**SGS-CSTC Standards**
**Technical Services Co., Ltd.**

588 West Jindu Road, Songjiang District, Shanghai, China

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# TEST REPORT

| | |
|---|---|
| **Application No. :** | SHEMO09090109402 |
| **Applicant:** | Sierra Wireless Inc. |
| **FCC ID:** | N7NMC8700 |
| **Equipment Under Test (EUT):** | |
| Product Name: | GSM/GPRS/EDGE/UMTS/HSDPA/HSUPA/HSPA+ Module |
| Brand Name: | Sierra Wireless |
| Model Name: | MC8700 |
| Type Name: | MC8700 |
| Marketing Name: | MC8700 |
| **Standards:** | FCC part 2, 22H & 24E |
| **Date of Receipt:** | Sep 23 , 2009 |
| **Date of Test:** | Sep 23 , 2009 to Nov 06, 2009 |
| **Date of Issue:** | Nov 06, 2009 |
| **Test Result :** | **PASS *** |

* In the configuration tested, the EUT detailed in this report complied with the standards specified above. Please refer to section 2 of this report for further details.

Tino Pan
E&E Section Manager
SGS-CSTC Co., Ltd.

Jack Wu
Project Engineer
SGS-CSTC Co., Ltd.

# 2 Test Summary

| Description of Test | FCC Rules | Result |
|---|---|---|
| RF Power Output | 2.1046(a)<br>22.913(a)<br>24.232(b) | Compliant |
| 99% Occupied Bandwidth | 2.1049(h) | Compliant |
| Effective Isotropic Radiated Power | 2.1046(a)<br>22.913(a)<br>24.232(b) | Compliant |
| Out of Band Emissions at antenna Terminals and Band Edge | 2.1051<br>22.917(a)<br>24.238(a) | Compliant |
| Field Strength of Spurious Emissions | 2.1053<br>22.917(a)<br>24.238(a) | Compliant |
| Frequency Stability vs. Temperature and Voltage | 2.1055 | Compliant |
| AC Power Line Conducted Emission | 15.207 | Compliant |

# 3 Contents

Page

# 4 General Information

## 4.1 Client Information

| | |
|---|---|
| Applicant: | Sierra Wireless Inc. |
| Address of Applicant: | 13811 Wireless Way Richmond,British Columbia Canada,V6V 3A4 |
| Manufacturer: | Flextronics Industrial (Zhuhai) Co.Ltd. |
| Address of Manufacturer: | NO.168,Zhu Feng Road Xin Qing Science & Technology Industrial Park Jing An,Doumen Zhuhai/519180 China |

## 4.2 General Description of E.U.T.

| | |
|---|---|
| Product Name: | GSM/GPRS/EDGE/UMTS/HSDPA/HSUPA/HSPA+ Module |
| Brand Name: | Sierra Wireless |
| Model Name: | MC8700 |
| Type Name: | MC8700 |
| Marketing Name: | MC8700 |
| Power Supply: | 3.3V DC |

GSM and WCDMA:

| | Operating frequency | | Rated Power |
|---|---|---|---|
| Cellular phone standards Frequency Range and Power: | GSM/GPRS/EDGE, 850 Class 12 | 824.2MHz-848.8MHz | 33dBm |
| | GSM/GPRS/EDGE, 1900 Class 12 | 1850.2MHz-1909.8MHz | 30dBm |
| | WCDMA/ HSDPA. Band II | 1852.4MHz-1907.6MHz | 24dBm |
| | WCDMA/ HSDPA Band V | 826.4MHz-846.6MHz | 24dBm |
| | HSUPA data rate: uplink up to 2Mbps<br>HSDPA data rate: downlink up to 7.2Mbps<br>HSUPA UE category: Release7<br>HSDPA UE category: Release7 | | |
| Hardware Version: | Rev 1.0 | | |
| Software Version: | M2.0.9.3B | | |
| IMEI: | 353446030003006 | | |

## 4.3 Test Location

Tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shanghai EMC Laboratory

588 West Jindu Road, Songjiang District, Shanghai, China

Tel: +86 21 61915666 Fax: +86 21 61915678

## 4.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **FCC – Registration No.: 402683**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration **402683**, Feb 23, 2009. SGS-CSTC is an authorized test laboratory for the DoC process.

## 4.5 Test Methodogy

Both conducted and radiated testing were performed according to the procedures document on TIA/EIA-603-C-2004 and FCC CFR 47 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055 and 2.1057.

The procedure of KDB941225 (SAR Measurement Procedures for 3G devices, WCDMA/HSDPA/HSUPA) was used for EUT and Base station setting.

# 5 Equipments Used during Test

| Item | Test Equipment | Manufacturer | Model No. | Serial No. | Cal. Date | Cal. Due date |
|---|---|---|---|---|---|---|
| 1 | Spectrum Analyzer | Rohde & Schwarz | FSP-30 | 100324 | 2009-4-21 | 2010-4-20 |
| 2 | EMI test receiver | Rohde & Schwarz | ESU40 | 100109 | 2009-6-4 | 2010-6-3 |
| 4 | Horn Antenna | Rohde & Schwarz | HF906 | 100284 | 2009-04-11 | 2010-04-10 |
| 5 | Horn Antenna | Rohde & Schwarz | HF906 | 100285 | 2009-10-9 | 2010-10-8 |
| 6 | ANTENNA | SCHWARZBECK | BBHA9120D | 9120D-679 | 2009-06-04 | 2010-06-03 |
| 7 | Ultra broadband antenna | Rohde & Schwarz | HL562 | 100227 | 2009-10-09 | 2010-10-08 |
| 8 | Atmosphere pressure meter | Shanghai ZhongXuan Electronic Co;Ltd | BY－2003P | -- | 2009-10-15 | 2010-10-14 |
| 9 | CLAMP METER | FLUKE | 316 | 86080010 | 2009-04-27 | 2010-04-26 |
| 10 | Thermo-Hygrometer | ZHICHEN | ZC1-2 | 01050033 | 2009-10-21 | 2010-10-20 |
| 11 | Digital illuminance meter | TES electrical electronic Corp. | TES-1330A | 050602219 | 2009-10-16 | 2010-10-15 |
| 12 | TEMPERATURE& HUMIDITY BOX | KSON | THS-D2C-100 | K40723 | 2008-11-18 | 2009-11-17 |
| 13 | High-low temperature cabinet | Shanghai YuanZhen | GW2050 | -- | 2009-6-27 | 2010-6-26 |
| 14 | DC power | KIKUSUI | PMC35－3 | NF100260 | 2009-1-16 | 2010-1-15 |
| 15 | Power meter | Rohde & Schwarz | NRP | 101641 | 2009-5-5 | 2010-5-4 |
| 16 | UNIVERSAL RADIO COMMUNICATION TESTER | Rohde & Schwarz | CMU 200 | 105964 | 2009-04-14 | 2010-04-13 |
| 17 | UNIVERSAL RADIO COMMUNICATION TESTER | Rohde & Schwarz | CMU 200 | 112012 | 2009-08-25 | 2010-08-24 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 18 | Tunable Notch Filter | WRCT800.0/880.0-0.2/40-5SSK | Wainwright instruments Gmbh | 9 | 2009-1-27 | 2010-1-26 |
| 19 | Tunable Notch Filter | WRCT1800.0/2000.0-0.2/40-5SSK | Wainwright instruments Gmbh | 11 | 2009-1-27 | 2010-1-26 |
| 20 | Band Reject Filter | WRCG 824/849-814/859-40/8SS | Amiden,Ireland | 1 | 2009-1-27 | 2010-1-26 |
| 21 | Band Reject Filter | WRCG 1850/1910-1835/1925-40/8SS | Amiden,Ireland | 13 | 2009-1-27 | 2010-1-26 |

**AC Conducted Measuring Equipment**

| Item | Test Equipment | Manufacturer | Model No. | Serial No. | Cal. Date | Cal. Due date |
|---|---|---|---|---|---|---|
| 1 | EMI test receiver | Rohde & Schwarz | ESCS30 | 100086 | 2009-6-4 | 2010-6-3 |
| 2 | Line impedance stabilization network | SCHWARZBECK | NSLK8127 | 8127-490 | 2009-5-8 | 2010-5-7 |

# 6 Test Results

## 6.1 E.U.T. test conditions

| | |
|---|---|
| Power supply: | DC 3.3V |
| Operating Environment: | |
| Temperature: | 20.0 -25.0 °C |
| Humidity: | 38-48 % RH |
| Atmospheric Pressure: | 992 -1006 mbar |

## 6.2 RF Power Output

Test Requirement: Part 2.1046

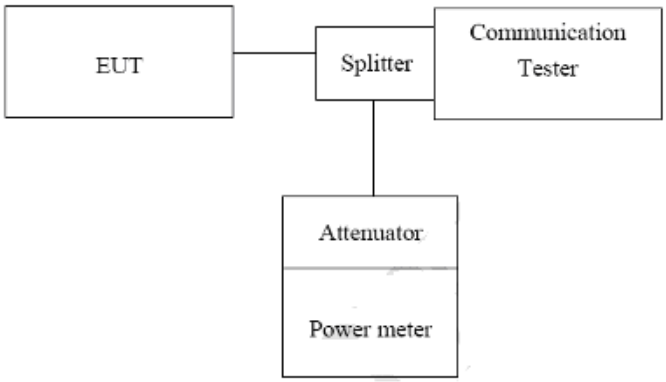
Part 22.913(a) Mobile station are limited to 7W

Part 24.232(d) peak Power measurement, FCC 24.232(c) Maximum Power reduction 3GPP Power Limitation for HSDPA and HSUPA

Maximum Output Powers With HSDPA for test:

| Sub-test | Power Class 3 | | Power Class 4 | |
|---|---|---|---|---|
| | Power (dBm) | Tol (dB) | Power (dBm) | Tol (dB) |
| 1 | +24 | +1.7/-3.7 | +21 | +2.7/-2.7 |
| 2 | +24 | +1.7/-3.7 | +21 | +2.7/-2.7 |
| 3 | +23 | +2.7/-3.7 | +20 | +3.7/-2.7 |
| 4 | +22 | +3.7/-3.7 | +19 | +4.7/-2.7 |

Test Setup




Measurement Setup for testing on Antenna connector.

Test Date: Oct 28, 2009 to Nov 06,2009

Test Status: Test lowest, middle, highest channel.

Test Procedure:

The transmitter output was connected to calibrated attenuator, the other end of which was connected to a power meter. Transmitter output was read off the power in dBm. The power output at the transmitter antenna port was determined by adding the vaule of attenuator to the power meter reading. The procedure of KDB941125 (SAR Measurement Procedures for 3G devices, WCDMA/HSDPA) was used for EUT and Base station setting. RMC 12.2kps is used for testing.

**Measurement Result:**

**RF Conducted output power**

**GSM/EDGE (GMSK; 8-PSK)**

**Result:**

| Frequency (MHz) | Ch | 1 Time Slot | | | | 2 Time Slot | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | GMSK Mode | | 8-PSK Mode | | GMSK Mode | | 8-PSK Mode | |
| | | Peak power (dBm) | AV power (dBm) | Peak power (dBm) | AV power (dBm) | Peak power (dBm) | AV power (dBm) | Peak power (dBm) | AV power (dBm) |
| 824.2 | 128 | 31.2 | 31.1 | 30.1 | 27.1 | 28.5 | 28.4 | 30.2 | 27.0 |
| 836.6 | 190 | 31.2 | 31.0 | 30.2 | 27.1 | 28.5 | 28.3 | 30.2 | 27.1 |
| 848.8 | 251 | 31.0 | 30.9 | 30.2 | 27.1 | 28.6 | 28.5 | 30.1 | 27.0 |
| 1850.2 | 512 | 29.4 | 29.2 | 29.3 | 26.0 | 26.4 | 26.3 | 28.9 | 26.0 |
| 1880.0 | 661 | 29.2 | 29.1 | 29.1 | 25.9 | 26.2 | 26.1 | 29.1 | 25.9 |
| 1909.8 | 810 | 29.1 | 28.9 | 28.9 | 25.7 | 26.0 | 25.9 | 28.9 | 25.6 |

| Frequency (MHz) | Ch | 3 Time Slot | | | | 4 Time Slot | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | GMSK Mode | | 8-PSK Mode | | GMSK Mode | | 8-PSK Mode | |
| | | Peak power (dBm) | AV power (dBm) | Peak power (dBm) | AV power (dBm) | Peak power (dBm) | AV power (dBm) | Peak power (dBm) | AV power (dBm) |
| 824.2 | 128 | 26.9 | 26.8 | 30.1 | 27.0 | 25.8 | 25.7 | 29.0 | 25.9 |
| 836.6 | 190 | 26.9 | 26.8 | 30.2 | 27.1 | 25.9 | 25.8 | 29.2 | 26.0 |
| 848.8 | 251 | 27.0 | 26.9 | 30.1 | 27.0 | 25.9 | 25.7 | 29.2 | 26.0 |
| 1850.2 | 512 | 24.6 | 24.4 | 27.9 | 24.7 | 23.5 | 23.3 | 26.6 | 23.4 |
| 1880.0 | 661 | 24.4 | 24.3 | 27.7 | 24.5 | 23.3 | 23.2 | 26.4 | 23.2 |
| 1909.8 | 810 | 24.2 | 24.1 | 27.4 | 24.2 | 23.1 | 23.0 | 26.2 | 23.0 |

**WCDMA Mode;**

The following tests were completed according to the test requirements outlined in section 5.2 of the 3GPP TS 34.121 V8.4.0 specification. The EUT supports power Class 3, Which has a norminal maximum output power of 24 dBm (+1.7/-3.7). RMC 12.2kps is used for this testing.

**Result:**

| EUT Mode | Frequency (MHz) | CH | Peak Power (dBm) | RMS Power (dBm) |
|---|---|---|---|---|
| WCDMA Band II | 1852.4 | 9262 | 24.50 | 21.42 |
| | 1880.0 | 9400 | 25.20 | 22.00 |
| | 1907.6 | 9538 | 24.59 | 21.72 |

Note: The results above reflect max power with all up bits.

| EUT Mode | Frequency (MHz) | CH | Peak Power (dBm) | RMS Power (dBm) |
|---|---|---|---|---|
| WCDMA Band V | 826.4 | 4132 | 25.62 | 22.98 |
| | 836.6 | 4180 | 25.49 | 22.70 |
| | 846.6 | 4233 | 25.55 | 22.79 |

**Release 6 HSDPA mode**

The following 4 Sub-Test were completed according to the test requirements outlined in section 5.2A of the 3Gpp TS34.121 V8.4.0 specification. All TX RMS power requirements for power Class 3 were met according to table 5.2AA.5 and 5.2B.5. All UE channels and power ratio are set according to table C10.1.4&C11.1.3 in the 3Gpp34.121 V8.4.0. RMC12.2kps is used for this testing.

HSDPA SUB-TEST Setting:

| Sub-test | $\beta_c$ | $\beta_d$ | $\beta_d$ (SF) | $\beta_c/\beta_d$ | $\beta_{hs}$ | CM(dB) | MPR(dB) |
|---|---|---|---|---|---|---|---|
| 1 | 2/15 | 15/15 | 64 | 2/15 | 4/15 | 0.0 | 0.0 |
| 2 | 12/15 | 15/15 | 64 | 12/15 | 24/15 | 1.0 | 0.0 |
| 3 | 15/15 | 8/15 | 64 | 15/8 | 30/15 | 1.5 | 0.5 |
| 4 | 15/15 | 4/15 | 64 | 15/4 | 30/15 | 1.5 | 0.5 |

Note: the recommended HSDPA MPRs are implemented as per following sub-test.

**Result:**

| Mode | Sub-test | RMS Power(dBm) Channel | | | Power Class 3 Limitation (dBm) | Comments |
|---|---|---|---|---|---|---|
| | | 9262 | 9400 | 9538 | | |
| HSDPA Band II | 1 | 21.23 | 21.79 | 21.36 | 20.3dBm-25.7dBm | Pass |
| | 2 | 21.21 | 21.72 | 21.32 | 20.3dBm-25.7dBm | Pass |
| | 3 | 21.03 | 21.65 | 21.21 | 19.3dBm-25.7dBm | Pass |
| | 4 | 20.99 | 21.43 | 21.23 | 18.3dBm-25.7dBm | Pass |

| Mode | Sub-test | RMS Power(dBm) Channel | | | Power Class 3 Limitation (dBm) | Comments |
|---|---|---|---|---|---|---|
| | | 4132 | 4180 | 4233 | | |
| HSDPA Band V | 1 | 22.75 | 22.54 | 22.38 | 20.3dBm-25.7dBm | Pass |
| | 2 | 22.67 | 22.49 | 22.20 | 20.3dBm-25.7dBm | Pass |
| | 3 | 22.21 | 22.12 | 22.16 | 19.3dBm-25.7dBm | Pass |
| | 4 | 22.38 | 22.19 | 22.19 | 18.3dBm-25.7dBm | Pass |

**Release 6 HSUPA mode**

The following 5 Sub-Test were completed according to the test requirements outlined in section 5.2A of the 3Gpp TS34.121 V8.4.0 specification. All TX RMS power requirements for power Class 3 were met according to table 5.2AA.5 and 5.2B.5. All UE channels and power ratio are set according to table C11.1.3 in the 3Gpp34.121 V8.4.0. RMC12.2kps is used for this testing.

HSPA SUB-TEST Setting:

| Sub-test | $\beta_c$ | $\beta_d$ | $\beta_d$ (SF) | $\beta_c/\beta_d$ | $\beta_{hs}$ | $\beta_{ec}$ |
|---|---|---|---|---|---|---|
| 1 | 11/15 | 15/15 | 64 | 11/15 | 22/15 | 209/225 |
| 2 | 6/15 | 15/15 | 64 | 6/15 | 12/15 | 12/15 |
| 3 | 15/15 | 9/15 | 64 | 15/9 | 30/15 | 30/15 |
| 4 | 2/15 | 15/15 | 64 | 2/15 | 4/15 | 2/15 |
| 5 | 15/15 | 15/15 | 64 | 15/15 | 30/15 | 24/15 |

| $\beta_{ed}$ (SF) | $\beta_{ed}$ (Codes) | CM （dB） | MPR （dB） | AG Index | E-TFCI |
|---|---|---|---|---|---|
| 4 | 1 | 1.0 | 0.0 | 20 | 75 |
| 4 | 1 | 3.0 | 2.0 | 12 | 67 |
| 4 | 2 | 2.0 | 1.0 | 15 | 92 |
| 4 | 1 | 3.0 | 2.0 | 17 | 71 |
| 4 | 1 | 1.0 | 0.0 | 21 | 81 |

Note: the recommended HSUPA MPRs are implemented as per following sub-test.

**Result:**

| Mode | Sub-test | RMS Power(dBm) Channel | | | Power Class 3 Limitation (dBm) | Comments |
|---|---|---|---|---|---|---|
| | | 9262 | 9400 | 9538 | | |
| HSUPA Band II | 1 | 21.22 | 21.34 | 20.87 | 18.8dBm-25.7dBm | Pass |
| | 2 | 20.51 | 20.79 | 20.40 | 16.8dBm-25.7dBm | Pass |
| | 3 | 20.38 | 20.45 | 19.99 | 17.8dBm-25.7dBm | Pass |
| | 4 | 19.75 | 20.45 | 20.11 | 16.8dBm-25.7dBm | Pass |
| | 5 | 19.94 | 19.78 | 19.56 | 18.8dBm-25.7dBm | Pass |

| Mode | Sub-test | RMS Power(dBm) Channel | | | Power Class 3 Limitation (dBm) | Comments |
|---|---|---|---|---|---|---|
| | | 4132 | 4180 | 4233 | | |
| HSUPA Band V | 1 | 21.97 | 21.89 | 22.09 | 18.8dBm-25.7dBm | Pass |
| | 2 | 21.22 | 21.06 | 20.98 | 16.8dBm-25.7dBm | Pass |
| | 3 | 21.78 | 21.32 | 21.02 | 17.8dBm-25.7dBm | Pass |
| | 4 | 21.19 | 20.87 | 20.81 | 16.8dBm-25.7dBm | Pass |
| | 5 | 21.34 | 21.31 | 21.01 | 18.8dBm-25.7dBm | Pass |

## 6.3 99% Occupied Bandwidth

Test Requirement: Part 2.1049

Test Date: Sep 30, 2009

Test Status: Test lowest, middle, highest channel.

Test Procedure:

The EUT output RF connector was connected with a short a cable to the spectrum analyzer, RBW was set to about 1% of emission BW, VBW>=3 times RBW, 99% bandwidth and -26 dBc bandwidth were measured, the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace.

**Test result:**

| EUT Mode | Frequency (MHz) | CH | 99% Bandwidth (MHz) |
|---|---|---|---|
| GSM 850 | 824.2 | 128 | 0.2424 |
| | 836.6 | 190 | 0.2424 |
| | 848.8 | 251 | 0.2436 |

| EUT Mode | Frequency (MHz) | CH | 99% Bandwidth (MHz) |
|---|---|---|---|
| EDGE 850 | 824.2 | 128 | 0.2424 |
| | 836.6 | 190 | 0.2460 |
| | 848.8 | 251 | 0.2436 |

| EUT Mode | Frequency (MHz) | CH | 99% Bandwidth (MHz) |
|---|---|---|---|
| PCS 1900 | 1850.2 | 512 | 0.2448 |
| | 1880.0 | 661 | 0.2436 |
| | 1909.8 | 810 | 0.2448 |

| EUT Mode | Frequency (MHz) | CH | 99% Bandwidth (MHz) |
|---|---|---|---|
| EDGE 1900 | 1850.2 | 512 | 0.2448 |
| | 1880.0 | 661 | 0.2472 |
| | 1909.8 | 810 | 0.2460 |

| EUT Mode | Frequency (MHz) | CH | 99% Bandwidth (MHz) |
|---|---|---|---|
| WCDMA II | 1852.4 | 9262 | 4.1808 |
| | 1880.0 | 9400 | 4.1923 |
| | 1907.6 | 9538 | 4.1685 |

| EUT Mode | Frequency (MHz) | CH | 99% Bandwidth (MHz) |
|---|---|---|---|
| WCDMA V | 826.4 | 4132 | 4.1782 |
| | 836.6 | 4180 | 4.1926 |
| | 846.6 | 4233 | 4.1782 |

| EUT Mode | Frequency (MHz) | CH | 99% Bandwidth (MHz) |
|---|---|---|---|
| HSDPA II | 1852.4 | 9262 | 4.1782 |
| | 1880.0 | 9400 | 4.1782 |
| | 1907.6 | 9538 | 4.1733 |

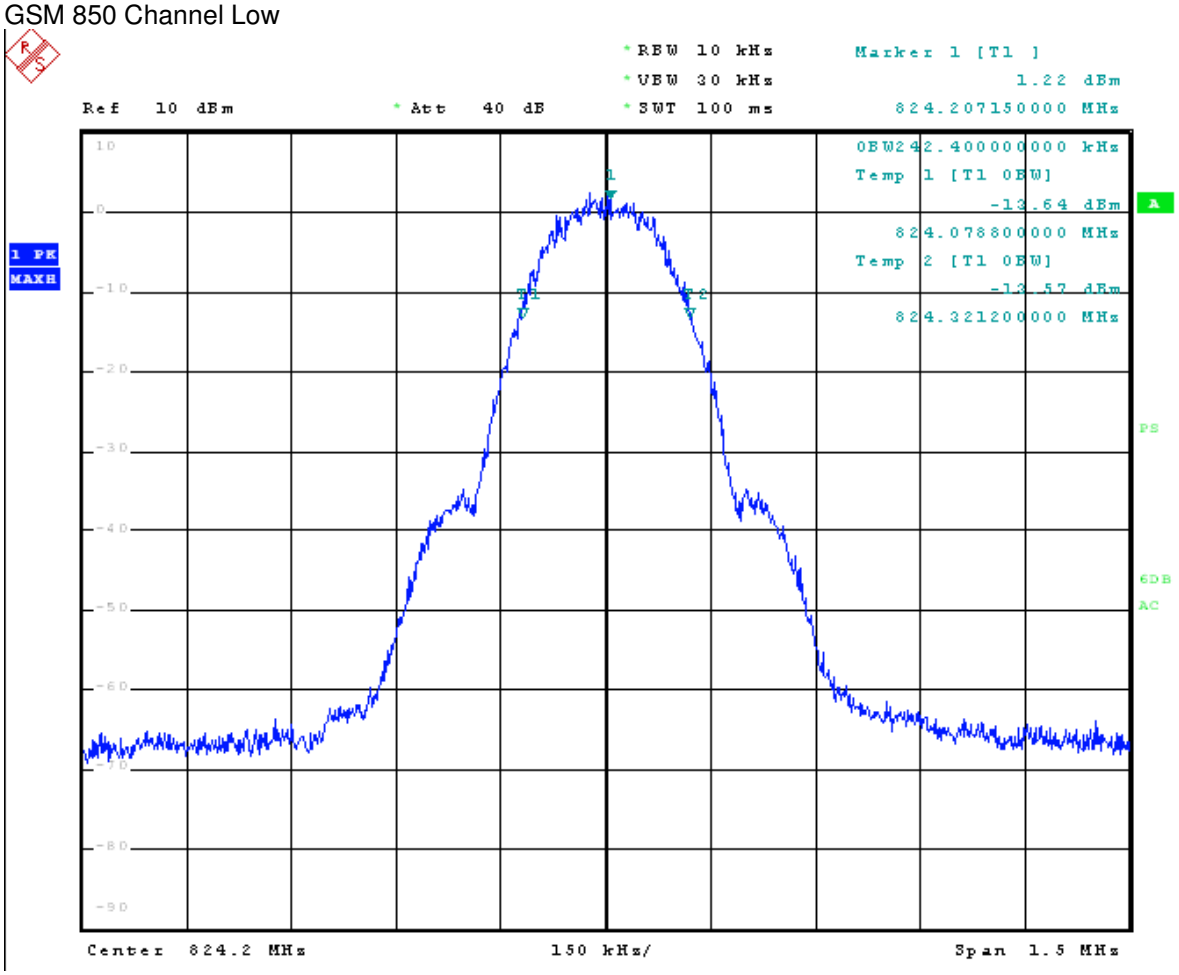
| EUT Mode | Frequency (MHz) | CH | 99% Bandwidth (MHz) |
|---|---|---|---|
| HSDPA V | 826.4 | 4132 | 4.1733 |
| | 836.6 | 4180 | 4.1808 |
| | 846.6 | 4233 | 4.1712 |

| EUT Mode | Frequency (MHz) | CH | 99% Bandwidth (MHz) |
|---|---|---|---|
| HSUPA II | 1852.4 | 9262 | 4.1923 |
| | 1880.0 | 9400 | 4.1827 |
| | 1907.6 | 9538 | 4.1731 |

| EUT Mode | Frequency (MHz) | CH | 99% Bandwidth (MHz) |
|---|---|---|---|
| HSUPA V | 826.4 | 4132 | 4.1635 |
| | 836.6 | 4180 | 4.1827 |
| | 846.6 | 4233 | 4.1827 |

