



FCC RF Test Report

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

Model Number: HUAWEI U9508, U9508

Report No: SYBH(Z-RF)005102012-2003
FCC ID: QISU9508

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.
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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.
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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: | Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C |
| Date of Receipt Test Item: | Oct., 31, 2012 |
| Start Date of Test: | Nov., 01, 2012 |
| End Date of Test: | Nov., 12, 2012 |
| | |
| | |
| Test Result: | Pass |

Approved By Senior Engineer Nov., 13, 2012 Dai Linjun
Date Name Signature

Reviewed By Nov., 13, 2012 Cousy Xu
Date Name Signature

Operated By Nov., 13, 2012 Huang Qiuliang
Date Name Signature



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1 General Information

| | |
|---|---|
| 1.1 Applied Standard | |
| | |
| Applied Rules: | 47 CFR FCC Part 2:2011, Subpart J 47 CFR FCC Part 27:2011, Subpart C&L ANSI/TIA 603C:2004 |
| | |
| 1.2 Test Location | |
| | |
| Test Location 1: | Reliability Laboratory of Huawei Technologies Co., Ltd. |
| Address: | Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C |
| | |
| 1.3 Test Environmental Condition | |
| | |
| 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 |
|--|-------------------|---|--------|
| AWS Band | | | |
| Transmitter Output Power | 2.1046 & 27.50(d) | Peak EIRP not exceed 1 W 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 & 27.53(h) | Below -13 dBm/1%*EBW, in 1 MHz range | Pass |
| Spurious Emission at Antenna Terminals | 2.1051 & 27.53(h) | Below -13 dBm/1 kHz, 9 kHz to 150 kHz Below -13 dBm/10 kHz, 150 kHz to 30 MHz Below -13 dBm/1 MHz, 30 MHz to 10 th harmonics | Pass |
| Field Strength of Spurious Radiation | 2.1053 & 27.53(h) | Below -13 dBm/1 MHz | Pass |
| Frequency Stability | 2.1055 & 27.54 | Stay within the authorized bands of operation | Pass |



3 Product Description

3.1 Product Information

3.1.1 General Description

HUAWEI U9508, U9508 is subscriber equipment in the WCDMA/GSM system. The HSPA+/HSUPA/HSDPA/UMTS frequency band is Band I, Band II, Band IV, Band IV can be used in this report. The GSM/GPRS/EDGE frequency band includes GSM850 and GSM900 and DCS1800 and PCS1900. 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 U9508, U9508 | | |
| Board and Module | | |
| Hardware Version | Software Version | Description |
| HD1U9508M | U9508V100R001CHNC00B017 | Main board of Mobile Phone |

3.1.3 Adapter Technical Data

| | |
|--------------------|---|
| AC/DCAdapter Model | HW-050100U1W |
| 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: HB5R1V Rated capacity: 2150mAh Nominal Voltage: $\text{---} +3.8\text{V}$ Charging Voltage: $\text{---} +4.35\text{V}$ |
| Rechargeable Li-ion | Huawei Technologies Co.,Ltd. | Battery Model: HB5Q1HV Rated capacity: 2600mAh Nominal Voltage: $\text{---} +3.8\text{V}$ Charging Voltage: $\text{---} +4.35\text{V}$ |



4 Test Description

4.1 Supported Frequency Range

| Characteristics | Description |
|-----------------|------------------|
| Downlink | 2110 to 2155 MHz |
| Uplink | 1710 to 1755 MHz |

4.2 Transmitter / Receiver Characteristics

| Characteristics | Description |
|------------------------------------|----------------------|
| System Type | UMTS |
| TX Output Power (per Antenna Port) | UMTS system: 23.5dBm |
| Channel Spacing(s) / Bandwidth(s) | UMTS system: 5 MHz |
| Designation of Emissions | UMTS system: 4M07F9W |



4.3 Antenna Gain

| | |
|-------------------|---|
| Antenna Gain(dBi) | 0 |
|-------------------|---|

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 DC Voltage Range: \approx 3.5 V to 4.35 V |
| Input to EUT (AC power) | AC Voltage Nominal: ~ 120 V (50/60 Hz) AC Voltage Range: ~ 100 V to 240 V |



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/TM3 | TX | Channel1312 | Channel1412 | Channel1513 |
| | | 1712.4MHz | 1732.4MHz | 1752.6MHz |
| | RX | Channel 1537 | Channel 1637 | Channel 1738 |
| | | 2112.4 MHz | 2132.4 MHz | 2152.6 MHz |

5.2 Test Modes

| Test Mode | Test Modes Description |
|-----------|------------------------|
| TM1 | WCDMA, QPSK modulation |
| TM2 | HSDPA, QPSK modulation |
| TM3 | 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 | 4.35V |

NOTE: VL= lower extreme test voltage

VN= nominal voltage

VH= upper extreme test voltage

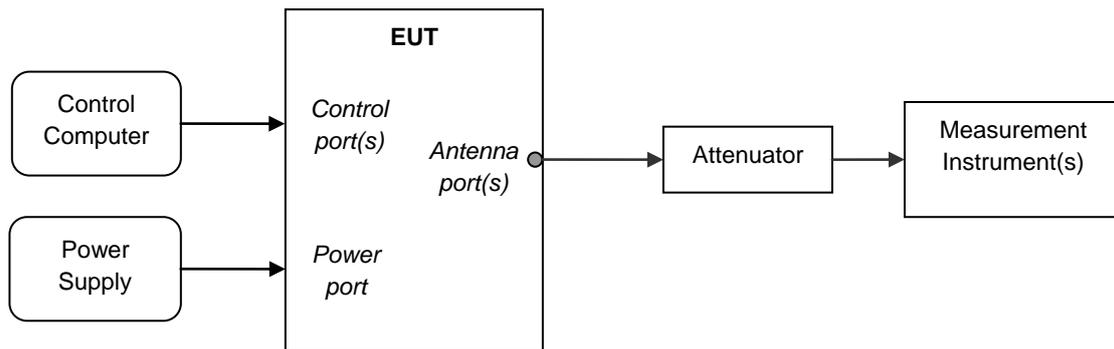
TN= normal temperature

5.4 Test Setup

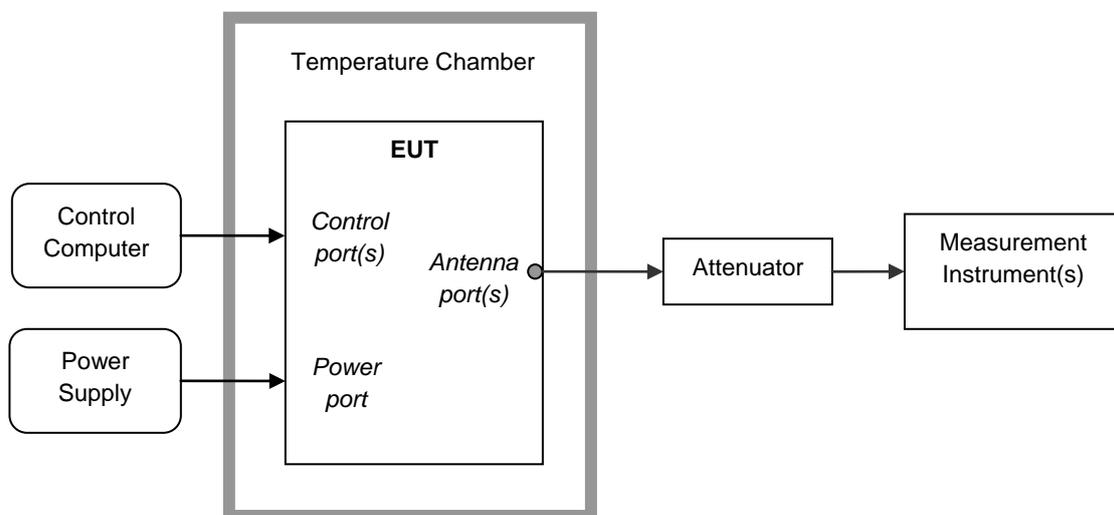
5.4.1 General Test Setup Configurations

| 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



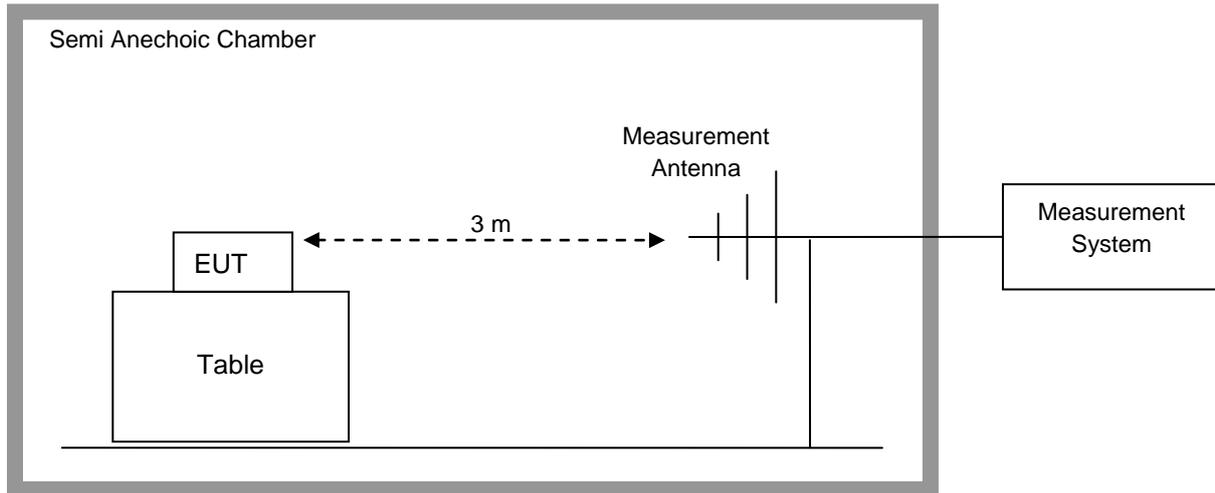
5.4.4 Test Setup 3

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.

