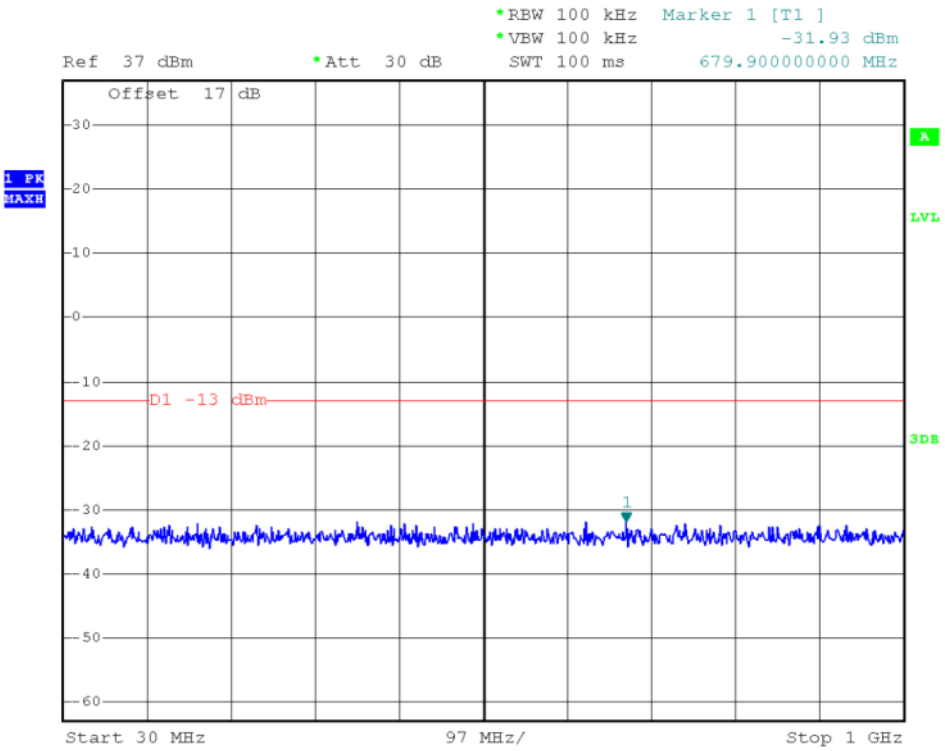
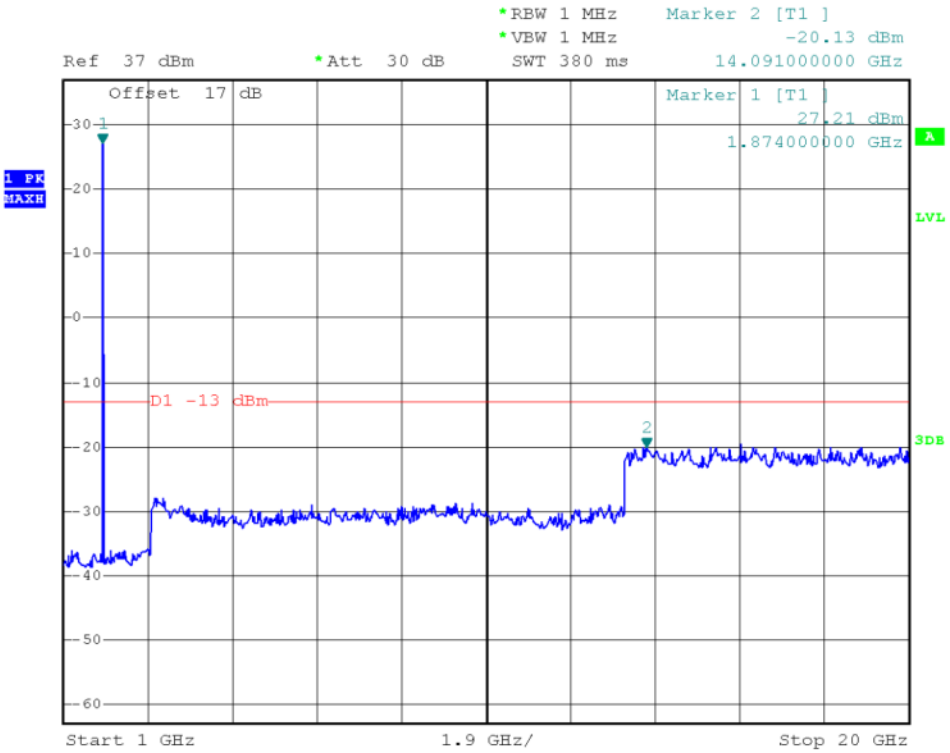
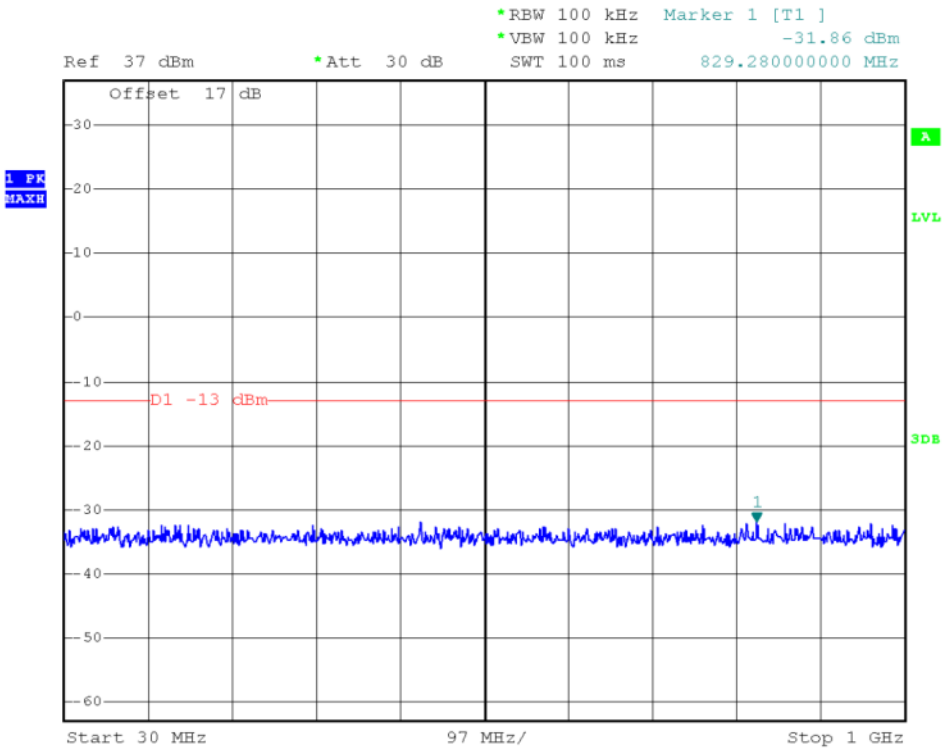


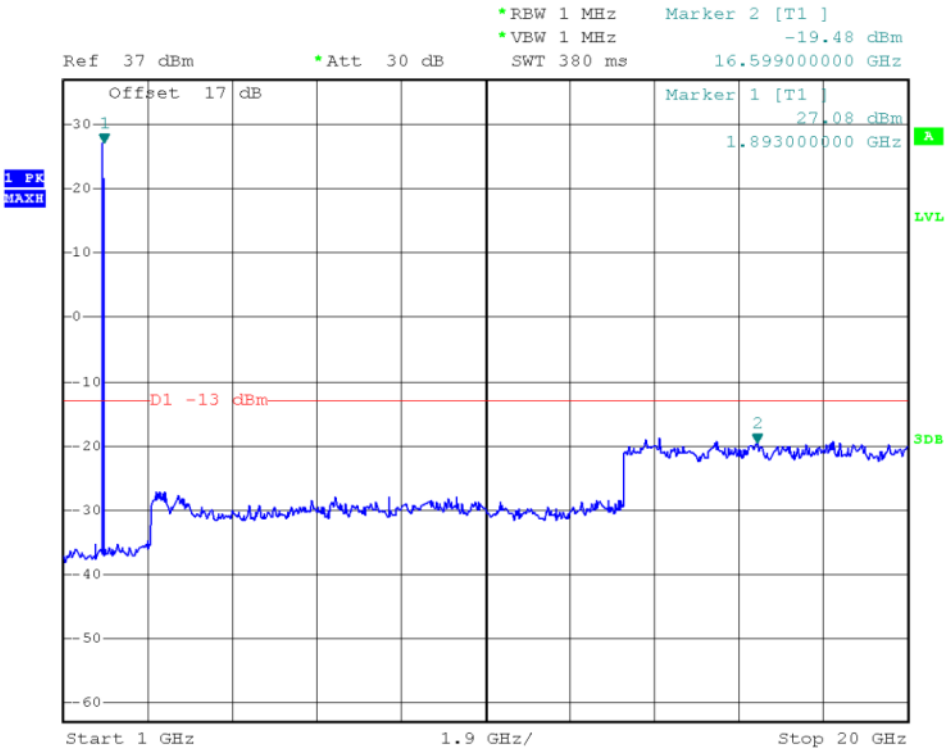

(Plot D2: EDGE 1900MHz Channel = 661, 30MHz to 1GHz)



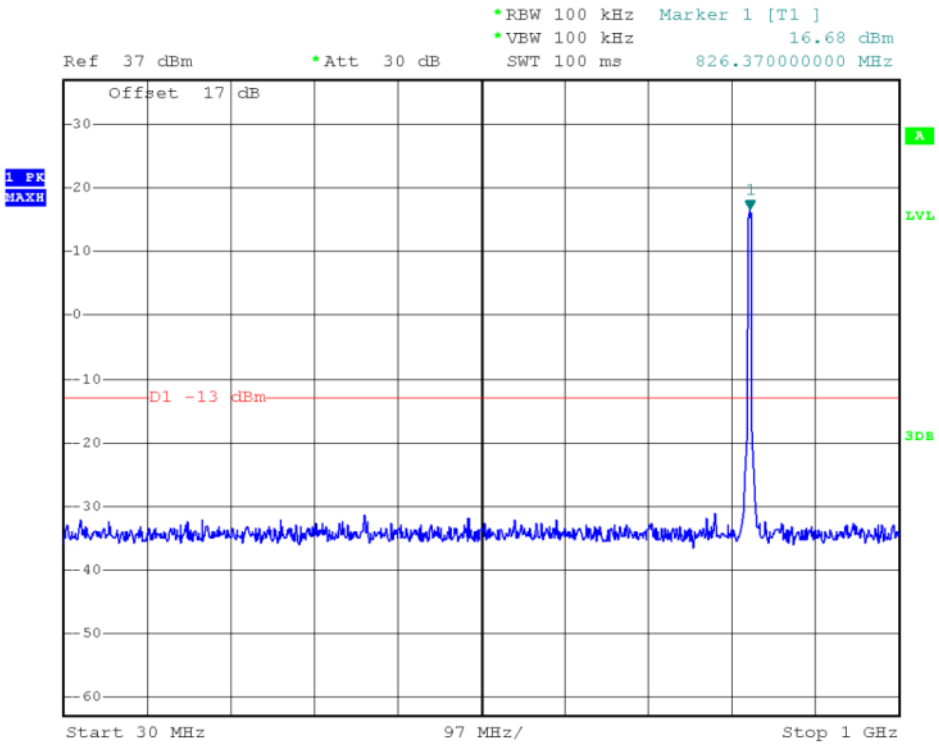

(Plot D2.1: EDGE 1900MHz Channel = 661, 1GHz to 20GHz)



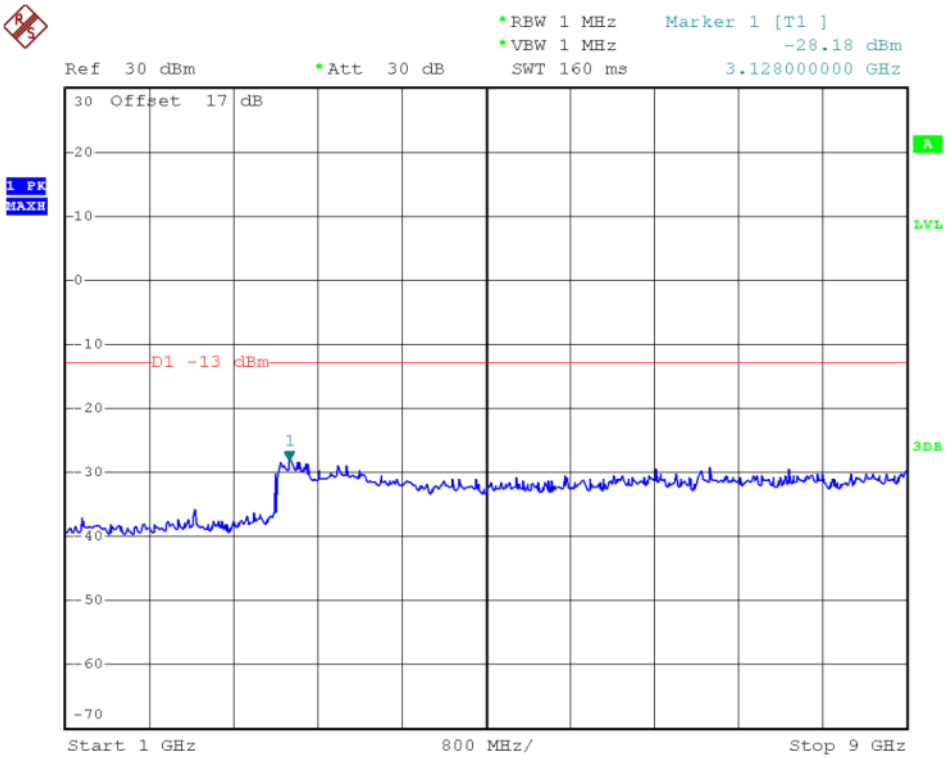

(Plot D3: EDGE 1900MHz Channel = 810, 30MHz to 1GHz)



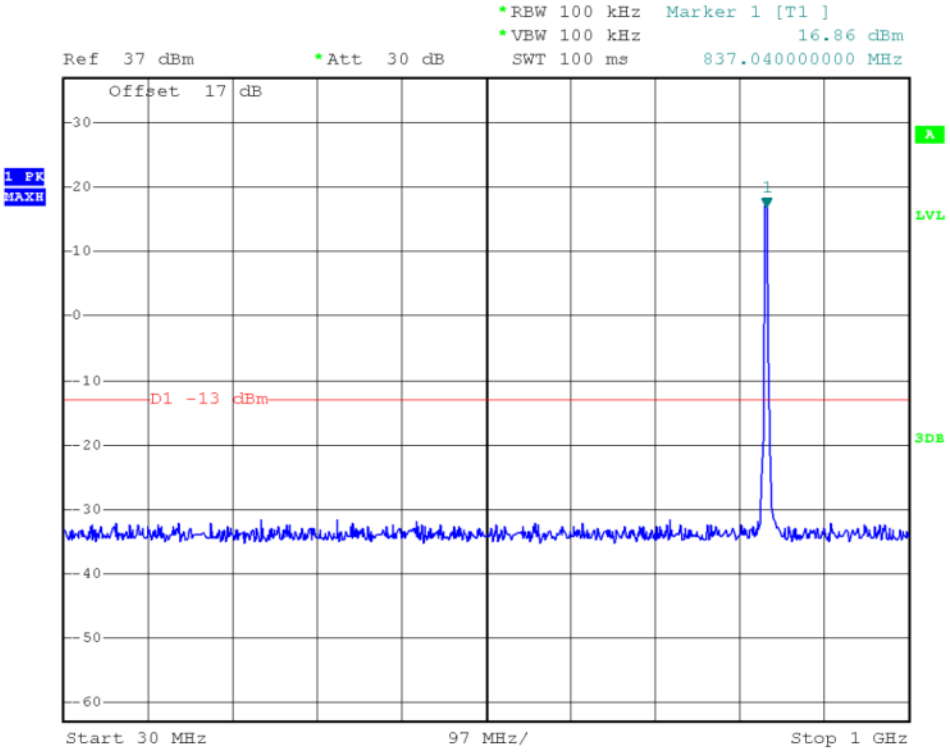

(Plot D3.1: EDGE 1900MHz Channel = 810, 1GHz to 20GHz)



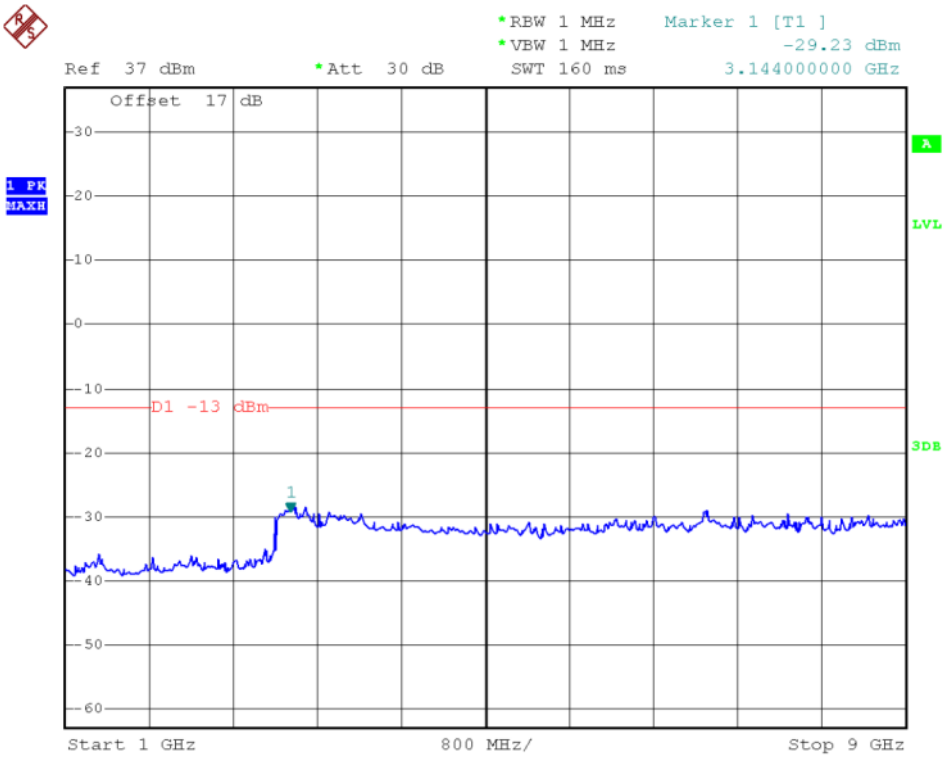

(Plot E1: WCDMA850MHz Channel = 4132, 30MHz to 1GHz)



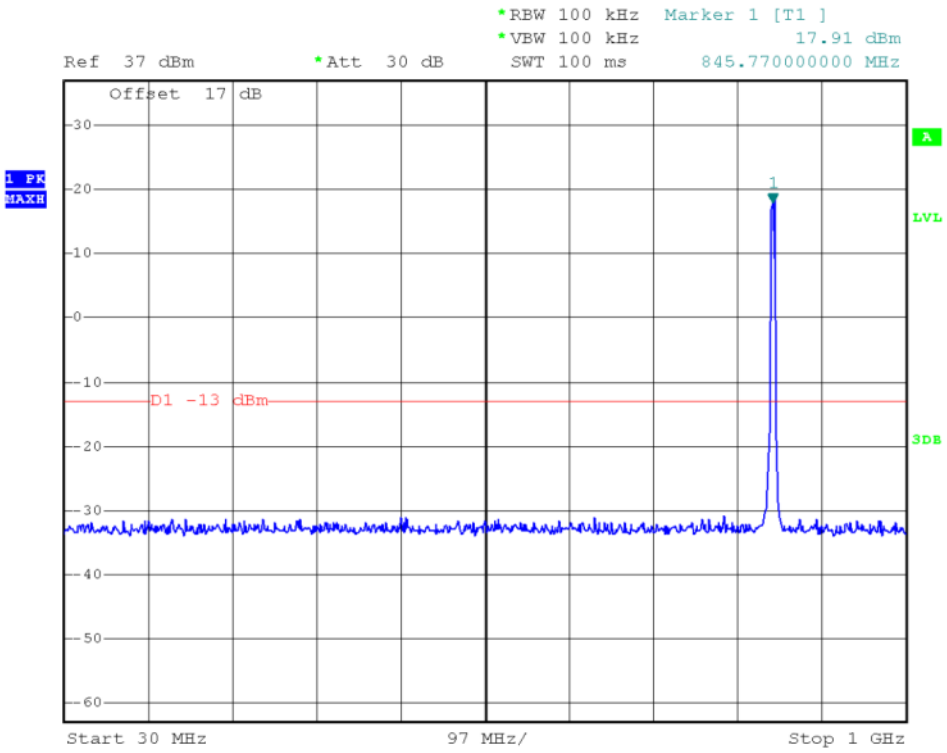

(Plot E1.1: WCDMA850MHz Channel = 4132, 1GHz to 9GHz)



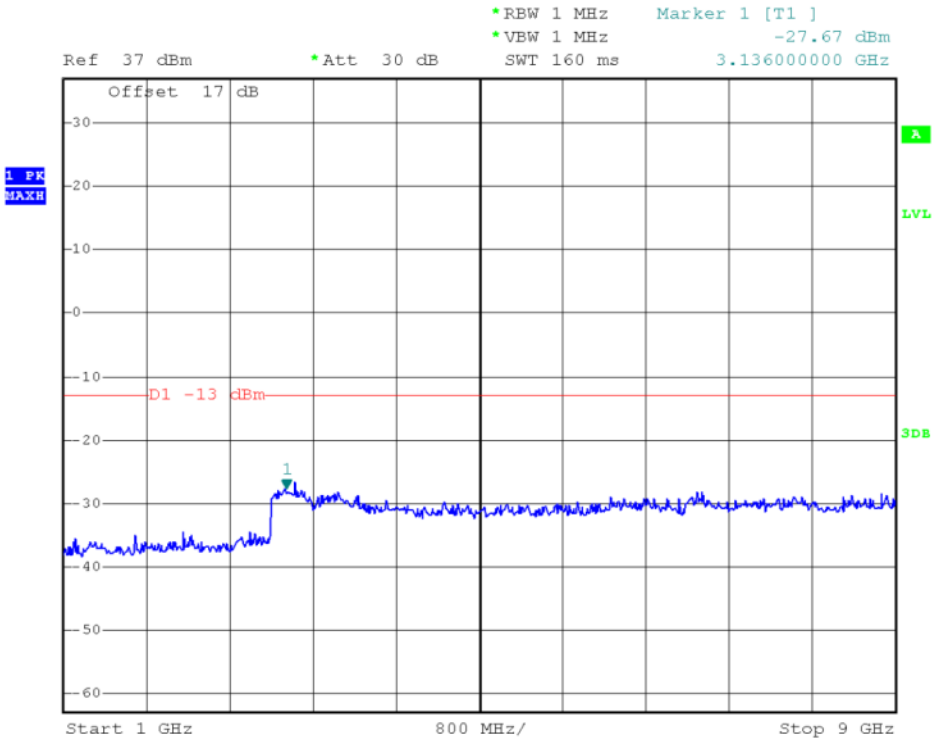

(Plot E2: WCDMA850MHz Channel = 4183, 30MHz to 1GHz)



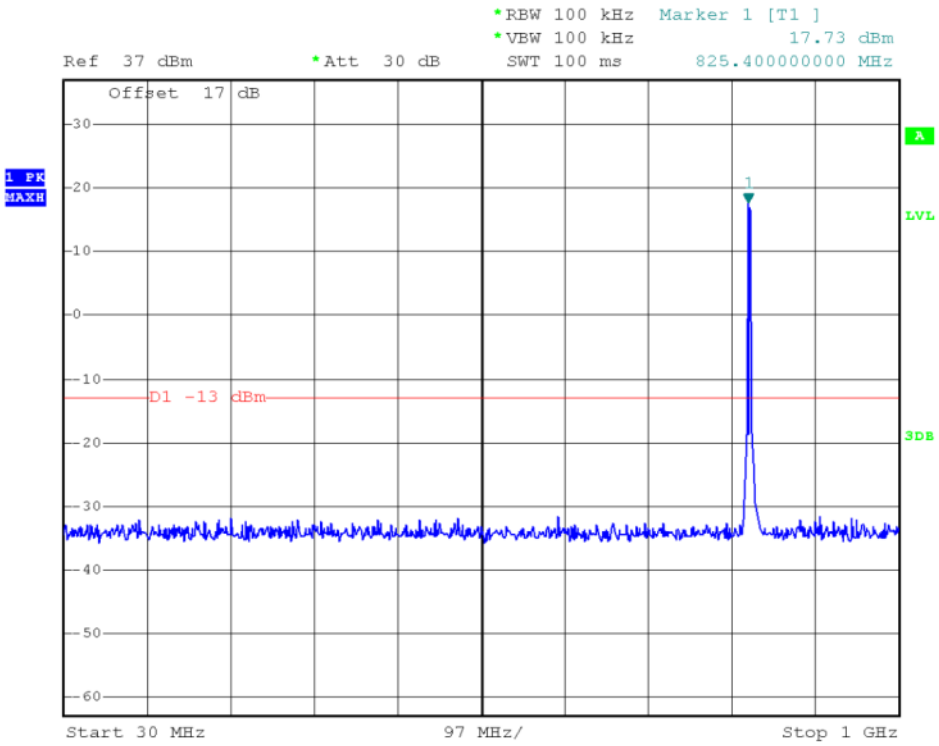

(Plot E2.1: WCDMA850MHz Channel = 4183, 1GHz to 9GHz)



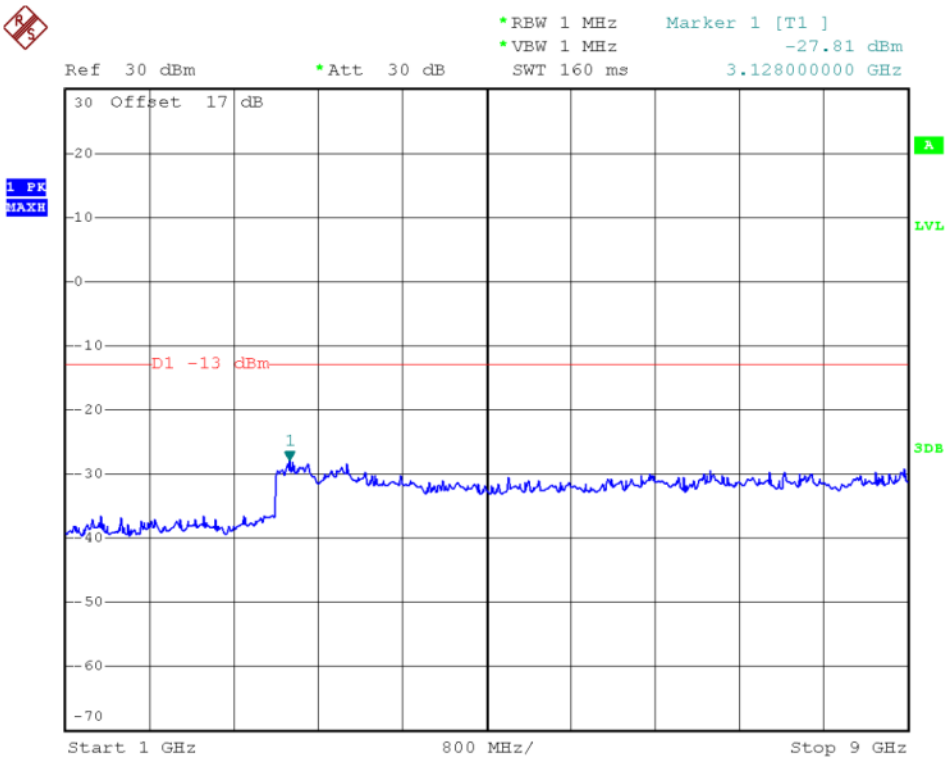

(Plot E3: WCDMA850MHz Channel = 4233, 30MHz to 1GHz)



