## FCC 47 CFR PART 22 SUBPART H AND PART 24 SUBPART E

# TEST REPORT

**For**

**GPS Mini Tracker**

**Model:**
**MT-900C, MT-900CA, MT-900CE, MT-900CF, MT-900CM, MT-900U, MT-900UA, MT-900UE, MT-900UF, MT-900UM, MT-900L, MT-900LM, MT-900D, MT-900I, MT-900K, MT-900R, MT-900S, MT-900Z, MT-900II, MT-900Pro, MT-900Adv, UT-900, UT-900C, UT-900CA, UT-900CE, UT-900CF**

**Trade Name: UniTraQ**

*Issued to*

**UniTraQ International Corp.**
**2F, No.136, Ziqiang S, Rd., Zhubei City, Hsinchu 30264, Taiwan**

*Issued by*

**Compliance Certification Services Inc.**
**No.11, Wugong 6th Rd., Wugu Dist.,**
**New Taipei City 24891, Taiwan. (R.O.C.)**
**http://www.ccsrf.com**
**service@ccsrf.com**
**Issued Date: October 17, 2013**

Testing Laboratory
1309

## Revision History

| Rev. | | Issue Date | | Revisions | Effect Page | Revised By |
|---|---|---|---|---|---|---|
| 00 | | October 17, 2013 | | Initial Issue | ALL | Eunice Shen |

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# 1. TEST RESULT CERTIFICATION

| | |
|---|---|
| **Applicant:** | UniTraQ International Corp.<br>2F, No.136, Ziqiang S, Rd., Zhubei City, Hsinchu 30264, Taiwan |
| **Equipment Under Test:** | GPS Mini Tracker |
| **Trade Name:** | UniTraQ |
| **Model Number:** | MT-900C, MT-900CA, MT-900CE, MT-900CF, MT-900CM, MT-900U, MT-900UA, MT-900UE, MT-900UF, MT-900UM, MT-900L, MT-900LM, MT-900D, MT-900I, MT-900K, MT-900R, MT-900S, MT-900Z, MT-900II, MT-900Pro, MT-900Adv, UT-900, UT-900C, UT-900CA, UT-900CE, UT-900CF |
| **Date of Test:** | July 31 ~ September 25, 2013 |

| **APPLICABLE STANDARDS** | |
|---|---|
| **STANDARD** | **TEST RESULT** |
| FCC 47 CFR Part 22 Subpart H &<br>Part 24 Subpart E | No non-compliance noted |

## We hereby certify that:

The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in TIA/EIA-603-C: 2004 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rule FCC PART 22 Subpart H and PART 24 Subpart E.

The test results of this report relate only to the tested sample identified in this report.

*Approved by:*

Miller Lee
Section Manager
Compliance Certification Services Inc.

*Reviewed by:*

Angel Cheng
Section Manager
Compliance Certification Services Inc.

# 2. EUT DESCRIPTION

| | |
|---|---|
| **Product** | GPS Mini Tracker |
| **Trade Name** | UniTraQ |
| **Model Number** | MT-900C, MT-900CA, MT-900CE, MT-900CF, MT-900CM, MT-900U, MT-900UA, MT-900UE, MT-900UF, MT-900UM, MT-900L, MT-900LM, MT-900D, MT-900I, MT-900K, MT-900R, MT-900S, MT-900Z, MT-900II, MT-900Pro, MT-900Adv, UT-900, UT-900C, UT-900CA, UT-900CE, UT-900CF |
| **Model Discrepancy** | All the specification and layout are identical except they come with different Software features and model numbers. |
| **Received Date** | August 15, 2013 |
| **Power Supply** | 1. Power from host PC<br>2. Power from Battery<br>Trade Name: SANYO<br>Model Number: UF652436F<br>Power rating: 4.2V |
| **Frequency Range** | WCDMA / HSDPA / HSUPA Band II: 1852.4 ~ 1907.6 MHz<br>WCDMA / HSDPA / HSUPA Band V: 826.4 ~ 846.6MHz |
| **Modulation Technique** | QPSK |
| **Antenna Gain** | Band II: 0.79 dBi<br>Band V : -10.16 dBi |
| **Antenna Type** | PCB Antenna |

***Remark:***

1. *The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.*
2. *This submittal(s) (test report) is intended for **FCC ID: UNU-MT900-C-L-U-M** filing to comply with Part 22 and Part 24 of the FCC 47 CFR Rules.*

| Mode | ERP Power (dBm) | ERP Power (w) | Type of Emission (99% Bandwidth) | Type of Emission (Occupied Bandwidth) |
|---|---|---|---|---|
| **WCDMA Band II** | 13.87 | 0.0244 | 4M21F9W | 4M67F9W |
| **WCDMA Band V** | 14.37 | 0.0274 | 4M20F9W | 4M67F9W |
| **WCDMA HSDPA Band II** | 14.15 | 0.0260 | 4M16F9W | 4M67F9W |
| **WCDMA HSDPA Band V** | 14.36 | 0.0273 | 4M17F9W | 4M66F9W |
| **WCDMA HSUPA Band II** | 14.02 | 0.0252 | 4M16F9W | 4M66F9W |
| **WCDMA HSUPA Band V** | 14.23 | 0.0265 | 4M18F9W | 4M66F9W |

# 3. TEST METHODOLOGY

Both conducted and radiated testing were performed according to the procedures document on chapter 13 of ANSI C63.4: 2009, TIA/EIA-603-C: 2004 and FCC CFR 47, Part 2, PART 22 SUBPART H AND PART 24 SUBPART E

## 3.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

## 3.2 EUT EXERCISE

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

## 3.3 GENERAL TEST PROCEDURES

**Conducted Emissions**

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4: 2009.Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

**Radiated Emissions**

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4: 2009.

## 3.4 DESCRIPTION OF TEST MODES

The EUT (model: MT-900C) had been tested under operating condition.

EUT staying in continuous transmitting mode was programmed.

After verification, all tests carried out are with the worst-case test modes as shown below except radiated spurious emission below 1GHz which worst case was in normal link mode.

WCDMA Band II:
Channel Low (CH9262), Channel Mid (CH9400) and Channel High (CH9538) were chosen for full testing.

WCDMA Band V:
Channel Low (CH4132), Channel Mid (CH4182) and Channel High (CH4233) were chosen for full testing.

WCDMA / HSDPA Band II:
Channel Low (CH9262), Channel Mid (CH9400) and Channel High (CH9538) were chosen for full testing.
WCDMA / HSDPA Band V:
Channel Low (CH4132), Channel Mid (CH4182) and Channel High (CH4233) were chosen for full testing.

WCDMA / HSUPA Band II:
Channel Low (CH9262), Channel Mid (CH9400) and Channel High (CH9538) were chosen for full testing.

WCDMA / HSDPA Band V:
Channel Low (CH4132), Channel Mid (CH4182) and Channel High (CH4233) were chosen for full testing.

The worst emission was found:

in stand-up position (Z axis) for WCDMA Band V / HSDPA Band V / HSUPA Band V
and in lie-down (Y axis) for WCDMA Band II / HSDPA Band II / HSUPA Band II

# 4. INSTRUMENT CALIBRATION

## 4.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

## 4.2 MEASUREMENT EQUIPMENT USED

**Equipment Used for Emissions Measurement**

***Remark:*** *Each piece of equipment is scheduled for calibration once a year and Loop Antenna is scheduled for calibration once three years.*

| Conducted Emissions Test Site | | | | |
|---|---|---|---|---|
| **Name of Equipment** | **Manufacturer** | **Model** | **Serial Number** | **Calibration Due** |
| Spectrum Analyzer | Agilent | E4446A | MY43360131 | 03/20/2014 |
| Power Meter | Anritsu | ML2495A | 1012009 | 06/04/2014 |
| Power Sensor | Anritsu | MA2411A | 0917072 | 06/04/2014 |

| 3M Semi Anechoic Chamber | | | | |
|---|---|---|---|---|
| **Name of Equipment** | **Manufacturer** | **Model** | **Serial Number** | **Calibration Due** |
| Spectrum Analyzer | Agilent | E4446A | US42510268 | 11/06/2013 |
| EMI Test Receiver | R&S | ESCI | 100064 | 02/17/2014 |
| Pre-Amplifier | Mini-Circults | ZFL-1000LN | SF350700823 | 01/12/2014 |
| Bilog Antenna | Sunol Sciences | JB3 | A030105 | 02/17/2014 |
| Bilog Antenna | Sunol Sciences | JB3 | A030205 | 10/01/2014 |
| Horn Antenna | EMCO | 3117 | 00055165 | 02/17/2014 |
| Horn Antenna | EMCO | 3117 | 00055167 | 01/28/2014 |
| Horn Antenna | EMCO | 3116 | 26370 | 01/07/2014 |
| Loop Antenna | EMCO | 6502 | 8905/2356 | 06/12/2014 |
| Turn Table | CCS | CC-T-1F | N/A | N.C.R |
| Antenna Tower | CCS | CC-A-1F | N/A | N.C.R |
| Controller | CCS | CC-C-1F | N/A | N.C.R |
| Site NSA | CCS | N/A | N/A | 12/22/2013 |
| Test S/W | EZ-EMC (CCS-3A1RE) | | | |

## 4.3 MEASUREMENT UNCERTAINTY

| PARAMETER | UNCERTAINTY |
|---|---|
| 3M Semi Anechoic Chamber / 30M~200M | +/- 4.0138 |
| 3M Semi Anechoic Chamber / 200M~1000M | +/- 3.9483 |
| 3M Semi Anechoic Chamber / 1G~8G | +/- 2.5975 |
| 3M Semi Anechoic Chamber / 8G~18G | +/- 2.6112 |
| 3M Semi Anechoic Chamber / 18G~26G | +/- 2.7389 |
| 3M Semi Anechoic Chamber / 26G~40G | +/- 2.9683 |

***Remark**: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.*

# 5. FACILITIES AND ACCREDITATIONS

## 5.1 FACILITIES

☐ No.199, Chunghsen Road, Hsintien City, Taipei Hsien, Taiwan, R.O.C.

Tel: 886-2-2217-0894 / Fax: 886-2-2217-1029

☒ No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.)

Tel: 886-2-2299-9720 / Fax: 886-2-2298-4045

☐ No.81-1, Lane 210, Bade 2nd Rd., Lujhu Township, Taoyuan County 33841, TAIWAN, R.O.C.

Tel: 886-3-324-0332 / Fax: 886-3-324-5235

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

## 5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, “Radio Interference Measuring Apparatus and Measurement Methods.”

## 5.3 TABLE OF ACCREDITATIONS AND LISTINGS

| Country | Agency | Scope of Accreditation | Logo |
|---|---|---|---|
| USA | FCC | 3M Semi Anechoic Chamber (FCC MRA: TW1039) to perform FCC Part 15 measurements | FCC MRA: TW1039 |
| Taiwan | TAF | LP0002, RTTE01, FCC Method-47 CFR Part 15 Subpart C, D, E, RSS-210, RSS-310<br>IDA TS SRD, AS/NZS 4268, AS/NZS 4771, TS 12.1 & 12,2,<br>ETSI EN 300 440-1, ETSI EN 300 440-2, ETSI EN 300 328,<br>ETSI EN 300 220-1, ETSI EN 300 220-2, ETSI EN 301 893,<br>ETSI EN 301 489-1/3/7/17<br>FCC OET Bulletin 65 + Supplement C,<br>EN 50360, EN 50361, EN 50371, RSS 102, EN 50383, EN 50385,<br>EN 50392, IEC 62209, CNS 14958-1, CNS 14959<br>FCC Method –47 CFR Part 15 Subpart B<br>IEC / EN 61000-3-2, IEC / EN 61000-3-3,<br>IEC / EN 61000-4-2/3/4/5/6/8/11 | TAF Testing Laboratory 1309 |
| Canada | Industry Canada | 3M Semi Anechoic Chamber (IC 2324G-1 / IC 2324G-2) to perform | Canada<br>IC 2324G-1<br>IC 2324G-2 |

** No part of this report may be used to claim or imply product endorsement by A2LA or any agency of the US Government.*

# 6. SETUP OF EQUIPMENT UNDER TEST

## 6.1 SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix I for the actual connections between EUT and support equipment.

## 6.2 SUPPORT EQUIPMENT

| No. | Device Type | Brand | Model | FCC ID | Series No. | Data Cable | Power Cord |
|---|---|---|---|---|---|---|---|
| 1. | 8960 Series 10 Wireless Communication test set (Remote) | Agilent | E5515C | GB44051665 | N/A | N/A | Unshielded, 1.8m |

***Remark:***

1. *All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.*
2. *Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.*

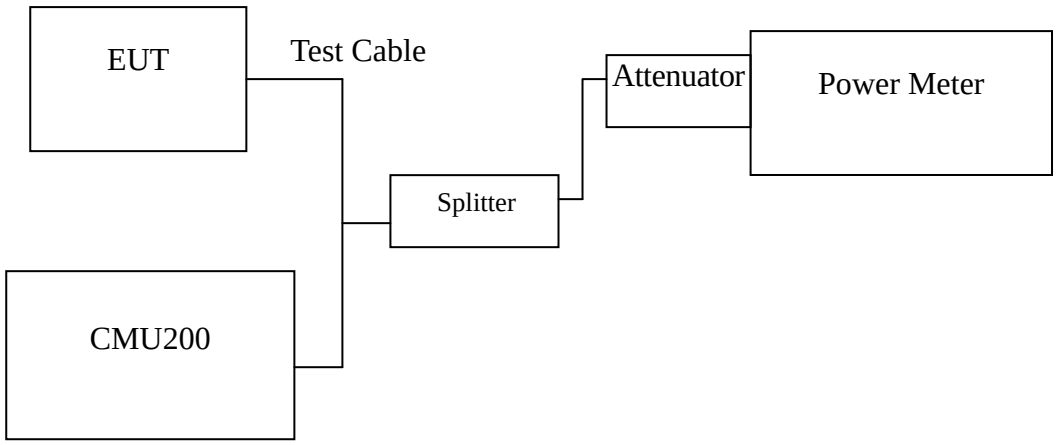
# 7. FCC PART 22 & 24 REQUIREMENTS

## 7.1 PEAK POWER

### LIMIT

According to FCC §2.1046.

**Test Configuration**




***Remark:*** *Measurement setup for testing on Antenna connector*

### TEST PROCEDURE

The transmitter output was connected to a calibrated attenuator, the other end of which was connected to a power meter. Transmitter output was read off the power meter in dBm. The power output at the transmitter antenna port was determined by adding the value of the attenuator to the power meter reading.

### TEST RESULTS

*No non-compliance noted.*

## Test Data

| Test Mode | CH | Frequency (MHz) | Peak Power (dBm) | Output Power (W) |
|---|---|---|---|---|
| WCDMA (BAND II) | 9262 | 1852.40 | 23.03 | 0.20091 |
| | 9400 | 1880.00 | 22.61 | 0.18239 |
| | 9538 | 1907.60 | ***23.18** | 0.20797 |
| WCDMA (BAND V) | 4132 | 826.40 | 23.17 | 0.20749 |
| | 4182 | 836.40 | ***23.40** | 0.21878 |
| | 4233 | 846.60 | 23.14 | 0.20606 |

| Test Mode | CH | Frequency (MHz) | Peak Power (dBm) | Output Power (W) |
|---|---|---|---|---|
| WCDMA / HSDPA (BAND II) | 9262 | 1852.40 | 22.56 | 0.18030 |
| | 9400 | 1880.00 | 22.42 | 0.17458 |
| | 9538 | 1907.60 | ***22.78** | 0.18967 |
| WCDMA / HSDPA (BAND V) | 4132 | 826.40 | 22.96 | 0.19770 |
| | 4182 | 836.40 | ***23.32** | 0.21478 |
| | 4233 | 846.60 | 23.03 | 0.20091 |

| Test Mode | CH | Frequency (MHz) | Peak Power (dBm) | Output Power (W) |
|---|---|---|---|---|
| WCDMA / HSUPA (BAND II) | 9262 | 1852.40 | 22.36 | 0.17219 |
| | 9400 | 1880.00 | 22.21 | 0.16634 |
| | 9538 | 1907.60 | ***22.68** | 0.18535 |
| WCDMA / HSUPA (BAND V) | 4132 | 826.40 | 22.46 | 0.17620 |
| | 4182 | 836.40 | ***23.02** | 0.20045 |
| | 4233 | 846.60 | 22.98 | 0.19861 |

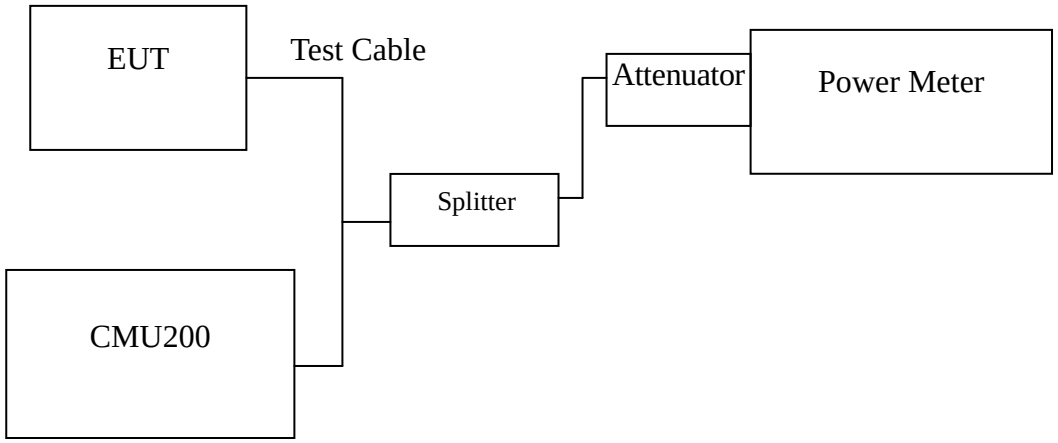
***Remark:*** *The value of factor includes both the loss of cable and external attenuator*

## 7.2 AVERAGE POWER

### LIMIT

For reporting purposes only.

**Test Configuration**




***Remark:*** *Measurement setup for testing on Antenna connector*

### TEST PROCEDURE

The transmitter output was connected to a calibrated attenuator, the other end of which was connected to a power meter. Transmitter output was read off the power meter in dBm. The power output at the transmitter antenna port was determined by adding the value of the attenuator to the power meter reading.

### TEST RESULTS

*No non-compliance noted.*

## Test Data

| Test Mode | CH | Frequency (MHz) | AVG Power (dBm) | Output Power W |
|---|---|---|---|---|
| WCDMA (BAND II) | 9262 | 1852.40 | 22.70 | 0.18621 |
| | 9400 | 1880.00 | 22.58 | 0.18113 |
| | 9538 | 1907.60 | 23.04 | 0.18967 |
| WCDMA (BAND V) | 4132 | 826.40 | 23.14 | 0.20606 |
| | 4182 | 836.40 | 23.33 | 0.21528 |
| | 4233 | 846.60 | 23.11 | 0.20464 |

| Test Mode | CH | Frequency (MHz) | AVG Power (dBm) | Output Power W |
|---|---|---|---|---|
| WCDMA / HSDPA (BAND II) | 9262 | 1852.40 | 22.48 | 0.17701 |
| | 9400 | 1880.00 | 22.38 | 0.17298 |
| | 9538 | 1907.60 | 23.02 | 0.20045 |
| WCDMA / HSDPA (BAND V) | 4132 | 826.40 | 22.93 | 0.19634 |
| | 4182 | 836.40 | 23.28 | 0.21281 |
| | 4233 | 846.60 | 23.00 | 0.19953 |

| Test Mode | CH | Frequency (MHz) | Peak Power (dBm) | Output Power W |
|---|---|---|---|---|
| WCDMA / HSUPA (BAND II) | 9262 | 1852.40 | 22.28 | 0.16904 |
| | 9400 | 1880.00 | 22.18 | 0.16520 |
| | 9538 | 1907.60 | 22.95 | 0.19724 |
| WCDMA / HSUPA (BAND V) | 4132 | 826.40 | 22.45 | 0.17579 |
| | 4182 | 836.40 | 22.95 | 0.19724 |
| | 4233 | 846.60 | 22.95 | 0.19724 |

***Remark:*** *The value of factor includes both the loss of cable and external attenuator*

## 7.3 ERP & EIRP MEASUREMENT

## LIMIT

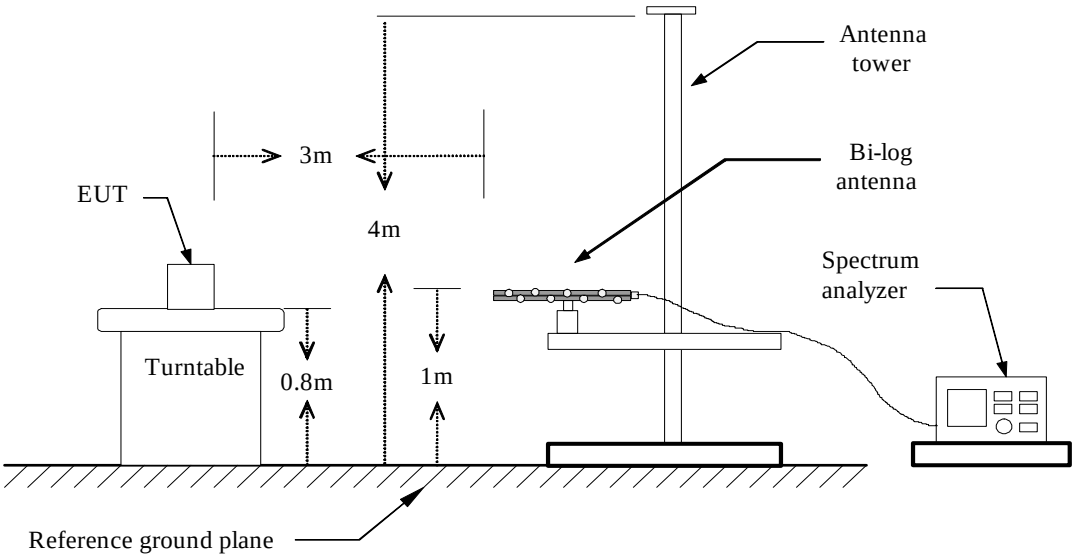
According to FCC §2.1046

FCC 22.913(a): The Effective Radiated Power (ERP) of mobile transmitters must not exceed 7 Watts.

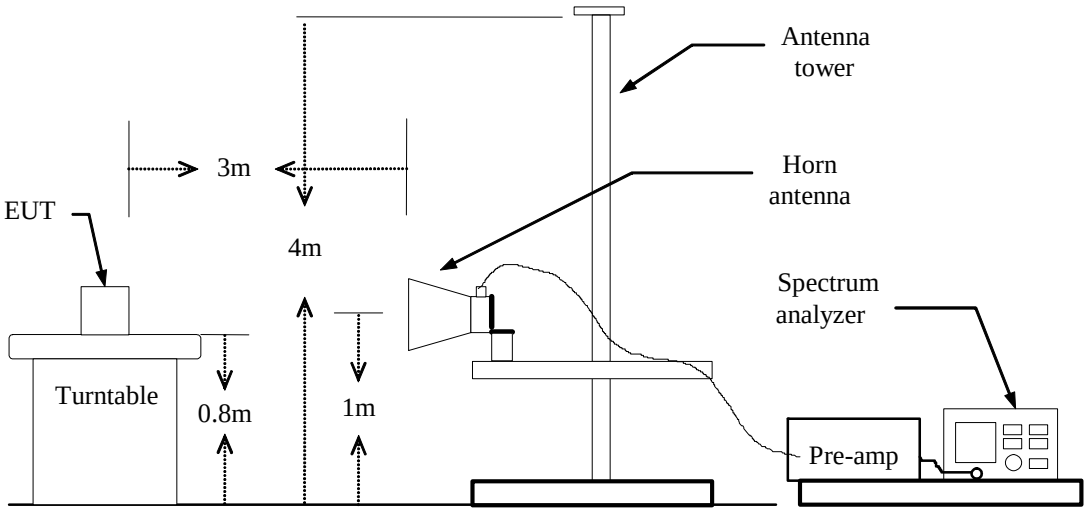
FCC 24.232(b): The equivalent Isotropic Radiated Power (EIRP) must not exceed 2 Watts.

**Test Configuration**

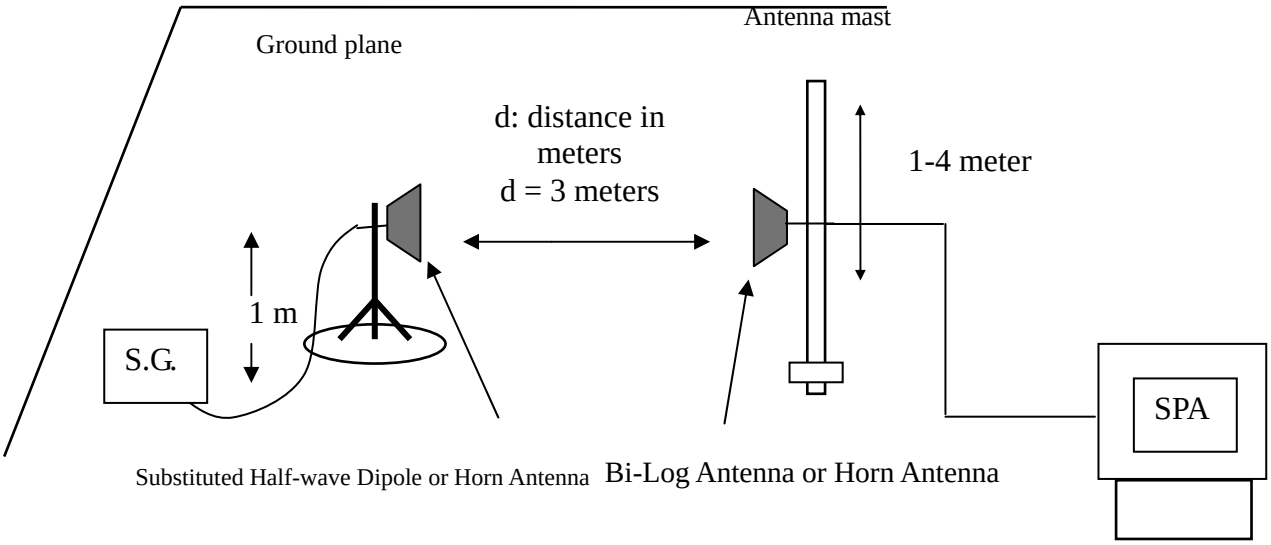
**Below 1 GHz**




**Above 1 GHz**



**For Substituted Method Test Set-UP**




## TEST PROCEDURE

The EUT was placed on an non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer.

During the measurement of the EUT, the resolution bandwidth was set to 5MHz and the average bandwidth was set to 50MHz. The highest emission was recorded with the rotation of the turntable and the lowering of the test antenna. The reading was recorded and the field strength (E in dBuV/m) was calculated.

