



REPORT No.: SZ16010163W04

# FCC RF TEST REPORT

**APPLICANT** : ZTE Corporation

**PRODUCT NAME** : LTE Digital Mobile Handset

**MODEL NAME** : ZTE Blade A511, Blade A511

**TRADE NAME** : ZTE

**BRAND NAME** : ZTE

**FCC ID** : SRQ-A511

**STANDARD(S)** : 47 CFR Part 22 Subpart H  
47 CFR Part 24 Subpart E

**ISSUE DATE** : 2016-04-01



**SHENZHEN MORLAB COMMUNICATIONS TECHNOLOGY Co., Ltd.**

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| Change History |            |                   |
|----------------|------------|-------------------|
| Issue          | Date       | Reason for change |
| 1.0            | 2016-04-01 | First edition     |
|                |            |                   |



REPORT No.: SZ16010163W04

**TEST REPORT DECLARATION**

|                      |                                                                                                         |
|----------------------|---------------------------------------------------------------------------------------------------------|
| Applicant            | ZTE Corporation                                                                                         |
| Applicant Address    | ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, P.R. China |
| Manufacturer         | ZTE Corporation                                                                                         |
| Manufacturer Address | ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, P.R. China |
| Product Name         | LTE Digital Mobile Handset                                                                              |
| Model Name           | ZTE Blade A511, Blade A511                                                                              |
| Brand Name           | ZTE                                                                                                     |
| HW Version           | V1AMB_A                                                                                                 |
| SW Version           | A476_TELCEL_MxCommon_1.00                                                                               |
| Test Standards       | 47 CFR Part 22 Subpart H<br>47 CFR Part 24 Subpart E                                                    |
| Test Date            | 2016-03-10 to 2016-03-21                                                                                |
| Test Result          | PASS                                                                                                    |

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Zou Jian

Reviewed by : Qiu Xiaojun  
Qiu Xiaojun

Approved by : Peng Huarui  
Peng Huarui





## 1. GENERAL INFORMATION

### 1.1 EUT Description

EUT Type .....: LTE Digital Mobile Handset  
Serial No. ....: (n.a, marked #1 by test site)  
Hardware Version .....: V1AMB\_A  
Software Version .....: A476\_TELCEL\_MxCommon\_1.00  
Applicant .....: ZTE Corporation  
ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan  
District, Shenzhen, Guangdong, P.R. China  
Manufacturer .....: ZTE Corporation  
ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan  
District, Shenzhen, Guangdong, P.R. China  
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  
EDGE Mode with 8PSK Modulation  
WCDMA Mode with QPSK Modulation  
HSDPA Mode with QPSK Modulation  
HSUPA Mode with QPSK Modulation  
HSPA+ Mode with QPSK Modulation  
Multislot Class .....: GPRS: Multislot Class12; EGPRS: Multislot Class12  
Antenna Type .....: PIFA Antenna  
Emission Designators .....: GSM 850:252KGXW, GSM 1900:252KGXW  
EGPRS850:254KG7W, EGPRS1900:254KG7W,  
WCDMA 850:4M23F9W, WCDMA1900:4M21F9W

*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), 4175(835MHz) 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.

## 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.  | 24.232(d)                      | Peak to average ratio                 | PASS   |
| 2   | 2.1049,22.917, 24.238,         | 99% Occupied Bandwidth                | PASS   |
| 3   | 2.1055,22.355, 24.235          | Frequency Stability                   | PASS   |
| 4   | 2.1051,2.1057, 22.917, 24.238, | Conducted Out of Band Emissions       | PASS   |
| 5   | 2.1051, 2.1057, 22.917, 24.238 | Band Edge                             | PASS   |
| 6   | 22.913, 24.232                 | Transmitter Radiated Power (EIPR/ERP) | PASS   |
| 7   | 2.1053, 2.1057, 22.917, 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 Facilities

Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L3572.

All measurement facilities used to collect the measurement data are located at FL.1, Building A, FeiYang Science Park, No.8 LongChang Road,Block 67, BaoAn District, ShenZhen, GuangDong Province,P. R. China 518101. The test site is constructed in conformance with the requirements of ANSI C63.7-2009, ANSI C63.4-2014 and CISPR Publication 22:2010; the FCC registration number is 695796.

### 1.3.2 Test Environment Conditions

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

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



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

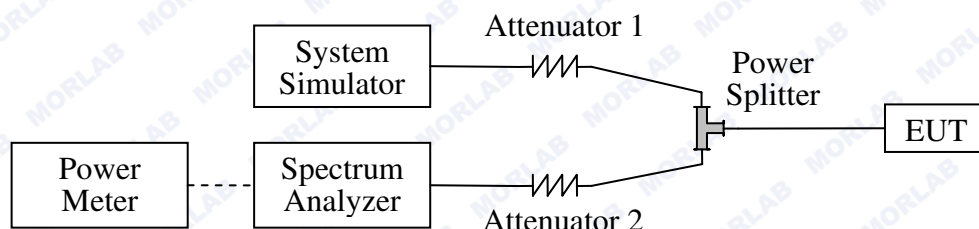
### 2.1 Conducted RF Output Power

#### 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

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.

The Power Meter was just used for the Conducted RF Output Power test of WCDMA Model.

Equipments List:

| Description       | Manufacturer | Model  | Serial No. | Cal. Date  | Cal. Due   |
|-------------------|--------------|--------|------------|------------|------------|
| System Simulator  | Agilent      | E5515C | GB43130131 | 2015.03.26 | 2016.03.25 |
| Spectrum Analyzer | Agilent      | E7405A | US44210471 | 2015.03.26 | 2016.03.25 |
| Power Meter       | Agilent      | E4418B | GB43318055 | 2015.03.26 | 2016.03.25 |
| Power Sensor      | Agilent      | 8482A  | MY41091706 | 2015.03.26 | 2016.03.25 |
| Power Splitter    | Weinschel    | 1506A  | NW521      | 2015.03.26 | 2016.03.25 |
| Attenuator 1      | Resnet       | 20dB   | (n.a.)     | 2015.03.26 | 2016.03.25 |
| Attenuator 2      | Resnet       | 3dB    | (n.a.)     | 2015.03.26 | 2016.03.25 |





### 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.

GSM Model Test Verdict:

| Band             | Channel | Frequency (MHz) | Measured Output Power |                                 | Limit | Verdict |
|------------------|---------|-----------------|-----------------------|---------------------------------|-------|---------|
|                  |         |                 | dBm                   | Refer to Plot                   | dBm   |         |
| GSM<br>850MHz    | 128     | 824.2           | 33.07                 | Plot A1 to A3                   | 35    | PASS    |
|                  | 190     | 836.6           | 33.07                 |                                 |       | PASS    |
|                  | 251     | 848.8           | 33.00                 |                                 |       | PASS    |
| GSM<br>1900MHz   | 512     | 1850.2          | 29.64                 | Plot B1 to B3                   | 32    | PASS    |
|                  | 661     | 1880.0          | 29.62                 |                                 |       | PASS    |
|                  | 810     | 1909.8          | 29.91                 |                                 |       | PASS    |
| GPRS<br>850MHz   | 128     | 824.2           | 32.20                 | Plot C1 to C3 <sup>Note 1</sup> | 35    | PASS    |
|                  | 190     | 836.6           | 32.32                 |                                 |       | PASS    |
|                  | 251     | 848.8           | 32.28                 |                                 |       | PASS    |
| GPRS<br>1900MHz  | 512     | 1850.2          | 28.68                 | Plot D1 to D3 <sup>Note 1</sup> | 32    | PASS    |
|                  | 661     | 1880.0          | 28.64                 |                                 |       | PASS    |
|                  | 810     | 1909.8          | 28.95                 |                                 |       | PASS    |
| EGPRS<br>850MHz  | 128     | 824.2           | 29.10                 | Plot E1 to E3 <sup>Note 1</sup> | 35    | PASS    |
|                  | 190     | 836.6           | 29.28                 |                                 |       | PASS    |
|                  | 251     | 848.8           | 29.30                 |                                 |       | PASS    |
| EGPRS<br>1900MHz | 512     | 1850.2          | 28.33                 | Plot F1 to F3 <sup>Note 1</sup> | 32    | PASS    |
|                  | 661     | 1880.0          | 28.21                 |                                 |       | PASS    |
|                  | 810     | 1909.8          | 28.54                 |                                 |       | PASS    |

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

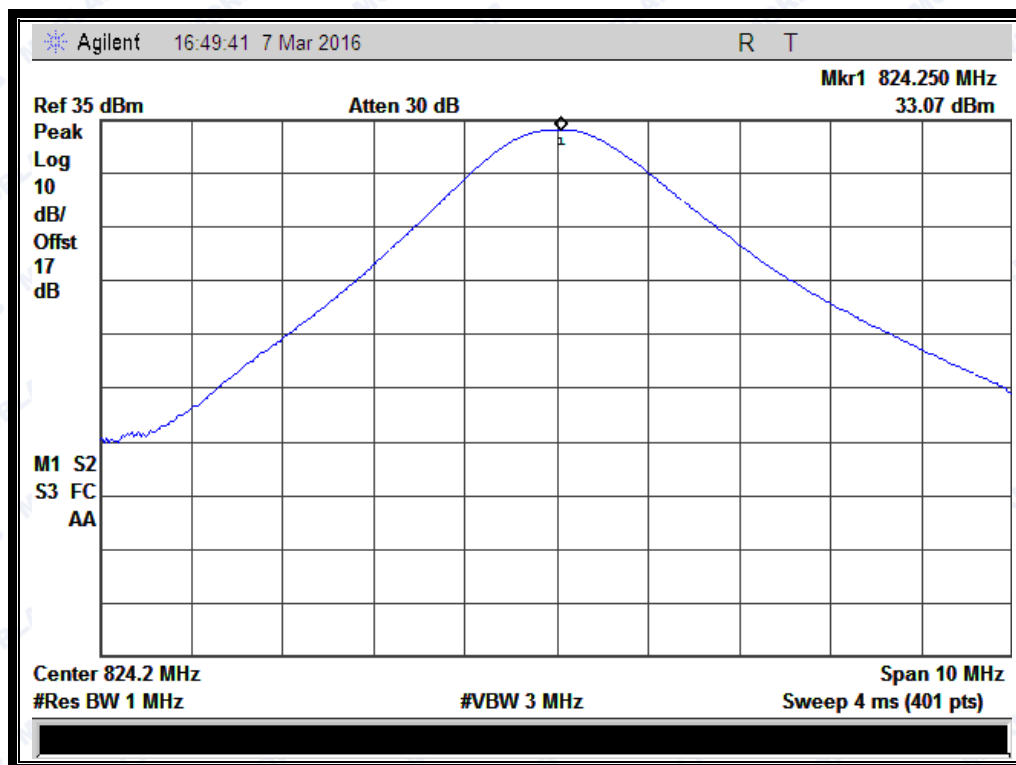


## WCDMA Model Test Verdict:

| Item       | band    | WCDMA 850 |       |       | WCDMA 1900 |       |       |
|------------|---------|-----------|-------|-------|------------|-------|-------|
|            | ARFCN   | 4132      | 4175  | 4233  | 9262       | 9400  | 9538  |
|            | subtest | dBm       |       |       | dBm        |       |       |
| 5.2(WCDMA) | non     | 23.15     | 23.33 | 23.47 | 22.52      | 22.86 | 22.28 |
| HSDPA      | 1       | 23.46     | 23.68 | 23.76 | 22.96      | 23.26 | 22.64 |
|            | 2       | 23.45     | 23.66 | 23.75 | 22.95      | 23.25 | 22.63 |
|            | 3       | 22.96     | 23.18 | 23.26 | 22.46      | 22.76 | 22.14 |
|            | 4       | 22.95     | 23.17 | 23.25 | 22.45      | 22.75 | 22.13 |
| HSUPA      | 1       | 23.53     | 23.71 | 23.79 | 22.97      | 23.31 | 22.77 |
|            | 2       | 21.52     | 21.70 | 21.80 | 20.95      | 21.29 | 20.75 |
|            | 3       | 22.51     | 22.69 | 22.78 | 21.96      | 22.31 | 21.73 |
|            | 4       | 21.50     | 21.68 | 21.76 | 20.93      | 21.30 | 20.76 |
|            | 5       | 23.52     | 23.70 | 23.78 | 22.92      | 23.28 | 22.73 |
| HSPA+      | 1       | 23.49     | 23.70 | 23.88 | 22.97      | 23.32 | 22.70 |

Note: The Conducted RF Output Power test of WCDMA /HSDPA /HSUPA /HSPA+ was tested by power meter.

## GSM Model Test Plots:

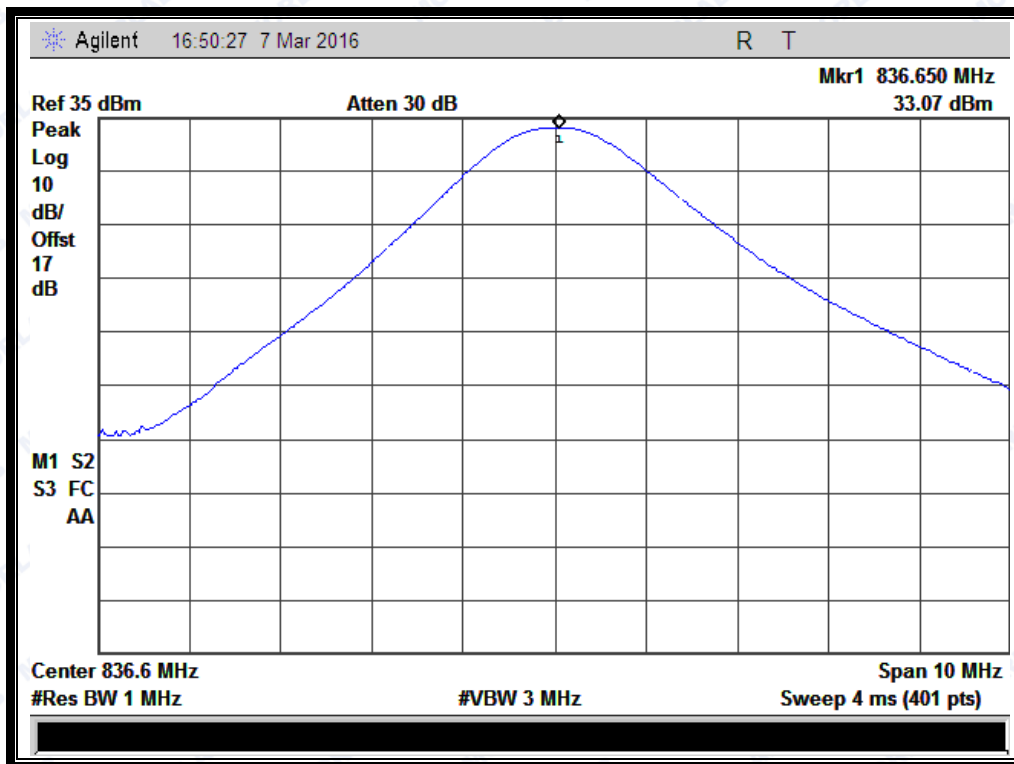


(Plot A1: GSM 850MHz Channel = 128)

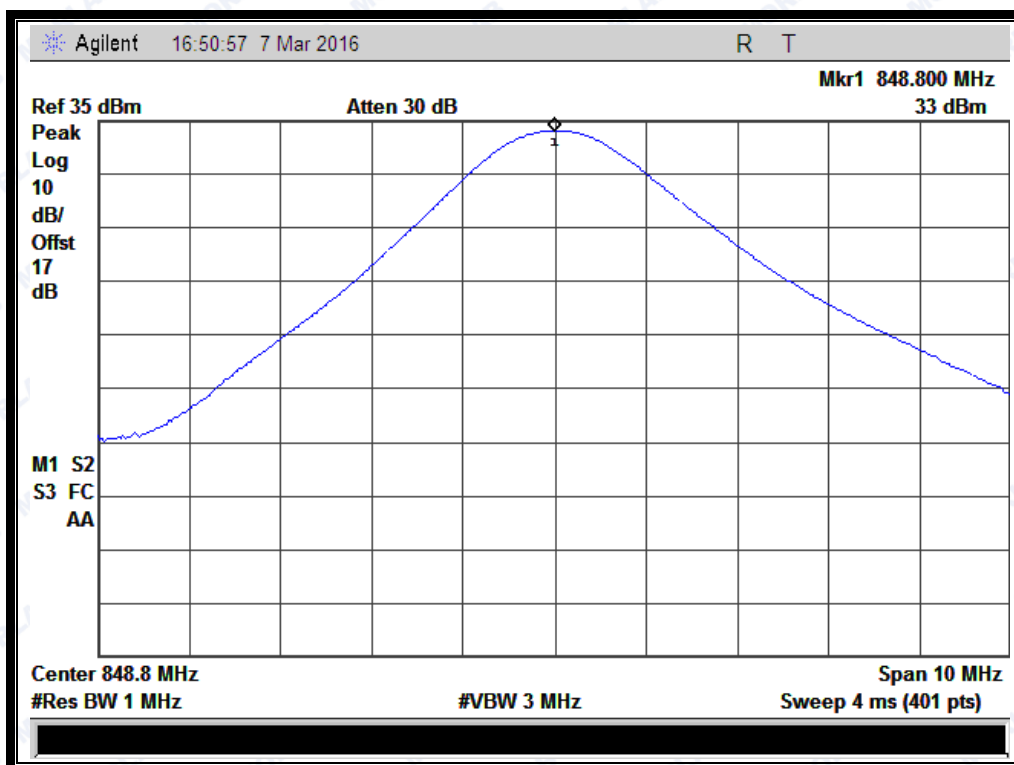




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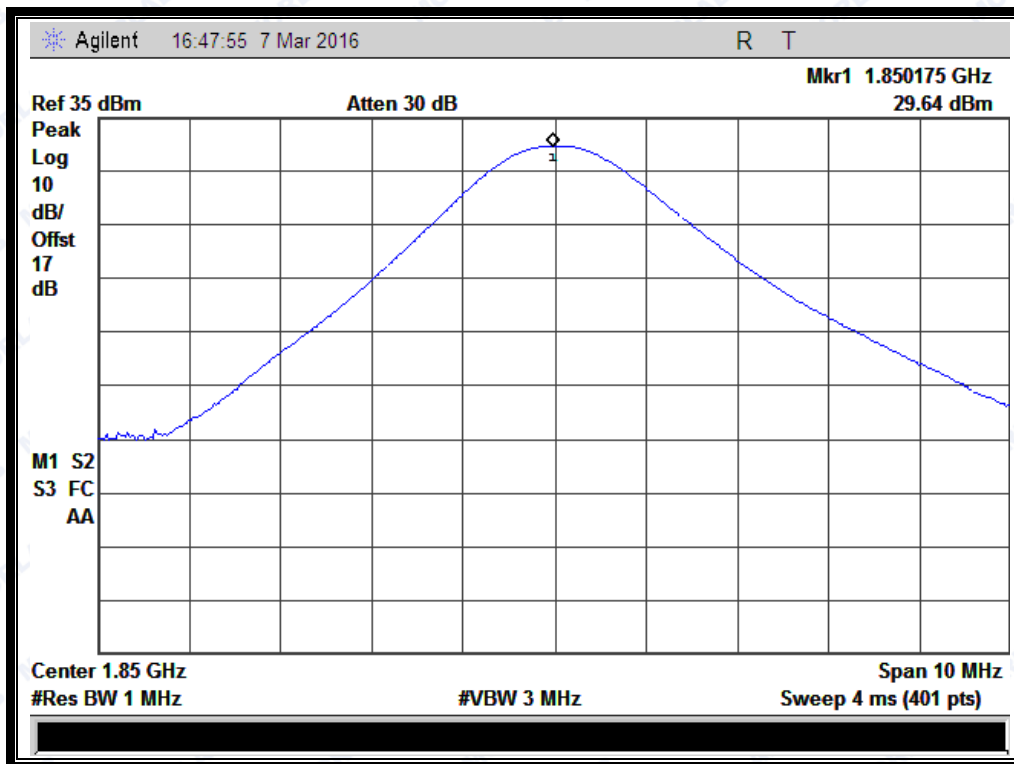
(Plot A2: GSM 850MHz Channel = 190)



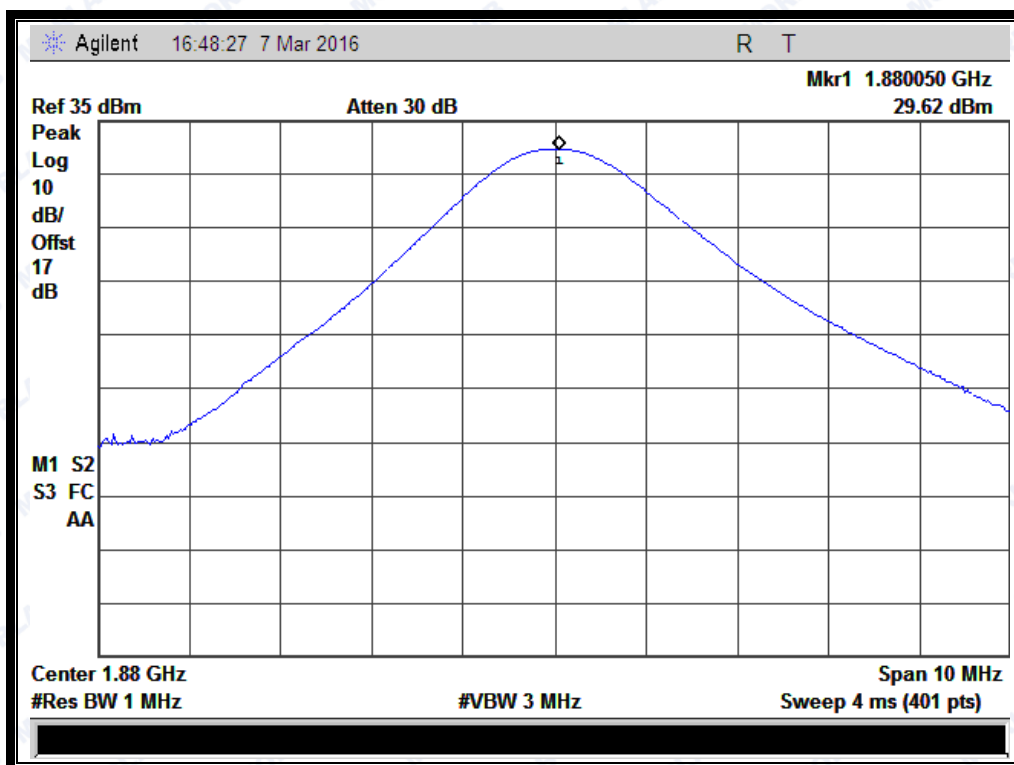
(Plot A3: GSM 850MHz Channel = 251)



