



FCC RF Test Report

Product Name: Mobile WiFi

Model Number: E5776s-501

Report No: SYBH(Z-RF)006112012-2001

FCC ID: QISE5776S-501

IC : 6369A-E5776S

Reliability Laboratory of Huawei Technologies Co., Ltd.

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Notice

1. The laboratory has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS), and accreditation number: L0310.
2. The laboratory has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements. The site recognition number is 97456.
3. The laboratory has been listed by industry Canada to perform electromagnetic emission measurement. The site recognition number is 6369A-2.
4. The test report is invalid if not marked with "exclusive stamp for the test report".
5. The test report is invalid if not marked with the stamps or the signatures of the persons responsible for performing, revising and approving the test report.
6. The test report is invalid if there is any evidence of erasure and/or falsification.
7. If there is any dissidence for the test report, please file objection to the test centre within 15 days from the date of receiving the test report.
8. Normally, the test report is only responsible for the samples that have undergone the test.
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.
10. The laboratory has Passed the accreditation by The American Association for Laboratory Accreditation (A2LA). The accreditation number is 2174.01.



| | |
|-----------------------------------|---|
| Applicant: | Huawei Technologies Co., Ltd. |
| Address: | Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C |
| Date of Receipt Test Item: | Nov.,07, 2012 |
| Start Date of Test: | Nov.,07, 2012 |
| End Date of Test: | Nov.,16, 2012 |
| | |
| | |
| Test Result: | Pass |

Approved by Senior

2012-11-16

DaiLinjun

Engineer:

Date

Name

Signature

Prepared by:

2012-11-16

GuoXingxing

Date

Name

Signature



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1 General Information

1.1 Applied Standard

| | |
|----------------|---|
| Applied Rules: | 47 CFR FCC Part 02:2011 47 CFR FCC Part 22: 2011 IC RSS-Gen (Issue 3) IC RSS-132 (Issue 2) |
| Test Method: | FCC KDB 971168 D01 Power Meas License Digital Systems v01 FCC KDB 662911 D01 Multiple Transmitter Output v01 |

1.2 Test Location

| | |
|------------------------------|---|
| Test Location 1: Address: | Reliability Laboratory of Huawei Technologies Co., Ltd. Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C |
|------------------------------|---|

1.3 Test Environment Condition

| | |
|----------------------------|----------------|
| Ambient Temperature: | 19.5 to 25 °C |
| Ambient Relative Humidity: | 40 to 55 % |
| Atmospheric Pressure: | Not applicable |



2 Summary

Summary of results

| Test Item | FCC Rule No. | IC Rule No. | Requirements | Test Result | Verdict (NOTE 2) |
|---|------------------|--|--|-------------|------------------|
| RF Power Output | §2.1046, §22.913 | RSS-Gen, §4.8; RSS-132, §4.4 | FCC: ERP ≤ 7 W. IC: EIRP ≤ 11.5 W. | Appendix A | Pass |
| Bandwidth | §2.1049, §22.917 | RSS-Gen, §4.6 | OBW: No limit. EBW: No limit. | Appendix B | Pass |
| Band Edges Compliance | §2.1051, §22.917 | RSS-Gen, §4.9; RSS-132, §4.5 | ≤ -13 dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block. | Appendix C | Pass |
| Spurious Emission at Antenna Terminals | §2.1051, §22.917 | RSS-Gen, §4.9; RSS-132, §4.5 | FCC: ≤ -13 dBm/100 kHz, from 9 kHz to 10 th harmonics but outside authorized operating frequency ranges. IC: ≤ -13 dBm/100 kHz (for EBW ≤ 4 MHz) or ≤ -13 dBm/1 MHz (for EBW > 4 MHz), from 9 kHz to 10 th harmonics but outside authorized operating frequency ranges. | Appendix D | Pass |
| Field Strength of Spurious Radiation | §2.1053, §22.917 | RSS-Gen, §4.9; RSS-132, §4.5 | FCC: ≤ -13 dBm/100 kHz. IC: ≤ -13 dBm/100 kHz (for EBW ≤ 4 MHz) or ≤ -13 dBm/1 MHz (for EBW > 4 MHz). | Appendix E | Pass |
| Frequency Stability | §2.1055, §22.355 | RSS-Gen, §4.7; RSS-132, §4.3 | ≤ ±2.5ppm. | Appendix F | Pass |
| Receiver Spurious Emissions (NOTE 1) | --- | RSS-Gen, §4.10; RSS-Gen, §6; RSS-132, §4.6 | Radiated limit: RSS-Gen, §6.1 field strength limit. Conducted limit: ≤ -57 dBm/120 kHz (CISPR-QP), from 30 MHz to 1000 MHz, and ≤ -53 dBm/1 MHz (AV), from 1 GHz to 3rd harmonics. | Appendix G | Pass |
| Photos of Test Setups | --- | --- | --- | Appendix H | --- |
| <p>NOTE 1: For Receiver Spurious Emissions, If the receiver has a detachable antenna of known impedance, antenna conducted spurious emissions measurement is permitted as an alternative to radiated measurement. However, the radiated method is recommended. The antenna conducted test shall be performed with the antenna disconnected and the receiver antenna terminals connected to a measuring instrument having equal impedance to that specified for the antenna.</p> <p>NOTE 2: For the verdict, the "N/A" denotes "not applicable", the "N/T" denotes "not tested".</p> | | | | | |



3 Product Description

3.1 Product Information

3.1.1 General Description

E5776s-501 is a LTE/UMTS/GSM triple mode and WiFi Wireless mobile Router; it can be used as a WiFi hotspot based on standard of IEEE802.11b/g/n. It supports 3G WCDMA and 4G LTE wireless internet accessing function. About 3G WCDMA wireless mode, it supports WCDMA and HSDPA/HSUPA/HSPA+/DC-HSDPA, operating in Band1、Band2、Band4、Band 5; and the 4G LTE operating in Band4、Band7; and GSM operating in GSM850MHz and GSM1900MHz.The WiFi frequency is 2.4GHz.

E5776s-501 supports 1Tx2Rx for 3G WCDMA and 4G LTE. WiFi supports 2Tx2Rx.

3.1.2 Board Information

Board Information

| | | |
|-------------------------------------|------------------|------------------|
| Mobile WiFi | | |
| E5776s-501 | | |
| Board and Module | | |
| Equipment Designation / Description | Software Version | Hardware Version |
| MAINBOARD | 21.202.11.01.00 | CL2E5776SM |

3.1.3 Adapter Technical Data

| | |
|--------------------|---|
| AC/DCAdapter Model | HW-050200U3W |
| Manufacturer | HUAWEI |
| Input Voltage | 100-240V1 ~50/60Hz, 0.5A MAX |
| Output Voltage |  5.0V 2.0A |



3.1.4 Battery Technical Data

| Name | Qty. | Manufacture | Serials number | Description |
|----------------|------|-------------|----------------|---|
| Li-ion Battery | 1 | HUAWEI | HB5P1H | Battery Model: HB5P1H Rated capacity: 3000mAh Nominal Voltage: === +3.7V Charging Voltage: === +4.2V |



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 UMTS |
| TX Output Power (per Antenna Port) | GSM system: 33dBm UMTS system: 24dBm |
| Channel Spacing(s) / Bandwidth(s) | GSM system: 200 kHz UMTS system: 5 MHz |
| Designation of Emissions | GSM system: 250KGXW (GMSK modulation), 251KG7W (8PSK modulation) UMTS system: 4M18F9W |



4.3 Antenna Gain

| | |
|-------------------|-----|
| Antenna Gain(dBi) | 1.8 |
|-------------------|-----|

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 3.7 V DC Voltage Range: \approx 3.6 V to 4.2V |



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 | 3.6V |
| | VN | 3.7V |
| | VH | 4.2V |

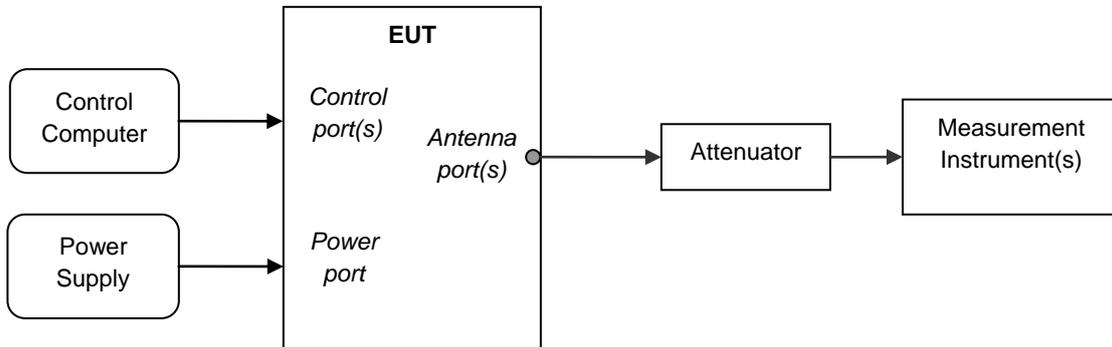
NOTE: VL= lower extreme test voltage
 VN= nominal voltage
 VH= upper extreme test voltage
 TN= normal temperature

5.4 Test Setup

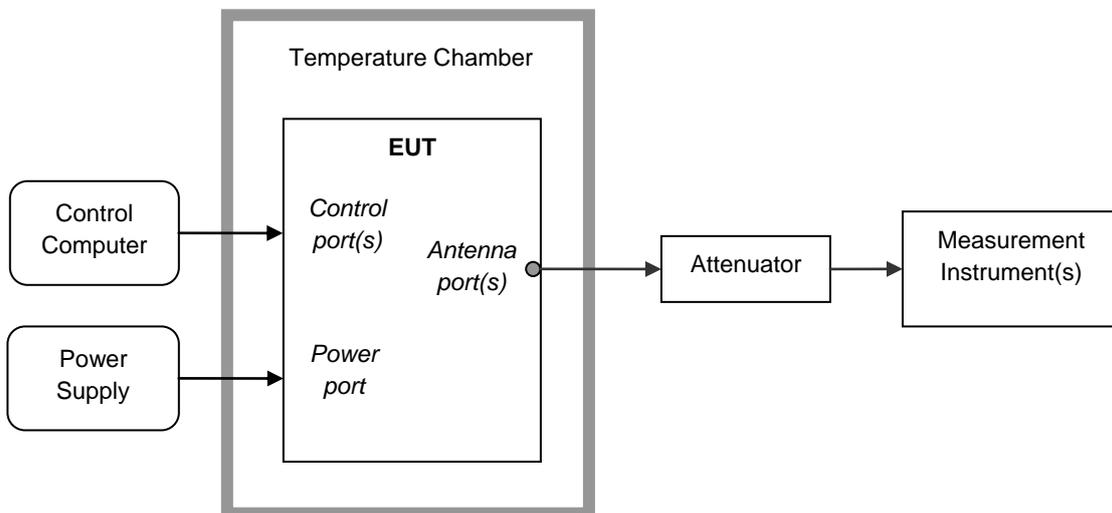
5.4.1 General Test Setup Configurations

| 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





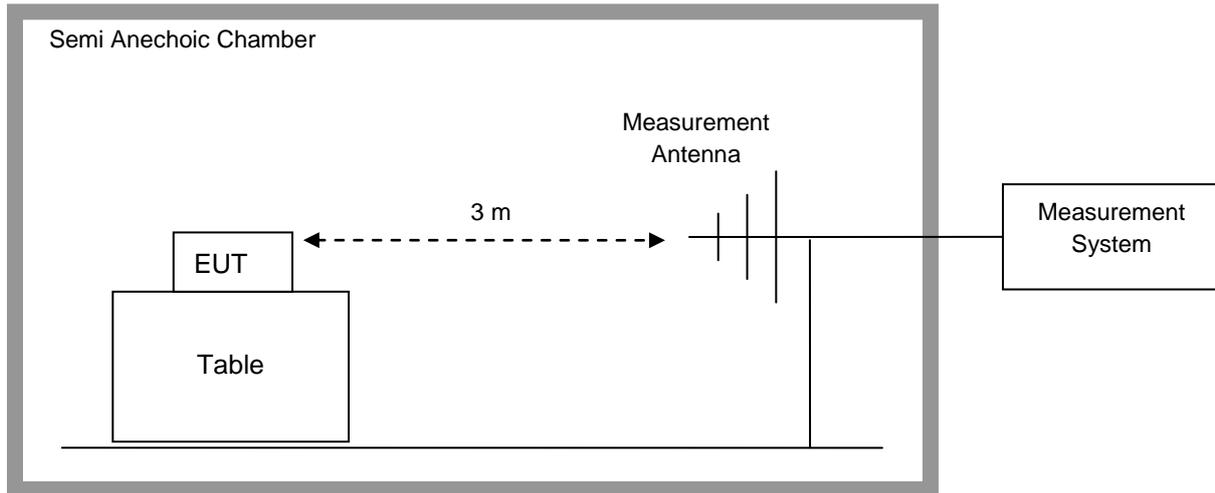
5.4.4 Test Setup 3

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.

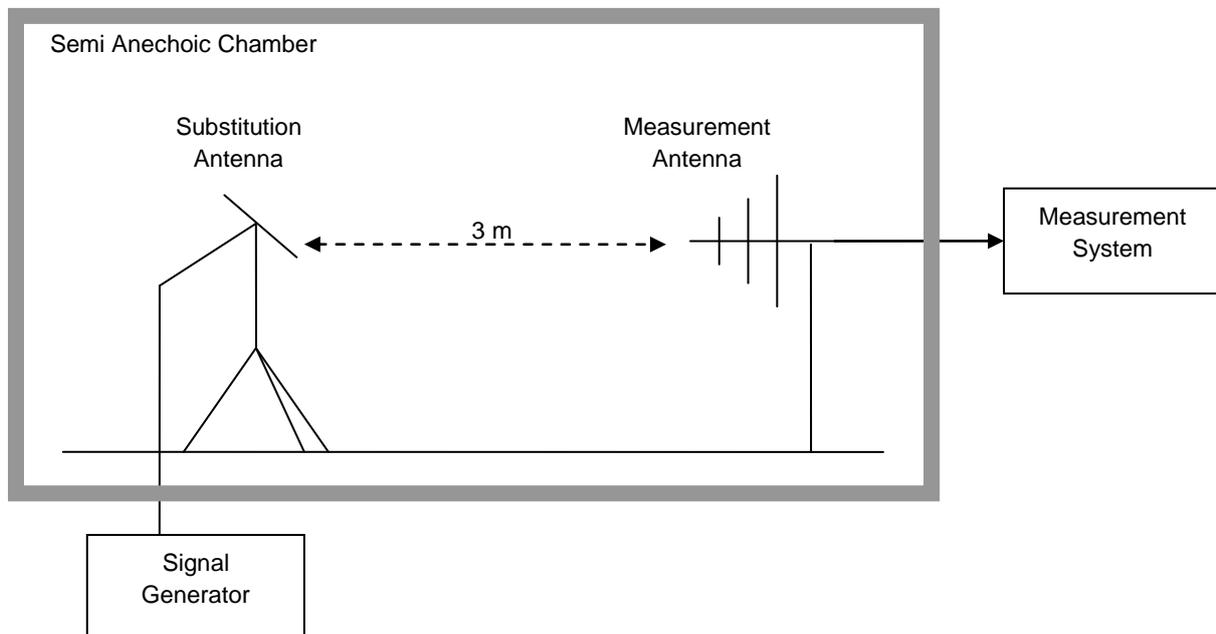
Step 1: Pre-test to find the Maximum ERP or EIRP

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; (2) 85%, 100% and 115% of Rated Voltage at Ambient Temperature. |
| | Test Setup | Test Setup 2 |



| Test Case | Test Conditions | |
|-----------|------------------|-------------|
| | RF Channels (TX) | M |
| | Test Mode | TM1/TM2/TM3 |



6 Main Test Instruments

Main Test Equipments

| Equipment Name | Manufacturer | Model | Serial Number | Cal Date | Cal. Due |
|---|--------------|-----------|---------------|------------|------------|
| Power supply | KEITHLEY | 2303 | 1288003 | 2012-11-09 | 2013-11-08 |
| Universal Radio Communication Tester | R&S | CMU200 | 117341 | 2012-01-13 | 2013-01-12 |
| Universal Radio Communication Tester | Agilent | E5515C | MY50260239 | 2012-11-09 | 2013-11-08 |
| Spectrum Analyzer | Agilent | E4440A | MY49420179 | 2012-07-18 | 2013-07-17 |
| Signal Analyzer | R&S | FSQ31 | 200021 | 2012-11-09 | 2013-11-08 |
| Temperature Chamber | WEISS | WKL64 | 24600294 | 2012-02-14 | 2013-02-13 |
| Signal generator | Agilent | E8257D | MY49281095 | 2012-07-10 | 2013-07-09 |
| Spectrum analyzer | R&S | FSU3 | 200474 | 2012-03-06 | 2013-03-05 |
| Spectrum analyzer | R&S | FSU43 | 100144 | 2012-03-06 | 2013-03-05 |
| Double-Ridged Waveguide Horn Antenna (1G~18GHz) | R&S | HF907 | 100304 | 2012-04-06 | 2013-04-05 |
| Double-Ridged Waveguide Horn Antenna (1G~18GHz) | R&S | HF907 | 100391 | 2012-04-06 | 2013-04-05 |
| Trilog Broadband Antenna (30M~3GHz) | SCHWARZ BECK | VULB 9163 | 9163-521 | 2012-07-18 | 2013-07-17 |
| Pyramidal Horn Antenna(26GHz-40GHz) | ETS-Lindgren | 3160-10 | 00123940 | 2012-02-28 | 2013-02-27 |
| Pyramidal Horn Antenna(18GHz-26.5GHz) | ETS-Lindgren | 3160-09 | 00125912 | 2012-02-28 | 2013-02-27 |



7 Measurement Uncertainty

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

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

END



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 | | 32.55 | 38.5 | 32.65 | 38.5 | 32.53 | 38.5 |
| TM2 | | 26.93 | 38.5 | 27.05 | 38.5 | 27.15 | 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 | | 22.71 | 38.5 | 22.61 | 38.5 | 22.67 | 38.5 |
| TM4 | Case1 | 22.13 | 38.5 | 22.09 | 38.5 | 22.13 | 38.5 |
| | Case2 | 22.13 | 38.5 | 22.09 | 38.5 | 22.13 | 38.5 |
| | Case3 | 21.66 | 38.5 | 21.69 | 38.5 | 21.64 | 38.5 |
| | Case4 | 21.15 | 38.5 | 21.18 | 38.5 | 21.07 | 38.5 |
| TM5 | Case1 | 21.63 | 38.5 | 20.97 | 38.5 | 21.08 | 38.5 |
| | Case2 | 19.49 | 38.5 | 20.05 | 38.5 | 20.09 | 38.5 |
| | Case3 | 20.15 | 38.5 | 19.88 | 38.5 | 20.02 | 38.5 |
| | Case4 | 19.99 | 38.5 | 19.95 | 38.5 | 20.07 | 38.5 |
| | Case5 | 21.69 | 38.5 | 21.01 | 38.5 | 20.99 | 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 | 31.40 | Dipole Ant. | 34.55 | -2.75 | 0.6 | 31.20 | 38.5 | Pass |
| TM1 | 837.0 | 31.50 | Dipole Ant. | 34.77 | -2.87 | 0.6 | 31.30 | 38.5 | Pass |
| TM1 | 848.8 | 31.38 | Dipole Ant. | 34.63 | -2.85 | 0.6 | 31.18 | 38.5 | Pass |
| TM2 | 824.2 | 25.78 | Dipole Ant. | 28.93 | -2.75 | 0.6 | 25.58 | 38.5 | Pass |
| TM2 | 837.0 | 25.90 | Dipole Ant. | 29.17 | -2.87 | 0.6 | 25.70 | 38.5 | Pass |
| TM2 | 848.8 | 26.00 | Dipole Ant. | 29.25 | -2.85 | 0.6 | 25.80 | 38.5 | Pass |
| TM3 | 826.4 | 21.56 | Dipole Ant. | 24.71 | -2.75 | 0.6 | 21.36 | 38.5 | Pass |
| TM3 | 836.4 | 21.46 | Dipole Ant. | 24.73 | -2.87 | 0.6 | 21.26 | 38.5 | Pass |
| TM3 | 846.6 | 21.52 | Dipole Ant. | 24.77 | -2.85 | 0.6 | 21.32 | 38.5 | Pass |