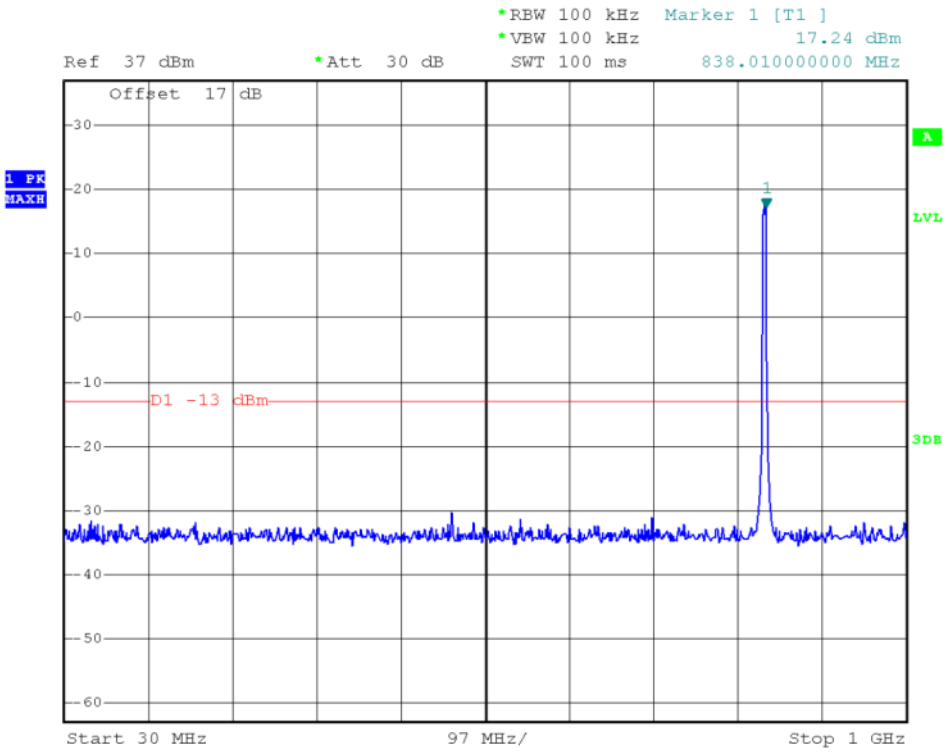

(Plot E3.1: WCDMA850MHz Channel = 4233, 1GHz to 9GHz)



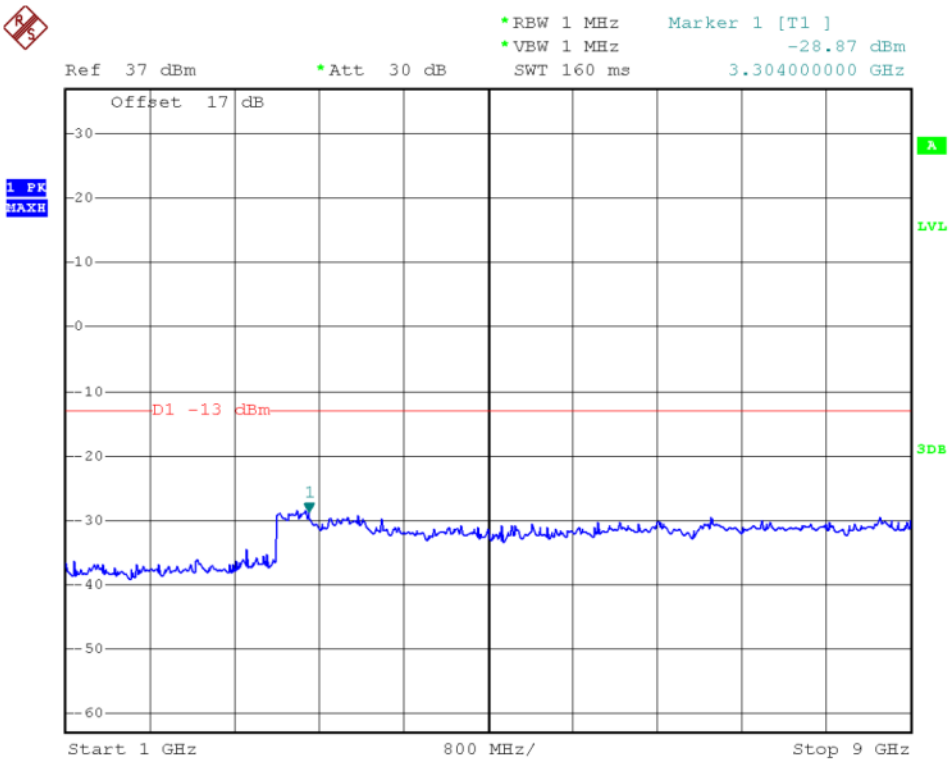

(Plot F1: HSDPA 850MHz Channel = 4132, 30MHz to 1GHz)



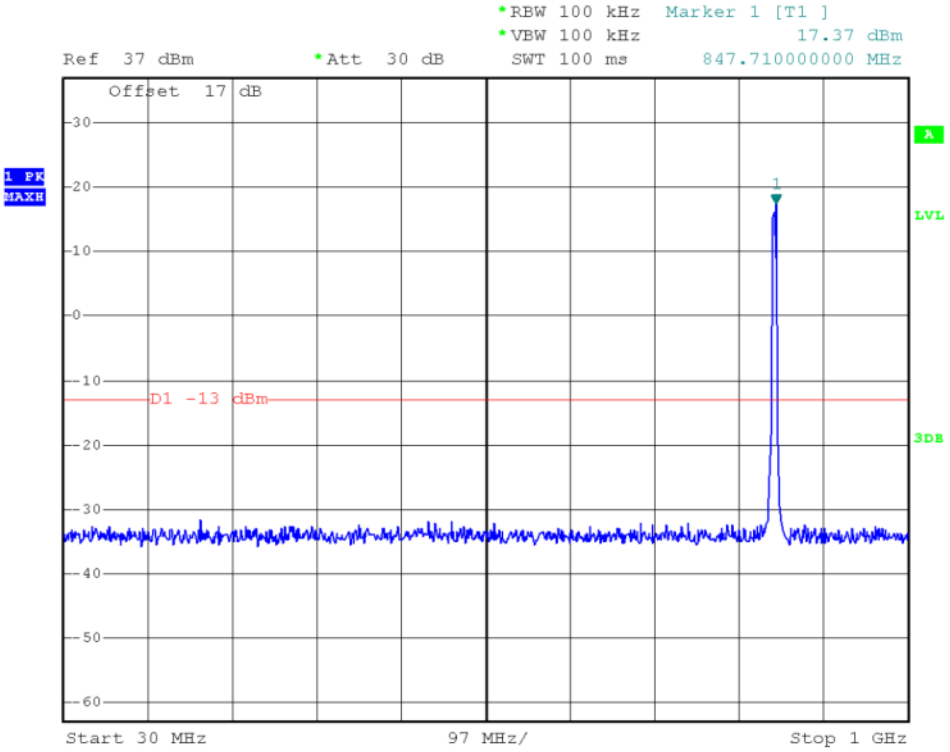

(Plot F1.1: HSDPA 850MHz Channel = 4132, 1GHz to 9GHz)



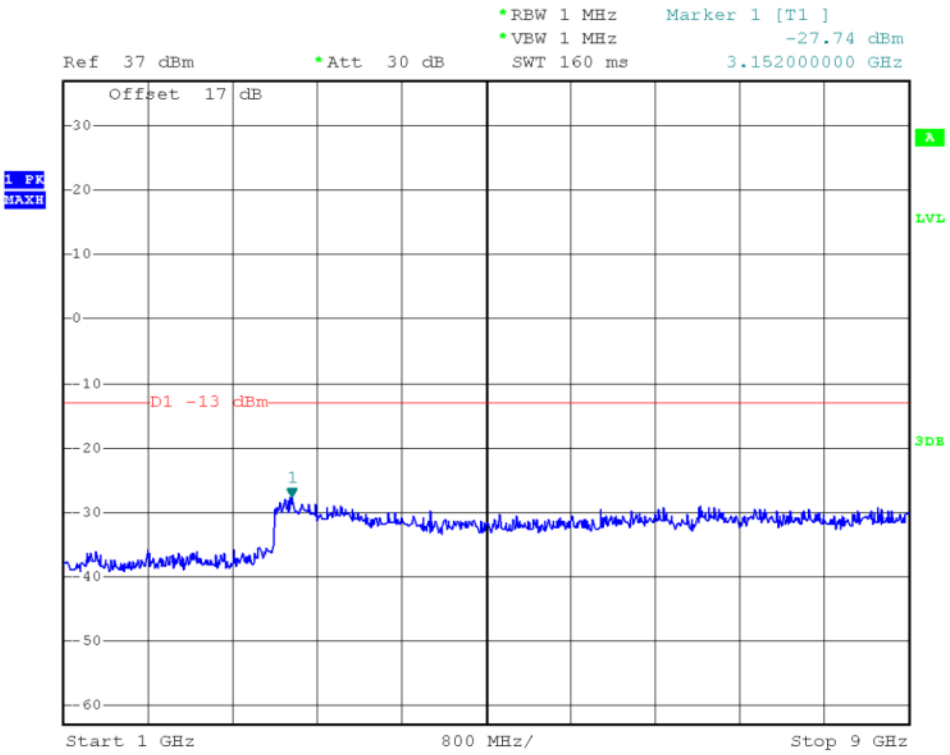

(Plot F2: HSDPA 850MHz Channel = 4183, 30MHz to 1GHz)




(Plot F2.1: HSDPA 850MHz Channel = 4183, 1GHz to 9GHz)




(Plot F3: HSDPA850MHz Channel = 4233, 30MHz to 1GHz)




(Plot F3.1: HSDPA850MHz Channel = 4233, 1GHz to 9GHz)

## 2.6 Band Edge

### 2.6.1 Requirement

According to FCC section 22.917(b) and FCC section 24.238(b), in the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth (26dB emission bandwidth) of the fundamental emission of the transmitter may be employed.

### 2.6.2 Test Description

See section 2.1.2 of this report.

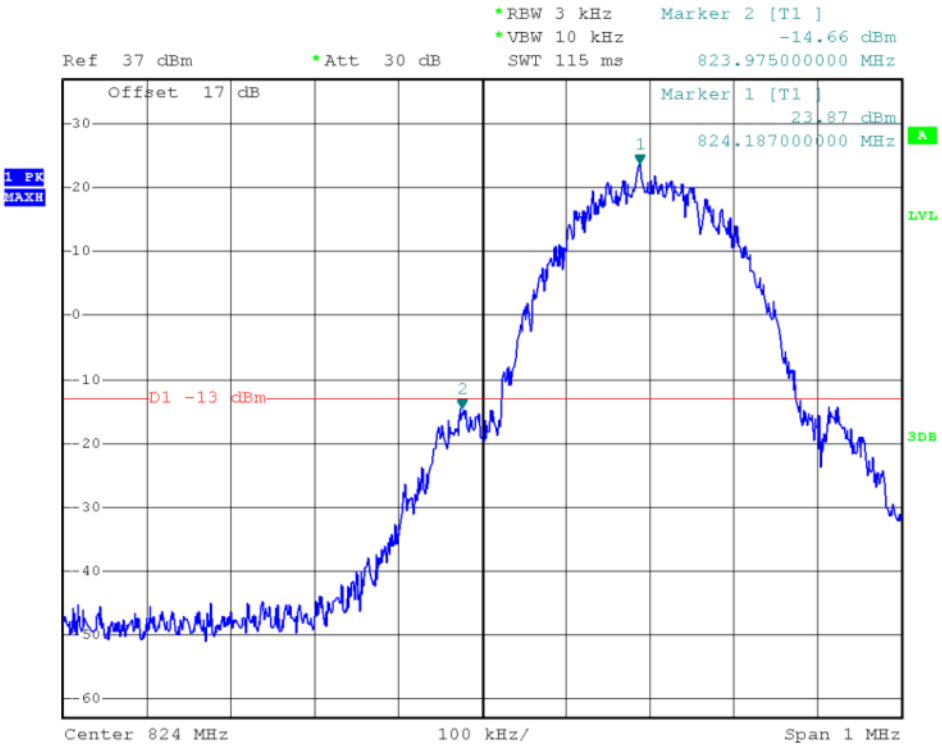
### 2.6.3 Test Result

The lowest and highest channels are tested to verify the band edge emissions.

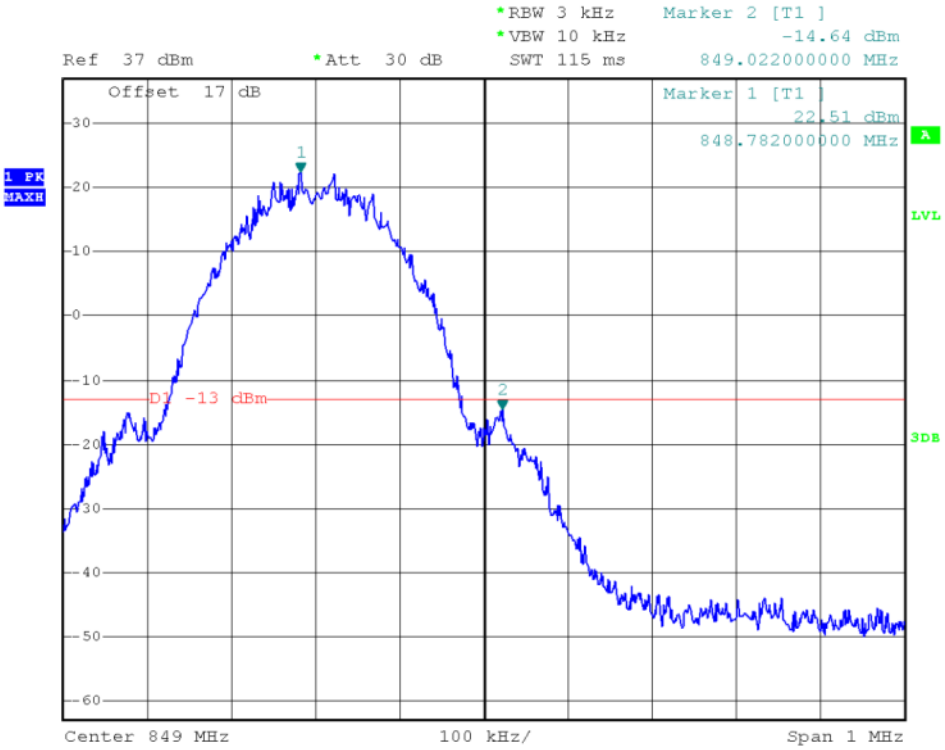
1. Test Verdict:

| Band | Channel | Frequency (MHz) | Measured Max. Band Edge Emission (dBm) | Refer to Plot | Limit (dBm) | Verdict |
|---|---|---|---|---|---|---|
| GSM 850MHz | 128 | 824.2 | -14.66 | Plat A | -13 | PASS |
| | 251 | 848.8 | -14.64 | Plot B | | PASS |
| GSM 1900MHz | 512 | 1850.2 | -14.16 | Plat C | -13 | PASS |
| | 810 | 1909.8 | -15.26 | Plot D | | PASS |
| EDGE 850MHz | 128 | 824.2 | -15.56 | Plat E | -13 | PASS |
| | 251 | 848.8 | -15.46 | Plot F | | PASS |
| EDGE 1900MHz | 512 | 1850.2 | -18.10 | Plat G | -13 | PASS |
| | 810 | 1909.8 | -16.77 | Plot H | | PASS |
| WCDMA 850MHz | 4132 | 826.4 | -15.25 | Plat I | -13 | PASS |
| | 4233 | 846.6 | -16.30 | Plot J | | PASS |
| HSDPA 850MHz | 4132 | 826.4 | -15.53 | Plat K | -13 | PASS |
| | 4233 | 846.6 | -17.57 | Plot L | | PASS |

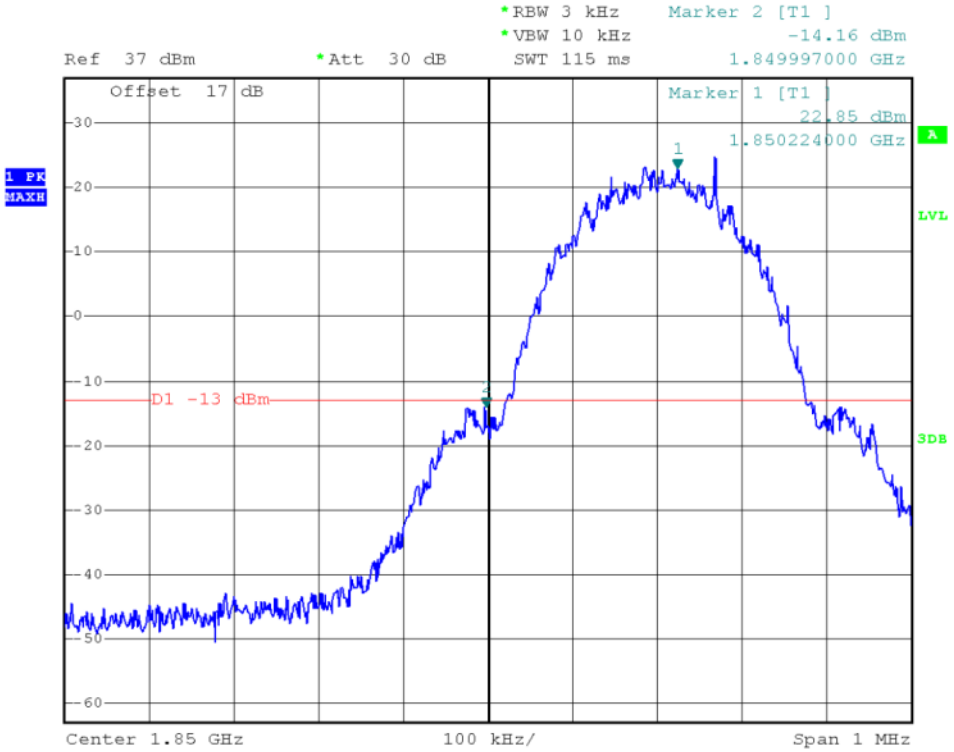
2. Test Plots:



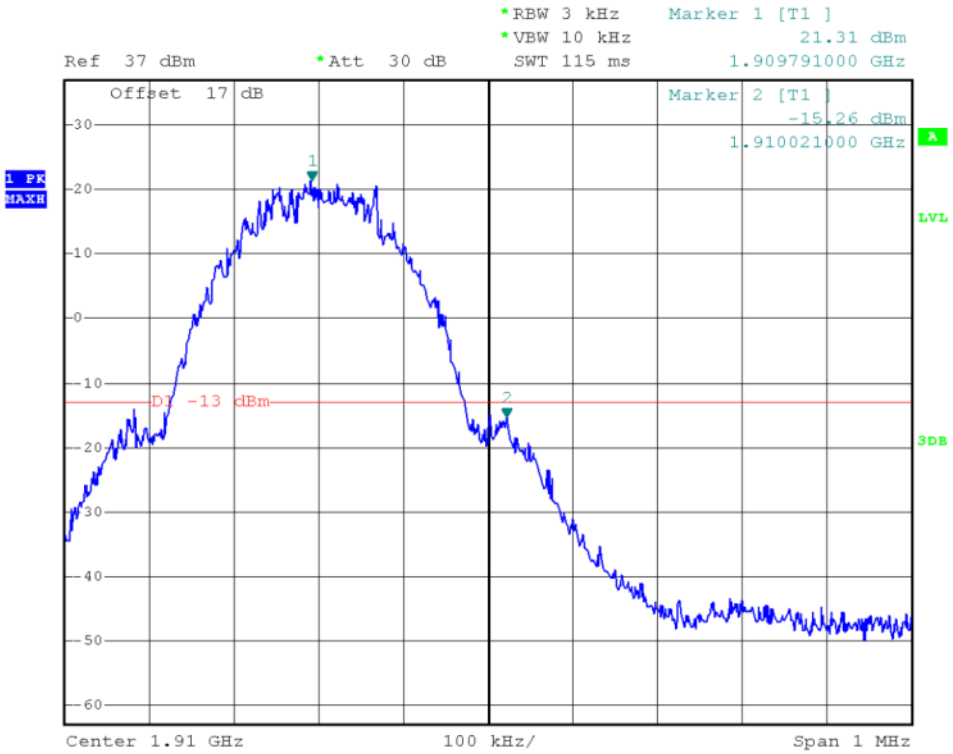

(Plot A: GSM 850 Channel = 128)



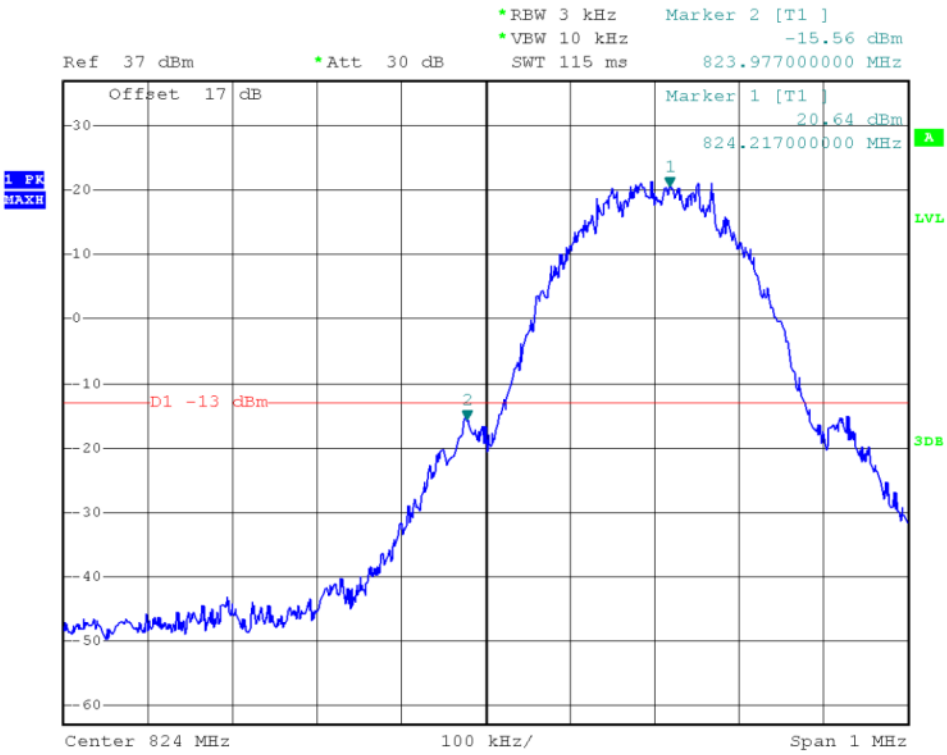

(Plot B: GSM 850 Channel = 251)



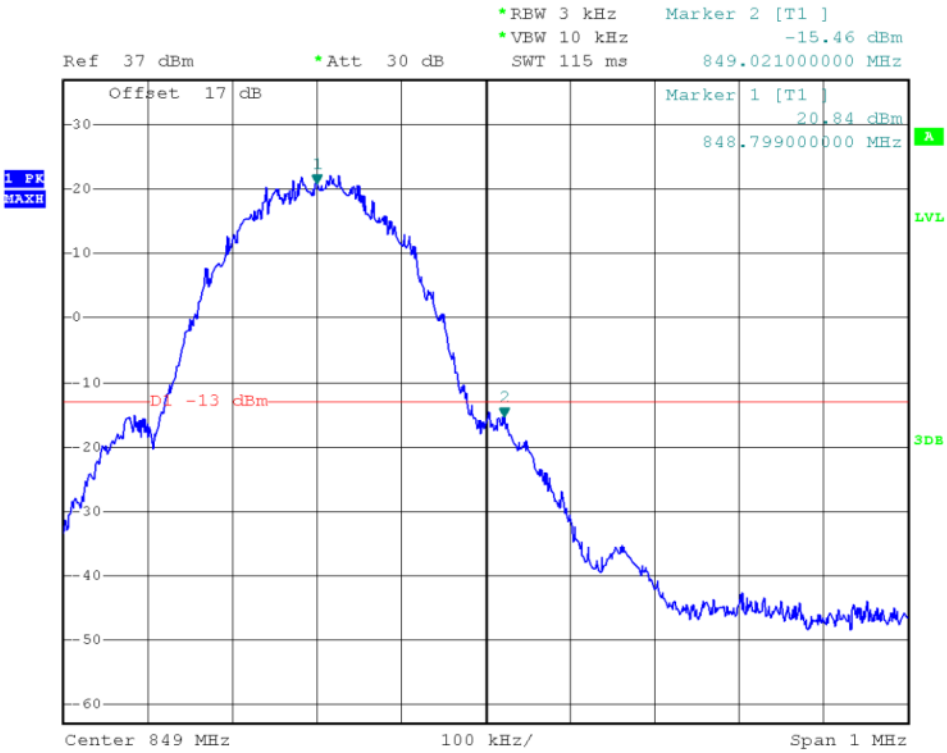

(Plot C: GSM 1900 Channel = 512)



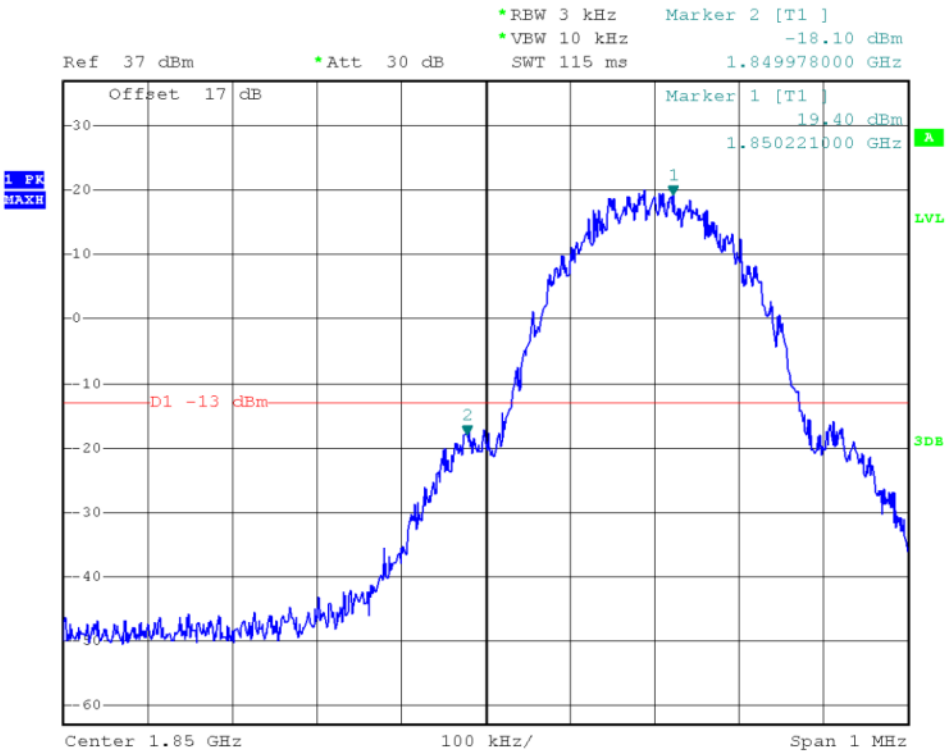

(Plot D: GSM 1900 Channel = 810)



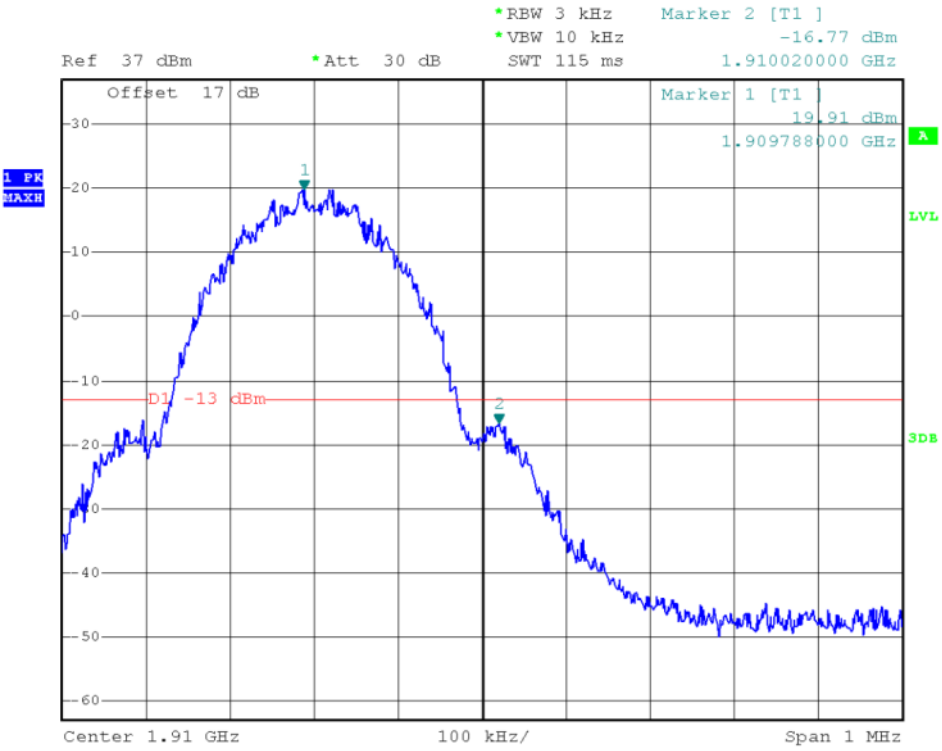

(Plot E: EDGE 850 Channel = 128)