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(Plot B1: GSM 1900MHz Channel = 512)

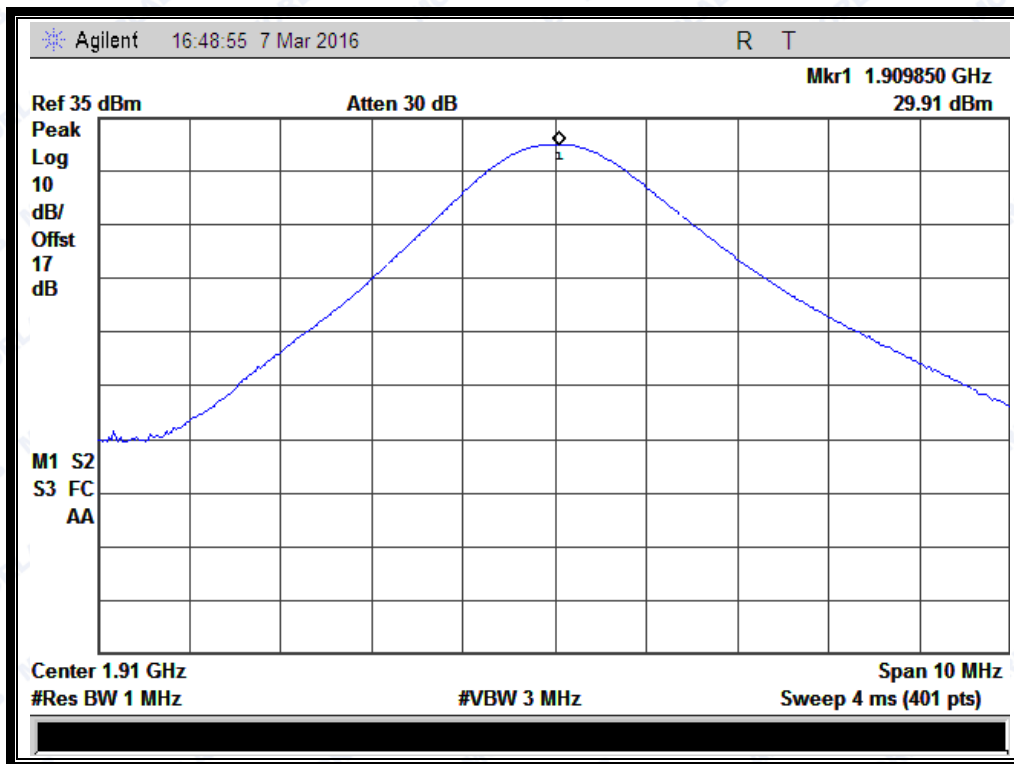


(Plot B2: GSM 1900MHz Channel = 661)

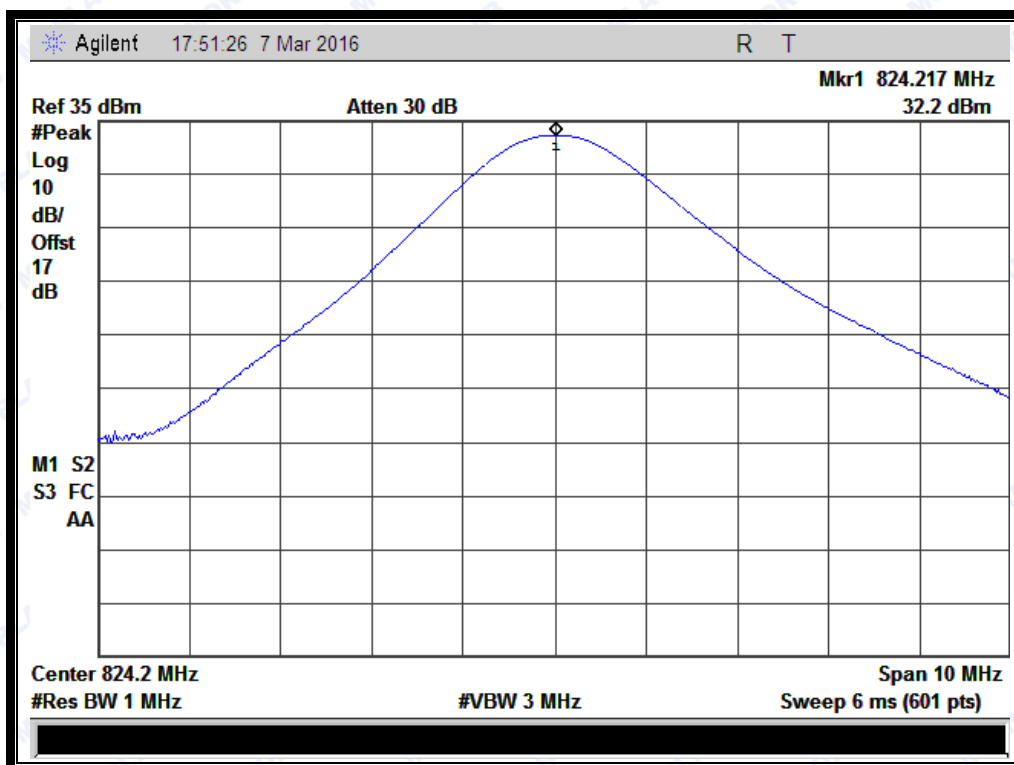




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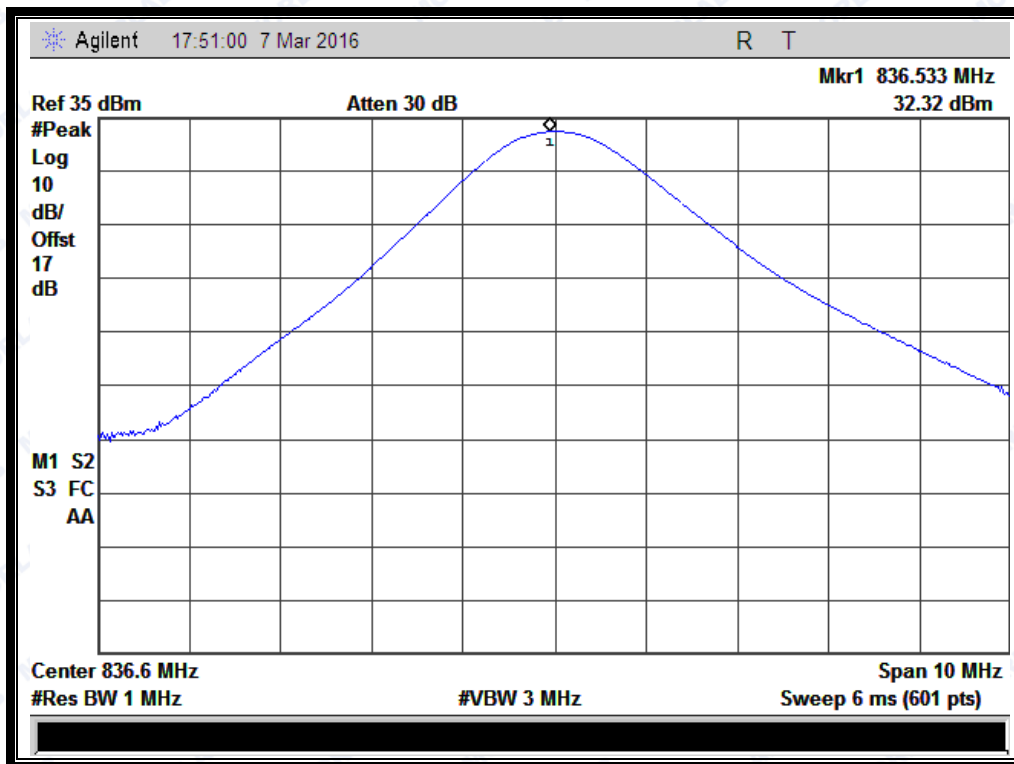
(Plot B3: GSM 1900Hz Channel = 810)



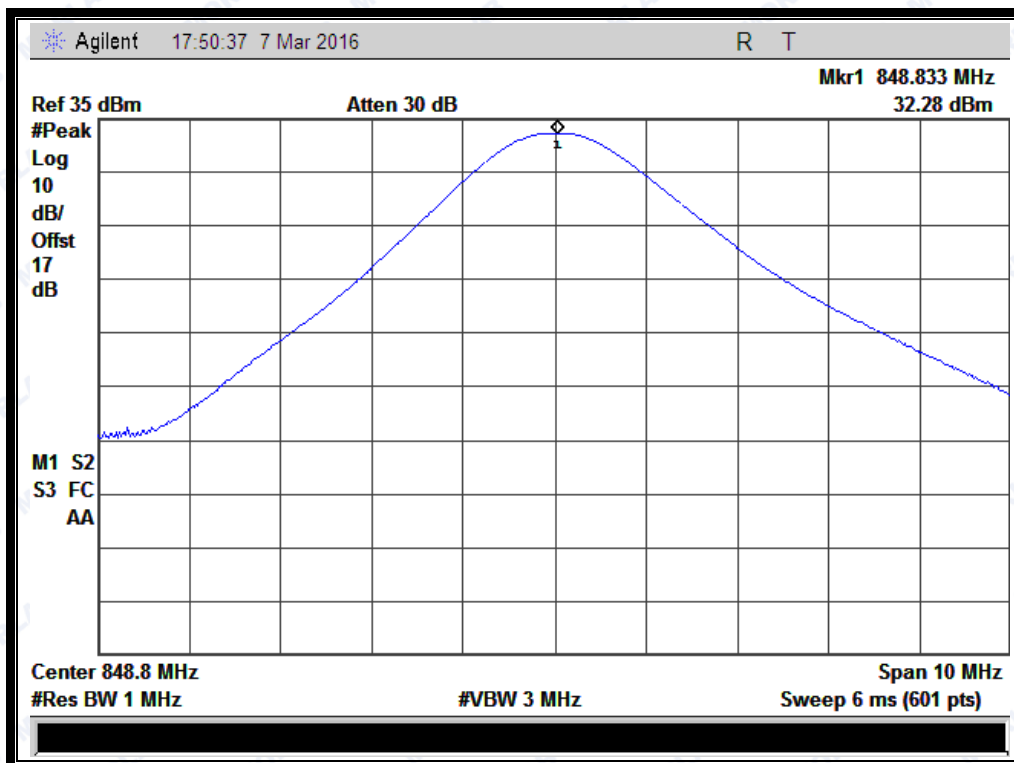
(Plot C1: GPRS 850MHz Channel = 128)



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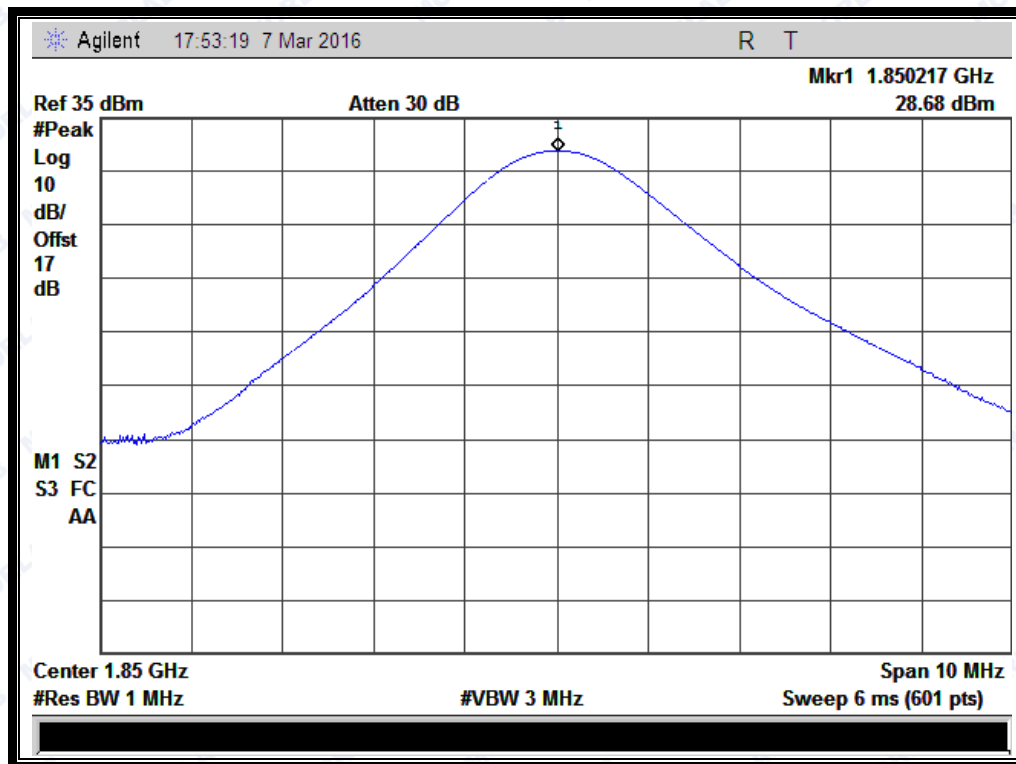
(Plot C2: GPRS 850MHz Channel = 190)



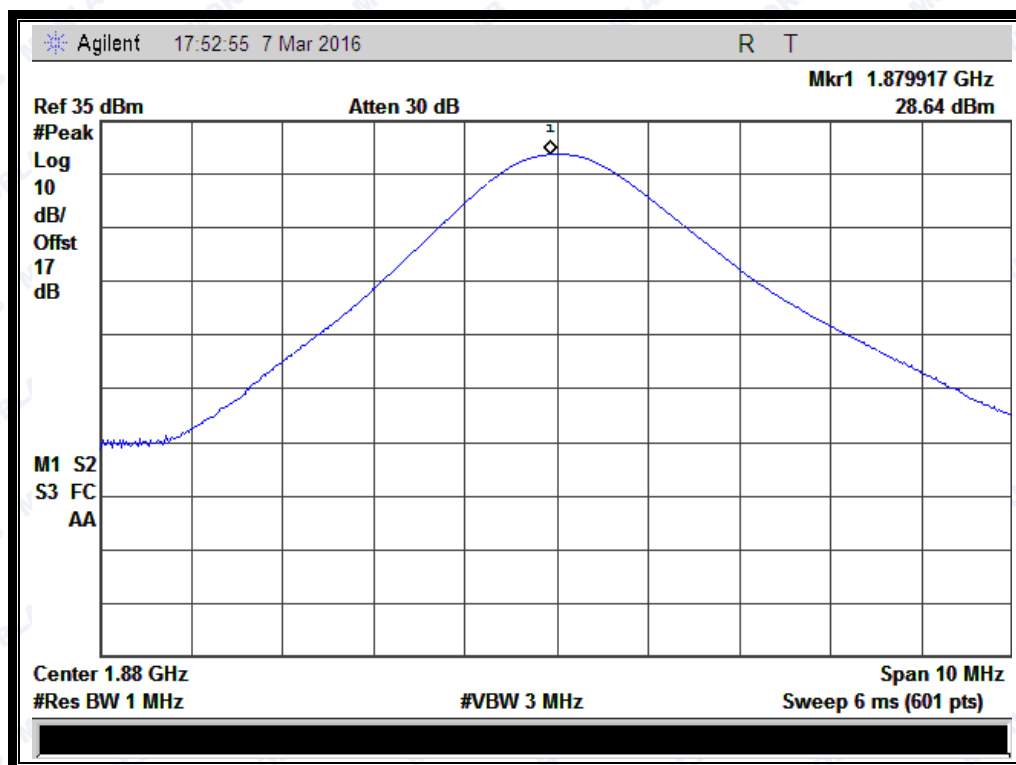
(Plot C3: GPRS 850MHz Channel = 251)



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(Plot D1: GPRS 1900MHz Channel = 512)

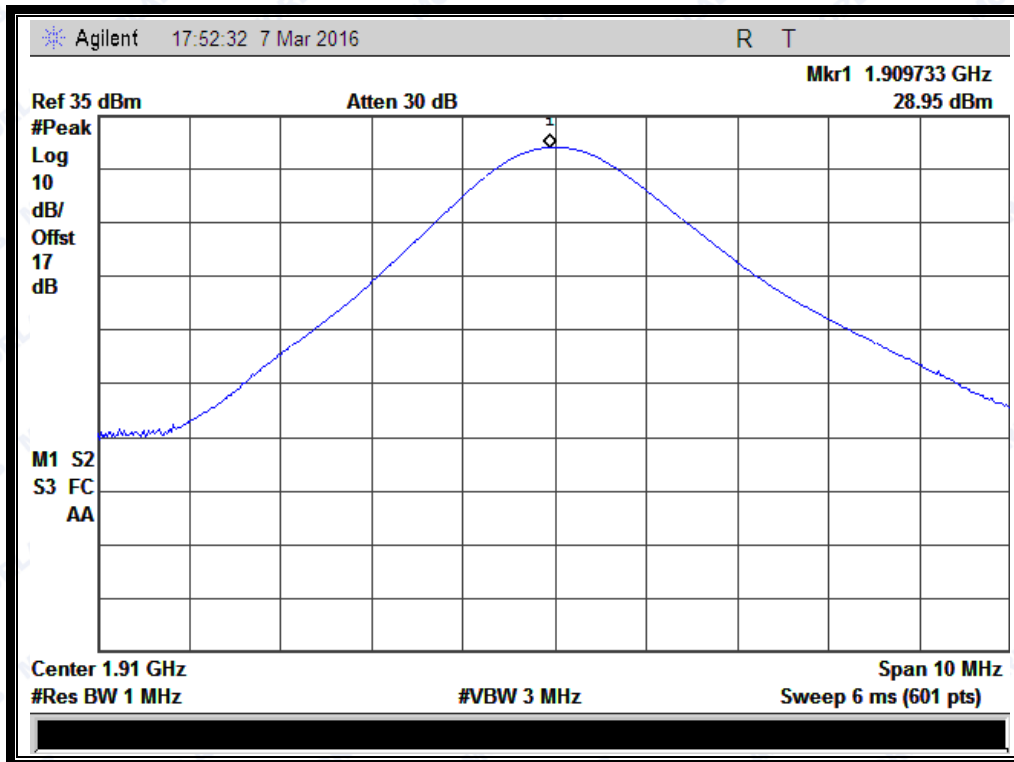


(Plot D2: GPRS 1900MHz Channel = 661)