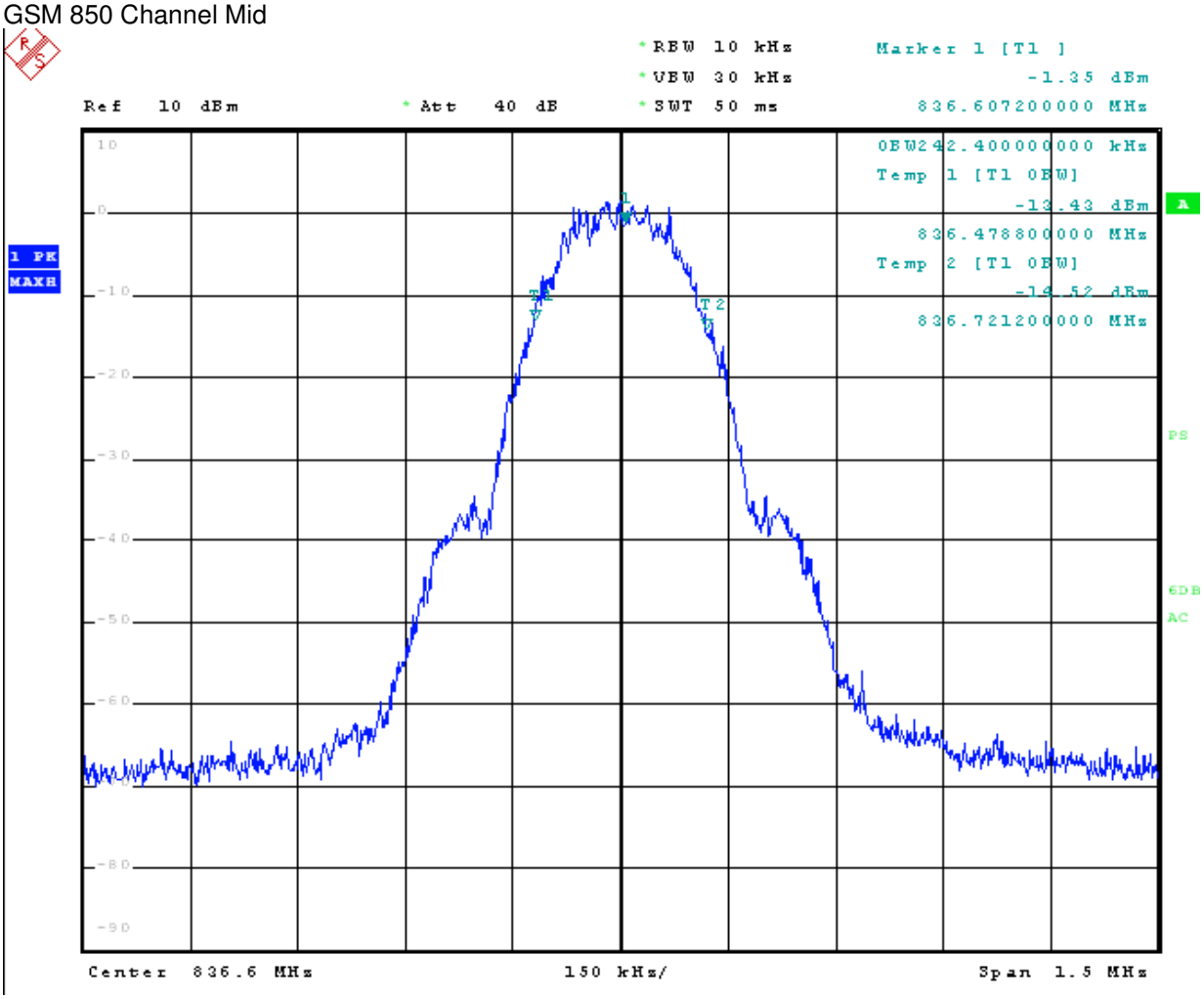
99% Bandwidth

GSM 850 Channel Low



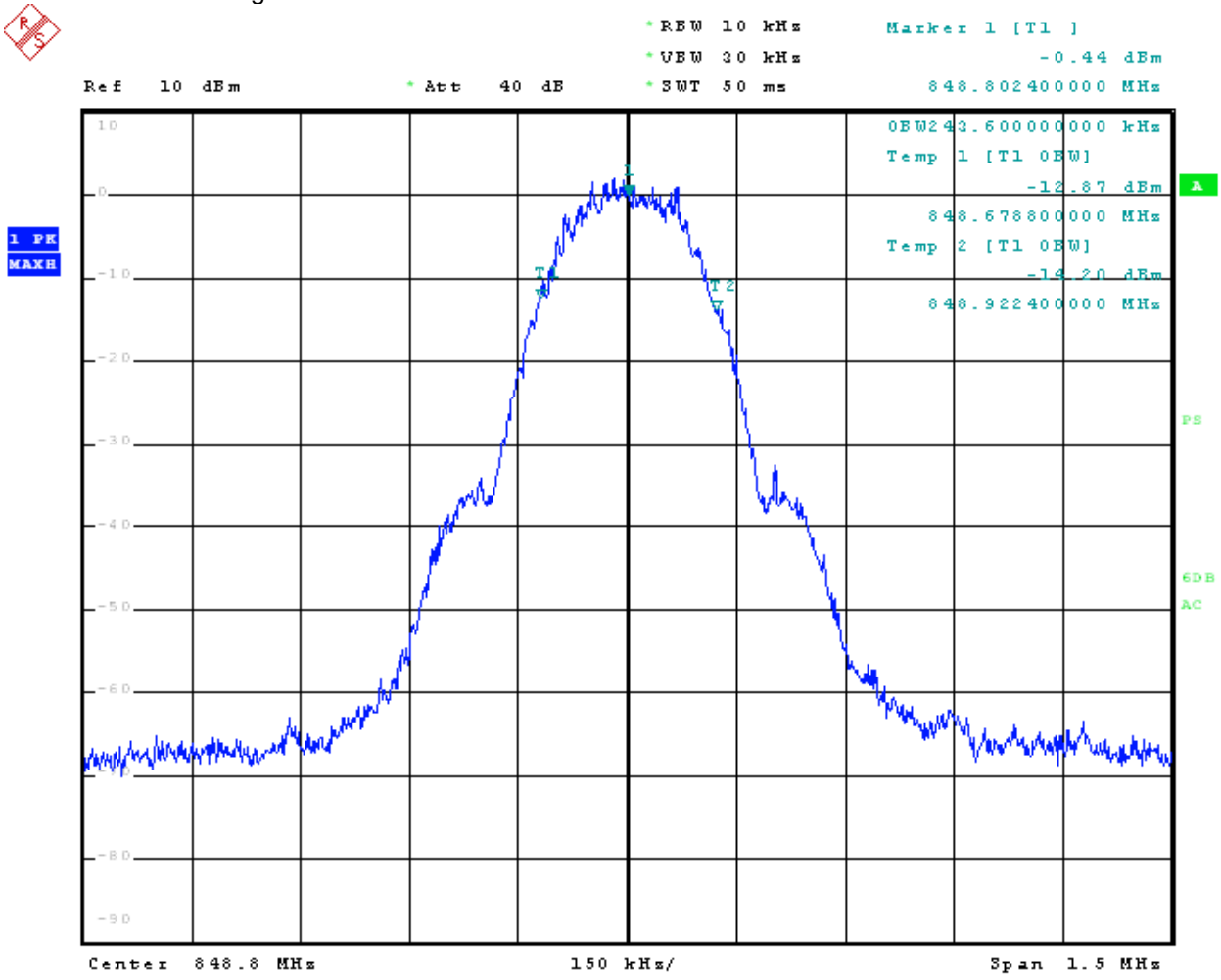
99% Bandwidth

GSM 850 Channel Mid



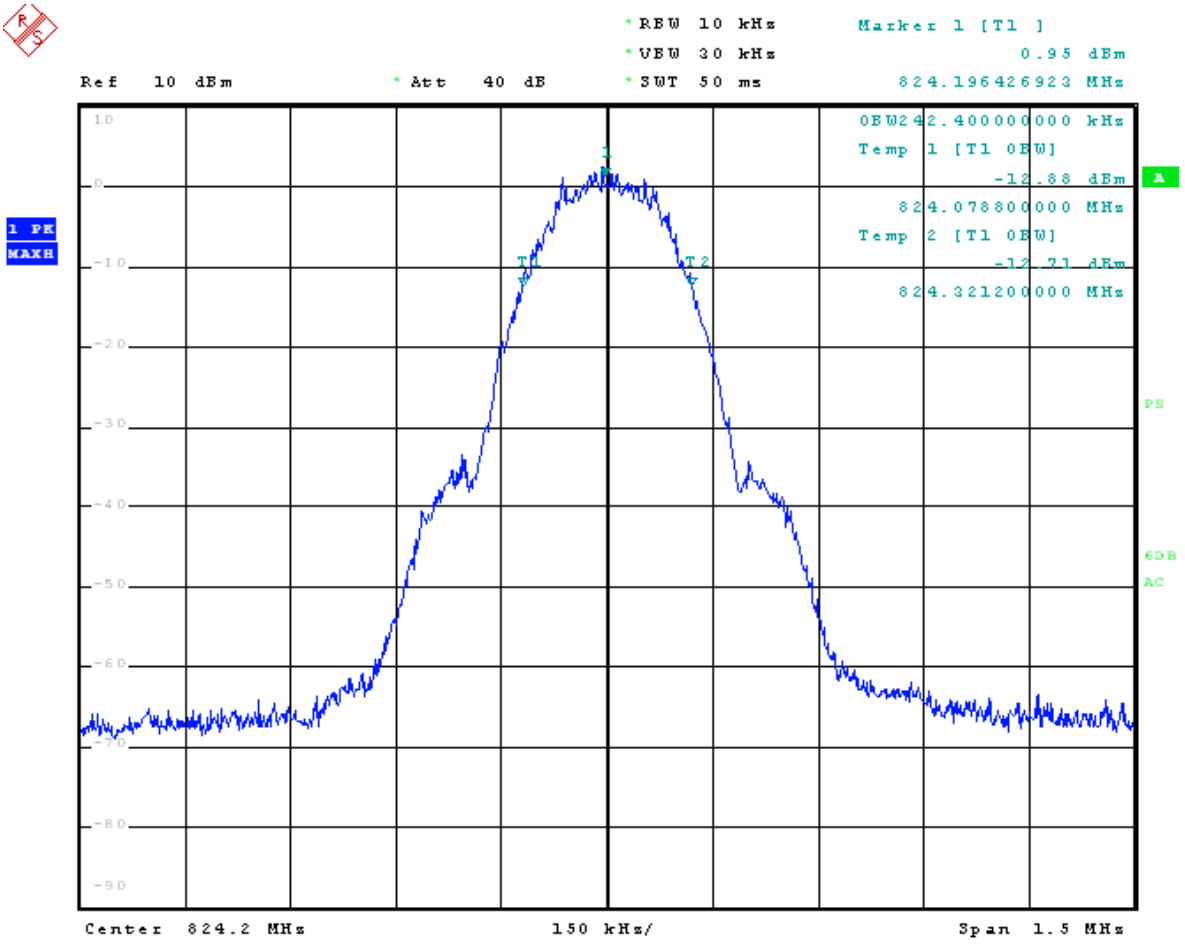
99% Bandwidth

GSM 850 Channel High



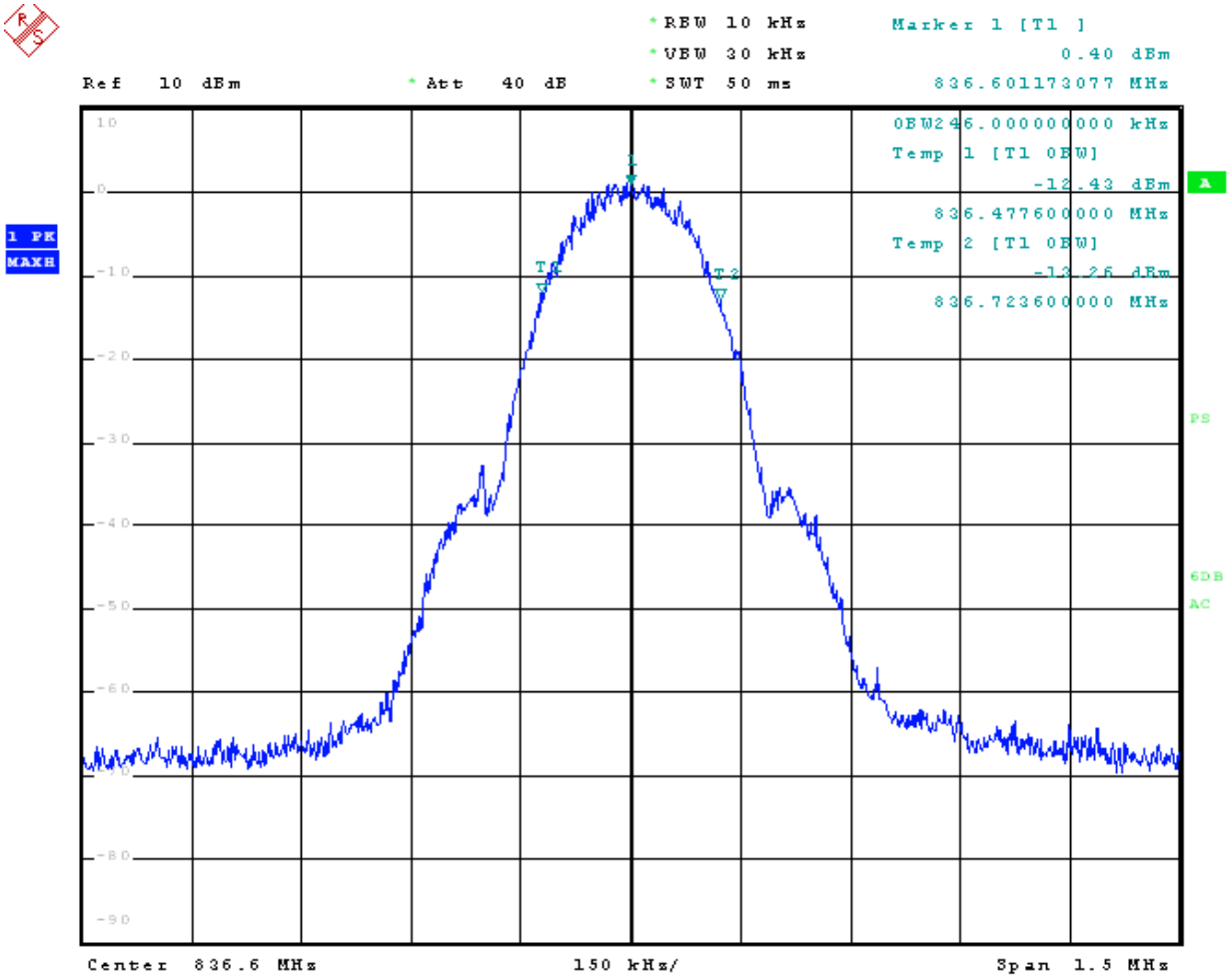
99% Bandwidth

EDGE 850 Channel Low



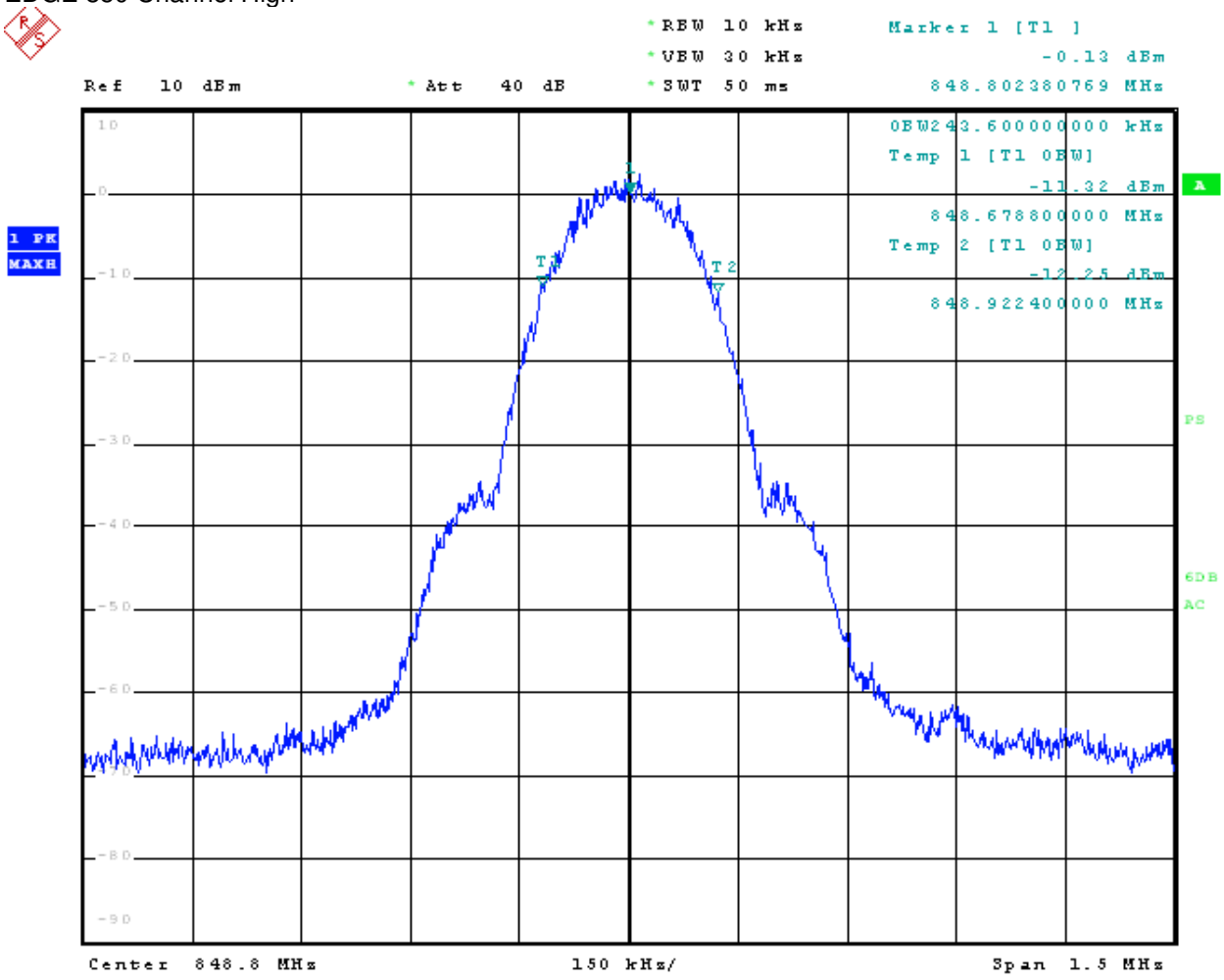
99% Bandwidth

EDGE 850 Channel Mid



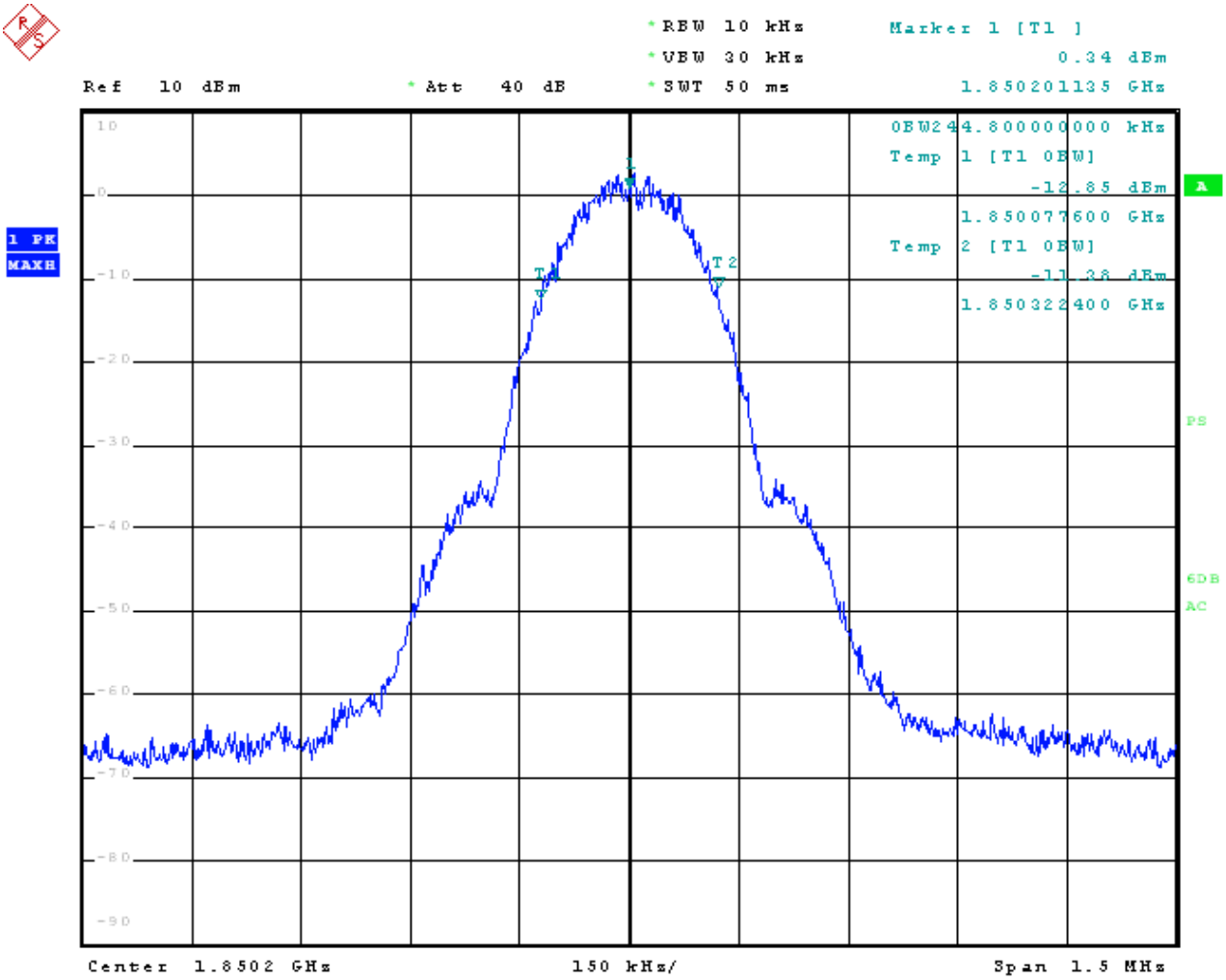
99% Bandwidth

EDGE 850 Channel High



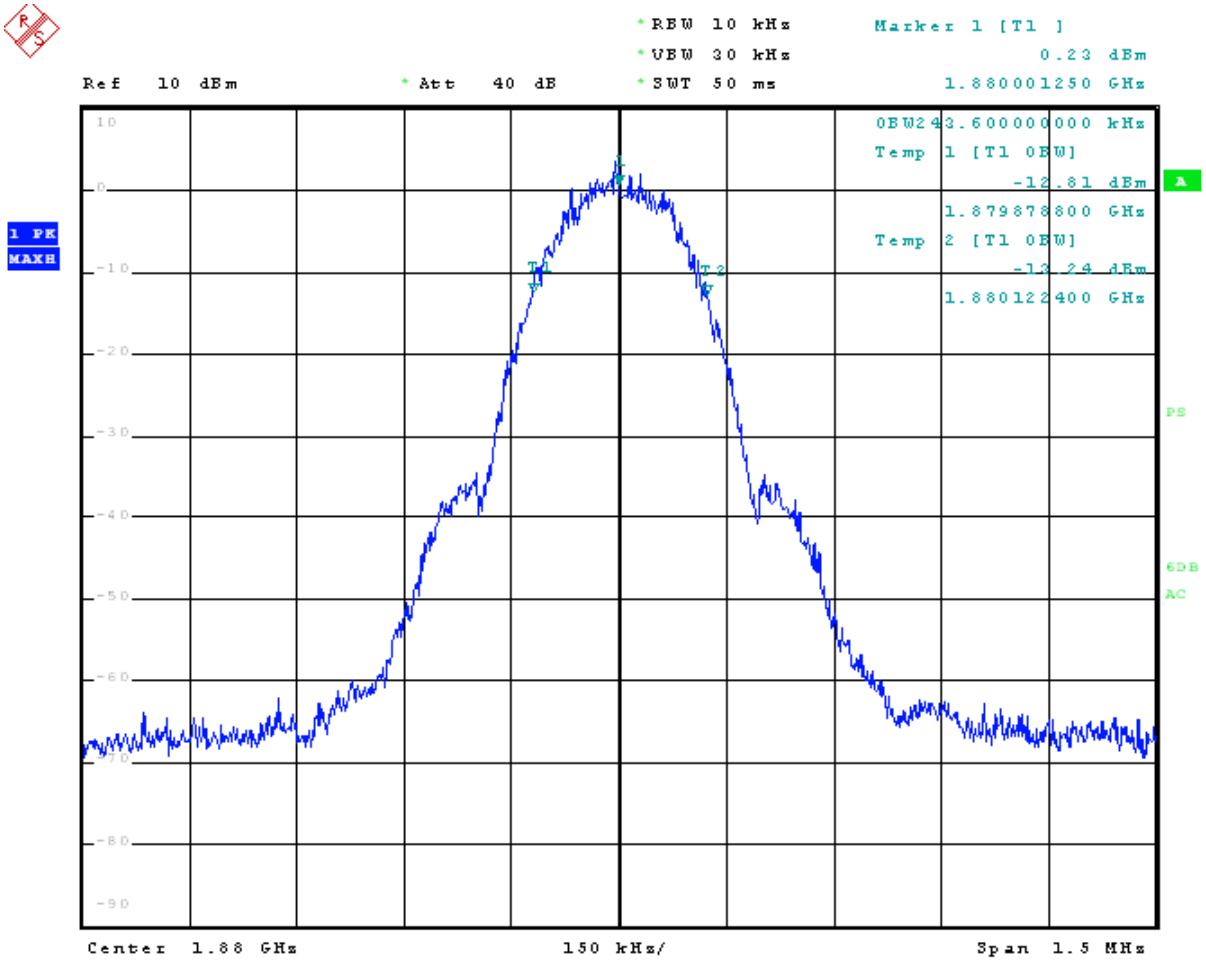
99% Bandwidth

PCS 1900 Channel Low



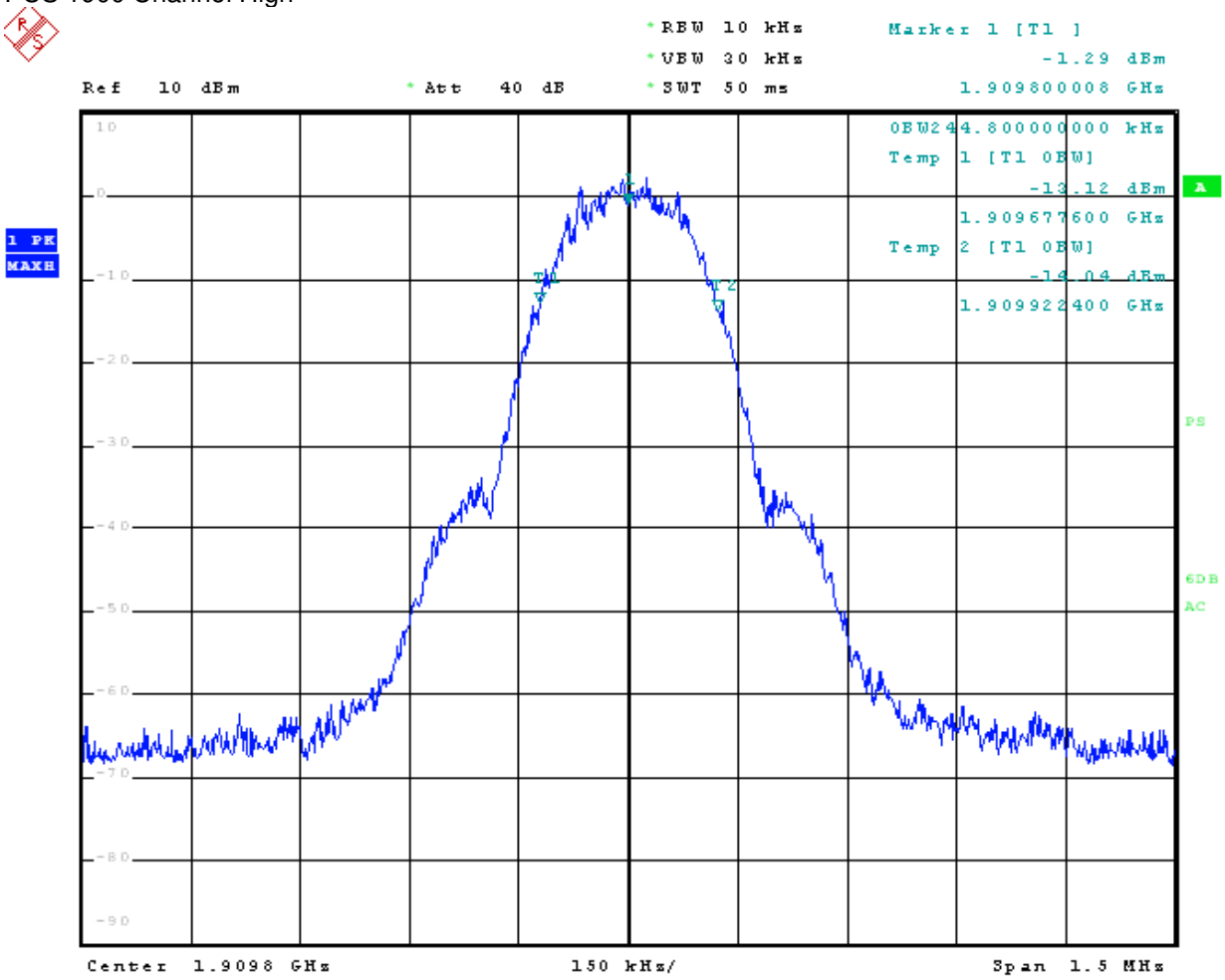
99% Bandwidth

PCS 1900 Channel Mid



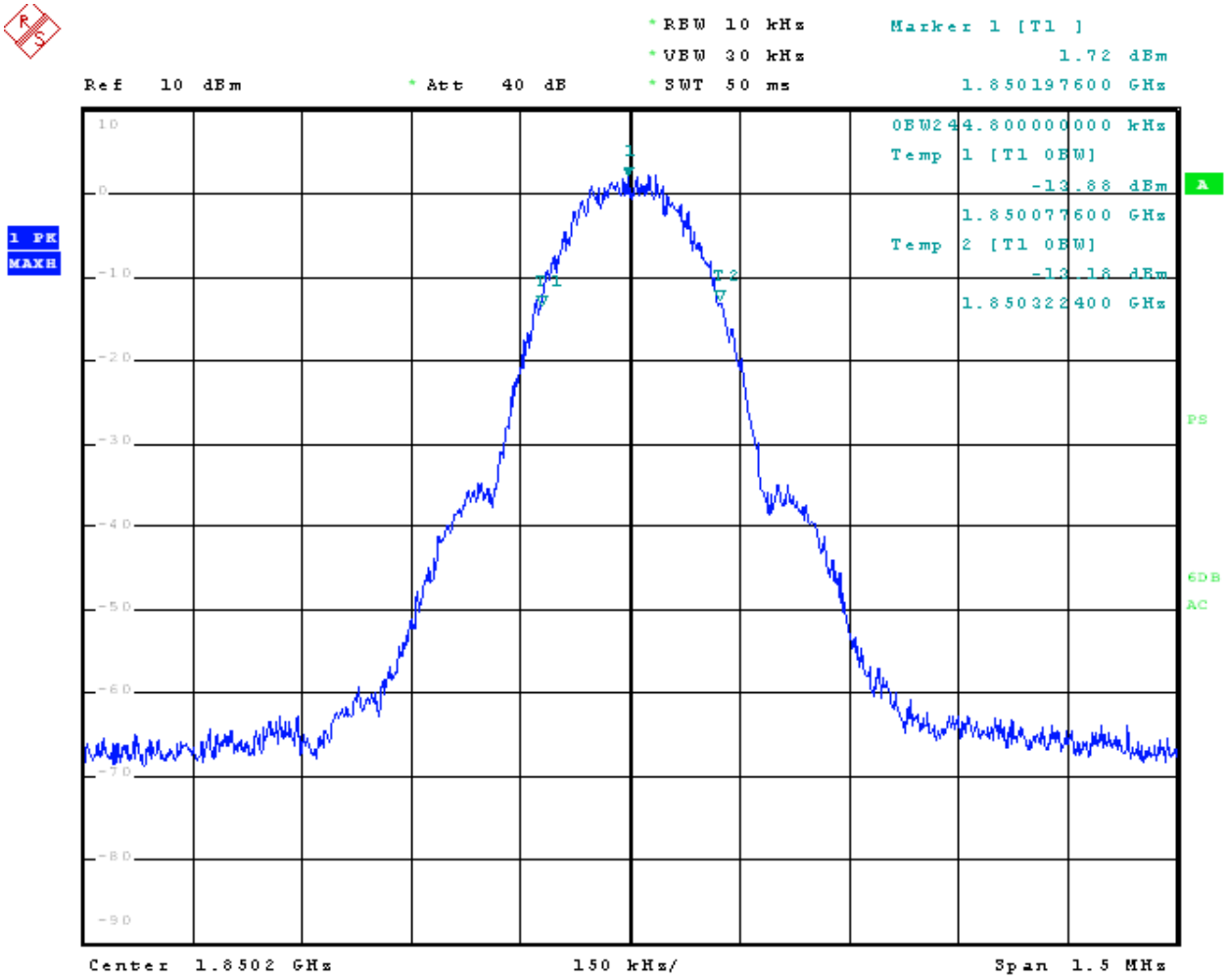
99% Bandwidth

PCS 1900 Channel High



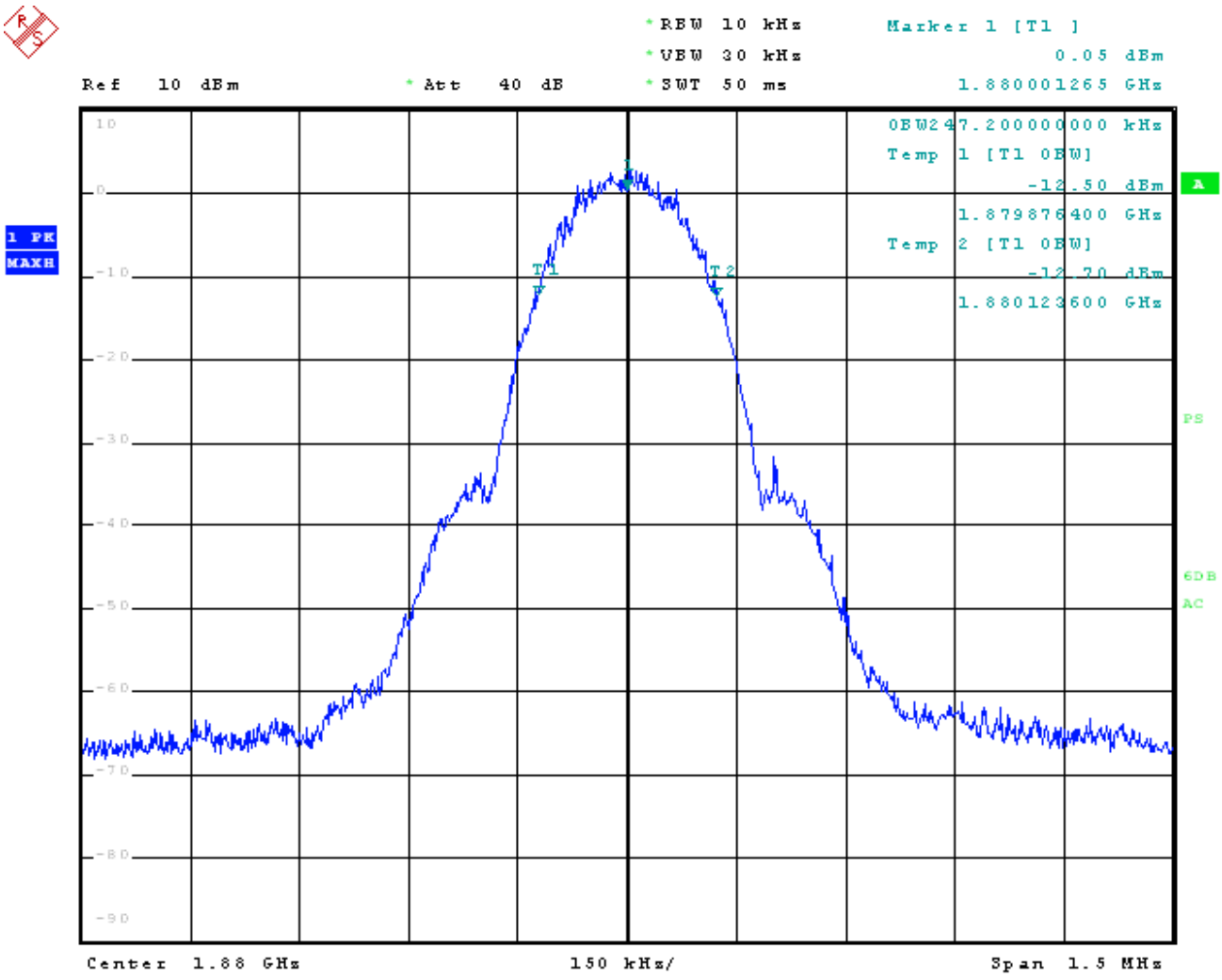
99% Bandwidth

EDGE 1900 Channel Low



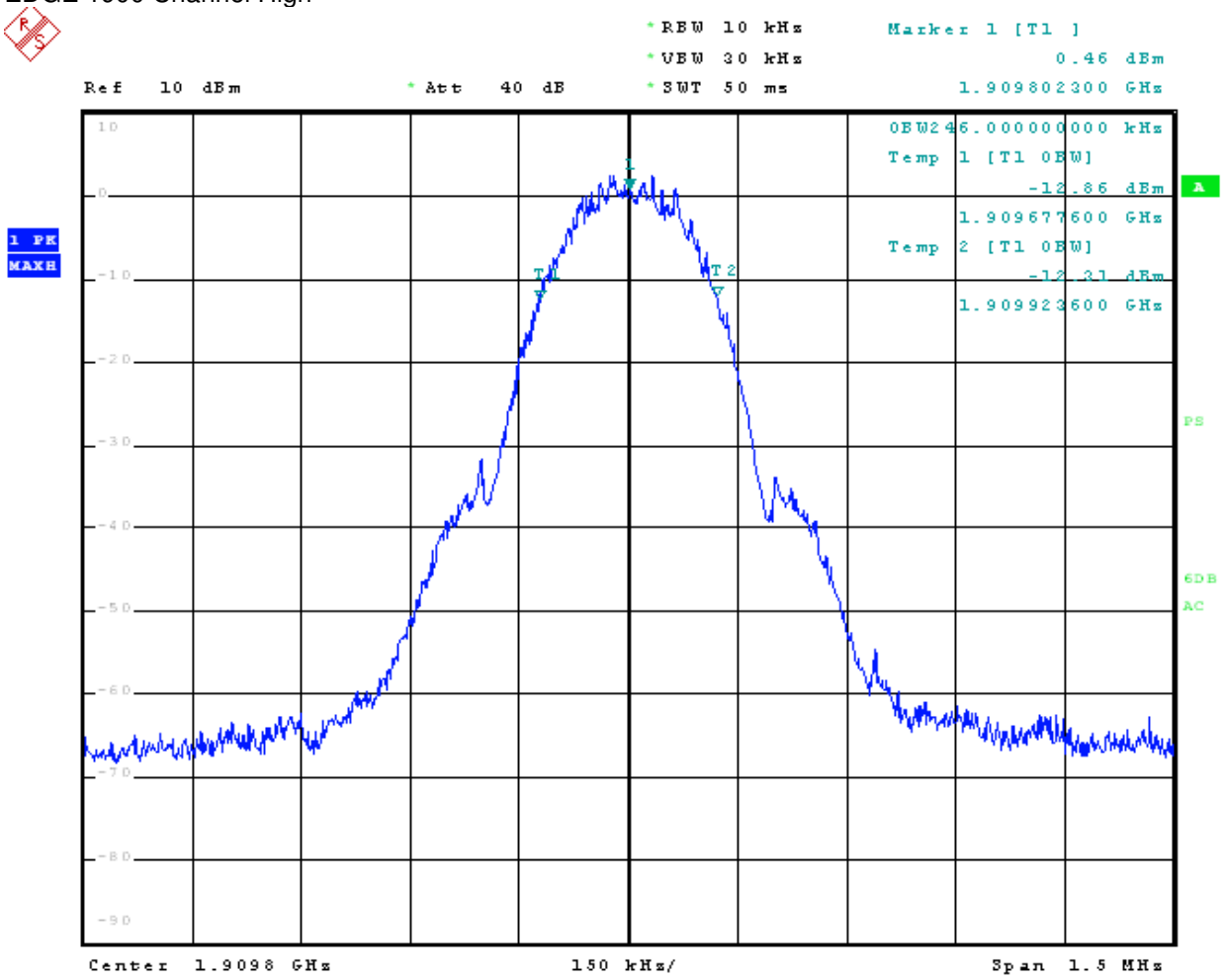
99% Bandwidth

EDGE 1900 Channel Mid



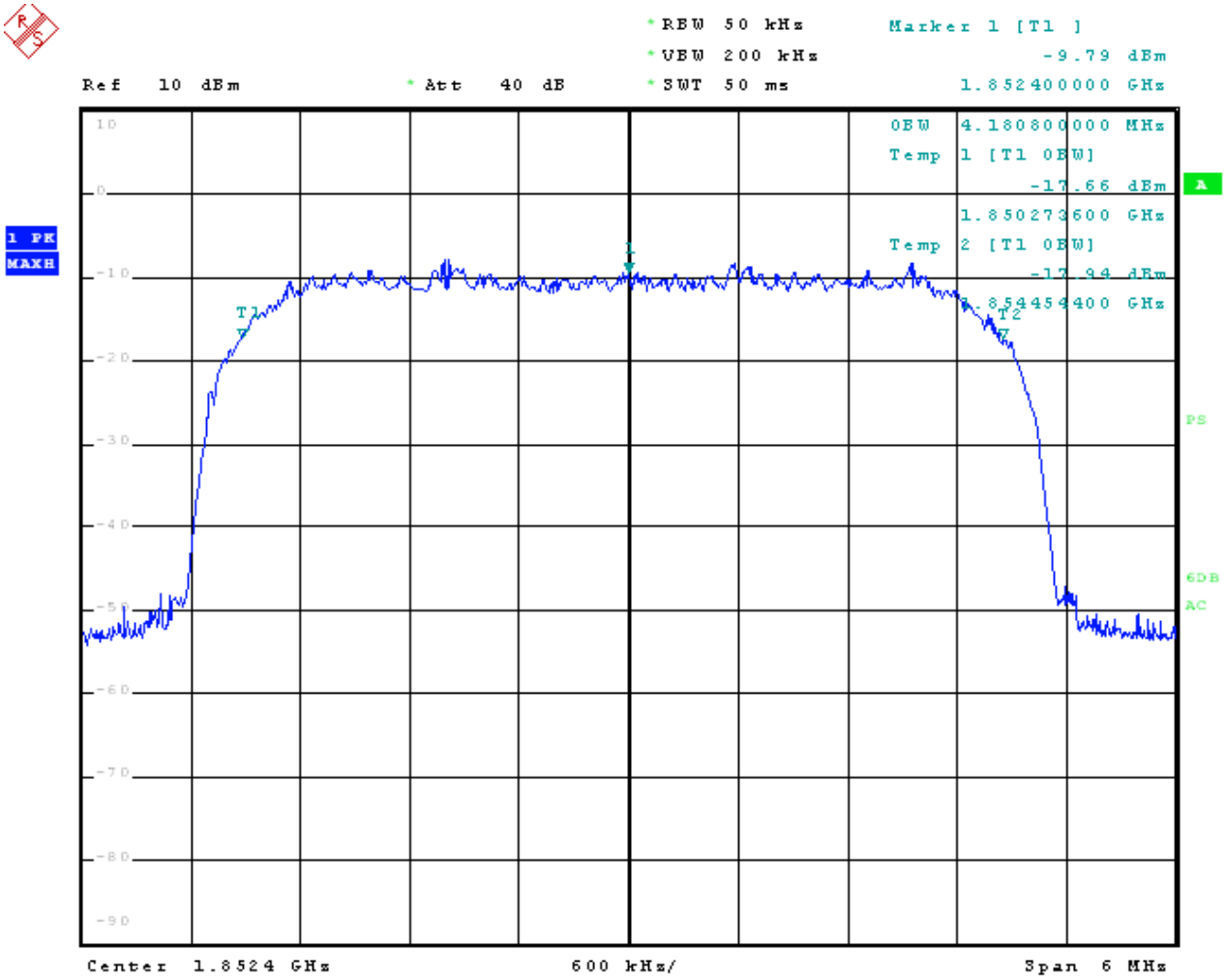
99% Bandwidth

EDGE 1900 Channel High



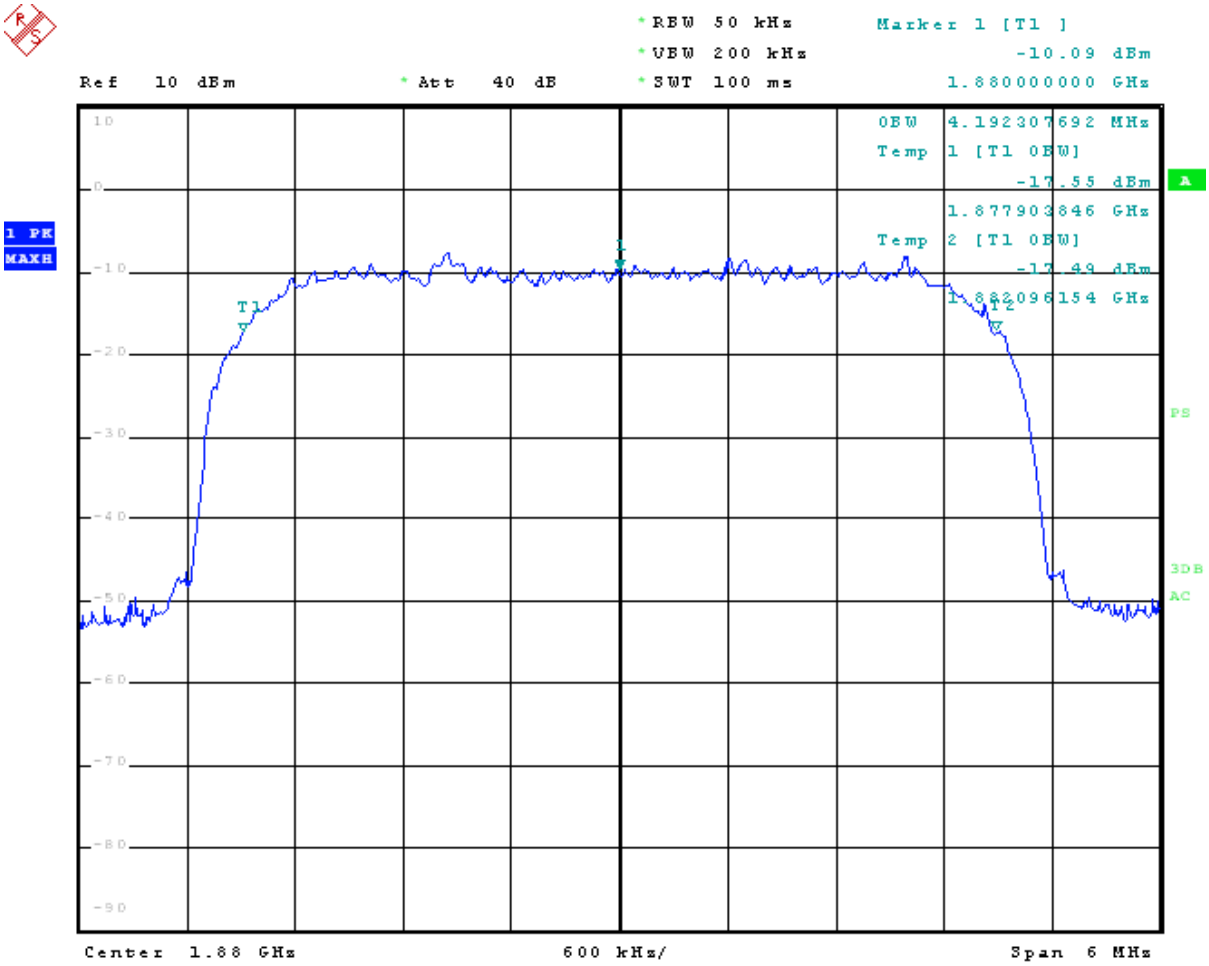
99% Bandwidth

WCDMA II Channel Low



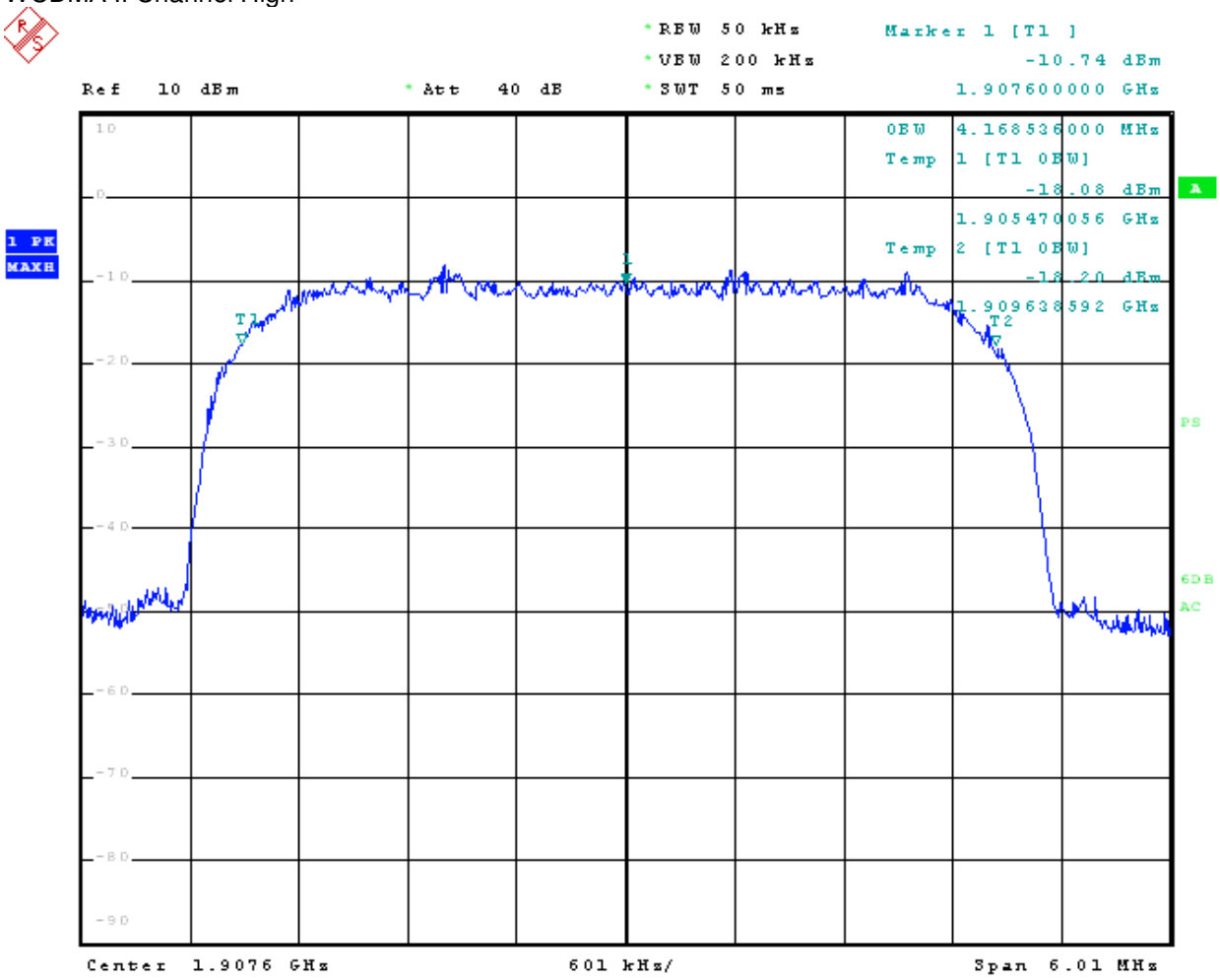
99% Bandwidth

WCDMA II Channel Mid



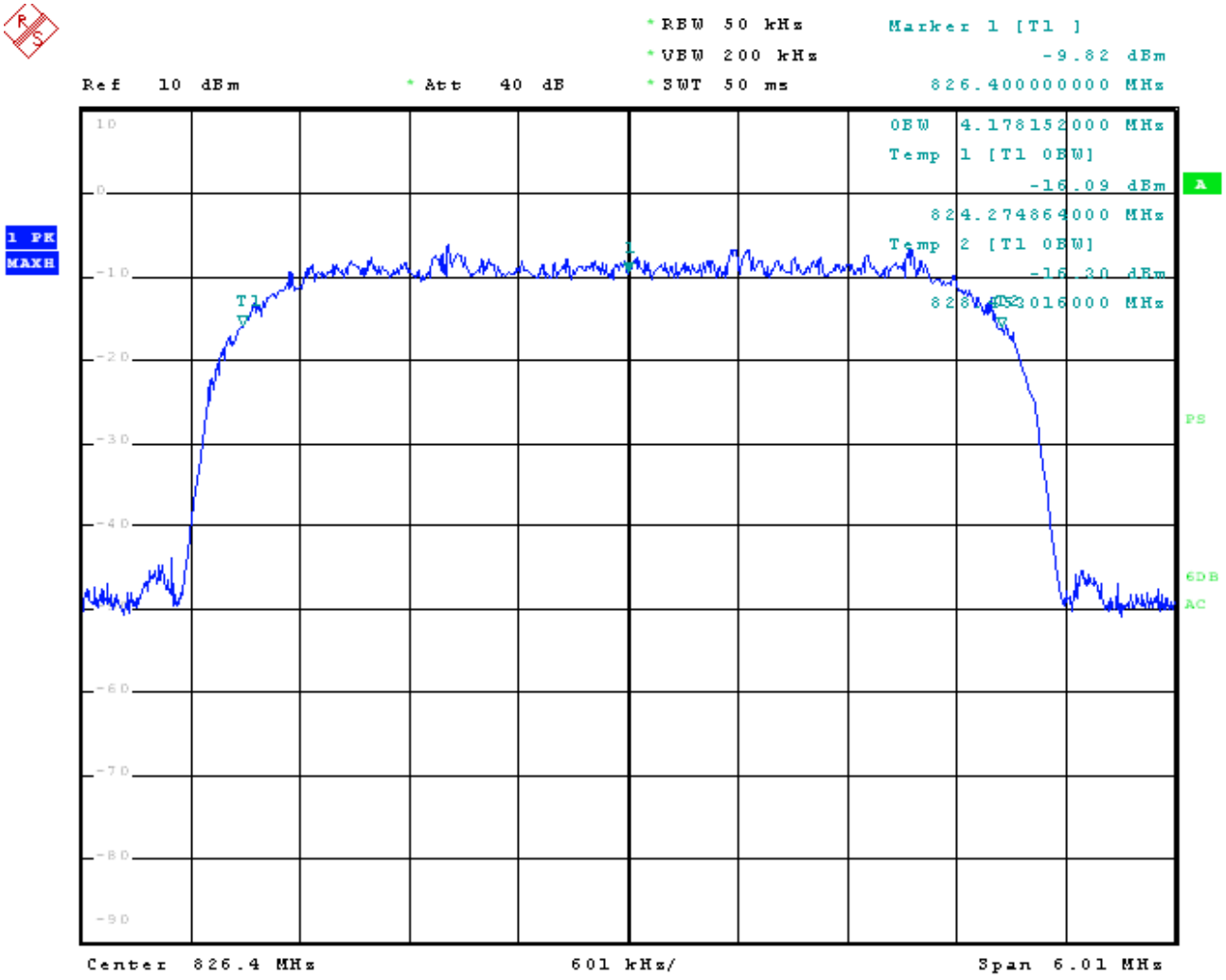
99% Bandwidth

WCDMA II Channel High



