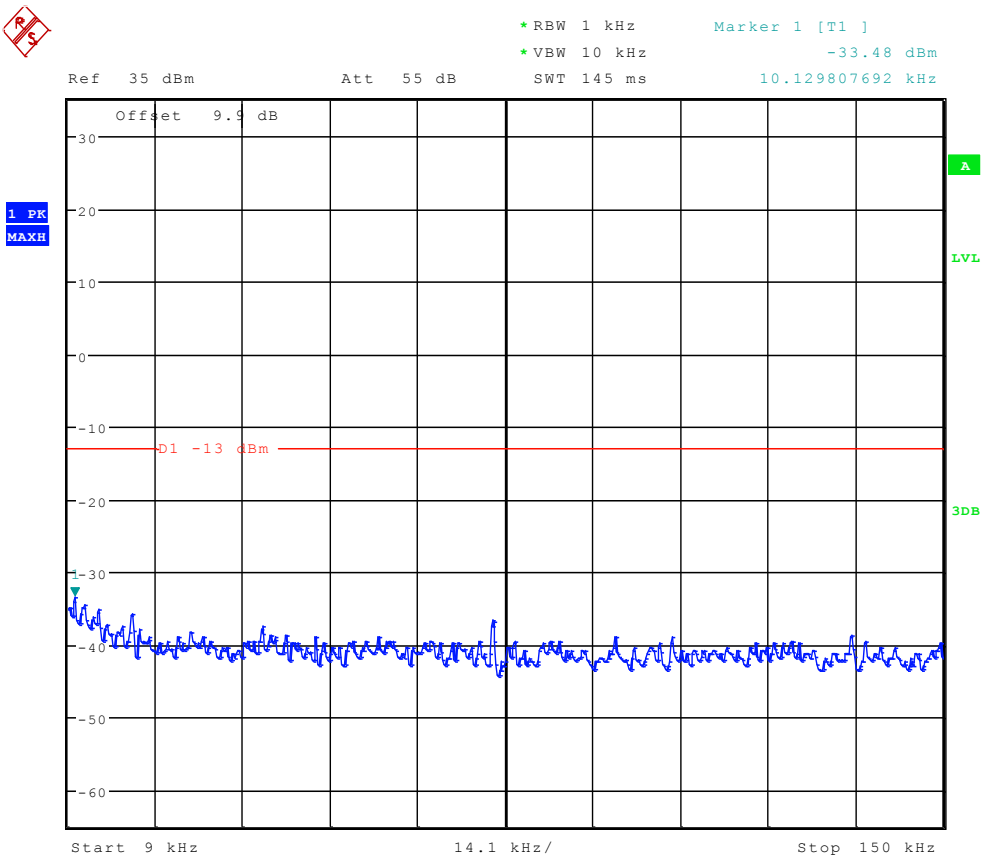



Date: 10.FEB.2012 16:39:36

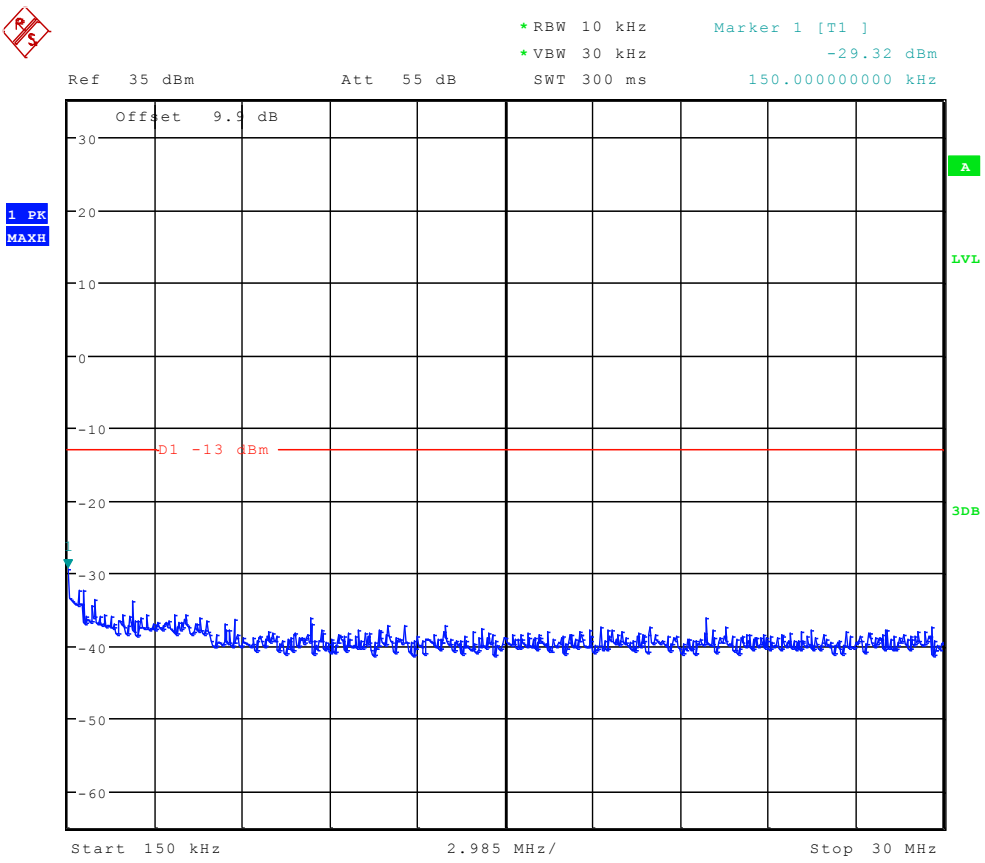



Date: 10.FEB.2012 16:40:20

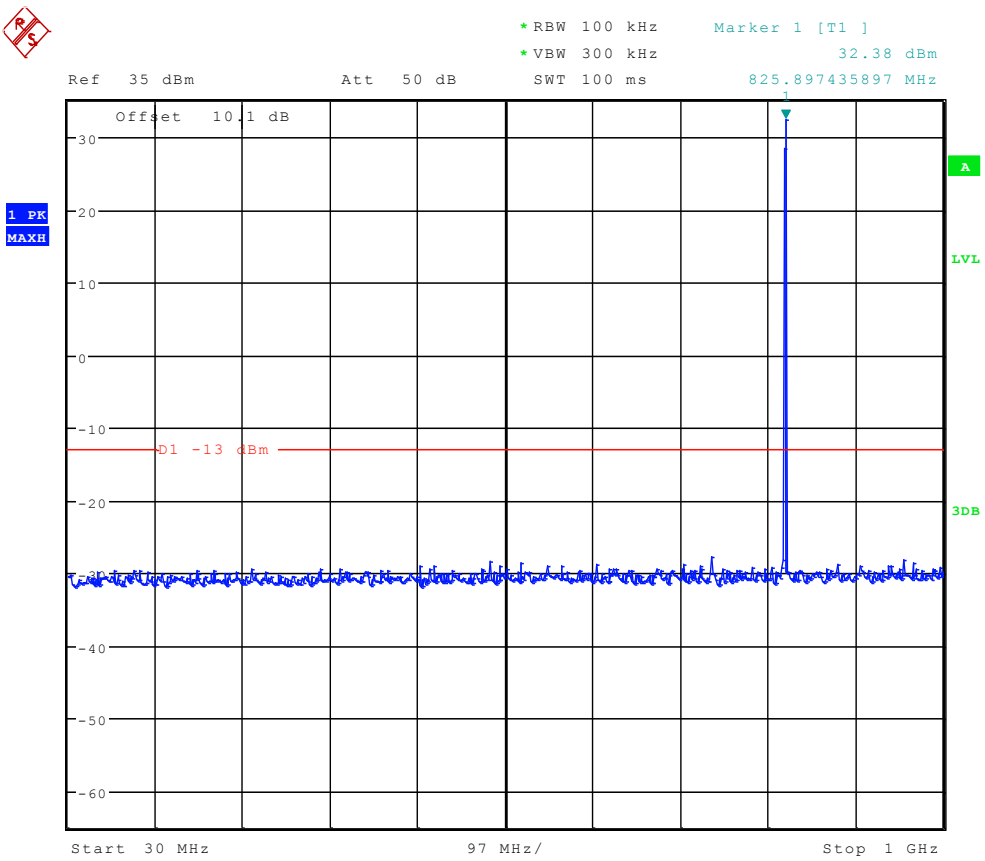
# TM2:EDGE
# Channel 128



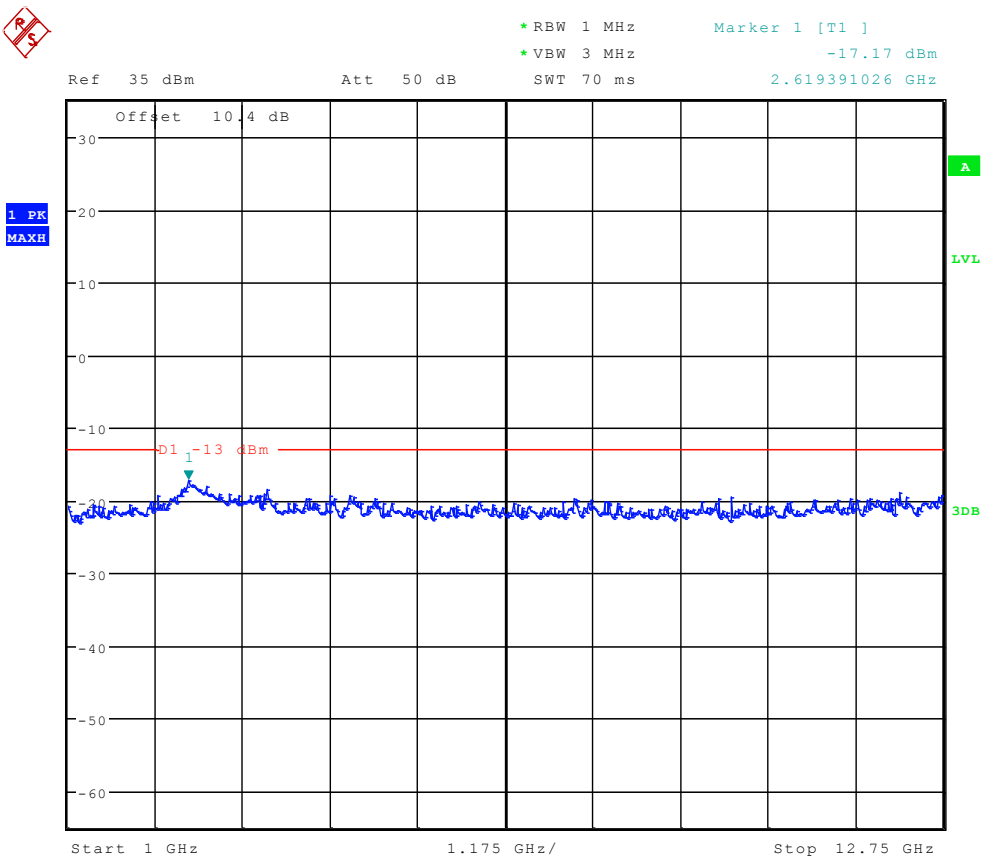

Date: 10.FEB.2012 16:47:19




Date: 10.FEB.2012 16:48:03

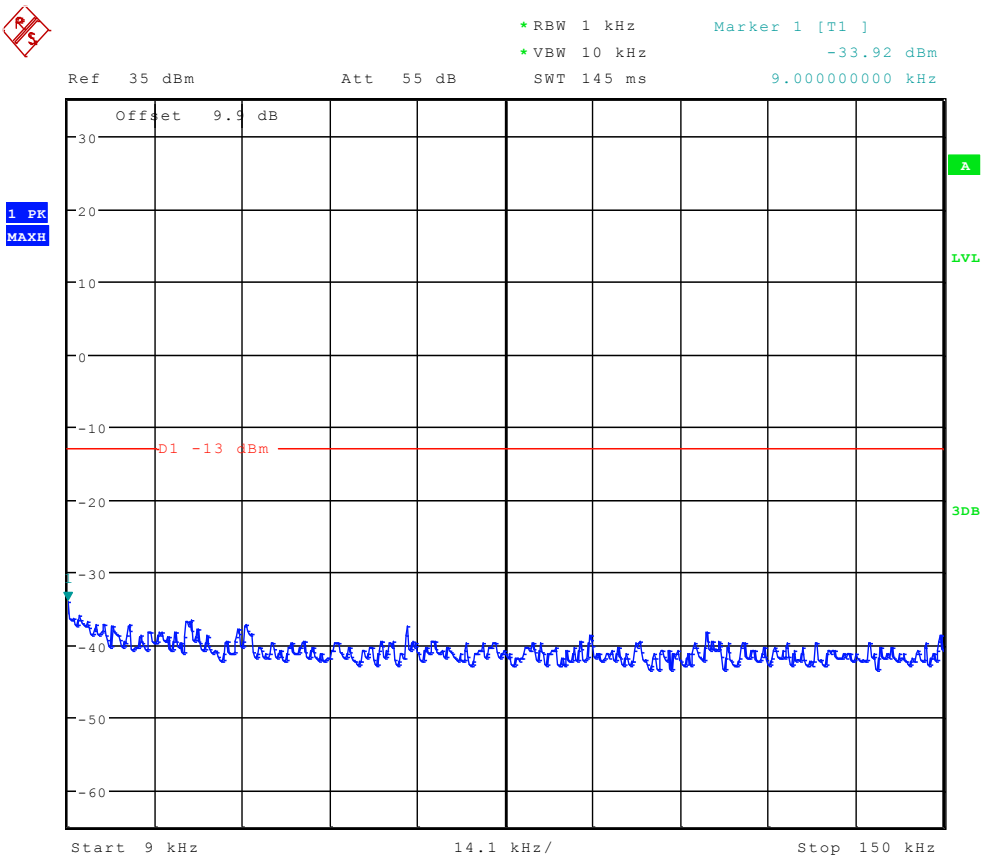



Date: 10.FEB.2012 16:48:47