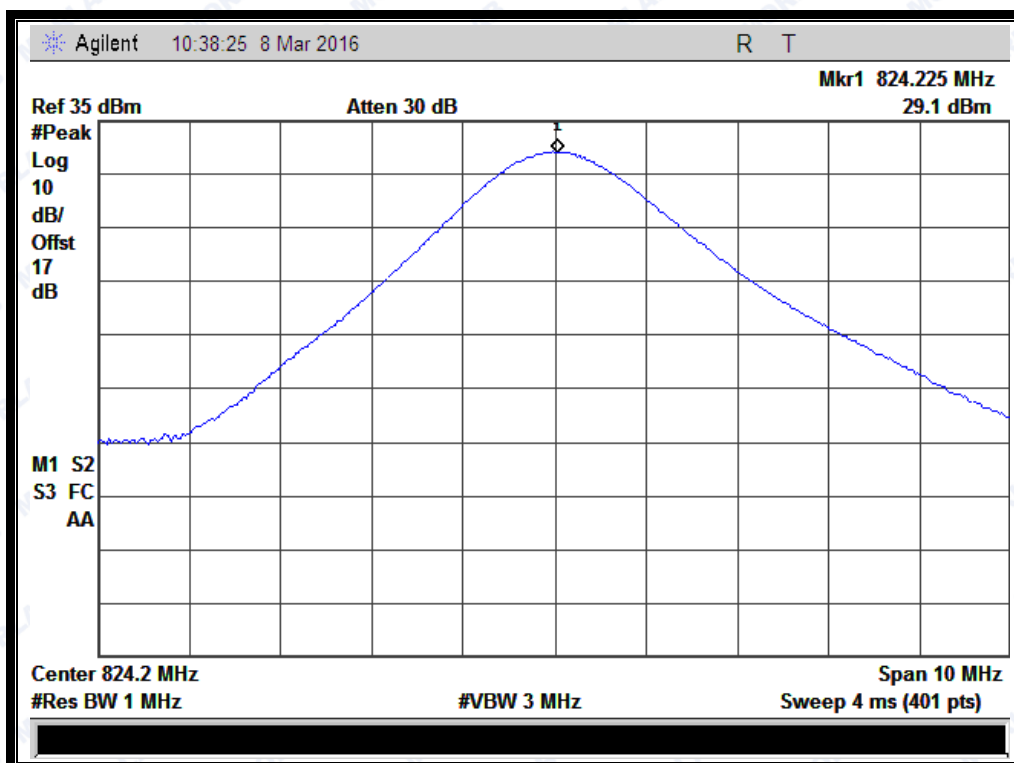




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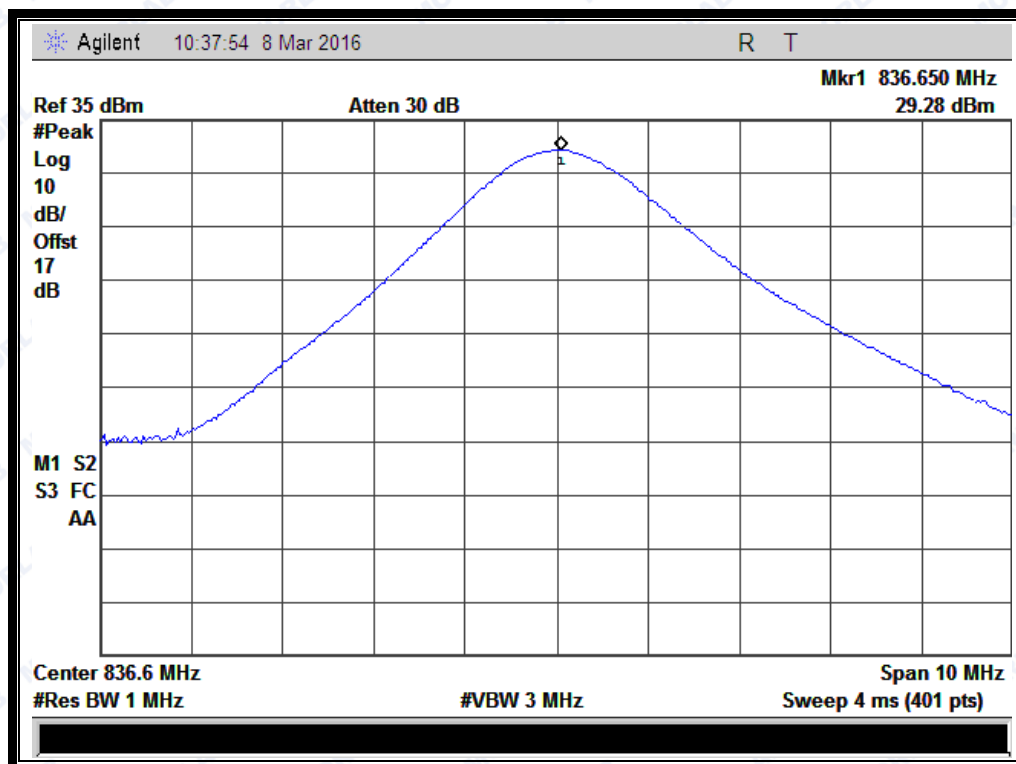
(Plot D3: GPRS 1900Hz Channel = 810)



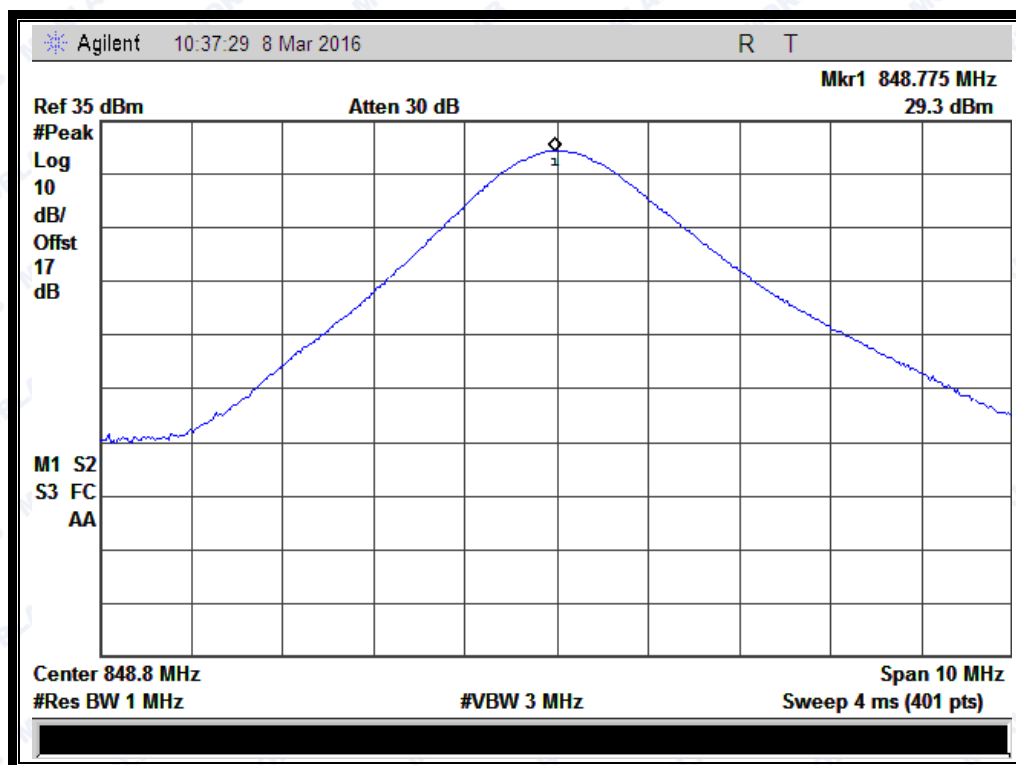
(Plot E1: EGPRS 850MHz Channel = 128)



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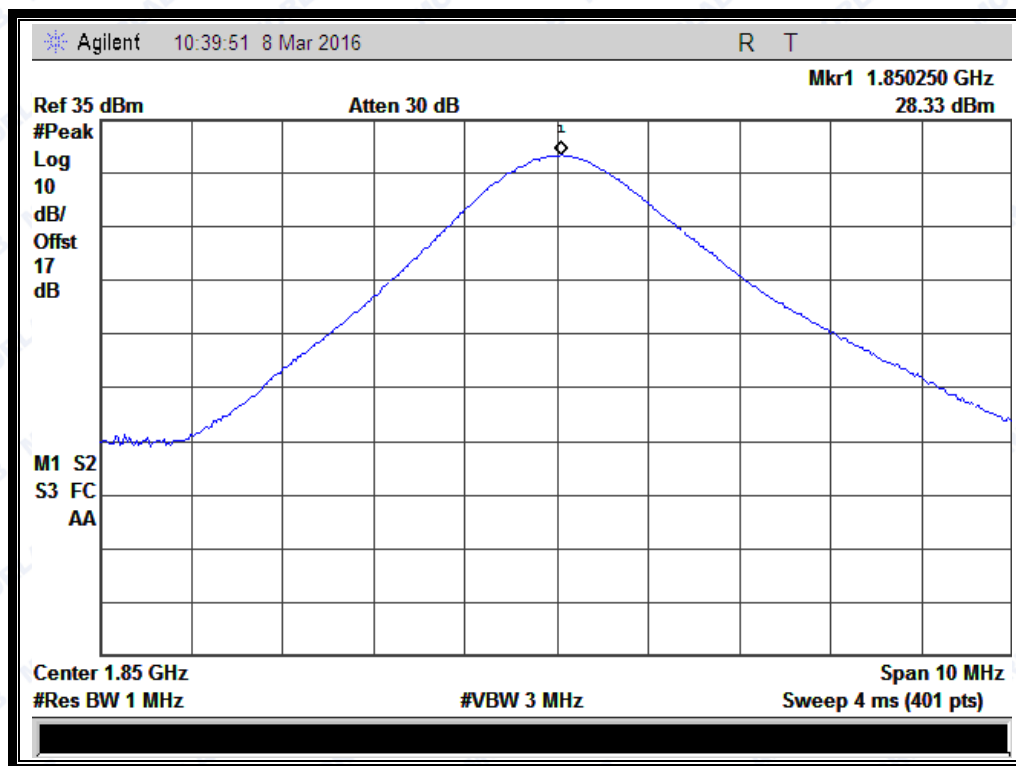
(Plot E2: EGPRS 850MHz Channel = 190)



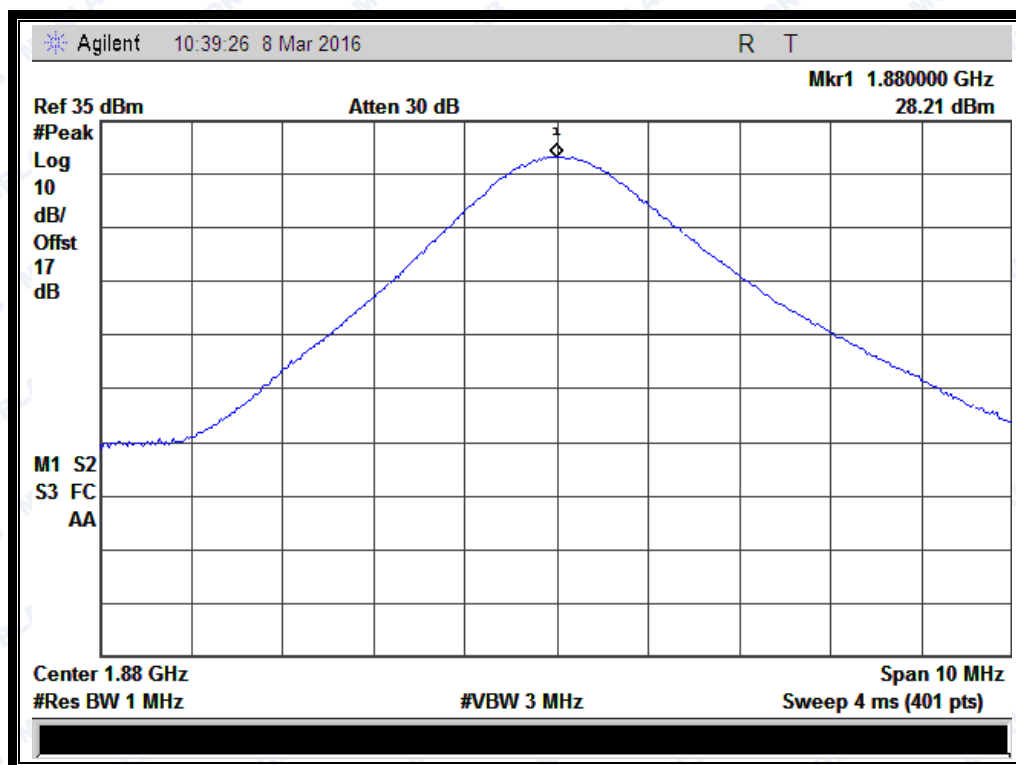
(Plot E3: EGPRS 850MHz Channel = 251)



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(Plot F1: EGPRS 1900MHz Channel = 512)

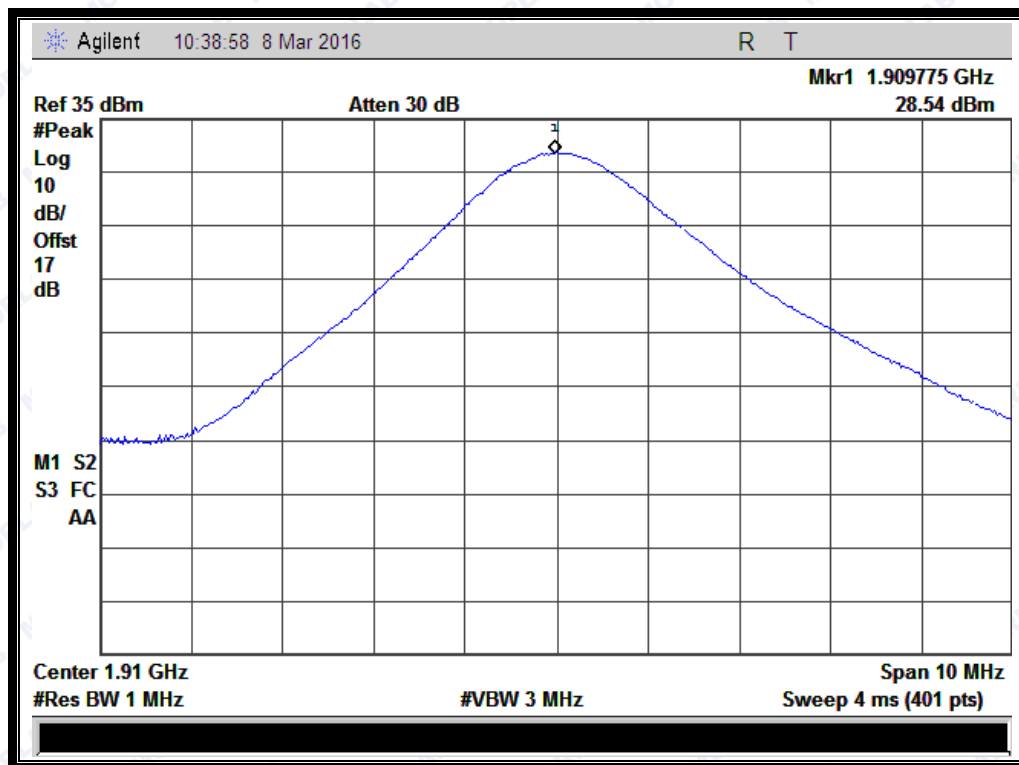


(Plot F2: EGPRS 1900MHz Channel = 661)





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(Plot F3: EGPRS 1900Hz 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/EGPRS operating mode:

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

B. For UMTS operating mode:

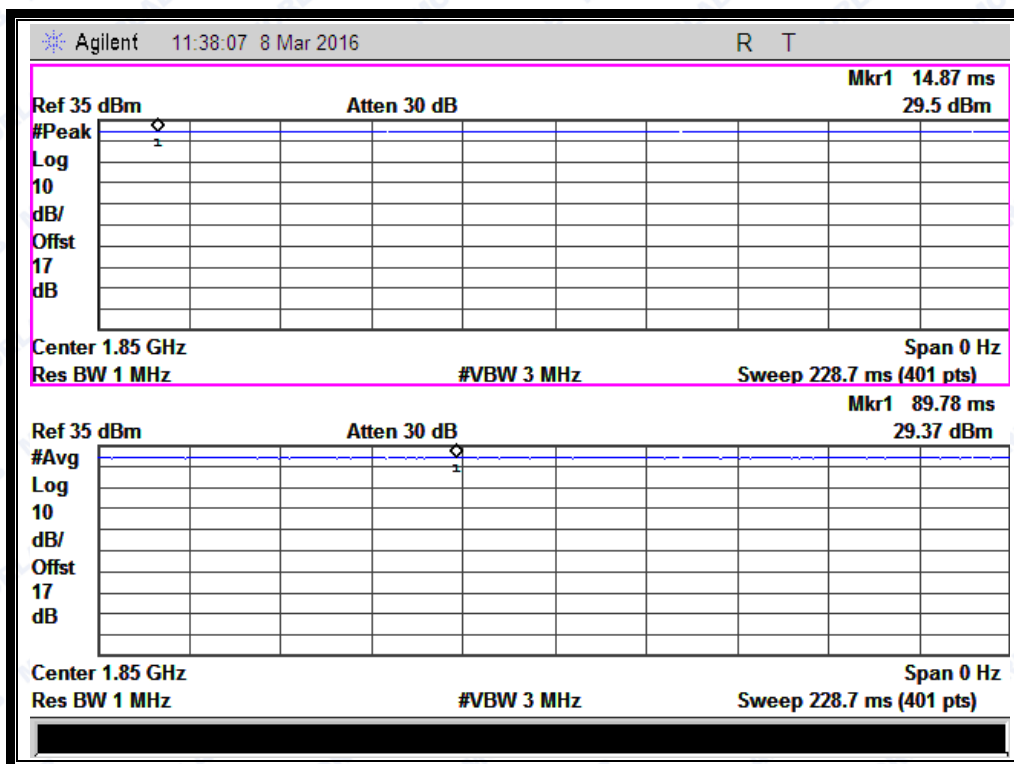
- Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
- The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1%.

Test Verdict:

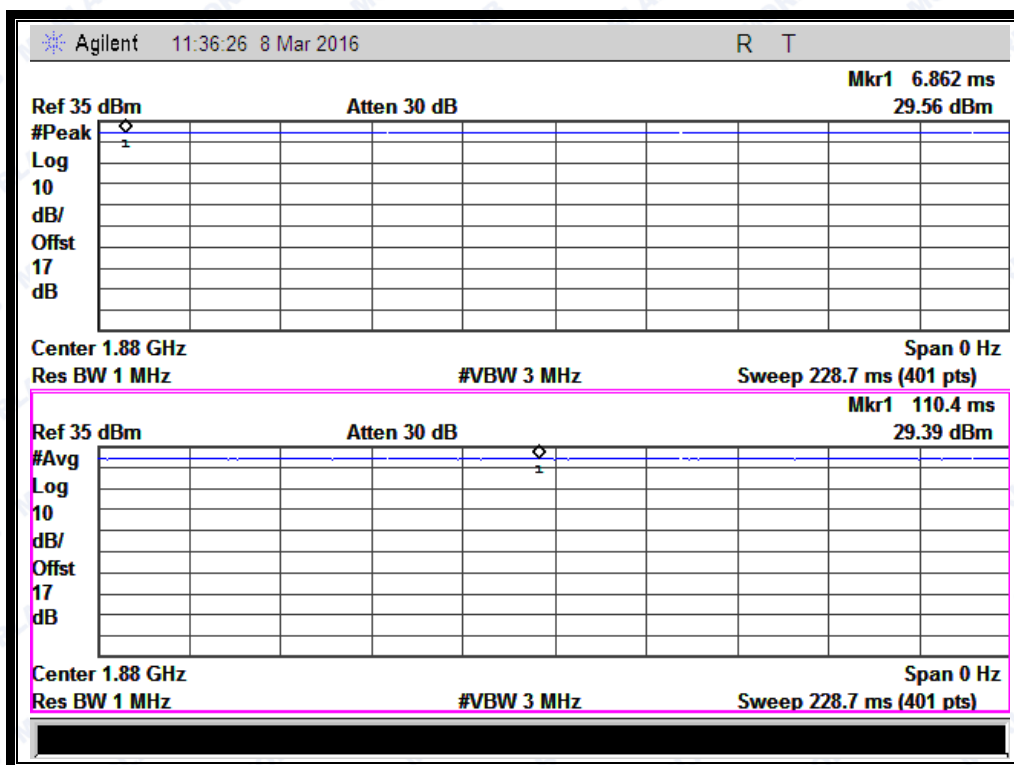
| Band             | Channel | Frequency<br>(MHz) | Peak to Average ratio |               | Limit | Verdict |
|------------------|---------|--------------------|-----------------------|---------------|-------|---------|
|                  |         |                    | dB                    | Refer to Plot | dB    |         |
| GSM<br>1900MHz   | 512     | 1850.2             | 0.13                  | Plot A1 to A3 | 13    | PASS    |
|                  | 661     | 1880.0             | 0.17                  |               |       | PASS    |
|                  | 810     | 1909.8             | 0.13                  |               |       | PASS    |
| EGPRS<br>1900MHz | 512     | 1850.2             | 2.08                  | Plot B1 to B3 | 13    | PASS    |
|                  | 661     | 1880.0             | 2.02                  |               |       | PASS    |
|                  | 810     | 1909.8             | 2.03                  |               |       | PASS    |
| WCDMA<br>1900MHz | 9262    | 1852.4             | 2.72                  | Plot C1 to C3 | 13    | PASS    |
|                  | 9400    | 1880.0             | 2.85                  |               |       | PASS    |
|                  | 9538    | 1907.6             | 2.64                  |               |       | PASS    |



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(Plot A1: GSM 1900 MHz Channel = 512)

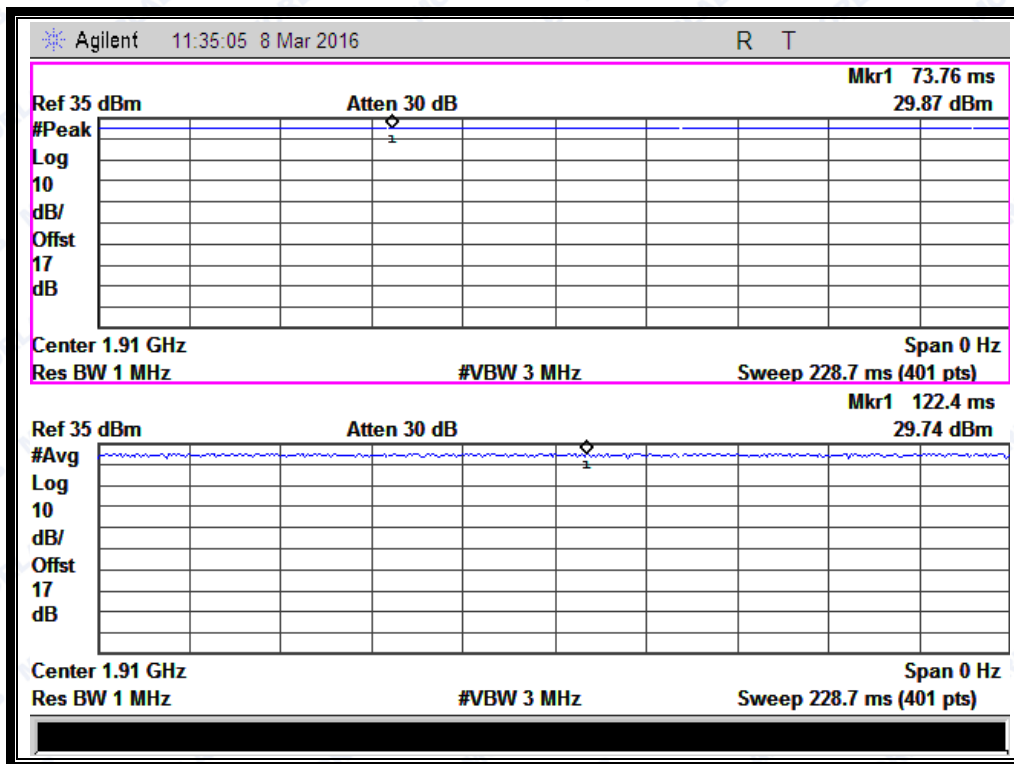


(Plot A2: GSM 1900 MHz Channel = 661)