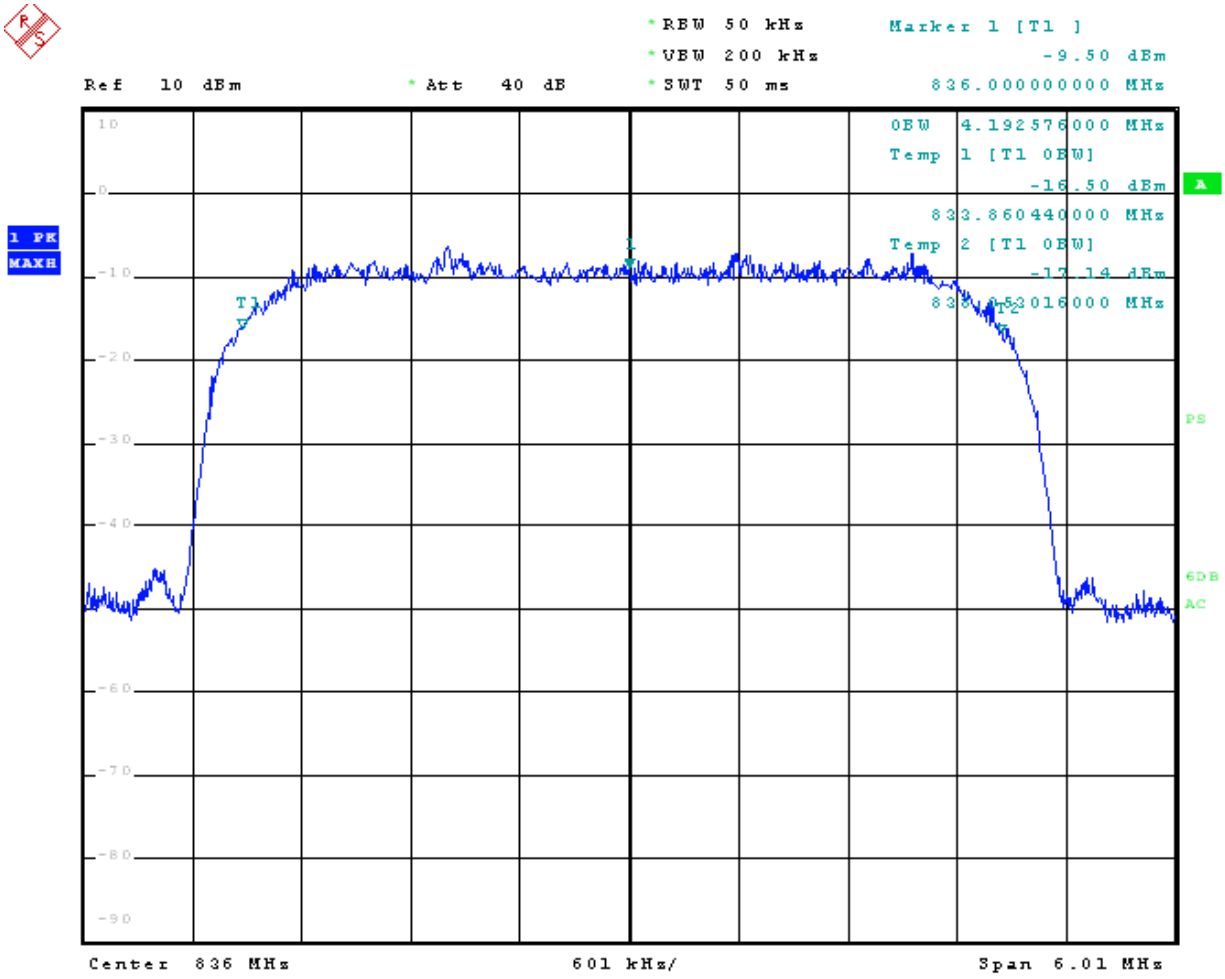
99% Bandwidth

WCDMA V Channel Low



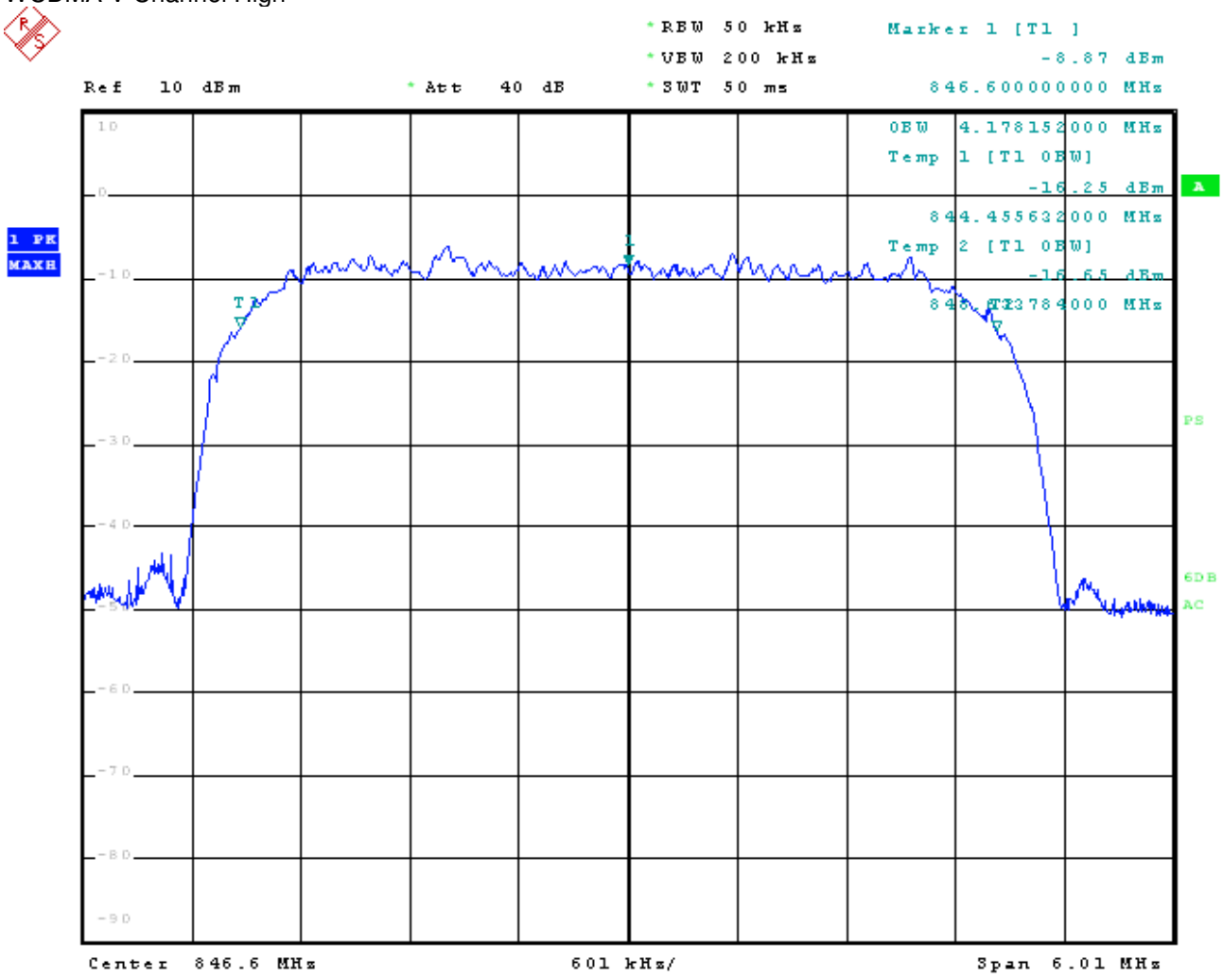
99% Bandwidth

WCDMA V Channel Mid



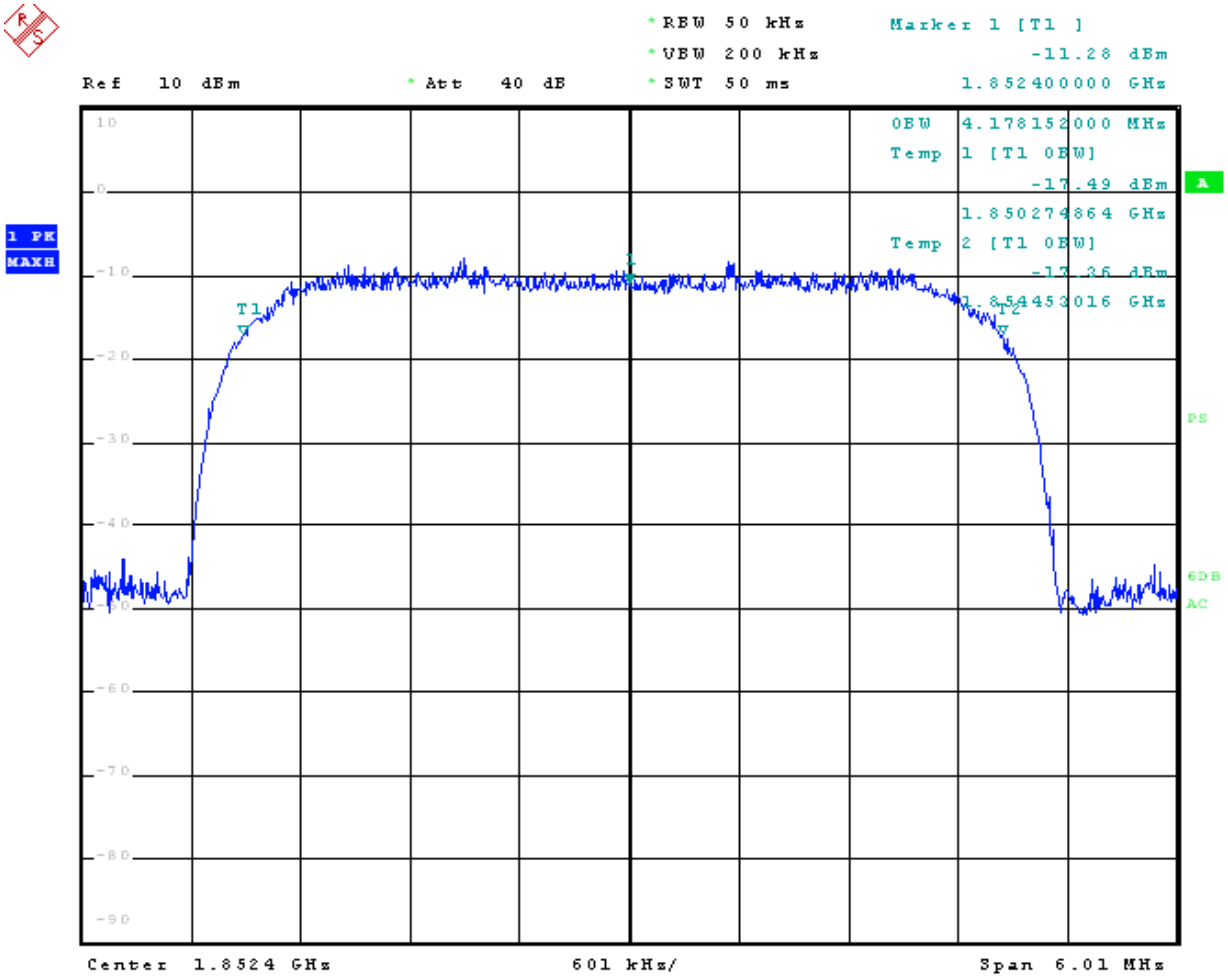
99% Bandwidth

WCDMA V Channel High



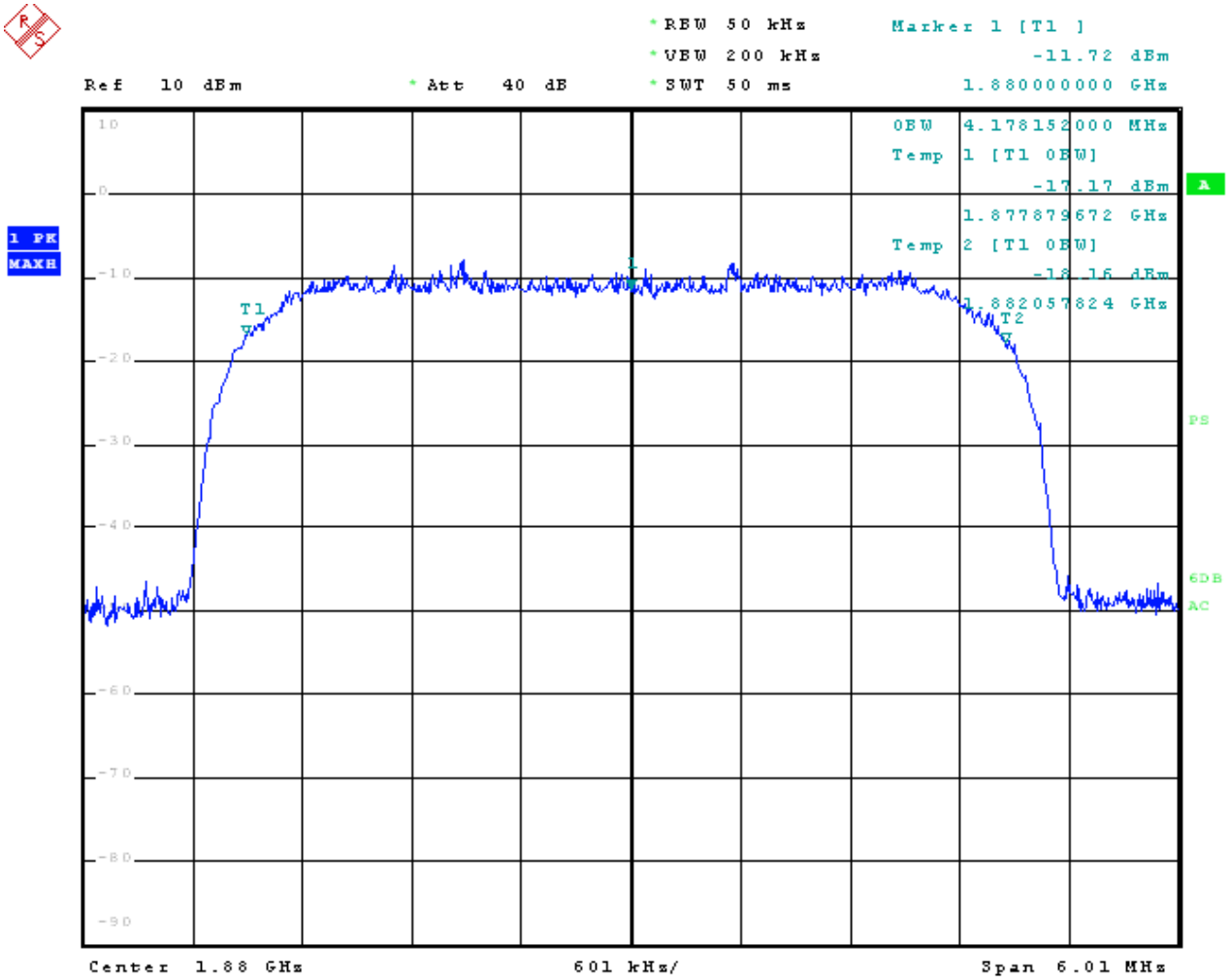
99% Bandwidth

HSDPA II Channel Low



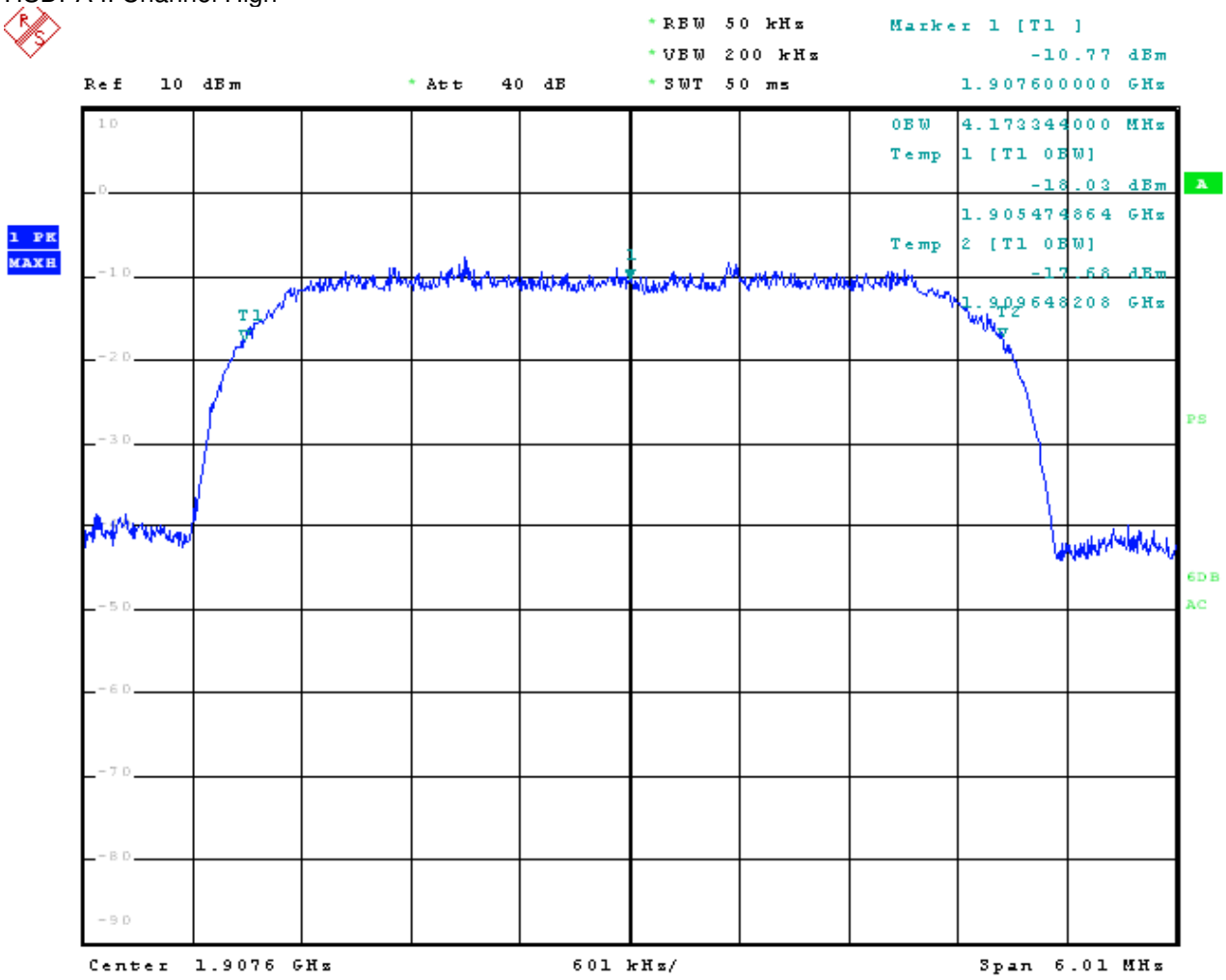
99% Bandwidth

HSDPA II Channel Mid



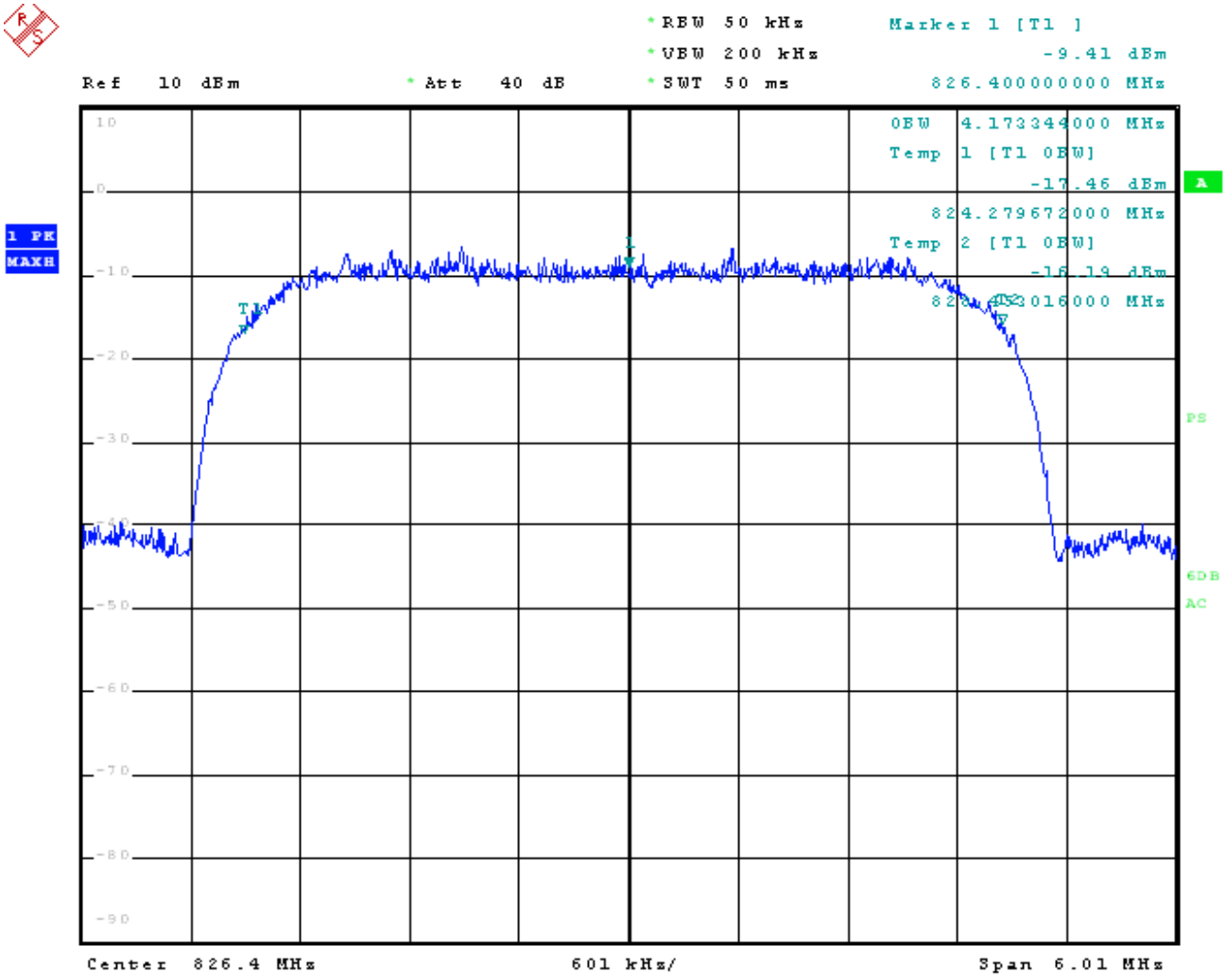
99% Bandwidth

HSDPA II Channel High



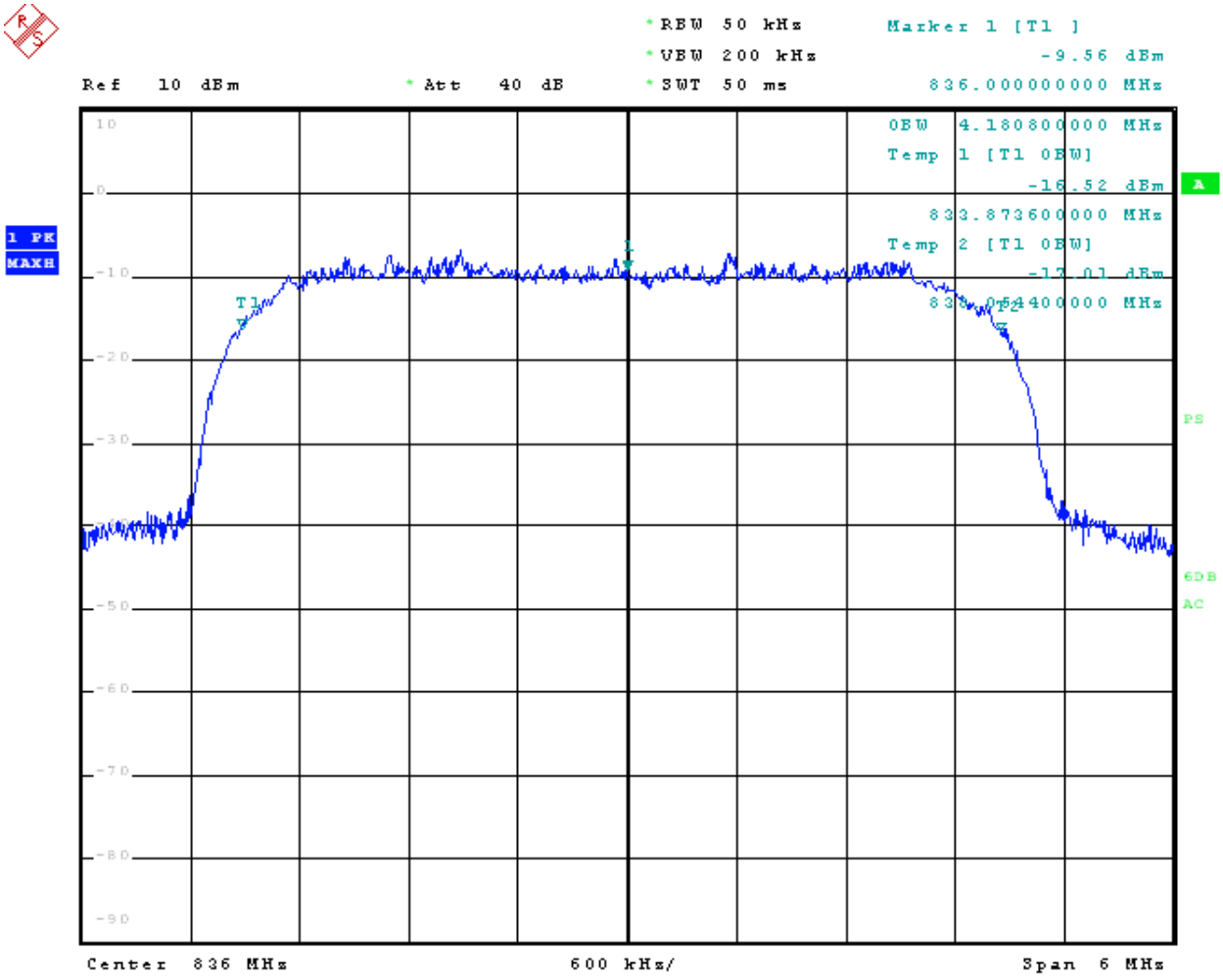
99% Bandwidth

HSDPA V Channel Low



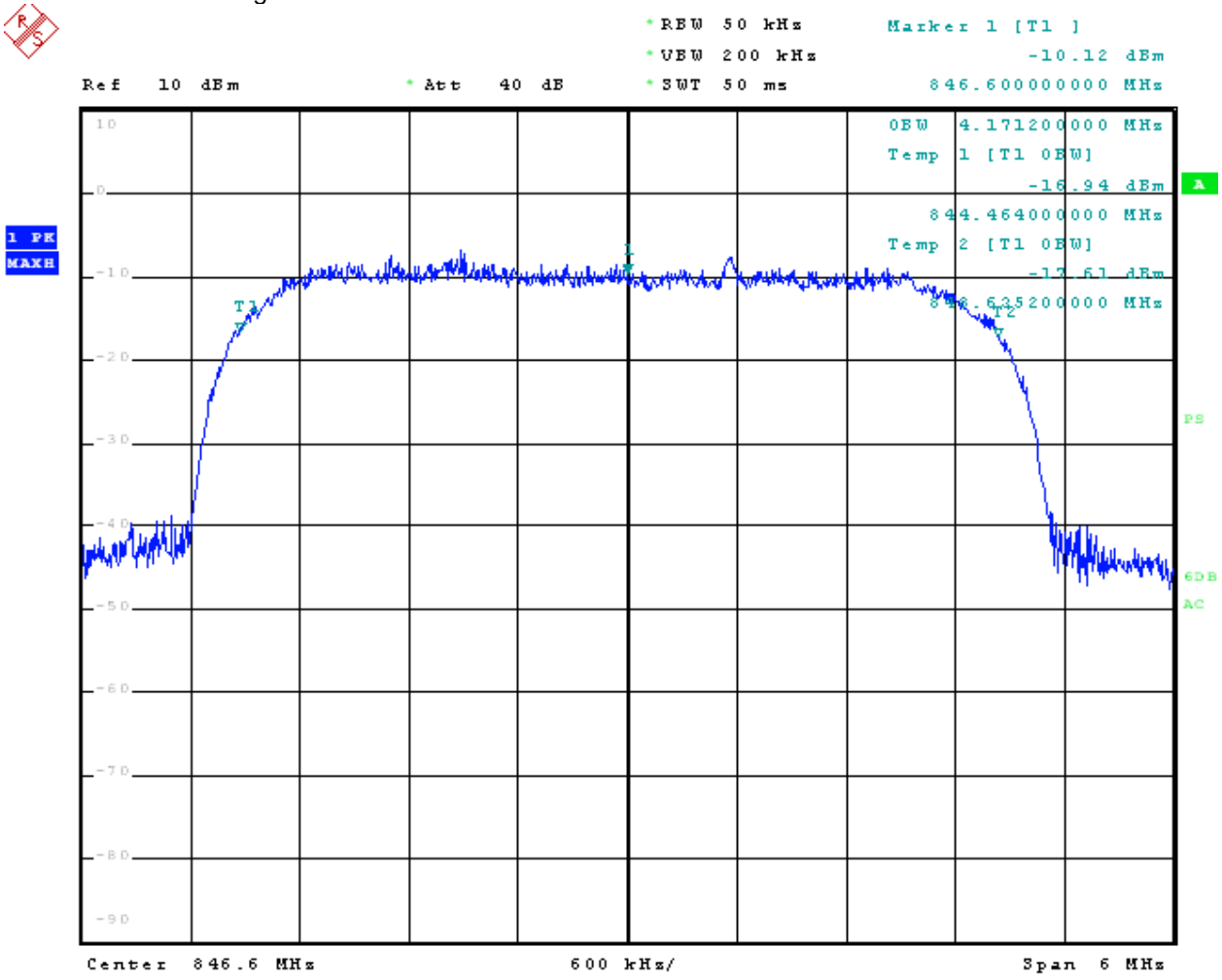
99% Bandwidth

HSDPA V Channel Mid



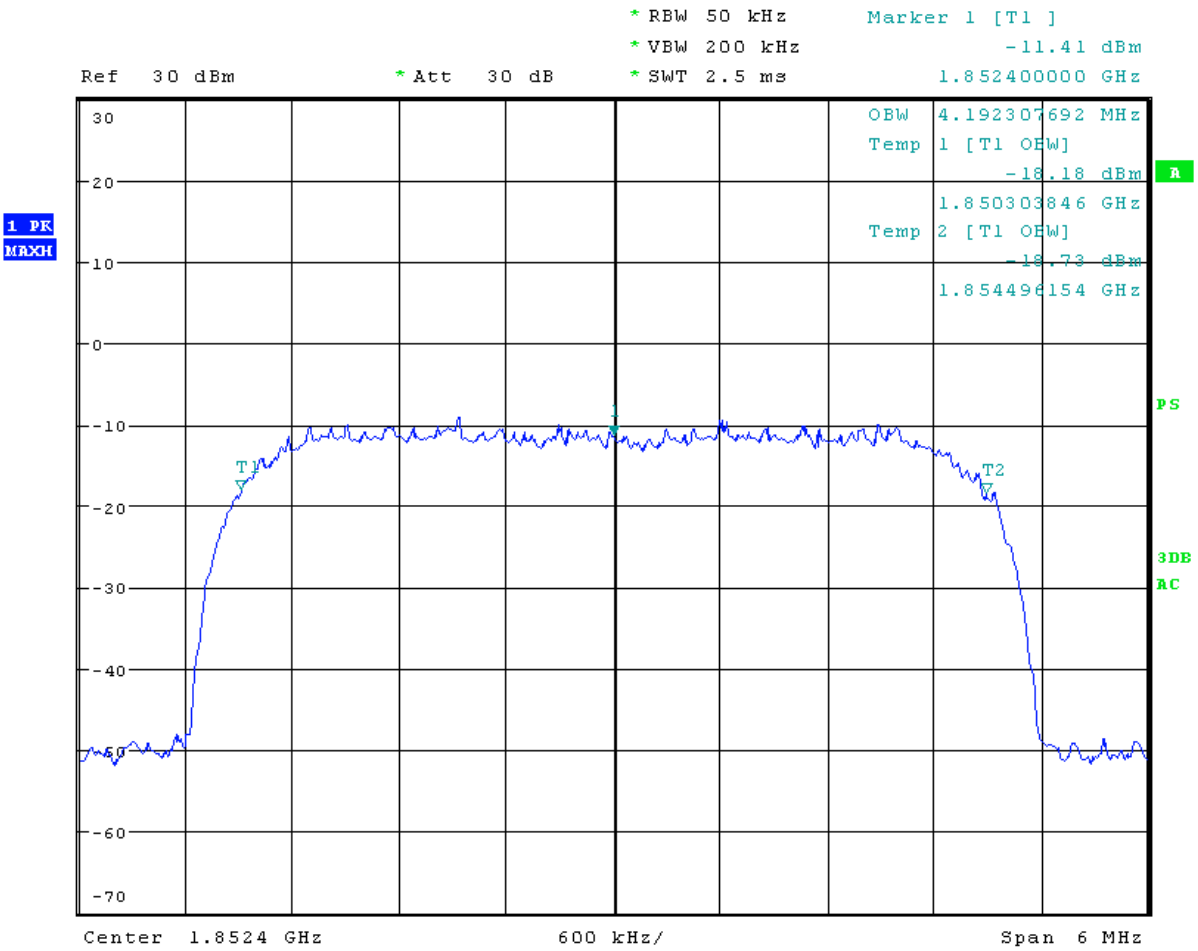
99% Bandwidth

HSDPA V Channel High



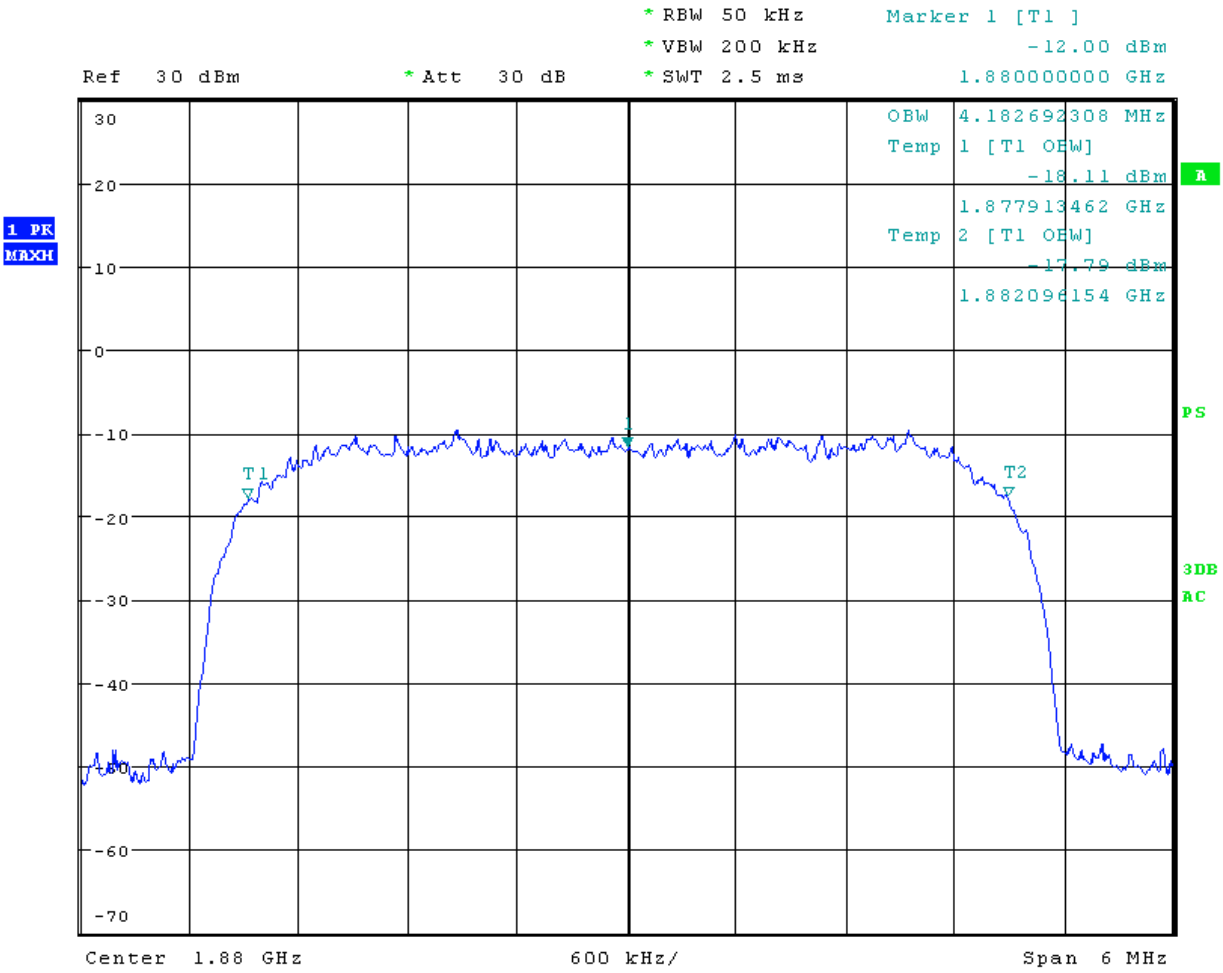
99% Bandwidth

HSUPA II Channel Low



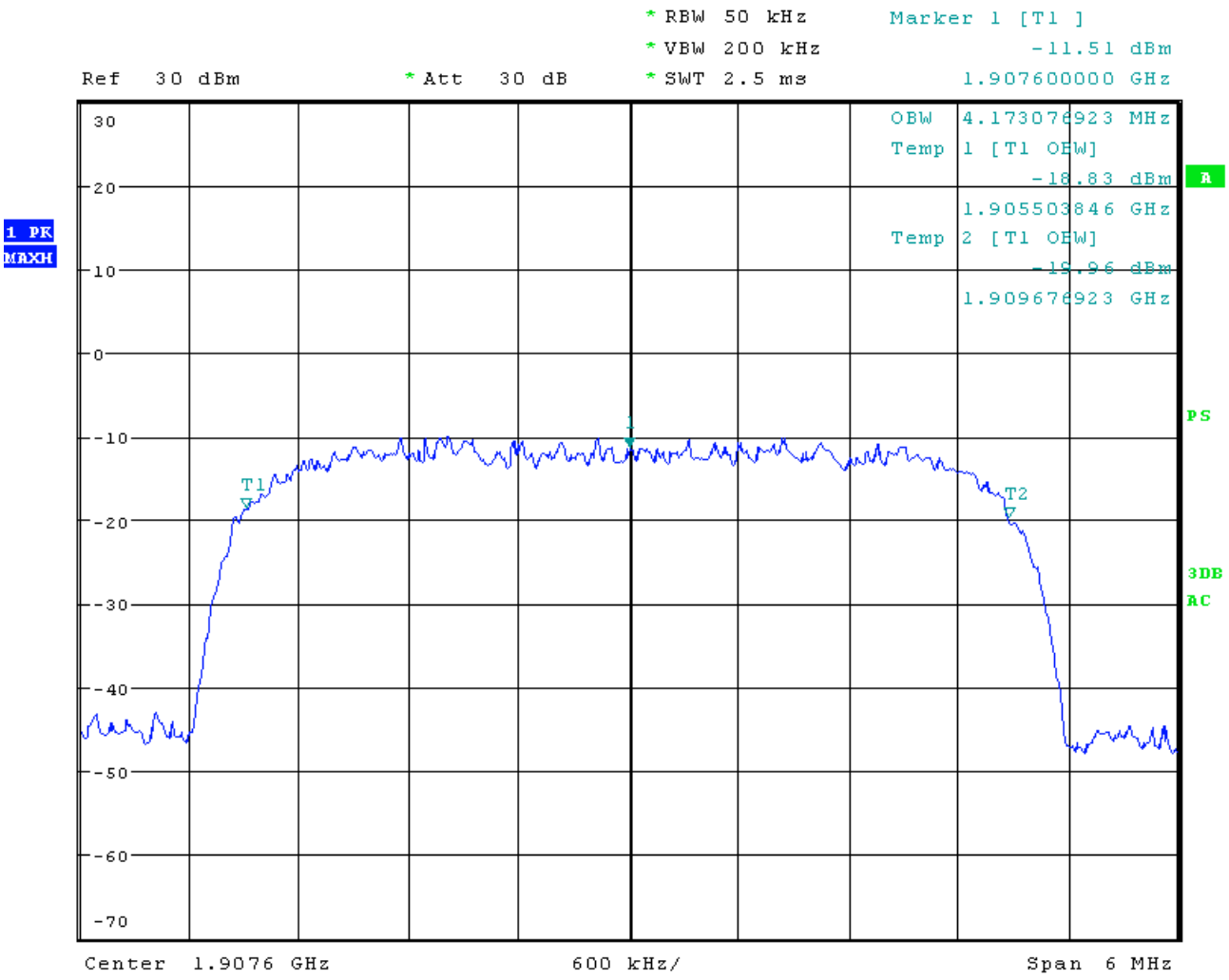
99% Bandwidth

HSUPA II Channel Mid



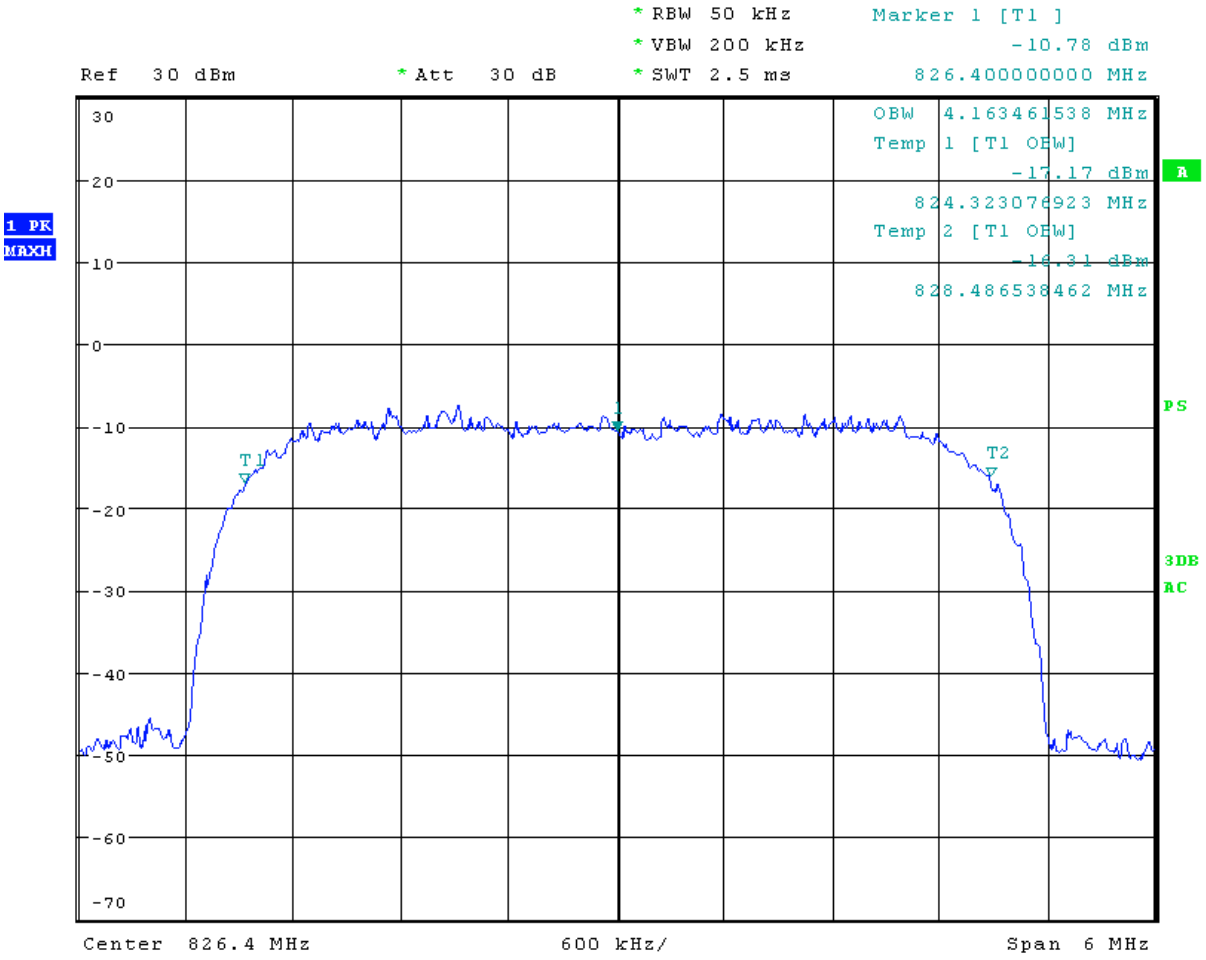
99% Bandwidth

HSUPA II Channel High



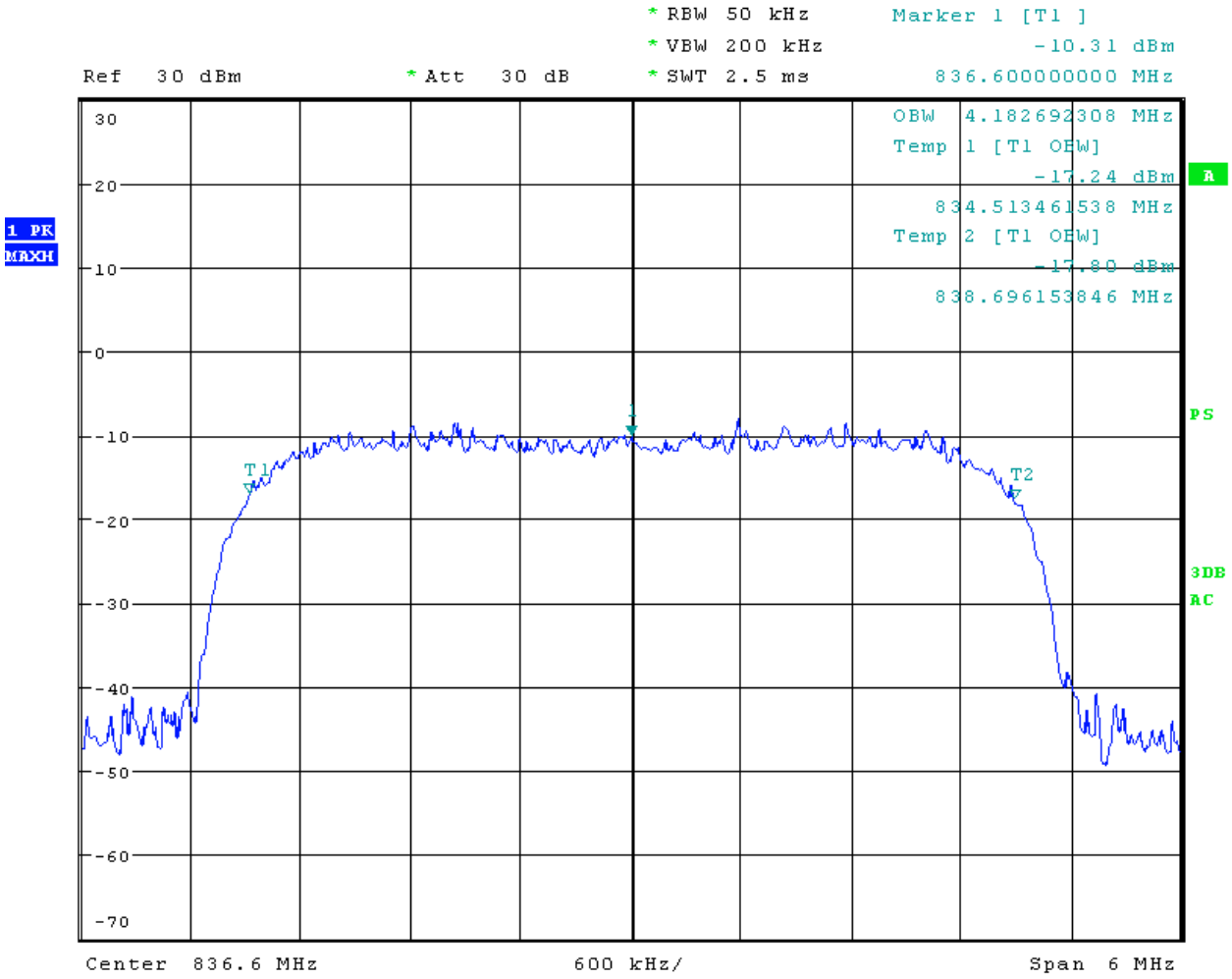
99% Bandwidth

HSUPA V Channel Low



99% Bandwidth

HSUPA V Channel Mid



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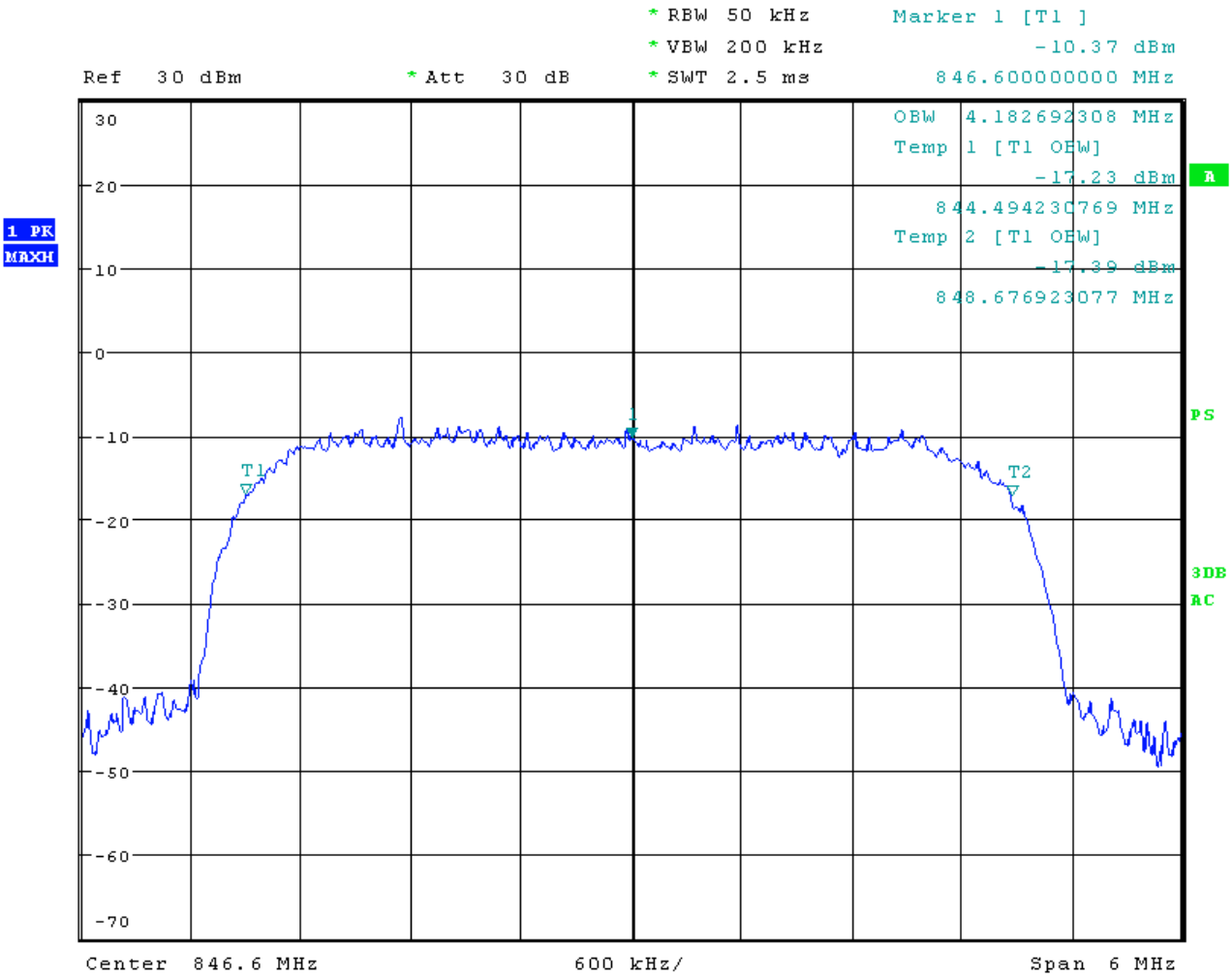
HSUPA V Channel High