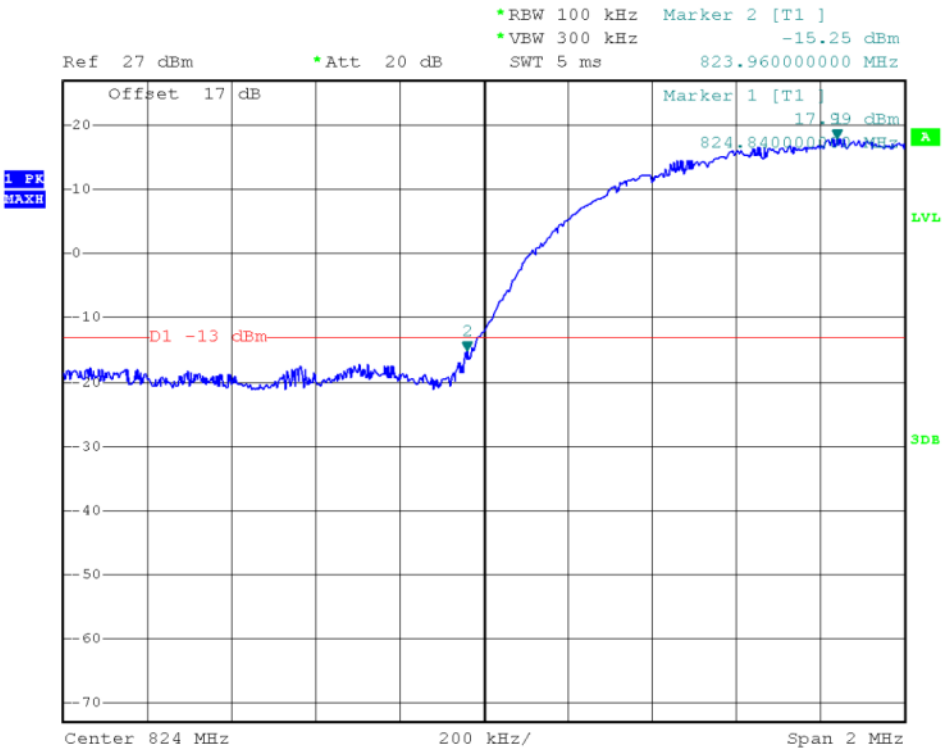

(Plot F: EDGE 850 Channel = 251)



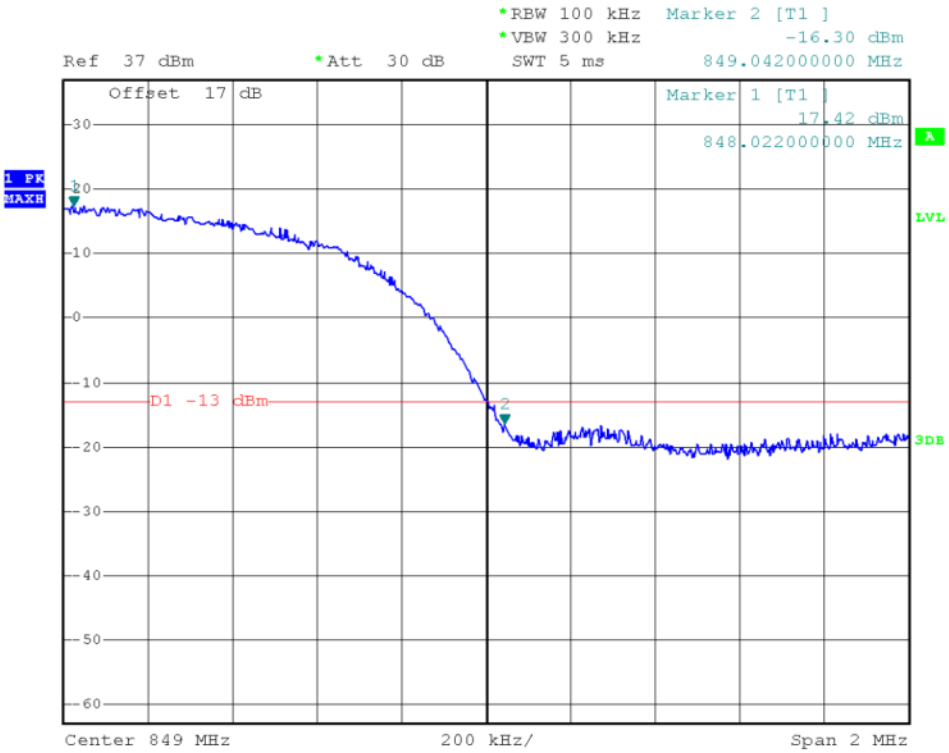

(Plot G: EDGE 1900 Channel = 512)



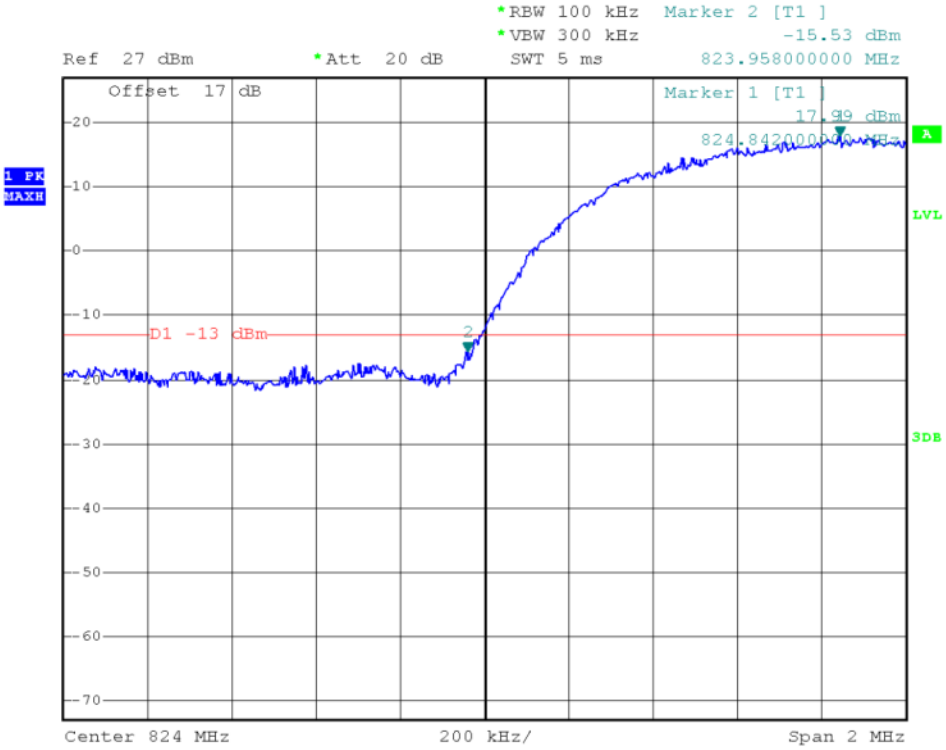

(Plot H: EDGE 1900 Channel = 810)



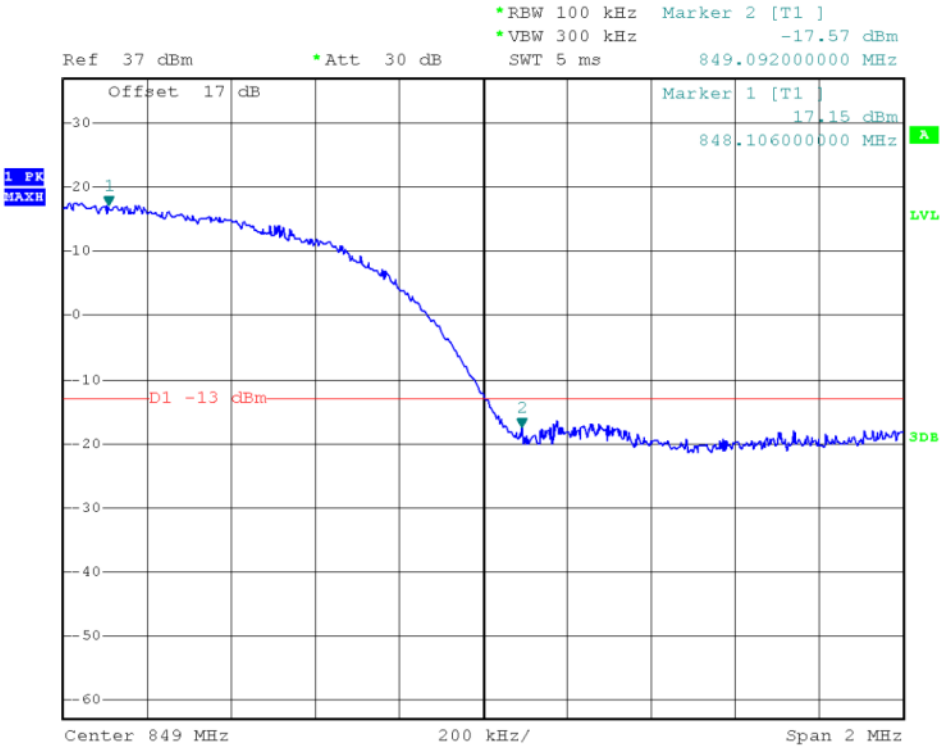

(Plot I: WCDMA 850 Channel = 4132)




(Plot J: WCDMA 850 Channel = 4233)




(Plot K: HSDPA 850 Channel = 4132)




(Plot L: HSDPA850 Channel = 4233)

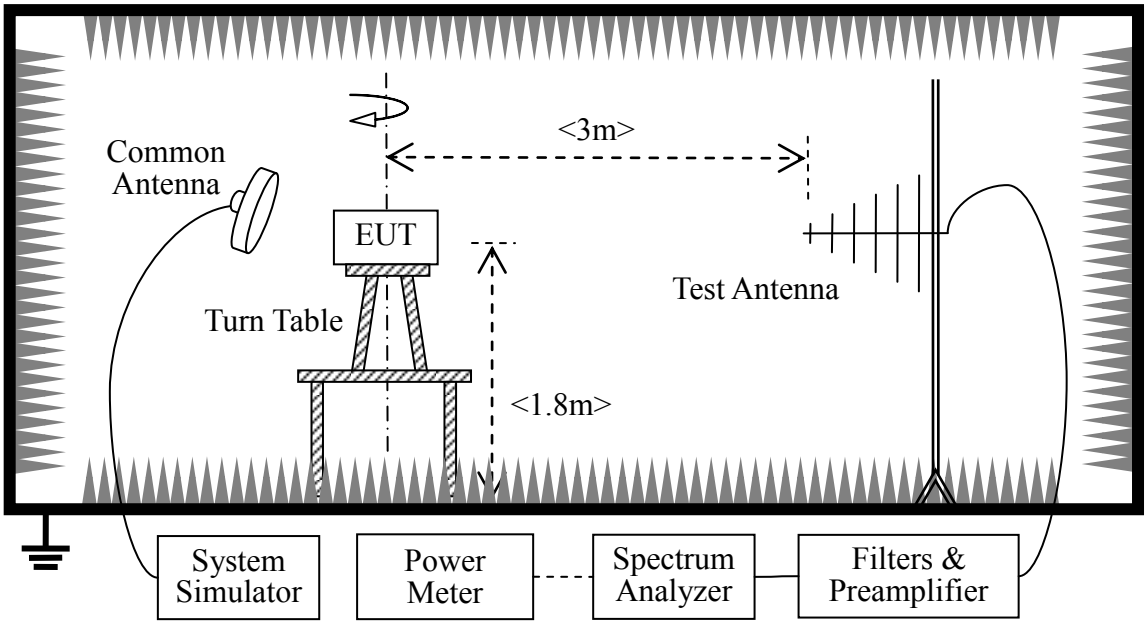
## 2.7 Transmitter Radiated Power (EIRP/ERP)

### 2.7.1 Requirement

According to FCC section 22.913, the Effective Radiated Power (ERP) of mobile transmitters and auxiliary test transmitters must not exceed 7Watts, and FCC section 24.232, the broadband PCS mobile station is limited to 2 Watts e.i.r.p. peak power.

### 2.7.2 Test Description

1. Test Setup:




The EUT, which is powered by the Battery charged with the AC Adapter, is located in a 3m Full-Anechoic Chamber; the cable loss, air loss and so on of the site as factors are pre-calibrated using the "Substitution" method, and calculated to correct the reading.

A call is established between the EUT and the SS via a Common Antenna. The EUT is commanded by the SS to operate at the maximum and minimum output power (i.e. GSM850MHz band Power Control Level (PCL) = 5/19 and Power Class = 4, GSM1900MHz band Power Control Level (PCL) = 0/15 and Power Class = 1), and only the test result of the maximum output power was recorded.

- GSM Maximum RF output power: GSM 850 32.79dBm, GSM 1900 30.45dBm，WCDMA 850 23.56dBm, Please refer to section 2.1.3 of this report.

- Step size (dB): 3dB
- Minimum RF power: GSM 850 3.1dBm, GSM 1900 0.3dBm,WCDMA 850 0.39dBm The Test Antenna is a Bi-Log one (used for 30MHz to 1GHz) or a Horn one (used for above 3GHz), and it's

located at the same height as the EUT. The Filters consists of Notch Filters and High Pass Filter.

2. Equipments List:

| Description | Manufacturer | Model | Serial No. | Cal.Due Date |
|---|---|---|---|---|
| Spectrum Analyzer | Agilent | E7405A | US44210471 | 2014.06.10 |
| Power Meter | Agilent | E4418B | GB43318055 | 2014.06.10 |
| Full-Anechoic Chamber | Albatross～Projects | 12.8m*6.8m*6.4m | A0412372 | 2015.01.14 |
| Double ridge horn antenna | R&S | HF906 | A0304225 | 2014.06.07 |
| Ultra-wideband antenna | R&S | HL562 | A0304224 | 2014.06.05 |
| Loop antenna | R&S | HFH2-Z2 | A0304226 | 2014.06.05 |

### 2.7.3 Test Result

The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. The lowest, middle and highest channels are tested.

The substitution corrections are obtained as described below:

$A_{SUBST} = P_{SUBST_TX} - P_{SUBST_RX} - L_{SUBST_CABLES} + G_{SUBST_TX_ANT}$

$A_{TOT} = L_{CABLES} + A_{SUBST}$

Where $A_{SUBST}$ is the final substitution correction including receive antenna gain.

$P_{SUBST_TX}$ is signal generator level,

$P_{SUBST_RX}$ is receiver level,

$L_{SUBST_CABLES}$ is cable losses including TX cable,

$G_{SUBST_TX_ANT}$ is substitution antenna gain.

$A_{TOT}$ is total correction factor including cable loss and substitution correction

During the test, the data of $A_{TOT}$ was added in the Test Spectrum Analyze, so Spectrum Analyze reading is the final values which contain the data of $A_{TOT}$.

1. GSM Model Test Verdict:

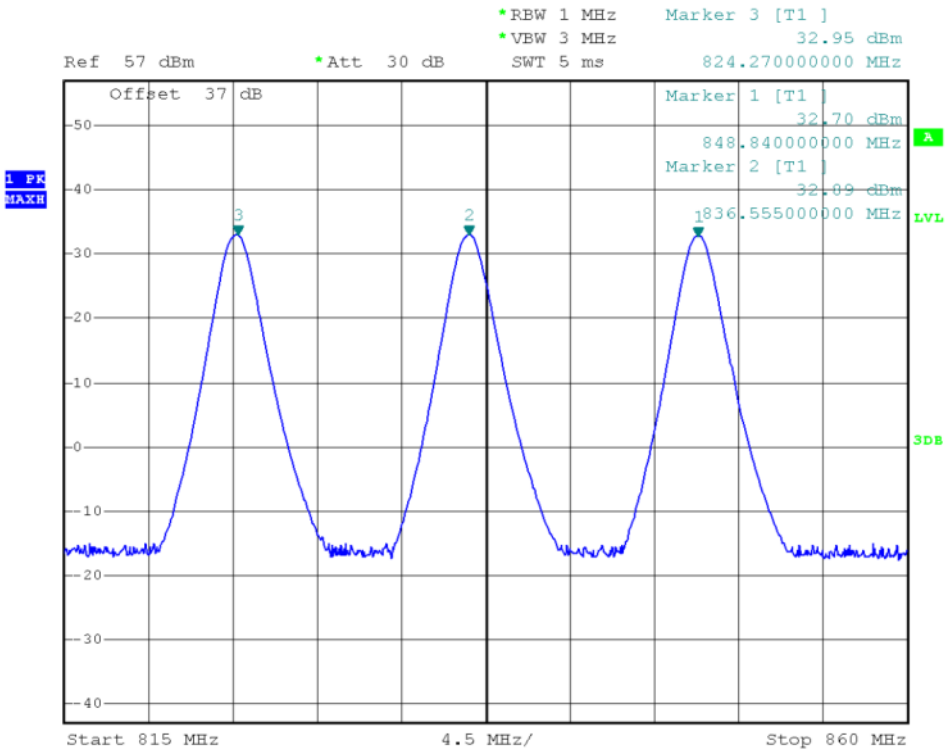
| Band | Channel | Frequency (MHz) | polarizations | PCL | Measured ERP | | | Limit | | Verdict |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | dBm | W | Refer to Plot | dBm | W | |
| GSM 850MHz | 128 | 824.20 | vertical | 5 | 32.95 | 1.972 | Plot A | 38.5 | 7 | PASS |
| | 190 | 836.60 | vertical | 5 | 32.09 | 1.618 | | | | PASS |
| | 251 | 848.80 | vertical | 5 | 32.70 | 1.862 | | | | PASS |
| GPRS 850MHz | 128 | 824.20 | vertical | 5 | 29.03 | 0.800 | Plot B Note 1 | 38.5 | 7 | PASS |
| | 190 | 836.60 | vertical | 5 | 29.03 | 0.800 | | | | PASS |
| | 251 | 848.80 | vertical | 5 | 28.83 | 0.764 | | | | PASS |
| EDGE 850MHz | 128 | 824.20 | vertical | 5 | 28.91 | 0.778 | Plot C Note 1 | 38.5 | 7 | PASS |
| | 190 | 836.60 | vertical | 5 | 28.76 | 0.752 | | | | PASS |
| | 251 | 848.80 | vertical | 5 | 28.56 | 0.718 | | | | PASS |
| Note 1: | For the GPRS and EDGE model, all the slots were tested and just the worst data was record in this report. | | | | | | | | | |

| Band | Channel | Frequency (MHz) | polarizations | PCL | Measured EIRP | | | Limit | | Verdict |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | dBm | W | Refer to Plot | dBm | W | |
| GSM 1900MHz | 512 | 1850.2 | vertical | 0 | 30.06 | 1.014 | Plot D | 33 | 2 | PASS |
| | 661 | 1880.0 | vertical | 0 | 30.21 | 1.050 | | | | PASS |
| | 810 | 1909.8 | vertical | 0 | 29.93 | 0.984 | | | | PASS |
| GPRS 1900MHz | 512 | 1850.2 | vertical | 0 | 28.97 | 0.789 | Plot E Note 1 | 33 | 2 | PASS |
| | 661 | 1880.0 | vertical | 0 | 28.66 | 0.735 | | | | PASS |
| | 810 | 1909.8 | vertical | 0 | 28.29 | 0.675 | | | | PASS |
| EDGE 1900MHz | 512 | 1850.2 | vertical | 0 | 27.76 | 0.597 | Plot F Note 1 | 33 | 2 | PASS |
| | 661 | 1880.0 | vertical | 0 | 27.2 | 0.525 | | | | PASS |
| | 810 | 1909.8 | vertical | 0 | 27.02 | 0.504 | | | | PASS |
| Note 1: | For the GPRS and EDGE model, all the slots were tested and just the worst data was record in this report. | | | | | | | | | |

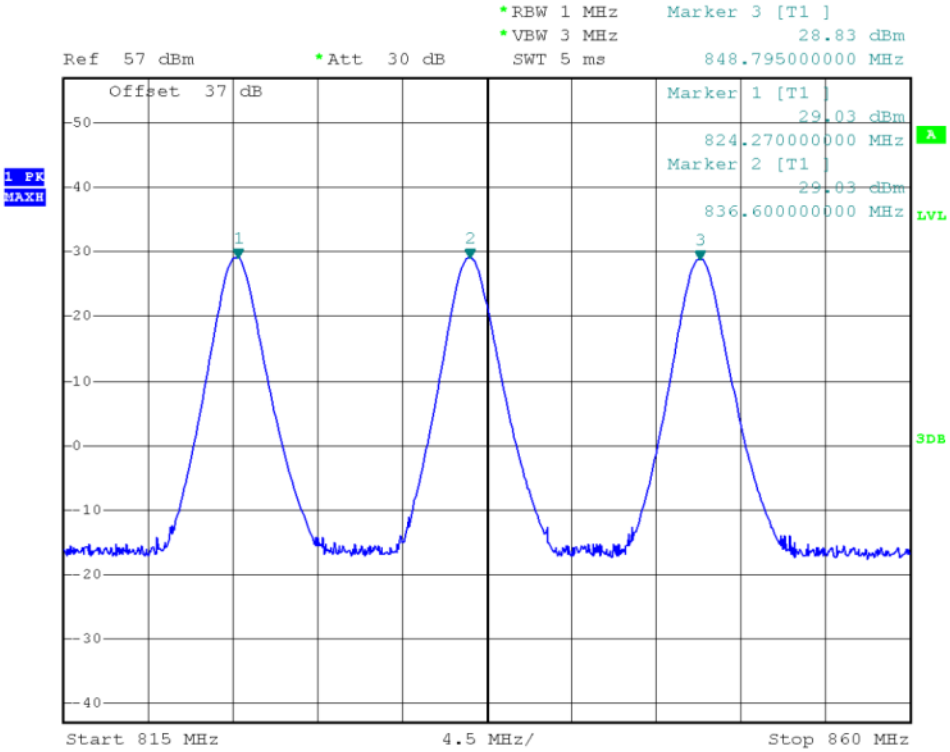
2. WCDMA Model Test Verdict:

| Band | Channel | Frequency (MHz) | polarizations | Measured ERP | | | Limit | | Verdict |
|---|---|---|---|---|---|---|---|---|---|
| | | | | dBm | W | Refer to Plot | dBm | W | |
| WCDMA 850MHz | 4132 | 826.4 | vertical | 23.27 | 0.212 | Plot E | 38.5 | 7 | PASS |
| | 4175 | 835 | vertical | 23.34 | 0.216 | | | | PASS |
| | 4233 | 846.6 | vertical | 23.94 | 0.248 | | | | PASS |
| HSDPA 850MHz | 4132 | 826.4 | vertical | 22.26 | 0.168 | Plot F | 38.5 | 7 | PASS |
| | 4175 | 835 | vertical | 22.78 | 0.190 | | | | PASS |
| | 4233 | 846.6 | vertical | 22.31 | 0.170 | | | | PASS |

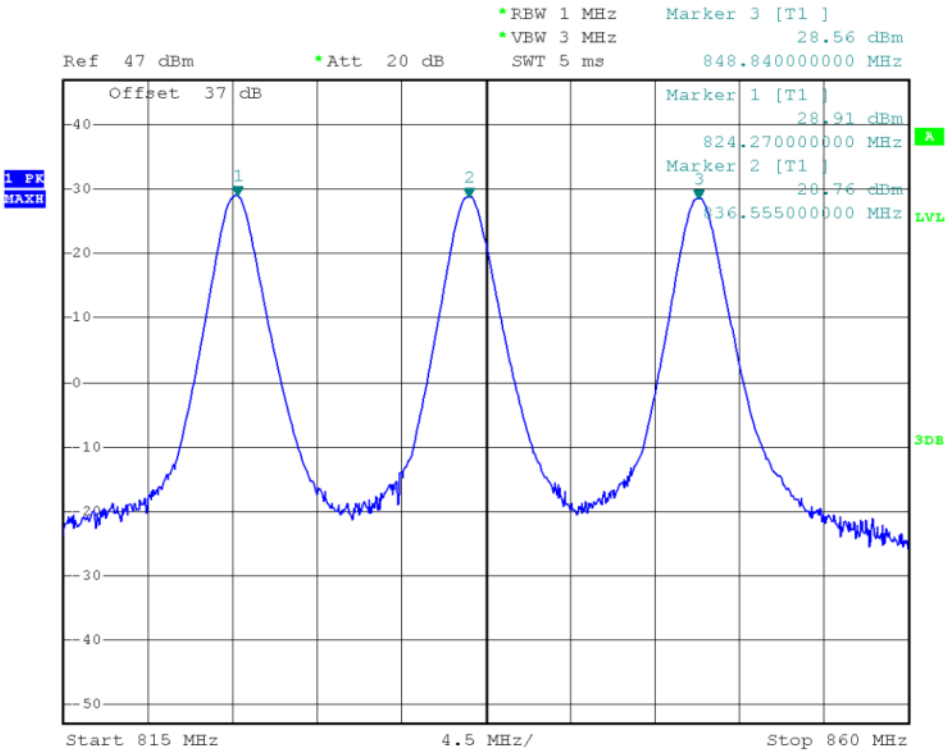
3. Test Plots:



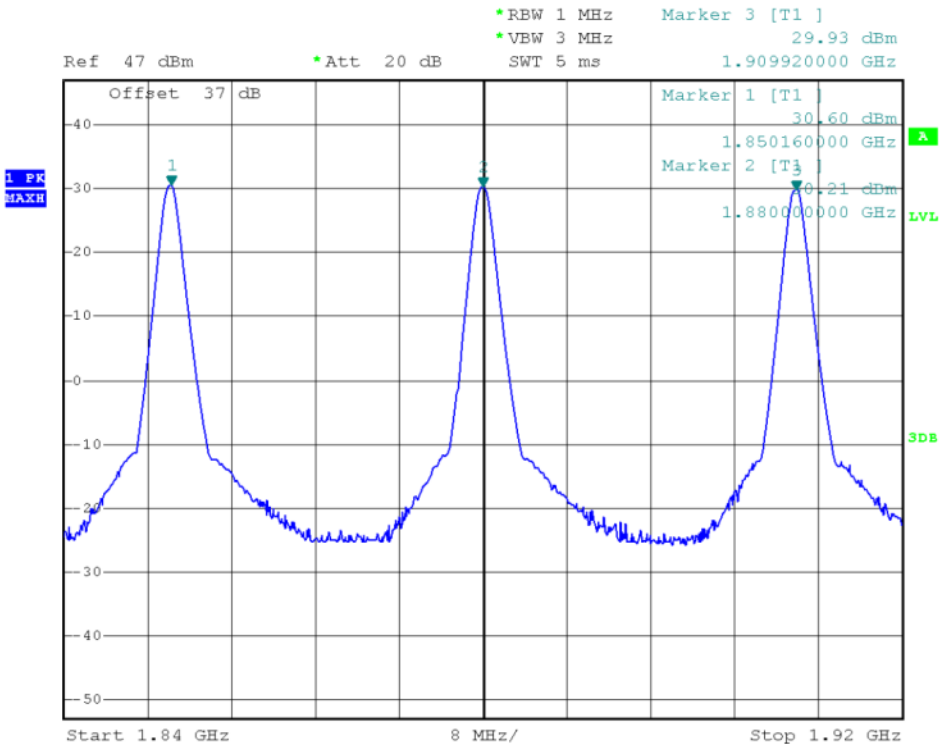

(Plot A: GSM 850MHz Channel = 128, 190, 251)



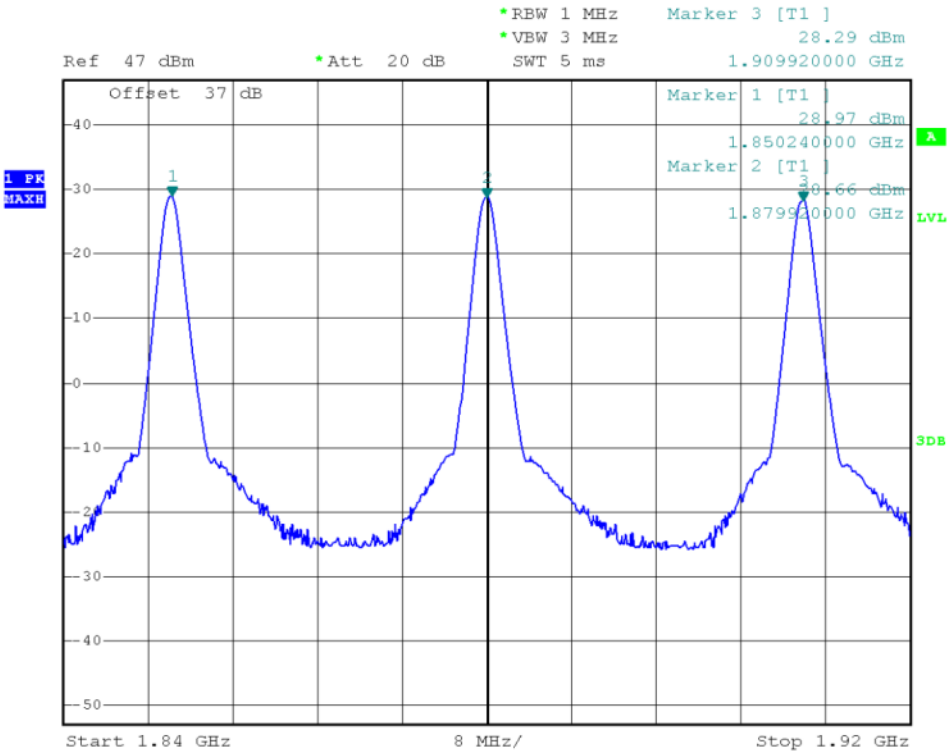

(Plot B: GPRS 850MHz Channel = 128, 190, 251)