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

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

b, SGP=Signal Generator Level

END



Appendix B

Occupied Bandwidth

According to FCC Part 2.1049 & Part 22 Subpart H



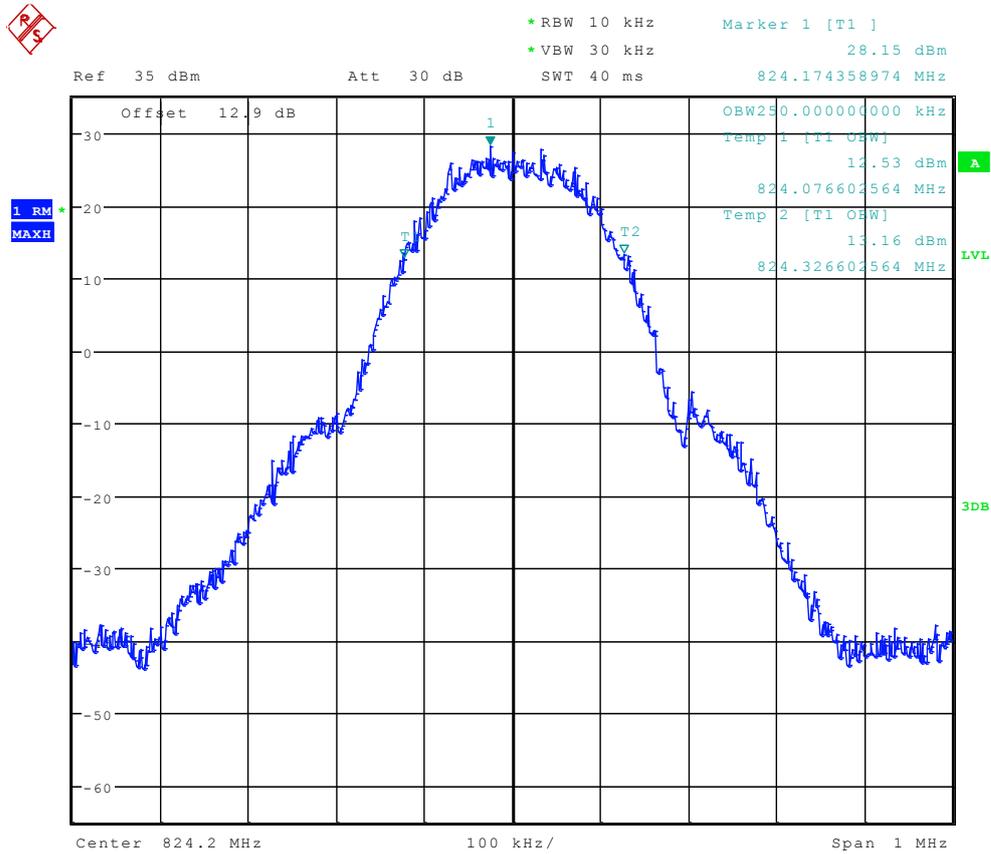
Result Table

Table 1 Measurement Results

| Test Mode | RF Channel | Occupied Bandwidth [kHz] | Verdict |
|-----------|------------|--------------------------|---------|
| TM1 | 128 | 250.00 | Pass |
| | 192 | 248.40 | Pass |
| | 251 | 248.40 | Pass |
| TM2 | 128 | 246.79 | Pass |
| | 192 | 251.60 | Pass |
| | 251 | 250.00 | Pass |
| Test Mode | RF Channel | Occupied Bandwidth [MHz] | Verdict |
| TM3 | 4132 | 4.17 | Pass |
| | 4182 | 4.17 | Pass |
| | 4233 | 4.17 | Pass |



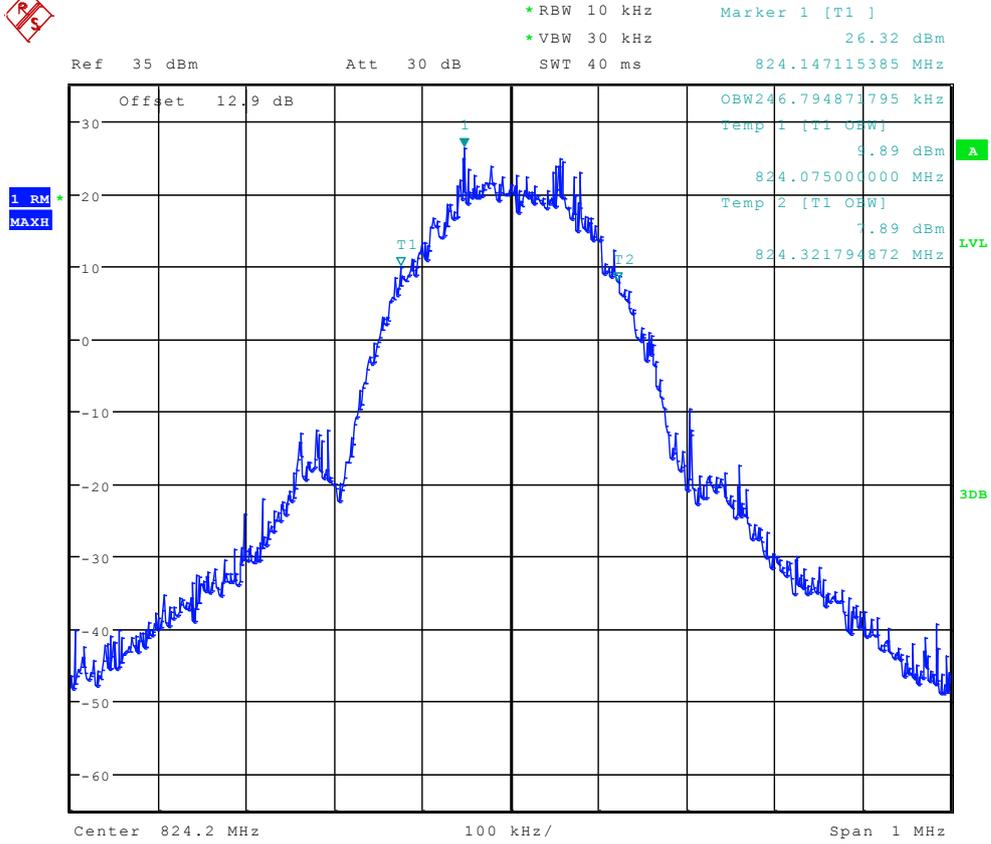
Channel 128 (TM1:GPRS/GSM)



Date: 9.NOV.2012 08:22:19



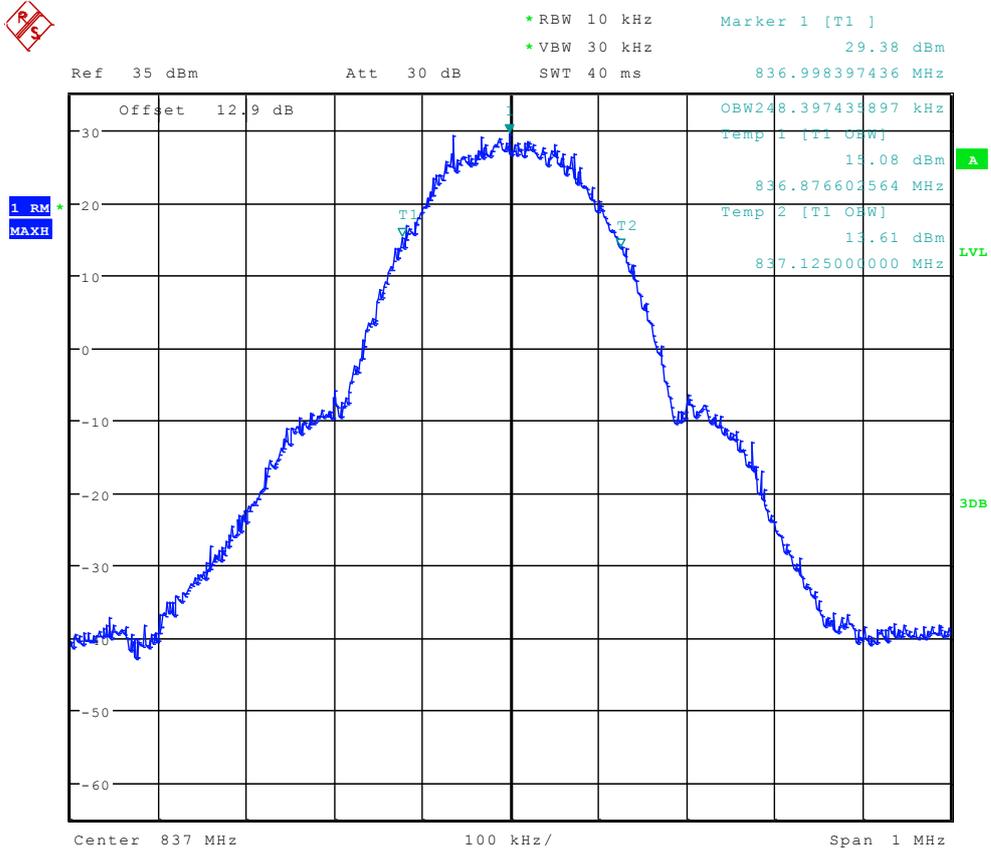
Channel 128 (TM2:EDGE)



Date: 9.NOV.2012 08:52:40



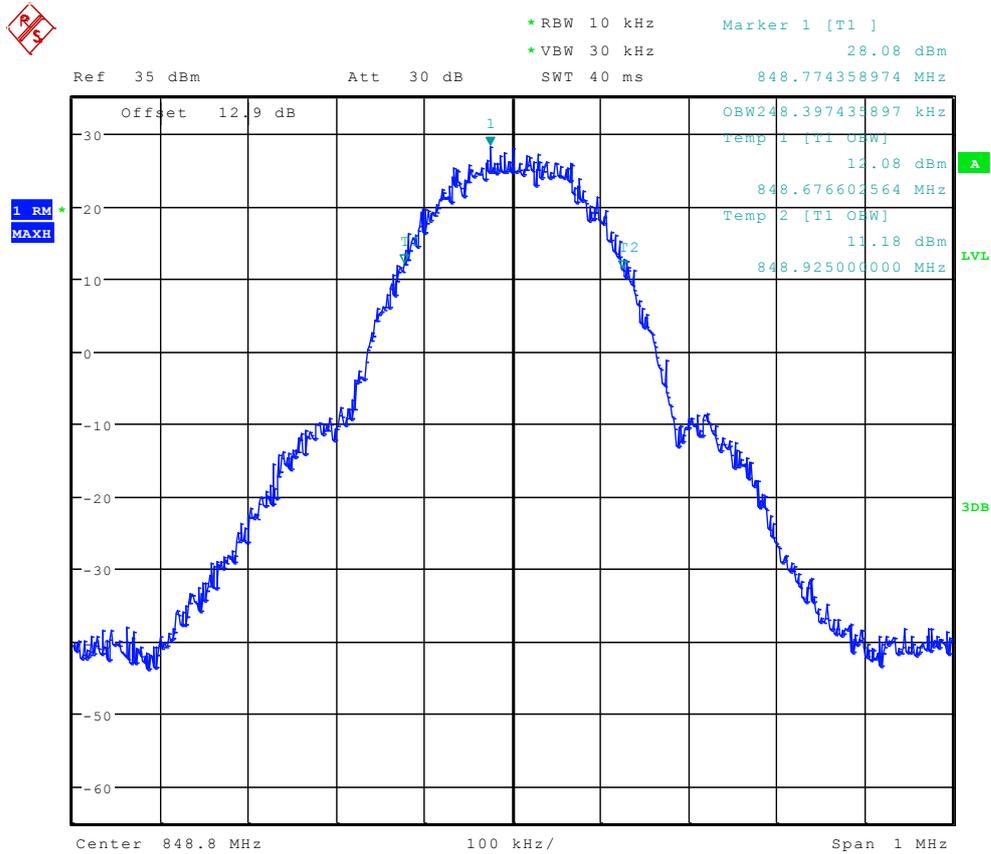
Channel 192 (TM1:GPRS/GSM)



Date: 9.NOV.2012 08:23:37



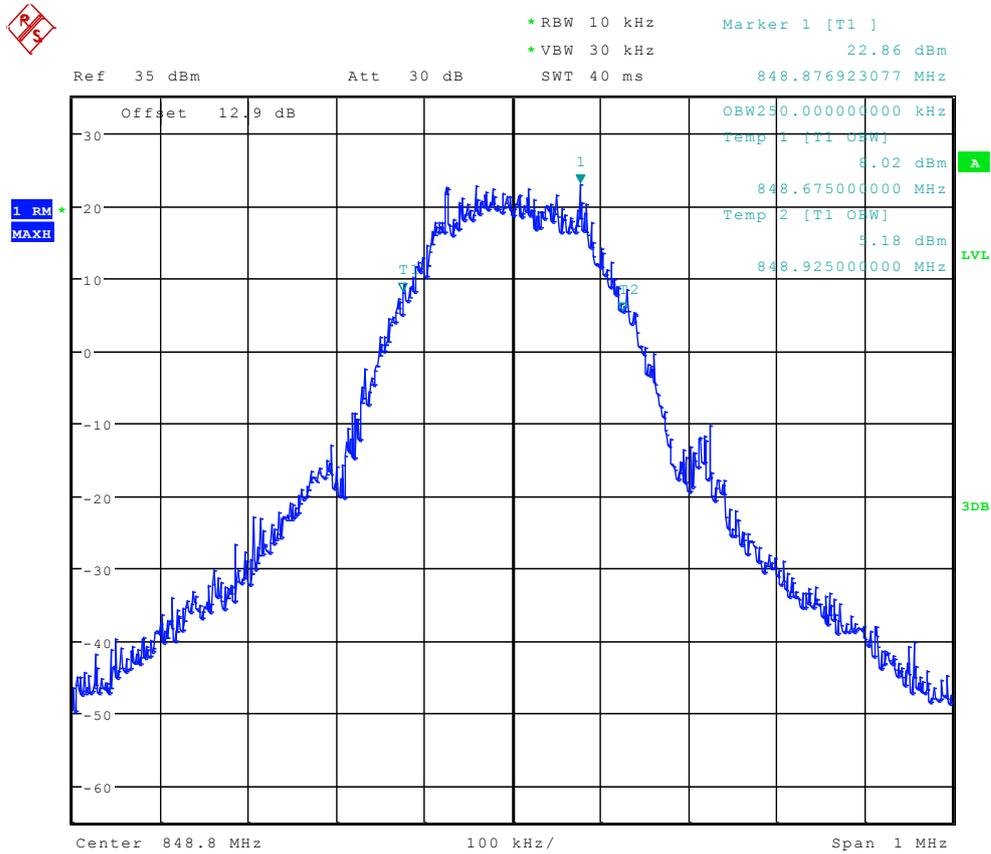
Channel 251 (TM1:GPRS/GSM)



Date: 9.NOV.2012 08:23:51

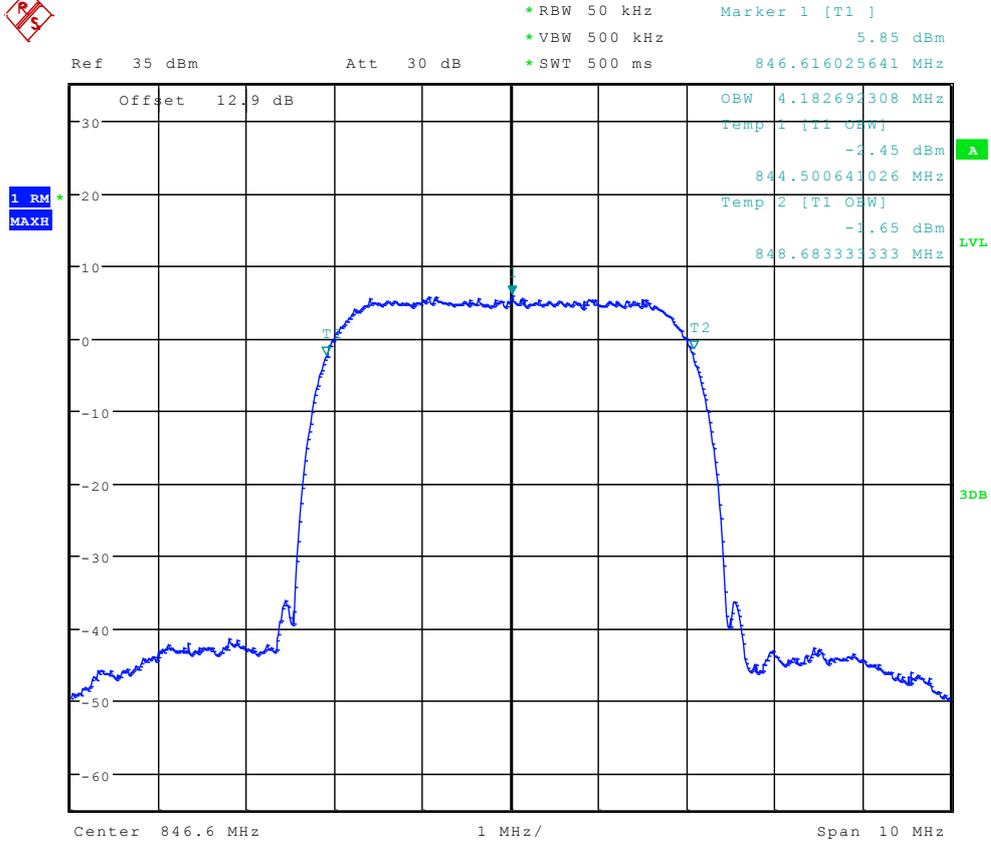


Channel 251 (TM2:EDGE)



Date: 9.NOV.2012 08:53:07

Channel 4233 (TM3: WCDMA)



Date: 9.NOV.2012 08:57:47

END



Appendix C

Band Edges Compliance

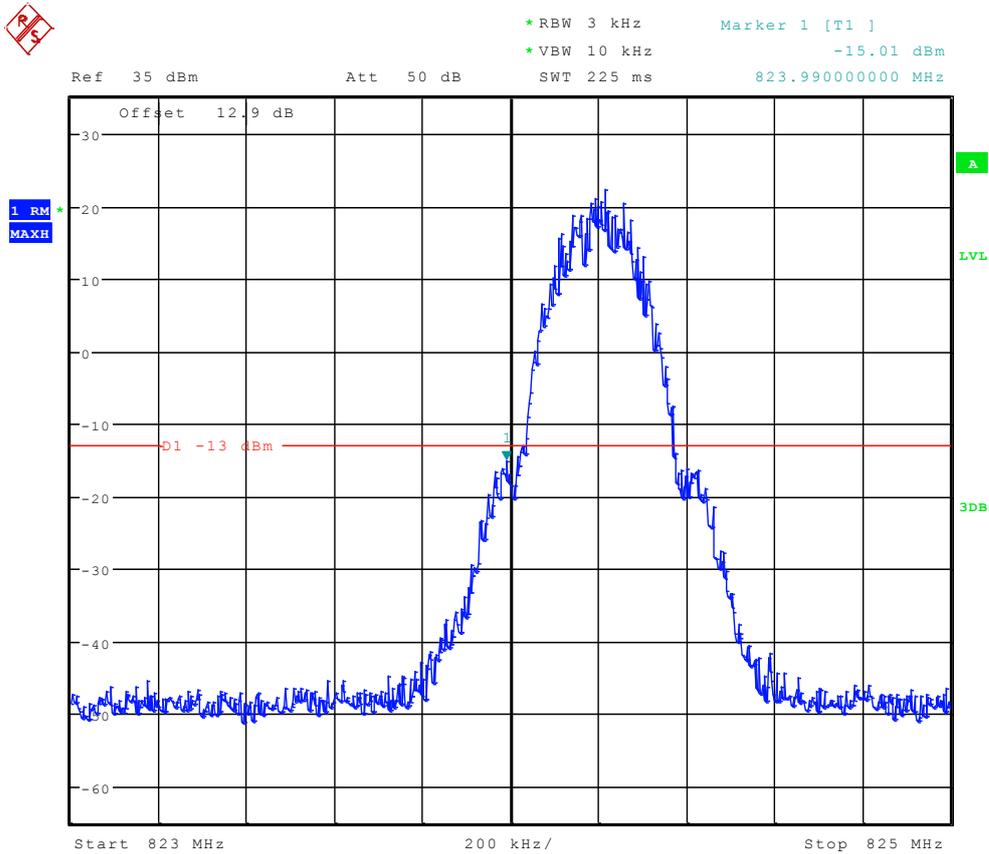
According to FCC Part 2.1051 & Part 22 Subpart H