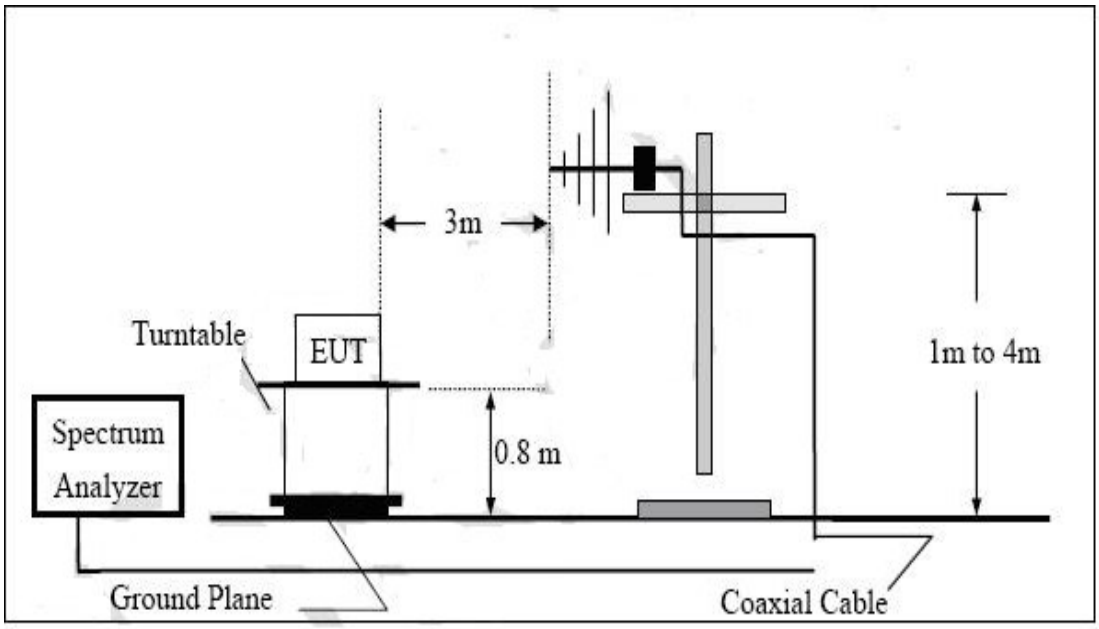
## 6.4 Effective Isotropic Radiated Power

Test Requirement: Part 2.1046
Part 24.232(b) Mobile station are Limited to 2W EIRP.
Part 22.913(a) Mobile station are limited to 7W ERP.

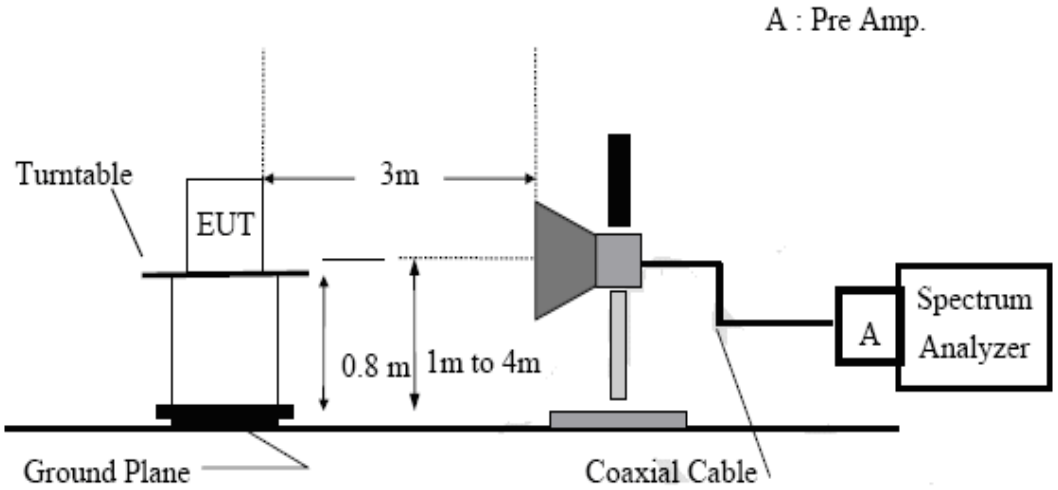
Test Date: Sep 29, 2009

Test Setup:

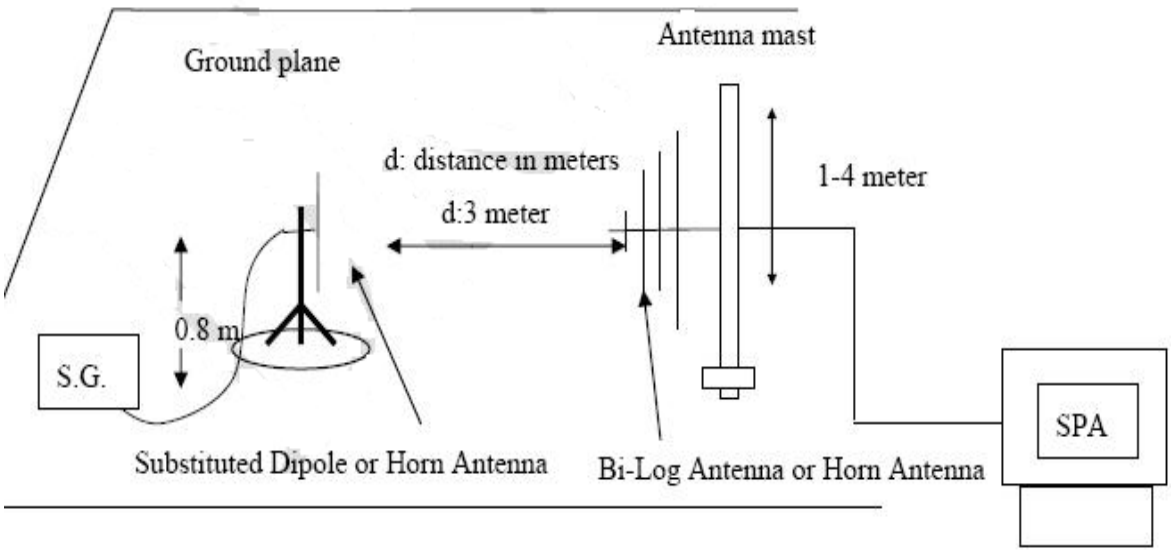
(A) Radiated emission Test setup, Below Frequency 1000MHz:




(B) Radiated emission Test setup frequency over 1GHz:



(C) Substituted Method Test setup:




**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, the EUT was communication with the station. The highest emission was recorded with the rotation of the turntable and lowering of the test antenna from 4m to 1m. The reading was recorded and the field strength(E in dBuV/m) was calculated.

ERP in frequency band 824.2-848.8MHz were measured using substitution method. The EUT was replaced by dipole antenna connected, the S.G. output was recorded and ERP was calculated as follow:

EIRP in frequency band 1850.2-1909.8MHz were measured using a substitution method. The EUT was replaced by a horn antenna connected, the S.G. output was recorded and EIRP was calculated as follows:

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

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

The procedure of KDB941225 (SAR Measurement Procedures for 3G devices, WCDMA/HSDPA) was used for EUT and Base station setting.

**Measurement result:**

**(1) The RBW, VBW of SPA for frequency**
**Below 1GHz was RBW=300KHz, VBW=1MHz;**
**Above 1GHz was RBW=1MHz, VBW=3MHz**

| EUT mode | Frequency(MHz) | CH | EUT Pol. | Antenna Pol. | S.G. output (dBm) | Antenna Gain (dBd) | Cable loss (dB) | ERP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|
| GSM 850 | 824.2 | 128 | H | V | 12.32 | 8.4 | 2.89 | 17.83 | 38.45 |
| | | | | H | 9.05 | 8.4 | 2.89 | 14.56 | 38.45 |
| | 836.6 | 190 | H | V | 12.12 | 8.45 | 2.93 | 17.64 | 38.45 |
| | | | | H | 6.88 | 8.45 | 2.93 | 12.4 | 38.45 |
| | 848.8 | 251 | H | V | 11.01 | 8.76 | 2.97 | 16.8 | 38.45 |
| | | | | H | 7.42 | 8.76 | 2.97 | 13.21 | 38.45 |

| EUT mode | Frequency(MHz) | CH | EUT Pol. | Antenna Pol. | S.G. output (dBm) | Antenna Gain (dBi) | Cable loss (dB) | EIRP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|
| PCS 1900 | 1850.2 | 512 | H | V | 17.53 | 7.05 | 4.45 | 20.13 | 33.00 |
| | | | | H | 15.76 | 7.05 | 4.45 | 18.36 | 33.00 |
| | 1880.0 | 661 | H | V | 18.05 | 7.13 | 4.57 | 20.61 | 33.00 |
| | | | | H | 12.67 | 7.13 | 4.57 | 15.23 | 33.00 |
| | 1909.8 | 810 | H | V | 16.57 | 7.25 | 4.48 | 19.34 | 33.00 |
| | | | | H | 14.92 | 7.25 | 4.48 | 17.69 | 33.00 |

| EUT mode | Frequency(MHz) | CH | EUT Pol. | Antenna Pol. | S.G. output (dBm) | Antenna Gain (dBd) | Cable loss (dB) | ERP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|
| EDGE 850 | 824.2 | 128 | H | V | 10.83 | 8.4 | 2.89 | 16.34 | 38.45 |
| | | | | H | 7.05 | 8.4 | 2.89 | 12.56 | 38.45 |
| | 836.6 | 190 | H | V | 11.46 | 8.45 | 2.93 | 16.98 | 38.45 |
| | | | | H | 7.52 | 8.45 | 2.93 | 13.04 | 38.45 |
| | 848.8 | 251 | H | V | 11.08 | 8.76 | 2.97 | 16.87 | 38.45 |
| | | | | H | 6.75 | 8.76 | 2.97 | 12.54 | 38.45 |

| EUT mode | Frequency(MHz) | CH | EUT Pol. | Antenna Pol. | S.G. output (dBm) | Antenna Gain (dBi) | Cable loss (dB) | EIRP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|
| EDGE 1900 | 1850.2 | 512 | H | V | 17.08 | 7.05 | 4.45 | 19.68 | 33.00 |
| | | | | H | 14.85 | 7.05 | 4.45 | 17.45 | 33.00 |
| | 1880.0 | 661 | H | V | 17.4 | 7.13 | 4.57 | 19.96 | 33.00 |
| | | | | H | 12.56 | 7.13 | 4.57 | 15.12 | 33.00 |
| | 1909.8 | 810 | H | V | 15.97 | 7.25 | 4.48 | 18.74 | 33.00 |
| | | | | H | 13.89 | 7.25 | 4.48 | 16.66 | 33.00 |

**(2) The RBW, VBW of SPA for frequency**

**Below 1GHz was RBW=5MHz, VBW=5MHz**

**Above 1GHz was RBW=5MHz, VBW=5MHz**

| EUT mode | Frequency(MHz) | CH | EUT Pol. | Antenna Pol. | S.G. output (dBm) | Antenna Gain (dBi) | Cable loss (dB) | EIRP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|
| WCDMA Band II | 1852.4 | 9262 | H | V | 14.63 | 7.05 | 4.46 | 17.22 | 33.00 |
| | | | | H | 13.89 | 7.05 | 4.46 | 16.48 | 33.00 |
| | 1880.0 | 9400 | H | V | 14.76 | 7.13 | 4.57 | 17.32 | 33.00 |
| | | | | H | 12.76 | 7.13 | 4.57 | 15.32 | 33.00 |
| | 1907.6 | 9538 | H | V | 13.86 | 7.23 | 4.5 | 16.59 | 33.00 |
| | | | | H | 13.25 | 7.23 | 4.5 | 15.98 | 33.00 |

| EUT mode | Frequency(MHz) | CH | EUT Pol. | Antenna Pol. | S.G. output (dBm) | Antenna Gain (dBd) | Cable loss (dB) | ERP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|
| WCDMA Band V | 826.4 | 4132 | H | V | 12.35 | 8.42 | 2.9 | 17.87 | 38.45 |
| | | | | H | 9.84 | 8.42 | 2.9 | 15.36 | 38.45 |
| | 836.0 | 4180 | H | V | 12.5 | 8.44 | 2.93 | 18.01 | 38.45 |
| | | | | H | 9.02 | 8.44 | 2.93 | 14.53 | 38.45 |
| | 846.6 | 4233 | H | V | 10.66 | 8.7 | 2.97 | 16.39 | 38.45 |
| | | | | H | 9.36 | 8.7 | 2.97 | 15.09 | 38.45 |

| EUT mode | Frequency(MHz) | CH | EUT Pol. | Antenna Pol. | S.G. output (dBm) | Antenna Gain (dBi) | Cable loss (dB) | EIRP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|
| HSDPA Band II | 1852.4 | 9262 | H | V | 14.29 | 7.05 | 4.46 | 16.88 | 33.00 |
| | | | | H | 11.1 | 7.05 | 4.46 | 13.69 | 33.00 |
| | 1880.0 | 9400 | H | V | 15.49 | 7.13 | 4.57 | 18.05 | 33.00 |
| | | | | H | 10.8 | 7.13 | 4.57 | 13.36 | 33.00 |
| | 1907.6 | 9538 | H | V | 14.06 | 7.23 | 4.5 | 16.79 | 33.00 |
| | | | | H | 11.59 | 7.23 | 4.5 | 14.32 | 33.00 |

| EUT mode | Frequency(MHz) | CH | EUT Pol. | Antenna Pol. | S.G. output (dBm) | Antenna Gain (dBd) | Cable loss (dB) | ERP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|
| HSDPA Band V | 826.4 | 4132 | H | V | 12.14 | 8.42 | 2.9 | 17.66 | 38.45 |
| | | | | H | 9.07 | 8.42 | 2.9 | 14.59 | 38.45 |
| | 836.0 | 4180 | H | V | 10.63 | 8.44 | 2.93 | 16.14 | 38.45 |
| | | | | H | 8.13 | 8.44 | 2.93 | 13.64 | 38.45 |
| | 846.6 | 4233 | H | V | 11.38 | 8.7 | 2.97 | 17.11 | 38.45 |
| | | | | H | 8.18 | 8.7 | 2.97 | 13.91 | 38.45 |

| EUT mode | Frequency(MHz) | CH | EUT Pol. | Antenna Pol. | S.G. output (dBm) | Antenna Gain (dBi) | Cable loss (dB) | EIRP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|
| HSUPA Band II | 1852.4 | 9262 | H | V | 14.54 | 7.05 | 4.46 | 17.13 | 33.00 |
| | | | | H | 11.73 | 7.05 | 4.46 | 14.32 | 33.00 |
| | 1880.0 | 9400 | H | V | 14.4 | 7.13 | 4.57 | 16.96 | 33.00 |
| | | | | H | 10.98 | 7.13 | 4.57 | 13.54 | 33.00 |
| | 1907.6 | 9538 | H | V | 14.04 | 7.23 | 4.5 | 16.77 | 33.00 |
| | | | | H | 10.51 | 7.23 | 4.5 | 13.24 | 33.00 |

| EUT mode | Frequency(MHz) | CH | EUT Pol. | Antenna Pol. | S.G. output (dBm) | Antenna Gain (dBd) | Cable loss (dB) | ERP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|
| HSUPA Band V | 826.4 | 4132 | H | V | 9.96 | 8.42 | 2.9 | 15.48 | 38.45 |
| | | | | H | 10.79 | 8.42 | 2.9 | 16.31 | 38.45 |
| | 836.0 | 4180 | H | V | 9.65 | 8.44 | 2.93 | 15.16 | 38.45 |
| | | | | H | 8.14 | 8.44 | 2.93 | 13.65 | 38.45 |
| | 846.6 | 4233 | H | V | 9.63 | 8.7 | 2.97 | 15.36 | 38.45 |
| | | | | H | 8.26 | 8.7 | 2.97 | 13.99 | 38.45 |

## 6.5 Out of band emissions at antenna Terminals

### 6.5.1 Band edges emissions

Test Requirement: Part 2.1051

FCC part 22.917(a), 24.238(a) the magnitude of each spurious and harmonic emission that can be detected when the equipment is operated under the conditions specification in the instruction manual and/or alignment procedure, shall not be less than 43+10log(Mean power in watts) dBc below the mean power output outside a license's frequency block(-13dBm).

Test Date: Sep 25, 2009

Test Procedure:

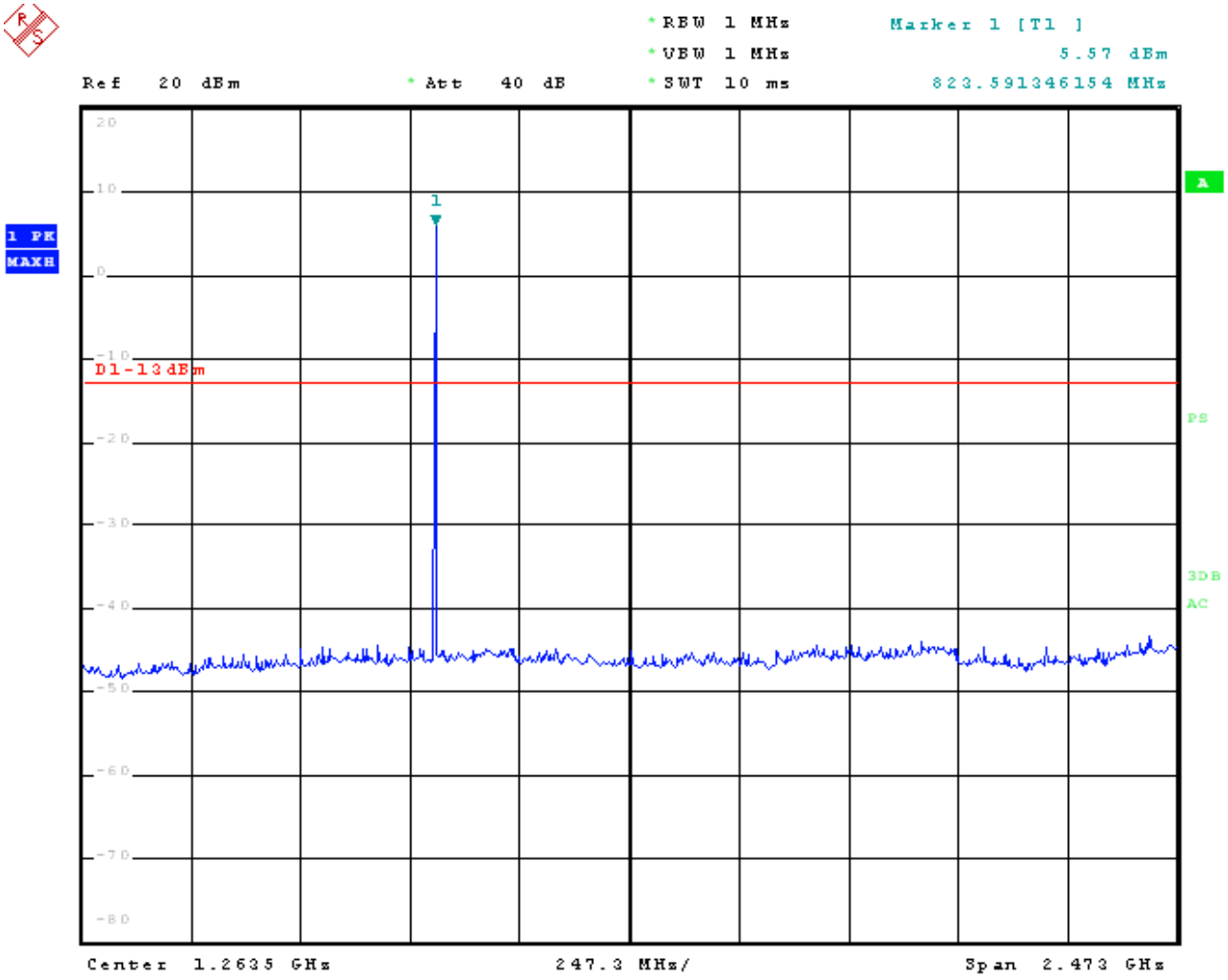
The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of spectrum analyzer was set at 1MHz, sufficient scans were taken to show the out of band Emission is any up to $10^{th}$ harmonic.

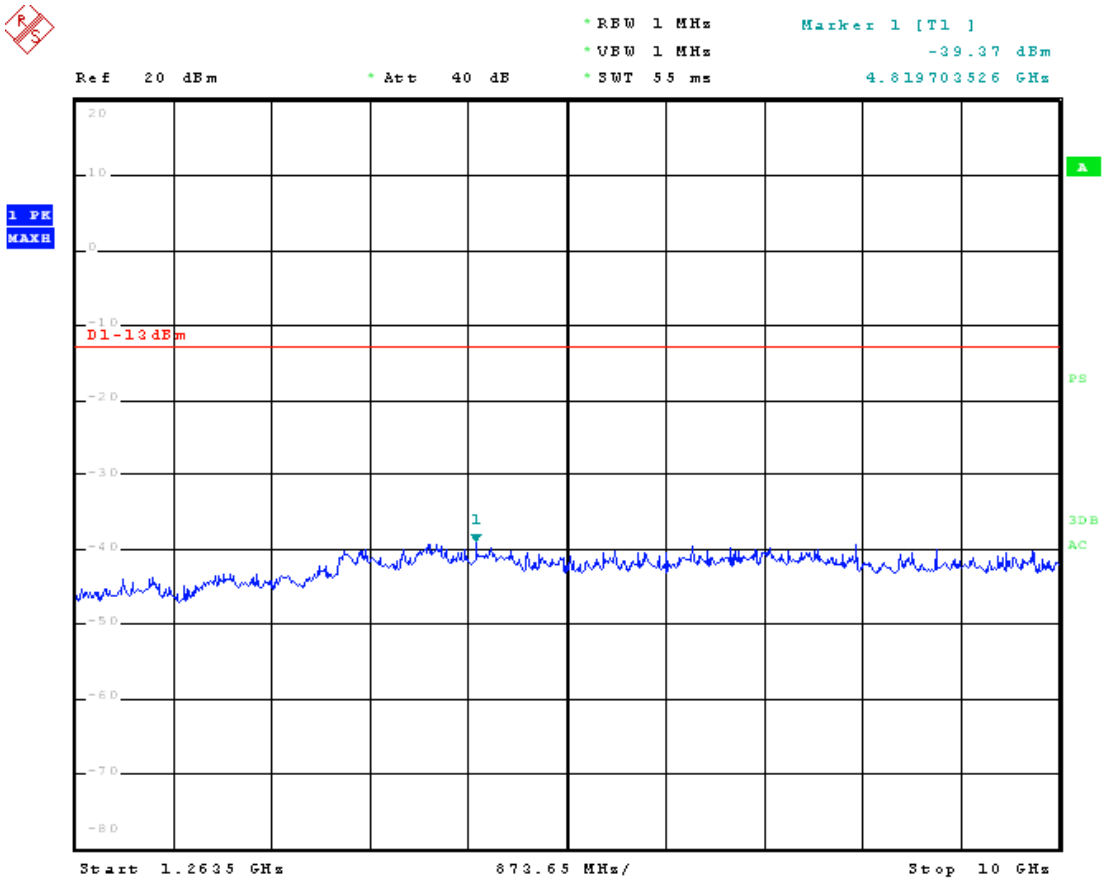
For the out of band: set RBW, VBW=1MHz, stat=30MHz, stop= 10 th harmonic. Limit= --13dBm

Band Edge requirements: In 1Mhz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 % of bandwidth of fundamental emission of the transmitter any be employed to measure the out of band emission. Limit=-13dBm.