ERP in frequency band 824-849MHz, and EIRP in frequency band 1851.25 –1910MHz were measured using a substitution method. The EUT was replaced by half-wave dipole (824-849MHz) or horn antenna (1851.25-1910MHz) connected to a signal generator. The spectrum analyzer reading was recorded and ERP/EIRP was calculated as follows:

ERP = S.G. output (dBm) + Antenna Gain (dBi) – Cable (dB)-2.15
EIRP = S.G. output (dBm) + Antenna Gain (dBi) – Cable (dB)

## TEST RESULTS

*No non-compliance noted.*

## WCDMA Test Data (BAND II)

| EUT Pol. | Channel | Frequency (MHz) | Antenna Pol. | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| Y | 9262 | 1852.40 | V | 6.5 | 5.37 | 5.66 | 6.79 | 33.00 | -26.21 |
| | | 1852.40 | H | 13.59 | 5.38 | 5.66 | ***13.87** | 33.00 | -19.13 |
| | 9400 | 1880.00 | V | 8.11 | 5.42 | 5.61 | 8.30 | 33.00 | -24.70 |
| | | 1880.00 | H | 13.59 | 5.42 | 5.61 | 13.78 | 33.00 | -19.22 |
| | 9538 | 1907.60 | V | 5.09 | 5.47 | 5.57 | 5.19 | 33.00 | -27.81 |
| | | 1907.60 | H | 13.54 | 5.47 | 5.57 | 13.64 | 33.00 | -19.36 |

## WCDMA Test Data (BAND V)

| EUT Pol. | Channel | Frequency (MHz) | Antenna Pol. | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| Z | 4132 | 826.40 | V | 8.5 | 3.39 | 6.27 | 11.38 | 38.45 | -27.07 |
| | | 826.40 | H | 8.6 | 3.39 | 6.27 | 11.48 | 38.45 | -26.97 |
| | 4182 | 836.40 | V | 9.15 | 3.4 | 6.35 | 12.10 | 38.45 | -26.35 |
| | | 836.40 | H | 9.11 | 3.4 | 6.35 | 12.06 | 38.45 | -26.39 |
| | 4233 | 846.60 | V | 7.53 | 3.4 | 6.35 | 10.48 | 38.45 | -27.97 |
| | | 846.60 | H | 11.41 | 3.4 | 6.36 | ***14.37** | 38.45 | -24.08 |

## WCDMA / HSDPA BAND II Test Data

| EUT Pol. | Channel | Frequency (MHz) | Antenna Pol. | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| Y | 9262 | 1852.40 | V | 6.37 | 5.38 | 5.66 | 6.65 | 33.00 | -26.35 |
| | | 1852.40 | H | 12.14 | 5.38 | 5.66 | 12.42 | 33.00 | -20.58 |
| | 9400 | 1880.00 | V | 8.38 | 5.42 | 5.61 | 8.57 | 33.00 | -24.43 |
| | | 1880.00 | H | 13.96 | 5.42 | 5.61 | ***14.15** | 33.00 | -18.85 |
| | 9538 | 1907.60 | V | 4.97 | 5.47 | 5.57 | 5.07 | 33.00 | -27.93 |
| | | 1907.60 | H | 13.46 | 5.47 | 5.57 | 13.56 | 33.00 | -19.44 |

## WCDMA / HSDPA BAND V Test Data

| EUT Pol. | Channel | Frequency (MHz) | Antenna Pol. | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| Z | 4132 | 826.40 | V | 6.11 | 3.39 | 6.28 | 9.00 | 38.45 | -29.45 |
| | | 826.40 | H | 8.55 | 3.39 | 6.27 | 11.43 | 38.45 | -27.02 |
| | 4182 | 836.40 | V | 7.83 | 3.4 | 6.36 | 10.79 | 38.45 | -27.66 |
| | | 836.40 | H | 8.77 | 3.4 | 6.36 | 11.73 | 38.45 | -26.72 |
| | 4233 | 846.60 | V | 7.51 | 3.4 | 6.36 | 10.47 | 38.45 | -27.98 |
| | | 846.60 | H | 11.41 | 3.4 | 6.35 | ***14.36** | 38.45 | -24.09 |

## WCDMA / HSUPA BAND II Test Data

| EUT Pol. | Channel | Frequency (MHz) | Antenna Pol. | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| Y | 9262 | 1852.40 | V | -0.42 | 5.37 | 5.66 | -0.13 | 33.00 | -33.13 |
| | | 1852.40 | H | 11.96 | 5.38 | 5.66 | 12.24 | 33.00 | -20.76 |
| | 9400 | 1880.00 | V | 8.12 | 5.42 | 5.62 | 8.32 | 33.00 | -24.68 |
| | | 1880.00 | H | 13.48 | 5.42 | 5.61 | 13.67 | 33.00 | -19.33 |
| | 9538 | 1907.60 | V | 4.93 | 5.47 | 5.57 | 5.03 | 33.00 | -27.97 |
| | | 1907.60 | H | 13.92 | 5.47 | 5.57 | ***14.02** | 33.00 | -18.98 |

## WCDMA / HSUPA BAND V Test Data

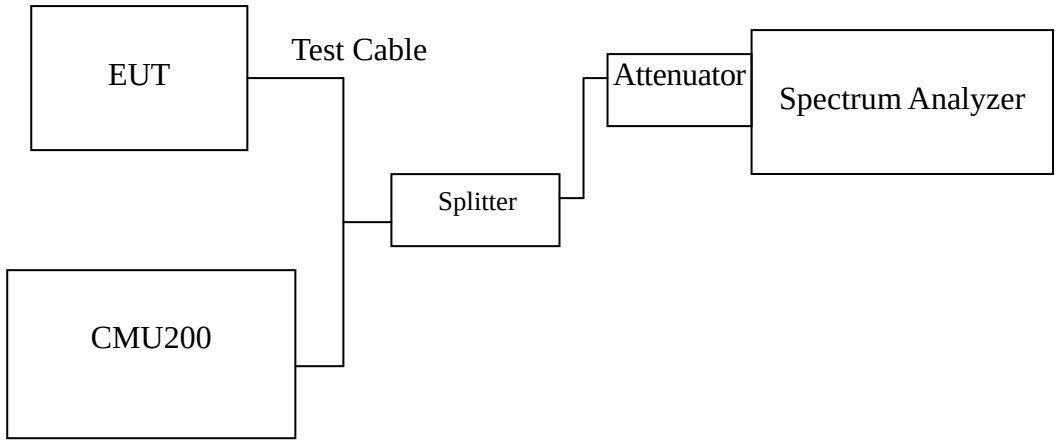
| EUT Pol. | Channel | Frequency (MHz) | Antenna Pol. | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| Z | 4132 | 826.40 | V | 6.14 | 3.39 | 6.27 | 9.02 | 38.45 | -29.43 |
| | | 826.40 | H | 9.59 | 3.39 | 6.27 | 12.47 | 38.45 | -25.98 |
| | 4182 | 836.40 | V | 8.35 | 3.4 | 6.37 | 11.32 | 38.45 | -27.13 |
| | | 836.40 | H | 8.04 | 3.4 | 6.36 | 11.00 | 38.45 | -27.45 |
| | 4233 | 846.60 | V | 7.49 | 3.4 | 6.36 | 10.45 | 38.45 | -28.00 |
| | | 846.60 | H | 11.28 | 3.4 | 6.35 | ***14.23** | 38.45 | -24.22 |

## 7.4 OCCUPIED BANDWIDTH MEASUREMENT

## LIMIT

According to §FCC 2.1049.

**Test Configuration**




***Remark:*** *Measurement setup for testing on Antenna connector*

## TEST PROCEDURE

The EUT's output RF connector was connected with a short cable to the spectrum analyzer, RBW was set to about 1% of emission BW, VBW is set to 3 times the RBW, -26dBc display line was placed on the screen (or 99% bandwidth), the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace.

## TEST RESULTS

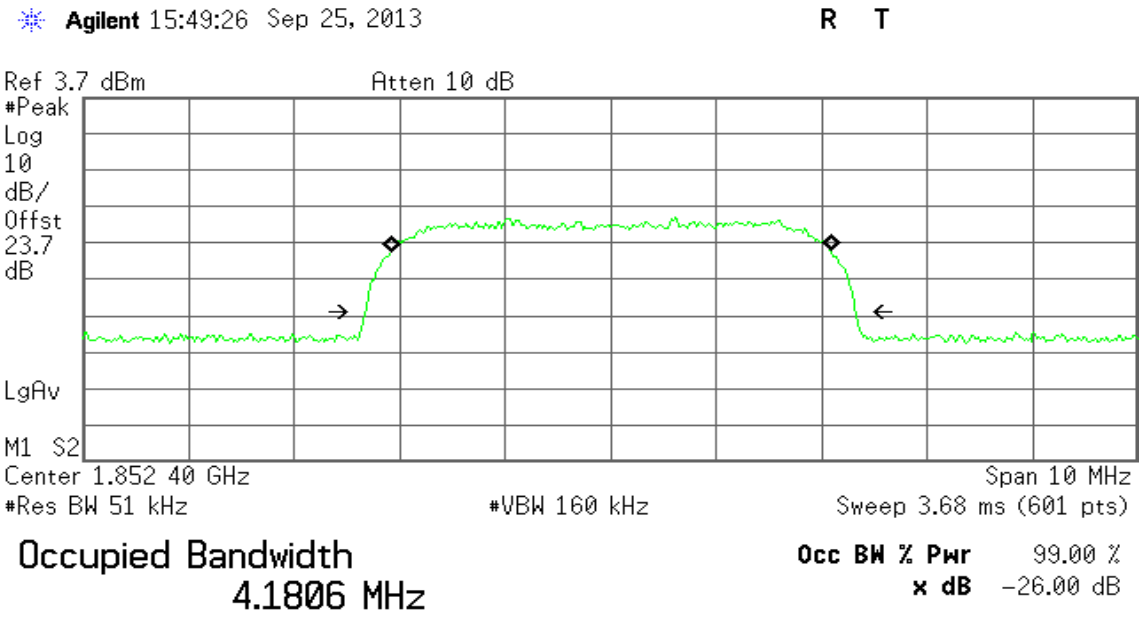
*No non-compliance noted*

## Test Data

| Test Mode | CH | Frequency (MHz) | 99% Bandwidth (MHz) | Occupied Bandwidth (MHz) |
|---|---|---|---|---|
| WCDMA (Band II) | 9262 | 1852.40 | 4.1806 | 4.660 |
| | 9400 | 1880.00 | 4.2129 | 4.677 |
| | 9538 | 1907.60 | 4.1872 | 4.671 |
| WCDMA (Band V) | 4132 | 826.40 | 4.1836 | 4.663 |
| | 4182 | 836.40 | 4.1909 | 4.673 |
| | 4233 | 846.60 | 4.2086 | 4.678 |
| WCDMA / HSDPA (BAND II) | 9262 | 1852.40 | 4.1633 | 4.670 |
| | 9400 | 1880.00 | 4.1500 | 4.654 |
| | 9538 | 1907.60 | 4.1505 | 4.641 |
| WCDMA / HSDPA (BAND V) | 4132 | 826.40 | 4.1713 | 4.656 |
| | 4182 | 836.40 | 4.1787 | 4.656 |
| | 4233 | 846.60 | 4.1724 | 4.669 |
| WCDMA / HSUPA (BAND II) | 9262 | 1852.40 | 4.1634 | 4.668 |
| | 9400 | 1880.00 | 4.1441 | 4.644 |
| | 9538 | 1907.60 | 4.1368 | 4.638 |
| WCDMA / HSUPA (BAND V) | 4132 | 826.40 | 4.1646 | 4.666 |
| | 4182 | 836.40 | 4.1845 | 4.655 |
| | 4233 | 846.60 | 4.1782 | 4.656 |

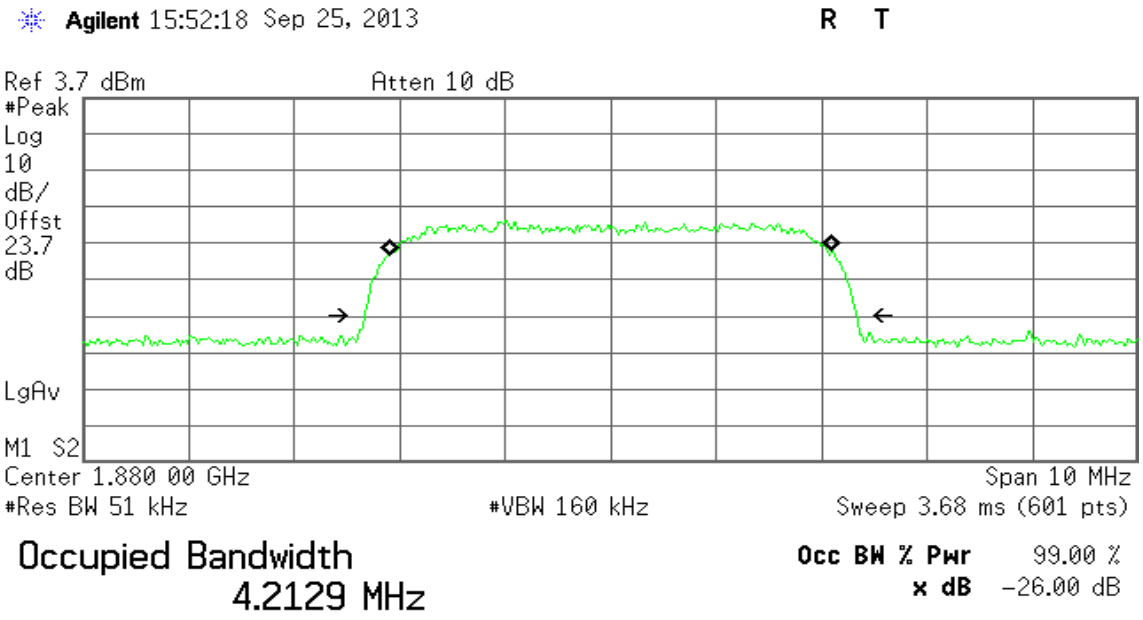
## Test Plot

### WCDMA Band II (CH Low)



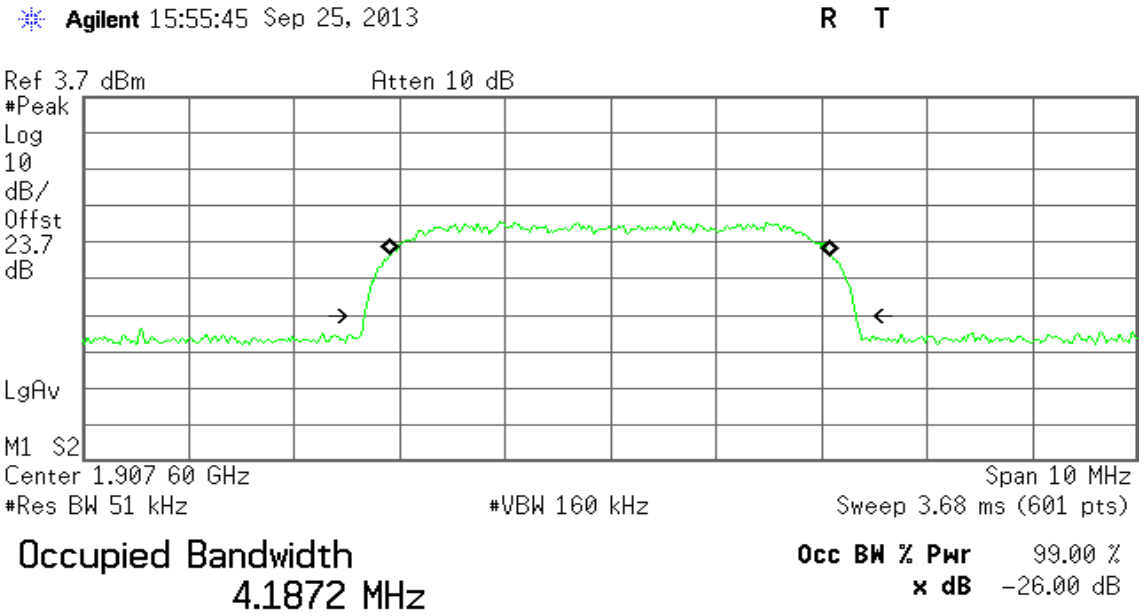

| | |
|---|---|
| **Transmit Freq Error** | 1.886 kHz |
| **x dB Bandwidth** | 4.660 MHz |

### WCDMA Band II (CH Mid)




| | |
|---|---|
| **Transmit Freq Error** | 938.165 Hz |
| **x dB Bandwidth** | 4.677 MHz |

## WCDMA Band II (CH High)

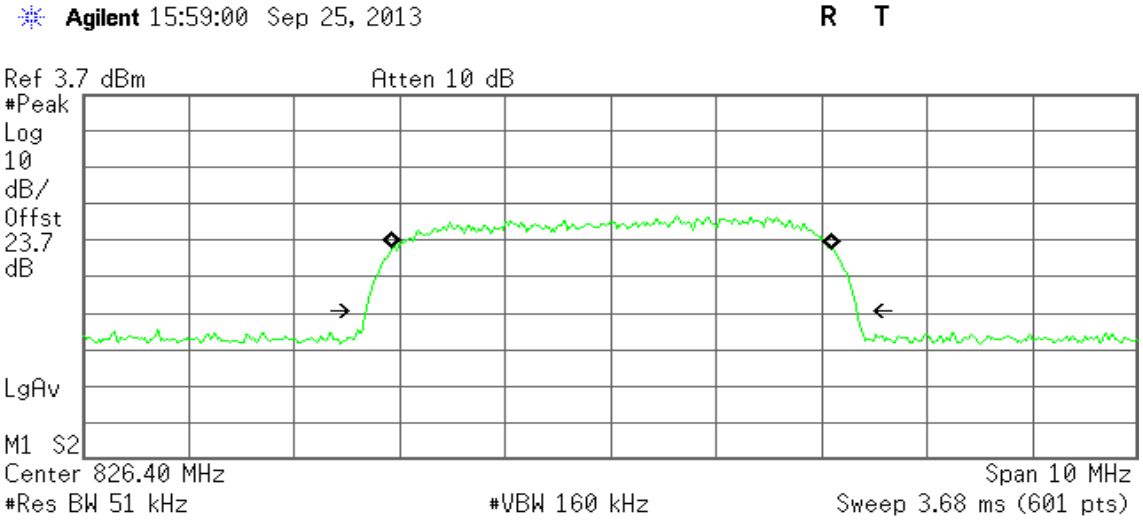



Occupied Bandwidth
4.1872 MHz

**Occ BW % Pwr** 99.00 %
**x dB** -26.00 dB

**Transmit Freq Error** -3.292 kHz
**x dB Bandwidth** 4.671 MHz

## WCDMA Band V (CH Low)

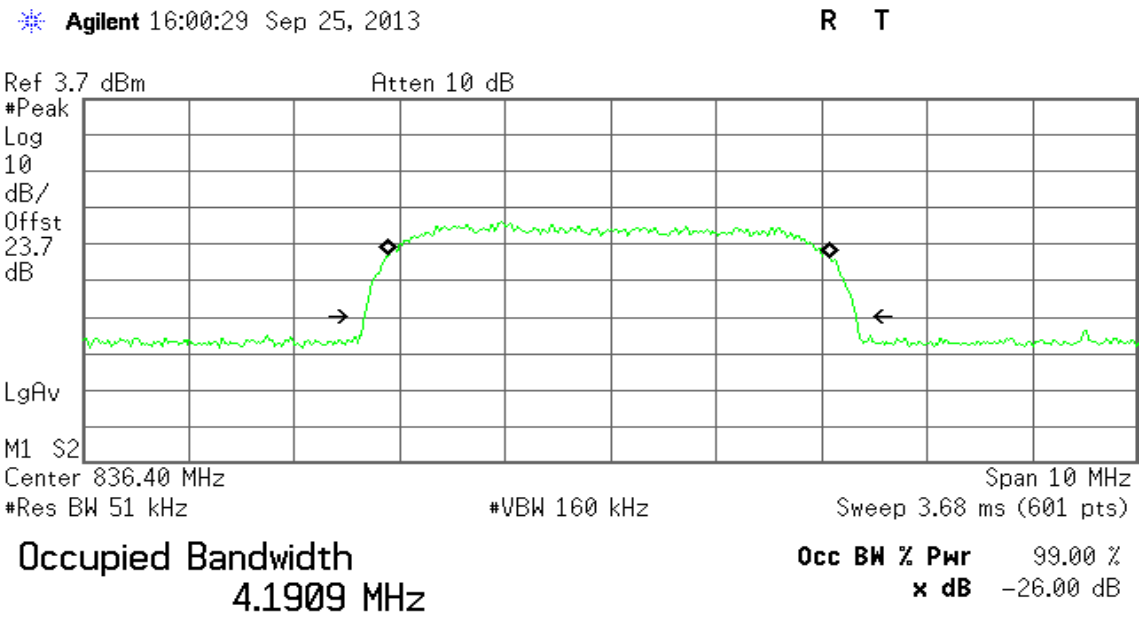



Occupied Bandwidth
4.1836 MHz

**Occ BW % Pwr** 99.00 %
**x dB** -26.00 dB

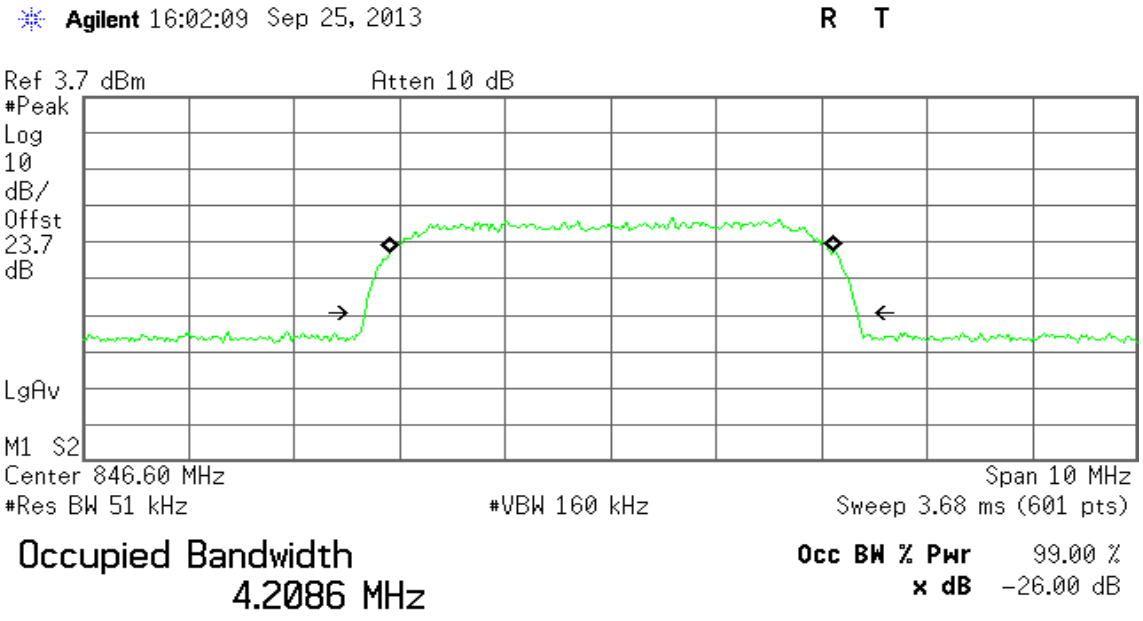
**Transmit Freq Error** 14.986 kHz
**x dB Bandwidth** 4.663 MHz

## WCDMA Band V (CH Mid)



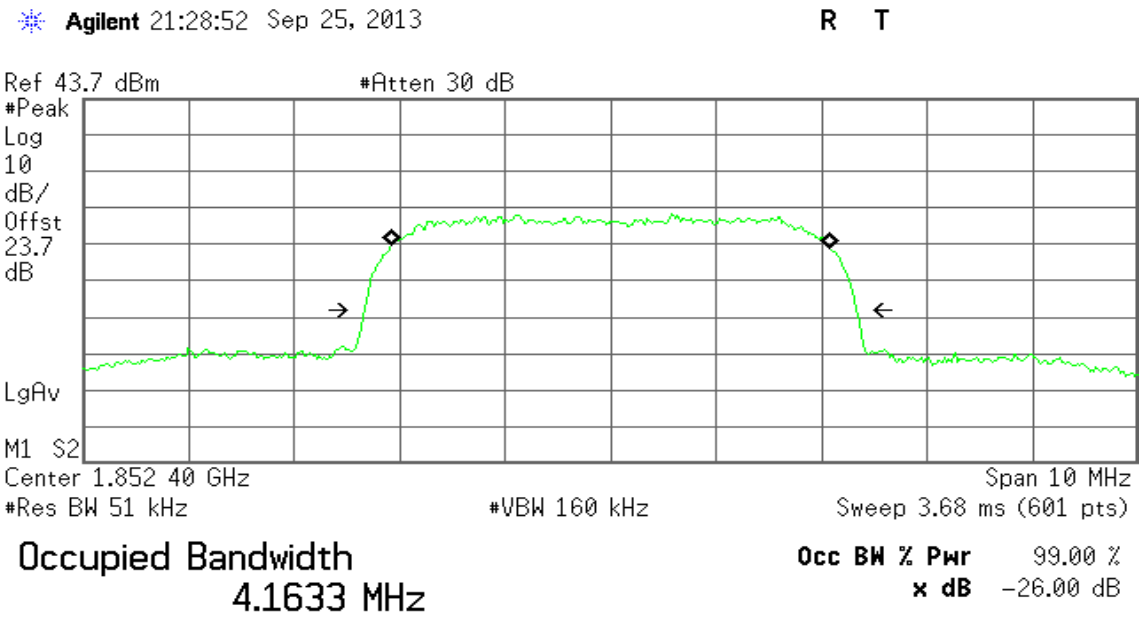

| | |
|---|---|
| **Transmit Freq Error** | -16.294 kHz |
| **x dB Bandwidth** | 4.673 MHz |

## WCDMA Band V (CH High)



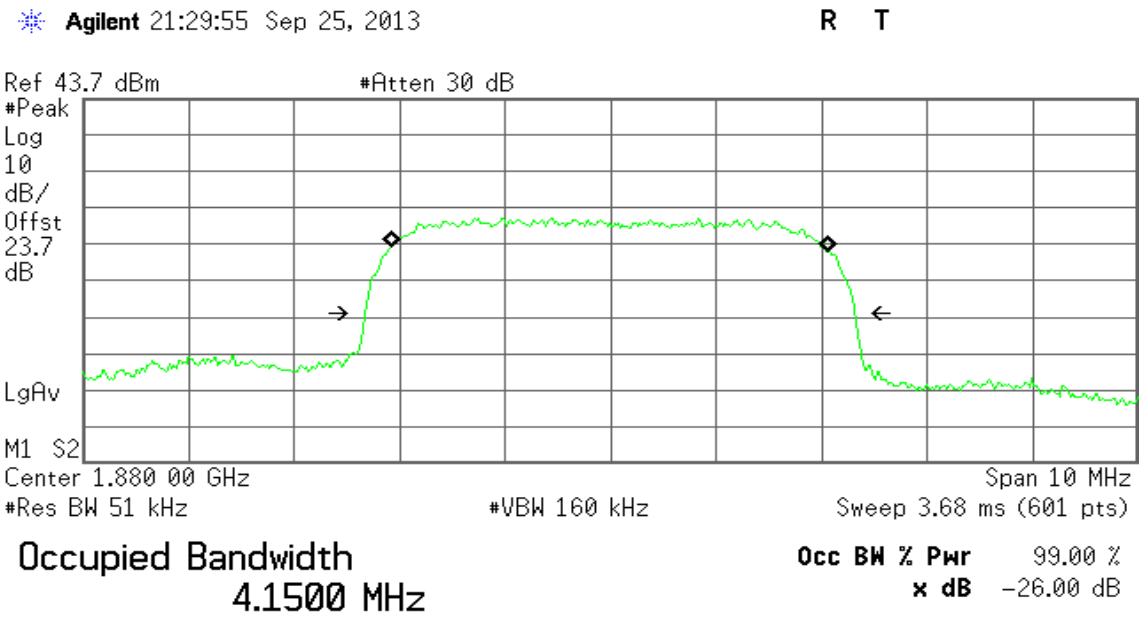

| | |
|---|---|
| **Transmit Freq Error** | 8.271 kHz |
| **x dB Bandwidth** | 4.678 MHz |

## WCDMA / HSDPA Band II (CH Low)



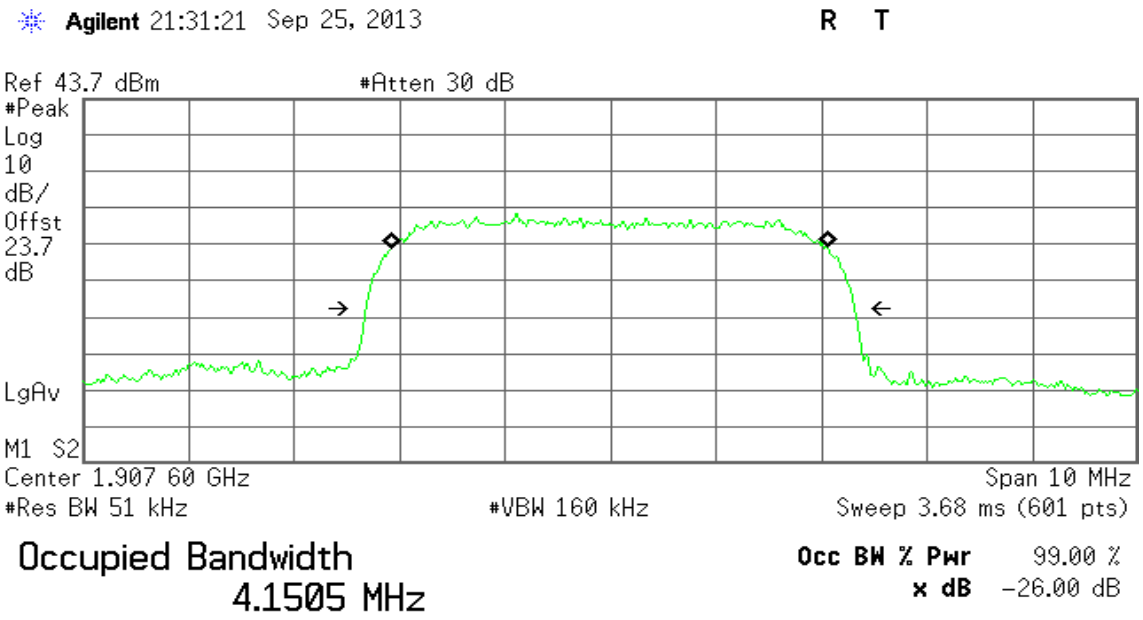

| | |
|---|---|
| **Transmit Freq Error** | -3.735 kHz |
| **x dB Bandwidth** | 4.670 MHz |