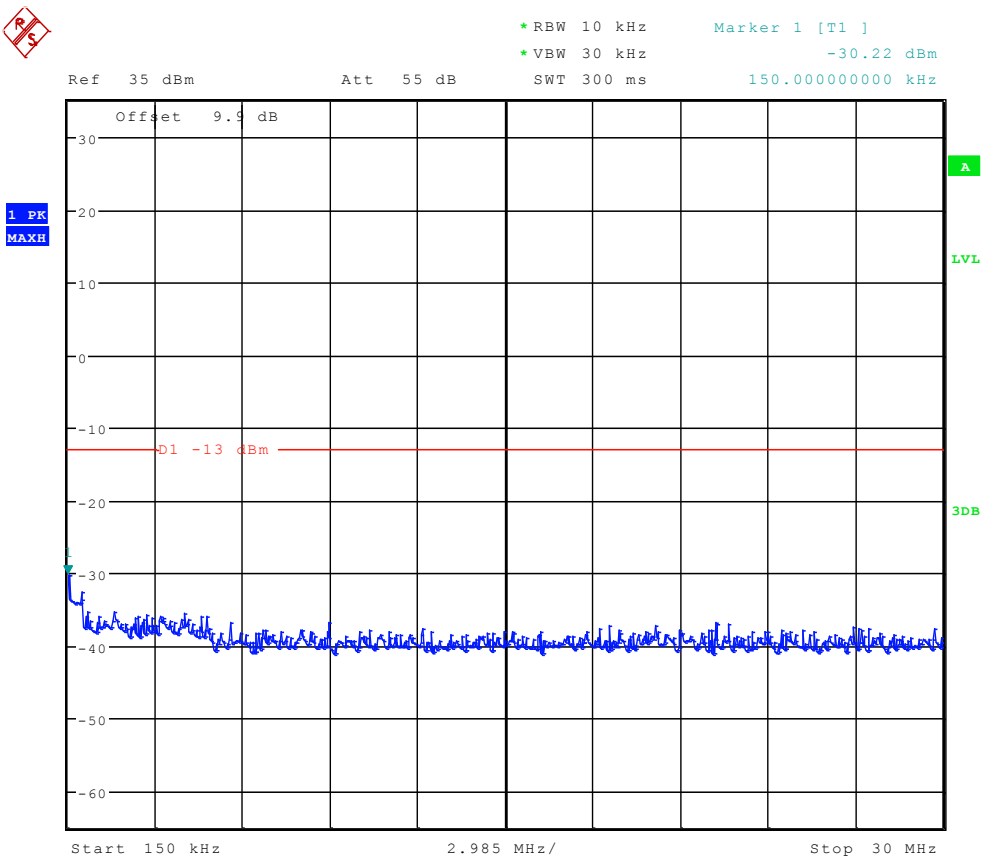



Date: 10.FEB.2012 16:49:31

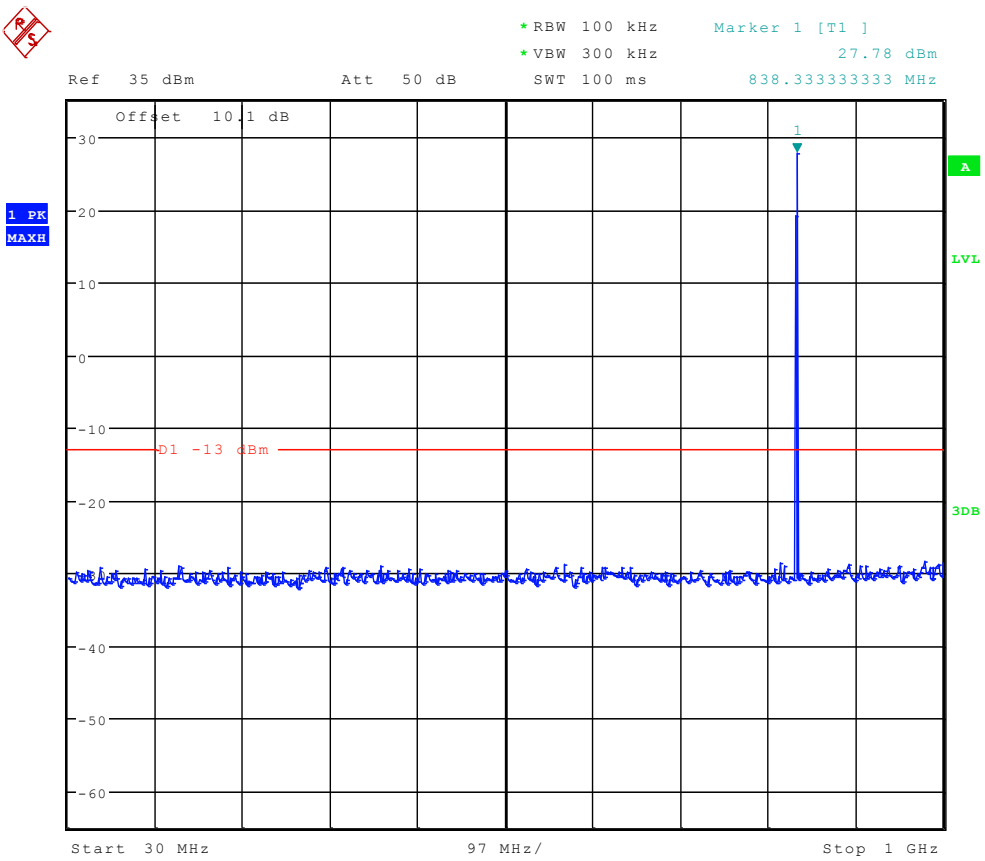
# Channel 192



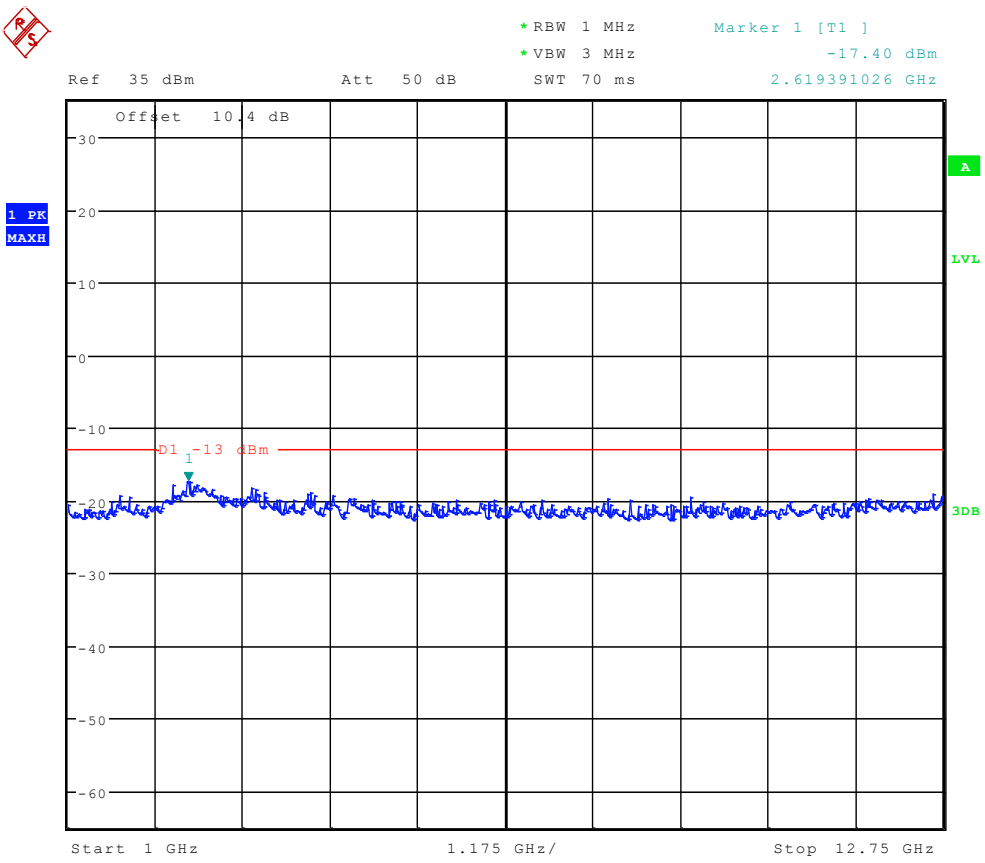

Date: 10.FEB.2012 16:47:33




Date: 10.FEB.2012 16:48:17

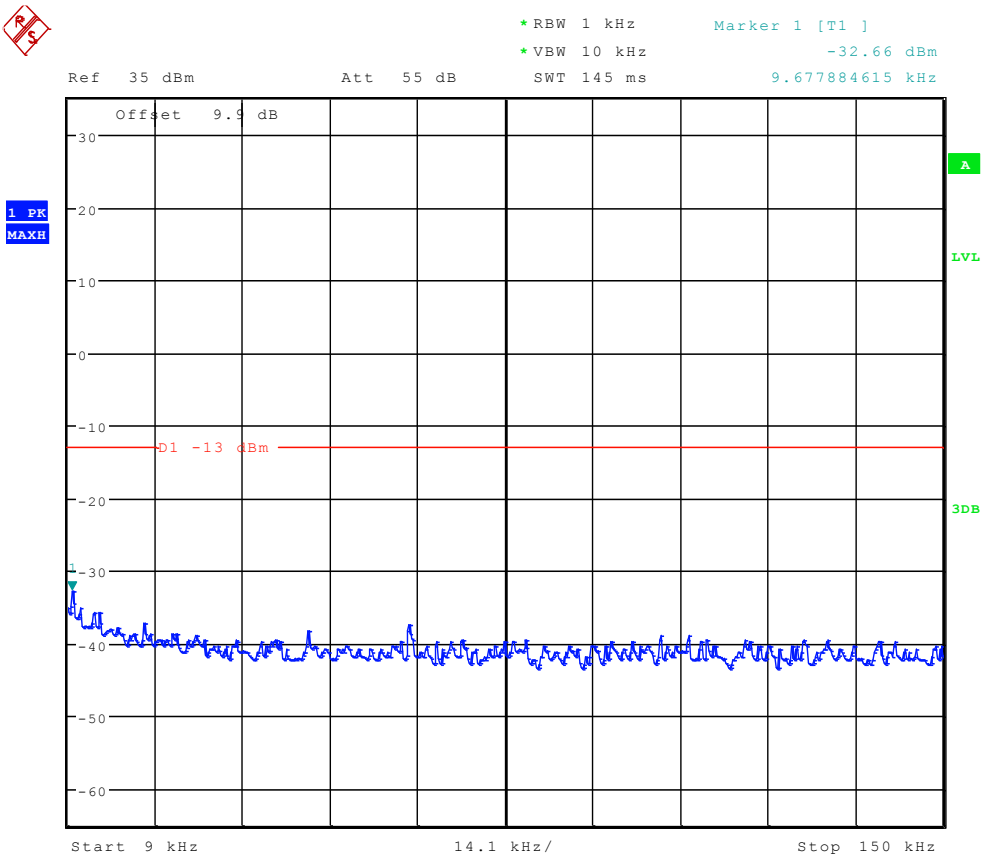



Date: 10.FEB.2012 16:49:01

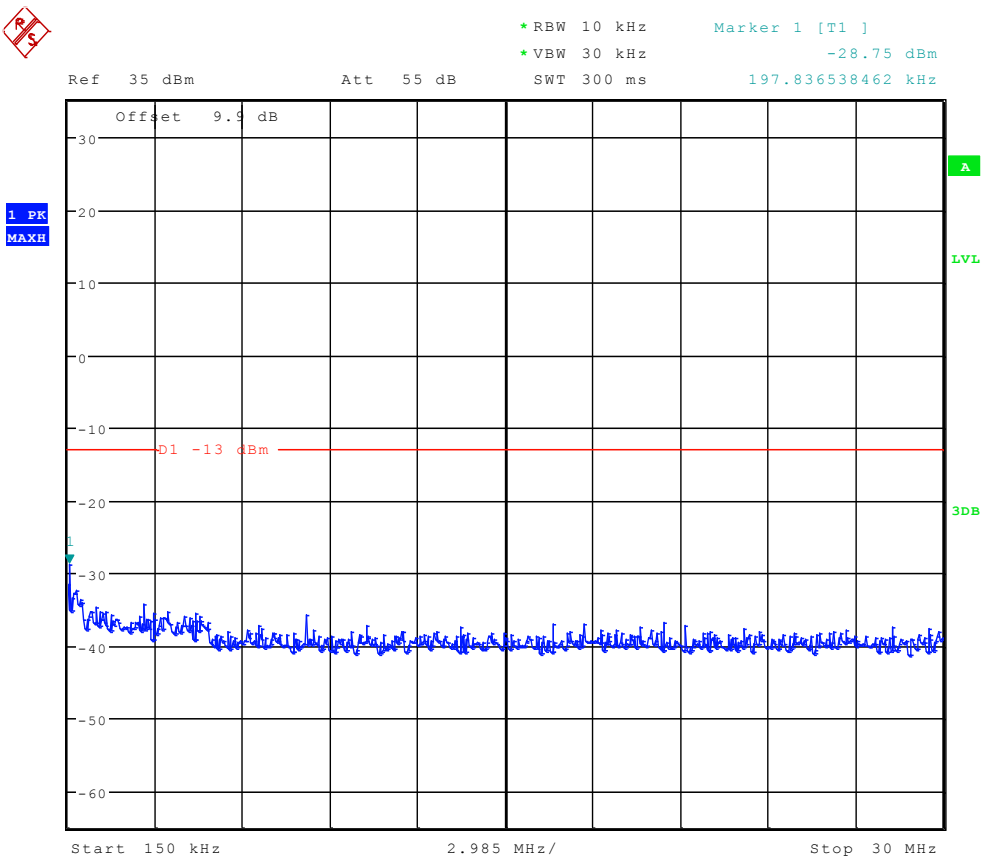



Date: 10.FEB.2012 16:49:45

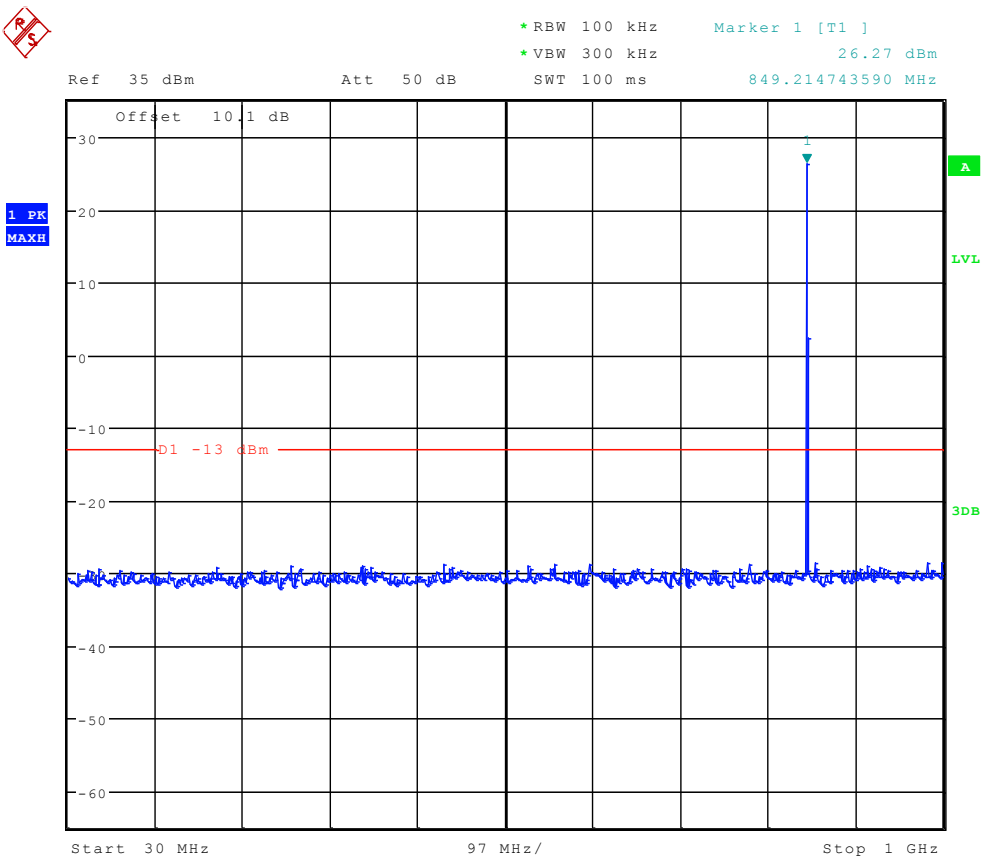
