



# RF TEST REPORT

**Report No.:** SET2014-01425

**Product:** GSM/WCDMA MOBILE PHONE

**FCC ID:** CLNSS4040

**Model No.:** M4 SS 4040

**Applicant:** MFOURTEL MEXICO S.A. DE C.V.

**Address:** Homero No. 136 – 101 Col. Chapultepec Morales, C.P. 11570,  
Delegación Miguel Hidalgo

**Issued by:** CCIC-SET

**Lab Location:** Electronic Testing Building, Shahe Road, Xili, Nanshan District,  
Shenzhen China

**Tel:** 86 755 26627338

**Fax:** 86 755 26627238

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### Test Report

**Product** .....: GSM/WCDMA MOBILE PHONE

**Brand Name**.....: N/A

**Trade Name**.....: M4

**Applicant**.....: MFOURTEL MEXICO S.A. DE C.V.

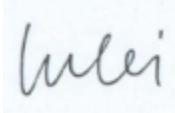
**Applicant Address** .....: Homero No. 136 – 101 Col. Chapultepec Morales, C.P.  
11570, Delegación Miguel Hidalgo


**Manufacturer** .....: CK Telecom Limited


**Manufacturer Address** .....: Technology Road.High-Tech Development Zone. Heyuan,  
Guangdong,P.R.China.

**Test Standards** .....: 47 CFR Part 2(10-1-12 Edition) Frequency Allocations and  
Radio Treaty Matters; General Rules and Regulations  
47 CFR Part 22(10-1-12 Edition) Public Mobile Services  
47 CFR Part 24(10-1-12 Edition)Personal Communications  
Services

**Test Result**.....: PASS

**Tested by** ..... :   
2014.02.27  
Lu Lei, Test Engineer

**Reviewed by** ..... :   
2014.02.27  
Shuangwen Zhang, Senior EGINEER

**Approved by**.....:   
2014.02.27  
Wu Li'an, Manager



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| Change History |            |                   |
|----------------|------------|-------------------|
| Issue          | Date       | Reason for change |
| 1.0            | 2014-02-27 | First edition     |
|                |            |                   |
|                |            |                   |



## 1. GENERAL INFORMATION

### 1.1 EUT Description

EUT Type.....: GSM/WCDMA MOBILE PHONE  
 Serial No.....: (n.a, marked #1 by test site)  
 Hardware Version.....: SLFQPLUS-V1.0  
 Software Version.....: M4\_SS4040\_S10\_Ver200  
 Frequency Range.....: GSM 850MHz:  
   Tx: 824.20 - 848.80MHz (at intervals of 200kHz);  
   Rx: 869.20 - 893.80MHz (at intervals of 200kHz)  
   GSM 1900MHz:  
   Tx: 1850.20 - 1909.80MHz (at intervals of 200kHz);  
   Rx: 1930.20 - 1989.80MHz (at intervals of 200kHz)  
   WCDMA 850MHz  
   Tx: 826.4 - 846.6MHz (at intervals of 200kHz);  
   Rx: 871.4 - 891.6MHz (at intervals of 200kHz)  
   WCDMA 1900MHz  
   Tx: 1852.4 - 1907.6MHz (at intervals of 200kHz);  
   Rx: 1932.4 - 1987.6MHz (at intervals of 200kHz)  
 Modulation Type.....: GSM,GPRS Mode with GMSK Modulation  
   WCDMA Mode with QPSK Modulation  
   HSDPA Mode with QPSK Modulation  
   HSUPA Mode with QPSK Modulation  
 Multislot Class.....: GPRS: Multislot Class12  
 Antenna Type.....: FIFA  
 Emission Designators.....: GSM 850:248KGXW,GSM 1900:248KGXW  
   GPRS 850:248KGXW;GRPS 1900:244KGXW  
   WCDMA 850:4M18F9W ,WCDMA1900:4M18F9W  
   HSDPA 850: 4M18F9W;HSDPA1900: 4M18F9W  
   HSUPA 850: 4M17F9W;HSUPA 1900: 4M16F9W

*Note 1:* The transmitter (Tx) frequency arrangement of the Cellular 850MHz band used by the EUT can be represented with the formula  $F(n)=824.2+0.2*(n-128)$ ,  $128 \leq n \leq 251$ ; the lowest, middle, highest channel numbers (ARFCHs) used and tested in this report are separately 128 (824.2MHz), 190 (836.6MHz) and 251 (848.8MHz).

*Note 2:* The transmitter (Tx) frequency arrangement of the PCS 1900MHz band used by the EUT can be represented with the formula  $F(n)=1850.2+0.2*(n-512)$ ,  $512 \leq n \leq 810$ ; the lowest, middle and highest channel numbers (ARFCHs) used and tested in this report are separately 512 (1850.2MHz), 661 (1880.0MHz) and 810 (1909.8MHz).

*Note 3:* The transmitter (Tx) frequency arrangement of the WCDMA 850MHz band used by the EUT can be represented with the formula  $F(n)=826.4+0.2*(n-4132)$ ,  $4132 \leq n \leq 4233$ ; the lowest,



middle and highest channel numbers (ARFCHs) used and tested in this report are separately 4132 (826.4MHz), 4183(836.6MHz) and 4233 (846.6MHz).

*Note 4:* The transmitter (Tx) frequency arrangement of the WCDMA 1900MHz band used by the EUT can be represented with the formula  $F(n)=1852.4+0.2*(n-9262)$ ,  $9262 \leq n \leq 9538$ ; the lowest, middle and highest channel numbers (ARFCHs) used and tested in this report are separately 9262 (1852.4MHz), 9400 (1880MHz) and 9538 (1907.6MHz).

*Note 5:* For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer

*Note 6:* The EUT does not support uplink function in EDGE mode.



## 1.2 Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 2, Part 22 and Part 24 for the EUT FCC ID Certification:

| No. | Identity                            | Document Title  |
|-----|-------------------------------------|---|
| 1   | 47 CFR Part 2<br>(10-1-12 Edition)  | Frequency Allocations and Radio Treaty Matters; General Rules and Regulations |
| 2   | 47 CFR Part 22<br>(10-1-12 Edition) | Public Mobile Services  |
| 3   | 47 CFR Part 24<br>(10-1-12 Edition) | Personal Communications Services  |

Test detailed items/section required by FCC rules and results are as below:

| No. | Section                              | Description                           | Result |
|-----|--------------------------------------|---------------------------------------|--------|
| 1   | 2.1046                               | Conducted RF Output Power             | PASS   |
| 2   | 2.1049                               | 99% Occupied Bandwidth                | PASS   |
| 3   | 2.1055<br>22.355<br>24.235           | Frequency Stability                   | PASS   |
| 4   | 2.1051<br>2.1057<br>22.917<br>24.238 | Conducted Out of Band Emissions       | PASS   |
| 5   | 2.1051<br>2.1057<br>22.917<br>24.238 | Band Edge                             | PASS   |
| 6   | 22.913<br>24.232                     | Transmitter Radiated Power (EIPR/ERP) | PASS   |
| 7   | 2.1053<br>2.1057<br>22.917<br>24.238 | Radiated Out of Band Emissions        | PASS   |

NOTE: Measurement method according to TIA/EIA 603.D-2010



### 1.3 Facilities and Accreditations

#### 1.3.1 Test Facilities

**CNAS-Lab Code: L1659**

CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd. CCIC is a third party testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L1659. A 12.8\*6.8\*6.4 (m) fully anechoic chamber was used for the radiated spurious emissions test.

**FCC-Registration No.: 406086**

CCIC Southern Electronic Product Testing (Shenzhen) 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 406086, Renewal date Nov. 19, 2011, valid time is until Nov. 18, 2014.

#### 1.3.2 Test Environment Conditions

During the measurement, the environmental conditions were within the listed ranges:

|                             |                |
|-----------------------------|----------------|
| Temperature (°C):           | 15°C - 35°C    |
| Relative Humidity (%):      | 30% - 60%      |
| Atmospheric Pressure (kPa): | 86KPa - 106KPa |

## 2. 47 CFR PART 2, PART 22H & 24E REQUIREMENTS

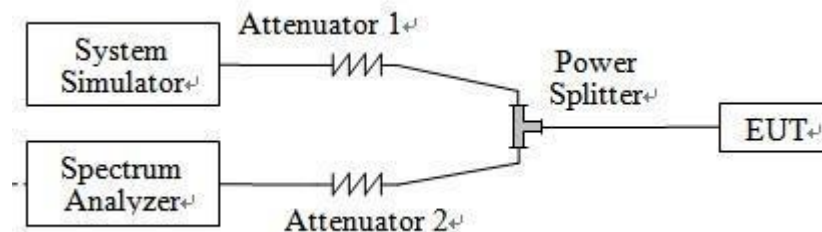
### 2.1 Conducted RF Output Power

#### 2.1.1 Requirement

According to FCC section 2.1046(a), for transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in FCC section 2.1033(c)(8).

#### 2.1.2 Test Description

##### 1. Test Setup:



The EUT, which is powered by the Battery, is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power i.e. Power Control Level (PCL) = 5 and Power Class = 4. A call is established between the EUT and the SS.

##### 2. Equipments List:

| Description       | Manufacturer  | Model  | Serial No.   | Cal.Due Date |
|-------------------|---------------|--------|--------------|--------------|
| System Simulator  | Agilent       | E5515C | MY47510547   | 2014.09.13   |
| Spectrum Analyzer | R&S           | FSP40  | MY4510810    | 2014.06.09   |
| Spectrum Analyzer | Agilent       | E4407B | 1164.4391.40 | 2014.06.09   |
| Power Meter       | Agilent       | E4418B | GB43318055   | 2014.06.09   |
| Power Splitter    | Weinschel     | 1506A  | NW521        | 2014.06.11   |
| Attenuator 1      | MCE/weinschel | 10dB   | BN3693       | 2014.06.11   |
| Attenuator 2      | Resnet        | 3dB    | (n.a.)       | 2014.06.09   |





### 2.1.3 Test Results

Here the lowest, middle and highest channels are selected to perform testing to verify the conducted RF output power of the EUT.

1. GSM Model Test Verdict:

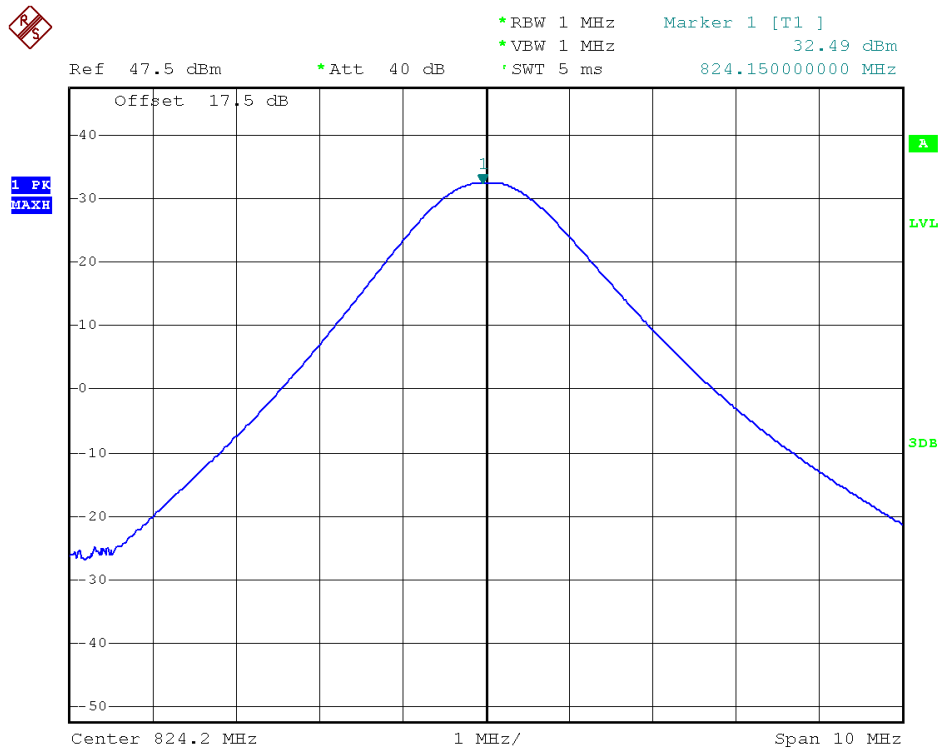
| Band            | Channel | Frequency (MHz) | Measured Output Power |                                    | Verdict |
|-----------------|---------|-----------------|-----------------------|------------------------------------|---------|
|                 |         |                 | dBm                   | Refer to Plot                      |         |
| GSM<br>850MHz   | 128     | 824.2           | 32.49                 | Plot A1 to<br>A3                   | PASS    |
|                 | 190     | 836.6           | 32.66                 |                                    | PASS    |
|                 | 251     | 848.8           | 32.71                 |                                    | PASS    |
| GSM<br>1900MHz  | 512     | 1850.2          | 30.23                 | Plot B1 to<br>B3                   | PASS    |
|                 | 661     | 1880.0          | 30.13                 |                                    | PASS    |
|                 | 810     | 1909.8          | 30.14                 |                                    | PASS    |
| GPRS<br>850MHz  | 128     | 824.2           | 32.48                 | Plot C1 to<br>C3 <sup>Note 1</sup> | PASS    |
|                 | 190     | 836.6           | 32.62                 |                                    | PASS    |
|                 | 251     | 848.8           | 32.63                 |                                    | PASS    |
| GPRS<br>1900MHz | 512     | 1850.2          | 30.26                 | Plot D1 to<br>D3 <sup>Note 1</sup> | PASS    |
|                 | 661     | 1880.0          | 30.12                 |                                    | PASS    |
|                 | 810     | 1909.8          | 30.15                 |                                    | PASS    |

Note 1: For the GPRS model, all the slots were tested and just the worst data was record in this report.

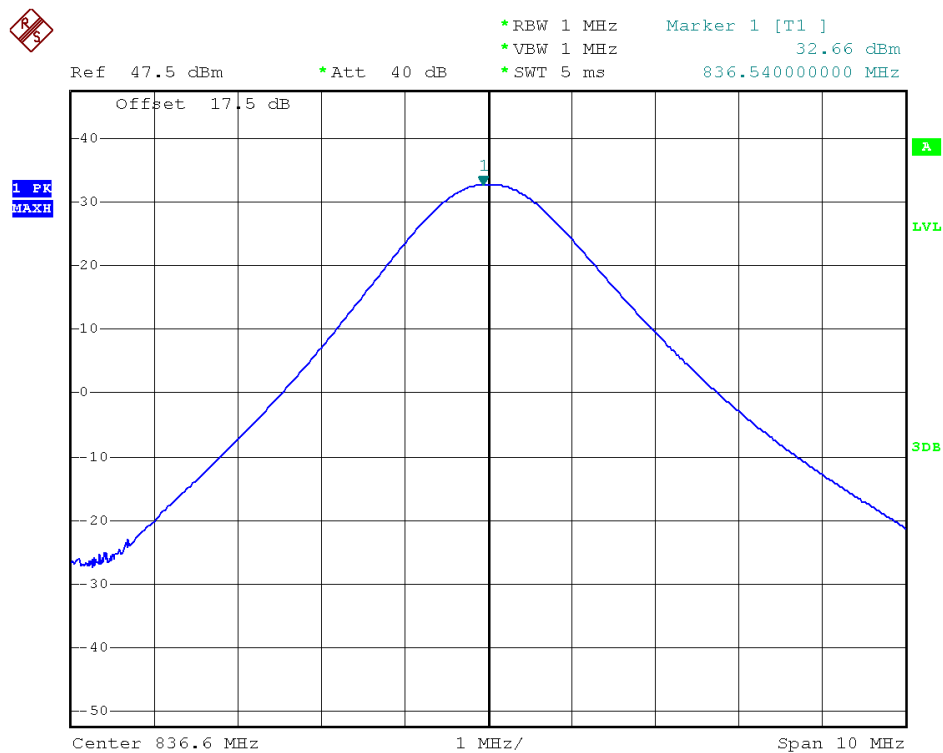
2. WCDMA Model Test Verdict:

| Item       | band   | WCDMA 850 |       |       | WCDMA 1900 |       |       |
|------------|--|-----------|-------|-------|------------|-------|-------|
|            | ARFCN  | 4132      | 4183  | 4233  | 9262       | 9400  | 9538  |
|            | subtest  | dBm       |       |       | dBm        |       |       |
| 5.2(WCDMA) | non  | 23.21     | 23.18 | 23.09 | 23.12      | 23.17 | 23.03 |
| HSDPA      | 1  | 22.40     | 22.34 | 22.32 | 22.38      | 22.22 | 22.34 |
|            | 2  | 22.38     | 22.30 | 22.25 | 22.20      | 22.41 | 22.38 |
|            | 3  | 21.87     | 21.95 | 21.96 | 21.84      | 21.85 | 21.88 |
|            | 4  | 21.90     | 22.03 | 21.83 | 21.82      | 22.08 | 21.88 |
| HSUPA      | 1  | 22.58     | 22.39 | 22.52 | 22.69      | 22.58 | 22.47 |
|            | 2  | 22.33     | 22.22 | 22.31 | 21.98      | 21.82 | 22.29 |
|            | 3  | 22.29     | 22.19 | 22.37 | 22.33      | 22.17 | 22.07 |
|            | 4  | 22.03     | 22.12 | 22.08 | 21.89      | 21.83 | 21.95 |
|            | 5  | 22.09     | 22.27 | 22.19 | 22.13      | 22.25 | 22.23 |
| Note:      | The Conducted RF Output Power test of WCDMA /HSDPA /HSUPA was tested by power meter. |           |       |       |            |       |       |

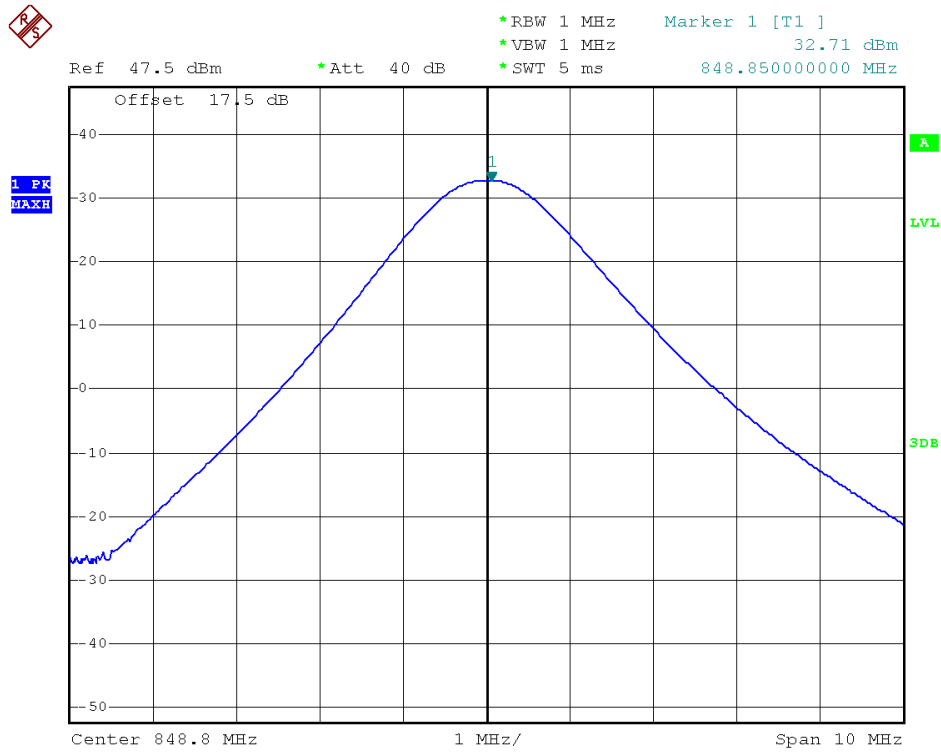
## 3. GSM Model Test Plots:



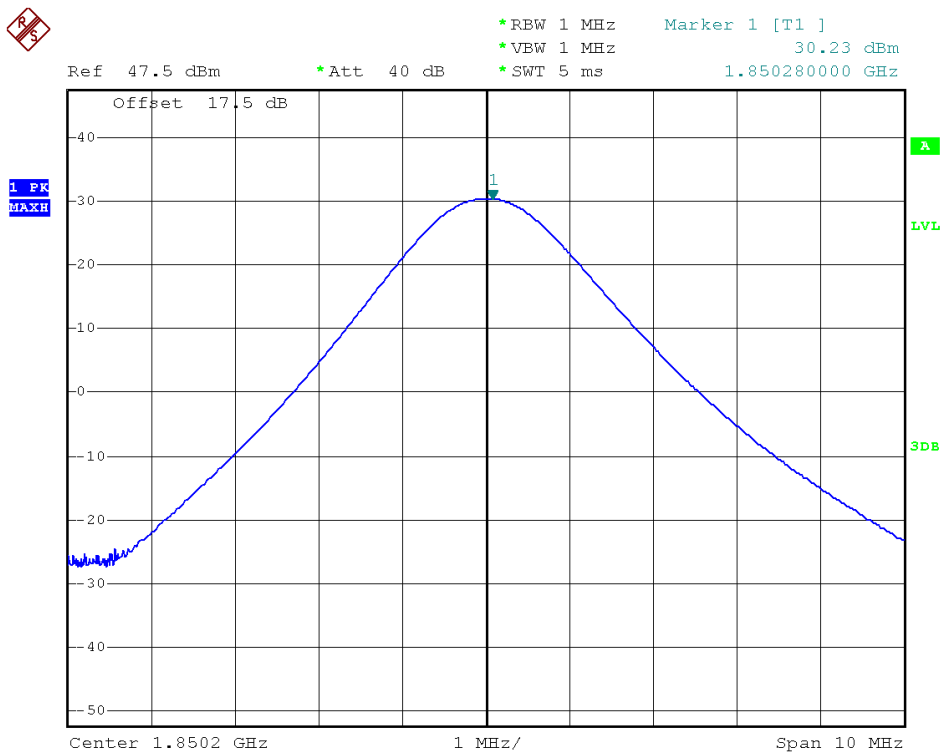
(Plot A1: GSM 850MHz Channel = 128)



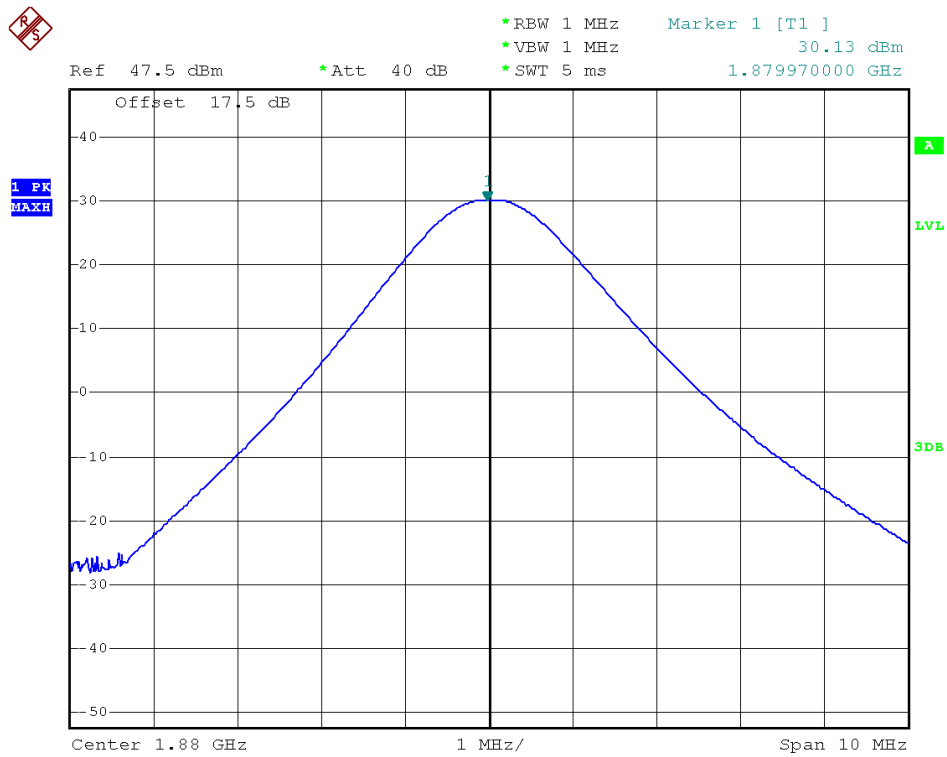
(Plot A2: GSM 850MHz Channel = 190)



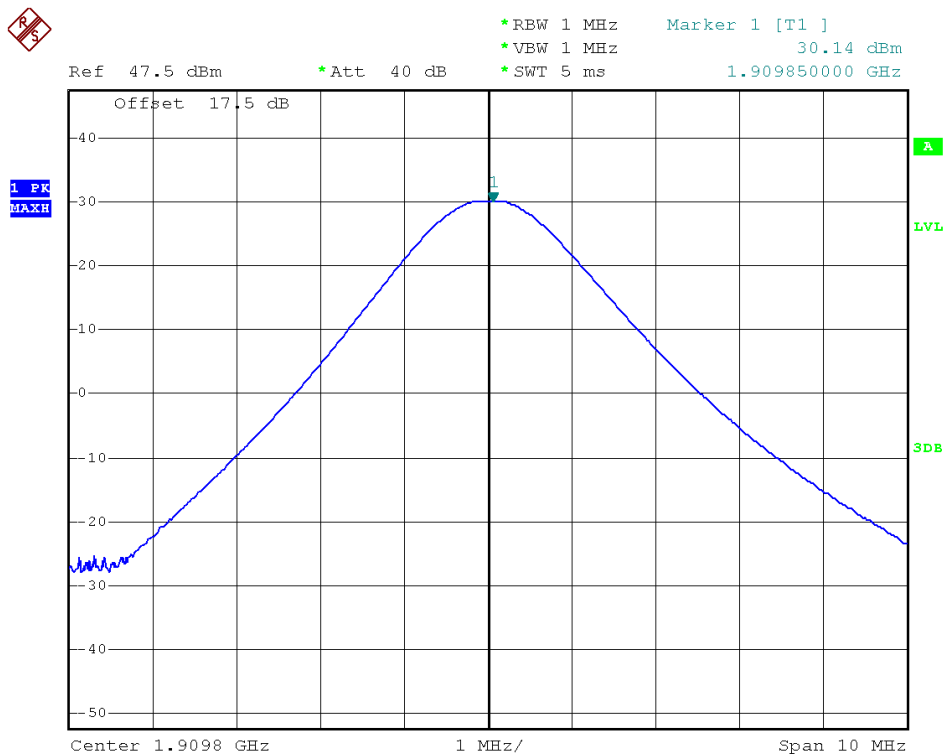
(Plot A3: GSM 850MHz Channel = 251)



(Plot B1: GSM 1900MHz Channel = 512)

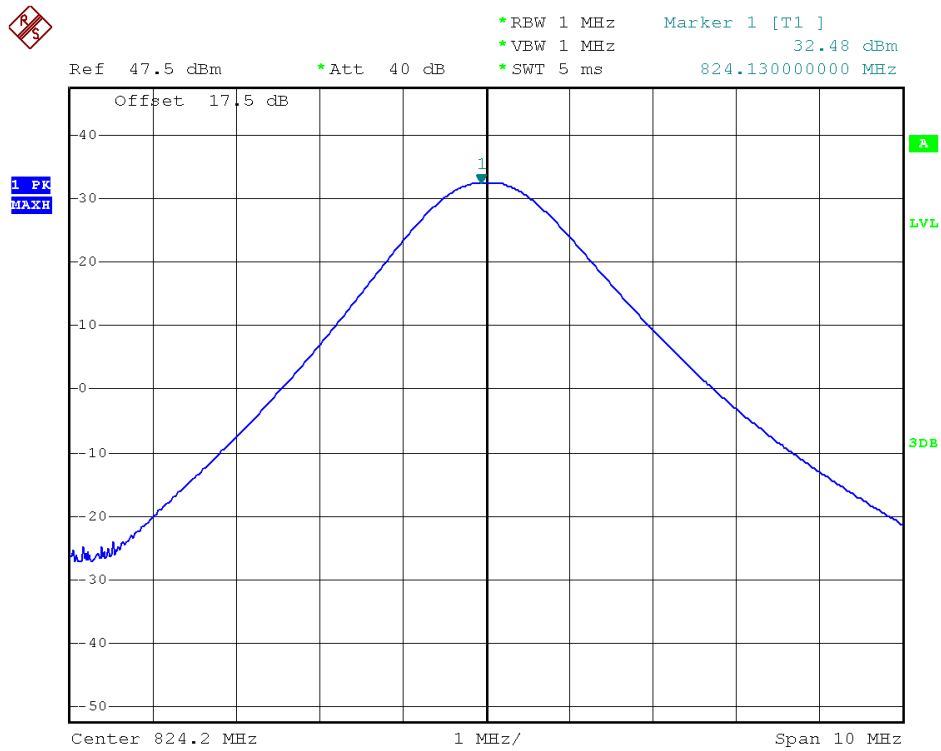


(Plot B2: GSM 1900MHz Channel = 661)

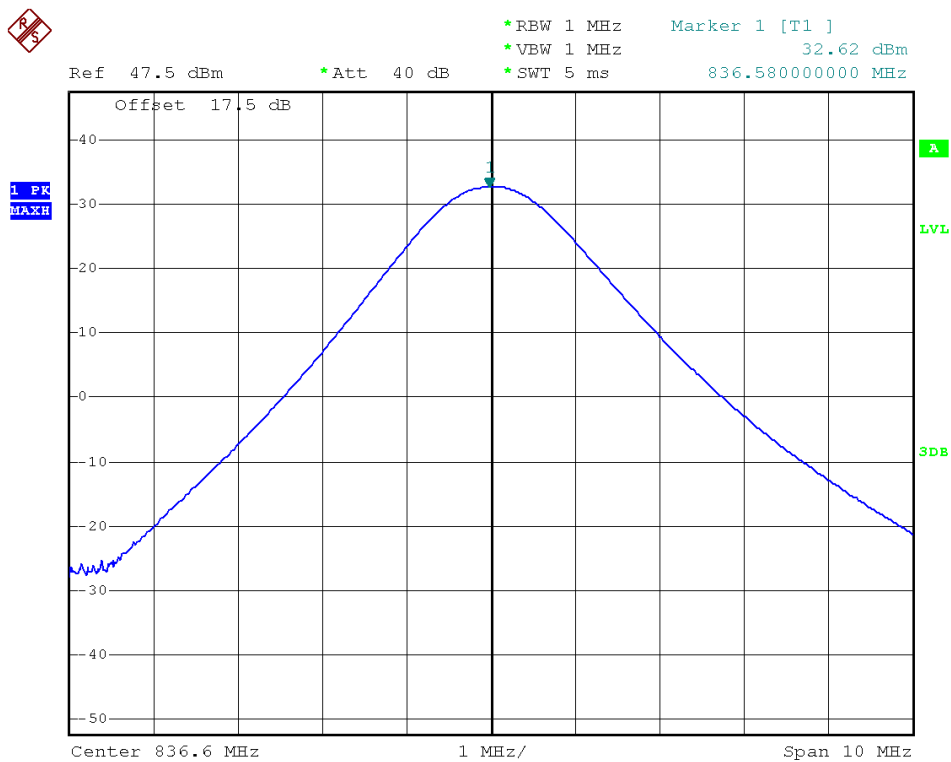


(Plot B3: GSM 1900MHz Channel = 810)

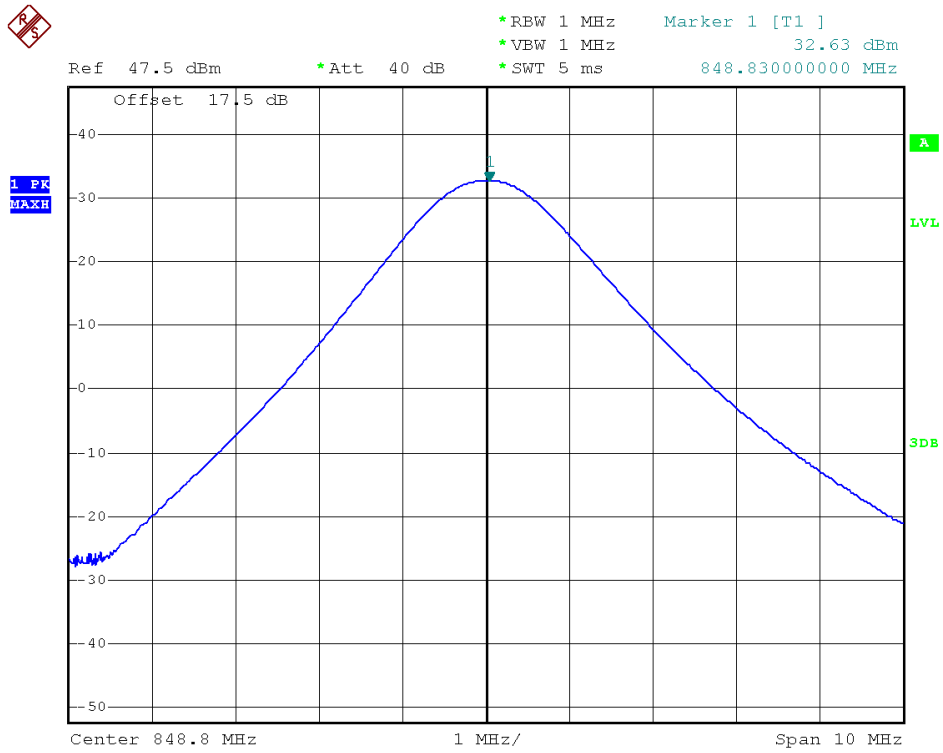
## 4. GPRS Model Test Plots:



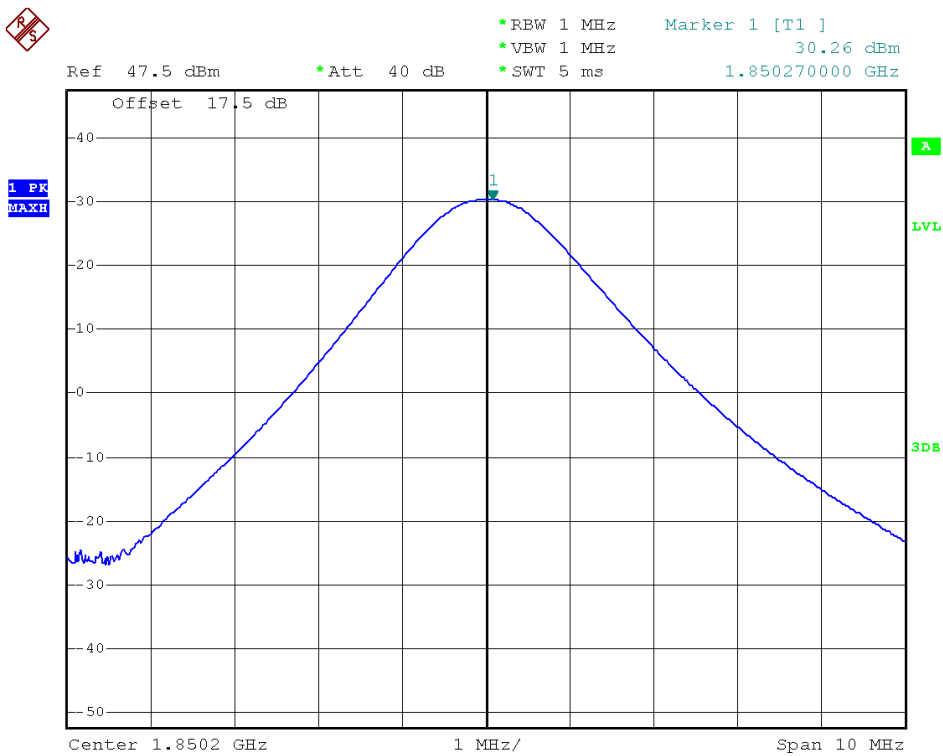
(Plot C1: GPRS 850MHz Channel = 128)



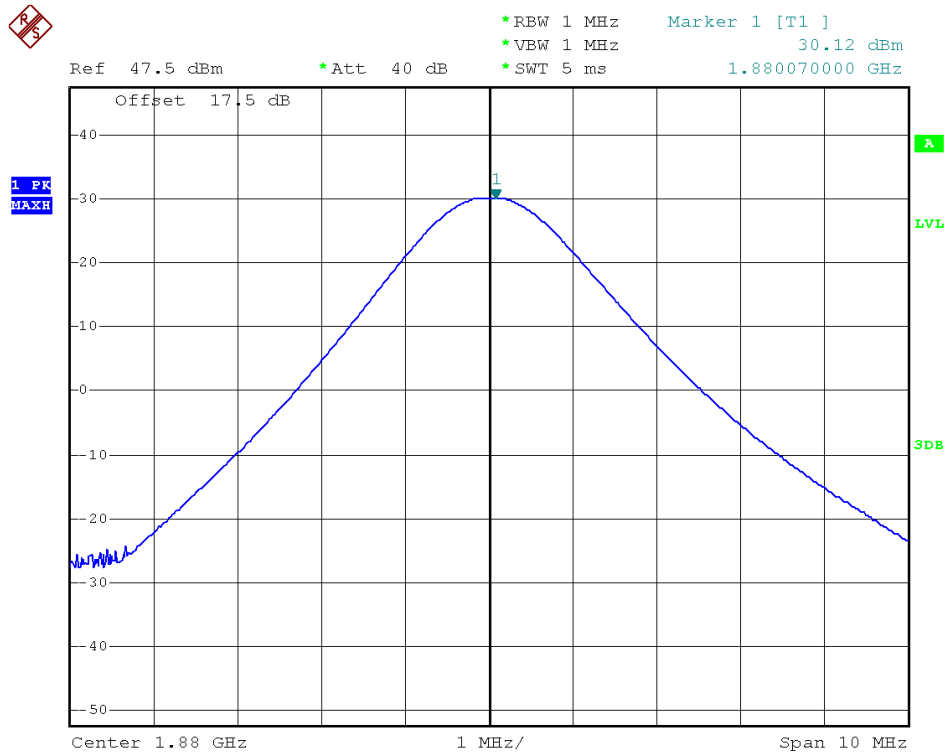
(Plot C2: GPRS 850MHz Channel = 190)



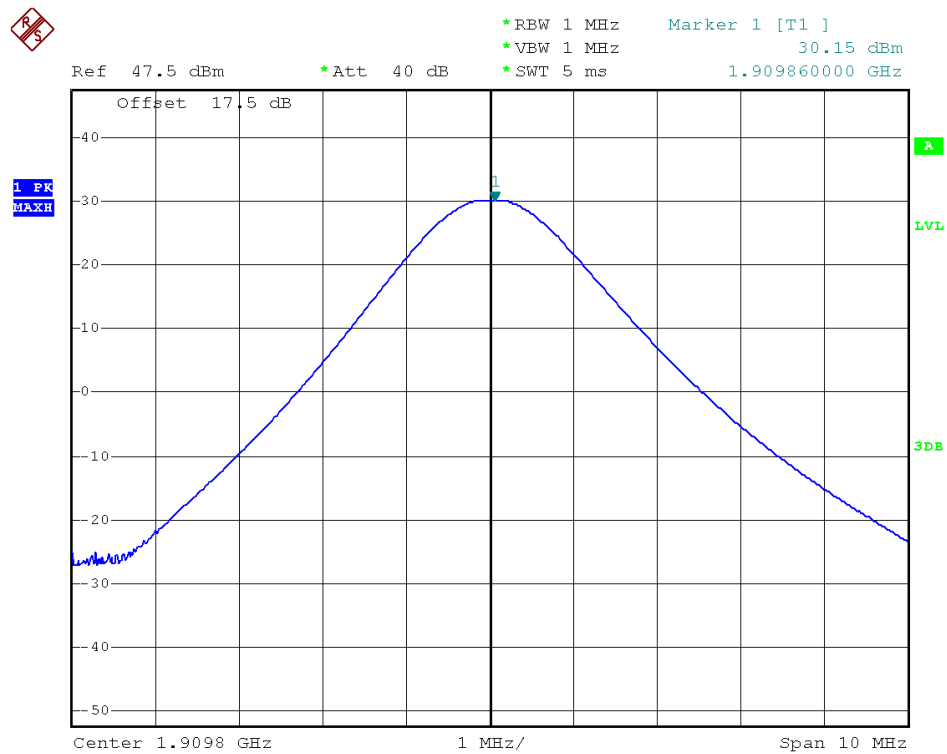
(Plot C3: GPRS 850MHz Channel = 251)



(Plot D1: GPRS 1900MHz Channel = 512)



(Plot D2: GPRS 1900MHz Channel = 661)



(Plot D3: GPRS 1900MHz Channel = 810)



## 2.2 Peak to Average Ratio

### 2.2.1 Definition

According to FCC section 2.1049 and FCC 24.232(d), the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

### 2.2.2 Test Description

See section 2.1.2 of this report.

### 2.2.3 Test Verdict

Here the lowest, middle and highest channels are selected to perform testing to verify the peak-to-average ratio.

Test procedures:

A. For GSM operating mode:

- a. Set RBW=1MHz, VBW=3MHz, peak detector in spectrum analyzer.
- b. Set EUT in maximum output power, and triggered the bust signal.
- c. Measured respectively the peak level and mean level, and the deviation was recorded as Peak to Average radio.

B. For UMTS operating mode:

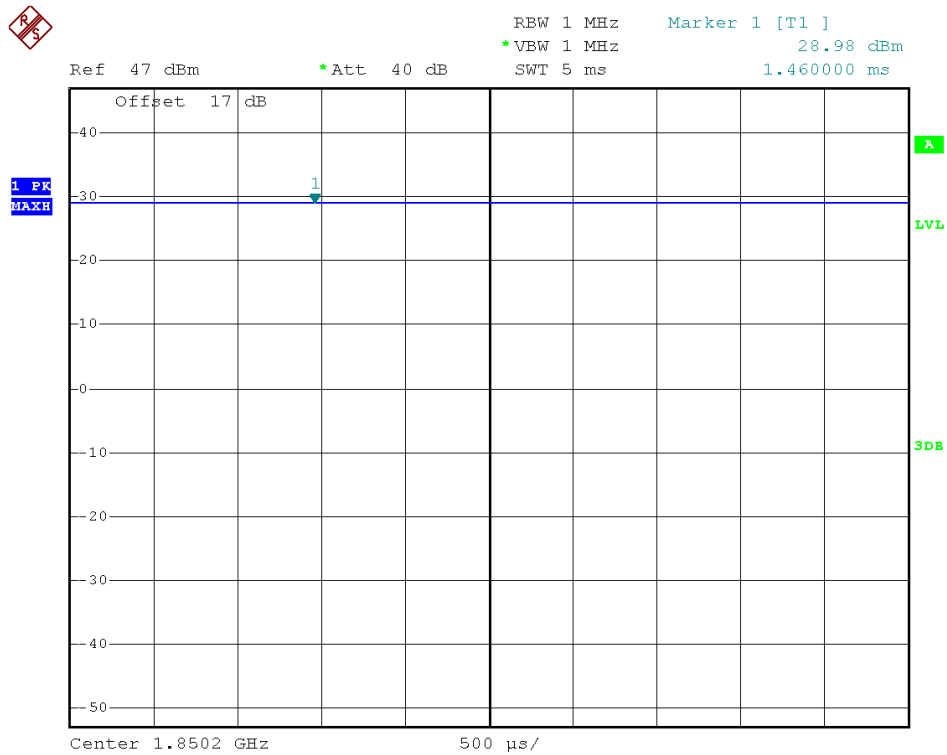
- a. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
- b. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1%.

1. Test Verdict:

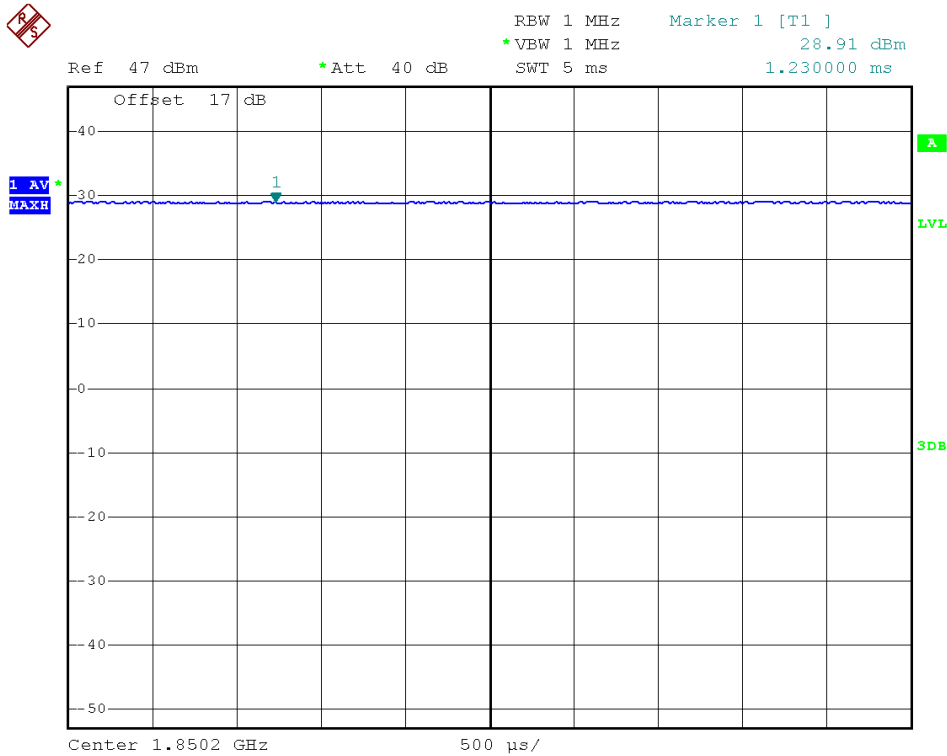
| Band             | Channel | Frequency (MHz) | Peak to Average ratio |                   | Limit dBm | Verdict |
|------------------|---------|-----------------|-----------------------|-------------------|-----------|---------|
|                  |         |                 | dBm                   | Refer to Plot     |           |         |
| GSM<br>1900MHz   | 512     | 1850.2          | 0.07                  | Plot A1-1 to A3-2 | 13        | PASS    |
|                  | 661     | 1880.0          | 0.07                  |                   |           | PASS    |
|                  | 810     | 1909.8          | 0.10                  |                   |           | PASS    |
| WCDMA<br>1900MHz | 9262    | 1852.4          | 3.23                  | Plot B1 toB3      | 13        | PASS    |
|                  | 9400    | 1880.0          | 3.14                  |                   |           | PASS    |
|                  | 9538    | 1907.6          | 3.16                  |                   |           | PASS    |
| HSDPA<br>1900MHz | 9262    | 1852.4          | 3.21                  | Plot C1 toC3      | 13        | PASS    |
|                  | 9400    | 1880.0          | 3.14                  |                   |           | PASS    |
|                  | 9538    | 1907.6          | 3.19                  |                   |           | PASS    |
| HSUPA<br>1900MHz | 9262    | 1852.4          | 3.26                  | Plot D1 toD3      | 13        | PASS    |
|                  | 9400    | 1880.0          | 3.24                  |                   |           | PASS    |
|                  | 9538    | 1907.6          | 3.15                  |                   |           | PASS    |



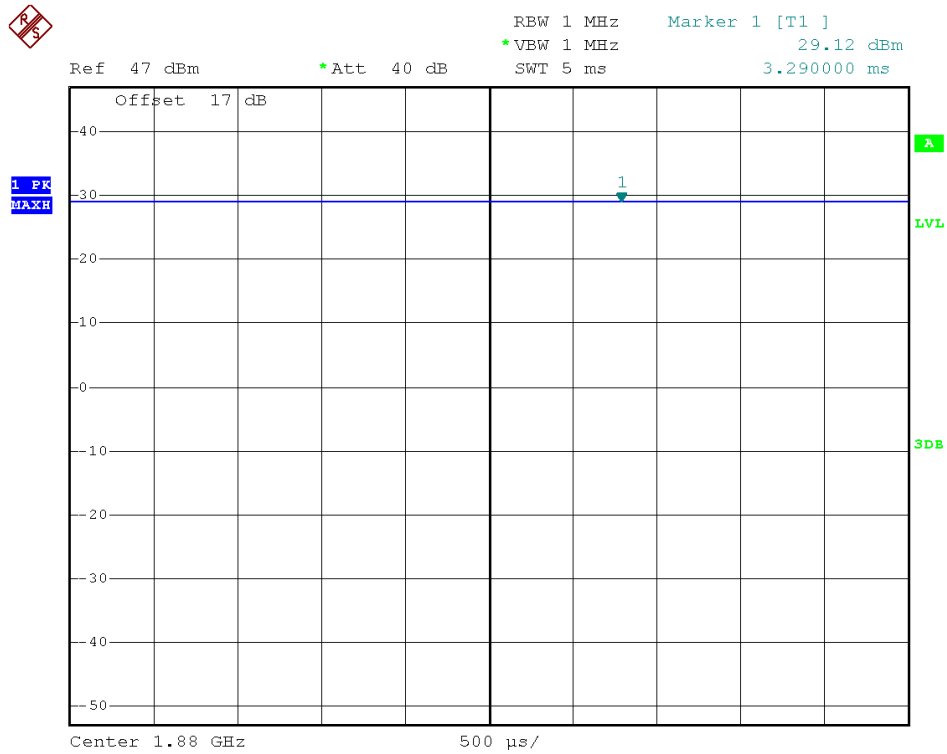
2. GSM Model Test Plots:



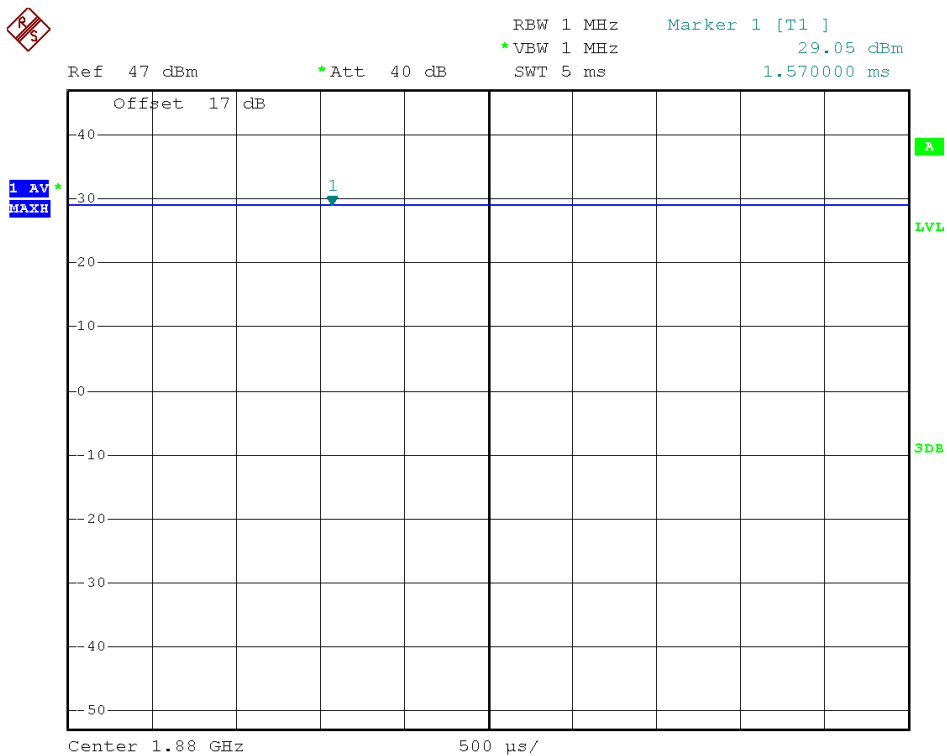
(Plot A1-1: GSM 1900 MHz Channel = 512)



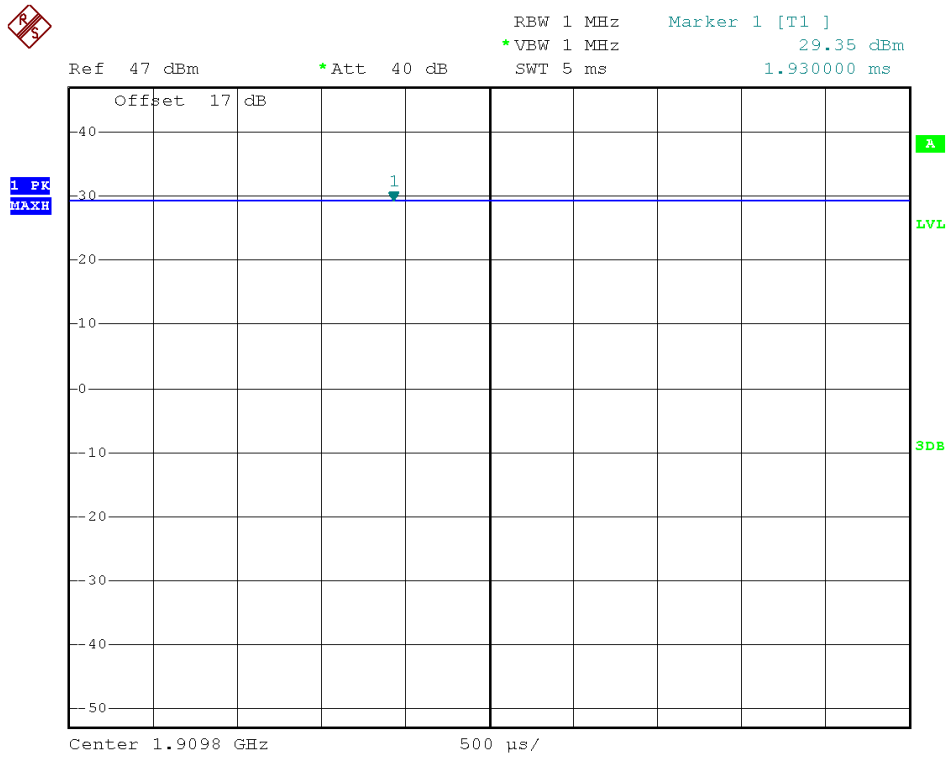
(Plot A1-2: GSM 1900 MHz Channel = 512)



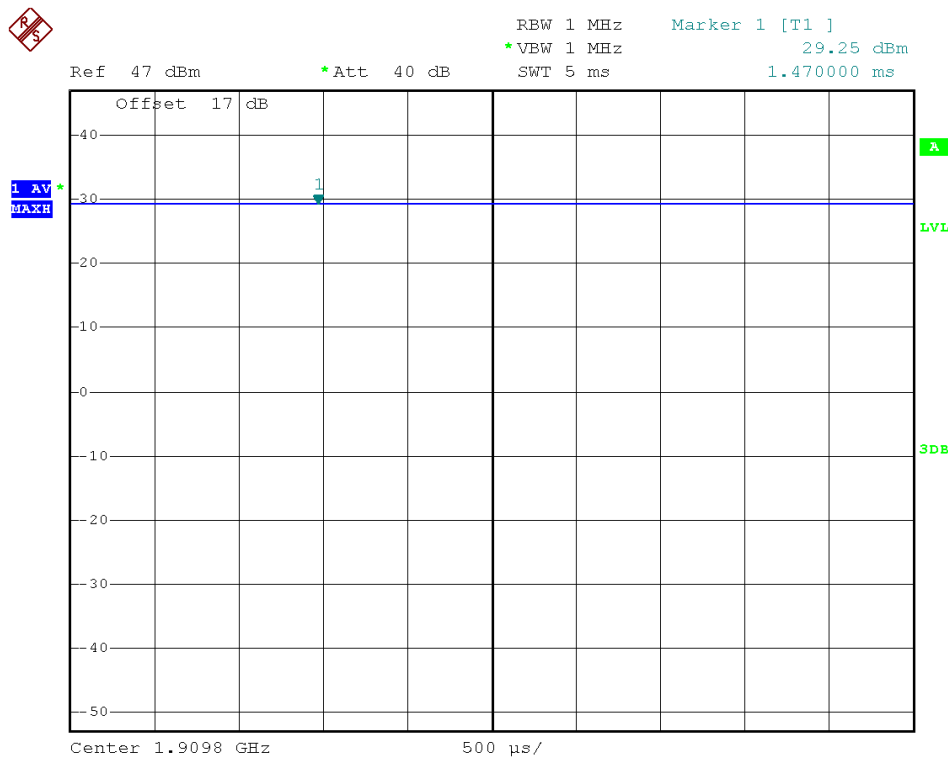
(Plot A2-1: GSM 1900 MHz Channel = 661)



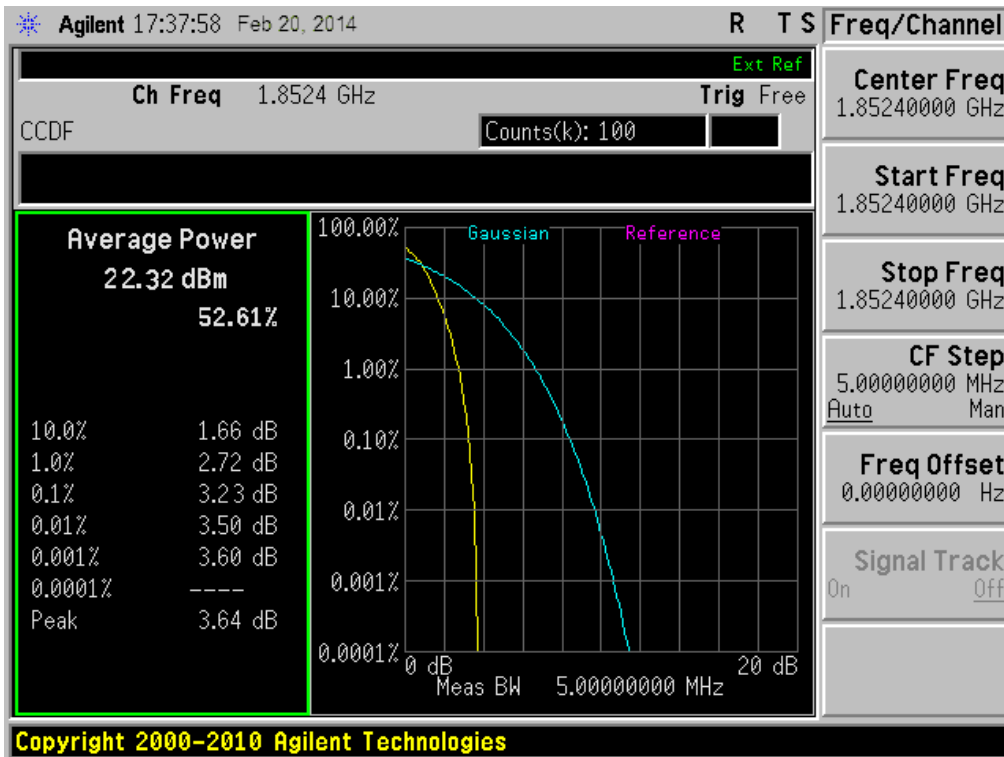
(Plot A2-2: GSM 1900 MHz Channel = 661)



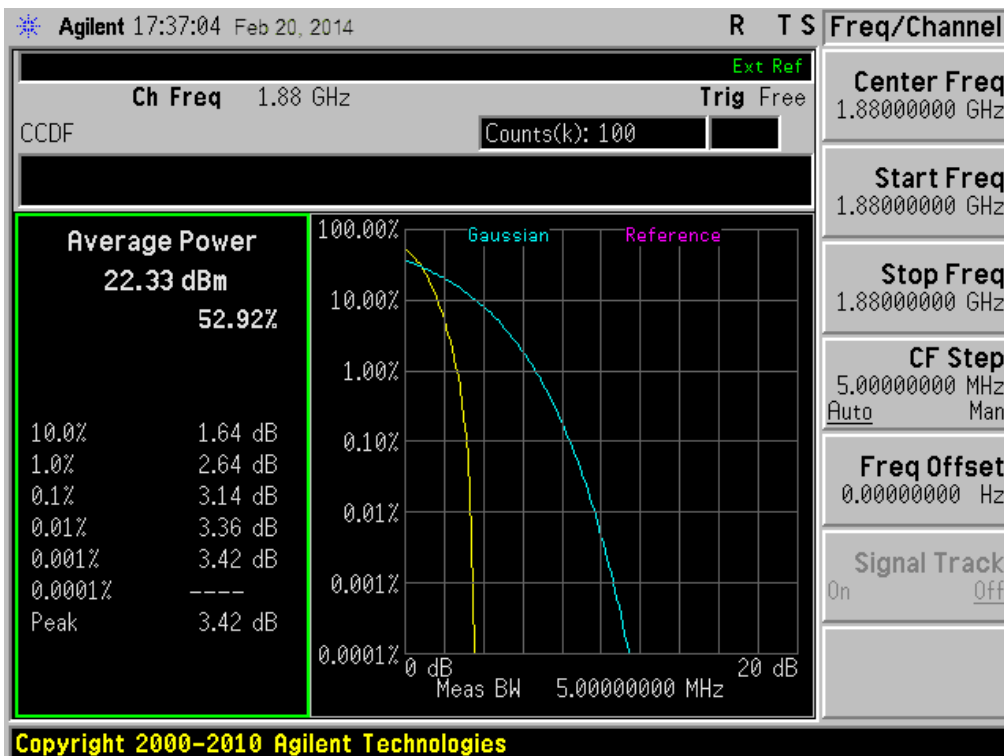
(Plot A3-1: GSM 1900MHz Channel = 810)



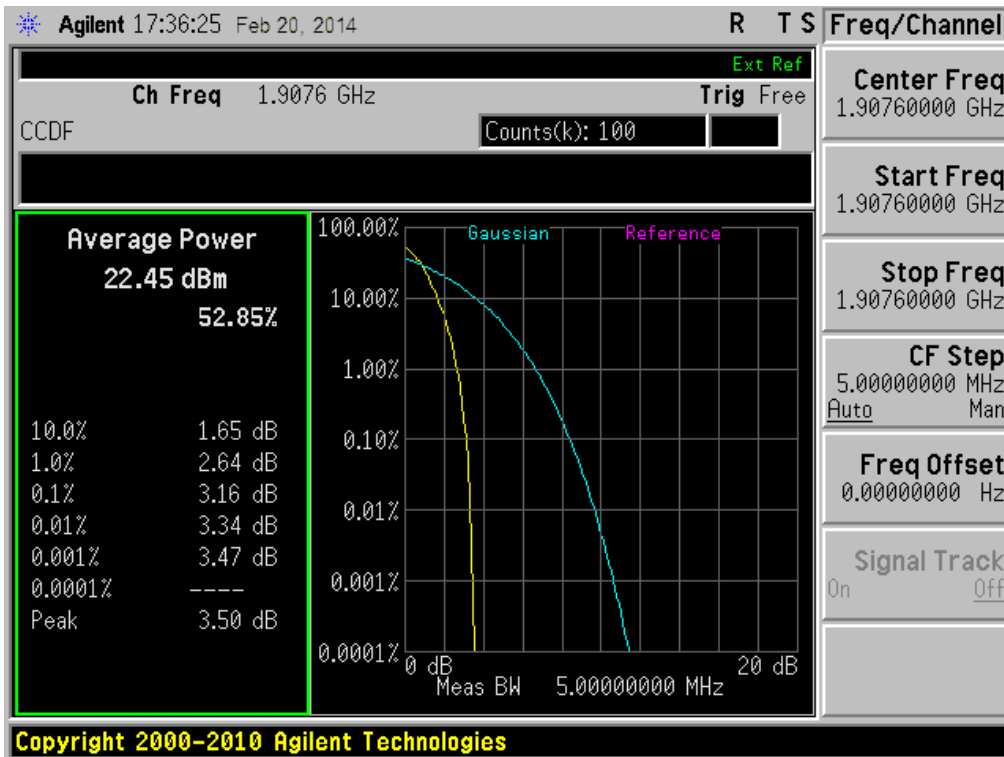
(Plot A3-2: GSM 1900MHz Channel = 810)



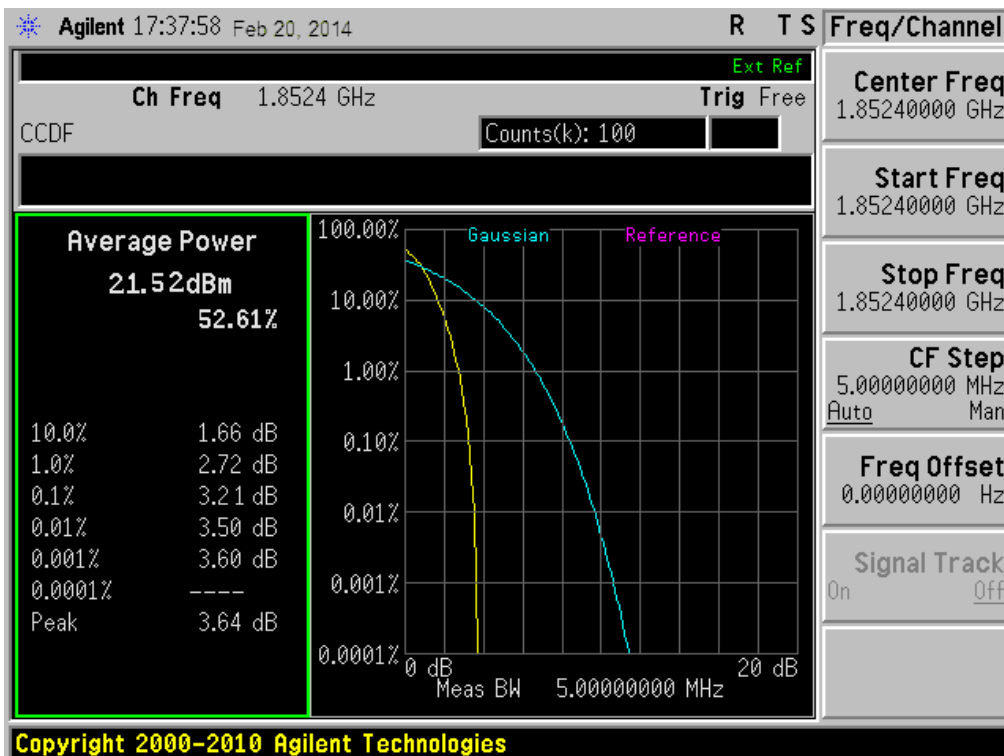
(Plot B1: WCDMA 1900MHz Channel = 9262)



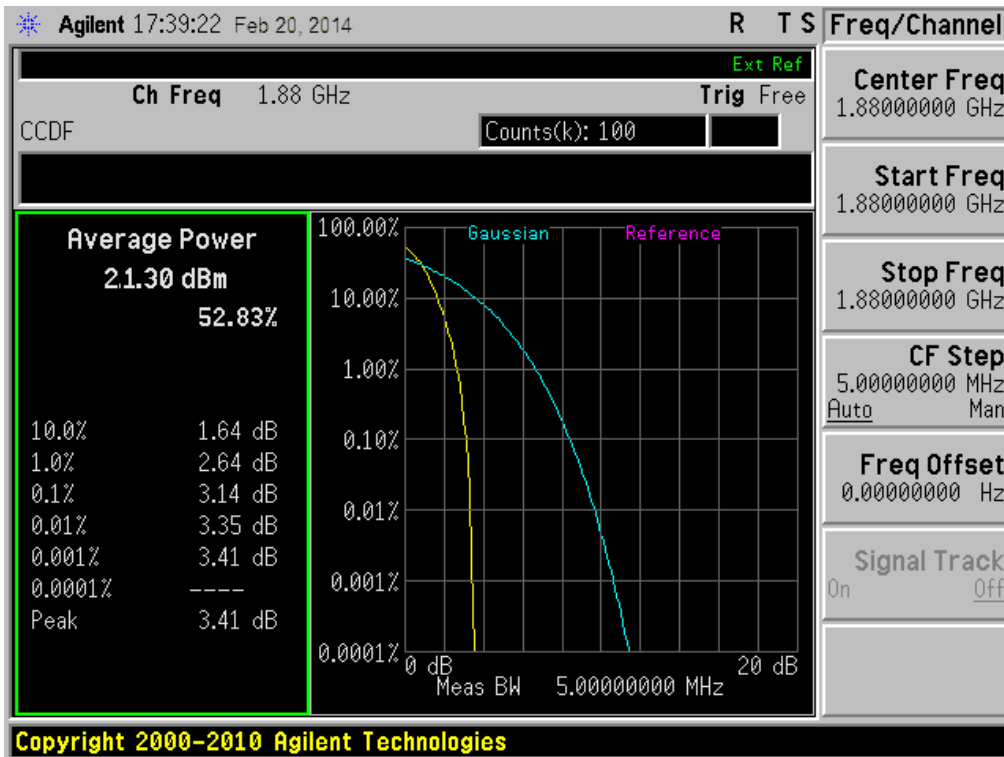
(Plot B2: WCDMA 1900MHz Channel = 9400)