## WCDMA / HSDPA Band II (CH Mid)



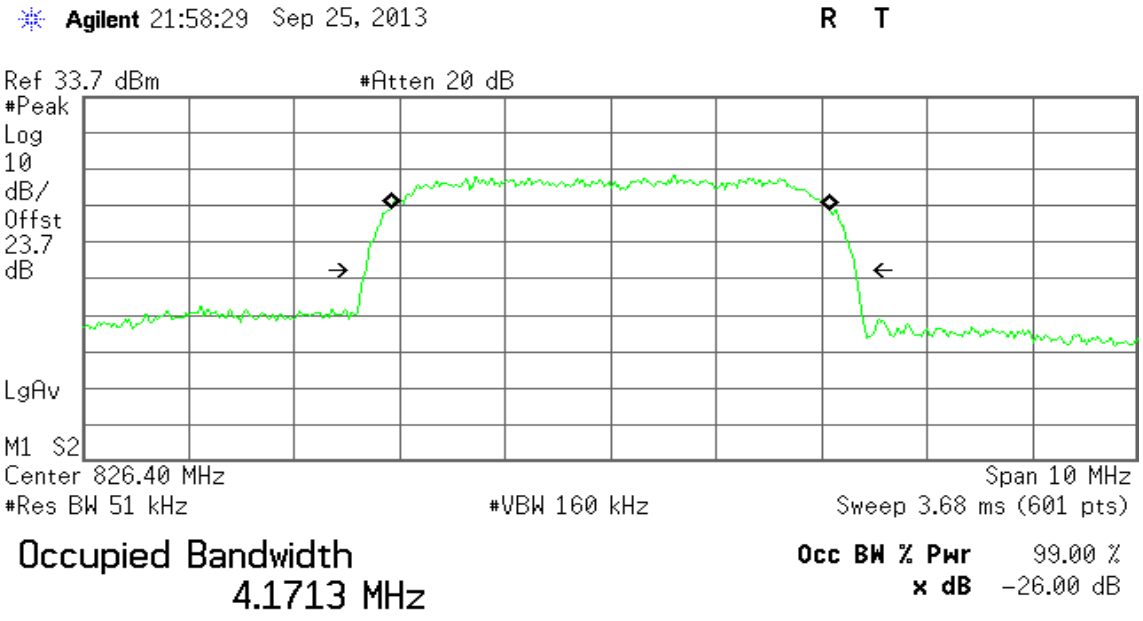

| | |
|---|---|
| **Transmit Freq Error** | -15.932 kHz |
| **x dB Bandwidth** | 4.654 MHz |

## WCDMA / HSDPA Band II (CH High)



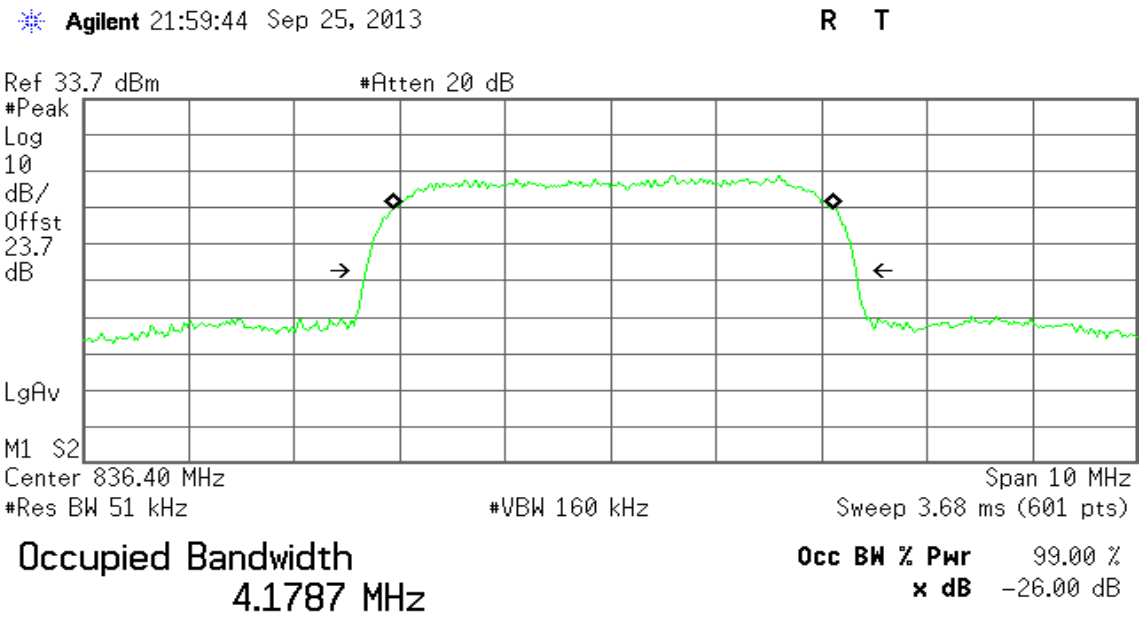

**Transmit Freq Error** -10.162 kHz
**x dB Bandwidth** 4.641 MHz

## WCDMA / HSDPA Band V (CH Low)



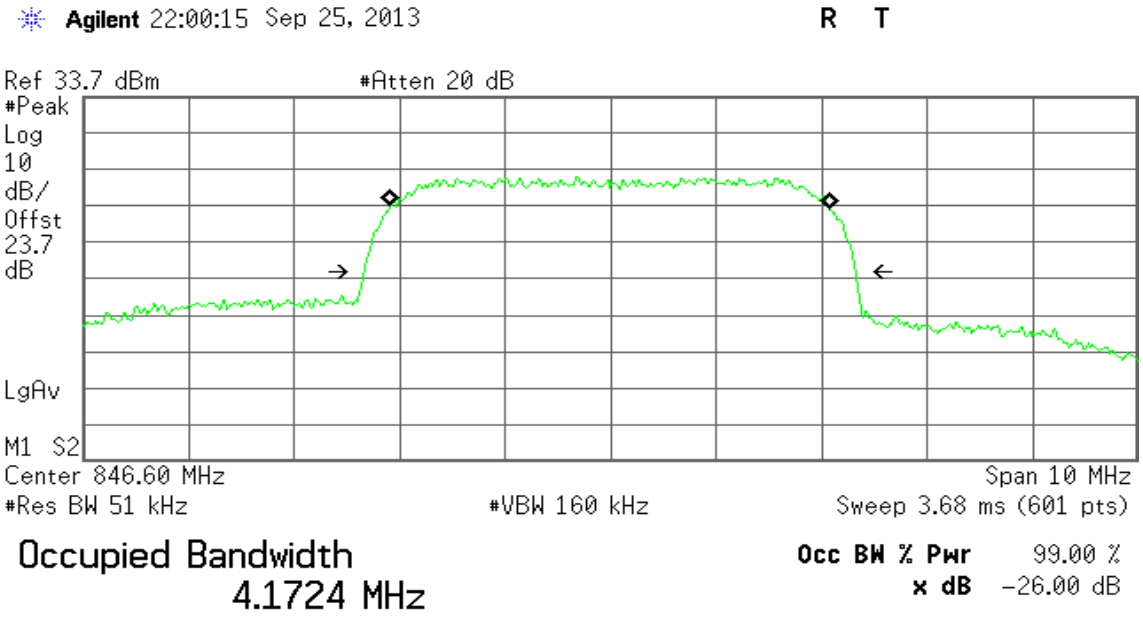

**Transmit Freq Error** -5.183 kHz
**x dB Bandwidth** 4.656 MHz

## WCDMA / HSDPA Band V (CH Mid)



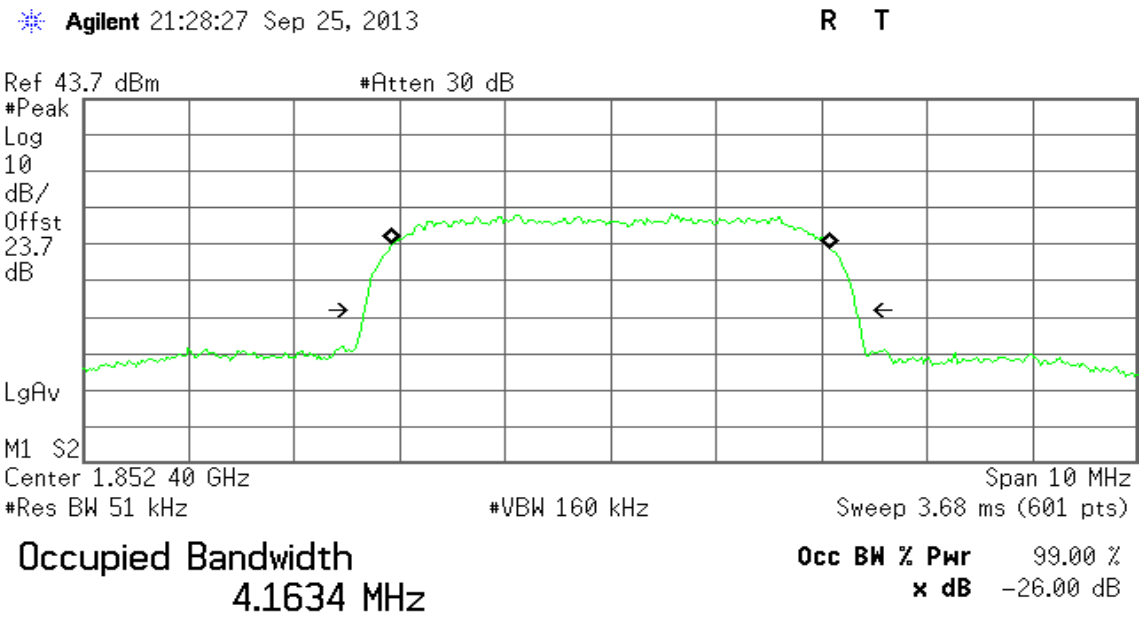

| | |
|---|---|
| **Transmit Freq Error** | 19.269 kHz |
| **x dB Bandwidth** | 4.656 MHz |

## WCDMA / HSDPA Band V (CH High)



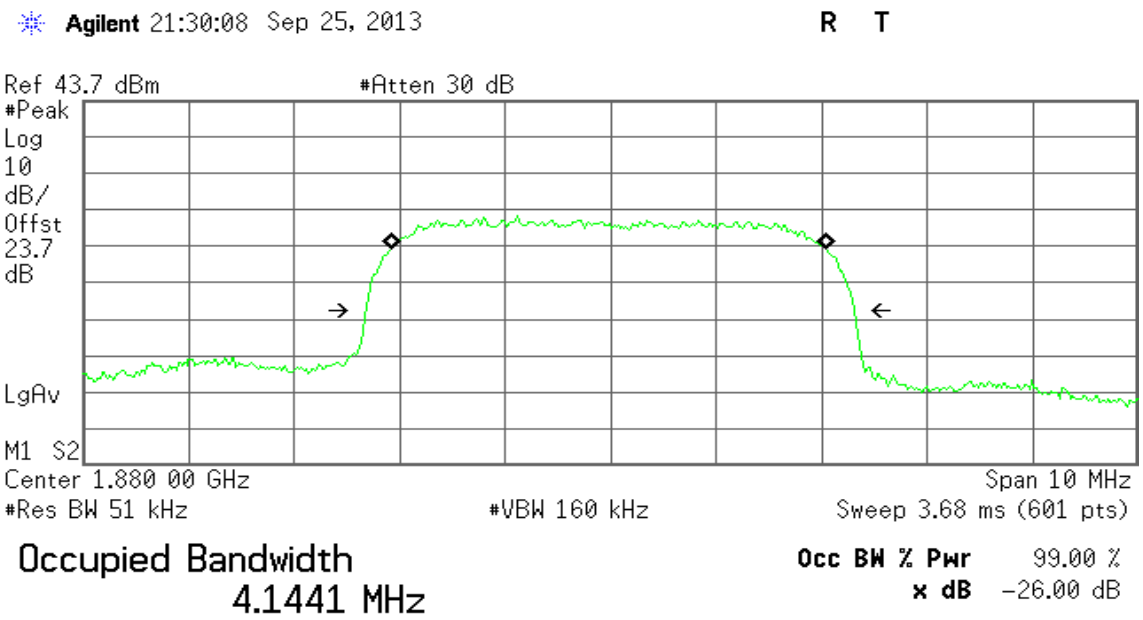

| | |
|---|---|
| **Transmit Freq Error** | -6.507 kHz |
| **x dB Bandwidth** | 4.669 MHz |

## WCDMA / HSUPA Band II (CH Low)



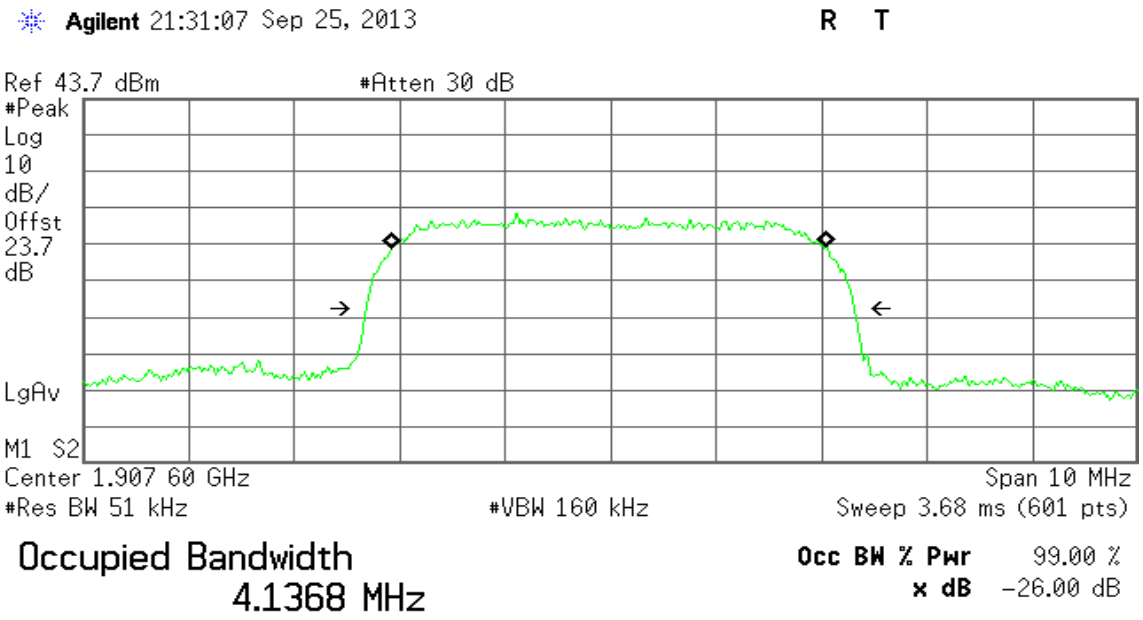

| | |
|---|---|
| **Transmit Freq Error** | -2.667 kHz |
| **x dB Bandwidth** | 4.668 MHz |

## WCDMA / HSUPA Band II (CH Mid)



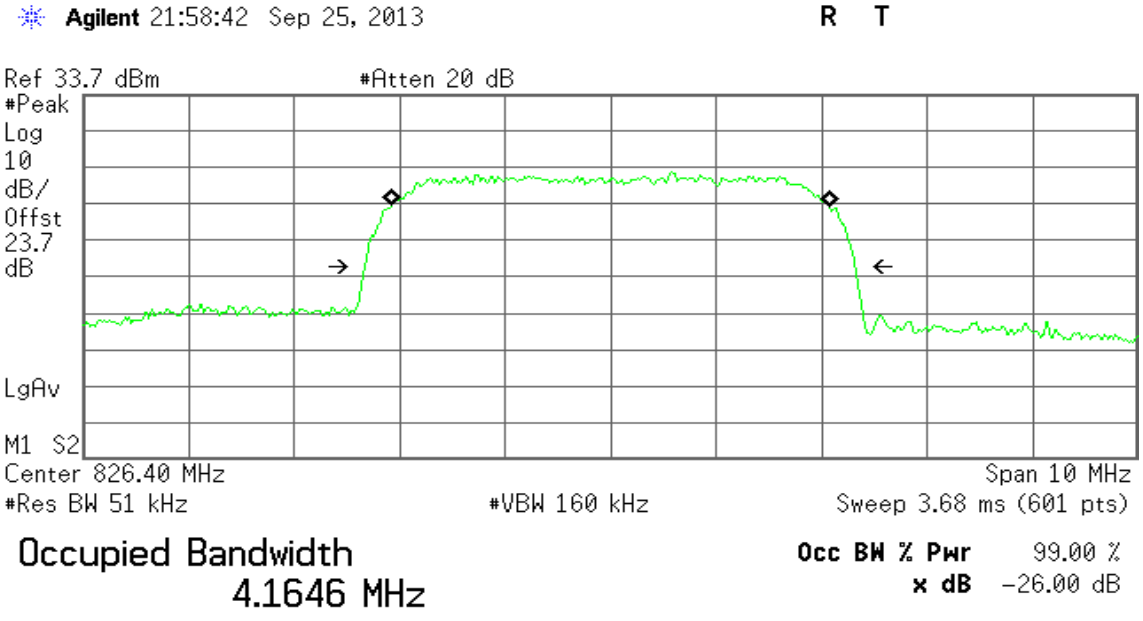

| | |
|---|---|
| **Transmit Freq Error** | -16.810 kHz |
| **x dB Bandwidth** | 4.644 MHz |

## WCDMA / HSUPA Band II (CH High)



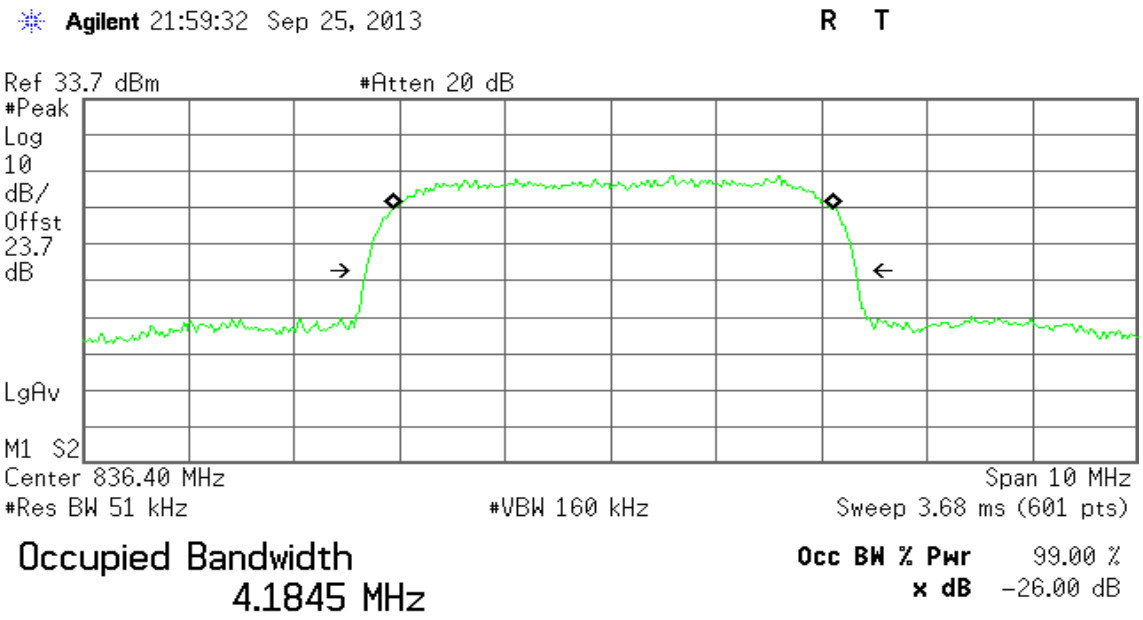

**Transmit Freq Error** −11.841 kHz
**x dB Bandwidth** 4.638 MHz

## WCDMA / HSUPA Band V (CH Low).



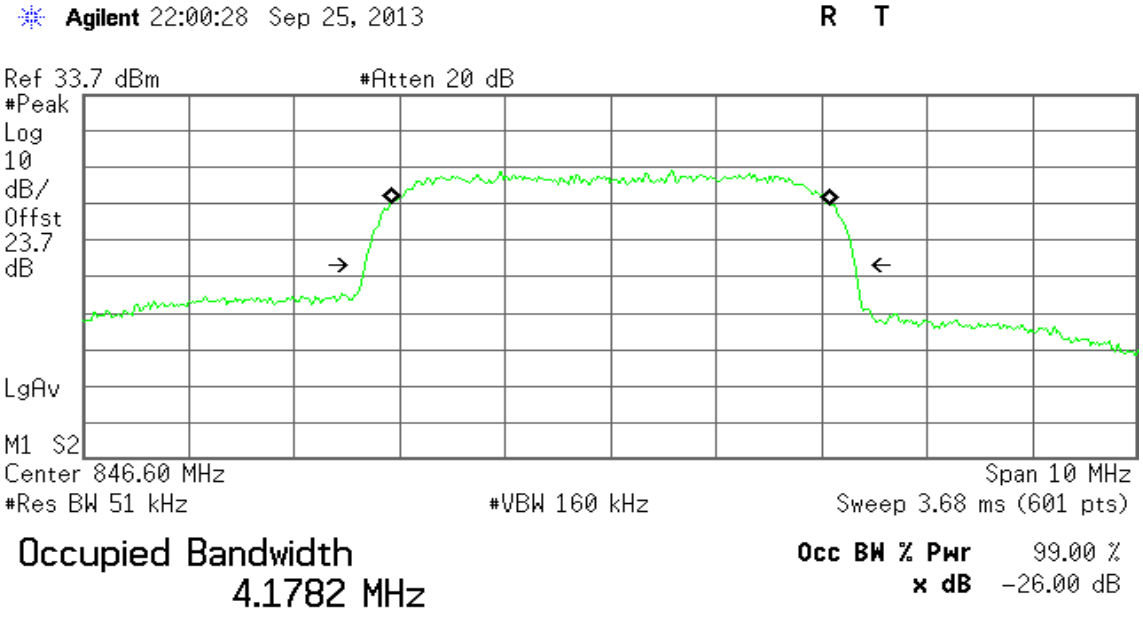

**Transmit Freq Error** −4.778 kHz
**x dB Bandwidth** 4.666 MHz

## WCDMA / HSUPA Band V (CH Mid)




| | |
|---|---|
| **Transmit Freq Error** | 19.807 kHz |
| **x dB Bandwidth** | 4.655 MHz |

## WCDMA / HSUPA Band V (CH High)




| | |
|---|---|
| **Transmit Freq Error** | 778.985 Hz |
| **x dB Bandwidth** | 4.656 MHz |

# 7.5 OUT OF BAND EMISSION AT ANTENNA TERMINALS

## LIMIT

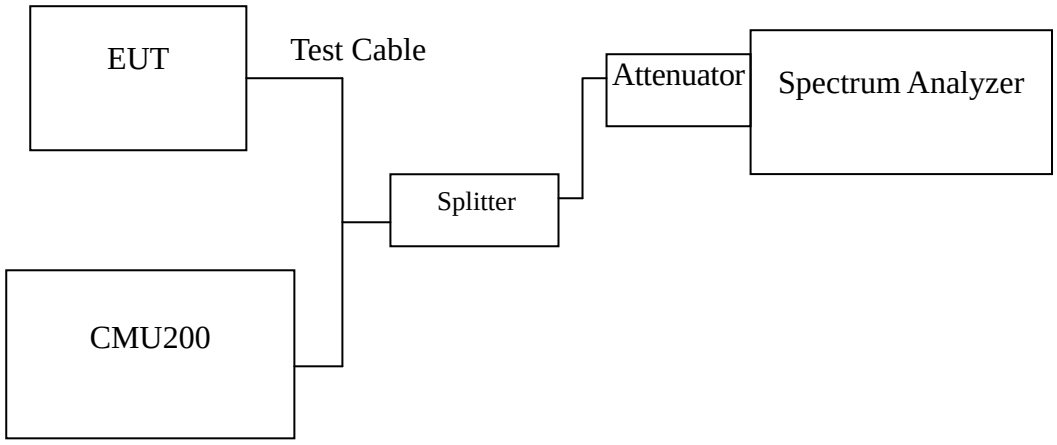
According to FCC §2.1051, FCC §22.917, FCC §24.238(a).

**Out of Band Emissions:** The mean power of emission must be attenuated below the mean power of the non-modulated carrier (P) on any frequency twice or more than twice the fundamental frequency by at lease 43 + 10 log P dB.

**Mobile Emissions in Base Frequency Range:** The mean power of any emissions appearing in the base station frequency range from cellular mobile transmitters operated must be attenuated to a level not exceed –80 dBm at the transmit antenna connector.
**Band Edge Requirements:** In the 1MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at lease 1% of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the Out of band Emission

**Test Configuration**

**Out of band emission at antenna terminals:**




## TEST PROCEDURE

The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 1MHz, sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic.

For the out of band: Set the RBW, VBW = 1MHz, Start = 30MHz, Stop= 10 th harmonic. Limit = -13dBm

Band Edge Requirements (824 MHz and 849 MHz /1850MHz and 1910MHz): In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions. Limit, -13dBm.

## TEST RESULTS

*No non-compliance noted.*

**Test Data**

| Mode | CH | Location | Description |
|---|---|---|---|
| WCDMA (Band II) | 9262 | Figure 19-1 | Conducted spurious emissions, 30MHz - 20GHz |
| | 9400 | Figure 19-2 | Conducted spurious emissions, 30MHz - 20GHz |
| | 9538 | Figure 19-3 | Conducted spurious emissions, 30MHz - 20GHz |
| WCDMA (Band V) | 4132 | Figure 20-1 | Conducted spurious emissions, 30MHz - 20GHz |
| | 4182 | Figure 20-2 | Conducted spurious emissions, 30MHz - 20GHz |
| | 4233 | Figure 20-3 | Conducted spurious emissions, 30MHz - 20GHz |

| Mode | CH | Location | Description |
|---|---|---|---|
| WCDMA (Band II) | 9262 | Figure 21-1 | Band Edge emissions |
| | 9538 | Figure 21-2 | Band Edge emissions |
| WCDMA (Band V) | 4132 | Figure 22-1 | Band Edge emissions |
| | 4233 | Figure 22-2 | Band Edge emissions |

| Mode | CH | Location | Description |
|---|---|---|---|
| HSDPA WCDMA (Band II) | 9262 | Figure 23-1 | Conducted spurious emissions, 30MHz - 20GHz |
| | 9400 | Figure 23-2 | Conducted spurious emissions, 30MHz - 20GHz |
| | 9538 | Figure 23-3 | Conducted spurious emissions, 30MHz - 20GHz |
| HSDPA WCDMA (Band V) | 4132 | Figure 24-1 | Conducted spurious emissions, 30MHz - 20GHz |
| | 4182 | Figure 24-2 | Conducted spurious emissions, 30MHz - 20GHz |
| | 4233 | Figure 24-3 | Conducted spurious emissions, 30MHz - 20GHz |

| Mode | CH | Location | Description |
|---|---|---|---|
| HSDPA WCDMA (Band II) | 9262 | Figure 25-1 | Band Edge emissions |
| | 9538 | Figure 25-2 | Band Edge emissions |
| HSDPA WCDMA (Band V) | 4132 | Figure 26-1 | Band Edge emissions |
| | 4233 | Figure 26-2 | Band Edge emissions |

| Mode | CH | Location | Description |
|---|---|---|---|
| HSUPA WCDMA (Band II) | 9262 | Figure 27-1 | Conducted spurious emissions, 30MHz - 20GHz |
| | 9400 | Figure 27-2 | Conducted spurious emissions, 30MHz - 20GHz |
| | 9538 | Figure 27-3 | Conducted spurious emissions, 30MHz - 20GHz |
| HSUPA WCDMA (Band V) | 4132 | Figure 28-1 | Conducted spurious emissions, 30MHz - 20GHz |
| | 4182 | Figure 28-2 | Conducted spurious emissions, 30MHz - 20GHz |
| | 4233 | Figure 28-3 | Conducted spurious emissions, 30MHz - 20GHz |

| Mode | CH | Location | Description |
|---|---|---|---|
| HSUPA WCDMA (Band II) | 9262 | Figure 29-1 | Band Edge emissions |
| | 9538 | Figure 29-2 | Band Edge emissions |
| HSUPA WCDMA (Band V) | 4132 | Figure 30-1 | Band Edge emissions |
| | 4233 | Figure 30-2 | Band Edge emissions |