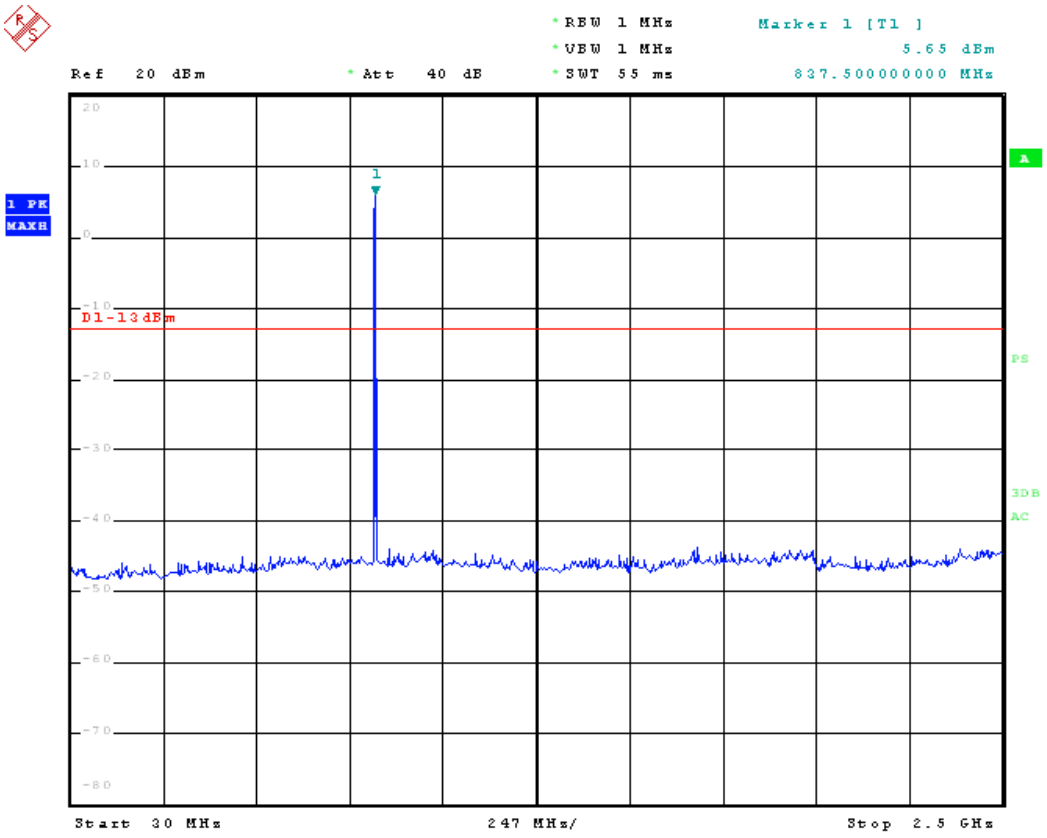
**Measurement result:**

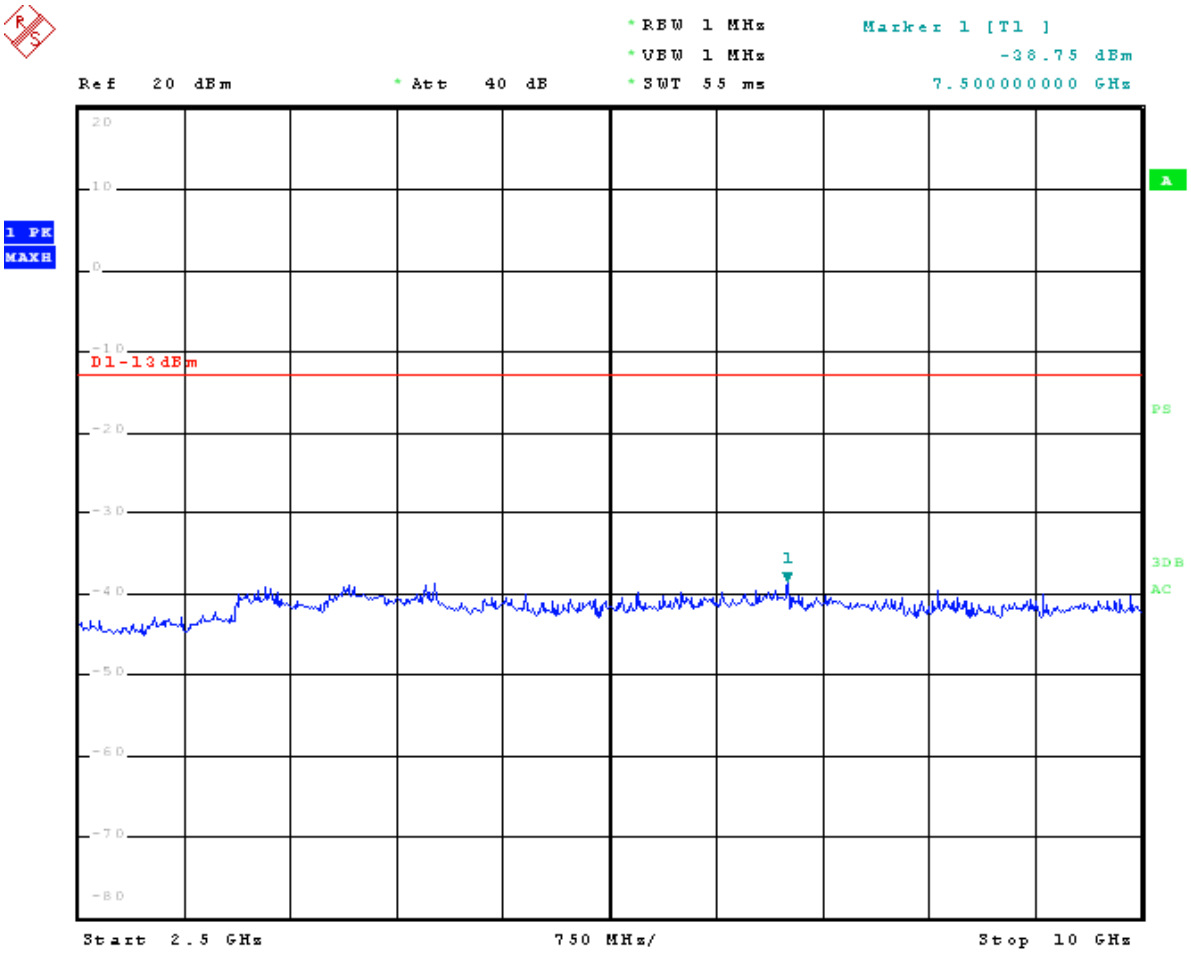
**GSM 850 Channel Low**



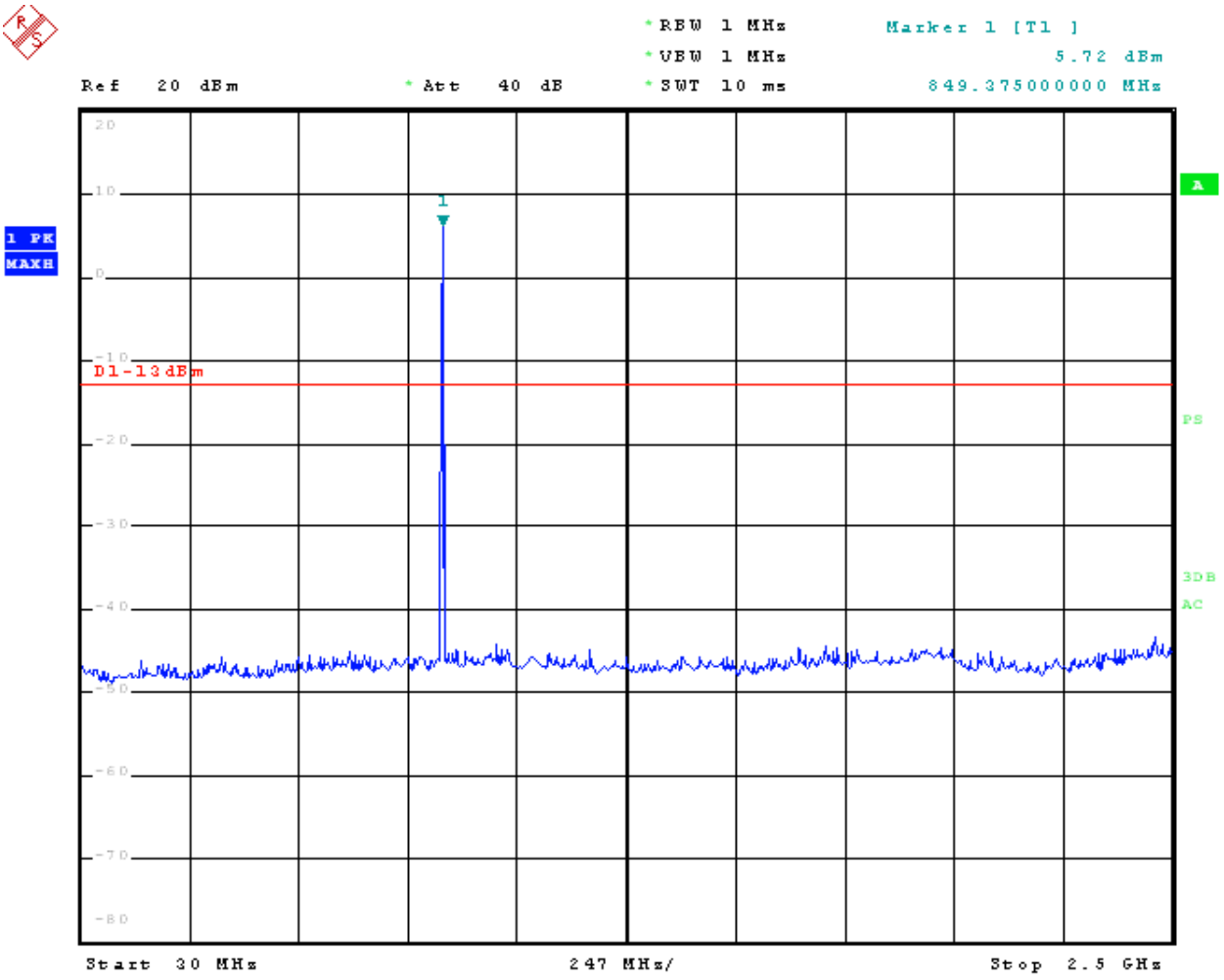


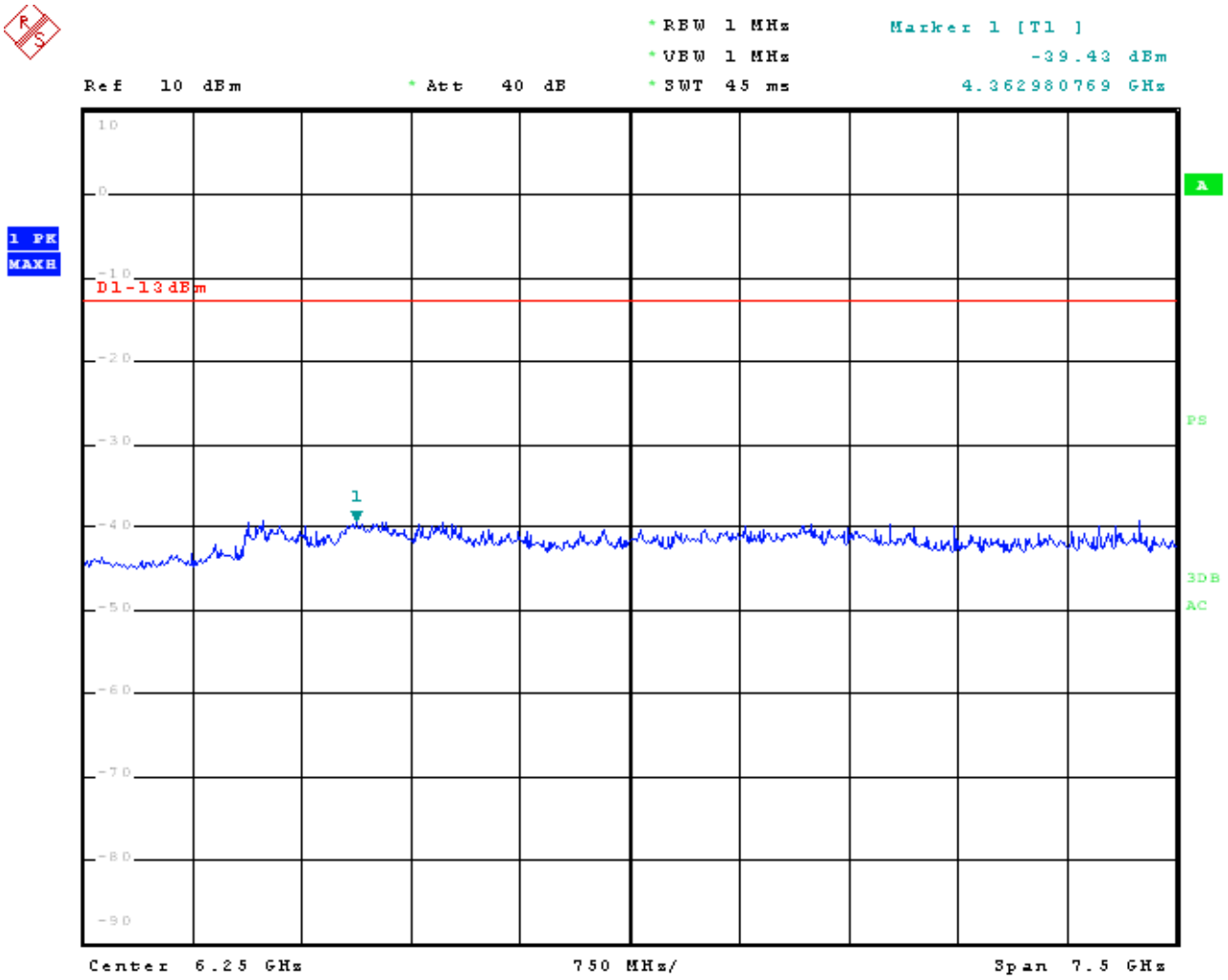
**GSM 850 Channel Mid**



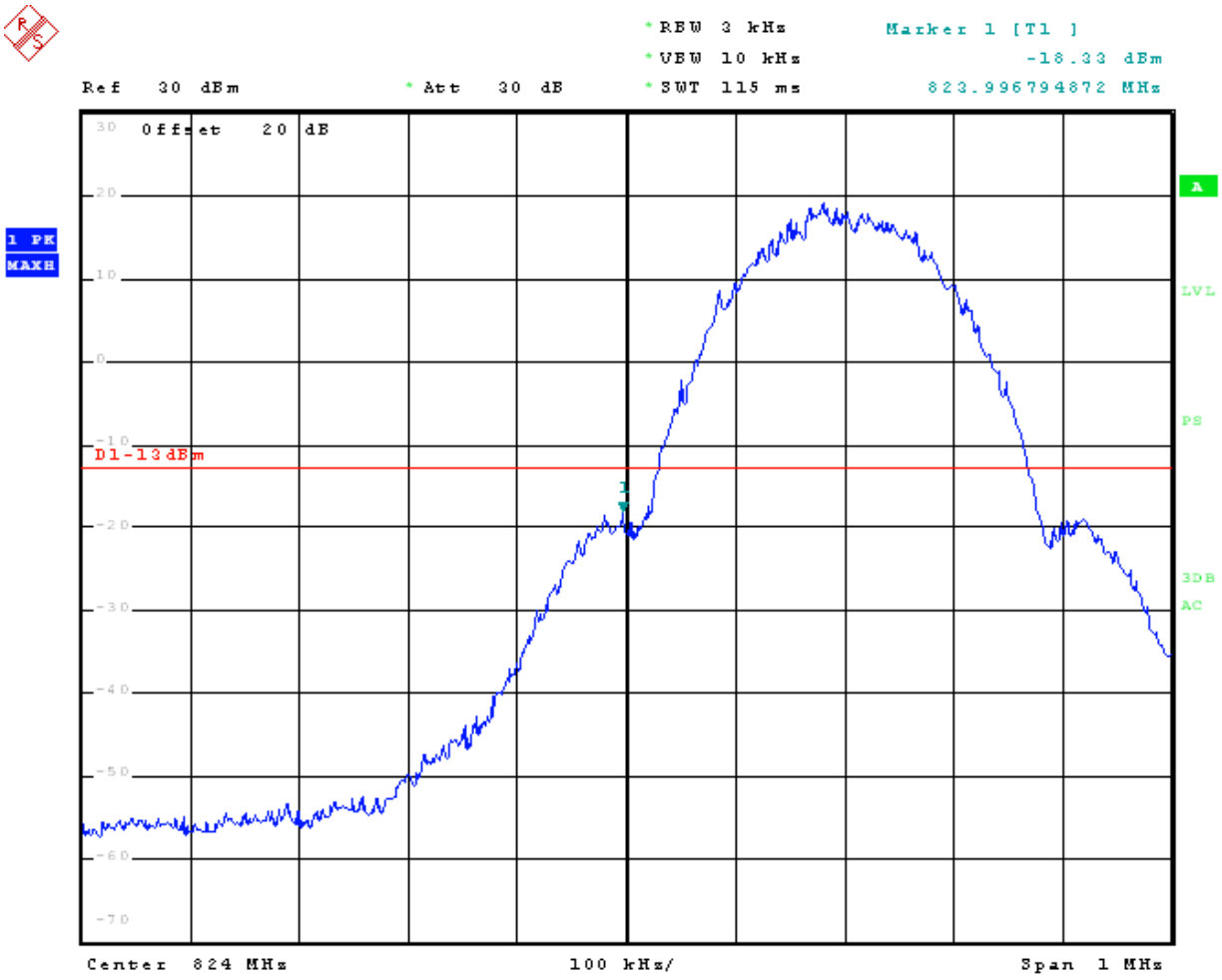


**GSM 850 Channel High**

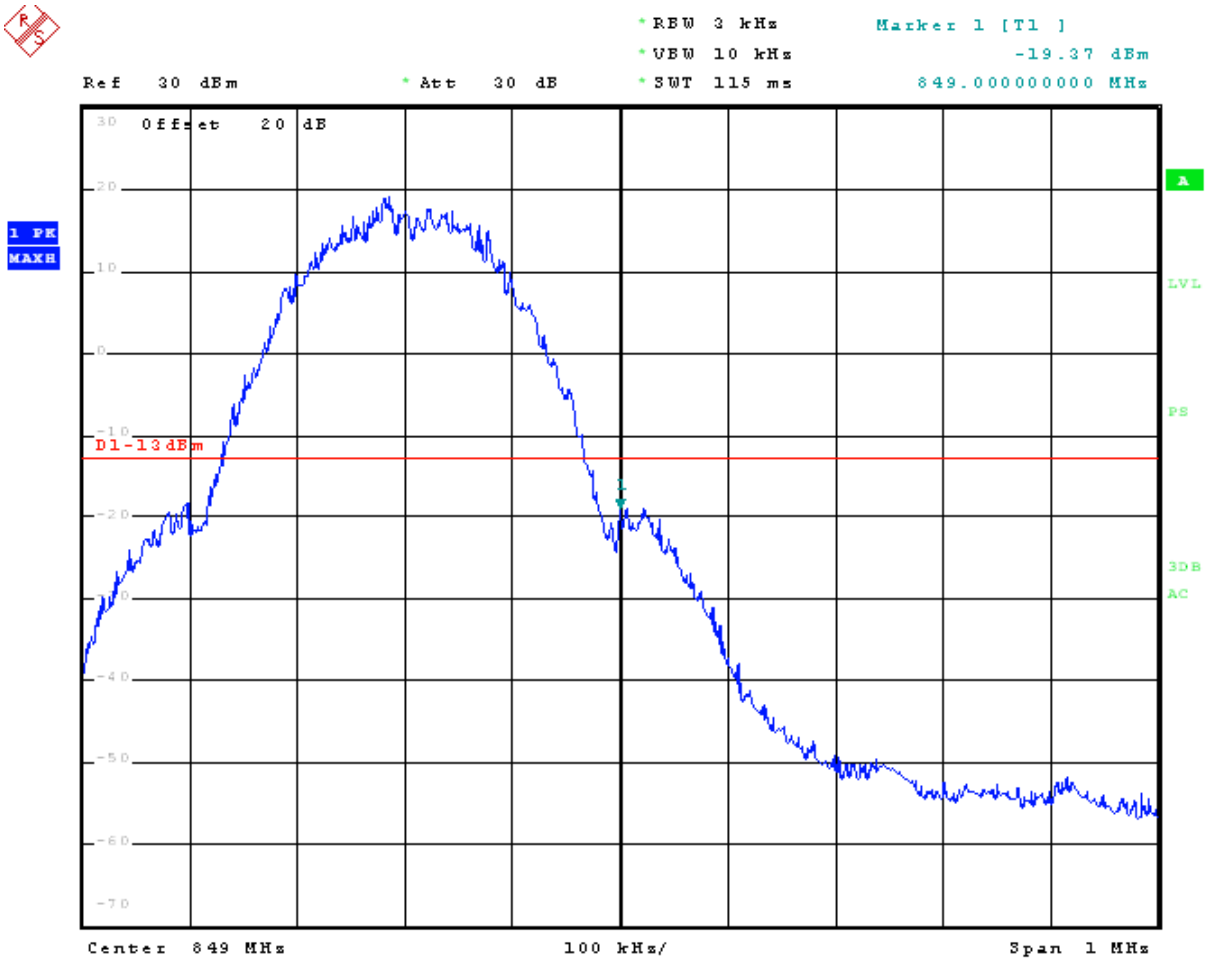




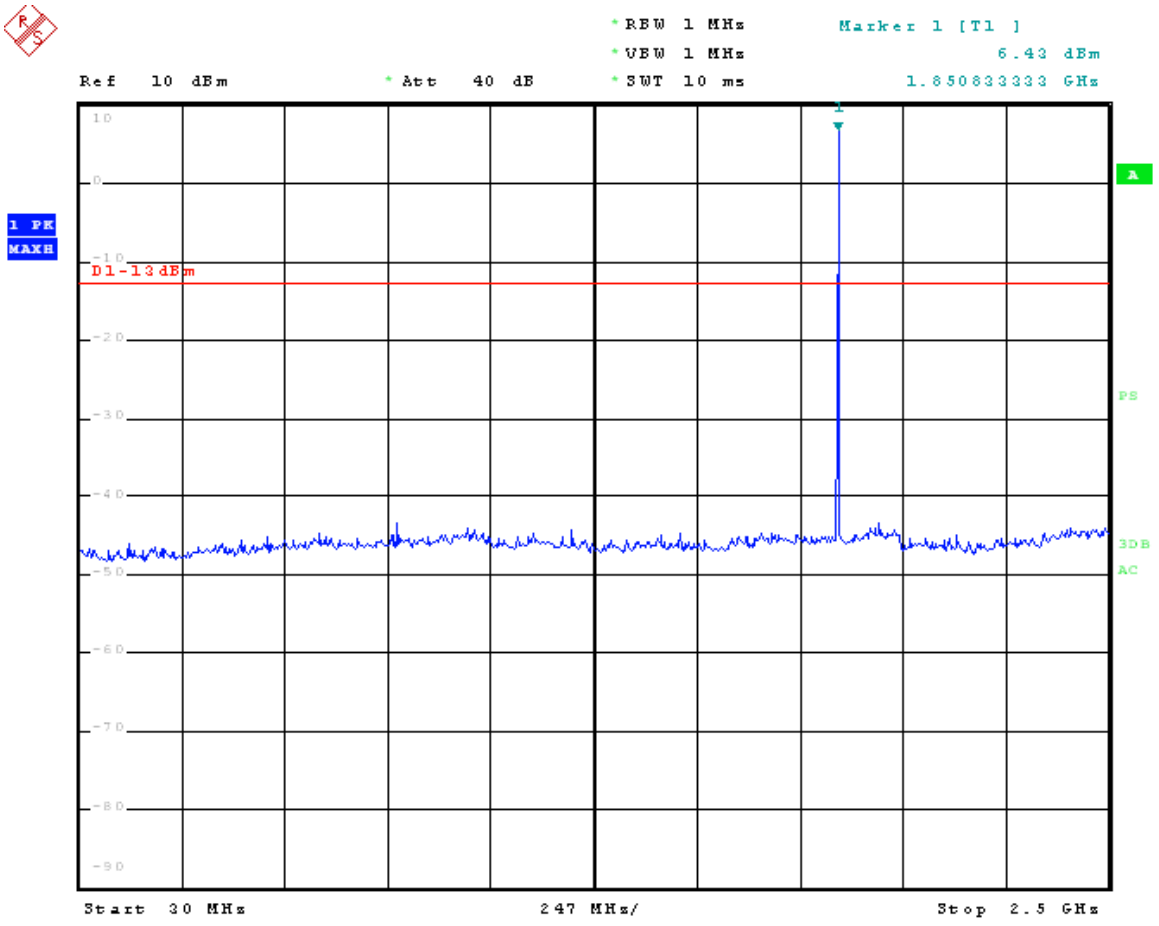
**Band Edge emission GSM 850 Channel Low**

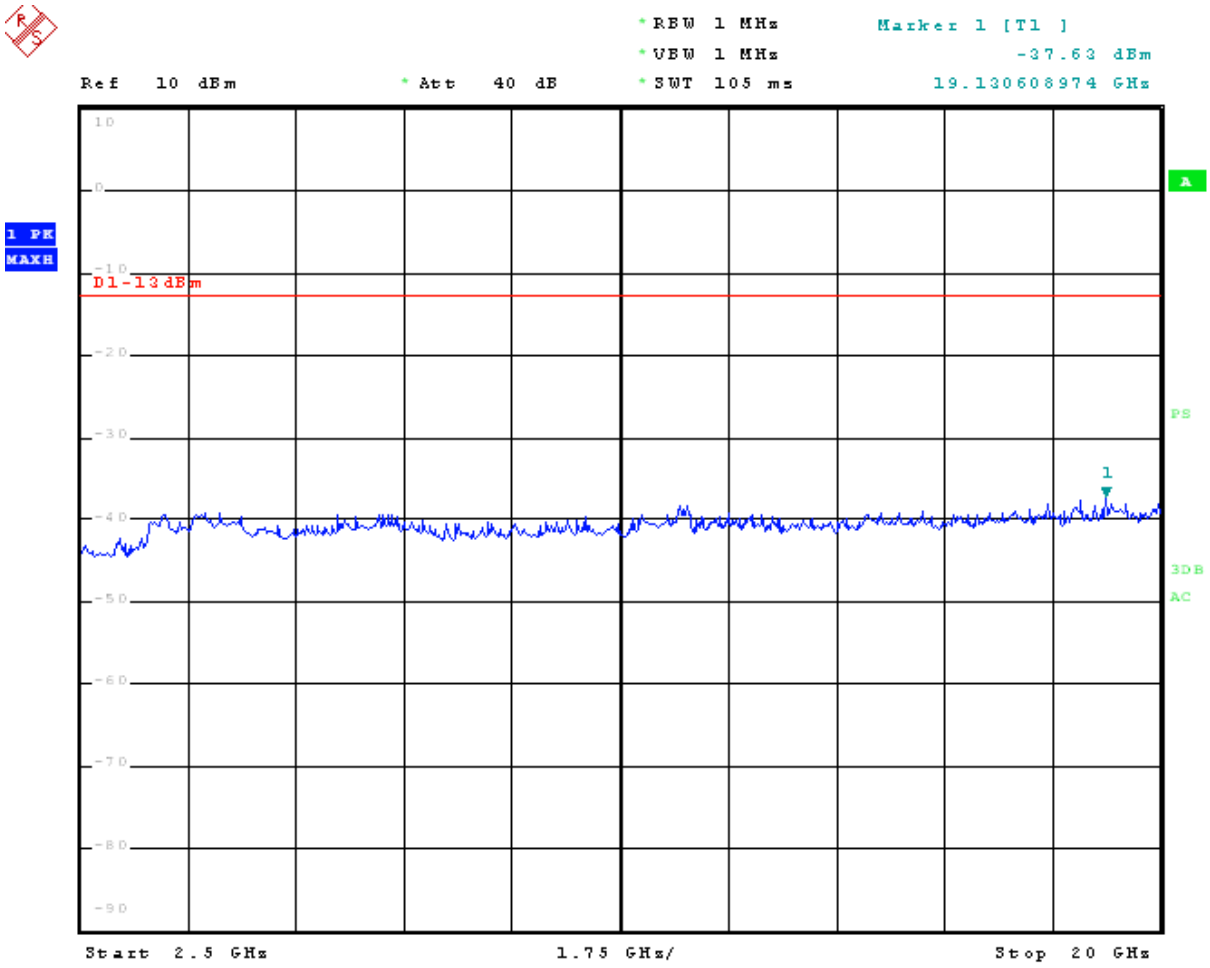


**Band Edge emission GSM 850 Channel high**

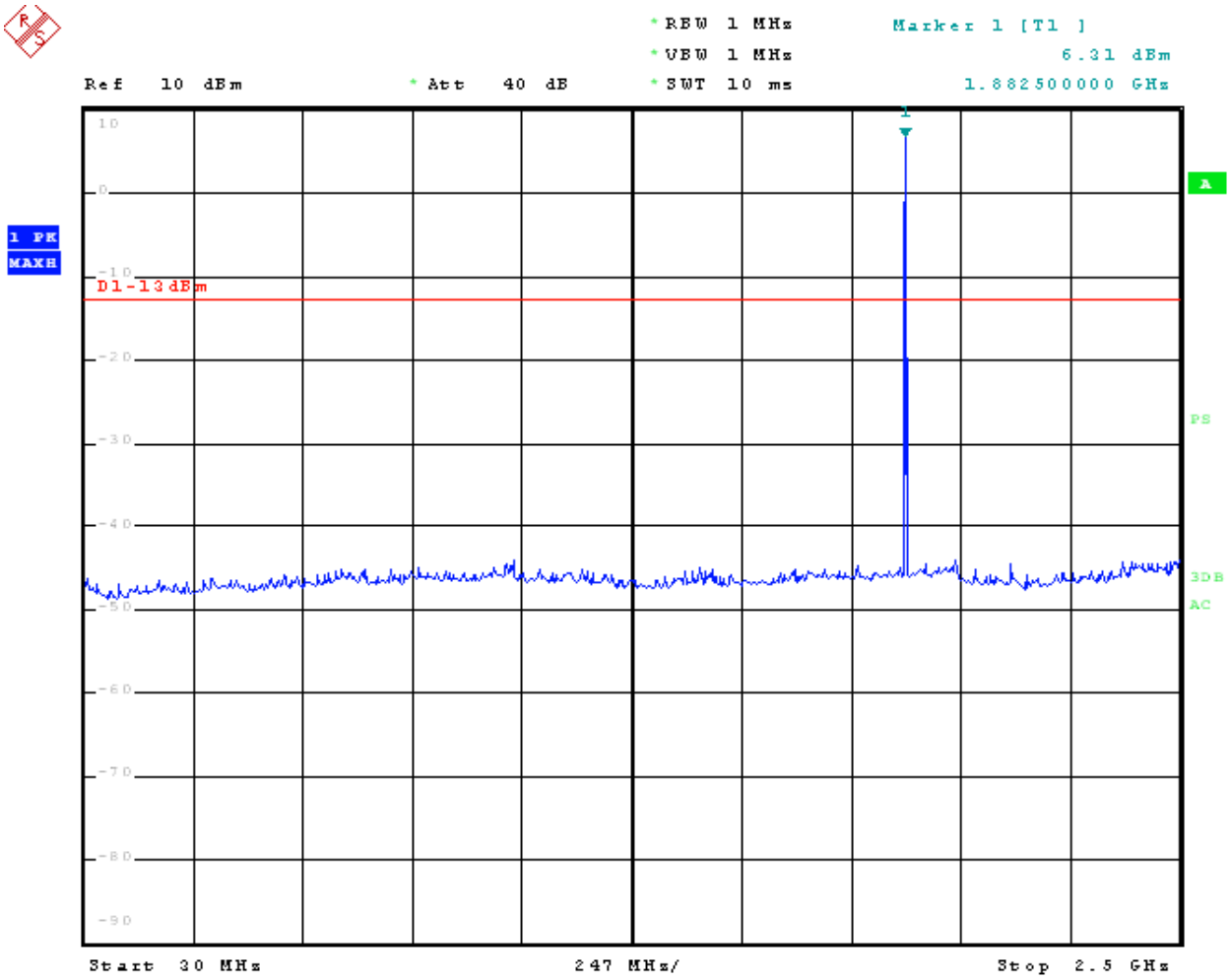


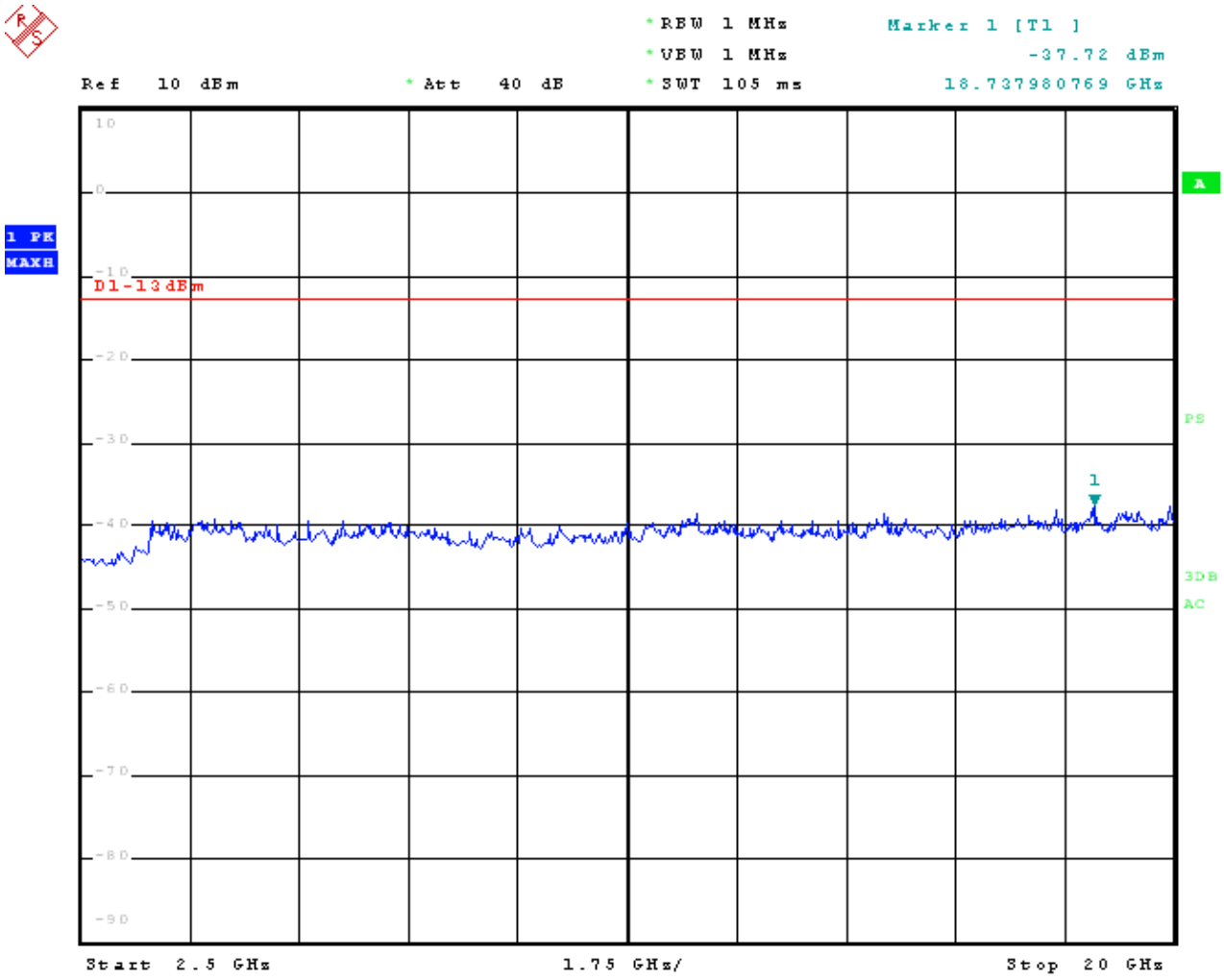
**PCS 1900 Channel Low**



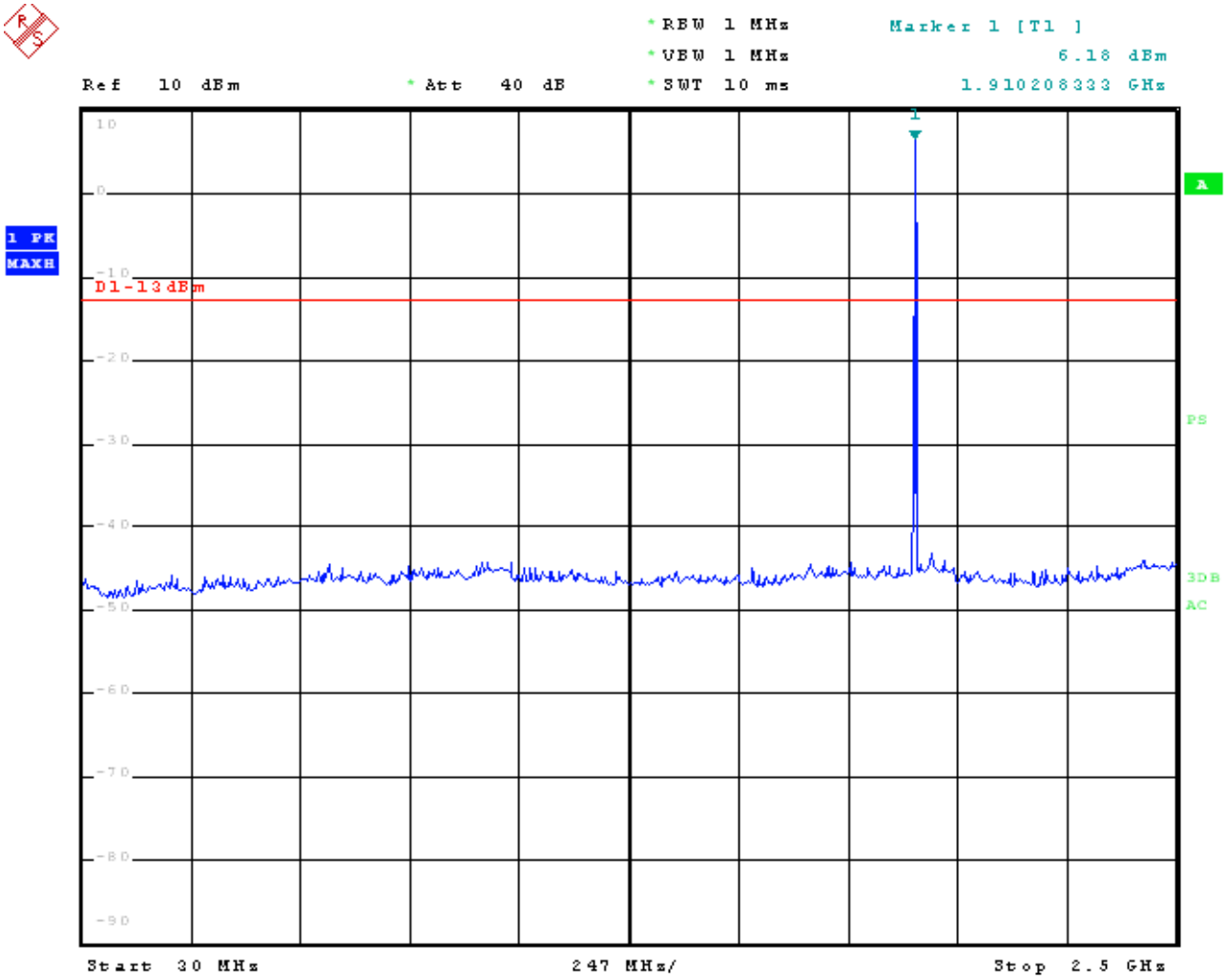


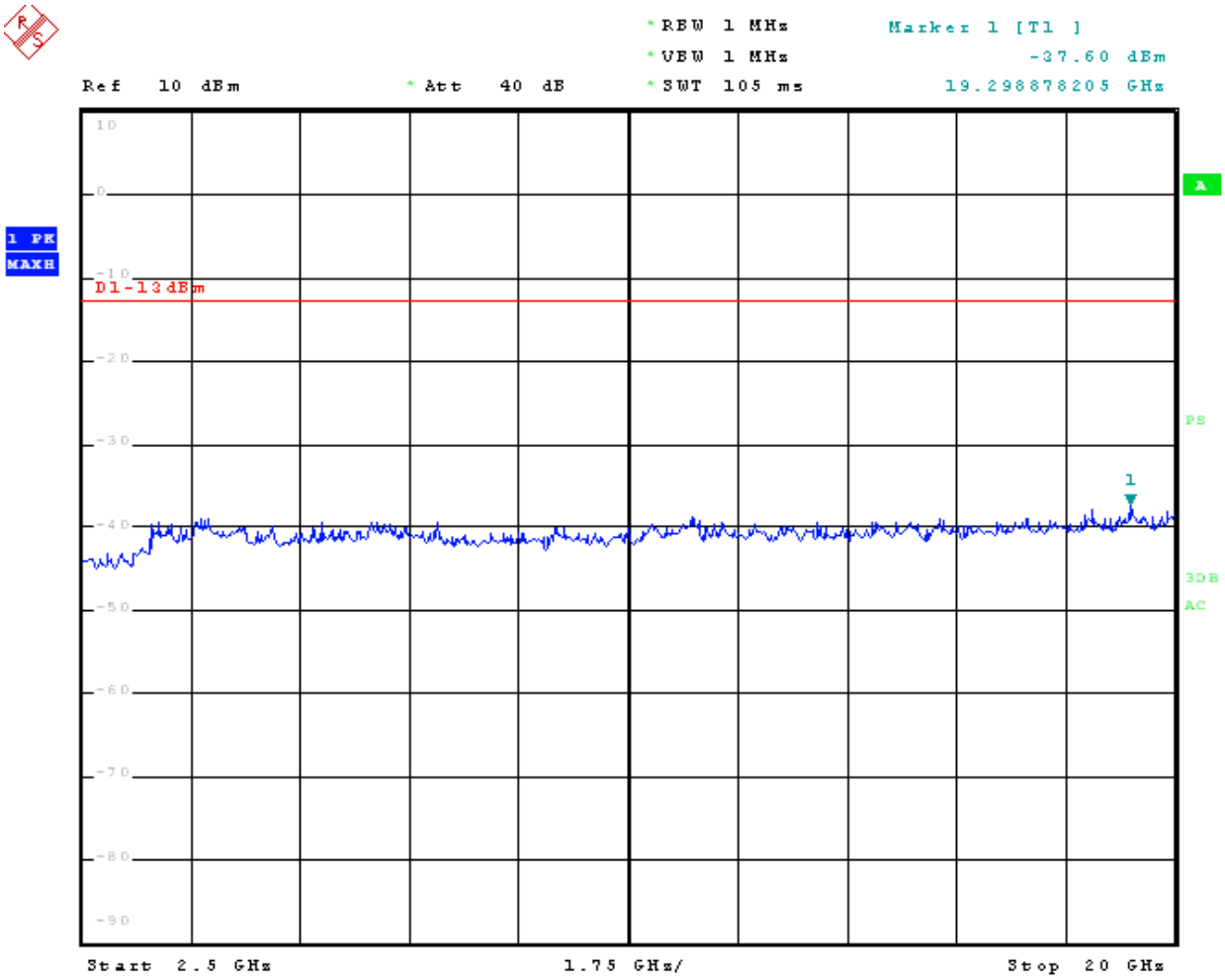
**PCS 1900 Channel Mid**



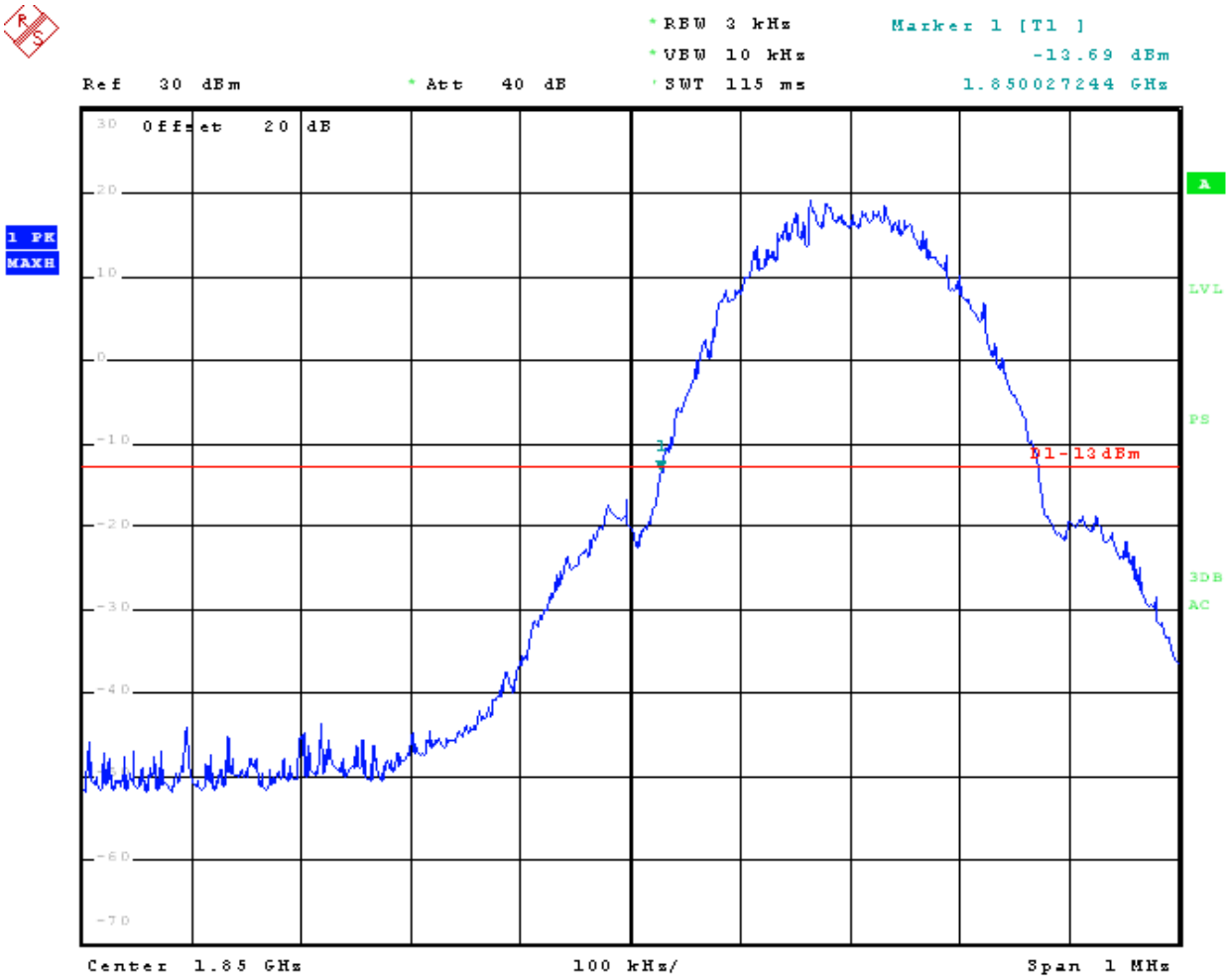


**PCS 1900 Channel High**

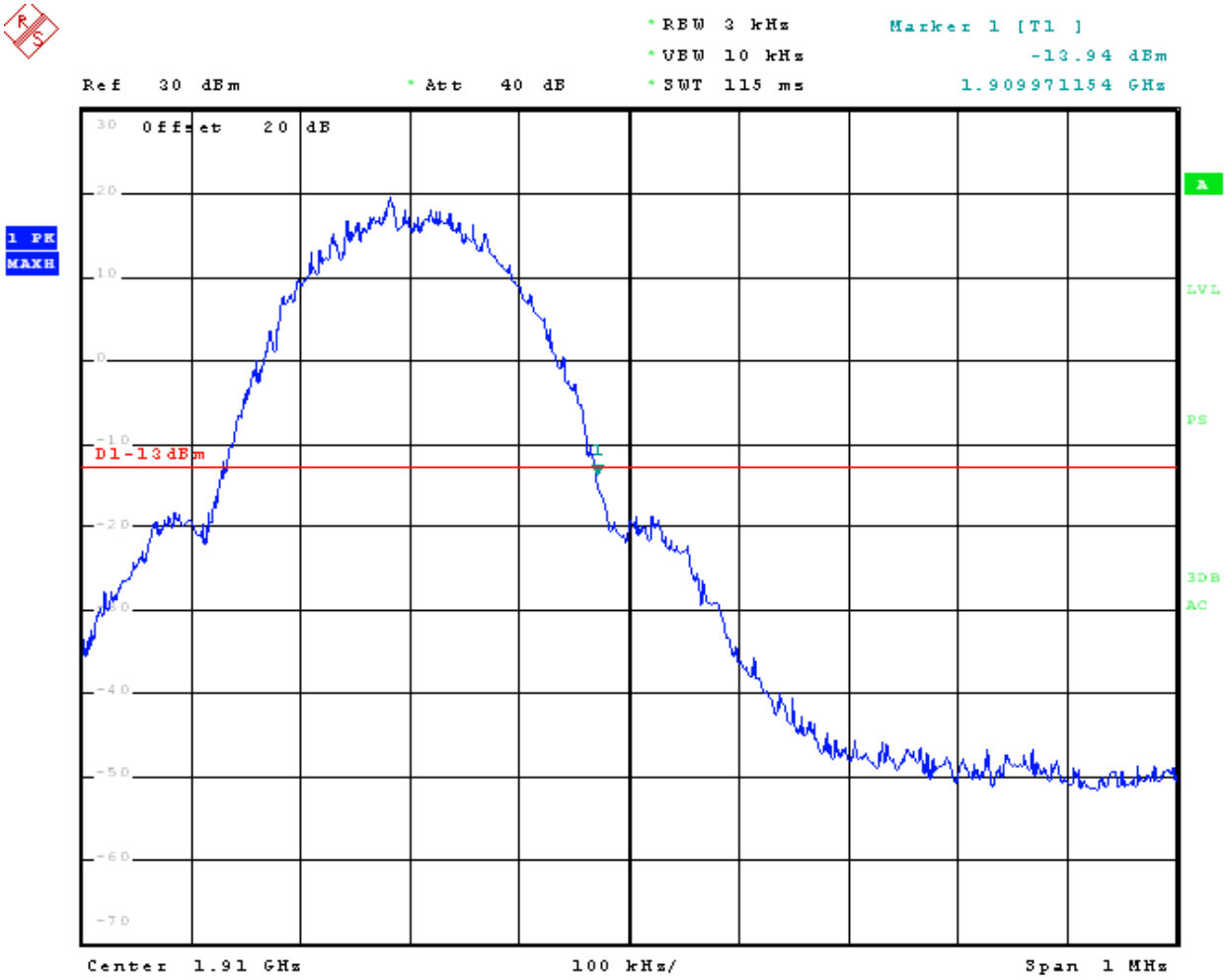




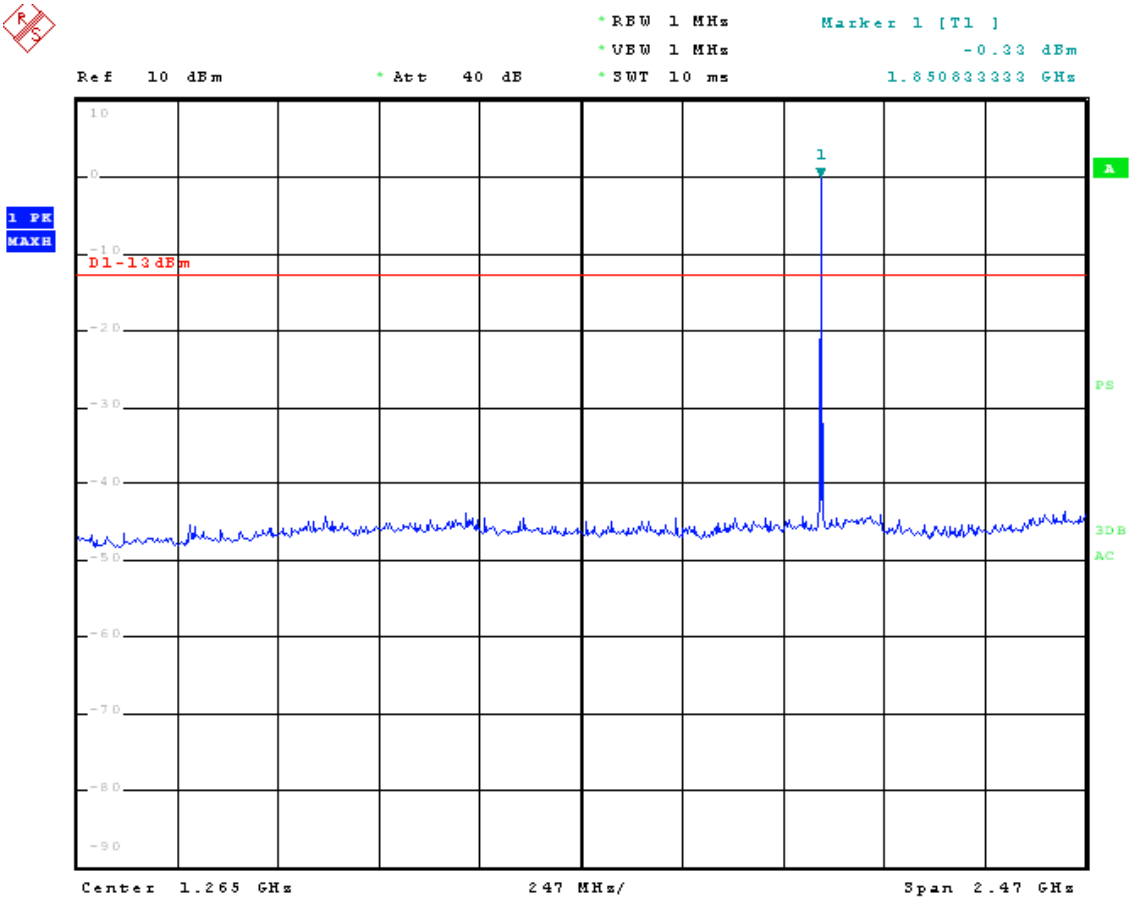
**Band Edge emission PCS 1900 Channel Low**