# Channel 251



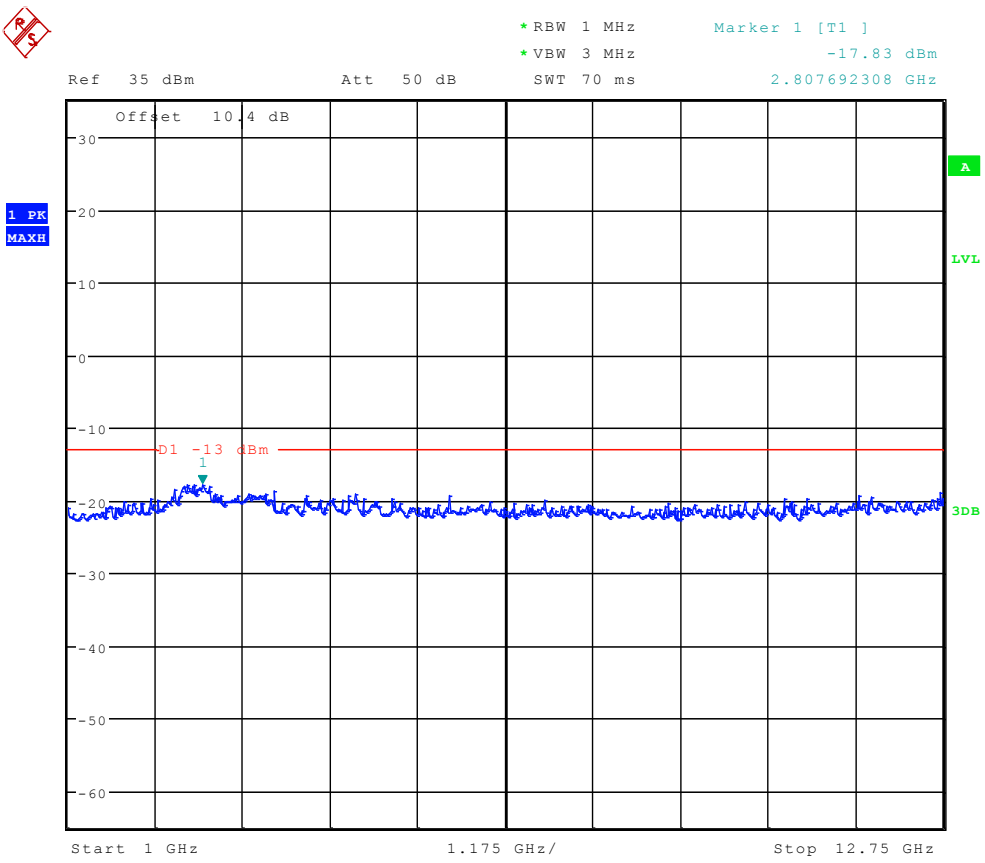

Date: 10.FEB.2012 16:47:48




Date: 10.FEB.2012 16:48:32

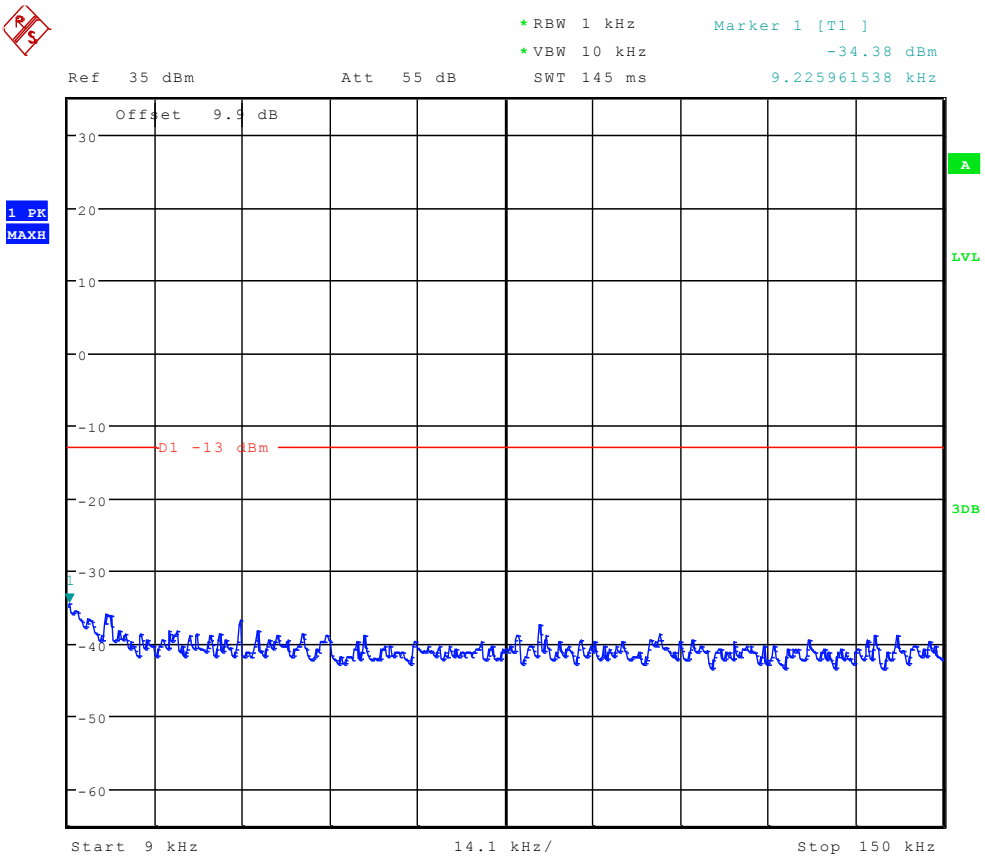



Date: 10.FEB.2012 16:49:16

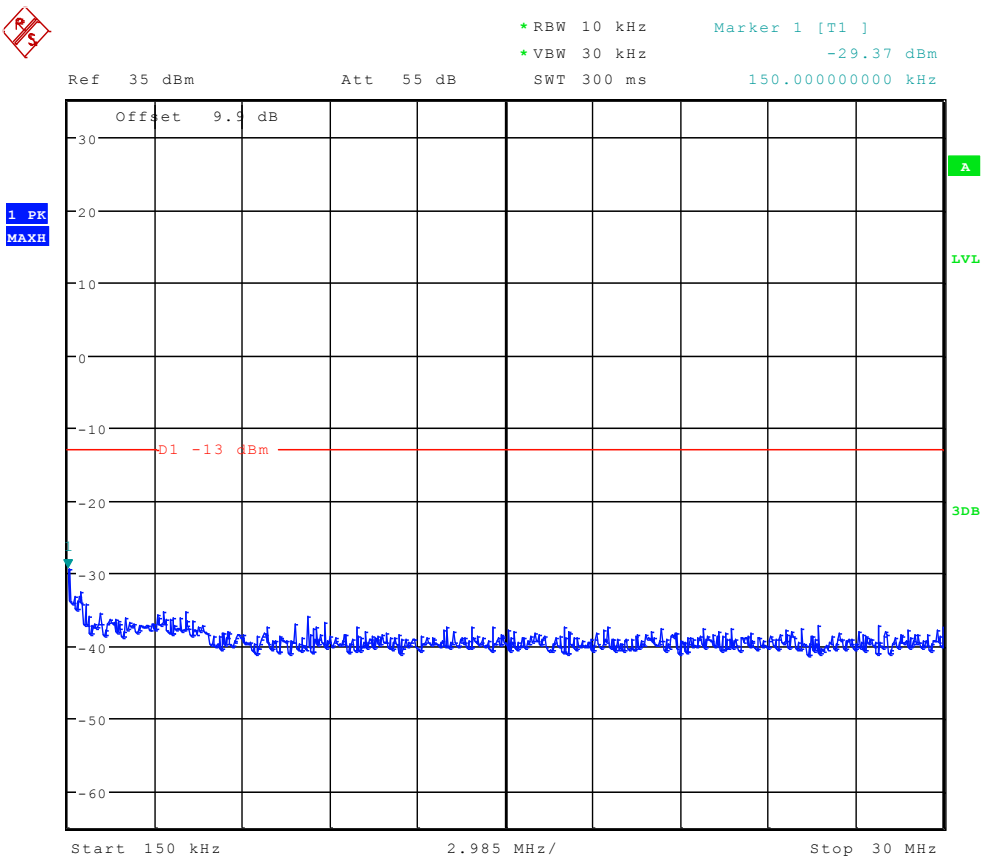



Date: 10.FEB.2012 16:50:00

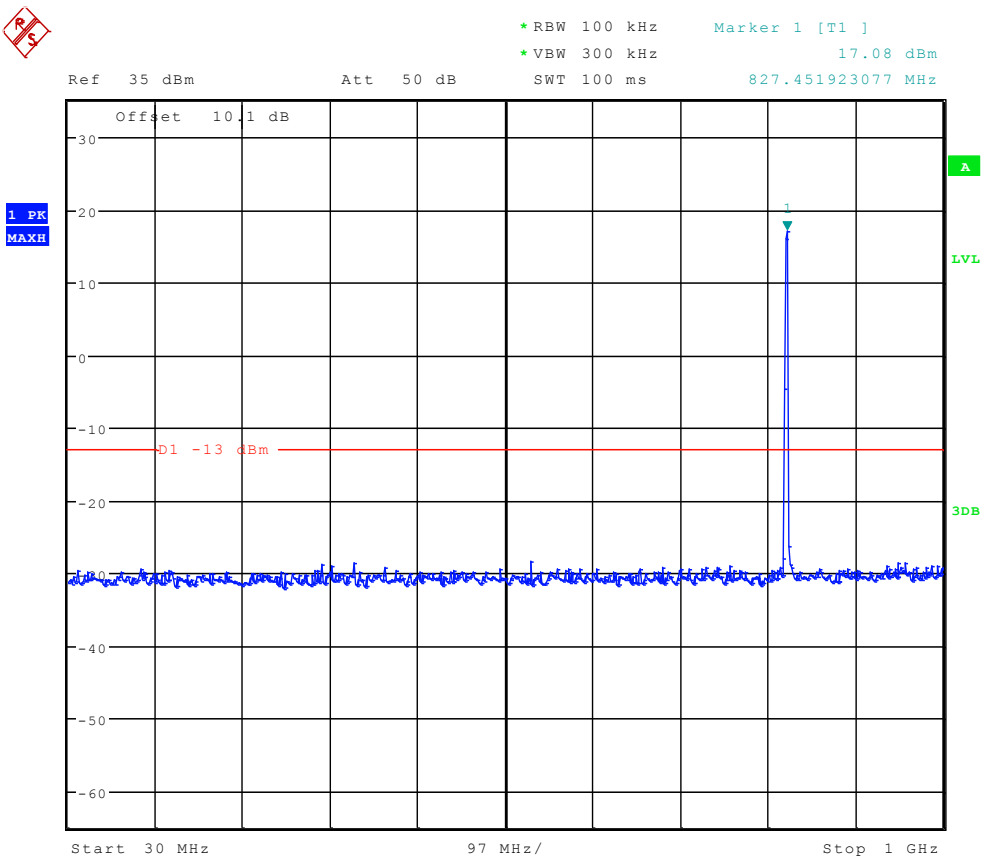
# TM3: WCDMA
# Channel 4132



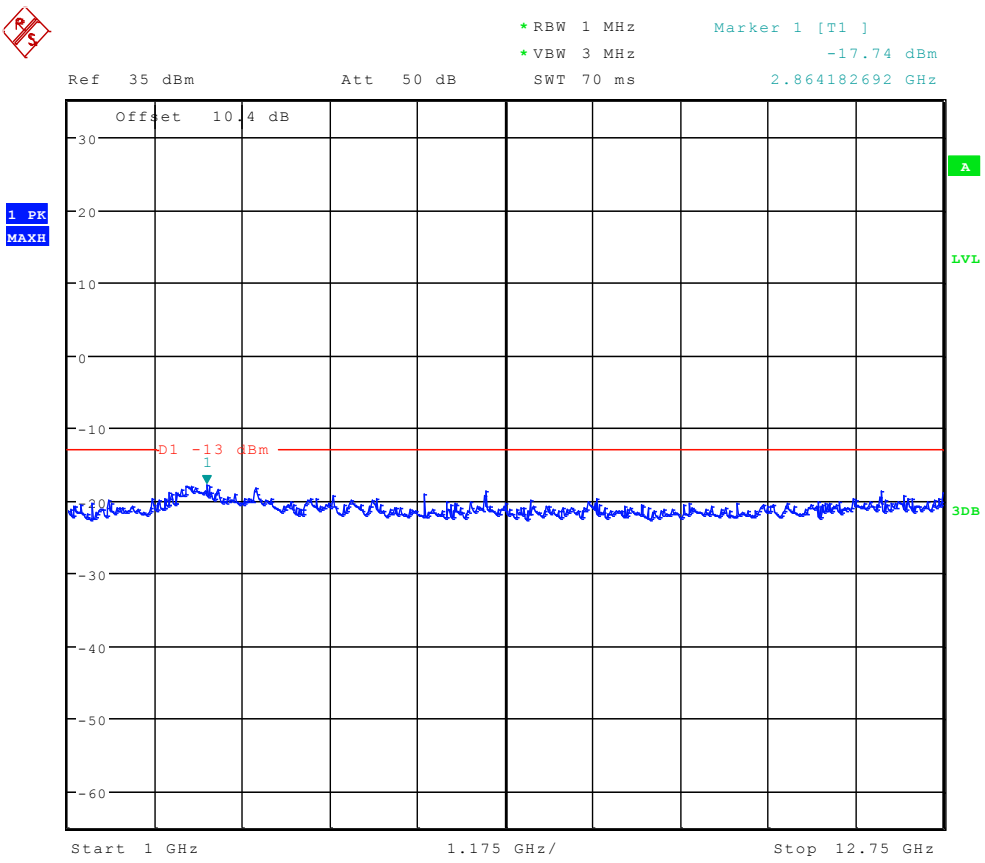

Date: 10.FEB.2012 16:55:21