**Test Plot**

## WCDMA Band II

Figure 19-1: Out of Band emission at antenna terminals – WCDMA CH Low

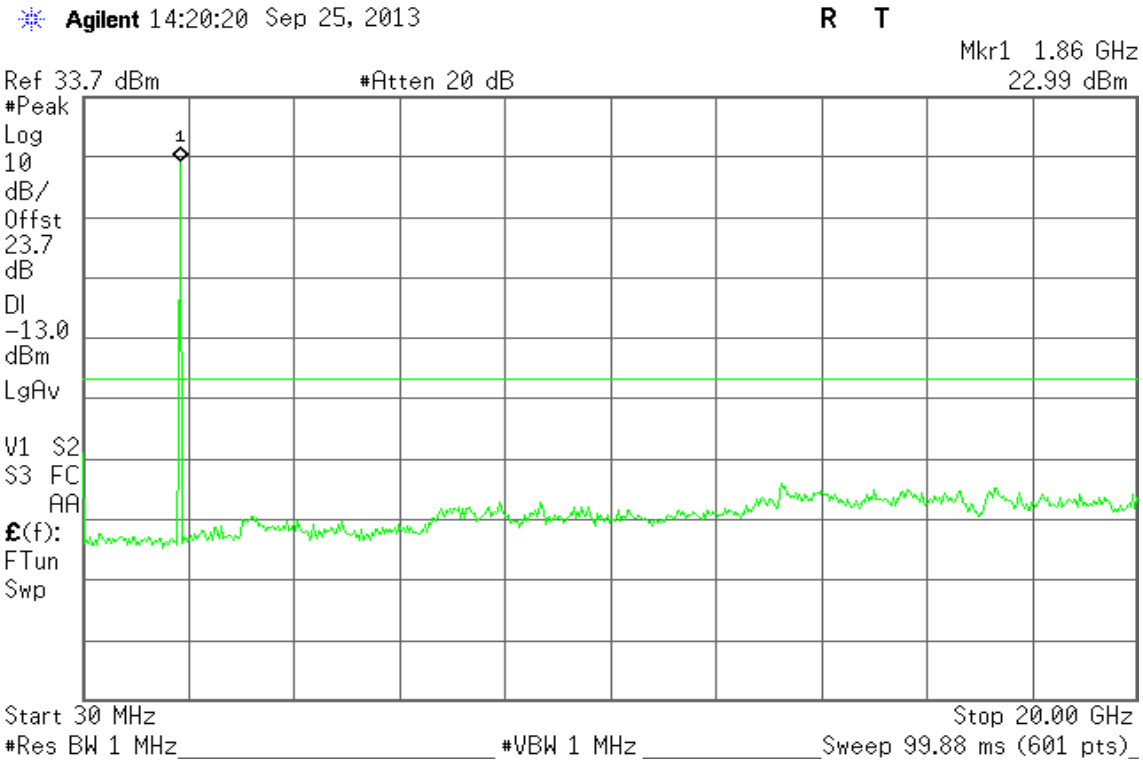



Figure 19-2: Out of Band emission at antenna terminals – WCDMA CH Mid

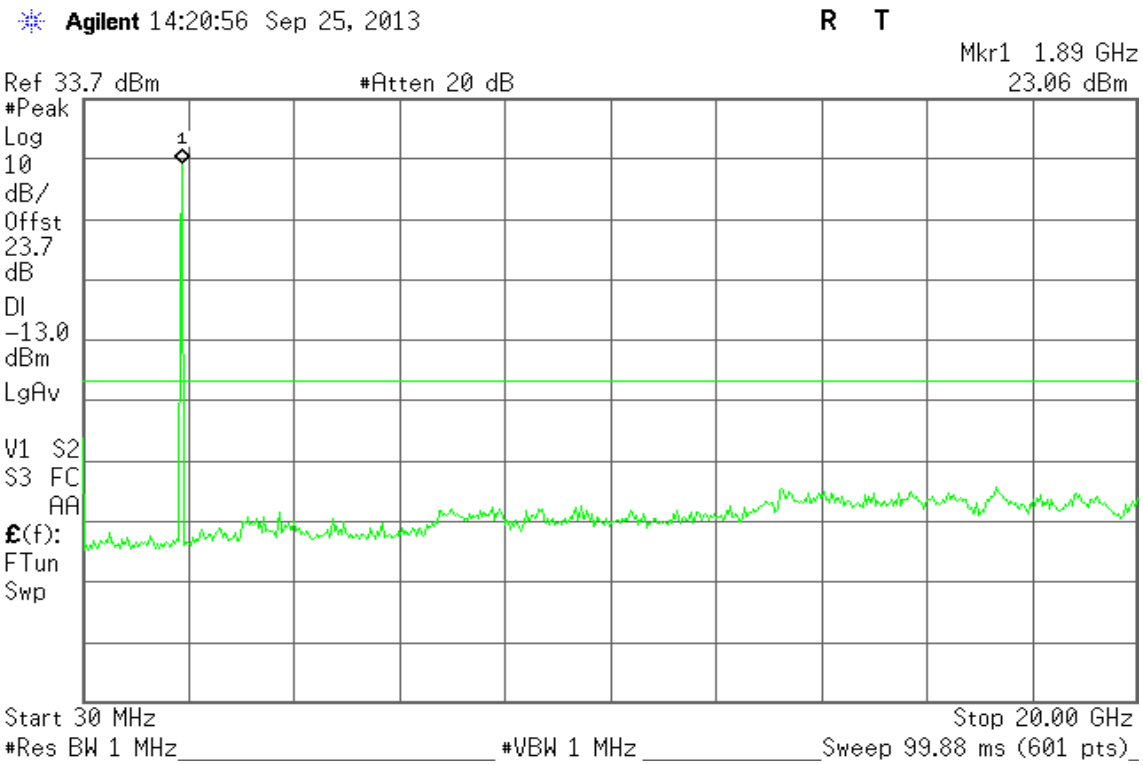
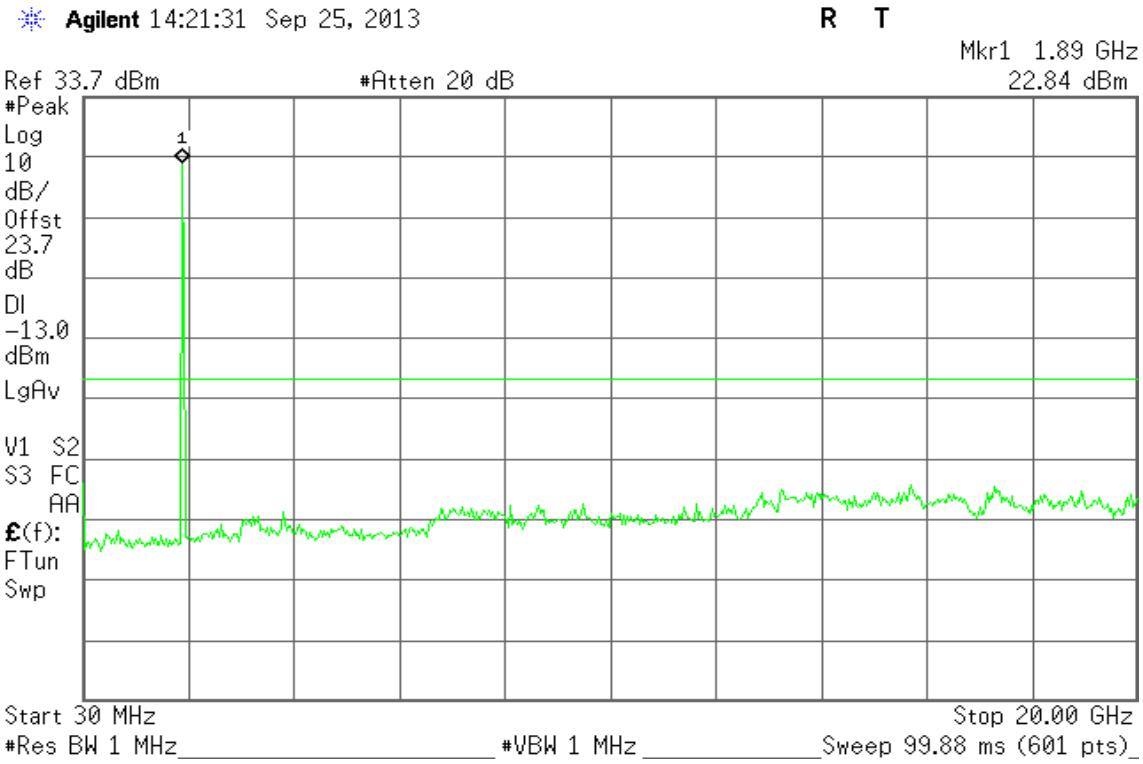


Figure 19-3: Out of Band emission at antenna terminals – WCDMA CH High




## WCDMA Band V

Figure 20-1: Out of Band emission at antenna terminals – WCDMA CH Low

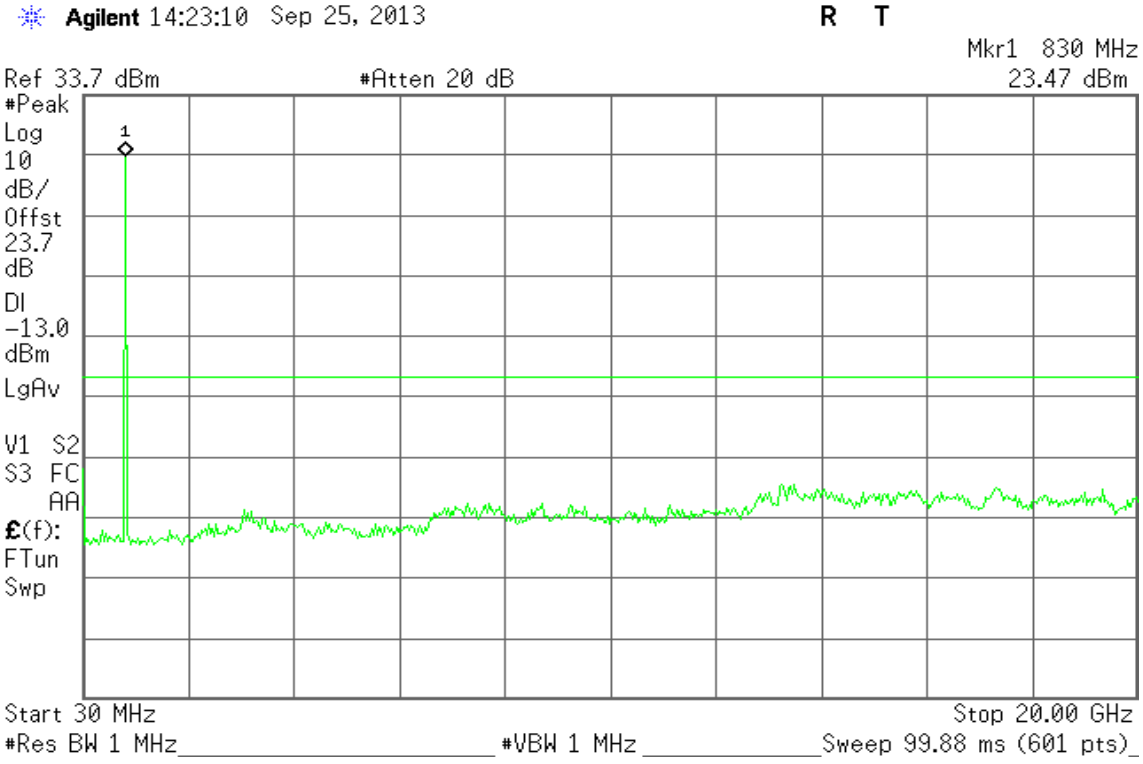


Figure 20-2: Out of Band emission at antenna terminals – WCDMA CH Mid

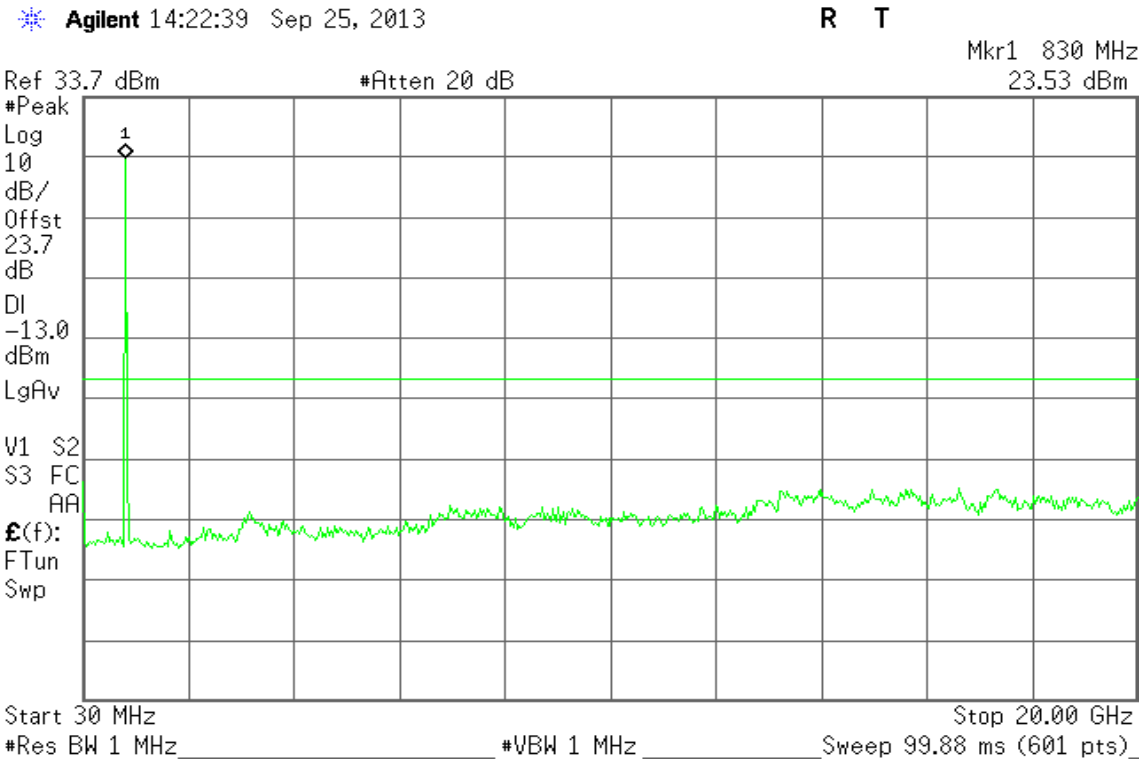
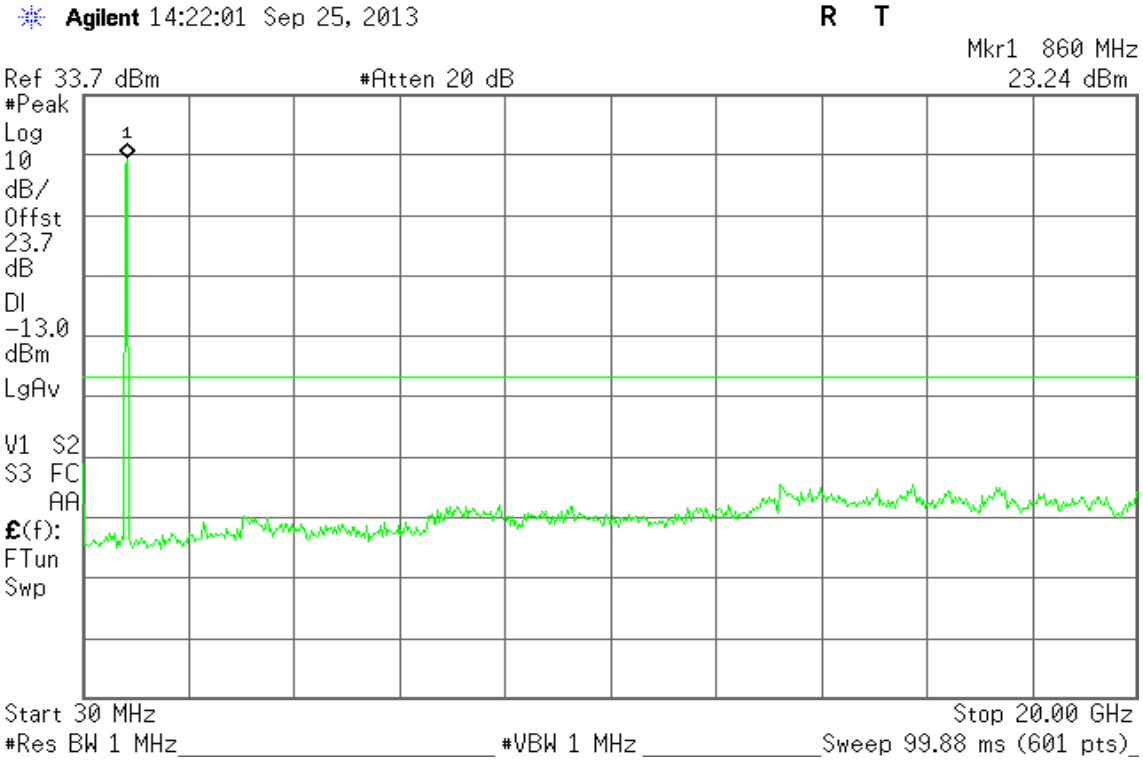



Figure 20-3: Out of Band emission at antenna terminals – WCDMA CH High



## WCDMA Band II

Figure 21-1: Band Edge emissions – WCDMA CH Low

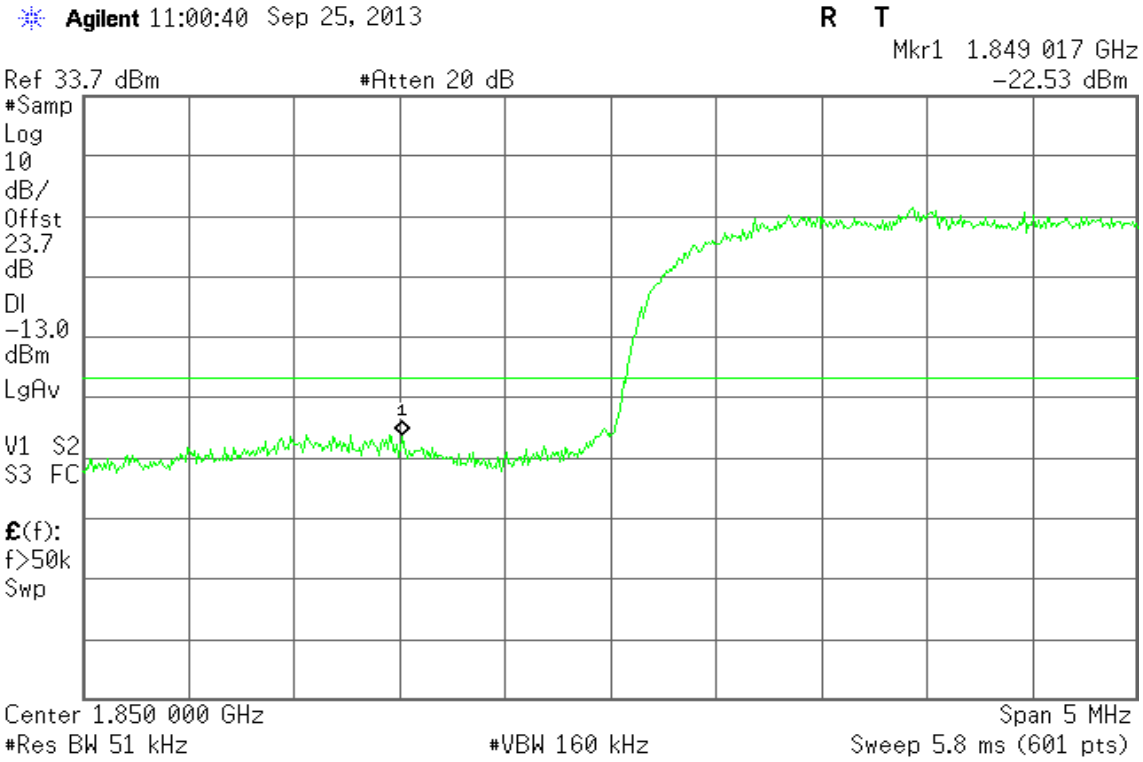
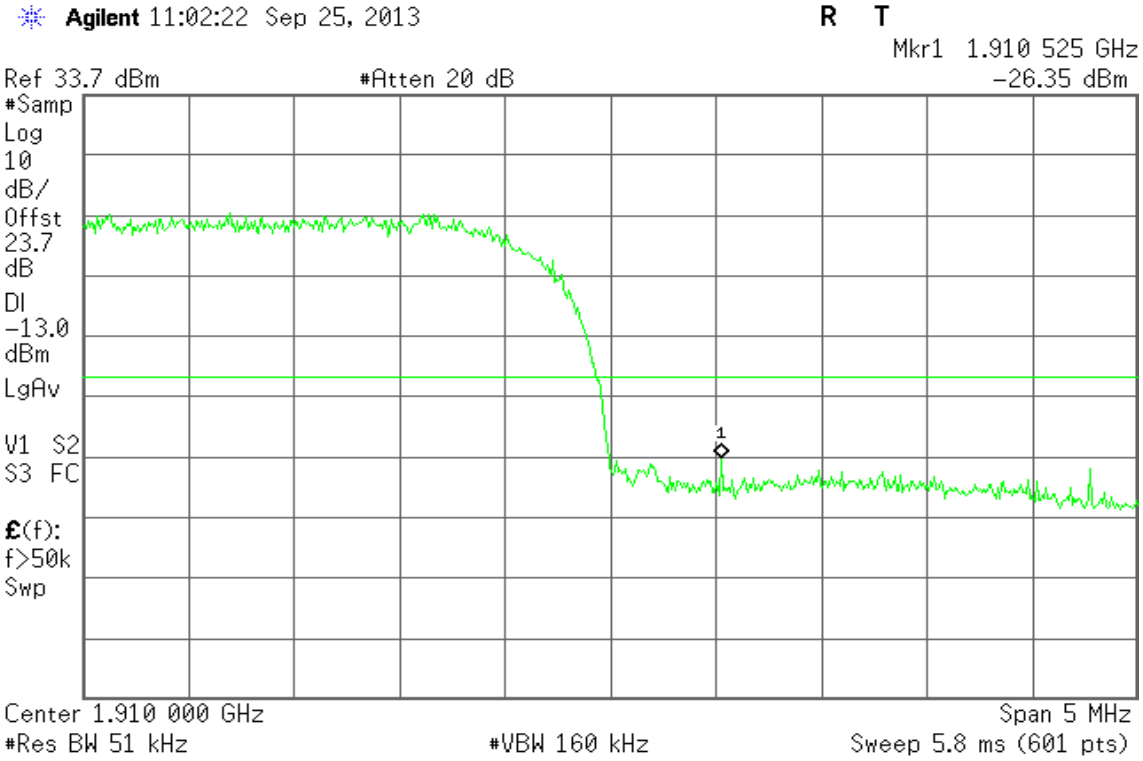



Figure 21-2: Band Edge emissions –WCDMA CH High



## WCDMA Band V

Figure 22-1: Band Edge emissions –WCDMA CH Low

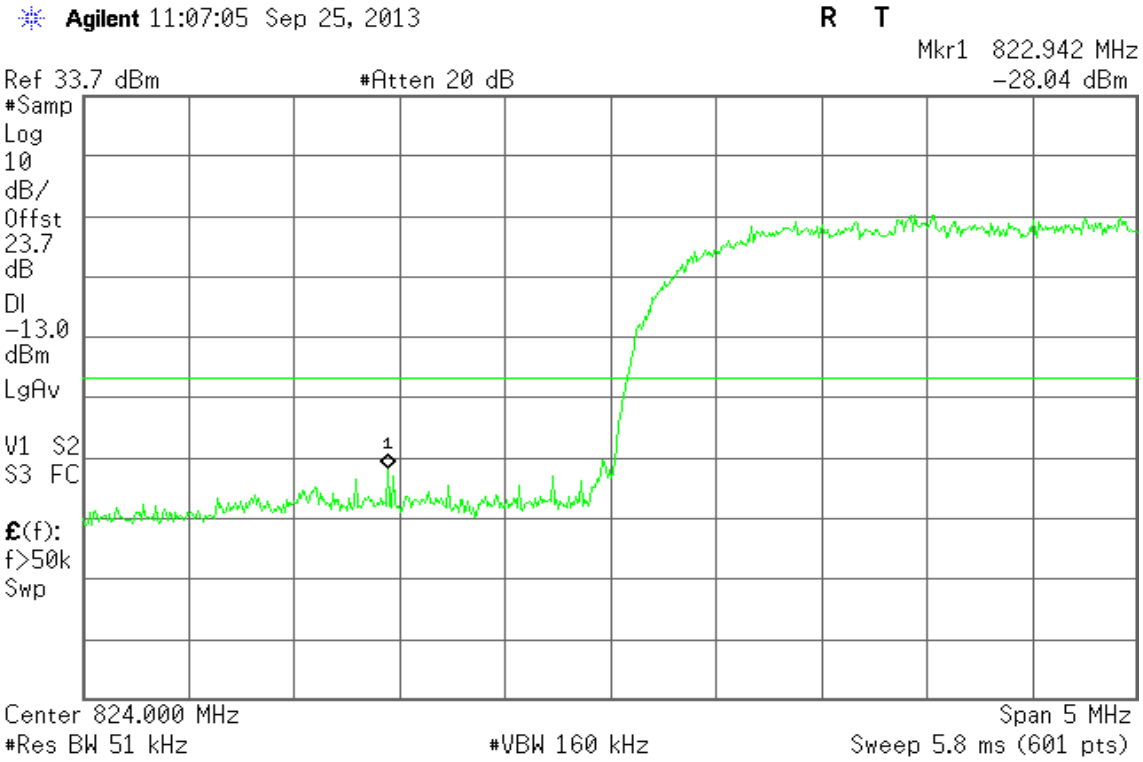
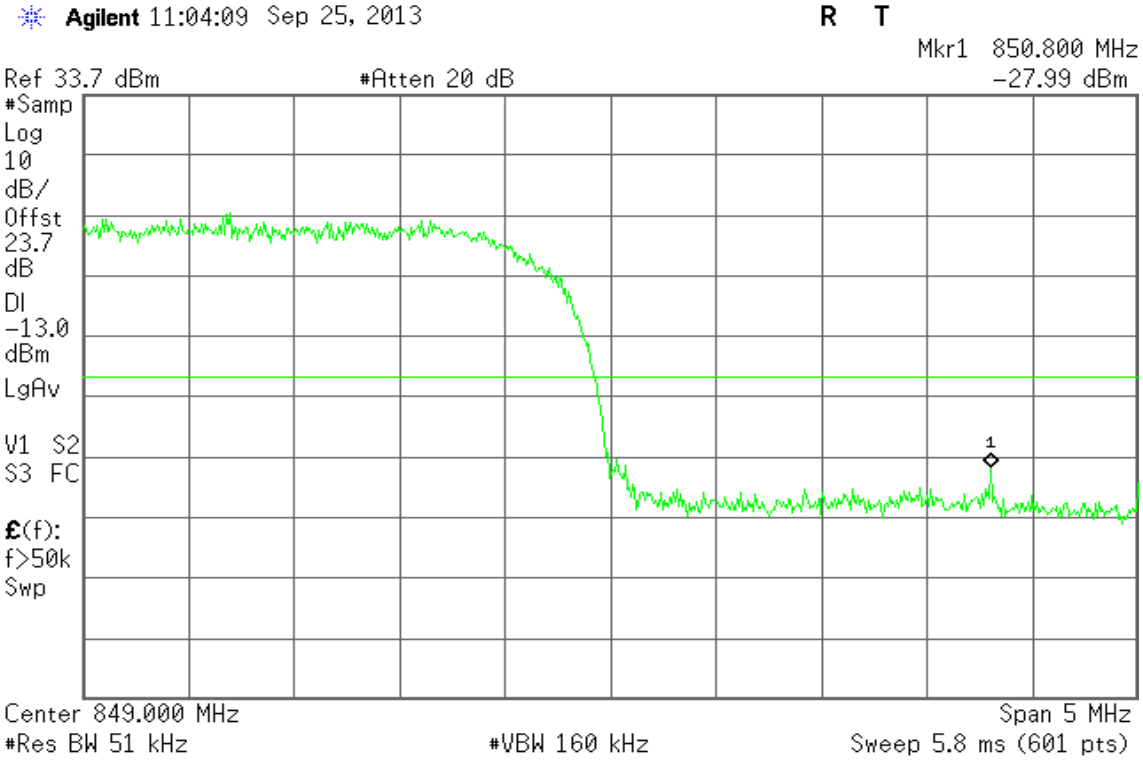