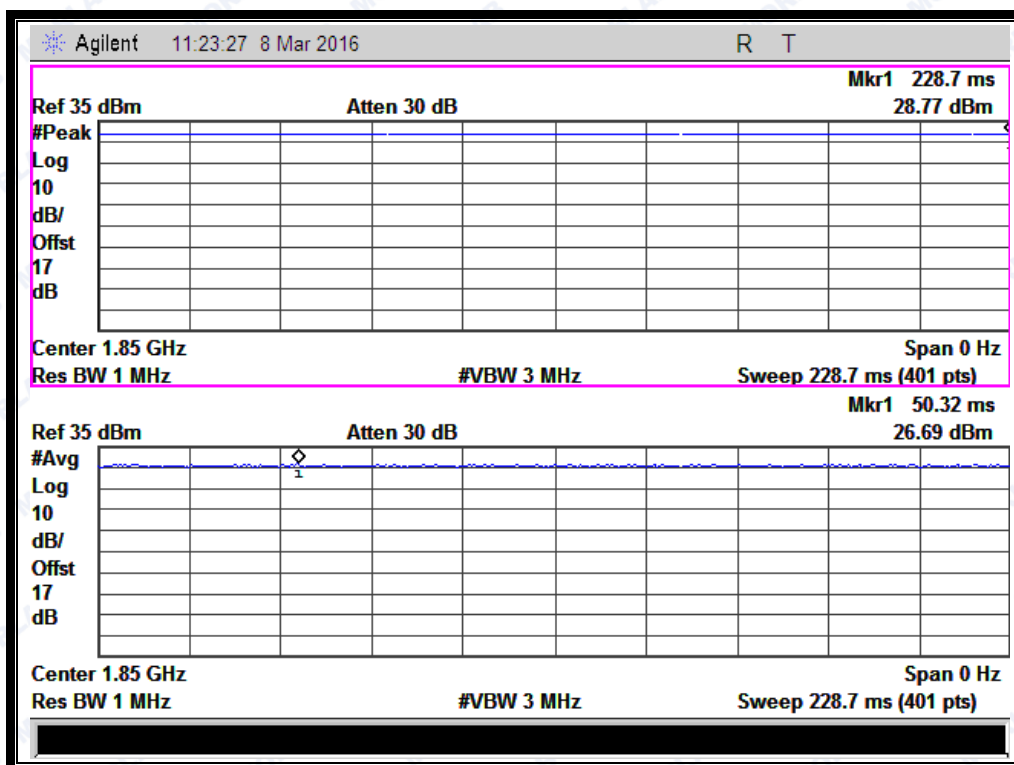




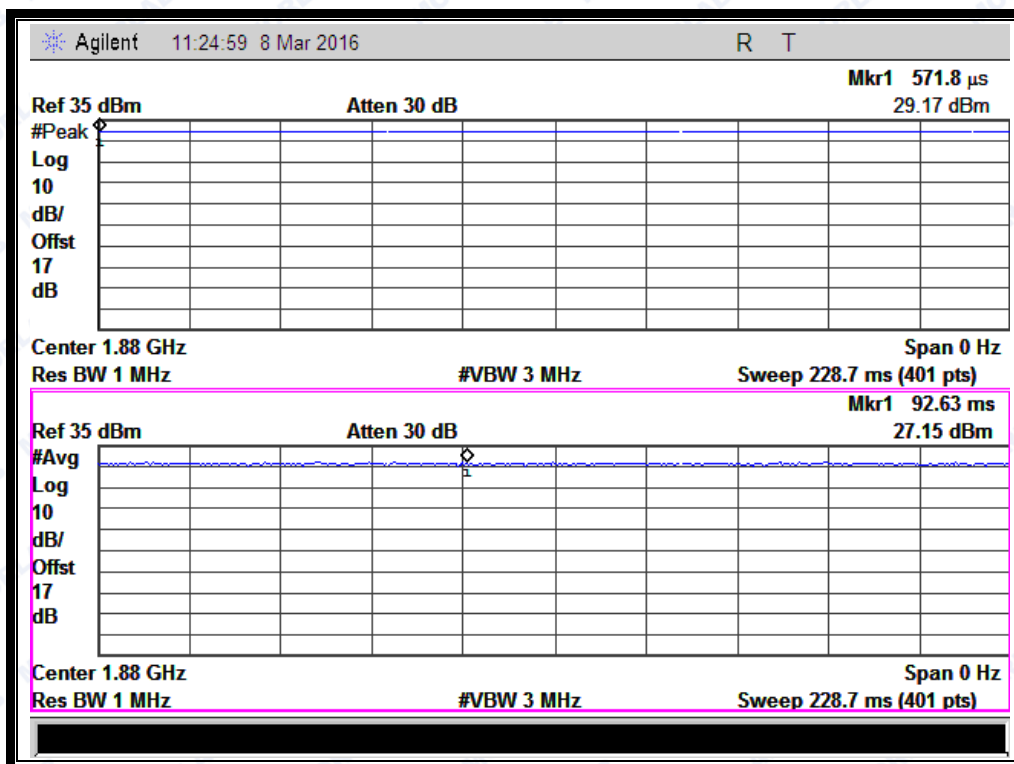
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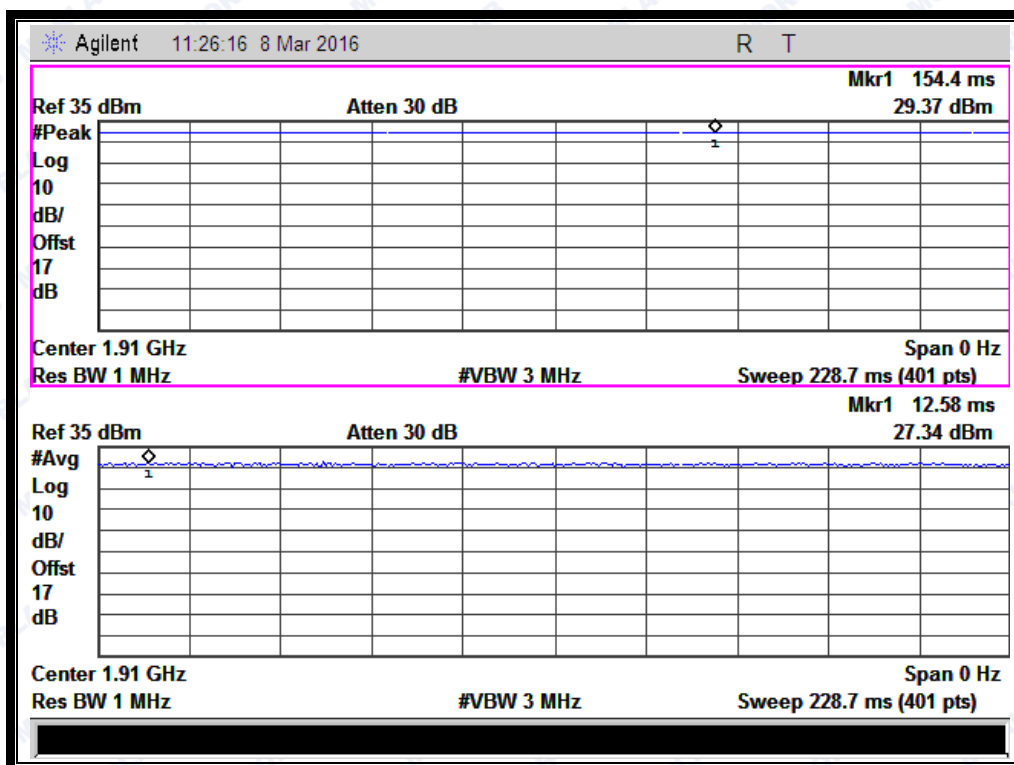
(Plot A3: GSM 1900MHz Channel = 810)



(Plot B1: EGPRS 1900 MHz Channel = 512)



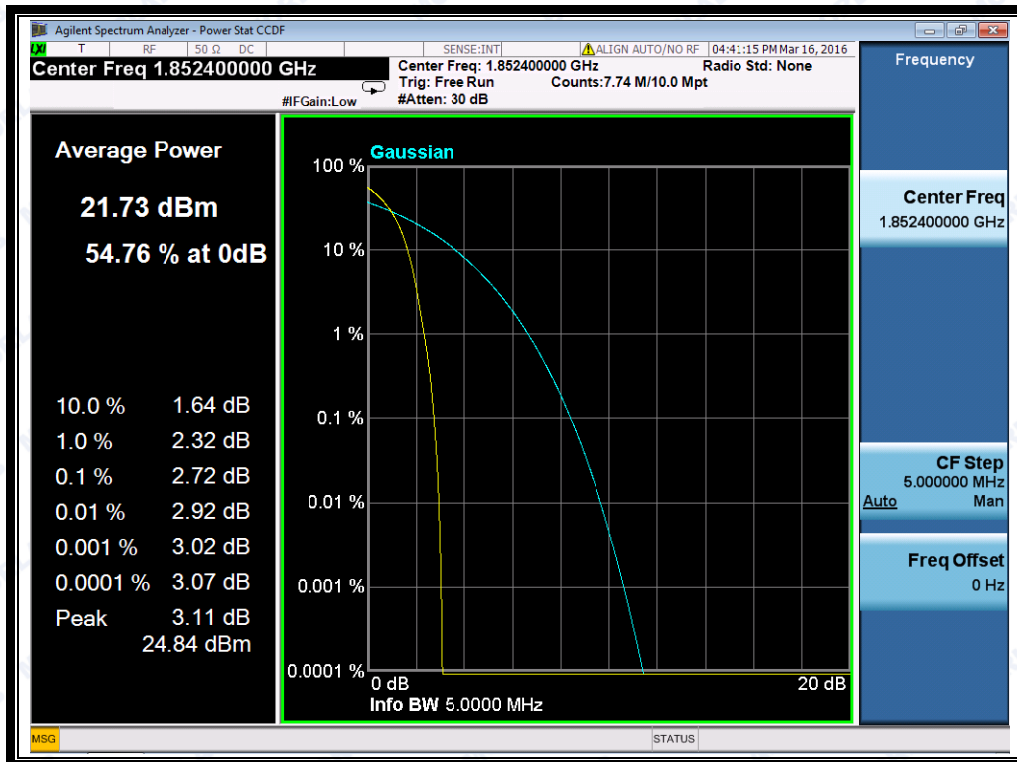
(Plot B2: EGPRS 1900 MHz Channel = 661)



(Plot B3: EGPRS 1900MHz Channel = 810)



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(Plot C1: WCDMA 1900MHz Channel = 9262)

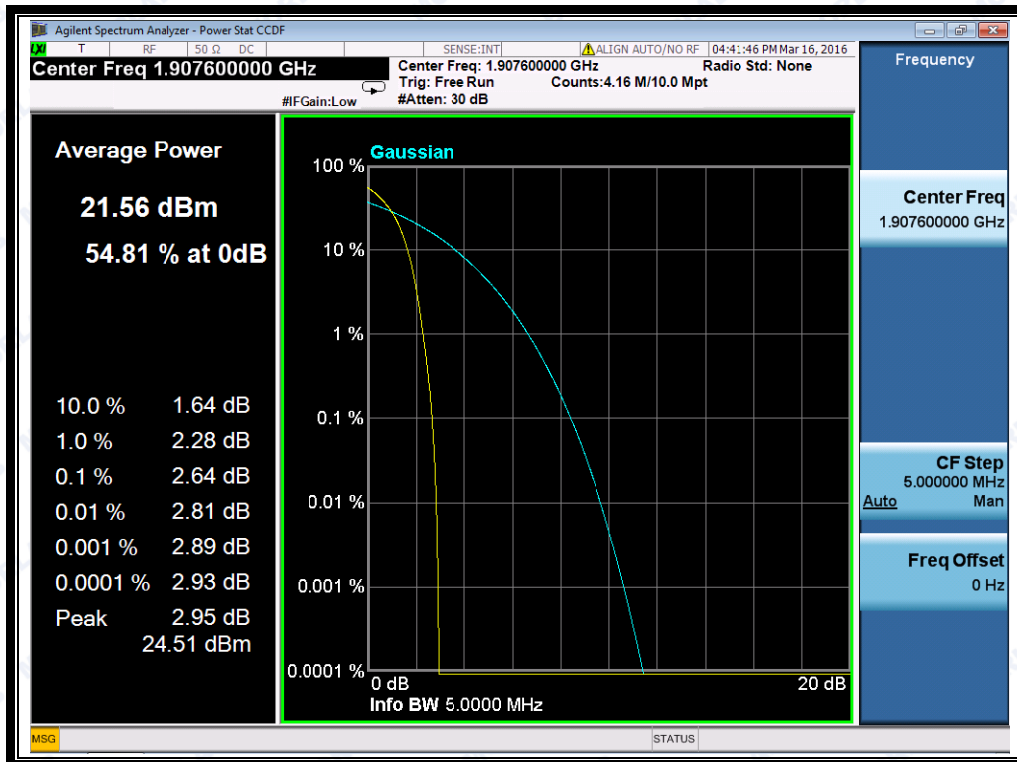


(Plot C2: WCDMA 1900MHz Channel = 9400)





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(Plot C3: WCDMA 1900MHz Channel = 9538)



## 2.3 99% Occupied Bandwidth

### 2.3.1 Definition

According to FCC section 2.1049 and FCC § 22.917 & 24.238, 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.

Test Verdict:

| Band          | Channel | Frequency (MHz) | 26dB bandwidth | 99% Occupied Bandwidth | Refer to Plot |
|---------------|---------|-----------------|----------------|------------------------|---------------|
| GSM 850MHz    | 128     | 824.2           | 324.808 KHz    | 251.7687 KHz           | Plot A1 to A3 |
|               | 190     | 836.6           | 322.355 KHz    | 246.3858 KHz           |               |
|               | 251     | 848.8           | 319.626 KHz    | 249.0097 KHz           |               |
| GSM 1900MHz   | 512     | 1850.2          | 318.451 KHz    | 243.7064 KHz           | Plot B1 to B3 |
|               | 661     | 1880.0          | 330.479 KHz    | 252.1646 KHz           |               |
|               | 810     | 1909.8          | 326.090 KHz    | 251.7005 KHz           |               |
| GPRS 850MHz   | 128     | 824.2           | 317.539 KHz    | 244.2743 KHz           | Plot C1 to C3 |
|               | 190     | 836.6           | 315.597 KHz    | 249.1560 KHz           |               |
|               | 251     | 848.8           | 325.517 KHz    | 244.6708 KHz           |               |
| GPRS 1900MHz  | 512     | 1850.2          | 322.984 KHz    | 247.7514 KHz           | Plot D1 to D3 |
|               | 661     | 1880.0          | 322.723 KHz    | 249.1365 KHz           |               |
|               | 810     | 1909.8          | 320.347 KHz    | 248.8365 KHz           |               |
| EGPRS 850MHz  | 128     | 824.2           | 320.500 KHz    | 247.7787 KHz           | Plot E1 to E3 |
|               | 190     | 836.6           | 326.320 KHz    | 251.1031 KHz           |               |
|               | 251     | 848.8           | 327.811 KHz    | 253.6319 KHz           |               |
| EGPRS 1900MHz | 512     | 1850.2          | 325.076 KHz    | 254.0380 KHz           | Plot F1 to F3 |
|               | 661     | 1880.0          | 320.869 KHz    | 249.9775 KHz           |               |
|               | 810     | 1909.8          | 322.342 KHz    | 251.3734 KHz           |               |
| WCDMA 850MHz  | 4132    | 826.4           | 4.871 MHz      | 4.2135 MHz             | Plot G1 to G3 |
|               | 4175    | 835.0           | 4.881 MHz      | 4.2116 MHz             |               |
|               | 4233    | 846.6           | 4.866 MHz      | 4.2345 MHz             |               |



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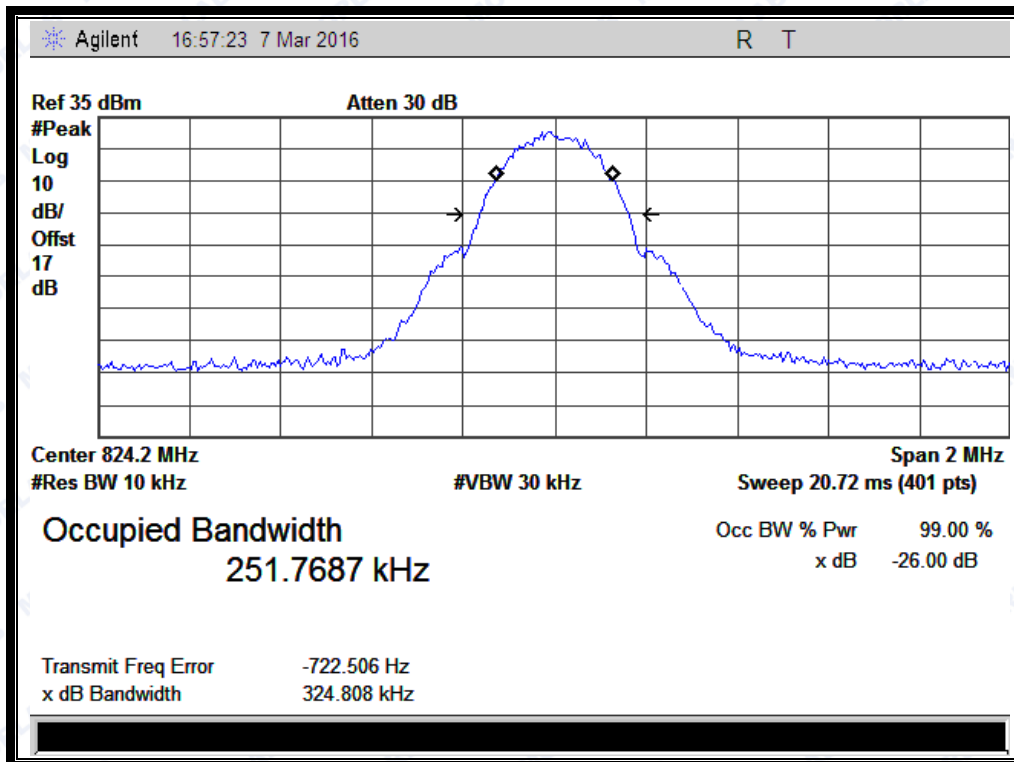
| Band             | Channel | Frequency (MHz) | 26dB bandwidth | 99% Occupied Bandwidth | Refer to Plot    |
|------------------|---------|-----------------|----------------|------------------------|------------------|
| WCDMA<br>1900MHz | 9262    | 1852.4          | 4.861 MHz      | 4.2125 MHz             | Plot<br>H1 to H3 |
|                  | 9400    | 1880.0          | 4.856 MHz      | 4.2123 MHz             |                  |
|                  | 9538    | 1907.6          | 4.875 MHz      | 4.2092 MHz             |                  |
| HSDPA<br>850MHz  | 4132    | 826.4           | 4.886 MHz      | 4.2169 MHz             | Plot<br>I1 to I3 |
|                  | 4175    | 835.0           | 4.861 MHz      | 4.2105 MHz             |                  |
|                  | 4233    | 846.6           | 4.866 MHz      | 4.2255 MHz             |                  |
| HSDPA<br>1900MHz | 9262    | 1852.4          | 4.870 MHz      | 4.2131 MHz             | Plot<br>J1 to J3 |
|                  | 9400    | 1880.0          | 4.829 MHz      | 4.2032 MHz             |                  |
|                  | 9538    | 1907.6          | 4.844 MHz      | 4.2057 MHz             |                  |
| HSUPA<br>850MHz  | 4132    | 826.4           | 4.910 MHz      | 4.2183 MHz             | Plot<br>K1 to K3 |
|                  | 4175    | 835.0           | 4.866 MHz      | 4.2120 MHz             |                  |
|                  | 4233    | 846.6           | 4.888 MHz      | 4.2308 MHz             |                  |
| HSUPA<br>1900MHz | 9262    | 1852.4          | 4.851 MHz      | 4.2107 MHz             | Plot<br>L1 to L3 |
|                  | 9400    | 1880.0          | 4.845 MHz      | 4.2115 MHz             |                  |
|                  | 9538    | 1907.6          | 4.874 MHz      | 4.2166 MHz             |                  |
| HSPA+<br>850MHz  | 4132    | 826.4           | 4.916 MHz      | 4.2202 MHz             | Plot<br>M1 to M3 |
|                  | 4175    | 835.0           | 4.876 MHz      | 4.2146 MHz             |                  |
|                  | 4233    | 846.6           | 4.874 MHz      | 4.2193 MHz             |                  |
| HSPA+<br>1900MHz | 9262    | 1852.4          | 4.850 MHz      | 4.2065 MHz             | Plot<br>N1 to N3 |
|                  | 9400    | 1880.0          | 4.852 MHz      | 4.2175 MHz             |                  |
|                  | 9538    | 1907.6          | 4.873 MHz      | 4.2199 MHz             |                  |