Date: 10.FEB.2012 16:56:05

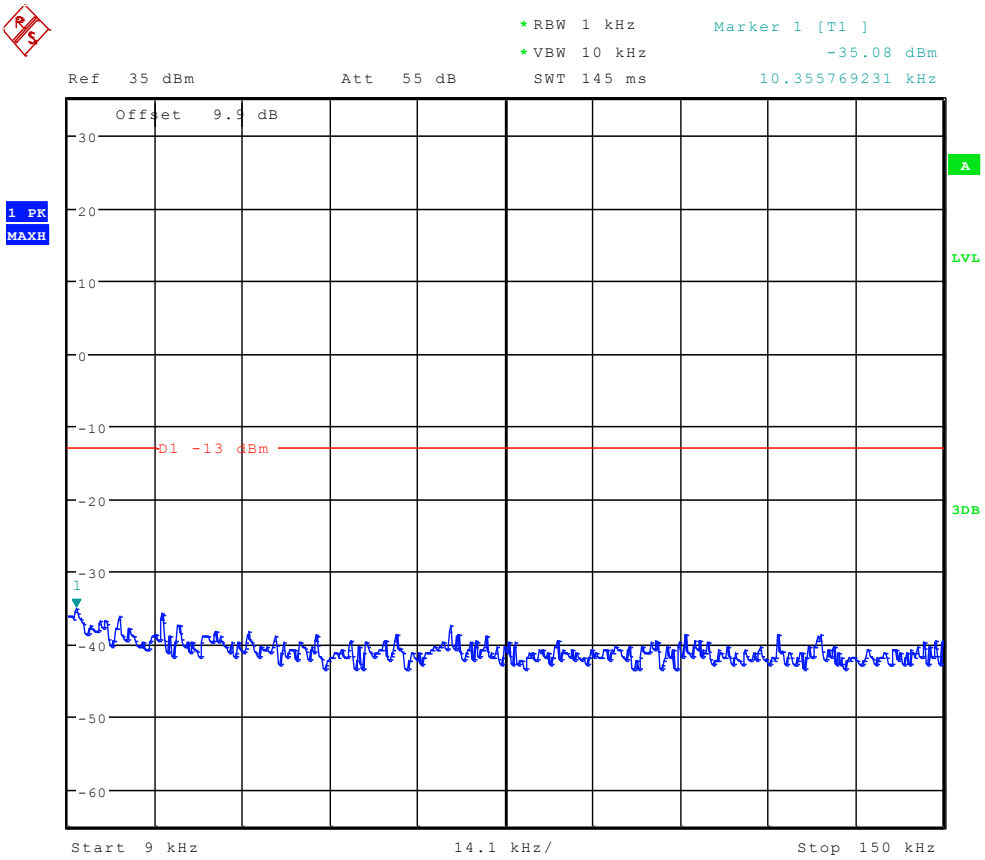



Date: 10.FEB.2012 16:56:49

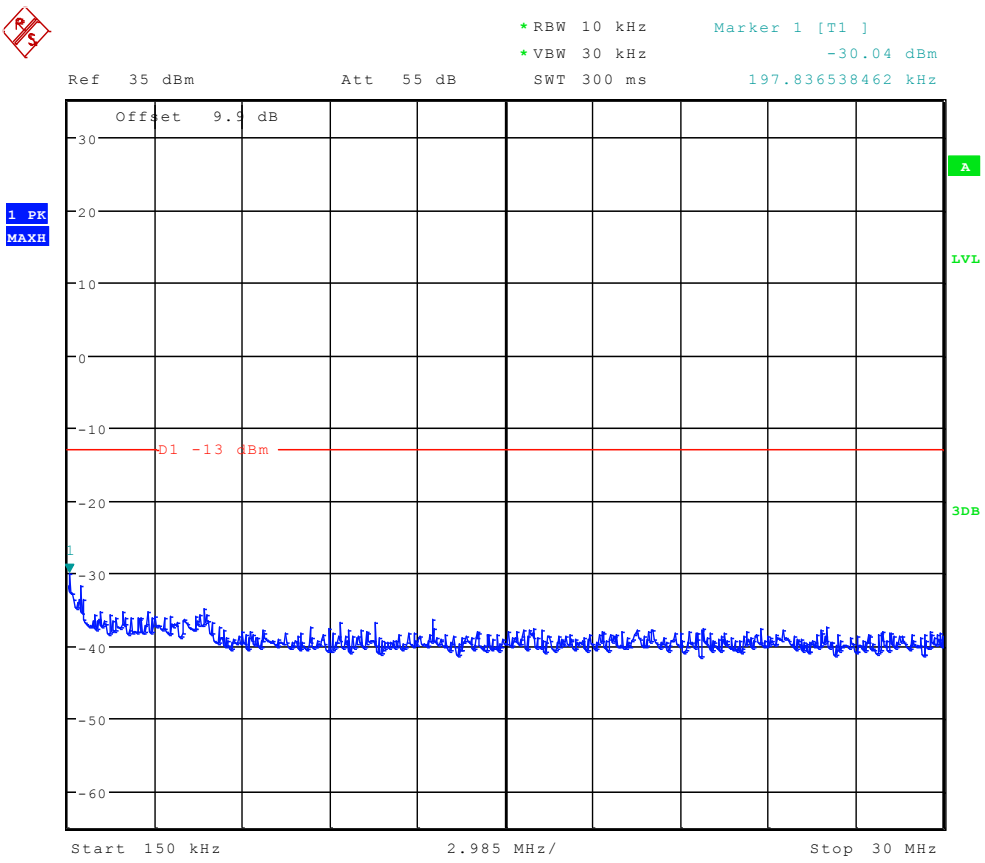



Date: 10.FEB.2012 16:57:33

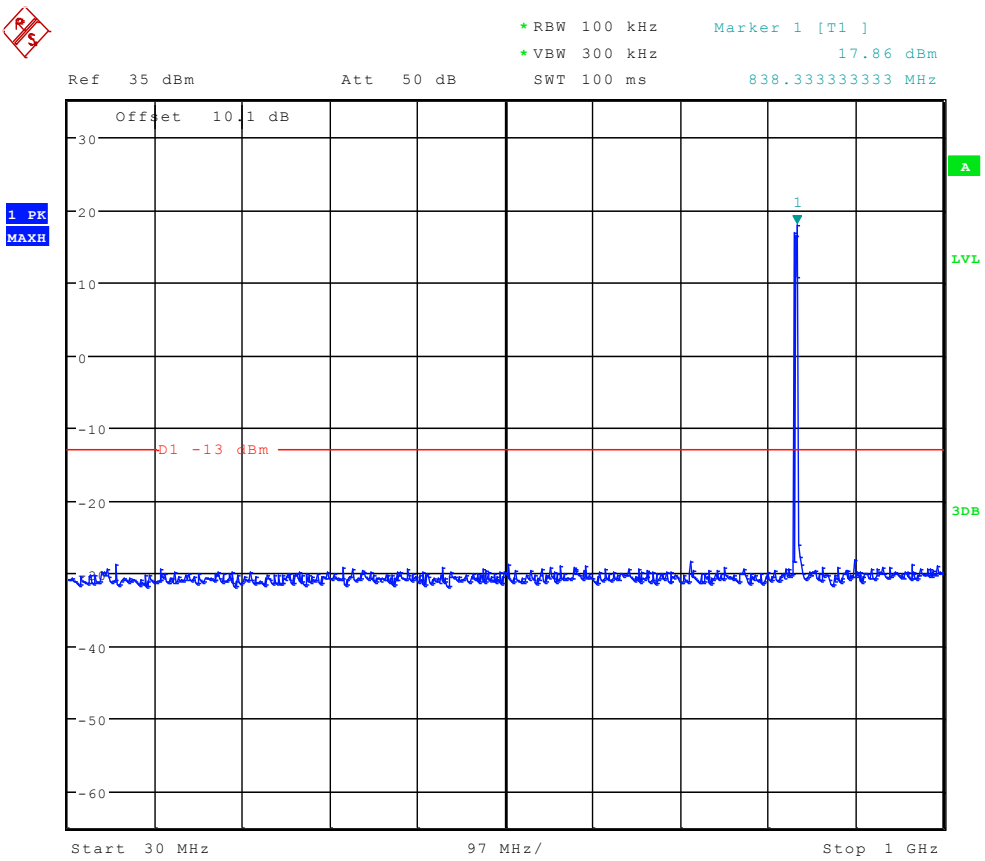
# Channel 4182



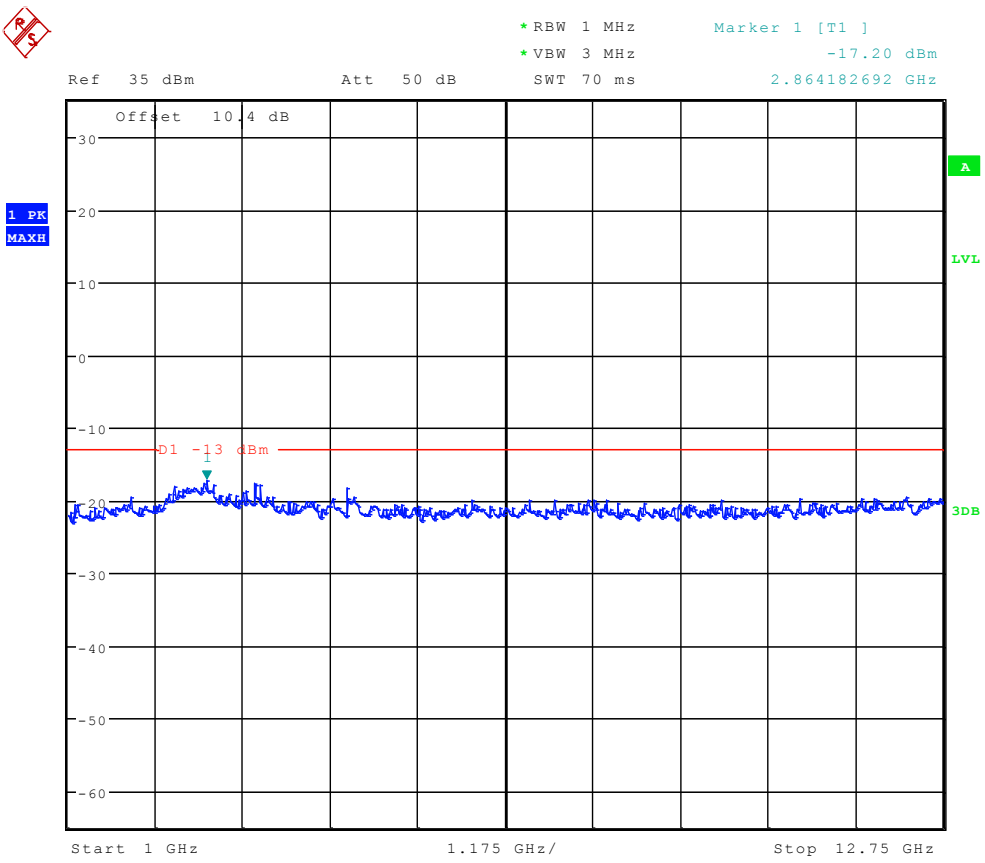

Date: 10.FEB.2012 16:55:36




Date: 10.FEB.2012 16:56:19

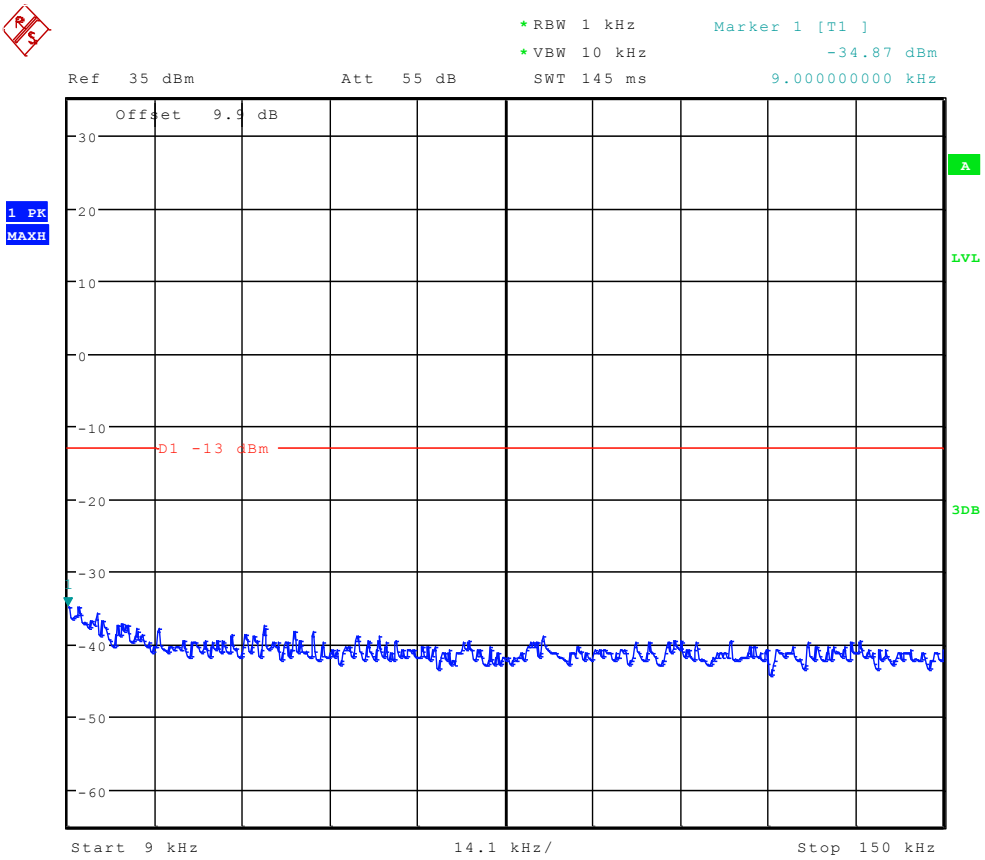



Date: 10.FEB.2012 16:57:03