TM1:GPRS/GSM

Left Edge

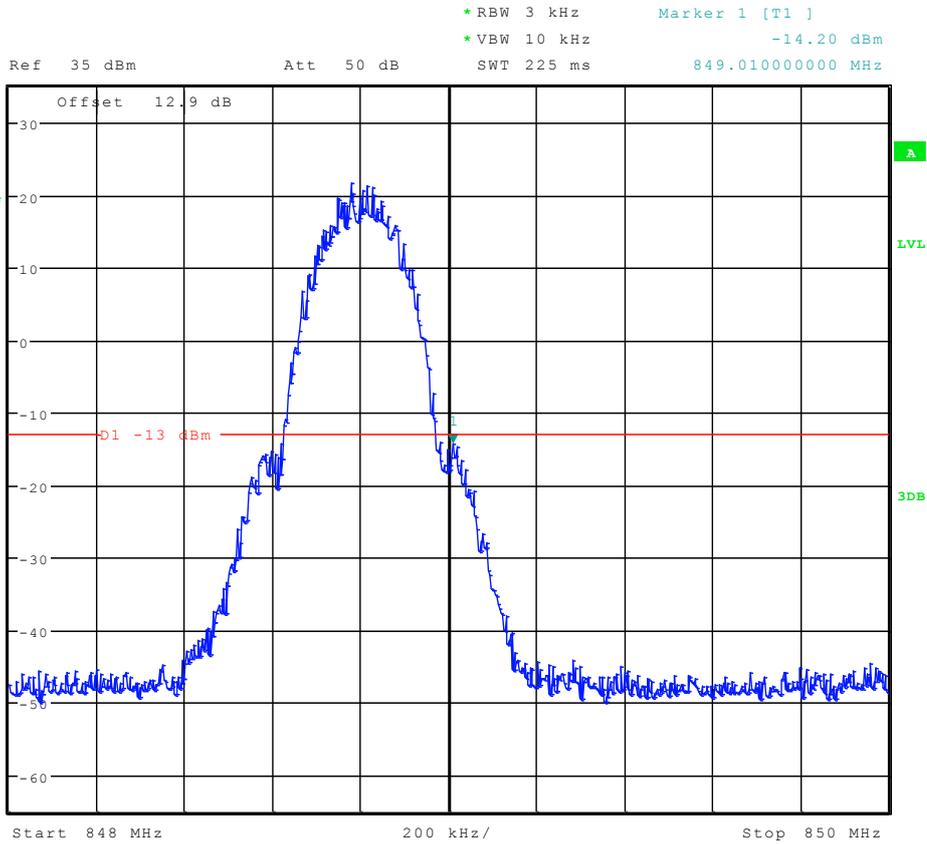
Channel 128



Date: 9.NOV.2012 09:44:59



Right Edge Channel 251



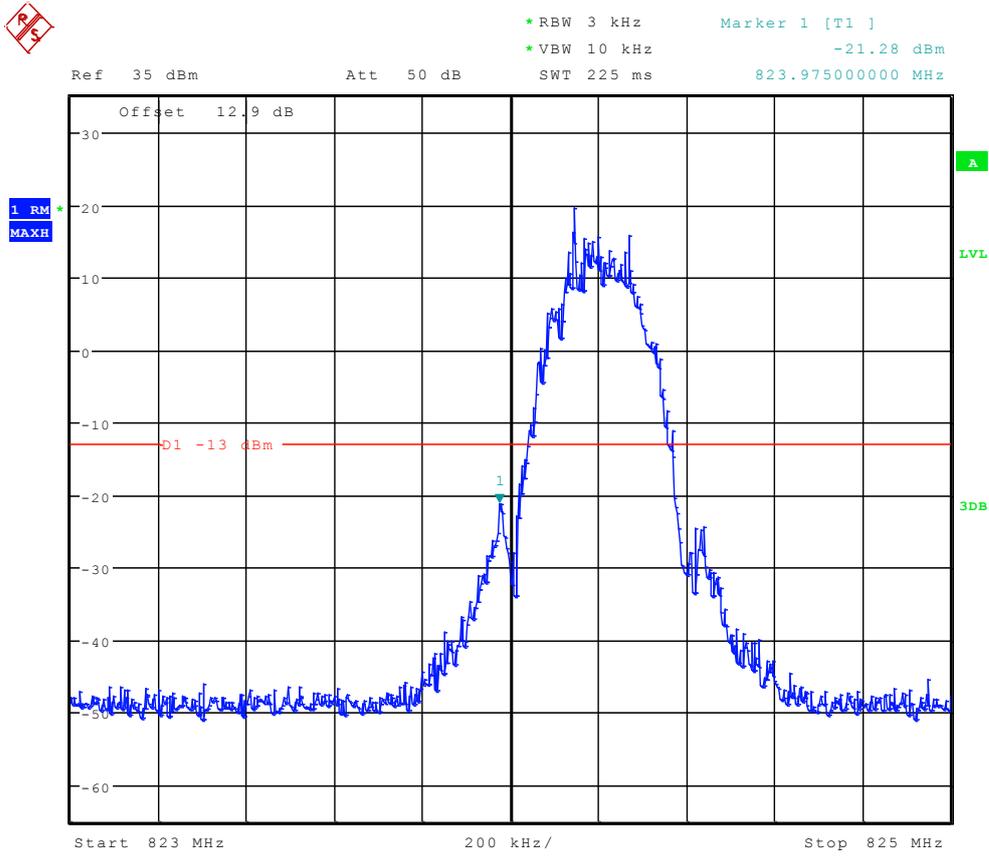
Date: 9.NOV.2012 09:45:29



TM2:EDGE

Left Edge

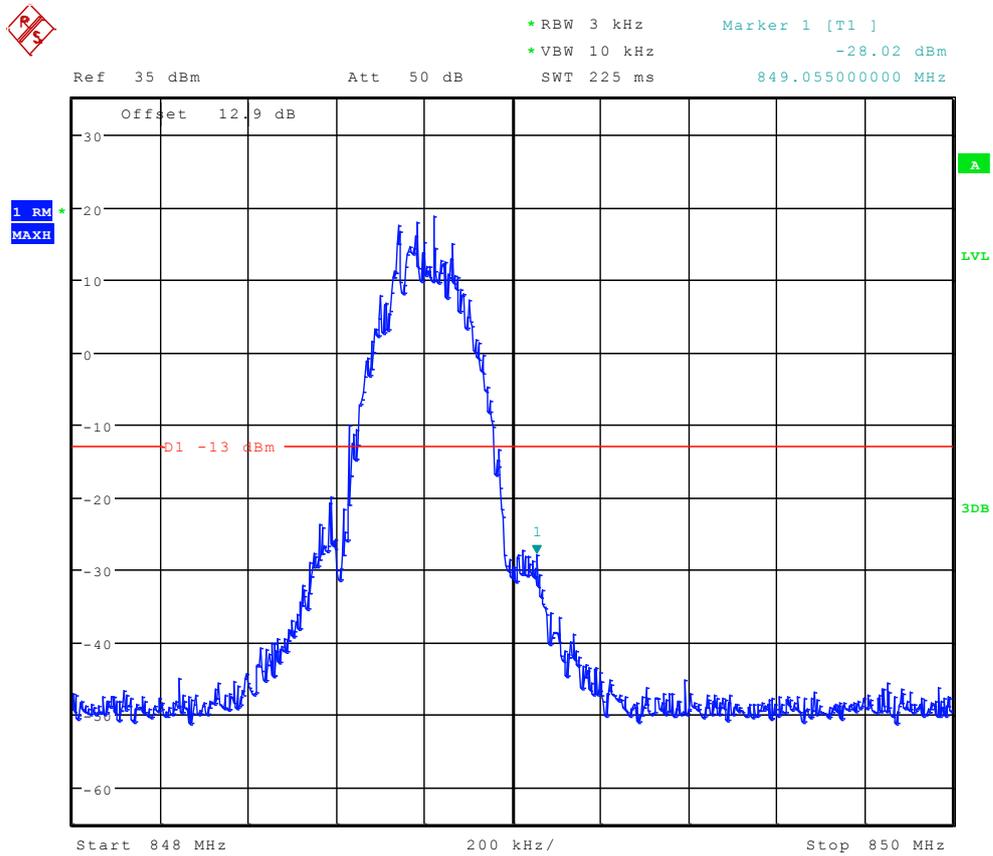
Channel 128



Date: 9.NOV.2012 08:52:07



Right Edge Channel 251



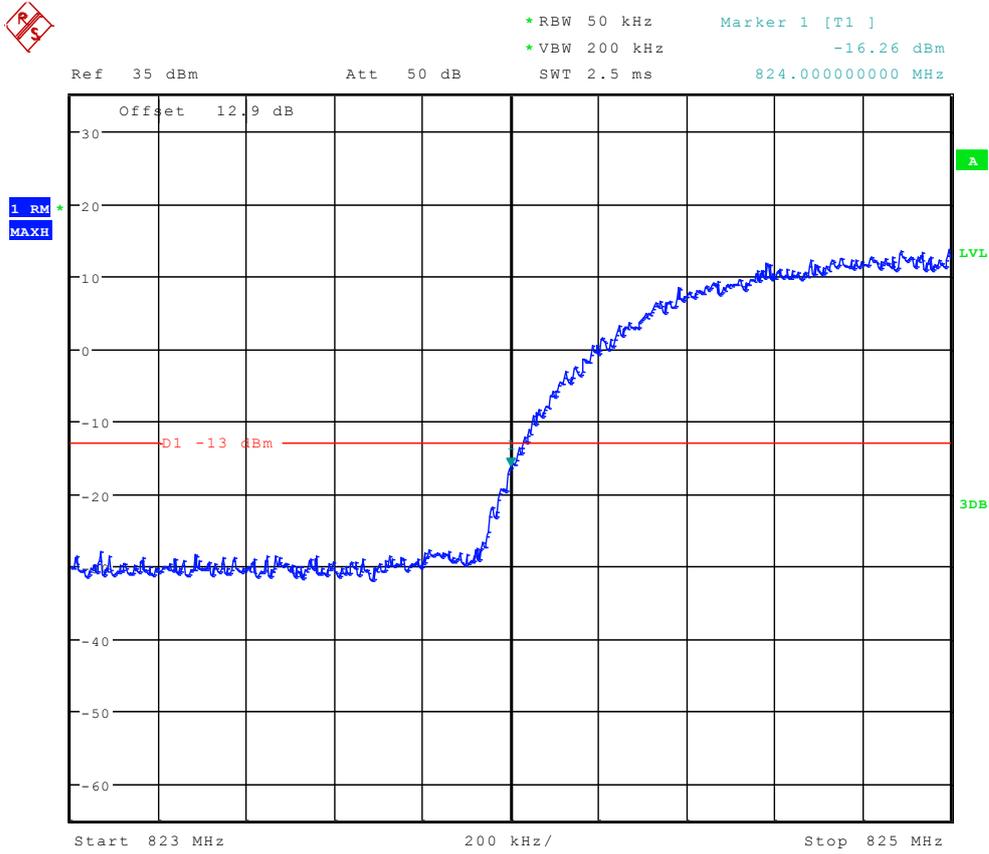
Date: 9.NOV.2012 08:52:21



TM3: WCDMA

Left Edge

Channel 4132



Date: 9.NOV.2012 08:58:01

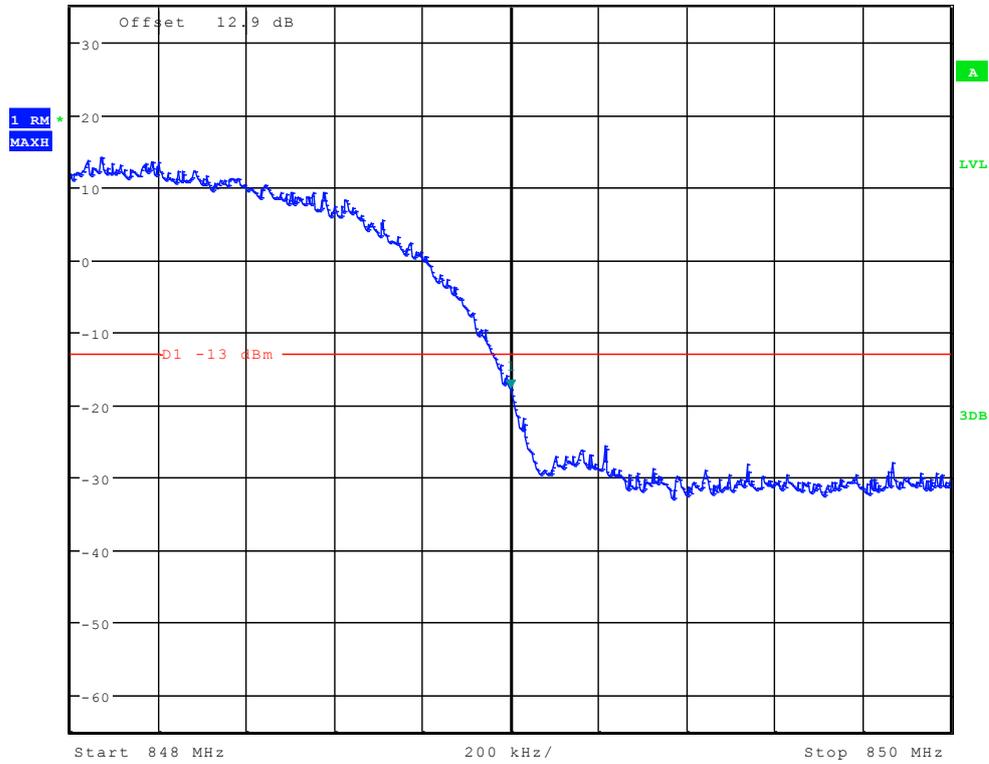
Right Edge



Channel 4233



Ref 35 dBm Att 50 dB *RBW 50 kHz Marker 1 [T1] -17.92 dBm
*VBW 200 kHz 849.000000000 MHz
SWT 2.5 ms



Date: 9.NOV.2012 08:58:15

END



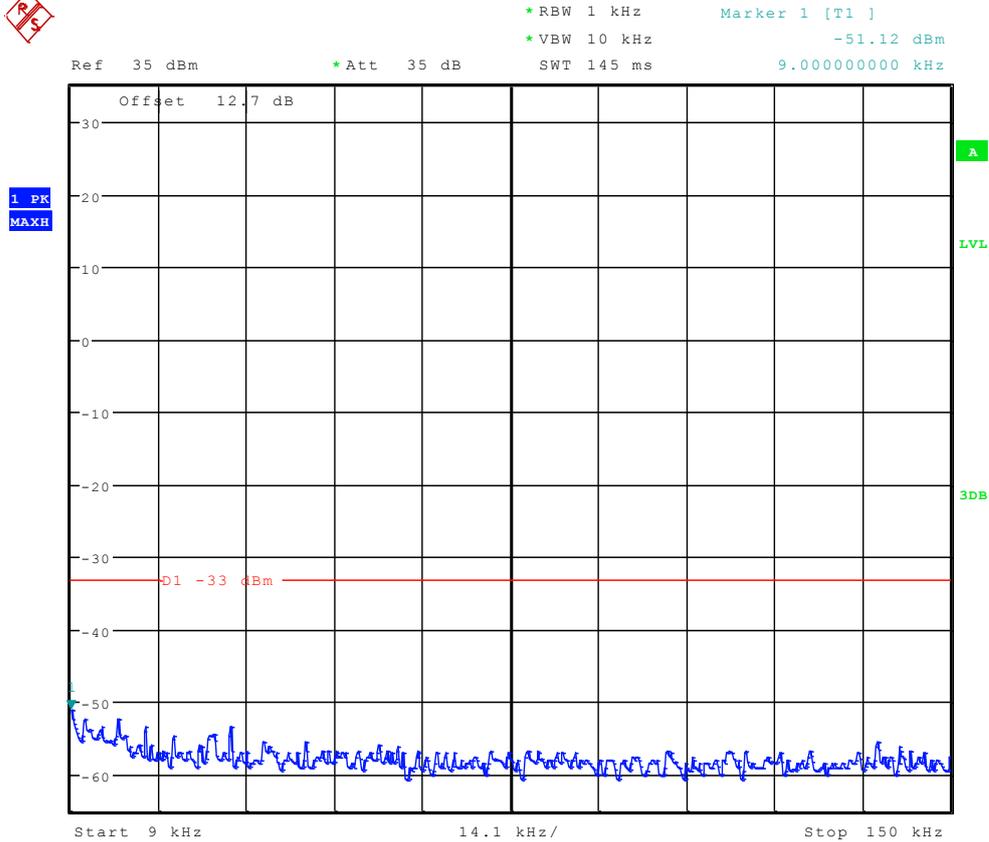
Appendix D

Spurious Emission at Antenna Terminal

According to FCC Part 2.1051 & Part 22 Subpart H



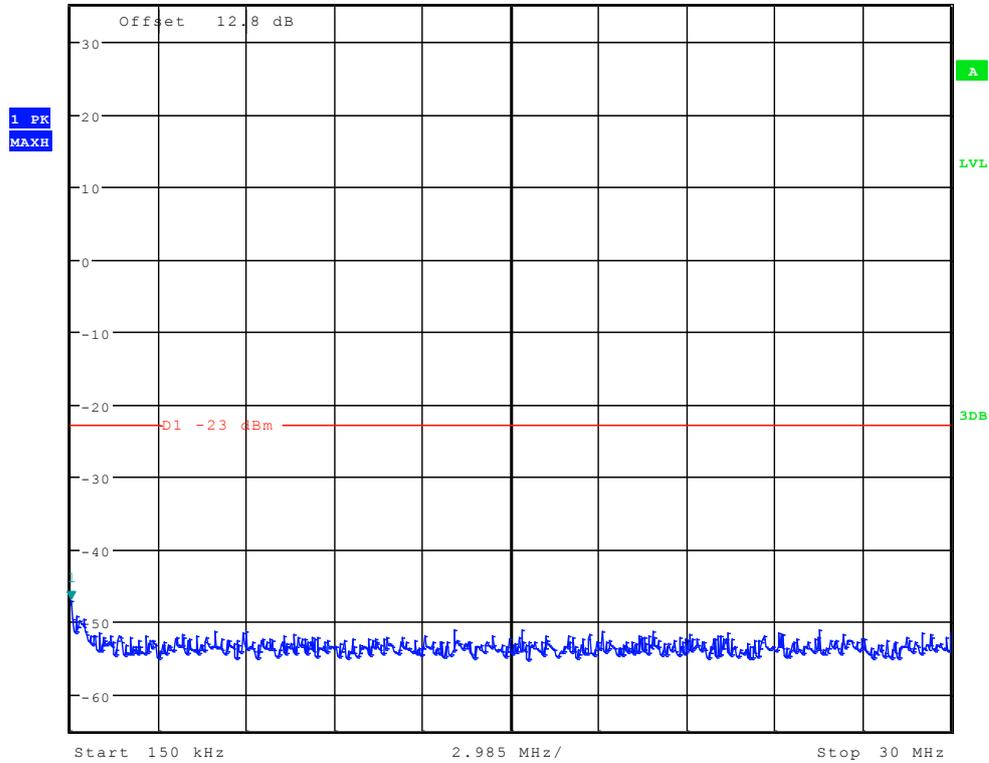
TM1:GPRS/GSM Channel 128



Date: 9.NOV.2012 08:24:06



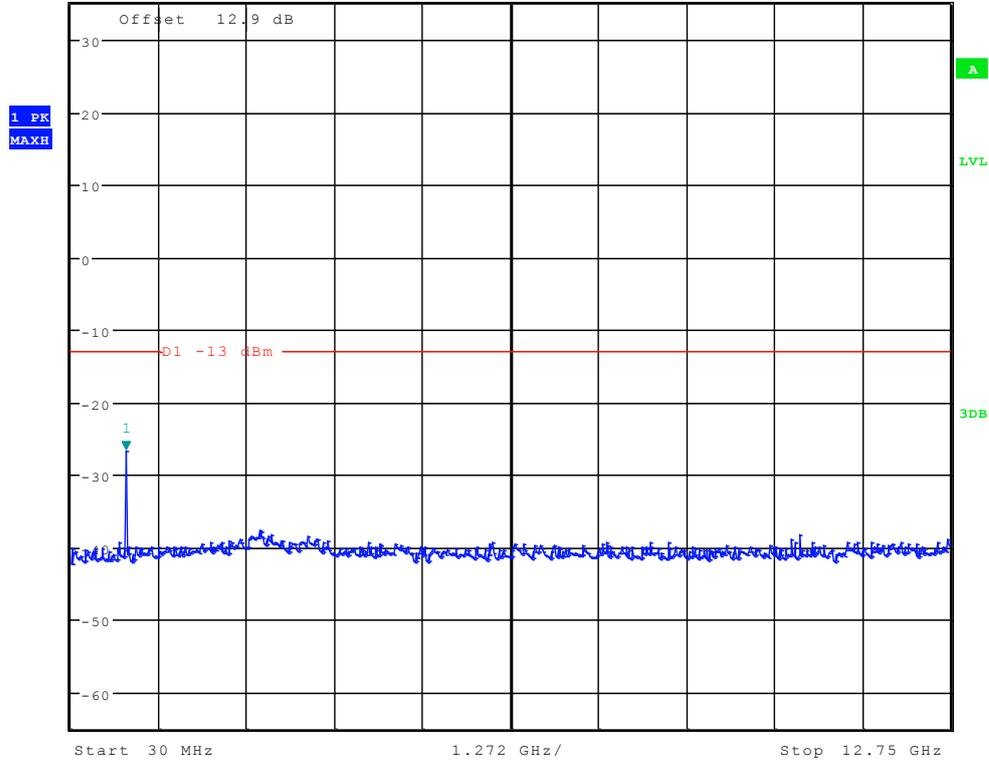
Ref 35 dBm * Att 35 dB SWT 300 ms 150.000000000 kHz
* RBW 10 kHz Marker 1 [T1]
* VBW 30 kHz -46.97 dBm



Date: 9.NOV.2012 08:24:50



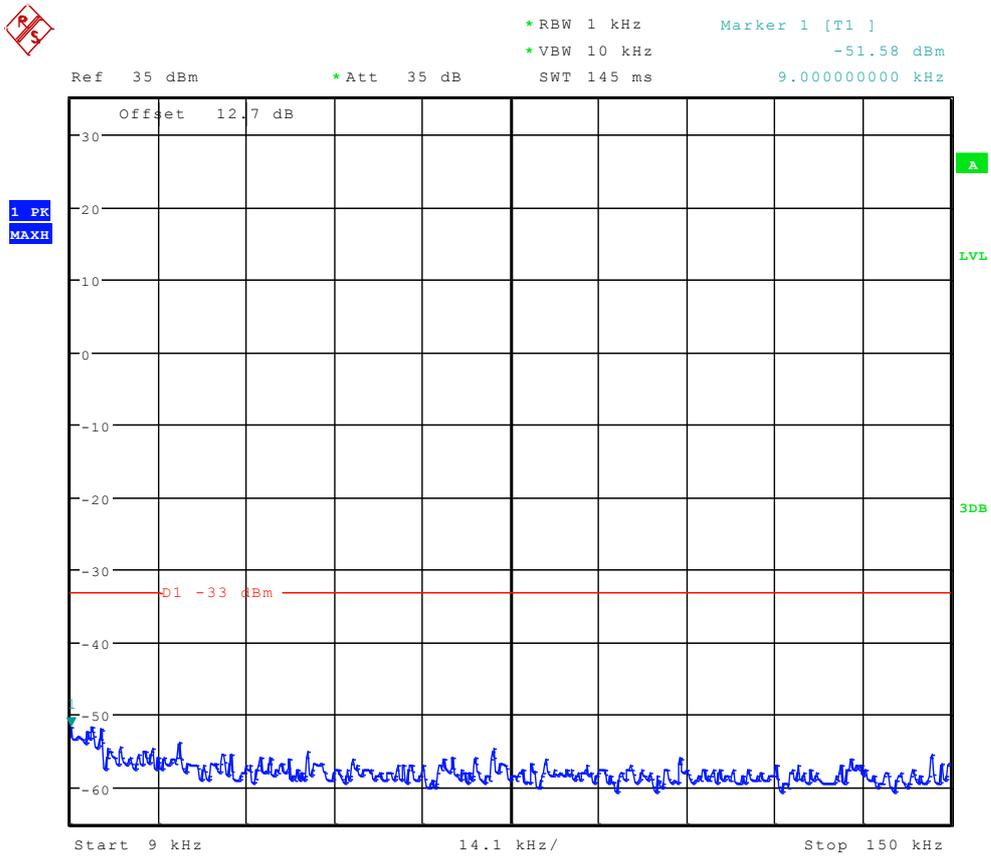
Ref 35 dBm * Att 35 dB SWT 1.3 s 825.00000000 MHz
* RBW 100 kHz Marker 1 [T1] -26.70 dBm
* VBW 300 kHz