Figure 22-2: Band Edge emissions –WCDMA CH High



## WCDMA / HSDPA Band II

Figure 23-1: Out of Band emission at antenna terminals – HSDPA CH Low

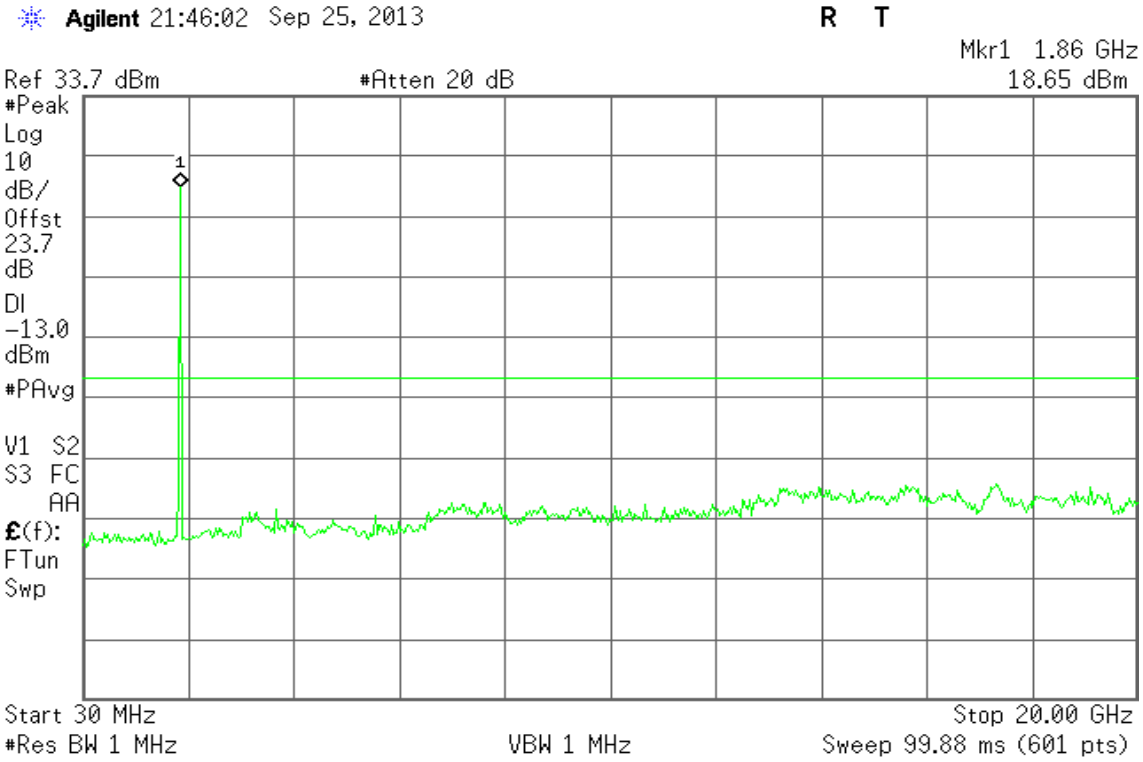



Figure 23-2: Out of Band emission at antenna terminals – HSDPA CH Mid

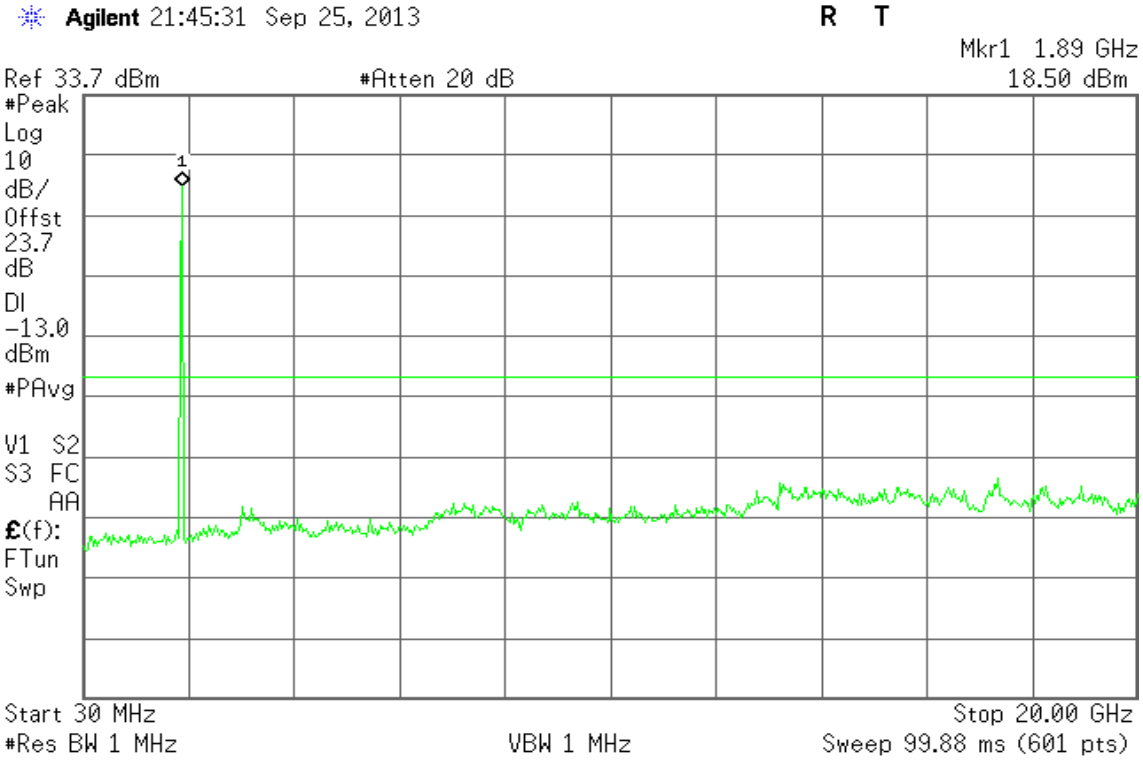
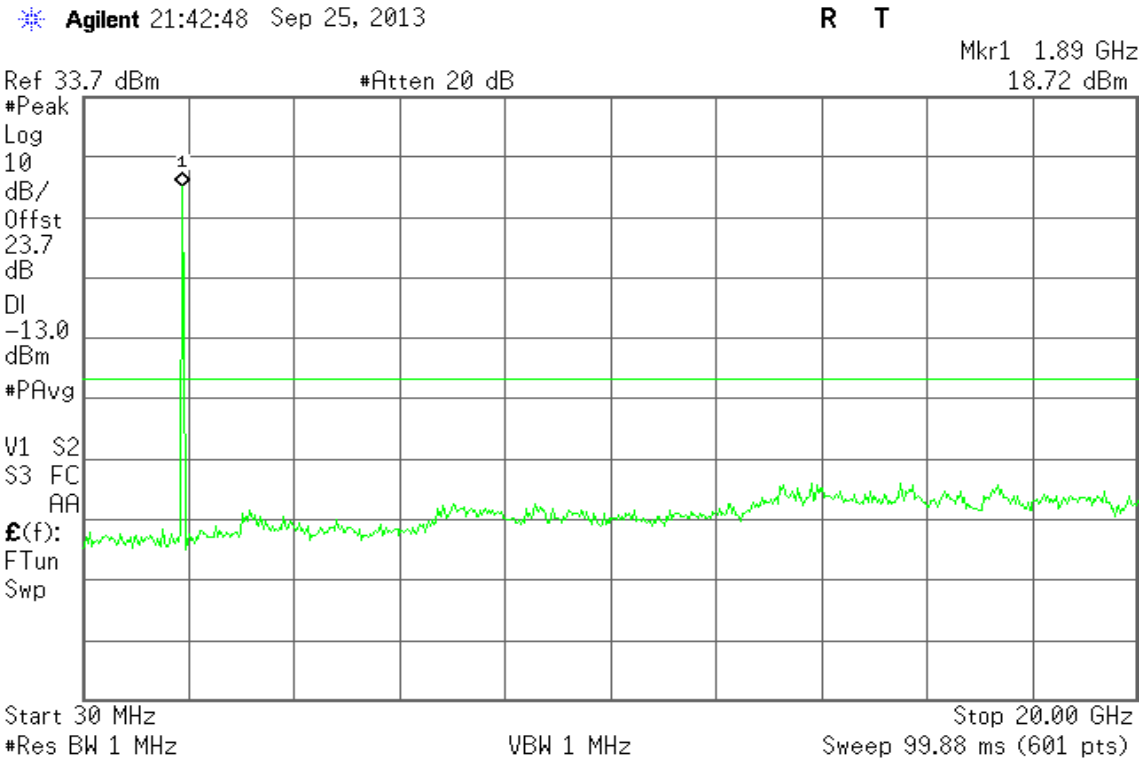


Figure 23-3: Out of Band emission at antenna terminals – HSDPA CH High




## WCDMA / HSDPA Band V

Figure 21-1: Out of Band emission at antenna terminals – HSDPA CH Low

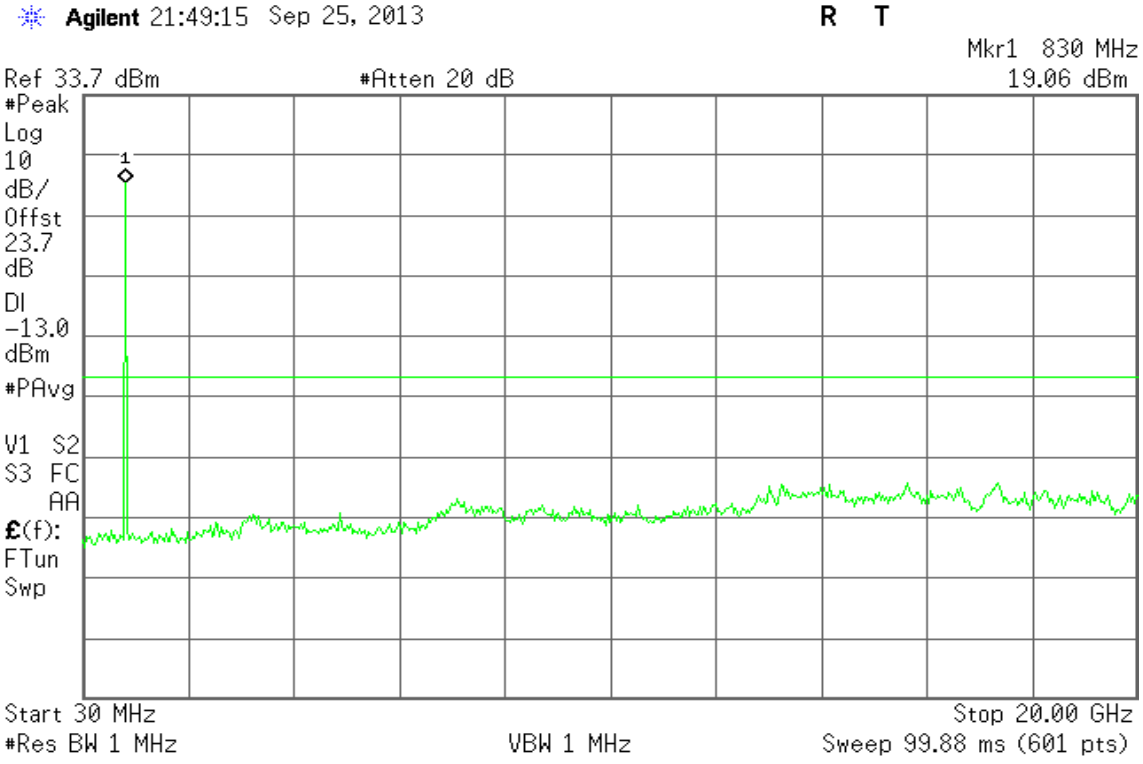


Figure 24-2: Out of Band emission at antenna terminals – HSDPA CH Mid

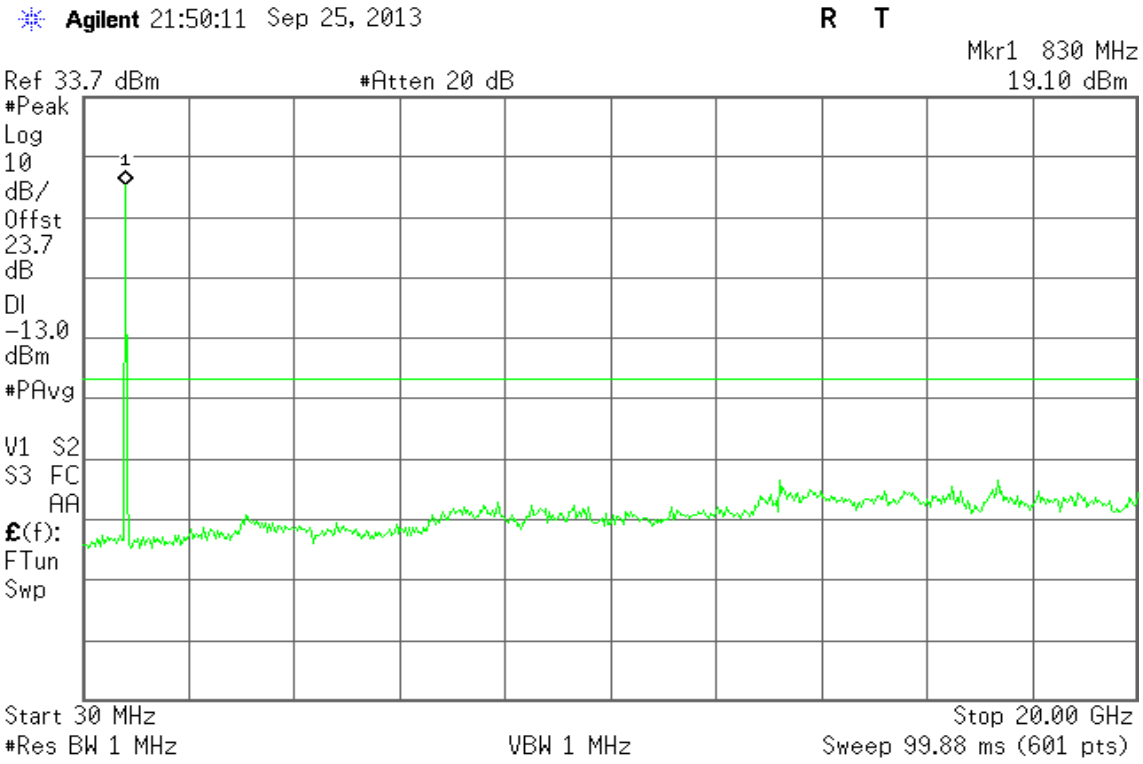
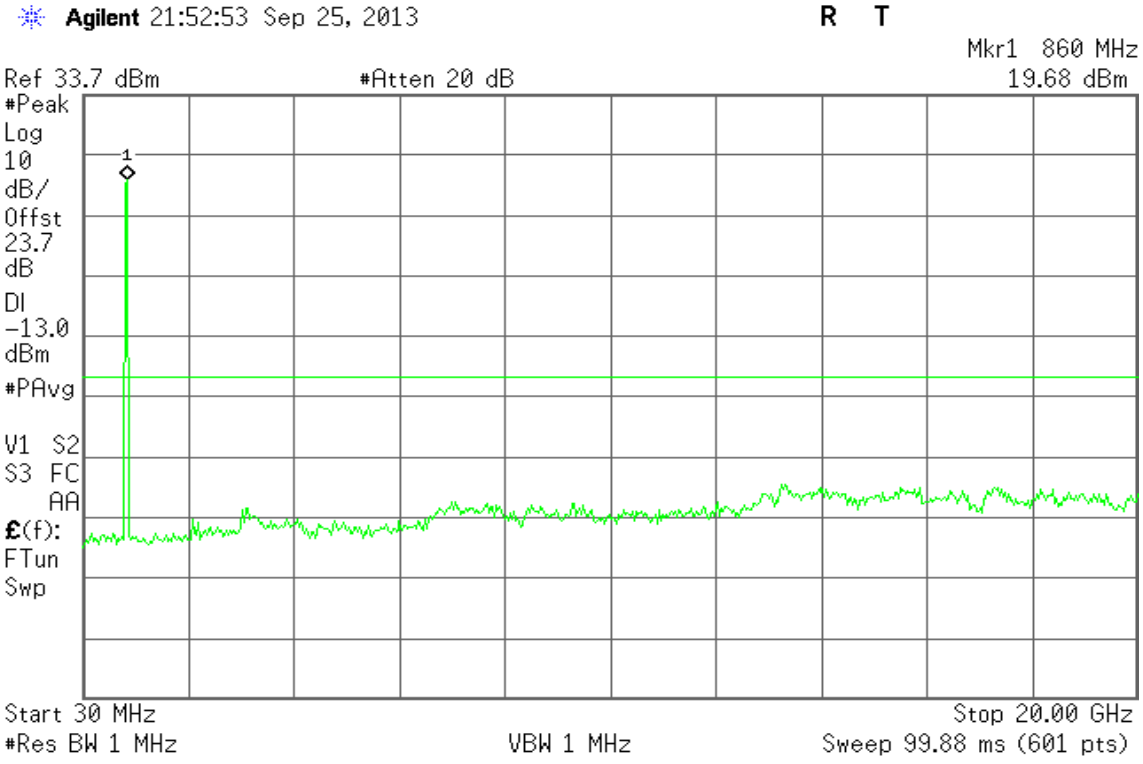



Figure 24-3: Out of Band emission at antenna terminals – HSDPA CH High



## WCDMA / HSDPA Band II

Figure 25-1: Band Edge emissions – HSDPA CH Low

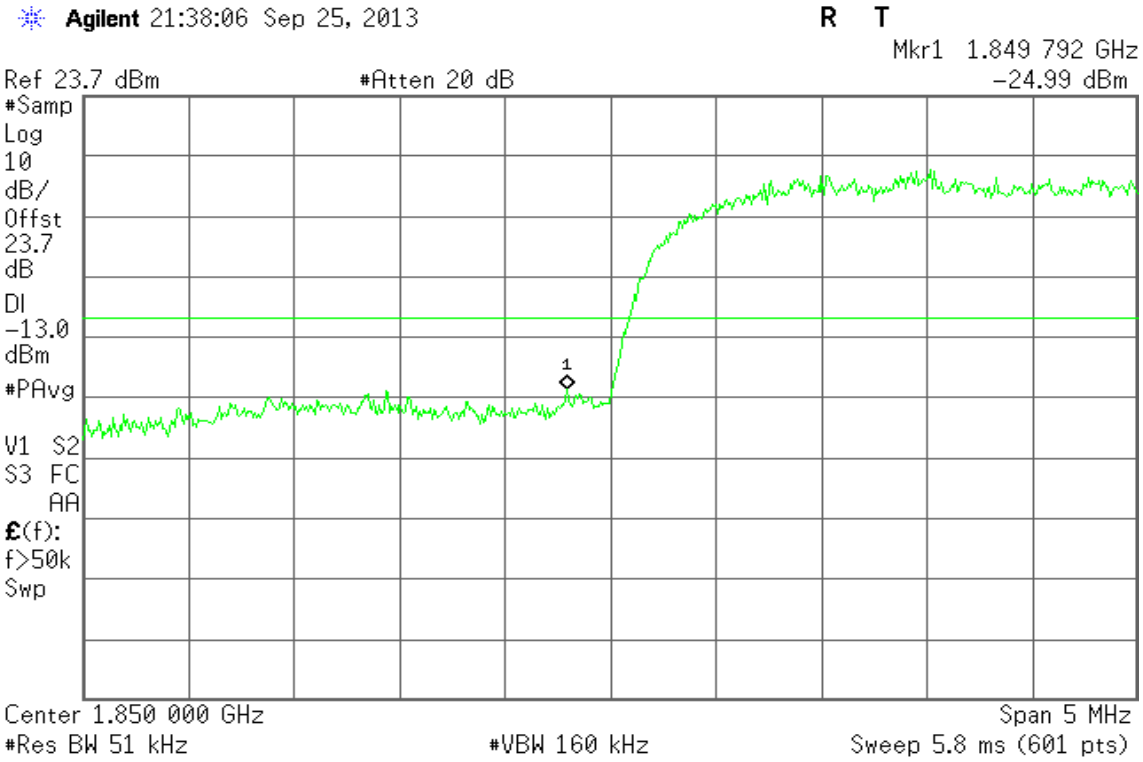
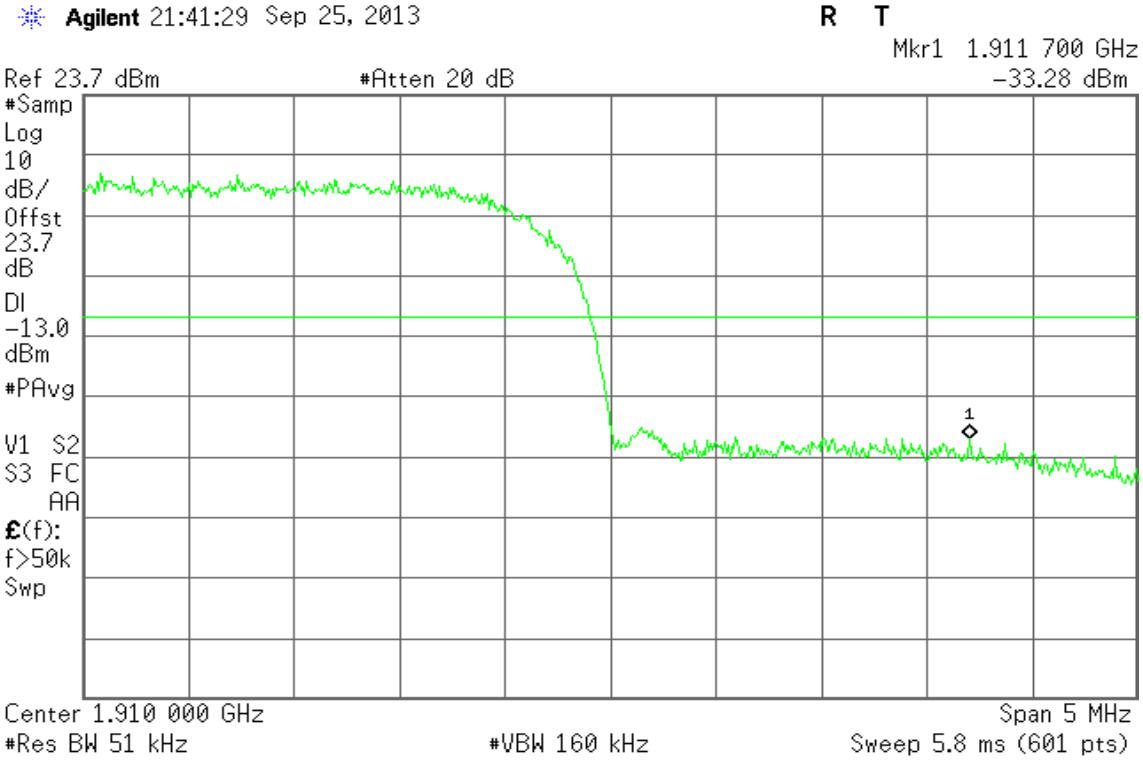



Figure 25-2: Band Edge emissions – HSDPA CH High



## WCDMA / HSDPA Band V

Figure 26-1: Band Edge emissions – HSDPA CH Low

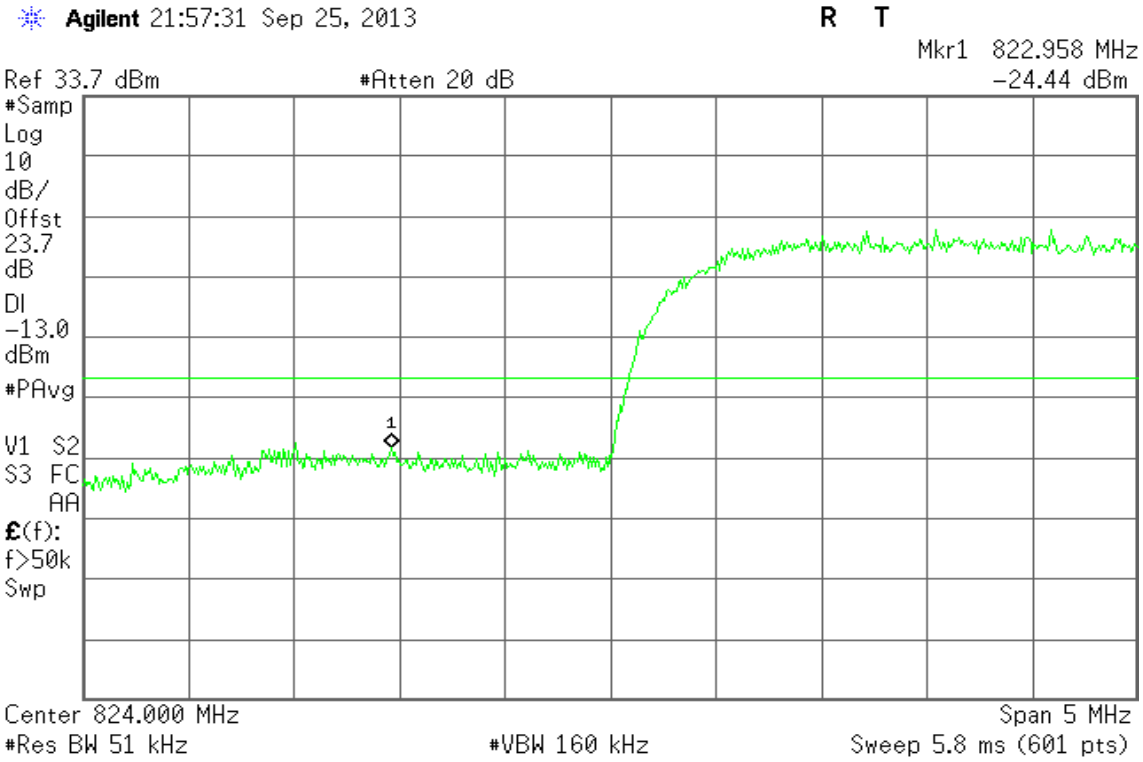
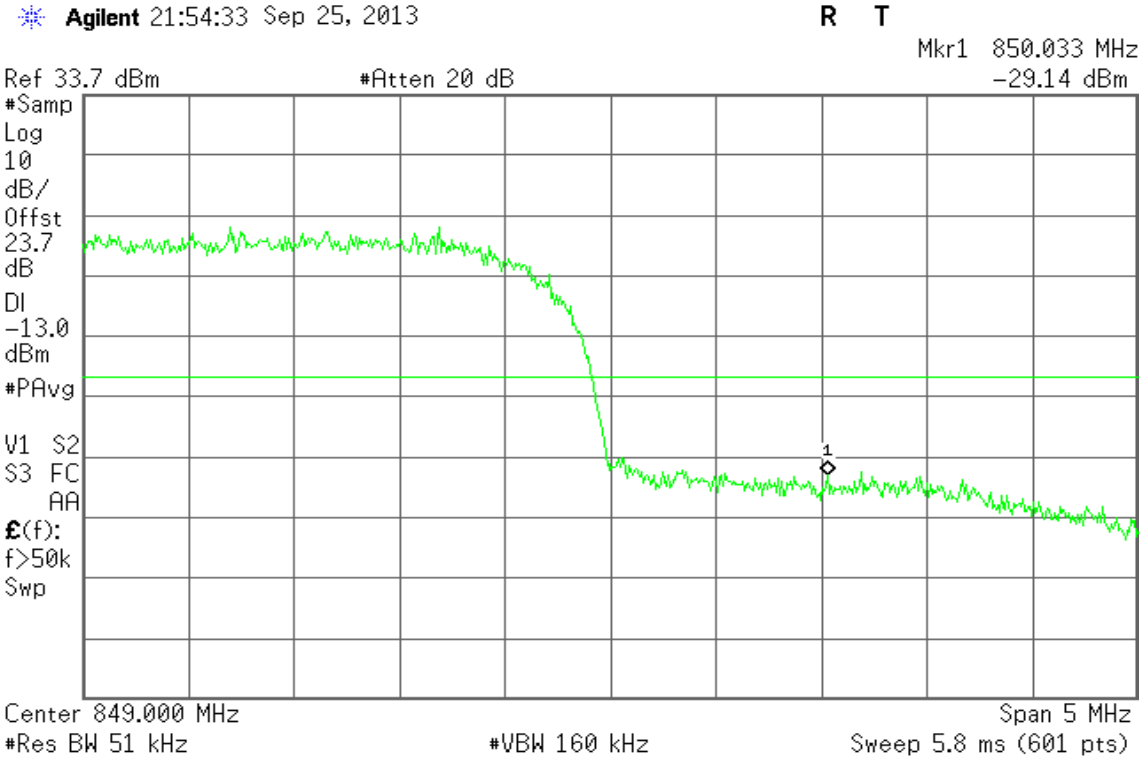