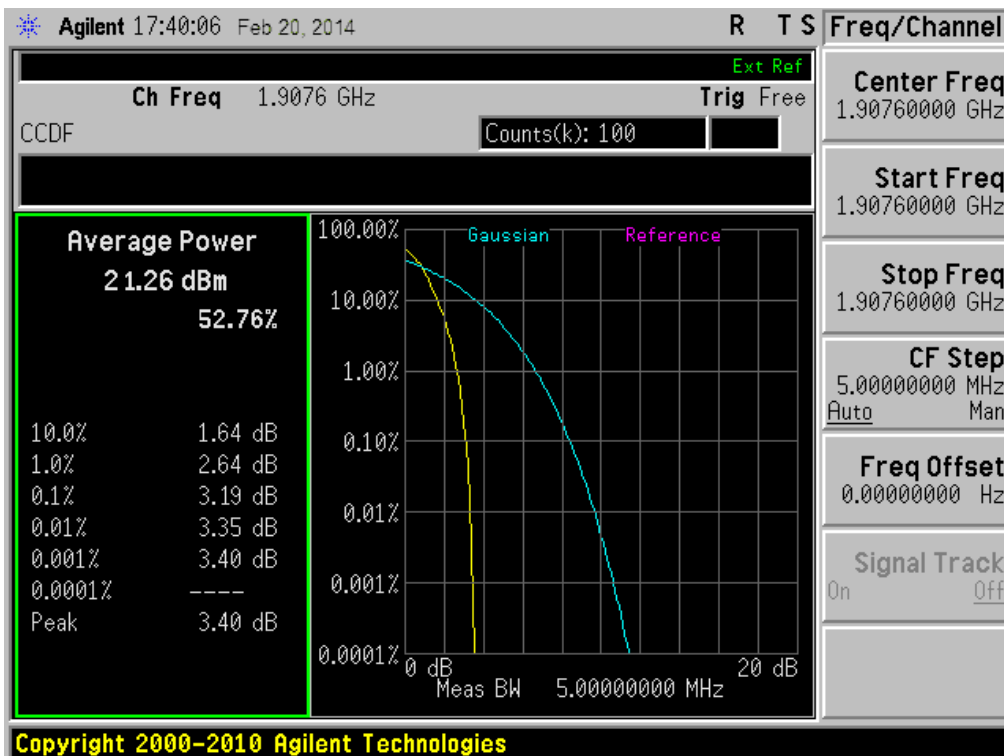
(Plot B3: WCDMA 1900MHz Channel = 9538)



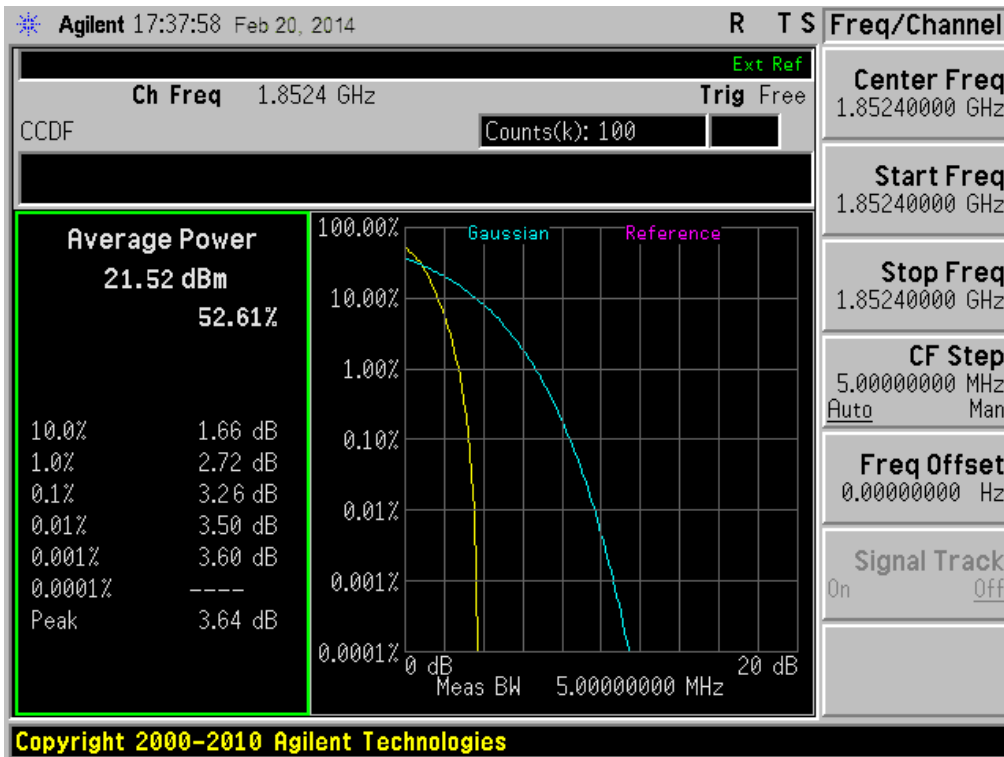
(Plot C1: HSDPA 1900MHz Channel = 9262)



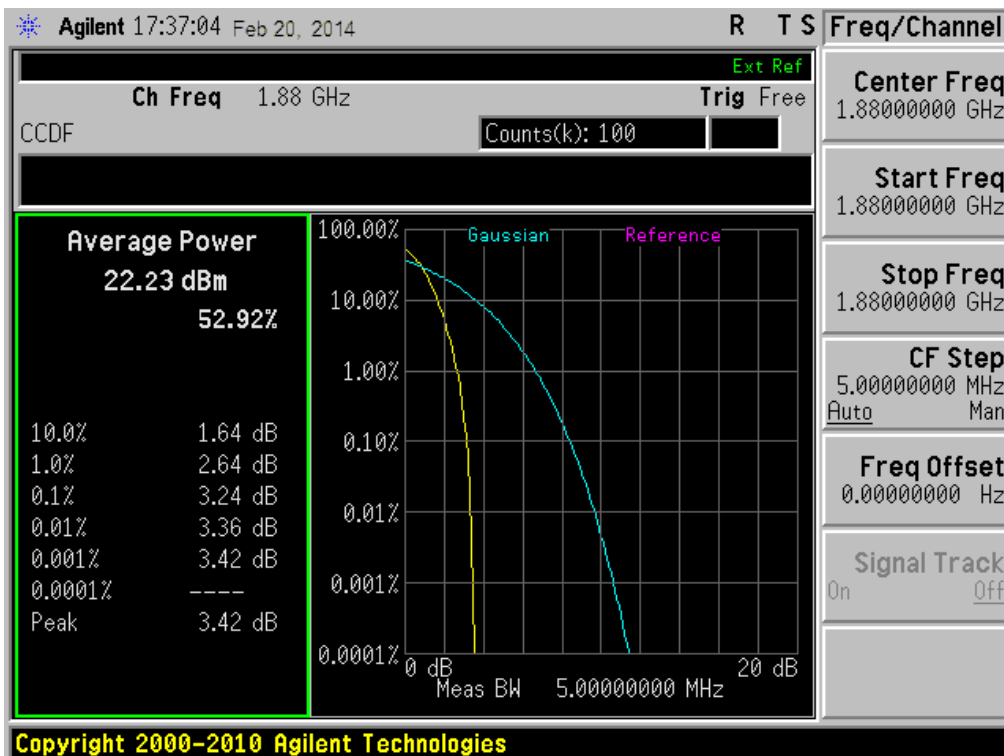
(Plot C2: HSDPA 1900MHz Channel = 9400)



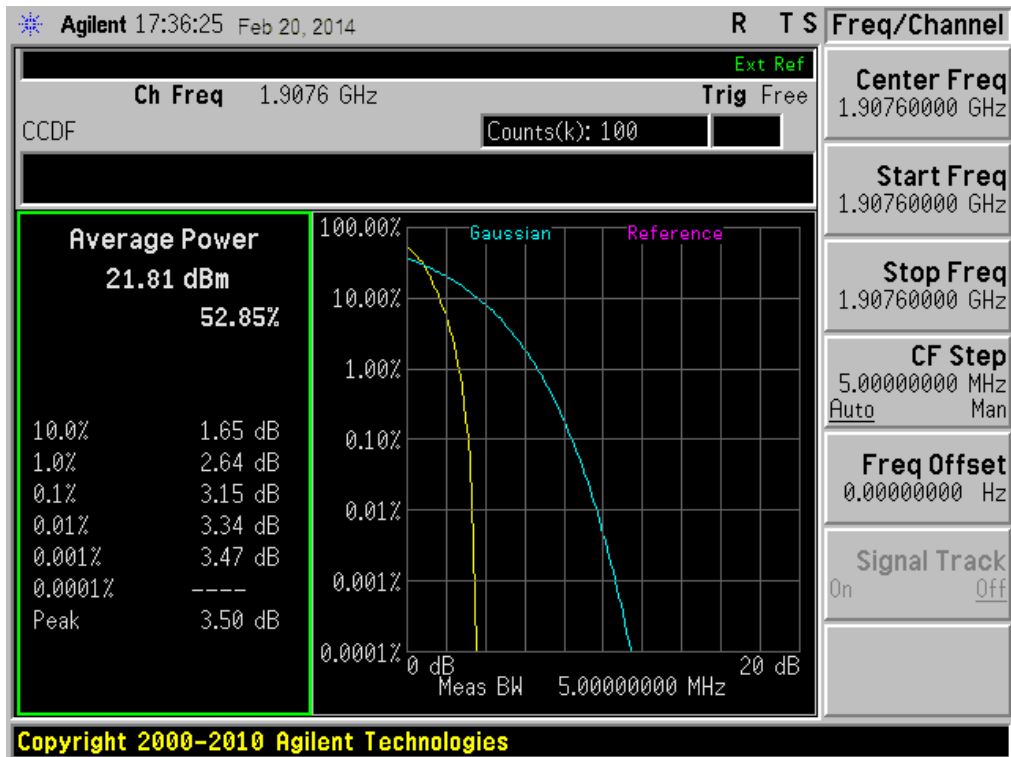
(Plot C3: HSDPA 1900MHz Channel = 9538)



(Plot D1: HSUPA 1900MHz Channel = 9262)



(Plot D2: HSUPA 1900MHz Channel = 9400)



(Plot D3: HSUPA 1900MHz Channel = 9538)





## 2.3 99% Occupied Bandwidth

### 2.3.1 Definition

According to FCC section 2.1049, the occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.

Occupied bandwidth is also known as the 99% emission bandwidth,

### 2.3.2 Test Description

See section 2.1.2 of this report.

### 2.3.3 Test Verdict

Here the lowest, middle and highest channels are selected to perform testing to verify the 99% occupied bandwidth.

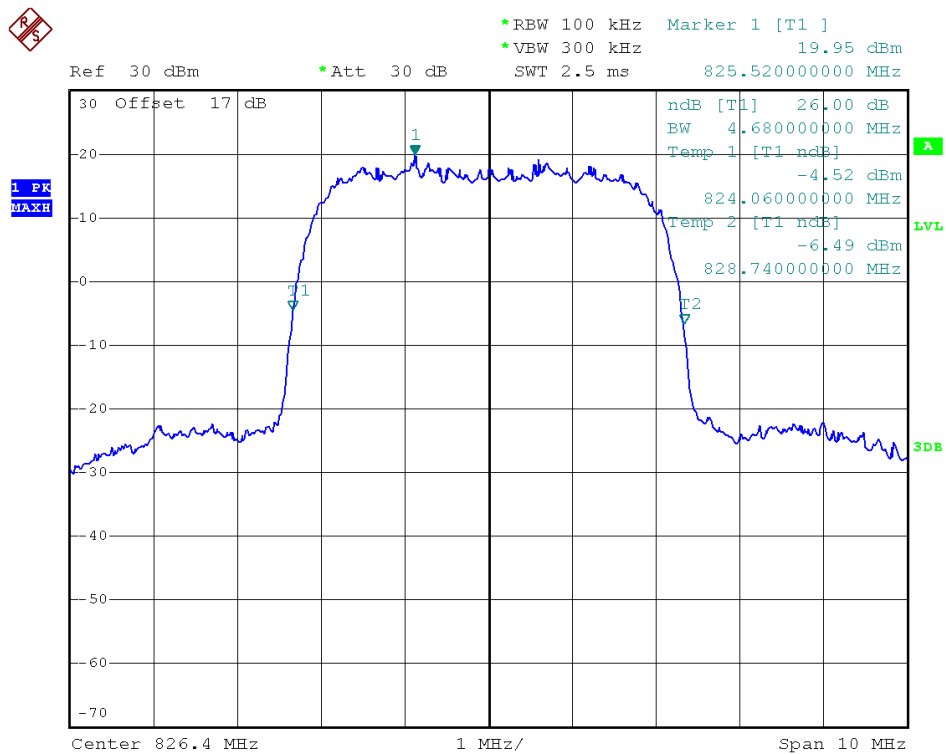
#### 1. Test Verdict:

| Band          | Channel | Frequency (MHz) | 26dB bandwidth | 99% Occupied Bandwidth | Refer to Plot |
|---------------|---------|-----------------|----------------|------------------------|---------------|
| WCDMA 850MHz  | 4132    | 826.4           | 4.68MHz        | 4.18MHz                | Plot A1-A2    |
|               | 4183    | 836.6           | 4.70MHz        | 4.18MHz                | Plot B1-B2    |
|               | 4233    | 846.6           | 4.70MHz        | 4.16MHz                | Plot C1-C2    |
| WCDMA 1900MHz | 9262    | 1852.4          | 4.68MHz        | 4.16MHz                | Plot D1-D2    |
|               | 9400    | 1880            | 4.68MHz        | 4.16MHz                | Plot E1-E2    |
|               | 9538    | 1907.6          | 4.72MHz        | 4.18MHz                | Plot F1-F2    |
| HSDPA 850MHz  | 4132    | 826.4           | 4.70MHz        | 4.16MHz                | Plot G1-G2    |
|               | 4183    | 836.6           | 4.70MHz        | 4.18MHz                | Plot H1-H2    |
|               | 4233    | 846.6           | 4.72MHz        | 4.16MHz                | Plot I1-I2    |
| HSDPA 1900MHz | 9262    | 1852.4          | 4.70MHz        | 4.16MHz                | Plot J1-J2    |
|               | 9400    | 1880            | 4.68MHz        | 4.18MHz                | Plot K1-K2    |
|               | 9538    | 1907.6          | 4.72MHz        | 4.18MHz                | Plot L1-L2    |
| HSUPA 850MHz  | 4132    | 826.4           | 4.68MHz        | 4.15MHz                | Plot M1-M2    |
|               | 4183    | 836.6           | 4.69MHz        | 4.17MHz                | Plot N1-N2    |
|               | 4233    | 846.6           | 4.68MHz        | 4.16MHz                | Plot O1-O2    |
| HSUPA 1900MHz | 9262    | 1852.4          | 4.68MHz        | 4.16MHz                | Plot P1-P2    |
|               | 9400    | 1880            | 4.68MHz        | 4.16MHz                | Plot Q1-Q2    |
|               | 9538    | 1907.6          | 4.67MHz        | 4.14MHz                | Plot R1-R2    |
| GSM 850MHz    | 128     | 824.2           | 314KHz         | 242KHz                 | Plot S1-S2    |

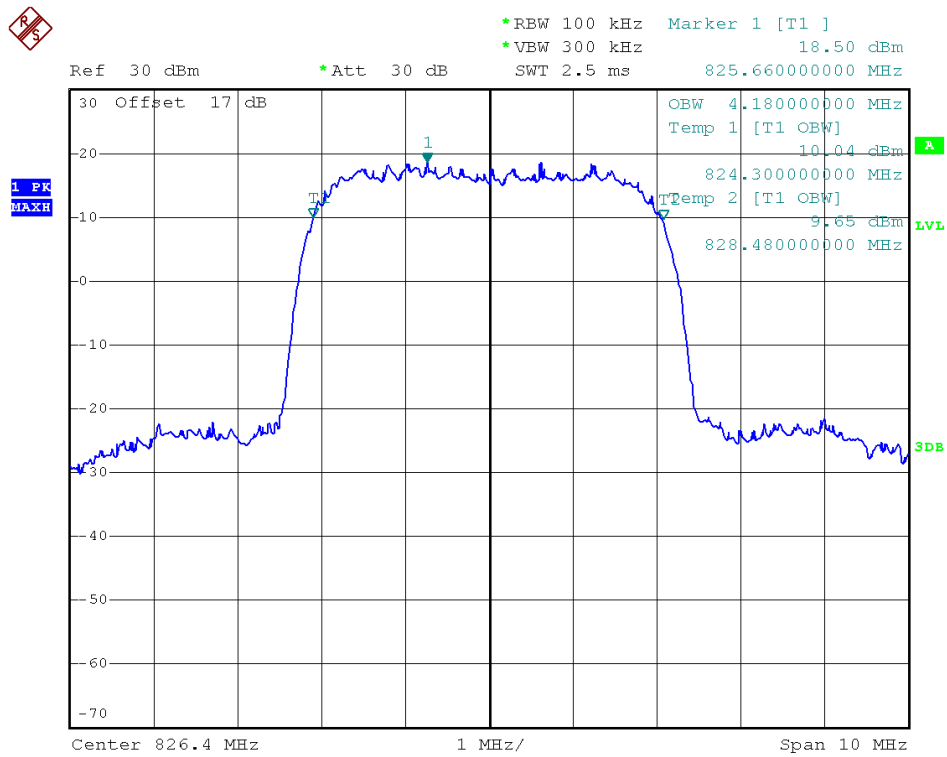


| Band         | Channel | Frequency (MHz) | 26dB bandwidth | 99% Occupied Bandwidth | Refer to Plot |
|--------------|---------|-----------------|----------------|------------------------|---------------|
|              | 190     | 836.6           | 320KHz         | 248KHz                 | Plot T1-T2    |
|              | 251     | 848.8           | 318KHz         | 244KHz                 | Plot U1-U2    |
| GSM 1900MHz  | 512     | 1850.2          | 320KHz         | 244KHz                 | Plot V1-V2    |
|              | 661     | 1880.0          | 324KHz         | 244KHz                 | Plot W1-W2    |
|              | 810     | 1909.8          | 324KHz         | 248KHz                 | Plot X1-X2    |
| GPRS 850MHz  | 128     | 824.2           | 324KHz         | 244KHz                 | Plot Y1-Y2    |
|              | 190     | 836.6           | 316KHz         | 248KHz                 | Plot Z1-Z2    |
|              | 251     | 848.8           | 316KHz         | 244KHz                 | Plot a1-a2    |
| GPRS 1900MHz | 512     | 1850.2          | 320KHz         | 244KHz                 | Plot b1-b2    |
|              | 661     | 1880.0          | 320KHz         | 240KHz                 | Plot c1-c2    |
|              | 810     | 1909.8          | 320KHz         | 244KHz                 | Plot d1-d2    |

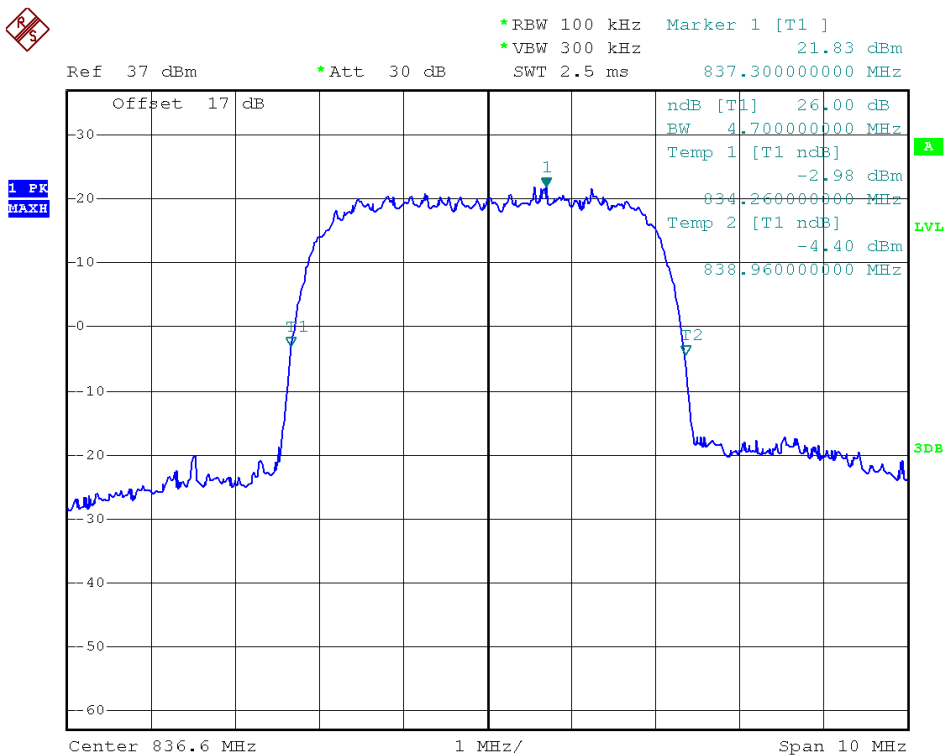
2. Test Plots:



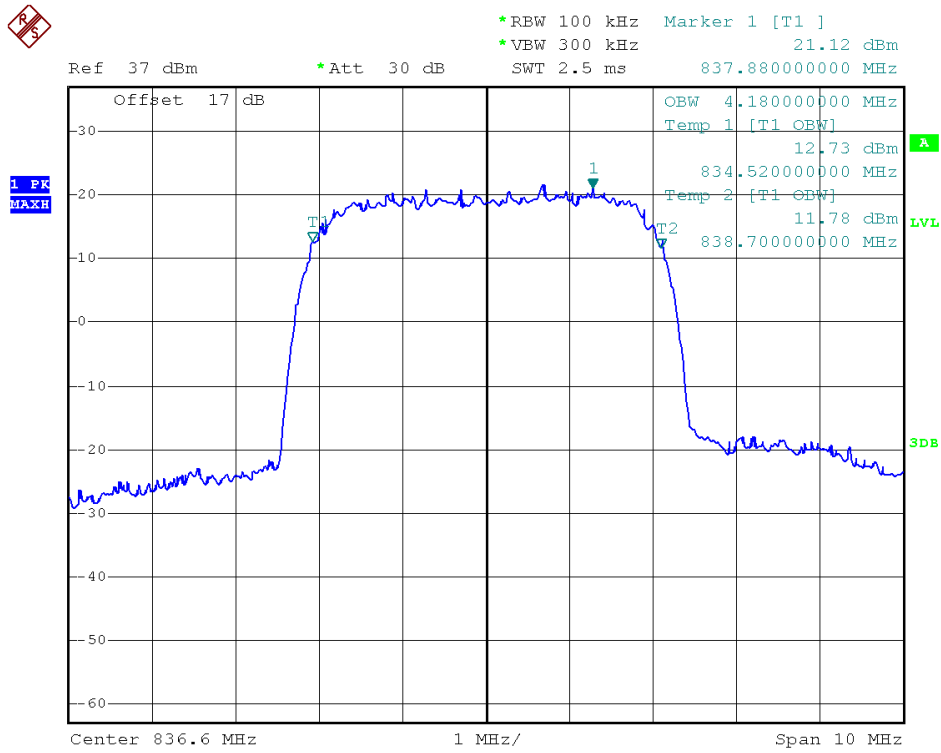
(Plot A1: WCDMA 850MHz Channel = 4132)



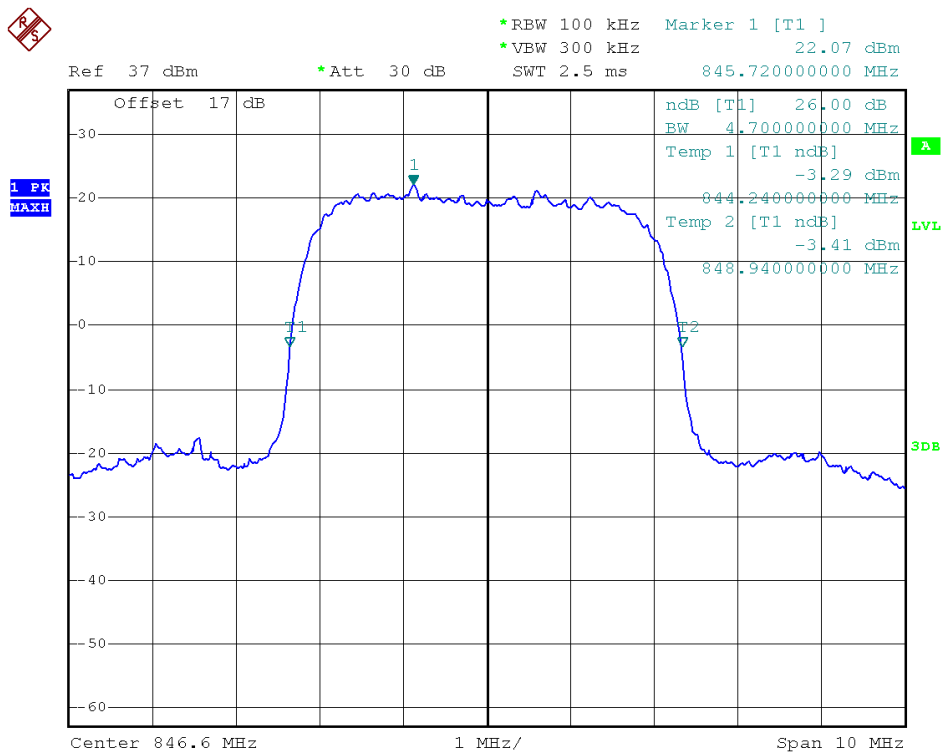
(Plot A2: WCDMA 850MHz Channel = 4132)



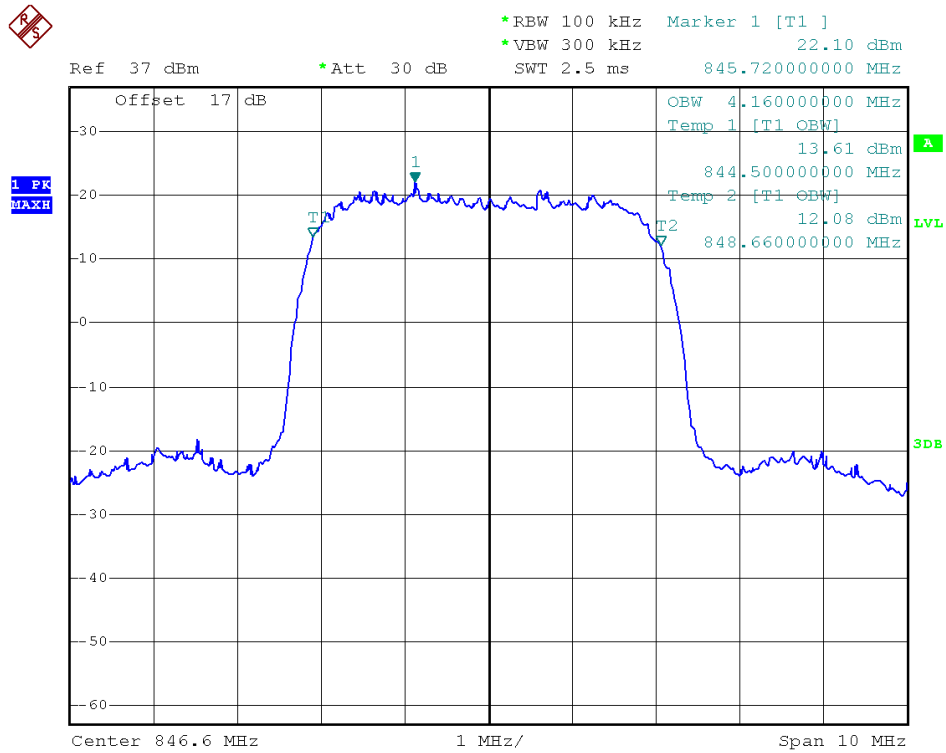
(Plot B1: WCDMA 850 MHz Channel = 4183)



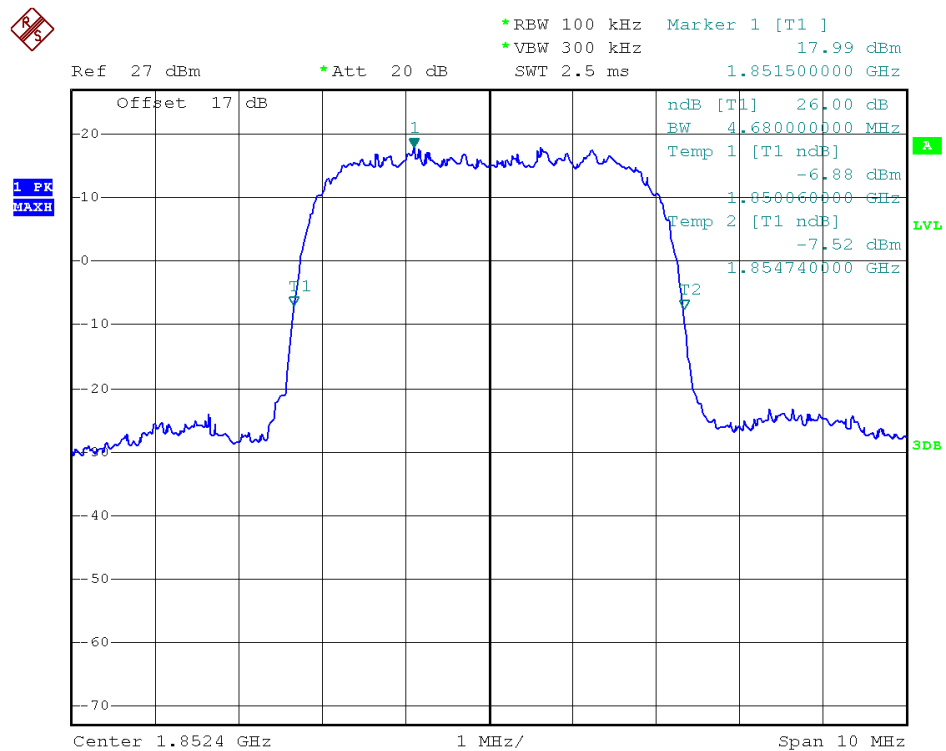
(Plot B2: WCDMA 850 MHz Channel = 4183)



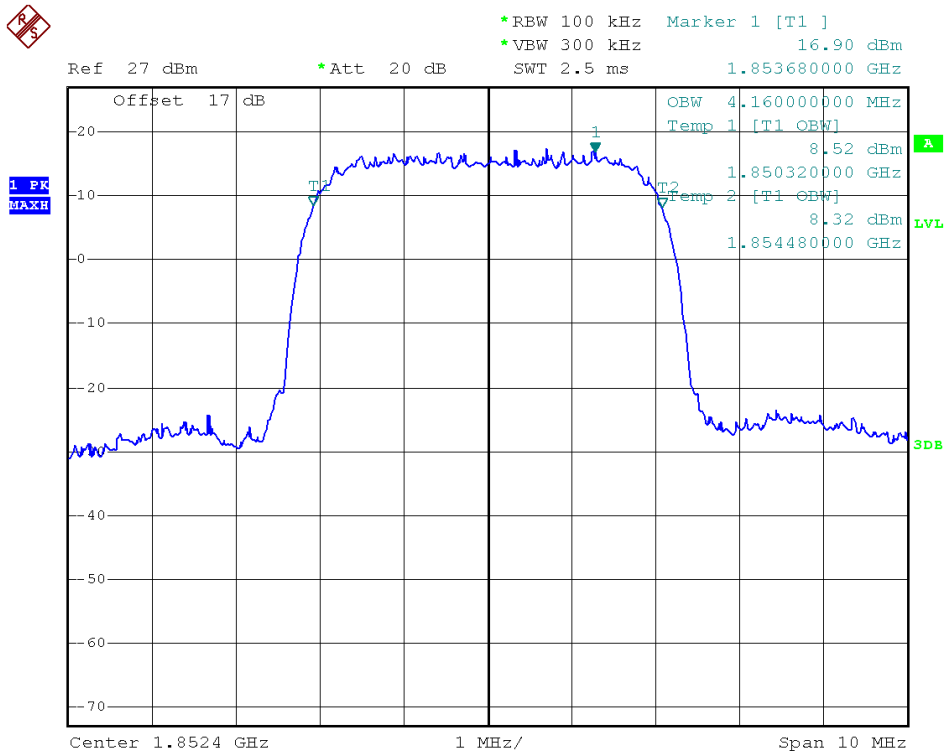
(Plot C1: WCDMA 850MHz Channel = 4233)



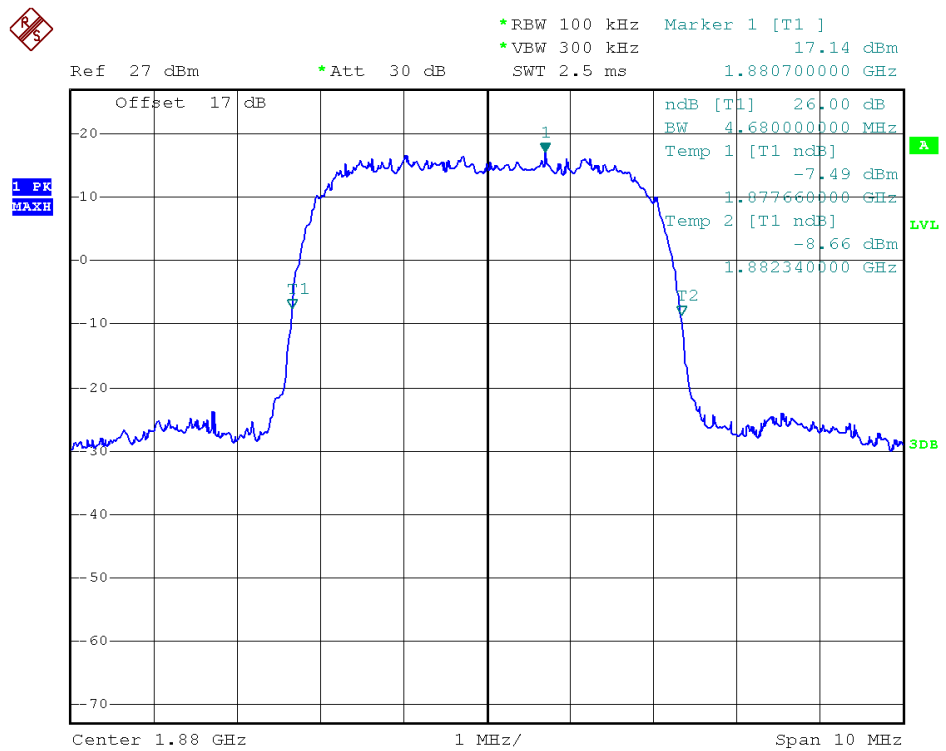
(Plot C2: WCDMA 850MHz Channel = 4233)



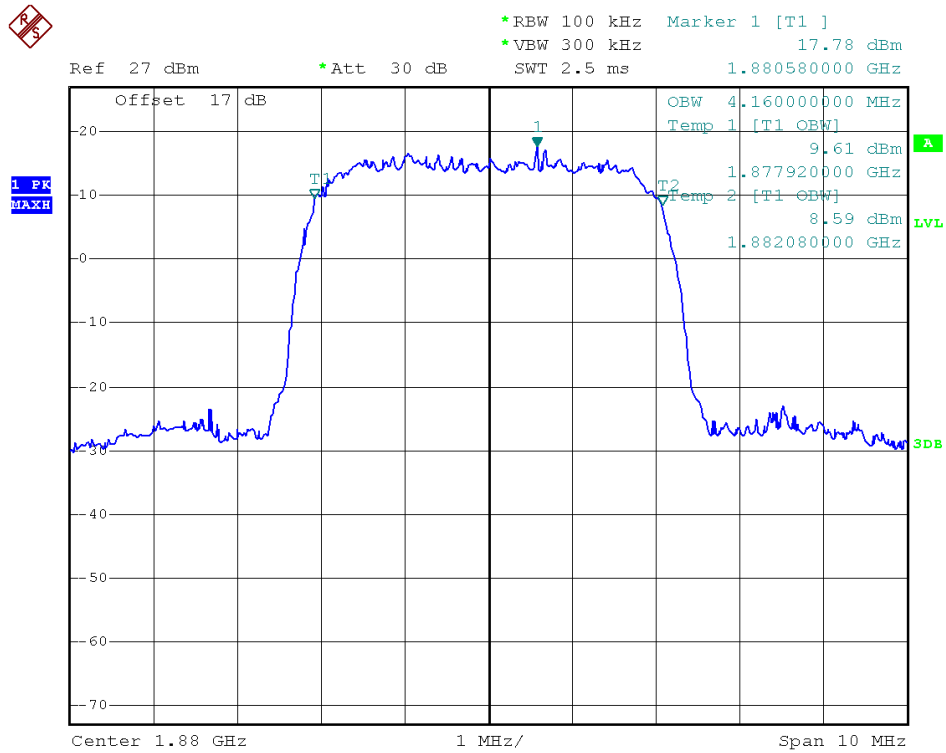
(Plot D1: WCDMA 1900MHz Channel = 9262)



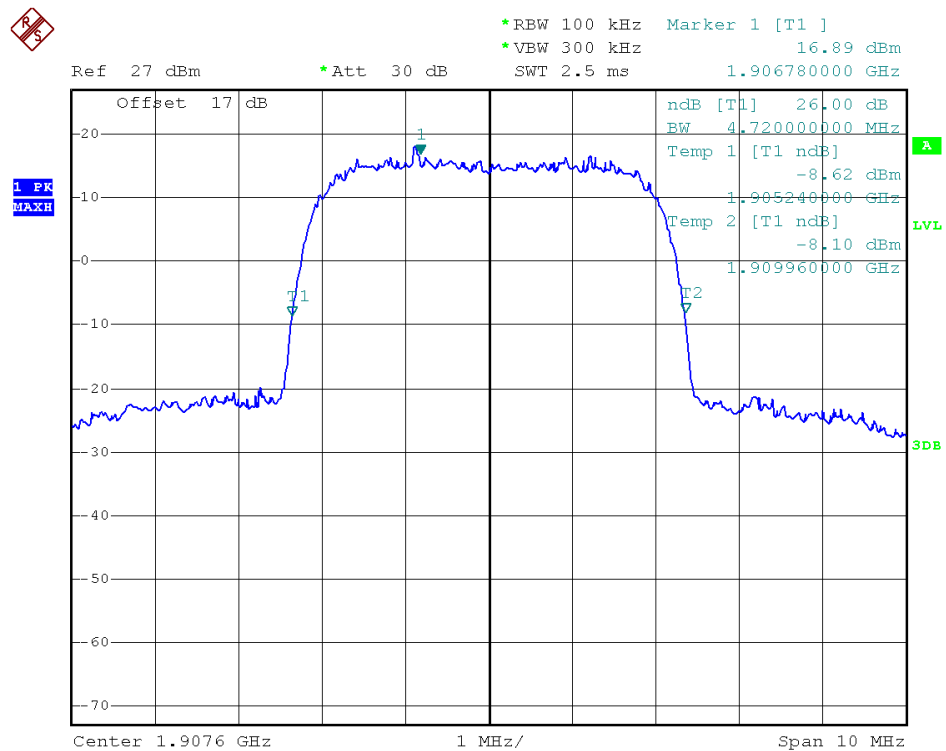
(Plot D2: WCDMA 1900MHz Channel = 9262)



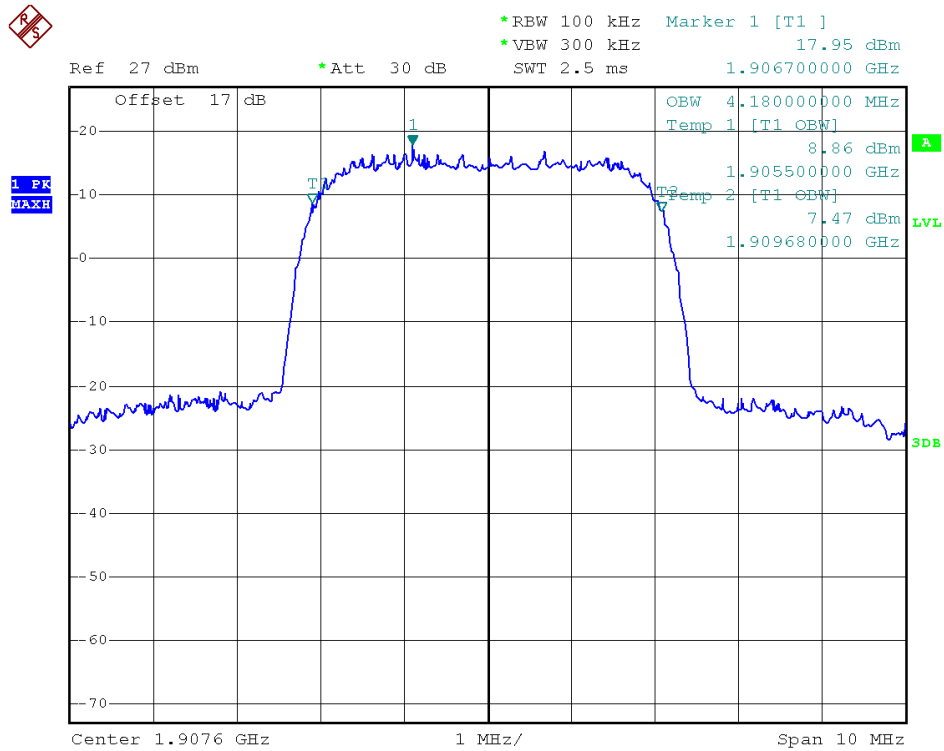
(Plot E1: WCDMA 1900 MHz Channel = 9400)



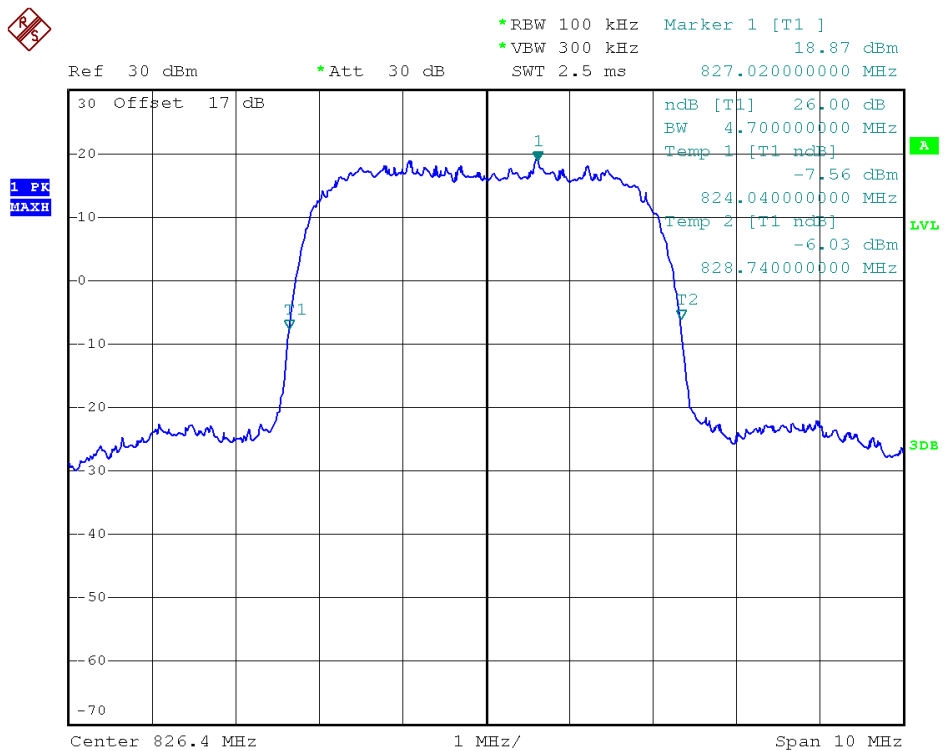
(Plot E2: WCDMA 1900 MHz Channel = 9400)



(Plot F1: WCDMA1900MHz Channel = 9538)

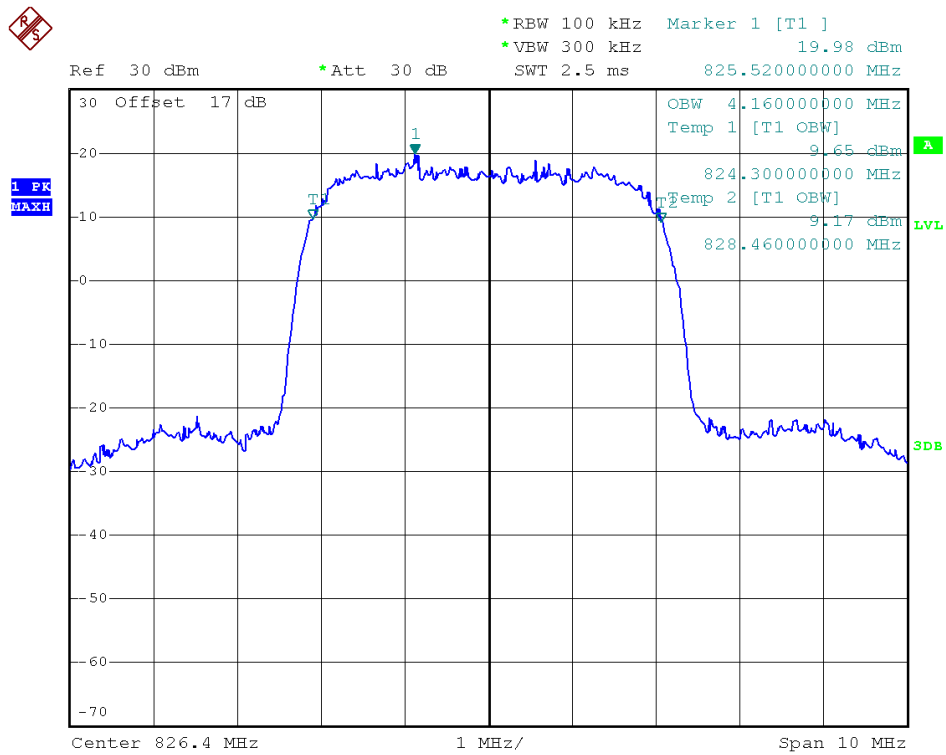


(Plot F2: WCDMA1900MHz Channel = 9538)

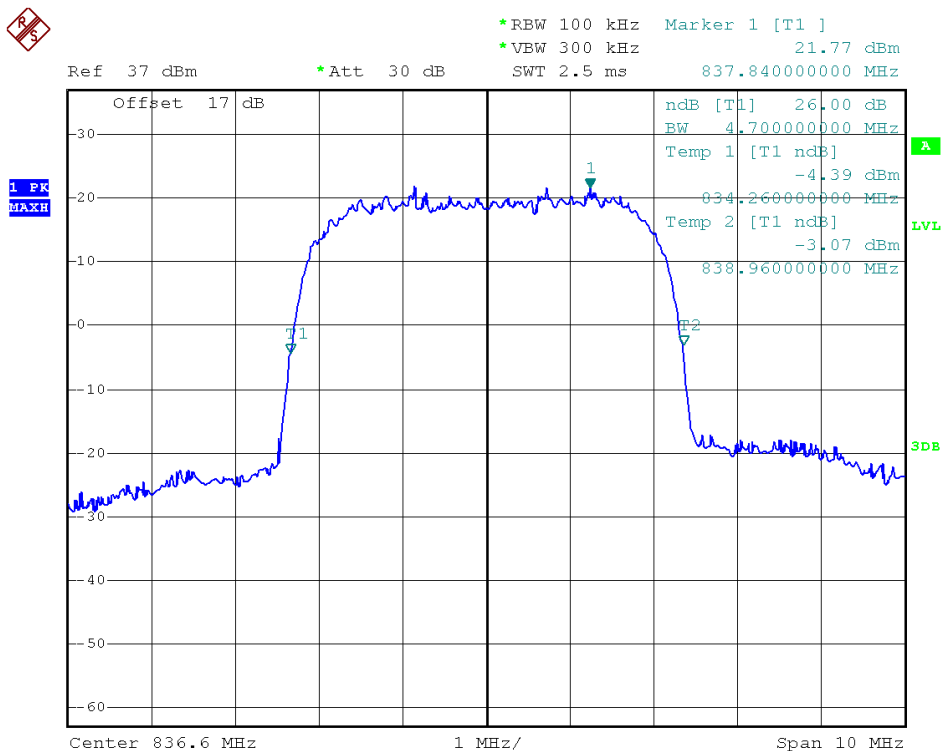


(Plot G1: HSDPA 850MHz Channel = 4132)

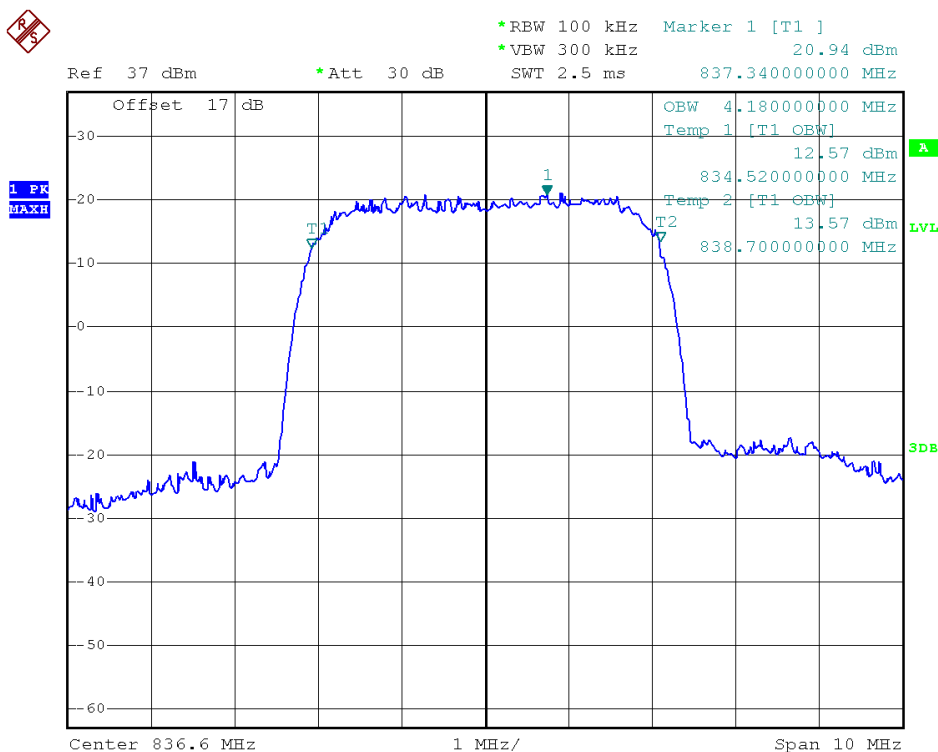




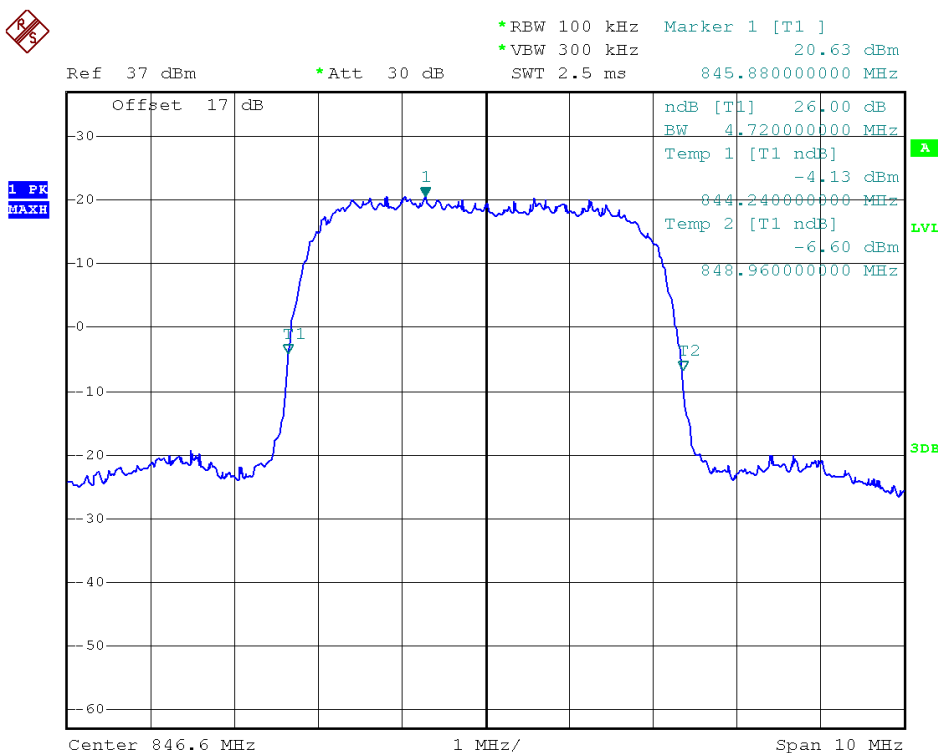
(Plot G2: HSDPA 850MHz Channel = 4132)



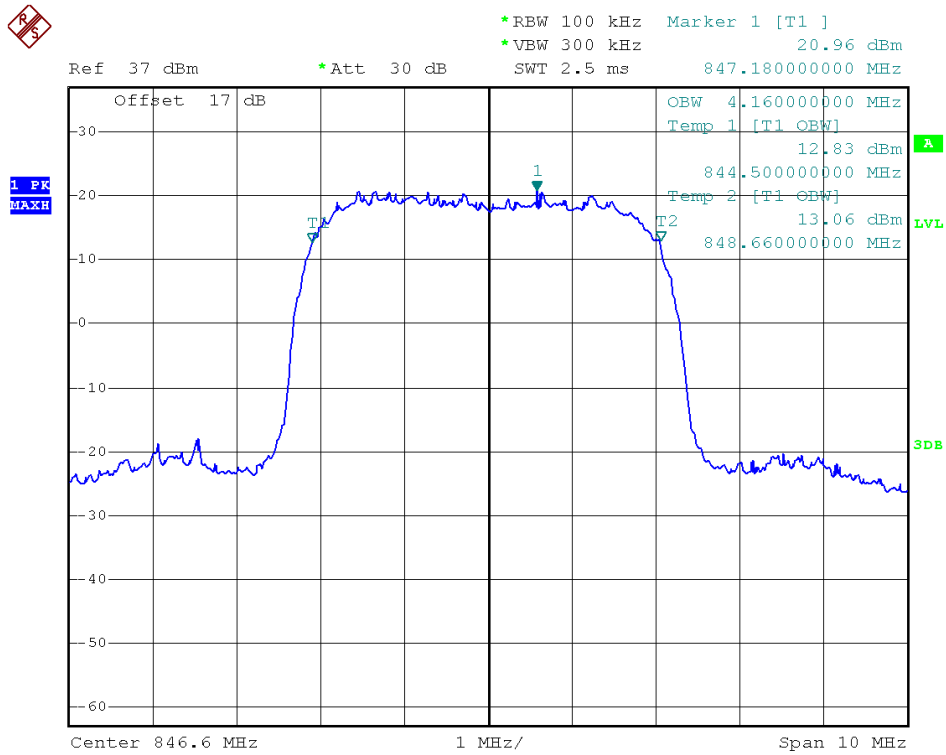
(Plot H1: HSDPA850 MHz Channel = 4183)



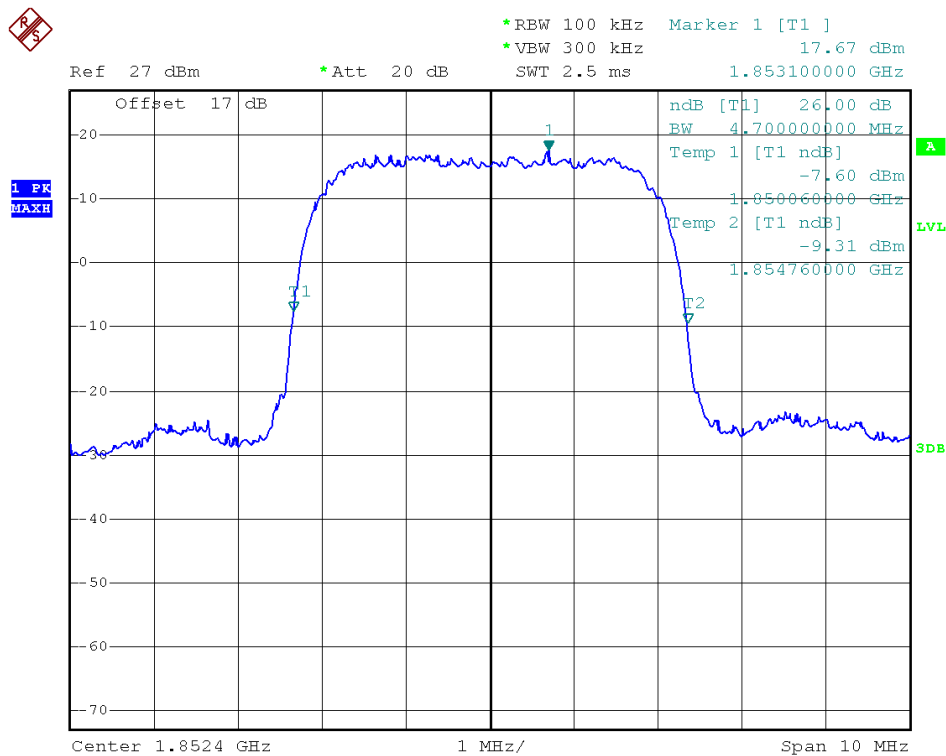
(Plot H2: HSDPA850 MHz Channel = 4183)



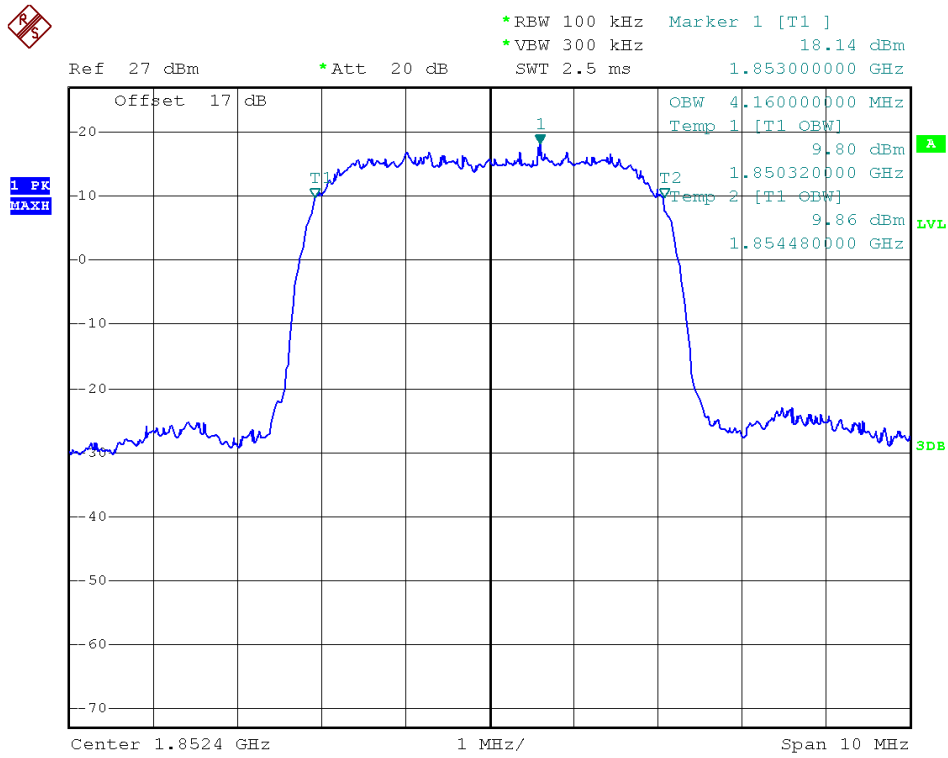
(Plot I1: HSDPA 850 MHz Channel = 4233)



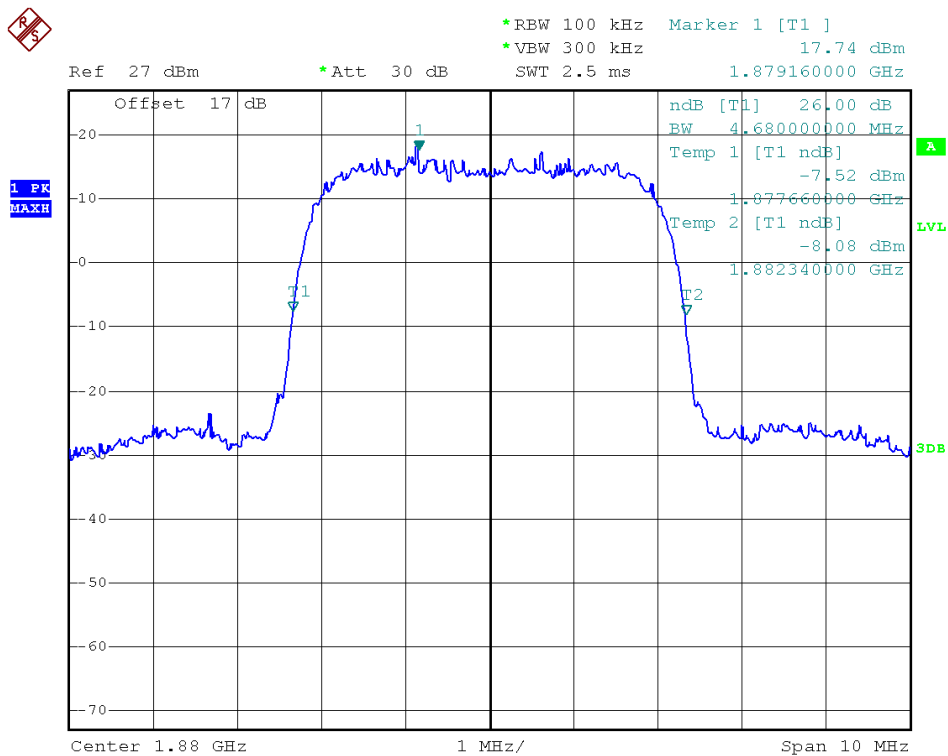
(Plot I2: HSDPA 850 MHz Channel = 4233)



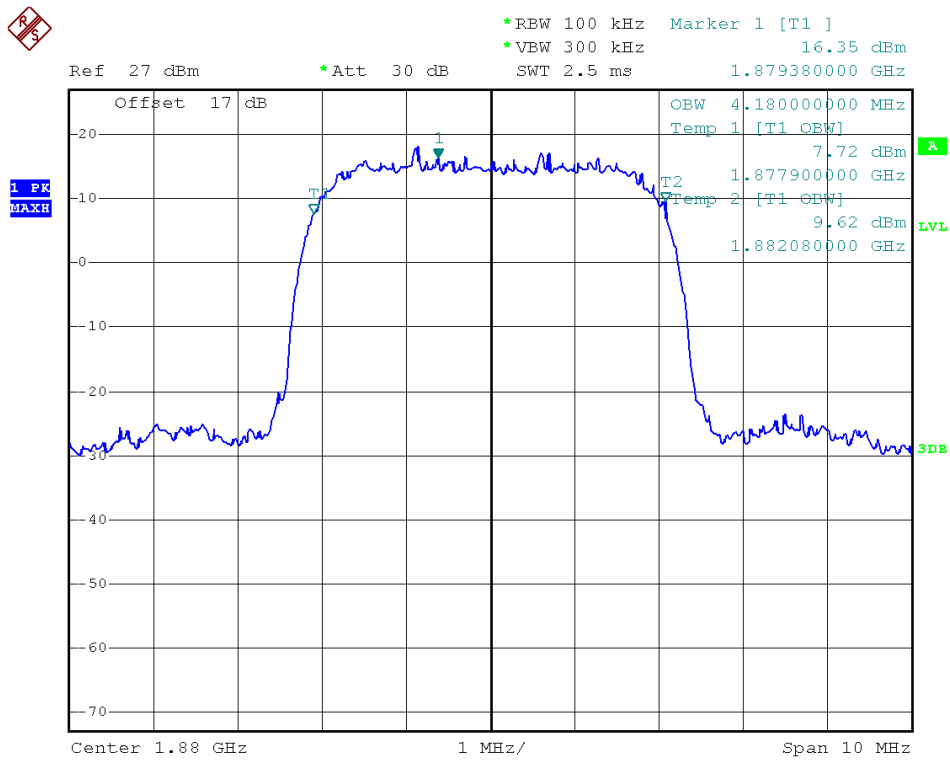
(Plot J1: HSDPA 1900 MHz Channel = 9262)



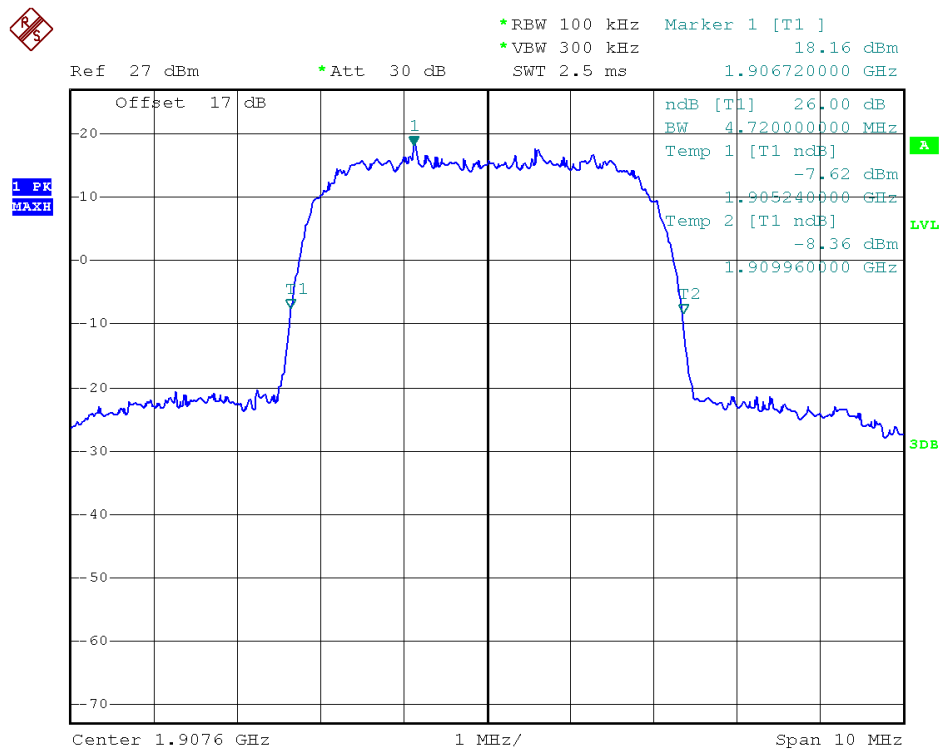
(Plot J2: HSDPA1900 MHz Channel = 9262)