Date: 9.NOV.2012 08:25:34



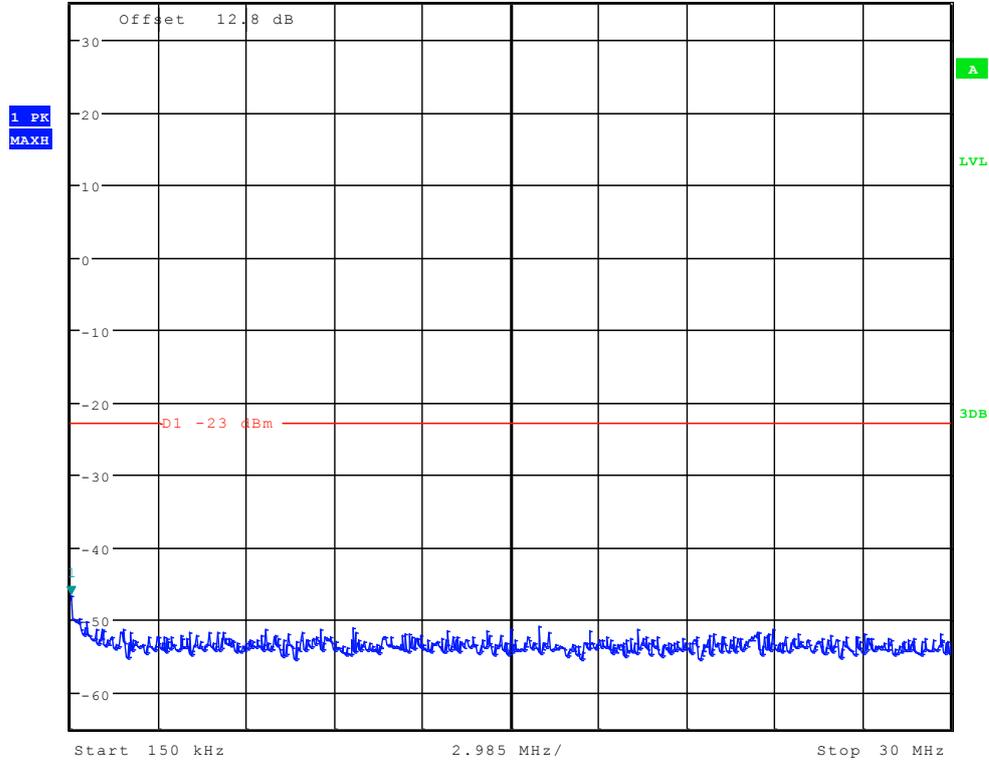
Channel 192



Date: 9.NOV.2012 08:24:20



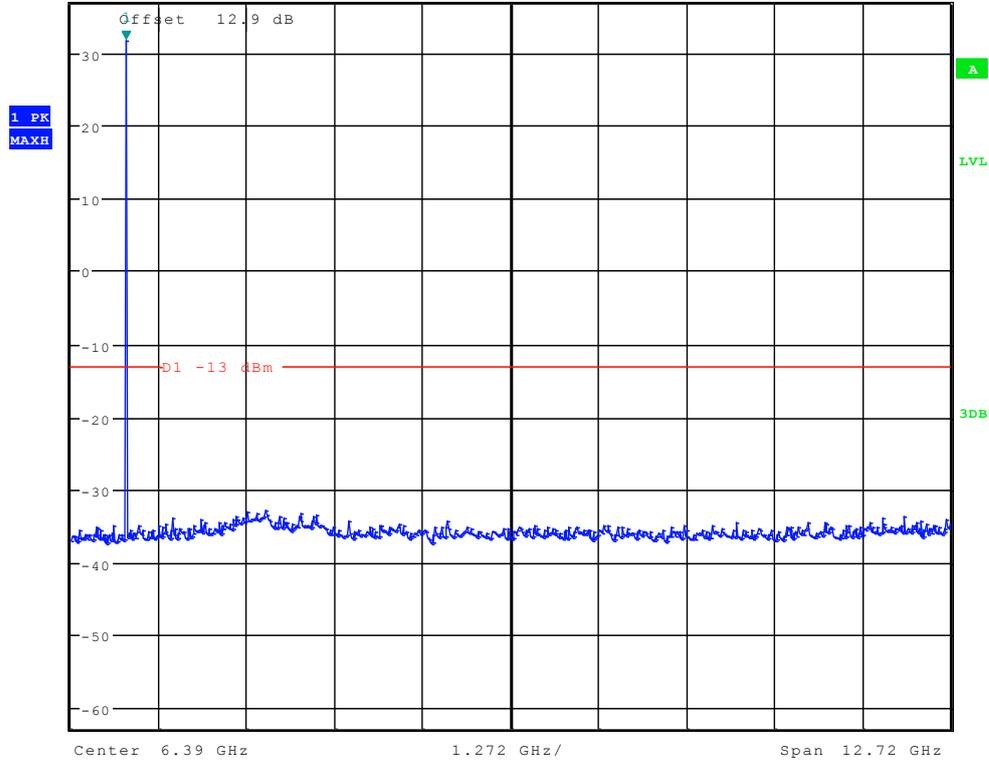
Ref 35 dBm * Att 35 dB SWT 300 ms 150.000000000 kHz
* RBW 10 kHz Marker 1 [T1]
* VBW 30 kHz -46.69 dBm



Date: 9.NOV.2012 08:25:04



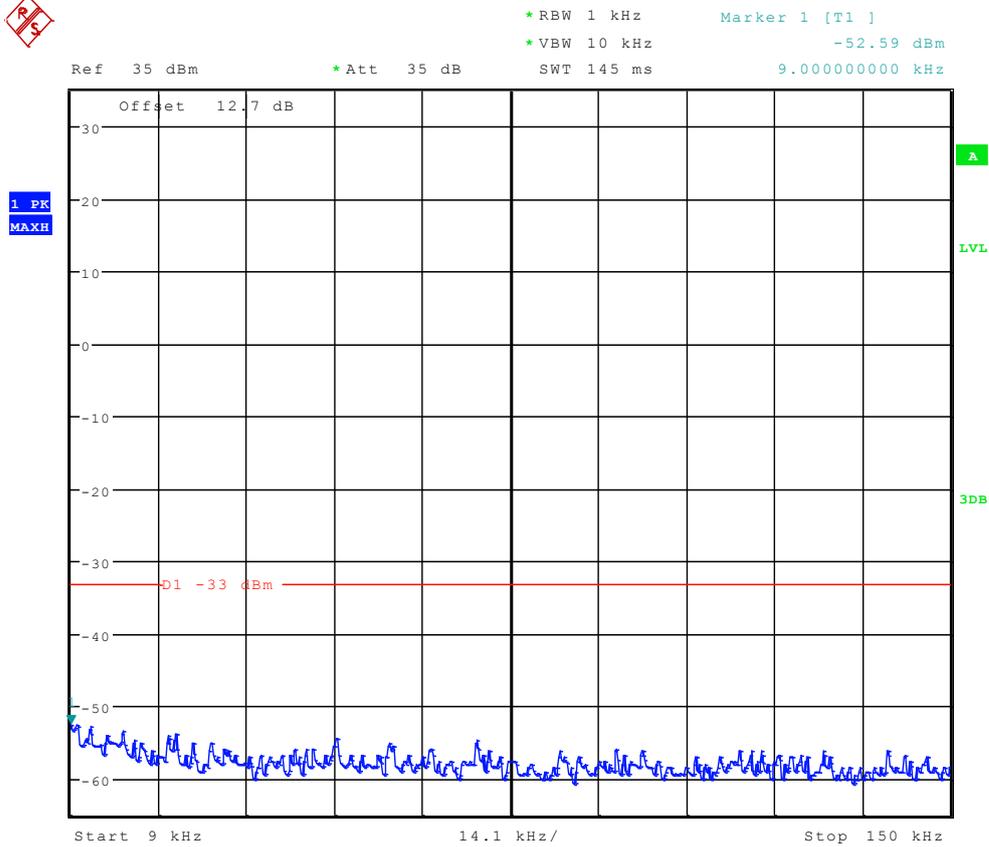
Ref 37 dBm * Att 40 dB SWT 1.3 s 825.00000000 MHz
* RBW 100 kHz Marker 1 [T1] 31.87 dBm
* VBW 300 kHz



Date: 9.NOV.2012 08:32:19



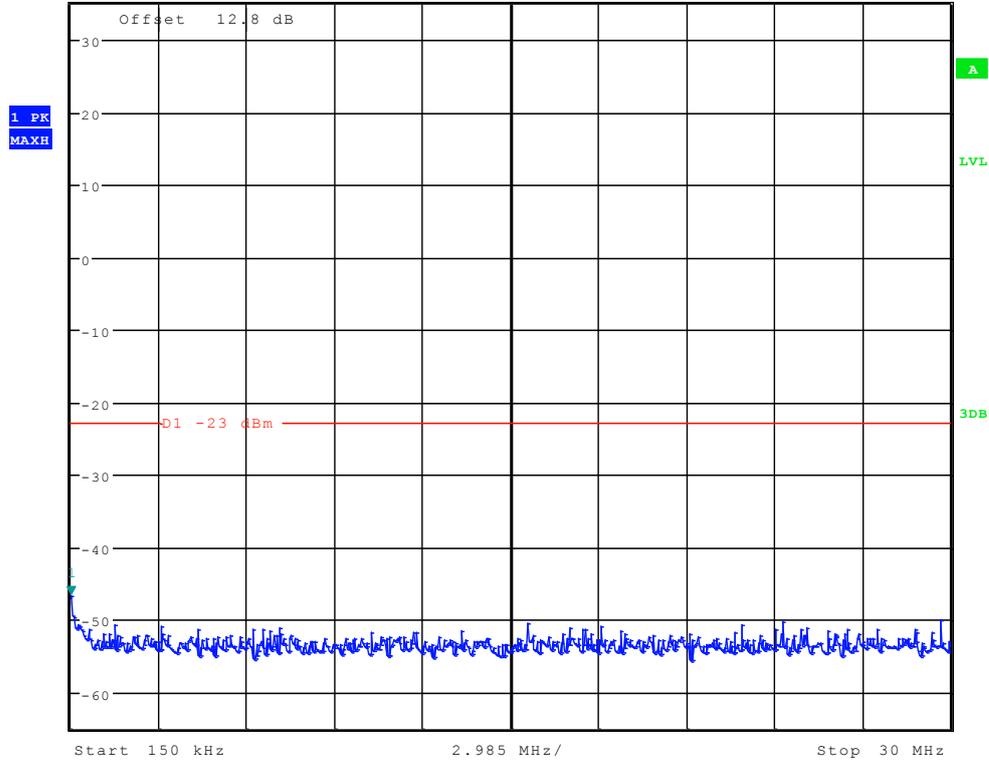
Channel 251



Date: 9.NOV.2012 08:24:35



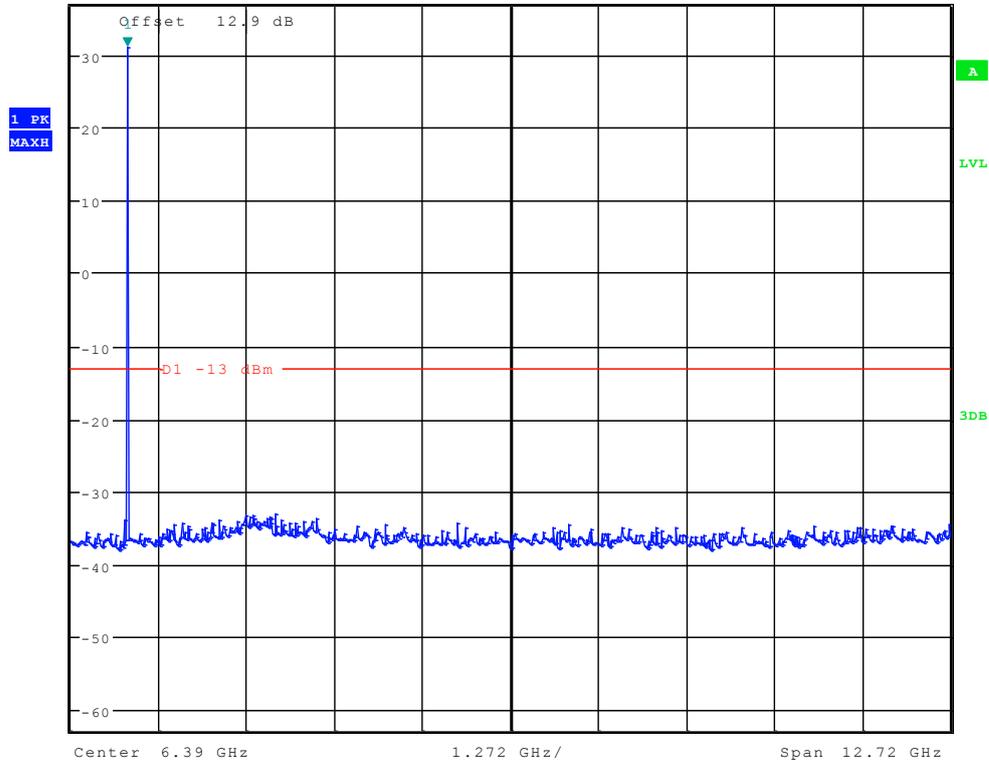
Ref 35 dBm * Att 35 dB SWT 300 ms 150.000000000 kHz
* RBW 10 kHz Marker 1 [T1]
* VBW 30 kHz -46.53 dBm



Date: 9.NOV.2012 08:25:19



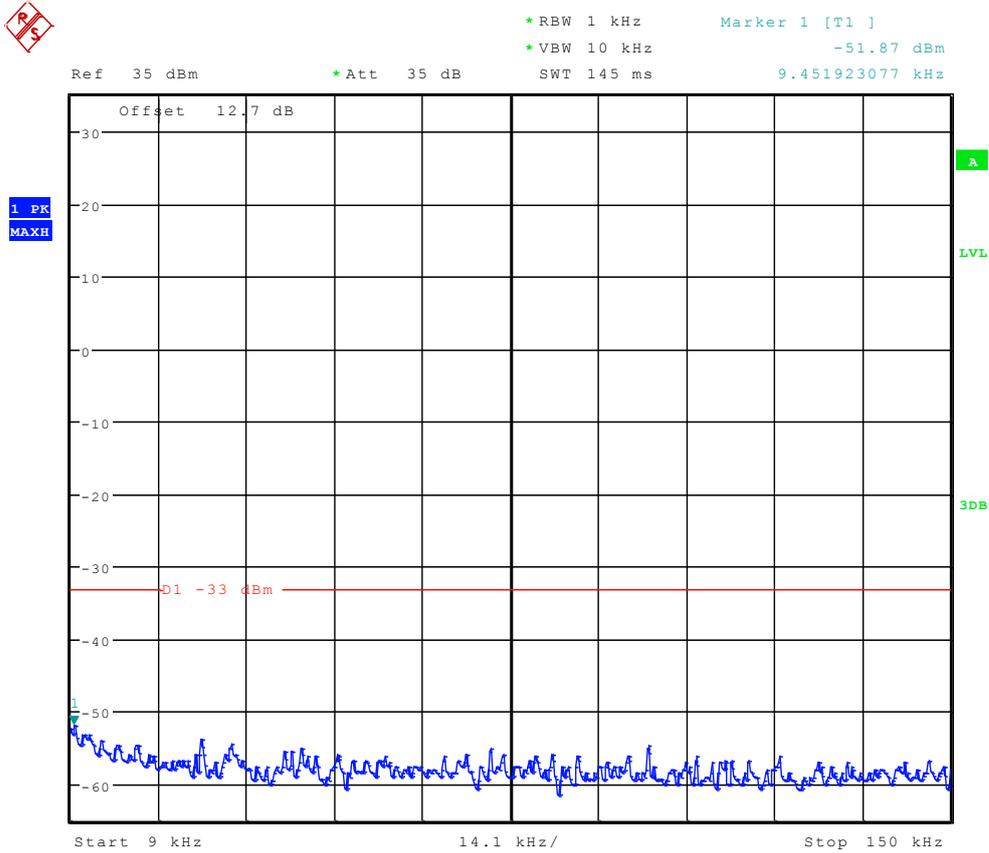
Ref 37 dBm * Att 40 dB SWT 1.3 s 845.384615385 MHz
* RBW 100 kHz Marker 1 [T1] 31.30 dBm
* VBW 300 kHz



Date: 9.NOV.2012 08:32:34



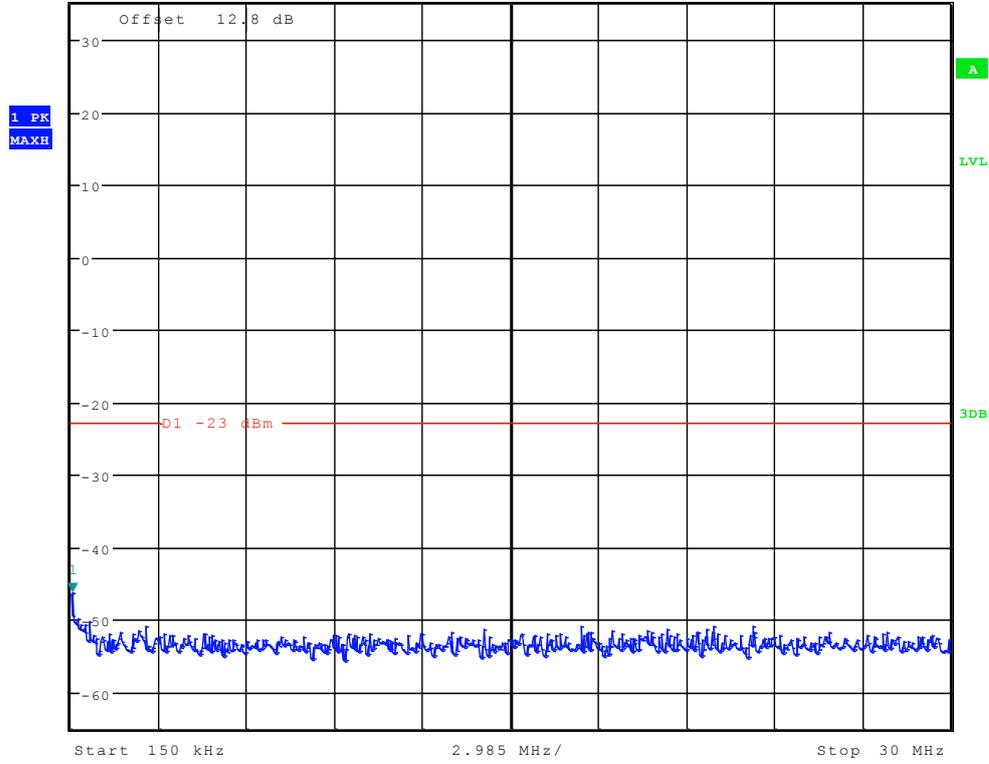
TM2:EDGE Channel 128



Date: 9.NOV.2012 08:53:22



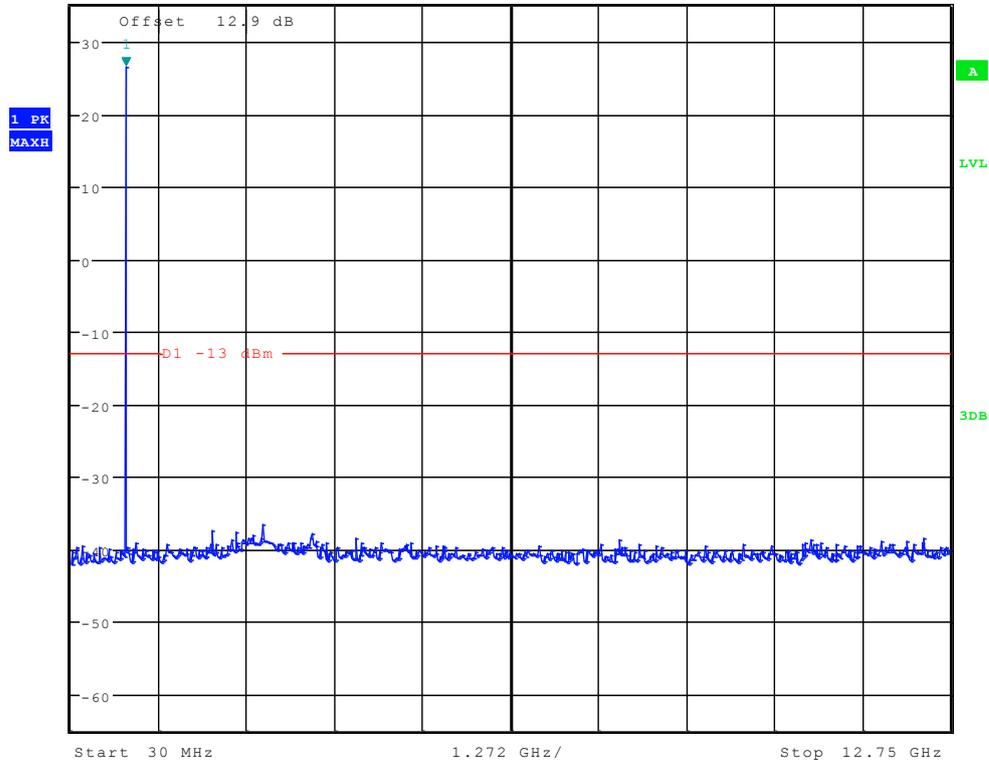
Ref 35 dBm * Att 35 dB SWT 300 ms 197.836538462 kHz
* RBW 10 kHz Marker 1 [T1]
* VBW 30 kHz -46.10 dBm