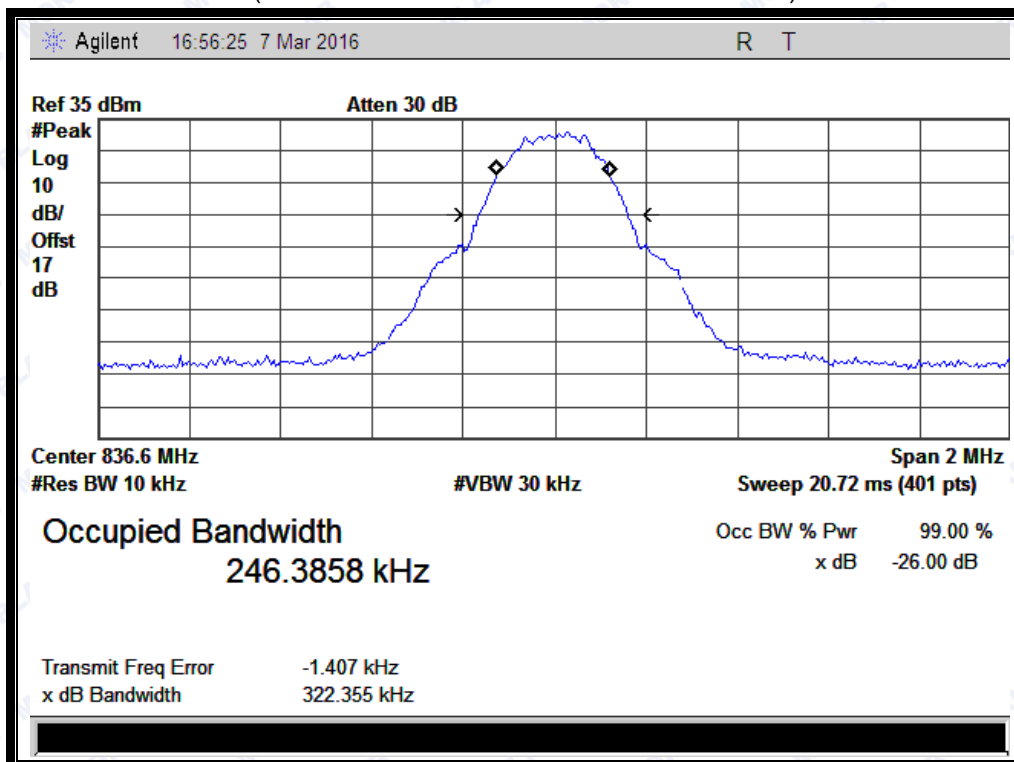


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Test Plots:



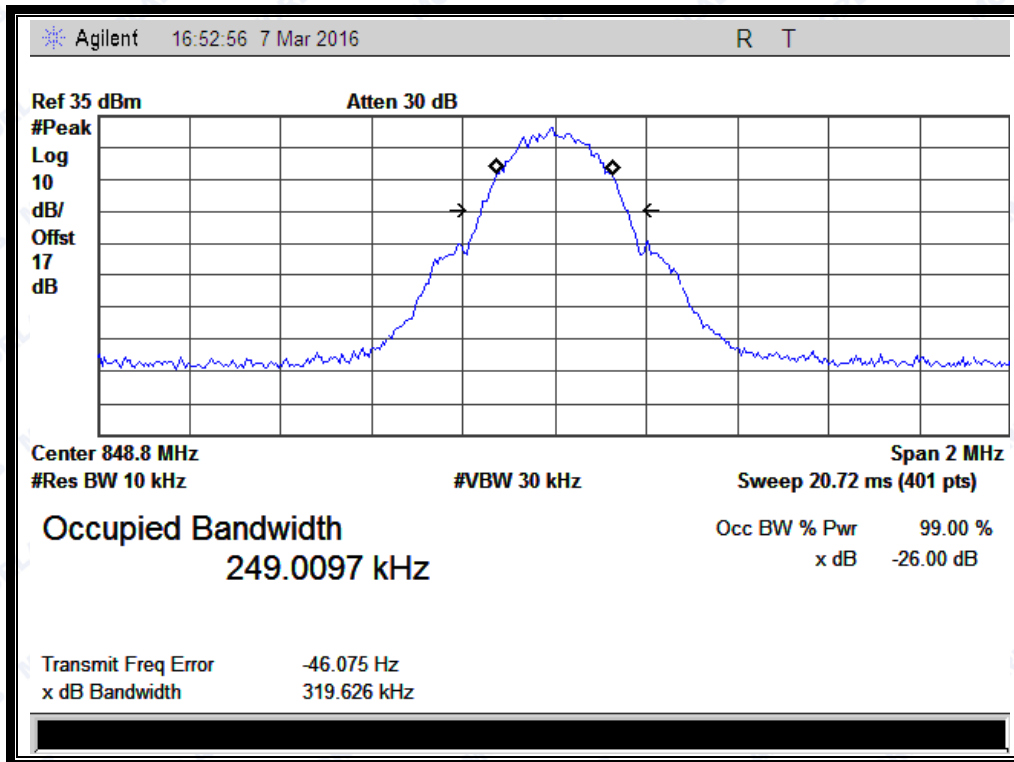
(Plot A1: GSM 850MHz Channel = 128)



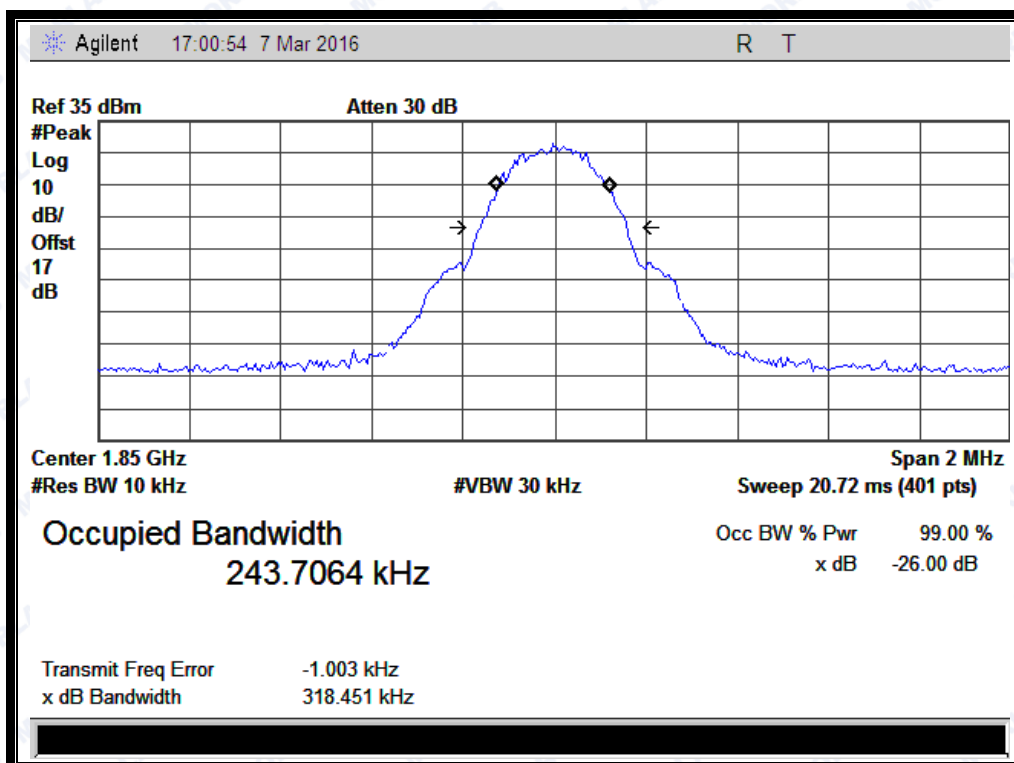
(Plot A2: GSM 850MHz Channel = 190)



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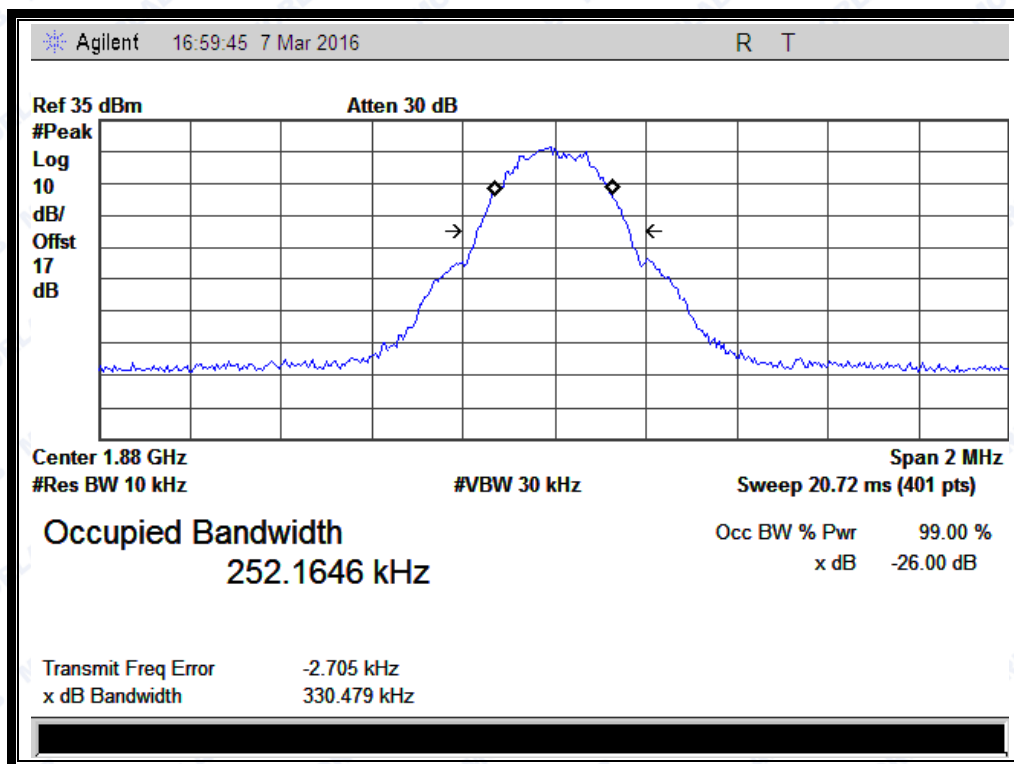
(Plot A3: GSM 850MHz Channel = 251)



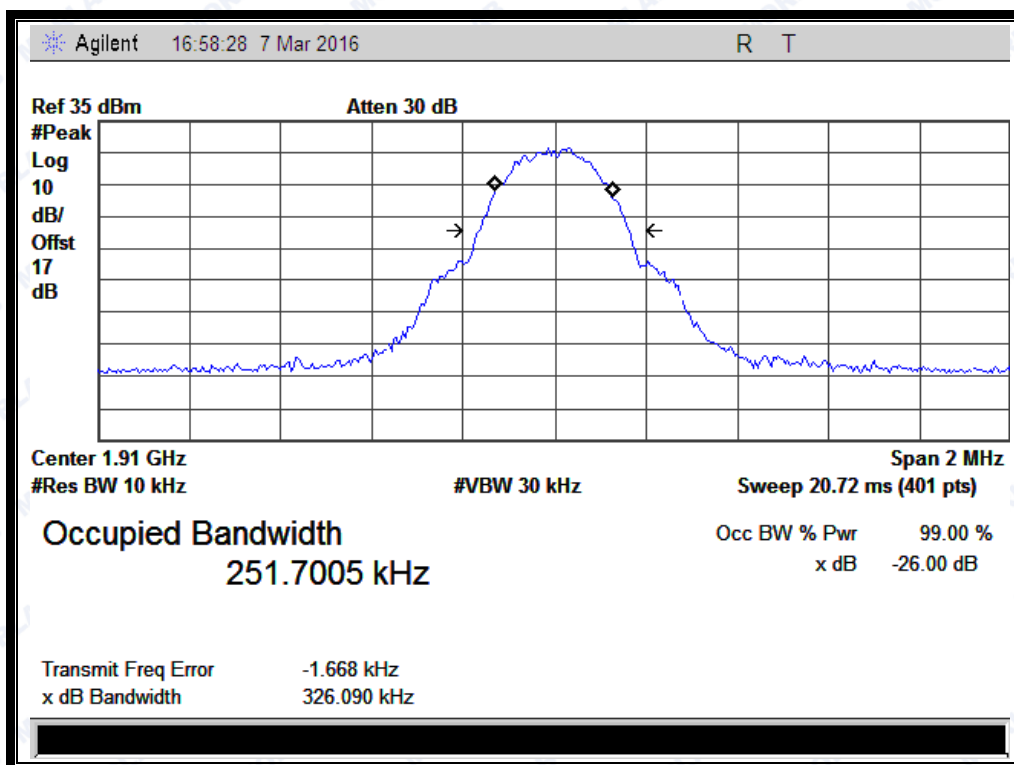
(Plot B1: GSM1900MHz Channel = 512)



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(Plot B2: GSM1900MHz Channel = 661)

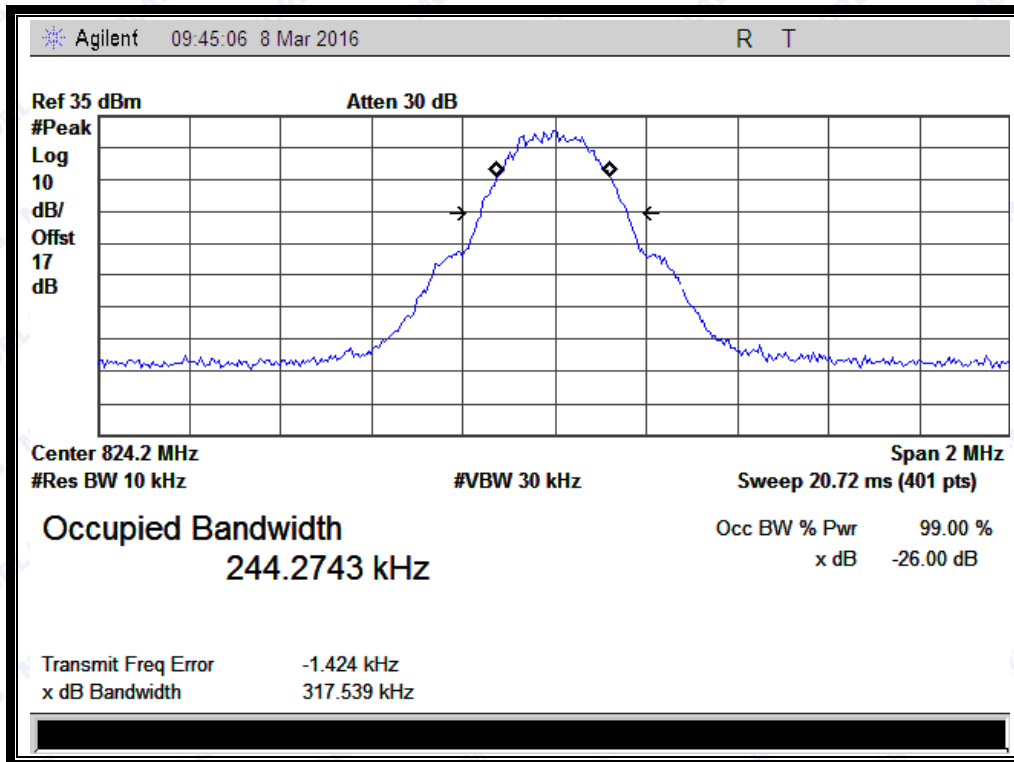


(Plot B3: GSM 1900MHz Channel = 810)

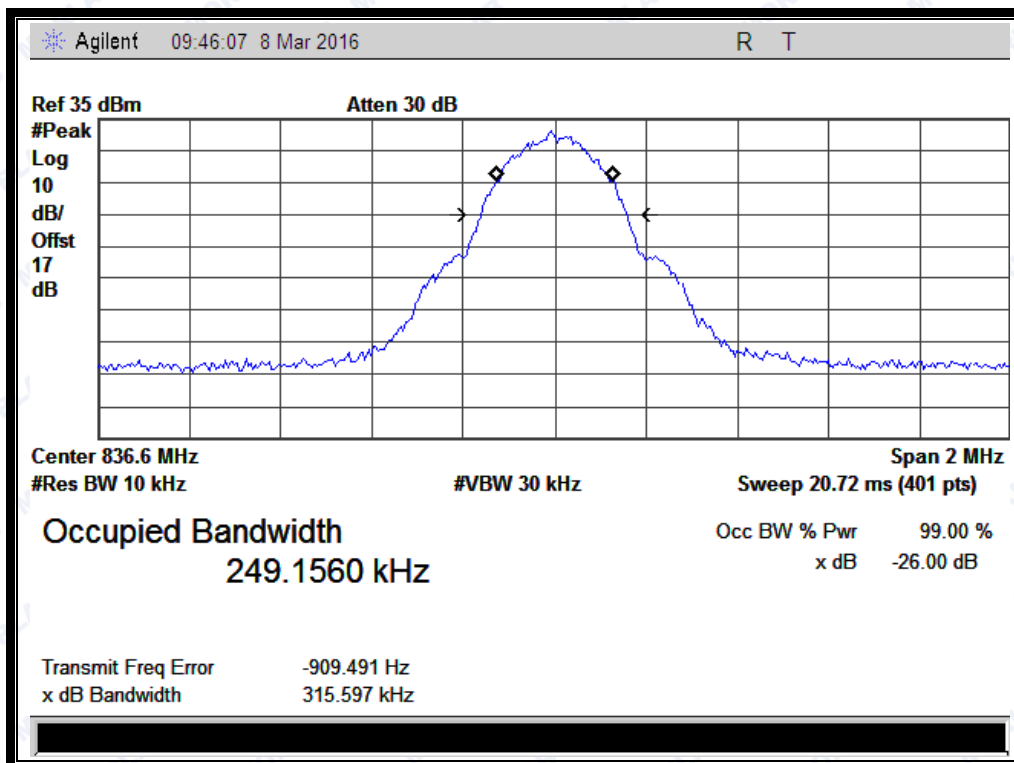




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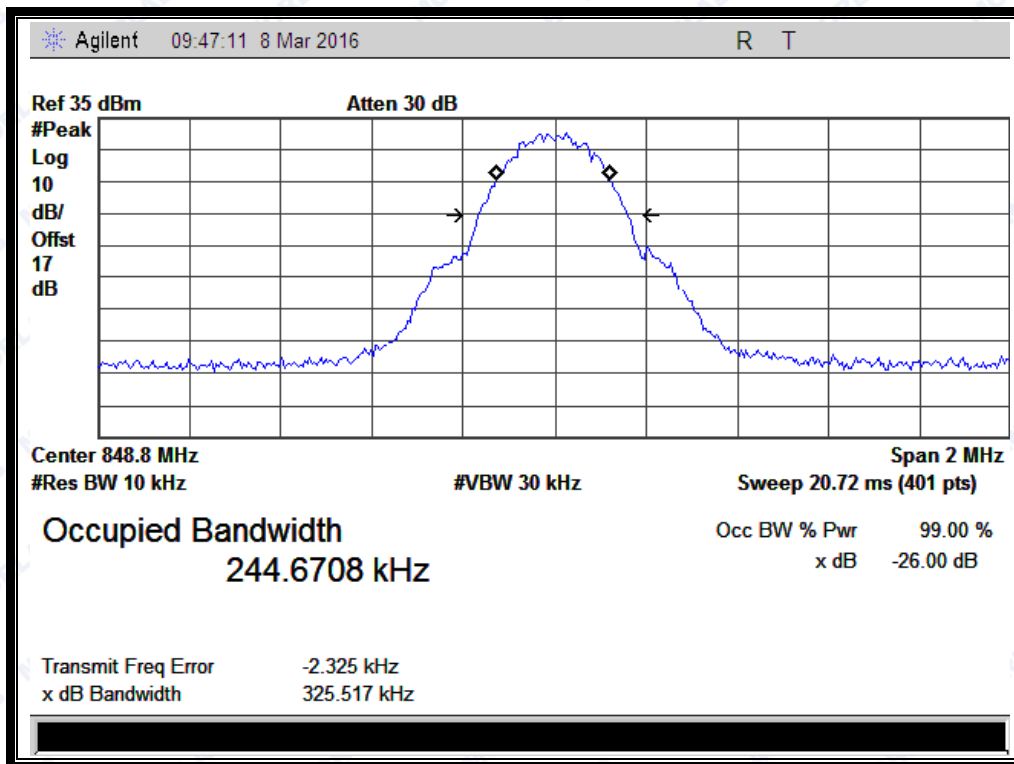
(Plot C1: GPRS 850MHz Channel = 128)