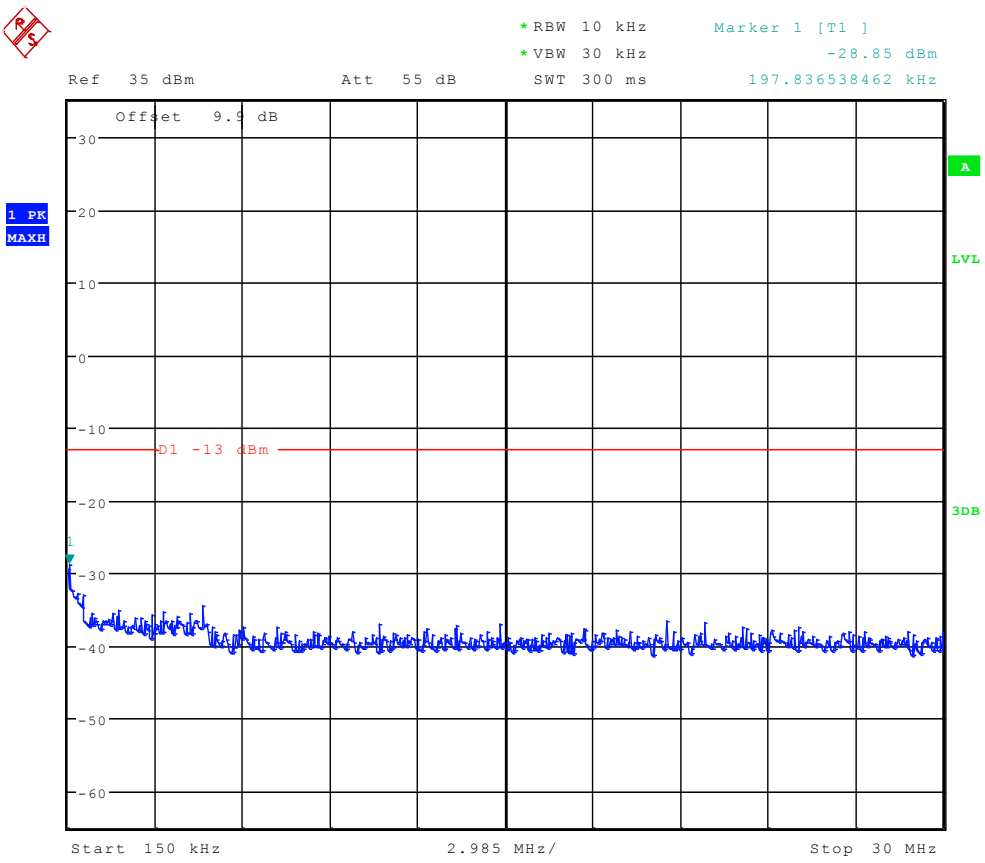



Date: 10.FEB.2012 16:57:47

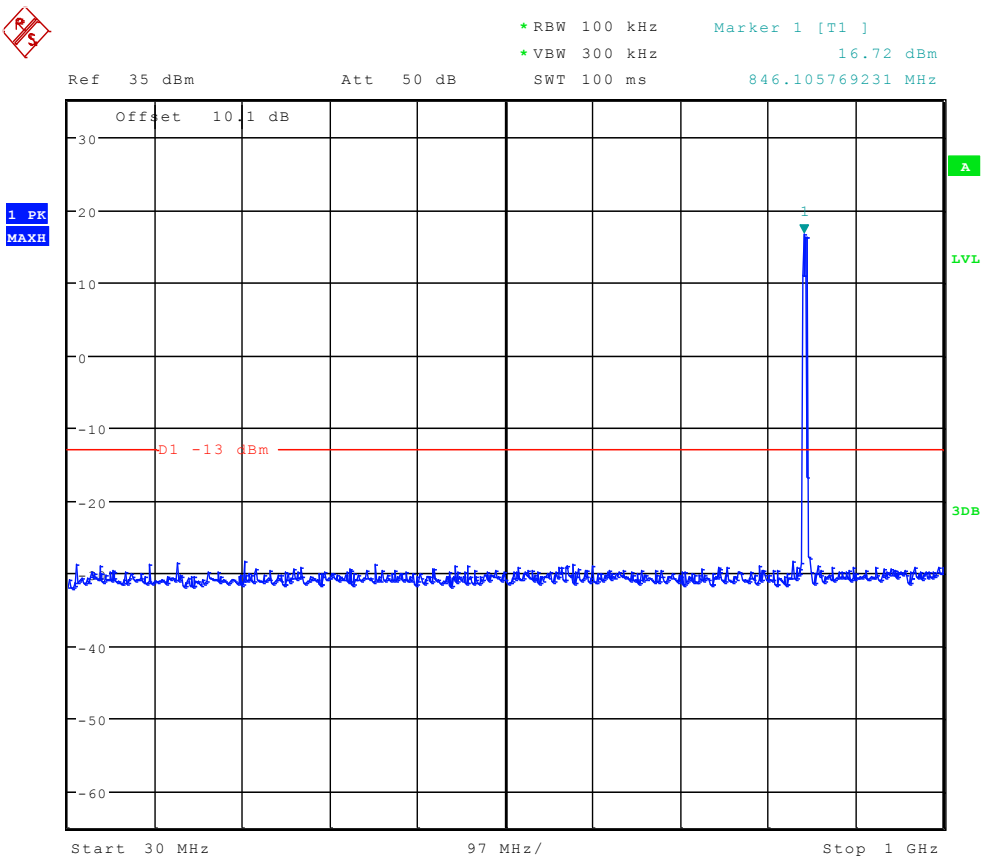
# Channel 4233



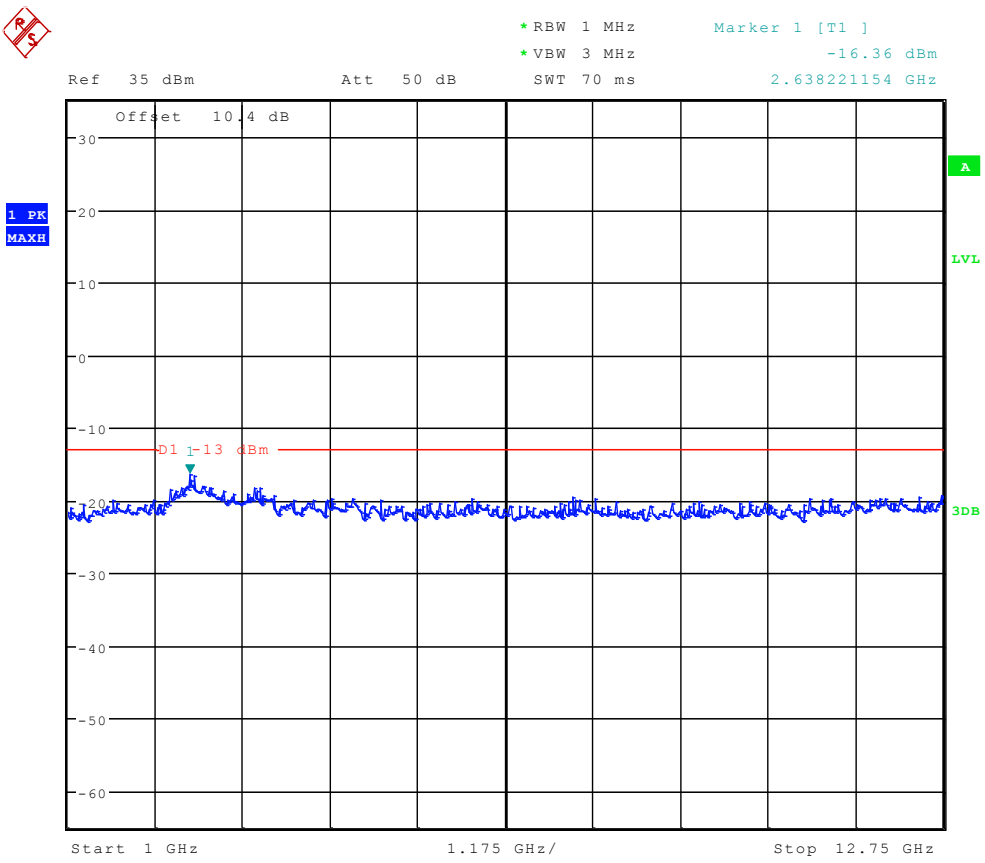

Date: 10.FEB.2012 16:55:50




Date: 10.FEB.2012 16:56:34




Date: 10.FEB.2012 16:57:18




Date: 10.FEB.2012 16:58:02

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

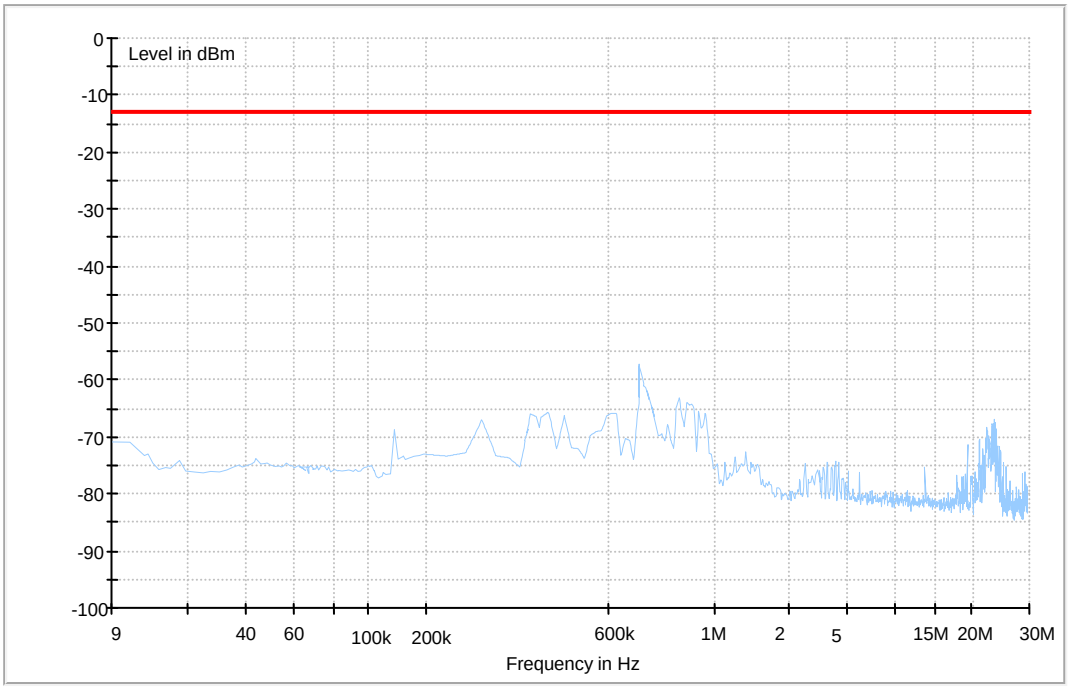