Date: 9.NOV.2012 08:54:06



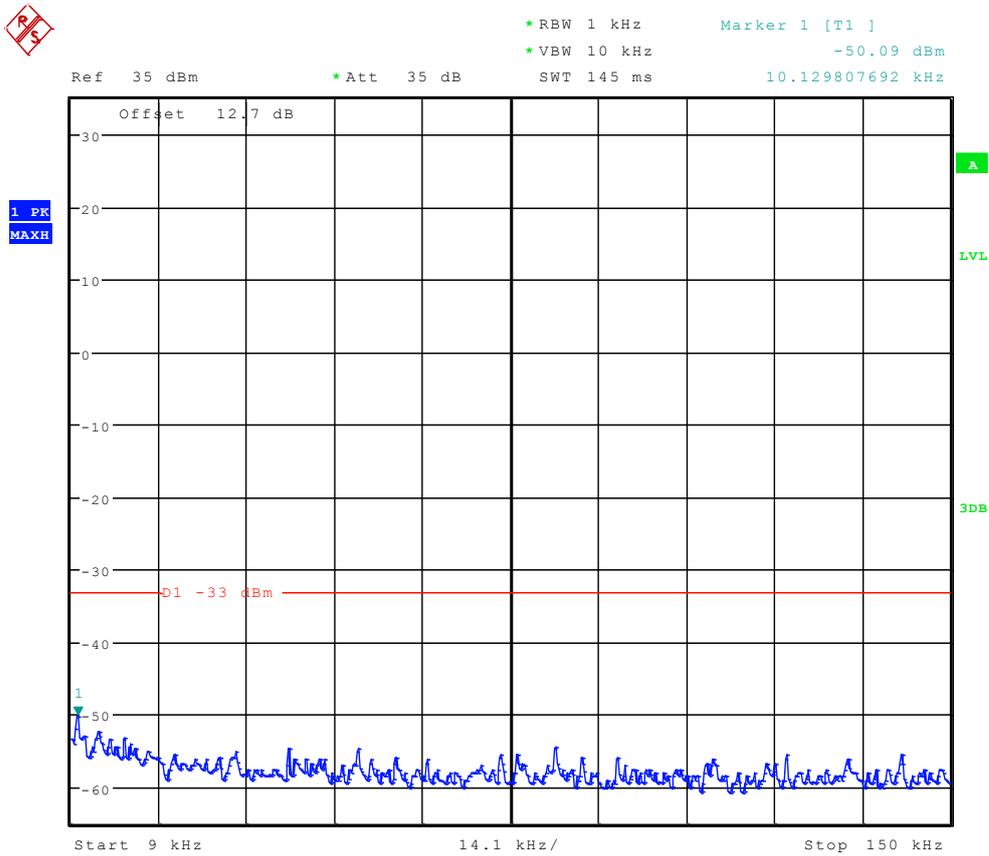
Ref 35 dBm * Att 35 dB SWT 1.3 s 825.000000000 MHz
* RBW 100 kHz Marker 1 [T1] 26.57 dBm
* VBW 300 kHz



Date: 9.NOV.2012 08:54:50



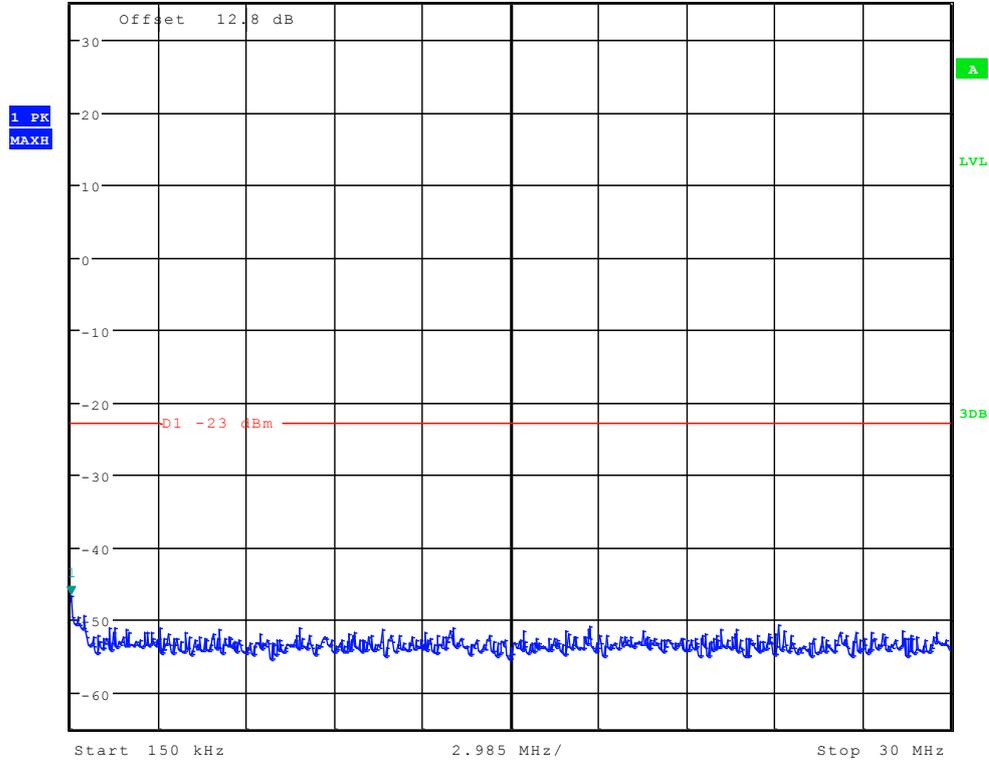
Channel 192



Date: 9.NOV.2012 08:53:37



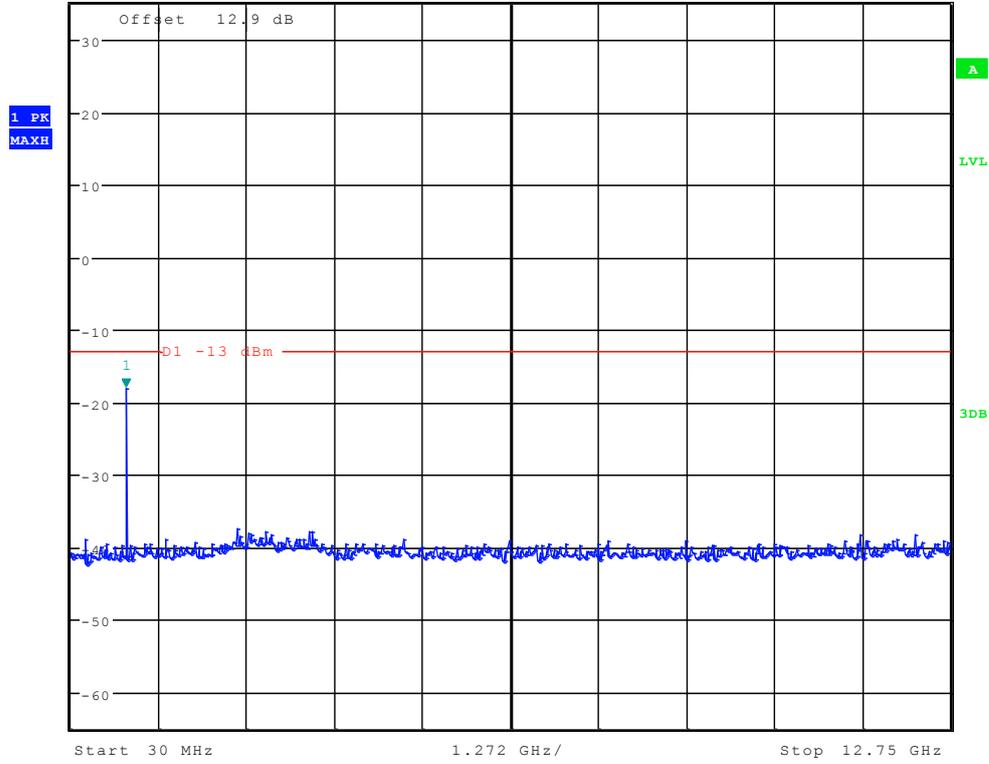
Ref 35 dBm * Att 35 dB SWT 300 ms 150.000000000 kHz
* RBW 10 kHz Marker 1 [T1]
* VBW 30 kHz -46.53 dBm



Date: 9.NOV.2012 08:54:20



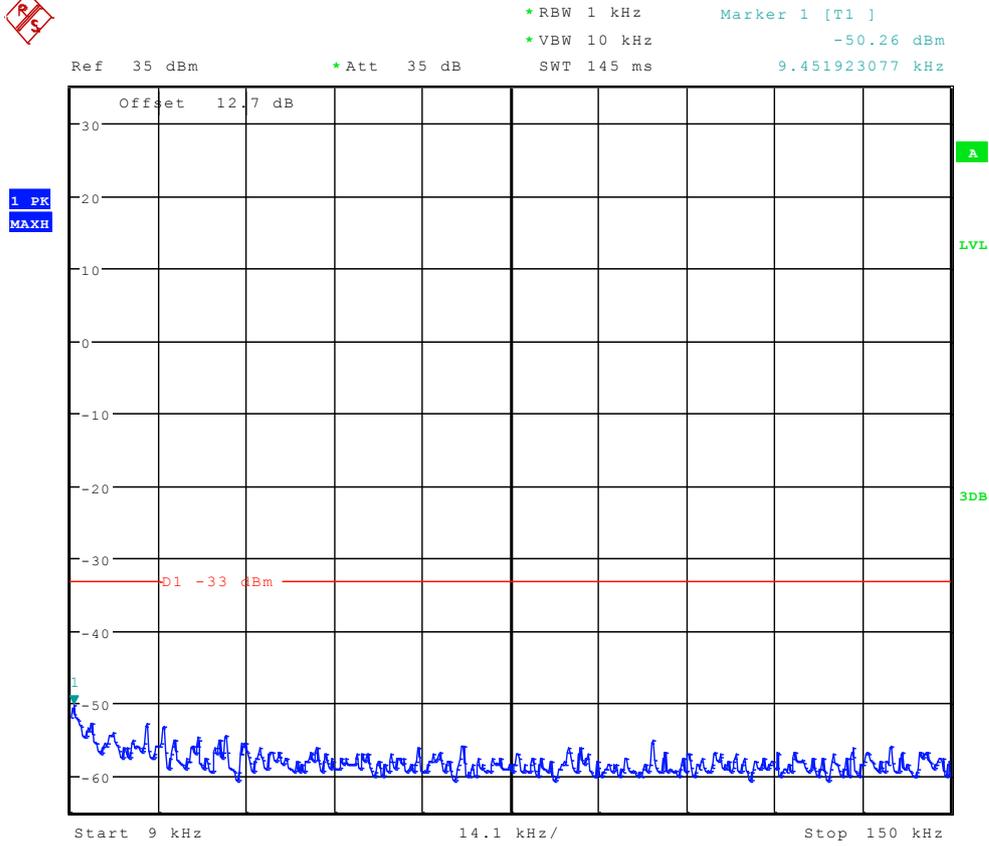
Ref 35 dBm * Att 35 dB SWT 1.3 s 825.00000000 MHz
* RBW 100 kHz Marker 1 [T1] -18.00 dBm
* VBW 300 kHz



Date: 9.NOV.2012 08:55:04



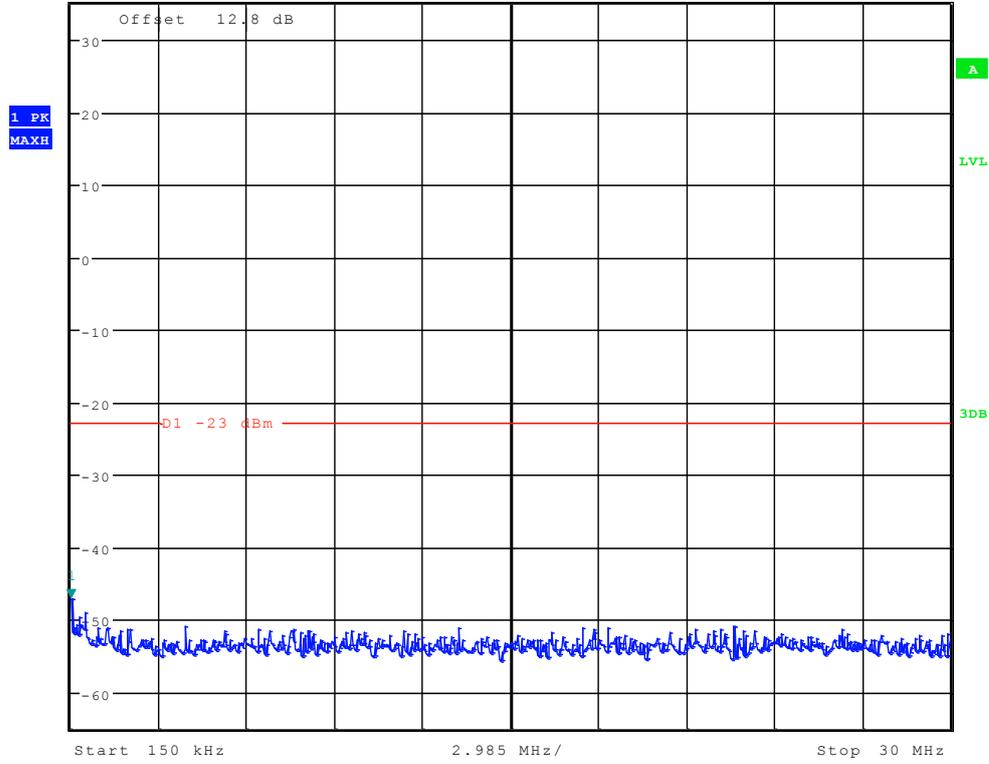
Channel 251



Date: 9.NOV.2012 08:53:51



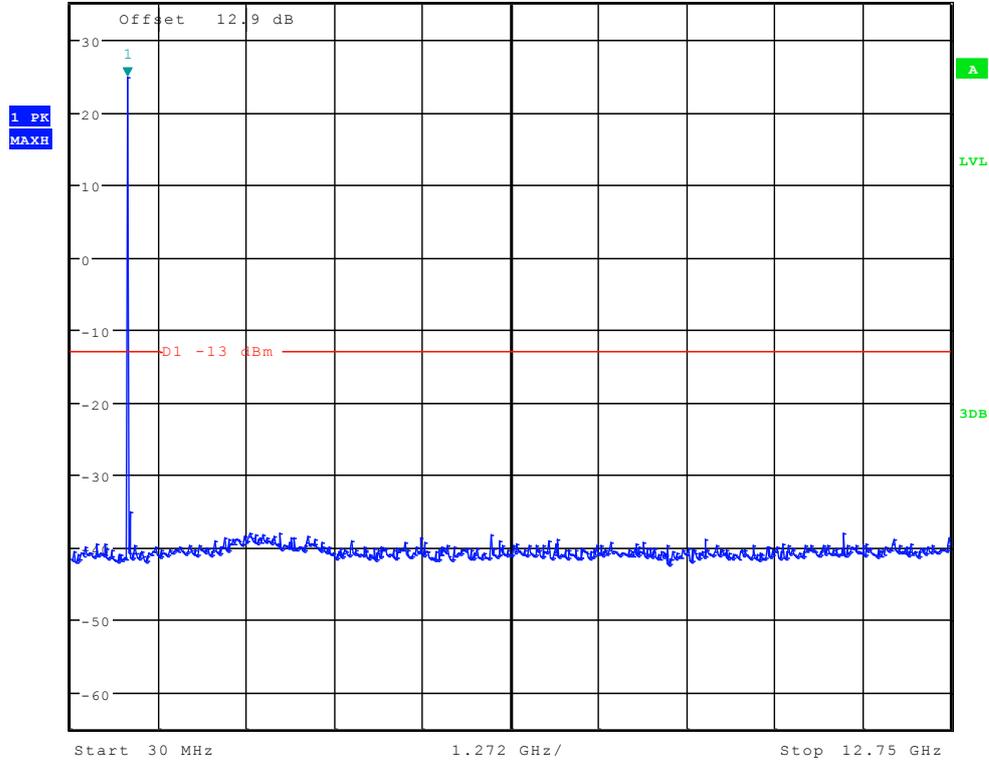
Ref 35 dBm * Att 35 dB SWT 300 ms 150.000000000 kHz
* RBW 10 kHz Marker 1 [T1]
* VBW 30 kHz -47.03 dBm



Date: 9.NOV.2012 08:54:35



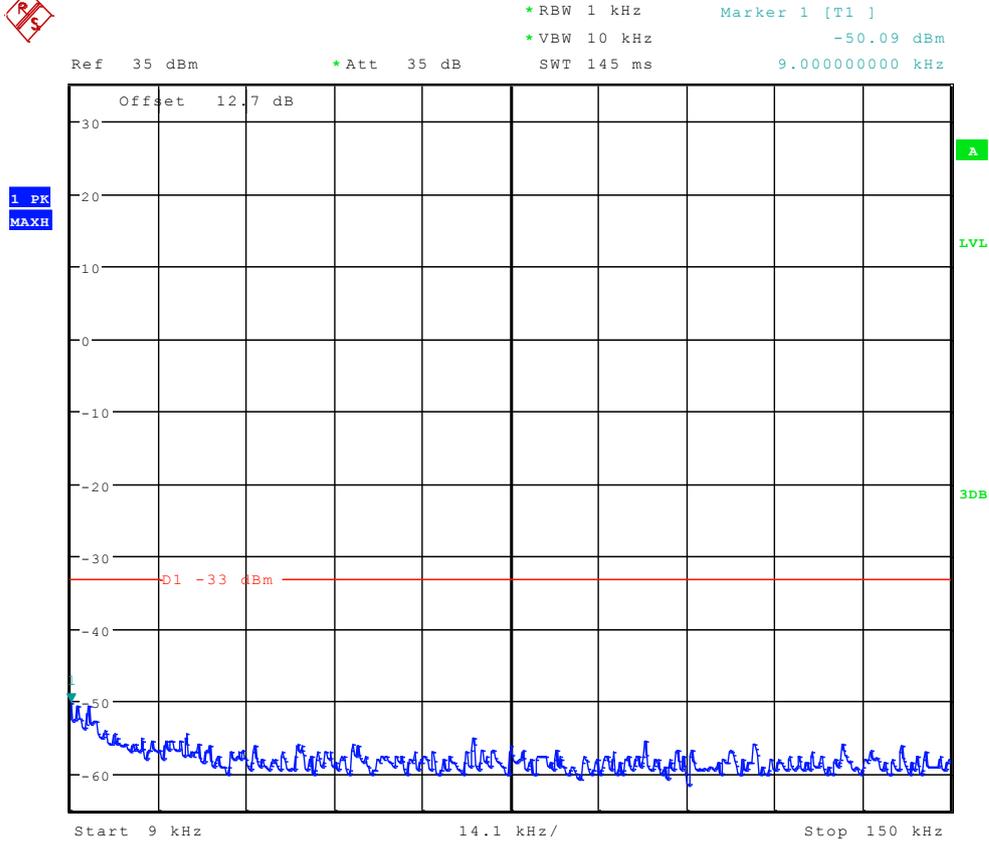
Ref 35 dBm * Att 35 dB SWT 1.3 s 845.384615385 MHz
* RBW 100 kHz Marker 1 [T1] 24.86 dBm
* VBW 300 kHz



Date: 9.NOV.2012 08:55:19



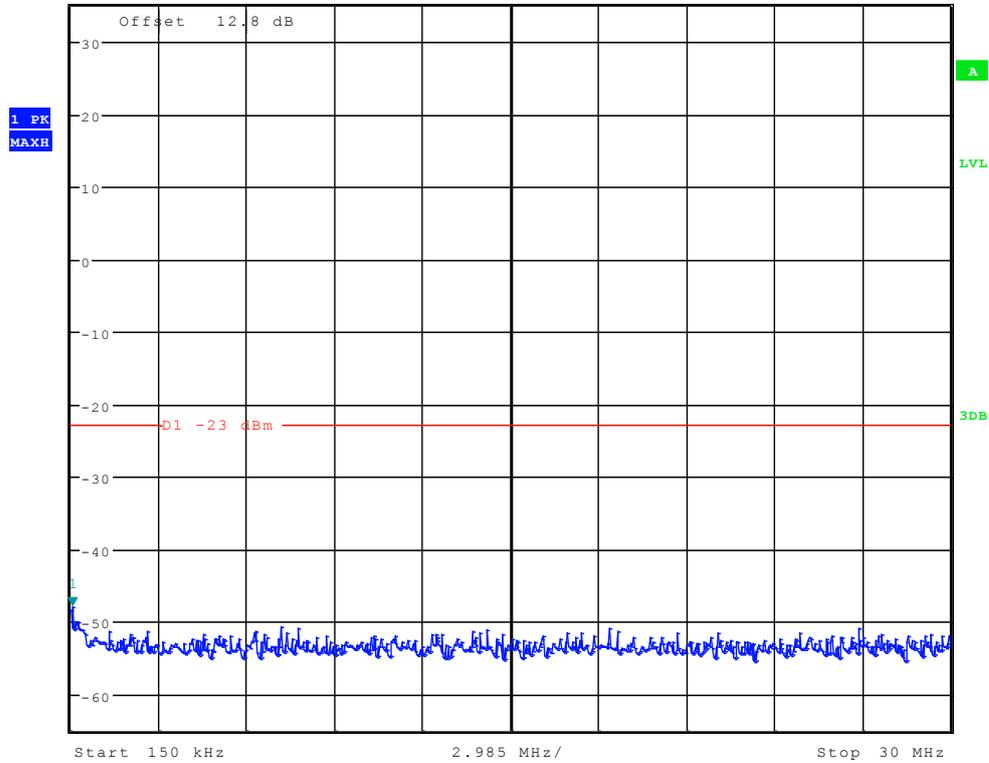
TM3: WCDMA Channel 4132



Date: 9.NOV.2012 08:58:30



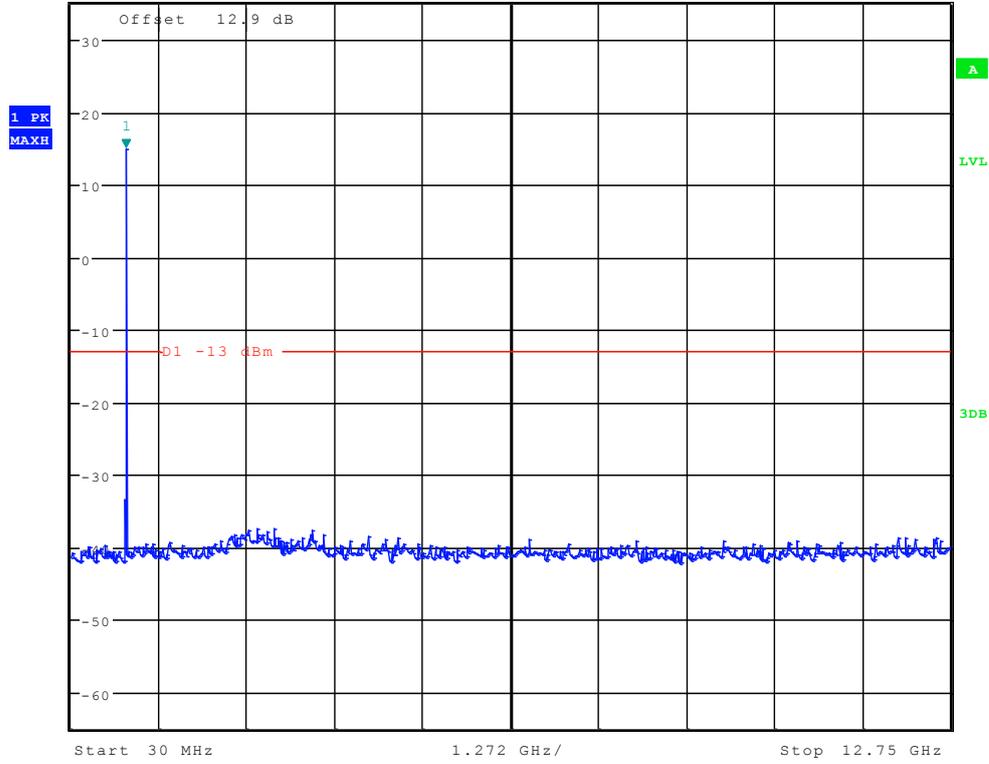
Ref 35 dBm * Att 35 dB SWT 300 ms 197.836538462 kHz
* RBW 10 kHz Marker 1 [T1]
* VBW 30 kHz -47.80 dBm