Figure 26-2: Band Edge emissions – HSDPA CH High



## WCDMA / HSUPA Band II

Figure 27-1: Out of Band emission at antenna terminals – HSUPA CH Low

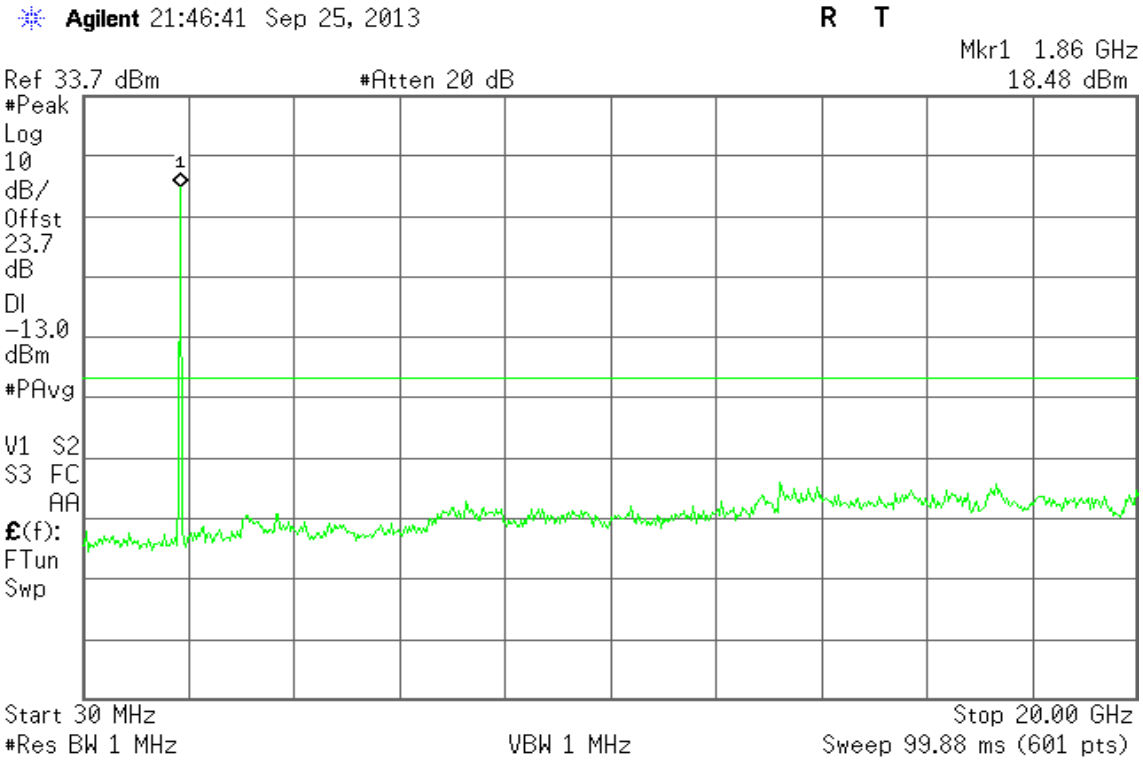



Figure 27-2: Out of Band emission at antenna terminals – HSUPA CH Mid

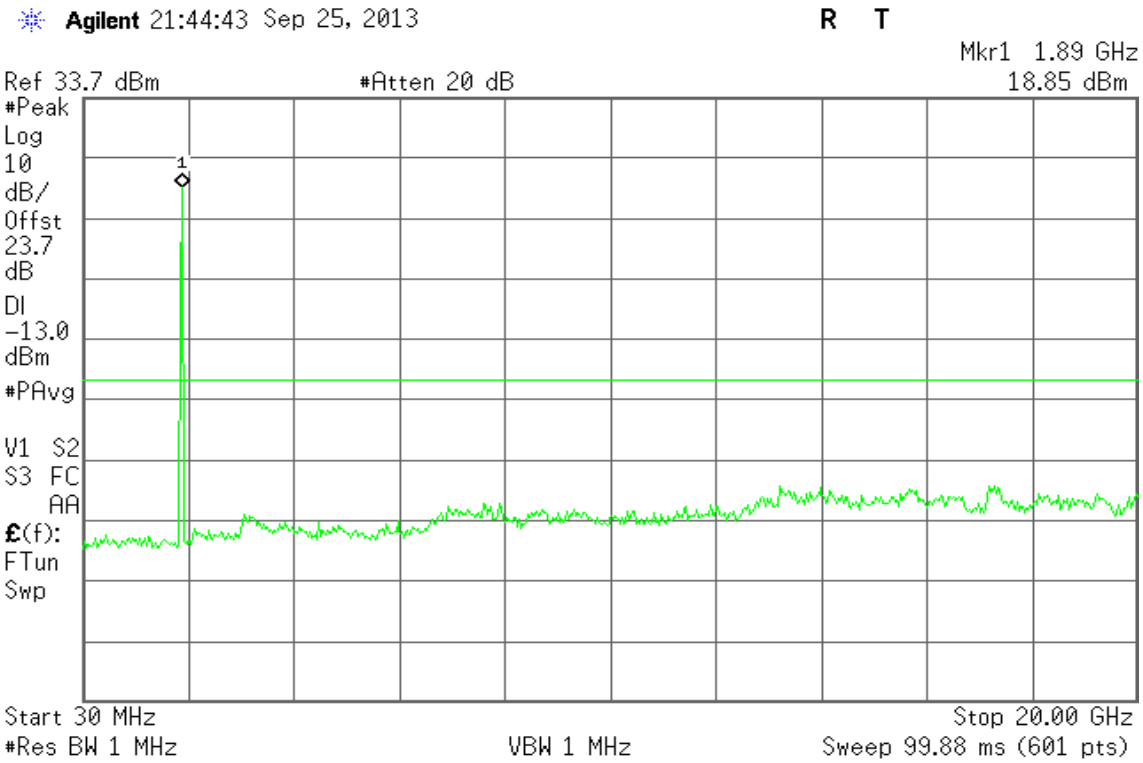
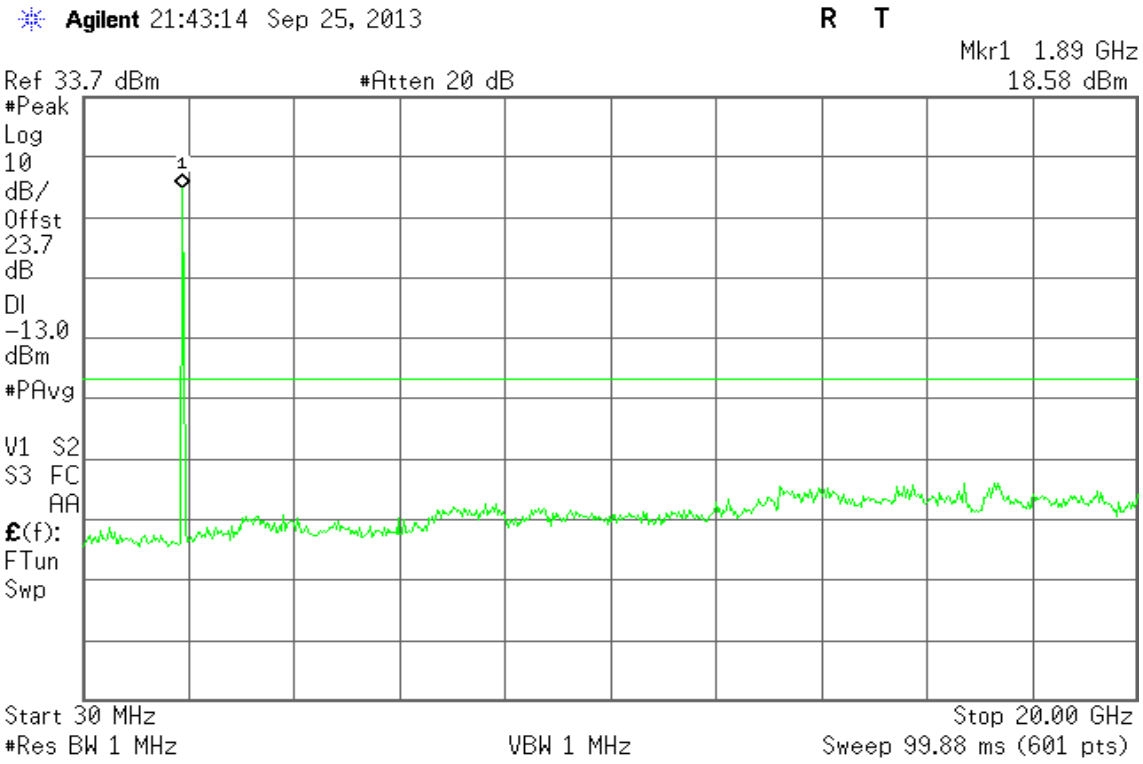


Figure 27-3: Out of Band emission at antenna terminals – HSUPA CH High




## HSUPA / WCDMA Band V

Figure 28-1: Out of Band emission at antenna terminals – HSUPA CH Low

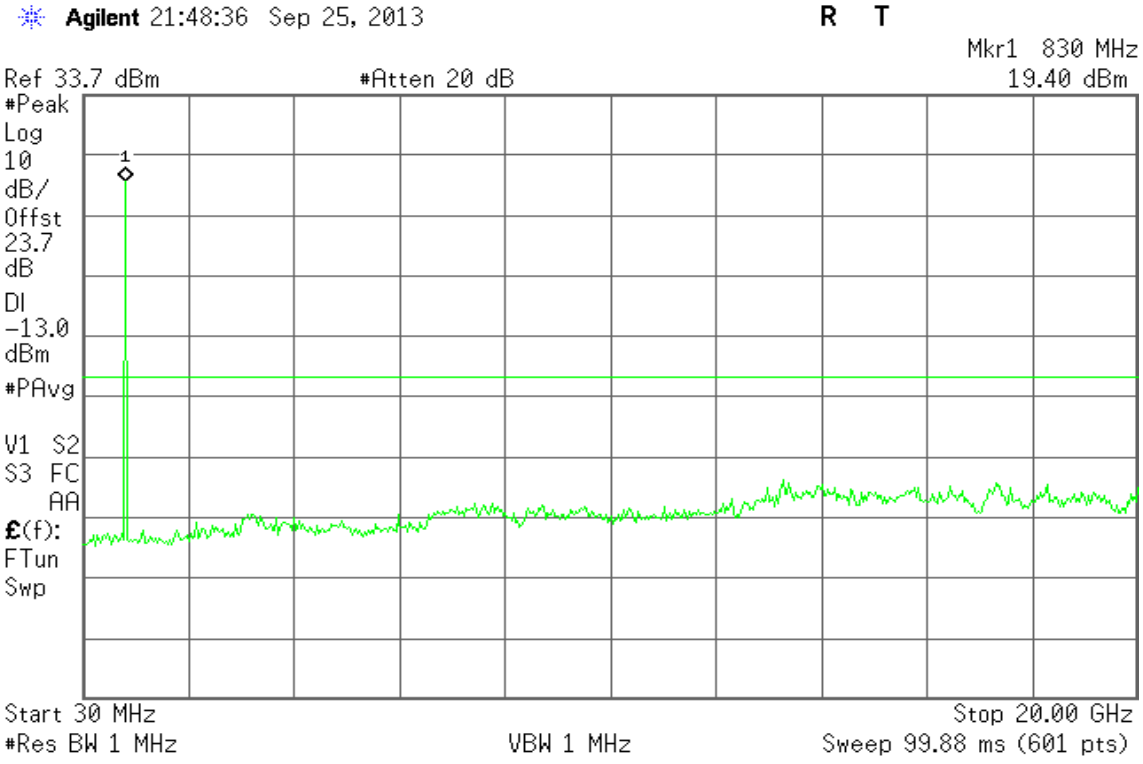


Figure 28-2: Out of Band emission at antenna terminals – HSUPA CH Mid

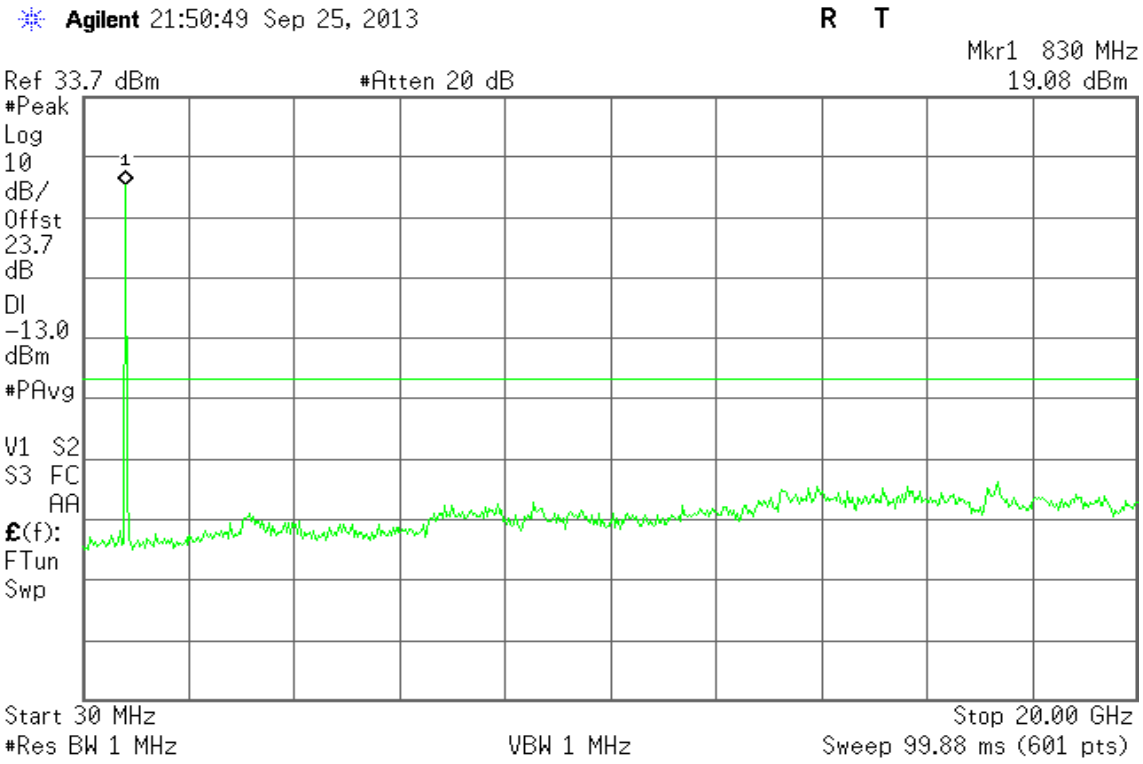
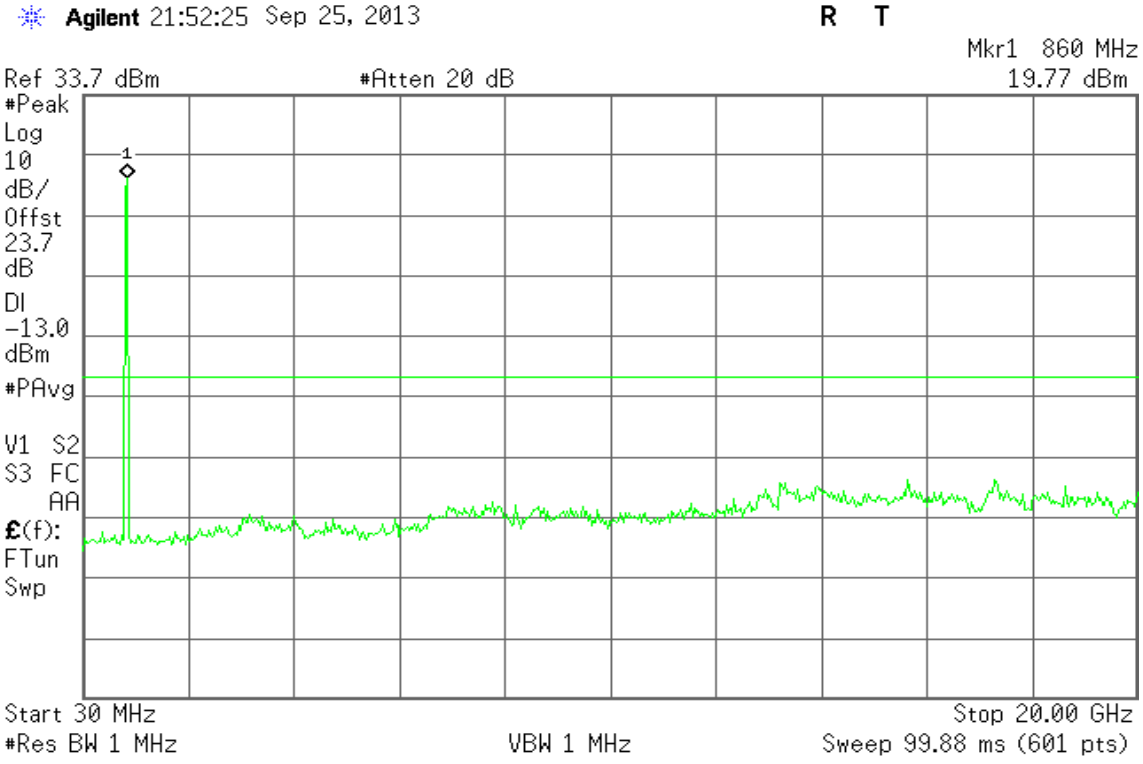



Figure 28-3: Out of Band emission at antenna terminals – HSUPA CH High



## WCDMA / HSUPA Band II

Figure 29-1: Band Edge emissions – HSUPA CH Low

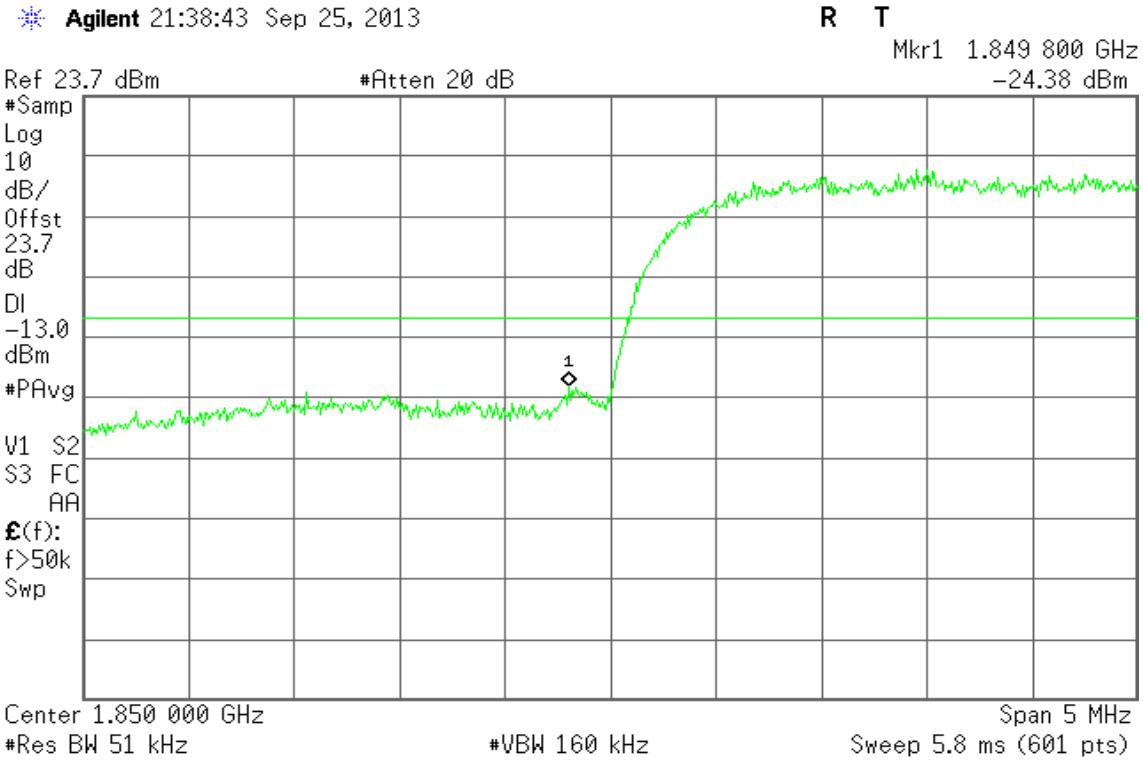
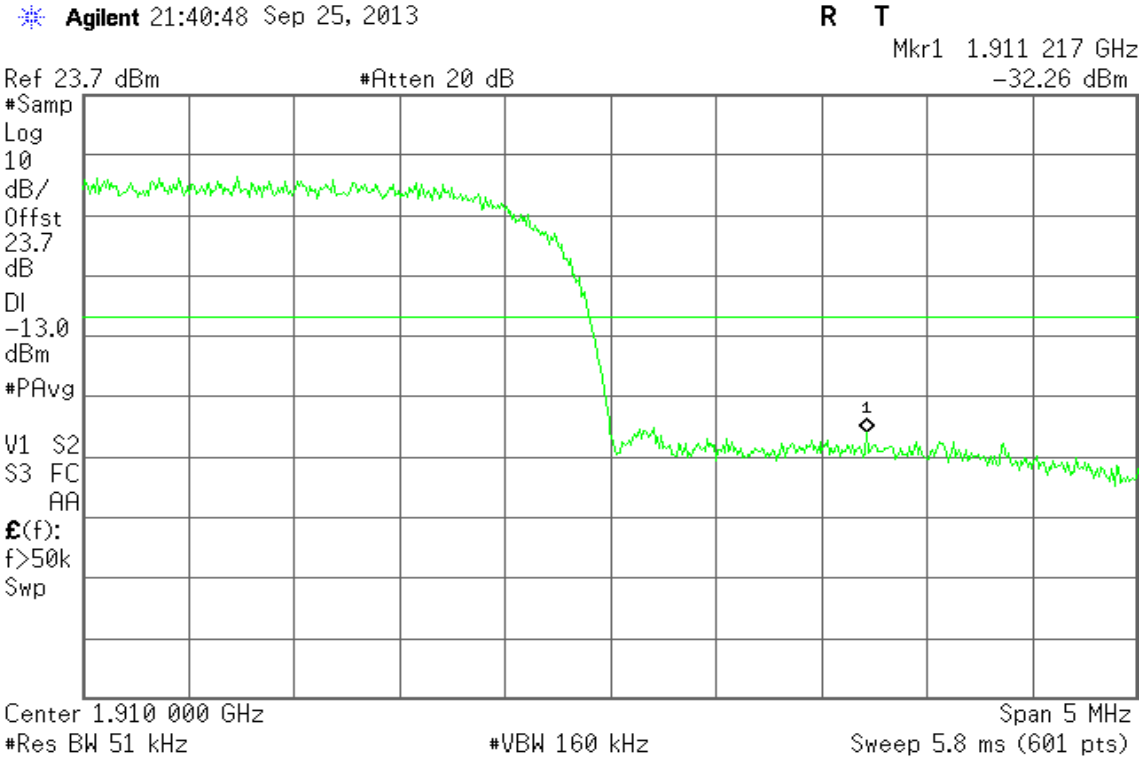



Figure 29-2: Band Edge emissions – HSUPA CH High



## WCDMA / HSUPA Band V

Figure 30-1: Band Edge emissions – HSUPA CH Low

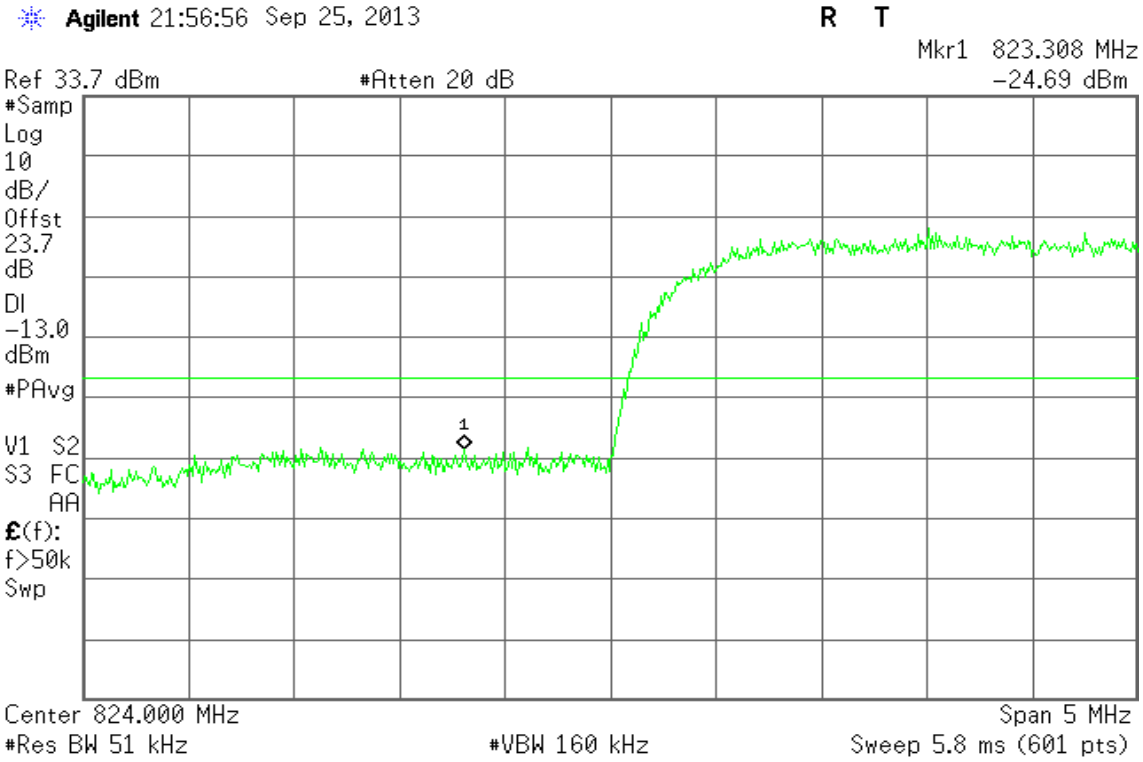
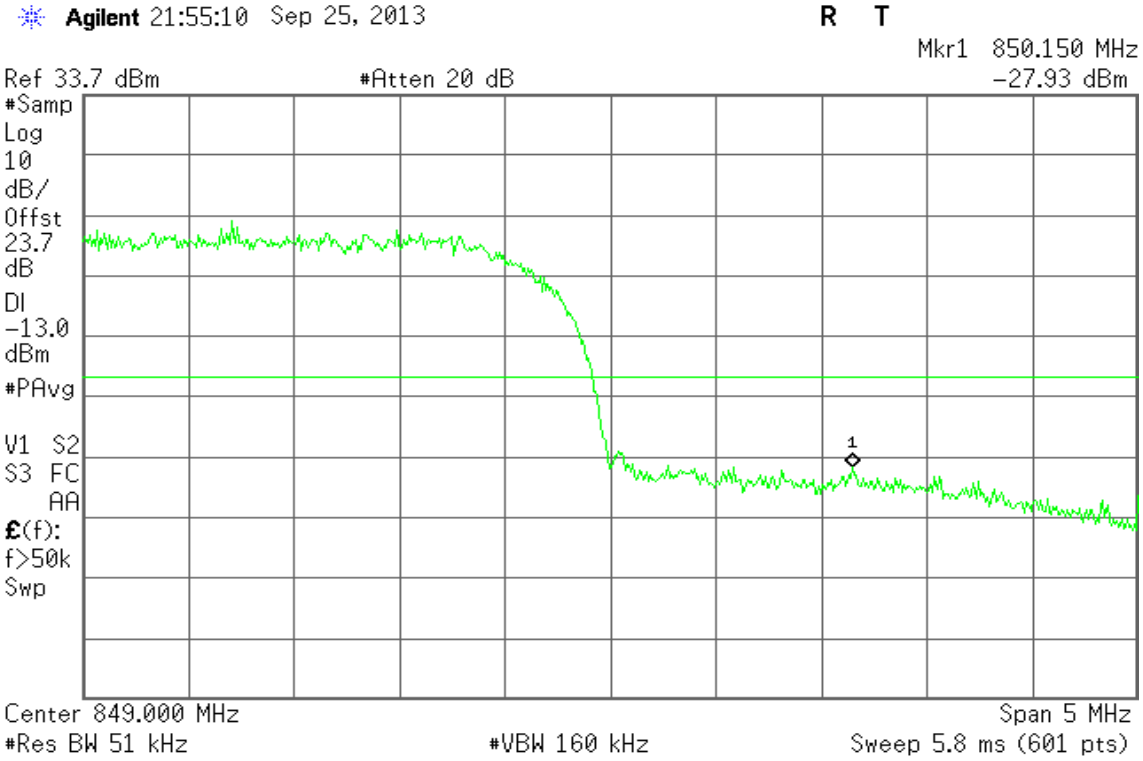



Figure 30-2: Band Edge emissions – HSUPA CH High



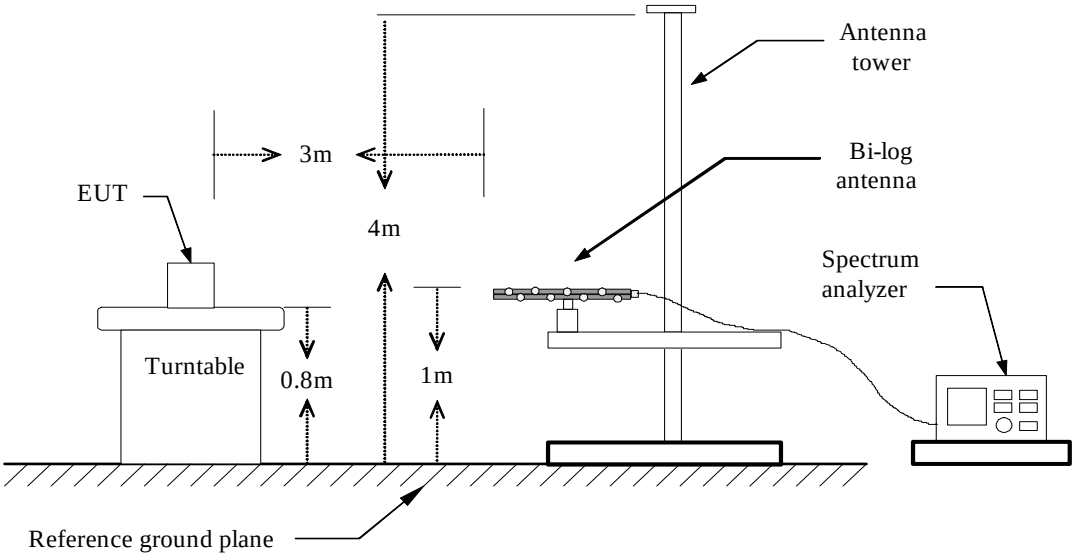
# 7.6 FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT

## LIMIT

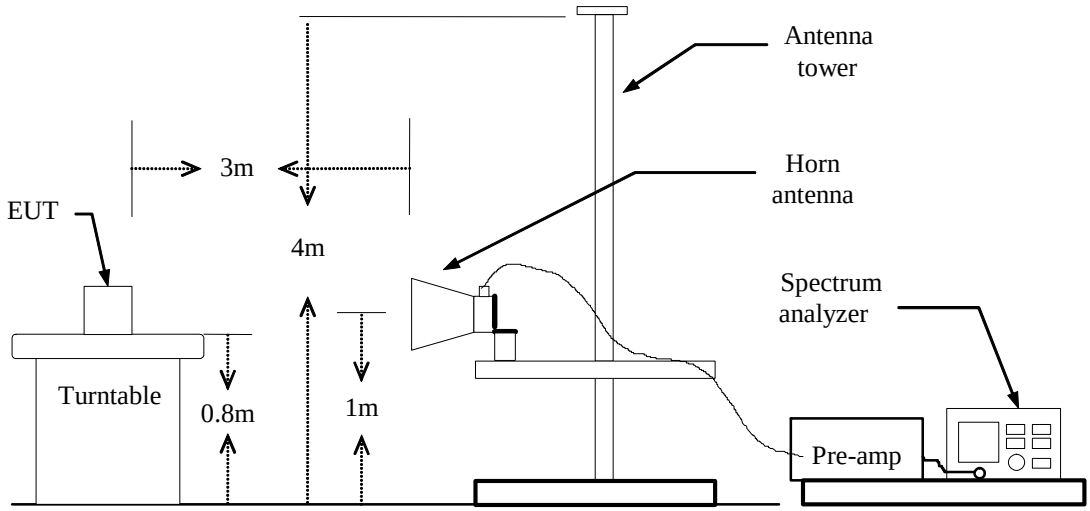
According to FCC §2.1053

**Test Configuration**

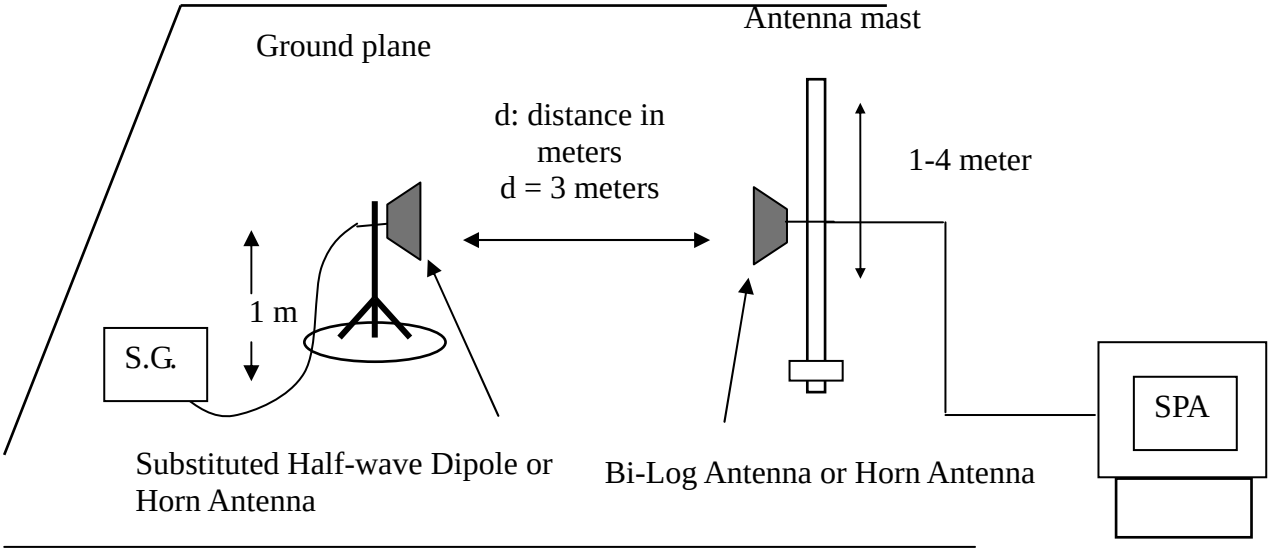
**Below 1 GHz**




**Above 1 GHz**



**Substituted Method Test Set-up**




## TEST PROCEDURE

The EUT was placed on a non-conductive, the measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

The frequency range up to tenth harmonic was investigated for each of three fundamental frequency (low, middle and high channels). Once spurious emission were identified, the power of the emission was determined using the substitution method.