# Appendix F

## Radiated spurious emission

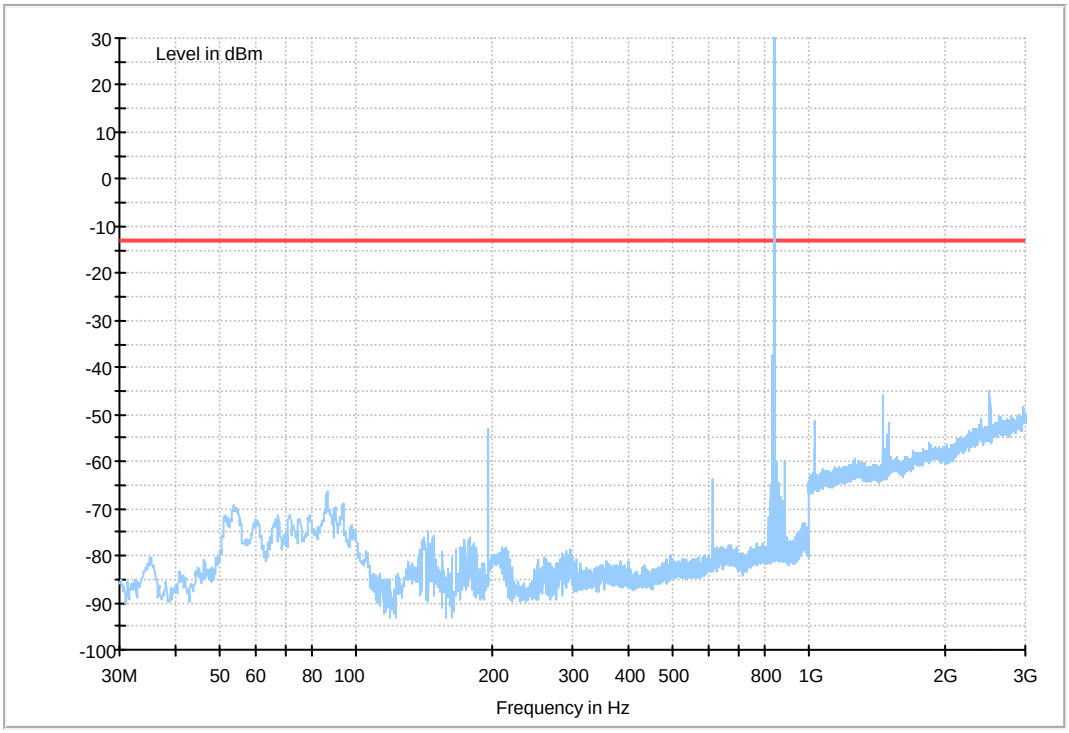
According to FCC Part 2.1053& Part 22.917

# GPRS 850

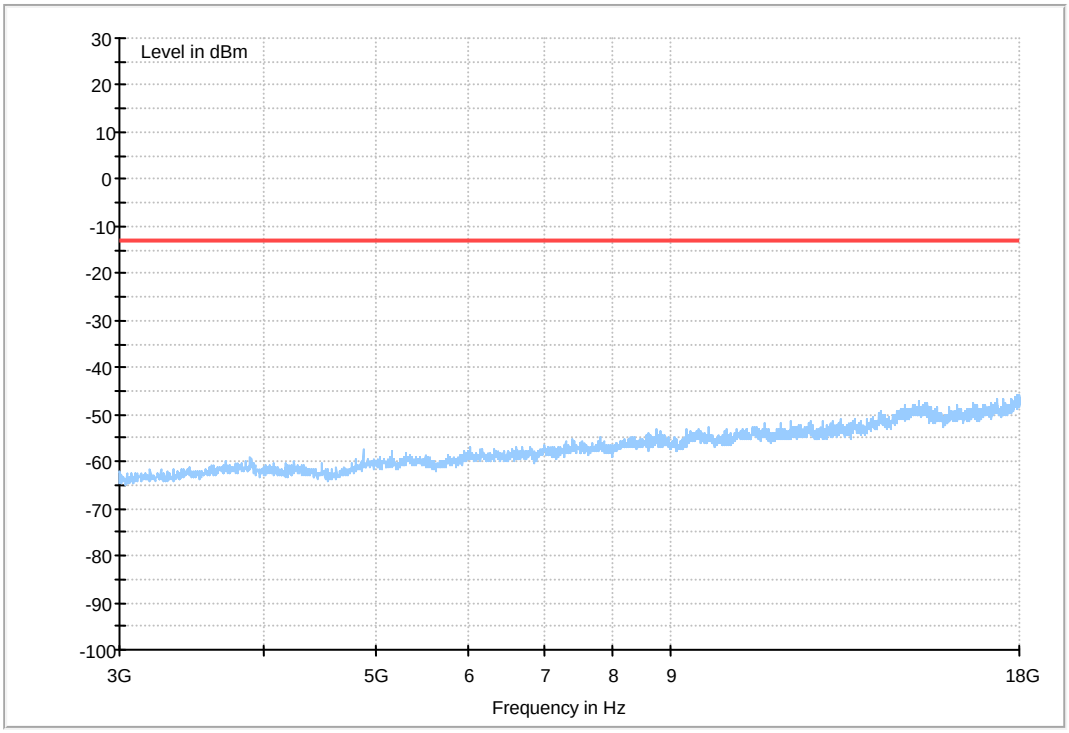
Traffic Mode (9kHz-30MHz)



## Traffic Mode (30MHz-3GHz)

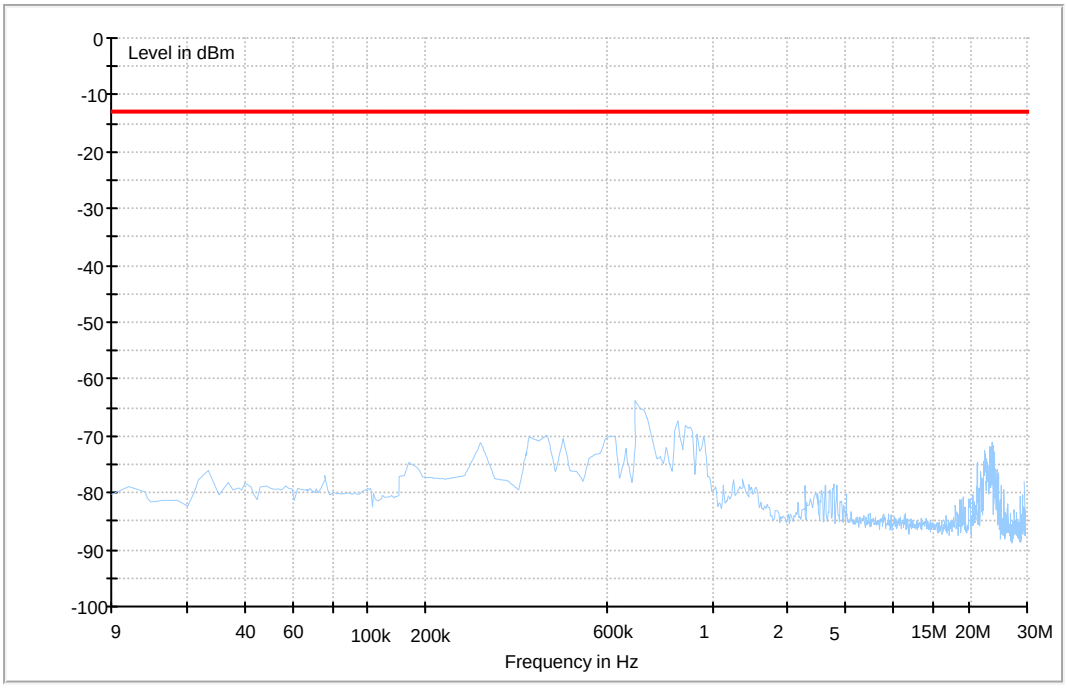


## Traffic Mode (3GHz-18GHz)

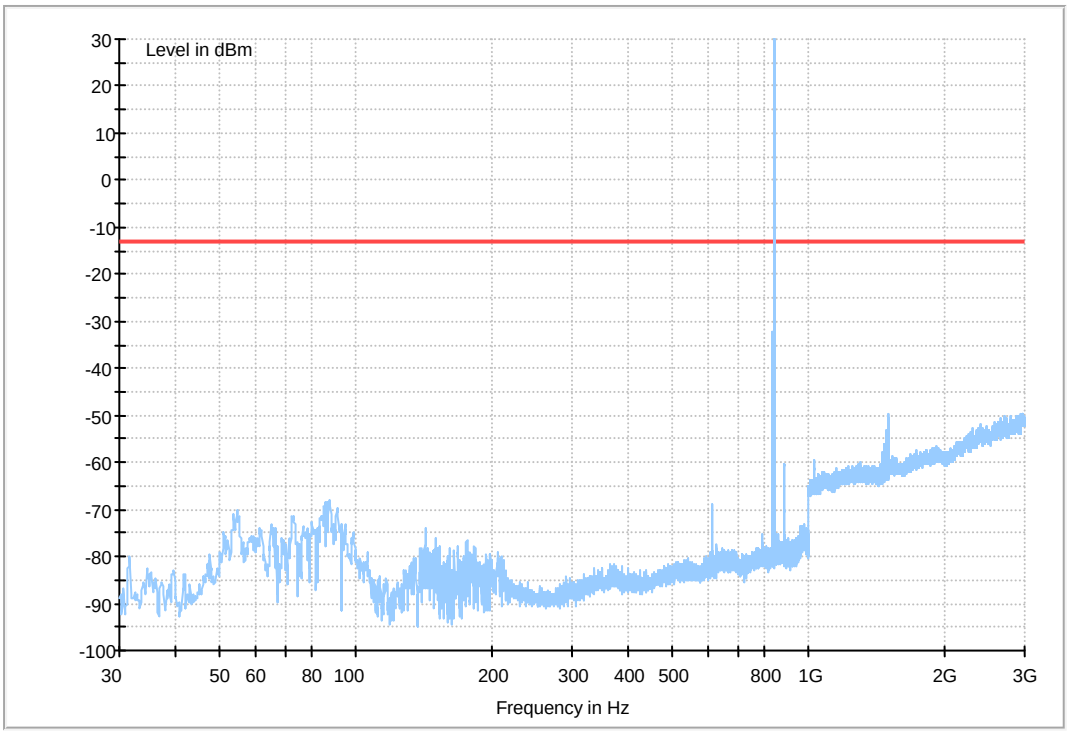


# EDGE 850

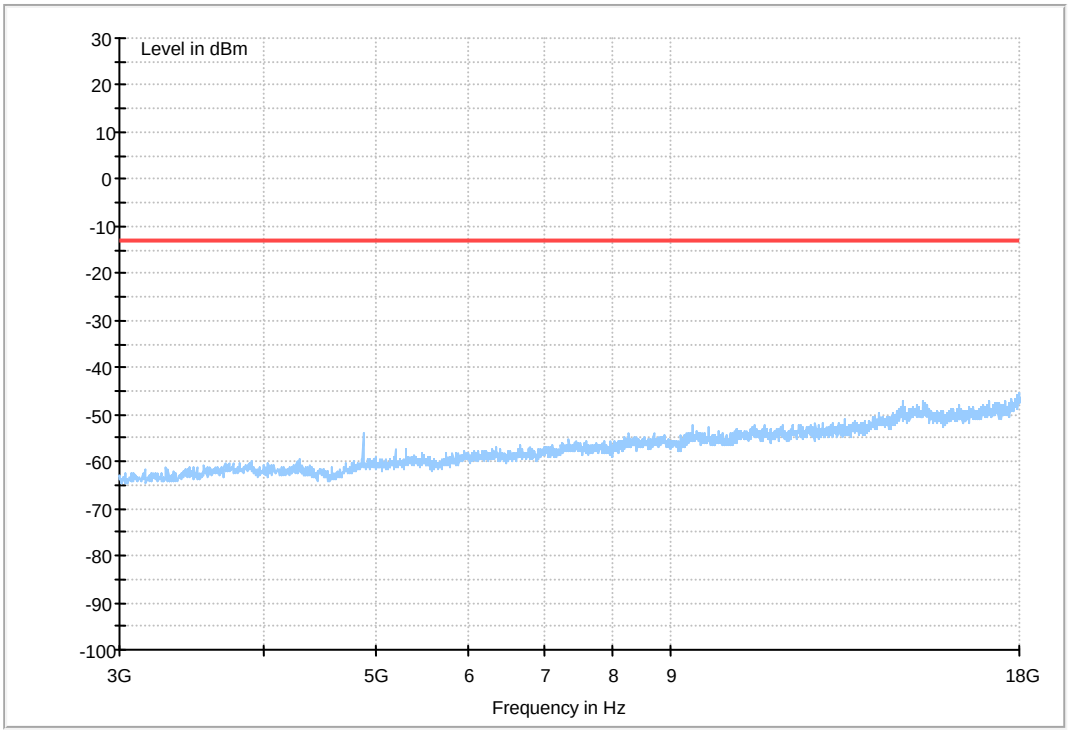
Traffic Mode (9kHz-30MHz)