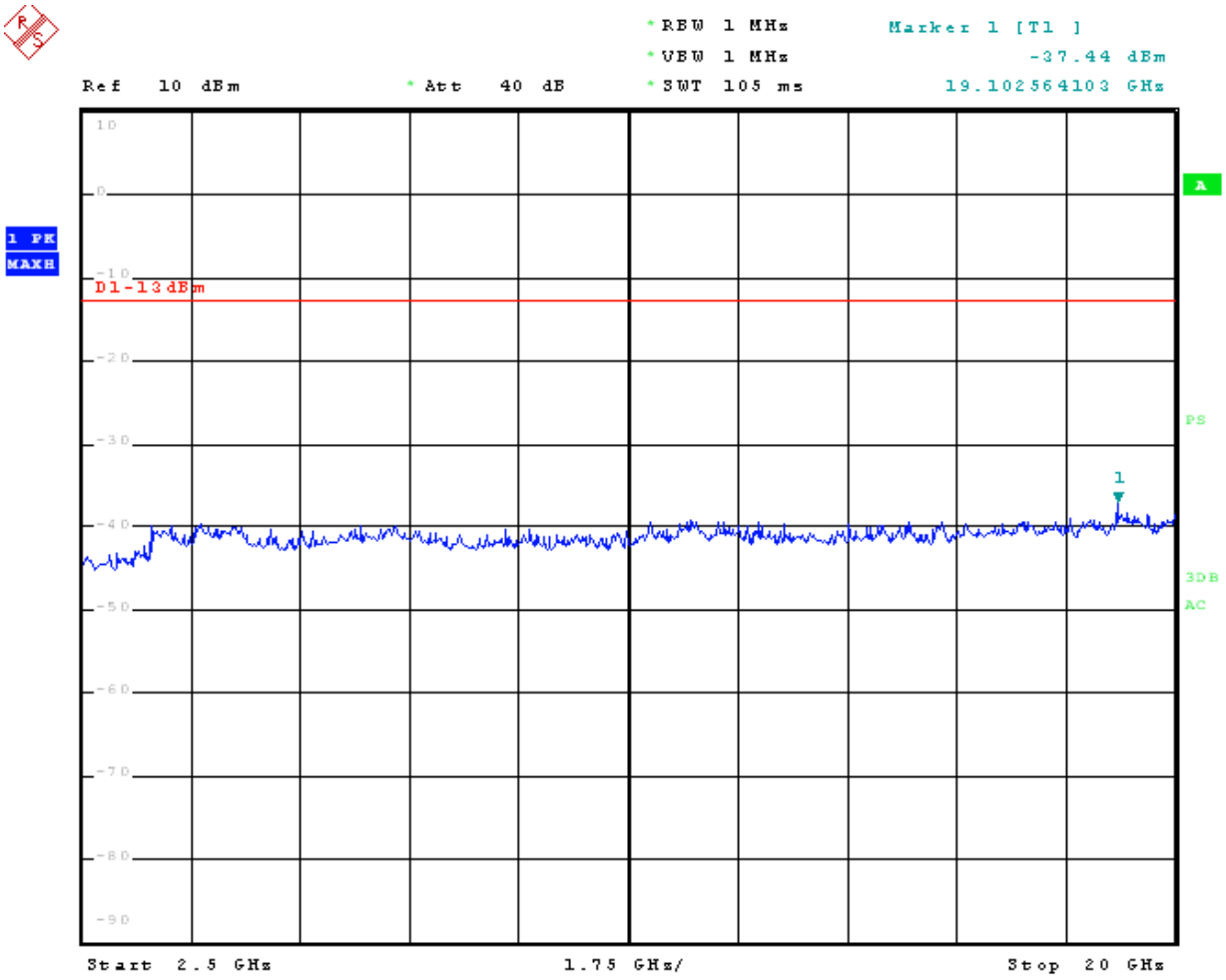


**Band Edge emission PCS 1900 Channel high**

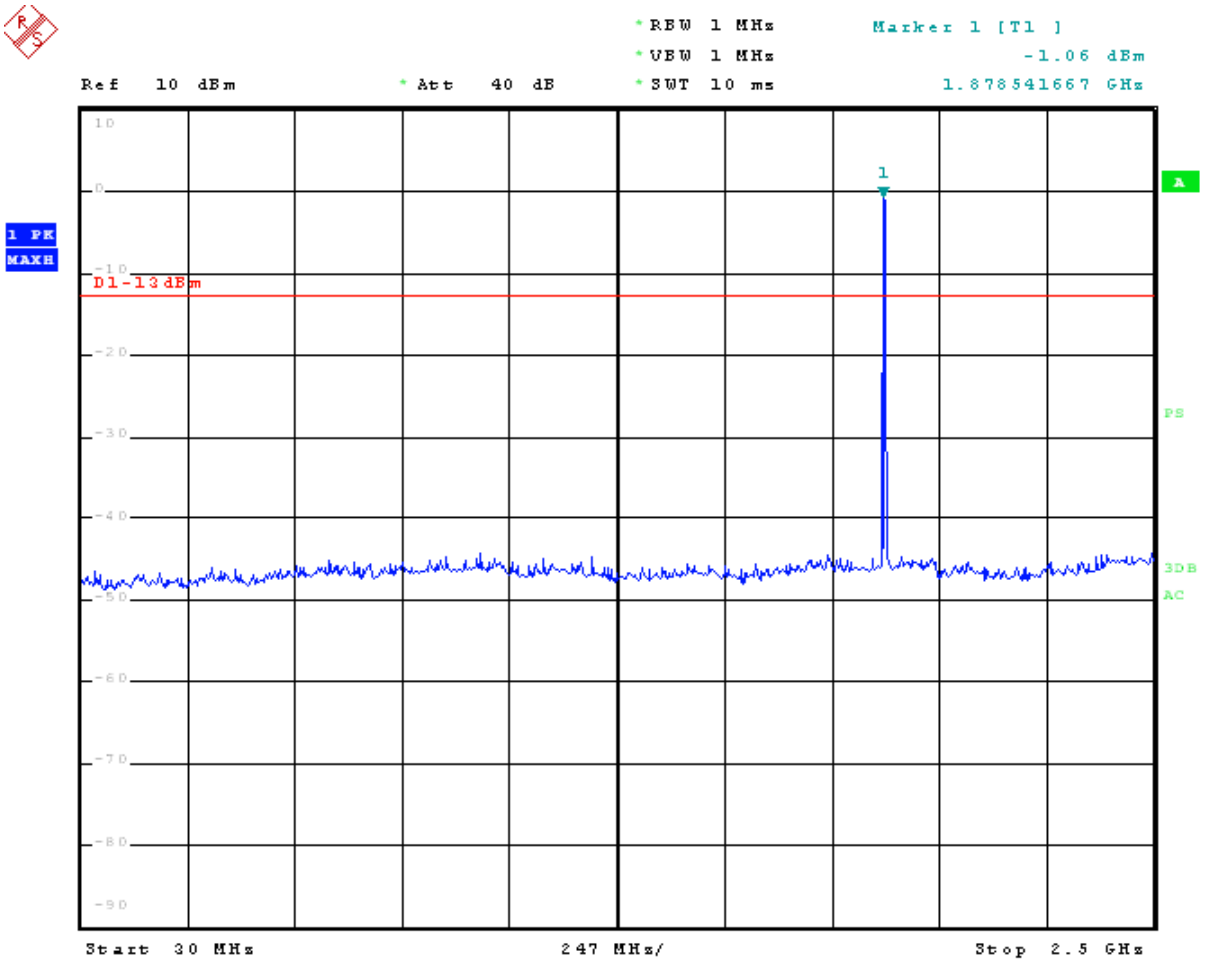


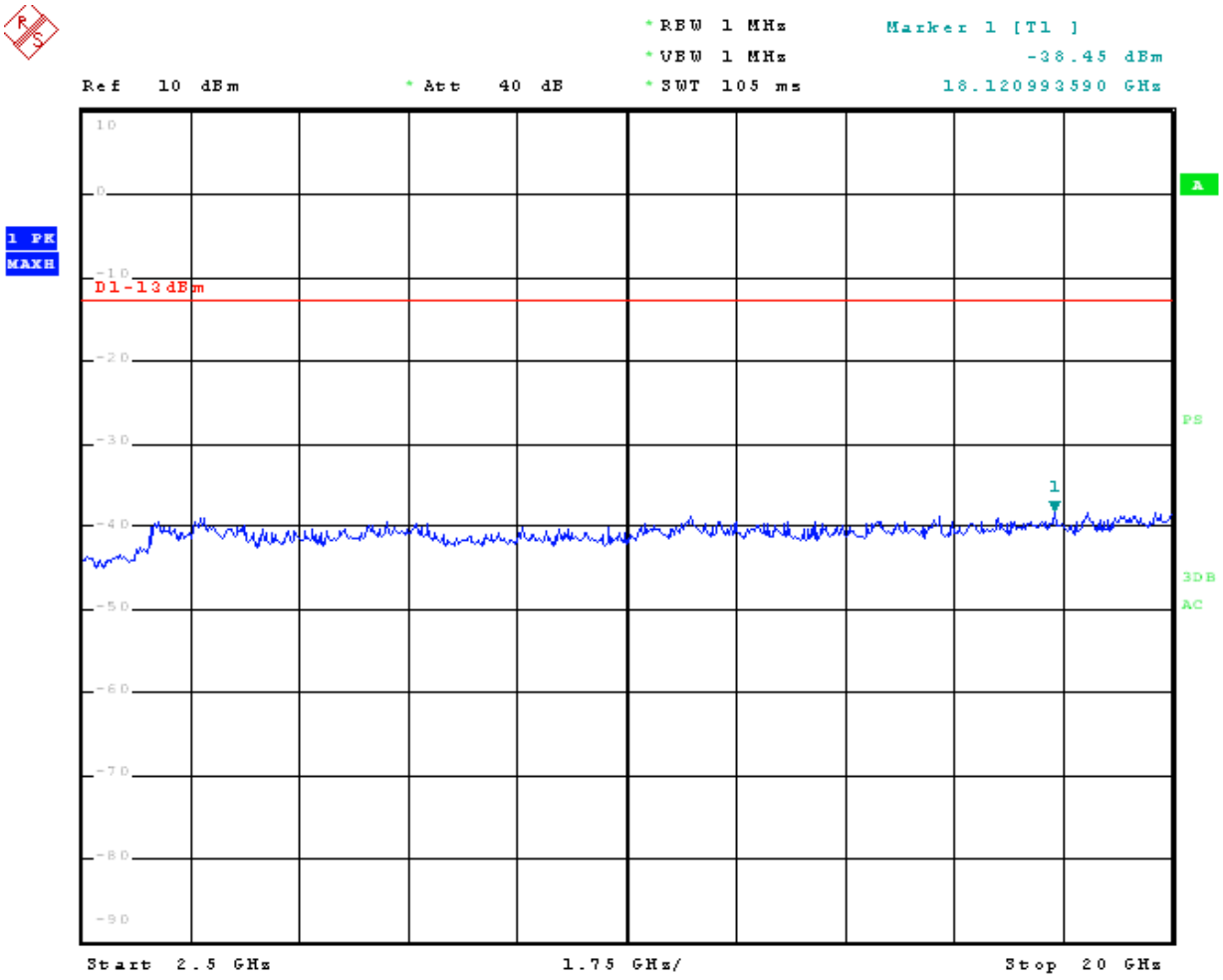
**WCDMA II Channel low**



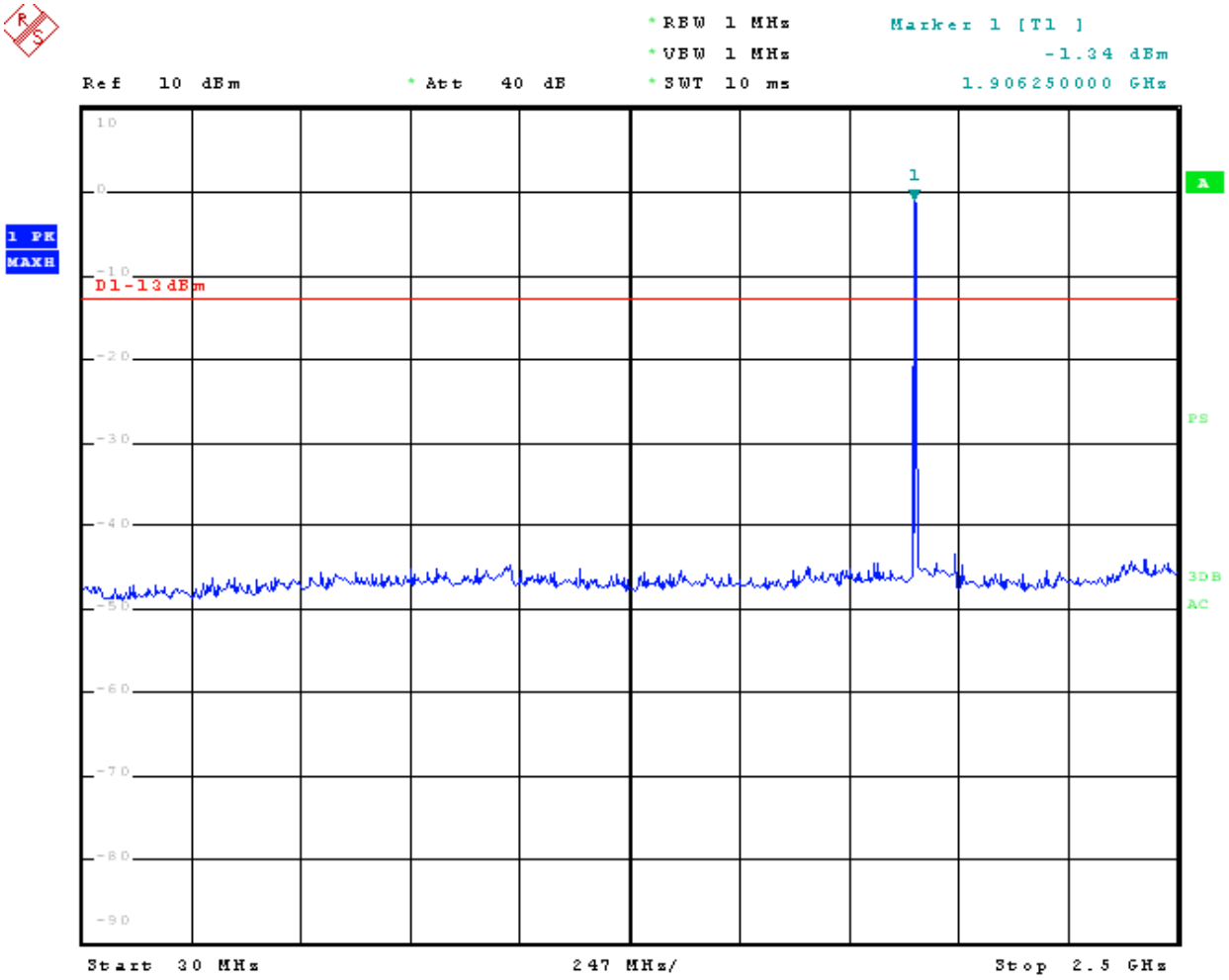


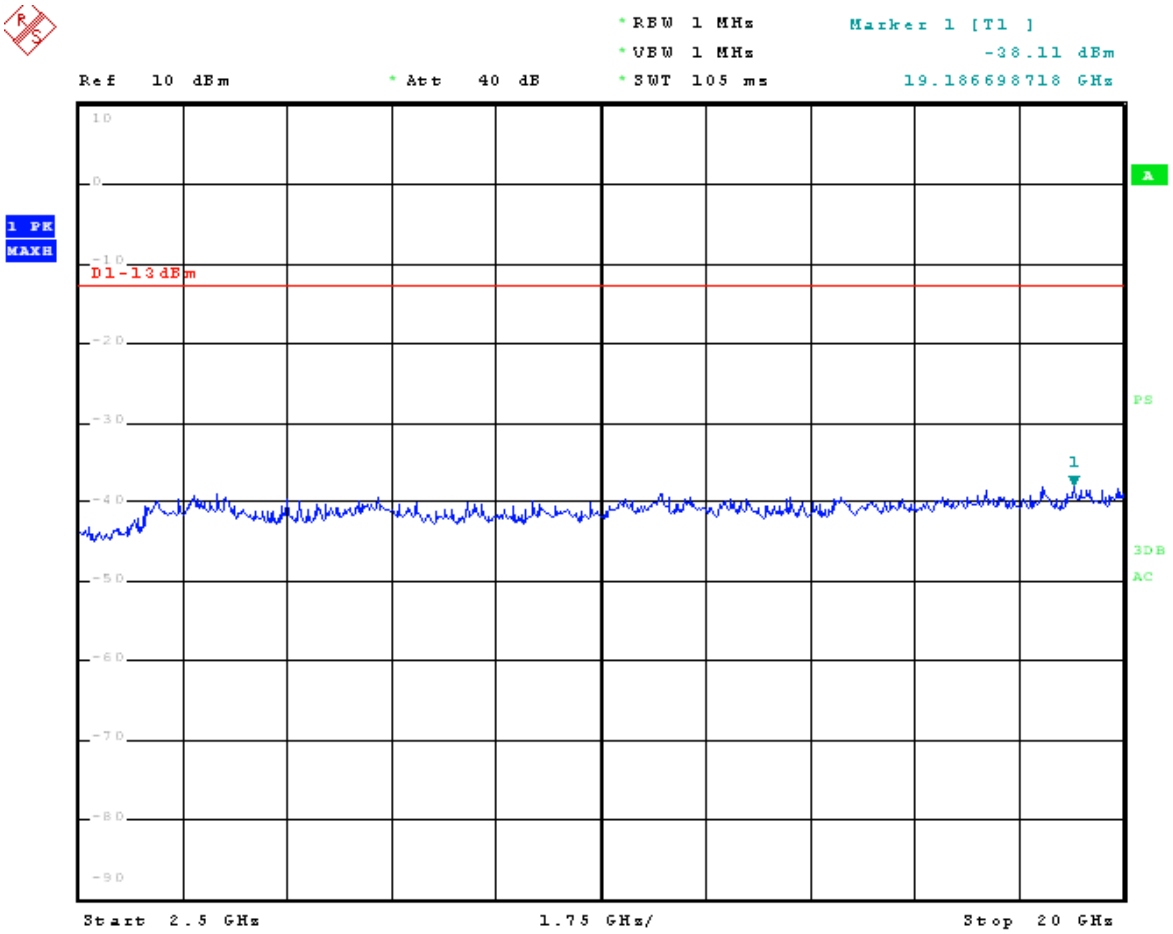
**WCDMA II Channel Mid**



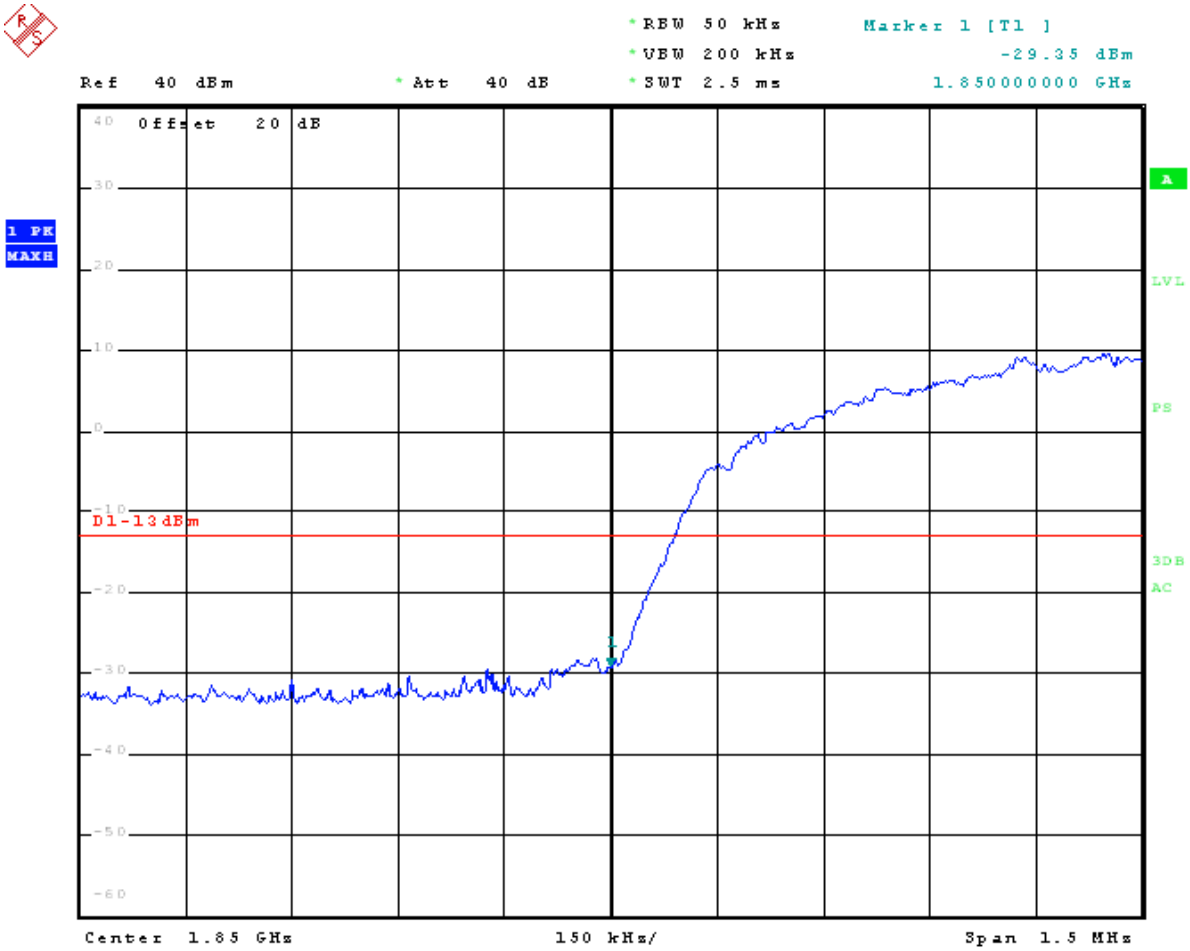


**WCDMA II Channel High**

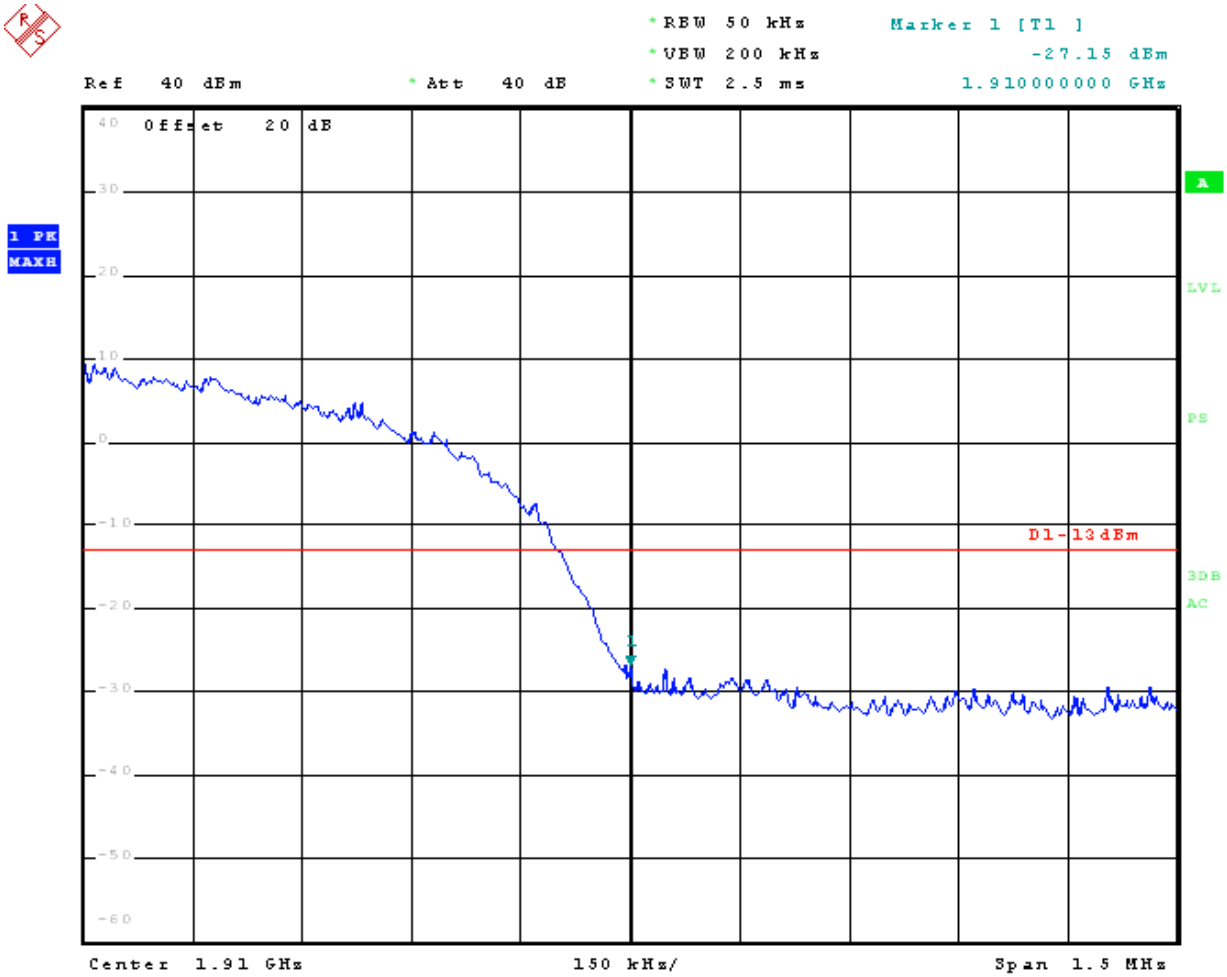




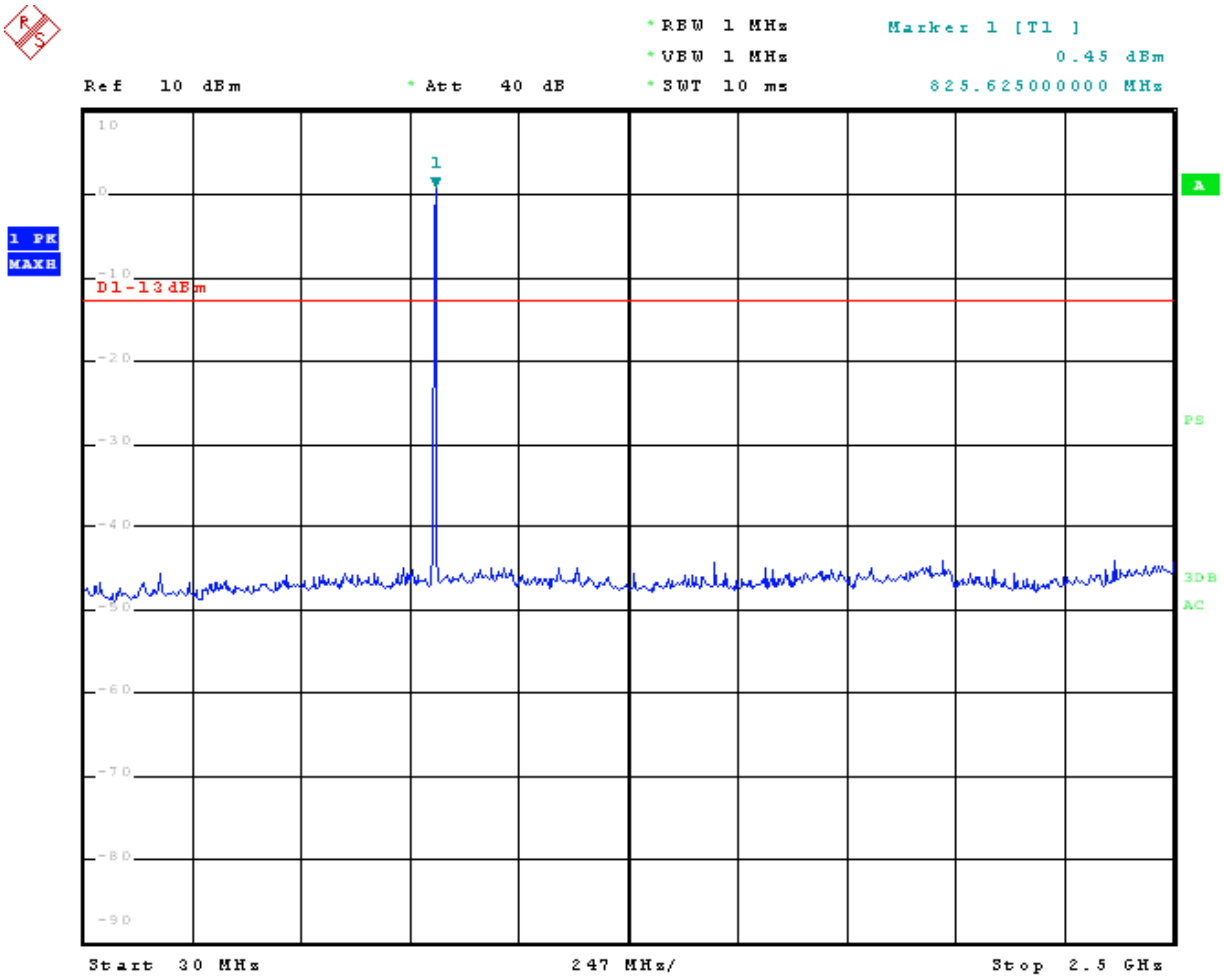
**Band Edge emission WCDMA II Channel Low**