Date: 9.NOV.2012 08:59:14



Ref 35 dBm * Att 35 dB SWT 1.3 s 825.00000000 MHz
* RBW 100 kHz Marker 1 [T1] 15.00 dBm
* VBW 300 kHz



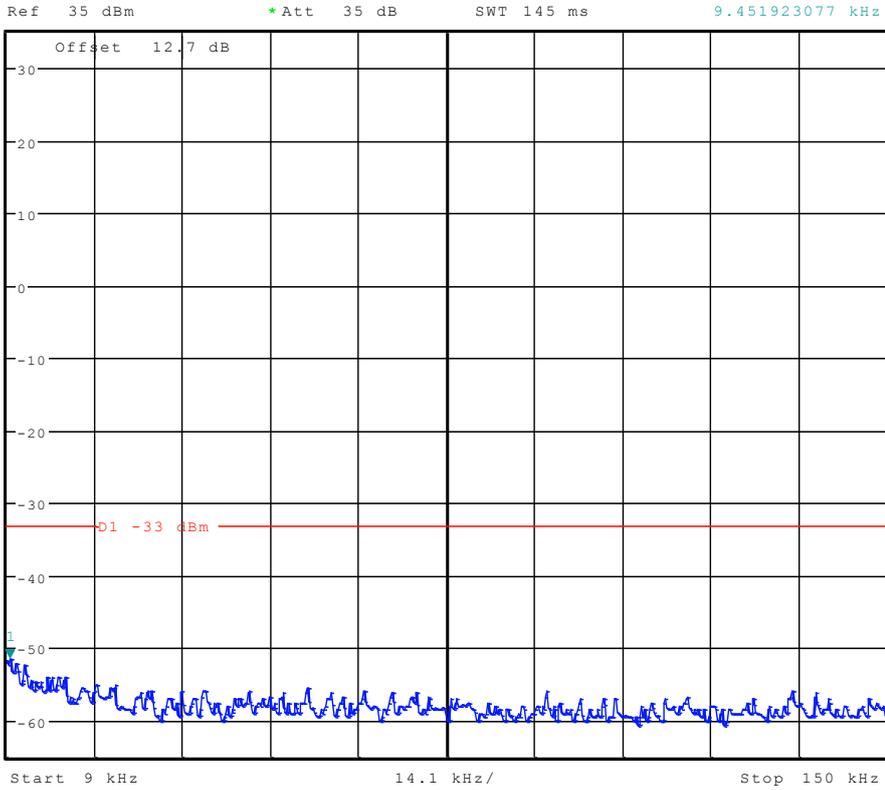
Date: 9.NOV.2012 08:59:57



Channel 4182



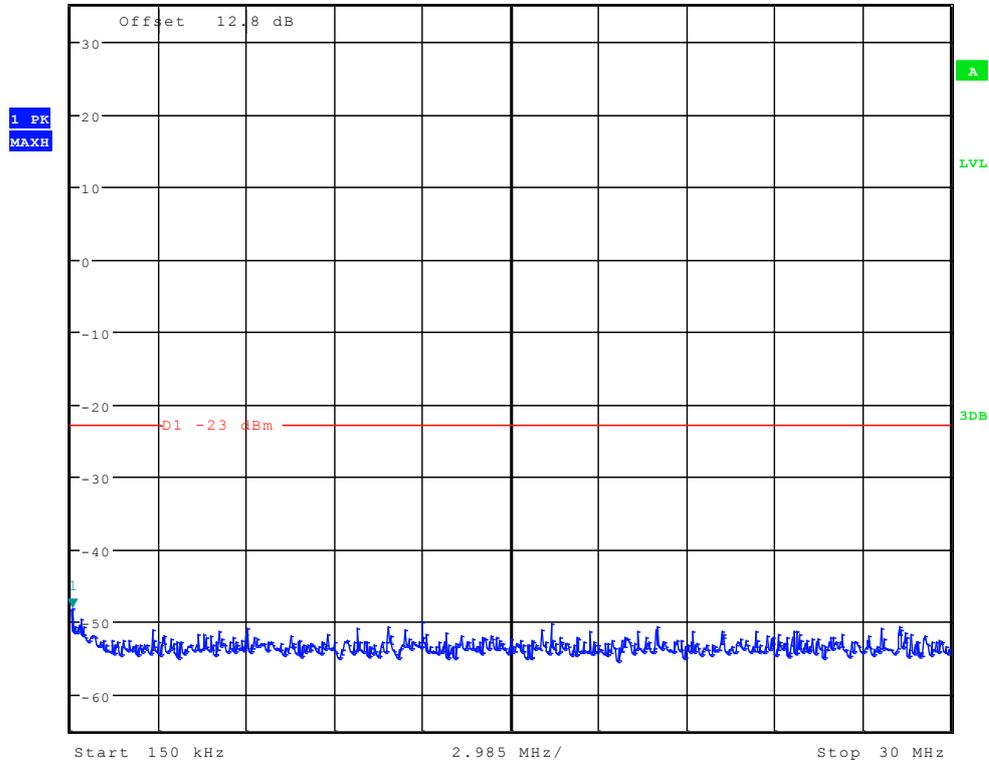
*RBW 1 kHz Marker 1 [T1]
*VBW 10 kHz -51.39 dBm
SWT 145 ms 9.451923077 kHz



Date: 9.NOV.2012 08:58:44



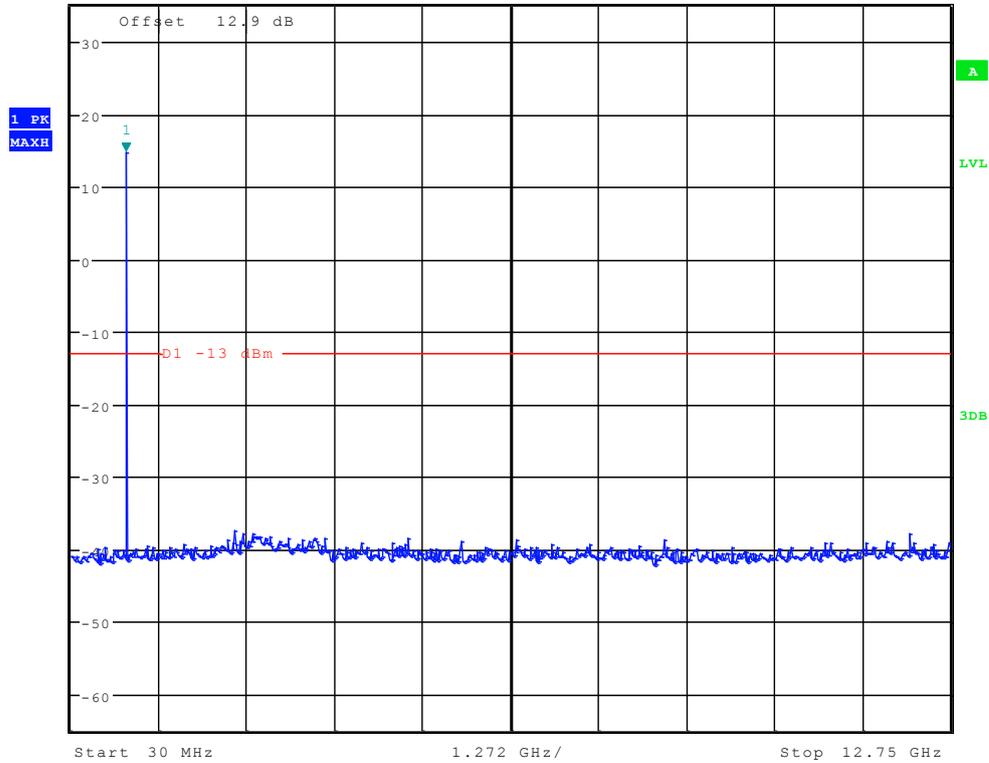
Ref 35 dBm * Att 35 dB SWT 300 ms 197.836538462 kHz
* RBW 10 kHz Marker 1 [T1]
* VBW 30 kHz -48.12 dBm



Date: 9.NOV.2012 08:59:28



Ref 35 dBm * Att 35 dB SWT 1.3 s 825.000000000 MHz
* RBW 100 kHz Marker 1 [T1] 14.64 dBm
* VBW 300 kHz



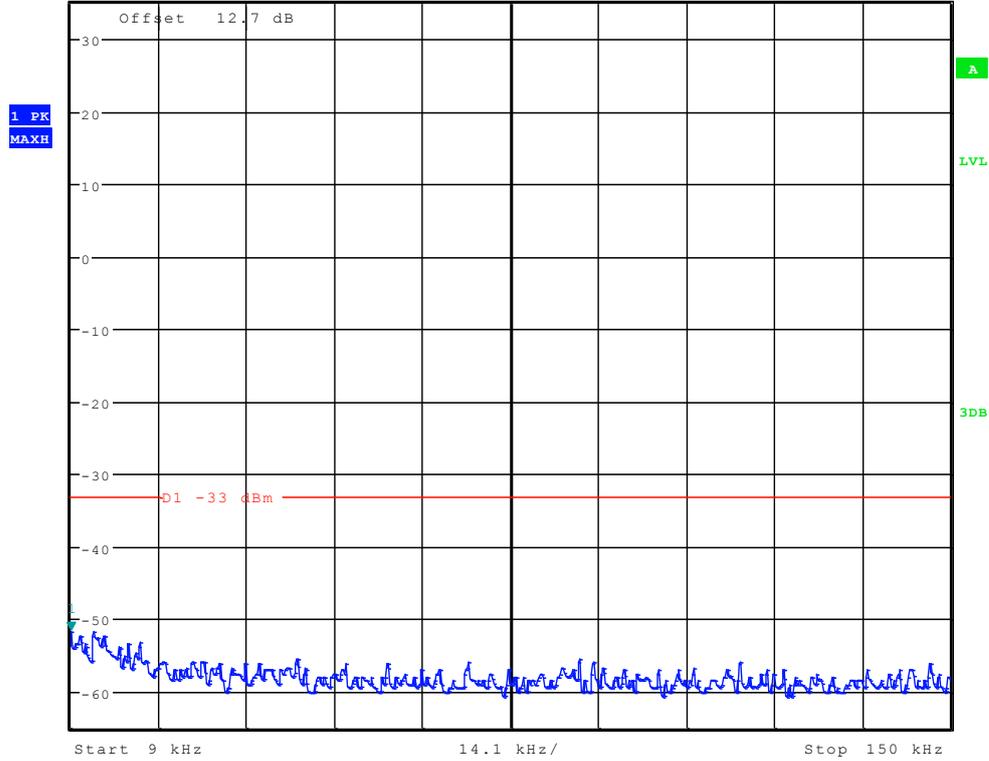
Date: 9.NOV.2012 09:00:12



Channel 4233



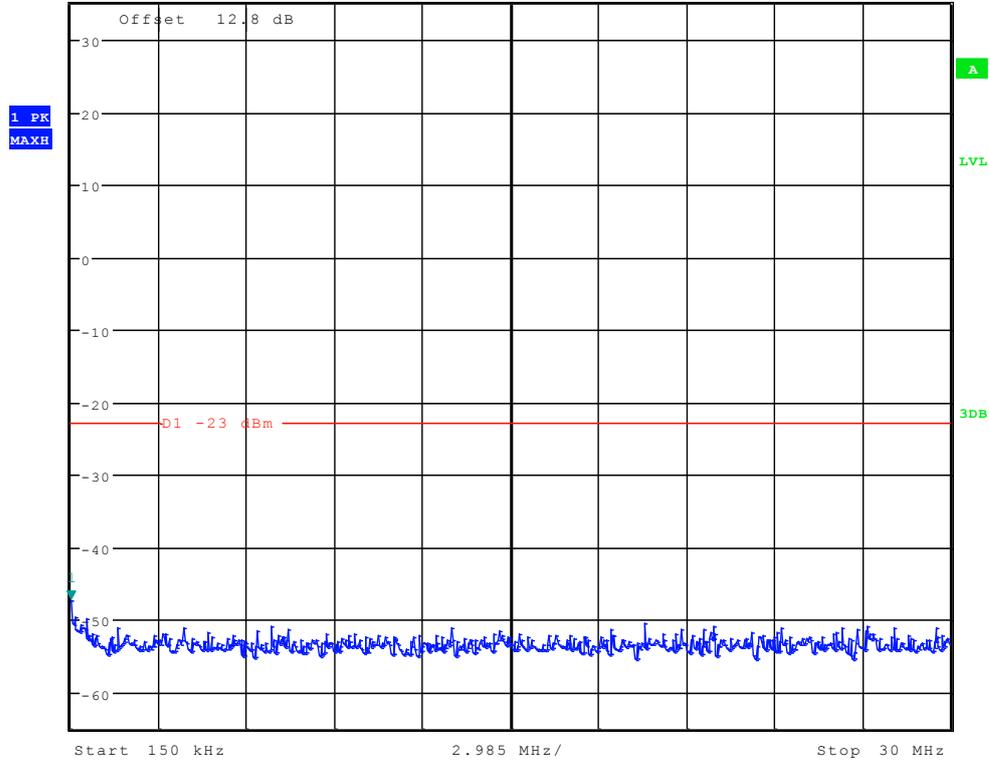
Ref 35 dBm * Att 35 dB * RBW 1 kHz Marker 1 [T1] * VBW 10 kHz -51.58 dBm
SWT 145 ms 9.000000000 kHz



Date: 9.NOV.2012 08:58:59



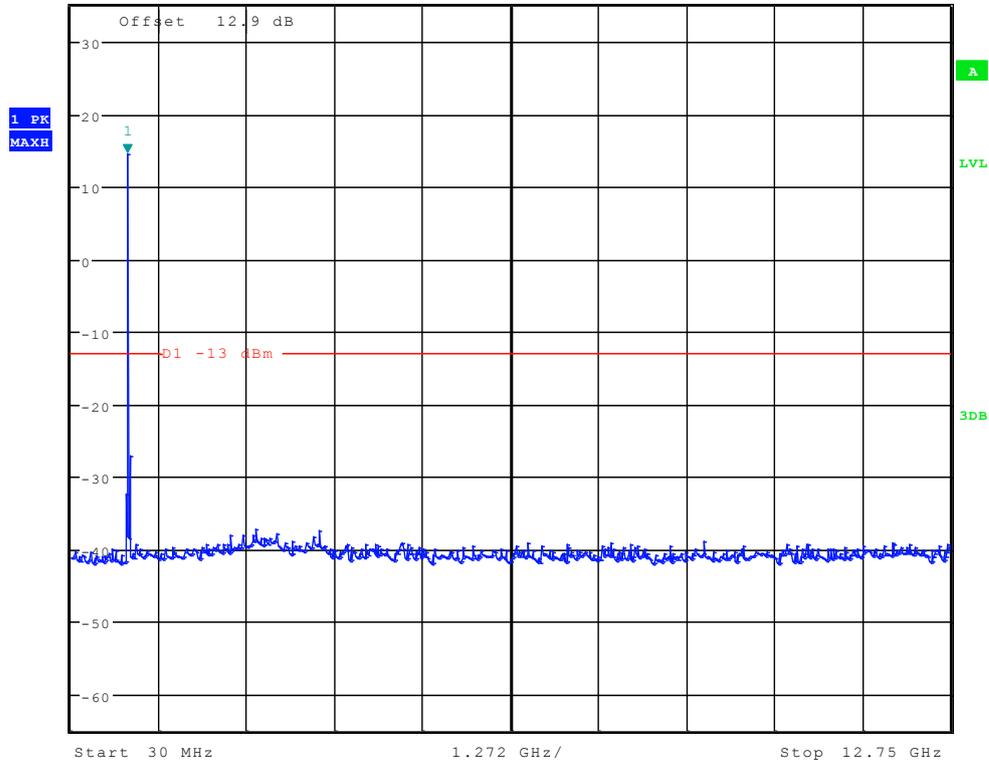
Ref 35 dBm * Att 35 dB SWT 300 ms 150.00000000 kHz
* RBW 10 kHz Marker 1 [T1]
* VBW 30 kHz -47.20 dBm



Date: 9.NOV.2012 08:59:42



Ref 35 dBm * Att 35 dB SWT 1.3 s 845.384615385 MHz
* RBW 100 kHz Marker 1 [T1] 14.51 dBm
* VBW 300 kHz



Date: 9.NOV.2012 09:00:26

END



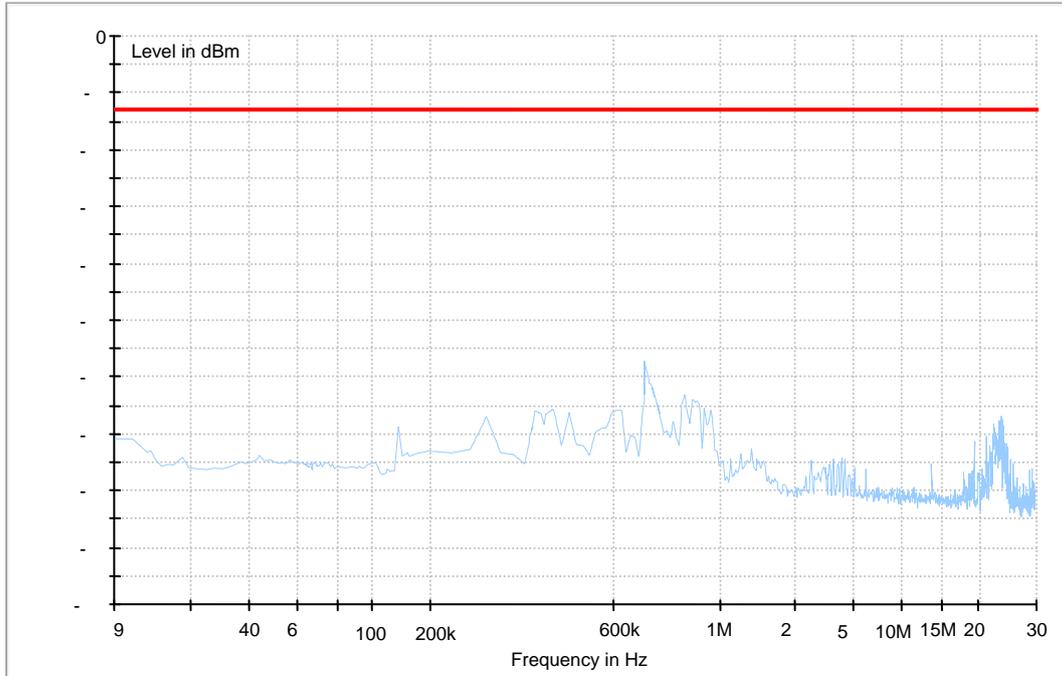
Appendix E

Radiated spurious emission



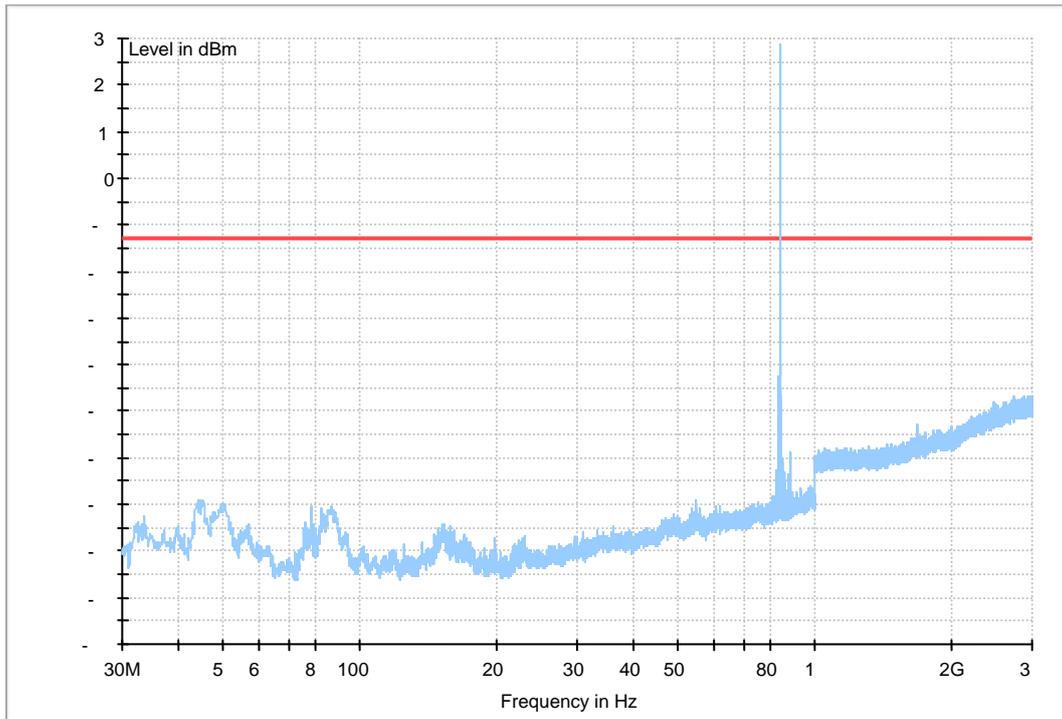
GPRS 850

Traffic Mode (9kHz-30MHz)