The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency.

ERP = S.G. output (dBm) + Antenna Gain (dBd) – Cable (dB)

EIRP = S.G. output (dBm) + Antenna Gain (dBi) – Cable (dB)

## TEST RESULTS

*Refer to the attached tabular data sheets.*

## Radiated Spurious Emission Measurement Result / Below 1GHz

**Operation Mode:** WCDMA Band II / TX / CH 9262 **Test Date:** July 31, 2013

**Temperature:** 26°C **Tested by:** David Shu

**Humidity:** 60 % RH **Polarity:** Ver. / Hor.

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 51.3400 | -64.16 | 0.81 | -4.51 | -69.48 | -13.00 | -56.48 | V |
| 95.9600 | -71.26 | 1.13 | 0.26 | -72.13 | -13.00 | -59.13 | V |
| 156.1000 | -73.58 | 1.46 | 1.15 | -73.89 | -13.00 | -60.89 | V |
| 207.5100 | -78.25 | 1.67 | 4.95 | -74.97 | -13.00 | -61.97 | V |
| 665.3500 | -71.47 | 3.06 | 6.3 | -68.23 | -13.00 | -55.23 | V |
| 883.6000 | -72.41 | 3.48 | 6.7 | -69.19 | -13.00 | -56.19 | V |
| | | | | | | | |
| 48.4300 | -65.24 | 0.79 | -5.83 | -71.86 | -13.00 | -58.86 | H |
| 123.1200 | -64.45 | 1.29 | -1.87 | -67.61 | -13.00 | -54.61 | H |
| 207.5100 | -78.82 | 1.67 | 4.95 | -75.54 | -13.00 | -62.54 | H |
| 263.7700 | -81.42 | 1.93 | 5.41 | -77.94 | -13.00 | -64.94 | H |
| 452.9200 | -76.47 | 2.59 | 5.77 | -73.29 | -13.00 | -60.29 | H |
| 603.2700 | -72.68 | 2.91 | 6.37 | -69.22 | -13.00 | -56.22 | H |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

**Operation Mode:** WCDMA Band II / TX / CH 9400 **Test Date:** July 31, 2013

**Temperature:** 26°C **Tested by:** David Shu

**Humidity:** 60 % RH **Polarity:** Ver. / Hor.

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 51.3400 | -63.3 | 0.81 | -4.51 | -68.62 | -13.00 | -55.62 | V |
| 95.9600 | -71.4 | 1.13 | 0.26 | -72.27 | -13.00 | -59.27 | V |
| 156.1000 | -74.48 | 1.46 | 1.15 | -74.79 | -13.00 | -61.79 | V |
| 208.4800 | -76.79 | 1.67 | 5.2 | -73.26 | -13.00 | -60.26 | V |
| 883.6000 | -73.07 | 3.48 | 6.7 | -69.85 | -13.00 | -56.85 | V |
| 935.9800 | -71.94 | 3.6 | 6.4 | -69.14 | -13.00 | -56.14 | V |
| | | | | | | | |
| 123.1200 | -63.03 | 1.29 | -1.87 | -66.19 | -13.00 | -53.19 | H |
| 207.5100 | -74.51 | 1.67 | 4.95 | -71.23 | -13.00 | -58.23 | H |
| 320.0300 | -77.41 | 2.18 | 5.71 | -73.88 | -13.00 | -60.88 | H |
| 606.1800 | -63.76 | 2.93 | 6.34 | -60.35 | -13.00 | -47.35 | H |
| 883.6000 | -68.21 | 3.48 | 6.7 | -64.99 | -13.00 | -51.99 | H |
| 935.9800 | -65.6 | 3.6 | 6.4 | -62.80 | -13.00 | -49.80 | H |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

**Operation Mode:** WCDMA Band II / TX / CH 9538 **Test Date:** July 31, 2013

**Temperature:** 26°C **Tested by:** David Shu

**Humidity:** 60 % RH **Polarity:** Ver. / Hor.

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 51.3400 | -64.22 | 0.81 | -4.51 | -69.54 | -13.00 | -56.54 | V |
| 156.1000 | -74.42 | 1.46 | 1.15 | -74.73 | -13.00 | -61.73 | V |
| 208.4800 | -77.42 | 1.67 | 5.2 | -73.89 | -13.00 | -60.89 | V |
| 263.7700 | -80.75 | 1.93 | 5.41 | -77.27 | -13.00 | -64.27 | V |
| 671.1700 | -70.74 | 3.07 | 6.32 | -67.49 | -13.00 | -54.49 | V |
| 935.9800 | -72.16 | 3.6 | 6.4 | -69.36 | -13.00 | -56.36 | V |
| | | | | | | | |
| 48.4300 | -64.16 | 0.79 | -5.83 | -70.78 | -13.00 | -57.78 | H |
| 123.1200 | -62.62 | 1.29 | -1.87 | -65.78 | -13.00 | -52.78 | H |
| 207.5100 | -75.66 | 1.67 | 4.95 | -72.38 | -13.00 | -59.38 | H |
| 572.2300 | -66.51 | 2.87 | 6.09 | -63.29 | -13.00 | -50.29 | H |
| 617.8200 | -66.68 | 2.94 | 6.14 | -63.48 | -13.00 | -50.48 | H |
| 935.9800 | -66.36 | 3.6 | 6.4 | -63.56 | -13.00 | -50.56 | H |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

**Operation Mode:** WCDMA Band V / TX / CH 4132 **Test Date:** July 31, 2013

**Temperature**: 26°C **Tested by:** David Shu

**Humidity:** 60 % RH **Polarity:** Ver. / Hor.

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 51.3400 | -64.86 | 0.81 | -4.51 | -70.18 | -13.00 | -57.18 | V |
| 95.9600 | -70.56 | 1.13 | 0.26 | -71.43 | -13.00 | -58.43 | V |
| 154.1600 | -74.78 | 1.45 | 1.01 | -75.22 | -13.00 | -62.22 | V |
| 208.4800 | -77.65 | 1.67 | 5.2 | -74.12 | -13.00 | -61.12 | V |
| 263.7700 | -79.89 | 1.93 | 5.41 | -76.41 | -13.00 | -63.41 | V |
| 612.9700 | -72.65 | 2.94 | 6.23 | -69.36 | -13.00 | -56.36 | V |
| | | | | | | | |
| 48.4300 | -64.54 | 0.79 | -5.83 | -71.16 | -13.00 | -58.16 | H |
| 124.0900 | -64.04 | 1.3 | -1.81 | -67.15 | -13.00 | -54.15 | H |
| 208.4800 | -75.07 | 1.67 | 5.2 | -71.54 | -13.00 | -58.54 | H |
| 288.0200 | -77.55 | 2.02 | 5.38 | -74.19 | -13.00 | -61.19 | H |
| 401.5100 | -75.65 | 2.4 | 5.98 | -72.07 | -13.00 | -59.07 | H |
| 609.0900 | -64.4 | 2.94 | 6.31 | -61.03 | -13.00 | -48.03 | H |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

**Operation Mode:** WCDMA Band V / TX / CH 4182 **Test Date:** July 31, 2013

**Temperature**: 26°C **Tested by:** David Shu

**Humidity:** 60 % RH **Polarity:** Ver. / Hor.

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 51.3400 | -65 | 0.81 | -4.51 | -70.32 | -13.00 | -57.32 | V |
| 95.9600 | -71.35 | 1.13 | 0.26 | -72.22 | -13.00 | -59.22 | V |
| 154.1600 | -74.37 | 1.45 | 1.01 | -74.81 | -13.00 | -61.81 | V |
| 208.4800 | -78.37 | 1.67 | 5.2 | -74.84 | -13.00 | -61.84 | V |
| 263.7700 | -80.23 | 1.93 | 5.41 | -76.75 | -13.00 | -63.75 | V |
| 612.0000 | -72.5 | 2.94 | 6.25 | -69.19 | -13.00 | -56.19 | V |
| | | | | | | | |
| 124.0900 | -63.37 | 1.3 | -1.81 | -66.48 | -13.00 | -53.48 | H |
| 129.9100 | -68.87 | 1.34 | -1.41 | -71.62 | -13.00 | -58.62 | H |
| 207.5100 | -74.96 | 1.67 | 4.95 | -71.68 | -13.00 | -58.68 | H |
| 312.2700 | -76.73 | 2.14 | 5.76 | -73.11 | -13.00 | -60.11 | H |
| 452.9200 | -74.35 | 2.59 | 5.77 | -71.17 | -13.00 | -58.17 | H |
| 603.2700 | -64.99 | 2.91 | 6.37 | -61.53 | -13.00 | -48.53 | H |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

**Operation Mode:** WCDMA Band V / TX / CH 4233 **Test Date:** July 31, 2013

**Temperature**: 26°C **Tested by:** David Shu

**Humidity:** 60 % RH **Polarity:** Ver. / Hor.

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 51.3400 | -64.35 | 0.81 | -4.51 | -69.67 | -13.00 | -56.67 | V |
| 95.9600 | -70.5 | 1.13 | 0.26 | -71.37 | -13.00 | -58.37 | V |
| 208.4800 | -77.78 | 1.67 | 5.2 | -74.25 | -13.00 | -61.25 | V |
| 312.2700 | -80.84 | 2.14 | 5.76 | -77.22 | -13.00 | -64.22 | V |
| 618.7900 | -72.22 | 2.94 | 6.12 | -69.04 | -13.00 | -56.04 | V |
| 741.0100 | -77.36 | 3.21 | 6.1 | -74.47 | -13.00 | -61.47 | V |
| | | | | | | | |
| 47.4600 | -63.9 | 0.78 | -6.58 | -71.26 | -13.00 | -58.26 | H |
| 122.1500 | -63.98 | 1.29 | -1.93 | -67.20 | -13.00 | -54.20 | H |
| 207.5100 | -75.48 | 1.67 | 4.95 | -72.20 | -13.00 | -59.20 | H |
| 263.7700 | -77.94 | 1.93 | 5.41 | -74.46 | -13.00 | -61.46 | H |
| 384.0500 | -76.69 | 2.31 | 5.99 | -73.01 | -13.00 | -60.01 | H |
| 608.1200 | -64.77 | 2.93 | 6.32 | -61.38 | -13.00 | -48.38 | H |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | WCDMA / HSDPA Band II / TX / CH 9262 | **Test Date:** | July 31, 2013 |
| **Temperature:** | 26°C | **Tested by:** | David Shu |
| **Humidity:** | 60 % RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 51.3400 | -64.55 | 0.81 | -4.51 | -69.87 | -13.00 | -56.87 | V |
| 208.4800 | -77.82 | 1.67 | 5.2 | -74.29 | -13.00 | -61.29 | V |
| 435.4600 | -81.85 | 2.51 | 5.86 | -78.50 | -13.00 | -65.50 | V |
| 671.1700 | -71.15 | 3.07 | 6.32 | -67.90 | -13.00 | -54.90 | V |
| 883.6000 | -72.93 | 3.48 | 6.7 | -69.71 | -13.00 | -56.71 | V |
| 935.9800 | -71.29 | 3.6 | 6.4 | -68.49 | -13.00 | -55.49 | V |
| | | | | | | | |
| 48.4300 | -67.54 | 0.79 | -5.83 | -74.16 | -13.00 | -61.16 | H |
| 124.0900 | -65.23 | 1.3 | -1.81 | -68.34 | -13.00 | -55.34 | H |
| 207.5100 | -78.83 | 1.67 | 4.95 | -75.55 | -13.00 | -62.55 | H |
| 312.2700 | -80.58 | 2.14 | 5.76 | -76.96 | -13.00 | -63.96 | H |
| 452.9200 | -76.39 | 2.59 | 5.77 | -73.21 | -13.00 | -60.21 | H |
| 603.2700 | -74.83 | 2.91 | 6.37 | -71.37 | -13.00 | -58.37 | H |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | WCDMA / HSDPA Band II / TX / CH 9400 | **Test Date:** | July 31, 2013 |
| **Temperature:** | 26°C | **Tested by:** | David Shu |
| **Humidity:** | 60 % RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 51.3400 | -67.33 | 0.81 | -4.51 | -72.65 | -13.00 | -59.65 | V |
| 95.9600 | -73.87 | 1.13 | 0.26 | -74.74 | -13.00 | -61.74 | V |
| 156.1000 | -75.32 | 1.46 | 1.15 | -75.63 | -13.00 | -62.63 | V |
| 207.5100 | -77.71 | 1.67 | 4.95 | -74.43 | -13.00 | -61.43 | V |
| 607.1500 | -72.6 | 2.93 | 6.33 | -69.20 | -13.00 | -56.20 | V |
| 671.1700 | -71.06 | 3.07 | 6.32 | -67.81 | -13.00 | -54.81 | V |
| | | | | | | | |
| 48.4300 | -62.62 | 0.79 | -5.83 | -69.24 | -13.00 | -56.24 | H |
| 122.1500 | -62.81 | 1.29 | -1.93 | -66.03 | -13.00 | -53.03 | H |
| 207.5100 | -74.83 | 1.67 | 4.95 | -71.55 | -13.00 | -58.55 | H |
| 605.2100 | -63.93 | 2.92 | 6.35 | -60.50 | -13.00 | -47.50 | H |
| 883.6000 | -68.23 | 3.48 | 6.7 | -65.01 | -13.00 | -52.01 | H |
| 935.9800 | -66.34 | 3.6 | 6.4 | -63.54 | -13.00 | -50.54 | H |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | WCDMA / HSDPA Band II / TX / CH 9538 | **Test Date:** | July 31, 2013 |
| **Temperature:** | 26°C | **Tested by:** | David Shu |
| **Humidity:** | 60 % RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 52.3100 | -63.98 | 0.82 | -4.22 | -69.02 | -13.00 | -56.02 | V |
| 95.9600 | -72.5 | 1.13 | 0.26 | -73.37 | -13.00 | -60.37 | V |
| 154.1600 | -73.62 | 1.45 | 1.01 | -74.06 | -13.00 | -61.06 | V |
| 603.2700 | -72.39 | 2.91 | 6.37 | -68.93 | -13.00 | -55.93 | V |
| 676.0200 | -70.76 | 3.08 | 6.42 | -67.42 | -13.00 | -54.42 | V |
| 883.6000 | -72.64 | 3.48 | 6.7 | -69.42 | -13.00 | -56.42 | V |
| | | | | | | | |
| 48.4300 | -62.34 | 0.79 | -5.83 | -68.96 | -13.00 | -55.96 | H |
| 123.1200 | -62.46 | 1.29 | -1.87 | -65.62 | -13.00 | -52.62 | H |
| 208.4800 | -74.73 | 1.67 | 5.2 | -71.20 | -13.00 | -58.20 | H |
| 607.1500 | -64.43 | 2.93 | 6.33 | -61.03 | -13.00 | -48.03 | H |
| 680.8700 | -69.16 | 3.09 | 6.5 | -65.75 | -13.00 | -52.75 | H |
| 935.9800 | -66.75 | 3.6 | 6.4 | -63.95 | -13.00 | -50.95 | H |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | WCDMA / HSDPA Band V / TX / CH 4132 | **Test Date:** | July 31, 2013 |
| **Temperature**: | 26°C | **Tested by:** | David Shu |
| **Humidity:** | 60 % RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 51.3400 | -65.48 | 0.81 | -4.51 | -70.80 | -13.00 | -57.80 | V |
| 95.9600 | -70.96 | 1.13 | 0.26 | -71.83 | -13.00 | -58.83 | V |
| 156.1000 | -75.32 | 1.46 | 1.15 | -75.63 | -13.00 | -62.63 | V |
| 207.5100 | -77.19 | 1.67 | 4.95 | -73.91 | -13.00 | -60.91 | V |
| 312.2700 | -81.03 | 2.14 | 5.76 | -77.41 | -13.00 | -64.41 | V |
| 611.0300 | -72.84 | 2.94 | 6.27 | -69.51 | -13.00 | -56.51 | V |
| | | | | | | | |
| 48.4300 | -62.87 | 0.79 | -5.83 | -69.49 | -13.00 | -56.49 | H |
| 122.1500 | -63.49 | 1.29 | -1.93 | -66.71 | -13.00 | -53.71 | H |
| 207.5100 | -75.4 | 1.67 | 4.95 | -72.12 | -13.00 | -59.12 | H |
| 312.2700 | -76.28 | 2.14 | 5.76 | -72.66 | -13.00 | -59.66 | H |
| 384.0500 | -75.71 | 2.31 | 5.99 | -72.03 | -13.00 | -59.03 | H |
| 605.2100 | -64.46 | 2.92 | 6.35 | -61.03 | -13.00 | -48.03 | H |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | WCDMA / HSDPA Band V / TX / CH 4182 | **Test Date:** | July 31, 2013 |
| **Temperature**: | 26°C | **Tested by:** | David Shu |
| **Humidity:** | 60 % RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 95.9600 | -71.31 | 1.13 | 0.26 | -72.18 | -13.00 | -59.18 | V |
| 153.1900 | -73.93 | 1.44 | 0.94 | -74.43 | -13.00 | -61.43 | V |
| 239.5200 | -77.98 | 1.81 | 5.35 | -74.44 | -13.00 | -61.44 | V |
| 312.2700 | -81.28 | 2.14 | 5.76 | -77.66 | -13.00 | -64.66 | V |
| 494.6300 | -78.99 | 2.68 | 5.84 | -75.83 | -13.00 | -62.83 | V |
| 607.1500 | -72.72 | 2.93 | 6.33 | -69.32 | -13.00 | -56.32 | V |
| | | | | | | | |
| 123.1200 | -63.53 | 1.29 | -1.87 | -66.69 | -13.00 | -53.69 | H |
| 207.5100 | -75.09 | 1.67 | 4.95 | -71.81 | -13.00 | -58.81 | H |
| 312.2700 | -76.2 | 2.14 | 5.76 | -72.58 | -13.00 | -59.58 | H |
| 384.0500 | -75.42 | 2.31 | 5.99 | -71.74 | -13.00 | -58.74 | H |
| 462.6200 | -73.64 | 2.61 | 5.85 | -70.40 | -13.00 | -57.40 | H |
| 609.0900 | -65.22 | 2.94 | 6.31 | -61.85 | -13.00 | -48.85 | H |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | WCDMA / HSDPA Band V / TX / CH 4233 | **Test Date:** | July 31, 2013 |
| **Temperature**: | 26°C | **Tested by:** | David Shu |
| **Humidity:** | 60 % RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 51.3400 | -63.78 | 0.81 | -4.51 | -69.10 | -13.00 | -56.10 | V |
| 95.9600 | -70.78 | 1.13 | 0.26 | -71.65 | -13.00 | -58.65 | V |
| 207.5100 | -77.74 | 1.67 | 4.95 | -74.46 | -13.00 | -61.46 | V |
| 263.7700 | -79.23 | 1.93 | 5.41 | -75.75 | -13.00 | -62.75 | V |
| 312.2700 | -82.47 | 2.14 | 5.76 | -78.85 | -13.00 | -65.85 | V |
| 609.0900 | -72.75 | 2.94 | 6.31 | -69.38 | -13.00 | -56.38 | V |
| | | | | | | | |
| 47.4600 | -63.36 | 0.78 | -6.58 | -70.72 | -13.00 | -57.72 | H |
| 124.0900 | -63.36 | 1.3 | -1.81 | -66.47 | -13.00 | -53.47 | H |
| 208.4800 | -75.68 | 1.67 | 5.2 | -72.15 | -13.00 | -59.15 | H |
| 312.2700 | -77.04 | 2.14 | 5.76 | -73.42 | -13.00 | -60.42 | H |
| 384.0500 | -76.65 | 2.31 | 5.99 | -72.97 | -13.00 | -59.97 | H |
| 610.0600 | -64.63 | 2.94 | 6.29 | -61.28 | -13.00 | -48.28 | H |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | WCDMA / HSUPA Band II / TX / CH 9262 | **Test Date:** | July 31, 2013 |
| **Temperature:** | 26°C | **Tested by:** | David Shu |
| **Humidity:** | 60 % RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 51.3400 | -67.27 | 0.81 | -4.51 | -72.59 | -13.00 | -59.59 | V |
| 154.1600 | -77 | 1.45 | 1.01 | -77.44 | -13.00 | -64.44 | V |
| 240.4900 | -81.37 | 1.81 | 5.34 | -77.84 | -13.00 | -64.84 | V |
| 263.7700 | -81.95 | 1.93 | 5.41 | -78.47 | -13.00 | -65.47 | V |
| 408.3000 | -82.89 | 2.44 | 5.92 | -79.41 | -13.00 | -66.41 | V |
| 610.0600 | -73.51 | 2.94 | 6.29 | -70.16 | -13.00 | -57.16 | V |
| | | | | | | | |
| 57.1600 | -70.16 | 0.86 | -2.8 | -73.82 | -13.00 | -60.82 | H |
| 124.0900 | -65.83 | 1.3 | -1.81 | -68.94 | -13.00 | -55.94 | H |
| 452.9200 | -76.69 | 2.59 | 5.77 | -73.51 | -13.00 | -60.51 | H |
| 564.4700 | -75.37 | 2.86 | 6.03 | -72.20 | -13.00 | -59.20 | H |
| 676.0200 | -75.27 | 3.08 | 6.42 | -71.93 | -13.00 | -58.93 | H |
| 960.2300 | -69.3 | 3.67 | 6.39 | -66.58 | -13.00 | -53.58 | H |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | WCDMA / HSUPA Band II / TX / CH 9400 | **Test Date:** | July 31, 2013 |
| **Temperature:** | 26°C | **Tested by:** | David Shu |
| **Humidity:** | 60 % RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 52.3100 | -67.53 | 0.82 | -4.22 | -72.57 | -13.00 | -59.57 | V |
| 95.9600 | -72.43 | 1.13 | 0.26 | -73.30 | -13.00 | -60.30 | V |
| 153.1900 | -76.51 | 1.44 | 0.94 | -77.01 | -13.00 | -64.01 | V |
| 216.2400 | -83.85 | 1.74 | 5.36 | -80.23 | -13.00 | -67.23 | V |
| 435.4600 | -81.6 | 2.51 | 5.86 | -78.25 | -13.00 | -65.25 | V |
| 669.2300 | -73.6 | 3.07 | 6.3 | -70.37 | -13.00 | -57.37 | V |
| | | | | | | | |
| 48.4300 | -63.68 | 0.79 | -5.83 | -70.30 | -13.00 | -57.30 | H |
| 123.1200 | -62.23 | 1.29 | -1.87 | -65.39 | -13.00 | -52.39 | H |
| 208.4800 | -75.16 | 1.67 | 5.2 | -71.63 | -13.00 | -58.63 | H |
| 605.2100 | -63.59 | 2.92 | 6.35 | -60.16 | -13.00 | -47.16 | H |
| 883.6000 | -68.01 | 3.48 | 6.7 | -64.79 | -13.00 | -51.79 | H |
| 935.9800 | -66.97 | 3.6 | 6.4 | -64.17 | -13.00 | -51.17 | H |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | WCDMA / HSUPA Band II / TX / CH 9538 | **Test Date:** | July 31, 2013 |
| **Temperature:** | 26°C | **Tested by:** | David Shu |
| **Humidity:** | 60 % RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 51.3400 | -63.4 | 0.81 | -4.51 | -68.72 | -13.00 | -55.72 | V |
| 95.9600 | -71.9 | 1.13 | 0.26 | -72.77 | -13.00 | -59.77 | V |
| 207.5100 | -77.21 | 1.67 | 4.95 | -73.93 | -13.00 | -60.93 | V |
| 615.8800 | -71.96 | 2.94 | 6.18 | -68.72 | -13.00 | -55.72 | V |
| 671.1700 | -70.69 | 3.07 | 6.32 | -67.44 | -13.00 | -54.44 | V |
| 883.6000 | -72.16 | 3.48 | 6.7 | -68.94 | -13.00 | -55.94 | V |
| | | | | | | | |
| 123.1200 | -62.83 | 1.29 | -1.87 | -65.99 | -13.00 | -52.99 | H |
| 207.5100 | -74.62 | 1.67 | 4.95 | -71.34 | -13.00 | -58.34 | H |
| 263.7700 | -77.49 | 1.93 | 5.41 | -74.01 | -13.00 | -61.01 | H |
| 312.2700 | -76.87 | 2.14 | 5.76 | -73.25 | -13.00 | -60.25 | H |
| 607.1500 | -64.01 | 2.93 | 6.33 | -60.61 | -13.00 | -47.61 | H |
| 935.9800 | -65.14 | 3.6 | 6.4 | -62.34 | -13.00 | -49.34 | H |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | WCDMA / HSUPA Band V / TX / CH 4132 | **Test Date:** | July 31, 2013 |
| **Temperature**: | 26°C | **Tested by:** | David Shu |
| **Humidity:** | 60 % RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 51.3400 | -64.32 | 0.81 | -4.51 | -69.64 | -13.00 | -56.64 | V |
| 95.9600 | -70.95 | 1.13 | 0.26 | -71.82 | -13.00 | -58.82 | V |
| 208.4800 | -78.3 | 1.67 | 5.2 | -74.77 | -13.00 | -61.77 | V |
| 288.0200 | -80.54 | 2.02 | 5.38 | -77.18 | -13.00 | -64.18 | V |
| 384.0500 | -81.47 | 2.31 | 5.99 | -77.79 | -13.00 | -64.79 | V |
| 613.9400 | -72.94 | 2.94 | 6.21 | -69.67 | -13.00 | -56.67 | V |
| | | | | | | | |
| 48.4300 | -64.41 | 0.79 | -5.83 | -71.03 | -13.00 | -58.03 | H |
| 123.1200 | -63.66 | 1.29 | -1.87 | -66.82 | -13.00 | -53.82 | H |
| 216.2400 | -76.06 | 1.74 | 5.36 | -72.44 | -13.00 | -59.44 | H |
| 312.2700 | -75.5 | 2.14 | 5.76 | -71.88 | -13.00 | -58.88 | H |
| 384.0500 | -76 | 2.31 | 5.99 | -72.32 | -13.00 | -59.32 | H |
| 610.0600 | -64.9 | 2.94 | 6.29 | -61.55 | -13.00 | -48.55 | H |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | WCDMA / HSUPA Band V / TX / CH 4182 | **Test Date:** | July 31, 2013 |
| **Temperature**: | 26°C | **Tested by:** | David Shu |
| **Humidity:** | 60 % RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 51.3400 | -64.47 | 0.81 | -4.51 | -69.79 | -13.00 | -56.79 | V |
| 95.9600 | -70.3 | 1.13 | 0.26 | -71.17 | -13.00 | -58.17 | V |
| 153.1900 | -74.12 | 1.44 | 0.94 | -74.62 | -13.00 | -61.62 | V |
| 207.5100 | -77.58 | 1.67 | 4.95 | -74.30 | -13.00 | -61.30 | V |
| 263.7700 | -80.13 | 1.93 | 5.41 | -76.65 | -13.00 | -63.65 | V |
| 611.0300 | -72.38 | 2.94 | 6.27 | -69.05 | -13.00 | -56.05 | V |
| | | | | | | | |
| 48.4300 | -63.55 | 0.79 | -5.83 | -70.17 | -13.00 | -57.17 | H |
| 124.0900 | -63.96 | 1.3 | -1.81 | -67.07 | -13.00 | -54.07 | H |
| 216.2400 | -75.6 | 1.74 | 5.36 | -71.98 | -13.00 | -58.98 | H |
| 263.7700 | -77.08 | 1.93 | 5.41 | -73.60 | -13.00 | -60.60 | H |
| 312.2700 | -75.39 | 2.14 | 5.76 | -71.77 | -13.00 | -58.77 | H |
| 604.2400 | -65.12 | 2.92 | 6.36 | -61.68 | -13.00 | -48.68 | H |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | WCDMA / HSUPA Band V / TX / CH 4233 | **Test Date:** | July 31, 2013 |
| **Temperature**: | 26°C | **Tested by:** | David Shu |
| **Humidity:** | 60 % RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 51.3400 | -63.86 | 0.81 | -4.51 | -69.18 | -13.00 | -56.18 | V |
| 95.9600 | -71.31 | 1.13 | 0.26 | -72.18 | -13.00 | -59.18 | V |
| 154.1600 | -74.44 | 1.45 | 1.01 | -74.88 | -13.00 | -61.88 | V |
| 207.5100 | -76.99 | 1.67 | 4.95 | -73.71 | -13.00 | -60.71 | V |
| 312.2700 | -81.05 | 2.14 | 5.76 | -77.43 | -13.00 | -64.43 | V |
| 616.8500 | -72.04 | 2.94 | 6.16 | -68.82 | -13.00 | -55.82 | V |
| | | | | | | | |
| 48.4300 | -64.11 | 0.79 | -5.83 | -70.73 | -13.00 | -57.73 | H |
| 123.1200 | -63.22 | 1.29 | -1.87 | -66.38 | -13.00 | -53.38 | H |
| 208.4800 | -75.74 | 1.67 | 5.2 | -72.21 | -13.00 | -59.21 | H |
| 312.2700 | -76.54 | 2.14 | 5.76 | -72.92 | -13.00 | -59.92 | H |
| 408.3000 | -75.94 | 2.44 | 5.92 | -72.46 | -13.00 | -59.46 | H |
| 608.1200 | -64.93 | 2.93 | 6.32 | -61.54 | -13.00 | -48.54 | H |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