## Traffic Mode (30MHz-3GHz)

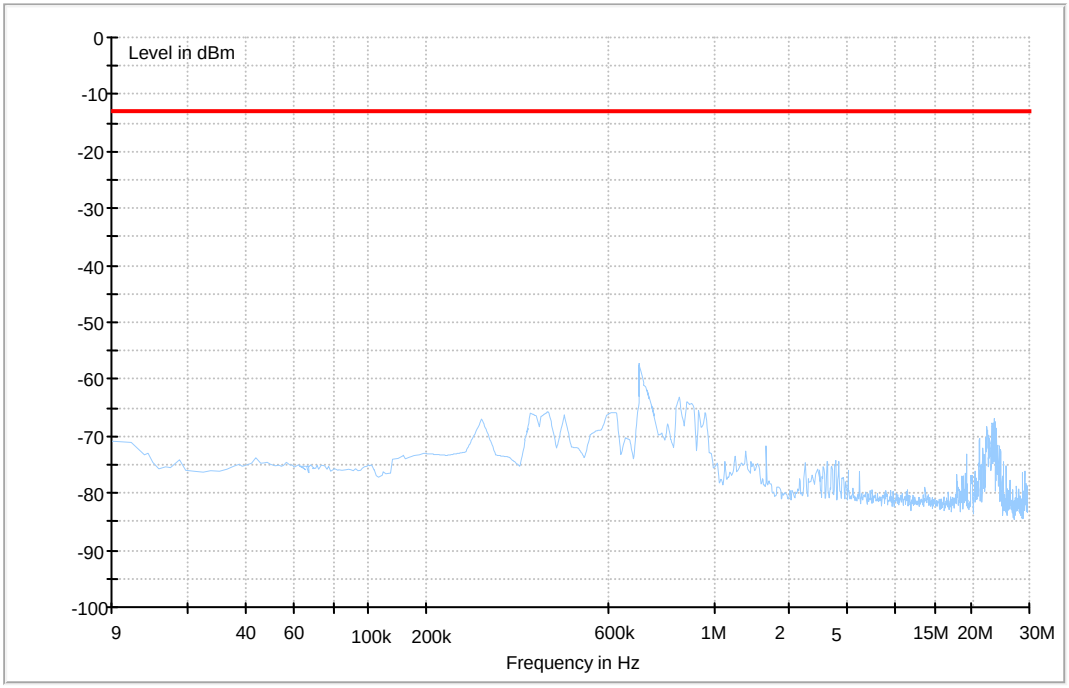


## Traffic Mode (3GHz-18GHz)

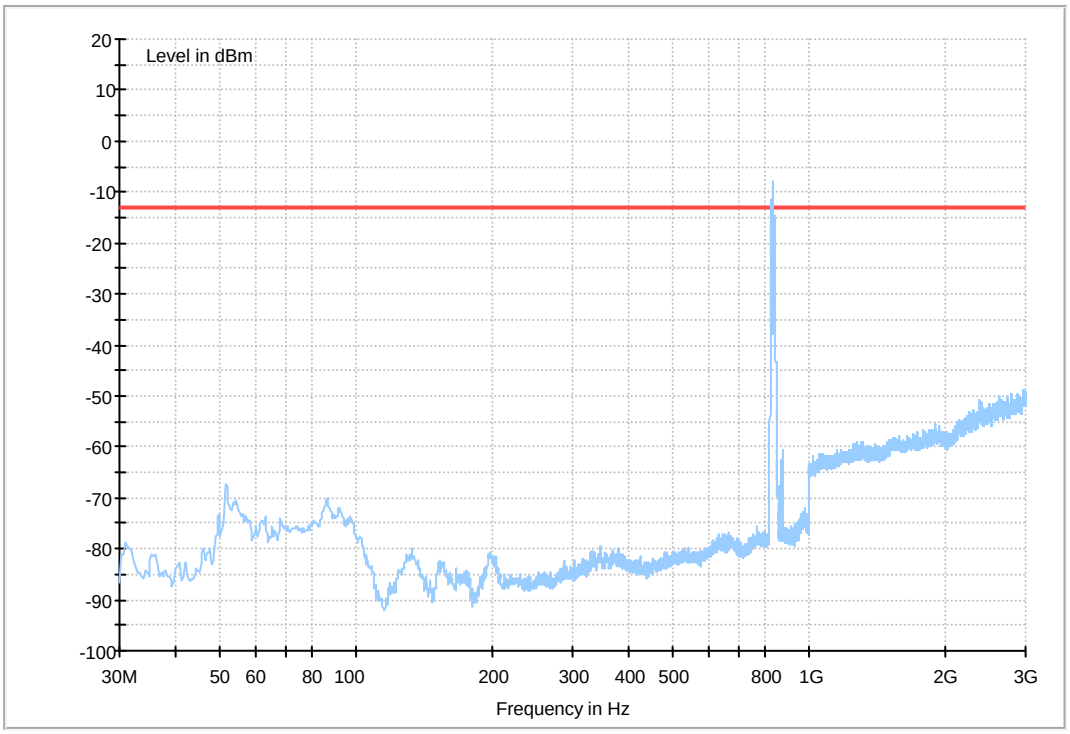


# WCDMA 850

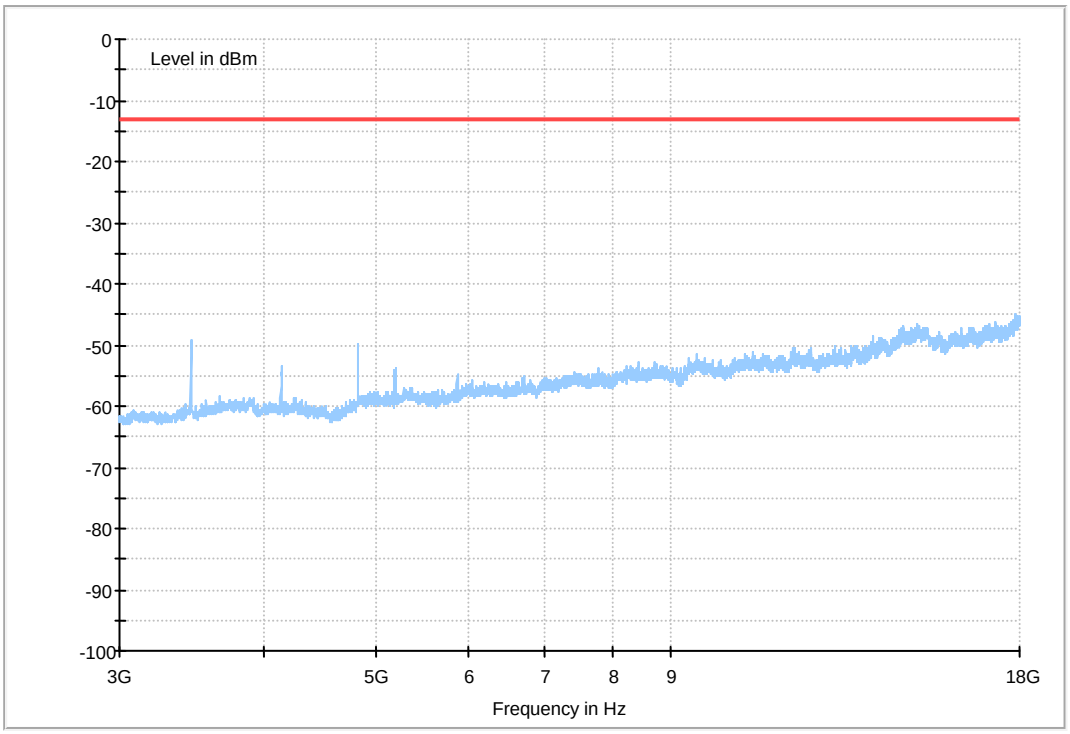
Traffic Mode (9kHz-30MHz)