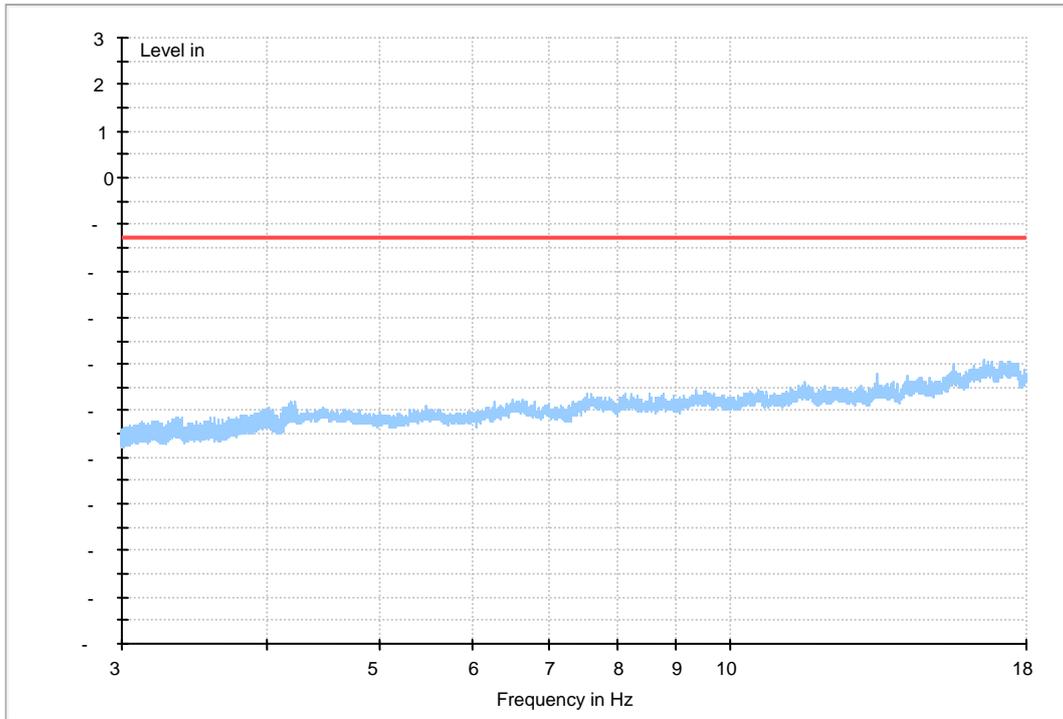


Traffic Mode (30MHz-3GHz)





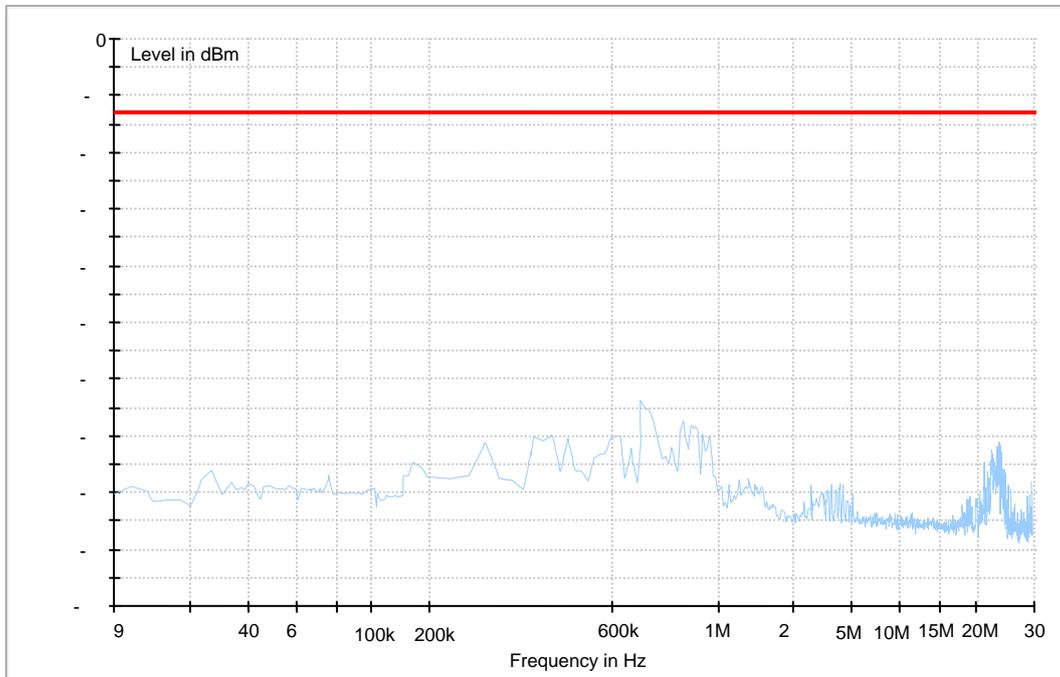
Traffic Mode (3GHz-18GHz)





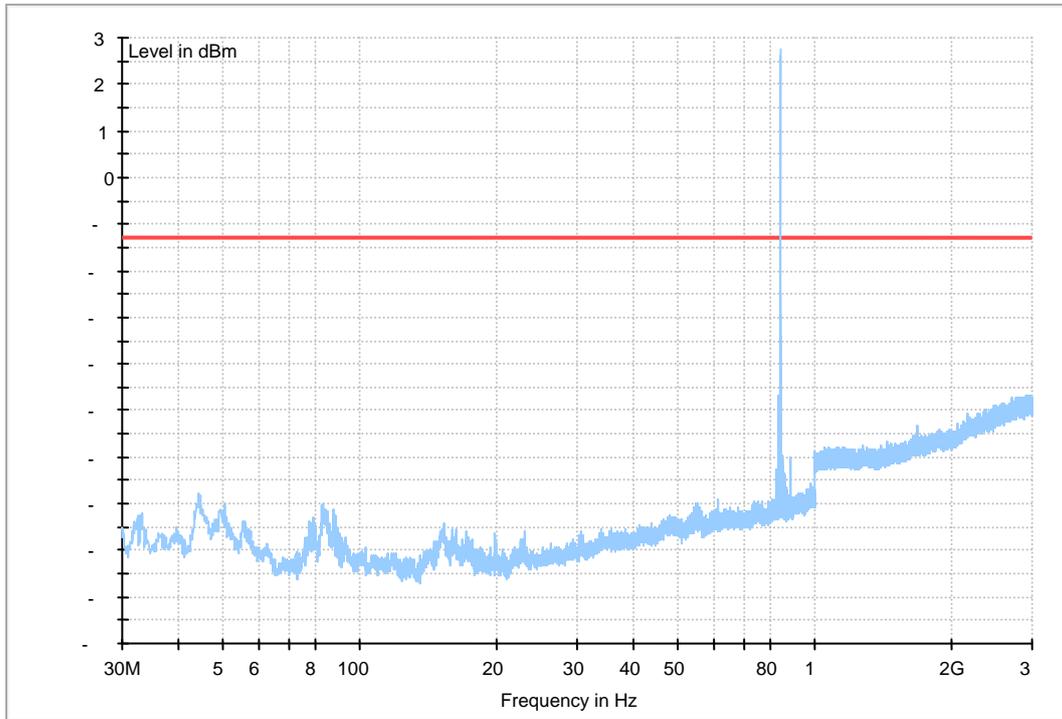
EDGE 850

Traffic Mode (9kHz-30MHz)



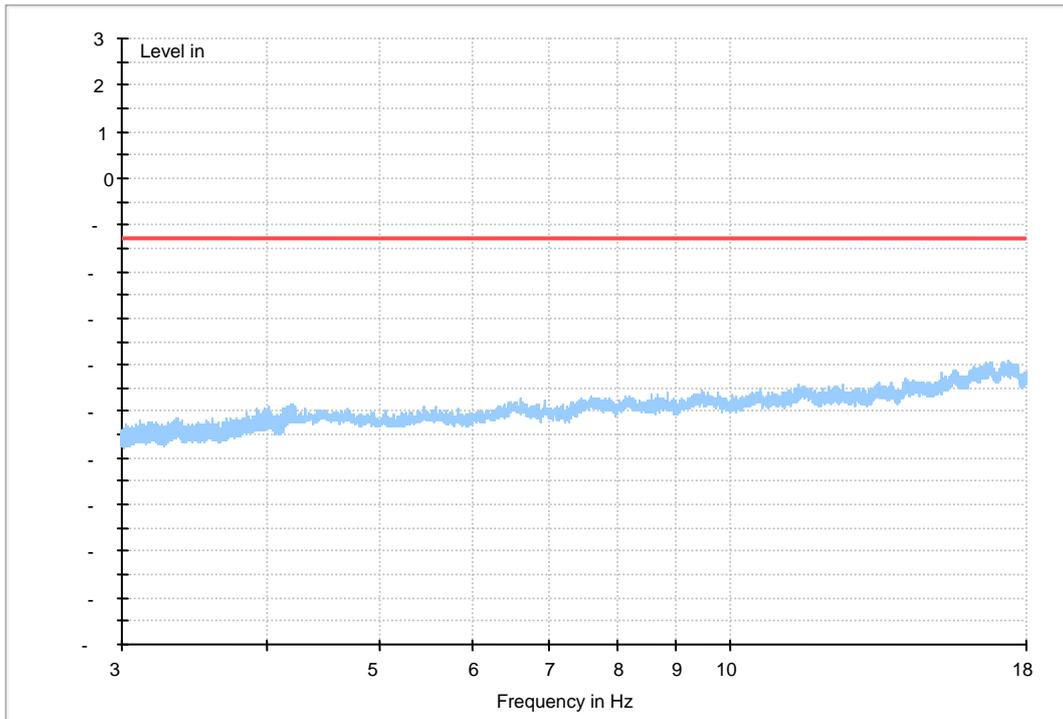


Traffic Mode (30MHz-3GHz)





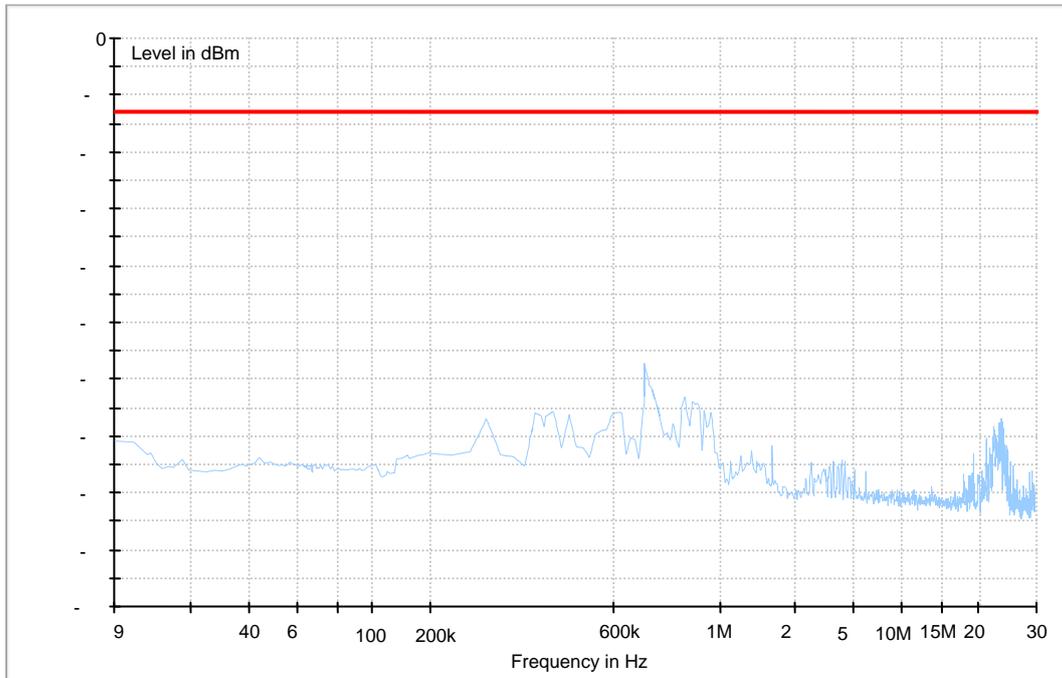
Traffic Mode (3GHz-18GHz)





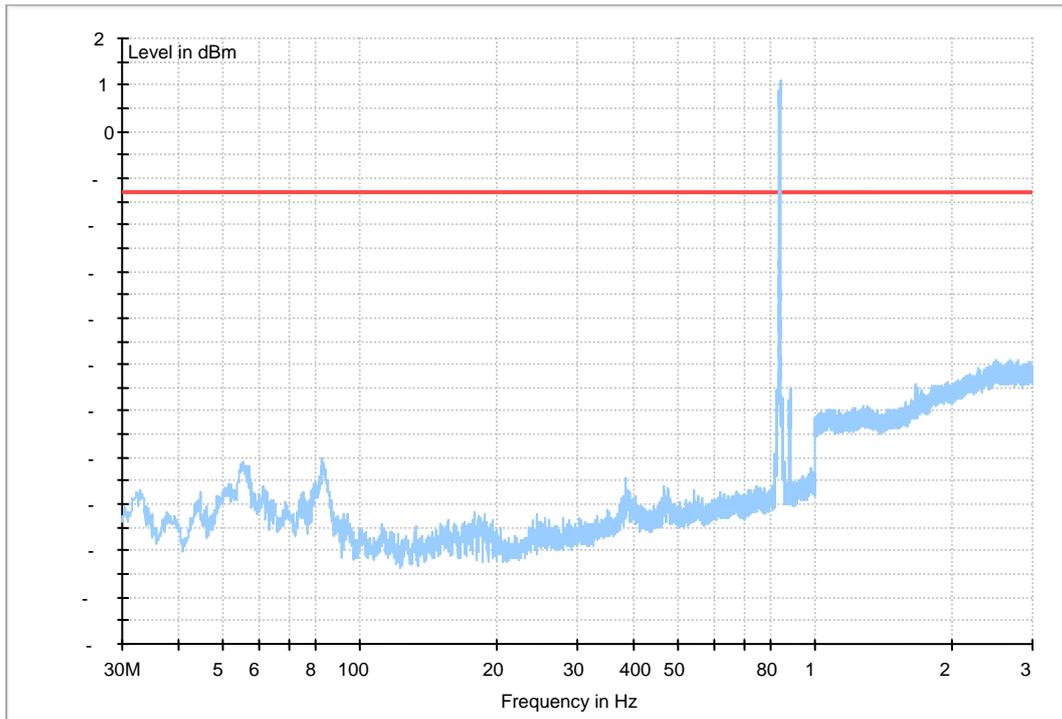
WCDMA Band V

Traffic Mode (9kHz-30MHz)



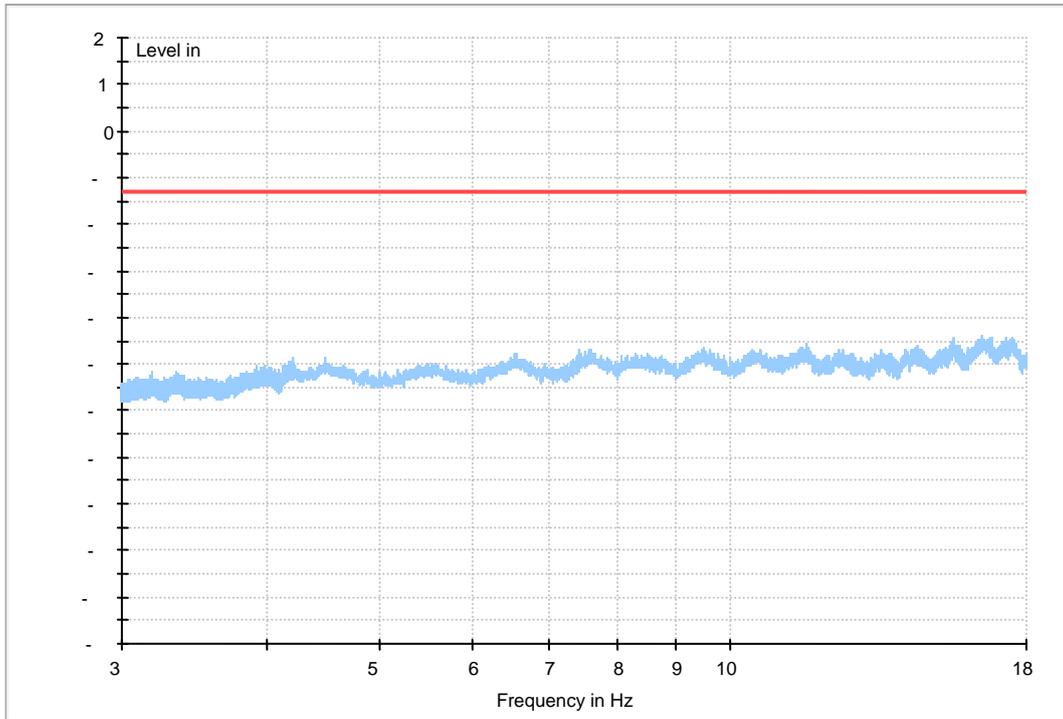


Traffic Mode (30MHz-3GHz)





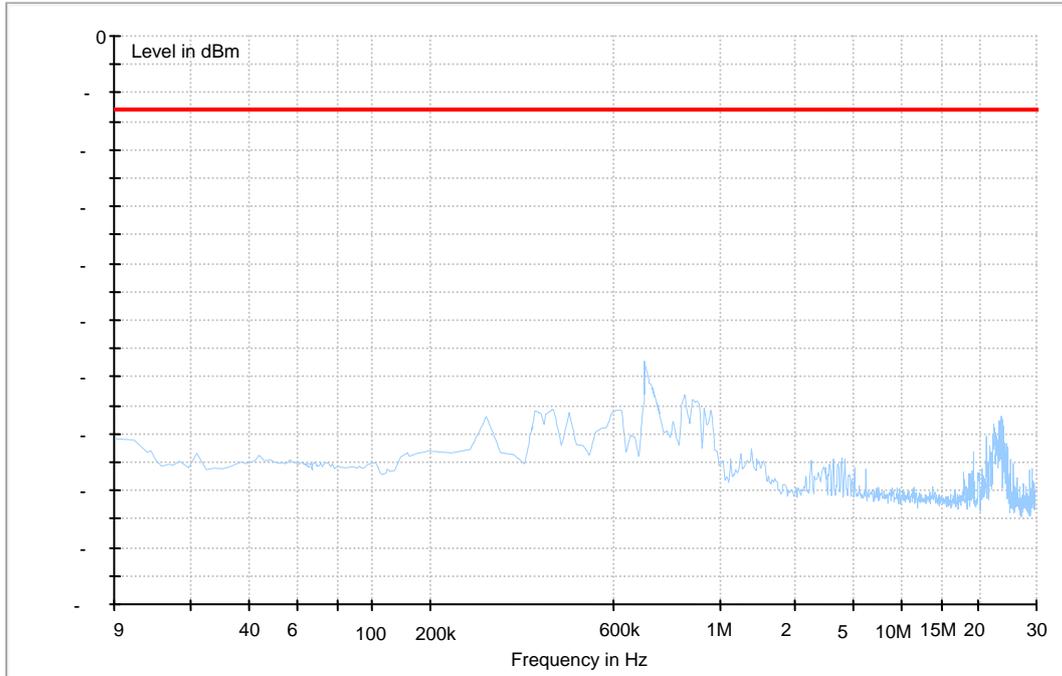
Traffic Mode (3GHz-18GHz)





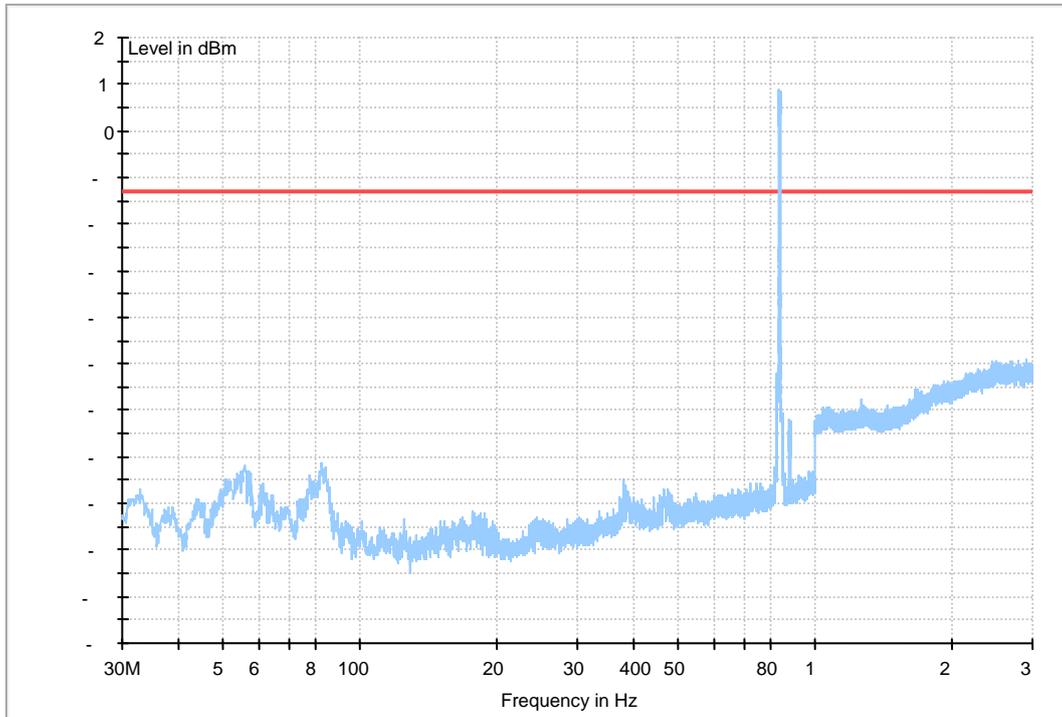
HSDPA Band V

Traffic Mode (9kHz-30MHz)