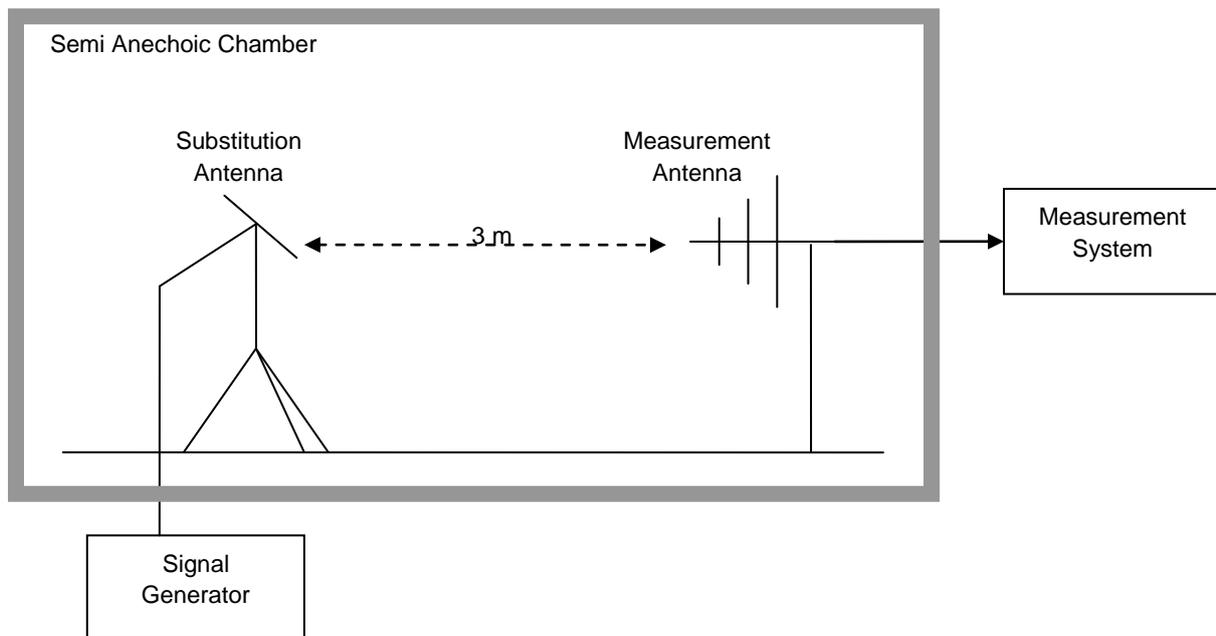
Step 1: Pre-test to find the Maximum ERP or EIRP

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



| Test Case | Test Conditions | |
|-----------|-----------------|-----|
| | Test Mode | TM1 |



6 Main Test Instruments

Table 3 Main Test Equipments

| Equipment Description | Manufacturer | Model | Serial Number | Calibrated until |
|---|--------------|-----------|---------------|------------------|
| Power supply | KEITHLEY | 2303 | 1288003 | Sept., 26,2013 |
| Universal Radio Communication Tester | R&S | CMU200 | 117341 | Jan., 12,2013 |
| Universal Radio Communication Tester | Agilent | E5515C | MY50260239 | Nov., 09,2013 |
| Spectrum Analyzer | Agilent | E4440A | MY49420179 | Jul., 17,2013 |
| Signal Analyzer | R&S | FSQ31 | 200021 | Nov., 09,2013 |
| 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 | Field Strength of Spurious Radiation | Appendix F |
| 7 | Frequency Stability | Appendix G |
| 8 | Photos of Test Setup | 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) U=3.0 dB (above 1 GHz) |
| Frequency Stability | Frequency Accuracy (ppm) | U=0.21 ppm |

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



Appendix A

Transmitter Output Power According to FCC Part 2.1046 & Part 27 Subpart C&L



Conducted Power of Transmitter

Table 1 Measurement Results

| TEST CONDITIONS | | RF Output Power (Conducted) | | | | | |
|---------------------|-------|-----------------------------|-------|-----------------|-------|-----------------|-------|
| | | Channel 1312(L) | | Channel 1412(M) | | Channel 1513(H) | |
| | | 1712.4MHz | | 1732.4MHz | | 1752.6MHz | |
| | | dBm | | dBm | | dBm | |
| T_{nom} / V_{nom} | | Measured | Limit | Measured | Limit | Measured | Limit |
| TM1 | | 23.59 | 30 | 23.35 | 30 | 23.52 | 30 |
| TM2 | Case1 | 23.28 | 30 | 23.02 | 30 | 23.16 | 30 |
| | Case2 | 22.03 | 30 | 21.79 | 30 | 21.93 | 30 |
| | Case3 | 21.71 | 30 | 21.46 | 30 | 21.62 | 30 |
| | Case4 | 21.44 | 30 | 21.19 | 30 | 21.34 | 30 |
| TM3 | Case1 | 22.3 | 30 | 22.08 | 30 | 22.19 | 30 |
| | Case2 | 20.26 | 30 | 19.99 | 30 | 20.09 | 30 |
| | Case3 | 21.05 | 30 | 20.83 | 30 | 20.91 | 30 |
| | Case4 | 20.41 | 30 | 20.19 | 30 | 20.34 | 30 |
| | Case5 | 22.55 | 30 | 22.24 | 30 | 22.4 | 30 |



Peak-to-Average Ratio

| TEST CONDITIONS | | RF Output Power (Conducted) | | | | | |
|---------------------|-------|-----------------------------|-------|-----------------|-------|-----------------|-------|
| | | Channel 1312(L) | | Channel 1412(M) | | Channel 1513(H) | |
| | | 1712.4MHz | | 1732.4MHz | | 1752.6MHz | |
| | | dB | | dB | | dB | |
| T_{nom} / V_{nom} | | Measured | Limit | Measured | Limit | Measured | Limit |
| TM1 | | 3.02 | 13 | 3.09 | 13 | 3.11 | 13 |
| TM2 | Case1 | 2.93 | 13 | 3.05 | 13 | 2.98 | 13 |
| | Case2 | 2.83 | 13 | 2.86 | 13 | 2.78 | 13 |
| | Case3 | 2.61 | 13 | 2.60 | 13 | 2.53 | 13 |
| | Case4 | 2.55 | 13 | 2.62 | 13 | 2.58 | 13 |
| TM3 | Case1 | 2.68 | 13 | 2.83 | 13 | 2.74 | 13 |
| | Case2 | 2.49 | 13 | 2.39 | 13 | 2.63 | 13 |
| | Case3 | 2.67 | 13 | 2.74 | 13 | 2.77 | 13 |
| | Case4 | 2.35 | 13 | 2.49 | 13 | 2.59 | 13 |
| | Case5 | 2.86 | 13 | 2.92 | 13 | 2.79 | 13 |



Efficient Isotropic Radiated Power (EIRP)

Table 2 Substitution Results

| Test Mode | Freq. [MHz] | Meas. Level [dBm] | Substitution Antenna Type | SGP [dBm] | Substitution Gain [dBi] | Cable Loss [dB] | Substitution Level (EIRP) [dBm] | Limit [dBm] | Result |
|-----------|-------------|-------------------|---------------------------|-----------|-------------------------|-----------------|---------------------------------|-------------|--------|
| TM1 | 1712.4 | 23.59 | Horn Ant. | 19.89 | 4.5 | 1 | 23.39 | 30 | Pass |
| TM1 | 1732.4 | 23.35 | Horn Ant. | 19.85 | 4.5 | 1 | 23.35 | 30 | Pass |
| TM1 | 1752.6 | 23.52 | Horn Ant. | 19.52 | 4.8 | 1 | 23.32 | 30 | Pass |