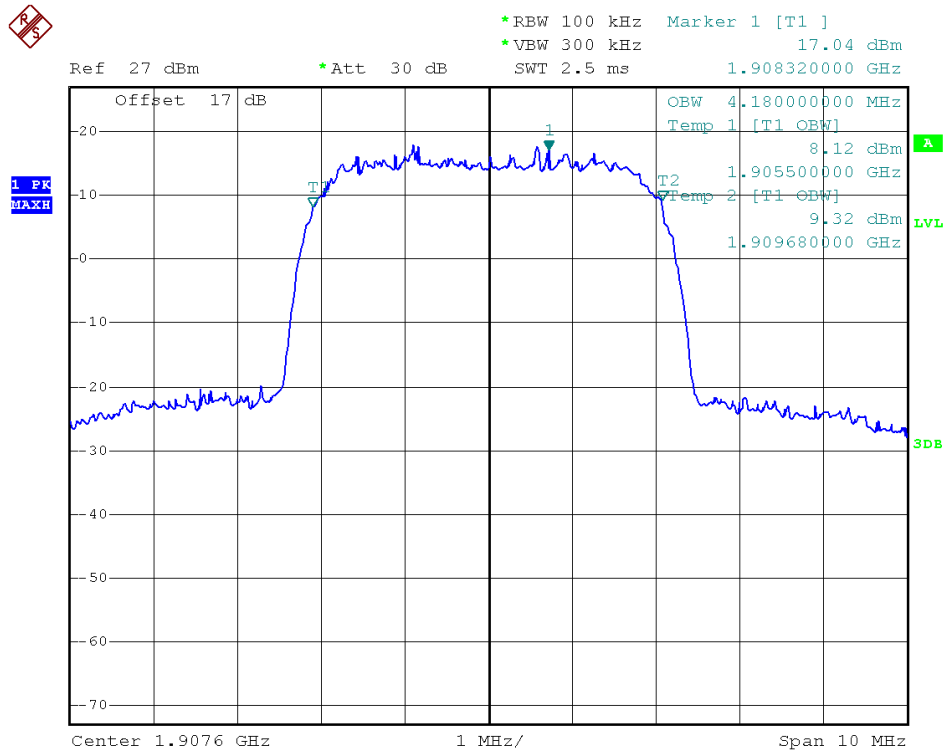
(Plot K1: HSDPA1900 MHz Channel = 9400)



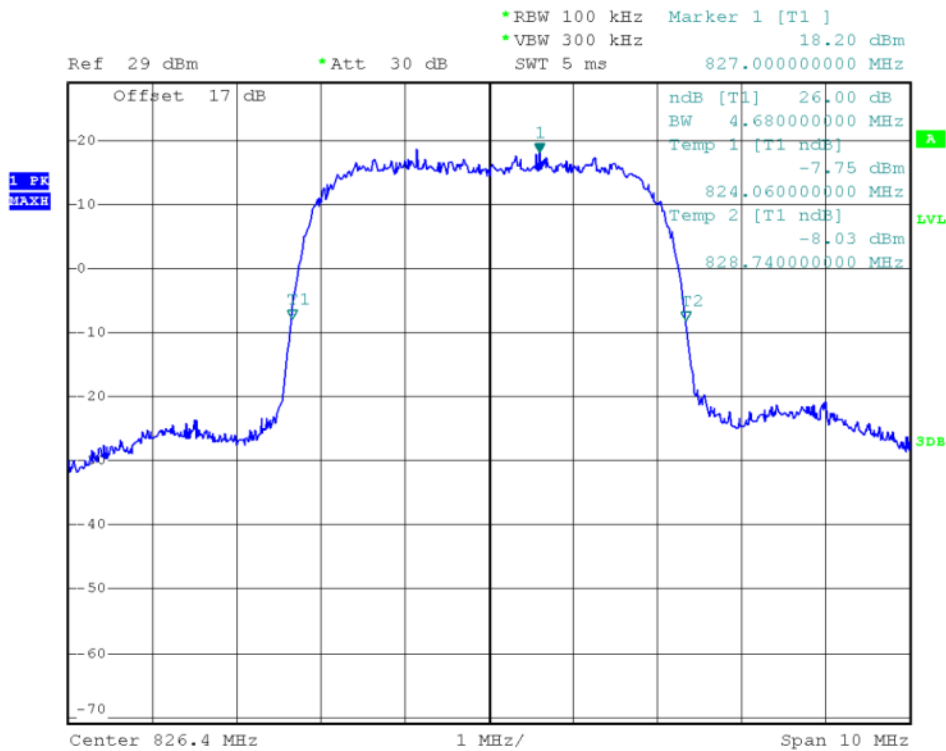
(Plot K2: HSDPA1900 MHz Channel = 9400)



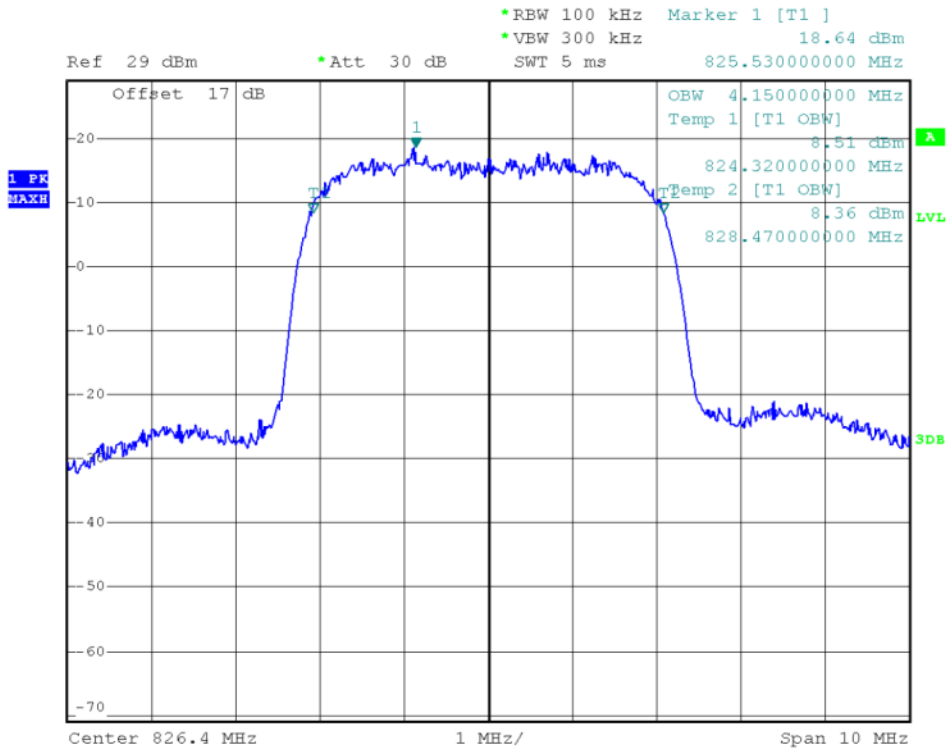
(Plot L1: HSDPA 1900 MHz Channel = 9538)



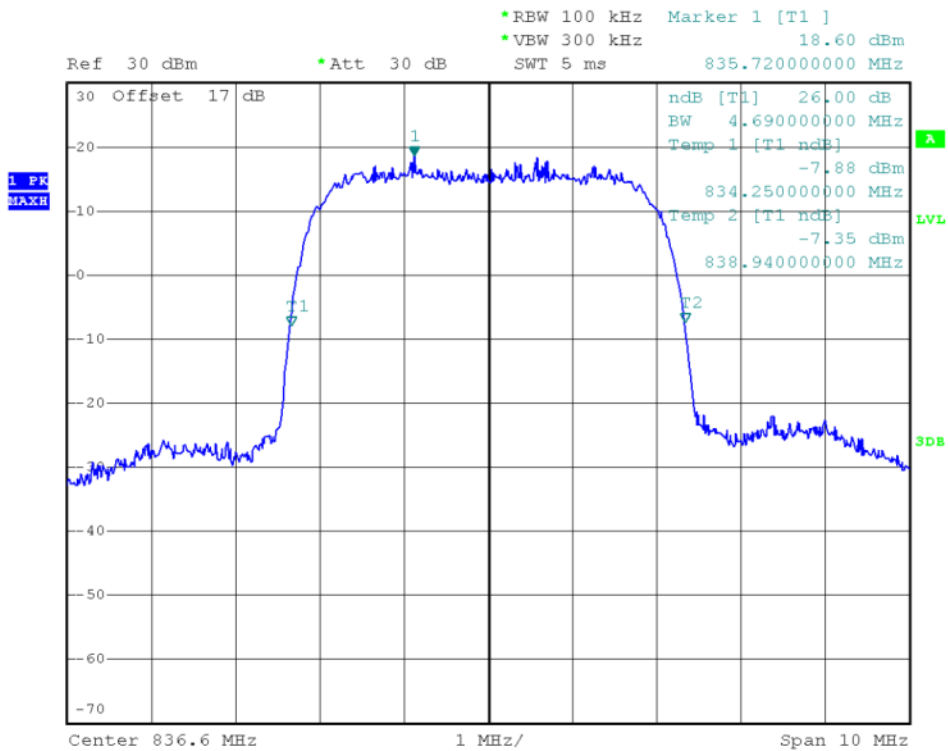
(Plot L2: HSDPA 1900 MHz Channel = 9538)



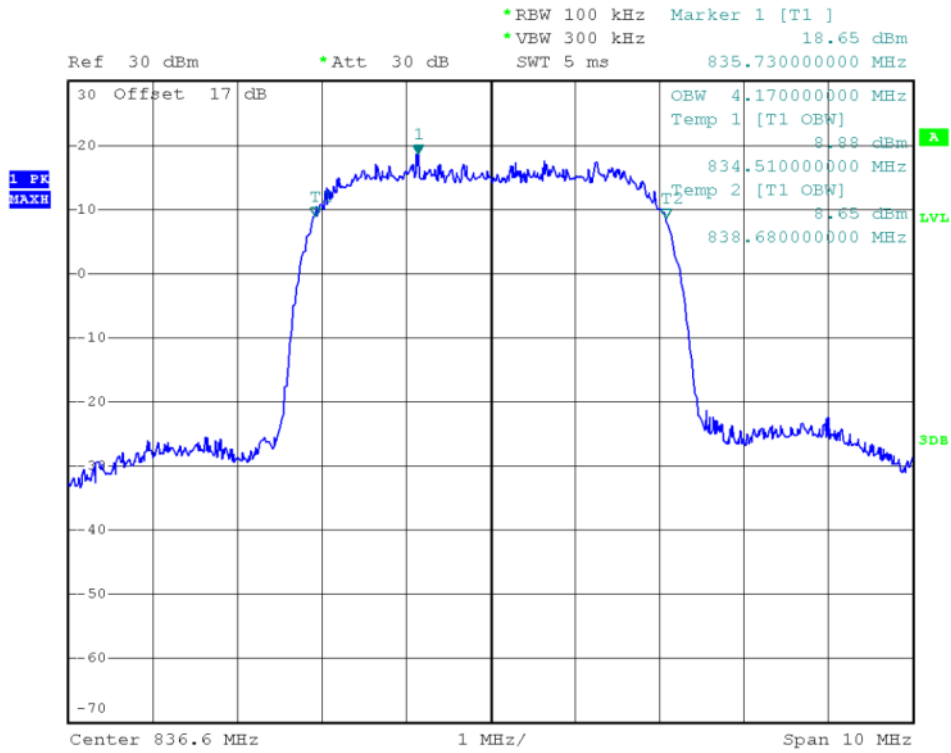
(Plot M1: HSUPA 850 MHz Channel = 4132)



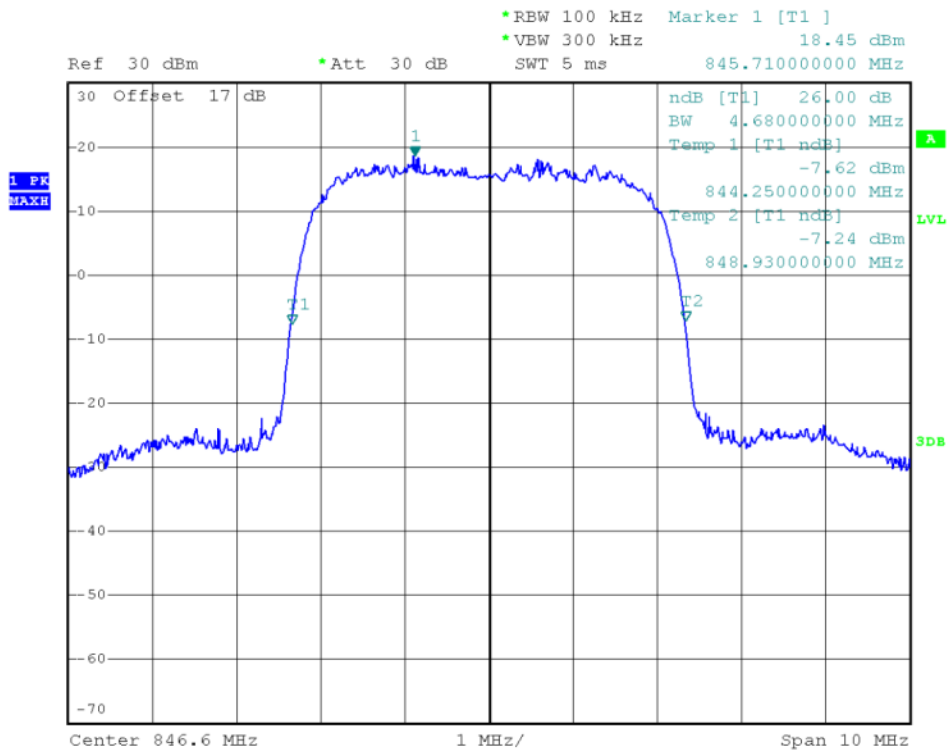
(Plot M2: HSUPA850 MHz Channel = 4132)



(Plot N1: HSUPA850 MHz Channel = 4183)

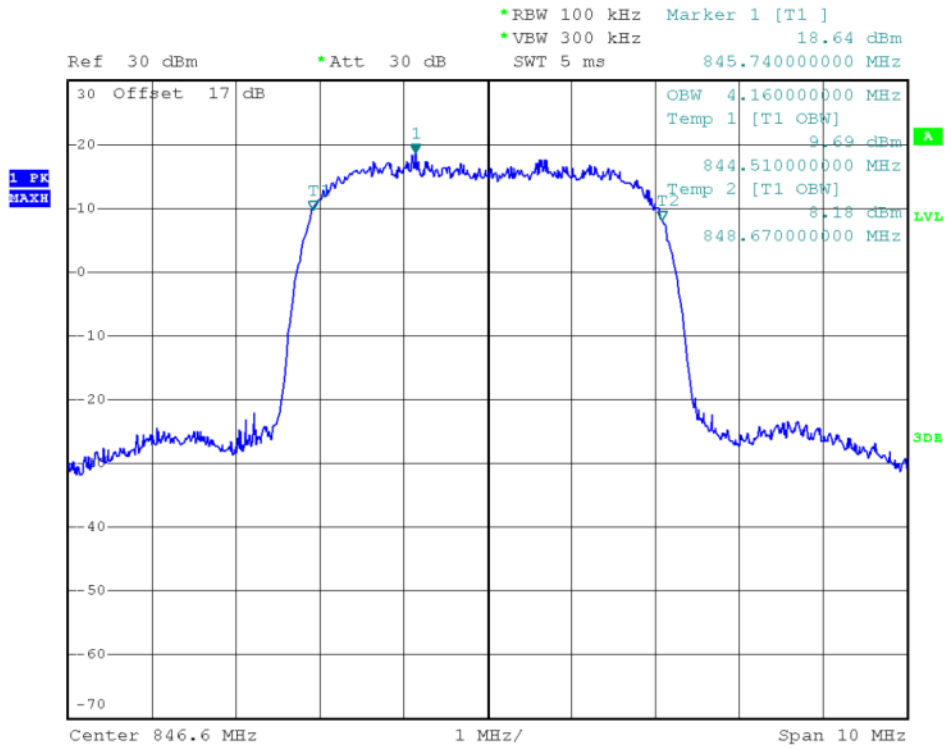


(Plot N2: HSUPA850 MHz Channel = 4183)

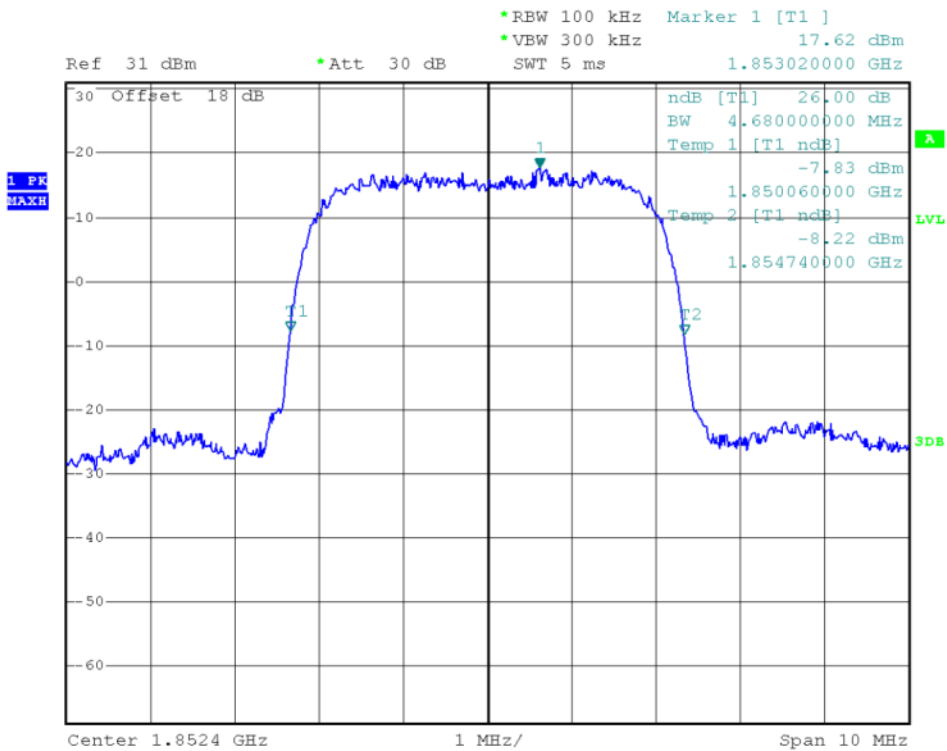


(Plot O1: HSUPA850 MHz Channel = 4233)

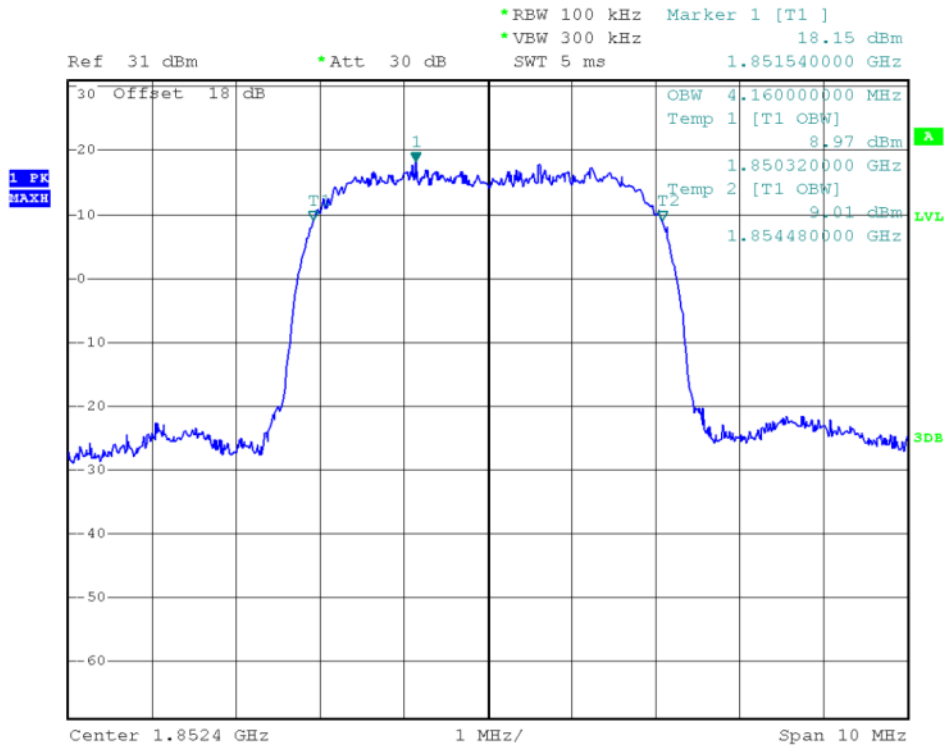




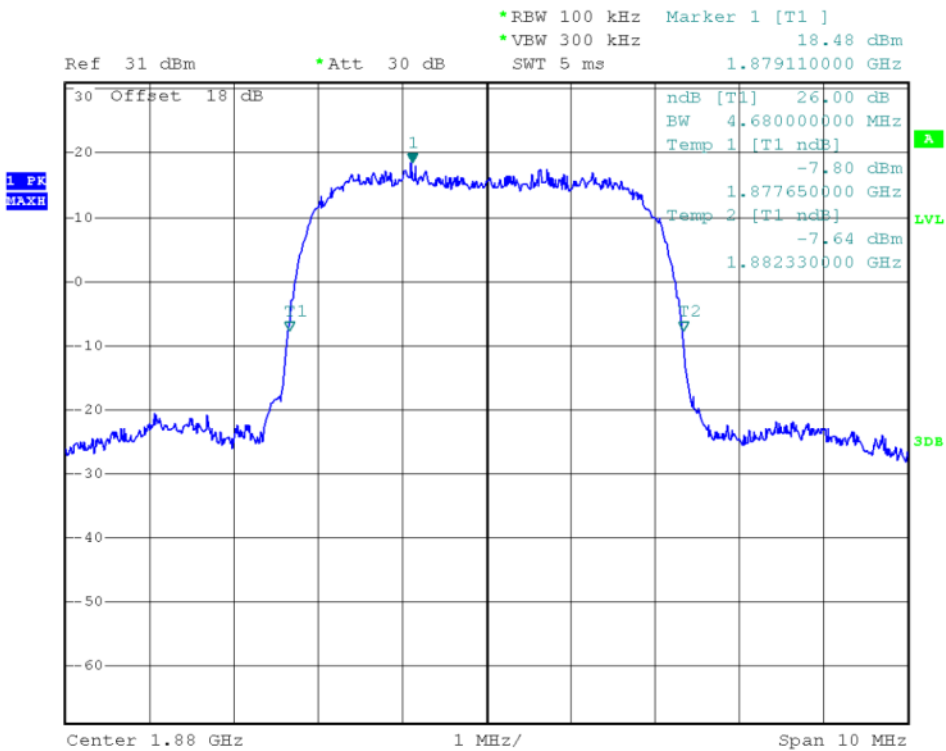
(Plot O2: HSUPA850 MHz Channel = 4233)



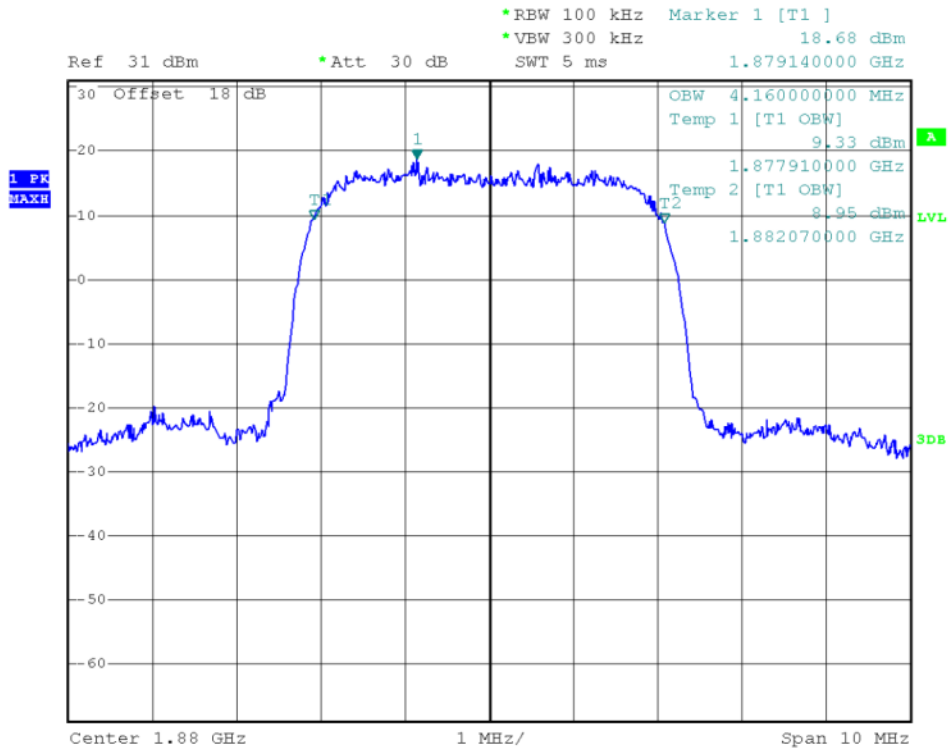
(Plot P1: HSUPA1900 MHz Channel = 9262)



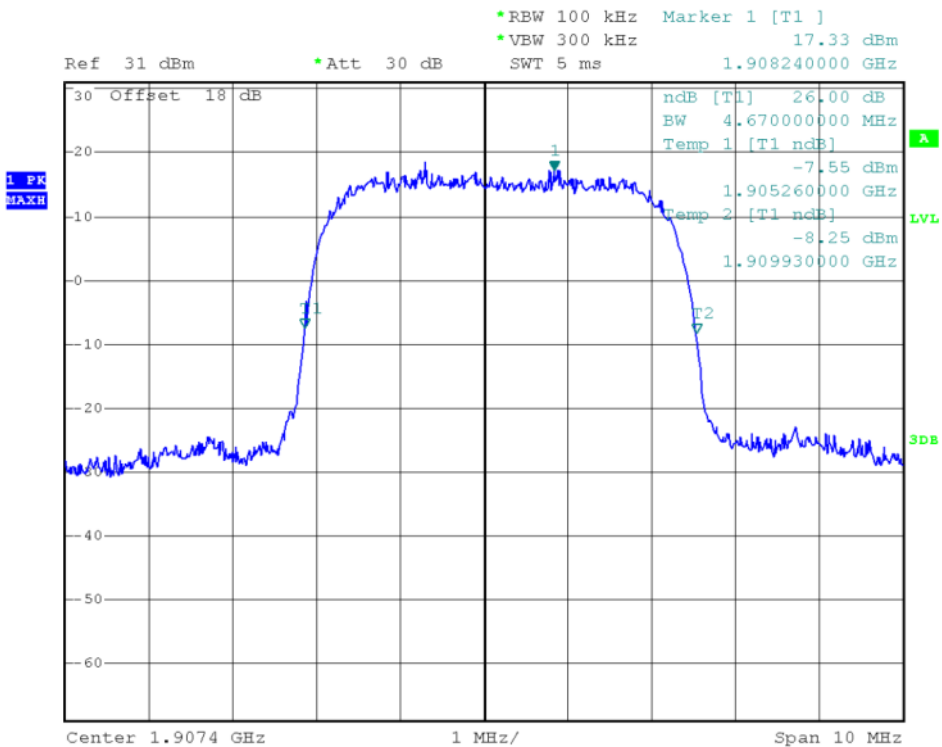
(Plot P2: HSUPA1900 MHz Channel = 9262)



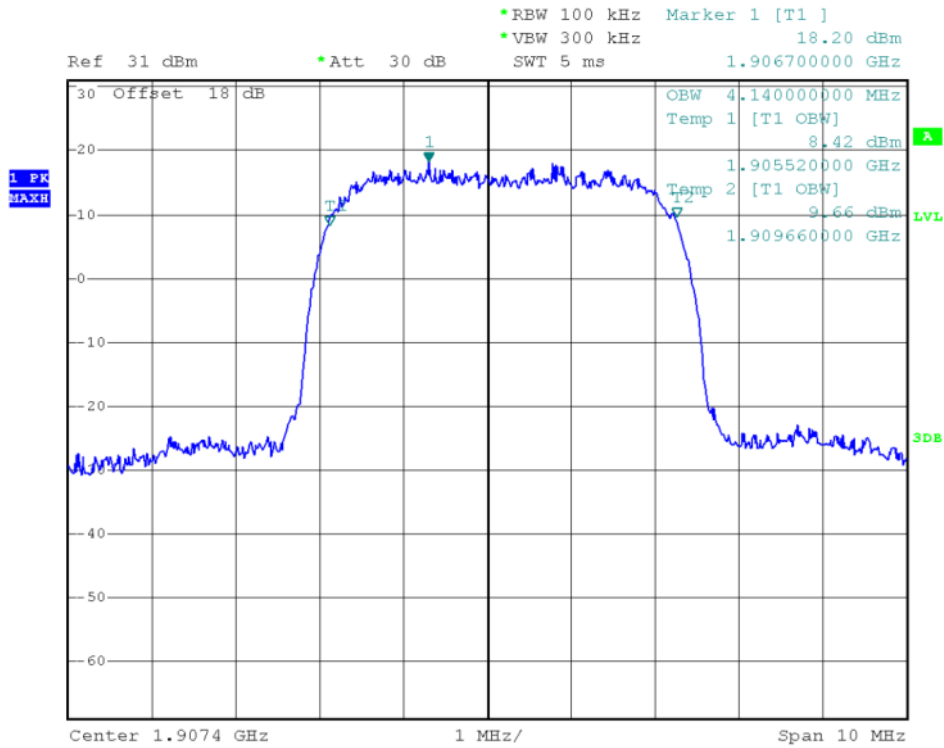
(Plot Q1: HSUPA1900 MHz Channel = 9400)



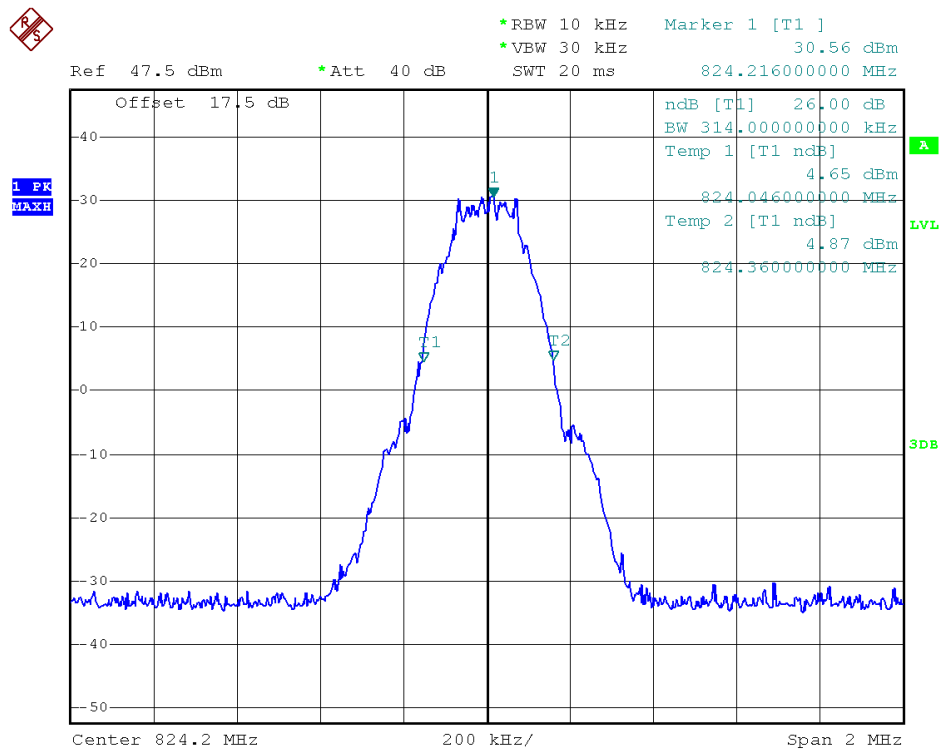
(Plot Q2: HSUPA1900 MHz Channel = 9400)



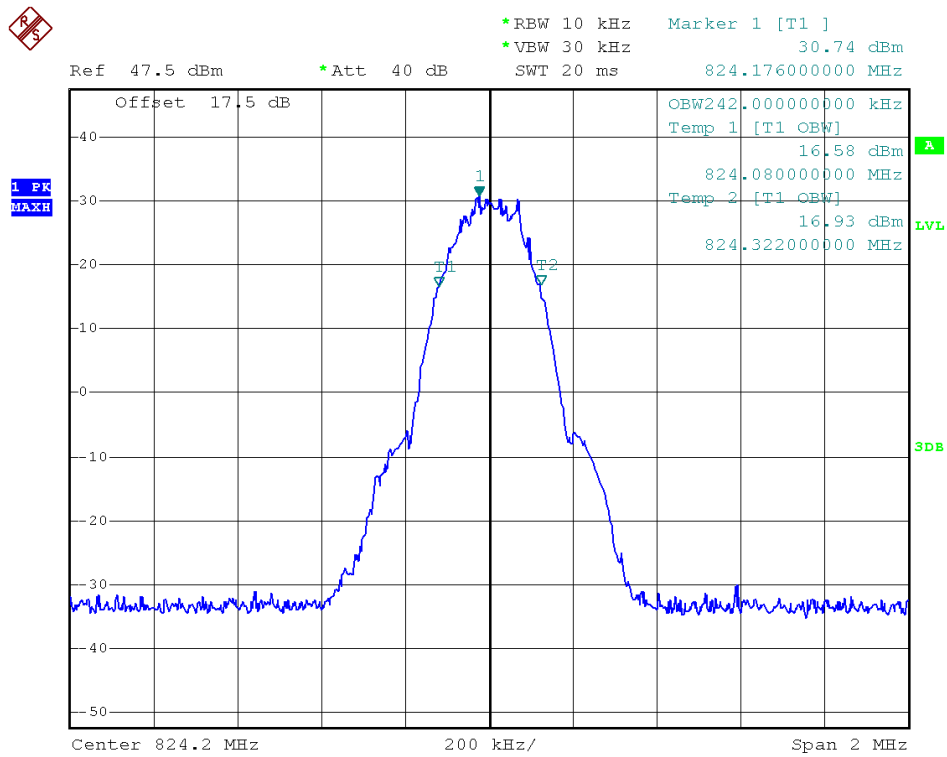
(Plot R1: HSUPA1900 MHz Channel = 9538)



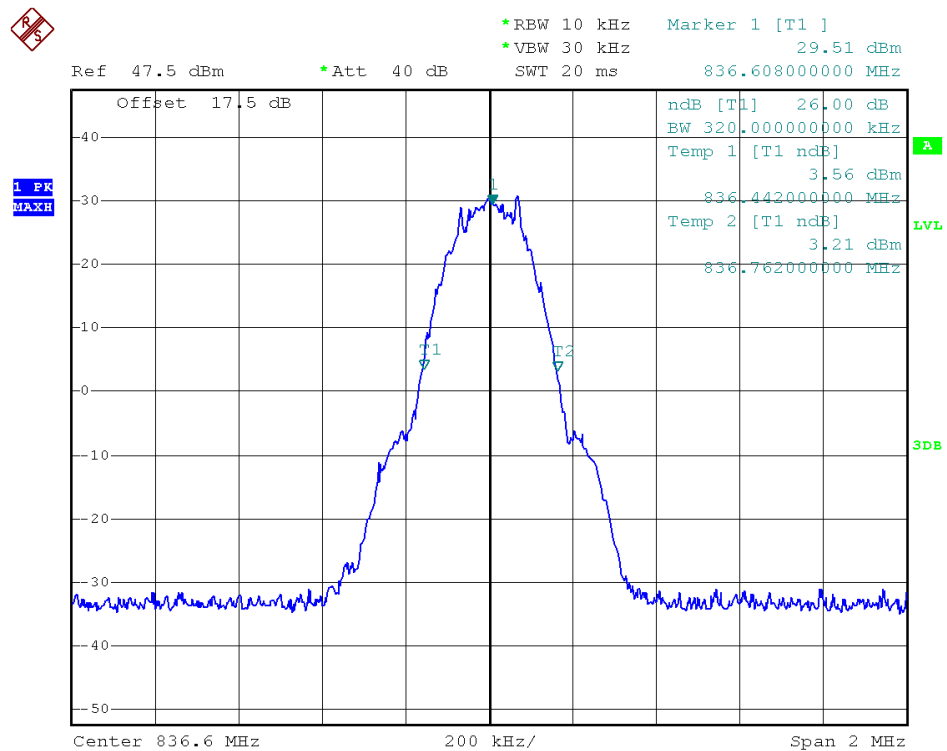
(Plot R2: HSUPA1900 MHz Channel = 9538)



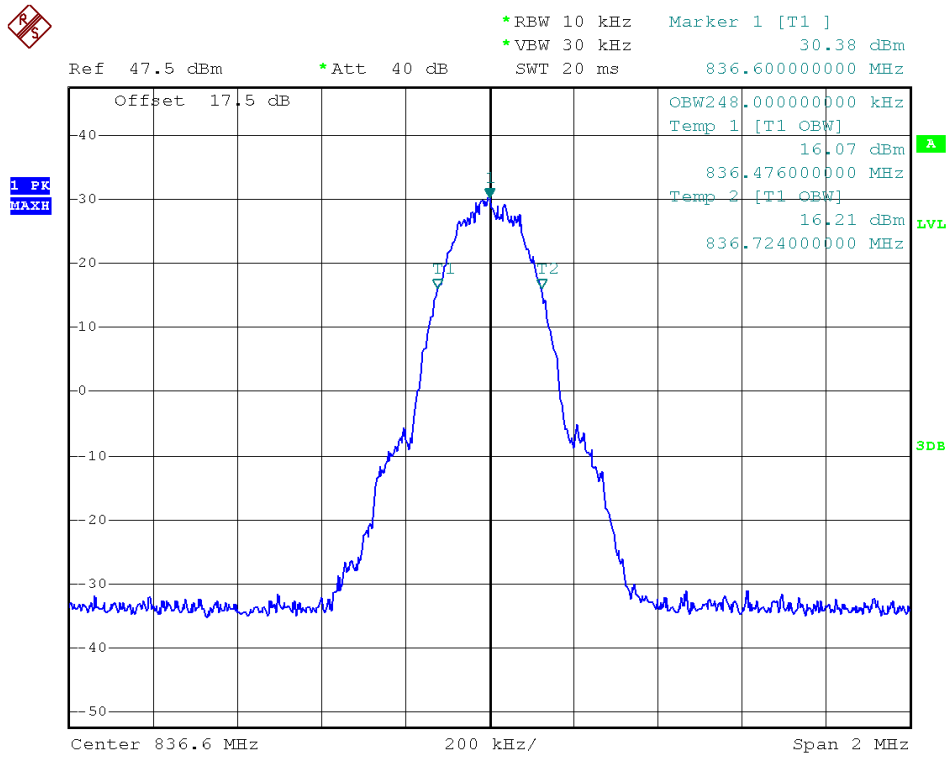
(Plot S1: GSM 850MHz Channel = 128)



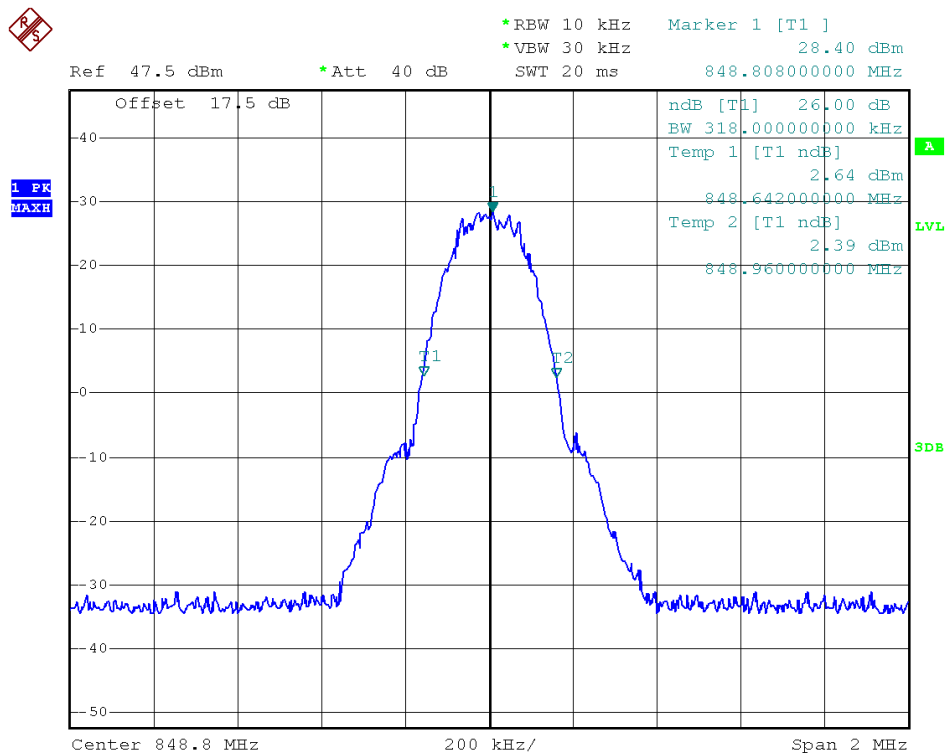
(Plot S2: GSM 850MHz Channel = 128)



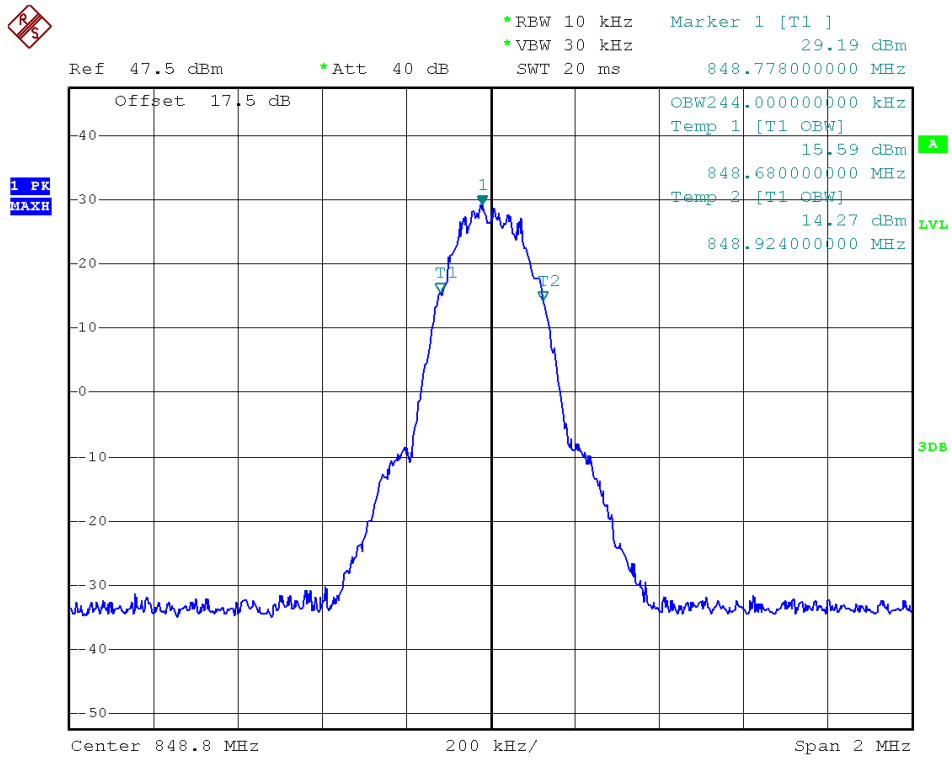
(Plot T1: GSM 850MHz Channel = 190)



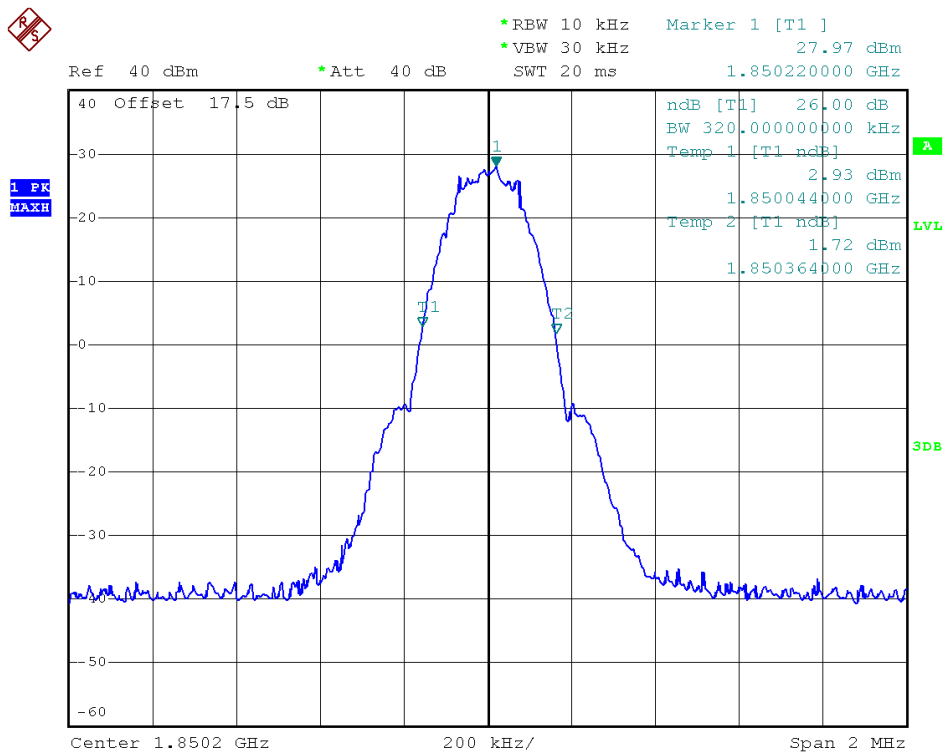
(Plot T2: GSM 850MHz Channel = 190)



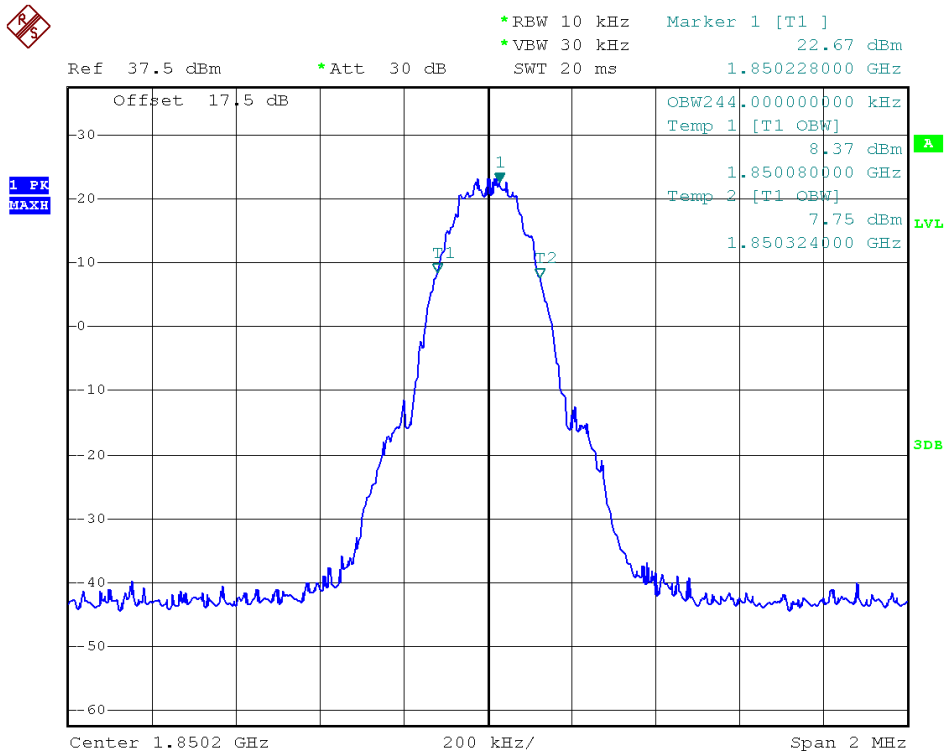
(Plot U1: GSM 850MHz Channel = 251)



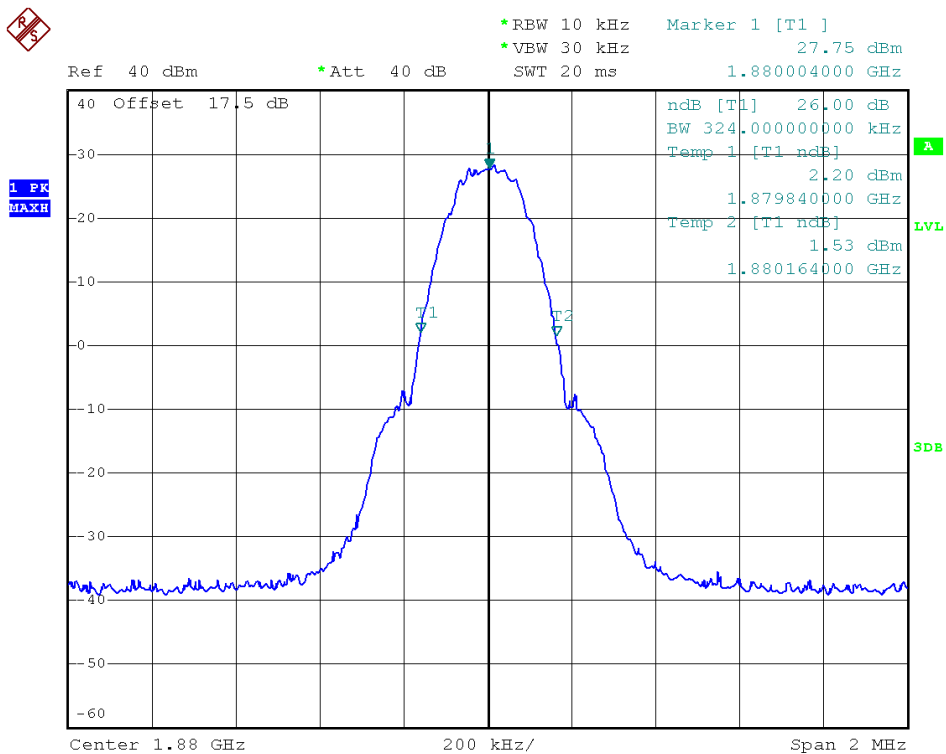
(Plot U2: GSM 850MHz Channel = 251)



(Plot V1: GSM 1900MHz Channel = 512)

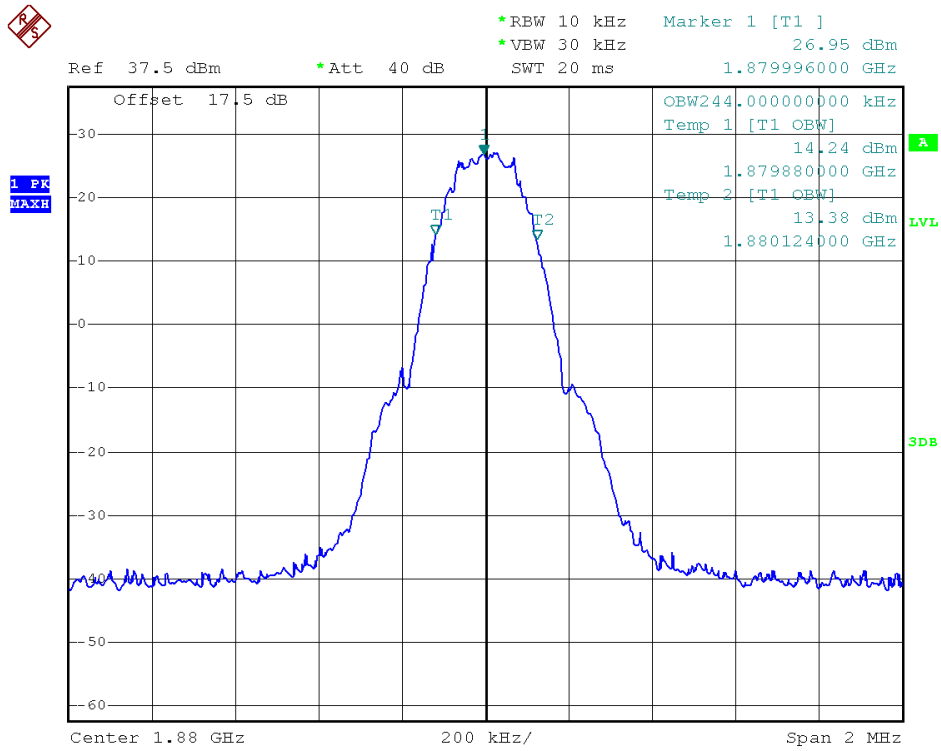


(Plot V2: GSM 1900MHz Channel = 512)

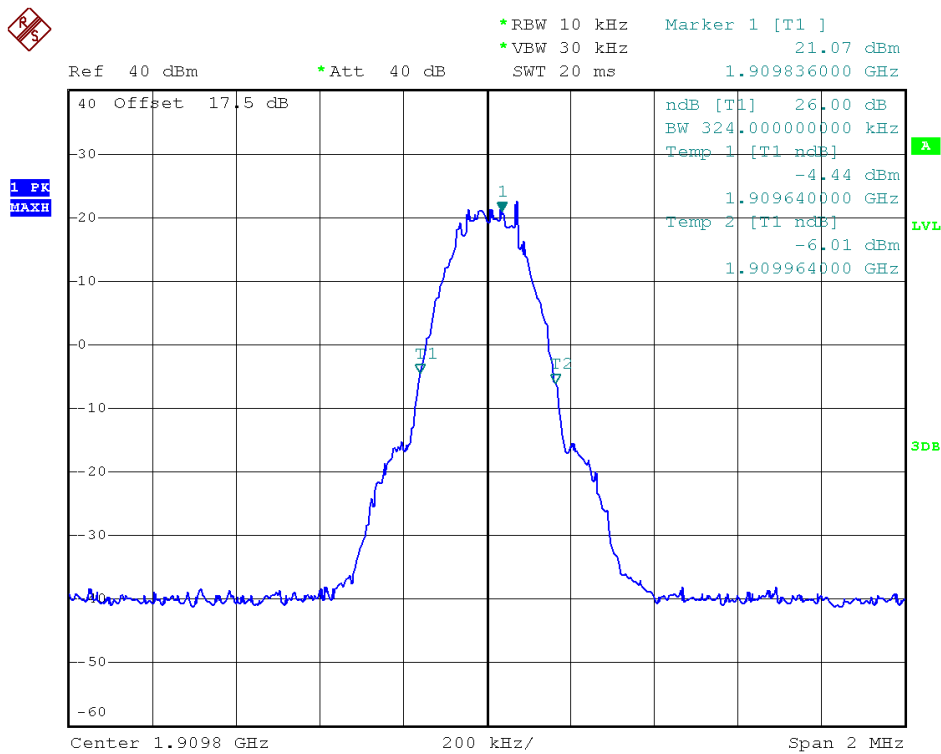


(Plot W1: GSM 1900MHz Channel = 661)

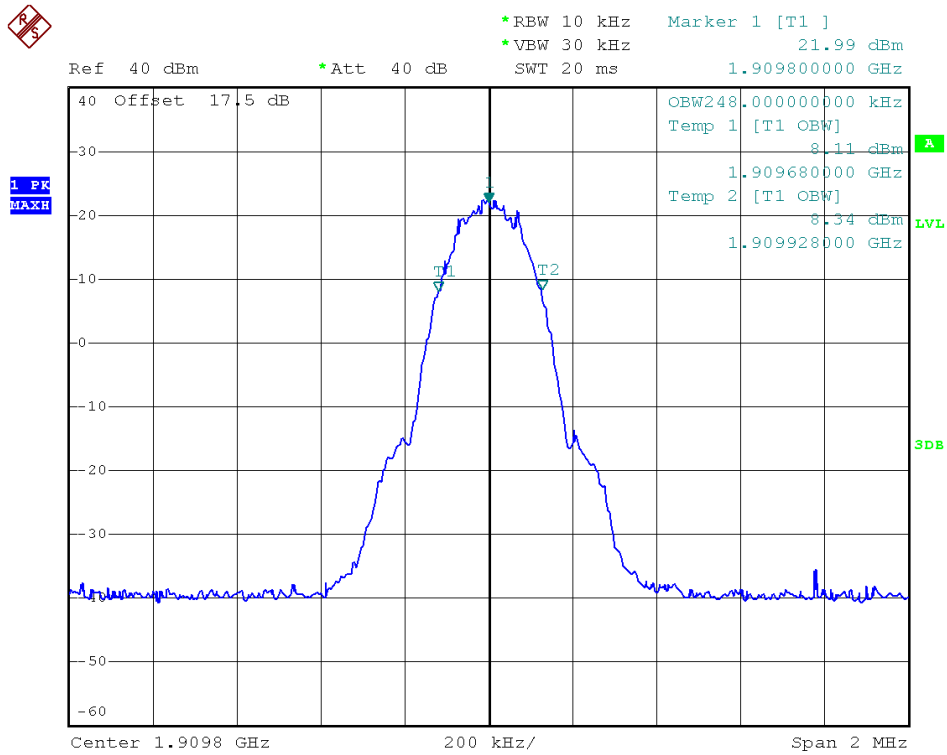




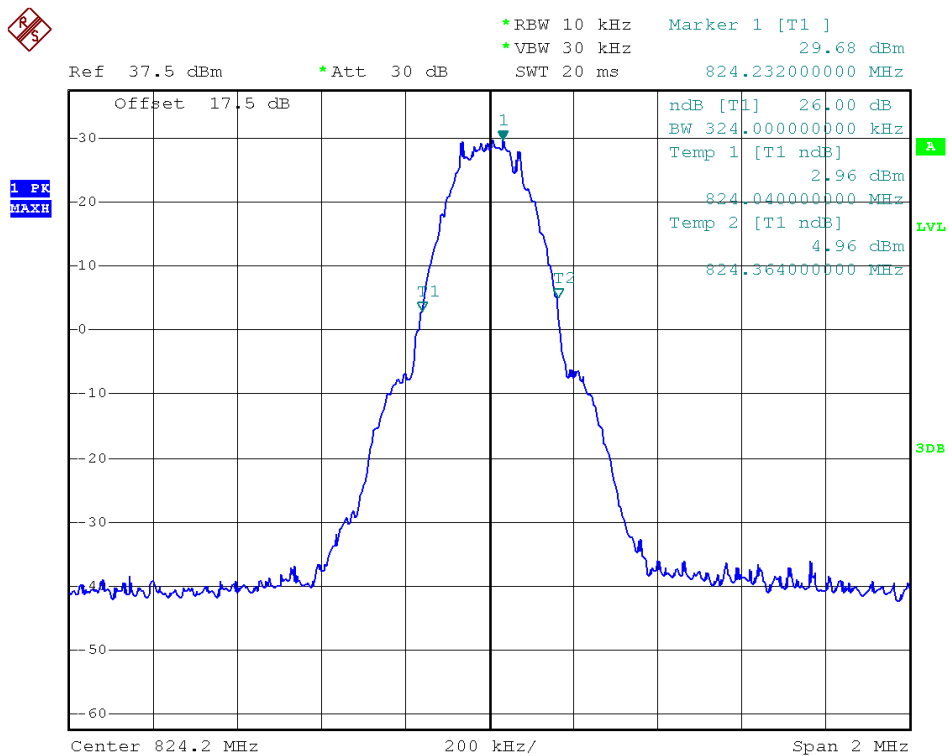
(Plot W2: GSM 1900MHz Channel = 661)



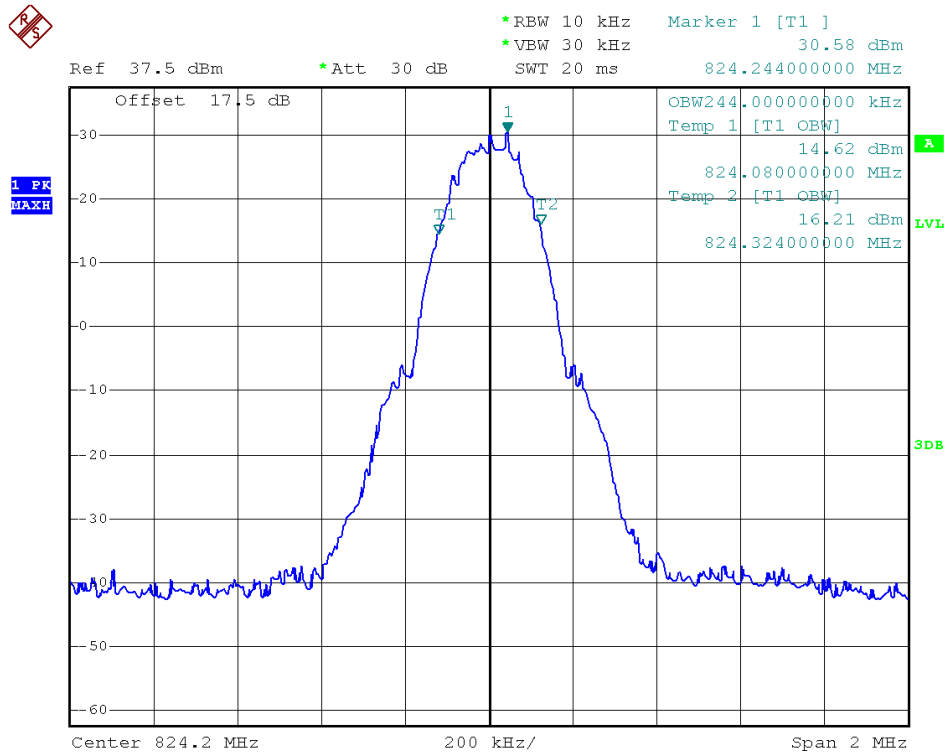
(Plot X1: GSM 1900MHz Channel = 810)



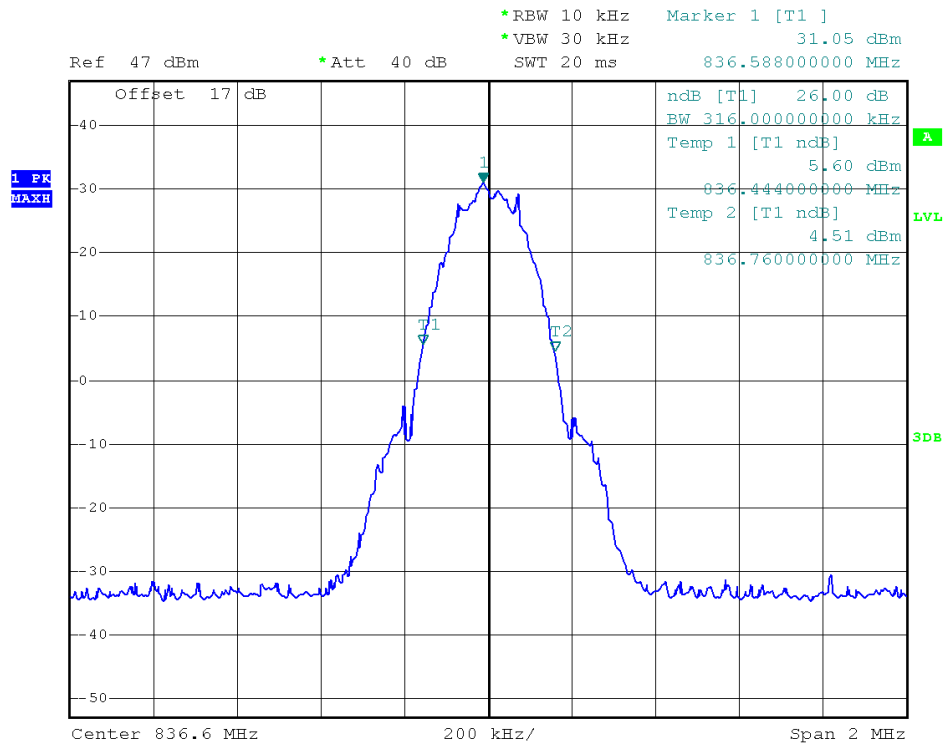
(Plot X2: GSM 1900MHz Channel = 810)



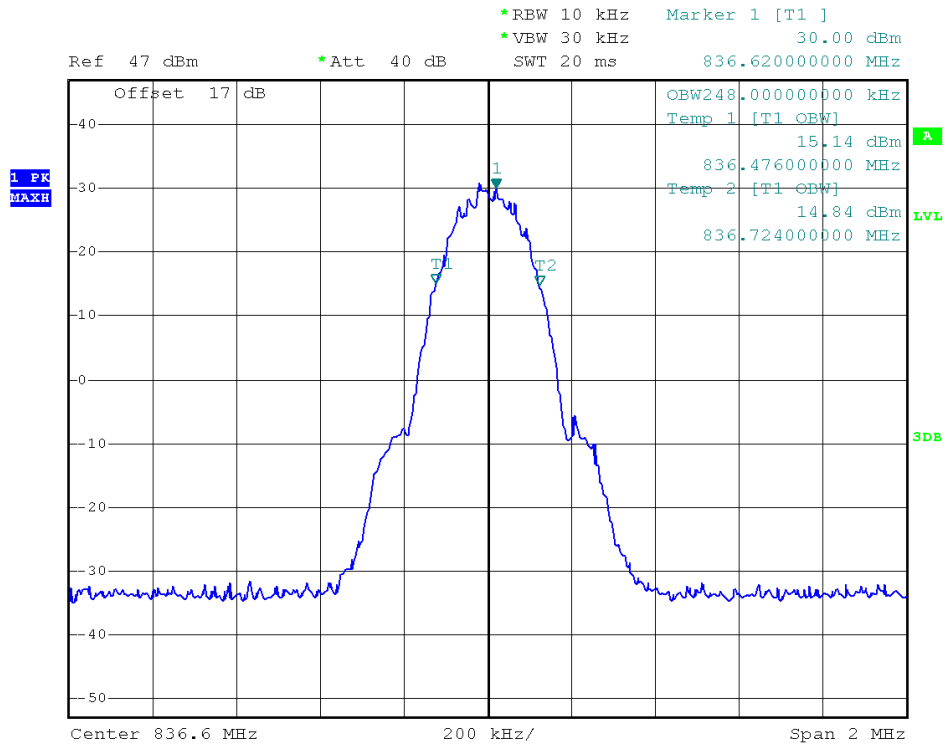
(Plot Y1: GPRS 850MHz Channel = 128)



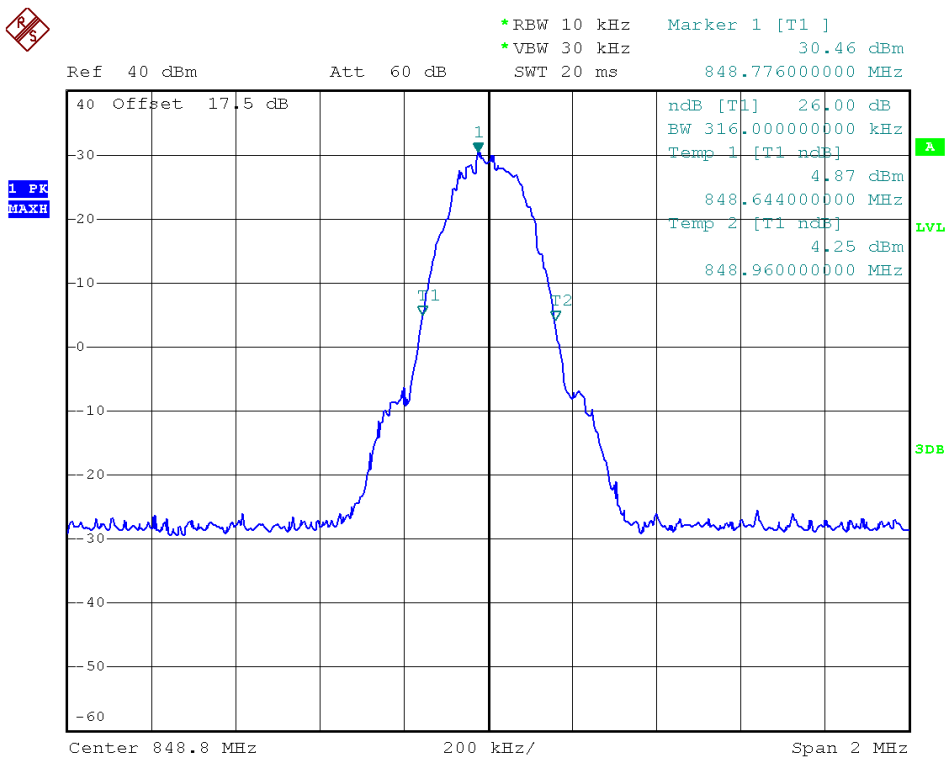
(Plot Y2: GPRS 850MHz Channel = 128)