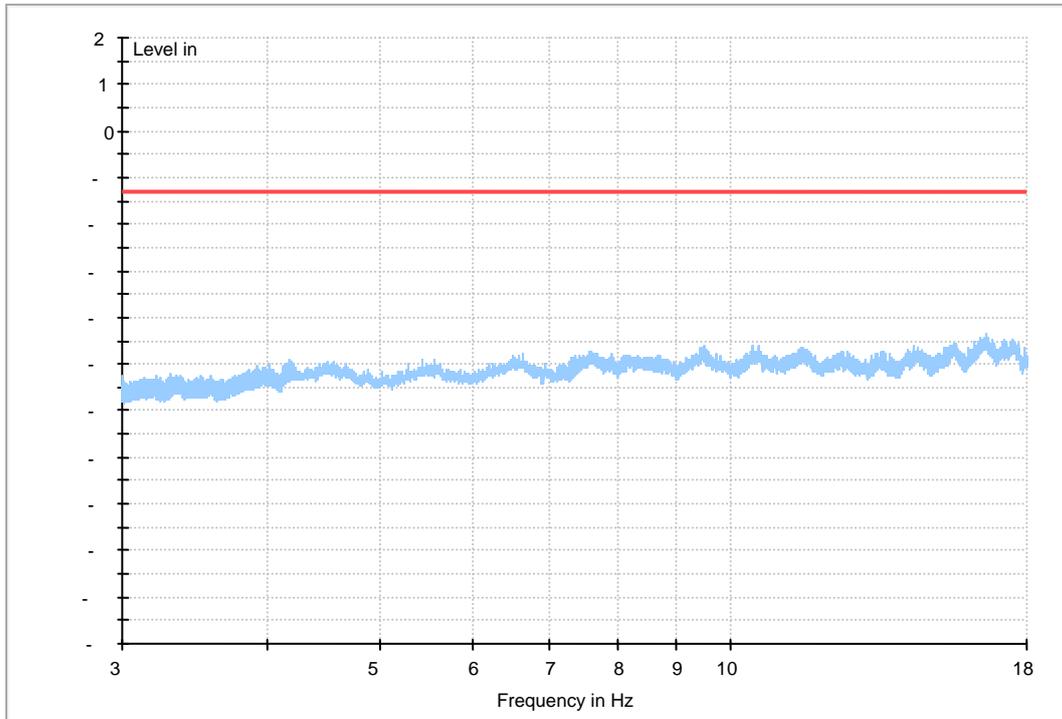


Traffic Mode (30MHz-3GHz)





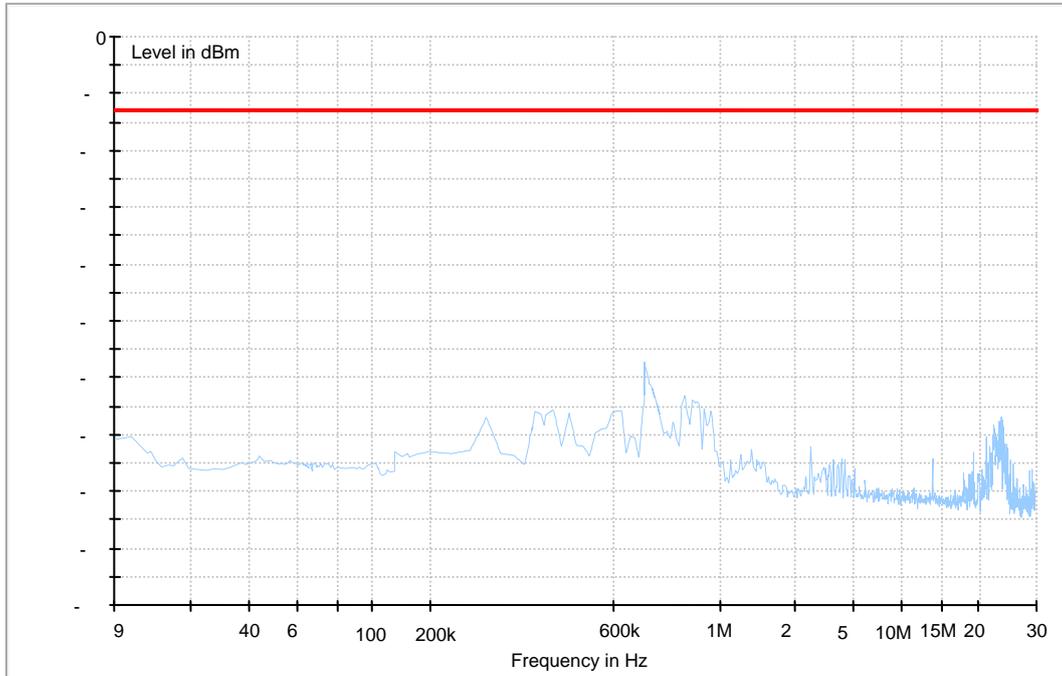
Traffic Mode (3GHz-18GHz)





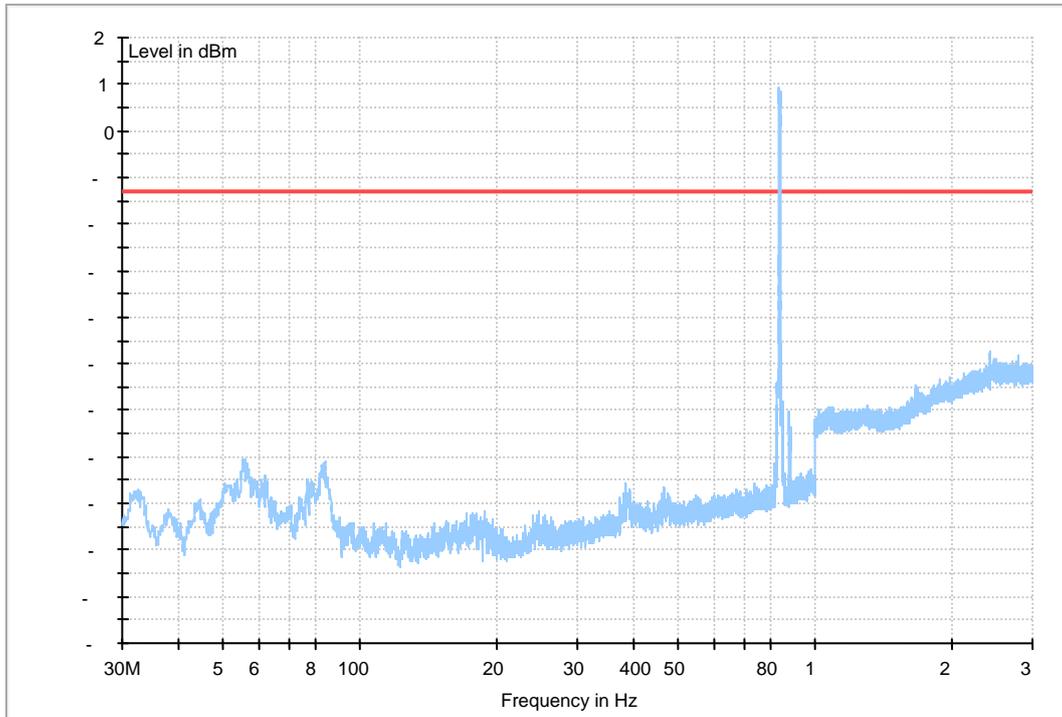
HSUPA Band V

Traffic Mode (9kHz-30MHz)



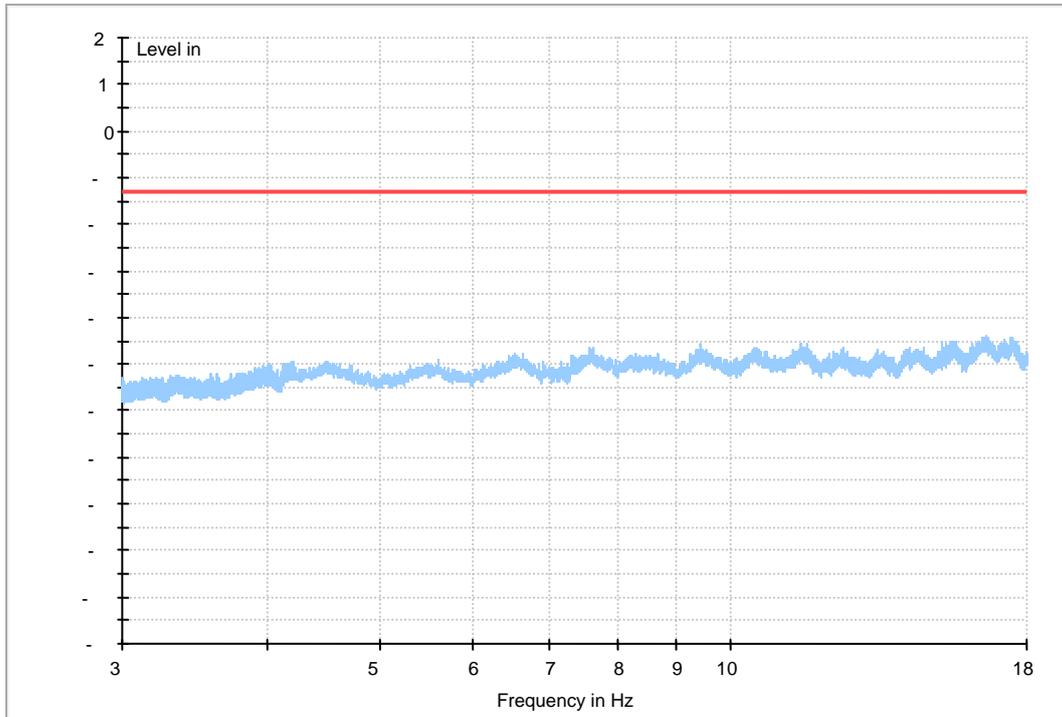


Traffic Mode (30MHz-3GHz)





Traffic Mode (3GHz-18GHz)



END



FCC&IC Test Report of E5776s-501
FCC ID: QISE5776s-501
IC : 6369A-E5776S

Appendix F

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 | 23 | 0.02748 | --- | ±2.5 | Pass |
| | | | -20 °C | -18 | -0.02151 | --- | ±2.5 | Pass |
| | | | -10 °C | 20 | 0.02389 | --- | ±2.5 | Pass |
| | | | 0 °C | 26 | 0.03106 | --- | ±2.5 | Pass |
| | | | 10 °C | 17 | 0.02031 | --- | ±2.5 | Pass |
| | | | 20 °C | -12 | -0.01434 | --- | ±2.5 | Pass |
| | | | 30 °C | -17 | -0.02031 | --- | ±2.5 | Pass |
| | | | 40 °C | 9 | 0.01075 | --- | ±2.5 | Pass |
| | | | 50 °C | -8 | -0.00956 | --- | ±2.5 | Pass |
| TM 2 | M | VN | -30 °C | -13 | -0.01553 | --- | ±2.5 | Pass |
| | | | -20 °C | -7 | -0.00836 | --- | ±2.5 | Pass |
| | | | -10 °C | 10 | 0.01195 | --- | ±2.5 | Pass |
| | | | 0 °C | 20 | 0.02389 | --- | ±2.5 | Pass |
| | | | 10 °C | -24 | -0.02867 | --- | ±2.5 | Pass |
| | | | 20 °C | -10 | -0.01195 | --- | ±2.5 | Pass |
| | | | 30 °C | 11 | 0.01314 | --- | ±2.5 | Pass |
| | | | 40 °C | -8 | -0.00956 | --- | ±2.5 | Pass |
| | | | 50 °C | -11 | -0.01314 | --- | ±2.5 | Pass |
| TM 3 | M | VN | -30 °C | -19 | -0.02270 | --- | ±2.5 | Pass |
| | | | -20 °C | 26 | 0.03106 | --- | ±2.5 | Pass |
| | | | -10 °C | -9 | -0.01075 | --- | ±2.5 | Pass |
| | | | 0 °C | -7 | -0.00836 | --- | ±2.5 | Pass |
| | | | 10 °C | 16 | 0.01912 | --- | ±2.5 | Pass |
| | | | 20 °C | 14 | 0.01673 | --- | ±2.5 | Pass |
| | | | 30 °C | 16 | 0.01912 | --- | ±2.5 | Pass |
| | | | 40 °C | 19 | 0.02270 | --- | ±2.5 | Pass |
| | | | 50 °C | 16 | 0.01912 | --- | ±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 | -21 | -0.02509 | --- | ±2.5 | Pass |
| | | | VN | 20 | 0.02389 | --- | ±2.5 | Pass |
| | | | VH | -20 | -0.02389 | --- | ±2.5 | Pass |
| TM 2 | M | TN | VL | -11 | -0.01314 | --- | ±2.5 | Pass |
| | | | VN | 12 | 0.01434 | --- | ±2.5 | Pass |
| | | | VH | -23 | -0.02748 | --- | ±2.5 | Pass |
| TM 3 | M | TN | VL | -11 | -0.01314 | --- | ±2.5 | Pass |
| | | | VN | 18 | 0.02151 | --- | ±2.5 | Pass |
| | | | VH | 16 | 0.01912 | --- | ±2.5 | Pass |

END



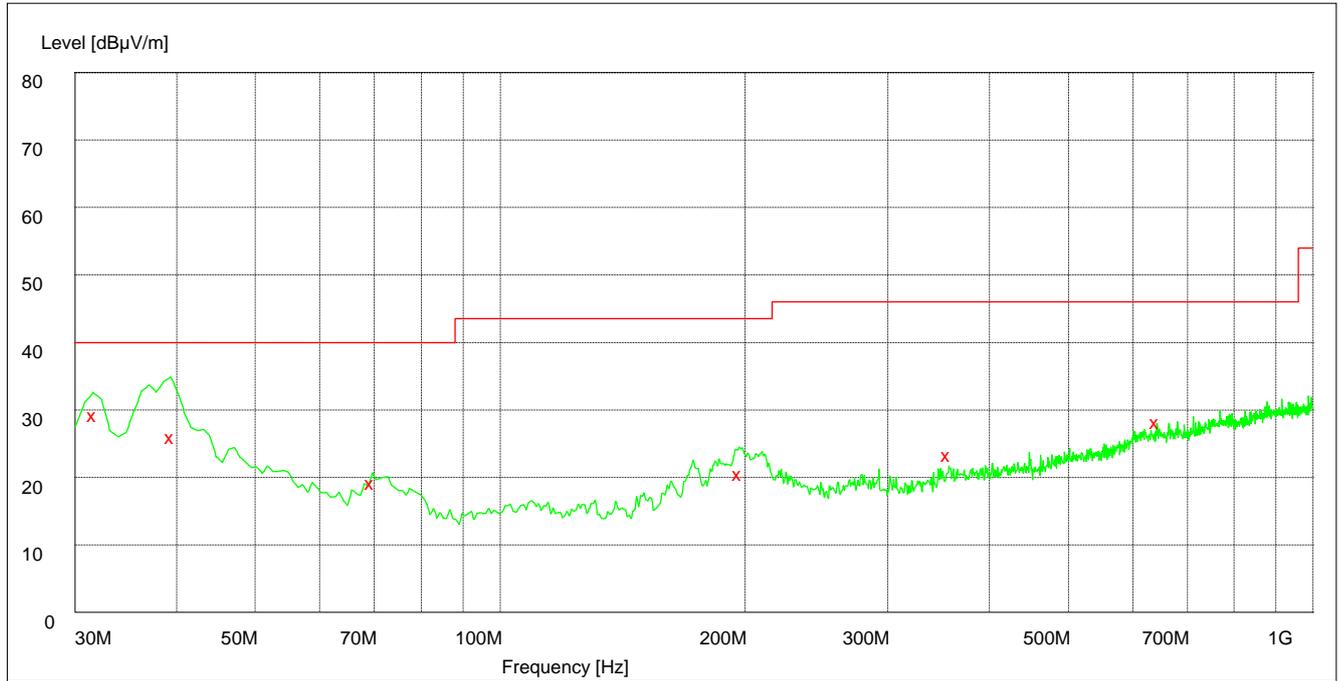
Appendix G

Receiver Spurious Emission



This test was carried out in all the test modes. Here only the worst test result was shown.

30MHz-1GHz

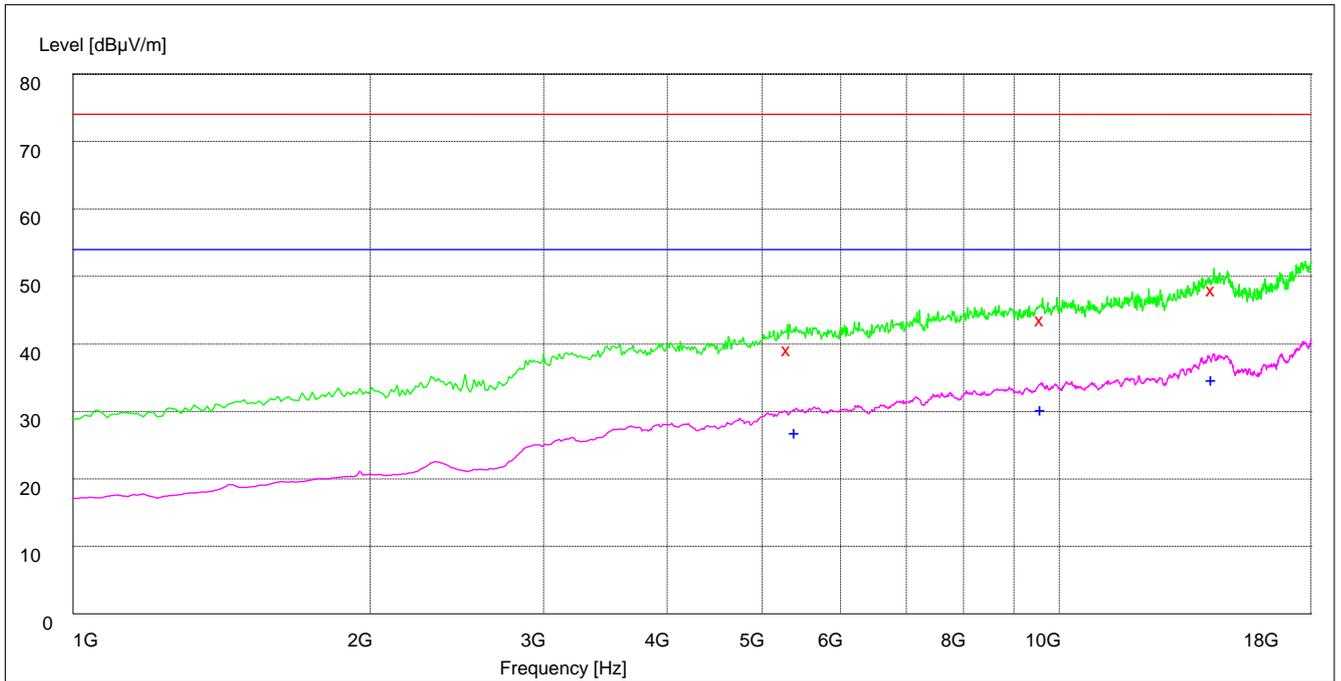


MEASUREMENT RESULT: QP Detector

| Frequency | Level | Transducer | Limit | Margin | Height | Azimuth | Polarisation |
|------------|--------|------------|--------|--------|--------|---------|--------------|
| MHz | dBµV/m | dB | dBµV/m | dB | cm | deg | |
| 31.740000 | 30.50 | 14.7 | 40.0 | 9.5 | 100.0 | 272.00 | VERTICAL |
| 39.540000 | 27.30 | 15.3 | 40.0 | 12.7 | 100.0 | 289.00 | VERTICAL |
| 69.780000 | 20.50 | 11.0 | 40.0 | 19.5 | 126.0 | 46.00 | VERTICAL |
| 197.580000 | 21.80 | 12.3 | 43.5 | 21.7 | 100.0 | 340.00 | VERTICAL |
| 356.760000 | 24.70 | 16.8 | 46.0 | 21.3 | 100.0 | 231.00 | HORIZONTAL |
| 643.740000 | 29.60 | 21.8 | 46.0 | 16.4 | 200.0 | 212.00 | VERTICAL |



1GHz to 18 GHz”



MEASUREMENT RESULT: PK Detector

| Frequency | Level | Transducer | Limit | Margin | Height | Azimuth | Polarisation |
|--------------|--------|------------|--------|--------|--------|---------|--------------|
| MHz | dBµV/m | dB | dBµV/m | dB | cm | deg | |
| 5321.800000 | 40.60 | -1.1 | 74.0 | 33.4 | 148.0 | 0.00 | VERTICAL |
| 9615.400000 | 44.90 | 6.0 | 74.0 | 29.1 | 100.0 | 26.00 | VERTICAL |
| 14349.100000 | 49.40 | 16.6 | 74.0 | 24.6 | 117.0 | 60.00 | HORIZONTAL |

MEASUREMENT RESULT: AV Detector

| Frequency | Level | Transducer | Limit | Margin | Height | Azimuth | Polarisation |
|--------------|--------|------------|--------|--------|--------|---------|--------------|
| MHz | dBµV/m | dB | dBµV/m | dB | cm | deg | |
| 5413.400000 | 28.20 | -0.8 | 54.0 | 25.8 | 135.0 | 136.00 | VERTICAL |
| 9614.900000 | 31.60 | 6.0 | 54.0 | 22.4 | 100.0 | 99.00 | VERTICAL |
| 14323.500000 | 36.10 | 16.5 | 54.0 | 17.9 | 148.0 | 176.00 | VERTICAL |

END