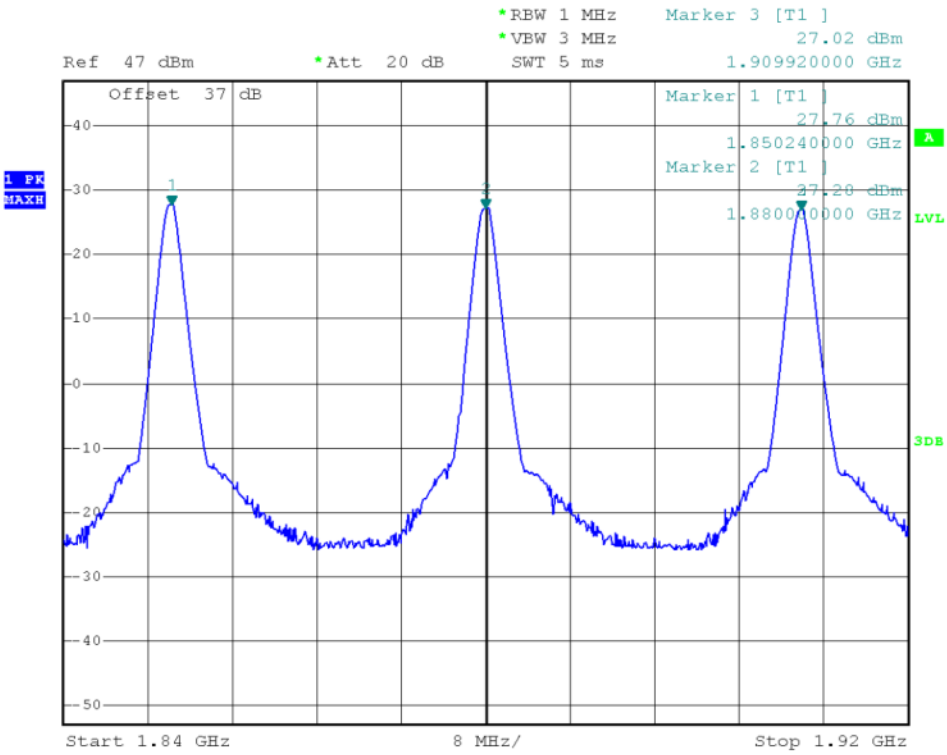

(Plot C: EDGE 850MHz Channel = 128, 190, 251)



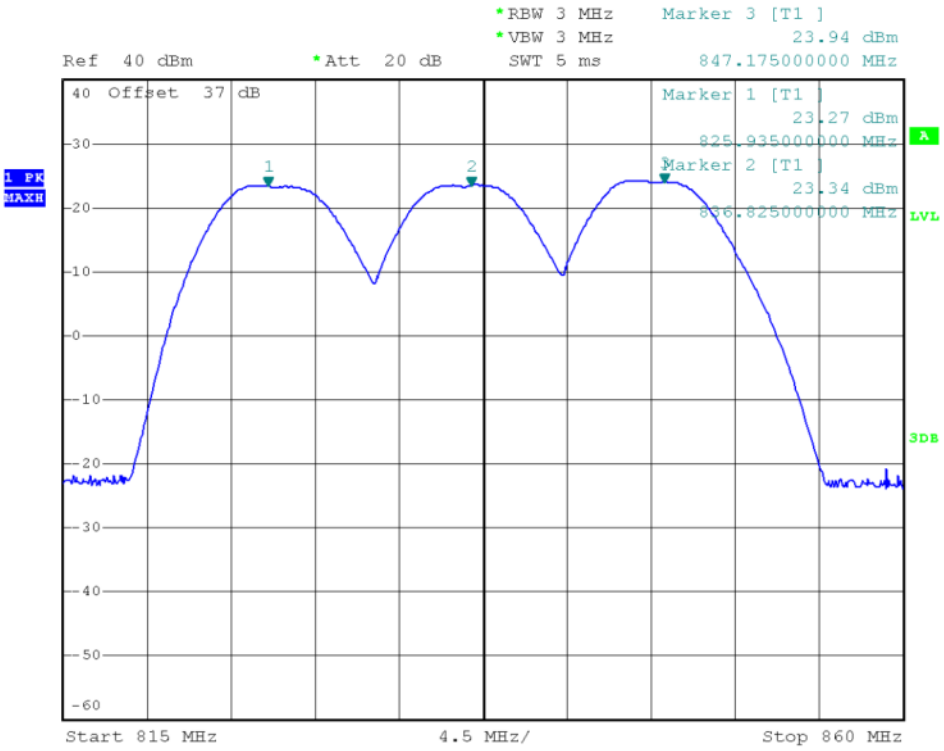

(Plot C: GSM1900MHz Channel = 512, 661, 810)



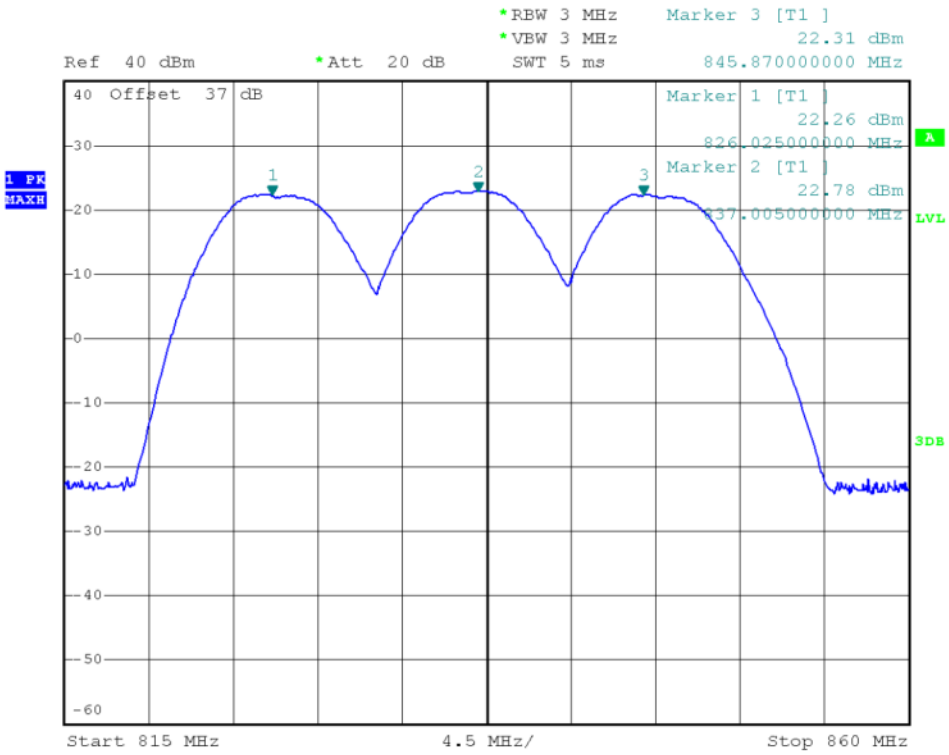

(Plot D: GPRS 1900MHz Channel = 512, 661, 810)




(Plot D: EDGE 1900MHz Channel = 512, 661, 810)




(Plot E: WCDMA 850 MHz Channel = 4132, 4175, 4233)




(Plot F: HSDPA 850 MHz Channel = 4132, 4175, 4233)

## 2.8 Radiated Out of Band Emissions

### 2.8.1 Requirement

According to FCC section 22.917(a) and section 24.238(a), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43+10*log(P)dB. This calculated to be -13dBm.

### 2.8.2 Test Description

See section 2.7.2 of this report.

Equipment List：

| Description | Manufacturer | Model | Serial No. | Cal.Due Date |
|---|---|---|---|---|
| Spectrum Analyzer | Agilent | E7405A | US44210471 | 2014.06.10 |
| Power Meter | Agilent | E4418B | GB43318055 | 2014.06.10 |
| Full-Anechoic Chamber | Albatross～Projects | 12.8m*6.8m*6.4m | A0412372 | 2015.01.14 |
| Double ridge horn antenna | R&S | HF906 | A0304225 | 2014.06.07 |
| Ultra-wideband antenna | R&S | HL562 | A0304224 | 2014.06.05 |
| Loop antenna | R&S | HFH2-Z2 | A0304226 | 2014.06.05 |

Note: when doing measurements above 1GHz, the EUT has been within the 3dB cone width of the horn antenna during horizontal antenna.

### 2.8.3 Test Result

The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. The lowest, middle and highest channels are tested to verify the out of band emissions.

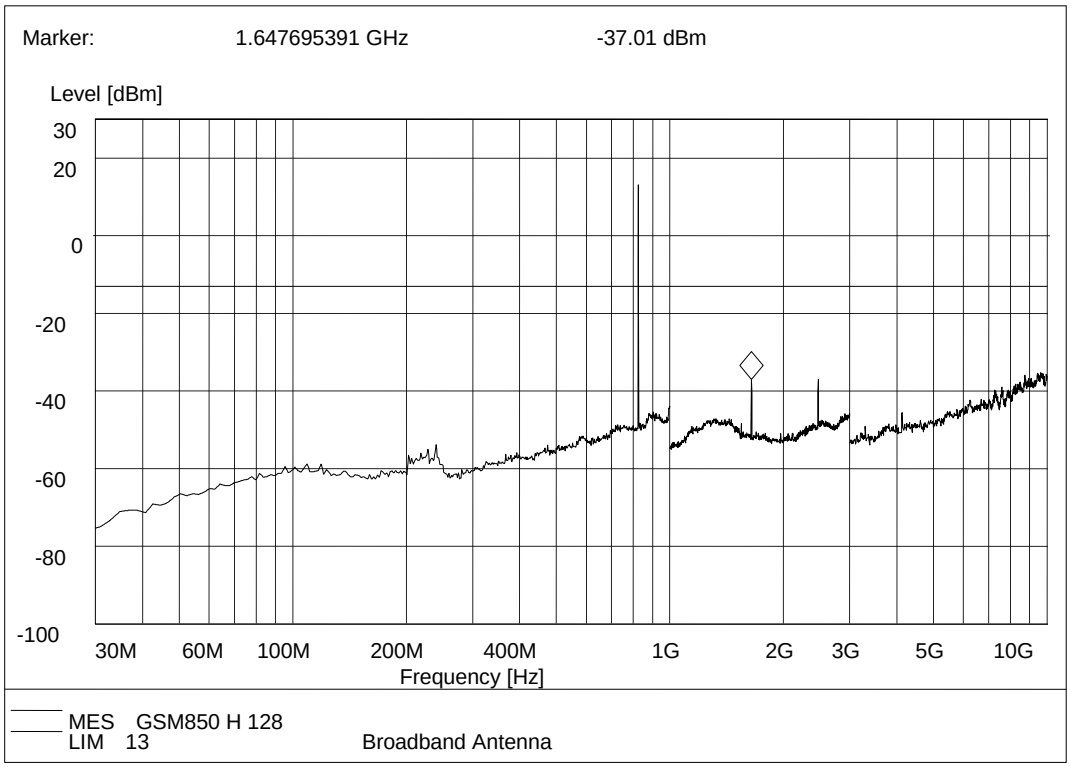
1. Test Verdict:

| Band | Channel | Frequency (MHz) | Measured Max. Spurious Emission (dBm) | | Refer to Plot | Limit (dBm) | Verdict |
|---|---|---|---|---|---|---|---|
| | | | Test Antenna Horizontal | Test Antenna Vertical | | | |
| GSM 850MHz | 128 | 824.2 | < -25 | < -25 | Plot A.1/A.2 | -13 | PASS |
| | 190 | 836.6 | < -25 | < -25 | Plot A.3/A.4 | | PASS |
| | 251 | 848.8 | < -25 | < -25 | Plot A.5/A.6 | | PASS |
| GSM 1900MHz | 512 | 1850.2 | < -25 | < -25 | Plot B.1/B.2 | -13 | PASS |
| | 661 | 1880.0 | < -25 | < -25 | Plot B.3/B.4 | | PASS |
| | 810 | 1909.8 | < -25 | < -25 | Plot B.5/B.6 | | PASS |
| WCDMA 850MHz | 4132 | 826.4 | < -25 | < -25 | Plot C.1/C.2 | -13 | PASS |
| | 4183 | 836.6 | < -25 | < -25 | Plot C.3/C.4 | | PASS |
| | 4233 | 846.6 | < -25 | < -25 | Plot C.5/C.6 | | PASS |
| HSDPA 850MHz | 4132 | 826.4 | < -25 | < -25 | Plot D.1/D.2 | -13 | PASS |
| | 4183 | 836.6 | < -25 | < -25 | Plot D.3/D.4 | | PASS |
| | 4233 | 846.6 | < -25 | < -25 | Plot D.5/D.6 | | PASS |
| GPRS850 | 128 | 824.2 | < -25 | < -25 | Plot E.1/E.2 | -13 | PASS |
| | 190 | 836.6 | < -25 | < -25 | Plot E.3/E.4 | | PASS |
| | 251 | 848.8 | < -25 | < -25 | Plot E.5/E.6 | | PASS |
| GPRS1900 | 512 | 1850.2 | < -25 | < -25 | Plot F.1/F.2 | -13 | PASS |
| | 661 | 1880 | < -25 | < -25 | Plot F.3/F.4 | | PASS |
| | 810 | 1909.8 | < -25 | < -25 | Plot F.5/F.6 | | PASS |
| EDGE850 | 128 | 824.2 | < -25 | < -25 | Plot G.1/G.2 | -13 | PASS |
| | 190 | 836.6 | < -25 | < -25 | Plot G.3/G.4 | | PASS |
| | 251 | 848.8 | < -25 | < -25 | Plot G.5/G.6 | | PASS |
| EDGE1900 | 512 | 1850.2 | < -25 | < -25 | Plot H.1/H.2 | -13 | PASS |
| | 661 | 1880 | < -25 | < -25 | Plot H.3/H.4 | | PASS |
| | 810 | 1909.8 | < -25 | < -25 | Plot H.5/H.6 | | PASS |

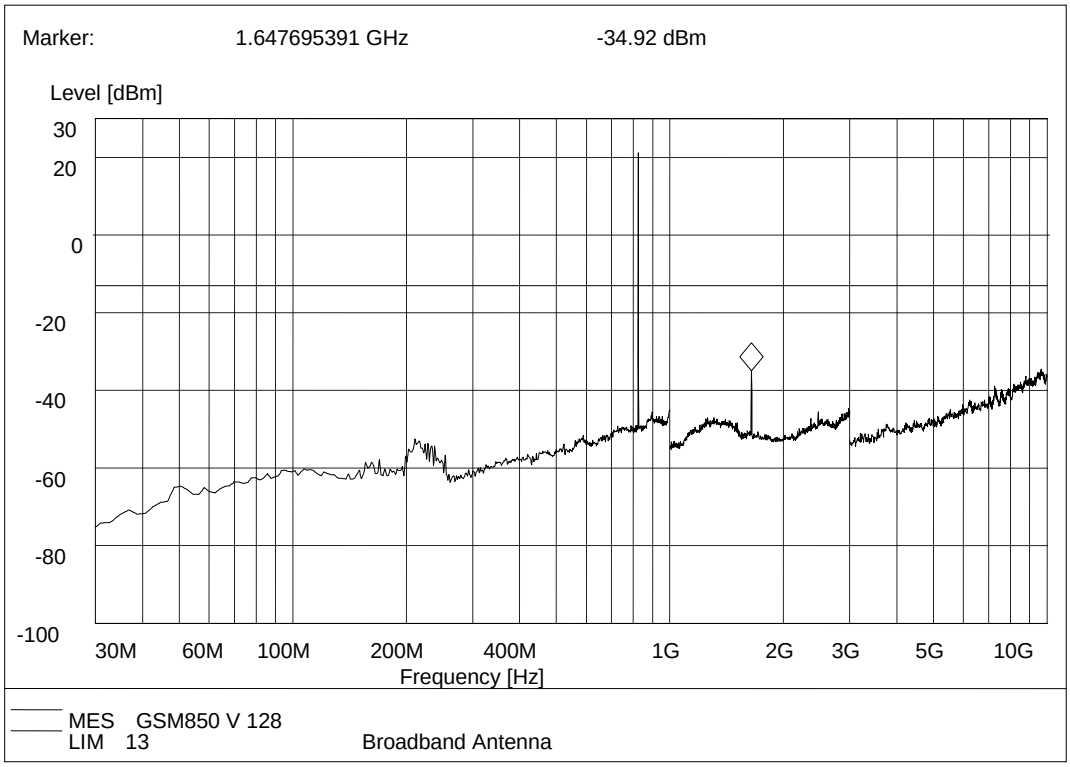
2. Test Plots for the Whole Measurement Frequency Range:

Note1: the power of the EUT transmitting frequency should be ignored.

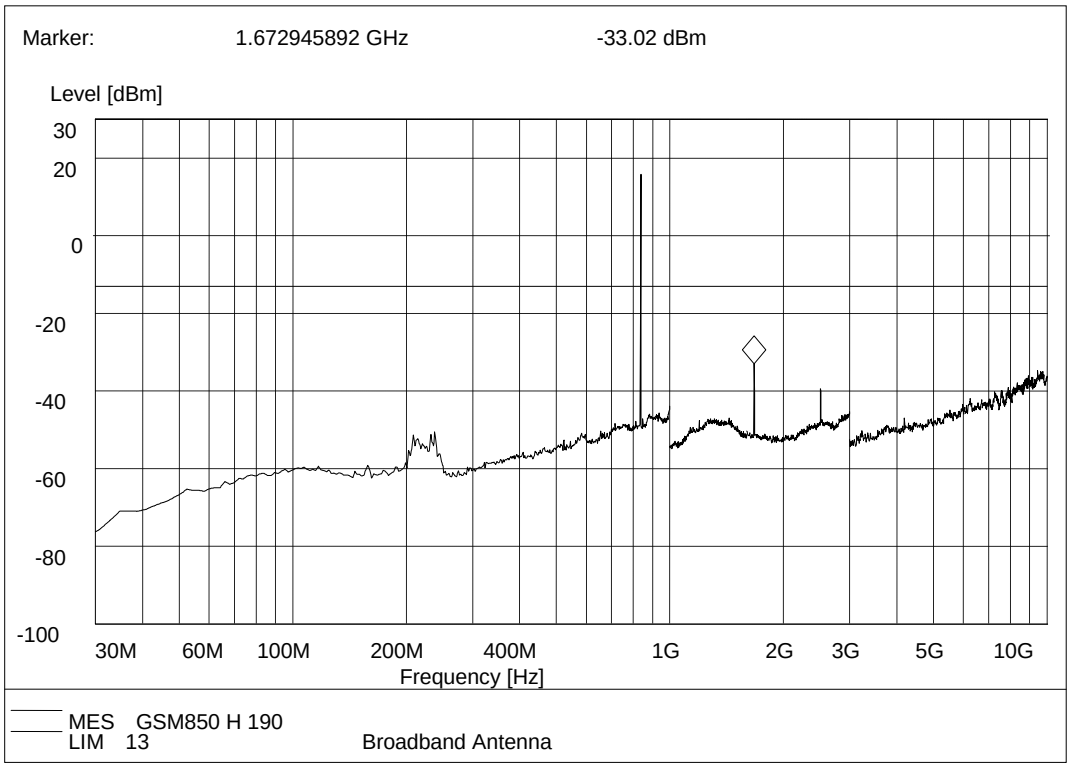
Note2: All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.



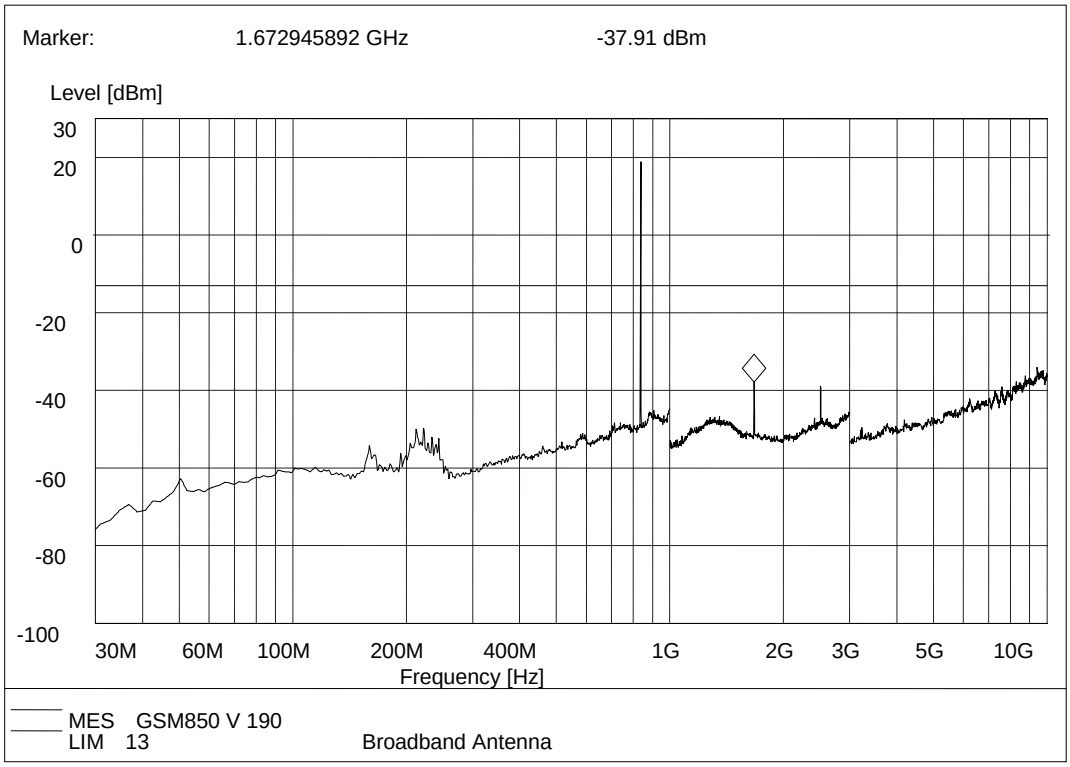

(Plot A.1: GSM 850MHz Channel = 128, Test Antenna Horizontal)



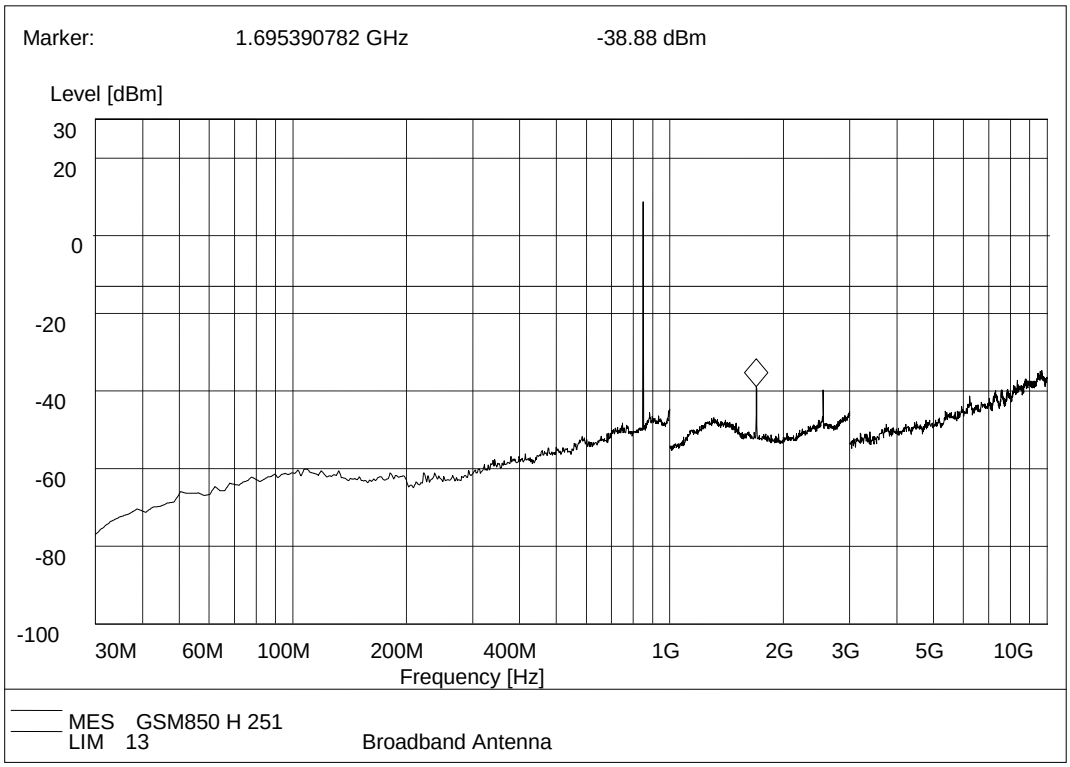

(Plot A.2: GSM 850MHz Channel = 128, Test Antenna Vertical)



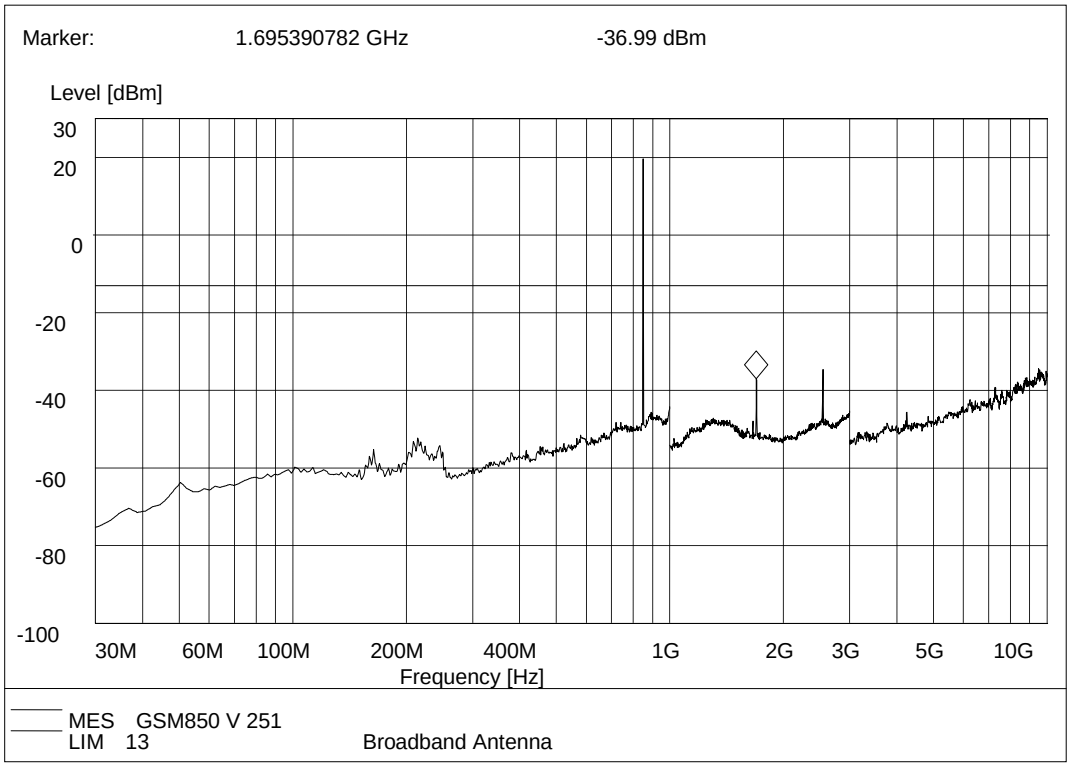

(Plot A.3: GSM 850MHz Channel = 190, Test Antenna Horizontal)