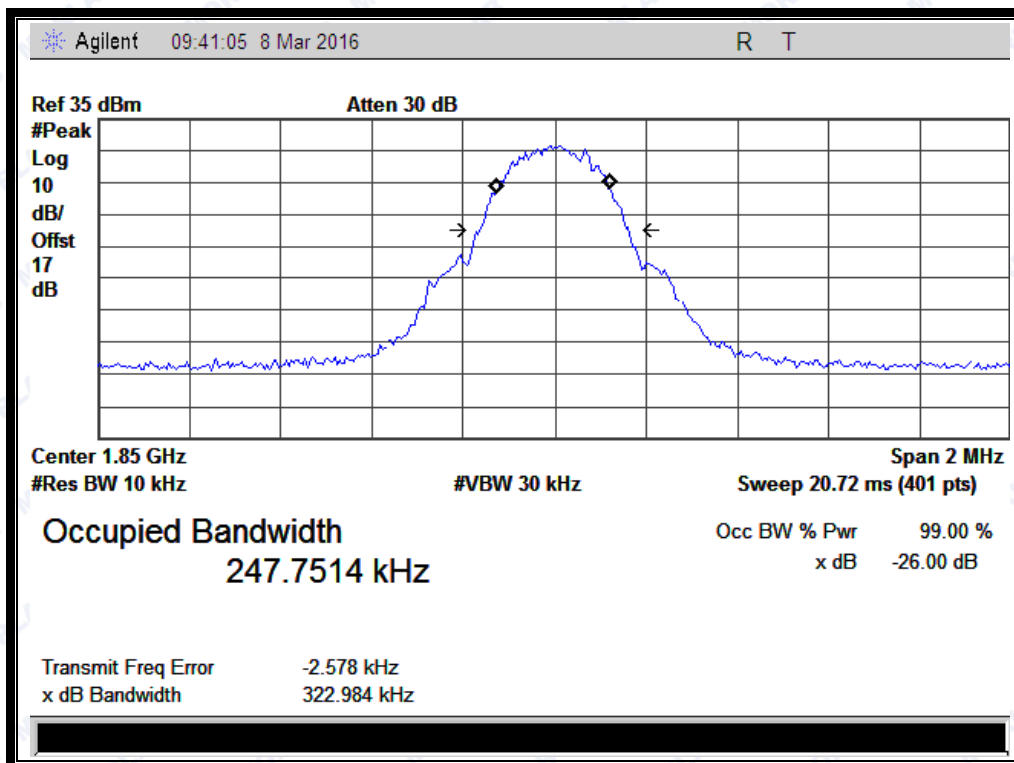
(Plot C2: GPRS 850MHz Channel = 190)



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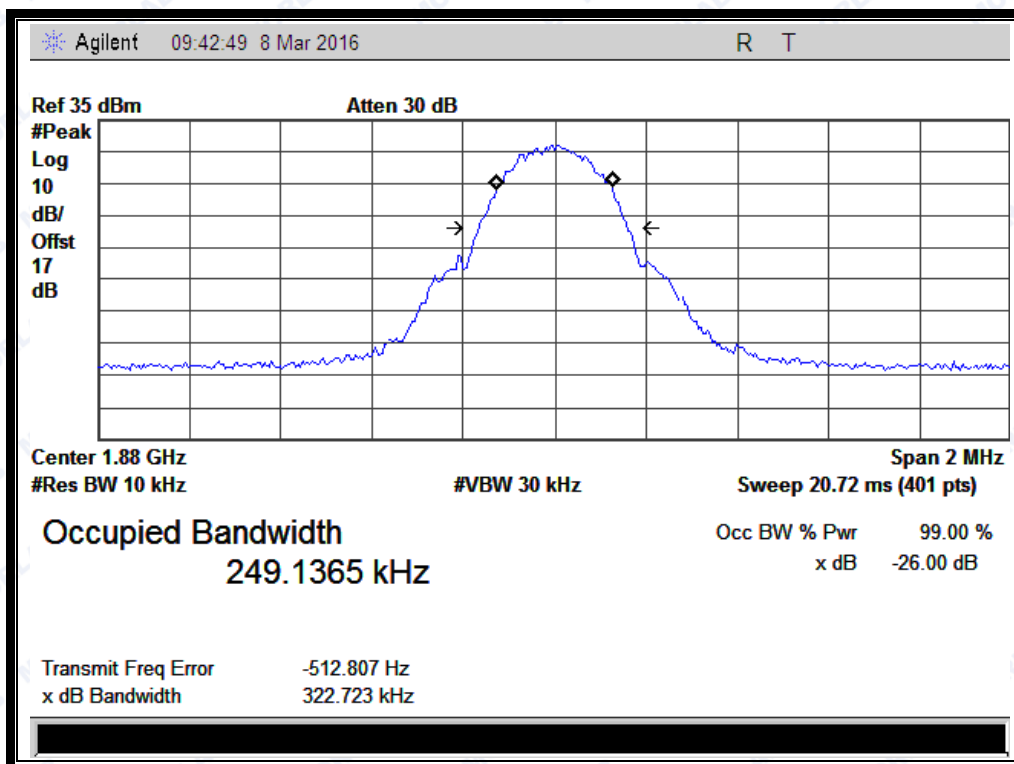
(Plot C3: GPRS 850MHz Channel = 251)



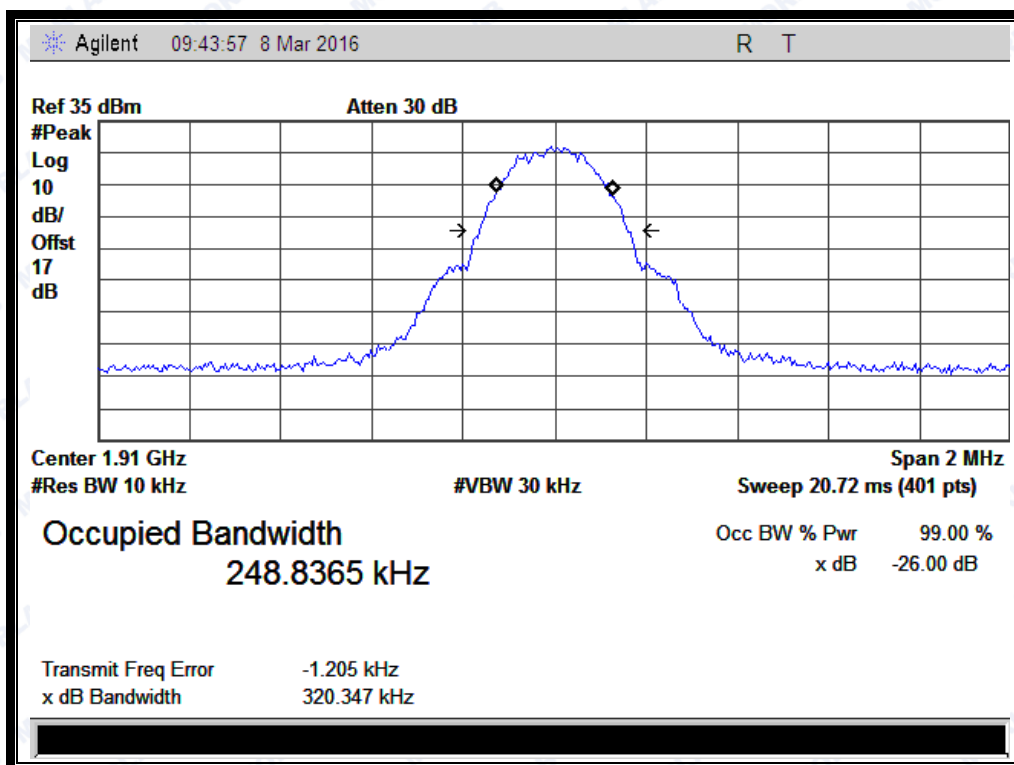
(Plot D1: GPRS1900MHz Channel = 512)



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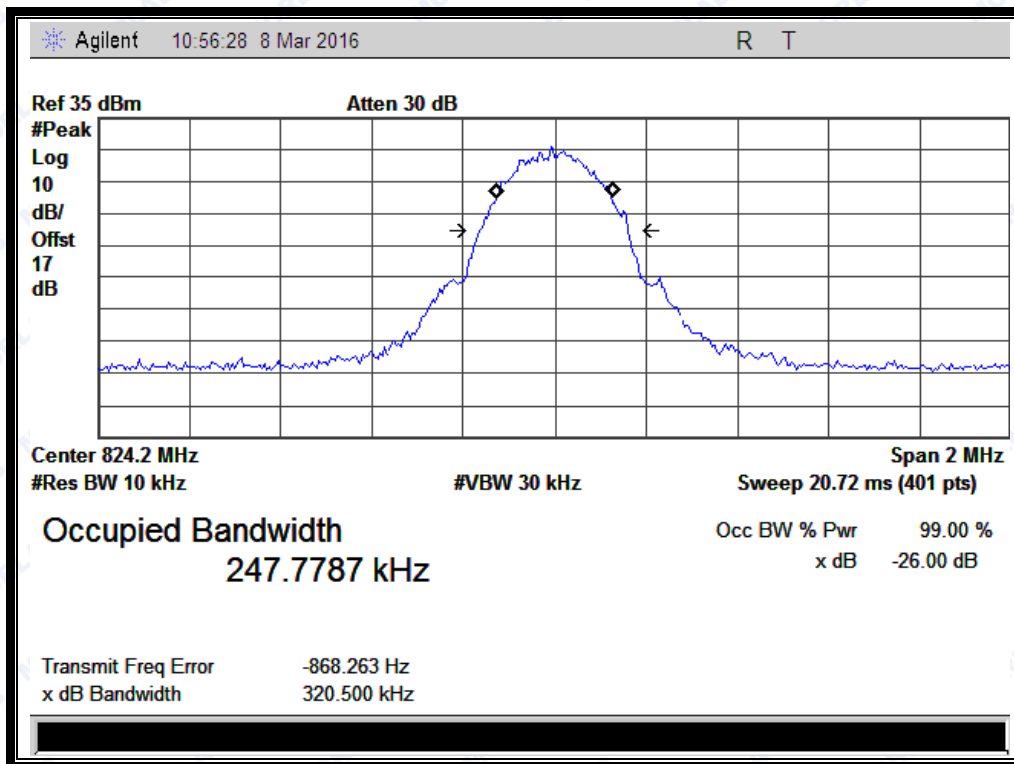
(Plot D2: GPRS1900MHz Channel = 661)



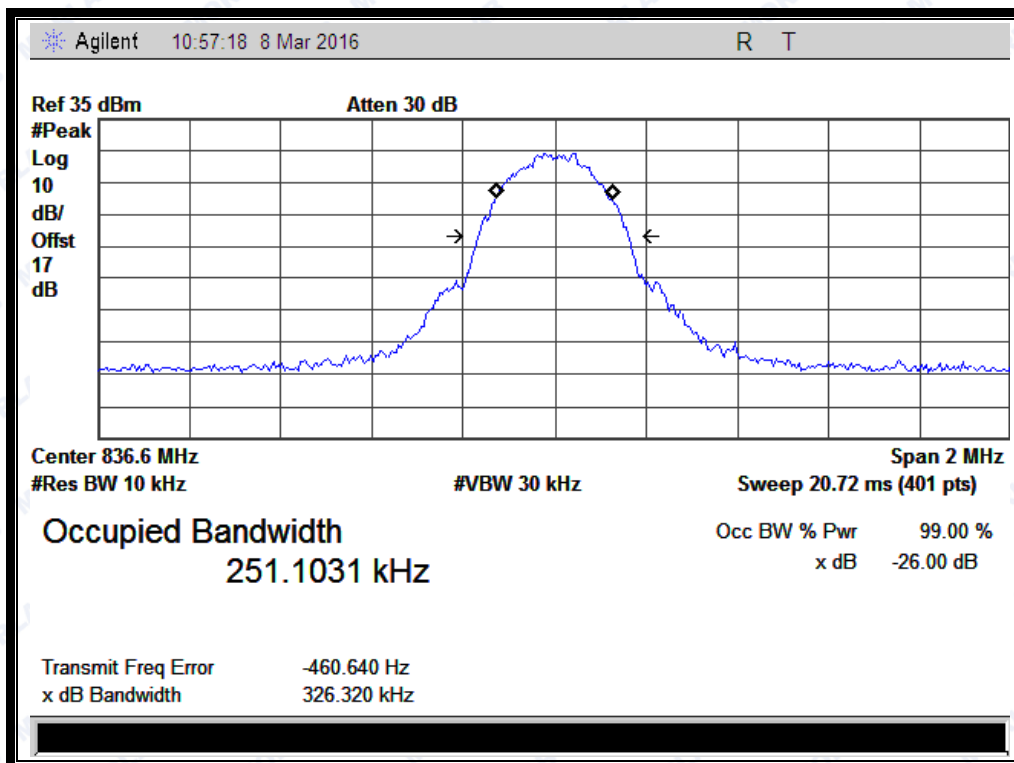
(Plot D3: GPRS 1900MHz Channel = 810)



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(Plot E1: EGPRS 850MHz Channel = 128)

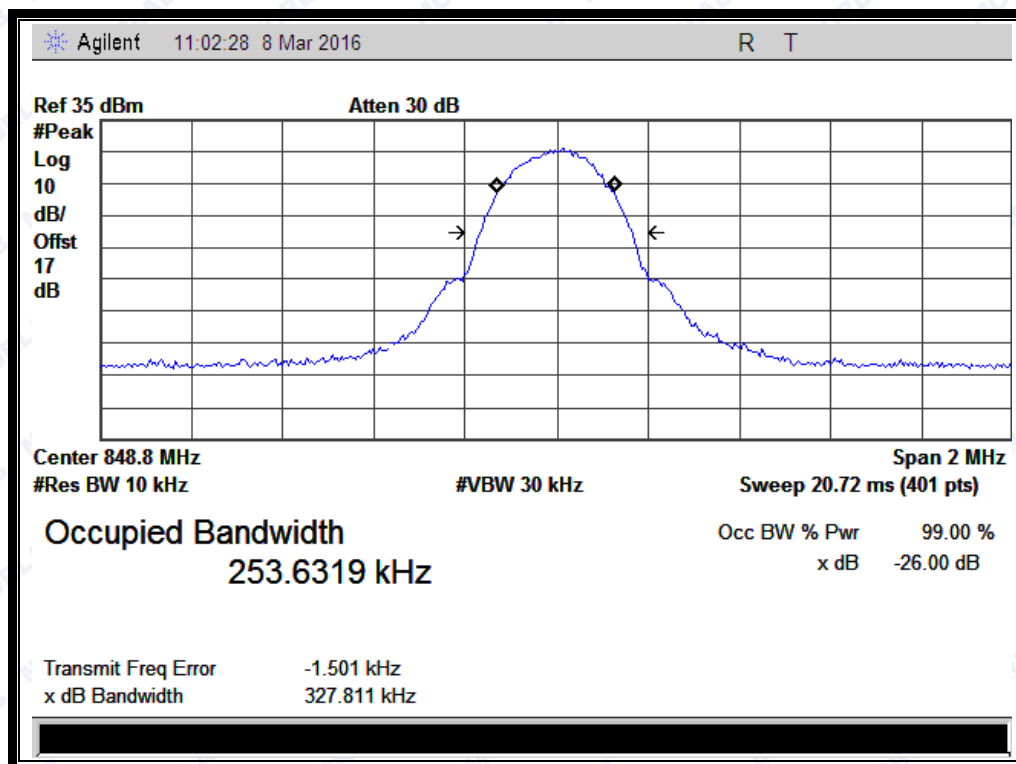


(Plot E2: EGPRS 850MHz Channel = 190)

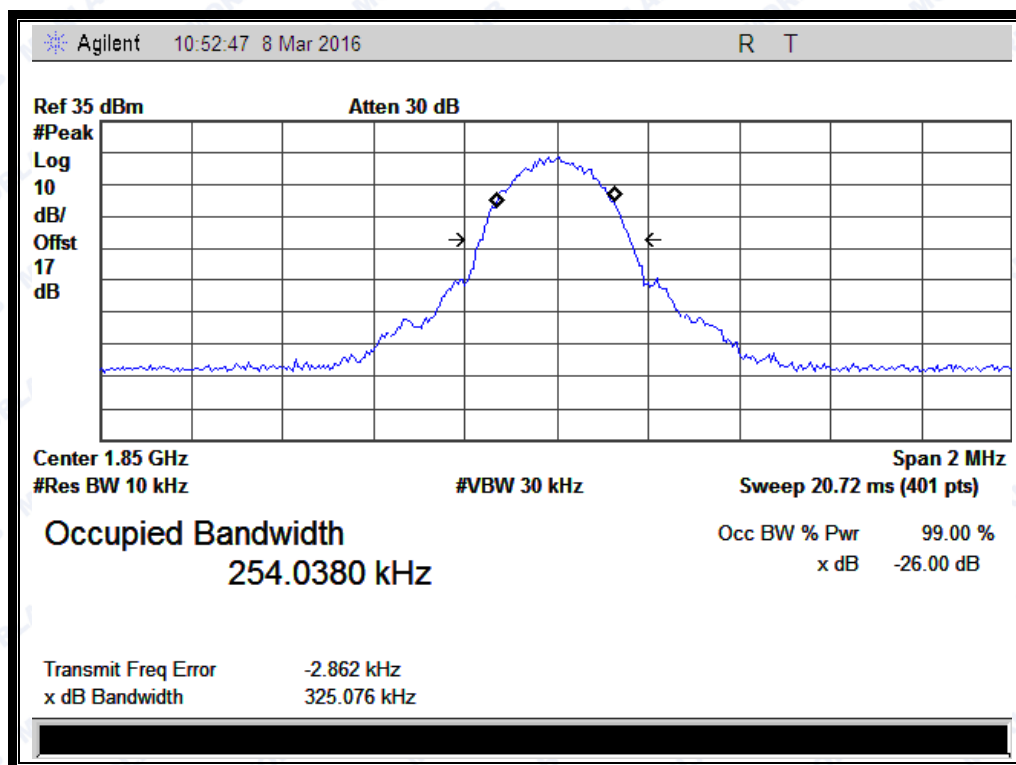




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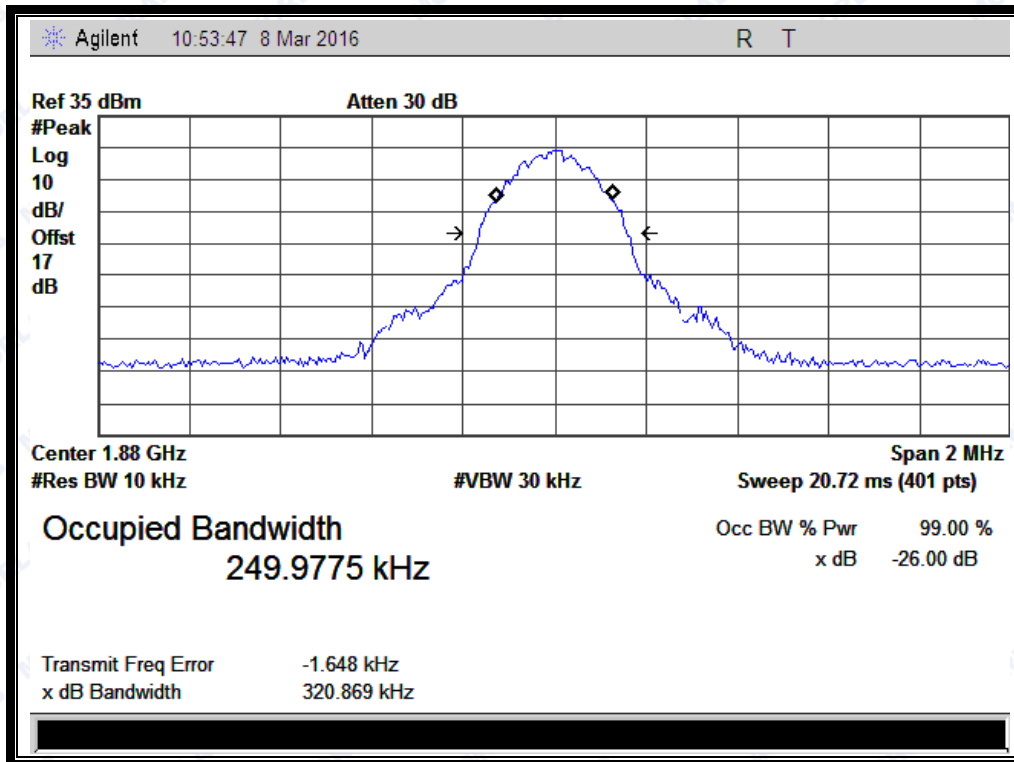
(Plot E3: EGPRS 850MHz Channel = 251)



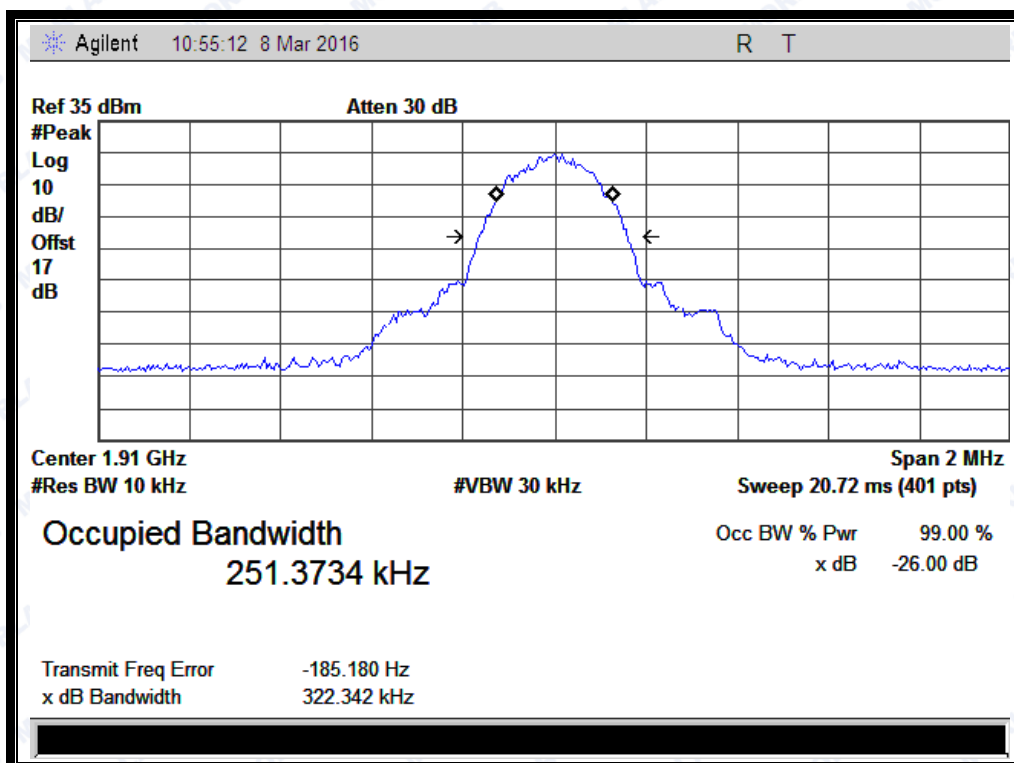
(Plot F1: EGPRS1900MHz Channel = 512)