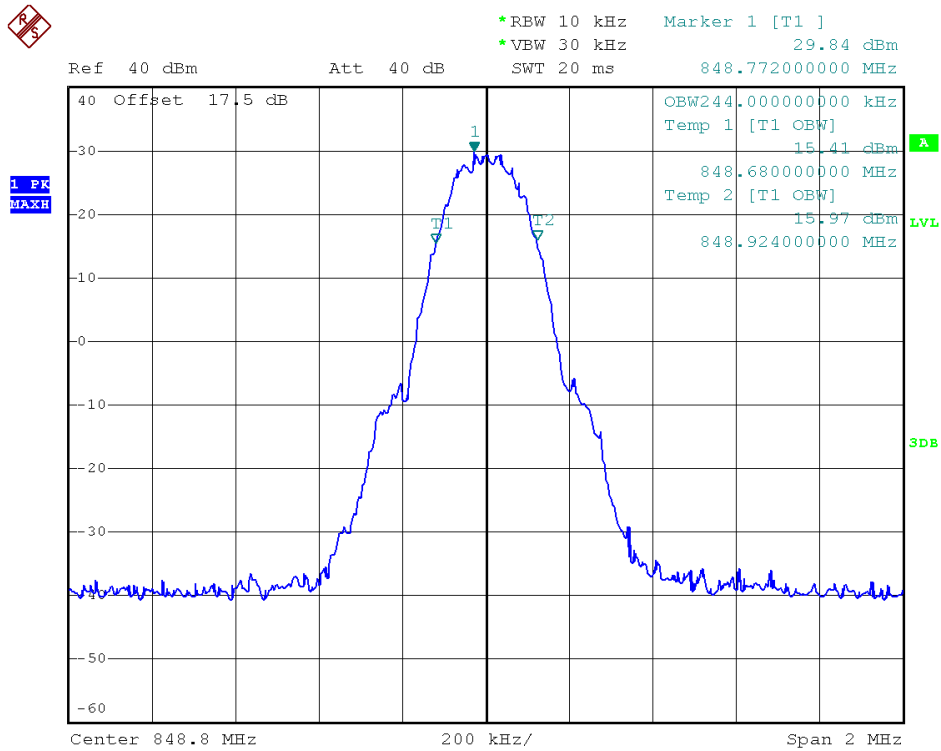
(Plot Z1: GPRS 850MHz Channel = 190)



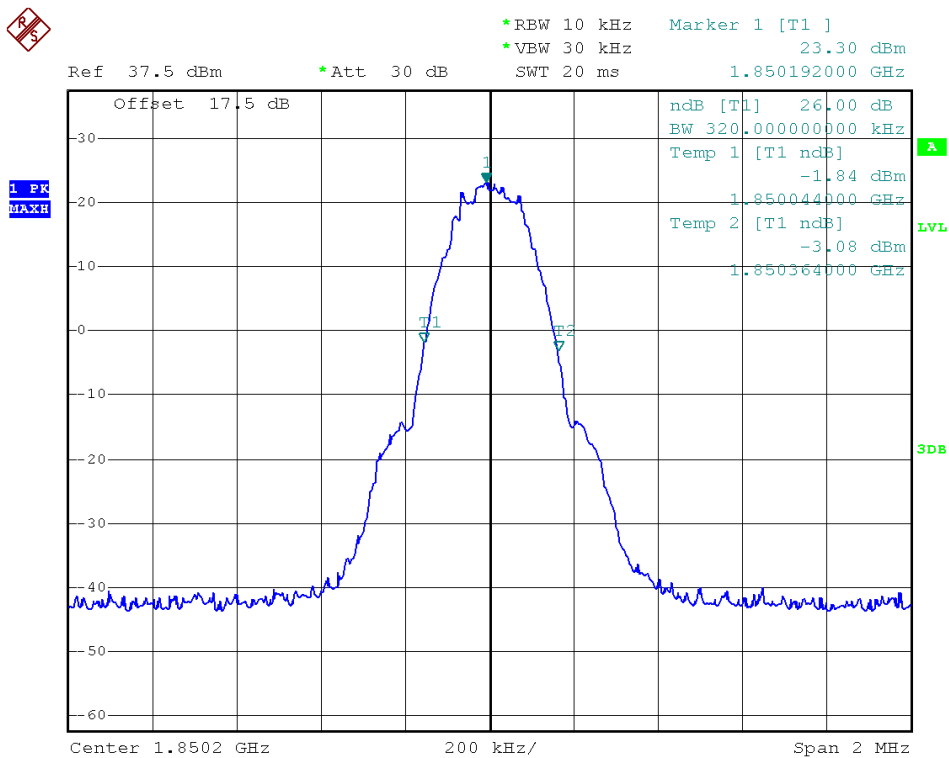
(Plot Z2: GPRS 850MHz Channel = 190)



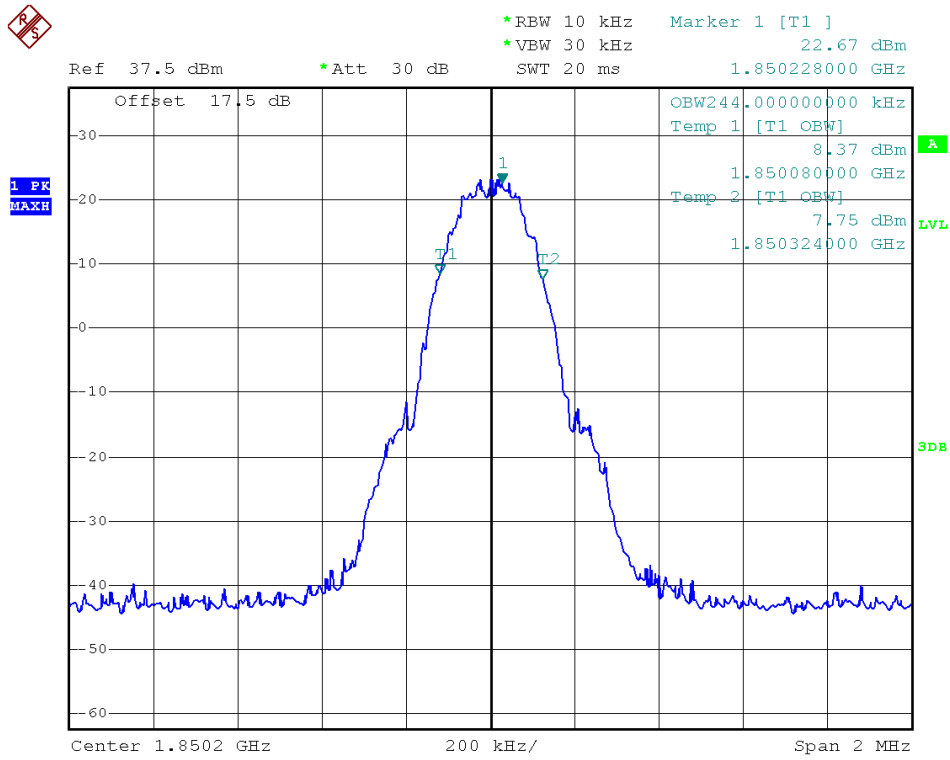
(Plot a1: GPRS850MHz Channel = 251)



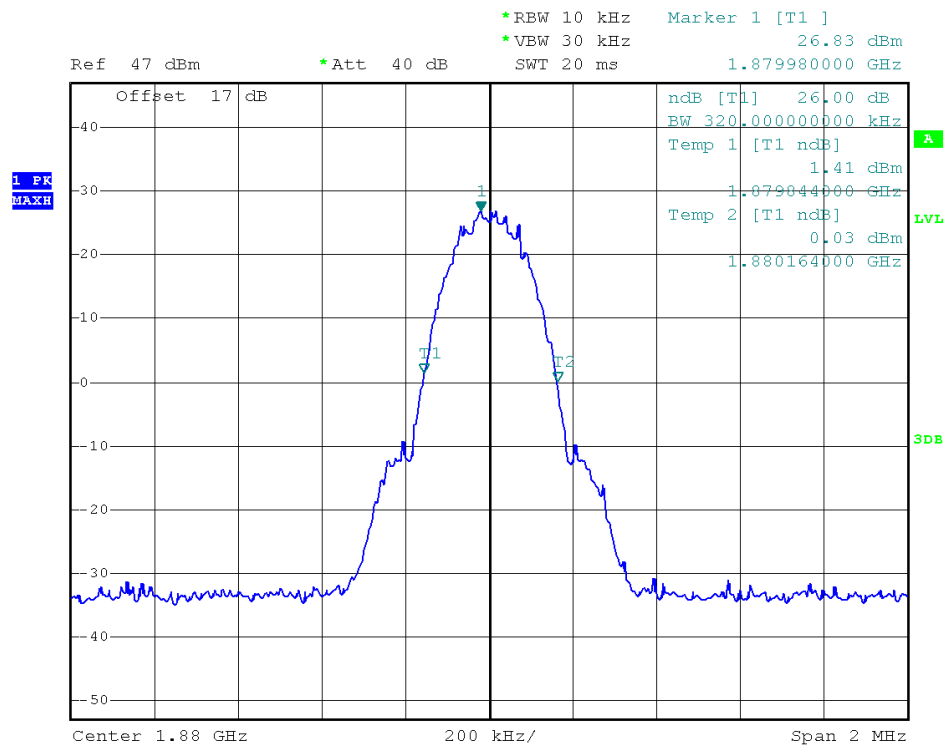
(Plot a2:GPRS850MHz Channel = 251)



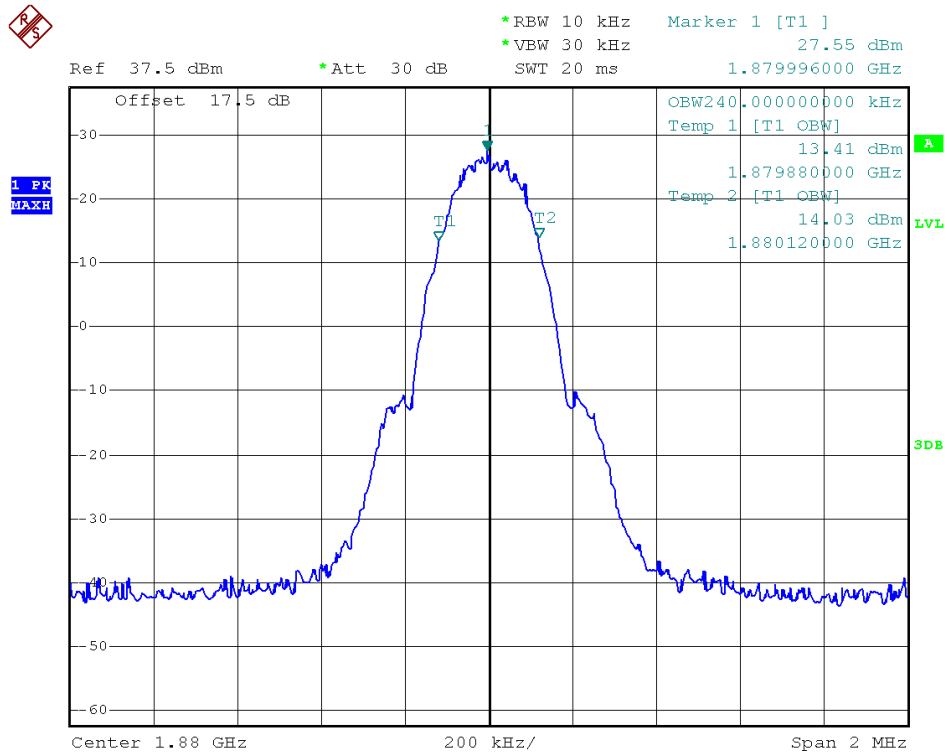
(Plot b1:GPRS 1900MHz Channel = 512)



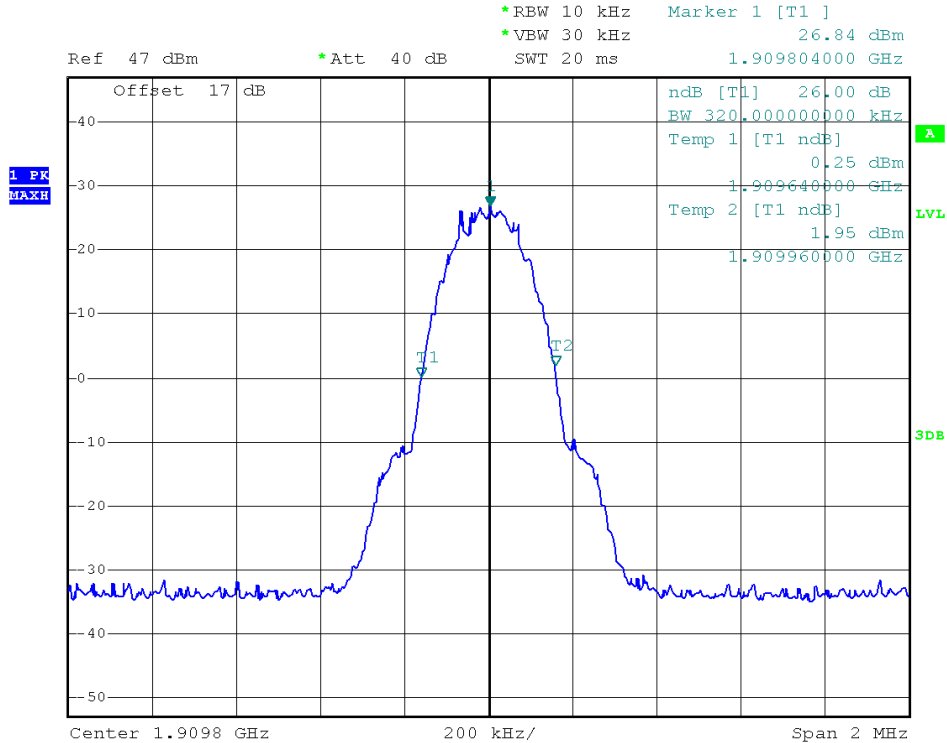
(Plot b2:GPRS 1900MHz Channel = 512)



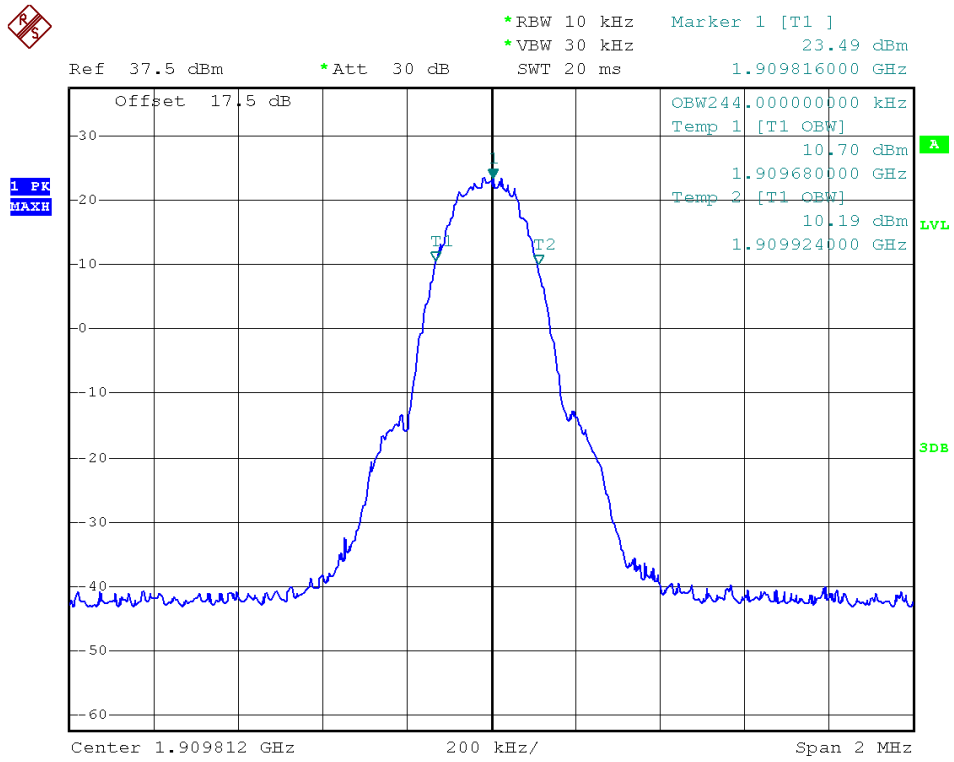
(Plot c1:GPRS 1900MHz Channel = 661)



(Plot c2:GPRS 1900MHz Channel = 661)



(Plot d1:GPRS 1900MHz Channel = 810)



(Plot d2:GPRS 1900MHz Channel = 810)



## 2.4 Frequency Stability

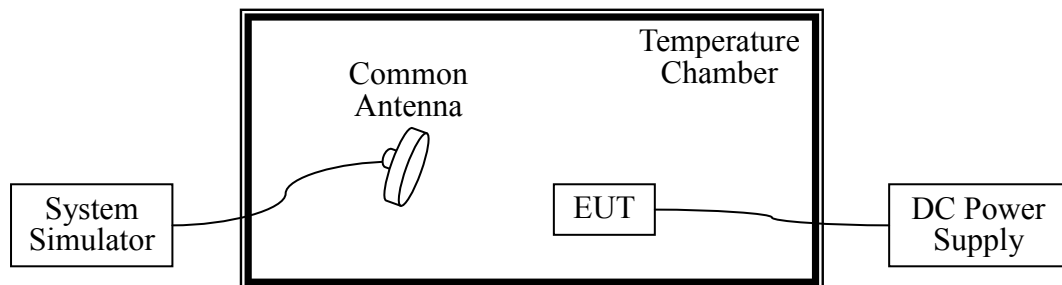
### 2.4.1 Requirement

According to FCC section 22.355 and FCC section 24.235, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. According to FCC section 2.1055, the test conditions are:

- (a) The temperature is varied from -30°C to +50°C at intervals of not more than 10°C.
- (b) For hand carried battery powered equipment, the primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacture. The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided.

### 2.4.2 Test Description

1. Test Setup:



The EUT, which is powered by the DC Power Supply directly, is located in the Temperature Chamber. The EUT is commanded by the System Simulator (SS) to operate at the maximum output power i.e. Power Control Level (PCL) = 5 and Power Class = 4. A call is established between the EUT and the SS via a Common Antenna.

2. Equipments List:

| Description         | Manufacturer              | Model      | Serial No. | Cal. Due Data |
|---------------------|---------------------------|------------|------------|---------------|
| System Simulator    | Agilent                   | E5515C     | GB43130131 | 2014.06.10    |
| DC Power Supply     | Good Will                 | GPS-3030DD | EF920938   | 2014.06.10    |
| Temperature Chamber | YinHe Experimental Equip. | HL4003T    | (n.a.)     | 2014.06.10    |

### 2.4.3 Test Verdict

The nominal, highest and lowest extreme voltages are separately 3.8VDC, 4.2VDC and 3.6VDC, which are specified by the applicant; the normal temperature here used is 25°C. The frequency



deviation limit of 850MHz band is  $\pm 2.5$ ppm, and 1900MHz is  $\pm 1$ ppm

1. GSM 850MHz Band

| Test Conditions |                  | Frequency Deviation      |              |                          |              |                          |            | Verdict |
|-----------------|------------------|--------------------------|--------------|--------------------------|--------------|--------------------------|------------|---------|
| Power (VDC)     | Temperature (°C) | Channel = 128 (824.2MHz) |              | Channel = 190 (836.6MHz) |              | Channel = 251 (848.8MHz) |            |         |
|                 |                  | Hz                       | Limits       | Hz                       | Limits       | Hz                       | Limits     |         |
| 3.8             | -30              | -4.32                    | $\pm 2060.5$ | 27.18                    | $\pm 2091.5$ | 5.05                     | $\pm 2122$ | PASS    |
|                 | -20              | 35.25                    |              | 30.07                    |              | 7.49                     |            |         |
|                 | -10              | -19.21                   |              | 5.48                     |              | 0.19                     |            |         |
|                 | 0                | 27.75                    |              | -1.82                    |              | 34.30                    |            |         |
|                 | +10              | -13.73                   |              | 19.02                    |              | 45.99                    |            |         |
|                 | +20              | -6.95                    |              | 44.78                    |              | -16.51                   |            |         |
|                 | +30              | 48.07                    |              | 21.99                    |              | 19.46                    |            |         |
|                 | +40              | 42.00                    |              | 17.67                    |              | -6.80                    |            |         |
| +50             | 38.85            | -19.44                   | 7.58         |                          |              |                          |            |         |
| 4.2             | +25              | 31.42                    |              | -6.76                    |              | 3.11                     |            |         |
| 3.6             | +25              | 4.49                     |              | 14.09                    |              | -4.93                    |            |         |

2. GSM 1900MHz Band

| Test Conditions |                  | Frequency Deviation       |              |                           |              |                           |              | Verdict |
|-----------------|------------------|---------------------------|--------------|---------------------------|--------------|---------------------------|--------------|---------|
| Power (VDC)     | Temperature (°C) | Channel = 512 (1850.2MHz) |              | Channel = 661 (1880.0MHz) |              | Channel = 810 (1909.8MHz) |              |         |
|                 |                  | Hz                        | Limits       | Hz                        | Limits       | Hz                        | Limits       |         |
| 3.8             | -30              | -0.97                     | $\pm 1850.2$ | 51.25                     | $\pm 1880.0$ | 1.12                      | $\pm 1909.8$ | PASS    |
|                 | -20              | 35.71                     |              | 51.56                     |              | 8.81                      |              |         |
|                 | -10              | 54.73                     |              | 48.10                     |              | 22.21                     |              |         |
|                 | 0                | 25.45                     |              | 43.19                     |              | 47.37                     |              |         |
|                 | +10              | 18.46                     |              | 6.50                      |              | 14.85                     |              |         |
|                 | +20              | 20.42                     |              | 3.76                      |              | 33.63                     |              |         |
|                 | +30              | 0.36                      |              | 7.11                      |              | 38.27                     |              |         |
|                 | +40              | 26.25                     |              | 5.70                      |              | 57.38                     |              |         |
| +50             | 24.14            | -5.74                     | 21.22        |                           |              |                           |              |         |
| 4.2             | +25              | 12.46                     |              | 42.11                     |              | 50.98                     |              |         |
| 3.6             | +25              | 46.55                     |              | 5.31                      |              | 0.95                      |              |         |



3. WCDMA 850MHz Band

| Test Conditions |                  | Frequency Deviation       |       |                           |         |                           |         | Verdict |
|-----------------|------------------|---------------------------|-------|---------------------------|---------|---------------------------|---------|---------|
| Power (VDC)     | Temperature (°C) | Channel = 4123 (826.4MHz) |       | Channel = 4183 (836.6MHz) |         | Channel = 4233 (846.6MHz) |         |         |
|                 |                  | Hz                        | Limit | Hz                        | Limit   | Hz                        | Limit   |         |
| 3.8             | -30              | 20.79                     | ±2066 | 46.68                     | ±2091.5 | 22.69                     | ±2116.5 | PASS    |
|                 | -20              | 44.54                     |       | 28.10                     |         | 2.39                      |         |         |
|                 | -10              | 10.45                     |       | -4.27                     |         | 64.53                     |         |         |
|                 | 0                | 10.88                     |       | 36.69                     |         | 12.66                     |         |         |
|                 | +10              | 54.76                     |       | 13.61                     |         | 50.37                     |         |         |
|                 | +20              | 2.46                      |       | 12.15                     |         | -5.39                     |         |         |
|                 | +30              | 27.07                     |       | 23.94                     |         | 35.13                     |         |         |
|                 | +40              | -8.66                     |       | 13.56                     |         | -0.53                     |         |         |
|                 | +50              | 14.23                     |       | 47.64                     |         | 37.40                     |         |         |
| 4.2             | +25              | 63.35                     | 52.86 | 31.75                     |         |                           |         |         |
| 3.6             | +25              | 35.82                     | 3.68  | 58.60                     |         |                           |         |         |

4. WCDMA 1900MHz Band

| Test Conditions |                  | Frequency Deviation        |         |                            |         |                            |         | Verdict |
|-----------------|------------------|----------------------------|---------|----------------------------|---------|----------------------------|---------|---------|
| Power (VDC)     | Temperature (°C) | Channel = 9262 (1852.4MHz) |         | Channel = 9400 (1880.0MHz) |         | Channel = 9538 (1907.6MHz) |         |         |
|                 |                  | Hz                         | Limits  | Hz                         | Limits  | Hz                         | Limits  |         |
| 3.8             | -30              | 0.96                       | ±1852.4 | 8.16                       | ±1880.0 | 16.62                      | ±1907.6 | PASS    |
|                 | -20              | 24.44                      |         | 36.72                      |         | -4.70                      |         |         |
|                 | -10              | 53.46                      |         | 57.55                      |         | 5.59                       |         |         |
|                 | 0                | 23.70                      |         | -1.82                      |         | 11.51                      |         |         |
|                 | +10              | 8.80                       |         | 40.78                      |         | -9.42                      |         |         |
|                 | +20              | 18.68                      |         | 13.96                      |         | -13.86                     |         |         |
|                 | +30              | 6.60                       |         | 35.78                      |         | 29.87                      |         |         |
|                 | +40              | 38.46                      |         | 44.01                      |         | 11.59                      |         |         |
|                 | +50              | 4.47                       |         | 24.16                      |         | 5.90                       |         |         |
| 4.2             | +25              | 15.78                      | 42.99   | -0.49                      |         |                            |         |         |
| 3.6             | +25              | 53.33                      | 26.70   | -3.07                      |         |                            |         |         |



5. HSDPA 850MHz Band

| Test Conditions |                  | Frequency Deviation       |       |                           |         |                           |         | Verdict |
|-----------------|------------------|---------------------------|-------|---------------------------|---------|---------------------------|---------|---------|
| Power (VDC)     | Temperature (°C) | Channel = 4123 (826.4MHz) |       | Channel = 4183 (836.6MHz) |         | Channel = 4233 (846.6MHz) |         |         |
|                 |                  | Hz                        | Limit | Hz                        | Limit   | Hz                        | Limit   |         |
| 3.8             | -30              | 54.22                     | ±2066 | 11.25                     | ±2091.5 | -19.81                    | ±2116.5 | PASS    |
|                 | -20              | 42.78                     |       | 9.1                       |         | -8.65                     |         |         |
|                 | -10              | 47.18                     |       | 26.93                     |         | 29.87                     |         |         |
|                 | 0                | 0.81                      |       | -22.7                     |         | -9.98                     |         |         |
|                 | +10              | 37.41                     |       | -8.3                      |         | -19.61                    |         |         |
|                 | +20              | 18.65                     |       | 32.29                     |         | -21.43                    |         |         |
|                 | +30              | 7.86                      |       | -4.32                     |         | 8.89                      |         |         |
|                 | +40              | -1.46                     |       | -18.83                    |         | -9.87                     |         |         |
|                 | +50              | 63.59                     |       | 33.03                     |         | 16.71                     |         |         |
| 4.2             | +25              | 48.45                     |       | 13.27                     |         | 2.56                      |         |         |
| 3.6             | +25              | 25.64                     |       | -5.87                     |         | -23.56                    |         |         |

6. HSDPA 1900MHz Band

| Test Conditions |                  | Frequency Deviation        |         |                            |        |                            |         | Verdict |
|-----------------|------------------|----------------------------|---------|----------------------------|--------|----------------------------|---------|---------|
| Power (VDC)     | Temperature (°C) | Channel = 9262 (1852.4MHz) |         | Channel = 9400 (1880.0MHz) |        | Channel = 9538 (1907.6MHz) |         |         |
|                 |                  | Hz                         | Limits  | Hz                         | Limits | Hz                         | Limits  |         |
| 3.8             | -30              | 40.74                      | ±1852.4 | 39.64                      | ±1880  | 4.24                       | ±1907.6 | PASS    |
|                 | -20              | 44.81                      |         | 36.49                      |        | 50.42                      |         |         |
|                 | -10              | -2.51                      |         | 7.98                       |        | 23.49                      |         |         |
|                 | 0                | 7.95                       |         | -3.94                      |        | 25.50                      |         |         |
|                 | +10              | 29.51                      |         | -9.04                      |        | -15.21                     |         |         |
|                 | +20              | 29.84                      |         | 45.91                      |        | 30.37                      |         |         |
|                 | +30              | 13.40                      |         | -5.29                      |        | 18.94                      |         |         |
|                 | +40              | 56.48                      |         | 40.47                      |        | 9.91                       |         |         |
|                 | +50              | 18.09                      |         | 22.99                      |        | 32.97                      |         |         |
| 4.2             | +25              | -17.00                     |         | 30.91                      |        | 50.69                      |         |         |
| 3.6             | +25              | 6.75                       |         | -10.79                     |        | 13.44                      |         |         |

## 7. HSUPA 850MHz Band

| Test Conditions |                  | Frequency Deviation       |       |                           |         |                           |         | Verdict |
|-----------------|------------------|---------------------------|-------|---------------------------|---------|---------------------------|---------|---------|
| Power (VDC)     | Temperature (°C) | Channel = 4123 (826.4MHz) |       | Channel = 4183 (836.6MHz) |         | Channel = 4233 (846.6MHz) |         |         |
|                 |                  | Hz                        | Limit | Hz                        | Limit   | Hz                        | Limit   |         |
| 3.8             | -30              | 7.01                      | ±2066 | -11.03                    | ±2091.5 | 21.02                     | ±2116.5 | PASS    |
|                 | -20              | -13.74                    |       | -2.06                     |         | 43.08                     |         |         |
|                 | -10              | 28.59                     |       | 12.88                     |         | 20.65                     |         |         |
|                 | 0                | -5.09                     |       | -21.75                    |         | -3.32                     |         |         |
|                 | +10              | 50.44                     |       | -18.76                    |         | 42.75                     |         |         |
|                 | +20              | -16.77                    |       | 32.54                     |         | -2.32                     |         |         |
|                 | +30              | 47.36                     |       | -18.89                    |         | 23.12                     |         |         |
|                 | +40              | 15.51                     |       | 44.49                     |         | 11.33                     |         |         |
|                 | +50              | 41.05                     |       | 40.72                     |         | -17.55                    |         |         |
| 4.2             | +25              | 21.79                     |       | 16.15                     |         | 38.10                     |         |         |
| 3.6             | +25              | 10.20                     |       | 52.34                     |         | -12.06                    |         |         |

## 8. HSUPA 1900MHz Band

| Test Conditions |                  | Frequency Deviation        |         |                            |        |                            |         | Verdict |
|-----------------|------------------|----------------------------|---------|----------------------------|--------|----------------------------|---------|---------|
| Power (VDC)     | Temperature (°C) | Channel = 9262 (1852.4MHz) |         | Channel = 9400 (1880.0MHz) |        | Channel = 9538 (1907.6MHz) |         |         |
|                 |                  | Hz                         | Limits  | Hz                         | Limits | Hz                         | Limits  |         |
| 3.8             | -30              | 33.26                      | ±1852.4 | 15.73                      | ±1880  | 52.17                      | ±1907.6 | PASS    |
|                 | -20              | 42.12                      |         | -8.20                      |        | 28.14                      |         |         |
|                 | -10              | -0.56                      |         | 43.40                      |        | 33.27                      |         |         |
|                 | 0                | 8.20                       |         | -13.79                     |        | 24.72                      |         |         |
|                 | +10              | -13.04                     |         | 28.82                      |        | 11.91                      |         |         |
|                 | +20              | -14.56                     |         | 25.83                      |        | 19.59                      |         |         |
|                 | +30              | 21.86                      |         | 41.20                      |        | 48.08                      |         |         |
|                 | +40              | -5.39                      |         | -10.03                     |        | 31.98                      |         |         |
|                 | +50              | 38.99                      |         | 2.69                       |        | 41.83                      |         |         |
| 4.2             | +25              | 36.56                      |         | 7.29                       |        | 22.23                      |         |         |
| 3.6             | +25              | 6.44                       |         | 17.60                      |        | 14.12                      |         |         |



## 2.5 Conducted Out of Band Emissions

### 2.5.1 Requirement

According to FCC section 22.917(a) and FCC 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.

### 2.5.2 Test Description

See section 2.1.2 of this report.

### 2.5.3 Test Result

The measurement frequency range is from 30MHz to the 10<sup>th</sup> harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the out of band emissions.

#### 1. Test Verdict:

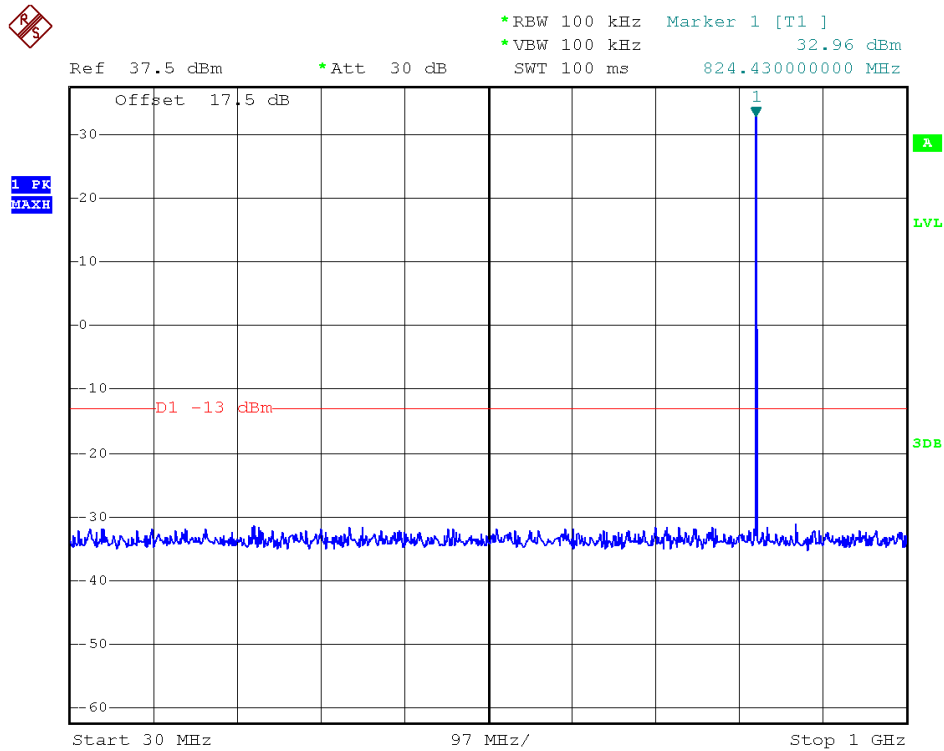
| Band             | Channel | Frequency (MHz) | Measured Max. Spurious Emission (dBm) | Refer to Plot | Limit (dBm) | Verdict |
|------------------|---------|-----------------|---------------------------------------|---------------|-------------|---------|
| GSM<br>850MHz    | 128     | 824.2           | -26.49                                | Plot A1toA1.1 | -13         | PASS    |
|                  | 190     | 836.6           | -26.76                                | Plot A2toA2.1 |             | PASS    |
|                  | 251     | 848.8           | -26.54                                | Plot A3toA3.1 |             | PASS    |
| GSM<br>1900MHz   | 512     | 1850.2          | -19.71                                | Plot B1toB1.1 | -13         | PASS    |
|                  | 661     | 1880.0          | -20.03                                | Plot B2toB2.1 |             | PASS    |
|                  | 810     | 1909.8          | -19.80                                | Plot B3toB3.1 |             | PASS    |
| WCDMA<br>850MHz  | 4132    | 826.4           | -28.18                                | Plot C1toC1.1 | -13         | PASS    |
|                  | 4183    | 836.6           | -27.95                                | Plot C2toC2.1 |             | PASS    |
|                  | 4233    | 846.6           | -27.81                                | Plot C3toC3.1 |             | PASS    |
| WCDMA<br>1900MHz | 9262    | 1852.4          | -29.43                                | Plot D1toD1.1 | -13         | PASS    |
|                  | 9400    | 1880            | -29.85                                | Plot D2toD2.1 |             | PASS    |
|                  | 9538    | 1907.6          | -30.25                                | Plot D3toD3.1 |             | PASS    |
| HSDPA<br>850MHz  | 4132    | 826.4           | -27.70                                | Plot E1toE1.1 | -13         | PASS    |
|                  | 4183    | 836.6           | -29.23                                | Plot E2toE2.1 |             | PASS    |
|                  | 4233    | 846.6           | -28.87                                | Plot E3toE3.1 |             | PASS    |
| HSDPA<br>1900MHz | 9262    | 1852.4          | -20.07                                | Plot F1toF1.1 | -13         | PASS    |
|                  | 9400    | 1880            | -20.53                                | Plot F2toF2.1 |             | PASS    |
|                  | 9538    | 1907.6          | -20.50                                | Plot F3toF3.1 |             | PASS    |
| HSUPA            | 4132    | 826.4           | -28.63                                | Plot G1toG1.1 | -13         | PASS    |



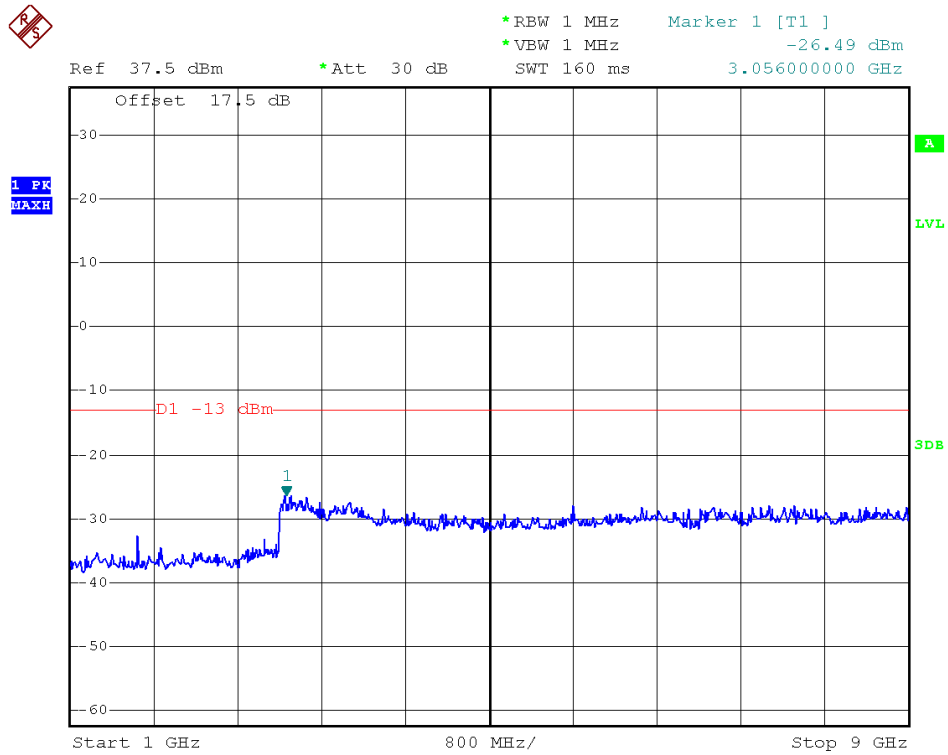
| Band             | Channel | Frequency (MHz) | Measured Max. Spurious Emission (dBm) | Refer to Plot | Limit (dBm) | Verdict |
|------------------|---------|-----------------|---------------------------------------|---------------|-------------|---------|
| 850MHz           | 4183    | 836.6           | -28.44                                | PlotG2toG2.1  |             | PASS-   |
|                  | 4233    | 846.6           | -28.79                                | Plot G3toG3.1 |             | PASS    |
| HSUPA<br>1900MHz | 9262    | 1852.4          | -19.55                                | Plot H1toH1.1 | -13         | PASS    |
|                  | 9400    | 1880            | -20.11                                | Plot H2toH2.1 |             | PASS    |
|                  | 9538    | 1907.6          | -20.55                                | Plot H3toH3.1 |             | PASS    |

2. Test Plots for the Whole Measurement Frequency Range:

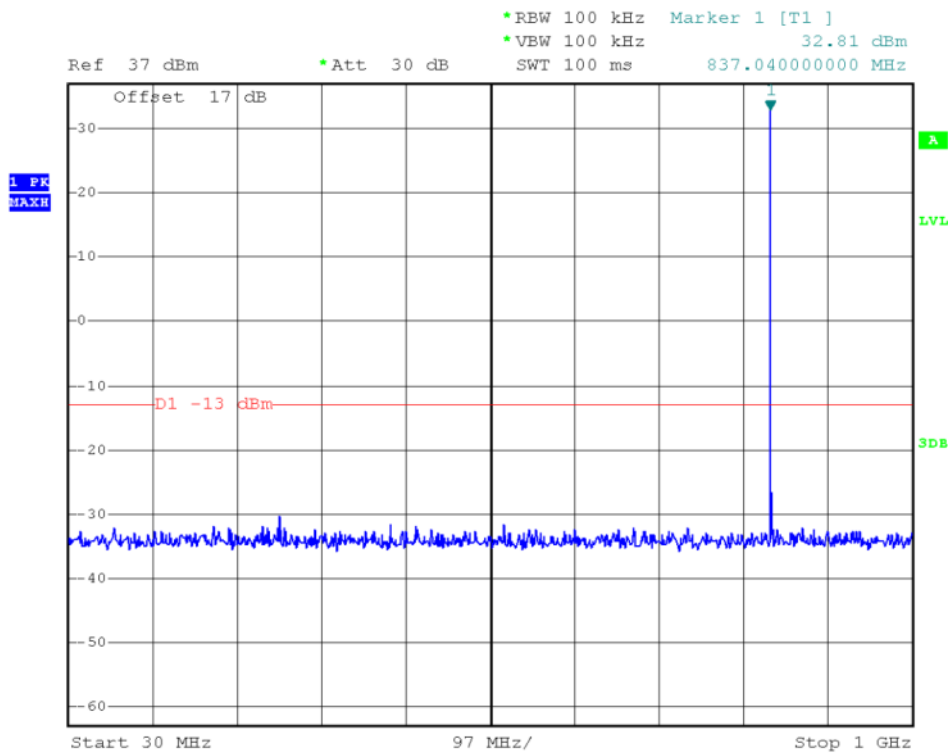
Note: the power of the EUT transmitting frequency should be ignored.



(Plot A1: GSM 850MHz Channel = 128, 30MHz to 1GHz)

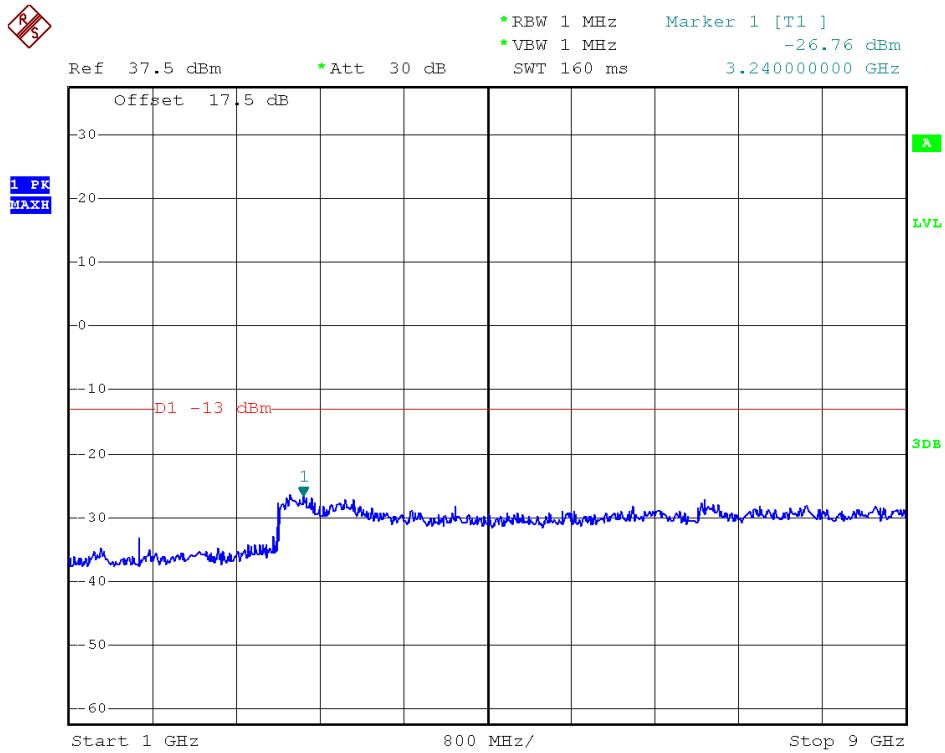


(Plot A1.1: GSM 850MHz Channel = 128, 1GHz to 9GHz)

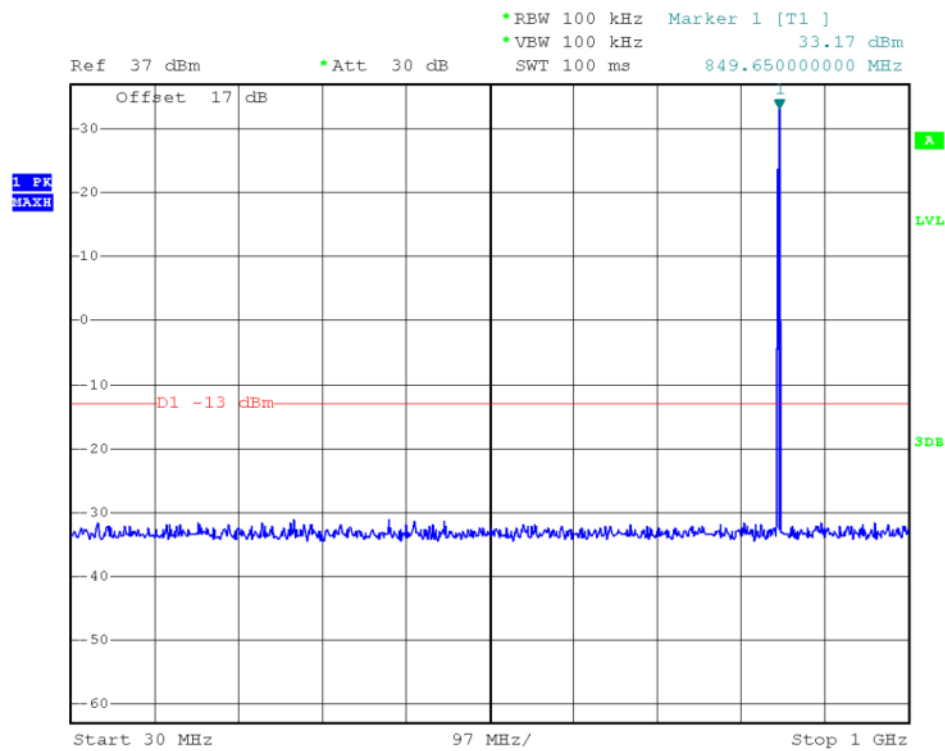


(Plot A2: GSM 850MHz Channel = 190, 30MHz to 1GHz)

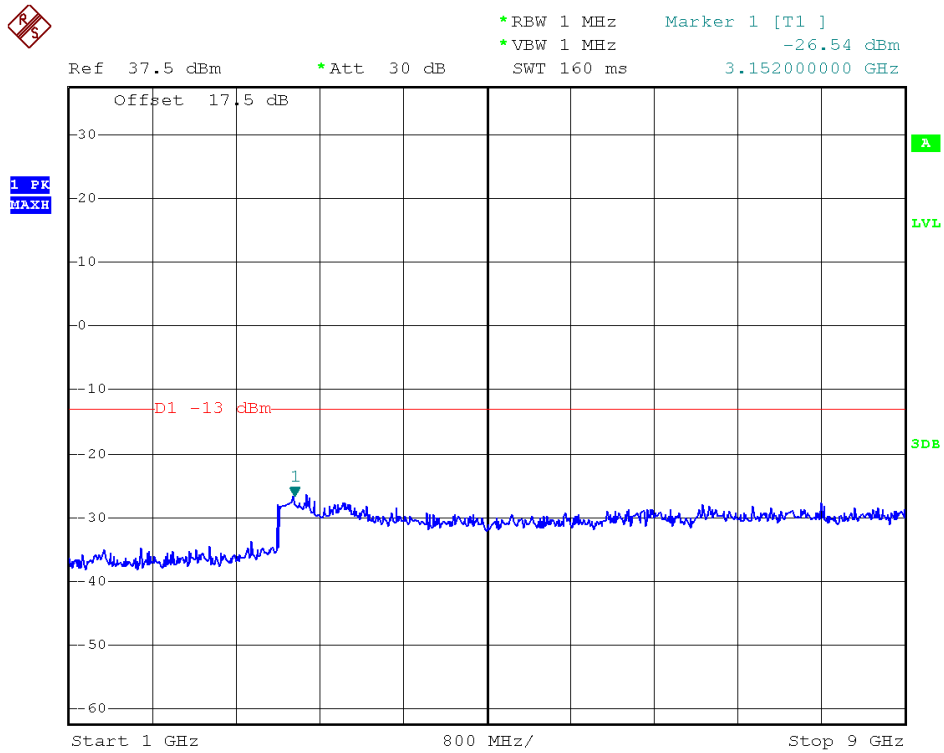




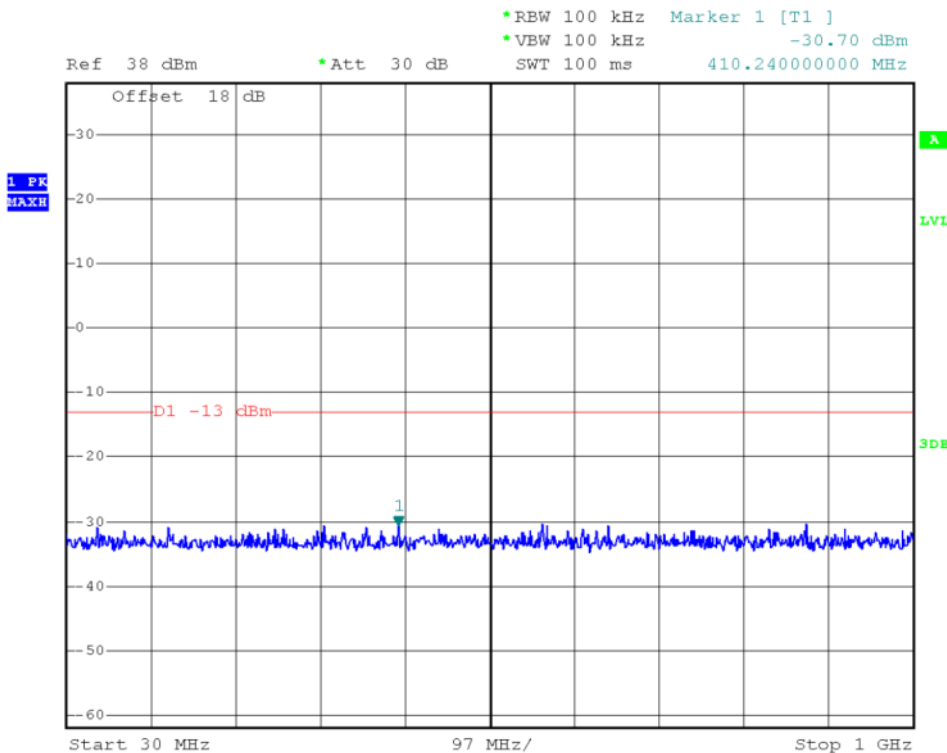
(Plot A2.1: GSM 850MHz Channel = 190, 1GHz to 9GHz)



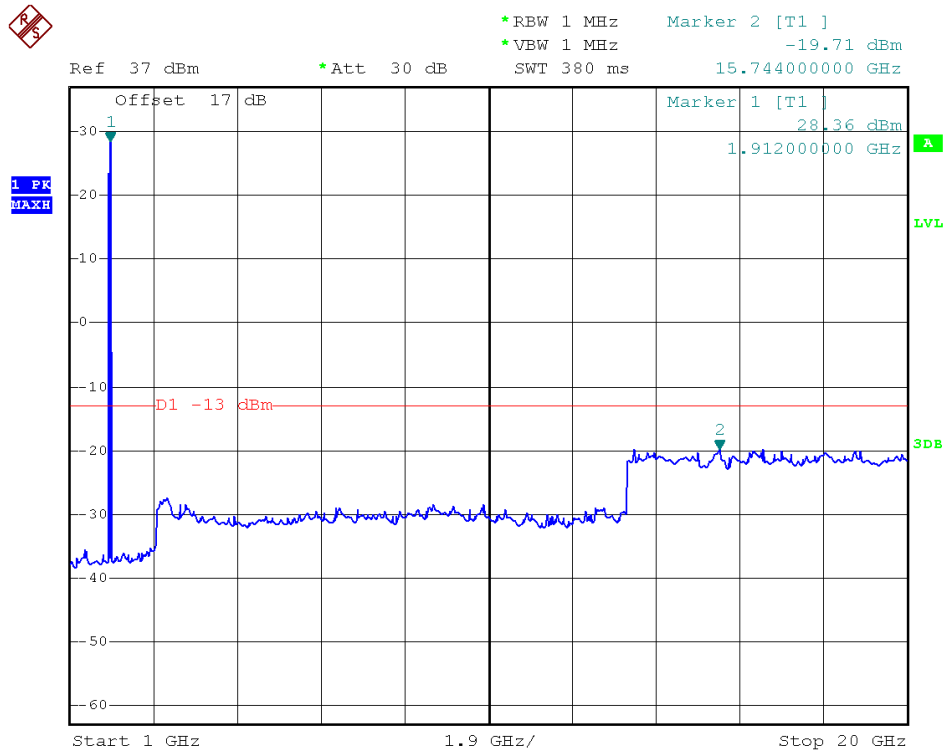
(Plot A3: GSM 850MHz Channel = 251, 30MHz to 1GHz)



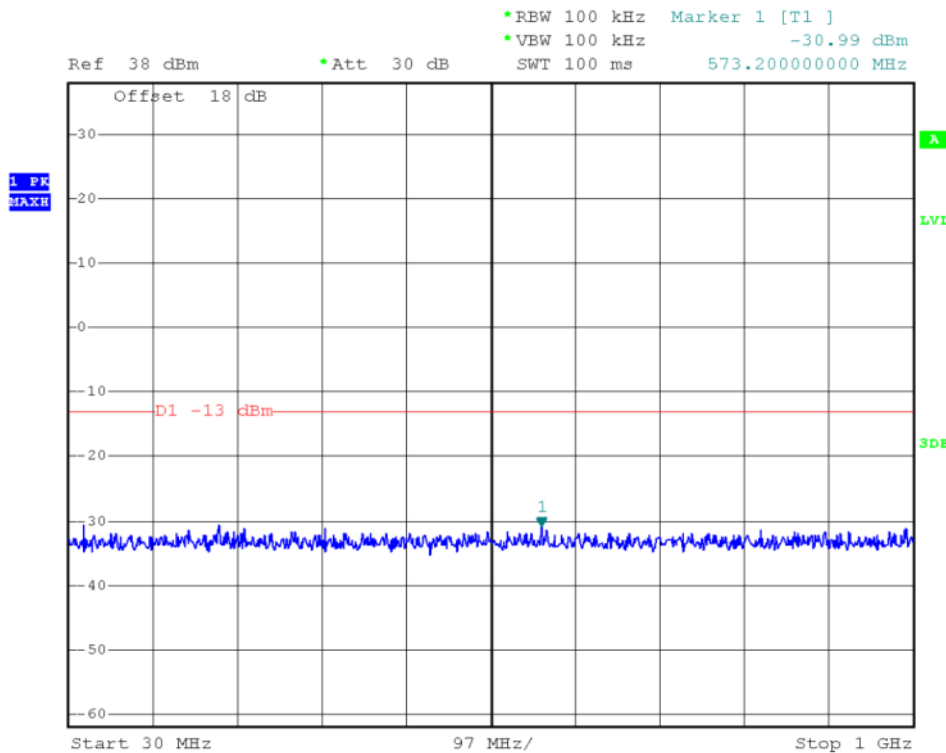
(Plot A3.1: GSM 850MHz Channel = 251, 1GHz to 9GHz)



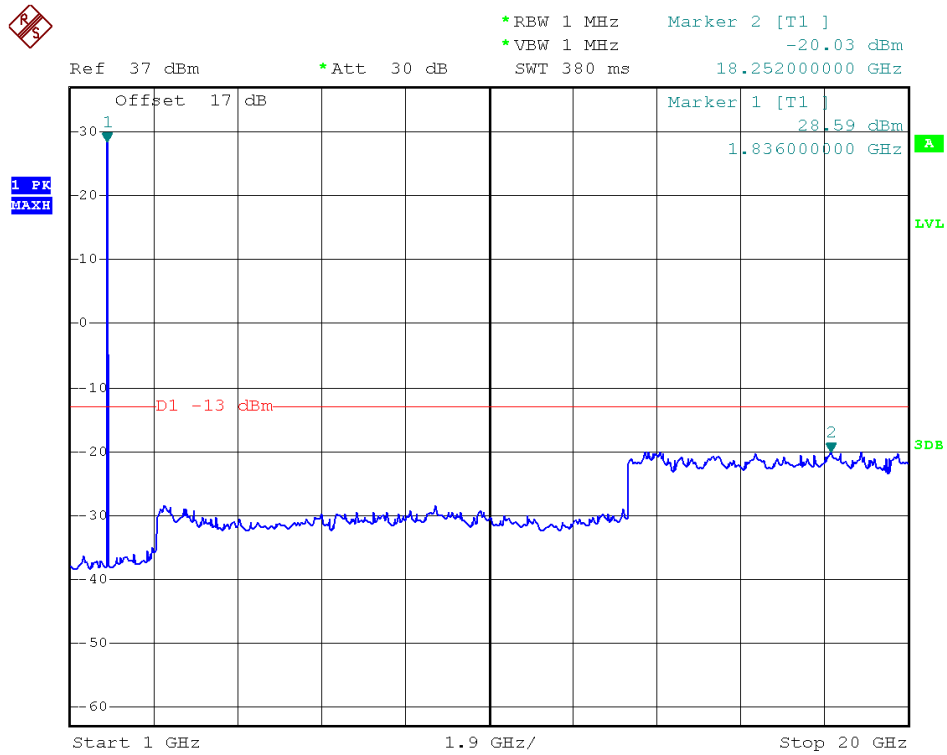
(Plot B1: GSM 1900MHz Channel = 512, 30MHz to 1GHz)



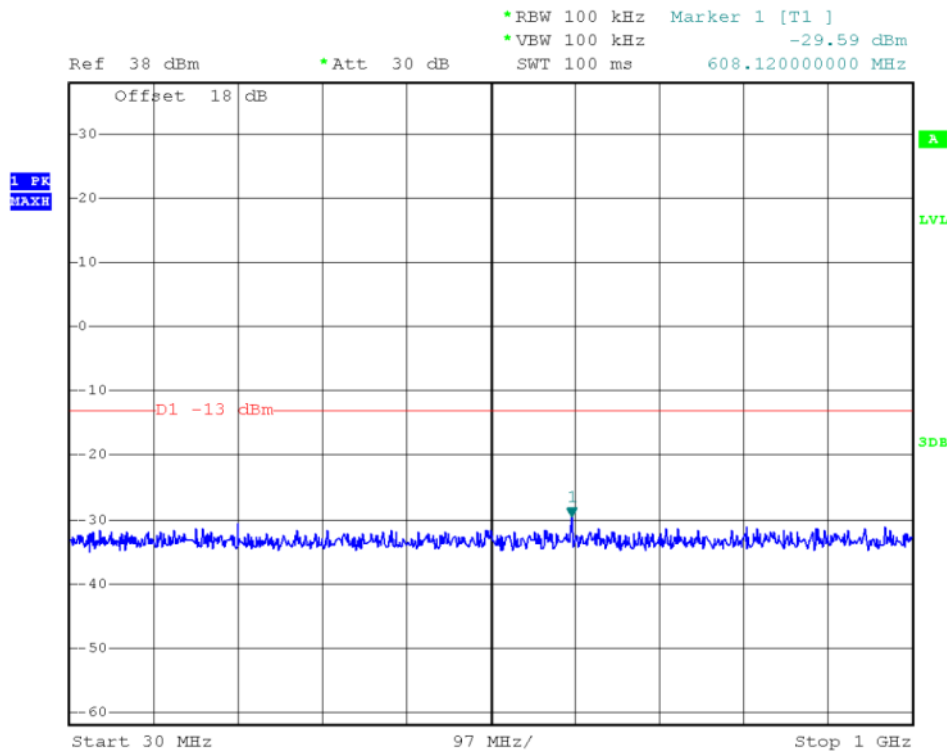
(Plot B1.1: GSM 1900MHz Channel = 512, 1GHz to 20GHz)



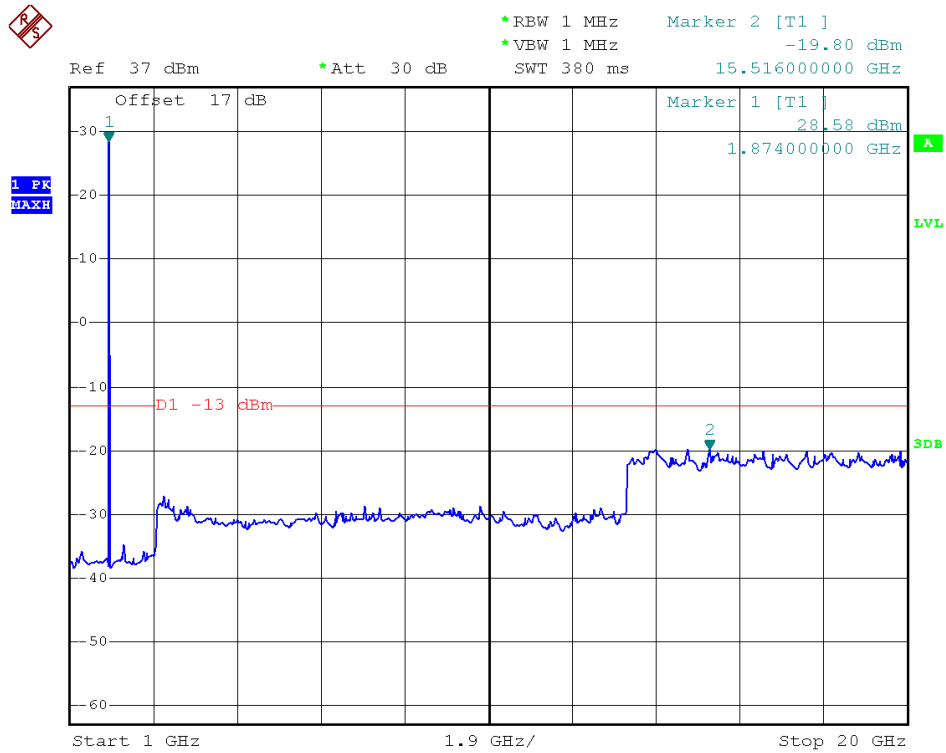
(Plot B2: GSM 1900MHz Channel = 661, 30MHz to 1GHz)



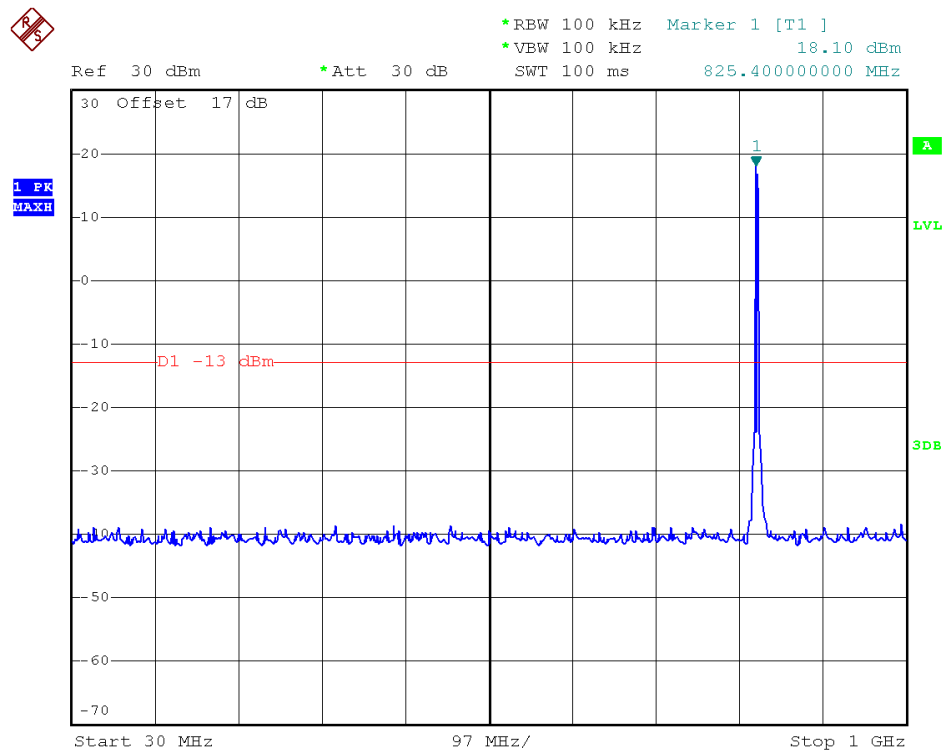
(Plot B2.1: GSM 1900MHz Channel = 661, 1GHz to 20GHz)



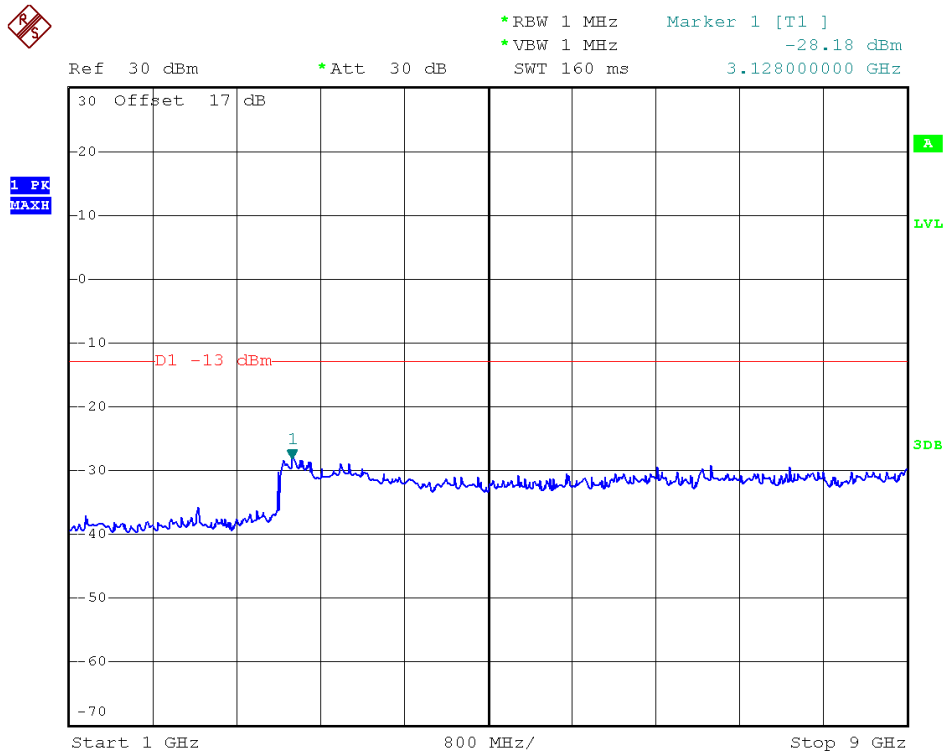
(Plot B3: GSM 1900MHz Channel = 810, 30MHz to 1GHz)