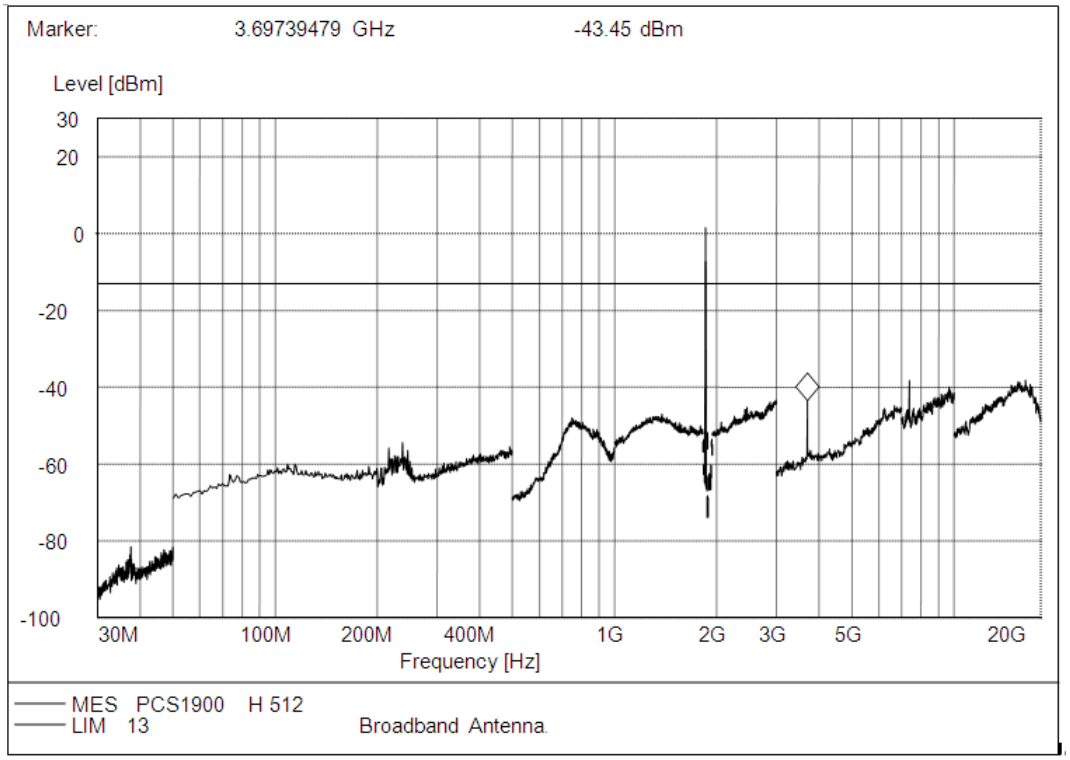

(Plot A.4: GSM 850MHz Channel = 190, Test Antenna Vertical)



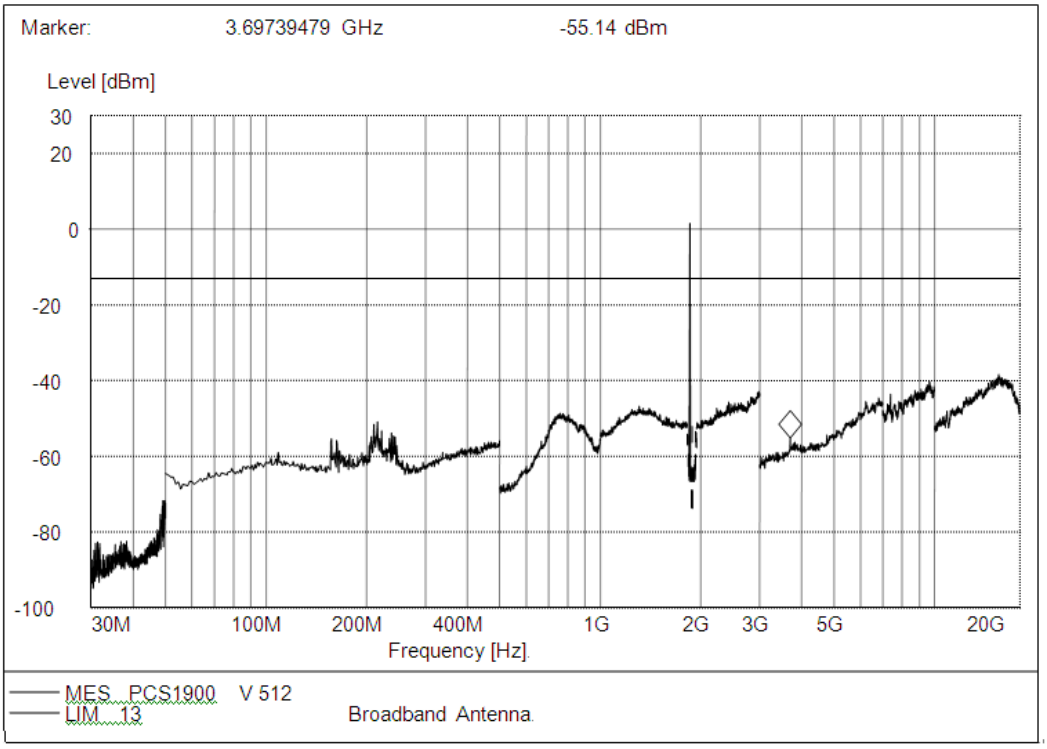

(Plot A.5: GSM 850MHz Channel = 251, Test Antenna Horizontal)



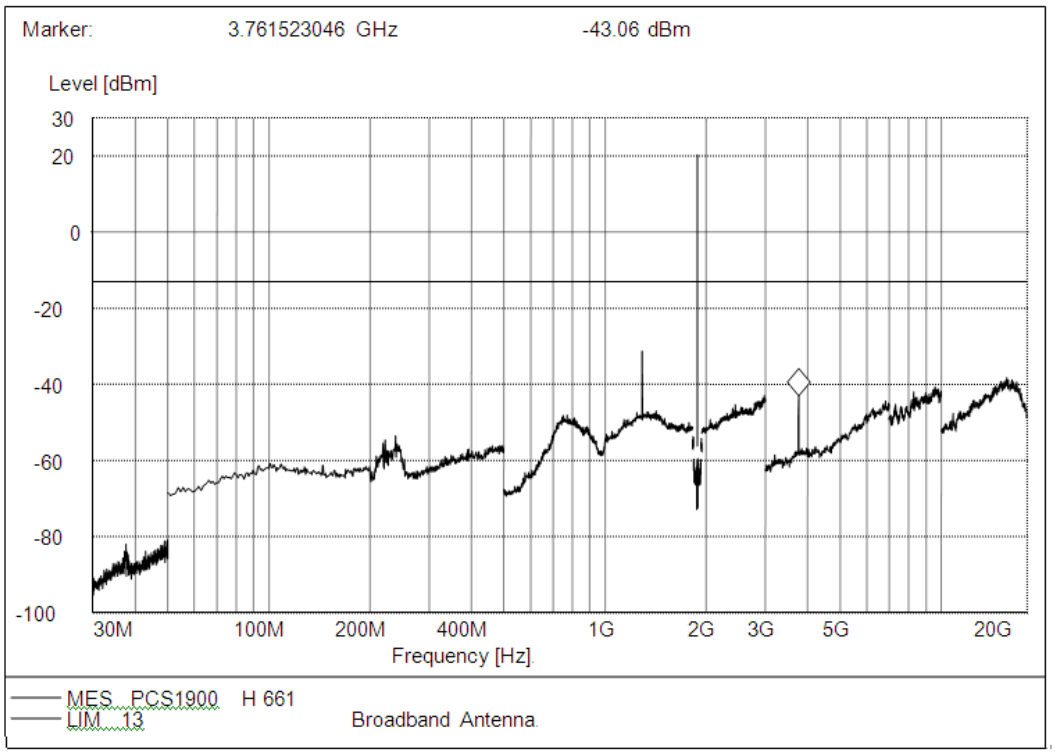

(Plot A.6: GSM 850MHz Channel = 251, Test Antenna Vertical)



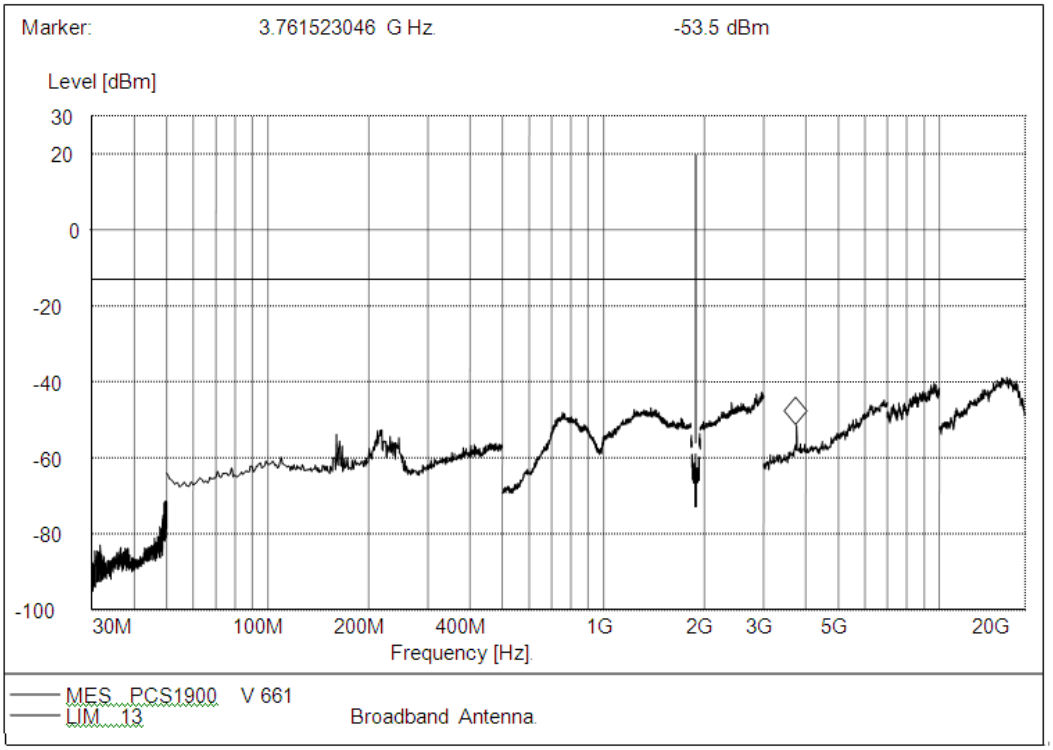

(Plot B.1: GSM 1900MHz Channel = 512, Test Antenna Horizontal)



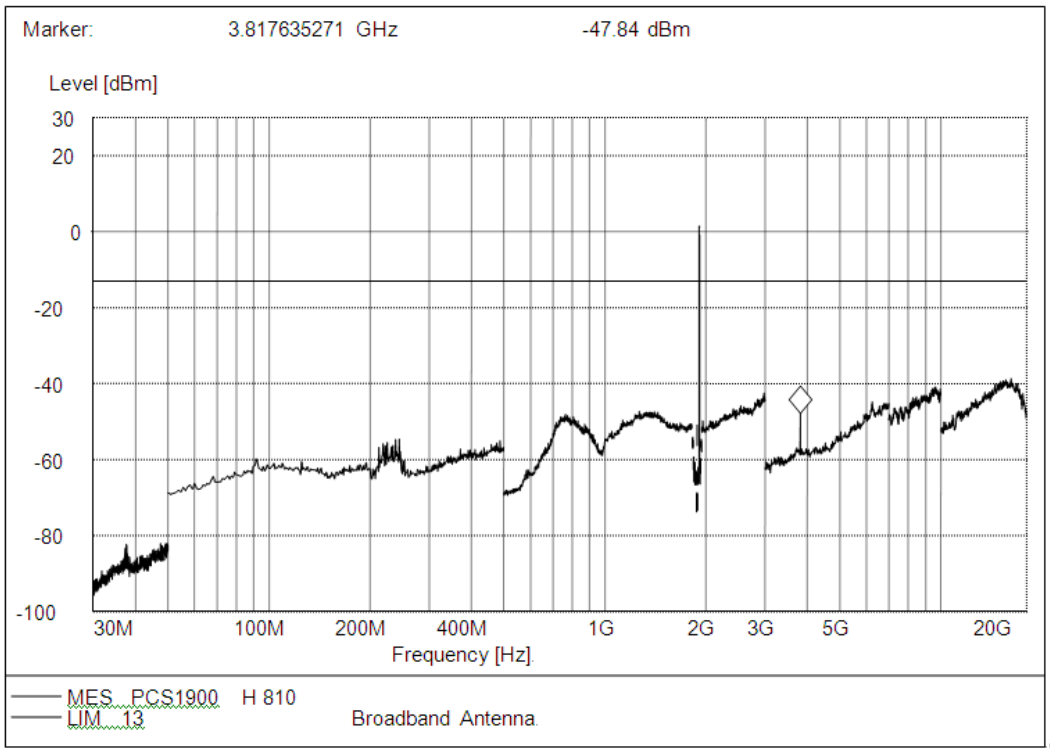

(Plot B.2: GSM 1900MHz Channel = 512, Test Antenna Vertical)



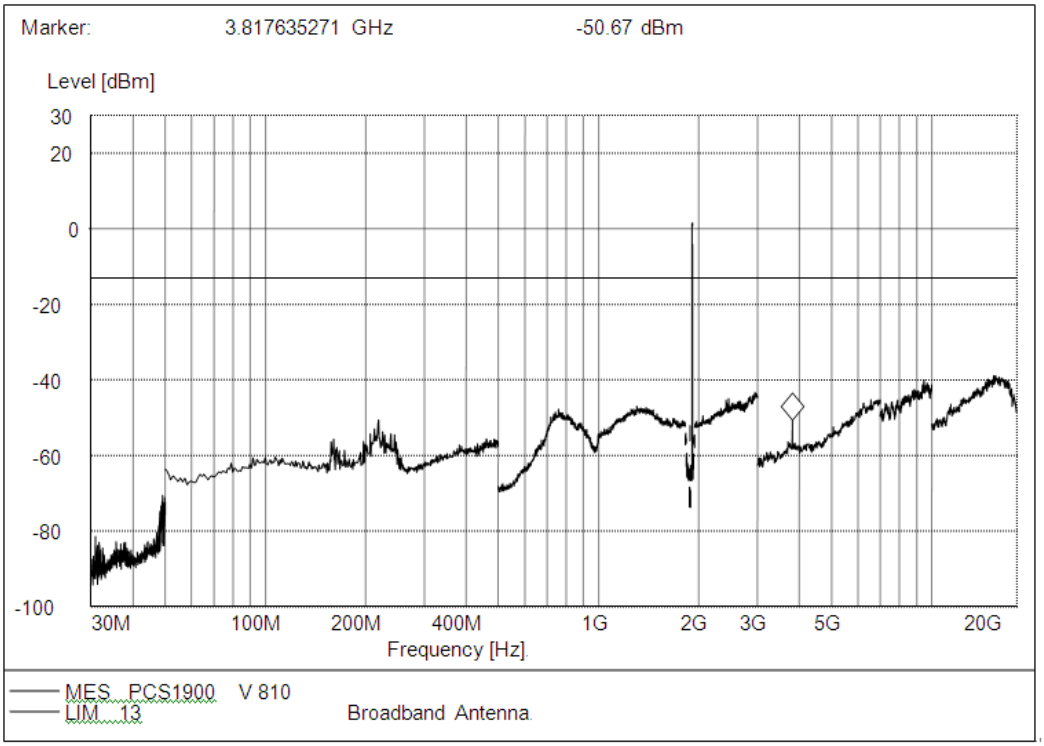

(Plot B.3: GSM 1900MHz Channel = 661, Test Antenna Horizontal)



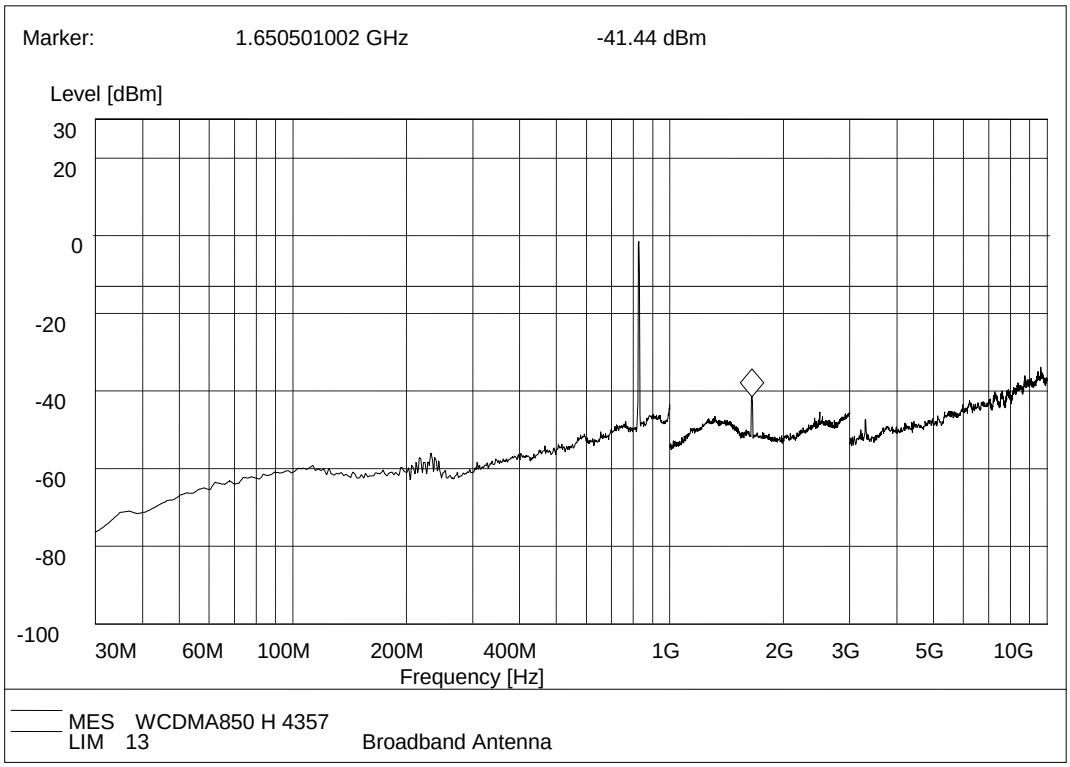

(Plot B.4: GSM 1900MHz Channel = 661, Test Antenna Vertical)



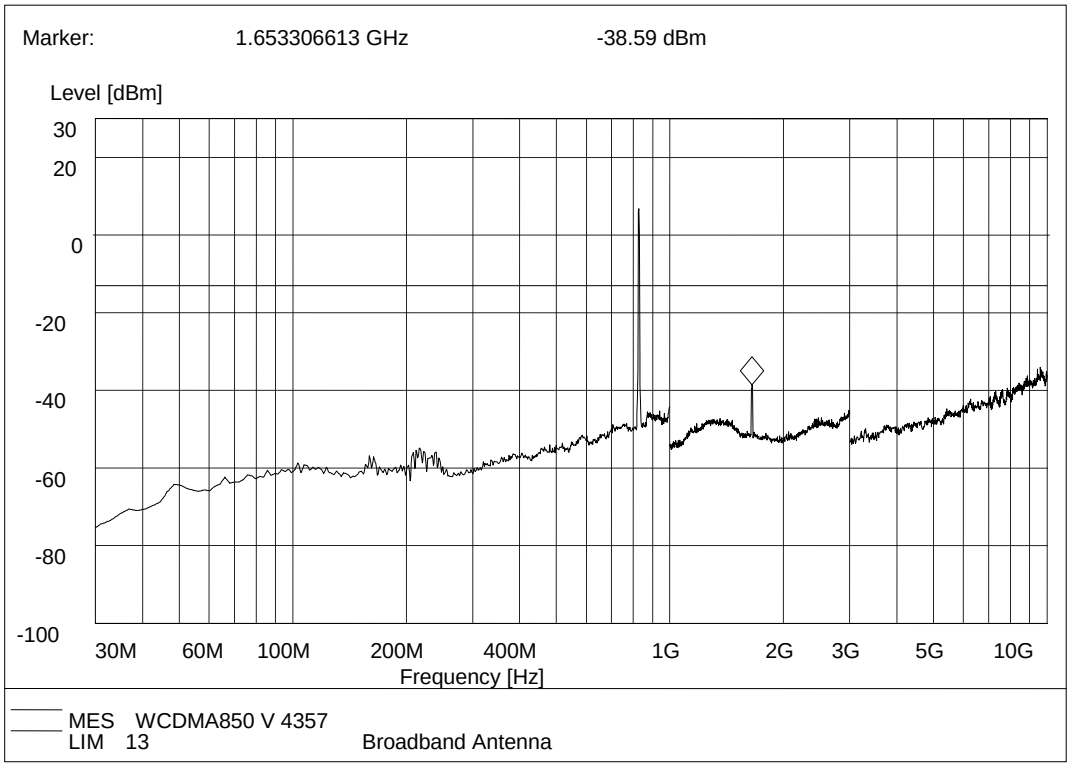

(Plot B.5: GSM 1900MHz Channel = 810, Test Antenna Horizontal)



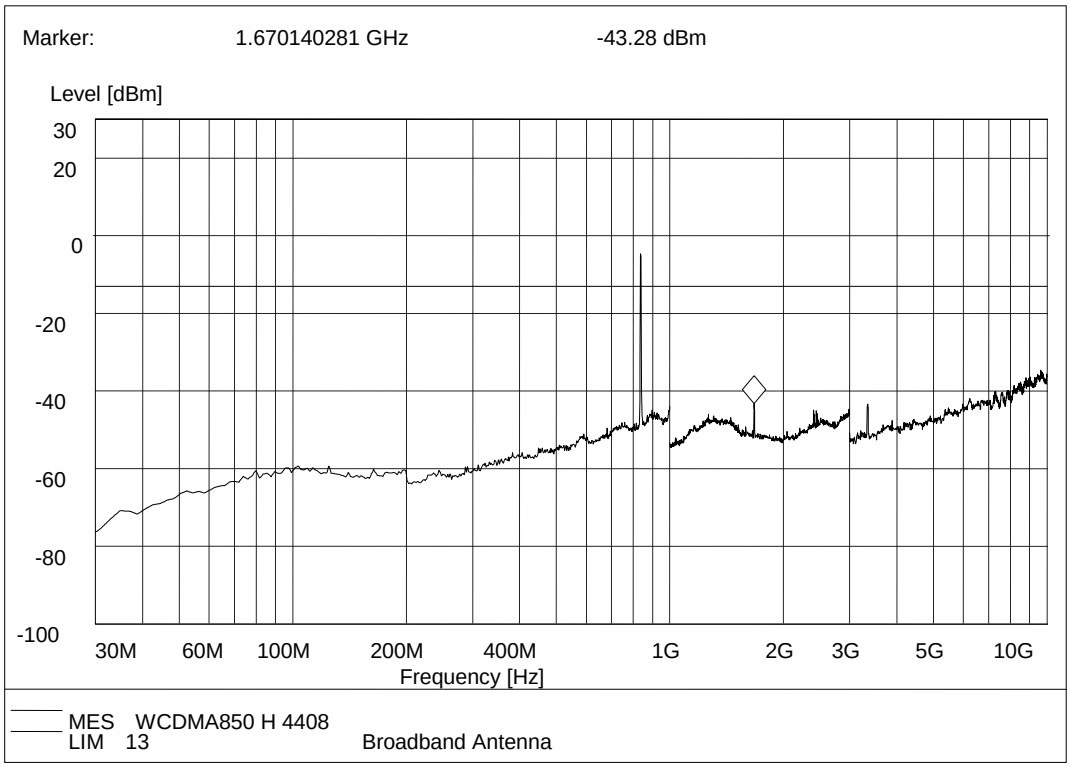

(PlotB.6: GSM 1900MHz Channel = 810, Test Antenna Vertical)



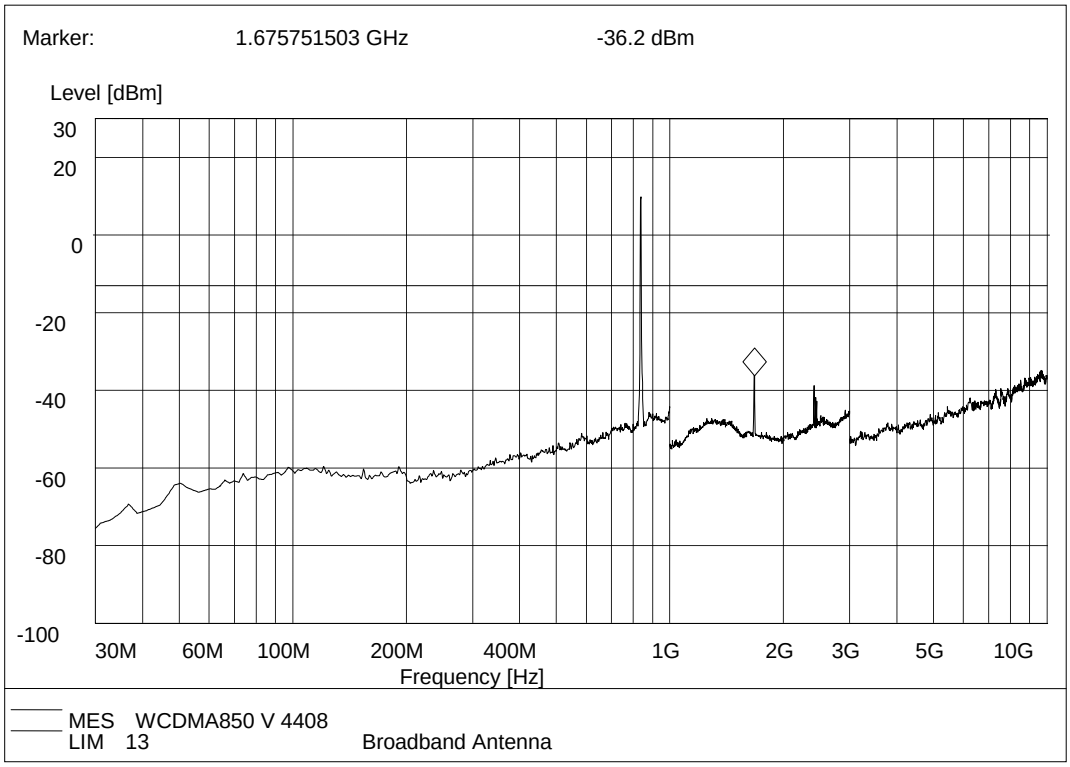

(Plot C.1: WCDMA 850MHz Channel = 4132, Test Antenna Horizontal)



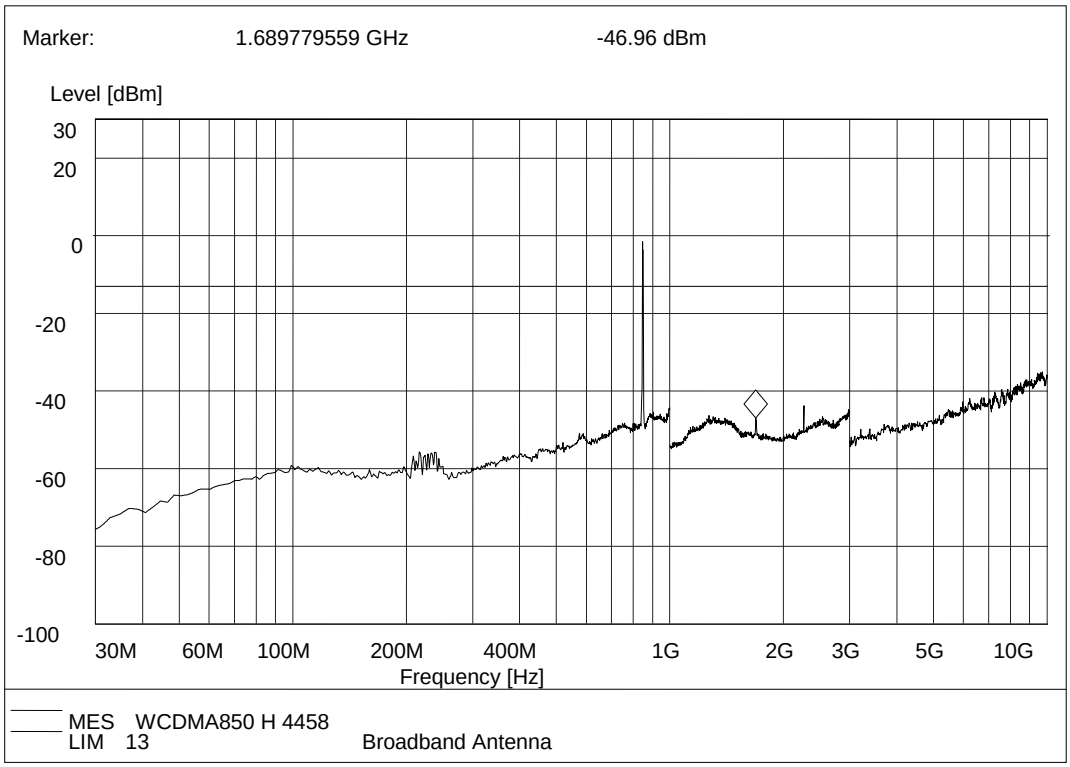

(Plot C.2: WCDMA 850MHz Channel = 4132, Test Antenna Vertical)