REPORT No.: SZ16010163W04



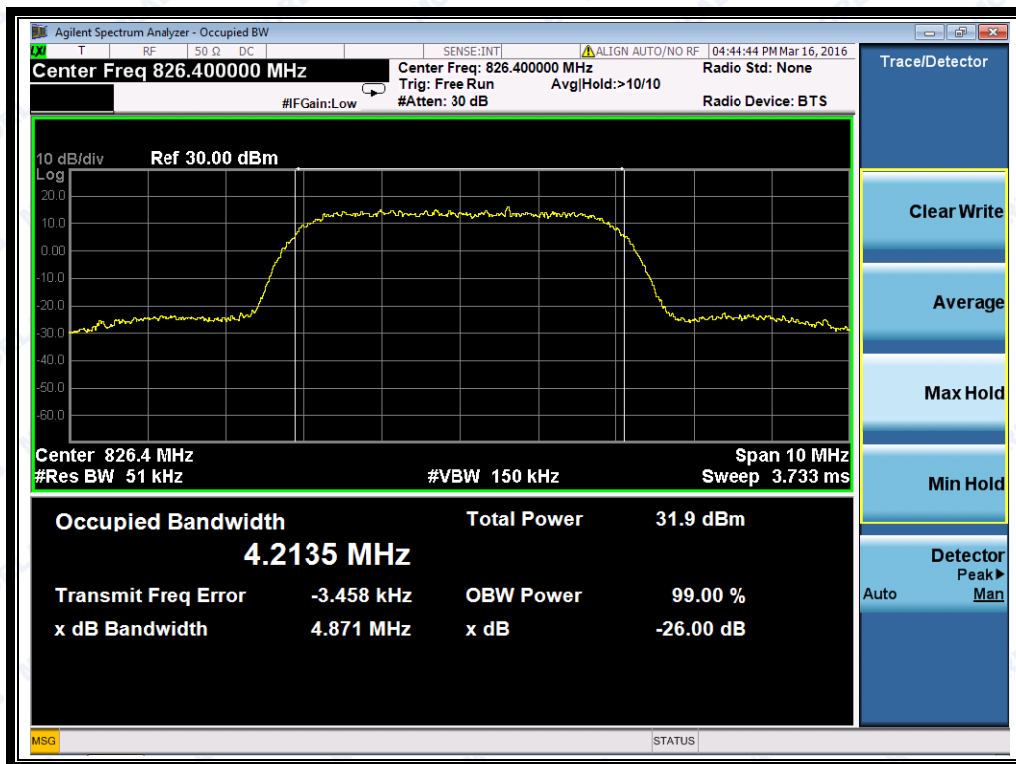
(Plot F2: EGPRS1900MHz Channel = 661)



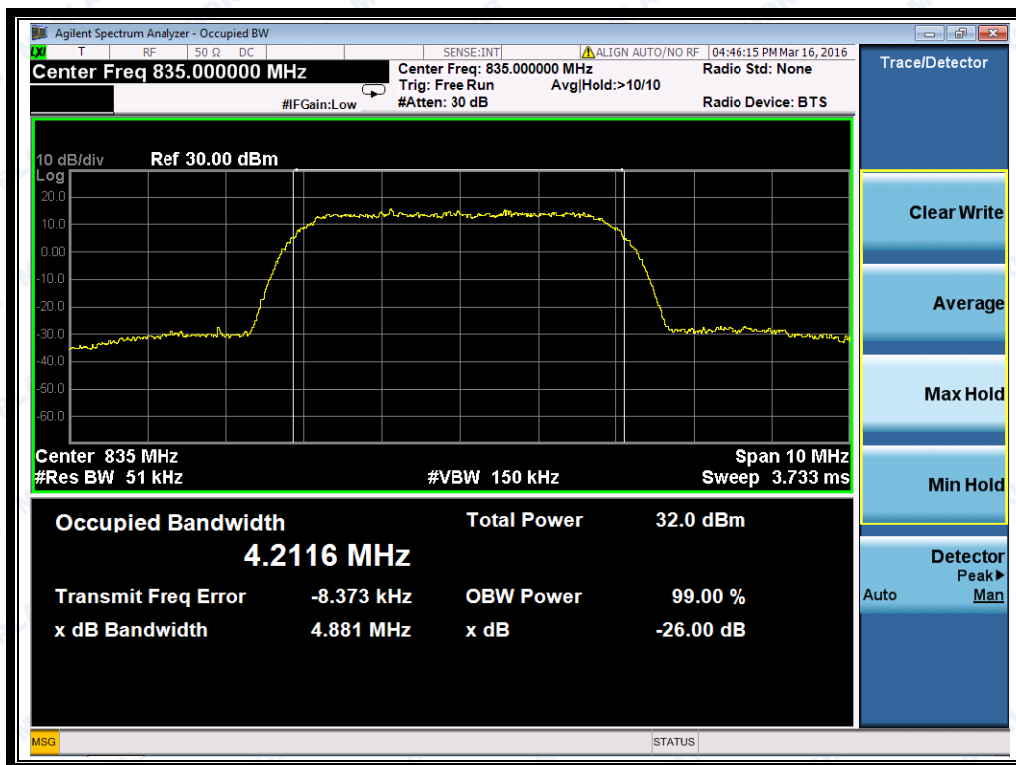
(Plot F3: EGPRS 1900MHz Channel = 810)



REPORT No.: SZ16010163W04



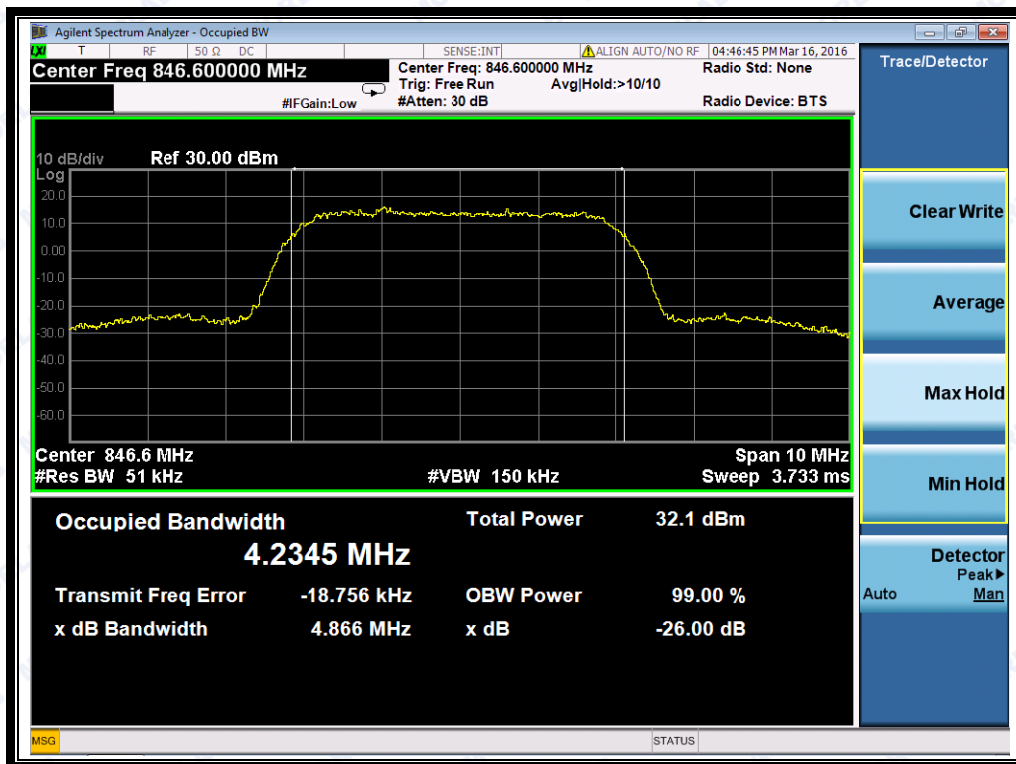
(Plot G1: WCDMA 850MHz Channel = 4132)



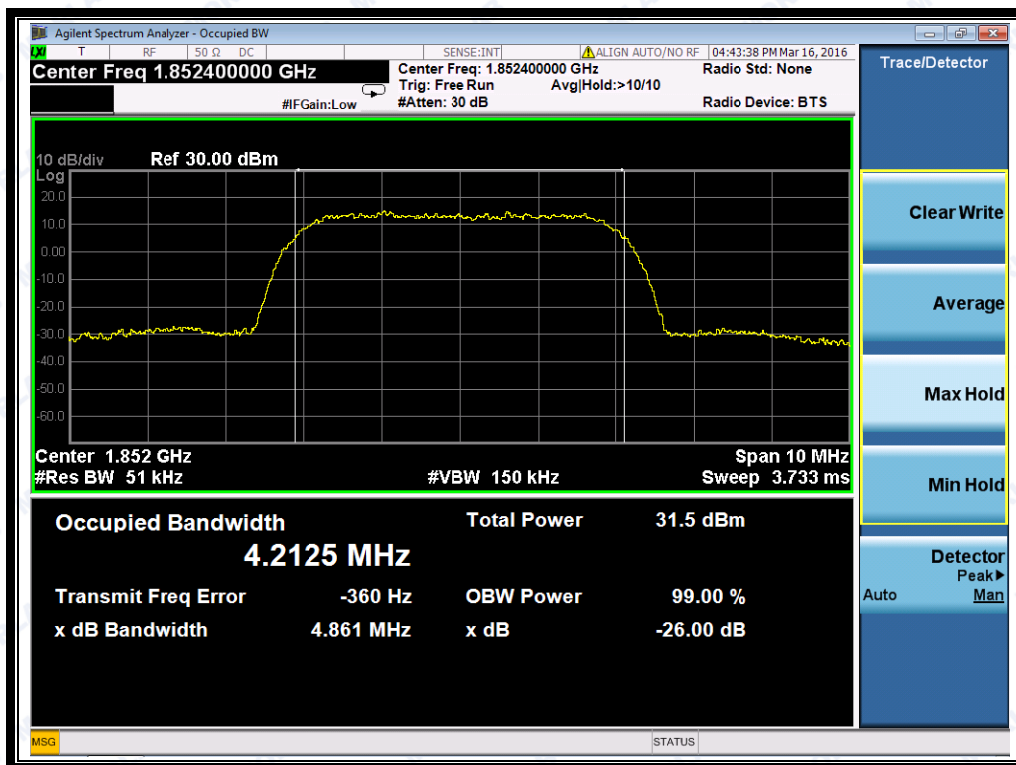
(Plot G2: WCDMA 850 MHz Channel = 4175)



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(Plot G3: WCDMA 850MHz Channel = 4233)

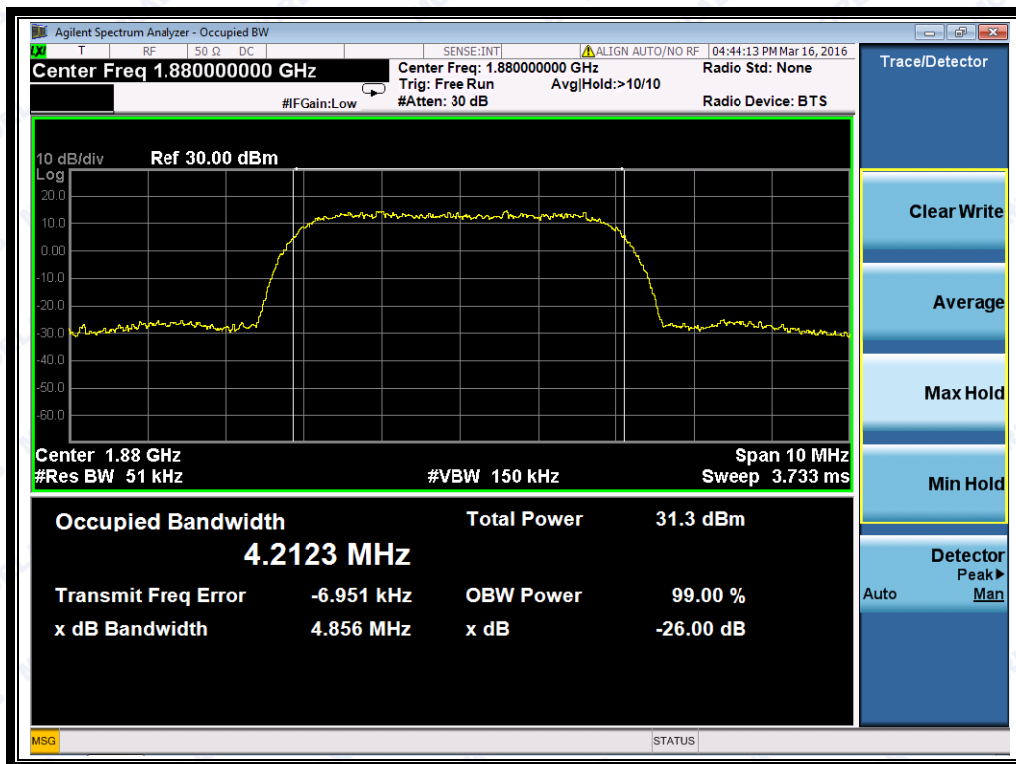


(Plot H1: WCDMA 1900MHz Channel = 9262)

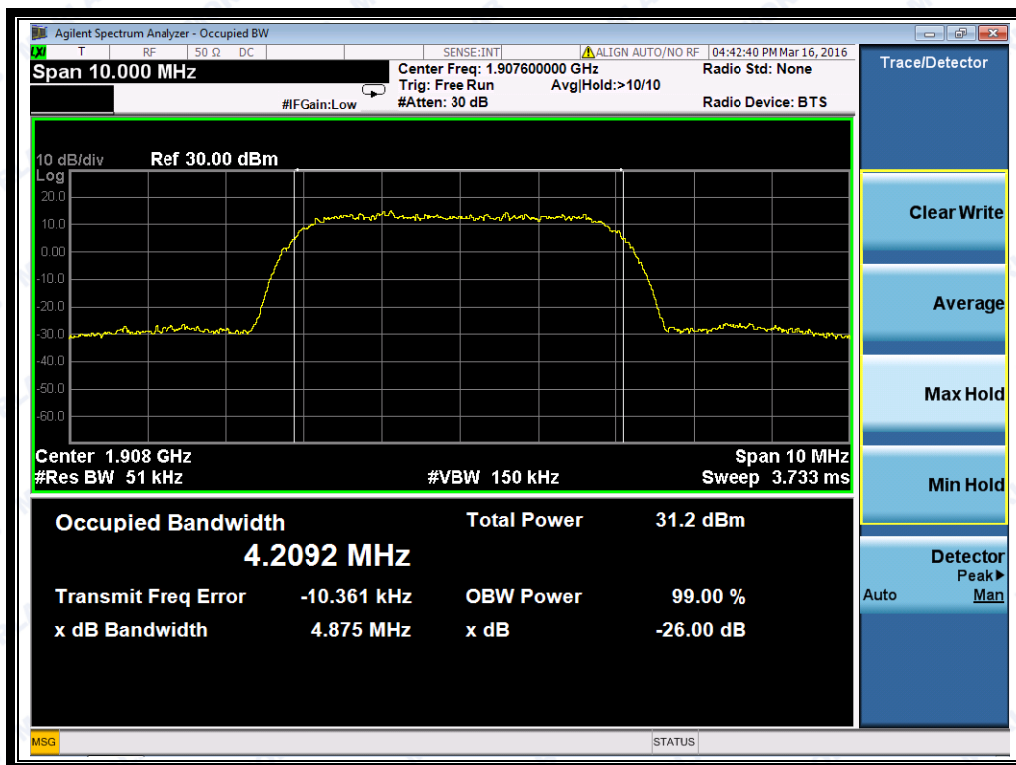




REPORT No.: SZ16010163W04



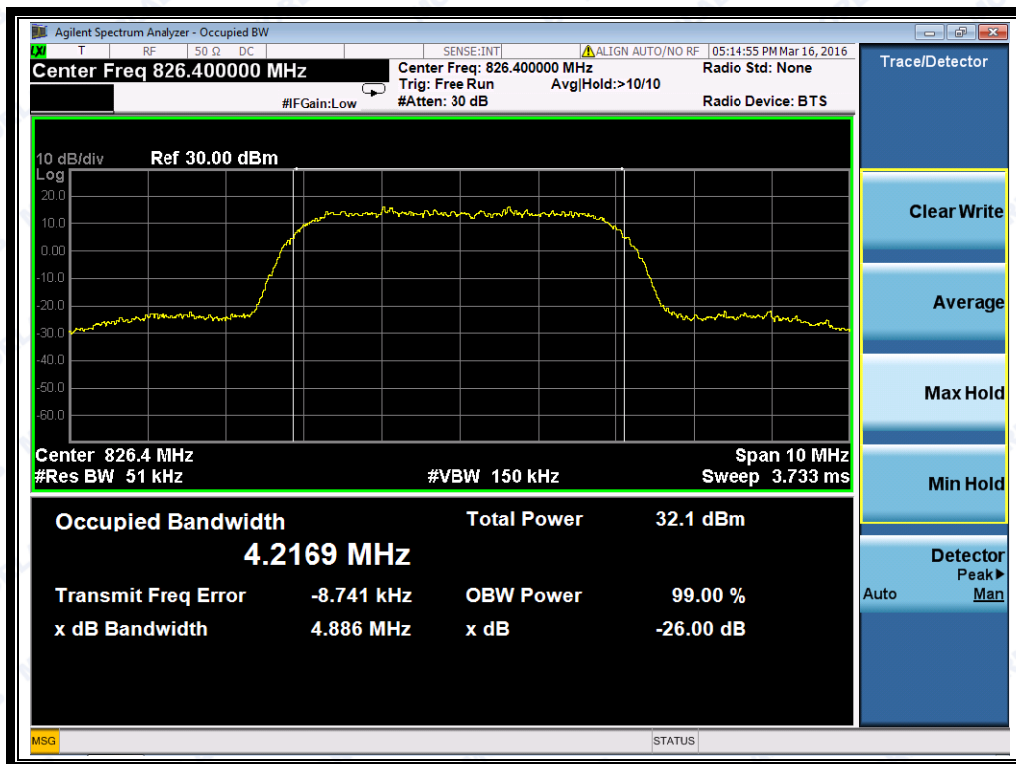
(Plot H2: WCDMA 1900 MHz Channel = 9400)



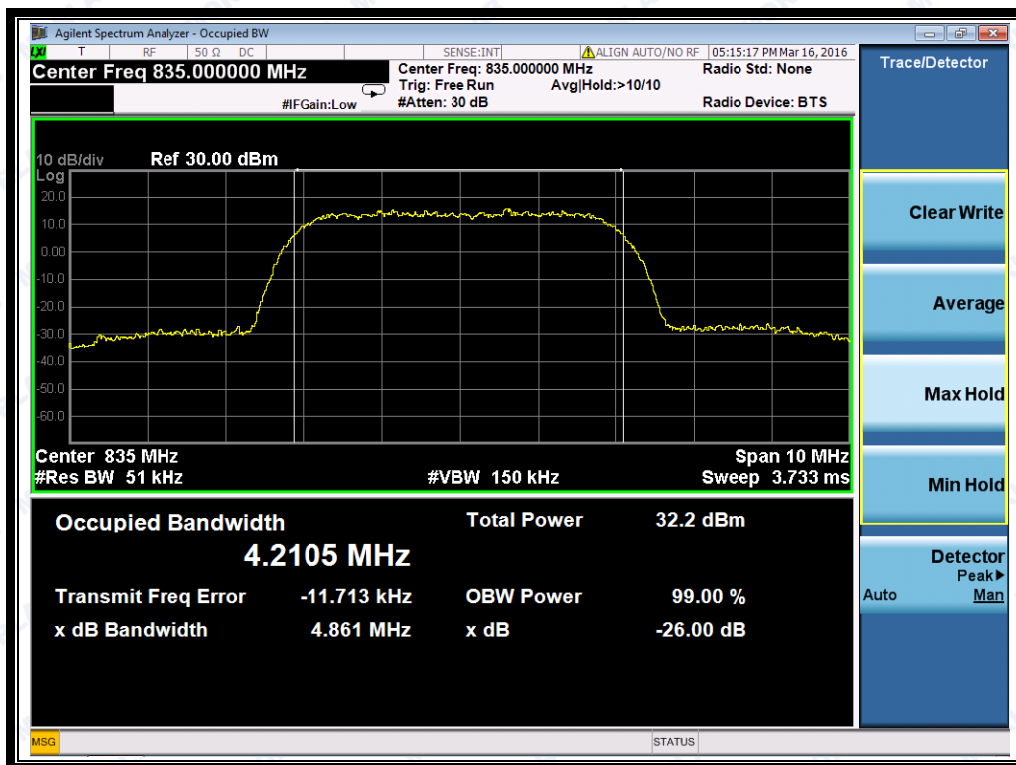
(Plot H3: WCDMA1900MHz Channel = 9538)