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

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

b, SGP=Signal Generator Level

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



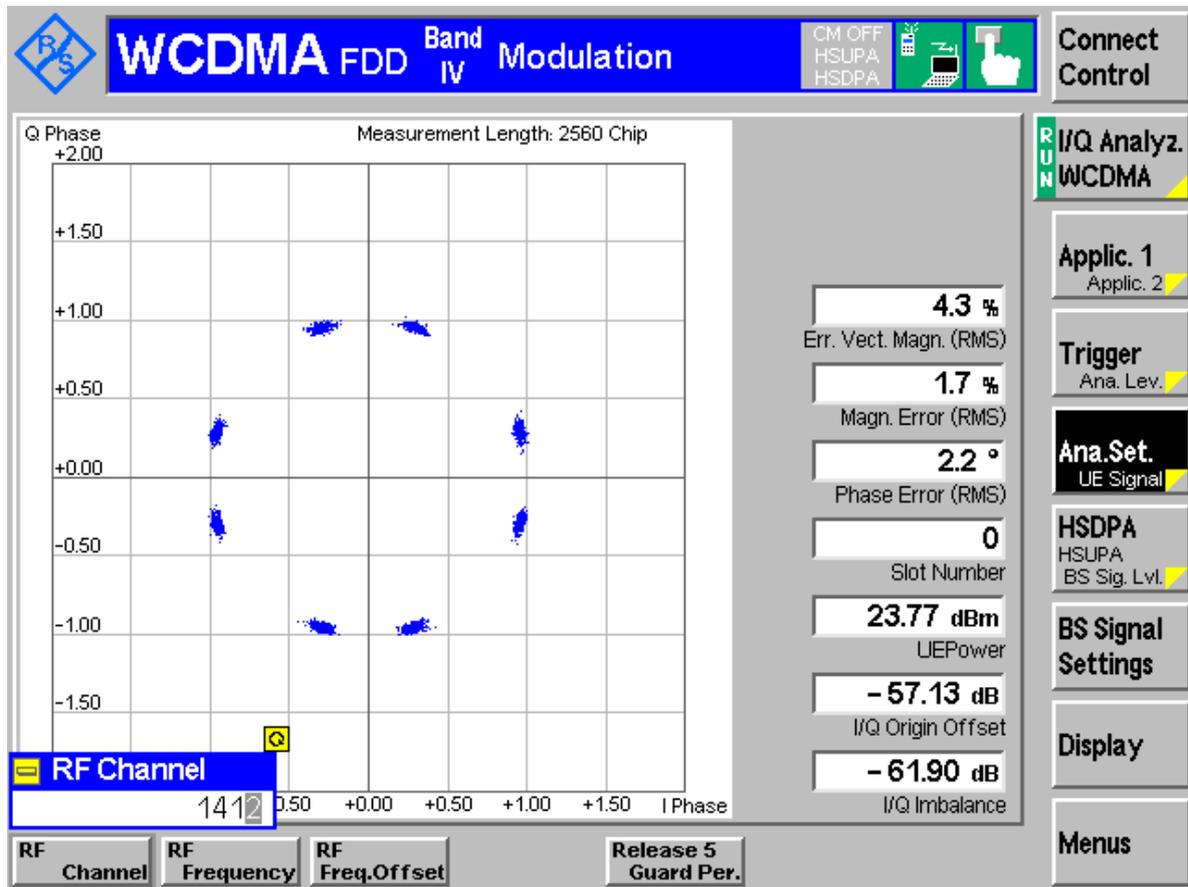
Appendix B

Modulation Characteristics

According to FCC Part 2.1047 & Part 27 Subpart C&L



TM1: WCDMA Channel 1412



-----END-----



Appendix C

Occupied Bandwidth

According to FCC Part 2.1049 & Part 27 Subpart C&L



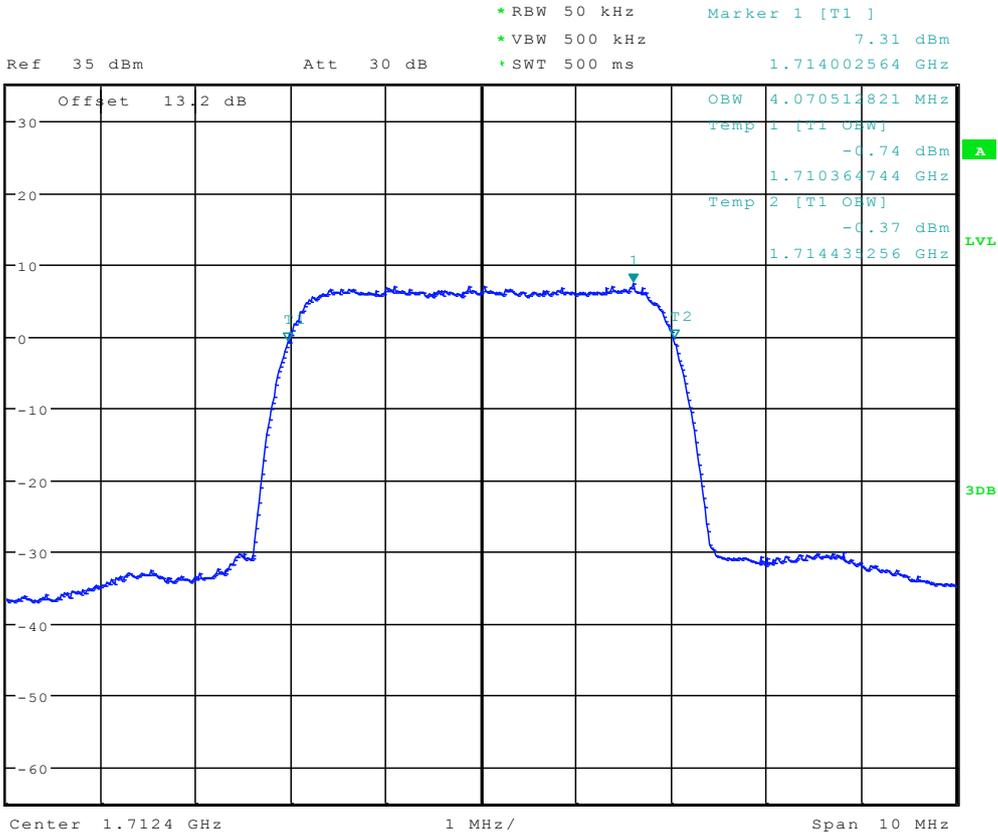
Result Table

Table 1 Measurement Results

| Test Mode | RF Channel | Occupied Bandwidth [MHz] | Verdict |
|-----------|------------|--------------------------|---------|
| TM1 | 1312 | 4.07 | Pass |
| | 1412 | 4.07 | Pass |
| | 1513 | 4.07 | Pass |



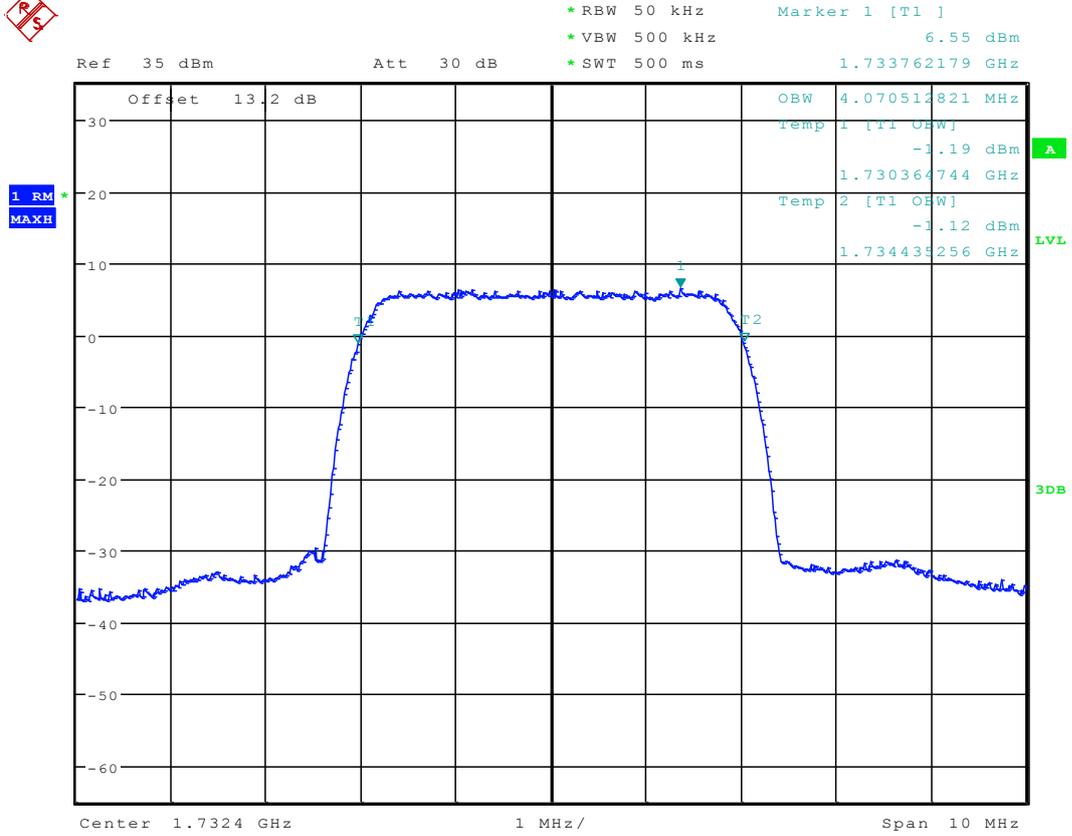
TM1: WCDMA Channel 1312



Date: 7.NOV.2012 14:01:22



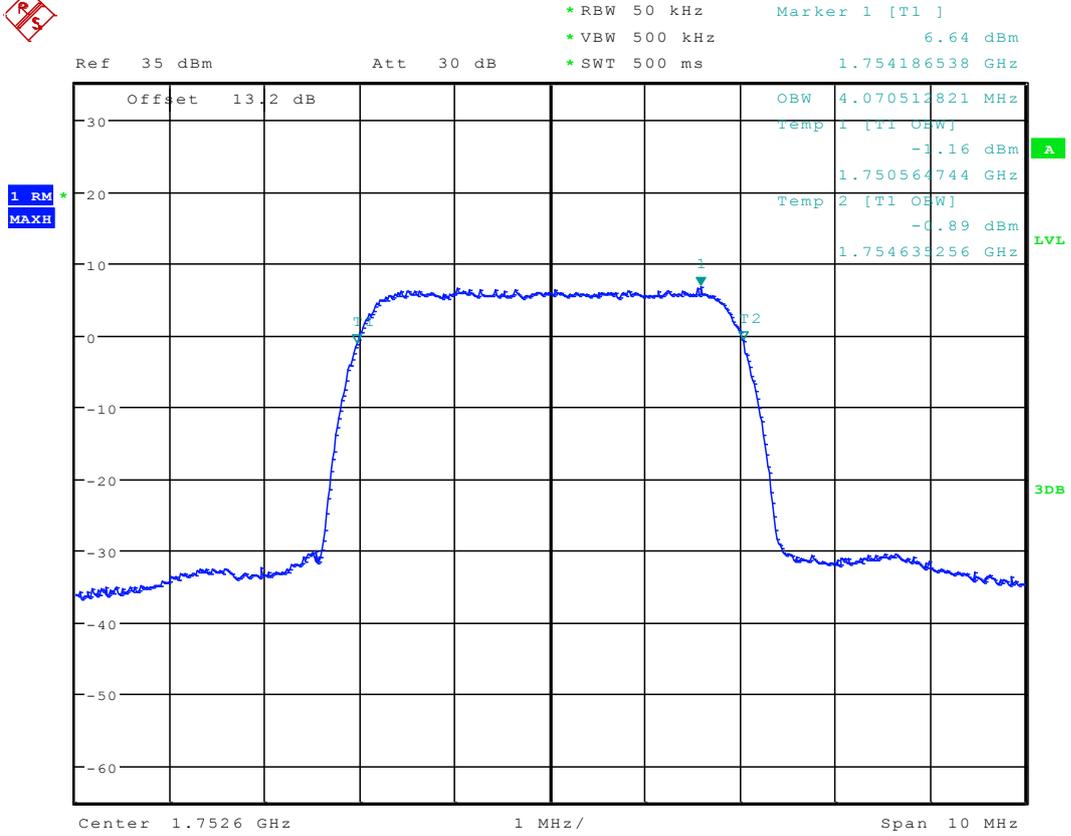
Channel 1412



Date: 7.NOV.2012 14:01:35



Channel 1513



Date: 7.NOV.2012 14:01:49

END



Appendix D

Band Edges Compliance

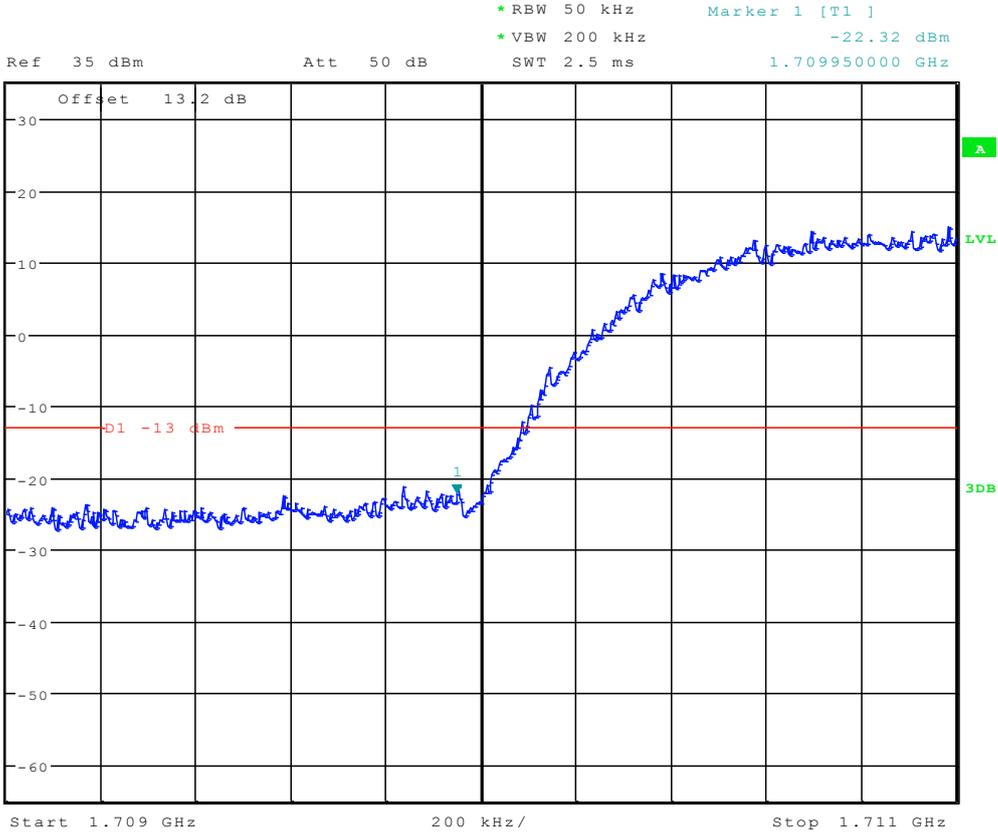
According to FCC Part 2.1051 & Part 27 Subpart C&L