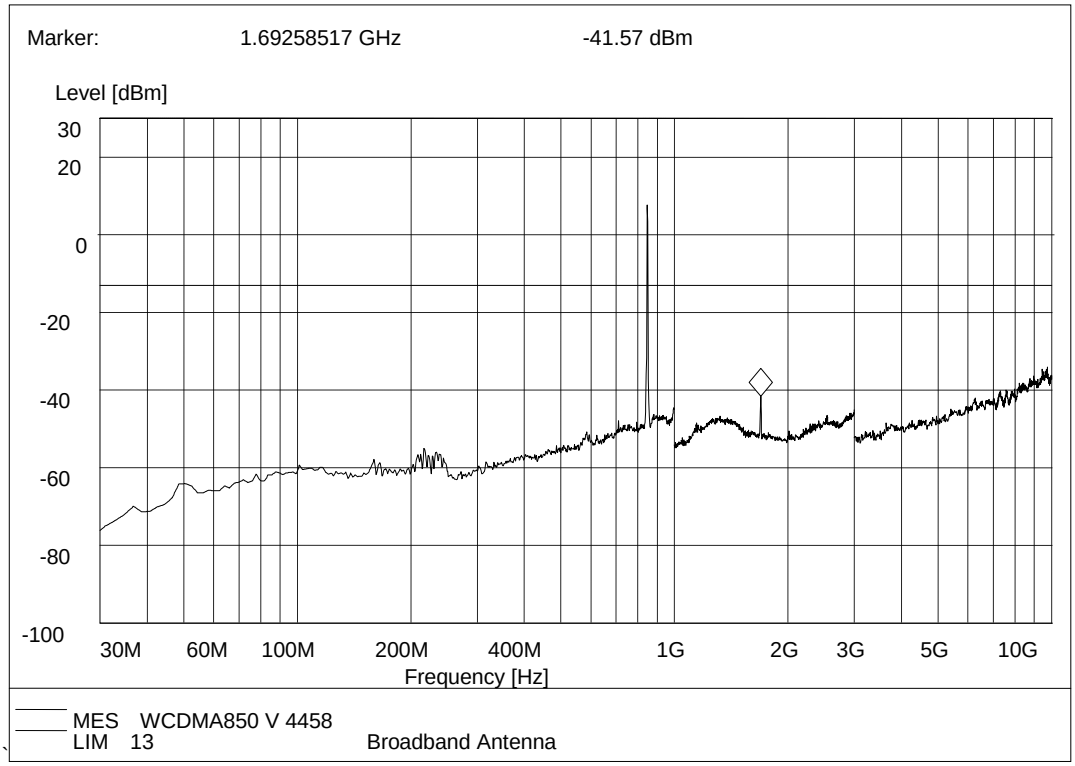

(Plot C.3: WCDMA 850MHz Channel = 4183, Test Antenna Horizontal)



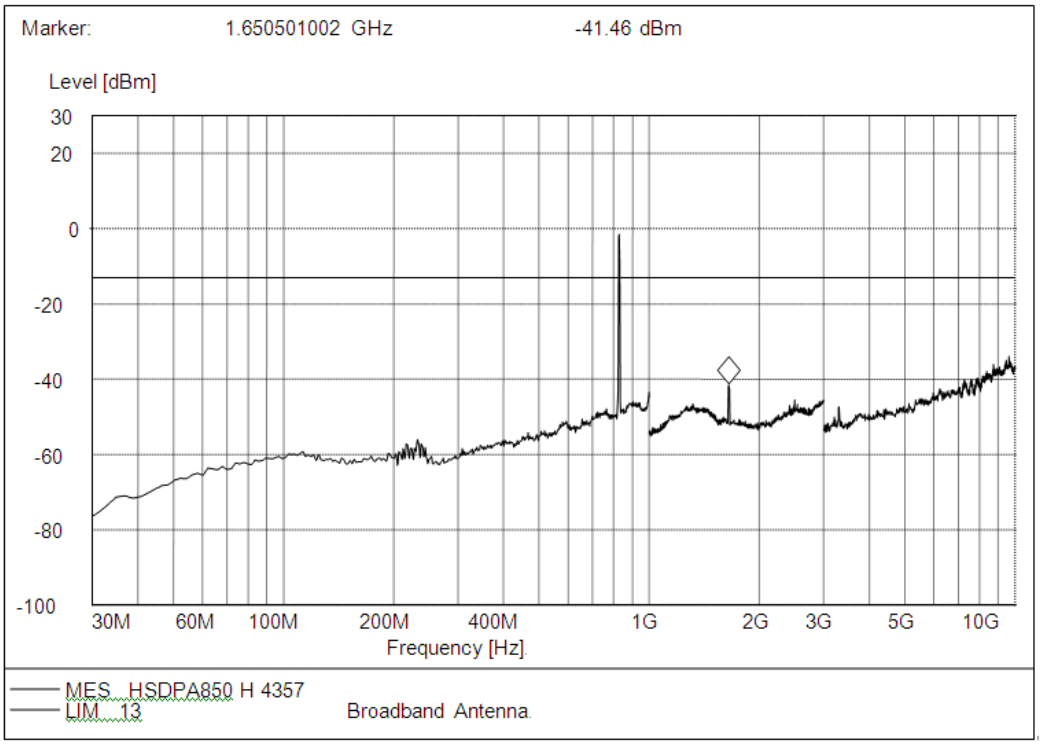

(Plot C.4: WCDMA 850MHz Channel = 4183, Test Antenna Vertical)



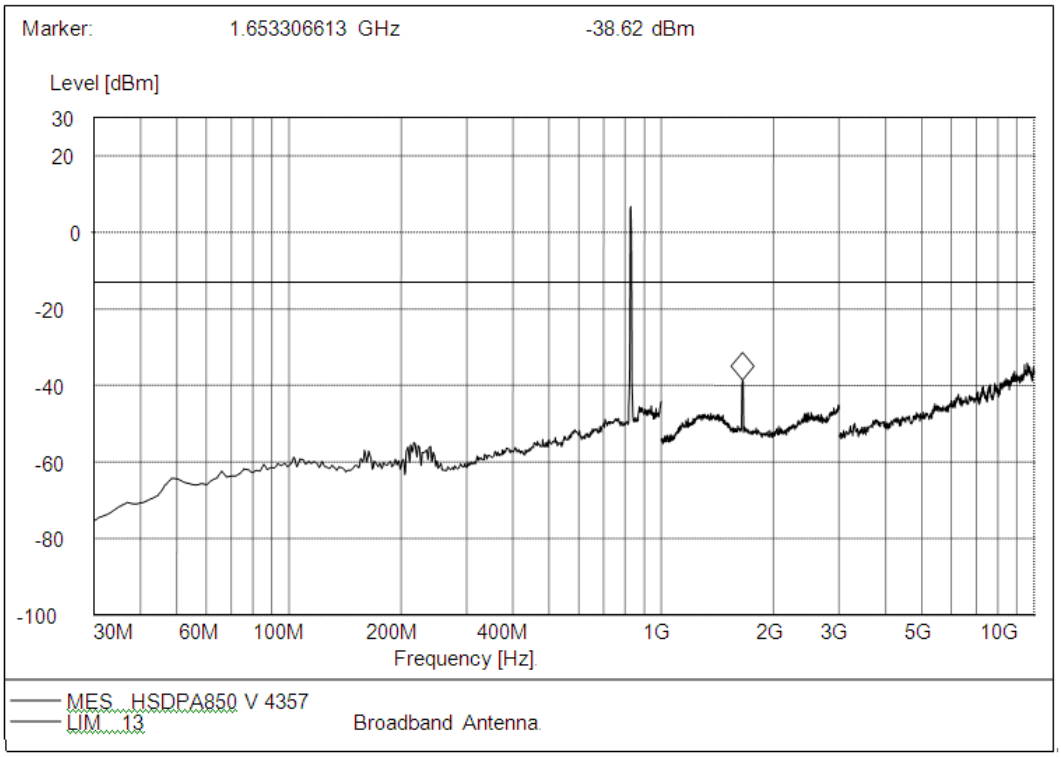

(Plot C.5: WCDMA 850MHz Channel = 4233, Test Antenna Horizontal)



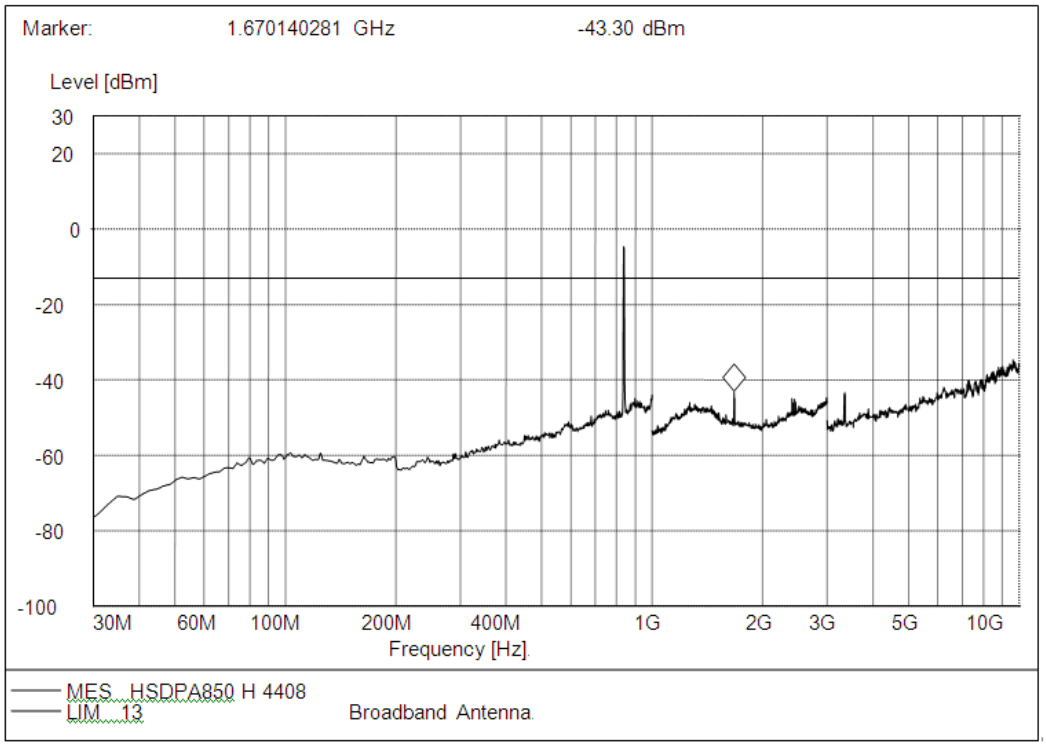

(Plot C.6: WCDMA 850MHz Channel = 4233, Test Antenna Vertical)



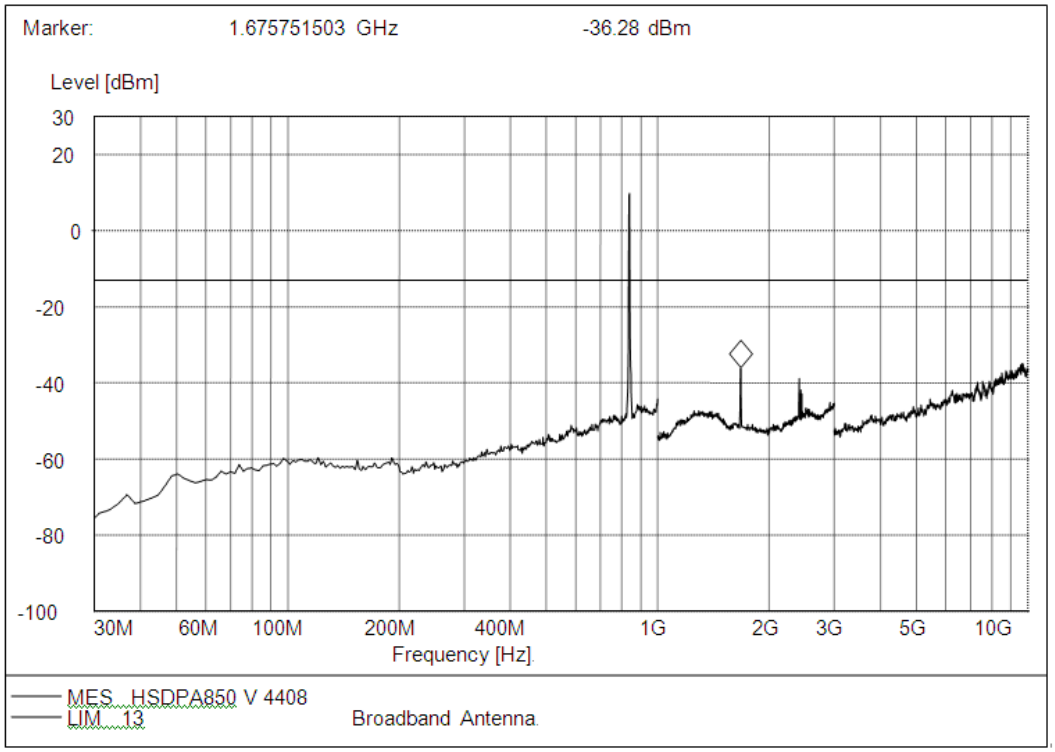

(Plot D.1: HSDPA 850MHz Channel = 4132, Test Antenna Horizontal)



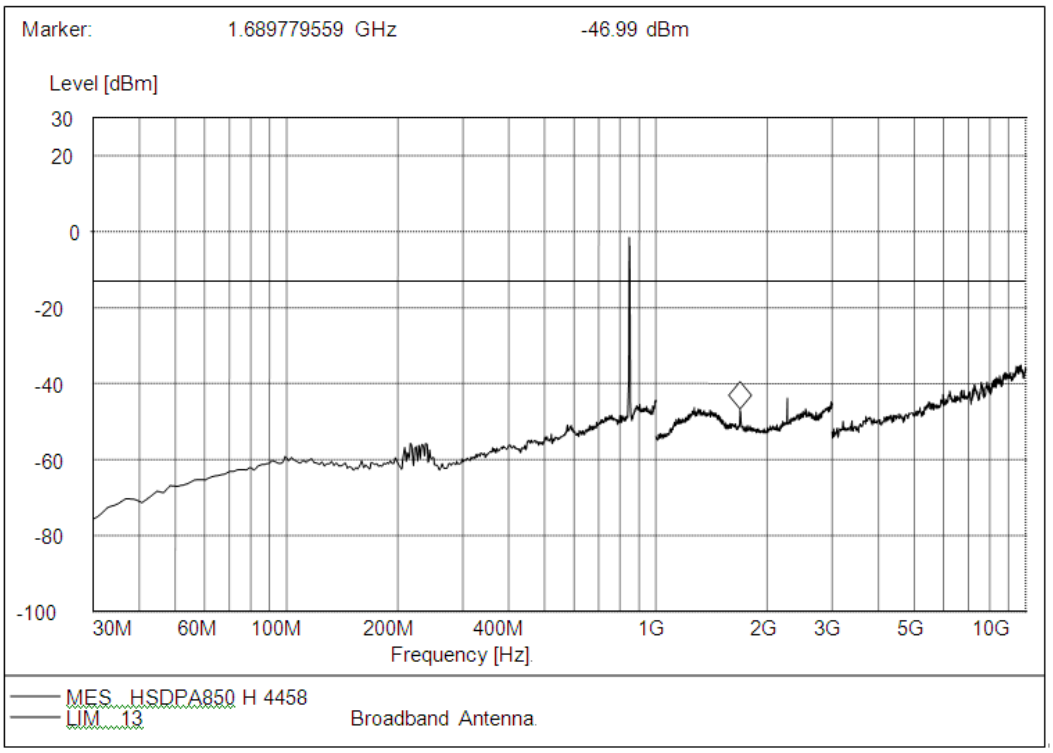

(Plot D.2: HSDPA 850MHz Channel = 4132, Test Antenna Vertical)



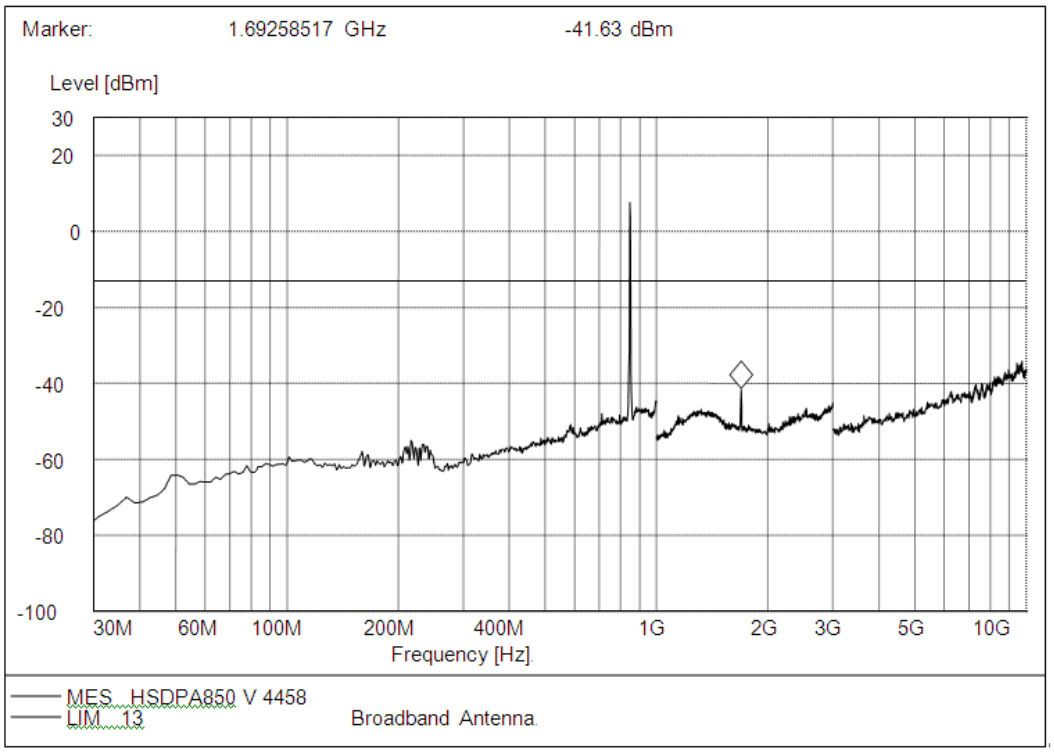

(Plot D.3: HSDPA 850MHz Channel = 4183, Test Antenna Horizontal)



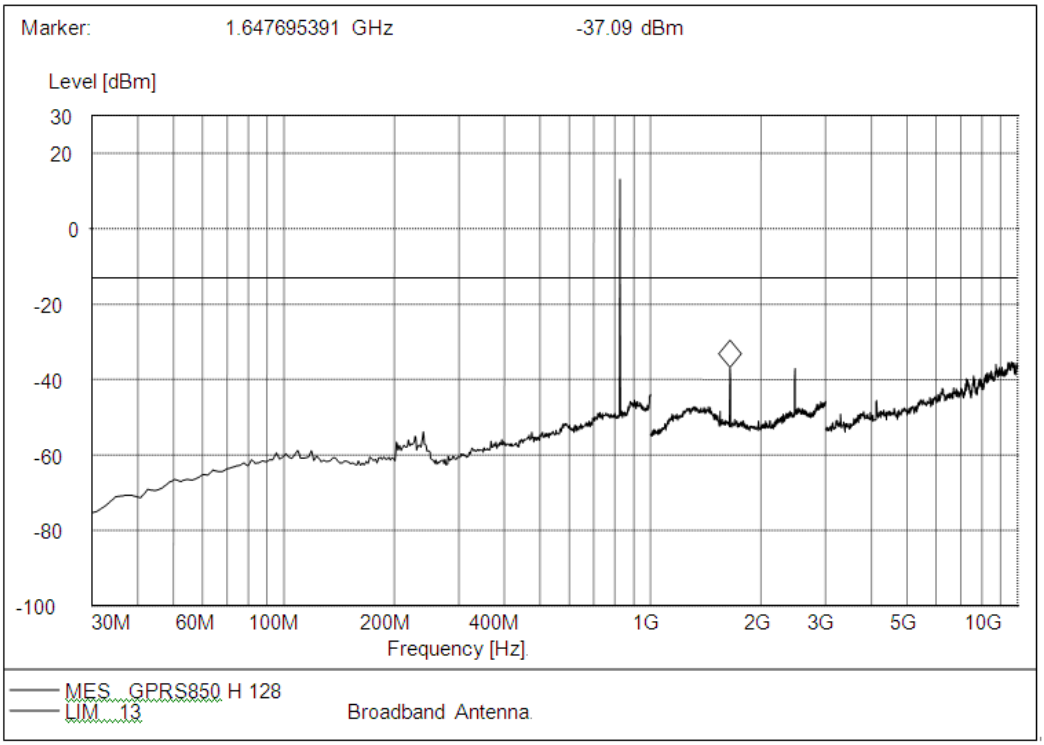

(Plot D.4: HSDPA 850MHz Channel = 4183, Test Antenna Vertical)



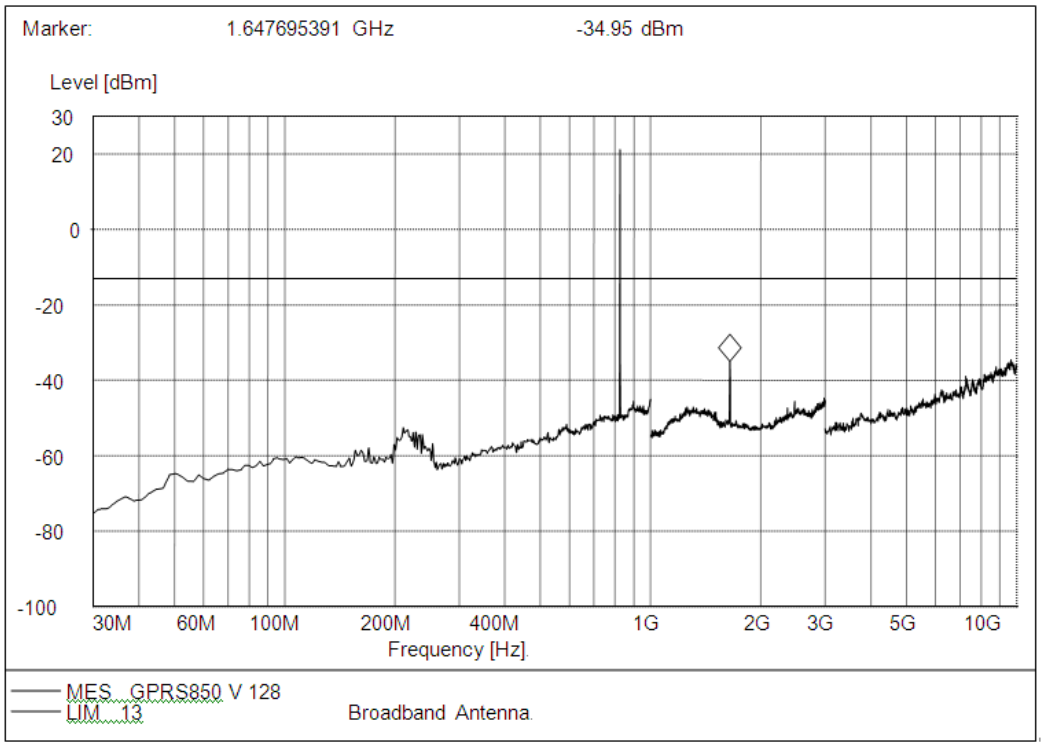

(Plot D.5: HSDPA 850MHz Channel = 4233, Test Antenna Horizontal)



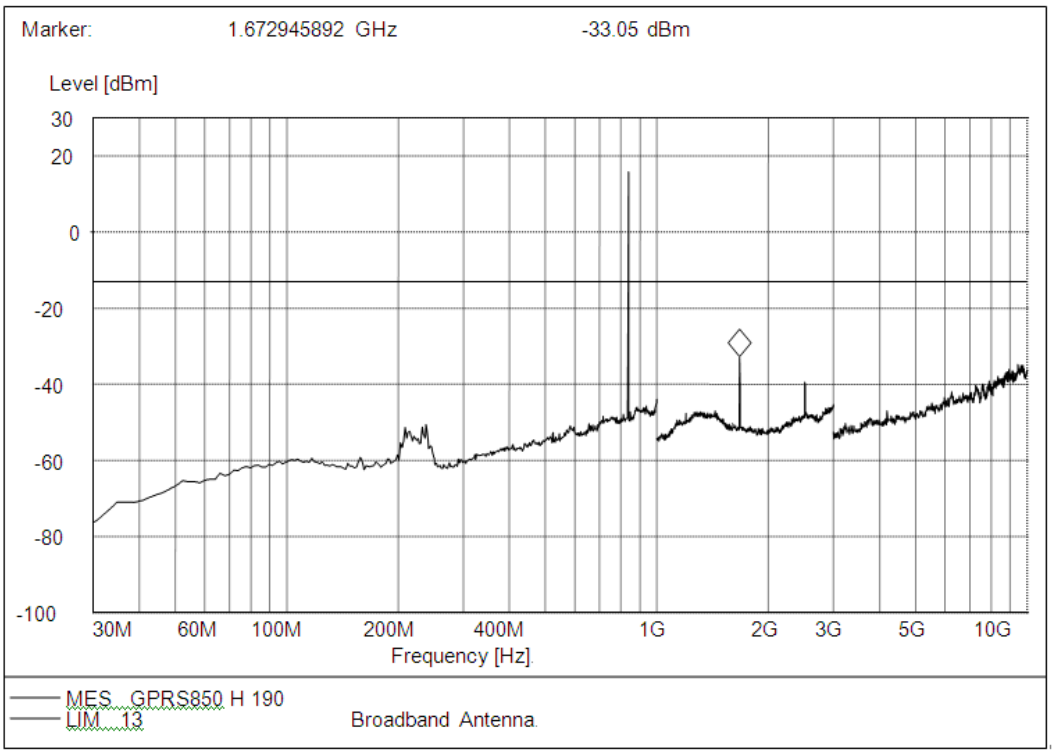

(Plot D.6: HSDPA 850MHz Channel = 4233, Test Antenna Vertical)



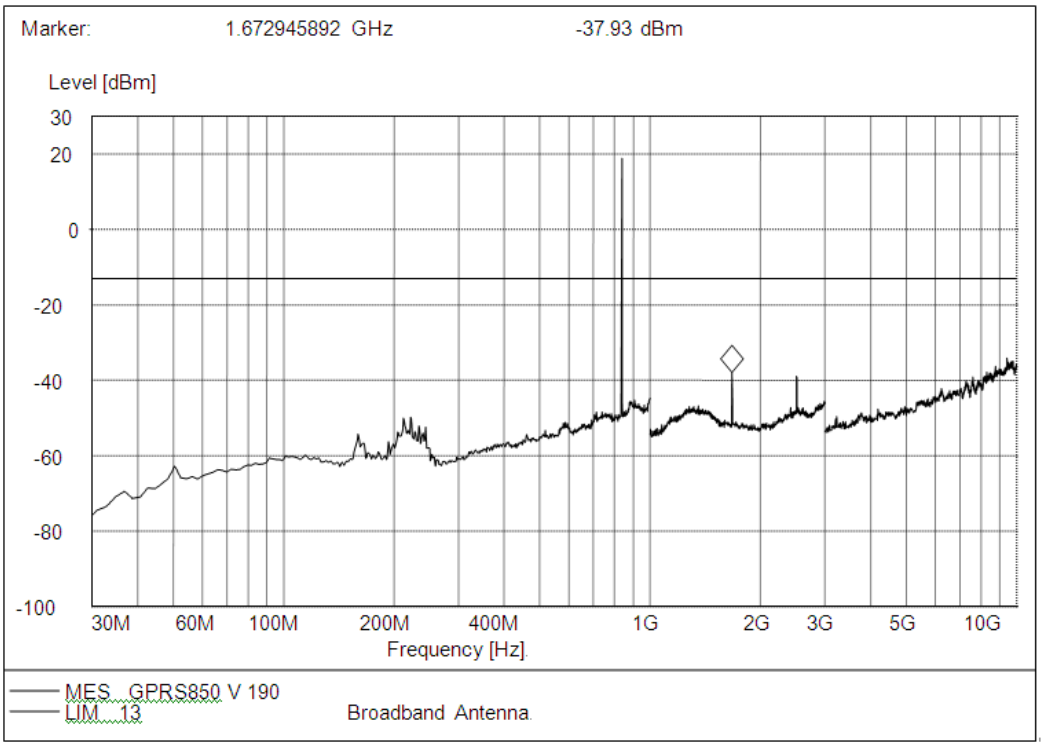

(Plot E.1: GPRS 850MHz Channel = 128, Test Antenna Horizontal)