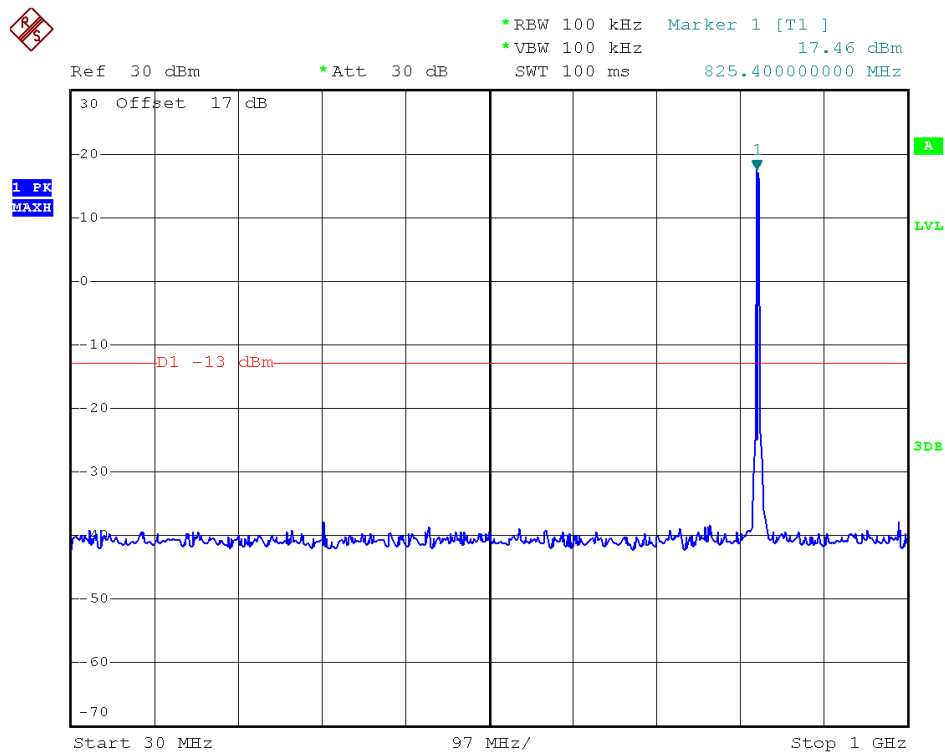
(Plot B3.1: GSM 1900MHz Channel = 810, 1GHz to 20GHz)



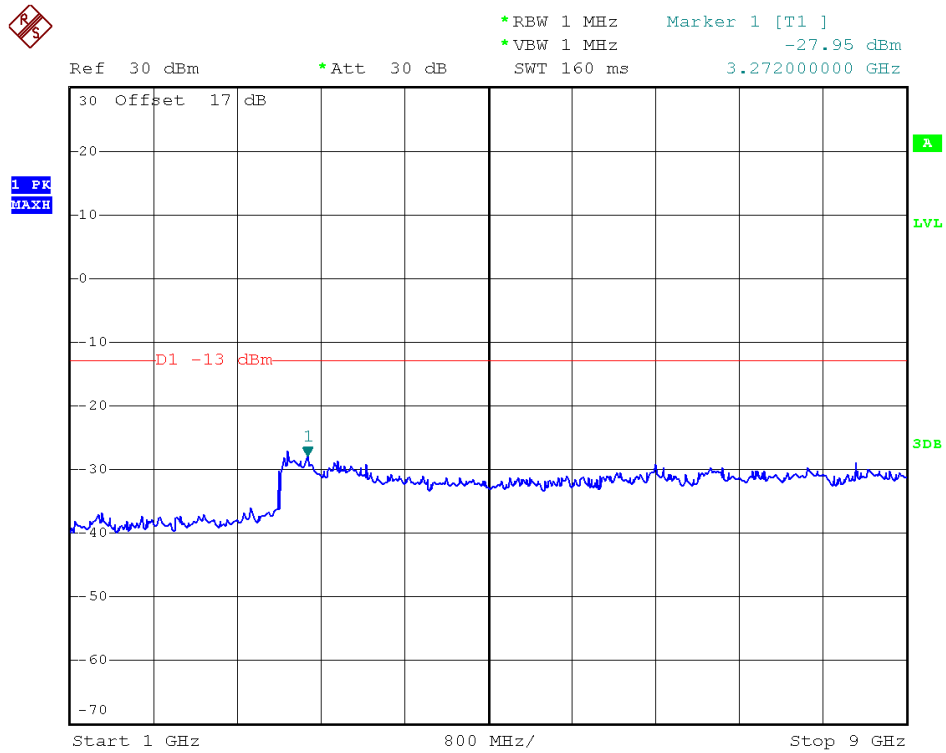
(Plot C1: WCDMA850MHz Channel = 4132, 30MHz to 1GHz)



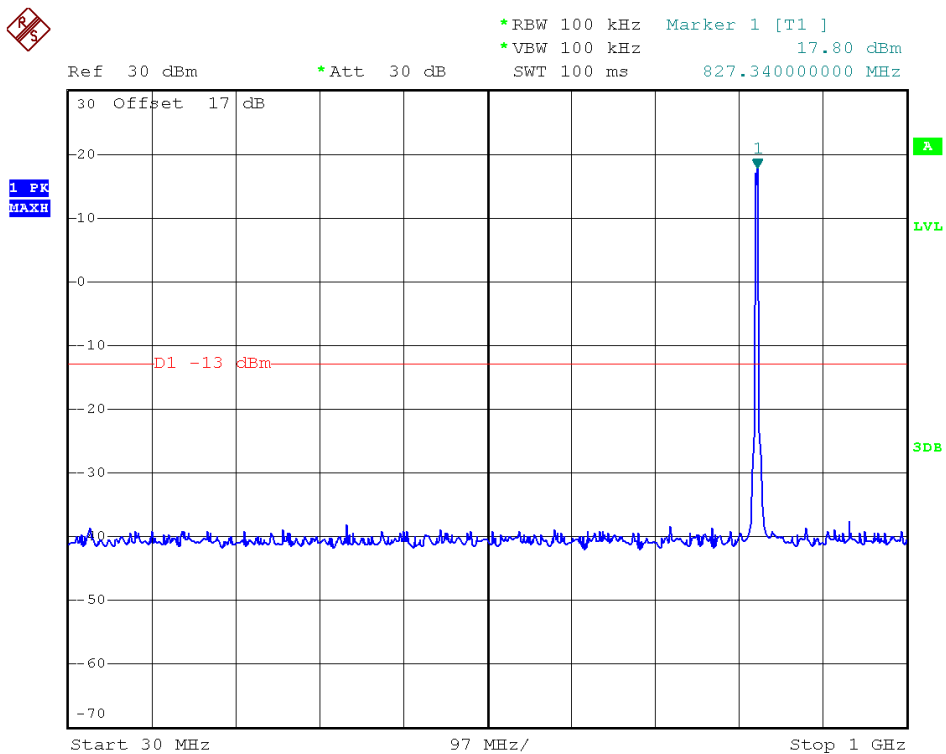
(Plot C1.1: WCDMA850MHz Channel = 4132, 1GHz to 9GHz)



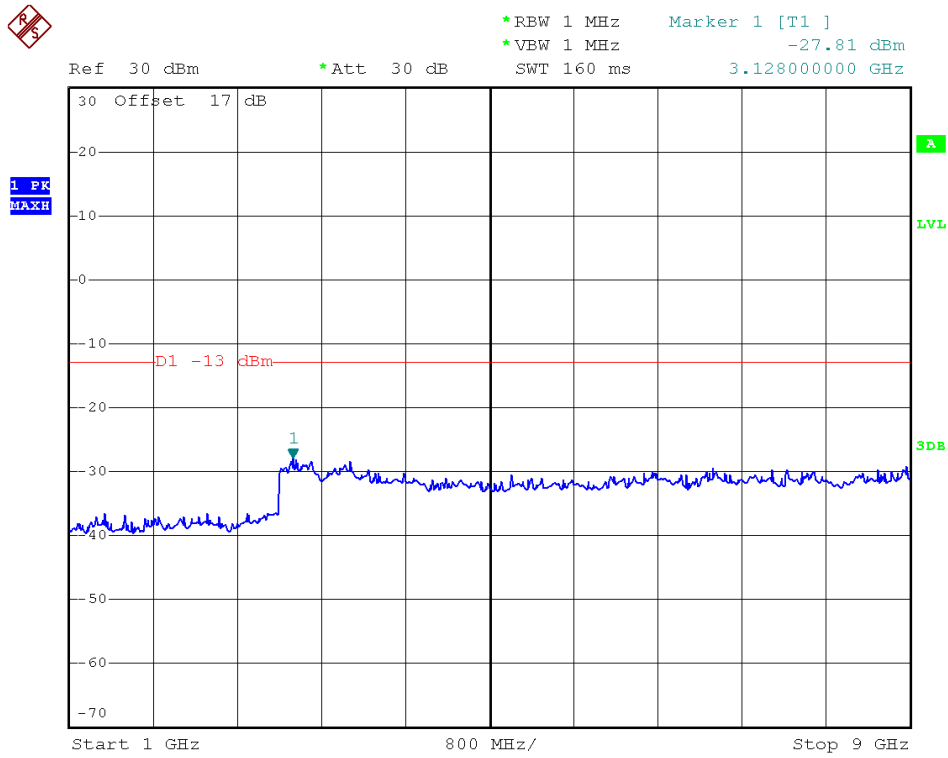
(Plot C2: WCDMA850MHz Channel = 4183, 30MHz to 1GHz)



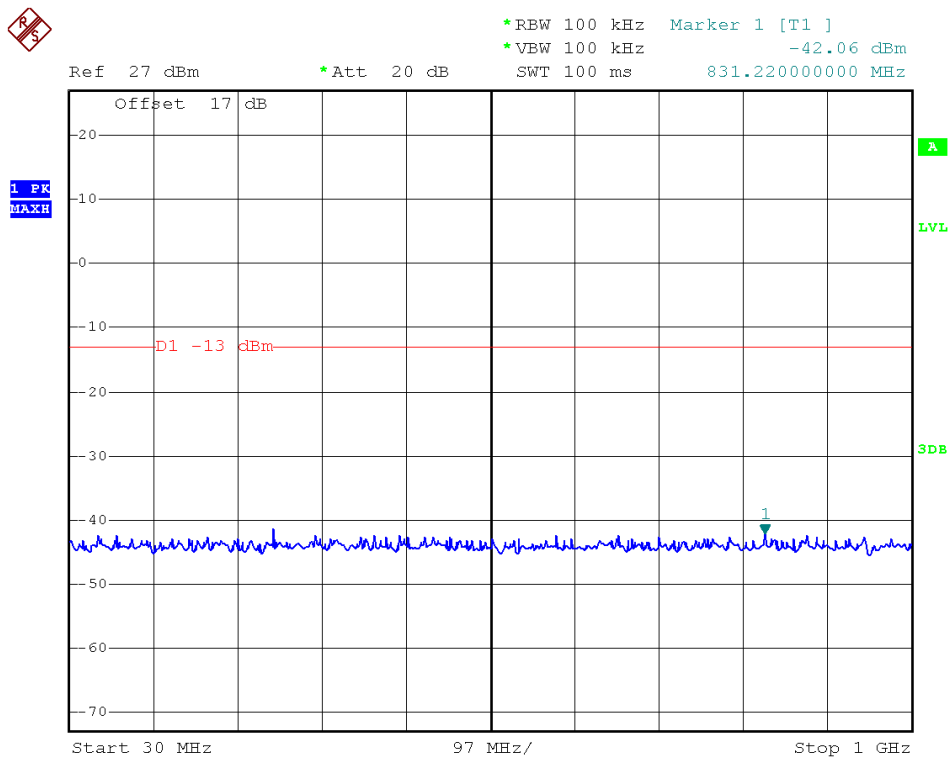
(Plot C2.1: WCDMA850MHz Channel = 4183, 1GHz to 9GHz)



(Plot C3: WCDMA850MHz Channel = 4233, 30MHz to 1GHz)

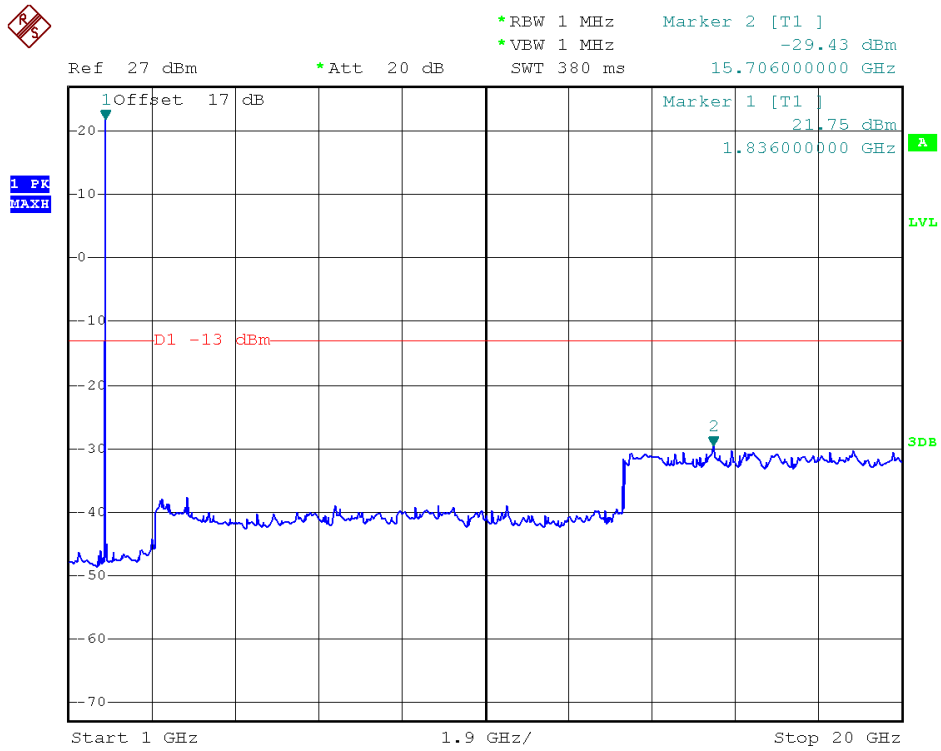


(Plot C3.1: WCDMA850MHz Channel = 4233, 1GHz to 9GHz)

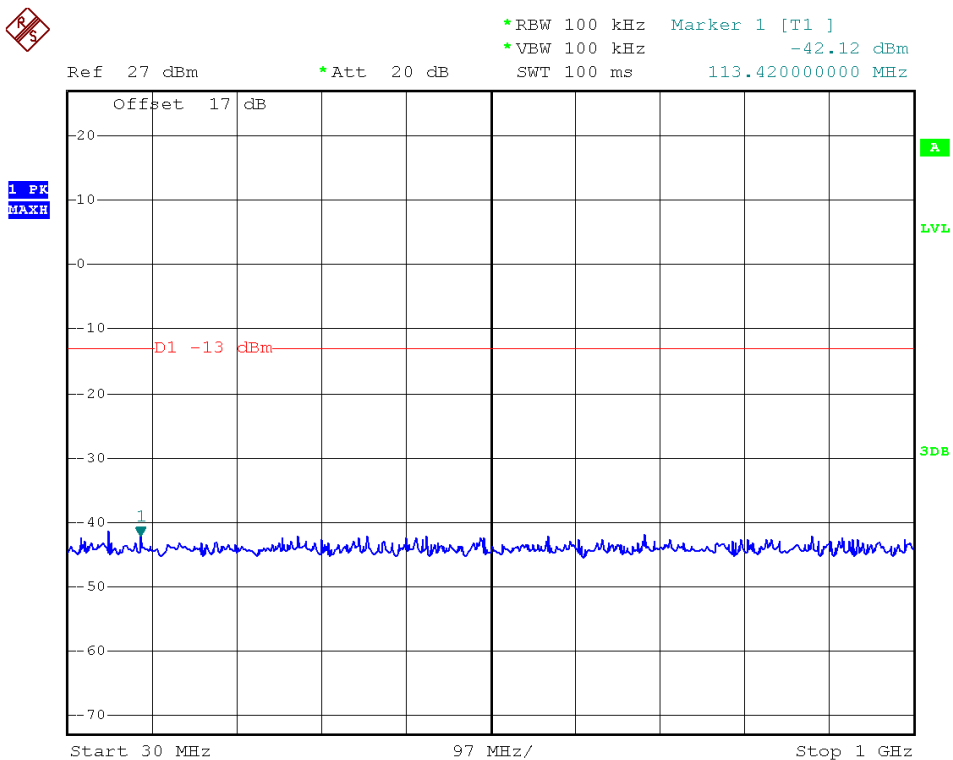


(Plot D1: WCDMA1900MHz Channel = 9262, 30MHz to 1GHz)

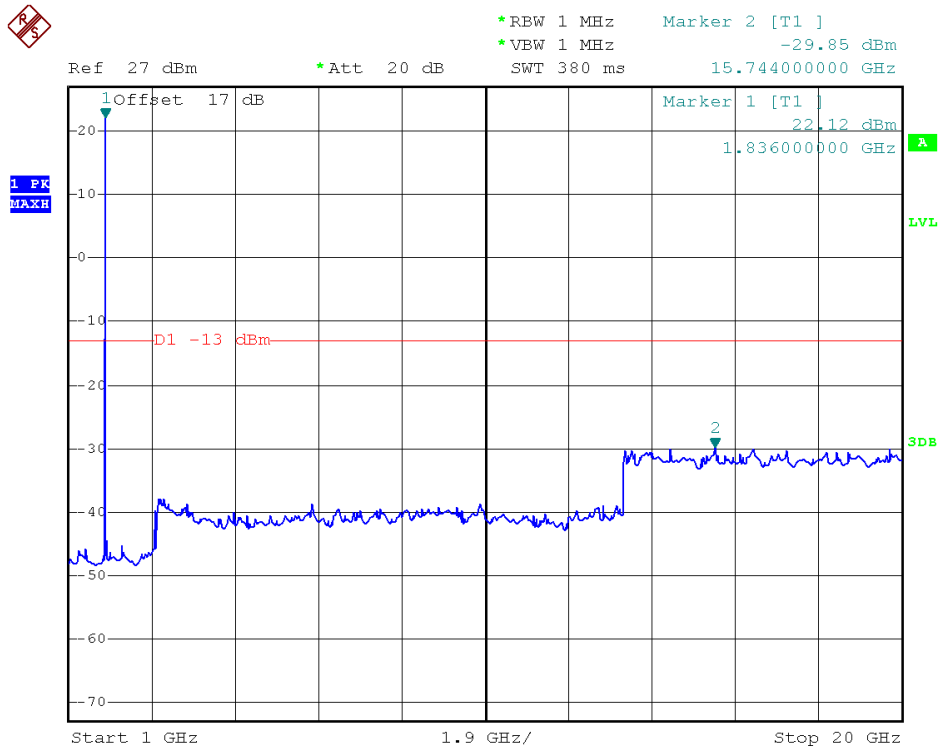




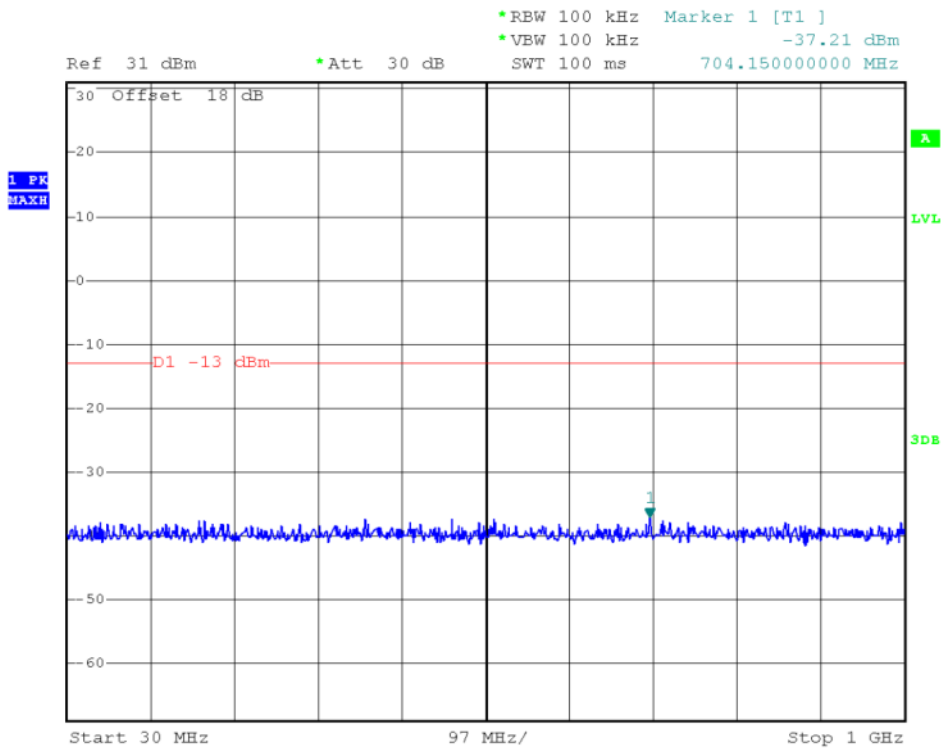
(Plot D1.1: WCDMA1900MHz Channel = 9262, 1GHz to 20GHz)



(Plot D2: WCDMA1900MHz Channel = 9400, 30MHz to 1GHz)

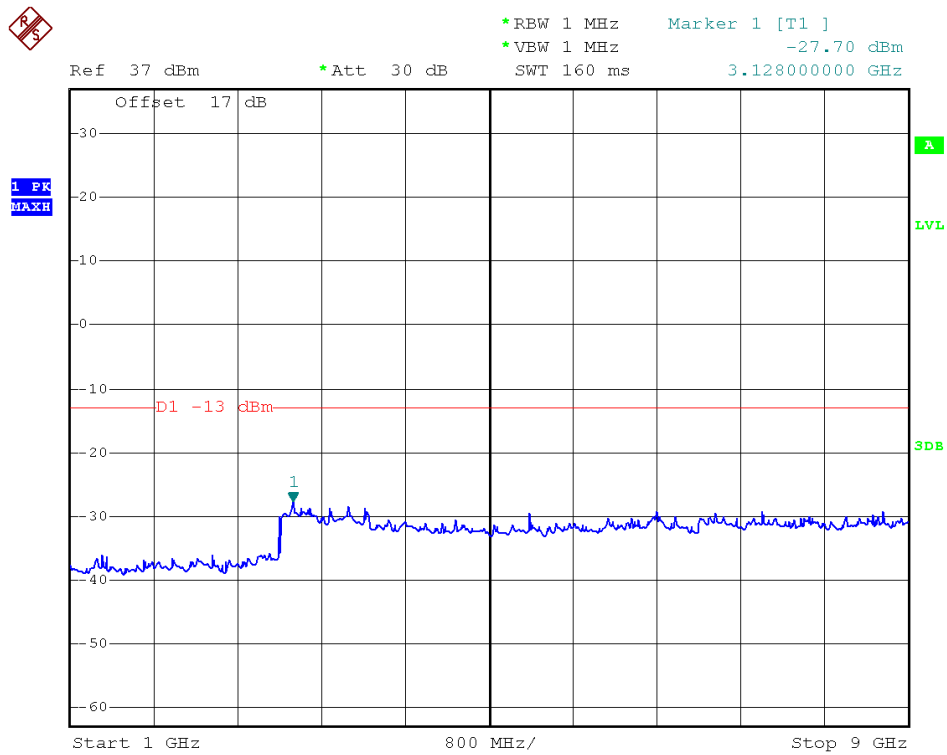


(Plot D2.1: WCDMA1900MHz Channel = 9400, 1GHz to 20GHz)

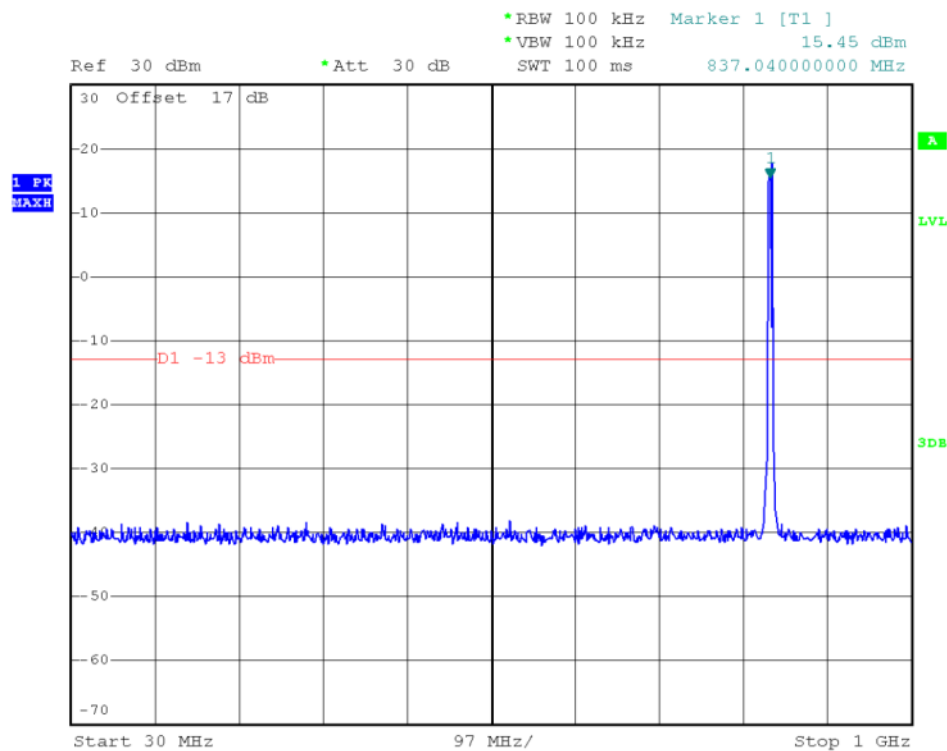


(Plot D3: WCDMA1900MHz Channel = 9538, 30MHz to 1GHz)

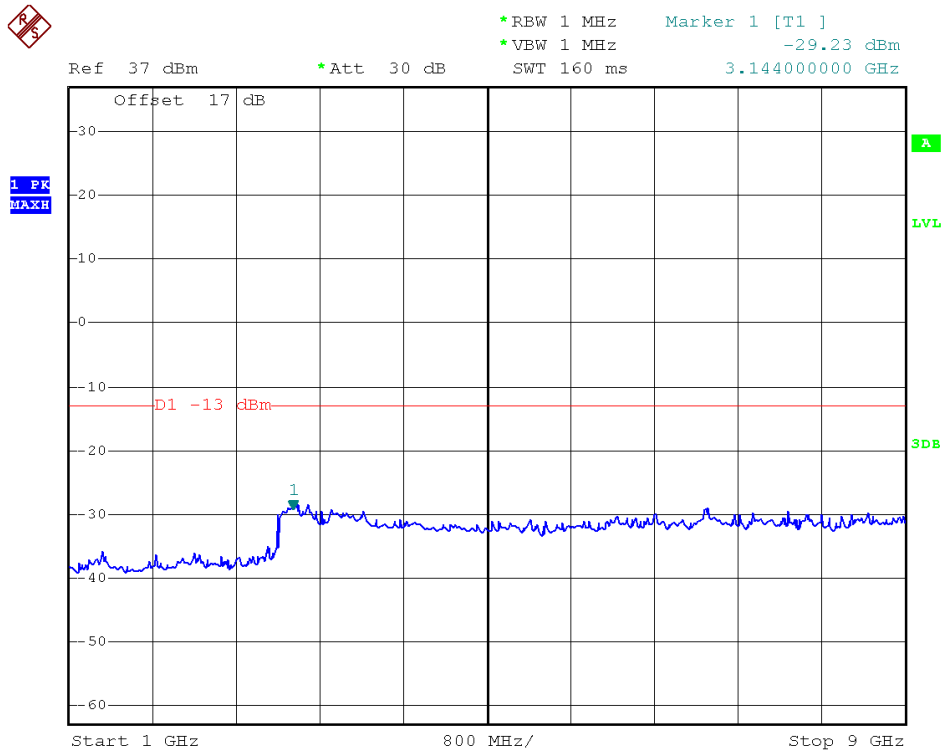




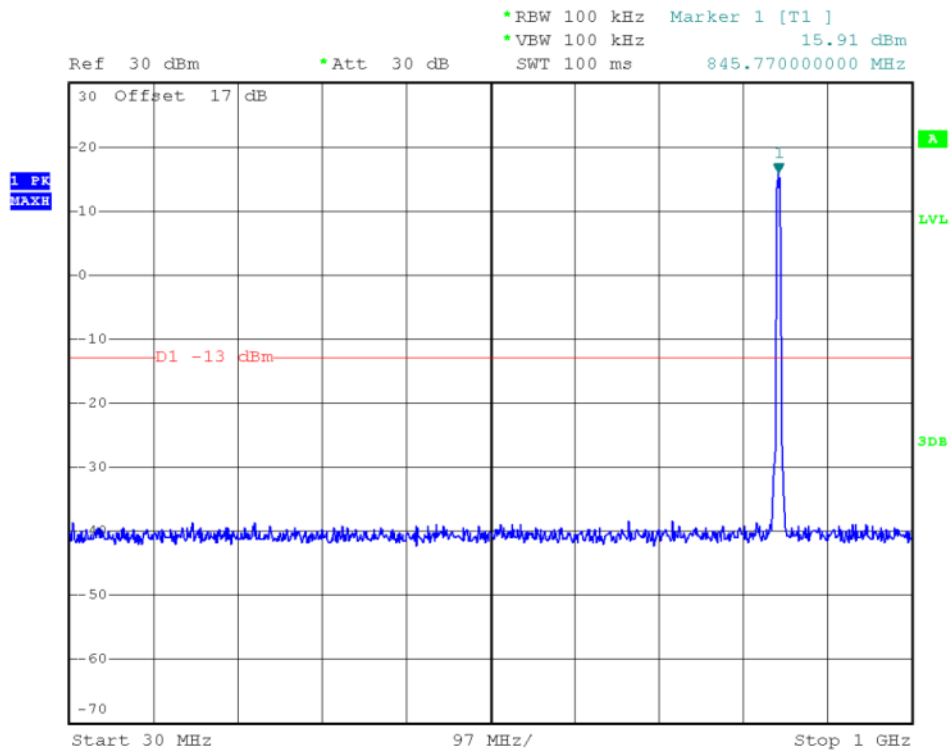
(Plot E1.1: HSDPA 850MHz Channel = 4132, 1GHz to 9GHz)



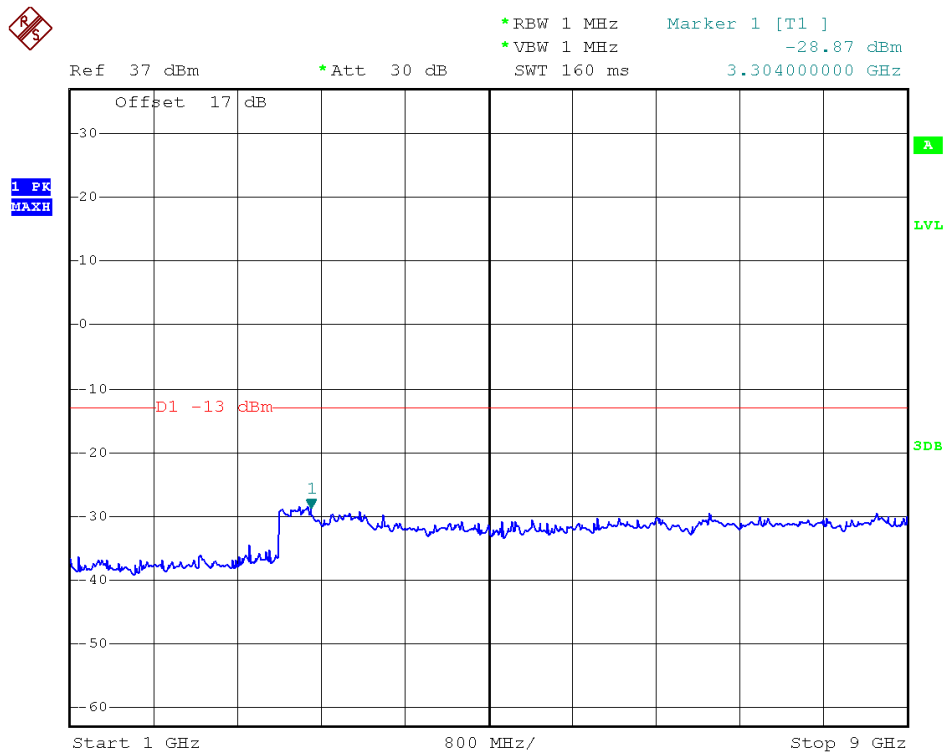
(Plot E2: HSDPA 850MHz Channel = 4183, 30MHz to 1GHz)



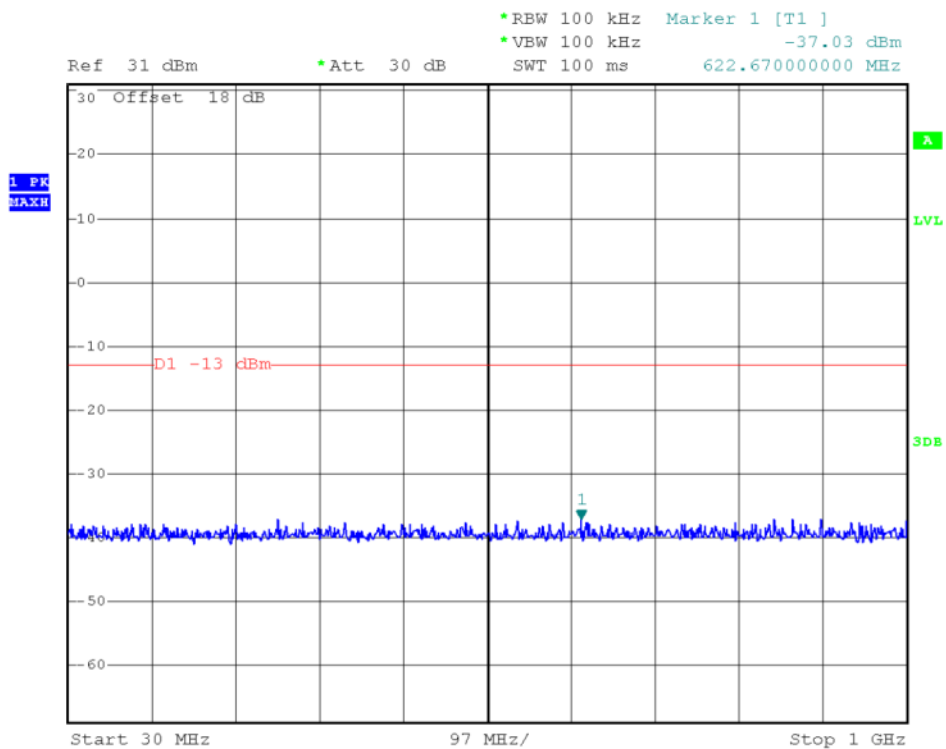
(Plot E2.1: HSDPA 850MHz Channel = 4183, 1GHz to 9GHz)



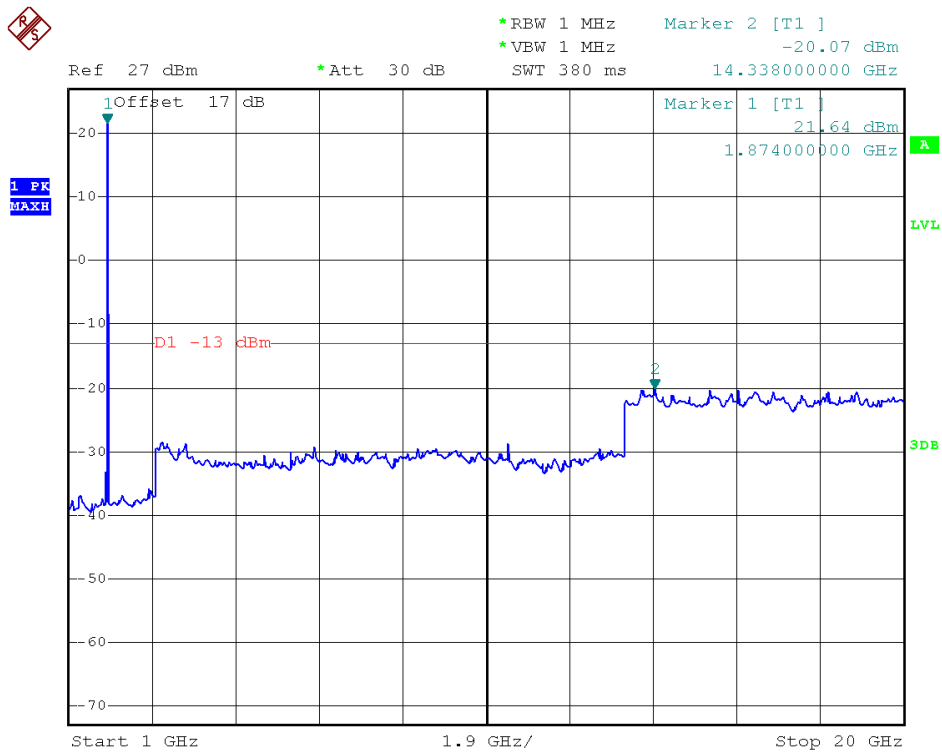
(Plot E3: HSDPA850MHz Channel = 4233, 30MHz to 1GHz)



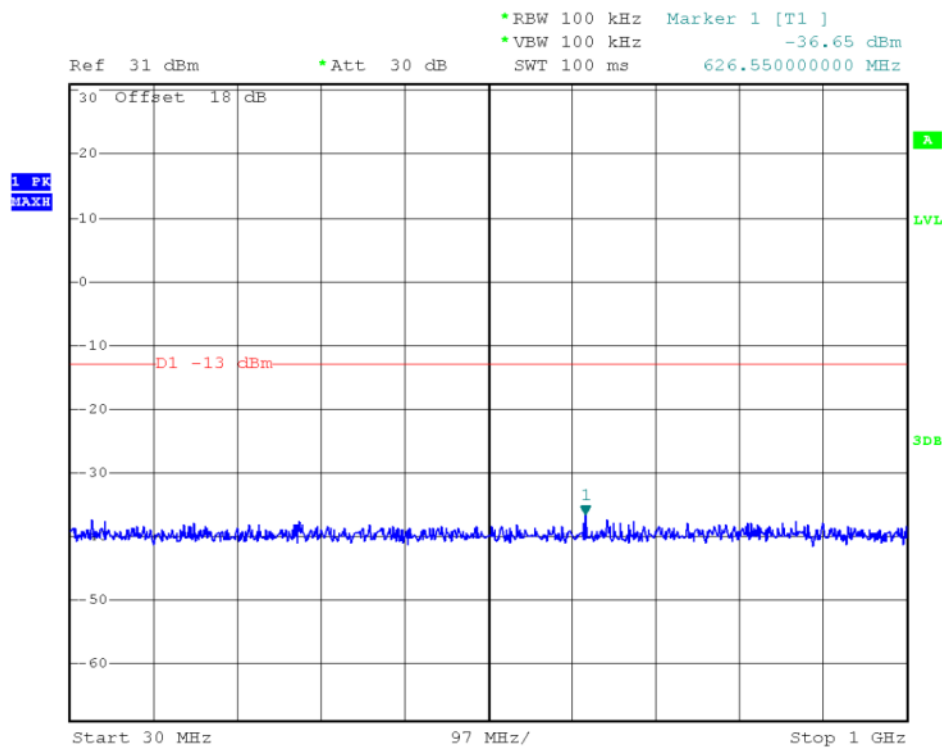
(Plot E3.1: HSDPA850MHz Channel = 4233, 1GHz to 9GHz)



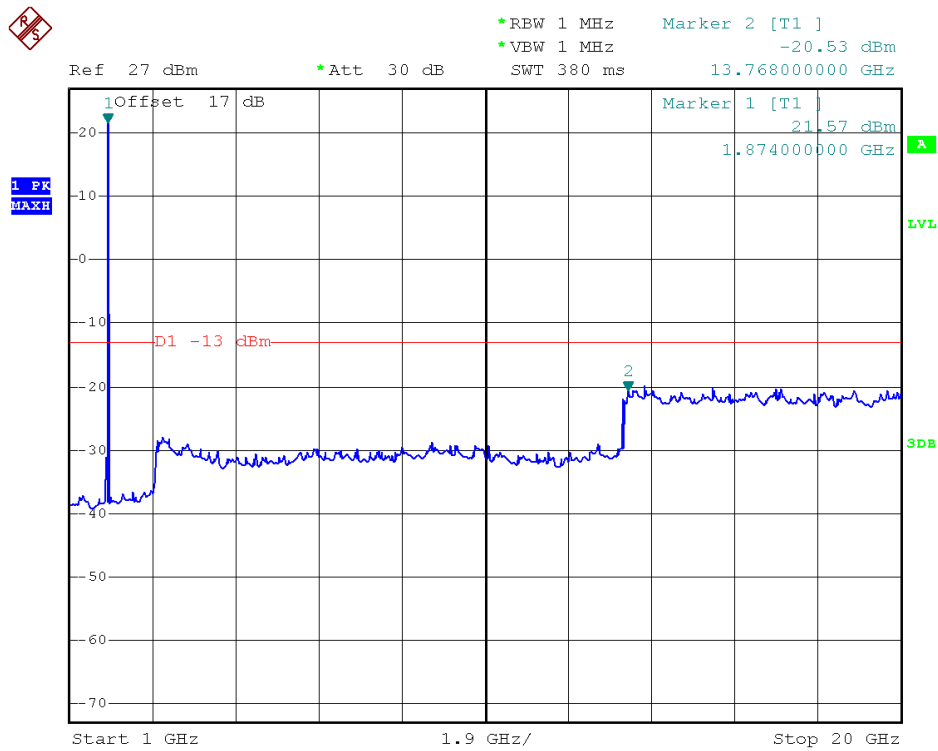
(Plot F1: HSDPA1900MHz Channel = 9262, 30MHz to 1GHz)



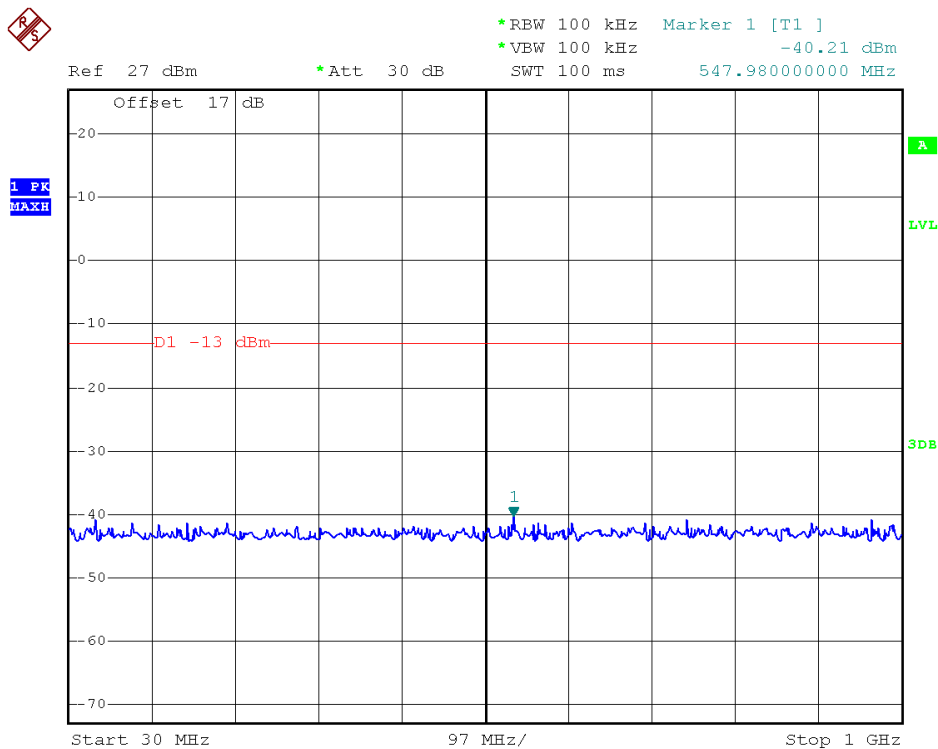
(Plot F1.1: HSDPA1900MHz Channel = 9262, 1GHz to 20GHz)



(Plot F2: HSDPA1900MHz Channel = 9400, 30MHz to 1GHz)

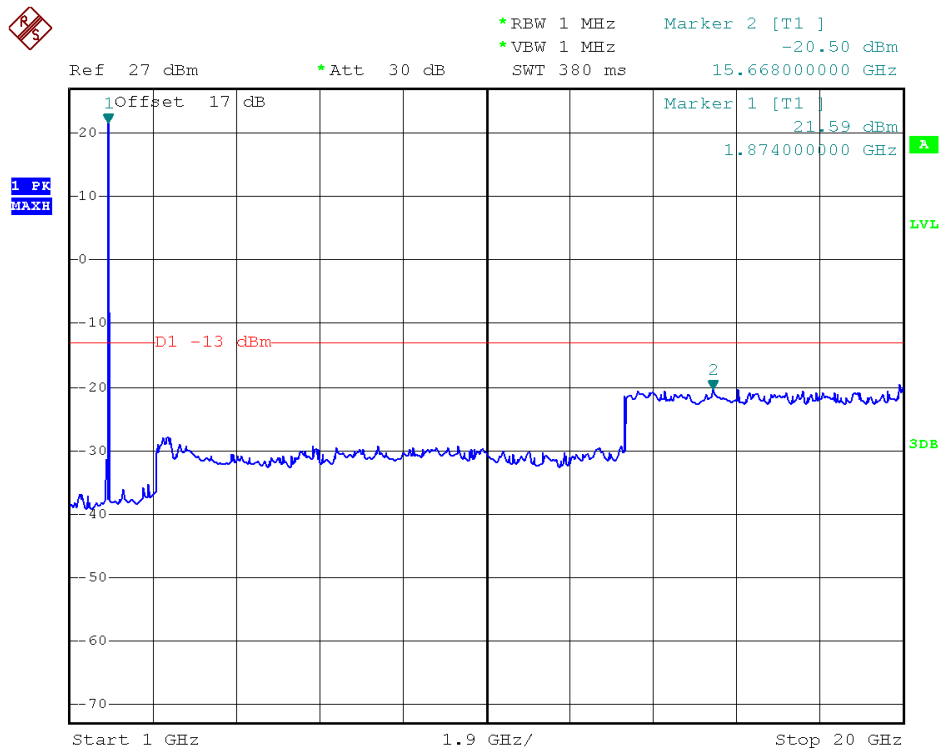


(Plot F2.1: HSDPA1900MHz Channel = 9400, 1GHz to 20GHz)

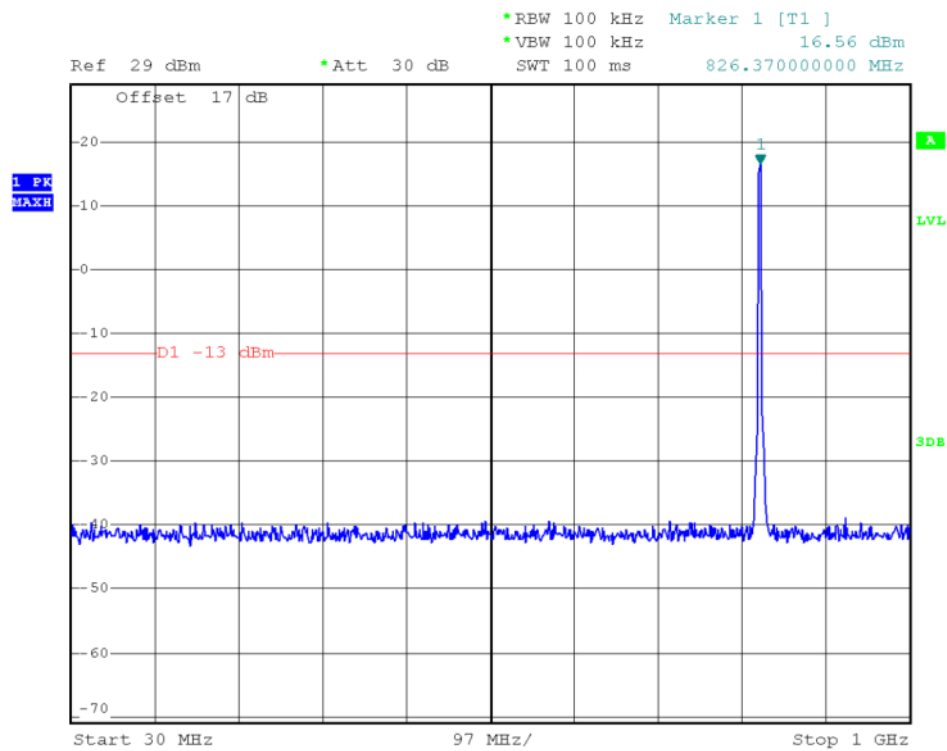


(Plot F3: HSDPA1900MHz Channel = 9538, 30MHz to 1GHz)

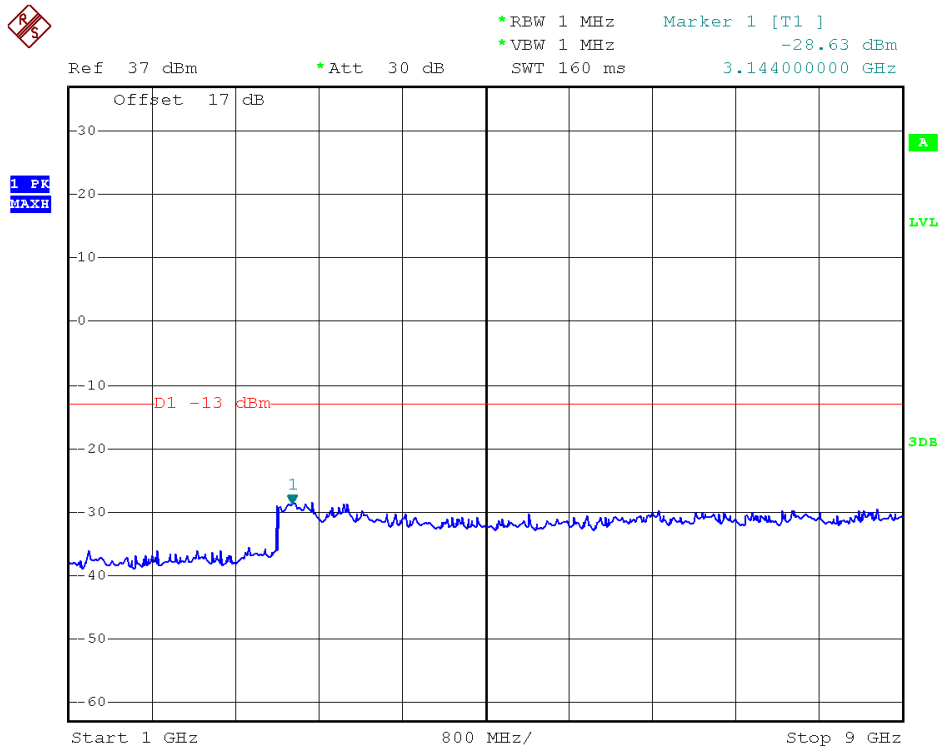




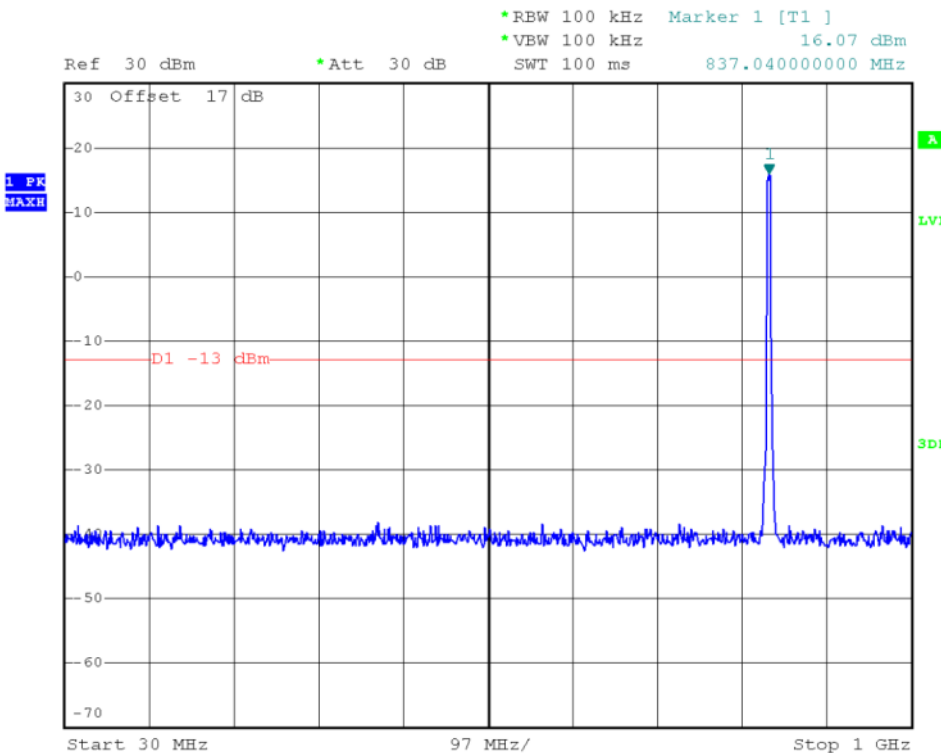
(Plot F3.1: HSDPA1900MHz Channel = 9538 1GHz to 20GHz)



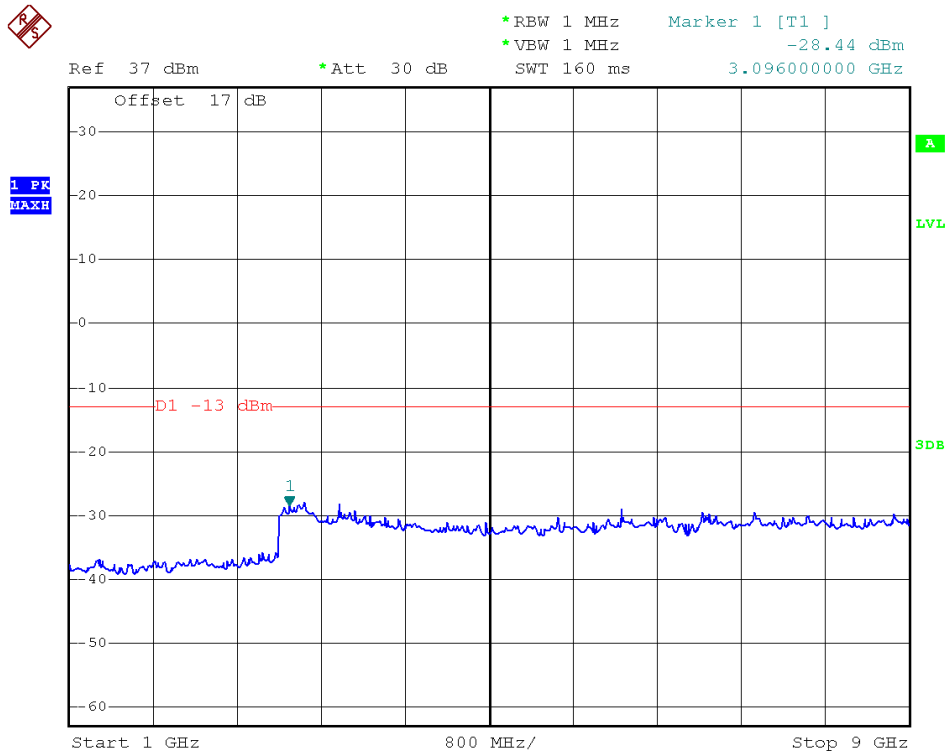
(Plot G 1: HSUPA 850MHz Channel = 4132, 30MHz to 1GHz)



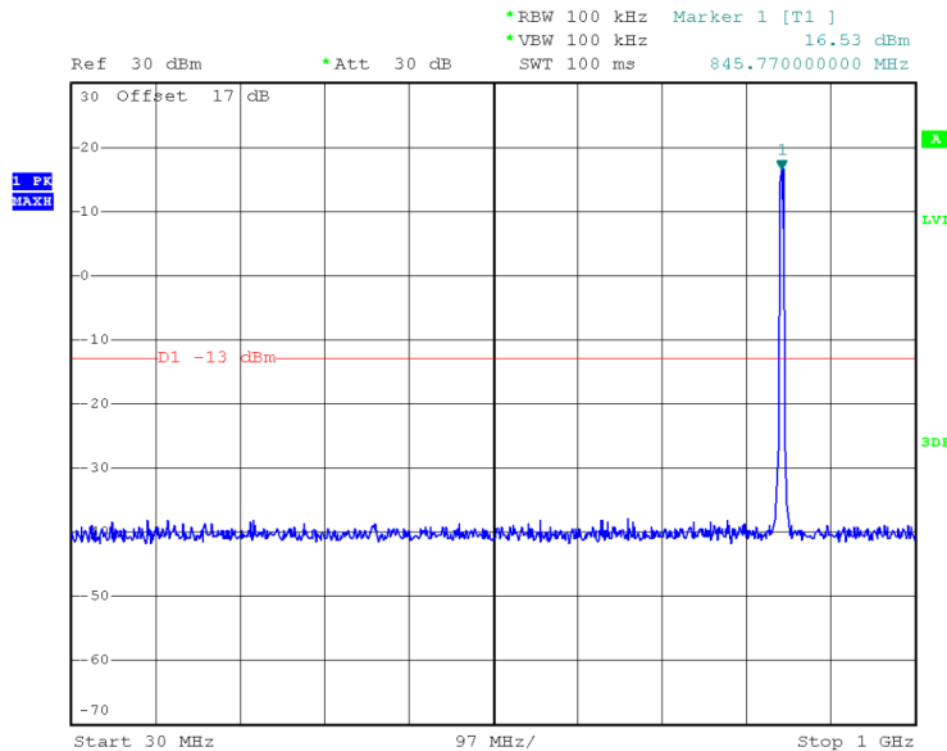
(Plot G1.1: HSUPA 850MHz Channel = 4132, 1GHz to 9GHz)



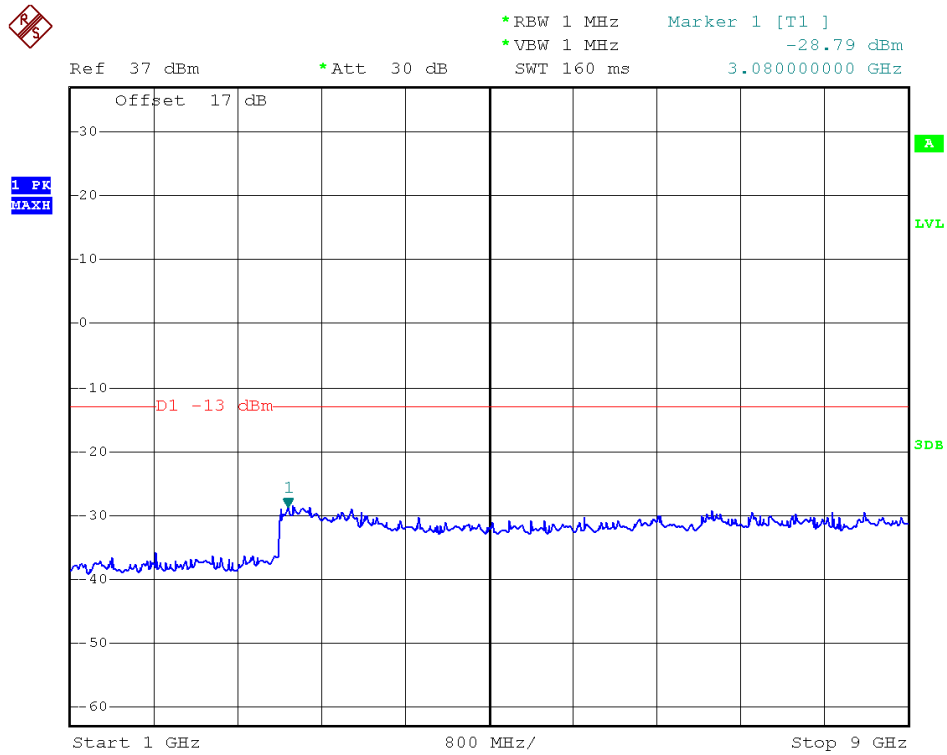
(Plot G2: HSUPA 850MHz Channel = 4183, 30MHz to 1GHz)



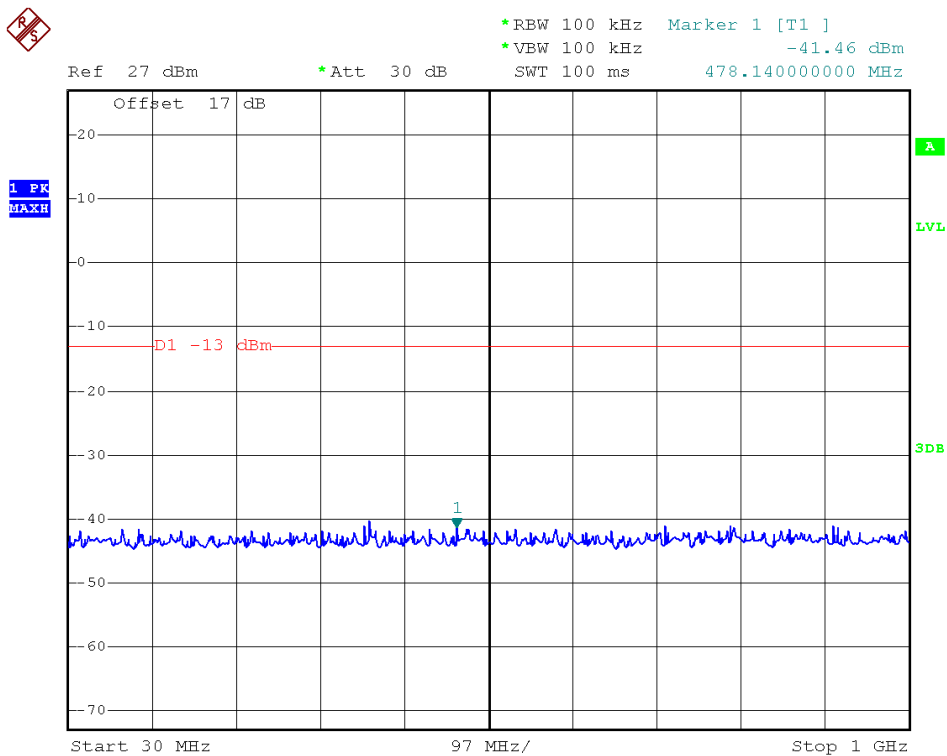
(Plot G2.1: HSUPA 850MHz Channel = 4183, 1GHz to 9GHz)



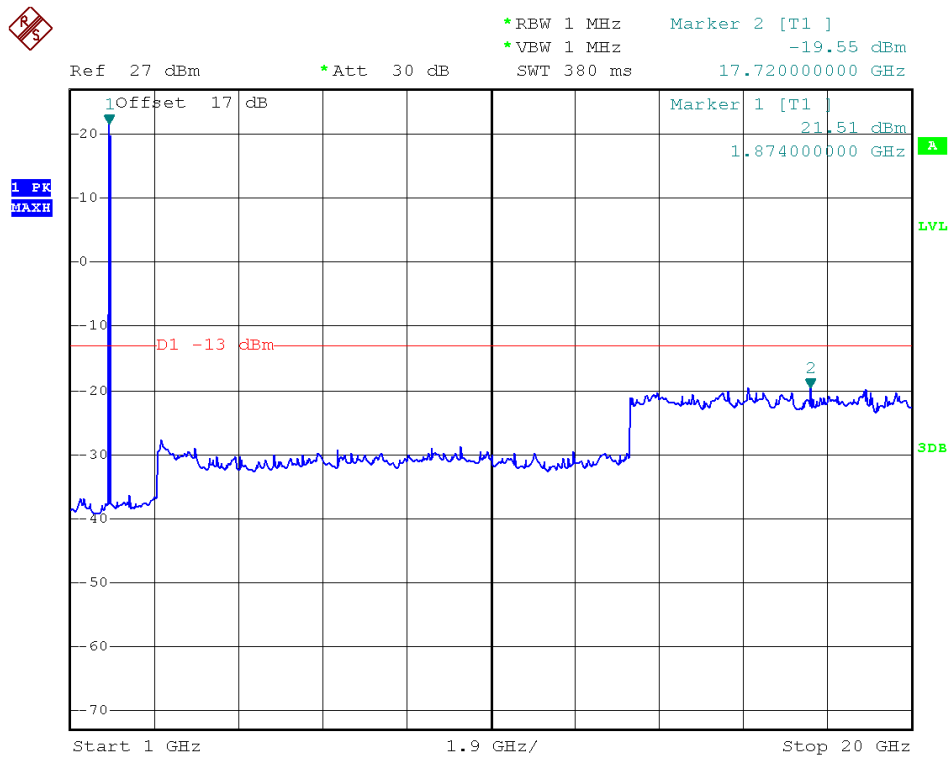
(Plot G 3: HSUPA850MHz Channel = 4233, 30MHz to 1GHz)



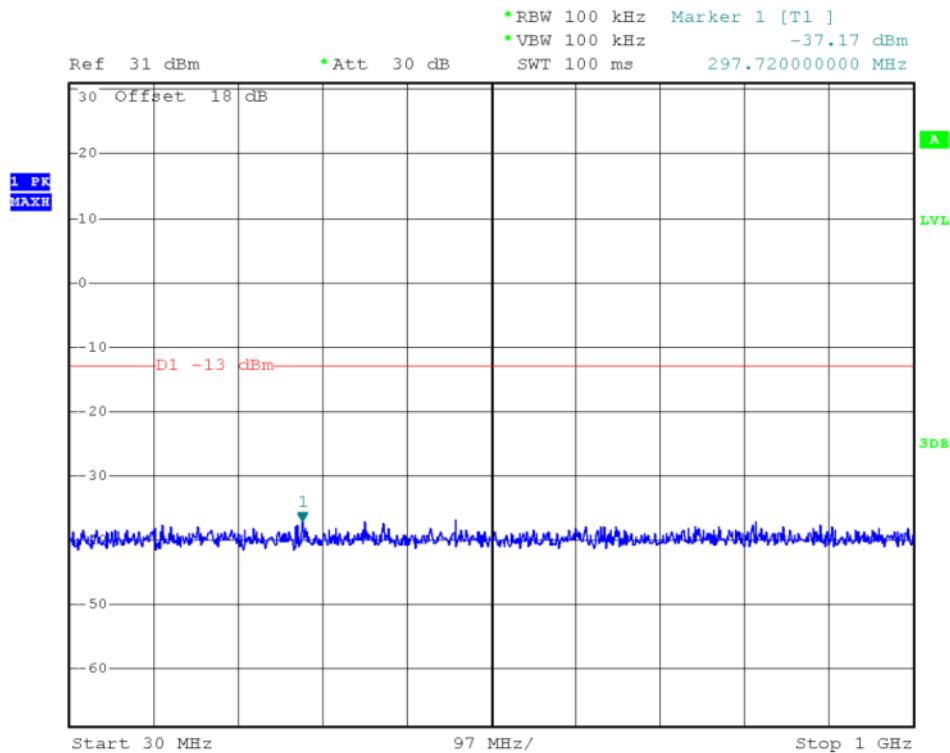
(Plot G3.1: HSUPA850MHz Channel = 4233, 1GHz to 9GHz)



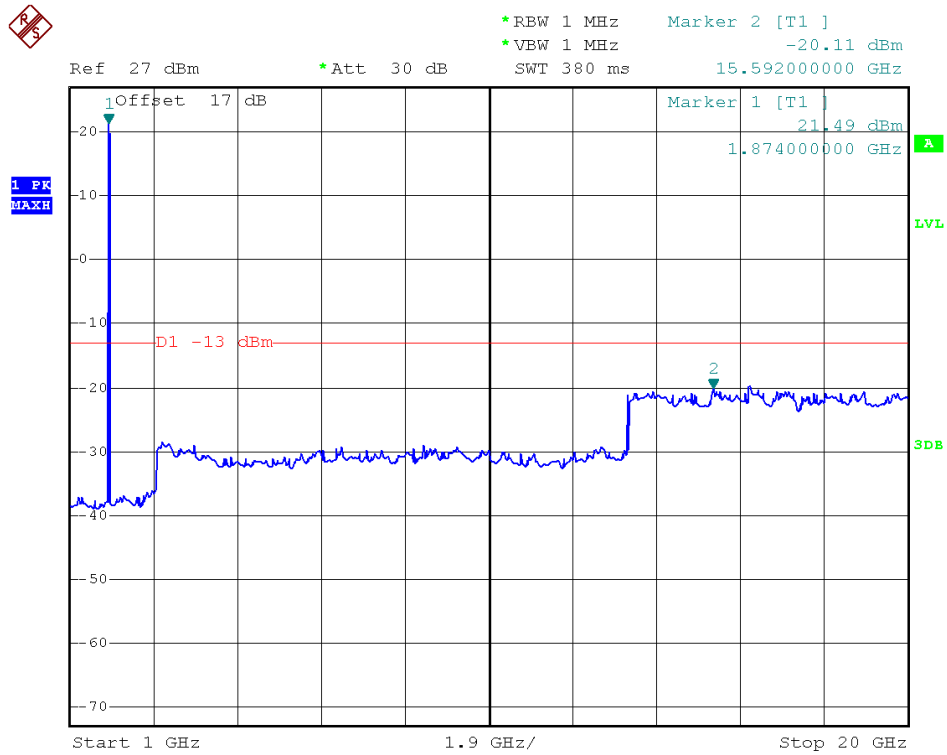
(Plot H1: HSUPA1900MHz Channel = 9262, 30MHz to 1GHz)



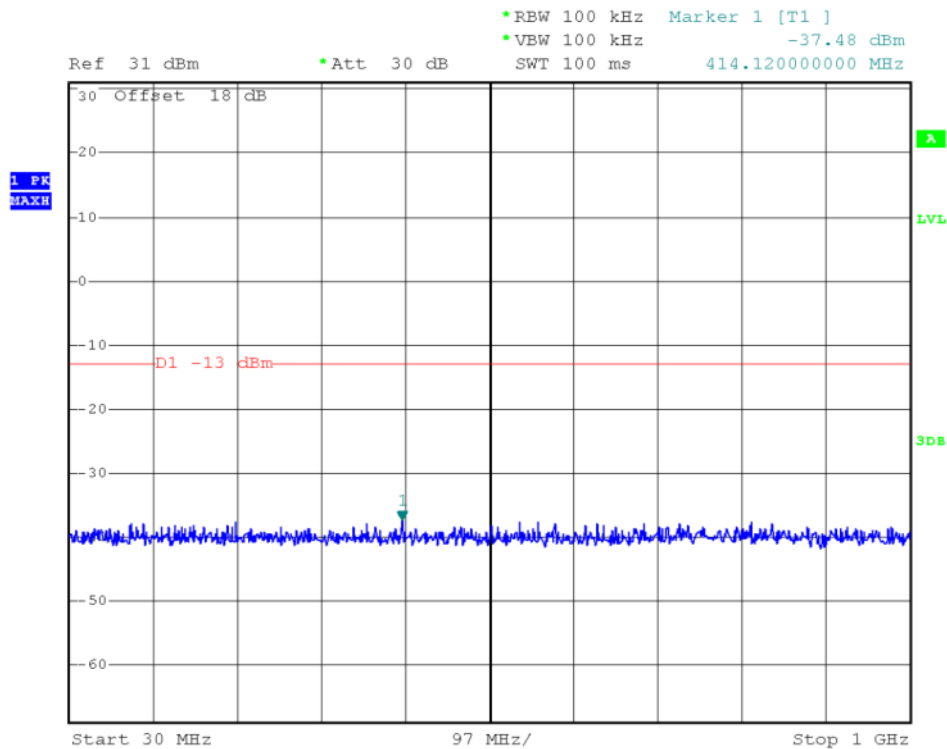
(Plot H1.1: HSUPA1900MHz Channel = 9262, 1GHz to 20GHz)



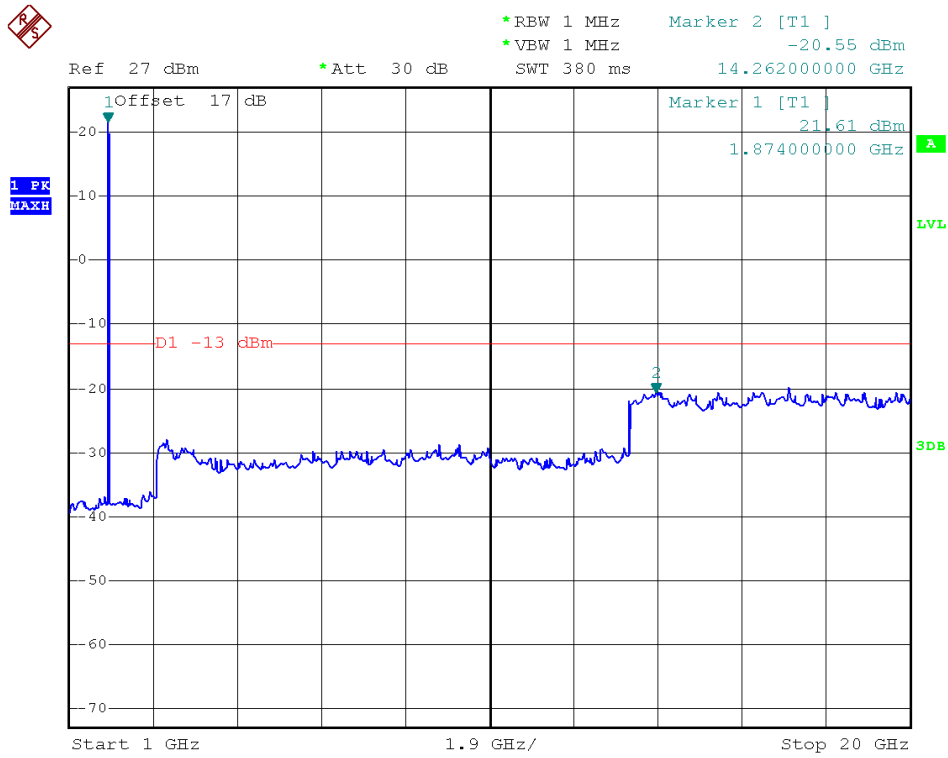
(Plot H2: HSUPA1900MHz Channel = 9400, 30MHz to 1GHz)



(Plot H2.1: HSUPA1900MHz Channel = 9400, 1GHz to 20GHz)



(Plot H3: HSUPA1900MHz Channel = 9538, 30MHz to 1GHz)



(Plot H3.1: HSUPA1900MHz Channel = 9538 1GHz to 20GHz)



## 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

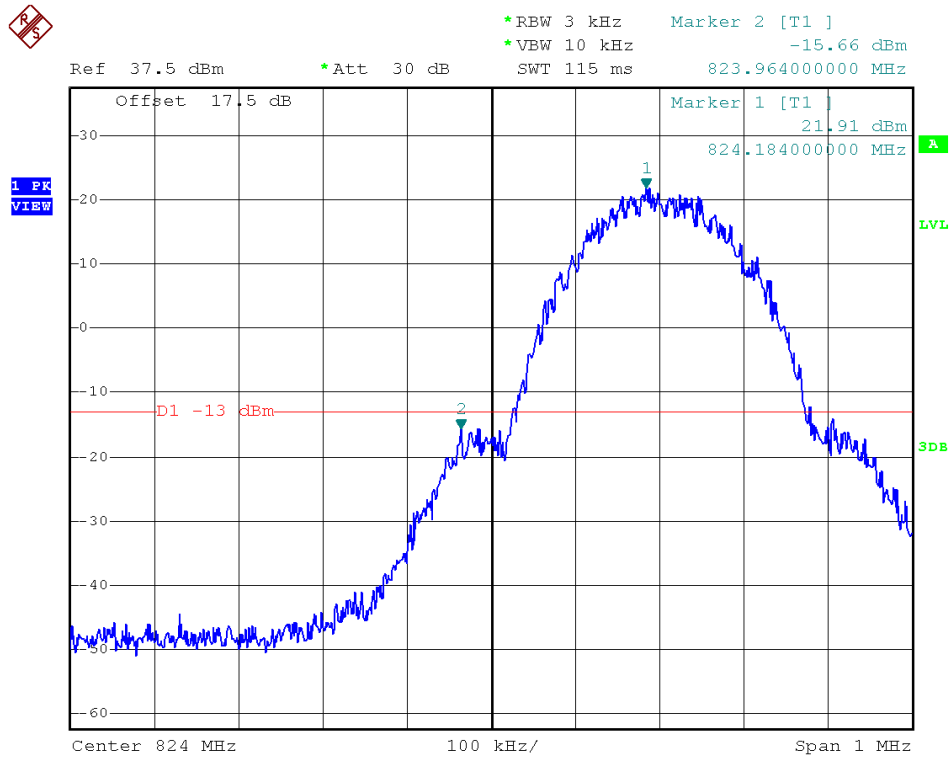
The lowest and highest channels are tested to verify the band edge emissions.