TM1: WCDMA

Left Edge

Channel 1312



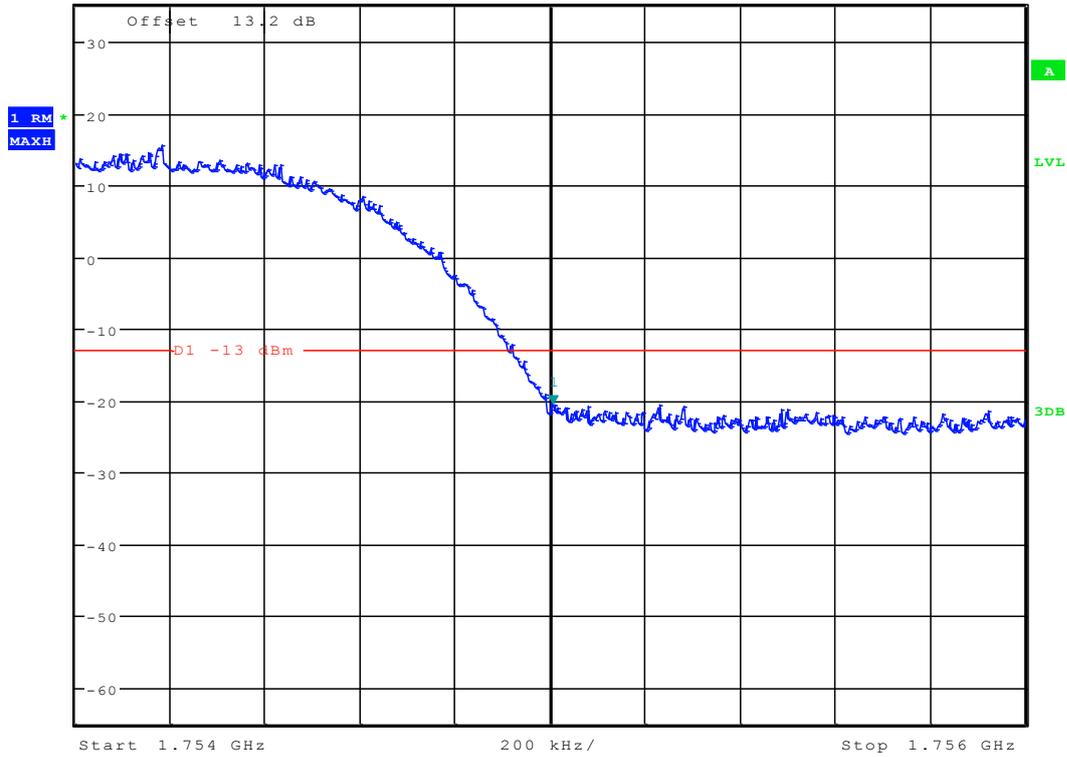
Date: 7.NOV.2012 14:02:03



Right Edge Channel 1513



Ref 35 dBm Att 50 dB * RBW 50 kHz Marker 1 [T1] -20.47 dBm
* VBW 200 kHz SWT 2.5 ms 1.755005000 GHz



Date: 7.NOV.2012 14:02:17

~~END~~

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Appendix E

Spurious Emission at Antenna Terminal

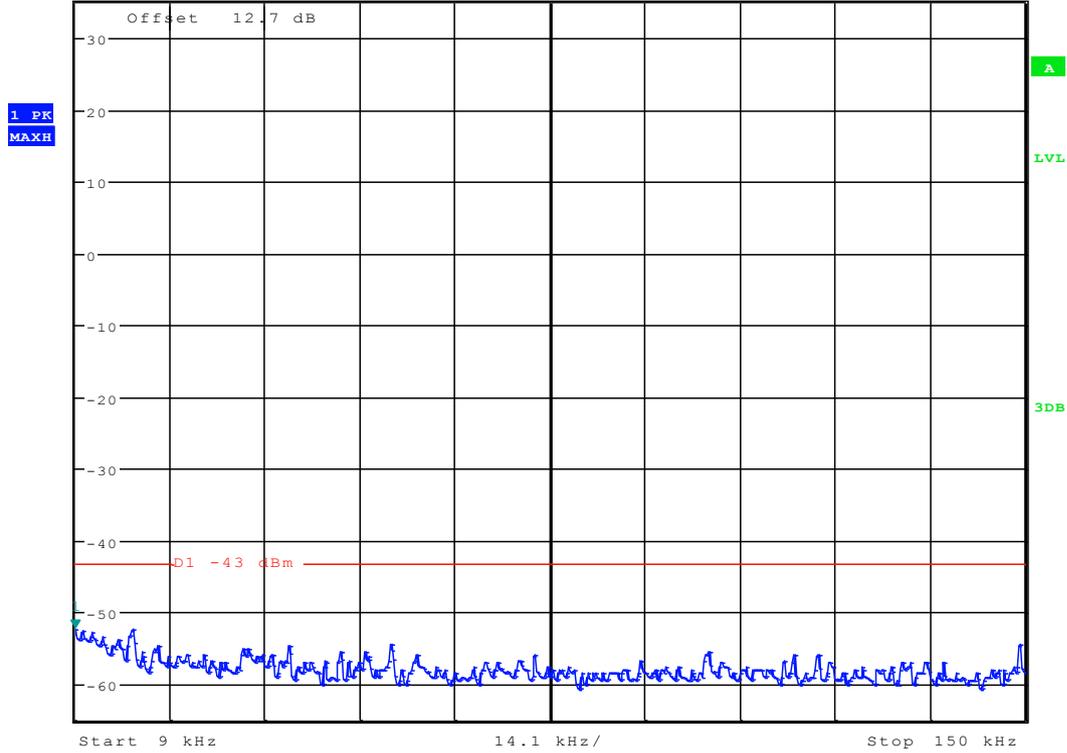
According to FCC Part 2.1051 & Part 27 Subpart C&L



TM1: WCDMA Channel 1312



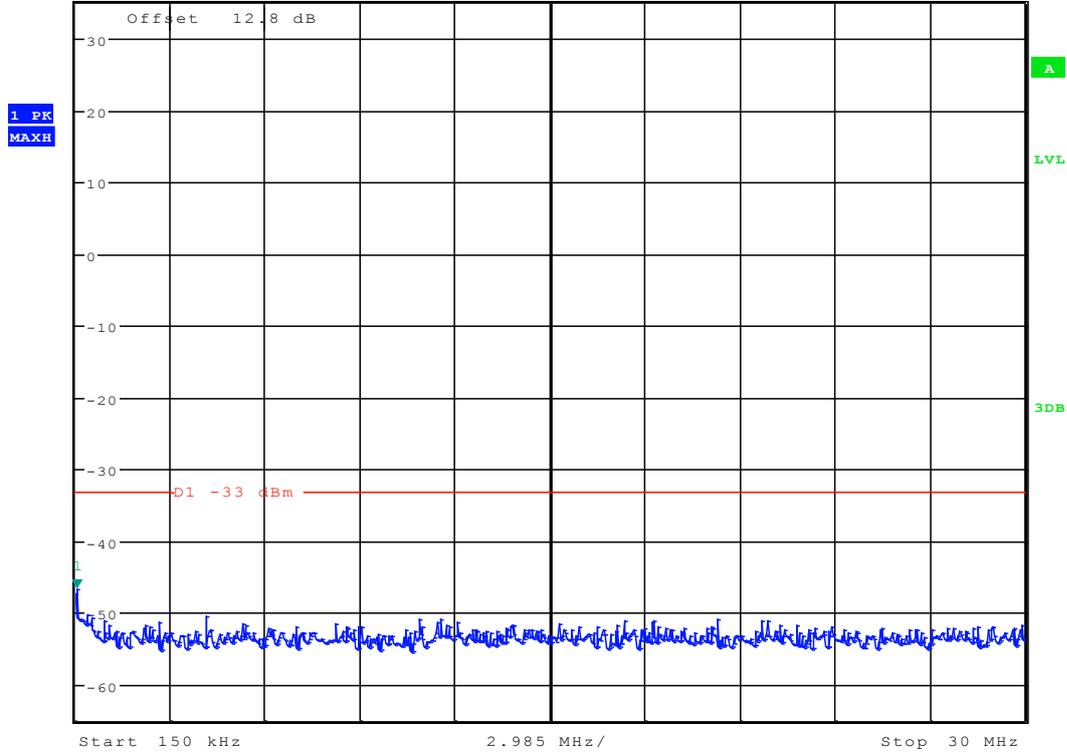
*RBW 1 kHz Marker 1 [T1]
*VBW 10 kHz -52.28 dBm
Ref 35 dBm *Att 35 dB SWT 145 ms 9.000000000 kHz