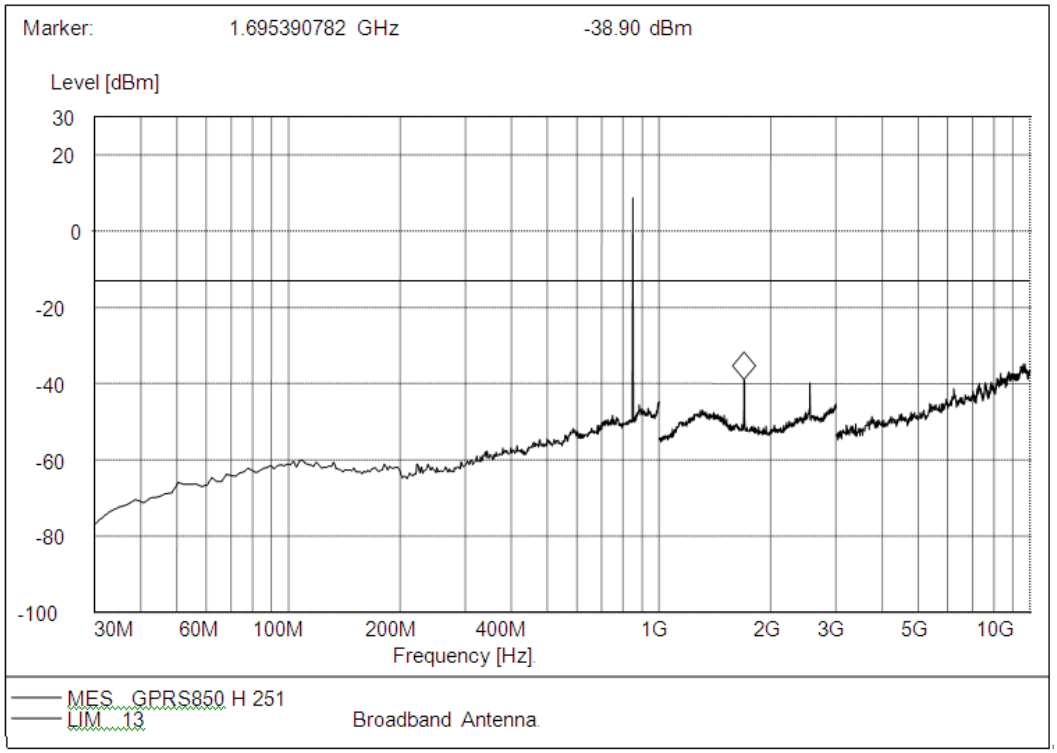

(Plot E.2: GPRS 850MHz Channel = 128, Test Antenna Vertical)



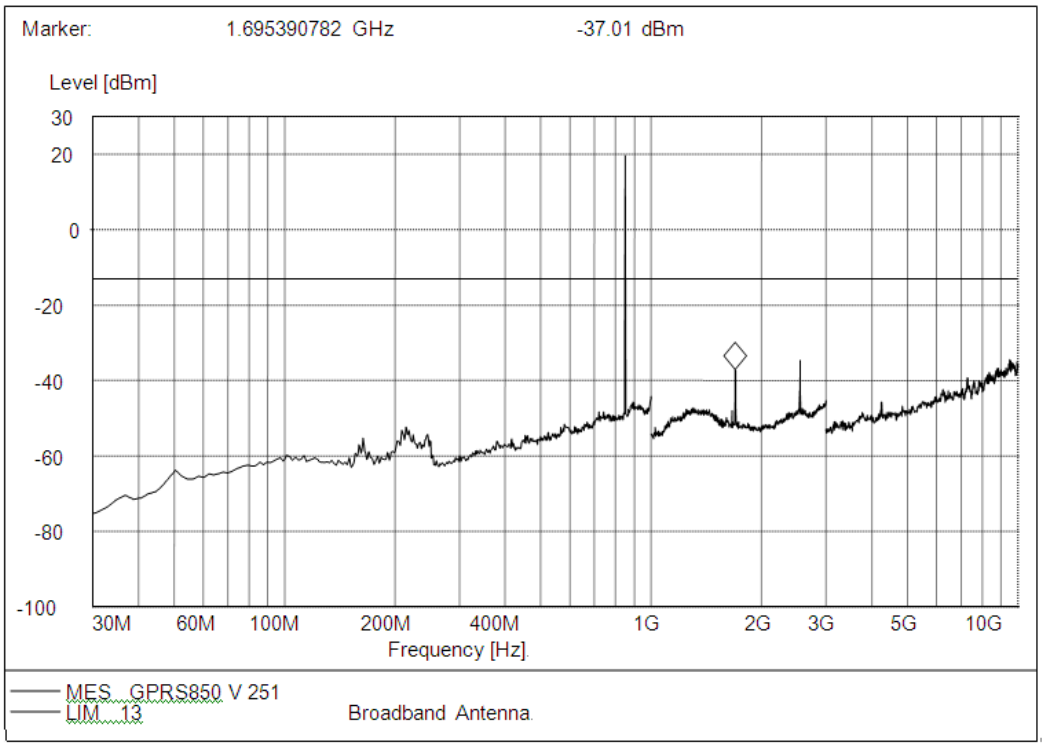

(Plot E.3: GPRS 850MHz Channel = 190, Test Antenna Horizontal)



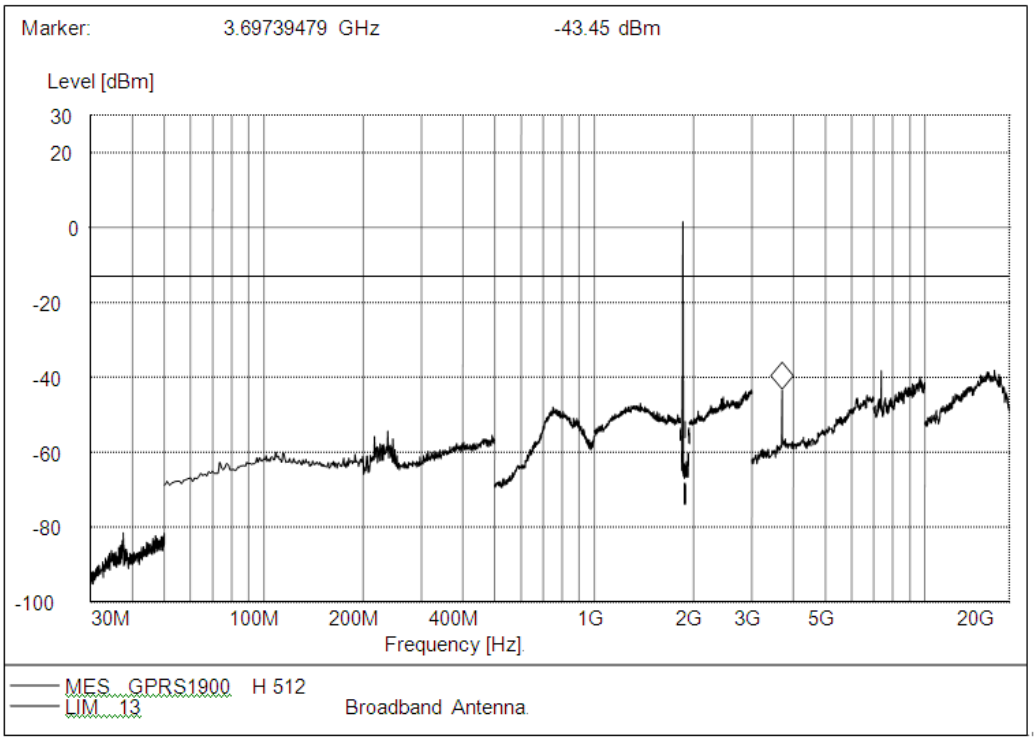

(Plot E.4: GPRS 850MHz Channel = 190, Test Antenna Vertical)



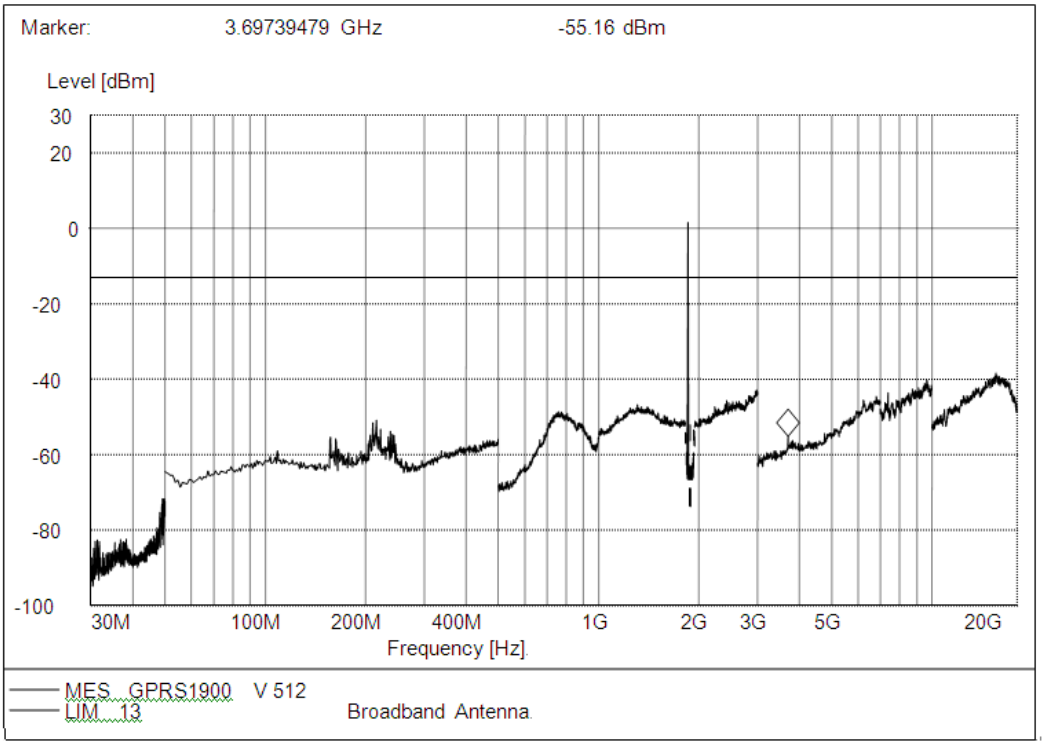

(Plot E.5: GPRS 850MHz Channel = 251, Test Antenna Horizontal)



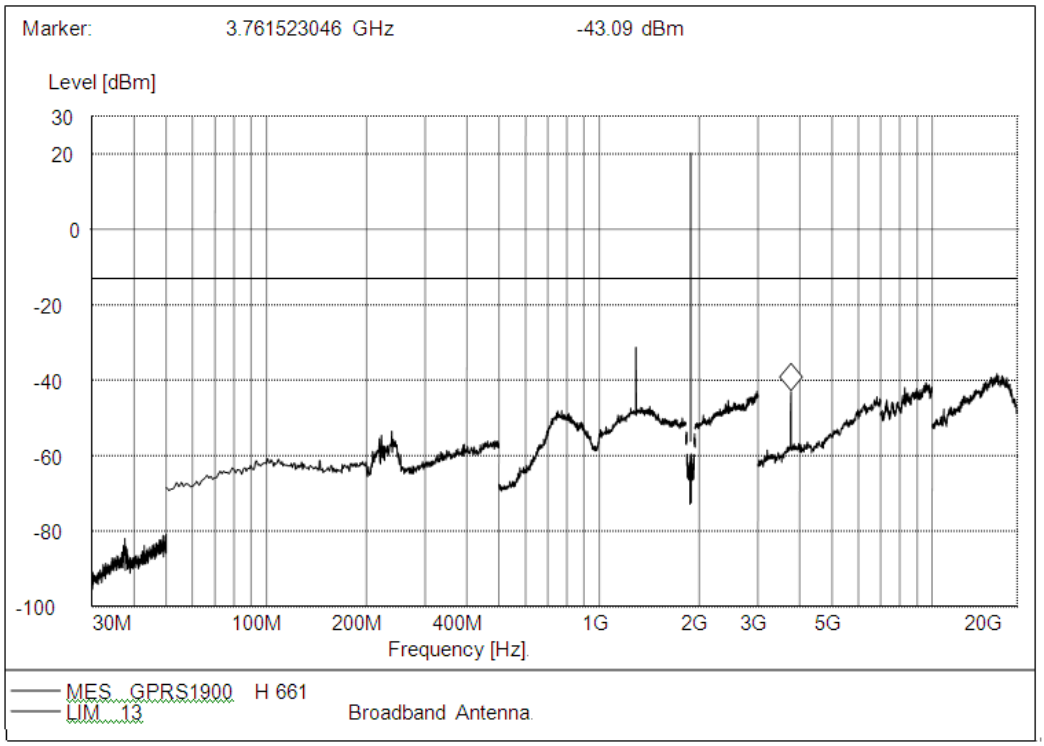

(Plot E.6: GPRS 850MHz Channel = 251, Test Antenna Vertical)



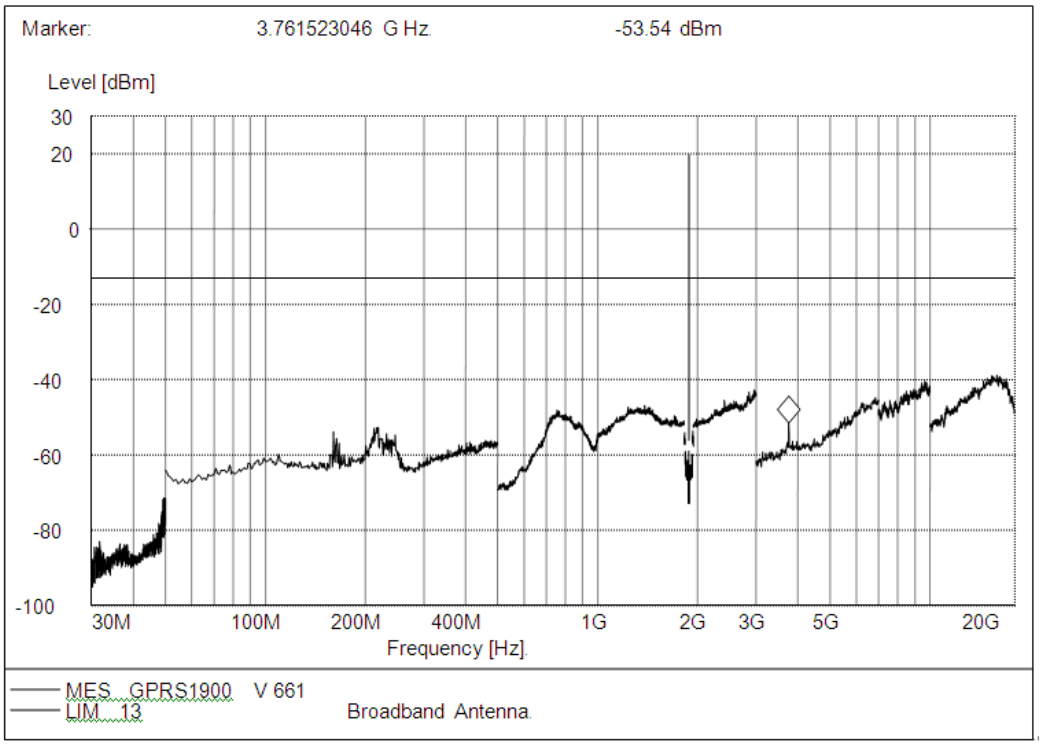

(Plot F.1: GPRS 1900MHz Channel = 512, Test Antenna Horizontal)



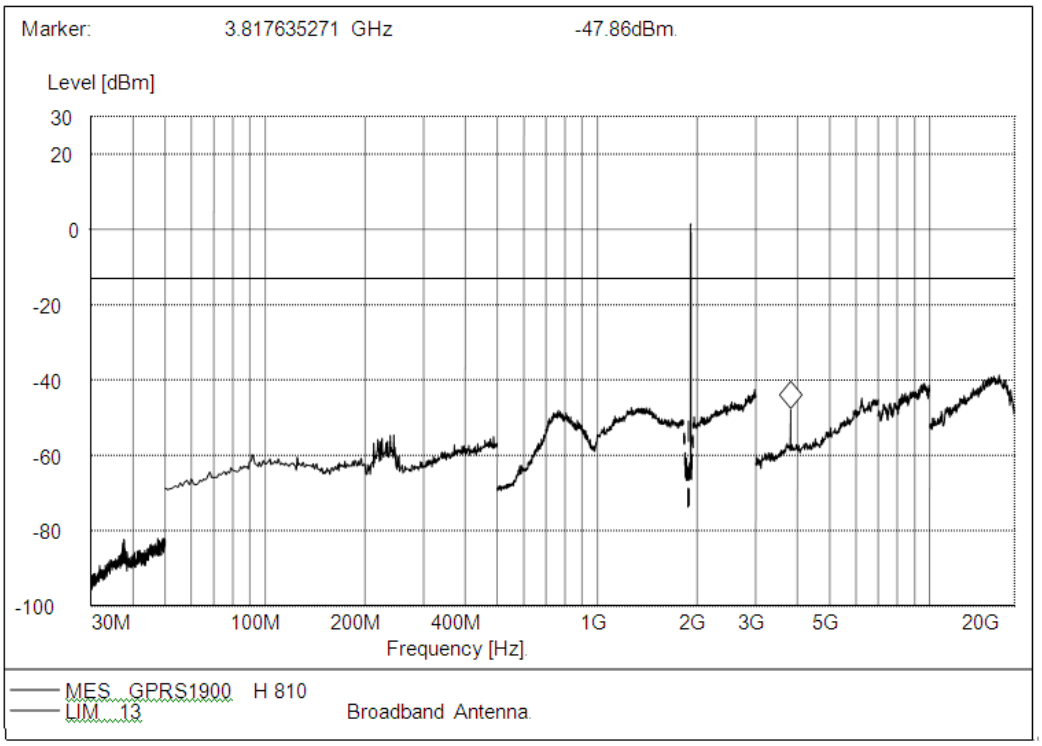

(Plot F.2: GPRS 1900MHz Channel = 512, Test Antenna Vertical)



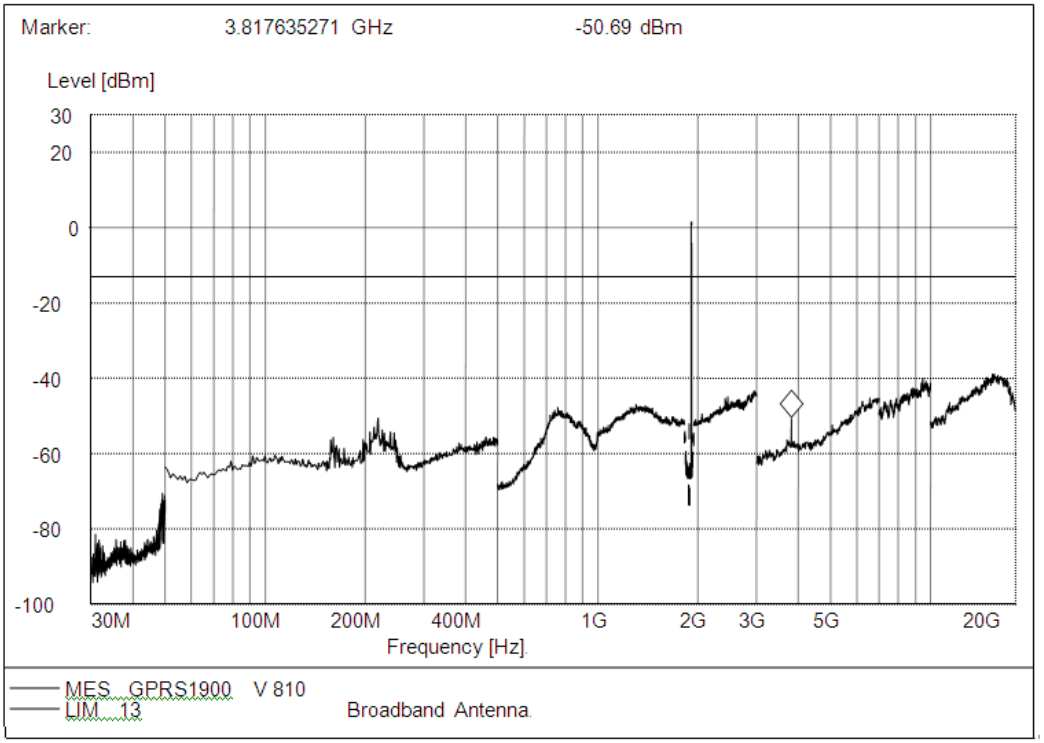

(Plot F.3: GPRS 1900MHz Channel = 661, Test Antenna Horizontal)



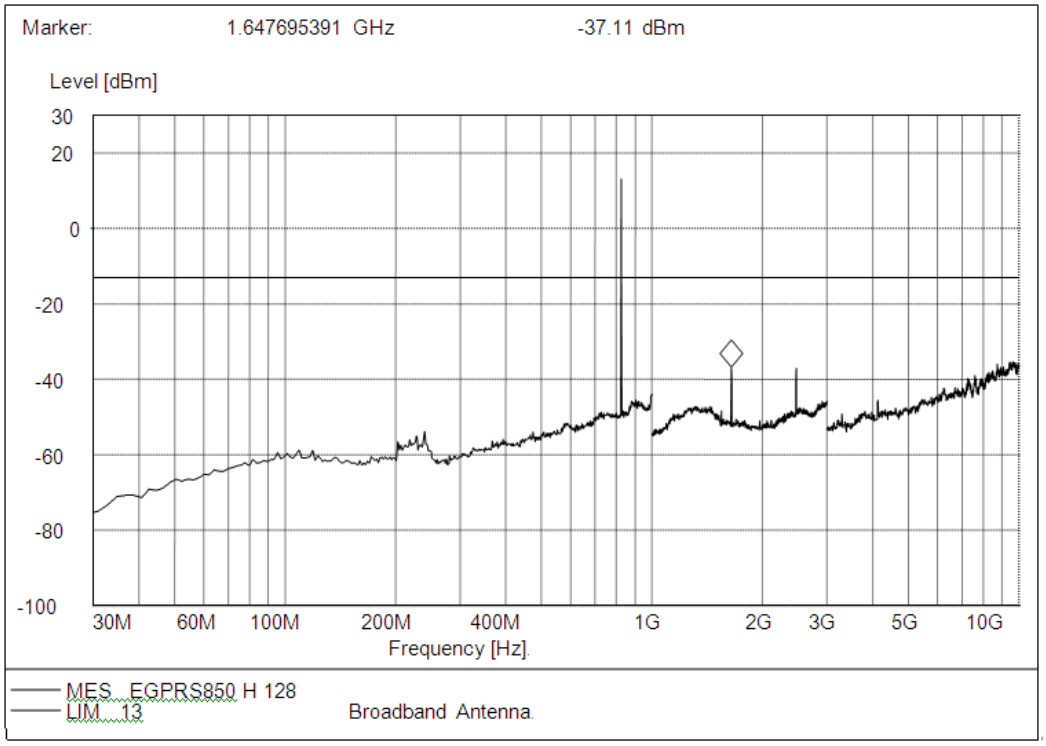

(Plot F.4: GPRS 1900MHz Channel = 661, Test Antenna Vertical)



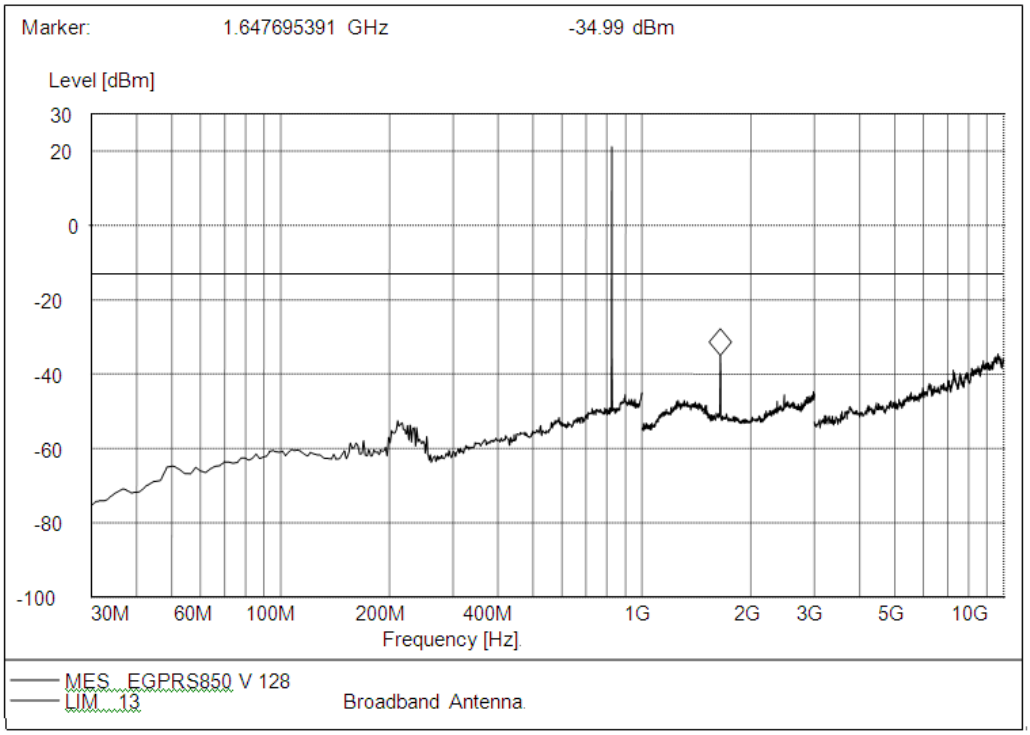

(Plot F.5: GPRS 1900MHz Channel = 810, Test Antenna Horizontal)



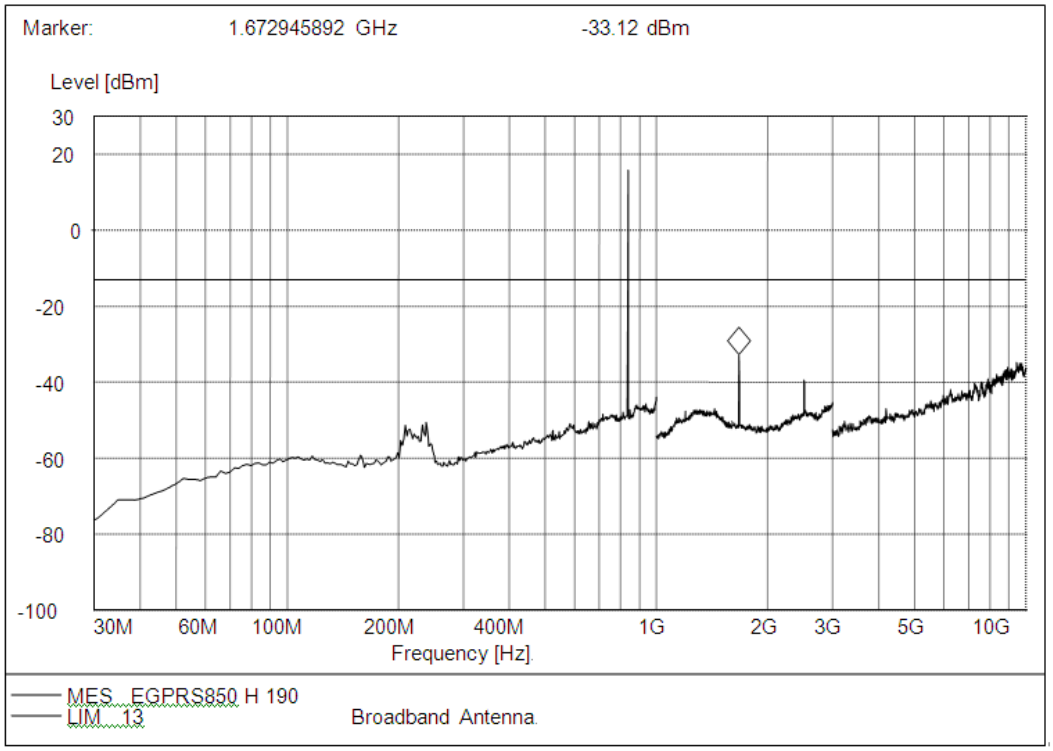

(Plot F.6: GPRS 1900MHz Channel = 810, Test Antenna Vertical)