## Traffic Mode (30MHz-3GHz)

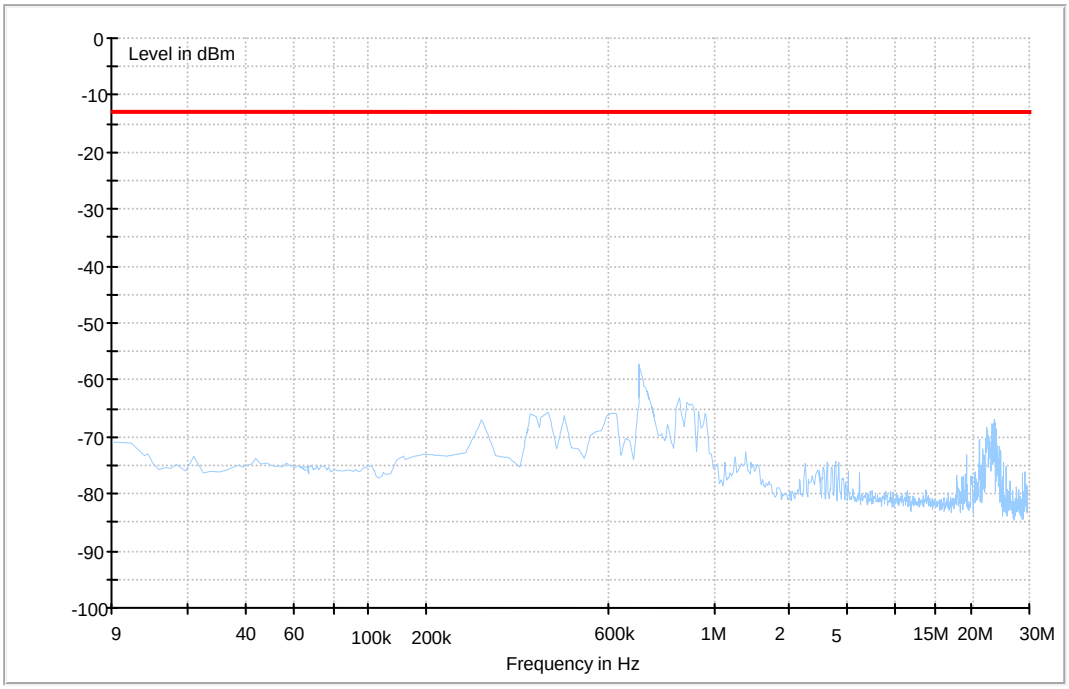


## Traffic Mode (3GHz-18GHz)

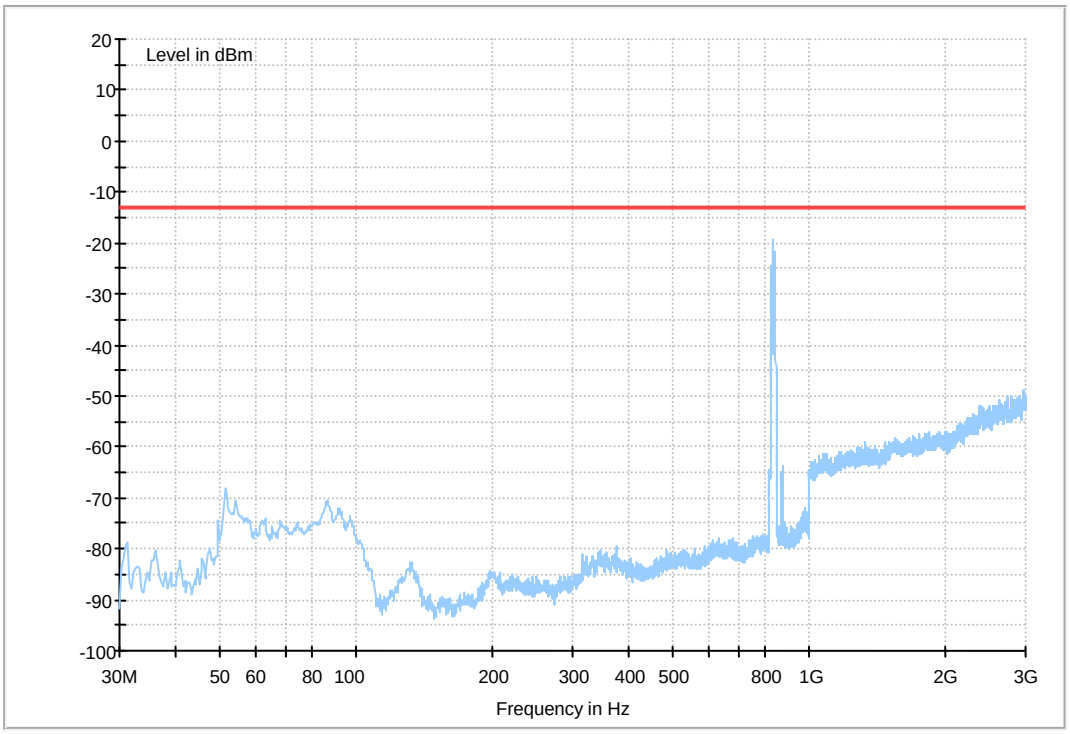


# HSUPA 850

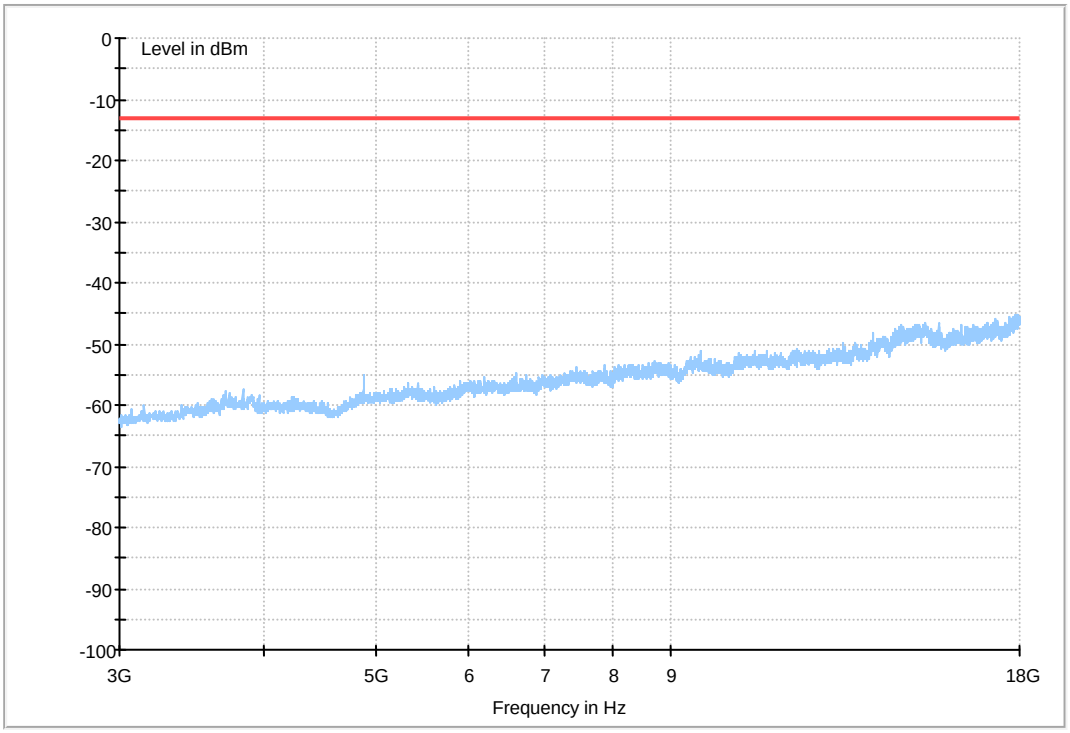
Traffic Mode (9kHz-30MHz)



## Traffic Mode (30MHz-3GHz)

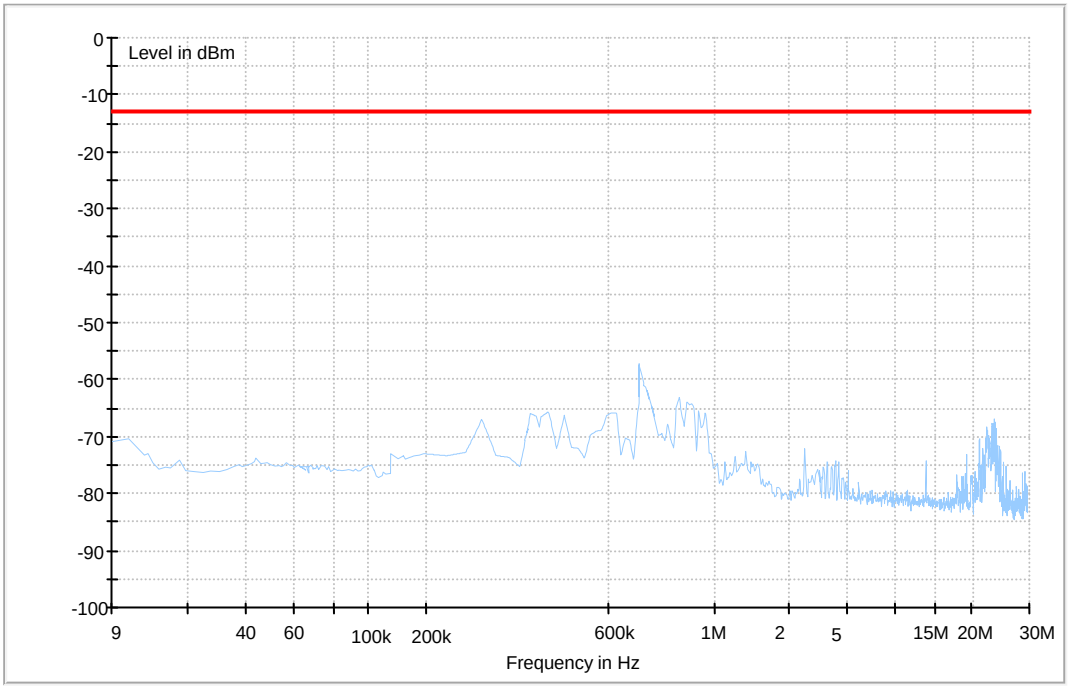


## Traffic Mode (3GHz-18GHz)

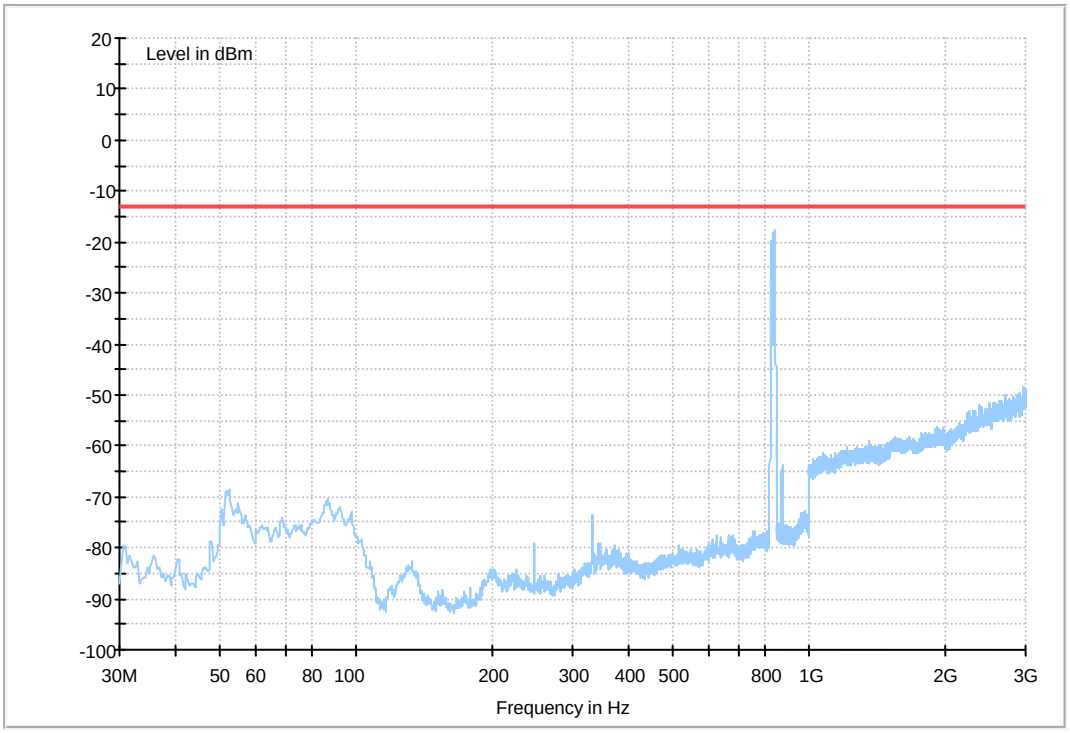


# HSDPA 850

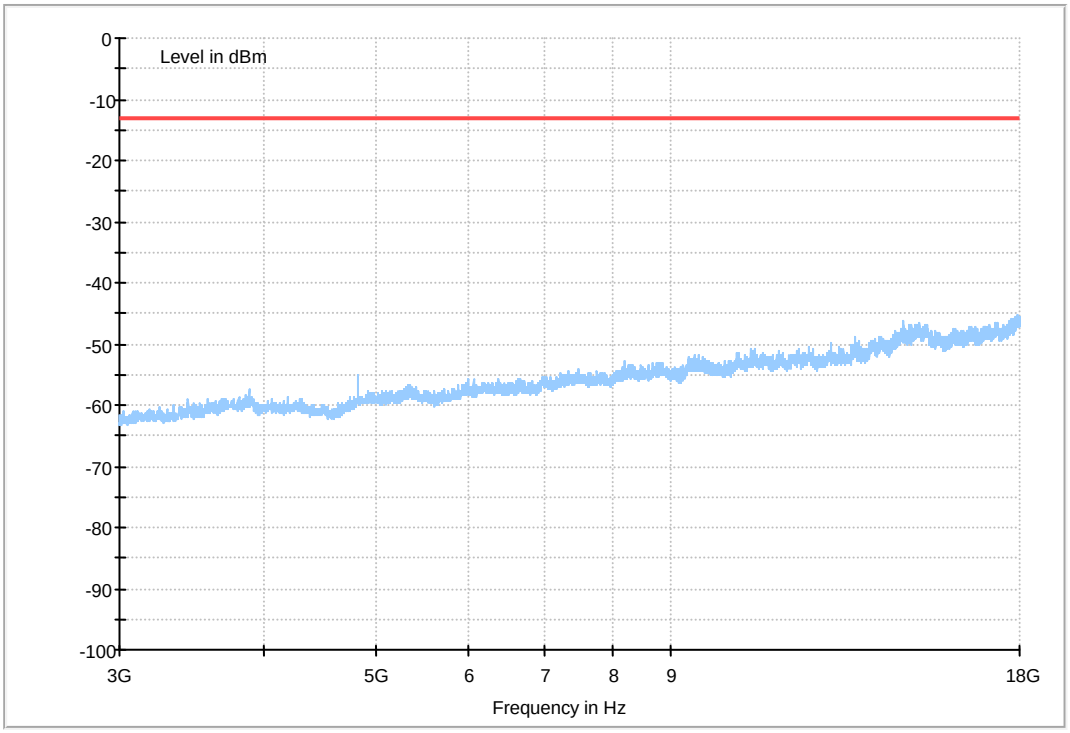
Traffic Mode (9kHz-30MHz)



## Traffic Mode (30MHz-3GHz)



## Traffic Mode (3GHz-18GHz)




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

# 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 | 100% | -30 °C | -14 | -0.017 | --- | ±2.5 | Pass |
| | | | -20 °C | 21 | 0.025 | --- | ±2.5 | Pass |
| | | | -10 °C | 15 | 0.018 | --- | ±2.5 | Pass |
| | | | 0 °C | 17 | 0.020 | --- | ±2.5 | Pass |
| | | | 10 °C | -11 | -0.013 | --- | ±2.5 | Pass |
| | | | 20 °C | 13 | 0.016 | --- | ±2.5 | Pass |
| | | | 30 °C | 18 | 0.022 | --- | ±2.5 | Pass |
| | | | 40 °C | 15 | 0.018 | --- | ±2.5 | Pass |
| | | | 50 °C | 12 | 0.014 | --- | ±2.5 | Pass |
| TM 2 | M | 100% | -30 °C | 11 | 0.013 | --- | ±2.5 | Pass |
| | | | -20 °C | -20 | -0.024 | --- | ±2.5 | Pass |
| | | | -10 °C | -19 | -0.023 | --- | ±2.5 | Pass |
| | | | 0 °C | 10 | 0.012 | --- | ±2.5 | Pass |
| | | | 10 °C | -13 | -0.016 | --- | ±2.5 | Pass |
| | | | 20 °C | 18 | 0.022 | --- | ±2.5 | Pass |
| | | | 30 °C | 17 | 0.020 | --- | ±2.5 | Pass |
| | | | 40 °C | 20 | 0.024 | --- | ±2.5 | Pass |
| | | | 50 °C | 16 | 0.019 | --- | ±2.5 | Pass |
| TM 3 | M | 100% | -30 °C | 13 | 0.016 | --- | ±2.5 | Pass |
| | | | -20 °C | -18 | -0.022 | --- | ±2.5 | Pass |
| | | | -10 °C | 13 | 0.016 | --- | ±2.5 | Pass |
| | | | 0 °C | -11 | -0.013 | --- | ±2.5 | Pass |
| | | | 10 °C | 12 | 0.014 | --- | ±2.5 | Pass |
| | | | 20 °C | 18 | 0.022 | --- | ±2.5 | Pass |
| | | | 30 °C | -13 | -0.016 | --- | ±2.5 | Pass |
| | | | 40 °C | -17 | -0.020 | --- | ±2.5 | Pass |
| | | | 50 °C | 13 | 0.016 | --- | ±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 | 20 °C | 85 % | 15 | 0.018 | --- | ±2.5 | Pass |
| | | | 100 % | 10 | 0.012 | --- | ±2.5 | Pass |
| | | | 115 % | -9 | -0.011 | --- | ±2.5 | Pass |
| TM 2 | M | 20 °C | 85 % | 13 | 0.016 | --- | ±2.5 | Pass |
| | | | 100 % | 14 | 0.017 | --- | ±2.5 | Pass |
| | | | 115 % | -13 | -0.016 | --- | ±2.5 | Pass |
| TM 3 | M | 20 °C | 85 % | 17 | 0.020 | --- | ±2.5 | Pass |
| | | | 100 % | -13 | -0.016 | --- | ±2.5 | Pass |
| | | | 115 % | 6 | 0.007 | --- | ±2.5 | Pass |

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