Date: 7.NOV.2012 14:02:32



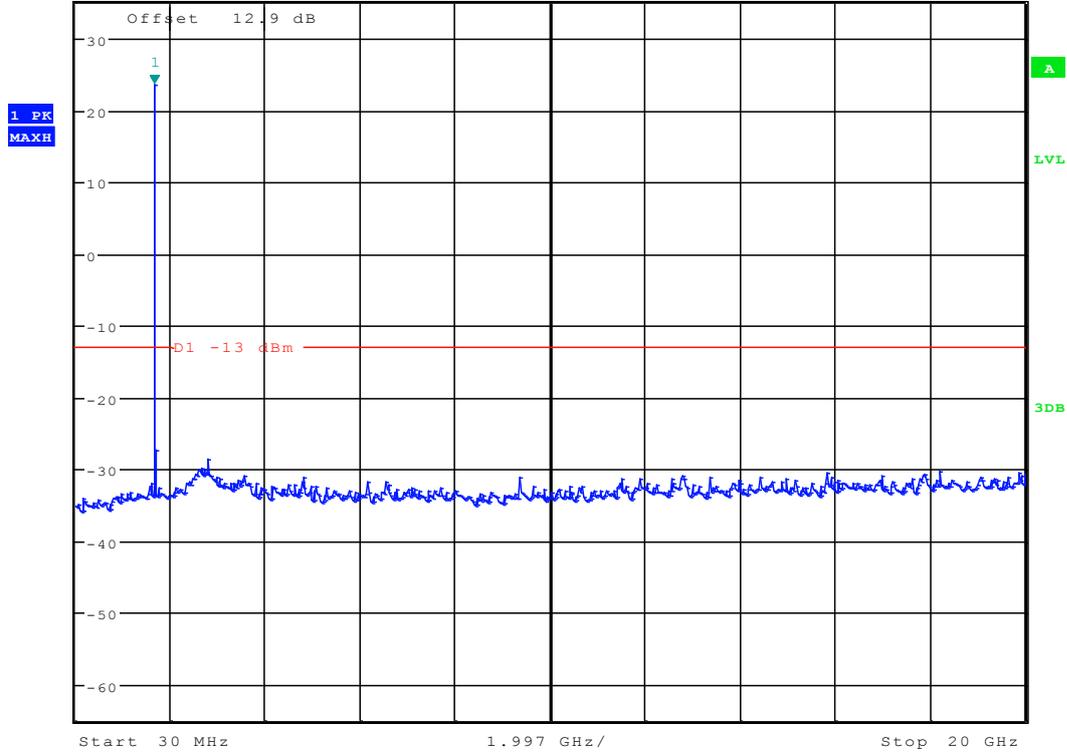
* RBW 10 kHz Marker 1 [T1]
* VBW 30 kHz -46.53 dBm
Ref 35 dBm * Att 35 dB SWT 300 ms 197.836538462 kHz



Date: 7.NOV.2012 14:03:16



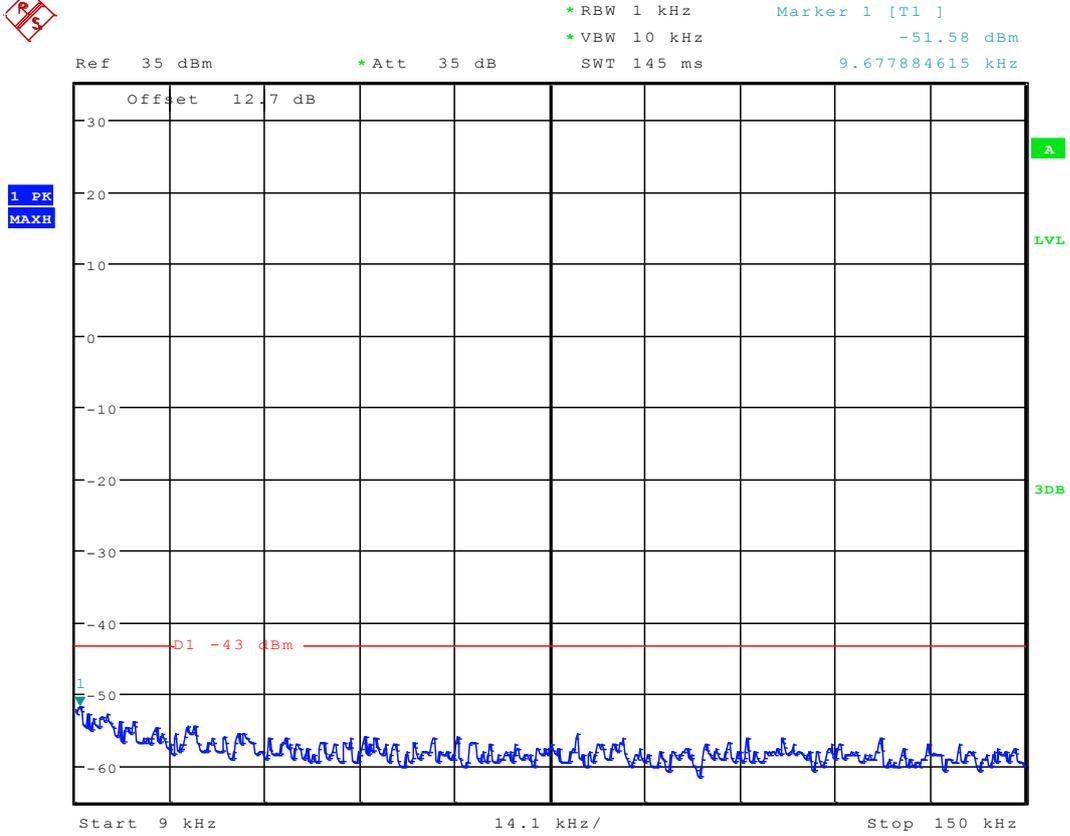
* RBW 1 MHz Marker 1 [T1]
* VBW 3 MHz 23.58 dBm
Ref 35 dBm * Att 35 dB SWT 115 ms 1.694166667 GHz