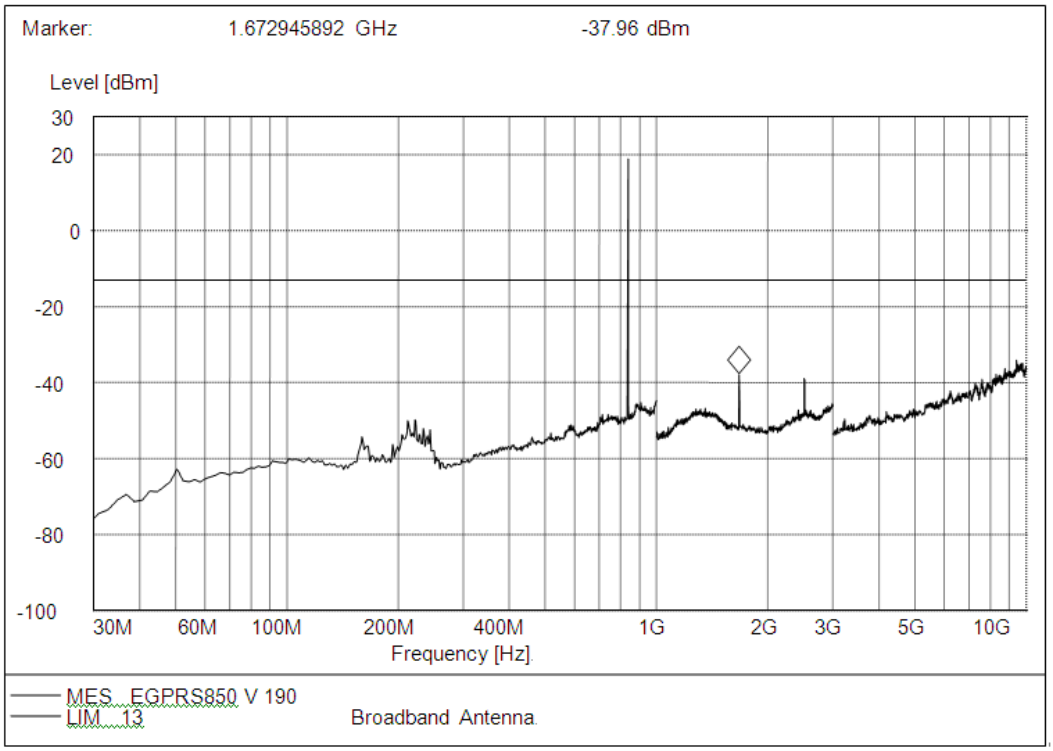

(Plot G.1: EDGE 850MHz Channel = 128, Test Antenna Horizontal)



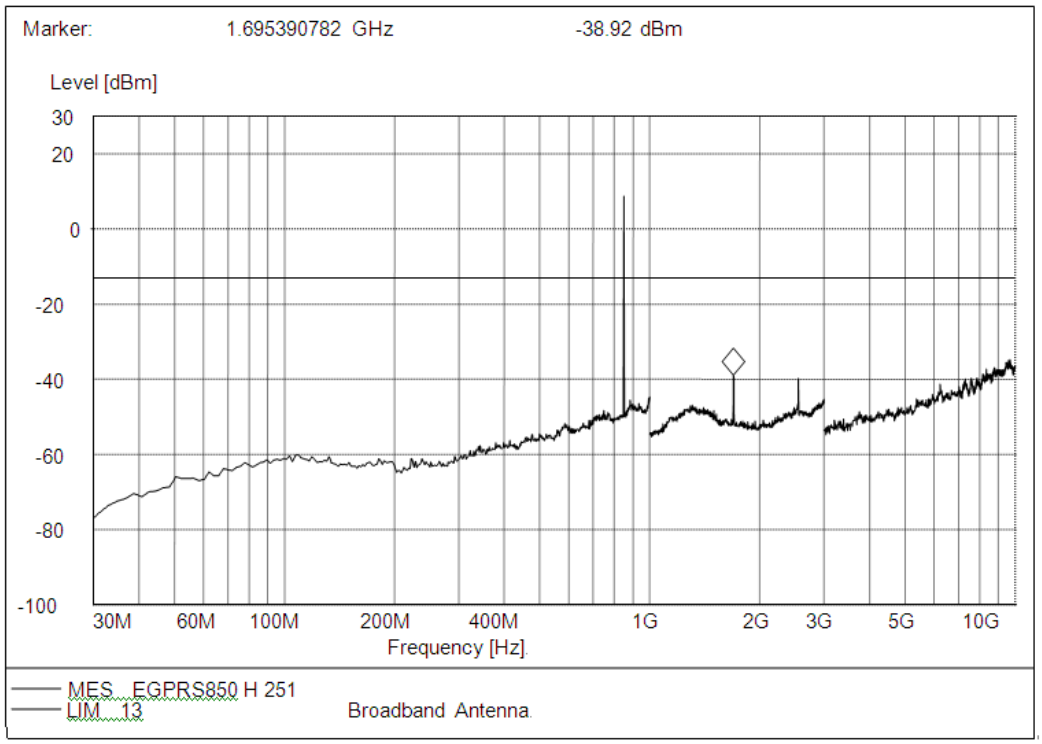

(Plot G.2: EDGE 850MHz Channel = 128, Test Antenna Vertical)



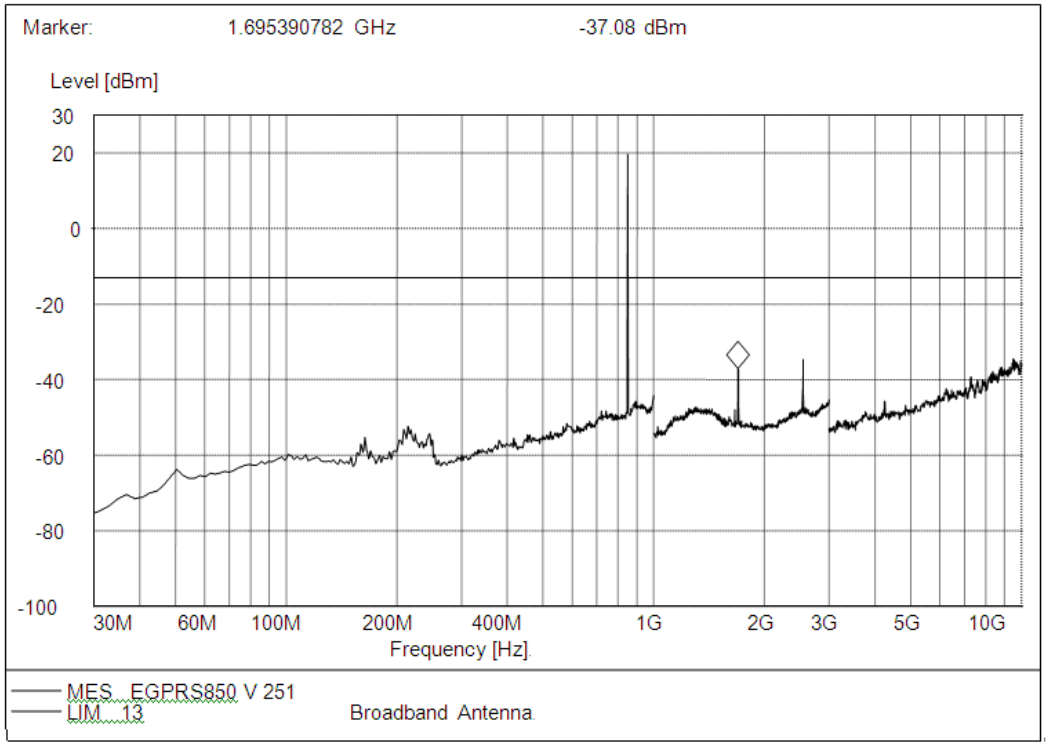

(Plot G.3: EDGE 850MHz Channel = 190, Test Antenna Horizontal)



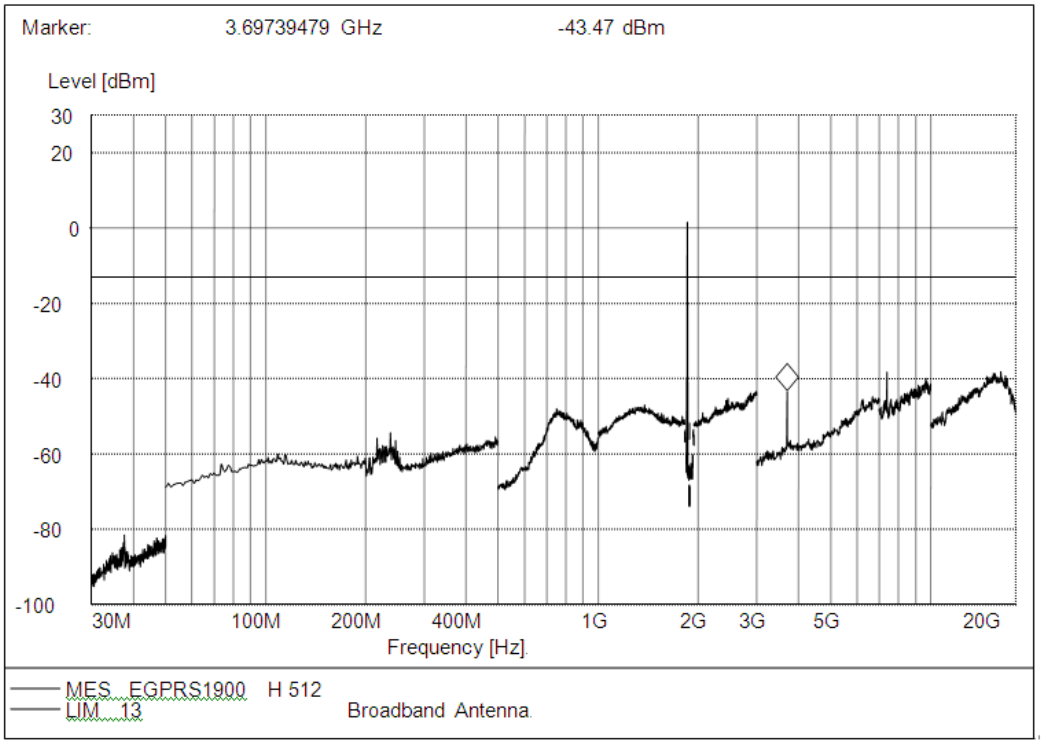

(Plot G.4: EDGE 850MHz Channel = 190, Test Antenna Vertical)



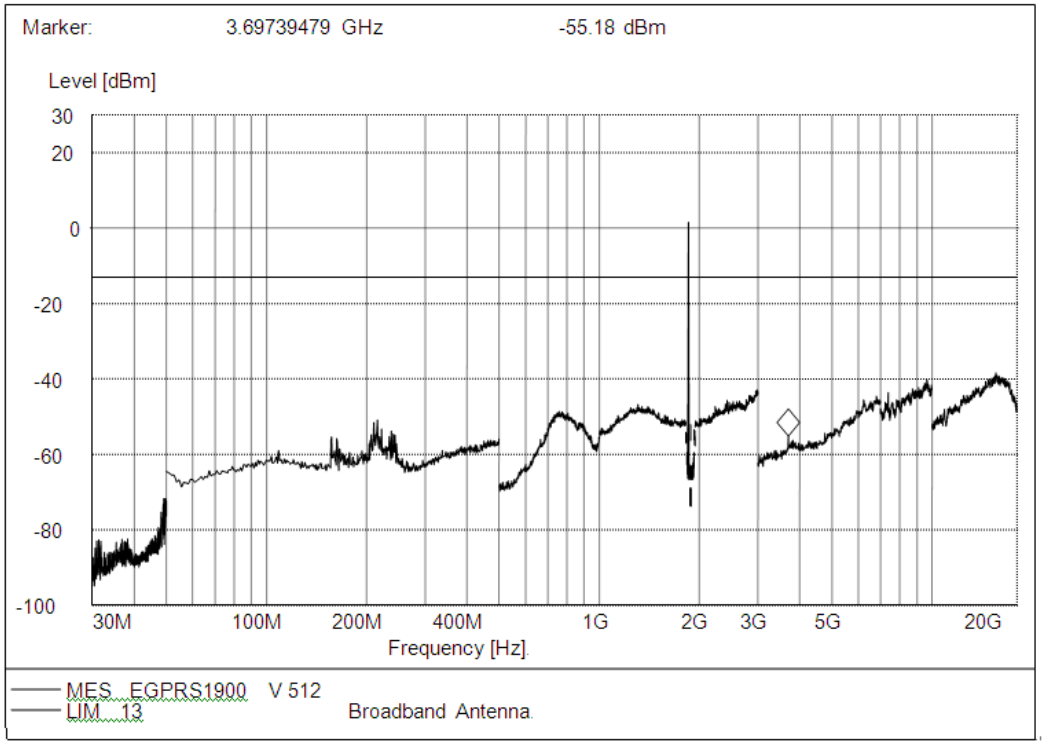

(Plot G.5: EDGE 850MHz Channel = 251, Test Antenna Horizontal)



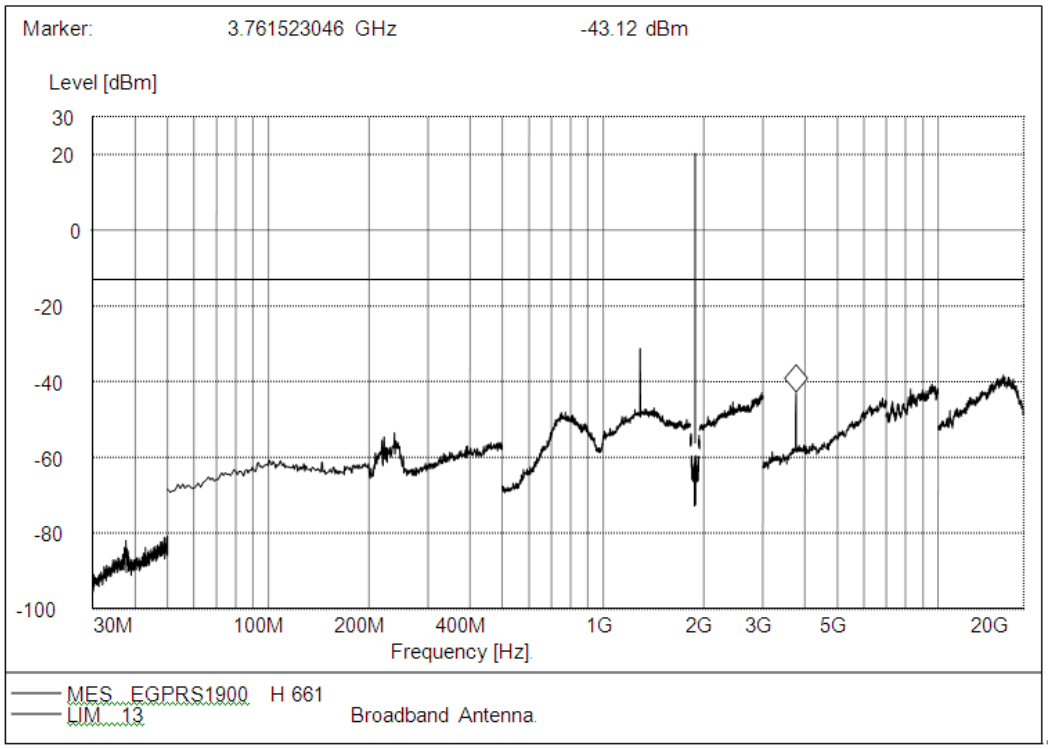

(Plot G.6: EDGE 850MHz Channel = 251, Test Antenna Vertical)




(Plot H.1: EDGE 1900MHz Channel = 512, Test Antenna Horizontal)

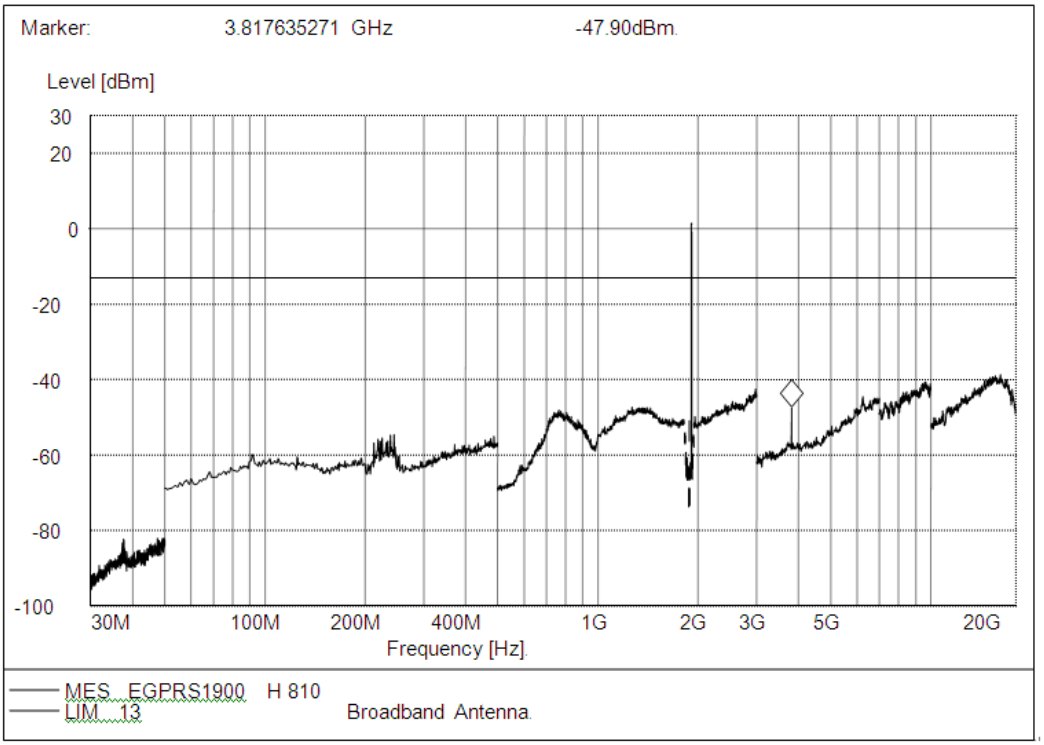



(Plot H.2: EDGE 1900MHz Channel = 512, Test Antenna Vertical)

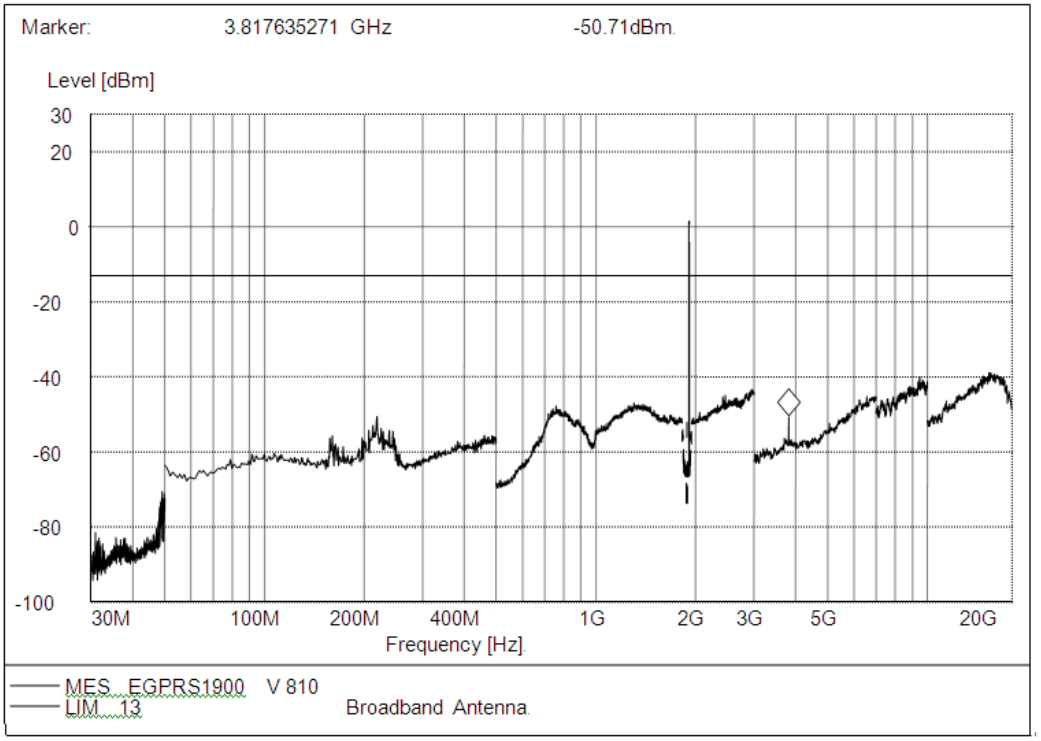



(Plot H.3: EDGE 1900MHz Channel = 661, Test Antenna Horizontal)

(Plot H.4: EDGE 1900MHz Channel = 661, Test Antenna Vertical)




(Plot H.5: EDGE 1900MHz Channel = 810, Test Antenna Horizontal)




(Plot H.6: EDGE 1900MHz Channel = 810, Test Antenna Vertical)

# Annex A Accreditation Certificate

China National Accreditation Service for Conformity Assessment

## LABORATORY ACCREDITATION CERTIFICATE

(Registration No. CNAS L1659 )

**CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd.**

Building 28/29, Shigudong, Xili Industrial Area, Xili Street,
Nanshan District, Shenzhen, Guangdong, China

*is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories(CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence of testing and calibration.*

*The scope of accreditation is detailed in the attached appendices bearing the same registration number as above. The appendices form an integral part of this certificate.*

Date of Issue: 2012-09-29
Date of Expiry: 2015-09-28
Date of Initial Accreditation: 1999-08-03
Date of Update: 2012-09-29

Signed on behalf of China National Accreditation Service for Conformity Assessment

China National Accreditation Service for Conformity Assessment (CNAS) is authorized by Certification and Accreditation Administration of the People's Republic of China (CNCA) to operate the national accreditation schemes for conformity assessment. CNAS is the signatory to International Laboratory Accreditation Cooperation Multilateral Recognition Arrangement (ILAC MRA) and Asia Pacific Laboratory Accreditation Cooperation Multilateral Recognition Arrangement (APLAC MRA).

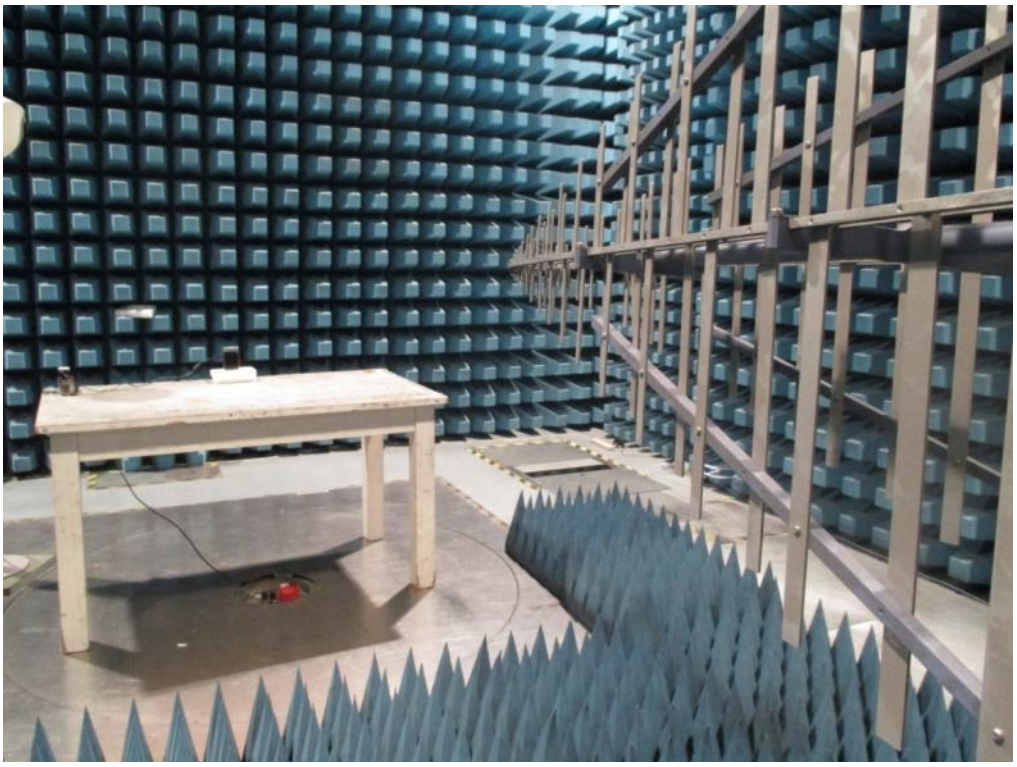
No.CNAS AL 2 0005210

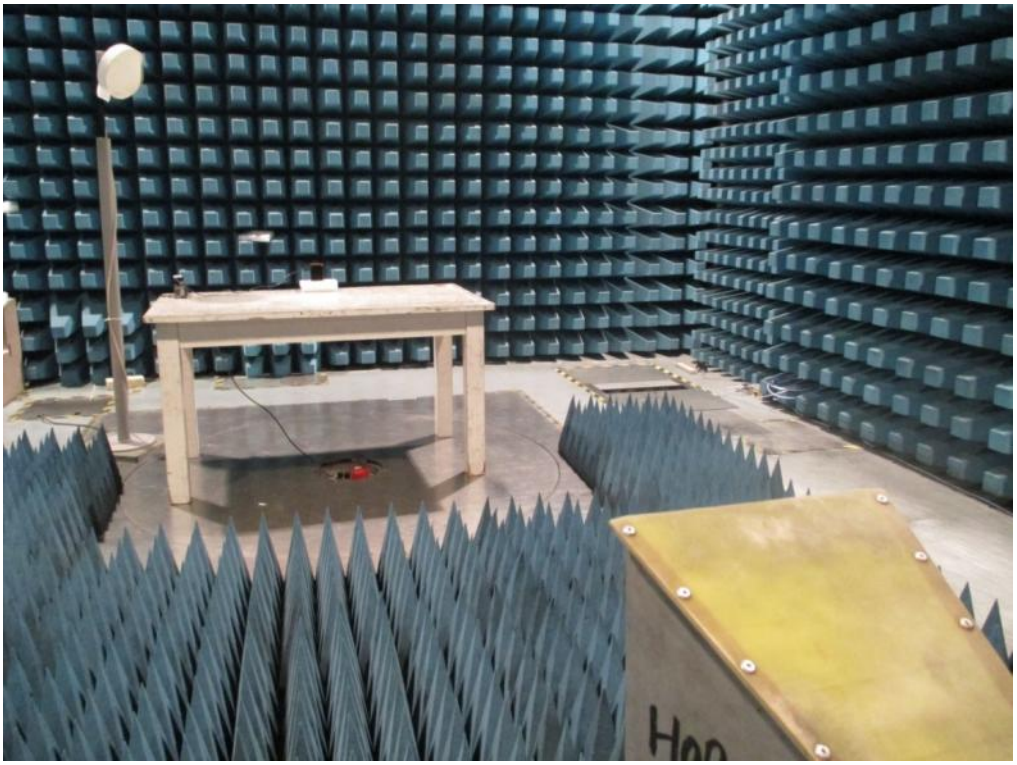
# Annex B PHOTOGRAPHS OF THE EUT

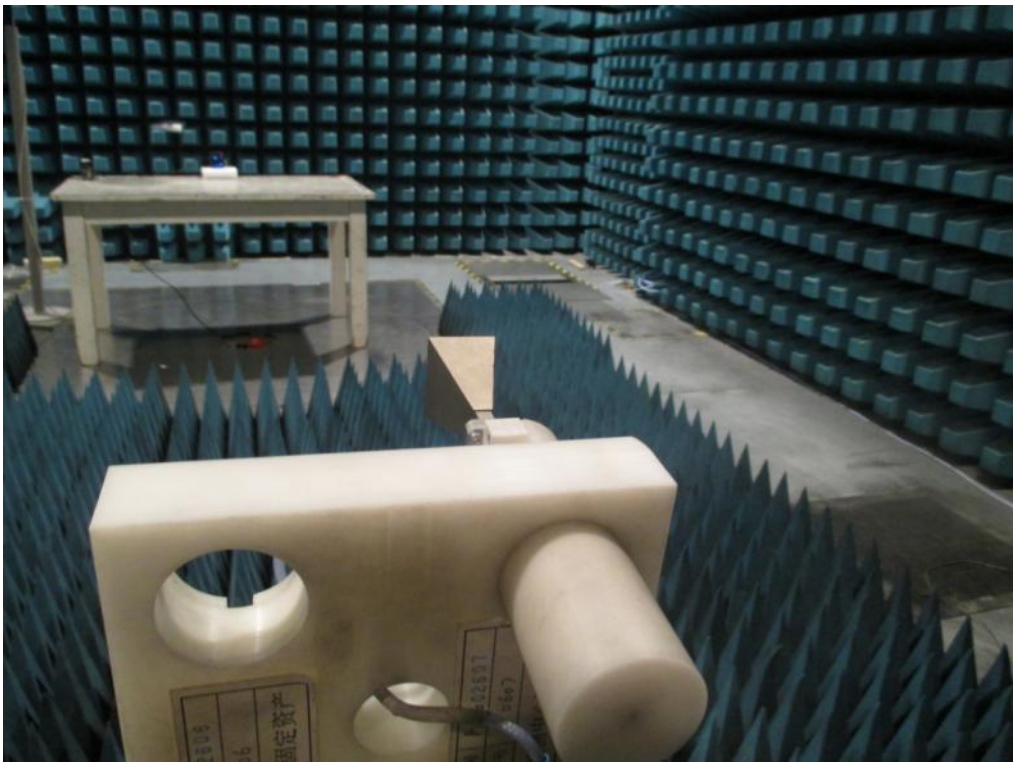
# Annex C PHOTOGRAPHS OF THE TEST SETUP

## 1. Conducted Measurement Setup

## 2. Radiated Measurement Setup







** END OF REPORT **