#### 1. Test Verdict:

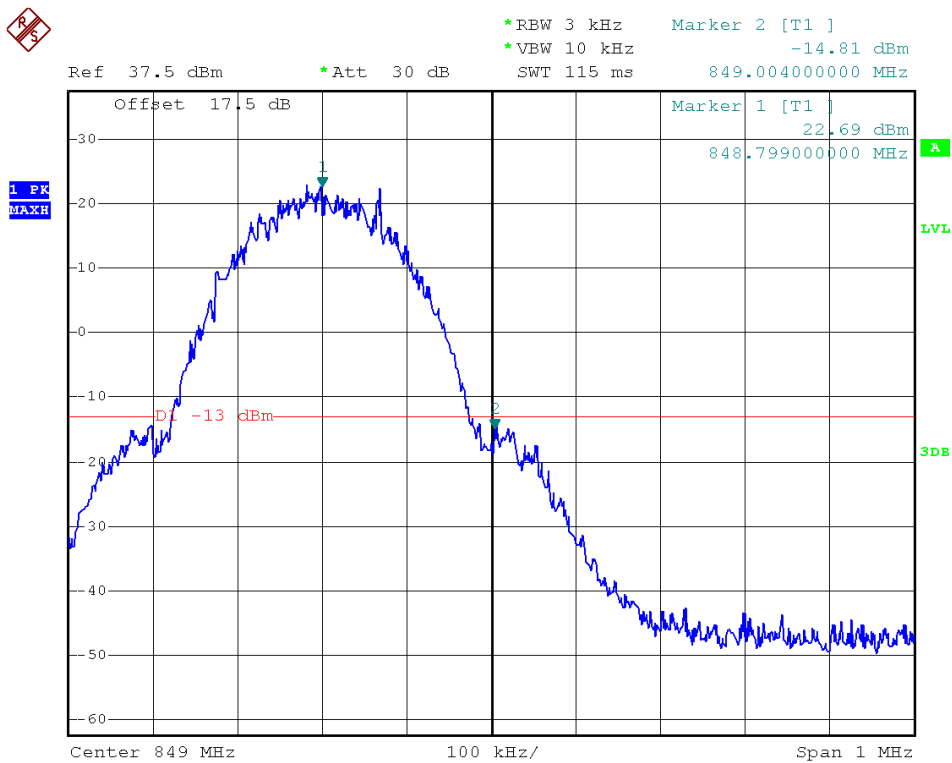
| Band             | Channel | Frequency (MHz) | Measured Max. Band Edge Emission (dBm) | Refer to Plot | Limit (dBm) | Verdict |
|------------------|---------|-----------------|--|---------------|-------------|---------|
| GSM<br>850MHz    | 128     | 824.2           | -15.66                                 | Plat A        | -13         | PASS    |
|                  | 251     | 848.8           | -14.81                                 | Plot B        |             | PASS    |
| GSM<br>1900MHz   | 512     | 1850.2          | -14.80                                 | Plat C        | -13         | PASS    |
|                  | 810     | 1909.8          | -15.55                                 | Plot D        |             | PASS    |
| WCDMA<br>850MHz  | 4132    | 826.4           | -14.47                                 | Plat E        | -13         | PASS    |
|                  | 4233    | 846.6           | -15.18                                 | Plot F        |             | PASS    |
| WCDMA<br>1900MHz | 9262    | 1852.4          | -21.10                                 | Plat G        | -13         | PASS    |
|                  | 9538    | 1907.6          | -16.23                                 | Plot H        |             | PASS    |
| HSDPA<br>850MHz  | 4132    | 826.4           | -14.42                                 | Plat I        | -13         | PASS    |
|                  | 4233    | 846.6           | -15.42                                 | Plot J        |             | PASS    |
| HSDPA<br>1900MHz | 9262    | 1852.4          | -21.27                                 | Plat K        | -13         | PASS    |
|                  | 9538    | 1907.6          | -17.72                                 | Plot L        |             | PASS    |
| HSUPA<br>850MHz  | 4132    | 826.4           | -14.83                                 | Plat M        | -13         | PASS    |
|                  | 4233    | 846.6           | -14.69                                 | Plot N        |             | PASS    |
| HSUPA<br>1900MHz | 9262    | 1852.4          | -20.98                                 | Plat O        | -13         | PASS    |
|                  | 9538    | 1907.6          | -18.35                                 | Plot P        |             | PASS    |



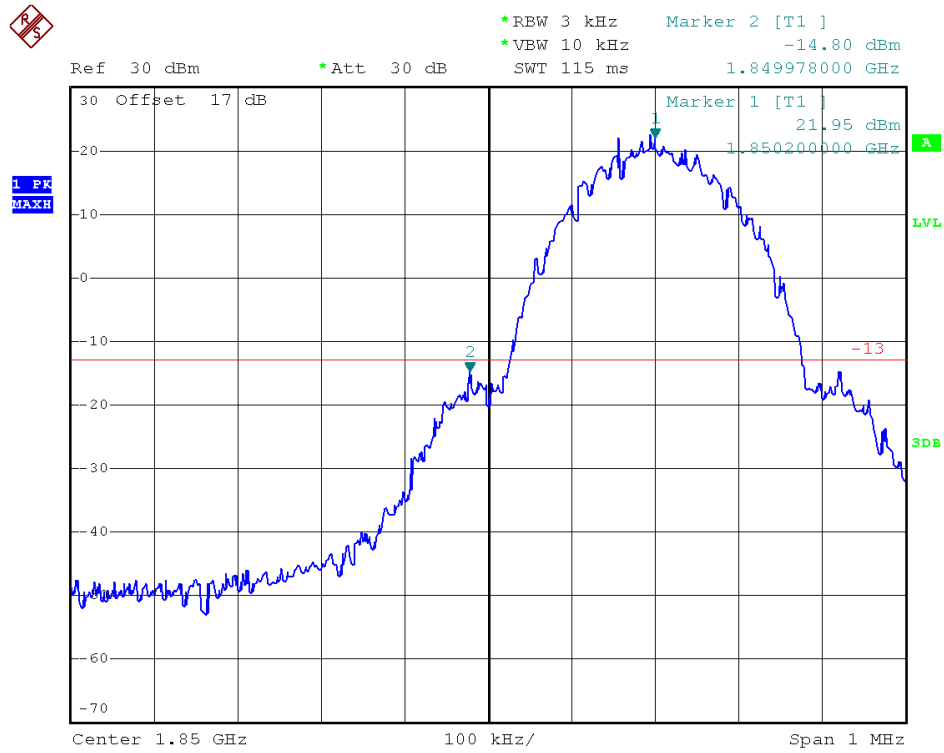
2. Test Plots:



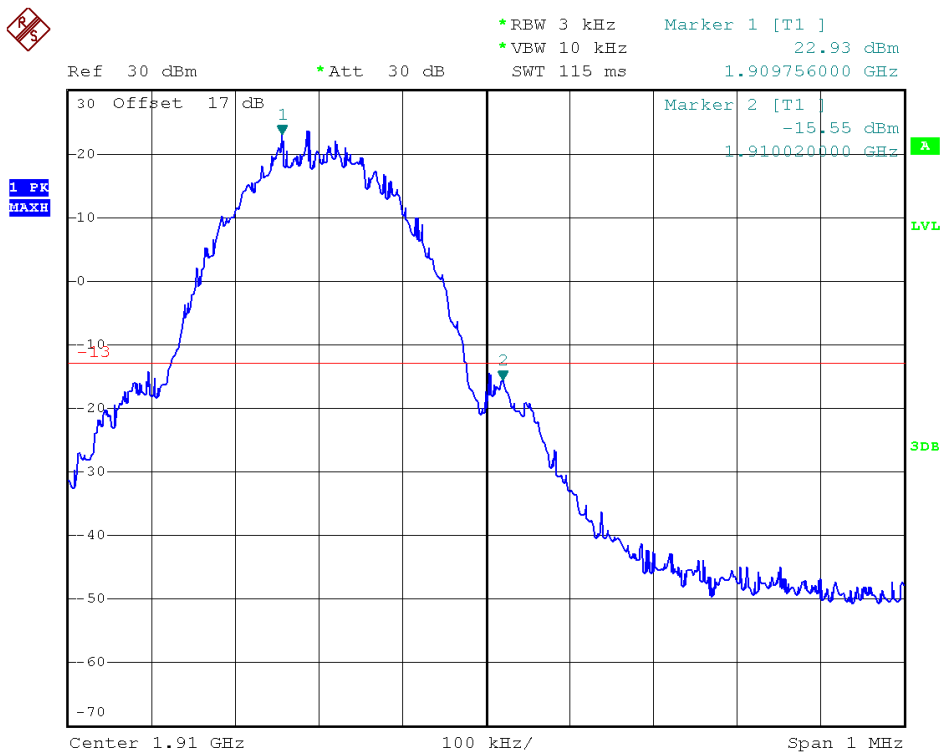
(Plot A: GSM 850 Channel = 128)



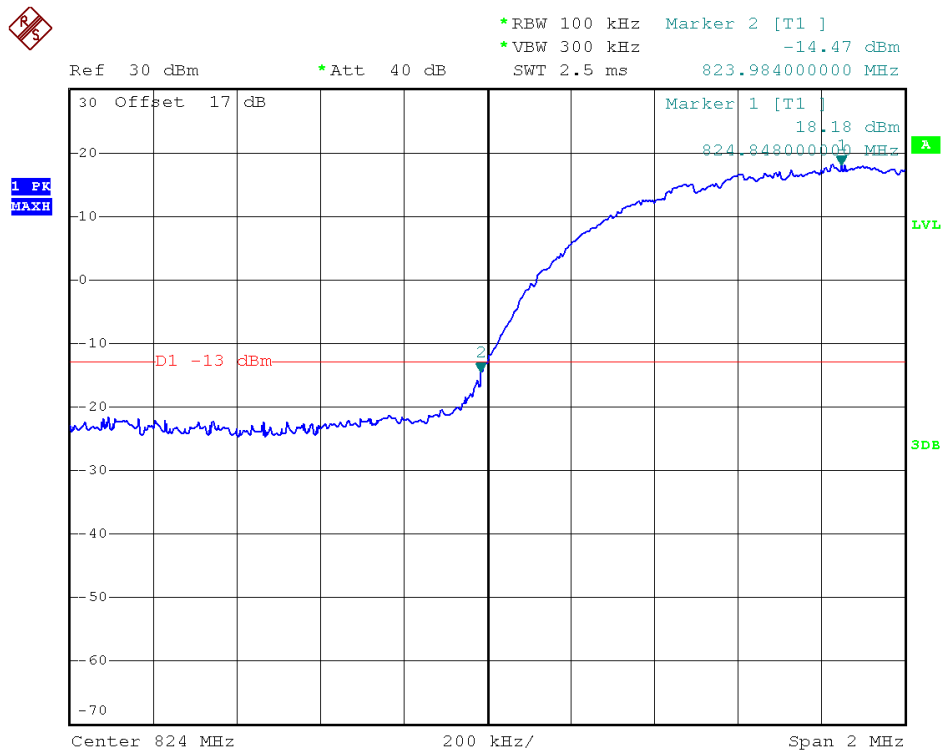
(Plot B: GSM 850 Channel = 251)



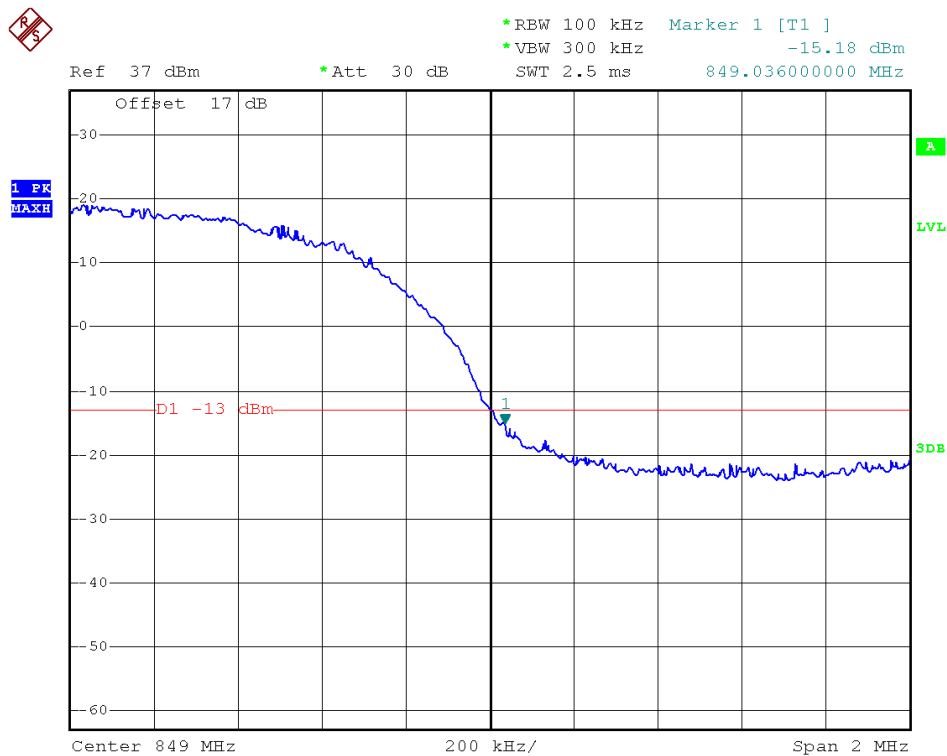
(Plot C: GSM 1900 Channel = 512)



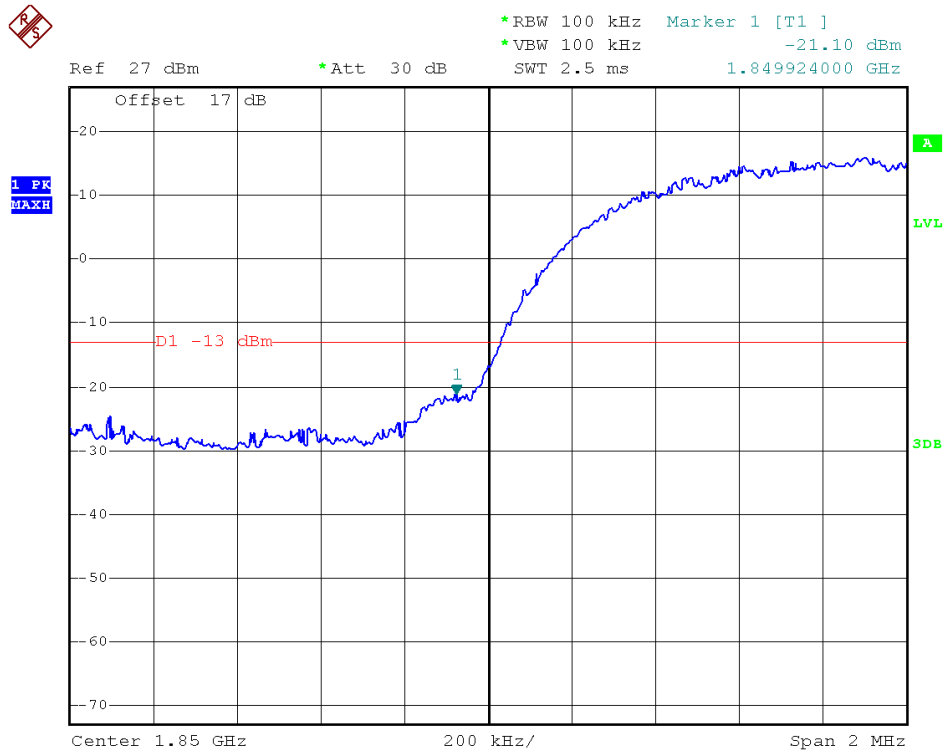
(Plot D: GSM 1900 Channel = 810)



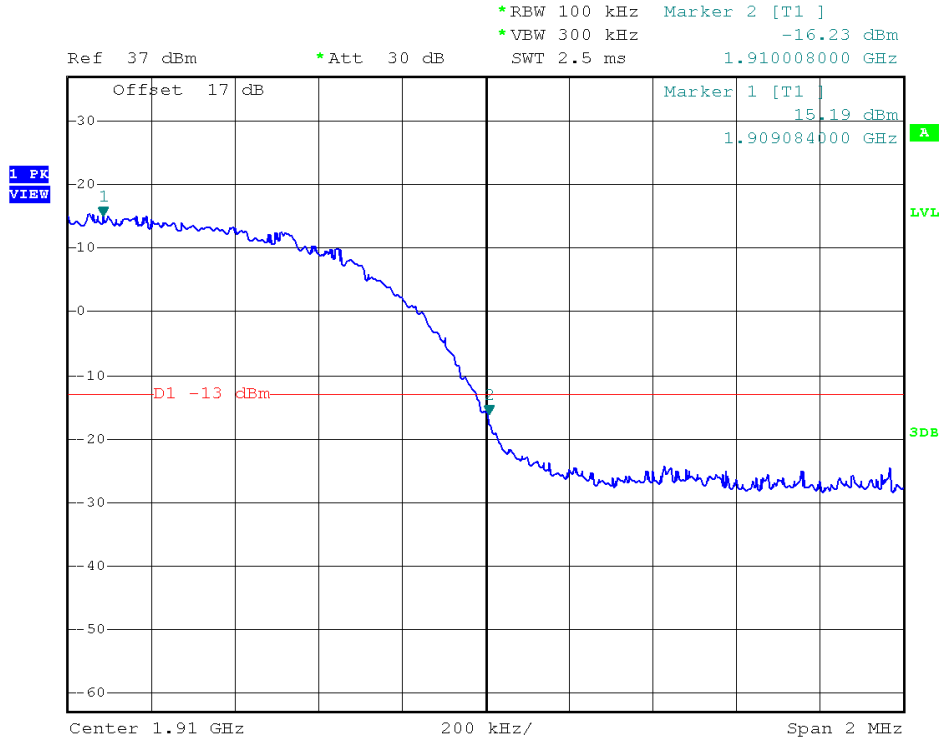
(Plot E: WCDMA 850 Channel = 4132)



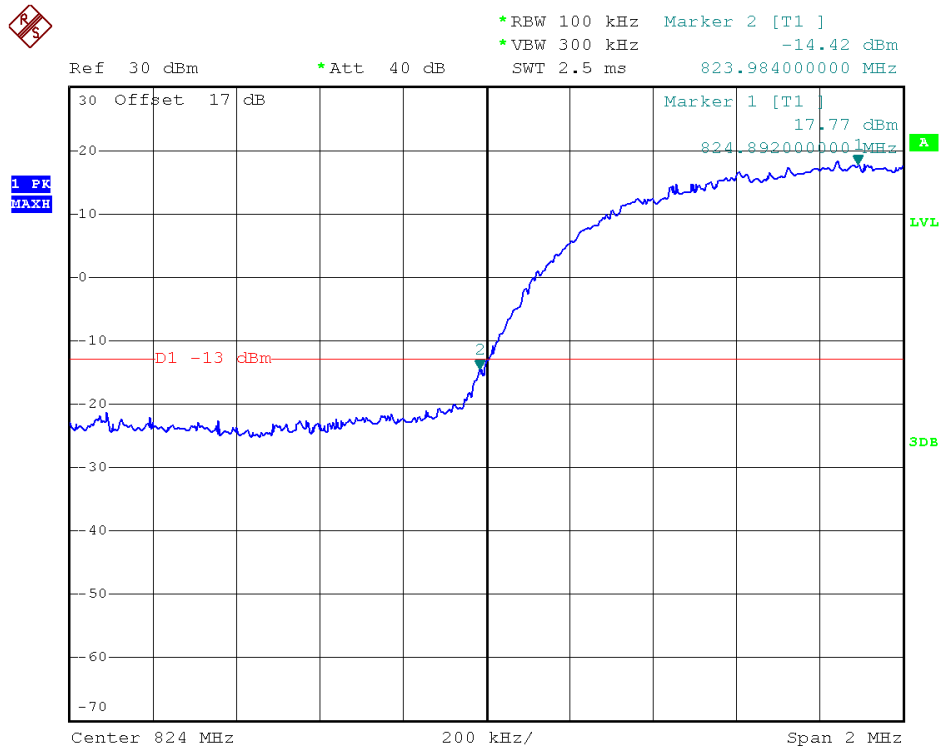
(Plot F: WCDMA 850 Channel = 4233)



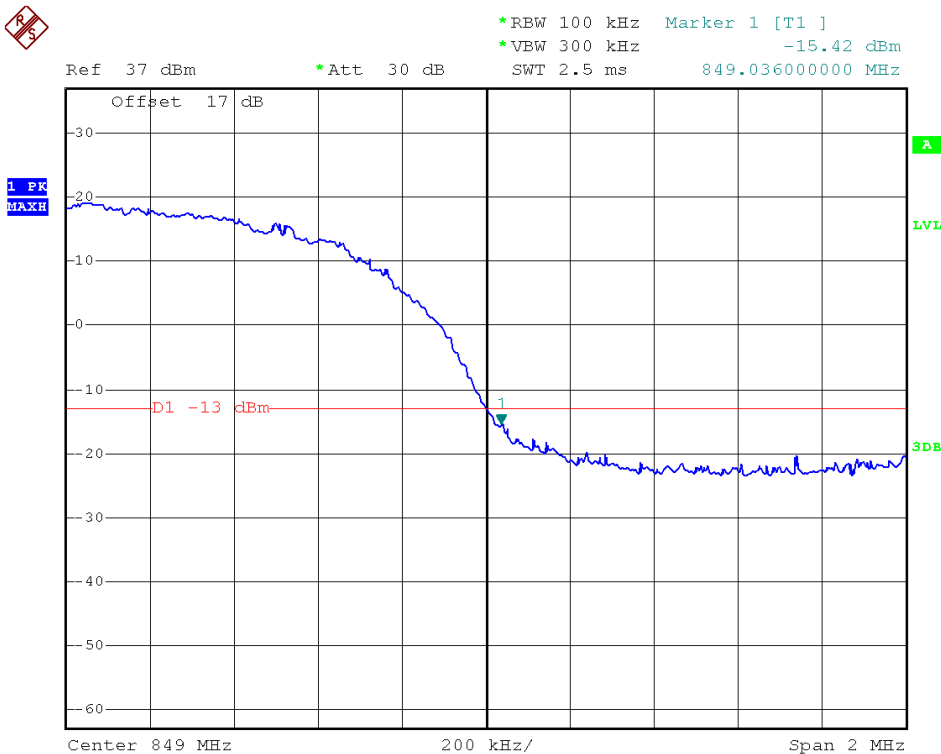
(Plot G: WCDMA 1900 Channel = 9262)



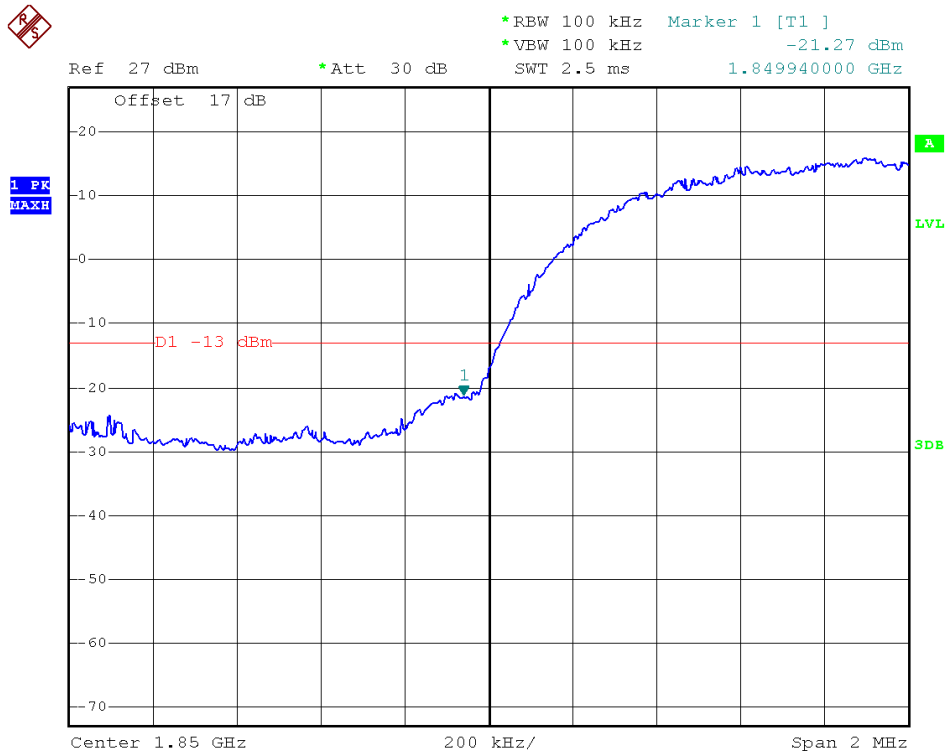
(Plot H: WCDMA 1900 Channel = 9538)



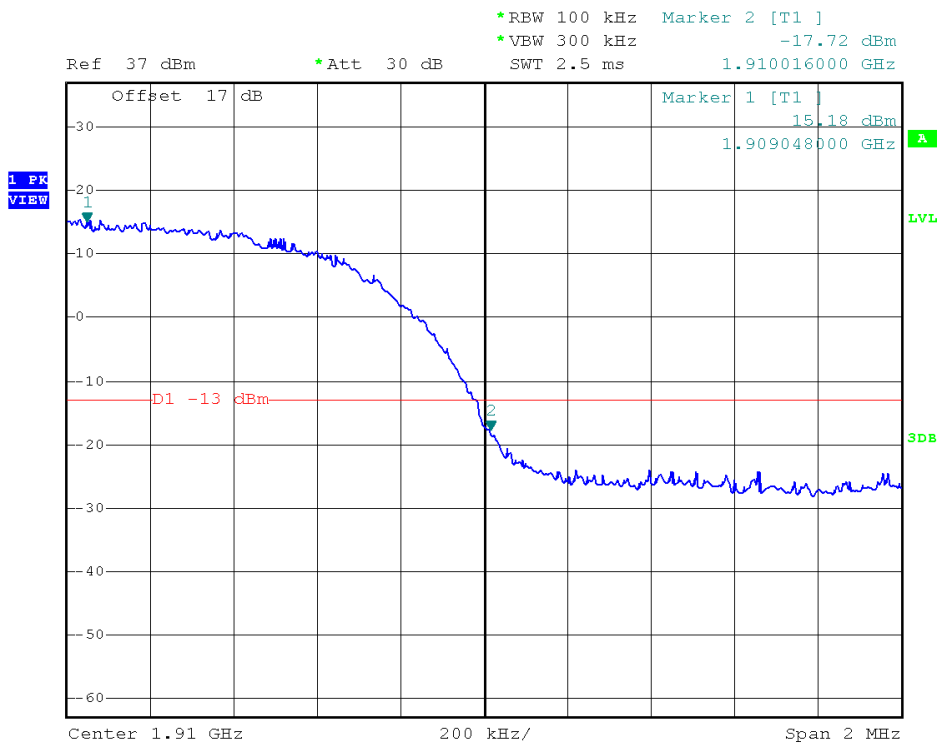
(Plot I: HSDPA 850 Channel = 4132)



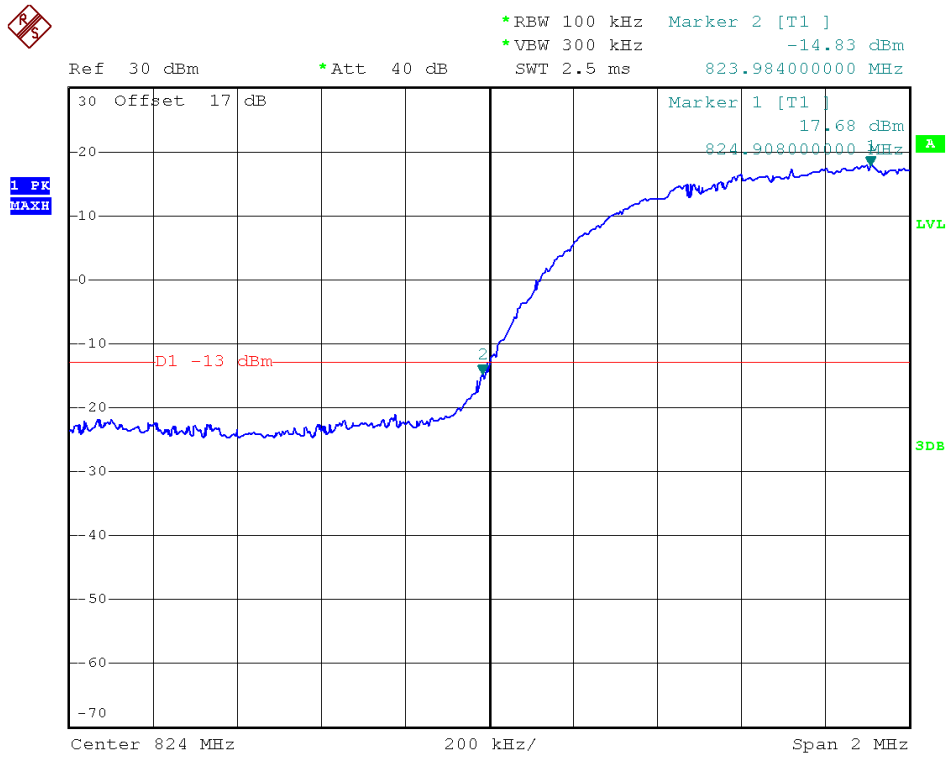
(Plot J: HSDPA850 Channel = 4233)



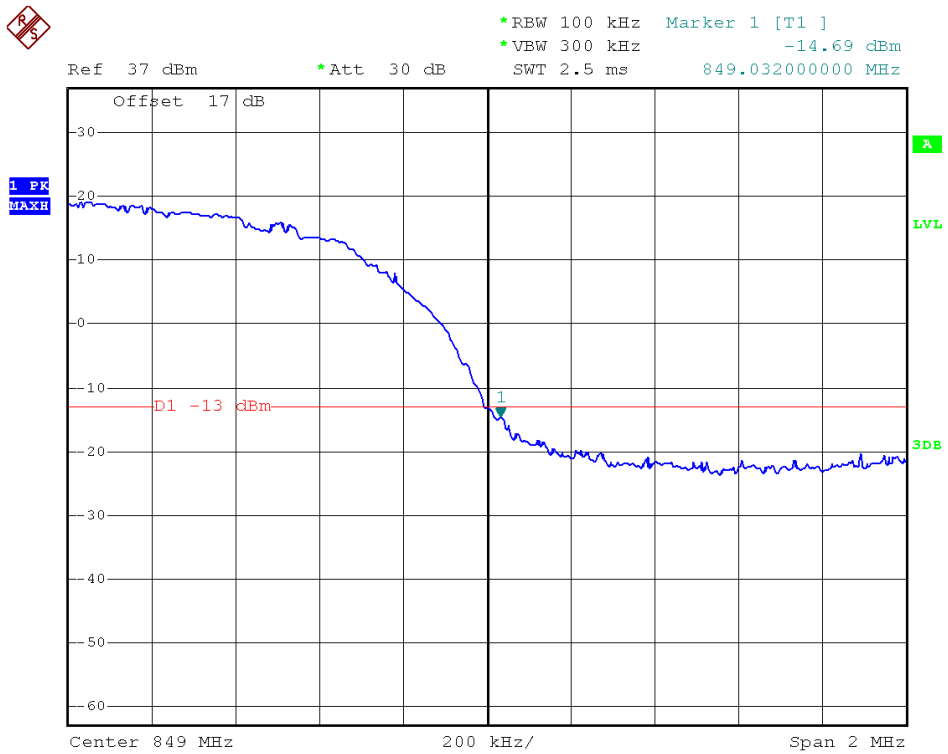
(Plot K: HSDPA 1900 Channel = 9262)



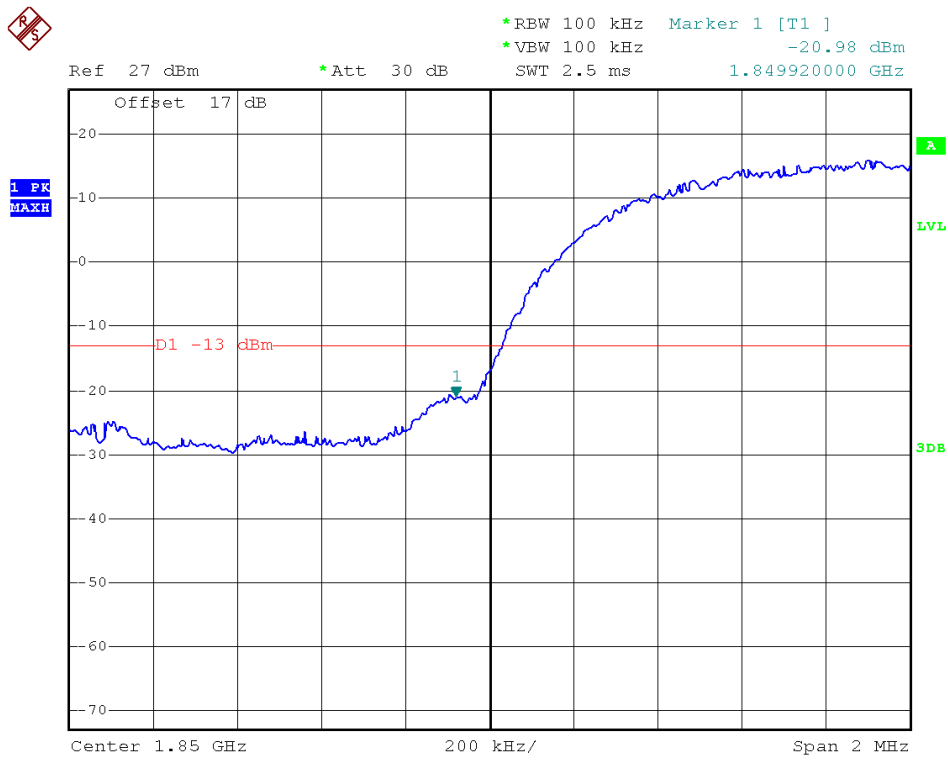
(Plot L: HSDPA 1900 Channel = 9538)



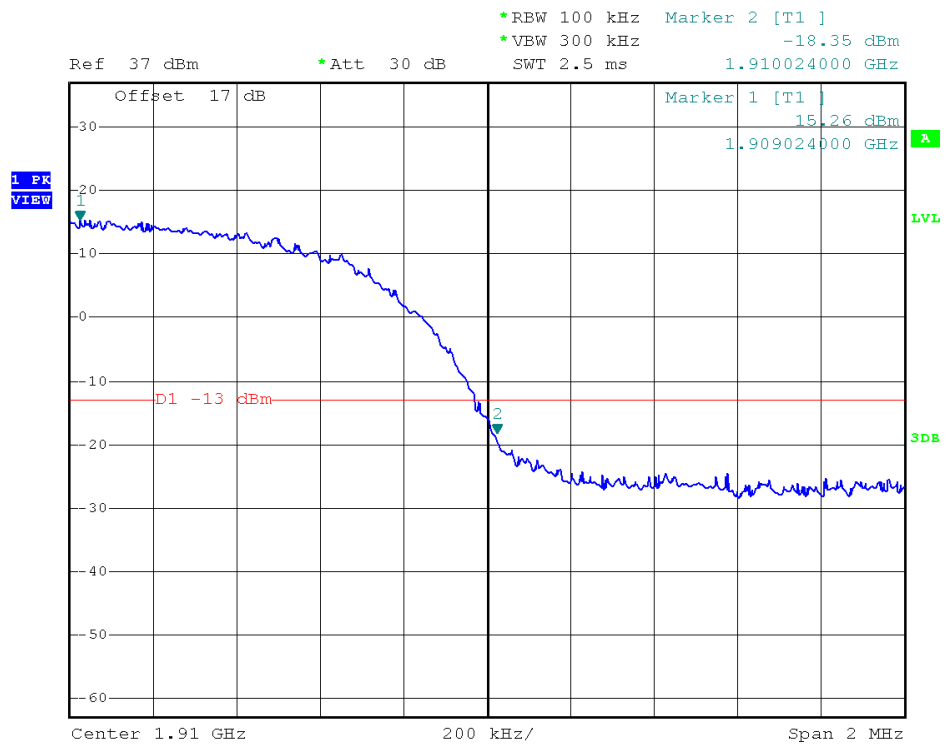
(Plot M: HSUPA 850 Channel = 4132)



(Plot N: HSUPA850 Channel = 4233)



(Plot O: HSUPA 1900 Channel = 9262)



(Plot P: HSUPA 1900 Channel = 9538)



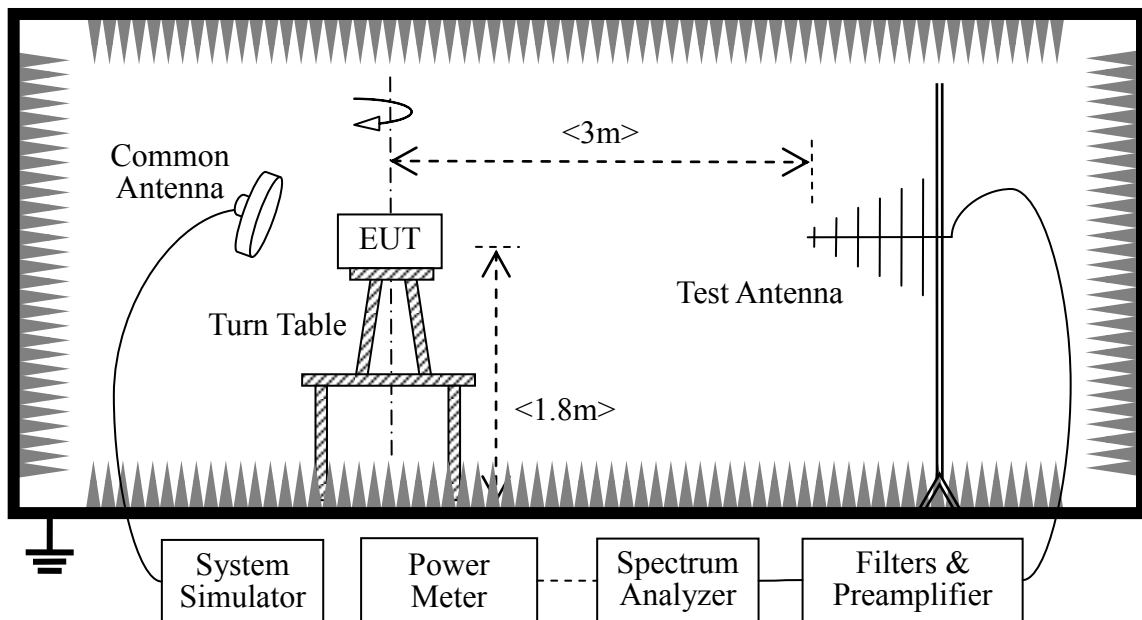
## 2.7 Transmitter Radiated Power (EIRP/ERP)

### 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 32.71dBm, GSM 1900 30.26dBm, WCDMA 850 23.21dBm, WCDMA 1900 23.17 dBm, 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, WCDMA 1900 0.5dBm.



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~<br>Projects | 12.8m*6.8m*<br>6.4m | A0412372   | 2015.01.04   |
| 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:

$$A_{\text{SUBST}} = P_{\text{SUBST\_TX}} - P_{\text{SUBST\_RX}} - L_{\text{SUBST\_CABLES}} + G_{\text{SUBST\_TX\_ANT}}$$

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

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

$P_{\text{SUBST\_TX}}$  is signal generator level,

$P_{\text{SUBST\_RX}}$  is receiver level,

$L_{\text{SUBST\_CABLES}}$  is cable losses including TX cable,

$G_{\text{SUBST\_TX\_ANT}}$  is substitution antenna gain.

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

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



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   | 32.43        | 1.750 | Plot A          | 38.5  | 7 | PASS    |
|             | 190  | 836.60          | vertical      | 5   | 32.48        | 1.771 |                 |       |   | PASS    |
|             | 251  | 848.80          | vertical      | 5   | 32.69        | 1.858 |                 |       |   | PASS    |
| GPRS 850MHz | 128  | 824.20          | vertical      | 5   | 32.24        | 1.675 | PlotB<br>Note 1 | 38.5  | 7 | PASS    |
|             | 190  | 836.60          | vertical      | 5   | 32.32        | 1.706 |                 |       |   | PASS    |
|             | 251  | 848.80          | vertical      | 5   | 32.40        | 1.738 |                 |       |   | PASS    |
| Note 1:     | 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   | 29.98         | 0.995 | Plot C           | 33    | 2 | PASS    |
|              | 661  | 1880.0          | vertical      | 0   | 29.81         | 0.957 |                  |       |   | PASS    |
|              | 810  | 1909.8          | vertical      | 0   | 29.85         | 0.966 |                  |       |   | PASS    |
| GPRS 1900MHz | 512  | 1850.2          | vertical      | 0   | 29.48         | 0.887 | Plot D<br>Note 1 | 33    | 2 | PASS    |
|              | 661  | 1880.0          | vertical      | 0   | 29.51         | 0.893 |                  |       |   | PASS    |
|              | 810  | 1909.8          | vertical      | 0   | 29.58         | 0.908 |                  |       |   | PASS    |
| Note 1:      | All the slots were tested and just the worst data was record in this report. |                 |               |     |               |       |                  |       |   |         |

2. WCDMA Model Test Verdict:

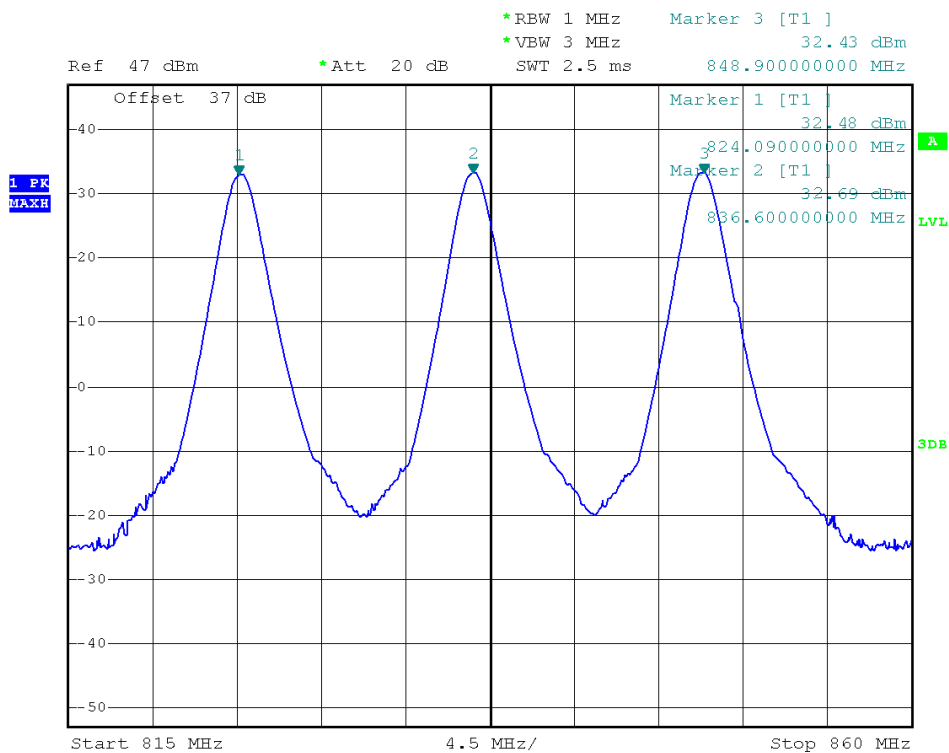
| Band         | Channel  | Frequency (MHz) | polarizations | Measured ERP |       |               | Limit |   | Verdict |  |
|--------------|--|-----------------|---------------|--------------|-------|---------------|-------|---|---------|--|
|              |  |                 |               | dBm          | W     | Refer to Plot | dBm   | W |         |  |
| WCDMA 850MHz | 4132   | 826.4           | vertical      | 26.41        | 0.438 | Plot E        | 38.5  | 7 | PASS    |  |
|              | 4175   | 835             | vertical      | 26.31        | 0.428 |               |       |   | PASS    |  |
|              | 4233   | 846.6           | vertical      | 26.44        | 0.441 |               |       |   | PASS    |  |
| HSDPA 850MHz | 4132   | 826.4           | vertical      | 26.25        | 0.422 | Plot F        | 38.5  | 7 | PASS    |  |
|              | 4175   | 835             | vertical      | 26.39        | 0.436 |               |       |   | PASS    |  |
|              | 4233   | 846.6           | vertical      | 26.28        | 0.425 |               |       |   | PASS    |  |
| HSUPA 850MHz | 4132   | 826.4           | vertical      | 26.09        | 0.406 | Plot G        | 38.5  | 7 | PASS    |  |
|              | 4175   | 835             | vertical      | 26.11        | 0.408 |               |       |   | PASS    |  |
|              | 4233   | 846.6           | vertical      | 26.24        | 0.421 |               |       |   | PASS    |  |
| Note 1:      | All the slots were tested and just the worst data was record in this report. |                 |               |              |       |               |       |   |         |  |



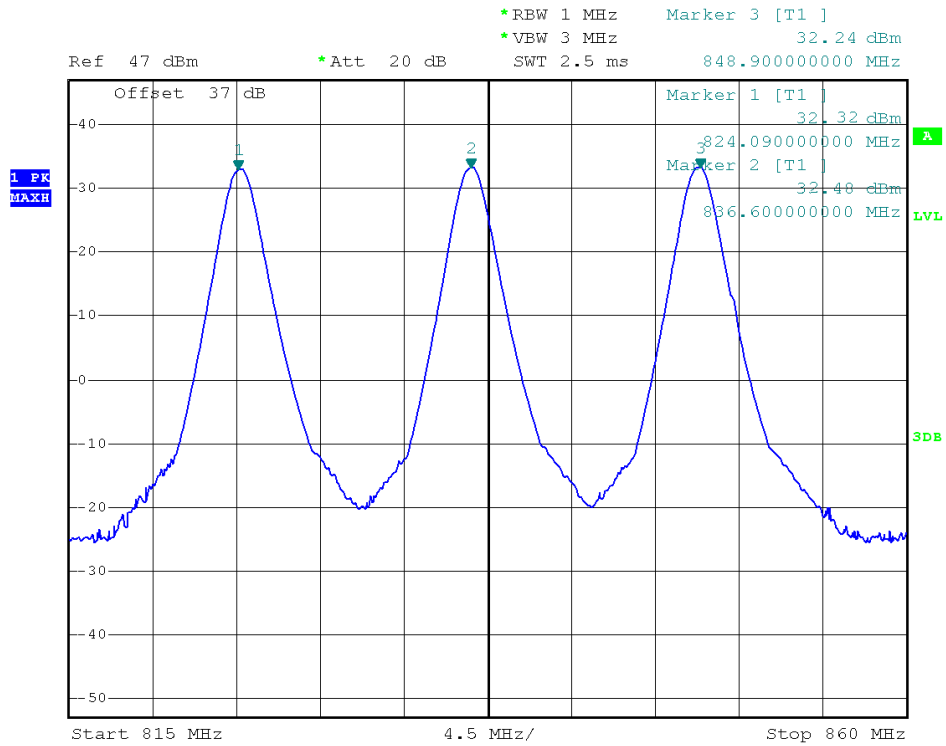
| Band             | Channel | Frequency (MHz) | polarizations | Measured EIRP |       |               | Limit |   | Verdict |
|------------------|---------|-----------------|---------------|---------------|-------|---------------|-------|---|---------|
|                  |         |                 |               | dBm           | W     | Refer to Plot | dBm   | W |         |
| WCDMA<br>1900MHz | 9262    | 1852.4          | vertical      | 25.52         | 0.356 | Plot H        | 33    | 2 | PASS    |
|                  | 9400    | 1880            | vertical      | 25.59         | 0.362 |               |       |   | PASS    |
|                  | 9538    | 1907.6          | vertical      | 25.62         | 0.365 |               |       |   | PASS    |
| HSDPA<br>1900MHz | 9262    | 1852.4          | vertical      | 25.36         | 0.344 | Plot I        | 33    | 2 | PASS    |
|                  | 9400    | 1880            | vertical      | 25.62         | 0.365 |               |       |   | PASS    |
|                  | 9538    | 1907.6          | vertical      | 25.58         | 0.361 |               |       |   | PASS    |
| HSUPA<br>1900MHz | 9262    | 1852.4          | vertical      | 25.32         | 0.340 | Plot J        | 33    | 2 | PASS    |
|                  | 9400    | 1880            | vertical      | 25.29         | 0.338 |               |       |   | PASS    |
|                  | 9538    | 1907.6          | vertical      | 25.32         | 0.340 |               |       |   | PASS    |

Note 1: All the slots were tested and just the worst data was record in this report.

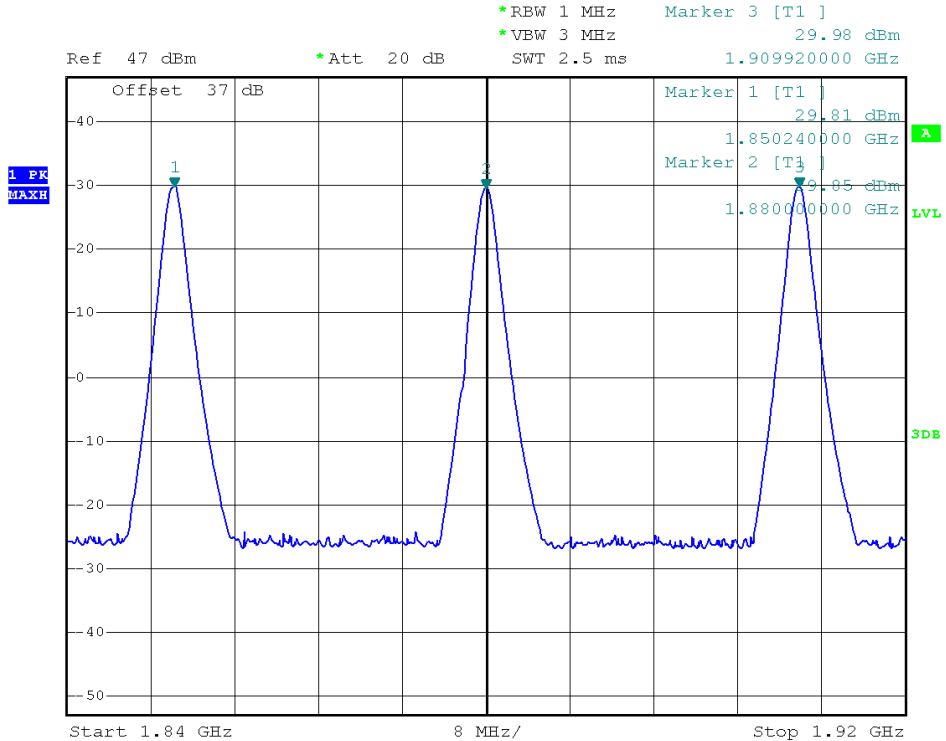
3. Test Plots:



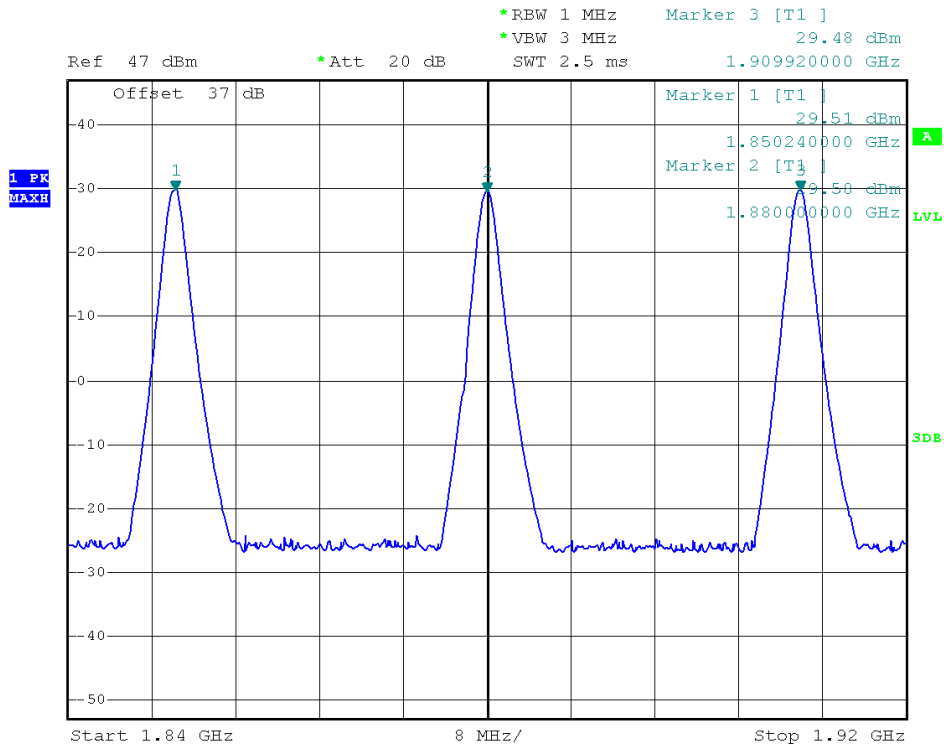
(Plot A: GSM 850MHz Channel = 128, 190, 251)



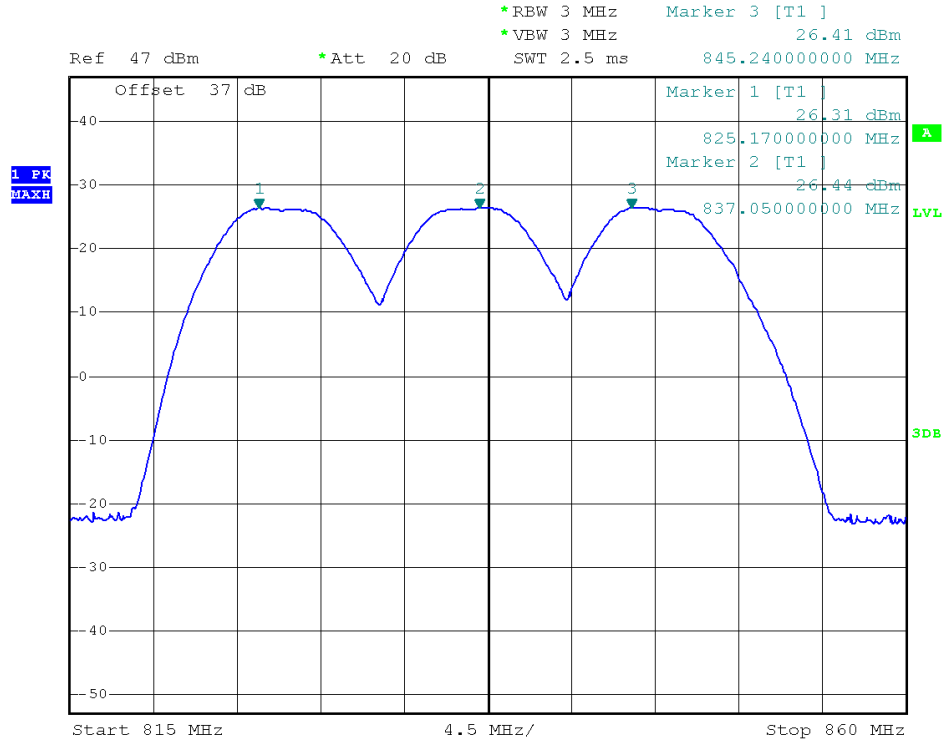
(Plot B: GPRS 850MHz Channel = 128, 190, 251)



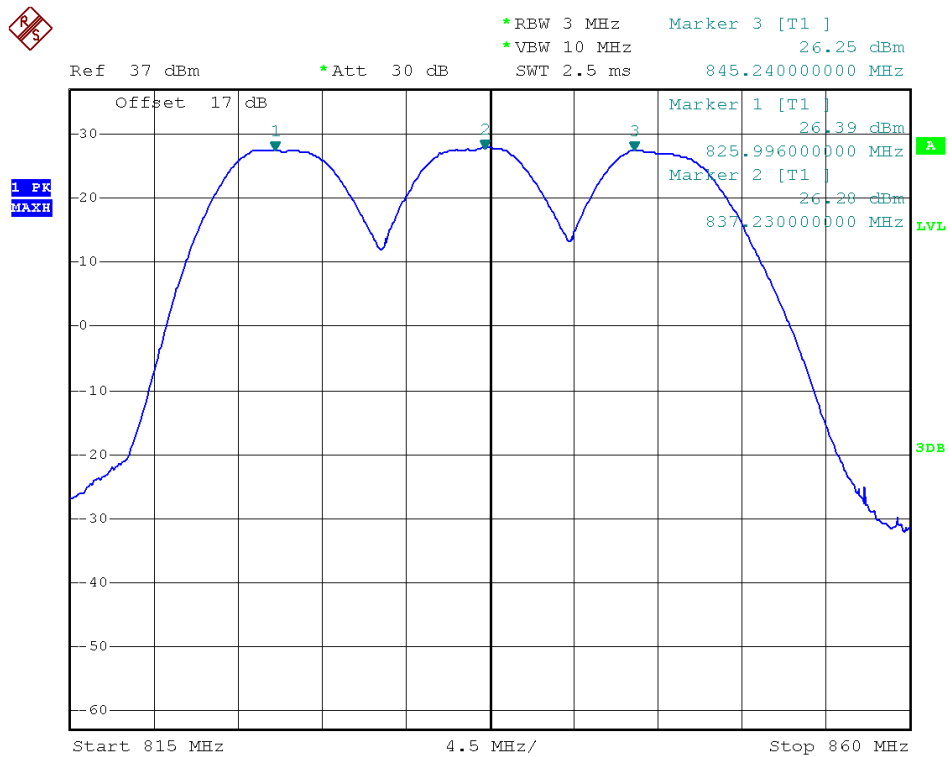
(Plot C: GSM1900MHz Channel = 512, 661, 810)



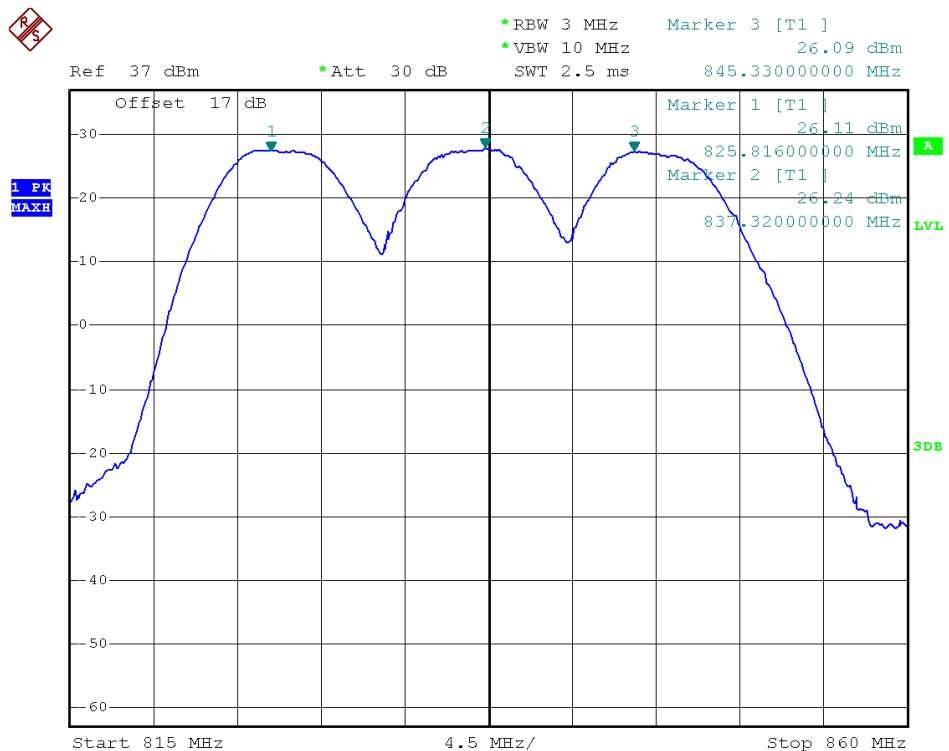
(Plot D: GPRS 1900MHz Channel = 512, 661, 810)



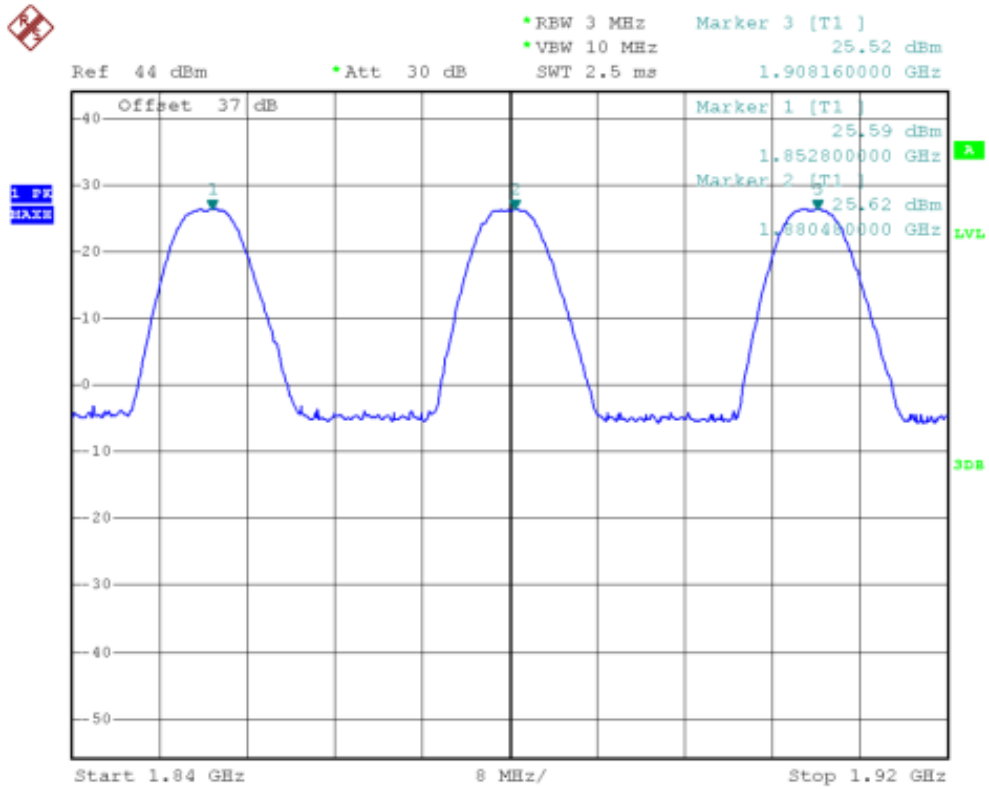
(Plot E: WCDMA 850 MHz Channel = 4132, 4175, 4233)



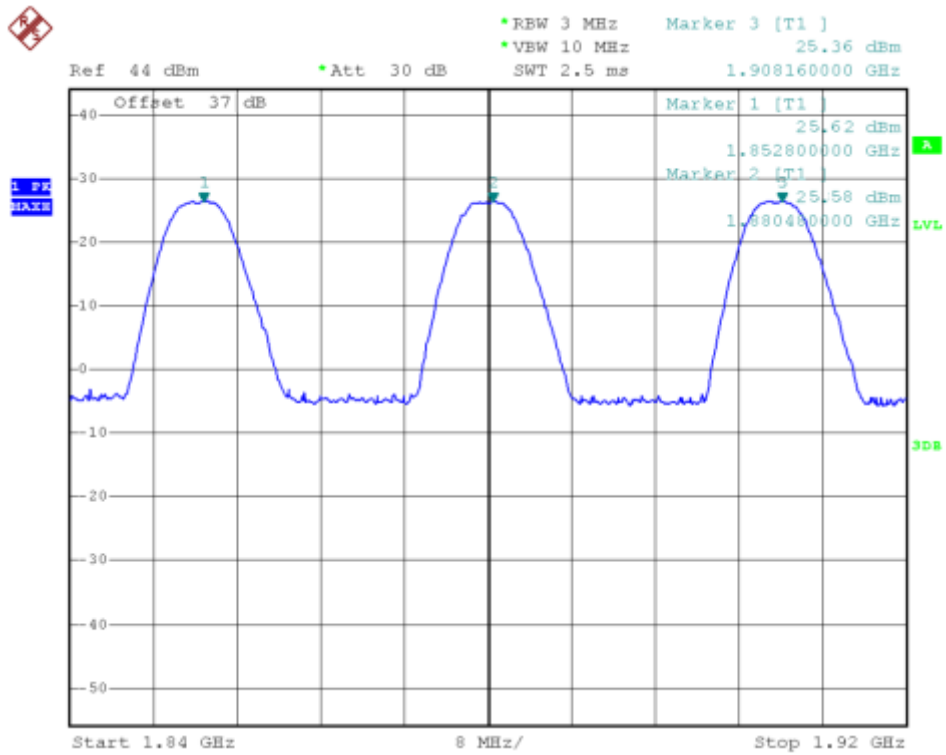
(Plot F: HSDPA 850 MHz Channel = 4132, 4175, 4233)



(Plot G: HSUPA 850 MHz Channel = 4132, 4175, 4233)

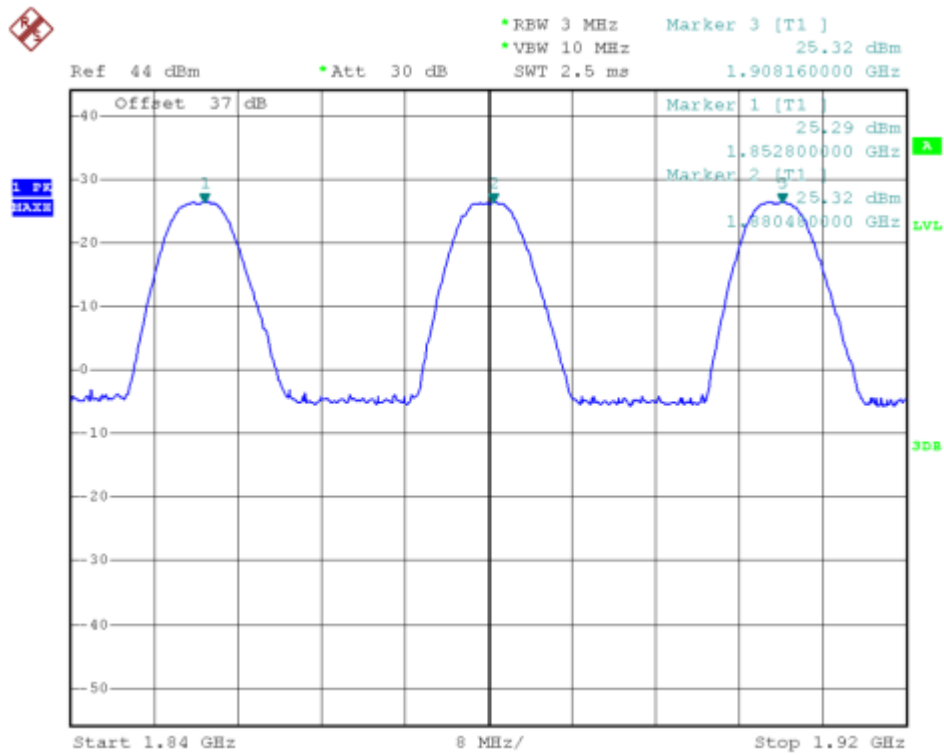


(Plot H: WCDMA 1900 MHz Channel = 9262, 9400, 9538)



(Plot I: HSDPA 1900 MHz Channel = 9262, 9400, 9538)





(Plot J: HSUPA1900 MHz Channel = 9262, 9400, 9538)



## 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~<br>Projects | 12.8m*6.8m*<br>6.4m | A0412372   | 2015.01.04   |
| 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.