Date: 7.NOV.2012 14:04:00



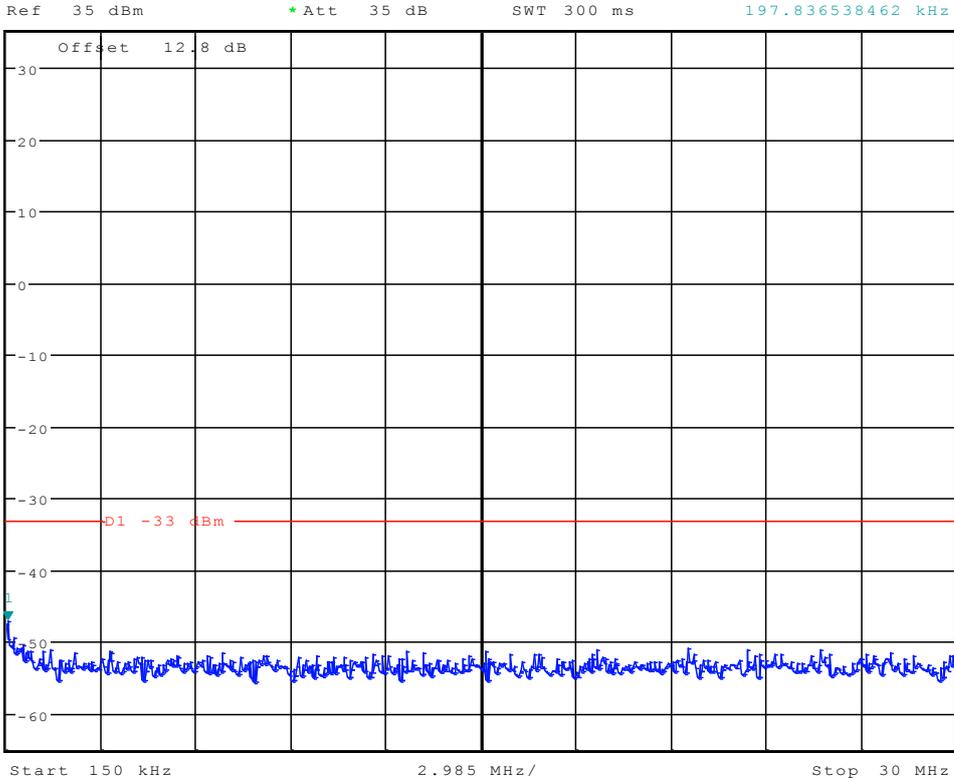
Channel 1412



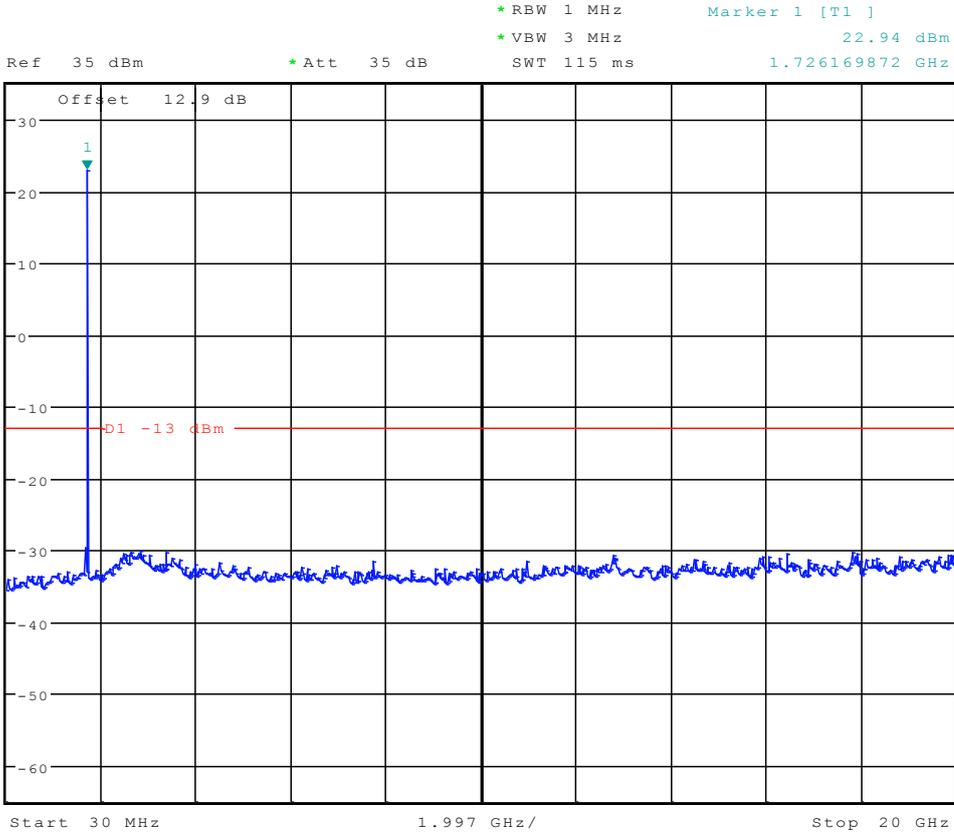
Date: 7.NOV.2012 14:02:46



* RBW 10 kHz Marker 1 [T1]
* VBW 30 kHz -47.03 dBm
SWT 300 ms 197.836538462 kHz



Date: 7.NOV.2012 14:03:30



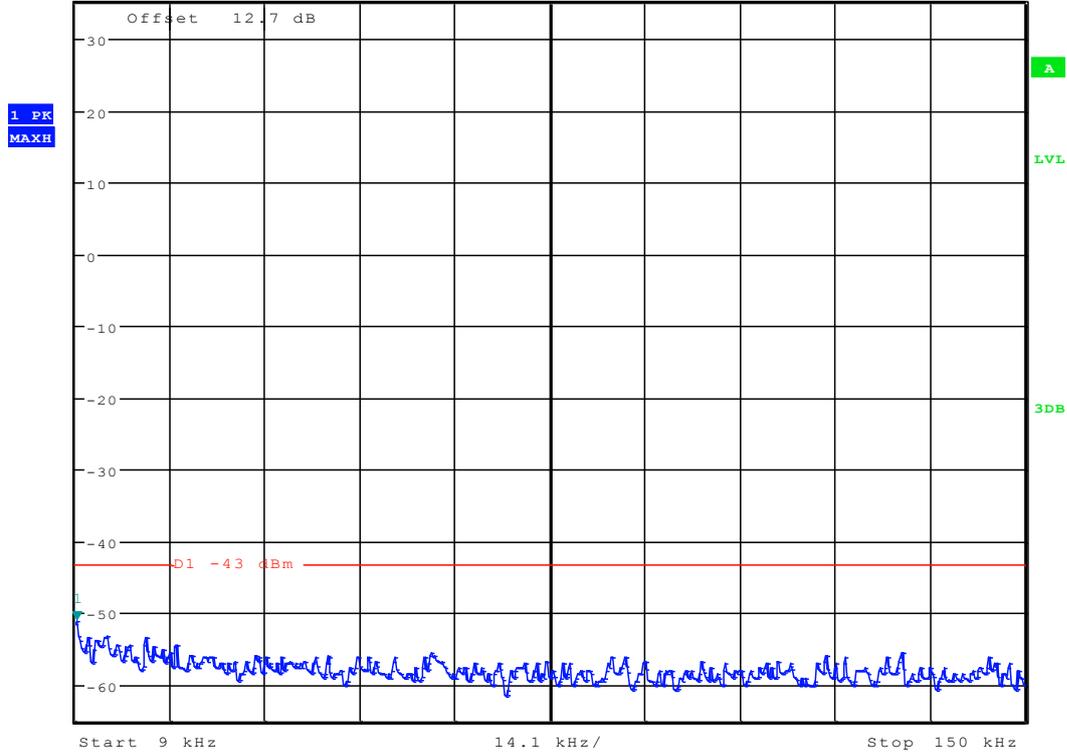
Date: 7.NOV.2012 14:04:14



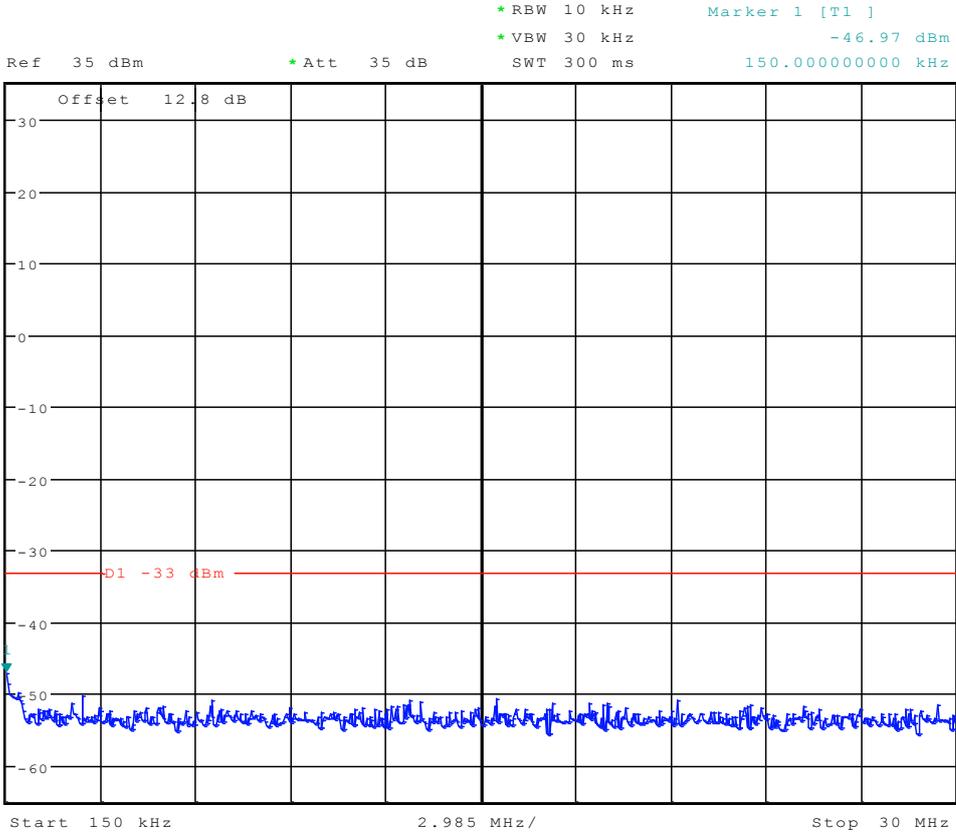
Channel 1513



*RBW 1 kHz Marker 1 [T1]
*VBW 10 kHz -51.12 dBm
Ref 35 dBm *Att 35 dB SWT 145 ms 9.225961538 kHz



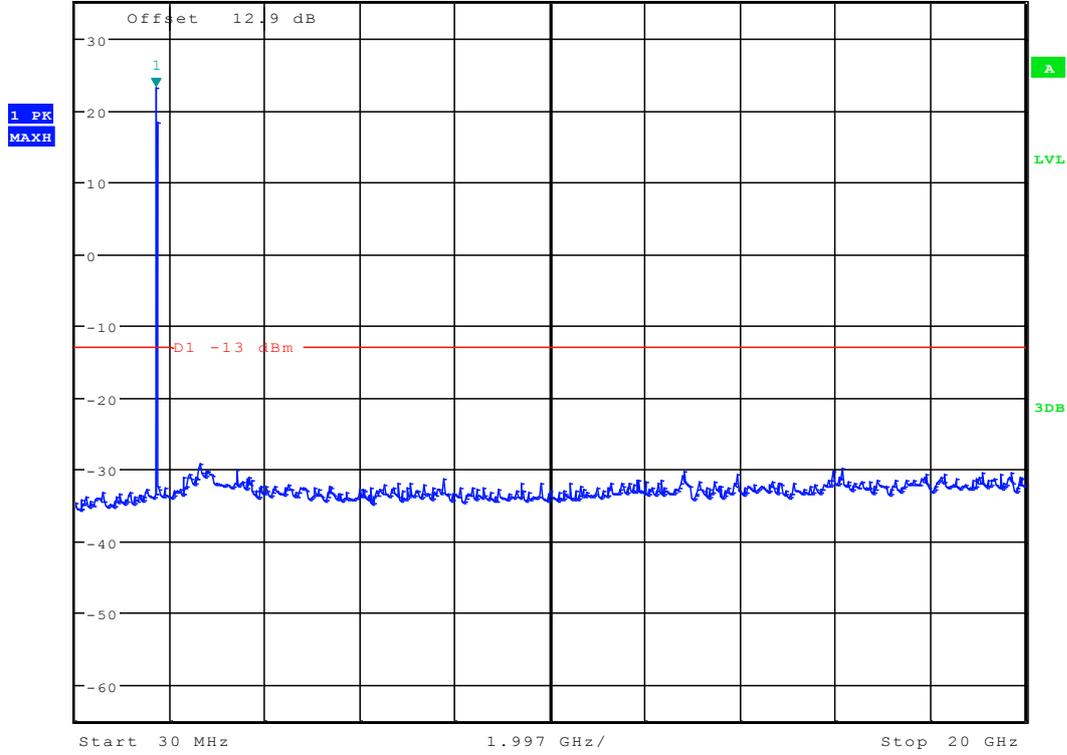
Date: 7.NOV.2012 14:03:01



Date: 7.NOV.2012 14:03:44



*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 23.19 dBm
Ref 35 dBm *Att 35 dB SWT 115 ms 1.726169872 GHz