**Above 1GHz**

**Operation Mode:** WCDMA Band II / TX / CH 9262 **Test Date:** July 31, 2013

**Temperature:** 26°C **Tested by:** David Shu

**Humidity:** 60 % RH **Polarity:** Ver. / Hor.

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 3709.000 | -50.45 | 8.21 | 9.11 | -49.55 | -13.00 | -36.55 | V |
| 5781.000 | -52.5 | 10.37 | 10.86 | -52.01 | -13.00 | -39.01 | V |
| N/A | | | | | | | |
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| | | | | | | | |
| 1854.000 | -54.27 | 5.38 | 5.66 | -53.99 | -13.00 | -40.99 | H |
| 5564.000 | -46.41 | 10.1 | 10.81 | -45.70 | -13.00 | -32.70 | H |
| N/A | | | | | | | |
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***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

**Operation Mode:** WCDMA Band II / TX / CH 9400 **Test Date:** July 31, 2013

**Temperature:** 26°C **Tested by:** David Shu

**Humidity:** 60 % RH **Polarity:** Ver. / Hor.

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 3765.000 | -53.13 | 8.24 | 9.16 | -52.21 | -13.00 | -39.21 | V |
| 5998.000 | -53.06 | 10.82 | 10.9 | -52.98 | -13.00 | -39.98 | V |
| N/A | | | | | | | |
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| | | | | | | | |
| 4255.000 | -53.79 | 8.55 | 9.6 | -52.74 | -13.00 | -39.74 | H |
| 5641.000 | -50.52 | 10.18 | 10.83 | -49.87 | -13.00 | -36.87 | H |
| N/A | | | | | | | |
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***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

**Operation Mode:** WCDMA Band II / TX / CH 9538 **Test Date:** July 31, 2013

**Temperature:** 26°C **Tested by:** David Shu

**Humidity:** 60 % RH **Polarity:** Ver. / Hor.

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 3814.000 | -52.66 | 8.28 | 9.21 | -51.73 | -13.00 | -38.73 | V |
| 6355.000 | -51.94 | 11.01 | 11.18 | -51.77 | -13.00 | -38.77 | V |
| N/A | | | | | | | |
| | | | | | | | |
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| | | | | | | | |
| 3814.000 | -52.04 | 8.28 | 9.21 | -51.11 | -13.00 | -38.11 | H |
| 5718.000 | -49.1 | 10.21 | 10.84 | -48.47 | -13.00 | -35.47 | H |
| N/A | | | | | | | |
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***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

**Operation Mode:** WCDMA Band V / TX / CH 4132 **Test Date:** July 31, 2013

**Temperature**: 26°C **Tested by:** David Shu

**Humidity:** 60 % RH **Polarity:** Ver. / Hor.

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 3919.000 | -54.83 | 8.38 | 9.32 | -53.89 | -13.00 | -40.89 | V |
| 4787.000 | -53.67 | 9.3 | 10.26 | -52.71 | -13.00 | -39.71 | V |
| N/A | | | | | | | |
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| | | | | | | | |
| 3660.000 | -55.15 | 8.16 | 9.06 | -54.25 | -13.00 | -41.25 | H |
| 4759.000 | -52.39 | 9.24 | 10.21 | -51.42 | -13.00 | -38.42 | H |
| N/A | | | | | | | |
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***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

**Operation Mode:** WCDMA Band V / TX / CH 4182 **Test Date:** July 31, 2013

**Temperature**: 26°C **Tested by:** David Shu

**Humidity:** 60 % RH **Polarity:** Ver. / Hor.

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 4731.000 | -54.37 | 9.19 | 10.17 | -53.39 | -13.00 | -40.39 | V |
| 6117.000 | -51.51 | 10.72 | 10.99 | -51.24 | -13.00 | -38.24 | V |
| N/A | | | | | | | |
| | | | | | | | |
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| | | | | | | | |
| 4325.000 | -53.99 | 8.61 | 9.66 | -52.94 | -13.00 | -39.94 | H |
| 5074.000 | -53.75 | 9.44 | 10.63 | -52.56 | -13.00 | -39.56 | H |
| N/A | | | | | | | |
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***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

**Operation Mode:** WCDMA Band V / TX / CH 4233 **Test Date:** July 31, 2013

**Temperature**: 26°C **Tested by:** David Shu

**Humidity:** 60 % RH **Polarity:** Ver. / Hor.

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 3877.000 | -54.86 | 8.36 | 9.28 | -53.94 | -13.00 | -40.94 | V |
| 5389.000 | -53.38 | 9.8 | 10.76 | -52.42 | -13.00 | -39.42 | V |
| N/A | | | | | | | |
| | | | | | | | |
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| | | | | | | | |
| 3954.000 | -55.02 | 8.37 | 9.35 | -54.04 | -13.00 | -41.04 | H |
| 4766.000 | -53.78 | 9.26 | 10.23 | -52.81 | -13.00 | -39.81 | H |
| N/A | | | | | | | |
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***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | WCDMA / HSDPA Band II / TX / CH 9262 | **Test Date:** | July 31, 2013 |
| **Temperature:** | 26°C | **Tested by:** | David Shu |
| **Humidity:** | 60 % RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 3702.000 | -49.5 | 8.2 | 9.1 | -48.60 | -13.00 | -35.60 | V |
| 5312.000 | -50.14 | 9.67 | 10.72 | -49.09 | -13.00 | -36.09 | V |
| N/A | | | | | | | |
| | | | | | | | |
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| | | | | | | | |
| 5032.000 | -49.26 | 9.42 | 10.61 | -48.07 | -13.00 | -35.07 | H |
| 5760.000 | -48.94 | 10.32 | 10.85 | -48.41 | -13.00 | -35.41 | H |
| N/A | | | | | | | |
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***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | WCDMA / HSDPA Band II / TX / CH 9400 | **Test Date:** | July 31, 2013 |
| **Temperature:** | 26°C | **Tested by:** | David Shu |
| **Humidity:** | 60 % RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 4507.000 | -49.47 | 8.93 | 9.81 | -48.59 | -13.00 | -35.59 | V |
| 6565.000 | -47.6 | 11.16 | 11.38 | -47.38 | -13.00 | -34.38 | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 3765.000 | -48.26 | 8.24 | 9.16 | -47.34 | -13.00 | -34.34 | H |
| 5067.000 | -49.94 | 9.44 | 10.63 | -48.75 | -13.00 | -35.75 | H |
| N/A | | | | | | | |
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***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | WCDMA / HSDPA Band II / TX / CH 9538 | **Test Date:** | July 31, 2013 |
| **Temperature:** | 26°C | **Tested by:** | David Shu |
| **Humidity:** | 60 % RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 4570.000 | -49.94 | 9.06 | 9.91 | -49.09 | -13.00 | -36.09 | V |
| 6831.000 | -45.02 | 11.37 | 11.7 | -44.69 | -13.00 | -31.69 | V |
| N/A | | | | | | | |
| | | | | | | | |
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| | | | | | | | |
| 4332.000 | -49.26 | 8.61 | 9.67 | -48.20 | -13.00 | -35.20 | H |
| 5725.000 | -48.02 | 10.22 | 10.84 | -47.40 | -13.00 | -34.40 | H |
| N/A | | | | | | | |
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***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | WCDMA / HSDPA Band V / TX / CH 4132 | **Test Date:** | July 31, 2013 |
| **Temperature**: | 26°C | **Tested by:** | David Shu |
| **Humidity:** | 60 % RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 1945.000 | -51.77 | 5.57 | 5.5 | -51.84 | -13.00 | -38.84 | V |
| 5032.000 | -50.53 | 9.42 | 10.61 | -49.34 | -13.00 | -36.34 | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
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| | | | | | | | |
| 1651.000 | -54.03 | 5.05 | 6.03 | -53.05 | -13.00 | -40.05 | H |
| 4423.000 | -49.54 | 8.7 | 9.74 | -48.50 | -13.00 | -35.50 | H |
| N/A | | | | | | | |
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***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | WCDMA / HSDPA Band V / TX / CH 4182 | **Test Date:** | July 31, 2013 |
| **Temperature**: | 26°C | **Tested by:** | David Shu |
| **Humidity:** | 60 % RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 4514.000 | -49.68 | 8.94 | 9.82 | -48.80 | -13.00 | -35.80 | V |
| 6887.000 | -43.93 | 11.5 | 11.76 | -43.67 | -13.00 | -30.67 | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1672.000 | -50.87 | 5.07 | 5.99 | -49.95 | -13.00 | -36.95 | H |
| 3772.000 | -50.37 | 8.24 | 9.17 | -49.44 | -13.00 | -36.44 | H |
| N/A | | | | | | | |
| | | | | | | | |
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***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | WCDMA / HSDPA Band V / TX / CH 4233 | **Test Date:** | July 31, 2013 |
| **Temperature**: | 26°C | **Tested by:** | David Shu |
| **Humidity:** | 60 % RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 4087.000 | -50.69 | 8.45 | 9.47 | -49.67 | -13.00 | -36.67 | V |
| 6012.000 | -48.32 | 10.8 | 10.91 | -48.21 | -13.00 | -35.21 | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 2540.000 | -51.14 | 6.41 | 6.2 | -51.35 | -13.00 | -38.35 | H |
| 4850.000 | -49.99 | 9.29 | 10.36 | -48.92 | -13.00 | -35.92 | H |
| N/A | | | | | | | |
| | | | | | | | |
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***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | WCDMA / HSUPA Band II / TX / CH 9262 | **Test Date:** | July 31, 2013 |
| **Temperature:** | 26°C | **Tested by:** | David Shu |
| **Humidity:** | 60 % RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 3702.000 | -48.14 | 8.2 | 9.1 | -47.24 | -13.00 | -34.24 | V |
| 5627.000 | -49.87 | 10.18 | 10.83 | -49.22 | -13.00 | -36.22 | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 4304.000 | -49.43 | 8.6 | 9.64 | -48.39 | -13.00 | -35.39 | H |
| 6201.000 | -47.05 | 11.22 | 11.06 | -47.21 | -13.00 | -34.21 | H |
| N/A | | | | | | | |
| | | | | | | | |
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***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | WCDMA / HSUPA Band II / TX / CH 9400 | **Test Date:** | July 31, 2013 |
| **Temperature:** | 26°C | **Tested by:** | David Shu |
| **Humidity:** | 60 % RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 3758.000 | -49.16 | 8.23 | 9.16 | -48.23 | -13.00 | -35.23 | V |
| 5501.000 | -50.26 | 9.94 | 10.8 | -49.40 | -13.00 | -36.40 | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 3765.000 | -48.37 | 8.24 | 9.16 | -47.45 | -13.00 | -34.45 | H |
| 4486.000 | -48.64 | 8.87 | 9.79 | -47.72 | -13.00 | -34.72 | H |
| N/A | | | | | | | |
| | | | | | | | |
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***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | WCDMA / HSUPA Band II / TX / CH 9538 | **Test Date:** | July 31, 2013 |
| **Temperature:** | 26°C | **Tested by:** | David Shu |
| **Humidity:** | 60 % RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 4283.000 | -50.01 | 8.58 | 9.63 | -48.96 | -13.00 | -35.96 | V |
| 6285.000 | -48.26 | 10.82 | 11.13 | -47.95 | -13.00 | -34.95 | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 5725.000 | -48.55 | 10.22 | 10.84 | -47.93 | -13.00 | -34.93 | H |
| 6929.000 | -42.62 | 11.53 | 11.81 | -42.34 | -13.00 | -29.34 | H |
| N/A | | | | | | | |
| | | | | | | | |
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***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | WCDMA / HSUPA Band V / TX / CH 4132 | **Test Date:** | July 31, 2013 |
| **Temperature**: | 26°C | **Tested by:** | David Shu |
| **Humidity:** | 60 % RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 2995.000 | -51.44 | 7.02 | 7.39 | -51.07 | -13.00 | -38.07 | V |
| 4486.000 | -49.84 | 8.87 | 9.79 | -48.92 | -13.00 | -35.92 | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1651.000 | -54.03 | 5.05 | 6.03 | -53.05 | -13.00 | -40.05 | H |
| 2631.000 | -51.88 | 6.56 | 6.44 | -52.00 | -13.00 | -39.00 | H |
| N/A | | | | | | | |
| | | | | | | | |
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***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | WCDMA / HSUPA Band V / TX / CH 4182 | **Test Date:** | July 31, 2013 |
| **Temperature**: | 26°C | **Tested by:** | David Shu |
| **Humidity:** | 60 % RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 1672.000 | -53.6 | 5.07 | 5.99 | -52.68 | -13.00 | -39.68 | V |
| 5403.000 | -50.74 | 9.82 | 10.76 | -49.80 | -13.00 | -36.80 | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 4010.000 | -50 | 8.36 | 9.41 | -48.95 | -13.00 | -35.95 | H |
| 5977.000 | -48.04 | 10.73 | 10.9 | -47.87 | -13.00 | -34.87 | H |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

| | | | |
|---|---|---|---|
| **Operation Mode:** | WCDMA / HSUPA Band V / TX / CH 4233 | **Test Date:** | July 31, 2013 |
| **Temperature**: | 26°C | **Tested by:** | David Shu |
| **Humidity:** | 60 % RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dBi) | Emission level (dBm) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 1945.000 | -43.37 | 5.57 | 5.5 | -43.44 | -13.00 | -30.44 | V |
| 4556.000 | -50.2 | 9.03 | 9.89 | -49.34 | -13.00 | -36.34 | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 2540.000 | -47.01 | 6.41 | 6.2 | -47.22 | -13.00 | -34.22 | H |
| 4024.000 | -49.76 | 8.38 | 9.42 | -48.72 | -13.00 | -35.72 | H |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

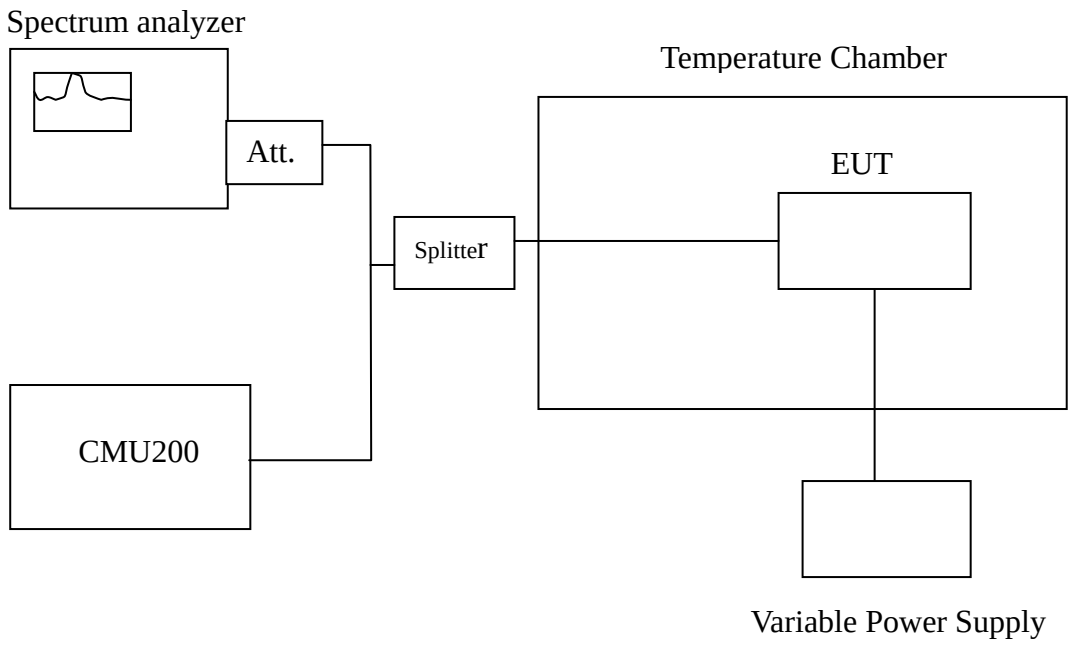
# 7.7 FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT

## LIMIT

According to FCC §2.1055, FCC §22.355, .FCC §24.235.

Frequency Tolerance: 2.5 ppm

**Test Configuration**




***Remark:*** *Measurement setup for testing on Antenna connector*

## TEST PROCEDURE

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to –30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

## TEST RESULTS

*No non-compliance noted.*

| **Reference Frequency: WCDMA Band II Mid Channel 1880 MHz @ 20°C** | | | | |
|---|---|---|---|---|
| Limit: ± 2.5 ppm = 4700 Hz | | | | |
| Power Supply Vdc | Environment Temperature (°C) | Frequency (Hz) | Delta (Hz) | Limit (Hz) |
| 3.7 | 50 | 1879999993 | -17 | 4700 |
| | 40 | 1879999992 | -18 | |
| | 30 | 1879999988 | -22 | |
| | 20 | 1880000010 | 0 | |
| | 10 | 1879999954 | -56 | |
| | 0 | 1879999953 | -57 | |
| | -10 | 1879999980 | -30 | |
| | -20 | 1879999975 | -35 | |
| | -30 | 1879999972 | -38 | |

| **Reference Frequency: WCDMA Band V Mid Channel 836.4 MHz @ 20°C** | | | | |
|---|---|---|---|---|
| Limit: +/- 2.5 ppm = 2091 Hz | | | | |
| Power Supply Vdc | Environment Temperature (°C) | Frequency (Hz) | Delta (Hz) | Limit (Hz) |
| 3.7 | 50 | 836400000 | -2 | 2090 |
| | 40 | 836399998 | -4 | |
| | 30 | 836399999 | -3 | |
| | 20 | 836400002 | 0 | |
| | 10 | 836399992 | -10 | |
| | 0 | 836399996 | -6 | |
| | -10 | 836399994 | -8 | |
| | -20 | 836399989 | -13 | |
| | -30 | 836399998 | -4 | |

| **Reference Frequency: WCDMA / HSDPA Band II Mid Channel 1880 MHz @ 20°C** | | | | |
|---|---|---|---|---|
| Limit: ± 2.5 ppm = 4700 Hz | | | | |
| Power Supply Vdc | Environment Temperature (°C) | Frequency (Hz) | Delta (Hz) | Limit (Hz) |
| 3.7 | 50 | 1879999997 | -3 | 4700 |
| | 40 | 1879999993 | -7 | |
| | 30 | 1879999967 | -33 | |
| | 20 | 1880000000 | 0 | |
| | 10 | 1879999977 | -23 | |
| | 0 | 1879999947 | -53 | |
| | -10 | 1879999972 | -28 | |
| | -20 | 1879999970 | -30 | |
| | -30 | 1879999945 | -55 | |

| **Reference Frequency: WCDMA / HSDPA Band V Mid Channel 836.4 MHz @ 20°C** | | | | |
|---|---|---|---|---|
| Limit: +/- 2.5 ppm = 2091 Hz | | | | |
| Power Supply Vdc | Environment Temperature (°C) | Frequency (Hz) | Delta (Hz) | Limit (Hz) |
| 3.7 | 50 | 836399959 | -107 | 2090 |
| | 40 | 836399995 | -71 | |
| | 30 | 836399957 | -109 | |
| | 20 | 836400066 | 0 | |
| | 10 | 836399993 | -73 | |
| | 0 | 836399983 | -83 | |
| | -10 | 836399911 | -155 | |
| | -20 | 836399915 | -151 | |
| | -30 | 836399980 | -86 | |

| **Reference Frequency: WCDMA / HSUPA Band II Mid Channel 1880 MHz @ 20°C** | | | | |
|---|---|---|---|---|
| Limit: ± 2.5 ppm = 4700 Hz | | | | |
| Power Supply Vdc | Environment Temperature (°C) | Frequency (Hz) | Delta (Hz) | Limit (Hz) |
| 3.7 | 50 | 1879999980 | -22 | 4700 |
| | 40 | 1879999973 | -29 | |
| | 30 | 1879999960 | -42 | |
| | 20 | 1880000002 | 0 | |
| | 10 | 1879999970 | -32 | |
| | 0 | 1879999981 | -21 | |
| | -10 | 1879999965 | -37 | |
| | -20 | 1879999986 | -16 | |
| | -30 | 1879999975 | -27 | |

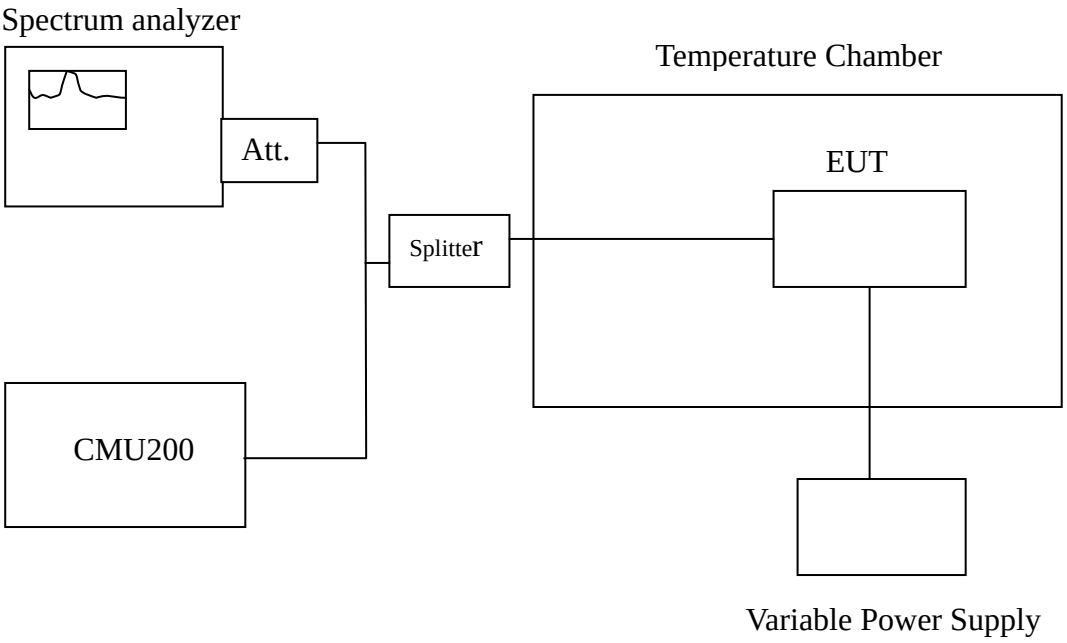
| **Reference Frequency: WCDMA / HSUPA Band V Mid Channel 836.4 MHz @ 20°C** | | | | |
|---|---|---|---|---|
| Limit: +/- 2.5 ppm = 2091 Hz | | | | |
| Power Supply Vdc | Environment Temperature (°C) | Frequency (Hz) | Delta (Hz) | Limit (Hz) |
| 3.7 | 50 | 836399993 | -8 | 2090 |
| | 40 | 836399991 | -10 | |
| | 30 | 836399986 | -15 | |
| | 20 | 836400001 | 0 | |
| | 10 | 836399980 | -21 | |
| | 0 | 836399972 | -29 | |
| | -10 | 836399967 | -34 | |
| | -20 | 836399983 | -18 | |
| | -30 | 836399972 | -29 | |

## 7.8 FREQUENCY STABILITY V.S. VOLTAGE MEASUREMENT

## LIMIT

According to FCC §2.1055, FCC §22.355, .FCC §24.235,

**Test Configuration**




***Remark:*** *Measurement setup for testing on Antenna connector.*

## TEST PROCEDURE

Set chamber temperature to 20°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation (± 15%) and endpoint, record the maximum frequency change.

## TEST RESULTS

*No non-compliance noted.*

| **Reference Frequency: WCDMA Band II Mid Channel 1880 MHz @ 20°C** | | | | |
|---|---|---|---|---|
| Limit: ± 2.5 ppm = 4700 Hz | | | | |
| Power Supply Vdc | Environment Temperature (°C) | Frequency (Hz) | Delta (Hz) | Limit (Hz) |
| 4.255 | 20 | 1880000030 | 20 | 4700 |
| 3.7 | | 1880000010 | 0 | |
| 3.145 | | 1880000033 | 23 | |
| 3END | | 1879999943 | -67 | |

| **Reference Frequency: WCDMA Band V Mid Channel 836.4 MHz @ 20°C** | | | | |
|---|---|---|---|---|
| Limit: ± 2.5 ppm = 2090Hz | | | | |
| Power Supply Vdc | Environment Temperature (°C) | Frequency (Hz) | Delta (Hz) | Limit (Hz) |
| 4.255 | 20 | 836400017 | 15 | 2091 |
| 3.7 | | 836400002 | 0 | |
| 3.145 | | 836400003 | 1 | |
| 3END | | 836400005 | 3 | |

| **Reference Frequency: WCDMA HSDPA Band II Mid Channel 1880 MHz @ 20°C** | | | | |
|---|---|---|---|---|
| Limit: ± 2.5 ppm = 4700 Hz | | | | |
| Power Supply Vdc | Environment Temperature (°C) | Frequency (Hz) | Delta (Hz) | Limit (Hz) |
| 4.255 | 20 | 1880000023 | 23 | 4700 |
| 3.7 | | 1880000000 | 0 | |
| 3.145 | | 1880000003 | 3 | |
| 3END | | 1880000001 | 1 | |

| **Reference Frequency: WCDMA HSDPA Band V Mid Channel 836.4 MHz @ 20°C** | | | | |
|---|---|---|---|---|
| Limit: ± 2.5 ppm = 2090Hz | | | | |
| Power Supply Vdc | Environment Temperature (°C) | Frequency (Hz) | Delta (Hz) | Limit (Hz) |
| 4.255 | 20 | 836400011 | -55 | 2091 |
| 3.7 | | 836400066 | 0 | |
| 3.145 | | 836400018 | -48 | |
| 3END | | 836400069 | 3 | |

| **Reference Frequency: WCDMA HSUPA Band II Mid Channel 1880 MHz @ 20°C** | | | | |
|---|---|---|---|---|
| Limit: ± 2.5 ppm = 4700 Hz | | | | |
| Power Supply Vdc | Environment Temperature (°C) | Frequency (Hz) | Delta (Hz) | Limit (Hz) |
| 4.255 | 20 | 1880000005 | 3 | 4700 |
| 3.7 | | 1880000002 | 0 | |
| 3.145 | | 1880000008 | 6 | |
| 3END | | 1880000008 | 6 | |

| **Reference Frequency: WCDMA HSUPA Band V Mid Channel 836.4 MHz @ 20°C** | | | | |
|---|---|---|---|---|
| Limit: ± 2.5 ppm = 2090Hz | | | | |
| Power Supply Vdc | Environment Temperature (°C) | Frequency (Hz) | Delta (Hz) | Limit (Hz) |
| 4.255 | 20 | 836400002 | 1 | 2091 |
| 3.7 | | 836400001 | 0 | |
| 3.145 | | 836400004 | 3 | |
| 3END | | 836400029 | 28 | |