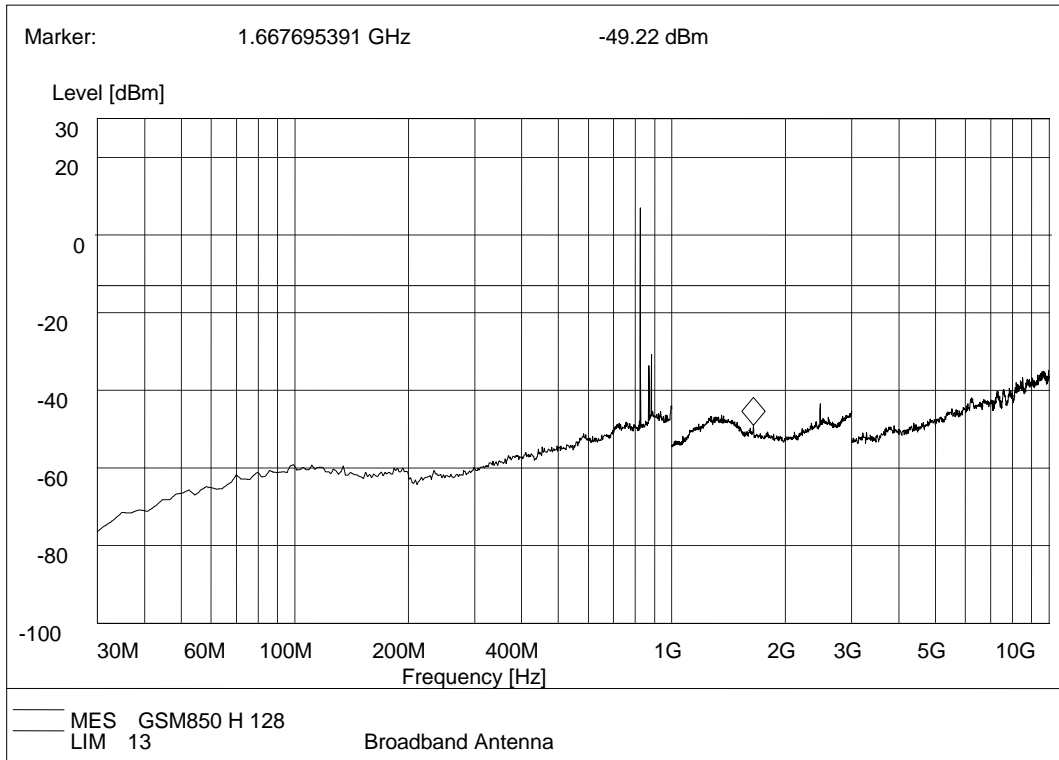
1. Test Verdict:

| 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 E.1/E.2  | -13         | PASS    |
|               | 4183    | 836.6           | < -25                                 | < -25                 | Plot E.3/E.4  |             | PASS    |
|               | 4233    | 846.6           | < -25                                 | < -25                 | Plot E.5/E.6  |             | PASS    |
| WCDMA 1900MHz | 9262    | 1852.4          | < -25                                 | < -25                 | Plot F.1/F.2  | -13         | PASS    |
|               | 9400    | 1880            | < -25                                 | < -25                 | Plot F.3/F.4  |             | PASS    |
|               | 9538    | 1907.6          | < -25                                 | < -25                 | Plot F.5/F.6  |             | PASS    |
| HSDPA 850MHz  | 4132    | 826.4           | < -25                                 | < -25                 | Plot G.1/G.2  | -13         | PASS    |
|               | 4183    | 836.6           | < -25                                 | < -25                 | Plot G.3/G.4  |             | PASS    |
|               | 4233    | 846.6           | < -25                                 | < -25                 | Plot G.5/G.6  |             | PASS    |
| HSDPA 1900MHz | 9262    | 1852.4          | < -25                                 | < -25                 | Plot H.1/H.2  | -13         | PASS    |
|               | 9400    | 1880            | < -25                                 | < -25                 | Plot H.3/H.4  |             | PASS    |
|               | 9538    | 1907.6          | < -25                                 | < -25                 | Plot H.5/H.6  |             | PASS    |
| HSUPA 850MHz  | 4132    | 826.4           | < -25                                 | < -25                 | Plot I.1/I.2  | -13         | PASS    |
|               | 4183    | 836.6           | < -25                                 | < -25                 | Plot I.3/I.4  |             | PASS    |
|               | 4233    | 846.6           | < -25                                 | < -25                 | Plot I.5/I.6  |             | PASS    |
| HSUPA 1900MHz | 9262    | 1852.4          | < -25                                 | < -25                 | Plot J.1/J.2  | -13         | PASS    |
|               | 9400    | 1880            | < -25                                 | < -25                 | Plot J.3/J.4  |             | PASS    |
|               | 9538    | 1907.6          | < -25                                 | < -25                 | Plot J.5/J.6  |             | PASS    |
| GPRS850       | 128     | 824.2           | < -25                                 | < -25                 | Plot K.1/K.2  | -13         | PASS    |
|               | 190     | 836.6           | < -25                                 | < -25                 | Plot K.3/K.4  |             | PASS    |
|               | 251     | 848.8           | < -25                                 | < -25                 | Plot K.5/K.6  |             | PASS    |
| GPRS1900      | 512     | 1850.2          | < -25                                 | < -25                 | Plot L.1/L.2  | -13         | PASS    |
|               | 661     | 1880            | < -25                                 | < -25                 | Plot L.3/L.4  |             | PASS    |
|               | 810     | 1909.8          | < -25                                 | < -25                 | Plot L.5/L.6  |             | PASS    |

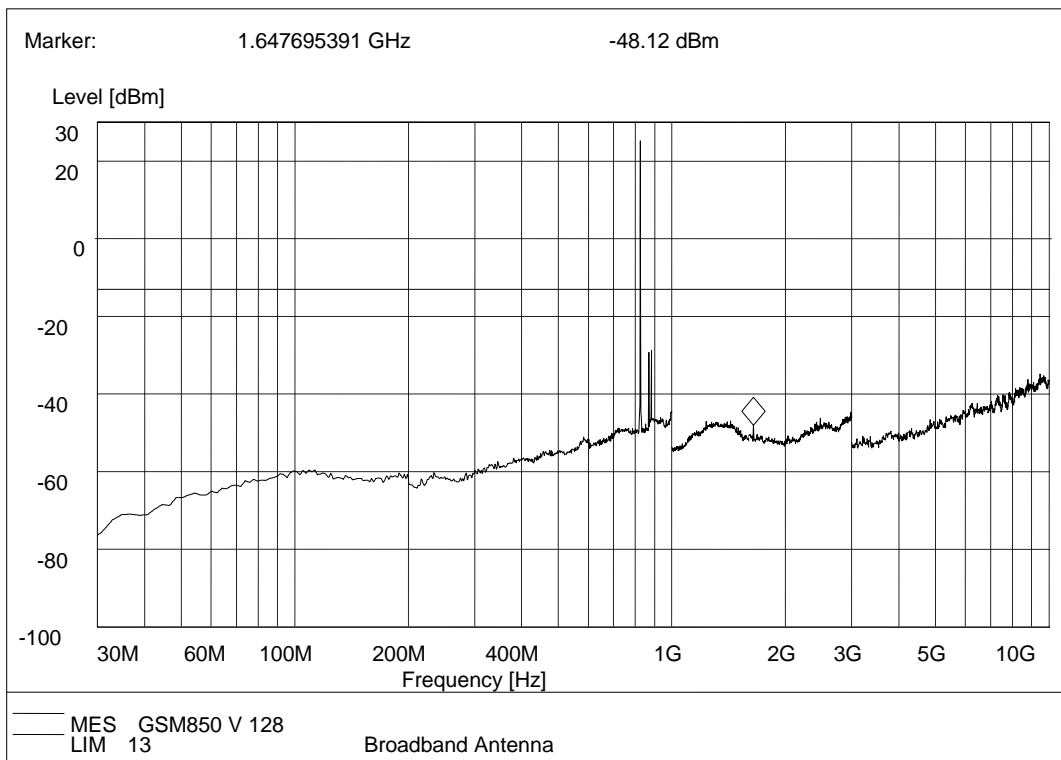
2. Test Plots for the Whole Measurement Frequency Range:

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

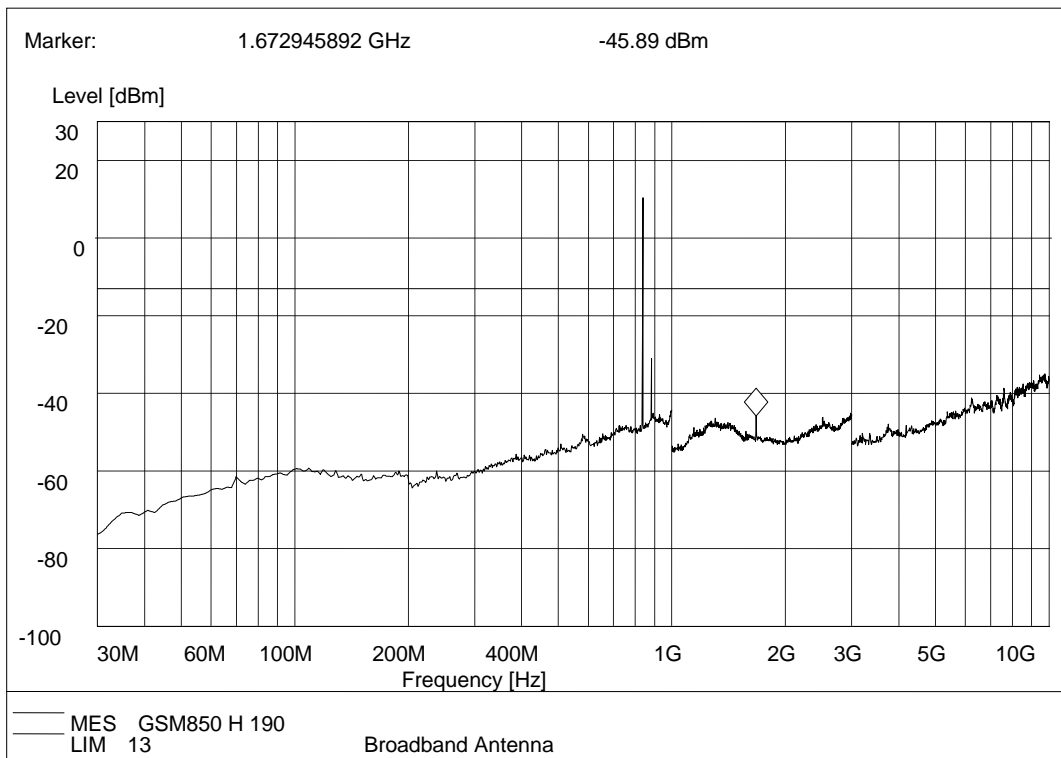
Note2: All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.



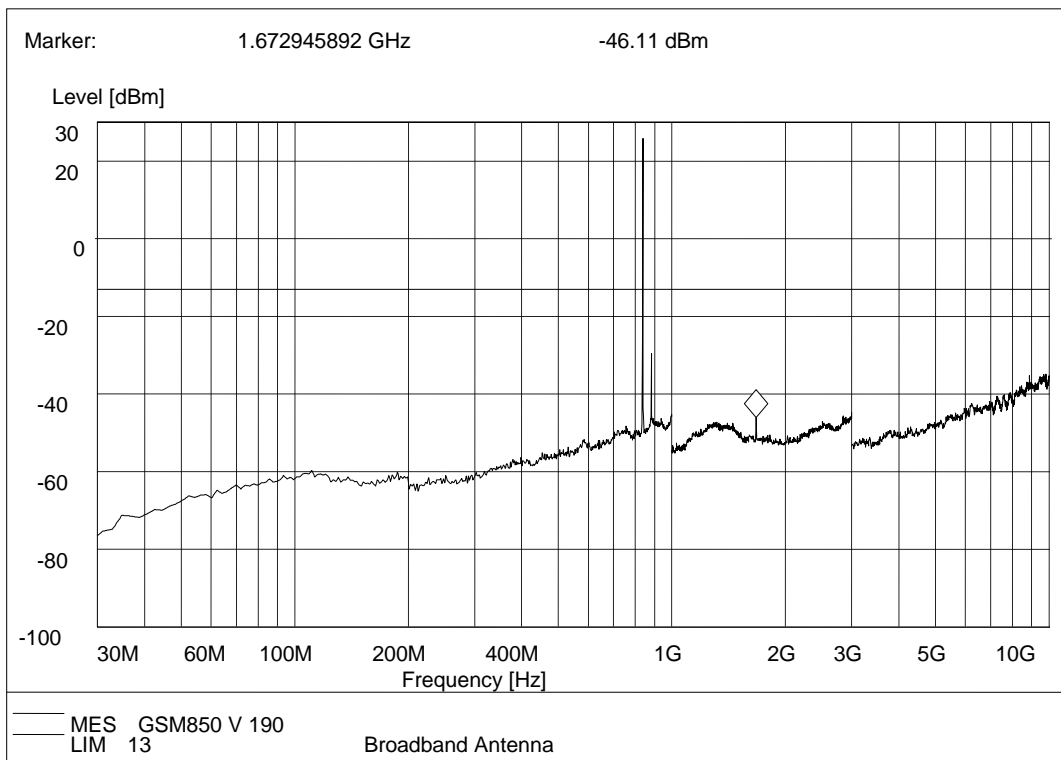
(Plot A.1: GSM 850MHz Channel = 128, Test Antenna Horizontal)



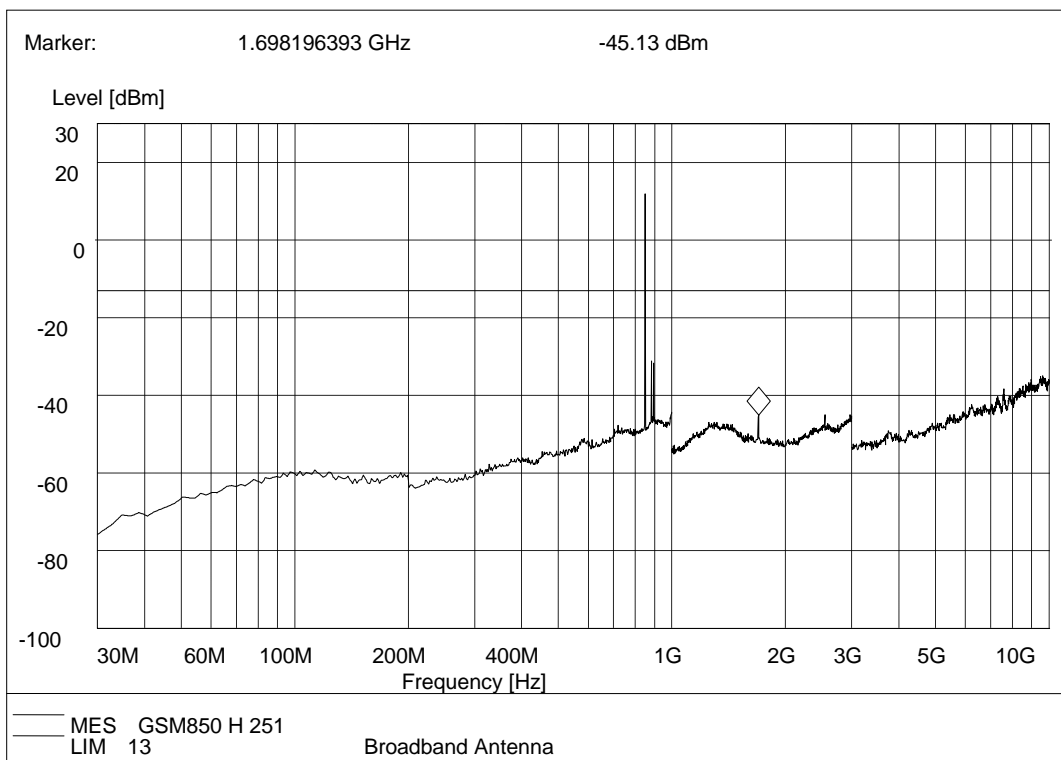
(Plot A.2: GSM 850MHz Channel = 128, Test Antenna Vertical)



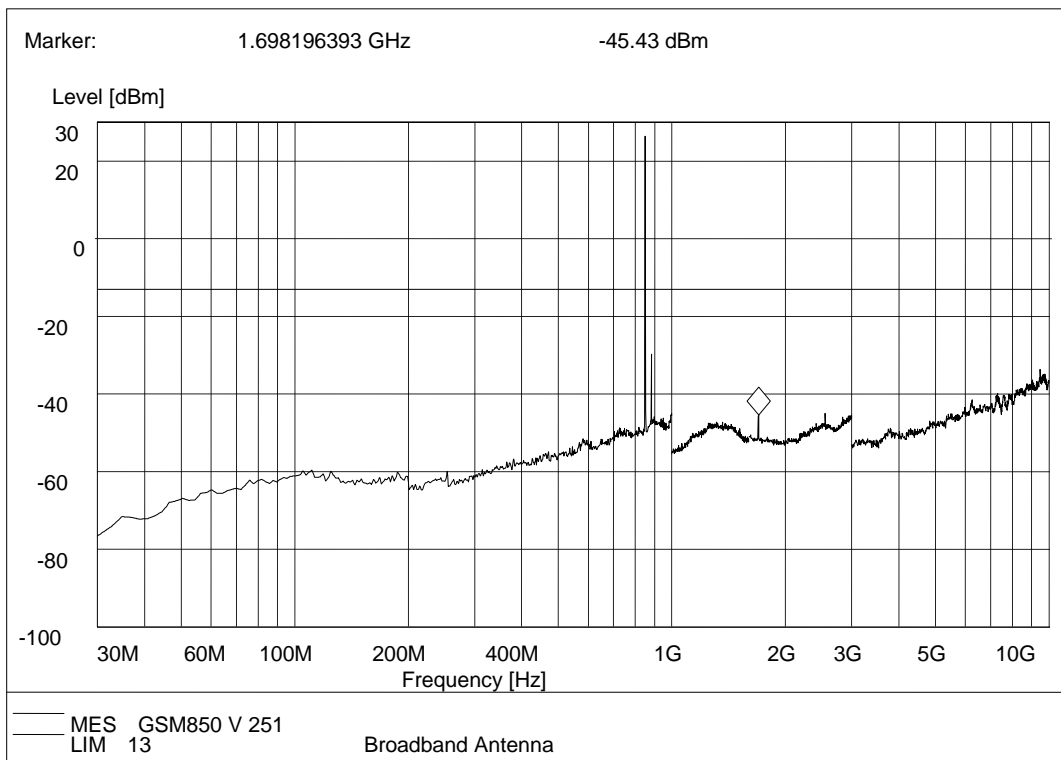
(Plot A.3: GSM 850MHz Channel = 190, Test Antenna Horizontal)



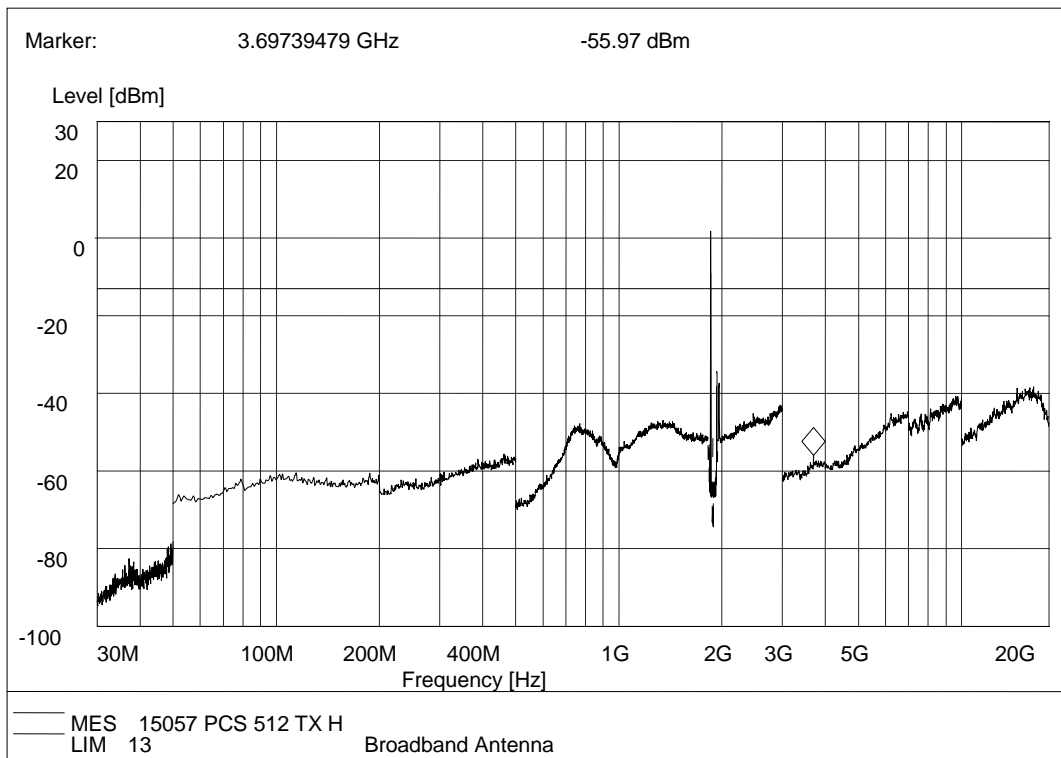
(Plot A.4: GSM 850MHz Channel = 190, Test Antenna Vertical)



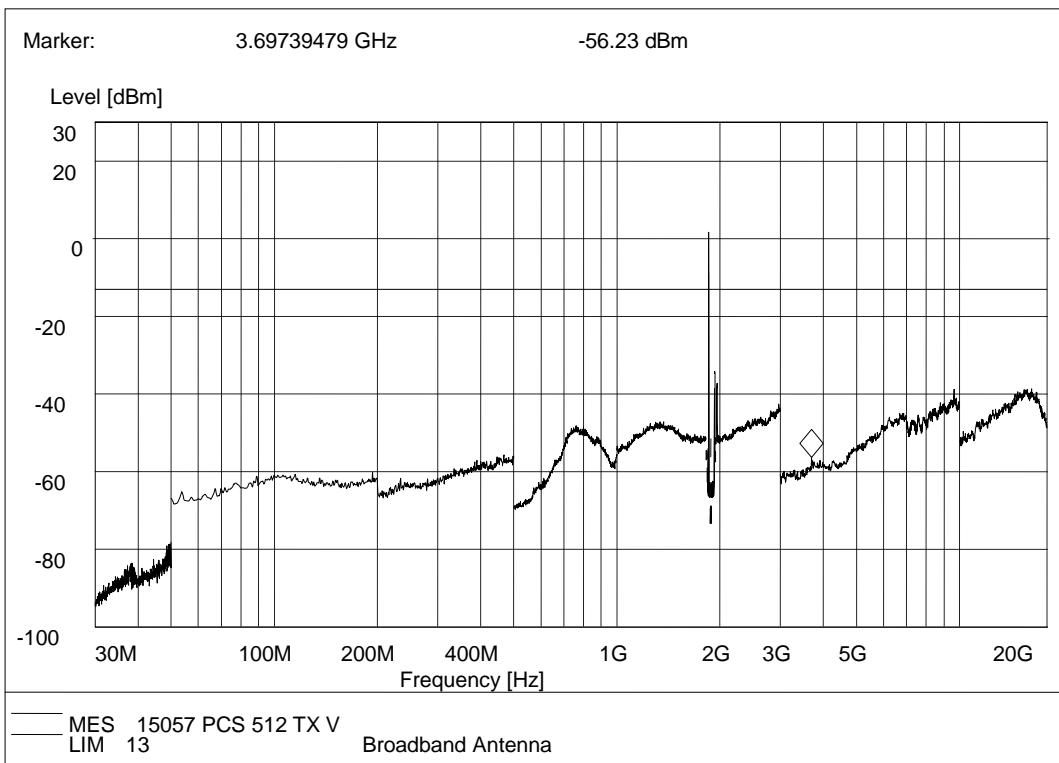
(Plot A.5: GSM 850MHz Channel = 251, Test Antenna Horizontal)



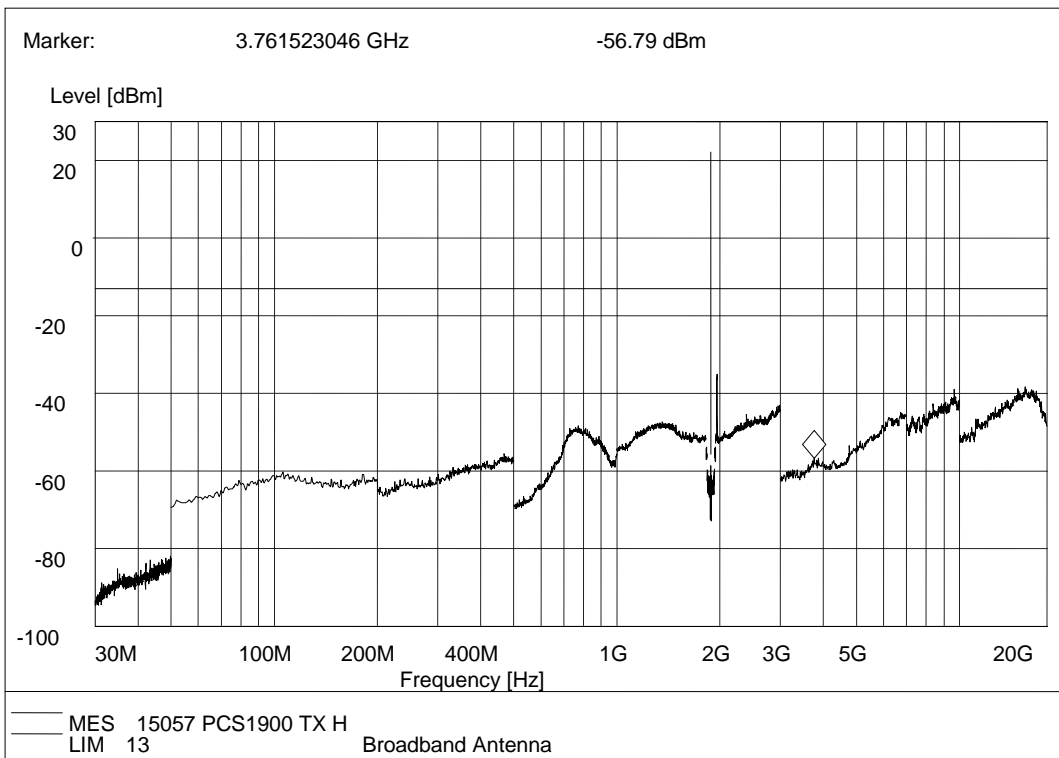
(Plot A.6: GSM 850MHz Channel = 251, Test Antenna Vertical)



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

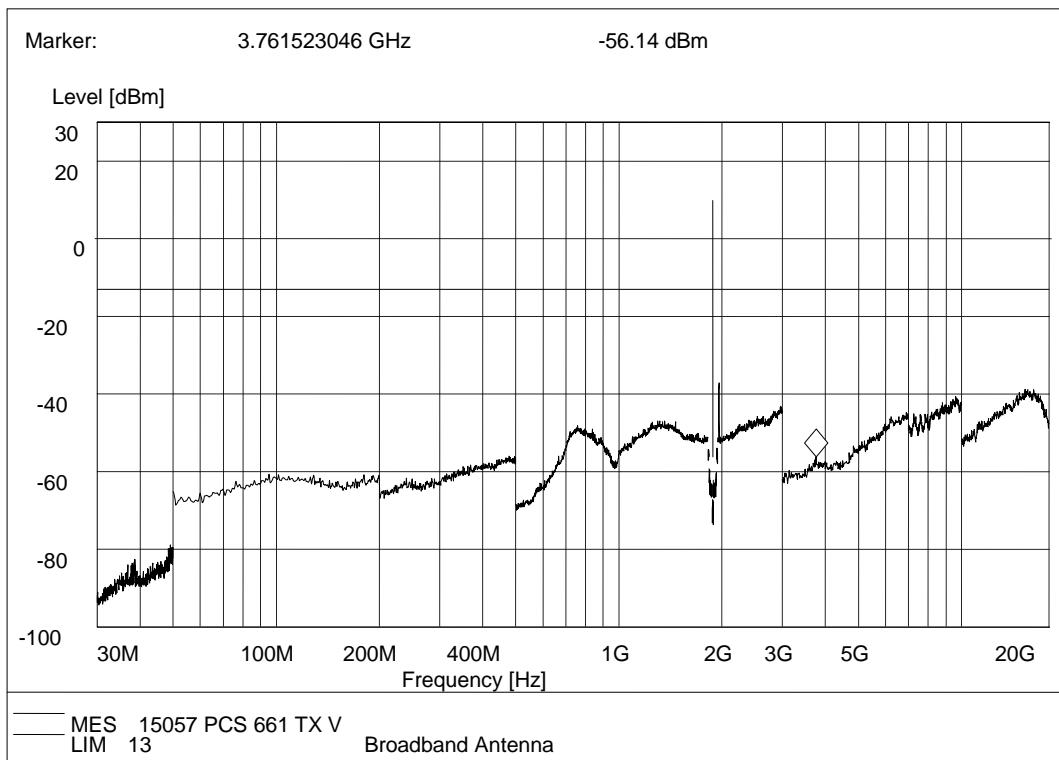


(Plot B.2: GSM 1900MHz Channel = 512, Test Antenna Vertical)

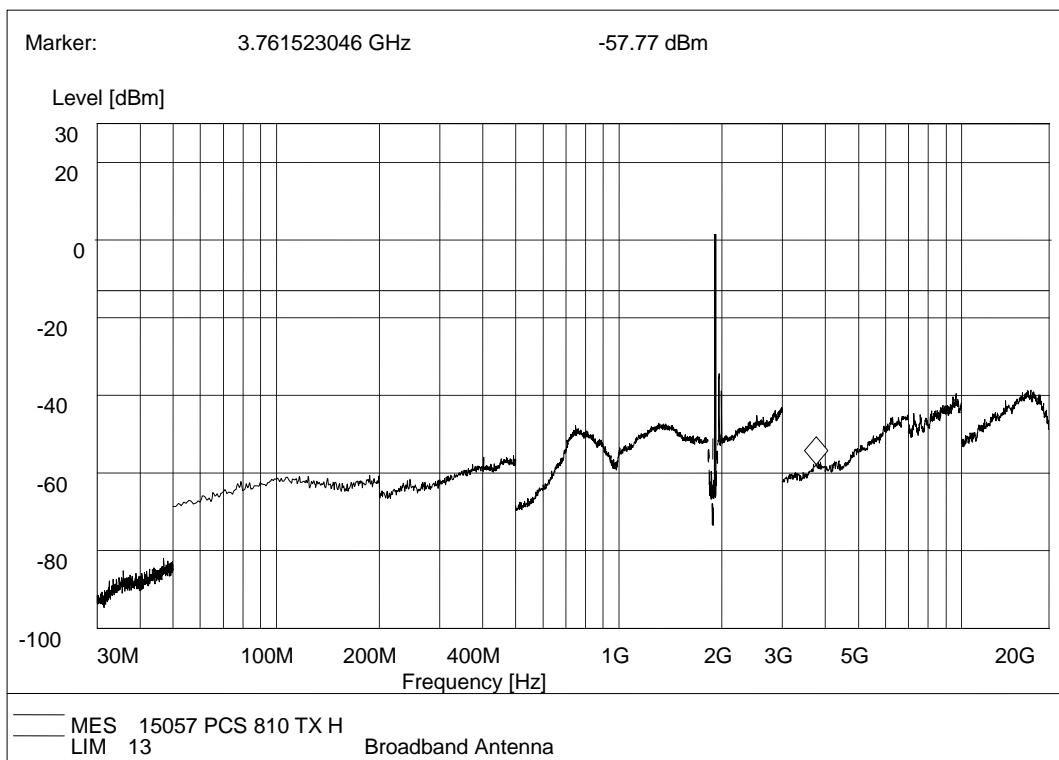


(Plot B.3: GSM 1900MHz Channel = 661, Test Antenna Horizontal)

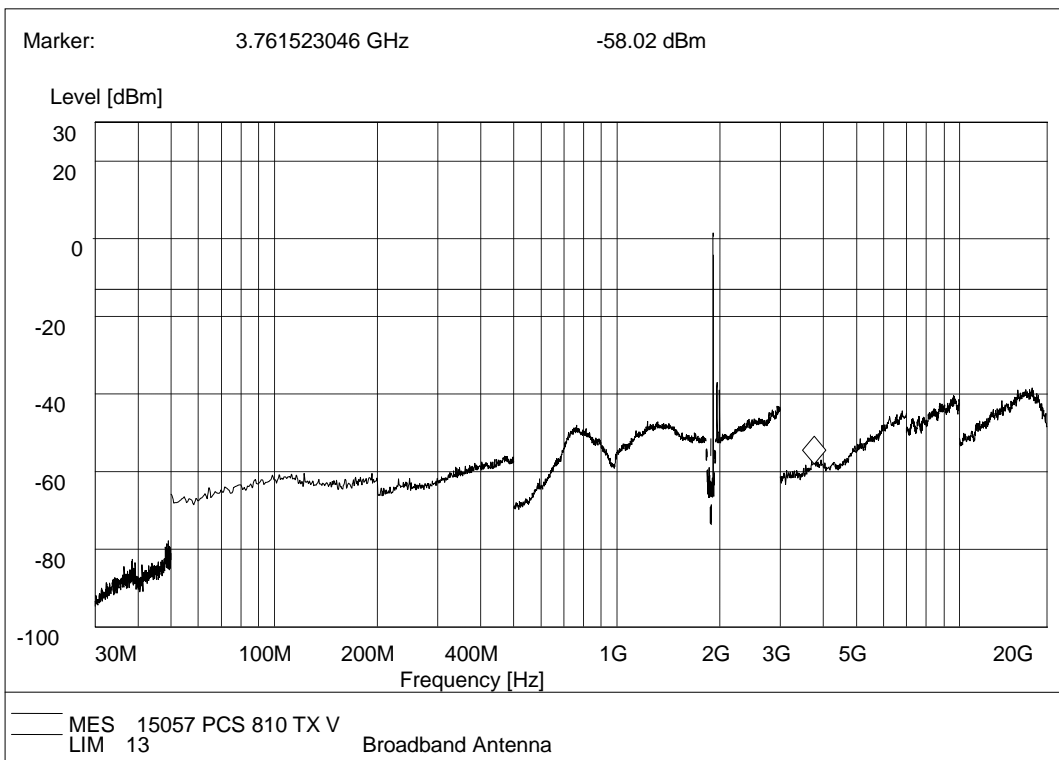




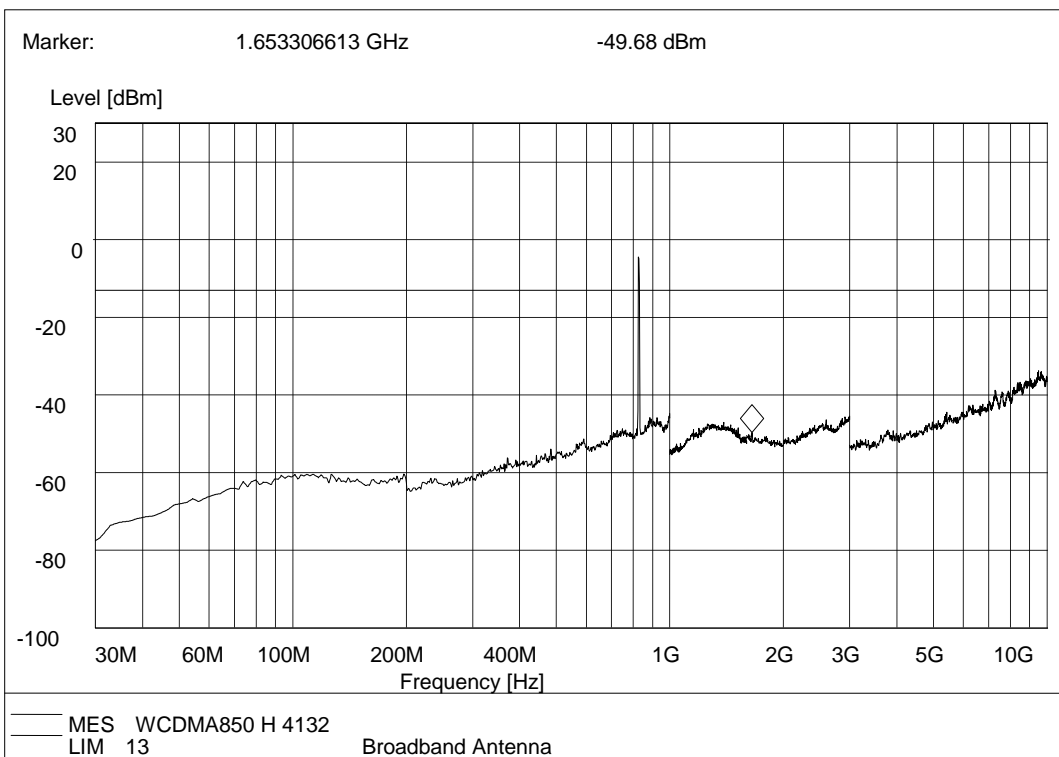
(Plot B.4: GSM 1900MHz Channel = 661, Test Antenna Vertical)



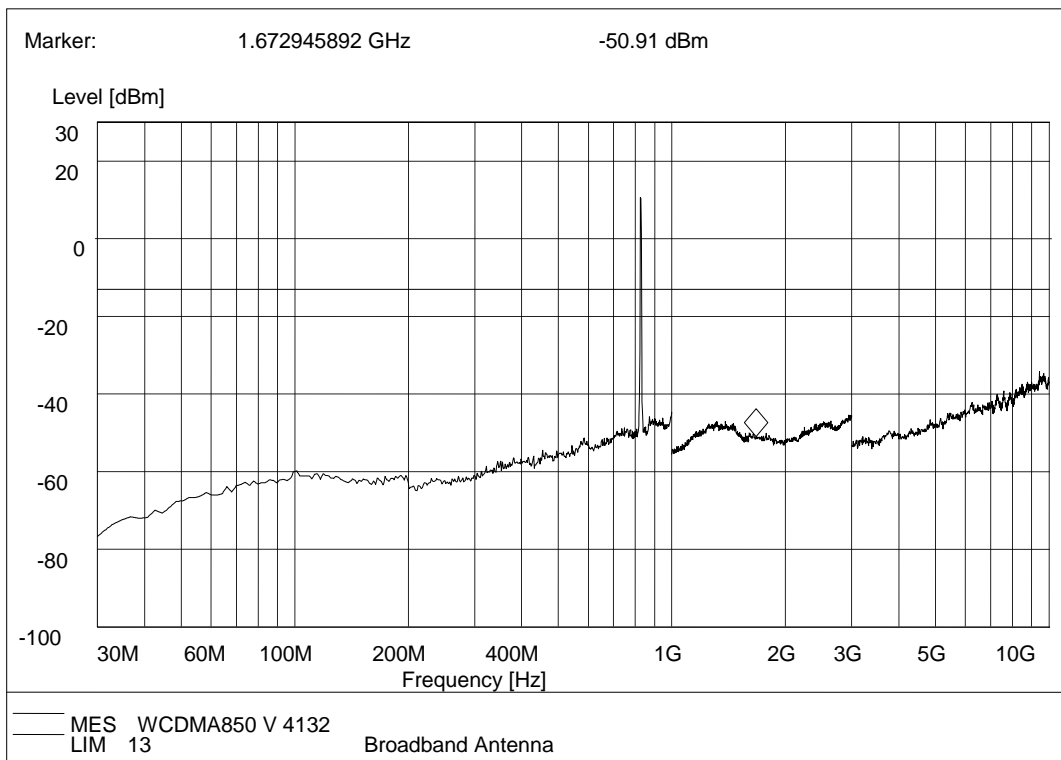
(Plot B.5: GSM 1900MHz Channel = 810, Test Antenna Horizontal)



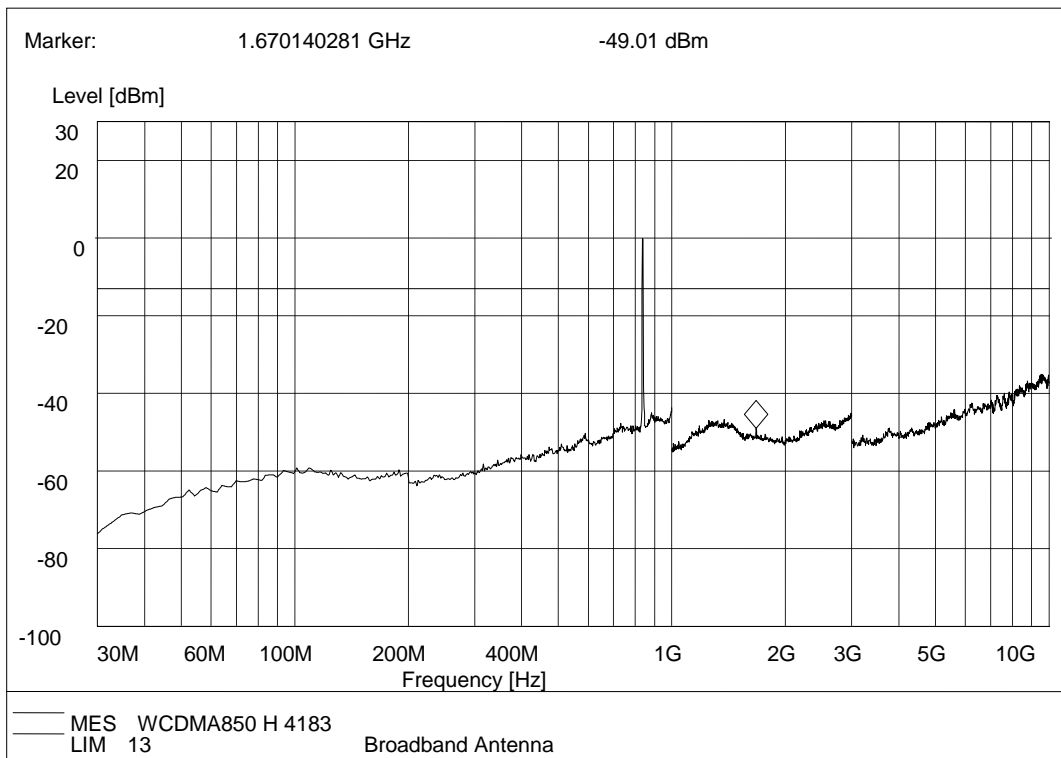
(Plot B.6: GSM 1900MHz Channel = 810, Test Antenna Vertical)



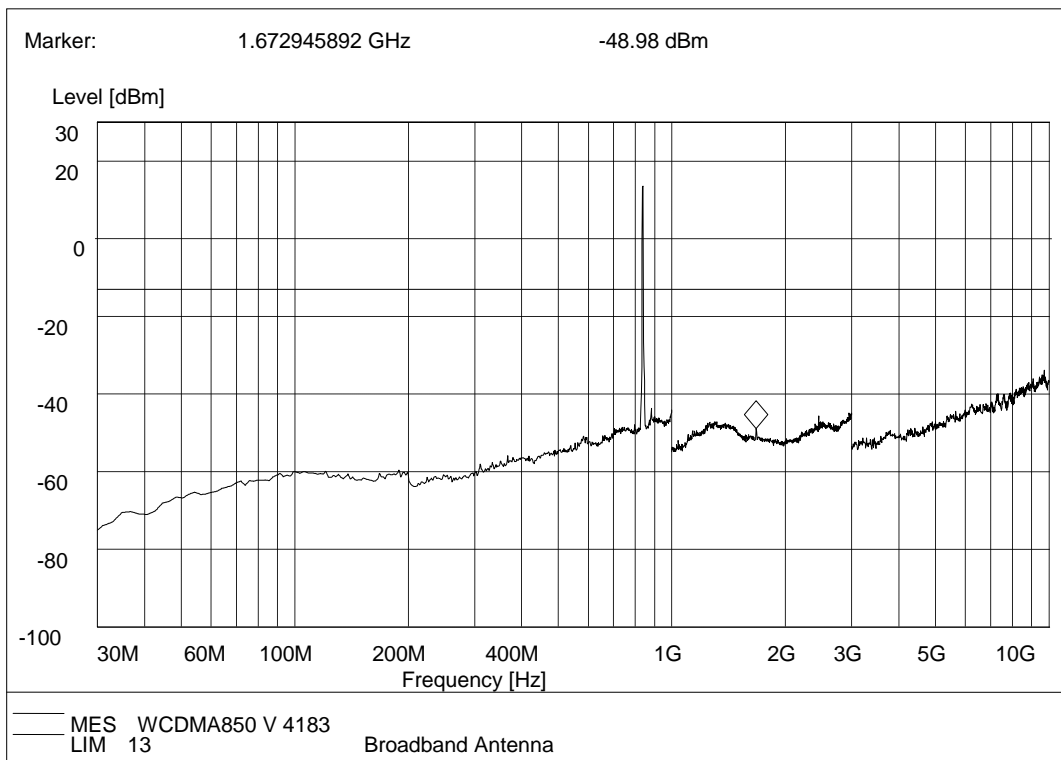
(Plot E.1: WCDMA 850MHz Channel = 4132, Test Antenna Horizontal)



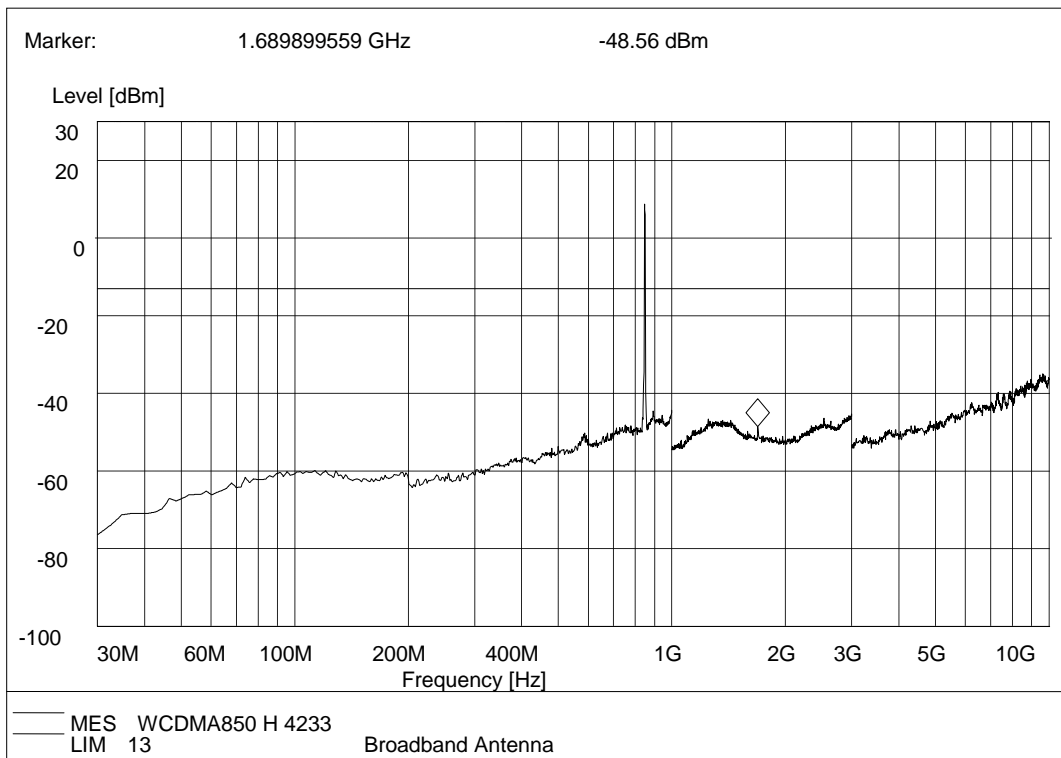
(Plot E.2: WCDMA 850MHz Channel = 4132, Test Antenna Vertical)



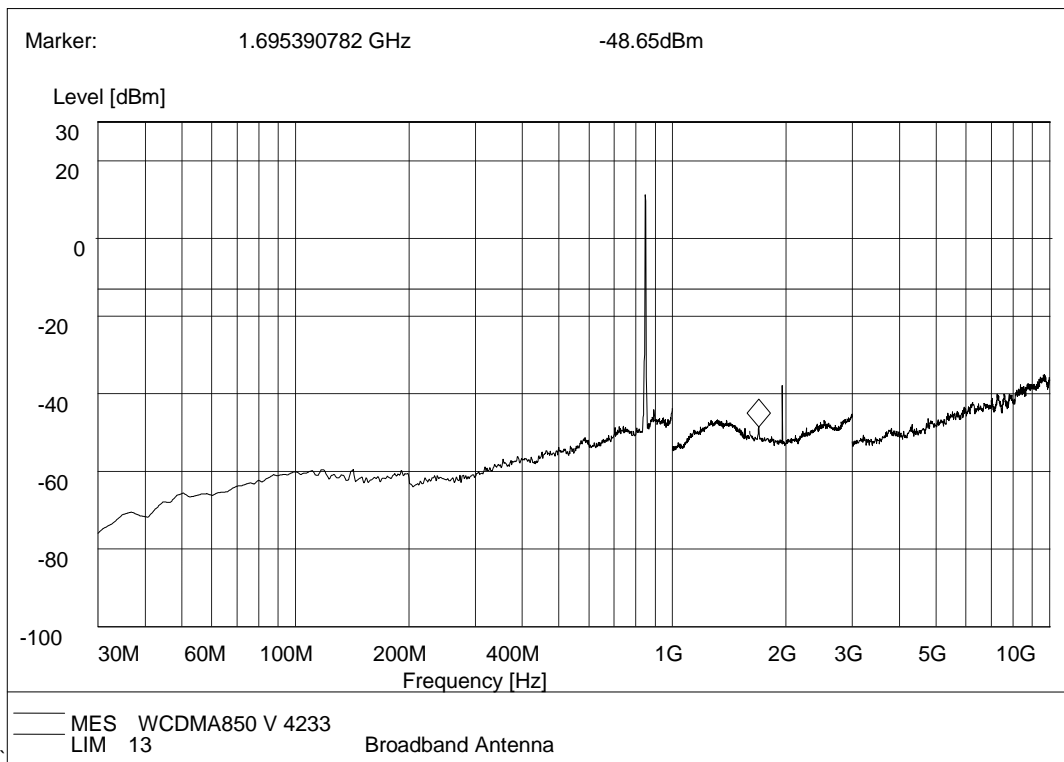
(Plot E.3: WCDMA 850MHz Channel = 4183, Test Antenna Horizontal)



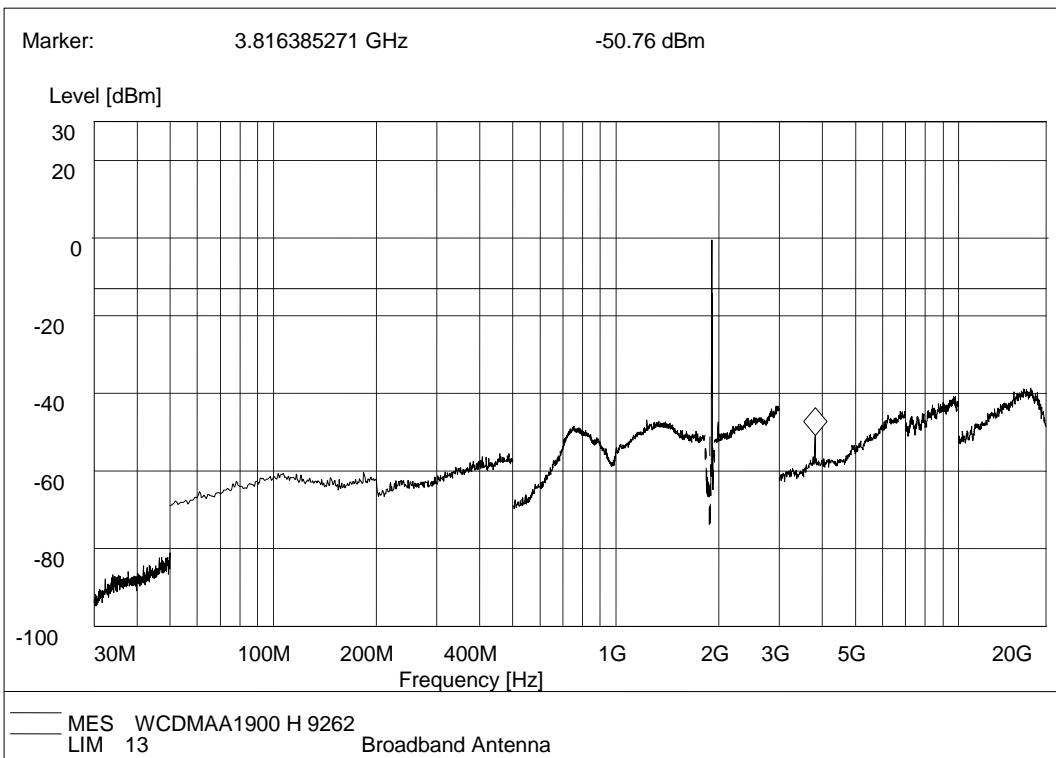
(Plot E.4: WCDMA 850MHz Channel = 4183, Test Antenna Vertical)



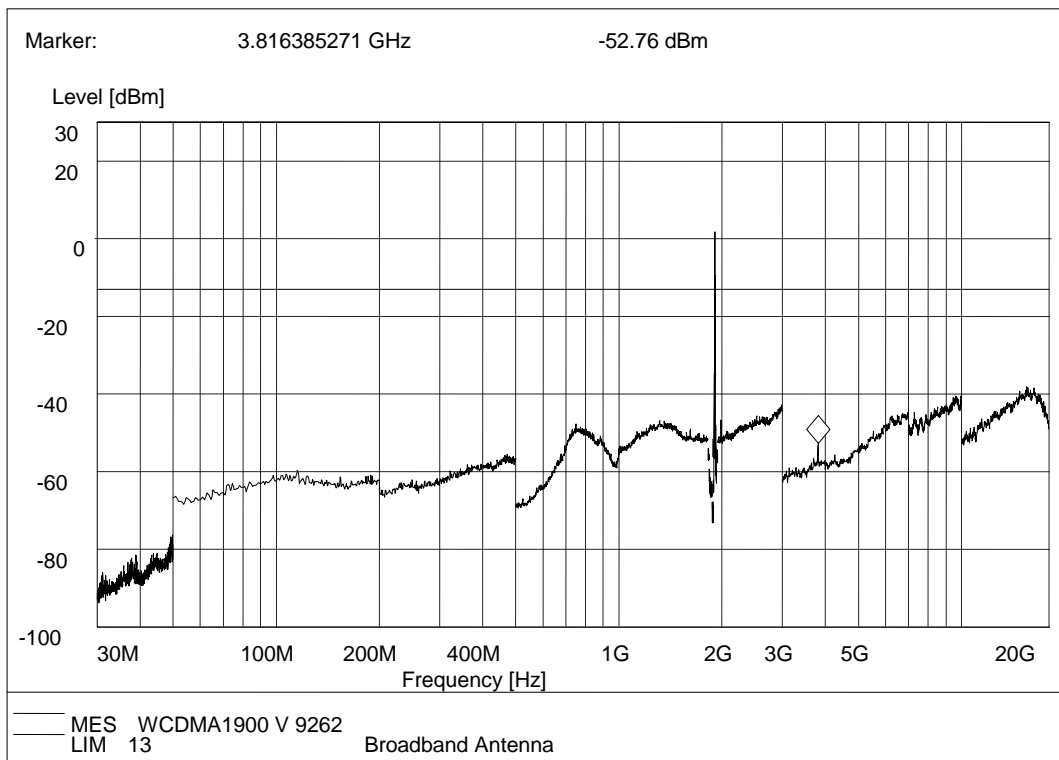
(Plot E.5: WCDMA 850MHz Channel = 4233, Test Antenna Horizontal)



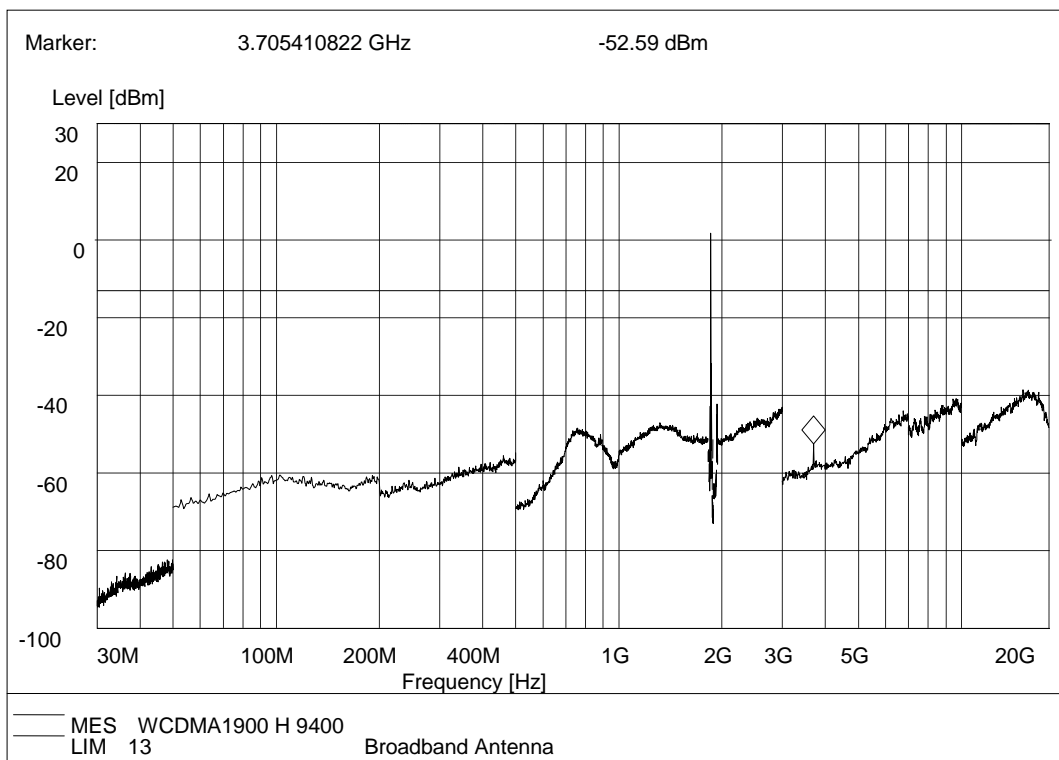
(Plot E.6: WCDMA 850MHz Channel = 4233, Test Antenna Vertical)



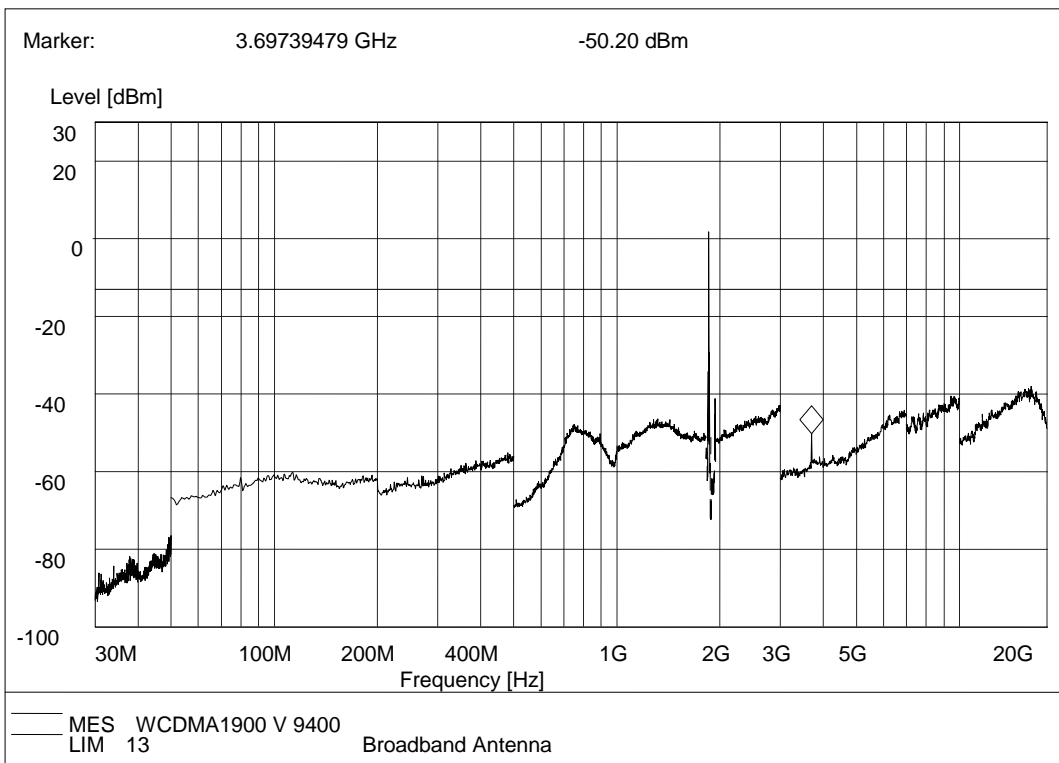
(Plot F.1: WCDMA 1900MHz Channel = 9262, Test Antenna Horizontal)