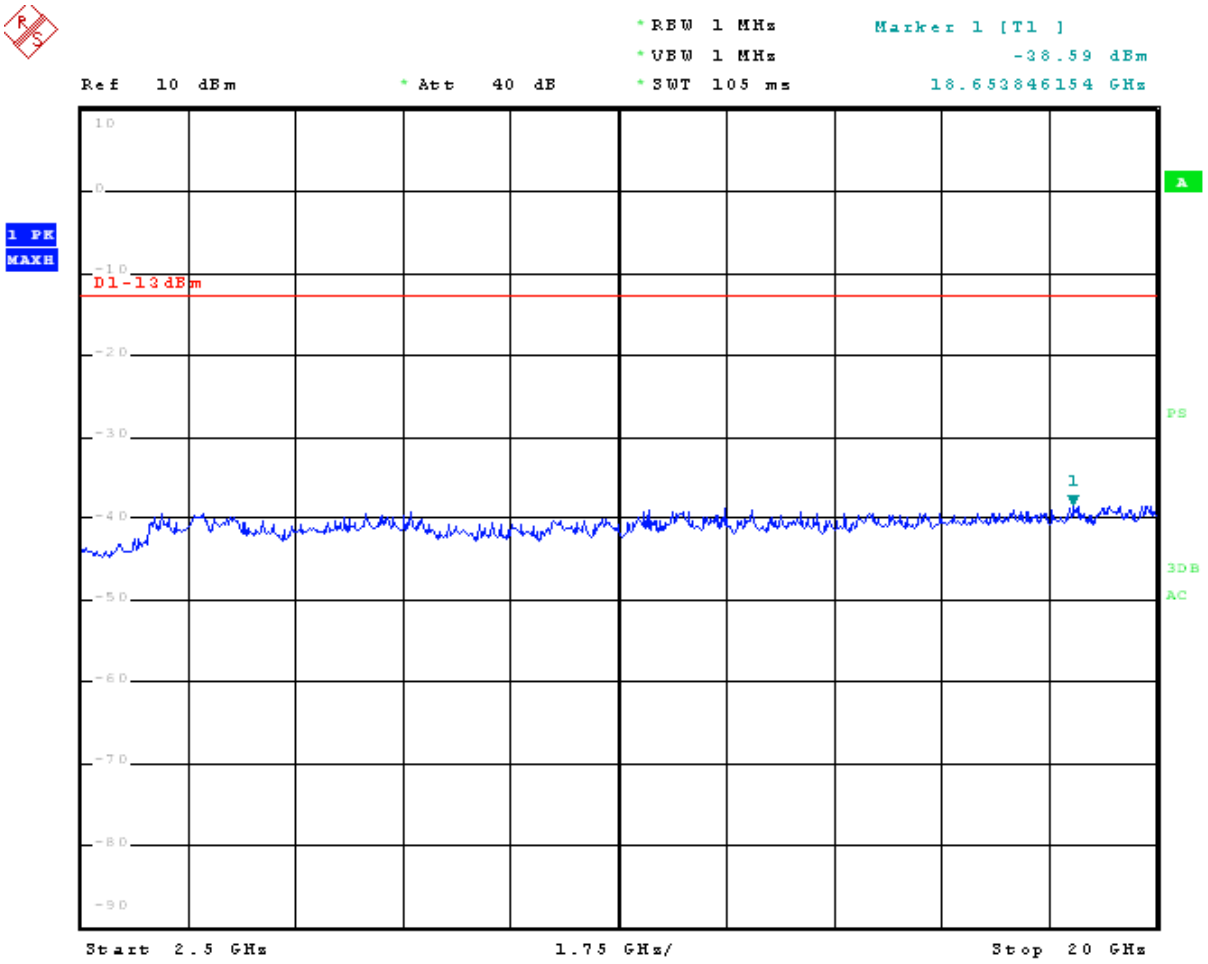


**Band Edge emission WCDMA II Channel high**

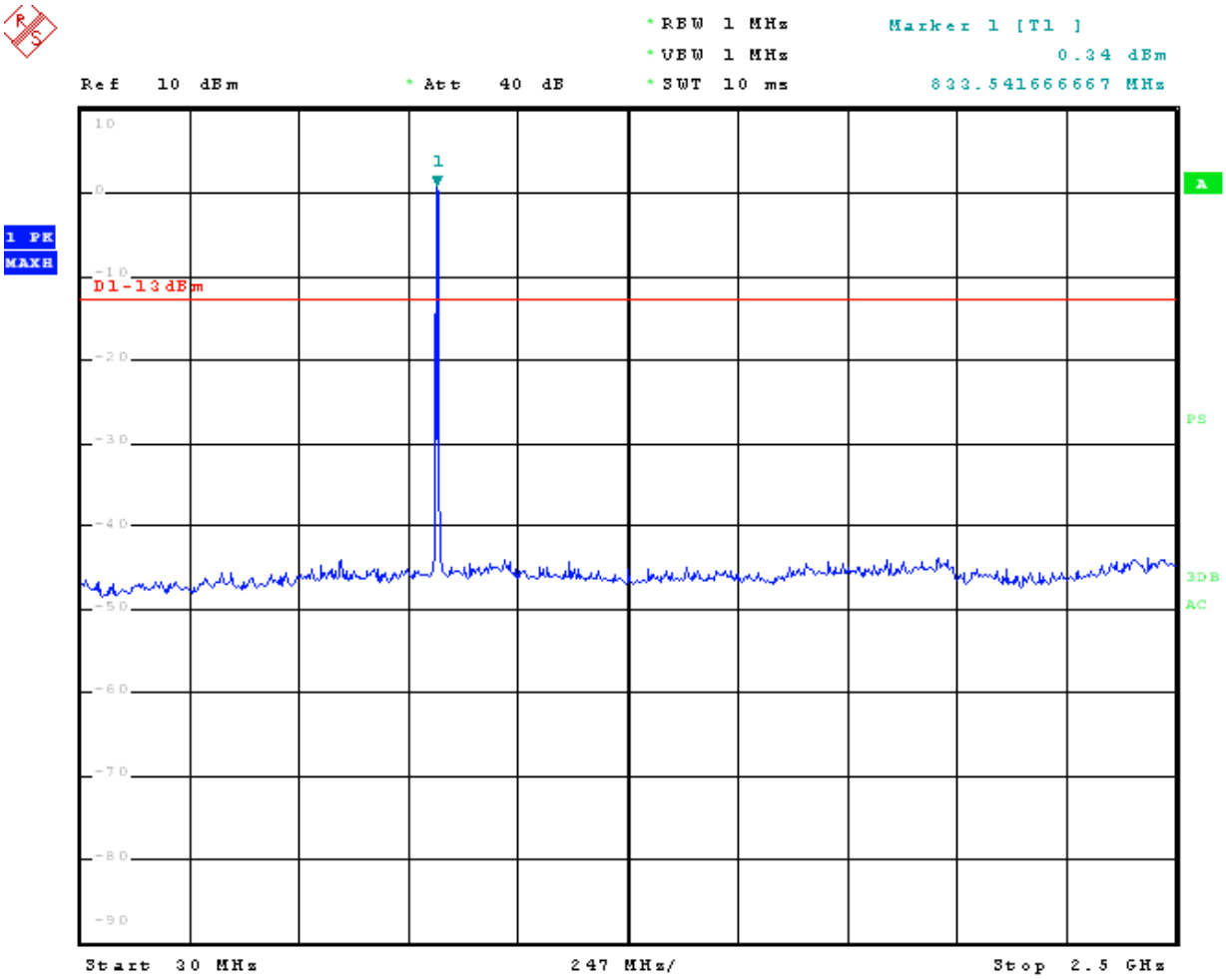


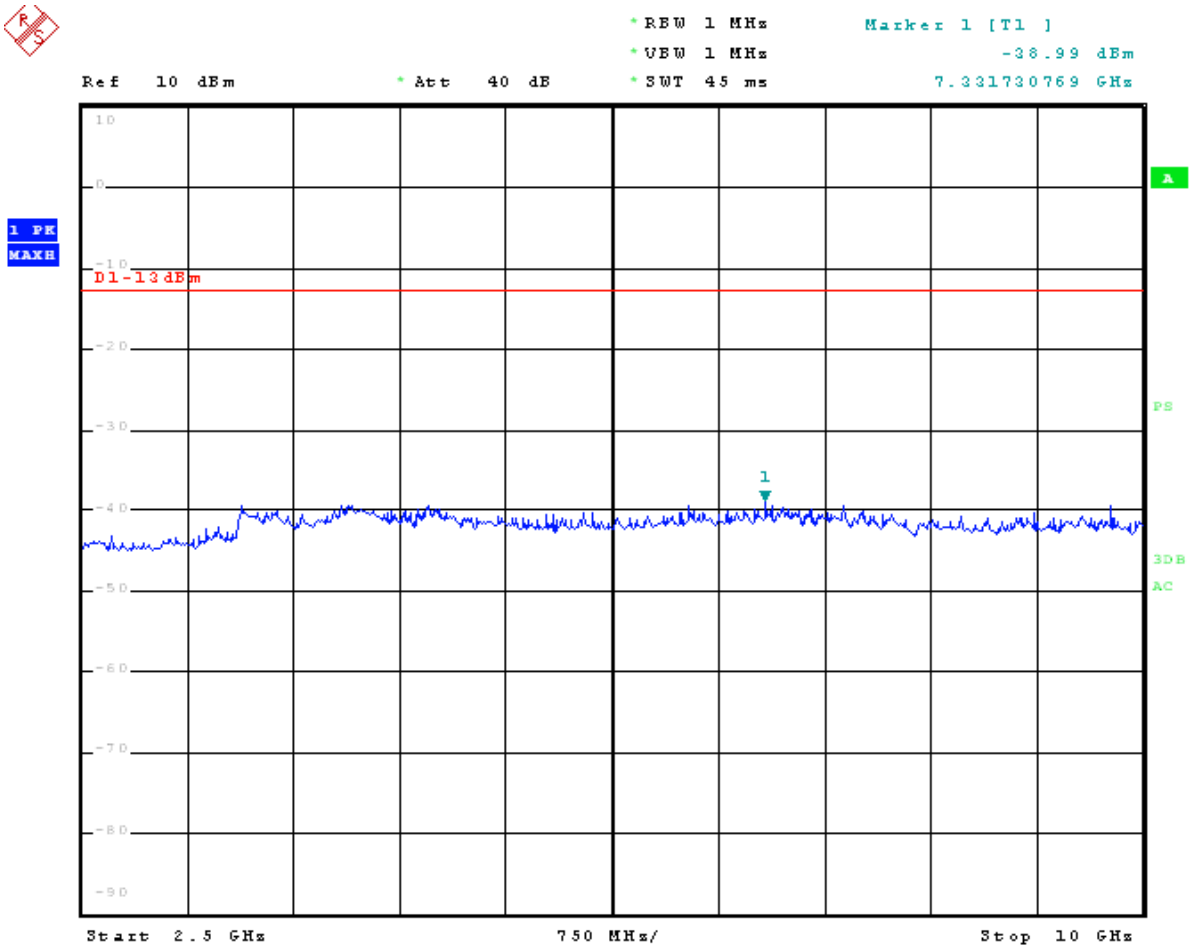
**WCDMA V Channel Low**



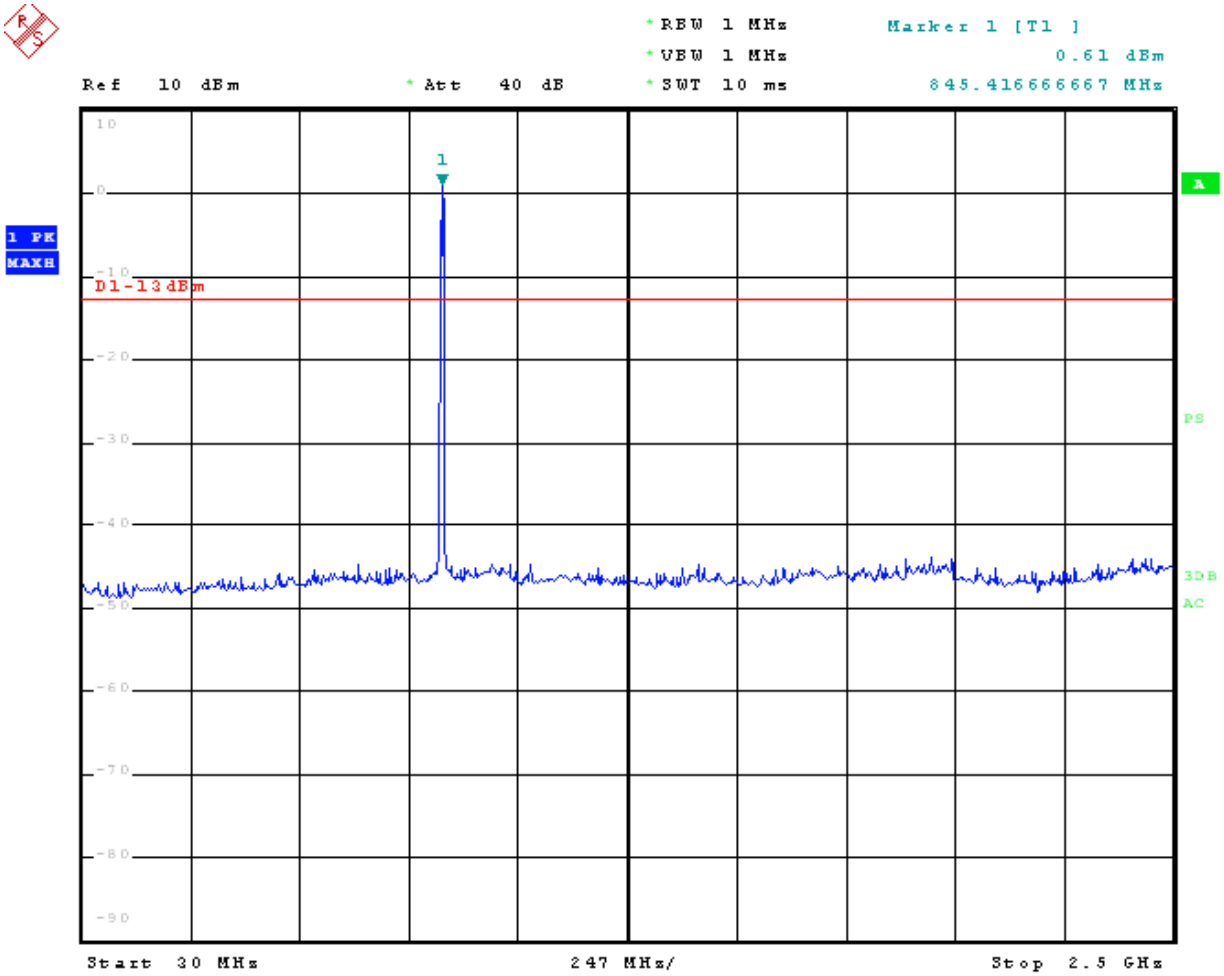


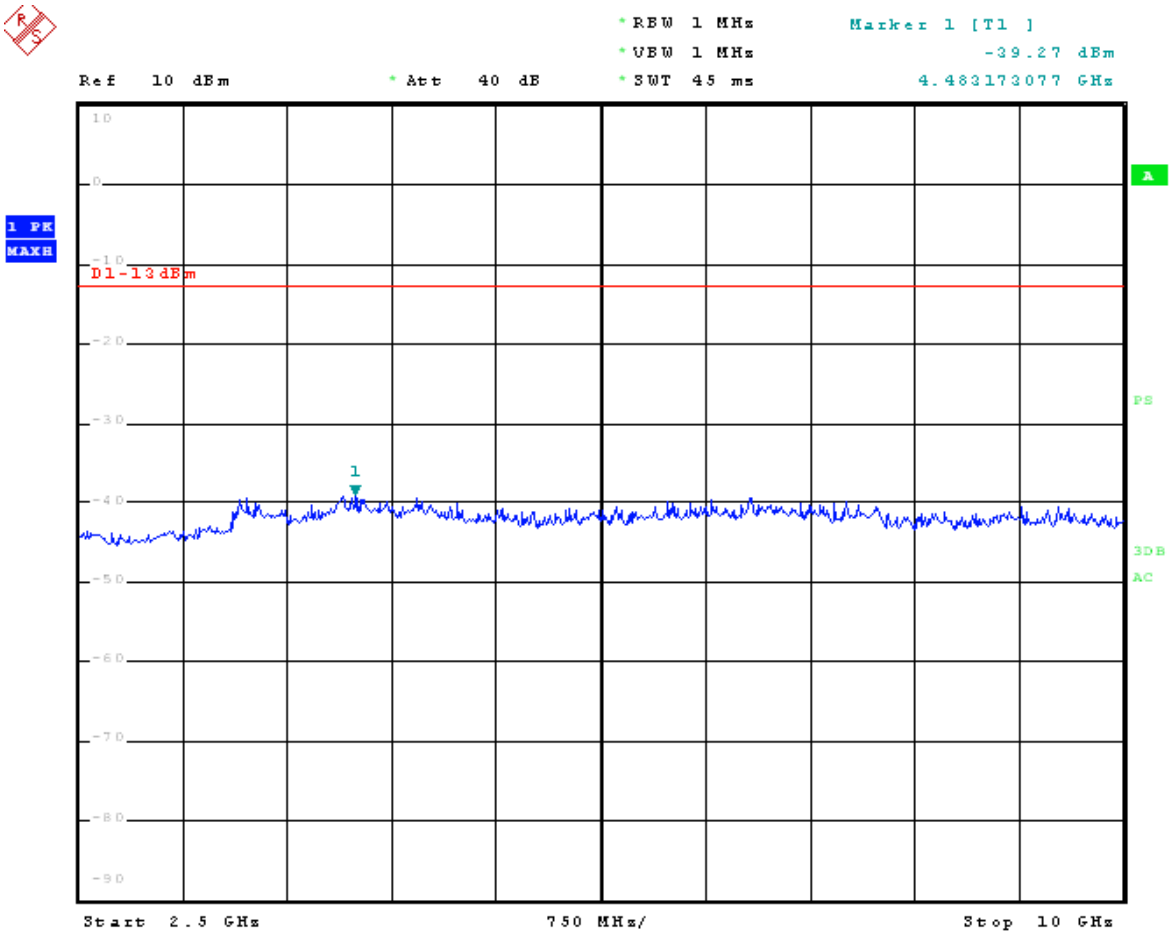
**WCDMA V Channel Mid**



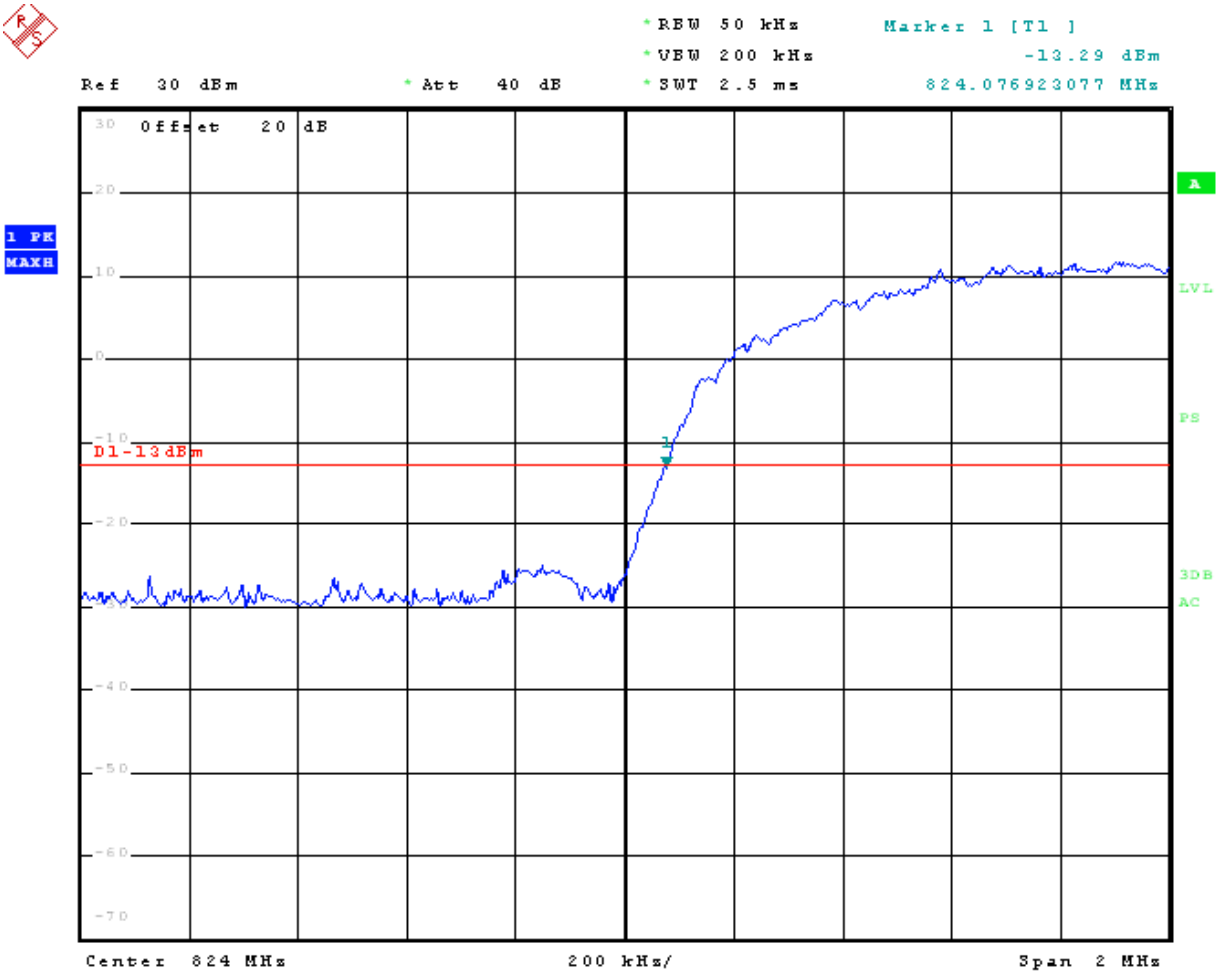


**WCDMA V Channel High**

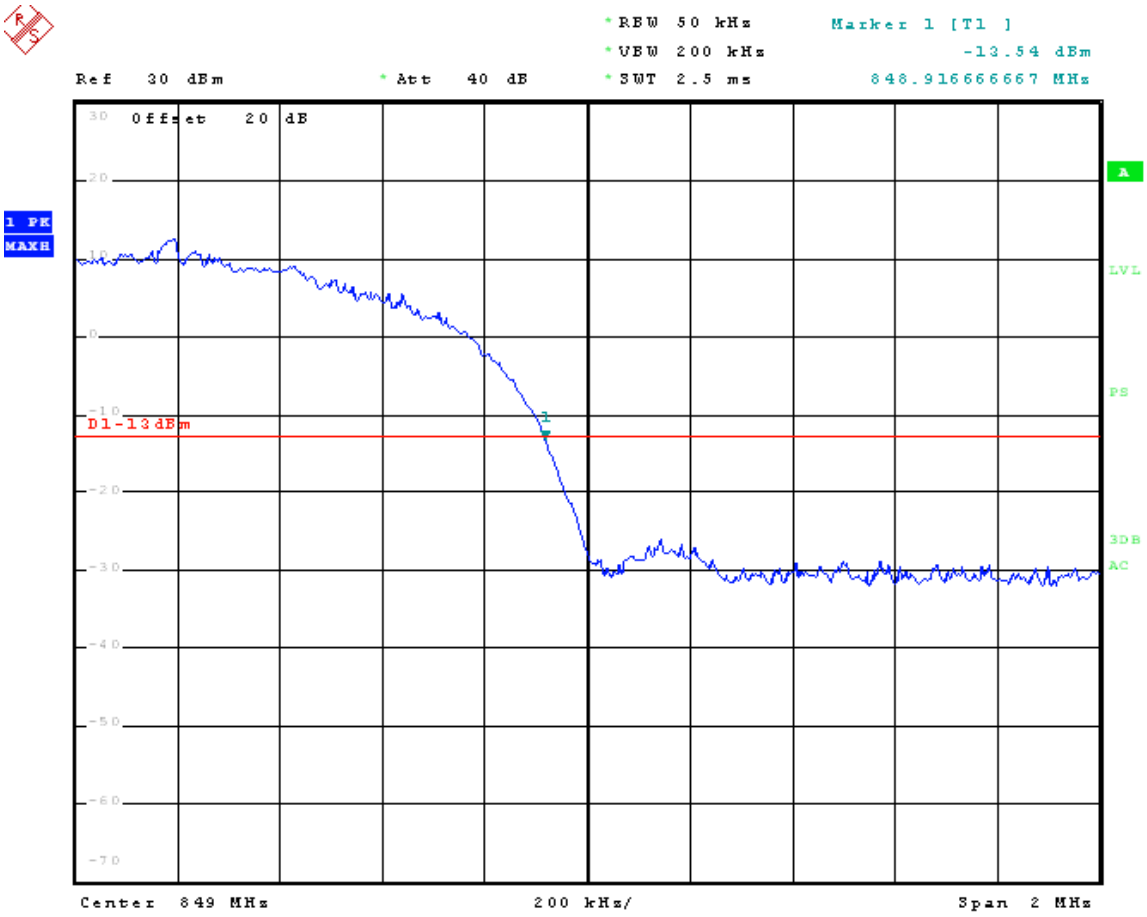




**Band Edge emission WCDMA V Channel Low**



**Band Edge emission WCDMA V Channel high**



## 6.6 Field Strength of Radiated Spurious Emissions

Test Requirement: Part 2.1053

FCC part 22.917(a), 24.238(a) the magnitude of each spurious and harmonic emission that can be detected when the equipment is operated under the conditions specification in the instruction manual and/or alignment procedure, shall not be less than 43+10log(Mean power in watts) dBc below the mean power output outside a license's frequency block(-13dBm).

Test Date: Sep 30, 2009

Test Procedure:

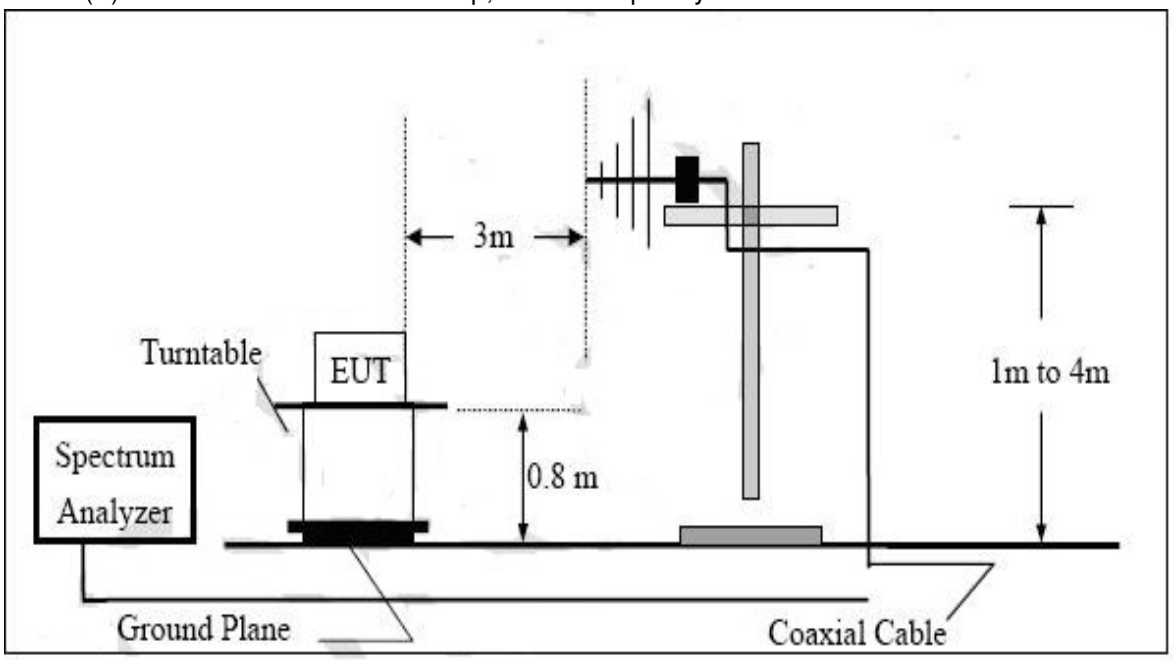
The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of spectrum analyzer was set at 1MHz, sufficient scans were taken to show the out of band Emission is any up to 10th harmonic.

For the out of band: set RBW, VBW=1MHz, stat=30MHz, stop= 10 th harmonic. Limit= --13dBm

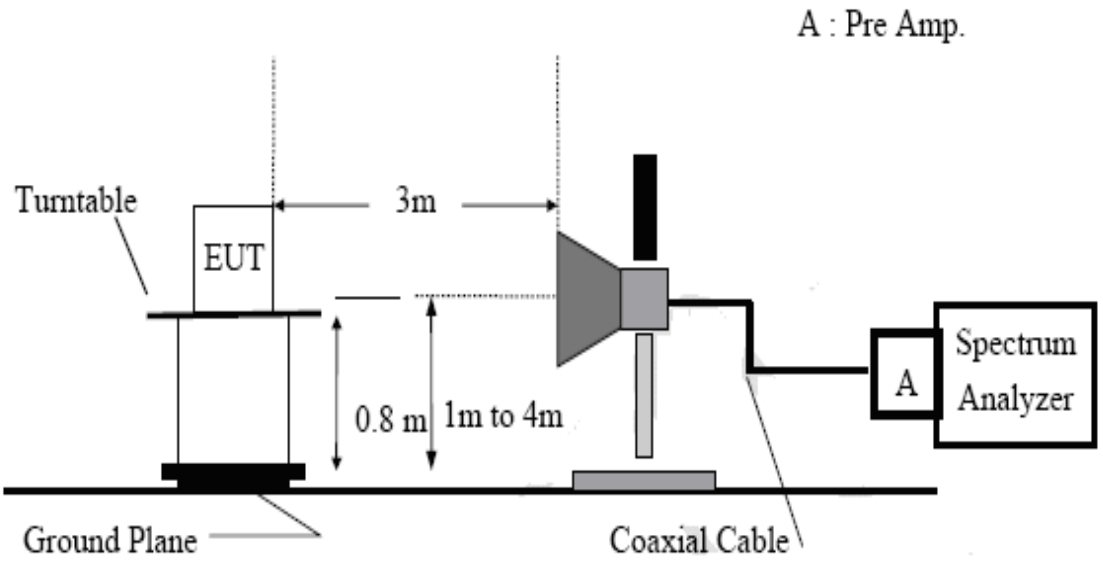
Band Edge requirements: In 1Mhz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 % of bandwidth of fundamental emission of the transmitter any be employed to measure the out of band emission. Limit=--13dBm.

Test Setup:

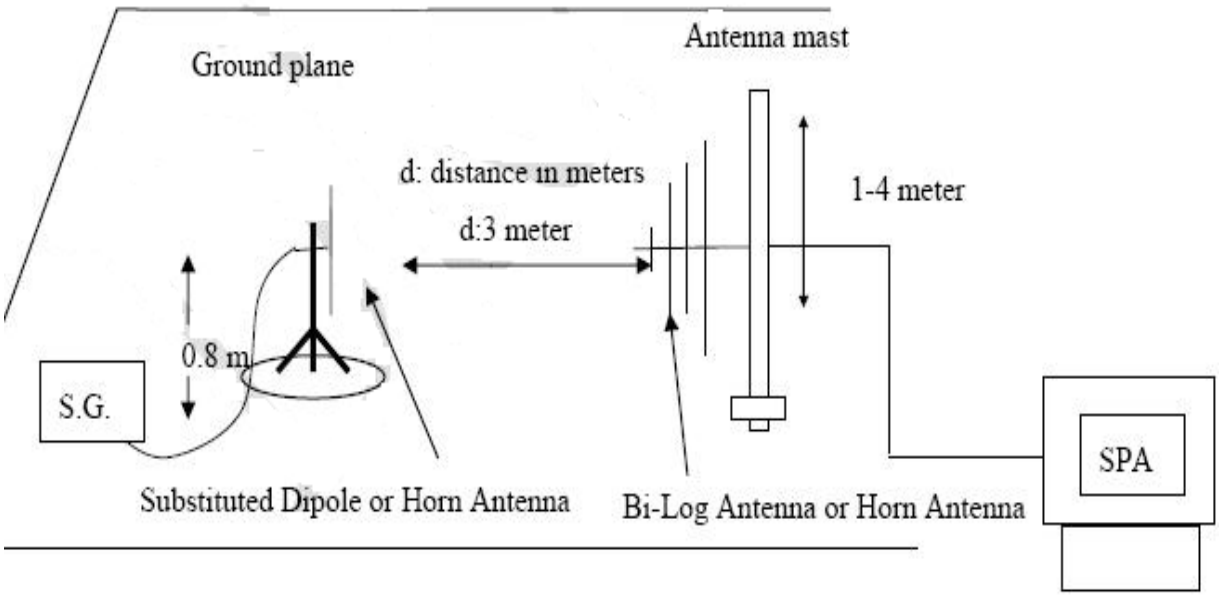
(A) Radiated emission Test setup, Below Frequency 1000MHz:



(B) Radiated emission Test setup frequency over 1GHz:




(C) Substituted Method Test setup:




**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, the EUT was communication with the station. The highest emission was recorded with the rotation of the turntable and lowering of the test antenna from 4m to 1m. The reading was recorded and the field strength (E in dBuV/m) was calculated.

ERP in frequency band 824.2-848.8MHz were measured using substitution method. The EUT was replaced by dipole antenna connected, the S.G. output was recorded and ERP was calculated as follow:

ERP in frequency band 1850.5-1909.8MHz were measured using a substitution method. The EUT was replaced by a horn antenna connected, the S.G. output was recorded and EIRP was calculated as follows:

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

**Radiated spurious Emission Measurement Result: GSM 850 mode**

**Operation mode: TX CH Low mode**

**Fundamental Frequency: 824.2MHz**

| Frequency (MHz) | Ant.Pol. H/V | S.G Output (dBm) | Antenna Gain (dBi/dBd) | Cable Loss (dBm) | ERP/ EIRP (dBm) | Limit (dBm) | Safe Margin (dB) |
|---|---|---|---|---|---|---|---|
| 100.00 | H | -59.31 | 2.60 | 1.00 | -57.71 | -13.0 | 44.71 |
| 200.00 | H | -65.7 | 9.10 | 1.42 | -58.02 | -13.0 | 45.02 |
| 800.00 | H | -65.41 | 8.70 | 2.86 | -59.57 | -13.0 | 46.57 |
| 1648.40 | H | -53.56 | 6.95 | 4.17 | -50.78 | -13.0 | 37.78 |
| 2472.60 | H | -53.28 | 8.35 | 5.24 | -50.17 | -13.0 | 37.17 |
| 3296.80 | H | -48.25 | 8.15 | 6.11 | -46.21 | -13.0 | 33.21 |
| 4121.00 | H | -49.03 | 8.45 | 6.94 | -47.52 | -13.0 | 34.52 |
| 100.00 | V | -58.72 | 2.60 | 1.00 | -57.12 | -13.0 | 44.12 |
| 200.00 | V | -65.74 | 9.10 | 1.42 | -58.06 | -13.0 | 45.06 |
| 800.00 | V | -66.61 | 8.70 | 2.86 | -60.77 | -13.0 | 47.77 |
| 1648.40 | V | -52.96 | 6.95 | 4.17 | -50.18 | -13.0 | 37.18 |
| 2472.60 | V | -53.2 | 8.35 | 5.24 | -50.09 | -13.0 | 37.09 |
| 3296.80 | V | -49.25 | 8.15 | 6.11 | -47.21 | -13.0 | 34.21 |
| 4121.00 | V | -50.03 | 8.45 | 6.94 | -48.52 | -13.0 | 35.52 |

Remark:

1 emission behaviors belong to narrowband spurious emission.

2 The result basic equation calculation is as follow:

ERP/EIRP(dBm)=S.G. Output(dBm) + Antenna Gain(dBd/dBi)-Cable Loss

**Radiated spurious Emission Measurement Result: GSM 850 mode**

**Operation mode: TX CH Mid mode**

**Fundamental Frequency: 836.60MHz**

| Frequency (MHz) | Ant.Pol. H/V | S.G Output (dBm) | Antenna Gain (dBi/dBd) | Cable Loss (dBm) | ERP/ EIRP (dBm) | Limit (dBm) | Safe Margin (dB) |
|---|---|---|---|---|---|---|---|
| 100.00 | H | -59.42 | 2.6 | 1 | -57.82 | -13 | 44.82 |
| 200.00 | H | -64.74 | 9.1 | 1.42 | -57.06 | -13 | 44.06 |
| 800.00 | H | -65.41 | 8.7 | 2.86 | -59.57 | -13 | 46.57 |
| 1673.20 | H | -53.53 | 6.95 | 4.2 | -50.78 | -13 | 37.78 |
| 2509.80 | H | -53.16 | 8.35 | 5.36 | -50.17 | -13 | 37.17 |
| 3346.40 | H | -48.7 | 8.15 | 6.25 | -46.8 | -13 | 33.8 |
| 4183.00 | H | -48.83 | 8.45 | 6.98 | -47.36 | -13 | 34.36 |
| 100.00 | V | -58.42 | 2.6 | 1 | -56.82 | -13 | 43.82 |
| 200.00 | V | -65.74 | 9.1 | 1.42 | -58.06 | -13 | 45.06 |
| 800.00 | V | -65.81 | 8.7 | 2.86 | -59.97 | -13 | 46.97 |
| 1673.20 | V | -52.73 | 6.95 | 4.2 | -49.98 | -13 | 36.98 |
| 2509.80 | V | -53.66 | 8.35 | 5.36 | -50.67 | -13 | 37.67 |
| 3346.40 | V | -48.91 | 8.15 | 6.25 | -47.01 | -13 | 34.01 |
| 4183.00 | V | -49.31 | 8.45 | 6.98 | -47.84 | -13 | 34.84 |

Remark:

1 emission behaviors belong to narrowband spurious emission.

2 The result basic equation calculation is as follow:

ERP/EIRP(dBm)=S.G. Output(dBm) + Antenna Gain(dBd/dBi)-Cable Loss

**Radiated spurious Emission Measurement Result: GSM 850 mode**

**Operation mode: TX CH High mode**

**Fundamental Frequency: 848.8MHz**

| Frequency (MHz) | Ant.Pol. H/V | S.G Output (dBm) | Antenna Gain (dBi/dBd) | Cable Loss (dBm) | ERP/ EIRP (dBm) | Limit (dBm) | Safe Margin (dB) |
|---|---|---|---|---|---|---|---|
| 100.00 | H | -58.92 | 2.6 | 1 | -57.32 | -13 | 44.32 |
| 200.00 | H | -65.07 | 9.1 | 1.42 | -57.39 | -13 | 44.39 |
| 800.00 | H | -64.81 | 8.7 | 2.86 | -58.97 | -13 | 45.97 |
| 1697.60 | H | -53.21 | 6.95 | 4.22 | -50.48 | -13 | 37.48 |
| 2546.40 | H | -52.73 | 8.35 | 5.39 | -49.77 | -13 | 36.77 |
| 3395.20 | H | -48.32 | 8.15 | 6.35 | -46.52 | -13 | 33.52 |
| 4244.00 | H | -49.37 | 8.45 | 7.04 | -47.96 | -13 | 34.96 |
| 100.00 | V | -58.42 | 2.6 | 1 | -56.82 | -13 | 43.82 |
| 200.00 | V | -65.74 | 9.1 | 1.42 | -58.06 | -13 | 45.06 |
| 800.00 | V | -65.81 | 8.7 | 2.86 | -59.97 | -13 | 46.97 |
| 1697.60 | V | -52.93 | 6.95 | 4.22 | -50.2 | -13 | 37.2 |
| 2546.40 | V | -53.19 | 8.35 | 5.39 | -50.23 | -13 | 37.23 |
| 3395.20 | V | -48.74 | 8.15 | 6.35 | -46.94 | -13 | 33.94 |
| 4244.00 | V | -48.53 | 8.45 | 7.04 | -47.12 | -13 | 34.12 |

Remark:

1 emission behaviors belong to narrowband spurious emission.

2 The result basic equation calculation is as follow:

ERP/EIRP(dBm)=S.G. Output(dBm) + Antenna Gain(dBd/dBi)-Cable Loss

**Radiated spurious Emission Measurement Result: PCS 1900 mode**

**Operation mode: TX CH Low mode**

**Fundamental Frequency: 1850.2MHz**

| Frequency (MHz) | Ant.Pol. H/V | S.G Output (dBm) | Antenna Gain (dBi/dBd) | Cable Loss (dBm) | ERP/ EIRP (dBm) | Limit (dBm) | Safe Margin (dB) |
|---|---|---|---|---|---|---|---|
| 100.00 | H | -58.92 | 2.6 | 1 | -57.32 | -13 | 44.32 |
| 200.00 | H | -65.07 | 9.1 | 1.42 | -57.39 | -13 | 44.39 |
| 800.00 | H | -64.81 | 8.7 | 2.86 | -58.97 | -13 | 45.97 |
| 1800.00 | H | -52.9 | 7 | 4.38 | -50.28 | -13 | 37.28 |
| 3700.40 | H | -48.6 | 8.35 | 6.77 | -47.02 | -13 | 34.02 |
| 5550.60 | H | -49.76 | 9.55 | 8.1 | -48.31 | -13 | 35.31 |
| 7400.80 | H | -51.11 | 9.75 | 9.51 | -50.87 | -13 | 37.87 |
| 9251.00 | H | -54.98 | 10.55 | 11.08 | -55.51 | -13 | 42.51 |
| 100.00 | V | -54.02 | 2.6 | 1 | -56.82 | -13 | 43.82 |
| 200.00 | V | -55.24 | 9.1 | 1.42 | -58.06 | -13 | 45.06 |
| 800.00 | V | -54.24 | 8.7 | 2.86 | -59.97 | -13 | 46.97 |
| 1800.00 | V | -51.1 | 7 | 4.38 | -48.48 | -13 | 35.48 |
| 3700.40 | V | -49.6 | 8.35 | 6.77 | -48.02 | -13 | 35.02 |
| 5550.60 | V | -49.68 | 9.55 | 8.1 | -48.23 | -13 | 35.23 |
| 7400.80 | V | -51.19 | 9.75 | 9.51 | -50.95 | -13 | 37.95 |
| 9251.00 | V | -53.02 | 10.55 | 11.08 | -53.55 | -13 | 40.55 |

Remark:

1 emission behaviors belong to narrowband spurious emission.

2 The result basic equation calculation is as follow:

ERP/EIRP(dBm)=S.G. Output(dBm) + Antenna Gain(dBd/dBi)-Cable Loss

**Radiated spurious Emission Measurement Result: PCS 1900 mode**

**Operation mode: TX CH mid mode**

**Fundamental Frequency: 1880.0MHz**

| Frequency (MHz) | Ant.Pol. H/V | S.G Output (dBm) | Antenna Gain (dBi/dBd) | Cable Loss (dBm) | ERP/ EIRP (dBm) | Limit (dBm) | Safe Margin (dB) |
|---|---|---|---|---|---|---|---|
| 100.00 | H | -58.92 | 2.6 | 1 | -57.32 | -13 | 44.32 |
| 200.00 | H | -67.07 | 9.1 | 1.42 | -59.39 | -13 | 46.39 |
| 800.00 | H | -66.81 | 8.7 | 2.86 | -60.97 | -13 | 47.97 |
| 1800.00 | H | -52.9 | 7 | 4.38 | -50.28 | -13 | 37.28 |
| 3760.00 | H | -49.43 | 8.42 | 6.84 | -47.85 | -13 | 34.85 |
| 5640.00 | H | -48.4 | 9.5 | 8.31 | -47.21 | -13 | 34.21 |
| 7520.00 | H | -51.17 | 9.78 | 9.6 | -50.99 | -13 | 37.99 |
| 9400.00 | H | -54.82 | 10.61 | 11.32 | -55.53 | -13 | 42.53 |
| 100.00 | V | -60.42 | 2.6 | 1 | -58.82 | -13 | 45.82 |
| 200.00 | V | -66.74 | 9.1 | 1.42 | -59.06 | -13 | 46.06 |
| 800.00 | V | -65.81 | 8.7 | 2.86 | -59.97 | -13 | 46.97 |
| 1800.00 | V | -54.1 | 7 | 4.38 | -51.48 | -13 | 38.48 |
| 3760.00 | V | -47.93 | 8.42 | 6.84 | -46.35 | -13 | 33.35 |
| 5640.00 | V | -48.78 | 9.5 | 8.31 | -47.59 | -13 | 34.59 |
| 7520.00 | V | -53.2 | 9.78 | 9.6 | -53.02 | -13 | 40.02 |
| 9400.00 | V | -54.86 | 10.61 | 11.32 | -55.57 | -13 | 42.57 |

Remark:

1 emission behaviors belong to narrowband spurious emission.

2 The result basic equation calculation is as follow:

ERP/EIRP(dBm)=S.G. Output(dBm) + Antenna Gain(dBd/dBi)-Cable Loss

**Radiated spurious Emission Measurement Result: PCS 1900 mode**

**Operation mode: TX CH High mode**

**Fundamental Frequency: 1909.8MHz**

| Frequency (MHz) | Ant.Pol. H/V | S.G Output (dBm) | Antenna Gain (dBi/dBd) | Cable Loss (dBm) | ERP/ EIRP (dBm) | Limit (dBm) | Safe Margin (dB) |
|---|---|---|---|---|---|---|---|
| 100.00 | H | -58.75 | 2.6 | 1 | -57.15 | -13 | 44.15 |
| 200.00 | H | -64.96 | 9.1 | 1.42 | -57.28 | -13 | 44.28 |
| 800.00 | H | -64.82 | 8.7 | 2.86 | -58.98 | -13 | 45.98 |
| 1800.00 | H | -54.4 | 7 | 4.38 | -51.78 | -13 | 38.78 |
| 3819.60 | H | -50.49 | 8.42 | 6.88 | -48.95 | -13 | 35.95 |
| 5729.80 | H | -50.58 | 9.5 | 8.48 | -49.56 | -13 | 36.56 |
| 7639.20 | H | -53.28 | 9.78 | 9.7 | -53.2 | -13 | 40.2 |
| 9549.00 | H | -54.34 | 10.61 | 11.64 | -55.37 | -13 | 42.37 |
| 100.00 | V | -59.92 | 2.6 | 1 | -58.32 | -13 | 45.32 |
| 200.00 | V | -66.62 | 9.1 | 1.42 | -58.94 | -13 | 45.94 |
| 800.00 | V | -65.81 | 8.7 | 2.86 | -59.97 | -13 | 46.97 |
| 1800.00 | V | -54.23 | 7 | 4.38 | -51.61 | -13 | 38.61 |
| 3819.60 | V | -51.66 | 8.42 | 6.88 | -50.12 | -13 | 37.12 |
| 5729.80 | V | -50.14 | 9.5 | 8.48 | -49.12 | -13 | 36.12 |
| 7639.20 | V | -53.26 | 9.78 | 9.7 | -53.18 | -13 | 40.18 |
| 9549.00 | V | -54.98 | 10.61 | 11.64 | -56.01 | -13 | 43.01 |

Remark:

1 emission behaviors belong to narrowband spurious emission.

2 The result basic equation calculation is as follow:

ERP/EIRP(dBm)=S.G. Output(dBm) + Antenna Gain(dBd/dBi)-Cable Loss

**Radiated spurious Emission Measurement Result: WCDMA II mode**

**Operation mode: TX CH Low mode**

**Fundamental Frequency: 1852.4MHz**

| Frequency (MHz) | Ant.Pol. H/V | S.G Output (dBm) | Antenna Gain (dBi/dBd) | Cable Loss (dBm) | ERP/ EIRP (dBm) | Limit (dBm) | Safe Margin (dB) |
|---|---|---|---|---|---|---|---|
| 100.00 | H | -59.89 | 2.6 | 1 | -58.29 | -13 | 45.29 |
| 200.00 | H | -66.94 | 9.1 | 1.42 | -59.26 | -13 | 46.26 |
| 800.00 | H | -65.81 | 8.7 | 2.86 | -59.97 | -13 | 46.97 |
| 1800.00 | H | -54.4 | 7 | 4.38 | -51.78 | -13 | 38.78 |
| 3704.80 | H | -48.08 | 8.35 | 6.77 | -46.5 | -13 | 33.5 |
| 5557.20 | H | -48.61 | 9.55 | 8.1 | -47.16 | -13 | 34.16 |
| 7409.60 | H | -53.36 | 9.75 | 9.52 | -53.13 | -13 | 40.13 |
| 9262.00 | H | -54.82 | 10.55 | 11.08 | -55.35 | -13 | 42.35 |
| 100.00 | V | -60.09 | 2.6 | 1 | -58.49 | -13 | 45.49 |
| 200.00 | V | -66.14 | 9.1 | 1.42 | -58.46 | -13 | 45.46 |
| 800.00 | V | -65.81 | 8.7 | 2.86 | -59.97 | -13 | 46.97 |
| 1800.00 | V | -54.2 | 7 | 4.38 | -51.58 | -13 | 38.58 |
| 3704.80 | V | -47.19 | 8.35 | 6.77 | -45.61 | -13 | 32.61 |
| 5557.20 | V | -48.86 | 9.55 | 8.1 | -47.41 | -13 | 34.41 |
| 7409.60 | V | -53.3 | 9.75 | 9.52 | -53.07 | -13 | 40.07 |
| 9262.00 | V | -55.42 | 10.55 | 11.08 | -55.95 | -13 | 42.95 |

Remark:

1 emission behaviors belong to narrowband spurious emission.

2 The result basic equation calculation is as follow:

ERP/EIRP(dBm)=S.G. Output(dBm) + Antenna Gain(dBd/dBi)-Cable Loss

**Radiated spurious Emission Measurement Result: WCDMA II mode**

**Operation mode: TX CH Mid mode**

**Fundamental Frequency: 1880.0MHz**

| Frequency (MHz) | Ant.Pol. H/V | S.G Output (dBm) | Antenna Gain (dBi/dBd) | Cable Loss (dBm) | ERP/ EIRP (dBm) | Limit (dBm) | Safe Margin (dB) |
|---|---|---|---|---|---|---|---|
| 100.00 | H | -59.91 | 2.6 | 1 | -58.31 | -13 | 45.31 |
| 200.00 | H | -66.04 | 9.1 | 1.42 | -58.36 | -13 | 45.36 |
| 800.00 | H | -65.89 | 8.7 | 2.86 | -60.05 | -13 | 47.05 |
| 1800.00 | H | -53.1 | 7 | 4.38 | -50.48 | -13 | 37.48 |
| 3760.00 | H | -49.52 | 8.42 | 6.84 | -47.94 | -13 | 34.94 |
| 5640.00 | H | -49.82 | 9.5 | 8.31 | -48.63 | -13 | 35.63 |
| 7520.00 | H | -52.17 | 9.78 | 9.6 | -51.99 | -13 | 38.99 |
| 9400.00 | H | -54.82 | 10.61 | 11.32 | -55.53 | -13 | 42.53 |
| 100.00 | H | -59.89 | 2.6 | 1 | -58.29 | -13 | 45.29 |
| 200.00 | V | -65.79 | 9.1 | 1.42 | -58.11 | -13 | 45.11 |
| 800.00 | V | -66.21 | 8.7 | 2.86 | -60.37 | -13 | 47.37 |
| 1800.00 | V | -53.1 | 7 | 4.38 | -50.48 | -13 | 37.48 |
| 3760.00 | V | -47.81 | 8.42 | 6.84 | -46.23 | -13 | 33.23 |
| 5640.00 | V | -49.34 | 9.5 | 8.31 | -48.15 | -13 | 35.15 |
| 7520.00 | V | -52.2 | 9.78 | 9.6 | -52.02 | -13 | 39.02 |
| 9400.00 | V | -53.86 | 10.61 | 11.32 | -54.57 | -13 | 41.57 |

Remark:

1 emission behaviors belong to narrowband spurious emission.

2 The result basic equation calculation is as follow:

ERP/EIRP(dBm)=S.G. Output(dBm) + Antenna Gain(dBd/dBi)-Cable Loss

**Radiated spurious Emission Measurement Result: WCDMA II mode**

**Operation mode: TX CH High mode**

**Fundamental Frequency: 1907.6MHz**

| Frequency (MHz) | Ant.Pol. H/V | S.G Output (dBm) | Antenna Gain (dBi/dBd) | Cable Loss (dBm) | ERP/ EIRP (dBm) | Limit (dBm) | Safe Margin (dB) |
|---|---|---|---|---|---|---|---|
| 100.00 | H | -59.09 | 2.6 | 1 | -57.49 | -13 | 44.49 |
| 200.00 | H | -65.74 | 9.1 | 1.42 | -58.06 | -13 | 45.06 |
| 800.00 | H | -65.31 | 8.7 | 2.86 | -59.47 | -13 | 46.47 |
| 1800.00 | H | -54.6 | 7 | 4.38 | -51.98 | -13 | 38.98 |
| 3815.20 | H | -47.21 | 8.42 | 6.85 | -45.64 | -13 | 32.64 |
| 5722.80 | H | -48.49 | 9.5 | 8.51 | -47.5 | -13 | 34.5 |
| 7630.40 | H | -51.65 | 9.78 | 9.64 | -51.51 | -13 | 38.51 |
| 9538.00 | H | -53.54 | 10.61 | 11.54 | -54.47 | -13 | 41.47 |
| 100.00 | H | -58.89 | 2.6 | 1 | -57.29 | -13 | 44.29 |
| 200.00 | V | -64.79 | 9.1 | 1.42 | -57.11 | -13 | 44.11 |
| 800.00 | V | -65.21 | 8.7 | 2.86 | -59.37 | -13 | 46.37 |
| 1800.00 | V | -54.11 | 7 | 4.38 | -51.49 | -13 | 38.49 |
| 3815.20 | V | -47.52 | 8.42 | 6.85 | -45.95 | -13 | 32.95 |
| 5722.80 | V | -48.68 | 9.5 | 8.51 | -47.69 | -13 | 34.69 |
| 7630.40 | V | -51.64 | 9.78 | 9.64 | -51.5 | -13 | 38.5 |
| 9538.00 | V | -53.19 | 10.61 | 11.54 | -54.12 | -13 | 41.12 |

Remark:

1 emission behaviors belong to narrowband spurious emission.

2 The result basic equation calculation is as follow:

ERP/EIRP(dBm)=S.G. Output(dBm) + Antenna Gain(dBd/dBi)-Cable Loss

**Radiated spurious Emission Measurement Result: WCDMA V mode**

**Operation mode: TX CH Low mode**

**Fundamental Frequency: 826.4MHz**

| Frequency (MHz) | Ant.Pol. H/V | S.G Output (dBm) | Antenna Gain (dBi/dBd) | Cable Loss (dBm) | ERP/ EIRP (dBm) | Limit (dBm) | Safe Margin (dB) |
|---|---|---|---|---|---|---|---|
| 100.00 | H | -60.22 | 2.6 | 1 | -58.62 | -13 | 45.62 |
| 200.00 | H | -66.64 | 9.1 | 1.42 | -58.96 | -13 | 45.96 |
| 800.00 | H | -66.41 | 8.7 | 2.86 | -60.57 | -13 | 47.57 |
| 1652.80 | H | -51.41 | 6.95 | 4.19 | -48.65 | -13 | 35.65 |
| 2479.20 | H | -53.26 | 8.35 | 5.26 | -50.17 | -13 | 37.17 |
| 3305.60 | H | -54.31 | 8.15 | 6.11 | -52.27 | -13 | 39.27 |
| 4132.00 | H | -54.33 | 8.45 | 6.9 | -52.78 | -13 | 39.78 |
| 100.00 | V | -58.72 | 2.6 | 1 | -57.12 | -13 | 44.12 |
| 200.00 | V | -65.74 | 9.1 | 1.42 | -58.06 | -13 | 45.06 |
| 800.00 | V | -66.61 | 8.7 | 2.86 | -60.77 | -13 | 47.77 |
| 1652.80 | V | -51.9 | 6.95 | 4.19 | -49.14 | -13 | 36.14 |
| 2479.20 | V | -53.16 | 8.35 | 5.26 | -50.07 | -13 | 37.07 |
| 3305.60 | V | -53.21 | 8.15 | 6.11 | -51.17 | -13 | 38.17 |
| 4132.00 | V | -52.31 | 8.45 | 6.9 | -50.76 | -13 | 37.76 |

Remark:

1 emission behaviors belong to narrowband spurious emission.

2 The result basic equation calculation is as follow:

ERP/EIRP(dBm)=S.G. Output(dBm) + Antenna Gain(dBd/dBi)-Cable Loss

**Radiated spurious Emission Measurement Result: WCDMA V mode**

**Operation mode: TX CH Mid mode**

**Fundamental Frequency: 836.0MHz**

| Frequency (MHz) | Ant.Pol. H/V | S.G Output (dBm) | Antenna Gain (dBi/dBd) | Cable Loss (dBm) | ERP/ EIRP (dBm) | Limit (dBm) | Safe Margin (dB) |
|---|---|---|---|---|---|---|---|
| 100.00 | H | -60.22 | 2.6 | 1 | -58.62 | -13 | 45.62 |
| 200.00 | H | -65.74 | 9.1 | 1.42 | -58.06 | -13 | 45.06 |
| 800.00 | H | -65.81 | 8.7 | 2.86 | -59.97 | -13 | 46.97 |
| 1672.00 | H | -50.88 | 6.95 | 4.19 | -48.12 | -13 | 35.12 |
| 2508.00 | H | -53.26 | 8.35 | 5.26 | -50.17 | -13 | 37.17 |
| 3344.00 | H | -53.31 | 8.15 | 6.11 | -51.27 | -13 | 38.27 |
| 4180.00 | H | -54.33 | 8.45 | 6.9 | -52.78 | -13 | 39.78 |
| 100.00 | V | -58.42 | 2.6 | 1 | -56.82 | -13 | 43.82 |
| 200.00 | V | -65.74 | 9.1 | 1.42 | -58.06 | -13 | 45.06 |
| 800.00 | V | -65.81 | 8.7 | 2.86 | -59.97 | -13 | 46.97 |
| 1672.00 | V | -50.44 | 6.95 | 4.19 | -47.68 | -13 | 34.68 |
| 2508.00 | V | -53.76 | 8.35 | 5.26 | -50.67 | -13 | 37.67 |
| 3344.00 | V | -53.21 | 8.15 | 6.11 | -51.17 | -13 | 38.17 |
| 4180.00 | V | -52.23 | 8.45 | 6.9 | -50.68 | -13 | 37.68 |

Remark:

1 emission behaviors belong to narrowband spurious emission.

2 The result basic equation calculation is as follow:

ERP/EIRP(dBm)=S.G. Output(dBm) + Antenna Gain(dBd/dBi)-Cable Loss

**Radiated spurious Emission Measurement Result: WCDMA V mode**

**Operation mode: TX CH High mode**

**Fundamental Frequency: 846.6MHz**

| Frequency (MHz) | Ant.Pol. H/V | S.G Output (dBm) | Antenna Gain (dBi/dBd) | Cable Loss (dBm) | ERP/ EIRP (dBm) | Limit (dBm) | Safe Margin (dB) |
|---|---|---|---|---|---|---|---|
| 100.00 | H | -59.92 | 2.6 | 1 | -58.32 | -13 | 45.32 |
| 200.00 | H | -66.07 | 9.1 | 1.42 | -58.39 | -13 | 45.39 |
| 800.00 | H | -64.81 | 8.7 | 2.86 | -58.97 | -13 | 45.97 |
| 1693.20 | H | -50.35 | 6.99 | 4.2 | -47.56 | -13 | 34.56 |
| 2539.80 | H | -52.85 | 8.41 | 5.35 | -49.79 | -13 | 36.79 |
| 3386.40 | H | -52.39 | 8.22 | 6.21 | -50.38 | -13 | 37.38 |
| 4233.00 | H | -54.47 | 8.48 | 6.91 | -52.9 | -13 | 39.9 |
| 100.00 | V | -58.42 | 2.6 | 1 | -56.82 | -13 | 43.82 |
| 200.00 | V | -65.74 | 9.1 | 1.42 | -58.06 | -13 | 45.06 |
| 800.00 | V | -65.81 | 8.7 | 2.86 | -59.97 | -13 | 46.97 |
| 1693.20 | V | -51.11 | 6.99 | 4.22 | -48.34 | -13 | 35.34 |
| 2539.80 | V | -52.27 | 8.41 | 5.39 | -49.25 | -13 | 36.25 |
| 3386.40 | V | -53.95 | 8.22 | 6.35 | -52.08 | -13 | 39.08 |
| 4233.00 | V | -52.18 | 8.48 | 7.04 | -50.74 | -13 | 37.74 |

Remark:

1 emission behaviors belong to narrowband spurious emission.

2 The result basic equation calculation is as follow:

ERP/EIRP(dBm)=S.G. Output(dBm) + Antenna Gain(dBd/dBi)-Cable Loss

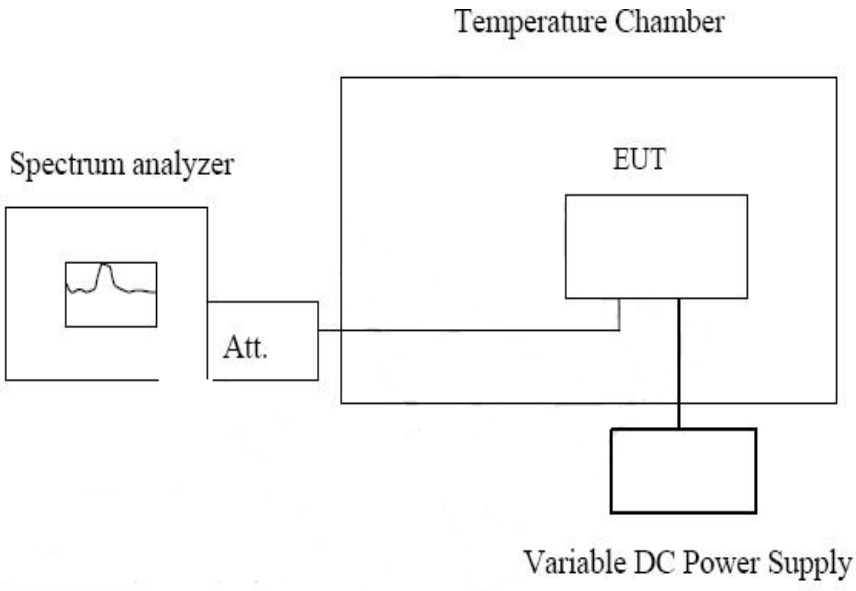
## 6.7 Frequency Stability V.S. TEMPERATURE MEASUREMENT

Test Requirement: Part 2.1055(a)(1)

Test Date: Oct 08, 2009

Test Status: Test lowest channel, middle, highest channel.