Date: 7.NOV.2012 14:04:28

END

=



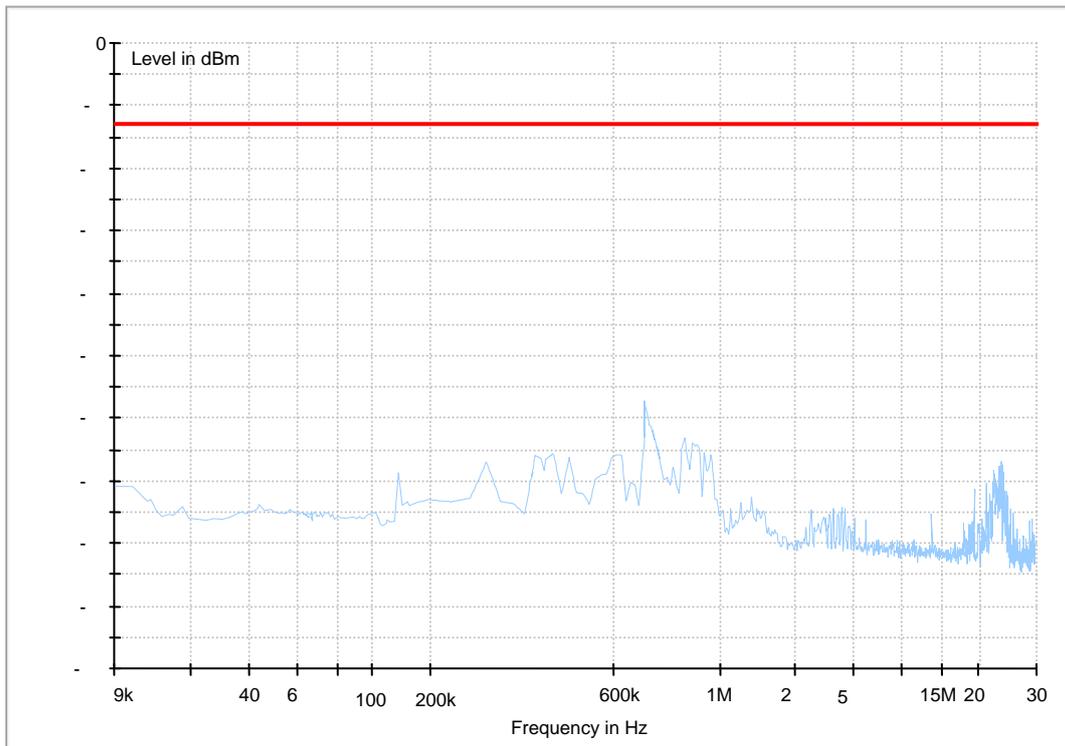
Appendix F

Radiated spurious emission

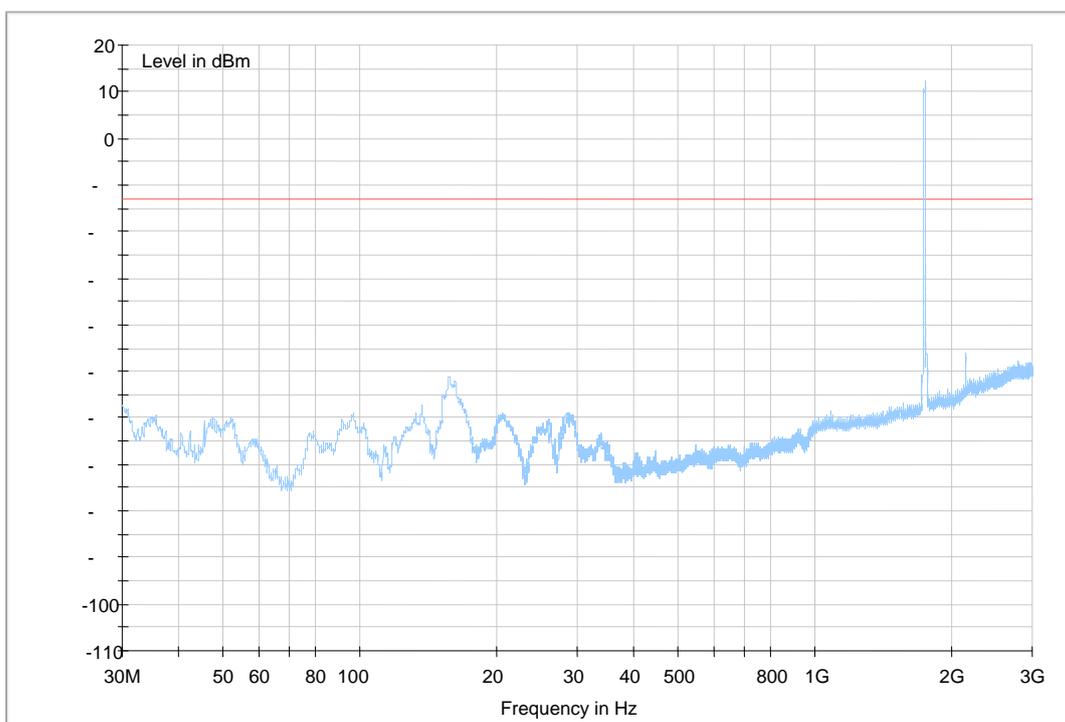


WCDMA AWS

Traffic Mode (9kHz-30MHz)

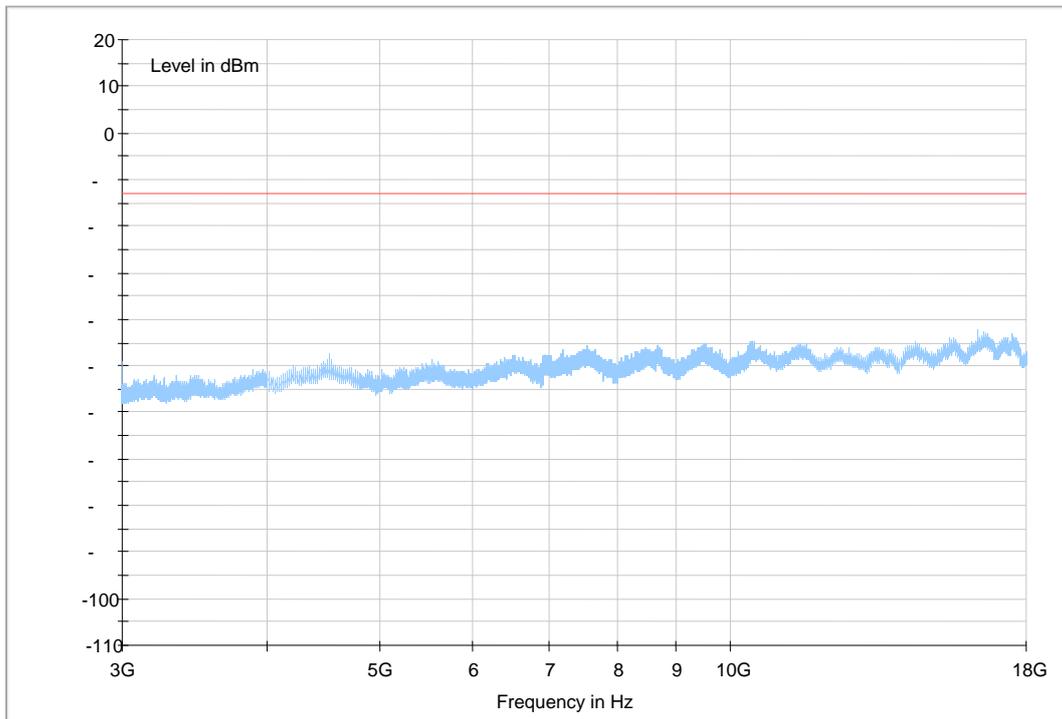


Traffic Mode (30MHz-3GHz)



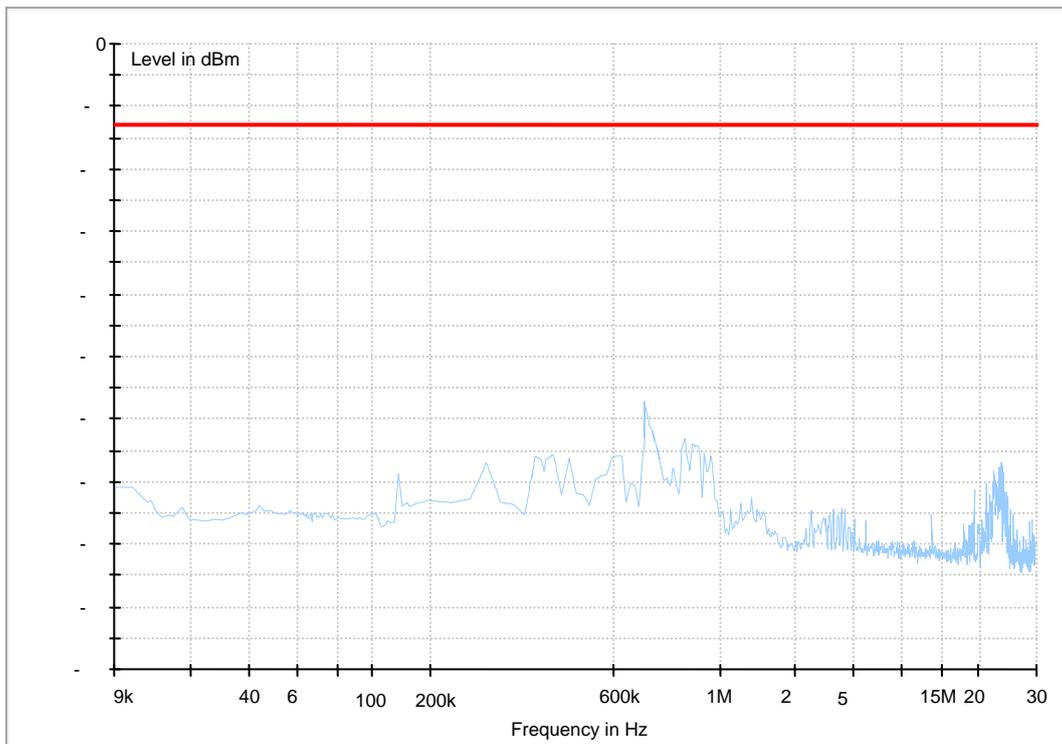


Traffic Mode (3GHz-18GHz)



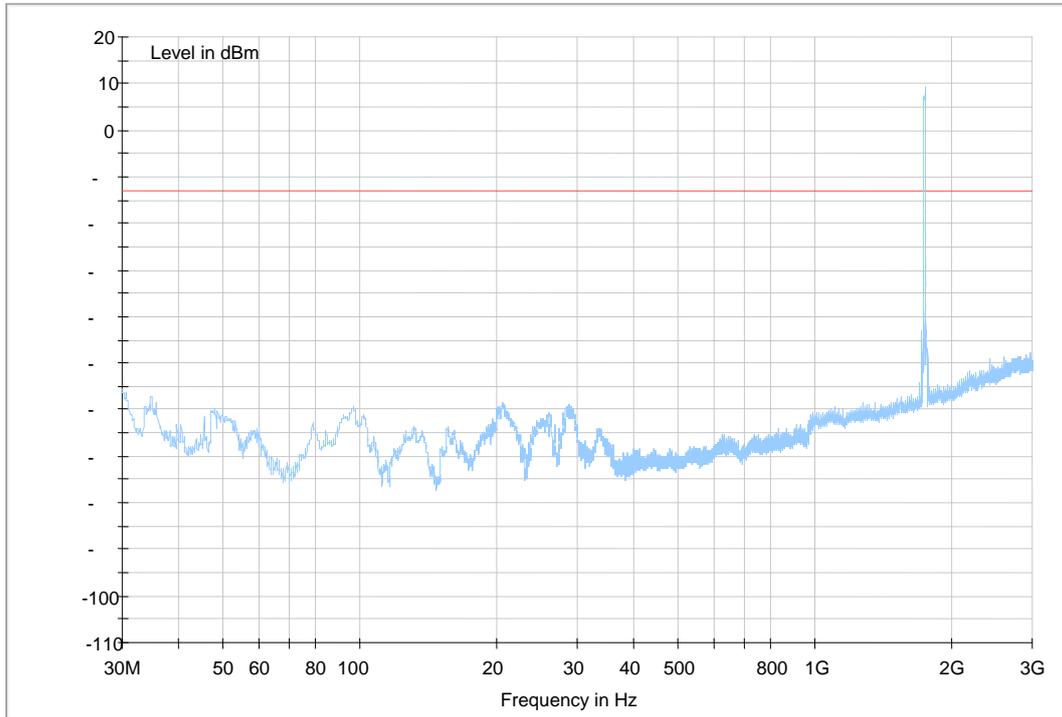
HSDPA AWS

Traffic Mode (9kHz-30MHz)