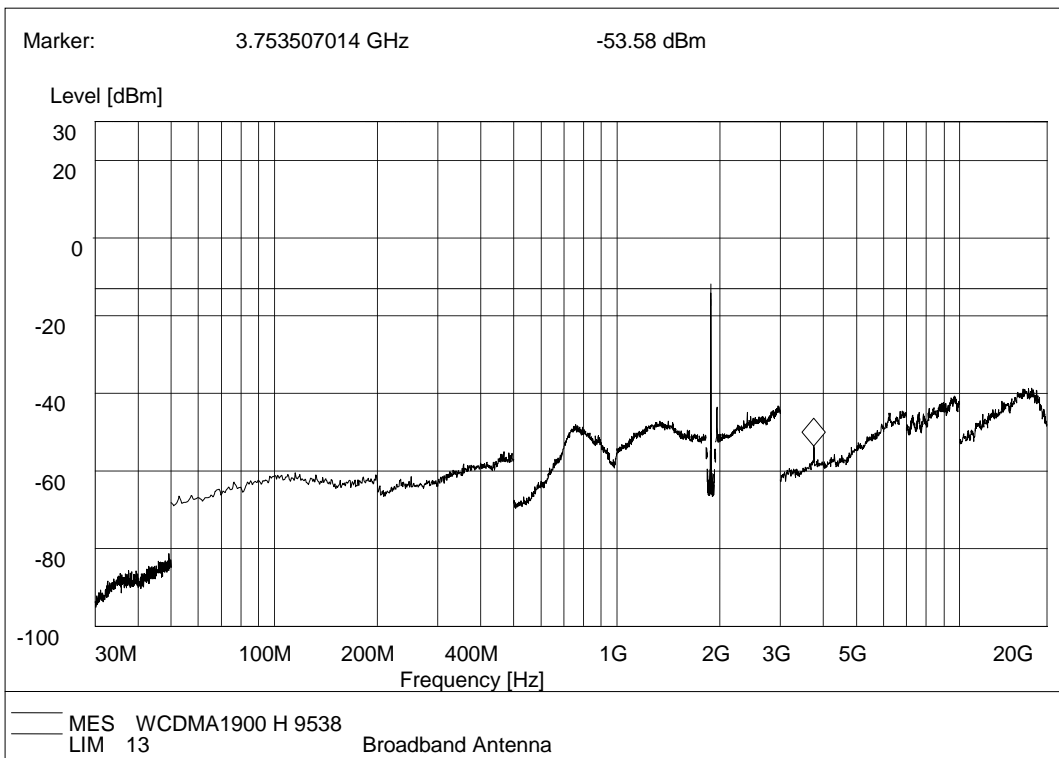
(Plot F.2: WCDMA 1900MHz Channel = 9262, Test Antenna Vertical)



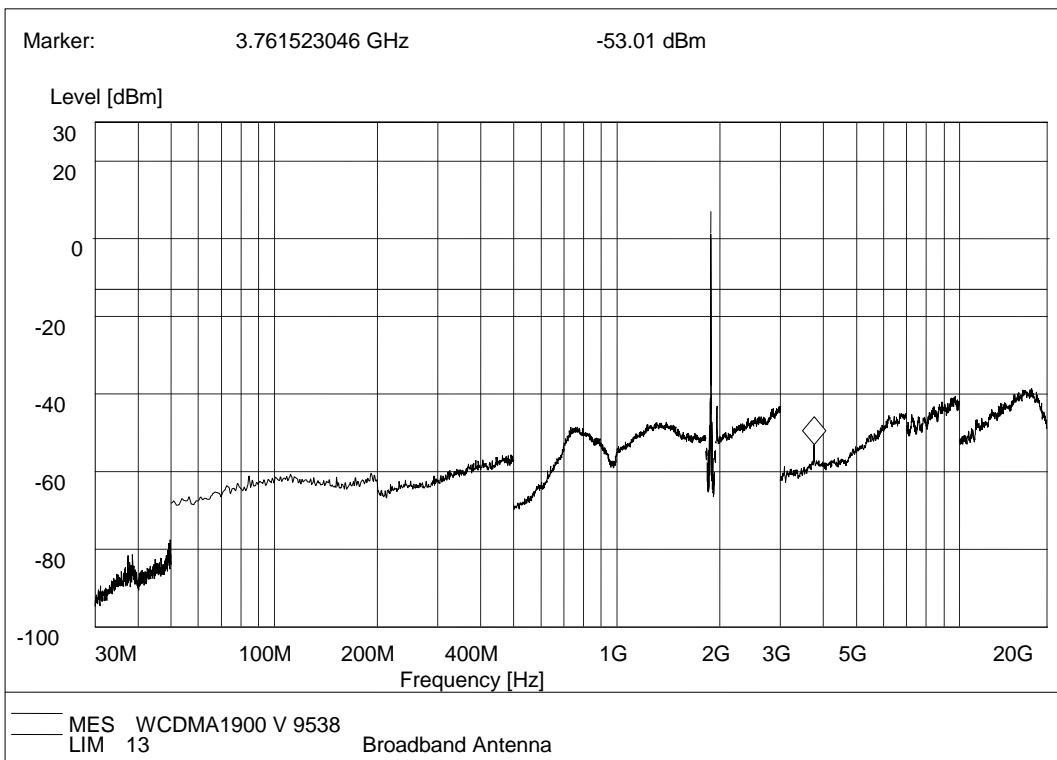
(Plot F.3: WCDMA 1900MHz Channel = 9400, Test Antenna Horizontal)



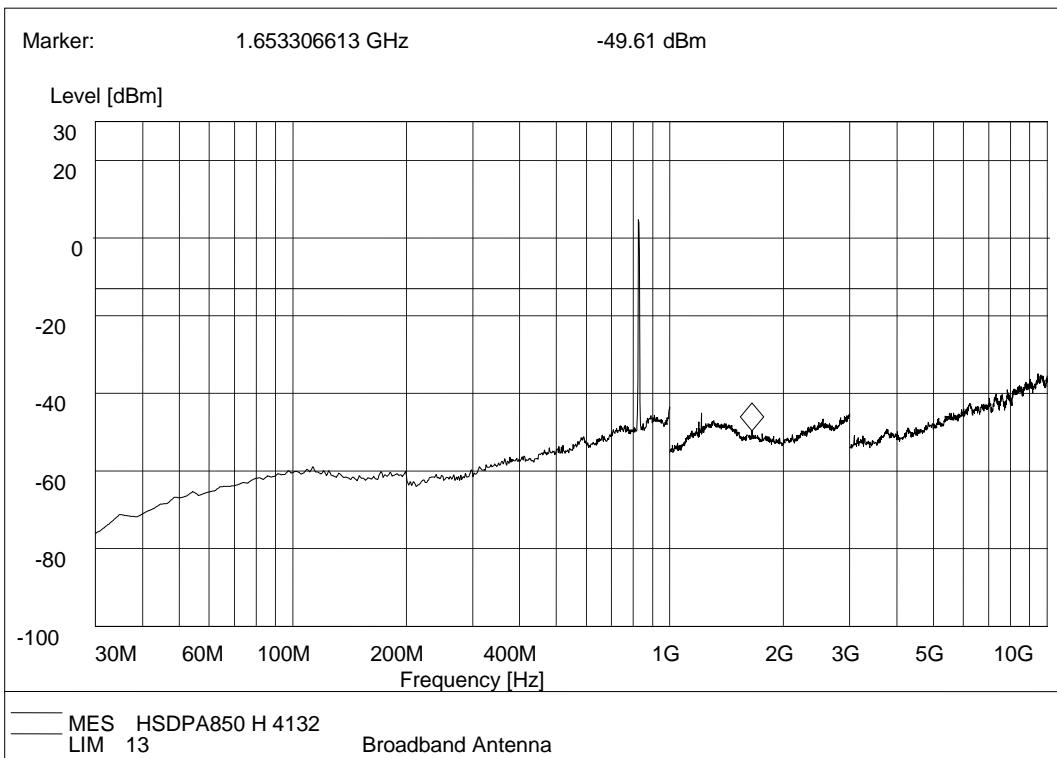
(Plot F.4: WCDMA 1900MHz Channel = 9400, Test Antenna Vertical)



(Plot F.5: WCDMA 1900MHz Channel = 9538, Test Antenna Horizontal)

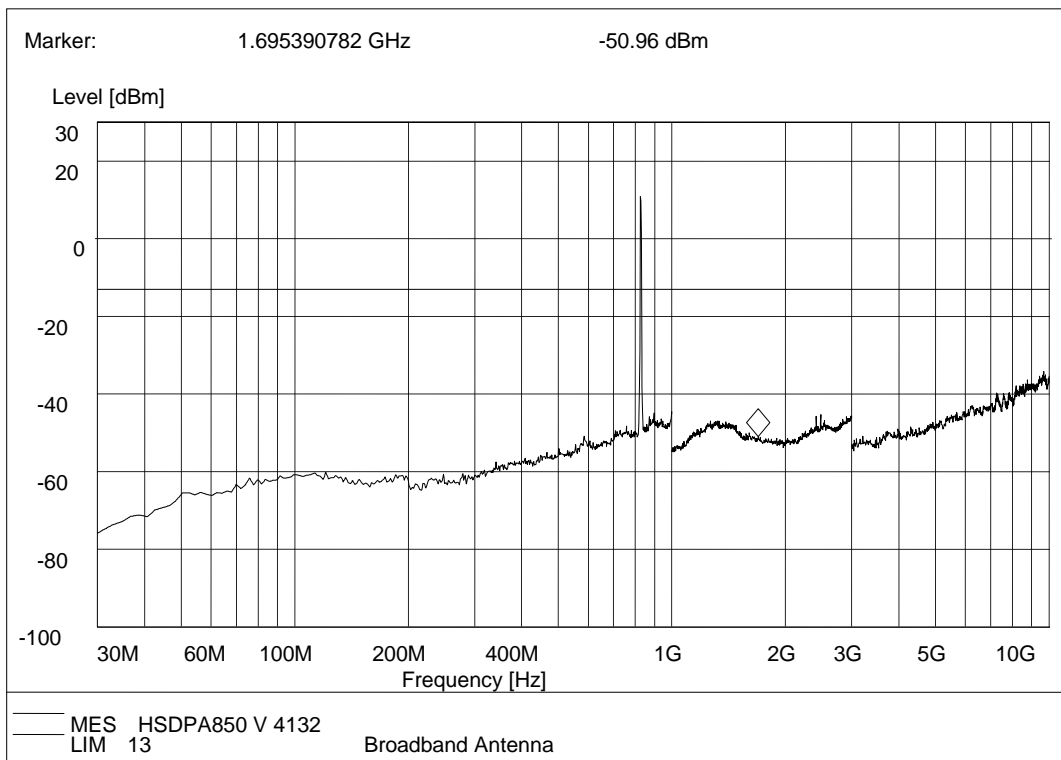


(Plot F.6: WCDMA 1900MHz Channel = 9538, Test Antenna Vertical)

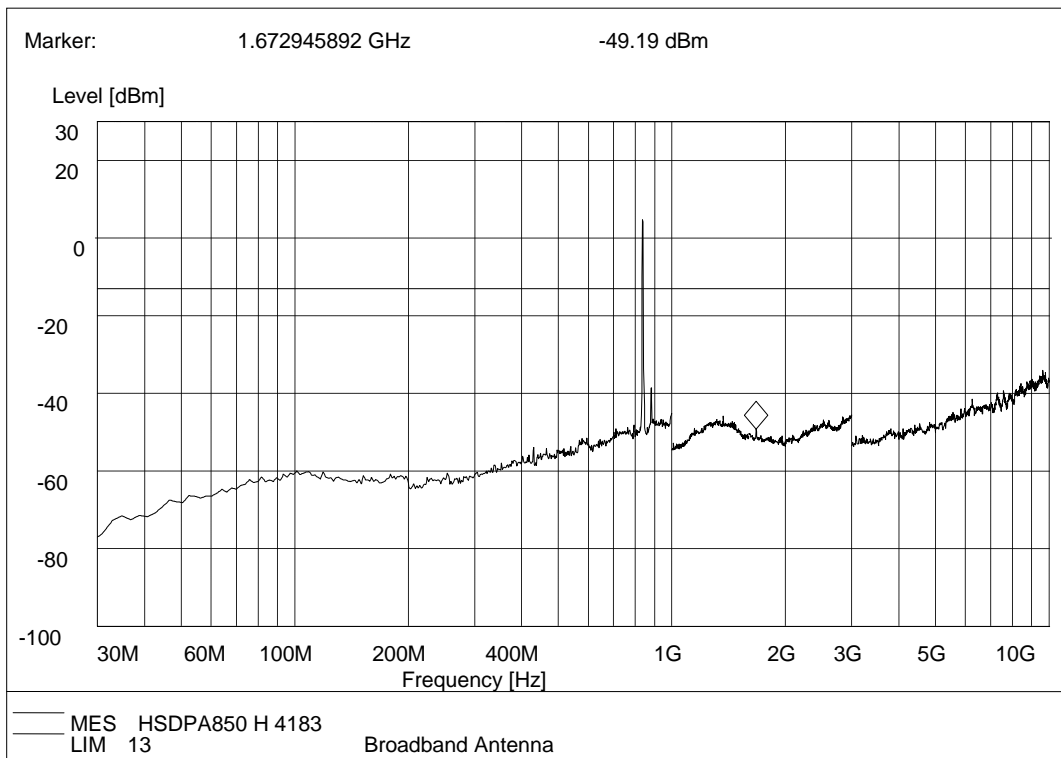


(Plot G.1: HSDPA 850MHz Channel = 4132, Test Antenna Horizontal)

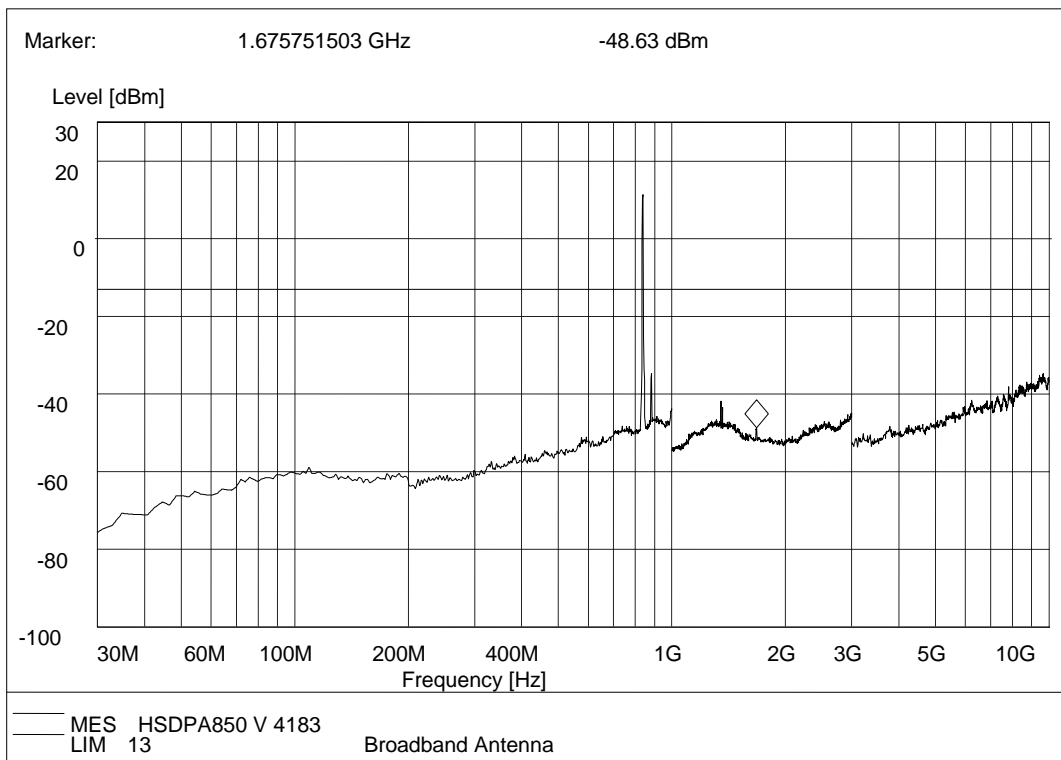




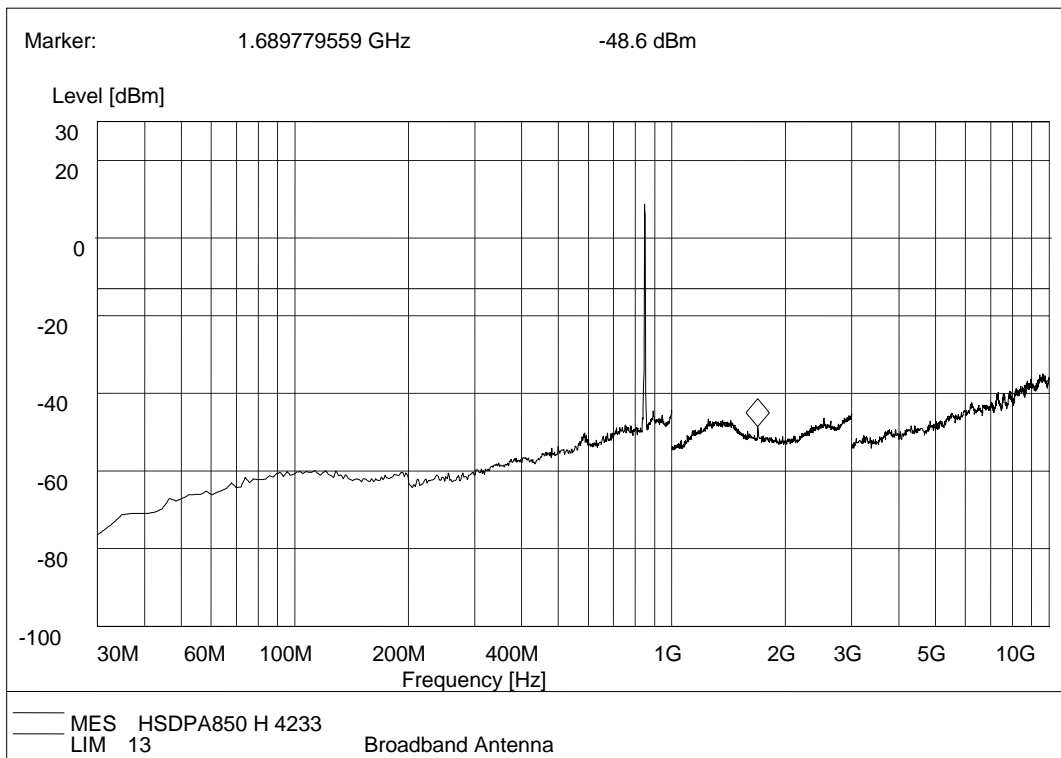
(Plot G.2: HSDPA 850MHz Channel = 4132, Test Antenna Vertical)



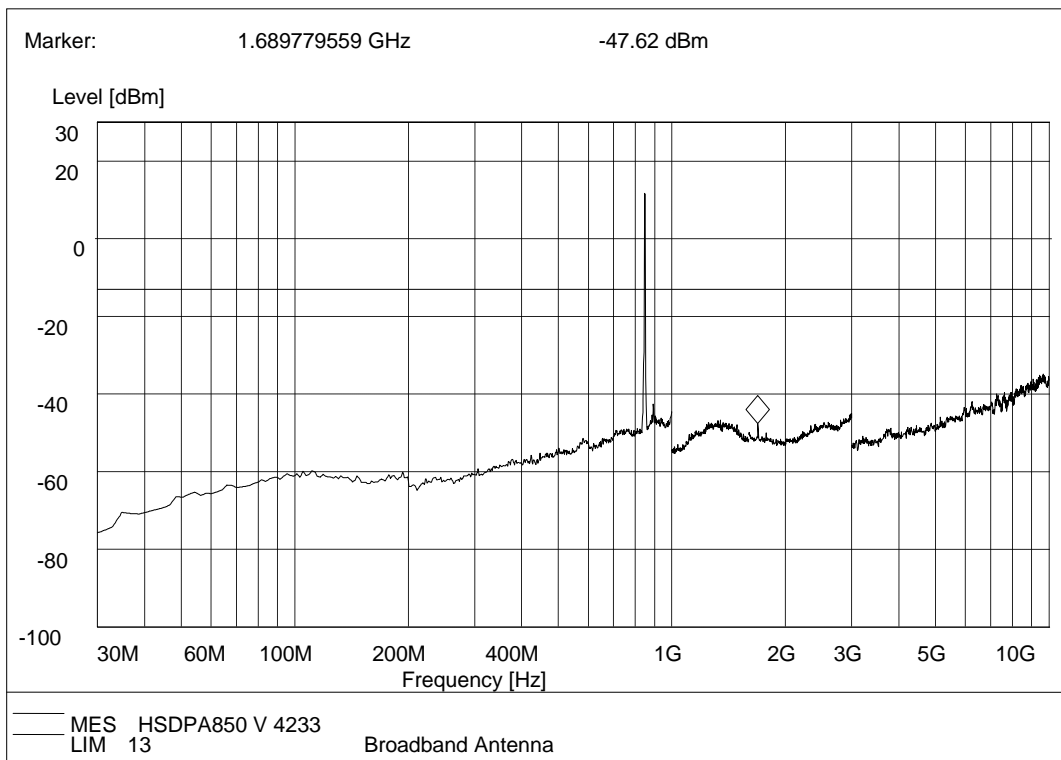
(Plot G.3: HSDPA 850MHz Channel = 4183, Test Antenna Horizontal)



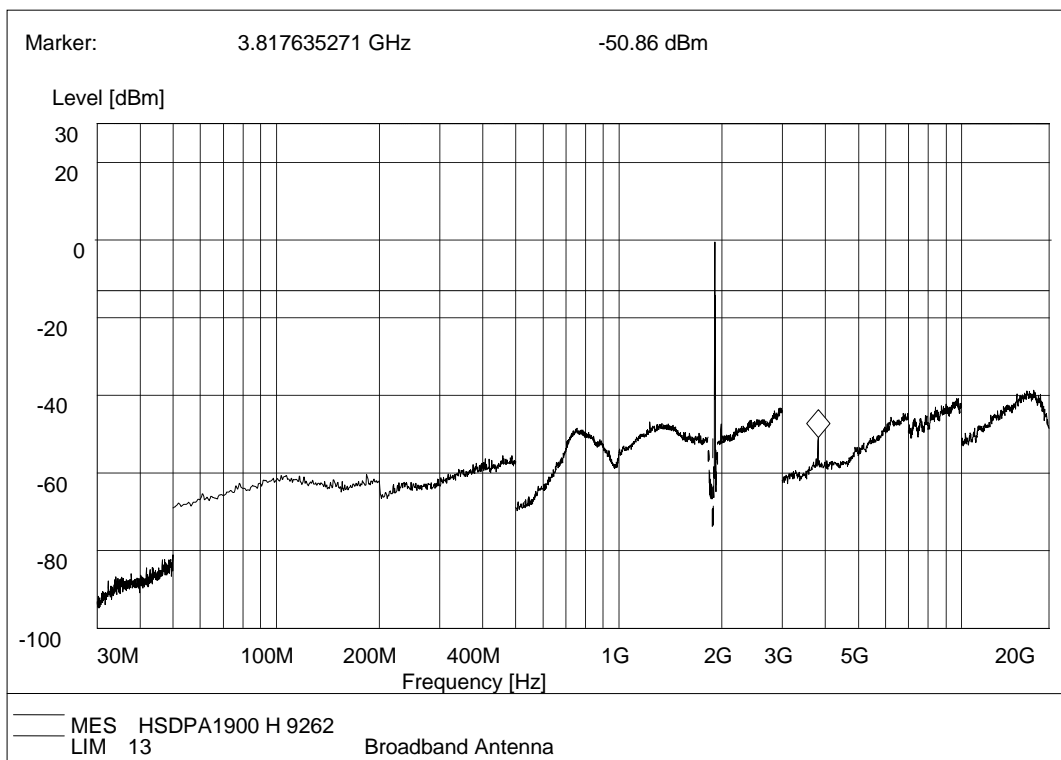
(Plot G.4: HSDPA 850MHz Channel = 4183, Test Antenna Vertical)



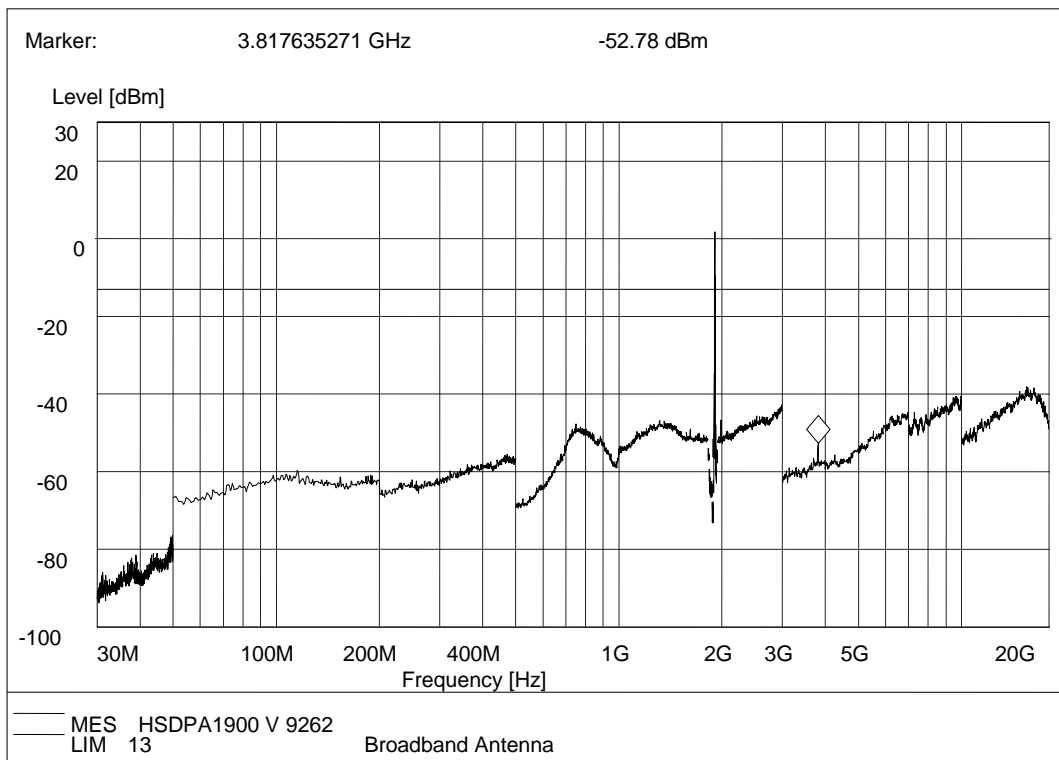
(Plot G.5: HSDPA 850MHz Channel = 4233, Test Antenna Horizontal)



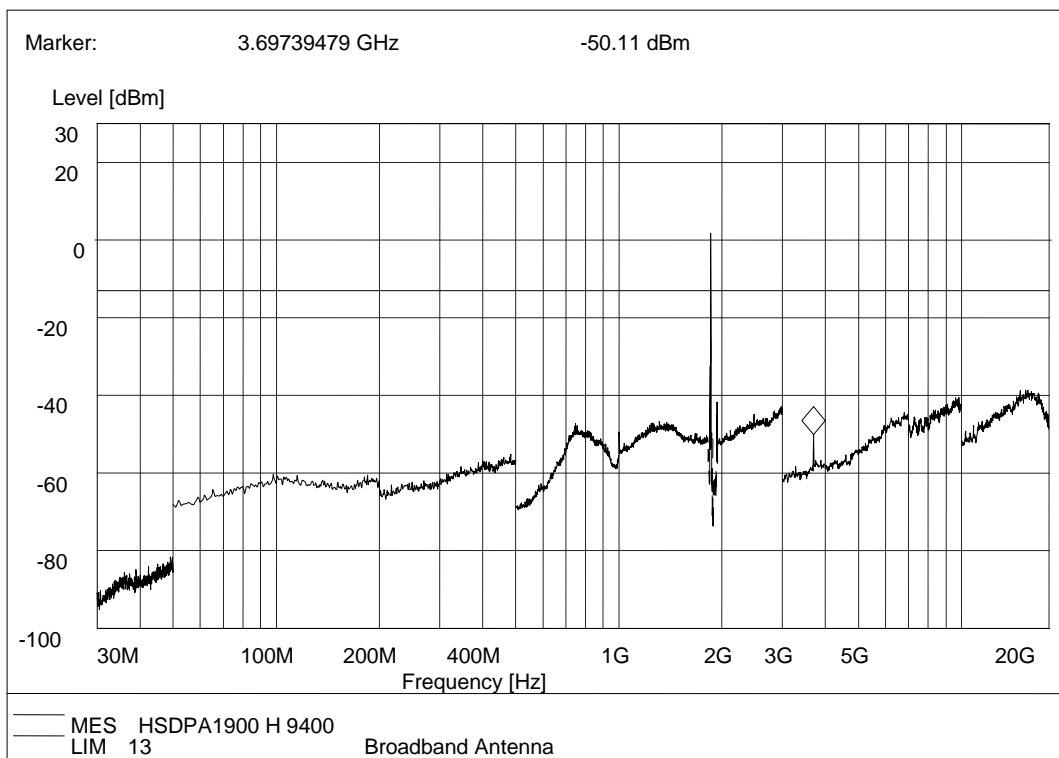
(Plot G.6: HSDPA 850MHz Channel = 4233, Test Antenna Vertical)



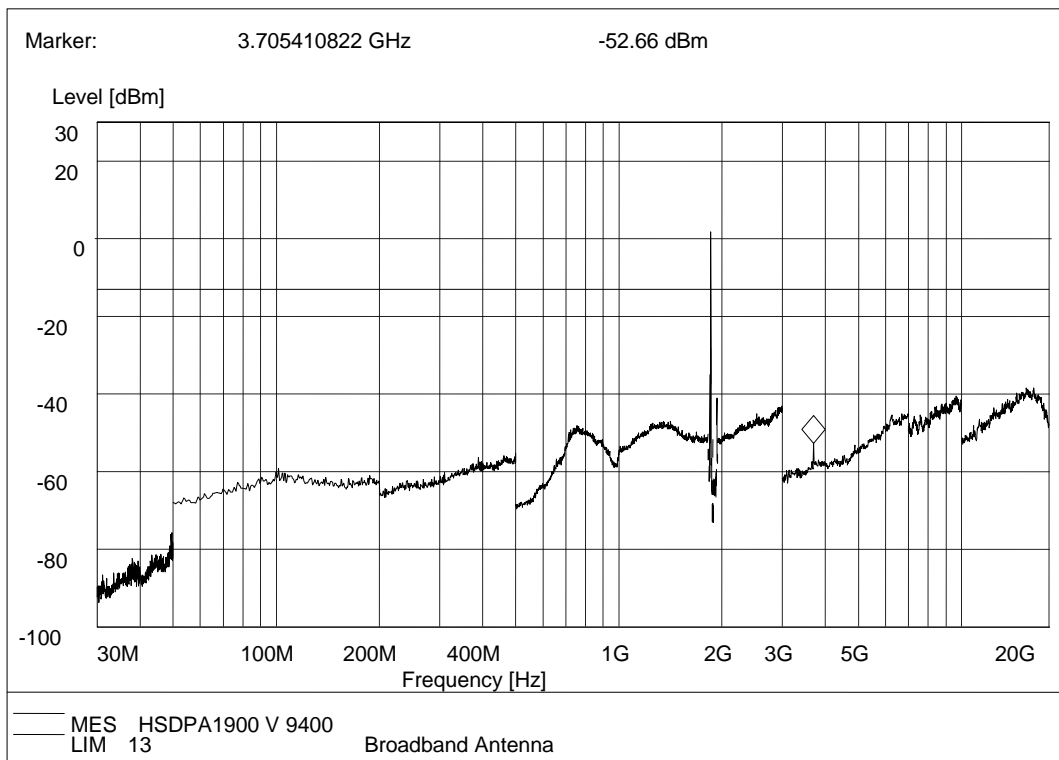
(Plot H.1: HSDPA 1900 MHz Channel = 9262, Test Antenna Horizontal)



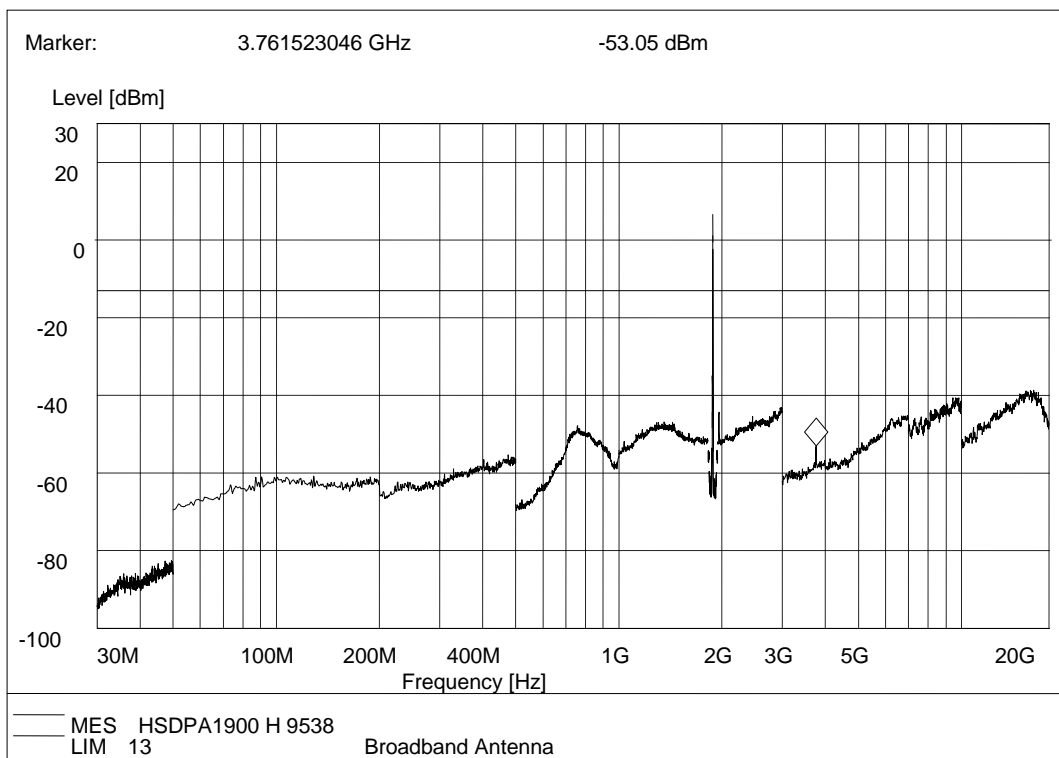
(Plot H.2: HSDPA 1900 MHz Channel = 9262, Test Antenna Vertical)



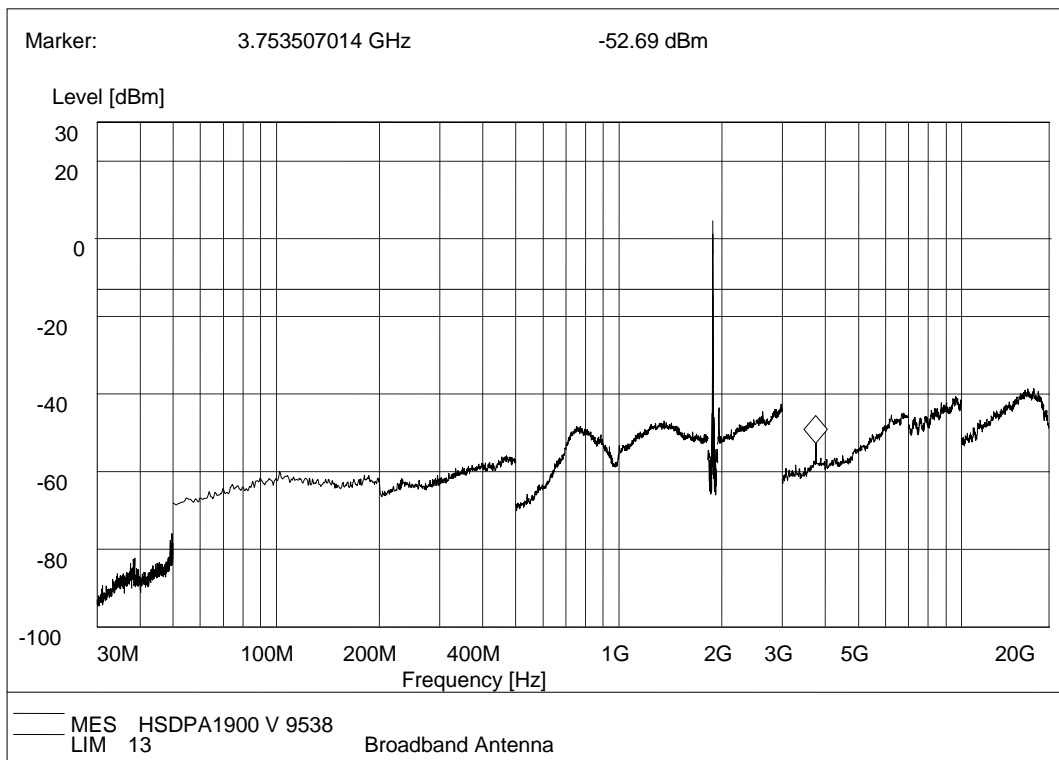
(Plot H.3: HSDPA 1900 MHz Channel = 9400, Test Antenna Horizontal)



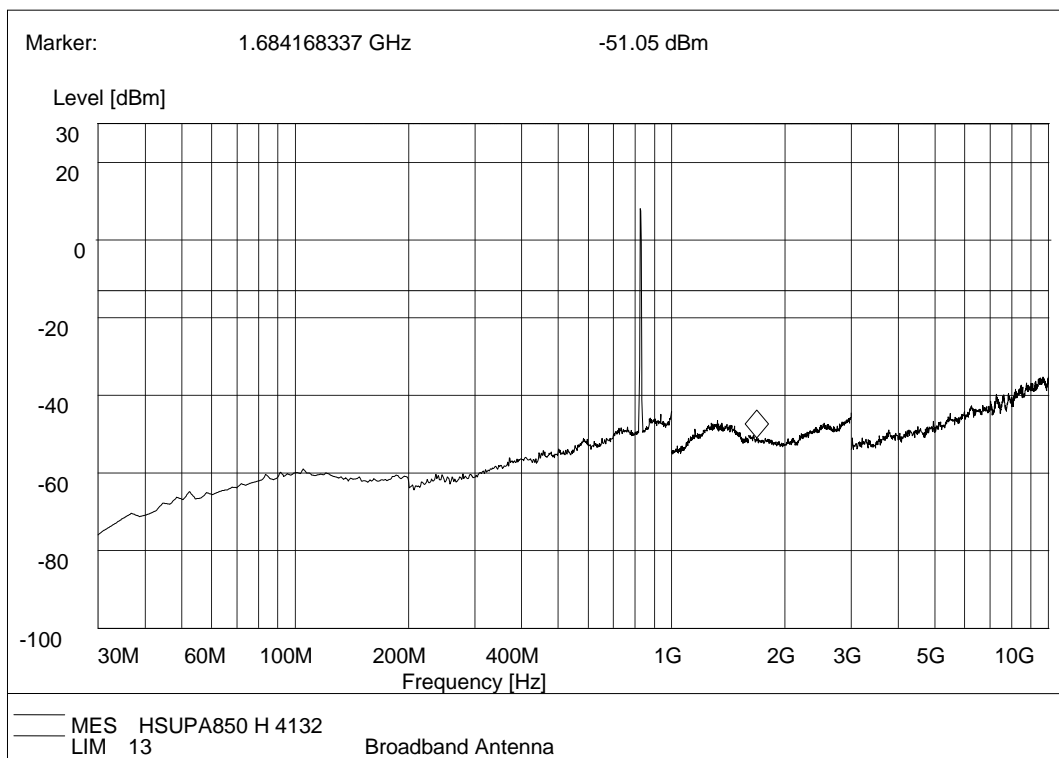
(Plot H.4: HSDPA 1900 MHz Channel = 9400, Test Antenna Vertical)



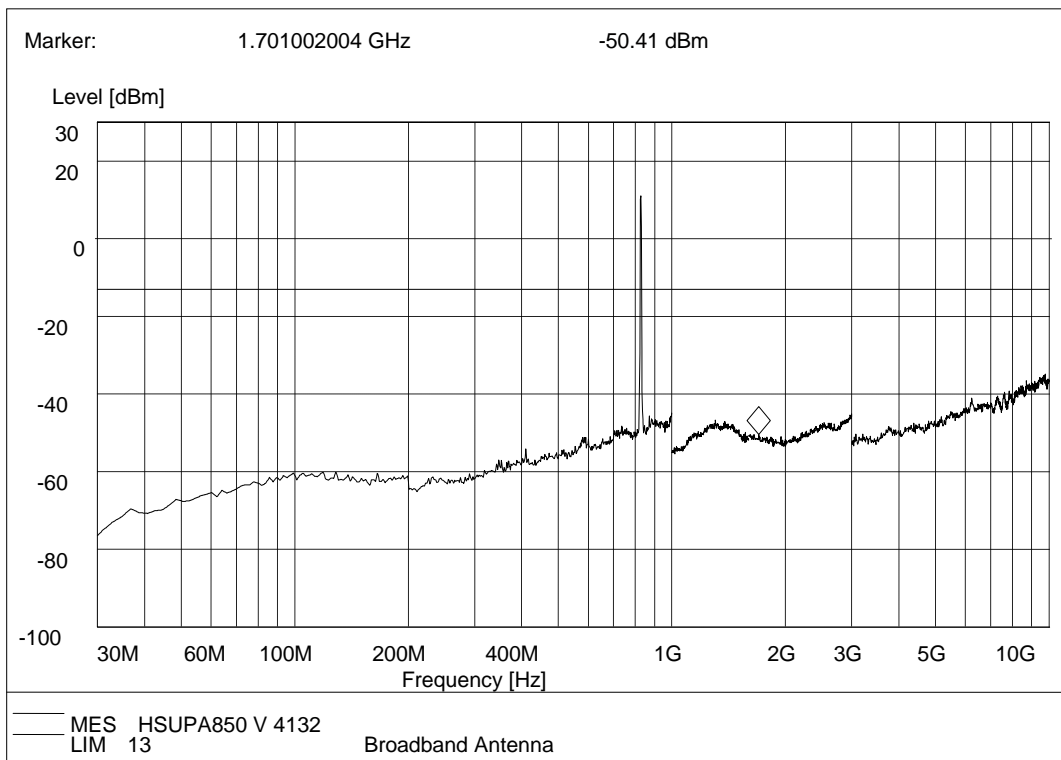
(Plot H.5: HSDPA 1900 MHz Channel = 9538, Test Antenna Horizontal)



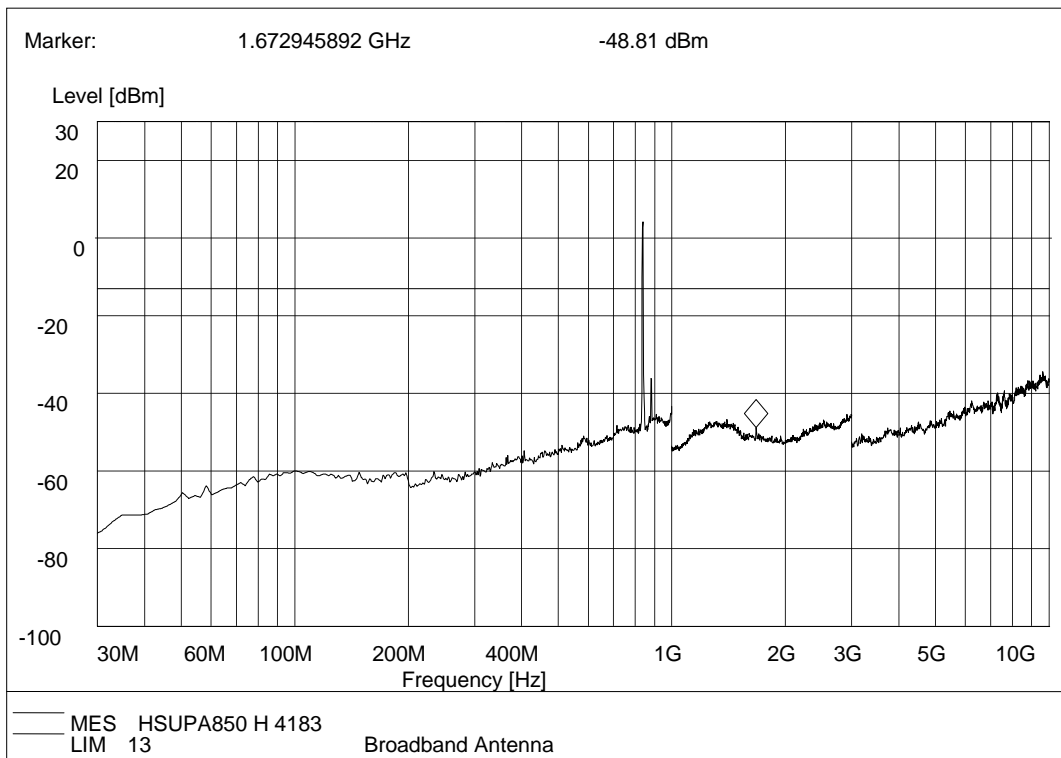
(Plot H.6: HSDPA 1900 MHz Channel = 9538, Test Antenna Vertical)



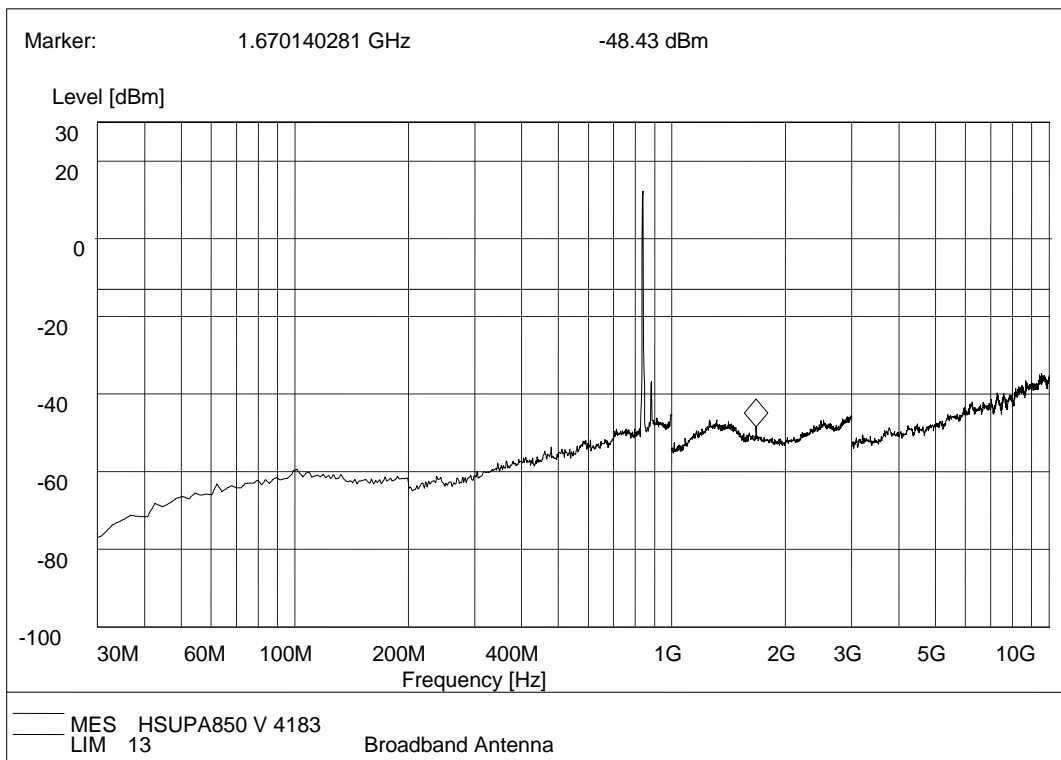
(Plot I.1: HSUPA 850MHz Channel = 4132, Test Antenna Horizontal)



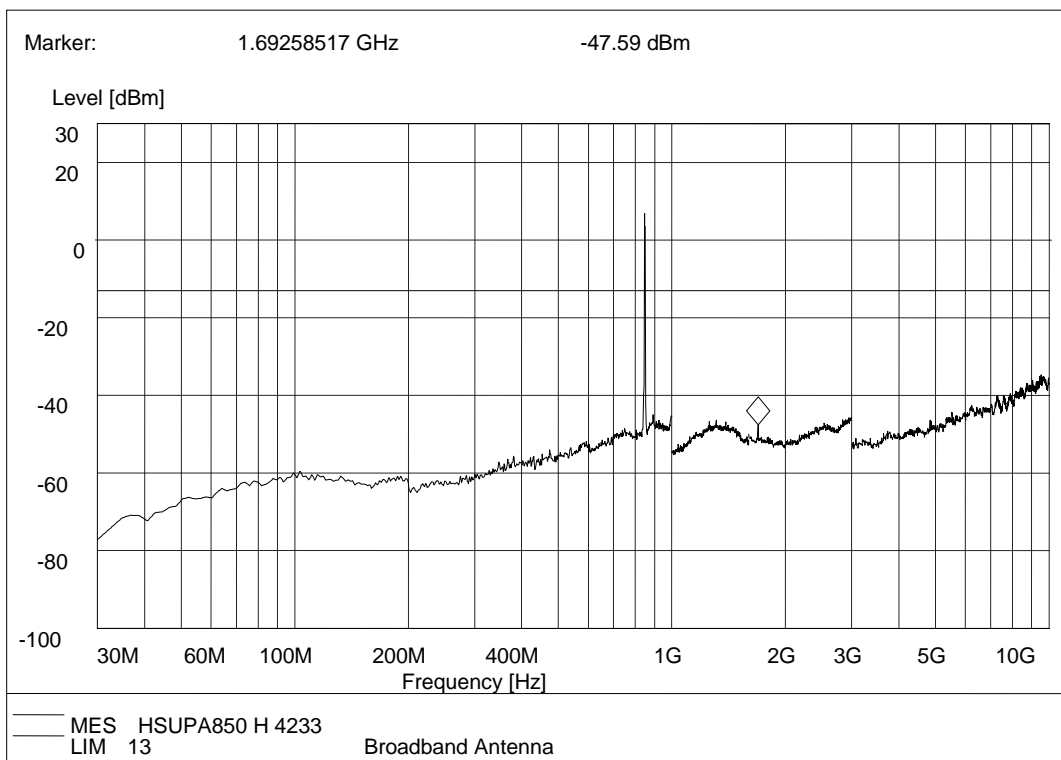
(Plot I.2: HSUPA 850 MHz Channel = 4132, Test Antenna Vertical)



(Plot I.3: HSUPA 850MHz Channel = 4183, Test Antenna Horizontal)

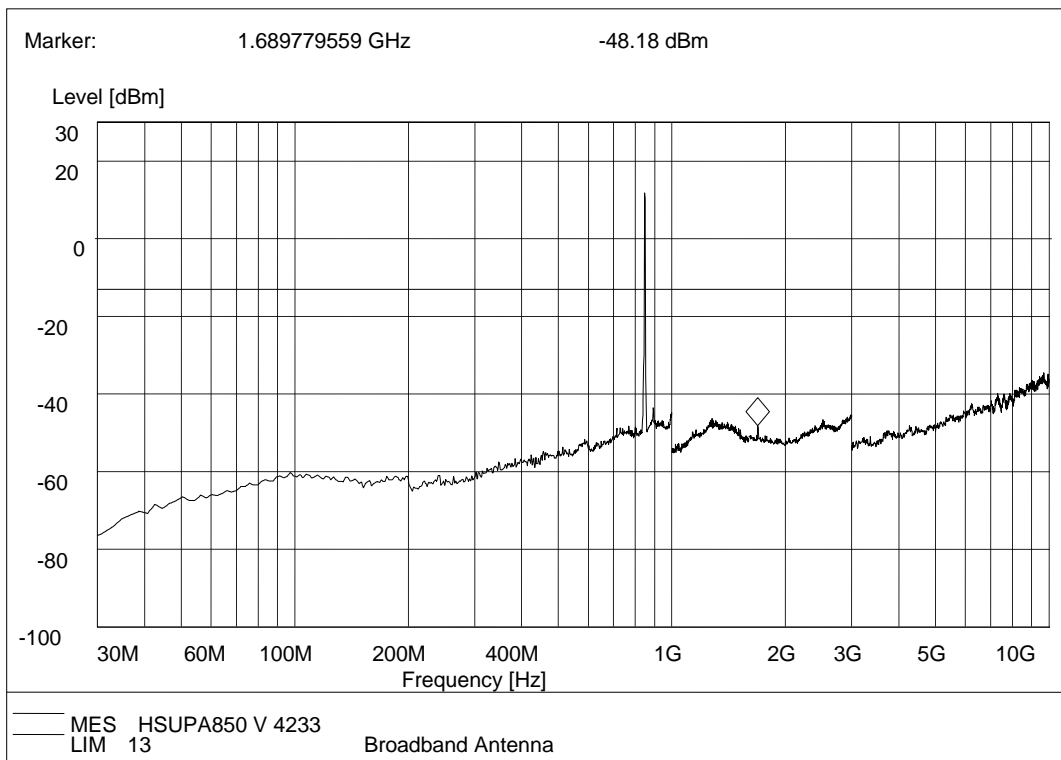


(Plot I.4: HSUPA 850MHz Channel = 4183, Test Antenna Vertical)

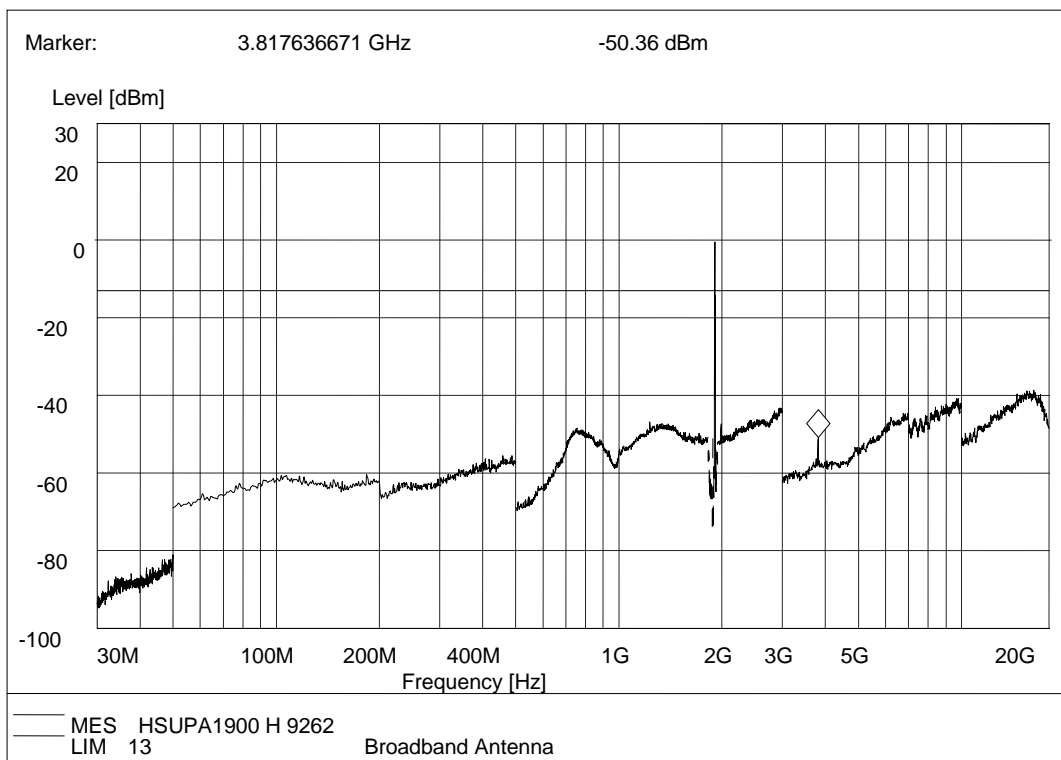


(Plot I.5: HSUPA 850MHz Channel = 4233, Test Antenna Horizontal)

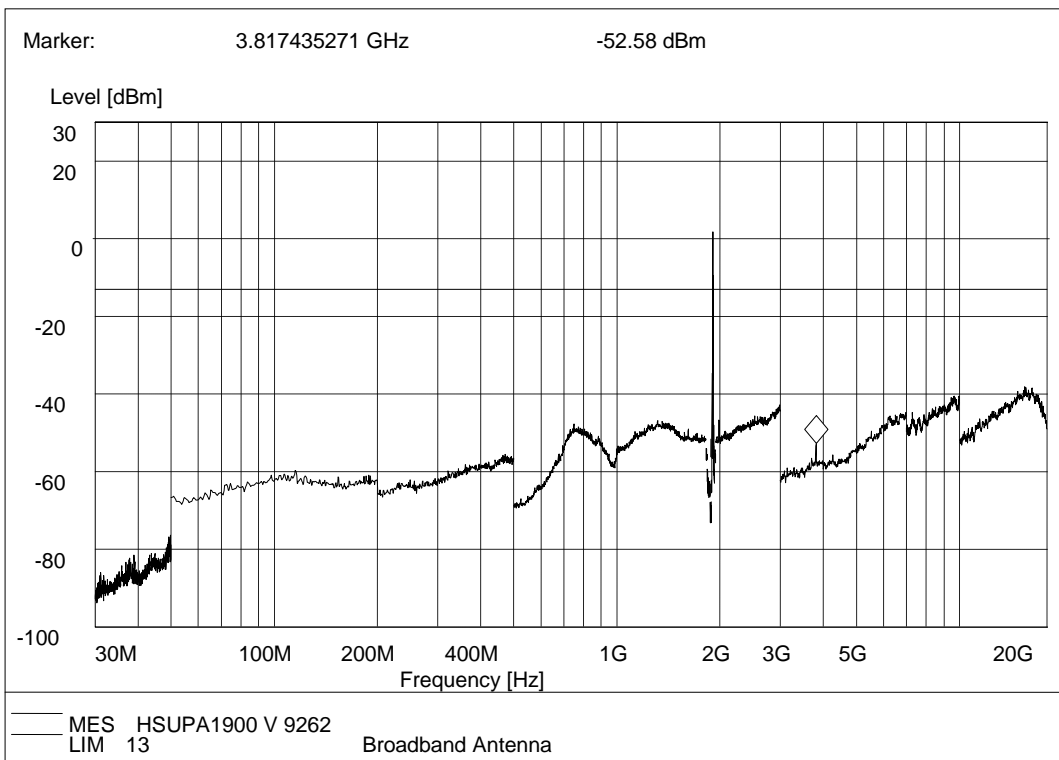




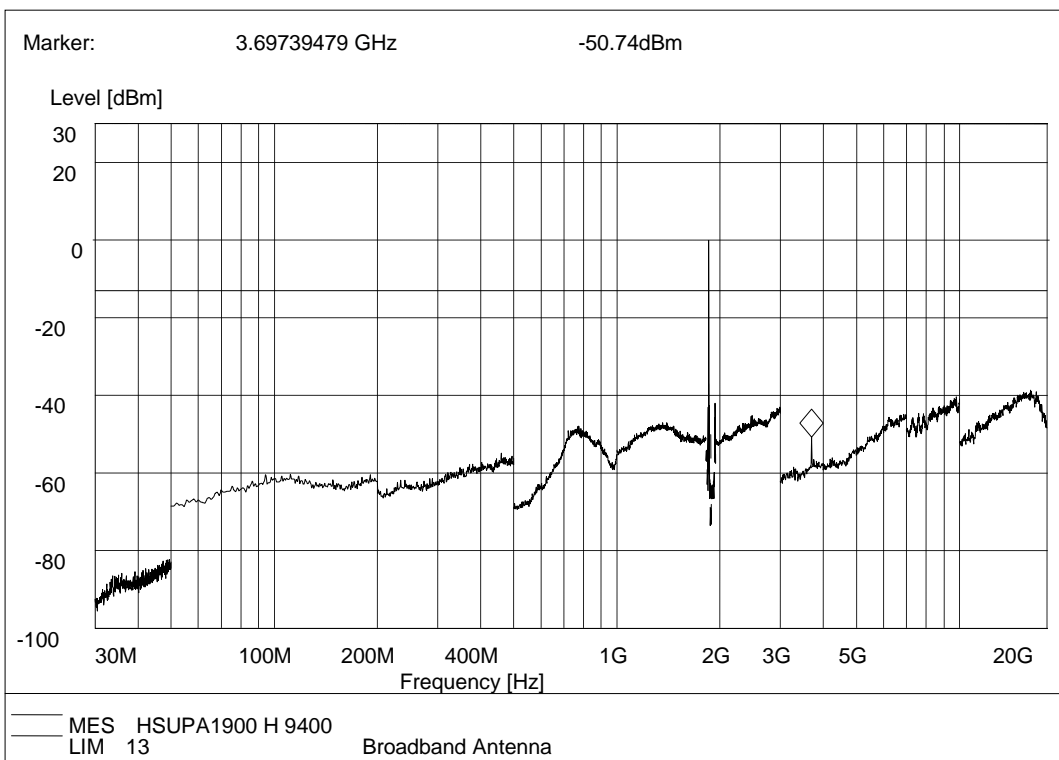
(Plot I.6: HSUPA 850MHz Channel = 4233, Test Antenna Vertical)



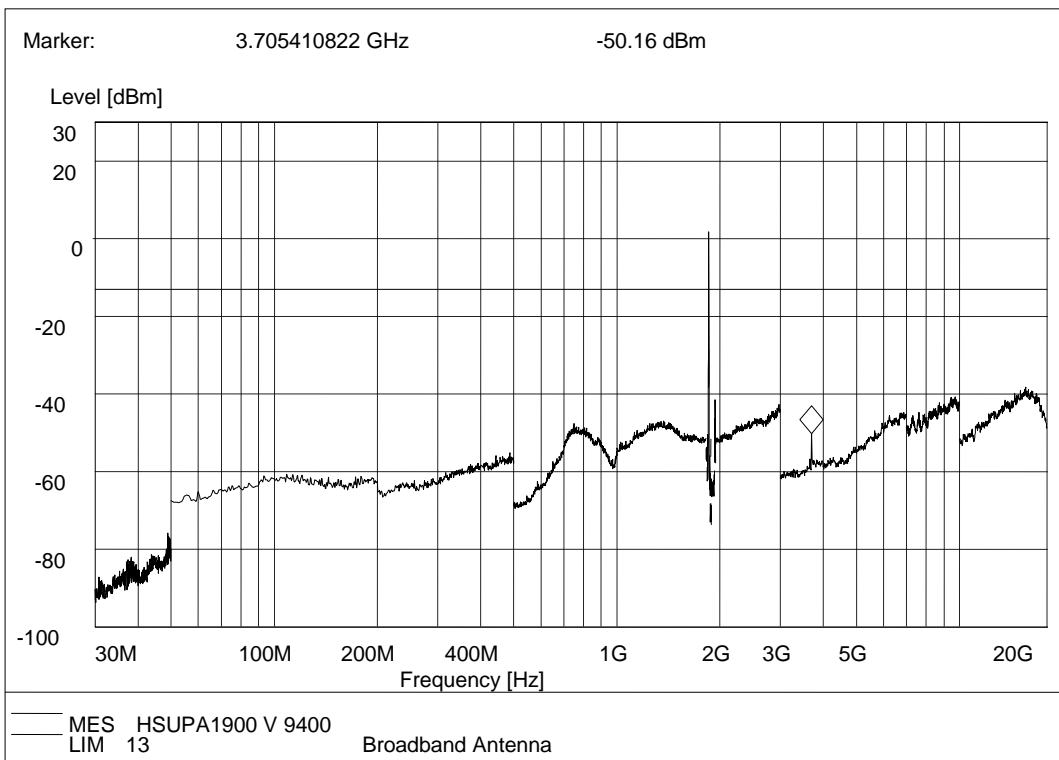
(Plot J.1: HSUPA 1900 MHz Channel = 9262, Test Antenna Horizontal)



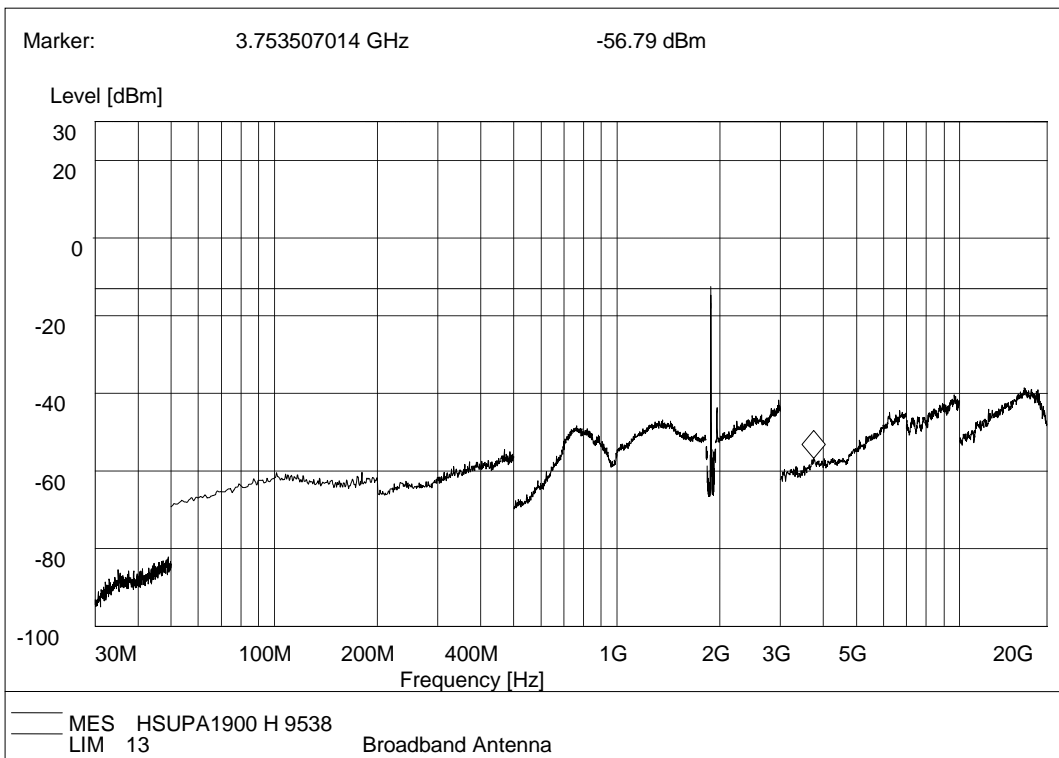
(Plot J.2: HSUPA 1900 MHz Channel = 9262, Test Antenna Vertical)



(Plot J.3: HSUPA 1900 MHz Channel = 9400, Test Antenna Horizontal)



(Plot J.4: HSUPA 1900 MHz Channel = 9400, Test Antenna Vertical)



(Plot J.5: HSUPA 1900 MHz Channel = 9538, Test Antenna Horizontal)