Test Setup:




Note: 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. Reference power supply voltage for these tests is DC 3.3 V.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 25 degree operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30 degree. After the temperature stabilized for approximately 30 minutes record the frequency. Repeat step measure with 10 degree per stage until the highest temperature of 50 degree reached.

Frequency Tolerance: +/-2.5ppm for 850MHz band

+/-2.5ppm for 1900MHz band

| Reference Frequency: GSM 850 Mid channel 836.6MHz@ 25 degree | | | |
|---|---|---|---|
| Limit: +/- 2.5ppm = 2091Hz | | | |
| Environment Temperature(degree) | Frequency (MHz) | Delta (Hz) | Limit (Hz) |
| -30 | 836.599950 | 50 | 2091 |
| -20 | 836.599971 | 29 | 2091 |
| -10 | 836.599979 | 21 | 2091 |
| 10 | 836.599986 | 14 | 2091 |
| 20 | 836.599996 | 4 | 2091 |
| 30 | 836.600011 | -11 | 2091 |
| 40 | 836.599978 | 22 | 2091 |
| 50 | 836.599965 | 35 | 2091 |

| Reference Frequency: PCS 1900 Mid channel 1880MHz@ 25 degree | | | |
|---|---|---|---|
| Limit: +/- 2.5ppm = 4700Hz | | | |
| Environment Temperature(degree) | Frequency (MHz) | Delta (Hz) | Limit (Hz) |
| -30 | 1879.999891 | 109 | 4700 |
| -20 | 1879.999945 | 55 | 4700 |
| -10 | 1879.999975 | 25 | 4700 |
| 10 | 1879.999989 | 11 | 4700 |
| 20 | 1879.999985 | 15 | 4700 |
| 30 | 1879.999973 | 27 | 4700 |
| 40 | 1879.999948 | 52 | 4700 |
| 50 | 1879.999935 | 65 | 4700 |

| Reference Frequency: WCDMA II Mid channel 1880MHz@ 25 degree | | | |
|---|---|---|---|
| Limit: +/- 2.5ppm = 4700Hz | | | |
| Environment Temperature(degree) | Frequency (MHz) | Delta (Hz) | Limit (Hz) |
| -30 | 1879.999936 | 64 | 4700 |
| -20 | 1879.999988 | 12 | 4700 |
| -10 | 1879.999985 | 15 | 4700 |
| 10 | 1879.999994 | 6 | 4700 |
| 20 | 1879.999999 | 1 | 4700 |
| 30 | 1879.999981 | 19 | 4700 |
| 40 | 1879.999975 | 25 | 4700 |
| 50 | 1879.999915 | 85 | 4700 |

| Reference Frequency: WCDMA V Mid channel 836.0MHz@ 25 degree | | | |
|---|---|---|---|
| Limit: +/- 2.5ppm = 2091Hz | | | |
| Environment Temperature(degree) | Frequency (MHz) | Delta (Hz) | Limit (Hz) |
| -30 | 835.999911 | 89 | 2091 |
| -20 | 835.999926 | 74 | 2091 |
| -10 | 835.999934 | 66 | 2091 |
| 10 | 835.999978 | 22 | 2091 |
| 20 | 835.999995 | 5 | 2091 |
| 30 | 835.999942 | 58 | 2091 |
| 40 | 835.999937 | 63 | 2091 |
| 50 | 835.999946 | 54 | 2091 |

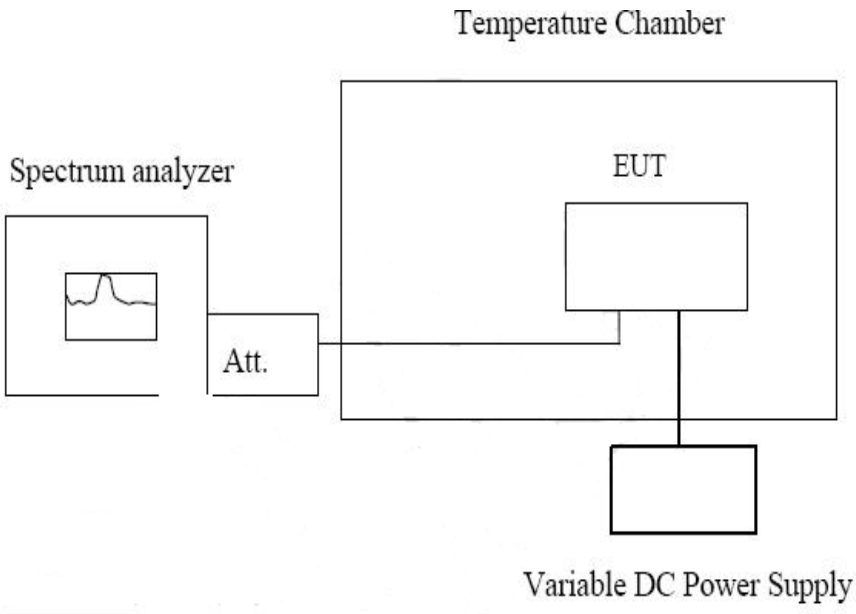
## 6.8 Frequency Stability V.S. VOLTAGE MEASUREMENT

Test Requirement: Part 2.1055(d)(1)

Test Date: Oct 16, 2009

Test Status: Test lowest channel, middle, highest channel.

Test Setup:




Note: Measurement setup for testing On antenna connector.

Test procedure:

Set chamber temperature to 25 degree. Use a variable AC power/ DC power supply to power the EUT and set the Voltage to rated voltage. Reference power supply voltage for these tests is DC 3.3 V. Set the spectrum analyzer RBW enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specified extreme voltage variation(+/-15%) and endpoint, record the maximum frequency change.

Frequency Tolerance: +/-2.5ppm for 850MHz band
+/-2.5ppm for 1900MHz band

| Reference Frequency: GSM 850 Mid channel 836.6MHz@ 25 degree | | | |
|---|---|---|---|
| Limit: +/- 2.5ppm = 2091Hz | | | |
| Power Supply Vdc | Frequency (MHz) | Delta (Hz) | Limit (Hz) |
| 3.6 | 836.600054 | -45 | 2091 |
| 3.3 | 836.600000 | 0 | 2091 |
| 3.0 | 836.599982 | -87 | 2091 |

| Reference Frequency: PCS 1900 Mid channel 1880MHz@ 25 degree | | | |
|---|---|---|---|
| Limit: +/- 2.5ppm = 4700Hz | | | |
| Power Supply Vdc | Frequency (MHz) | Delta (Hz) | Limit (Hz) |
| 3.6 | 1879.999980 | 30 | 4700 |
| 3.3 | 1880.000000 | 0 | 4700 |
| 3.0 | 1879.999994 | -58 | 4700 |

| Reference Frequency: WCDMA II Mid channel 1880MHz@ 25 degree | | | |
|---|---|---|---|
| Limit: +/- 2.5ppm = 4700Hz | | | |
| Power Supply Vdc | Frequency (MHz) | Delta (Hz) | Limit (Hz) |
| 3.6 | 1879.999914 | 86 | 4700 |
| 3.3 | 1880.000000 | 0 | 4700 |
| 3.0 | 1879.999965 | 35 | 4700 |

| Reference Frequency: WCDMA V Mid channel 836.0MHz@ 25 degree | | | |
|---|---|---|---|
| Limit: +/- 2.5ppm = 2091Hz | | | |
| Power Supply Vdc | Frequency (MHz) | Delta (Hz) | Limit (Hz) |
| 3.6 | 835.999973 | 30 | 2091 |
| 3.3 | 836.000000 | 0 | 2091 |
| 3.0 | 835.999945 | 63 | 2091 |

## 6.9 Conducted Emissions Mains Terminals, 150 kHz to 30MHz

Test Requirement: Part 15.207

Test Method: ANSI C63.4.

Test Date: Sep 24, 2009

Frequency Range: 150KHz to 30MHz

Detector: Peak for pre-scan (9kHz Resolution Bandwidth)

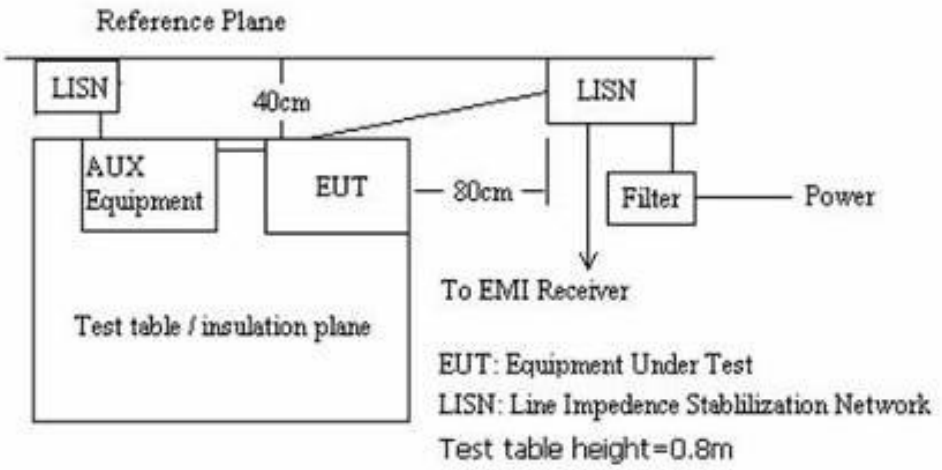
Quasi-Peak if maximised peak within 6dB of Quasi-Peak limit

EUT Operation: GSM 850/1900,WCDMA II/V link mode

An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

Plan View of Test Setup

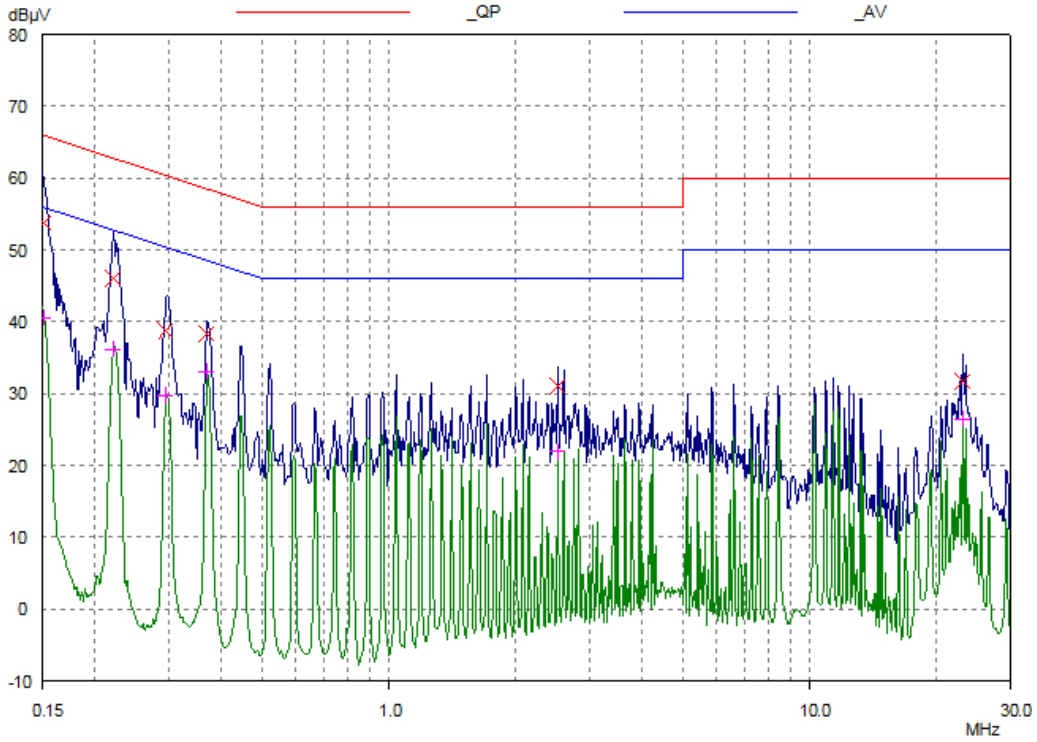



Limit:

| Frequency range MHz | Limits dB(uV) | |
|---|---|---|
| | Quasi-peak | Average |
| 0.15 to 0.50 | 66 to 56 | 56 to 46 |
| 0.50 to 5 | 56 | 46 |
| 5 to 30 | 60 | 50 |
| Note<br>1.The lower limit shall apply at the transition frequencies<br>2.The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz. | | |

Operating mode: GSM 850 Link

L Line:



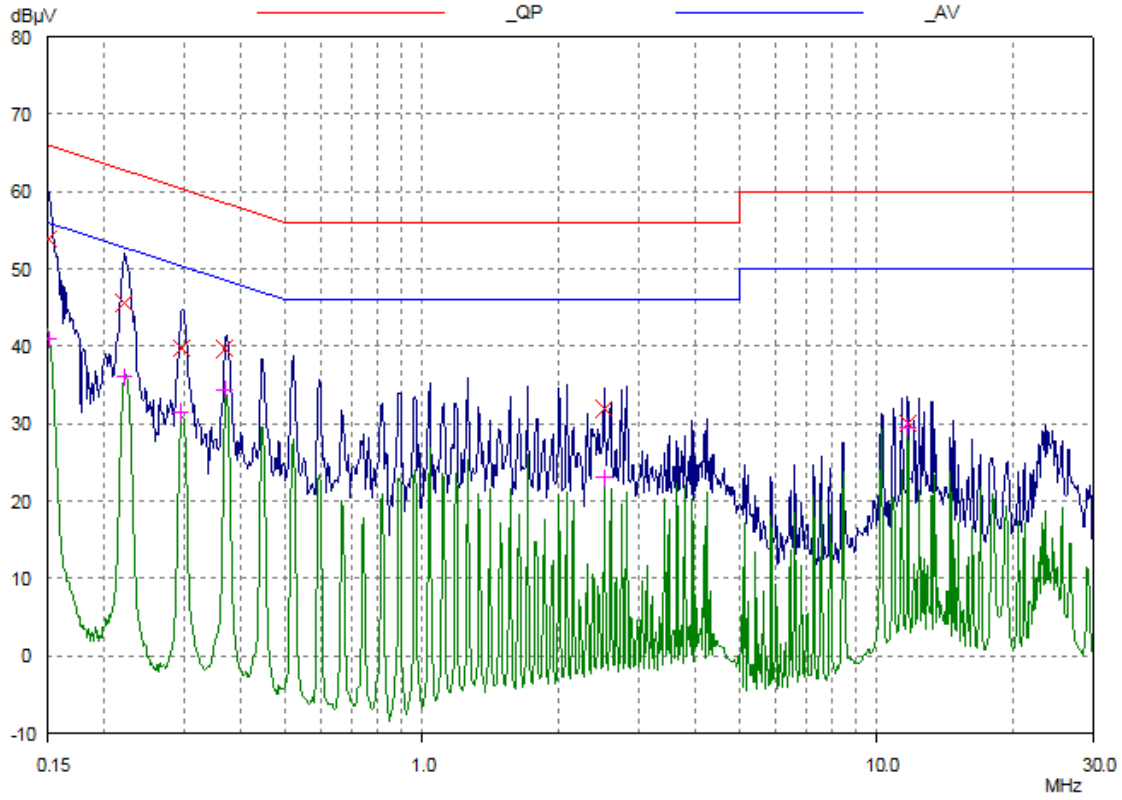

Final Measurement Results

| Frequency MHz | QP Level dBµV | QP Limit dBµV | QP Delta dB |
|---|---|---|---|
| 0.1512 | 53.75 | 65.93 | 12.18 |
| 0.22164 | 46.03 | 62.76 | 16.73 |
| 0.29528 | 38.73 | 60.37 | 21.64 |
| 0.36908 | 38.29 | 58.52 | 20.23 |
| 2.51837 | 31.07 | 56.00 | 24.93 |
| 23.07531 | 31.72 | 60.00 | 28.28 |

| Frequency MHz | AV Level dBµV | AV Limit dBµV | AV Delta dB |
|---|---|---|---|
| 0.1512 | 40.49 | 55.93 | 15.44 |
| 0.22164 | 36.08 | 52.76 | 16.68 |
| 0.29528 | 29.70 | 50.37 | 20.67 |
| 0.36908 | 32.95 | 48.52 | 15.57 |
| 2.51837 | 21.87 | 46.00 | 24.13 |
| 23.07531 | 26.43 | 50.00 | 23.57 |

Operating mode: GSM 850 Link

N Line:



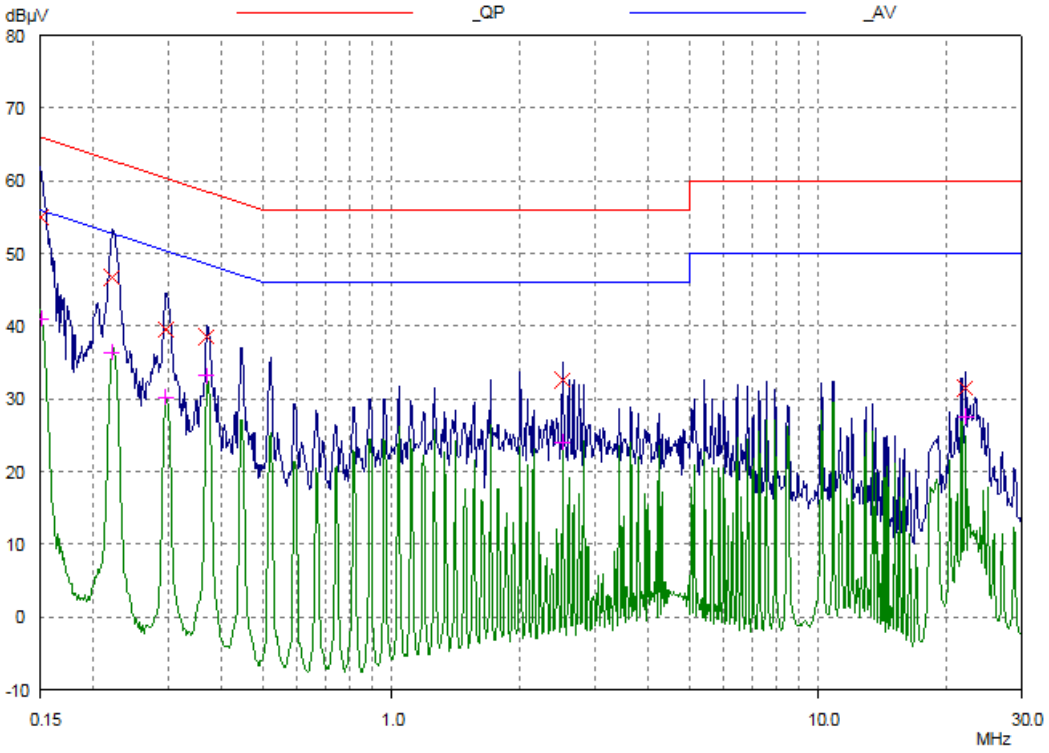

Final Measurement Results

| Frequency MHz | QP Level dBµV | QP Limit dBµV | QP Delta dB |
|---|---|---|---|
| 0.1512 | 53.85 | 65.93 | 12.08 |
| 0.22164 | 45.61 | 62.76 | 17.15 |
| 0.29528 | 39.78 | 60.37 | 20.59 |
| 0.36908 | 39.73 | 58.52 | 18.79 |
| 2.51837 | 31.93 | 56.00 | 24.07 |
| 11.72201 | 30.09 | 60.00 | 29.91 |

| Frequency MHz | AV Level dBµV | AV Limit dBµV | AV Delta dB |
|---|---|---|---|
| 0.1512 | 40.84 | 55.93 | 15.09 |
| 0.22164 | 36.01 | 52.76 | 16.75 |
| 0.29528 | 31.47 | 50.37 | 18.90 |
| 0.36908 | 34.25 | 48.52 | 14.27 |
| 2.51837 | 22.99 | 46.00 | 23.01 |
| 11.72201 | 29.57 | 50.00 | 20.43 |

Operating mode: PCS 1900 Link

L Line:



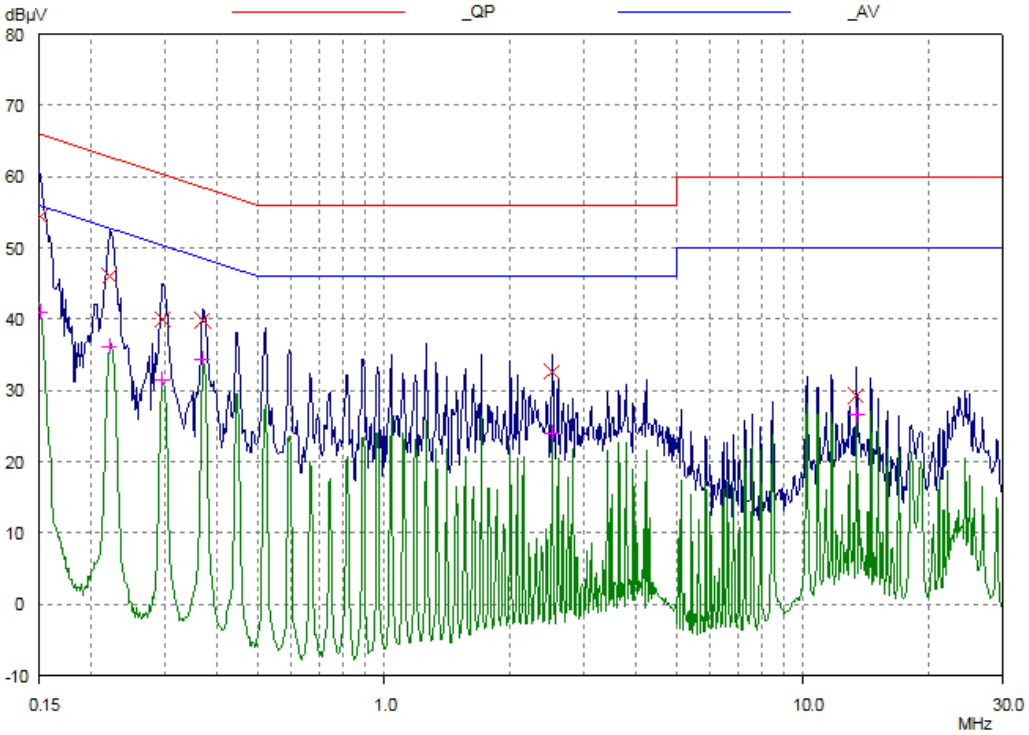

Final Measurement Results

| Frequency MHz | QP Level dBµV | QP Limit dBµV | QP Delta dB |
|---|---|---|---|
| 0.1512 | 54.92 | 65.93 | 11.01 |
| 0.22164 | 46.74 | 62.76 | 16.02 |
| 0.29528 | 39.52 | 60.37 | 20.85 |
| 0.36908 | 38.49 | 58.52 | 20.03 |
| 2.51837 | 32.60 | 56.00 | 23.40 |
| 22.17404 | 31.49 | 60.00 | 28.51 |

| Frequency MHz | AV Level dBµV | AV Limit dBµV | AV Delta dB |
|---|---|---|---|
| 0.1512 | 40.92 | 55.93 | 15.01 |
| 0.22164 | 36.42 | 52.76 | 16.34 |
| 0.29528 | 30.22 | 50.37 | 20.15 |
| 0.36908 | 33.14 | 48.52 | 15.38 |
| 2.51837 | 23.98 | 46.00 | 22.02 |
| 22.17404 | 27.58 | 50.00 | 22.42 |

Operating mode: PCS 1900 Link

N Line:



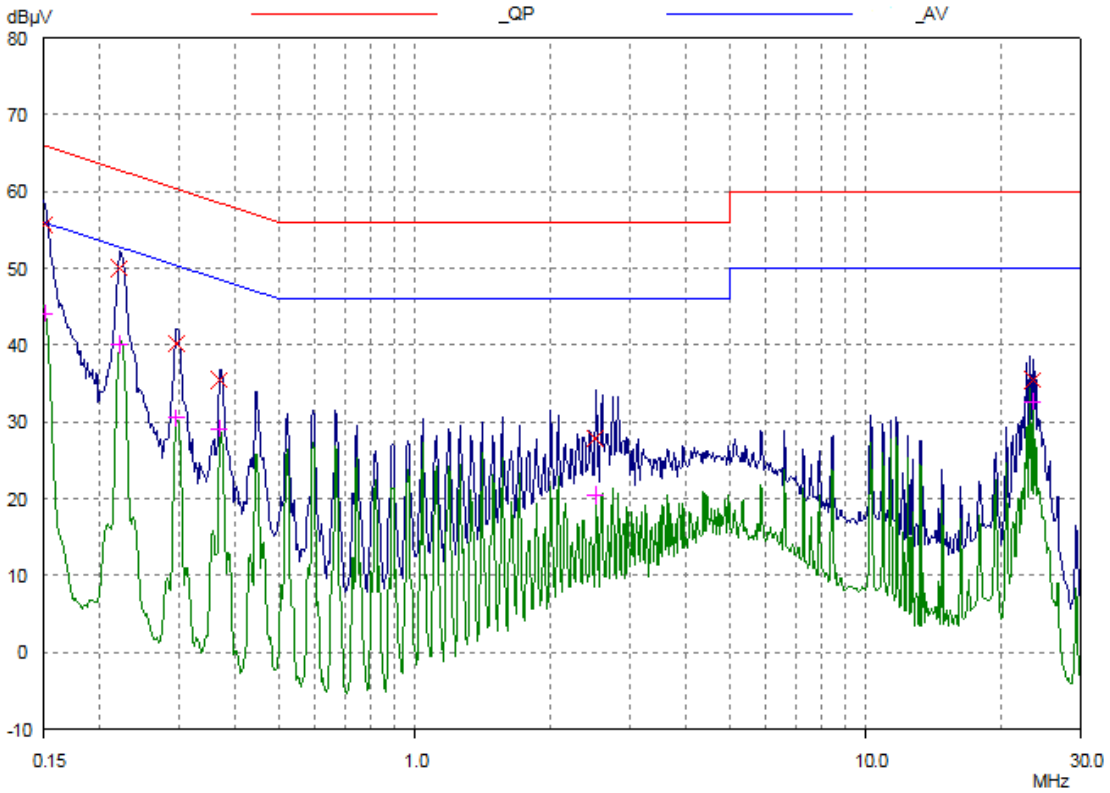

Final Measurement Results

| Frequency MHz | QP Level dBµV | QP Limit dBµV | QP Delta dB |
|---|---|---|---|
| 0.1512 | 54.47 | 65.93 | 11.46 |
| 0.22164 | 46.11 | 62.76 | 16.65 |
| 0.29528 | 39.97 | 60.37 | 20.40 |
| 0.36908 | 39.79 | 58.52 | 18.73 |
| 2.51837 | 32.62 | 56.00 | 23.38 |
| 13.42243 | 29.24 | 60.00 | 30.76 |

| Frequency MHz | AV Level dBµV | AV Limit dBµV | AV Delta dB |
|---|---|---|---|
| 0.1512 | 41.00 | 55.93 | 14.93 |
| 0.22164 | 36.15 | 52.76 | 16.61 |
| 0.29528 | 31.53 | 50.37 | 18.84 |
| 0.36908 | 34.34 | 48.52 | 14.18 |
| 2.51837 | 24.05 | 46.00 | 21.95 |
| 13.42243 | 26.52 | 50.00 | 23.48 |

Operating mode: WCDMA BAND II Link Mode

L Line:



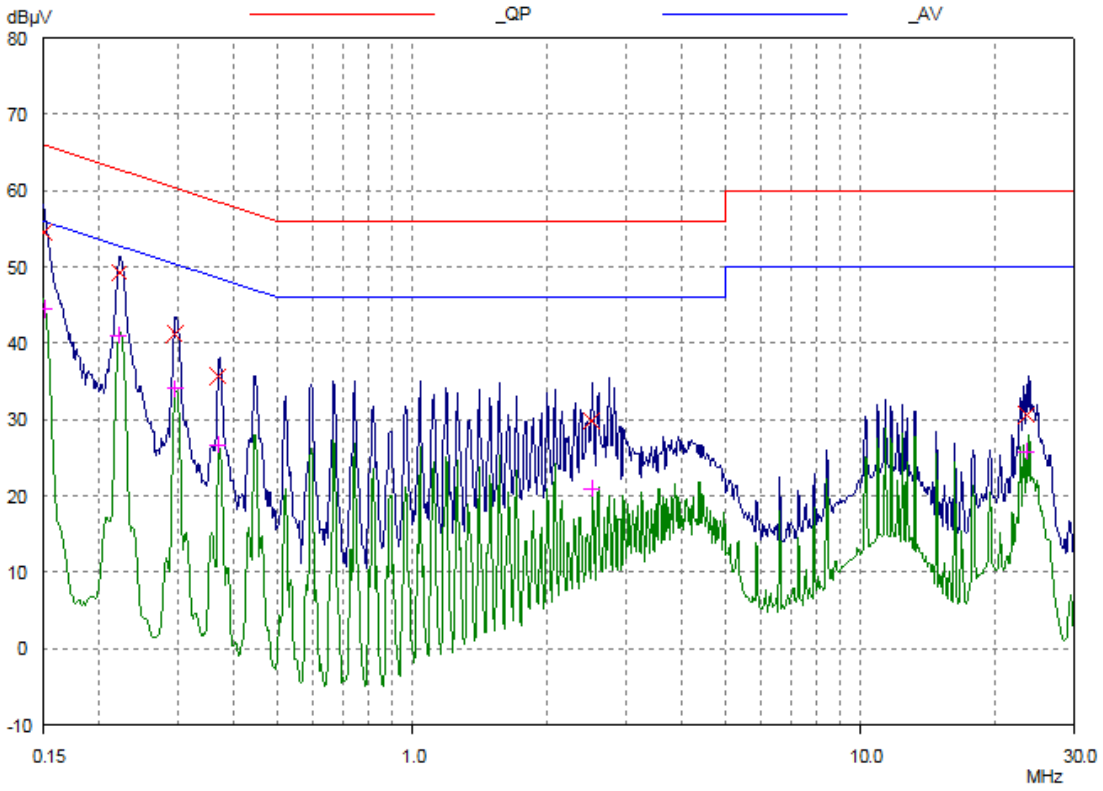

Final Measurement Results

| Frequency MHz | QP Level dBµV | QP Limit dBµV | QP Delta dB |
|---|---|---|---|
| 0.1512 | 55.68 | 65.93 | 10.25 |
| 0.22164 | 50.01 | 62.76 | 12.75 |
| 0.29528 | 40.15 | 60.37 | 20.22 |
| 0.36908 | 35.38 | 58.52 | 23.14 |
| 2.51837 | 27.83 | 56.00 | 28.17 |
| 23.44599 | 35.46 | 60.00 | 24.54 |

| Frequency MHz | AV Level dBµV | AV Limit dBµV | AV Delta dB |
|---|---|---|---|
| 0.1512 | 43.98 | 55.93 | 11.95 |
| 0.22164 | 40.02 | 52.76 | 12.74 |
| 0.29528 | 30.49 | 50.37 | 19.88 |
| 0.36908 | 29.07 | 48.52 | 19.45 |
| 2.51837 | 20.38 | 46.00 | 25.62 |
| 23.44599 | 32.70 | 50.00 | 17.30 |

Operating mode: WCDMA BAND II Link Mode

N Line:



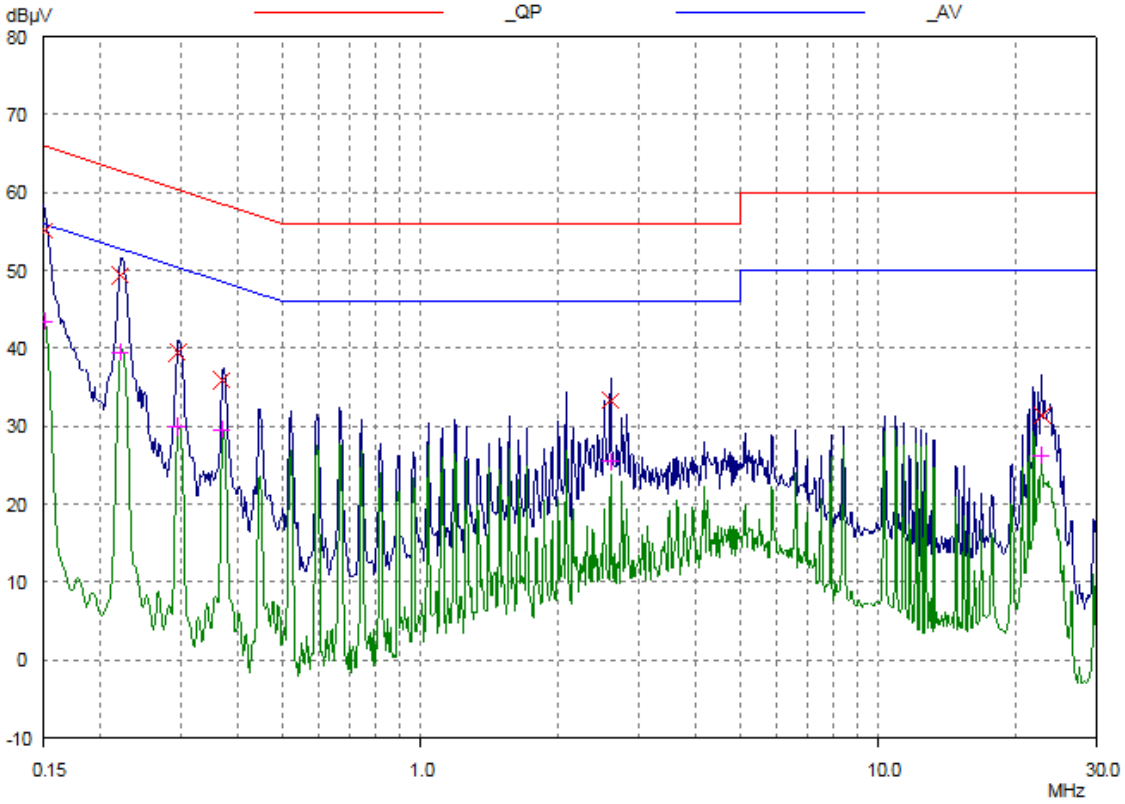

Final Measurement Results

| Frequency MHz | QP Level dBµV | QP Limit dBµV | QP Delta dB |
|---|---|---|---|
| 0.1512 | 54.51 | 65.93 | 11.42 |
| 0.22164 | 49.25 | 62.76 | 13.51 |
| 0.29528 | 41.21 | 60.37 | 19.16 |
| 0.36908 | 35.73 | 58.52 | 22.79 |
| 2.51837 | 29.82 | 56.00 | 26.18 |
| 23.44599 | 30.64 | 60.00 | 29.36 |

| Frequency MHz | AV Level dBµV | AV Limit dBµV | AV Delta dB |
|---|---|---|---|
| 0.1512 | 44.38 | 55.93 | 11.55 |
| 0.22164 | 40.92 | 52.76 | 11.84 |
| 0.29528 | 34.00 | 50.37 | 16.37 |
| 0.36908 | 26.56 | 48.52 | 21.96 |
| 2.51837 | 20.90 | 46.00 | 25.10 |
| 23.44599 | 25.70 | 50.00 | 24.30 |

Operating mode: WCDMA BAND V Link Mode

L Line:



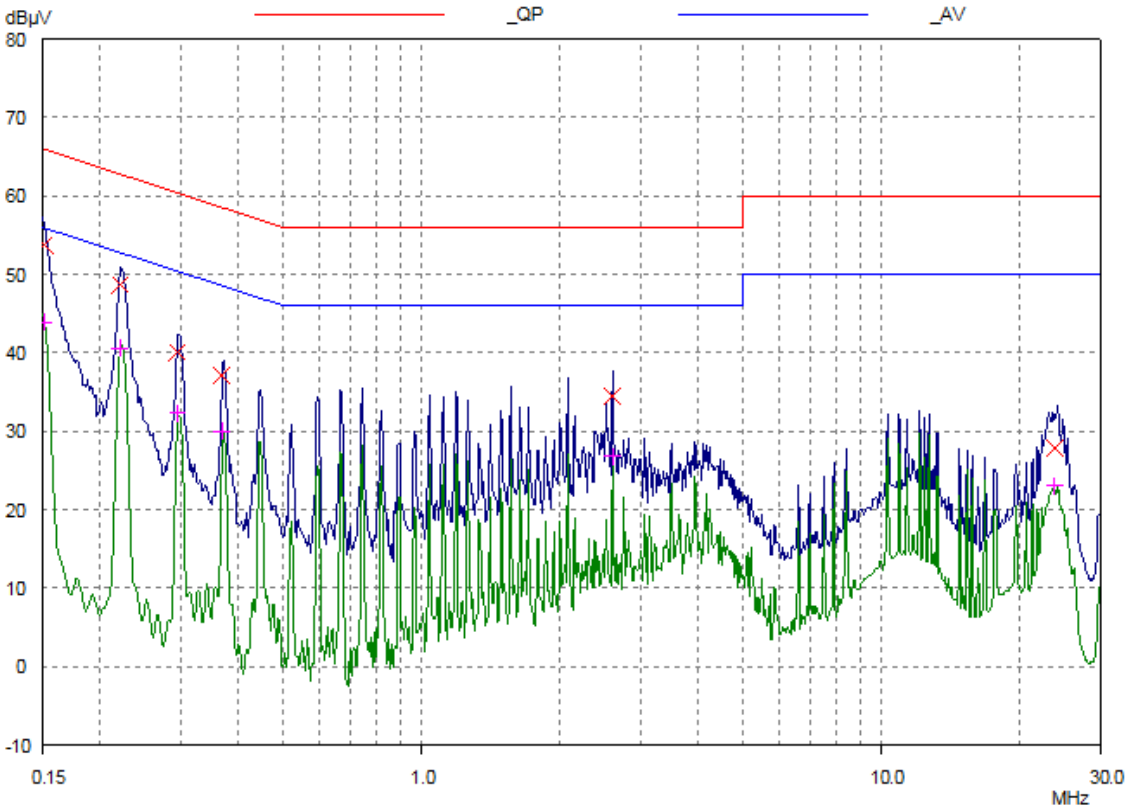

Final Measurement Results

| Frequency MHz | QP Level dBµV | QP Limit dBµV | QP Delta dB |
|---|---|---|---|
| 0.1512 | 55.02 | 65.93 | 10.91 |
| 0.22164 | 49.33 | 62.76 | 13.43 |
| 0.29528 | 39.44 | 60.37 | 20.93 |
| 0.36908 | 35.79 | 58.52 | 22.73 |
| 2.59993 | 33.26 | 56.00 | 22.74 |
| 22.71048 | 31.38 | 60.00 | 28.62 |

| Frequency MHz | AV Level dBµV | AV Limit dBµV | AV Delta dB |
|---|---|---|---|
| 0.1512 | 43.38 | 55.93 | 12.55 |
| 0.22164 | 39.43 | 52.76 | 13.33 |
| 0.29528 | 29.93 | 50.37 | 20.44 |
| 0.36908 | 29.47 | 48.52 | 19.05 |
| 2.59993 | 25.41 | 46.00 | 20.59 |
| 22.71048 | 26.16 | 50.00 | 23.84 |

Operating mode: WCDMA BAND V Link Mode

N Line:



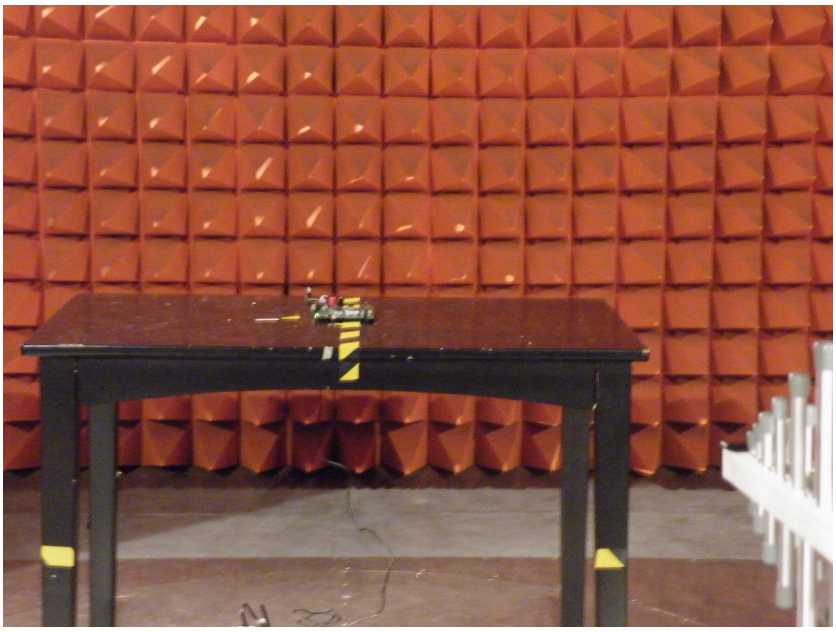

Final Measurement Results

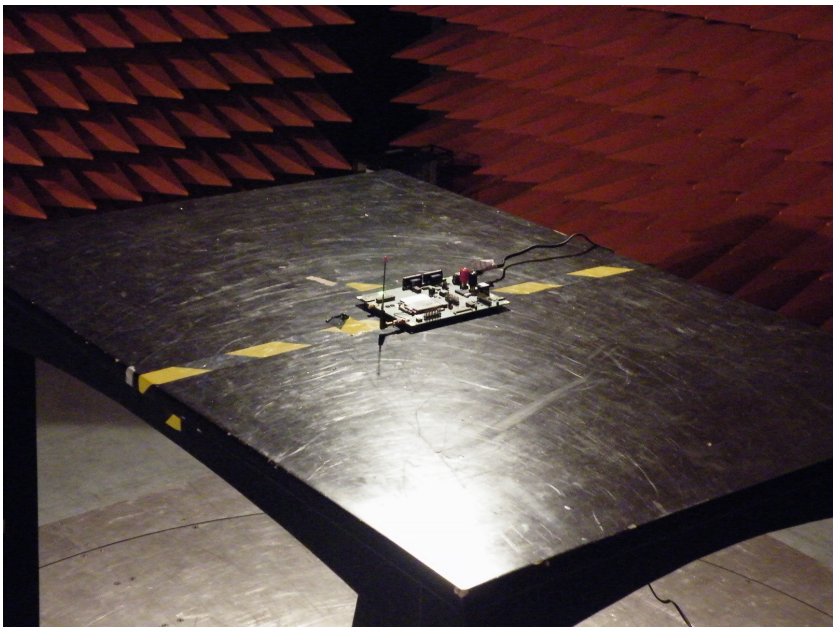
| Frequency MHz | QP Level dBµV | QP Limit dBµV | QP Delta dB |
|---|---|---|---|
| 0.1512 | 53.71 | 65.93 | 12.22 |
| 0.22164 | 48.59 | 62.76 | 14.17 |
| 0.29528 | 40.03 | 60.37 | 20.34 |
| 0.36908 | 37.08 | 58.52 | 21.44 |
| 2.59993 | 34.45 | 56.00 | 21.55 |
| 23.82262 | 27.88 | 60.00 | 32.12 |

| Frequency MHz | AV Level dBµV | AV Limit dBµV | AV Delta dB |
|---|---|---|---|
| 0.1512 | 43.81 | 55.93 | 12.12 |
| 0.22164 | 40.49 | 52.76 | 12.27 |
| 0.29528 | 32.32 | 50.37 | 18.05 |
| 0.36908 | 29.92 | 48.52 | 18.60 |
| 2.59993 | 26.72 | 46.00 | 19.28 |
| 23.82262 | 23.06 | 50.00 | 26.94 |

# 7 Photographs

## 7.1 Radiated Spurious Emission Test Setup





## 7.2 Conducted Emission Test Setup

***~End of Report~***