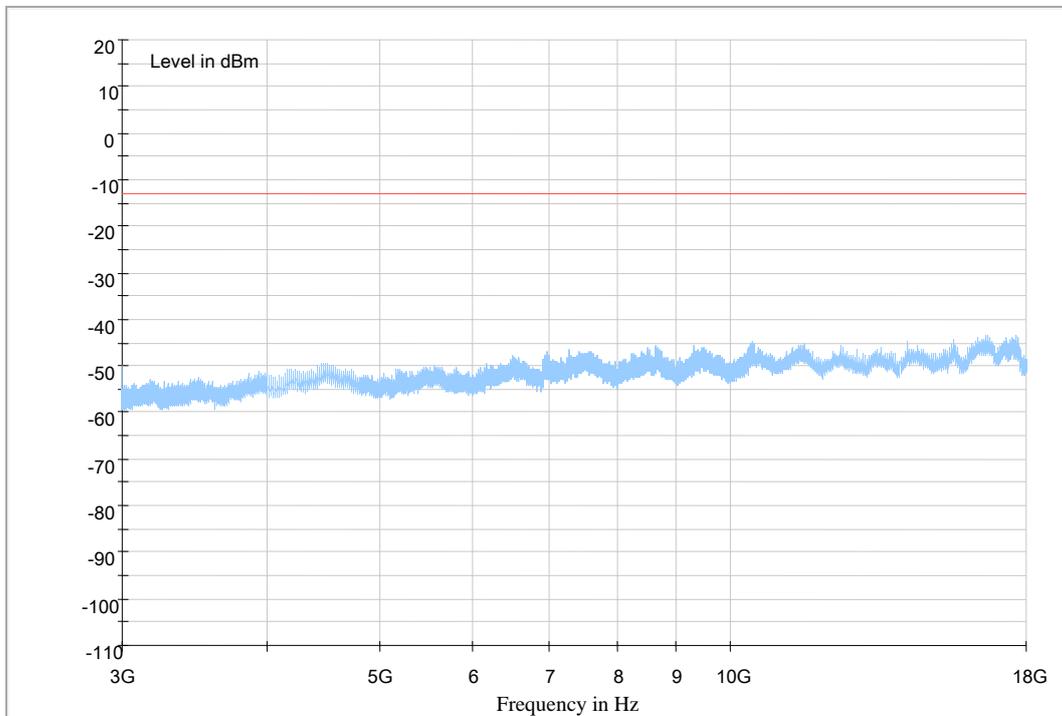




Traffic Mode (30MHz-3GHz)



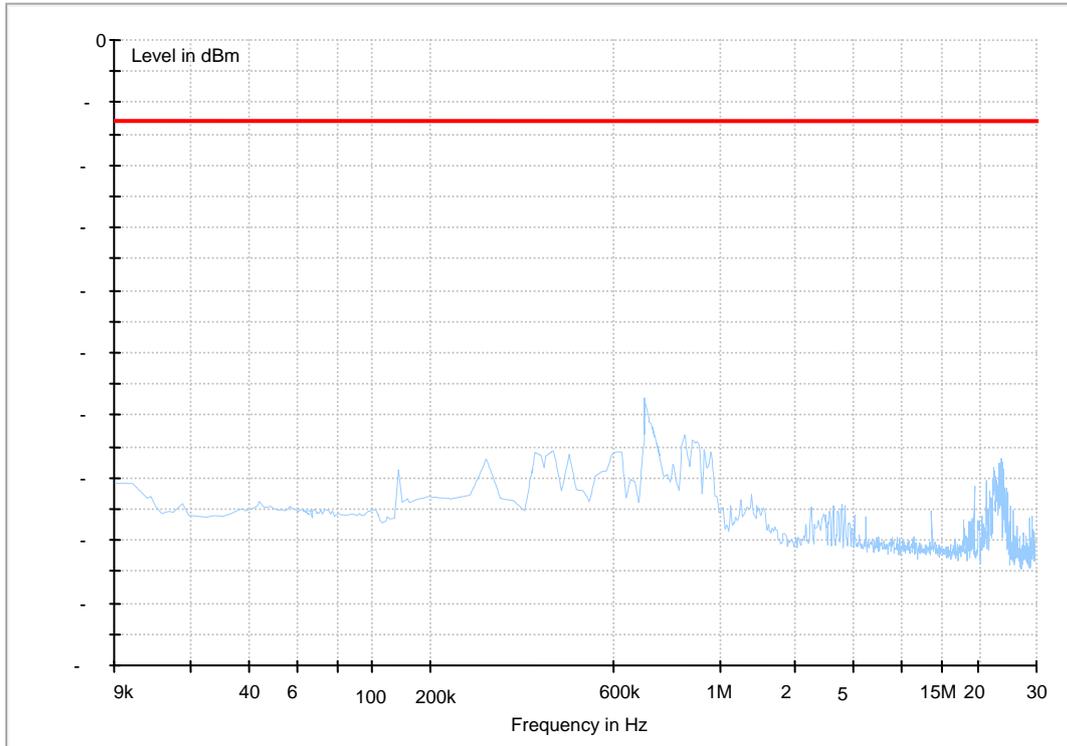
Traffic Mode (3GHz-18GHz)



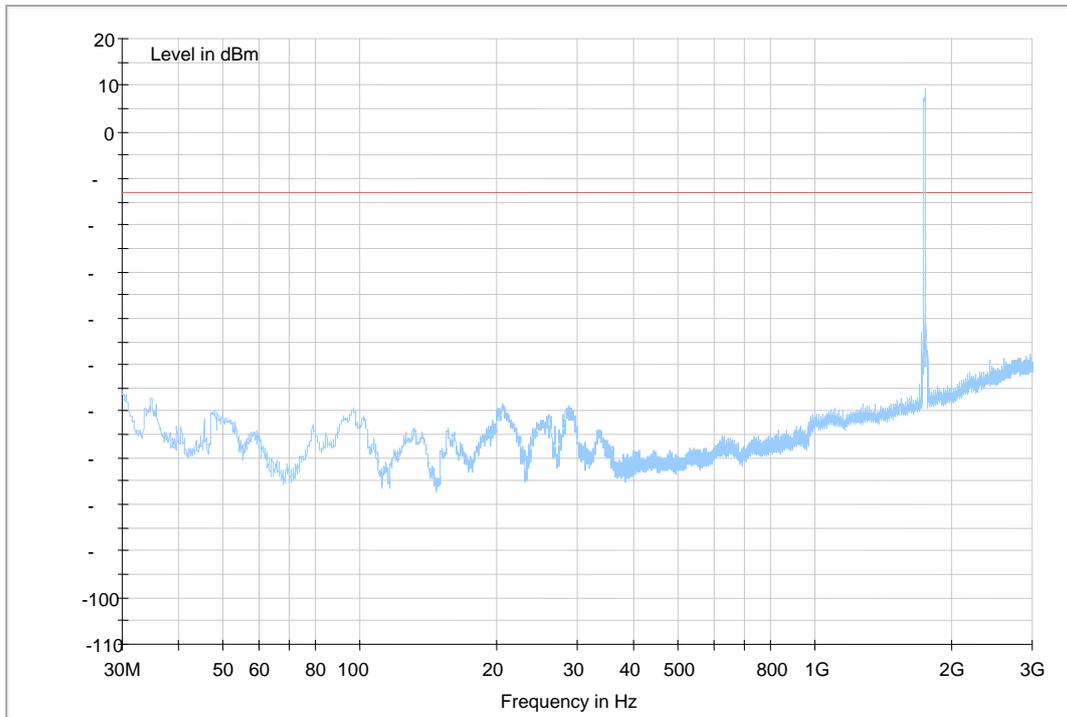


HSUPA AWS

Traffic Mode (9kHz-30MHz)

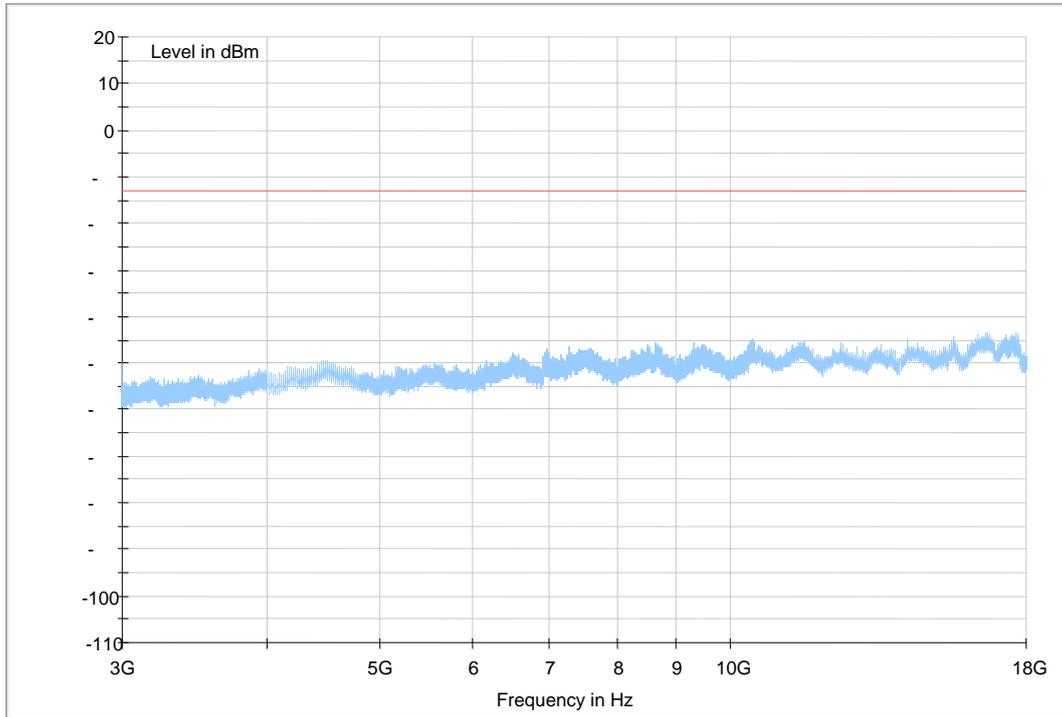


Traffic Mode (30MHz-3GHz)





Traffic Mode (3GHz-18GHz)





Appendix G

Frequency Stability According to FCC Part 2.1055 & Part 27.54



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 | 16 | 0.00924 | --- | ±2.5 | Pass |
| | | | -20 °C | 12 | 0.00693 | --- | ±2.5 | Pass |
| | | | -10 °C | -17 | -0.00981 | --- | ±2.5 | Pass |
| | | | 0 °C | 9 | 0.00520 | --- | ±2.5 | Pass |
| | | | 10 °C | -11 | -0.00635 | --- | ±2.5 | Pass |
| | | | 20 °C | -24 | -0.01385 | --- | ±2.5 | Pass |
| | | | 30 °C | 11 | 0.00635 | --- | ±2.5 | Pass |
| | | | 40 °C | -19 | -0.01097 | --- | ±2.5 | Pass |
| | | | 50 °C | -16 | -0.00924 | --- | ±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 | VL | -7 | -0.00404 | --- | ±2.5 | Pass |
| | | | VN | 10 | 0.00577 | --- | ±2.5 | Pass |
| | | | VH | 8 | 0.00462 | --- | ±2.5 | Pass |

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