REPORT No.: SZ16010163W04



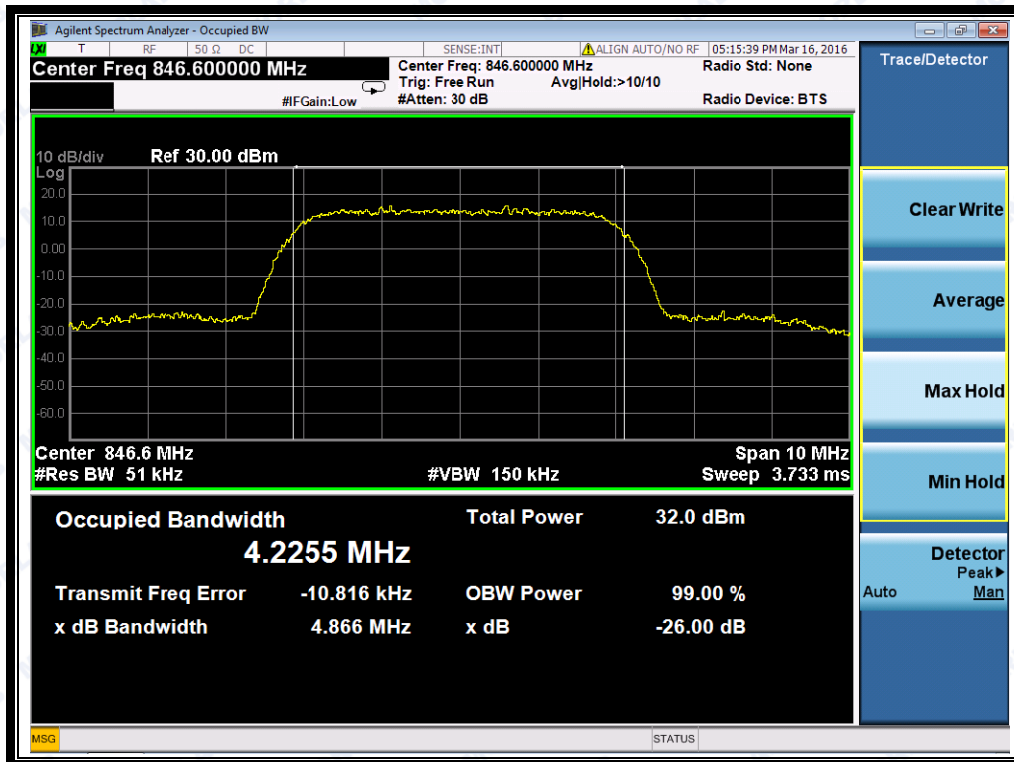
(Plot I1: HSDPA 850MHz Channel = 4132)



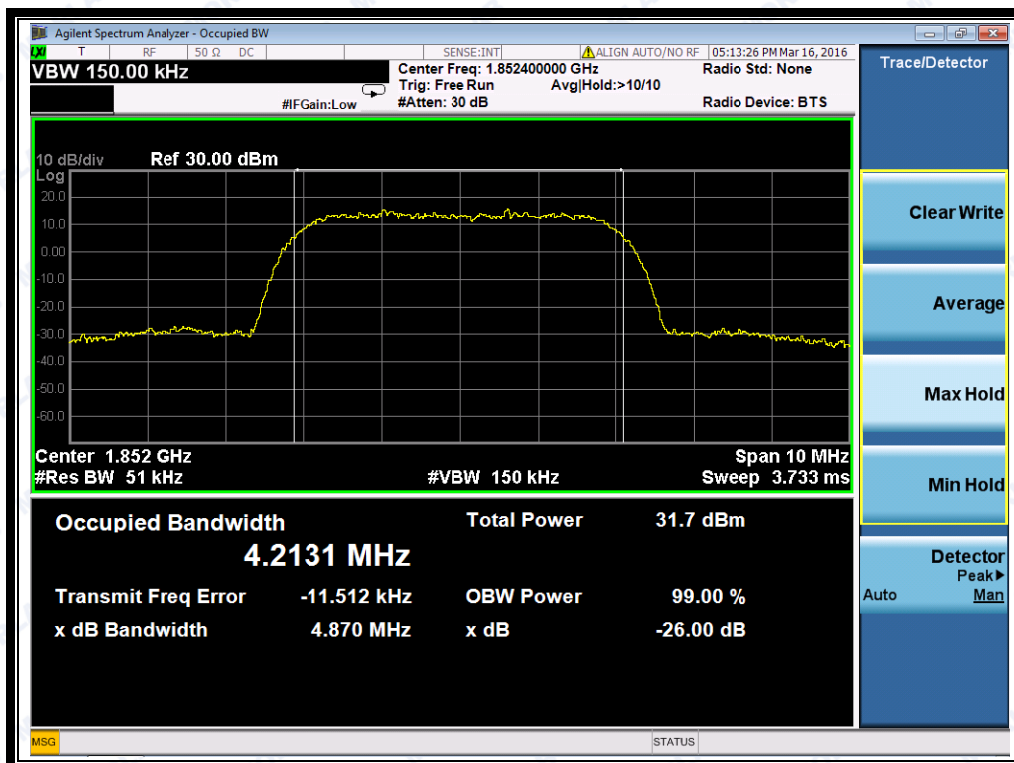
(Plot I2: HSDPA 850 MHz Channel = 4175)



REPORT No.: SZ16010163W04



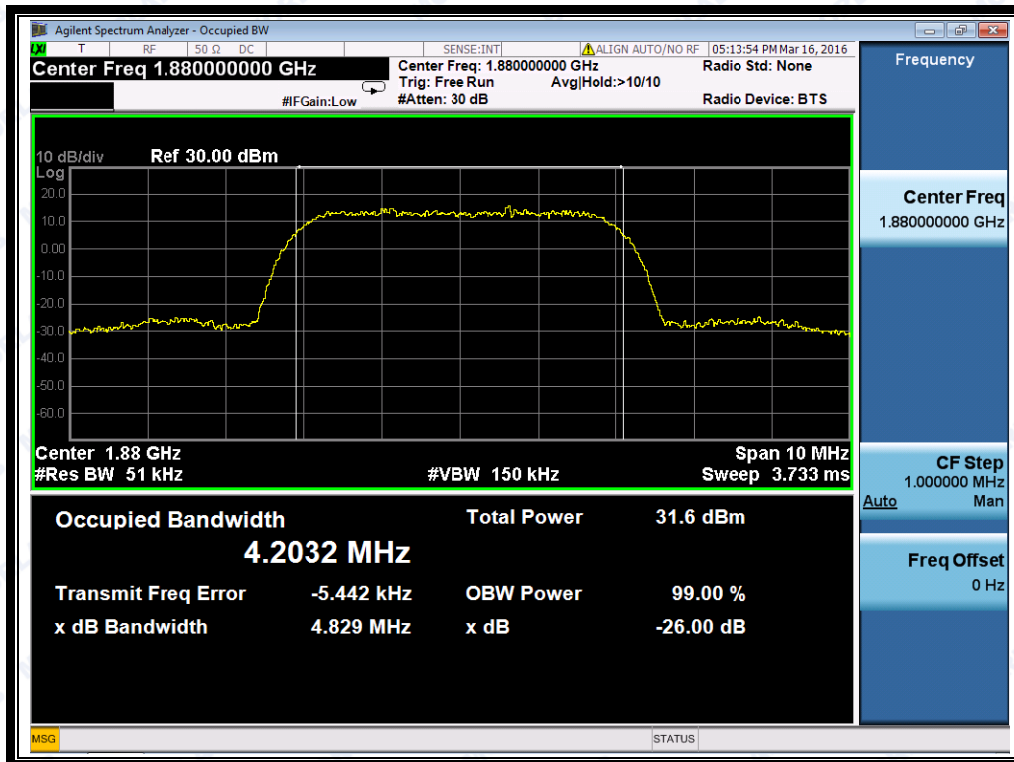
(Plot I3: HSDPA 850MHz Channel = 4233)



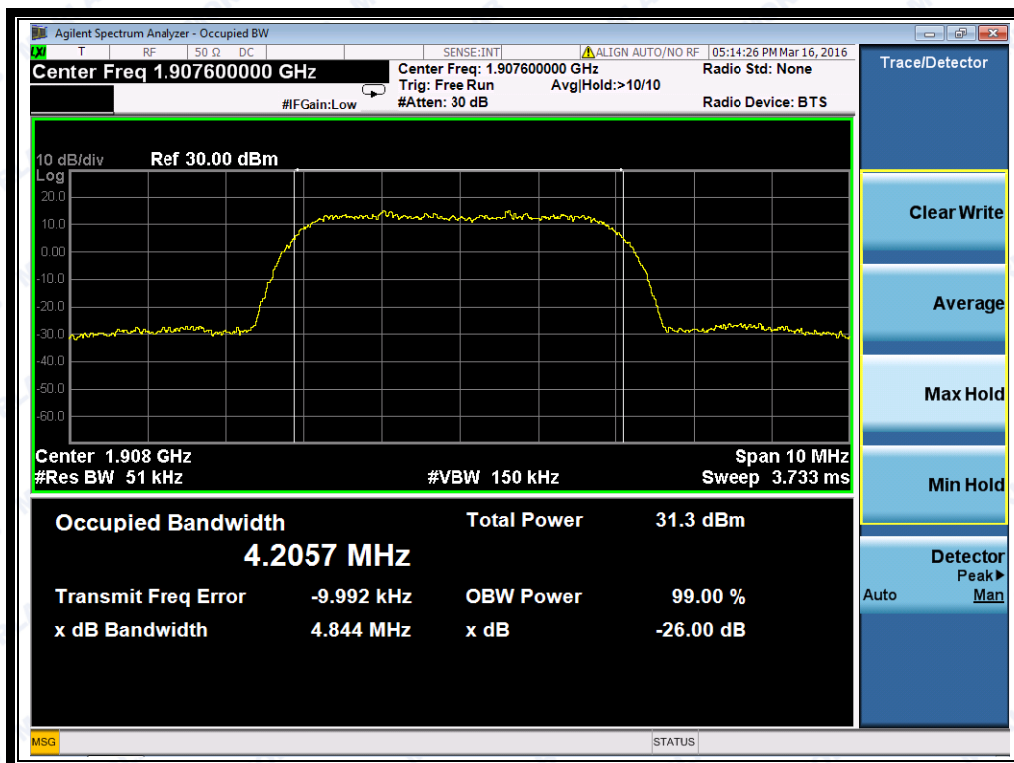
(Plot J1: HSDPA 1900MHz Channel = 9262)



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(Plot J2: HSDPA 1900 MHz Channel = 9400)

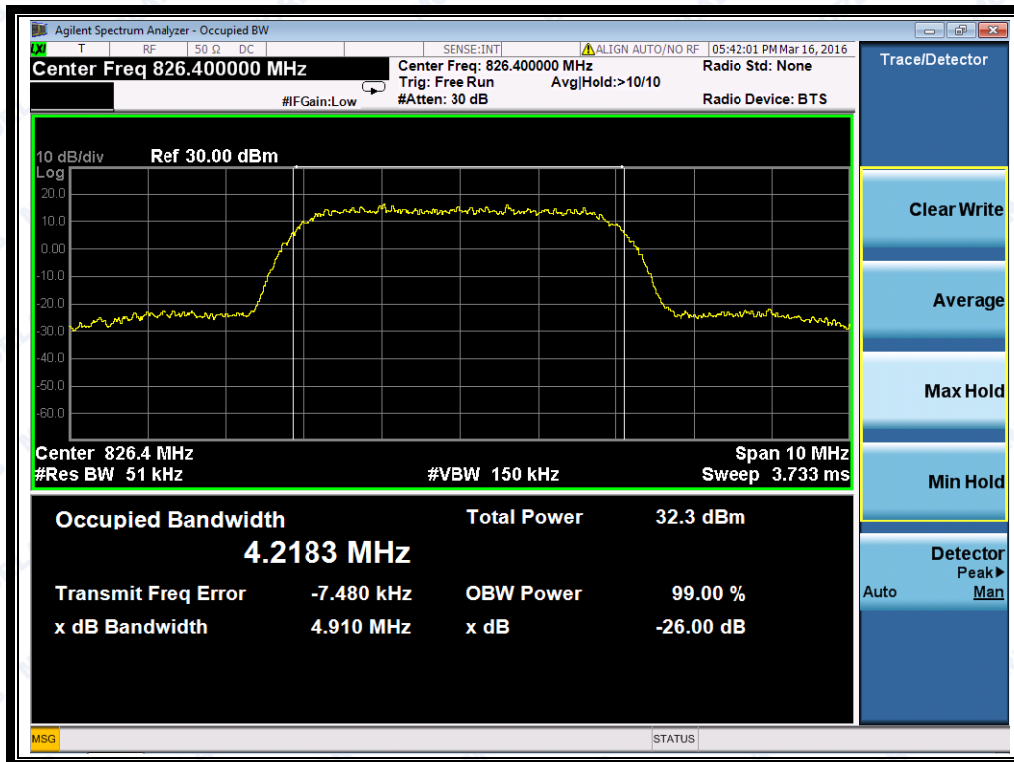


(Plot J3: HSDPA 1900MHz Channel = 9538)

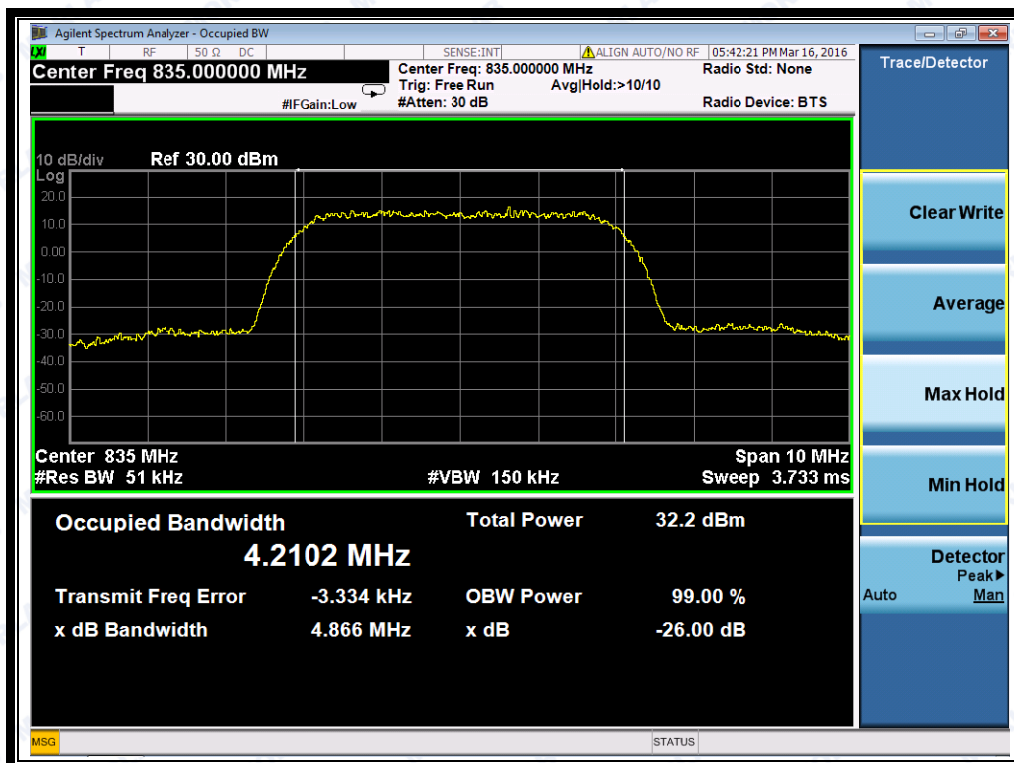




REPORT No.: SZ16010163W04



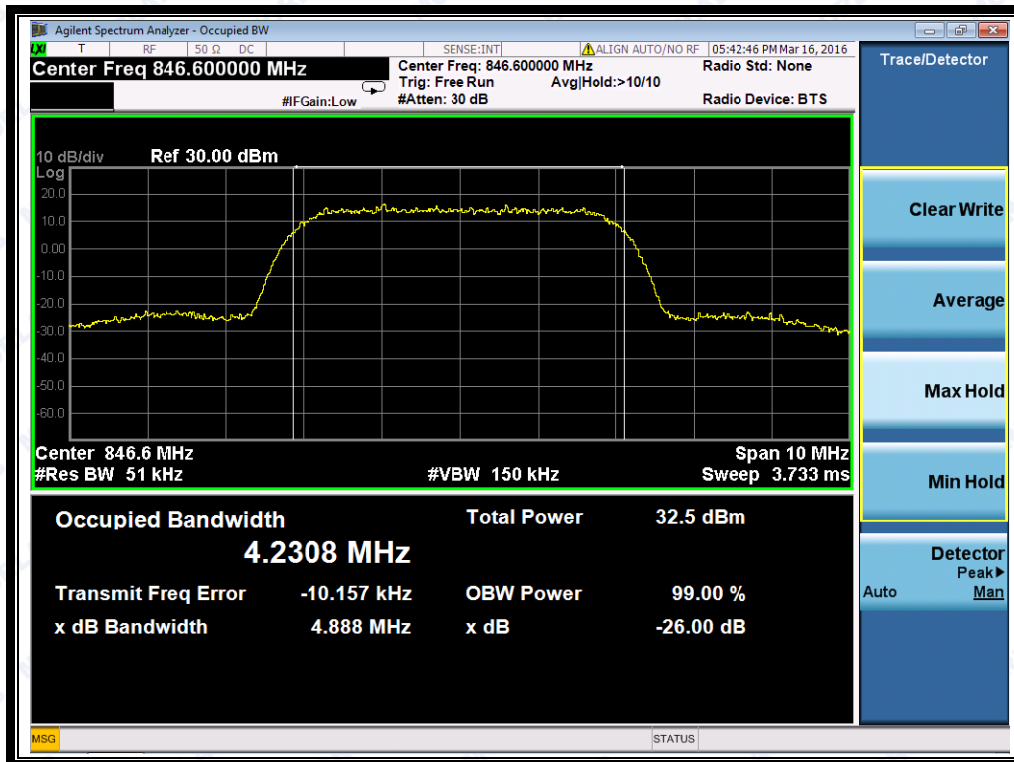
(Plot K1: HSUPA 850MHz Channel = 4132)



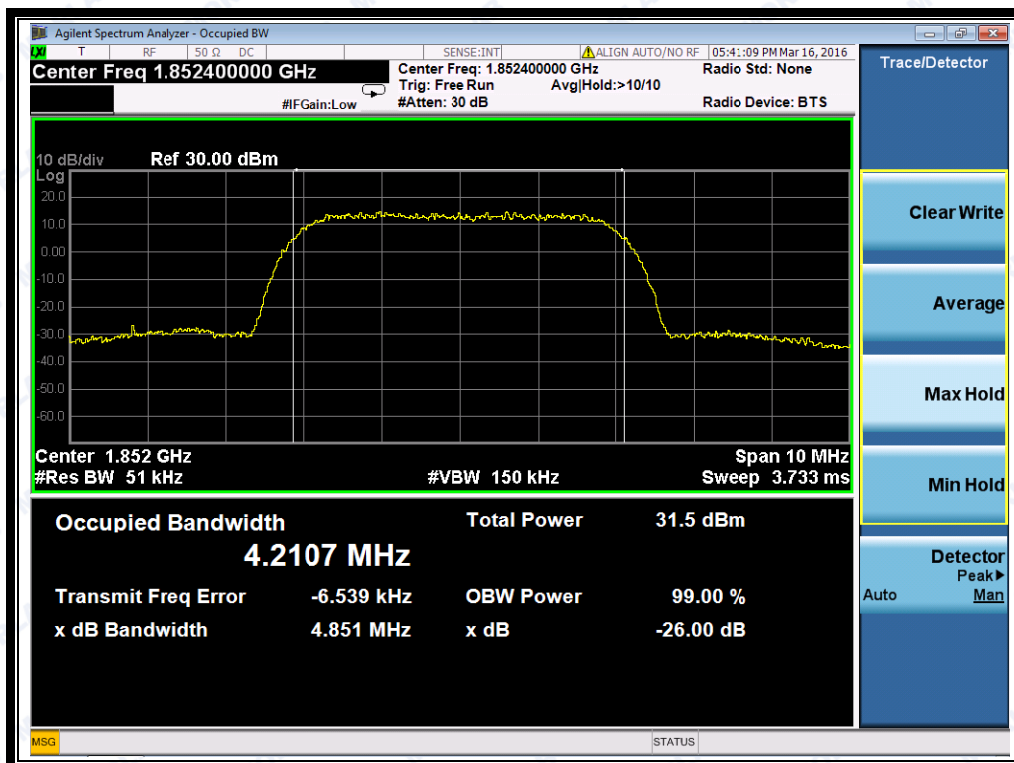
(Plot K2: HSUPA 850 MHz Channel = 4175)



REPORT No.: SZ16010163W04



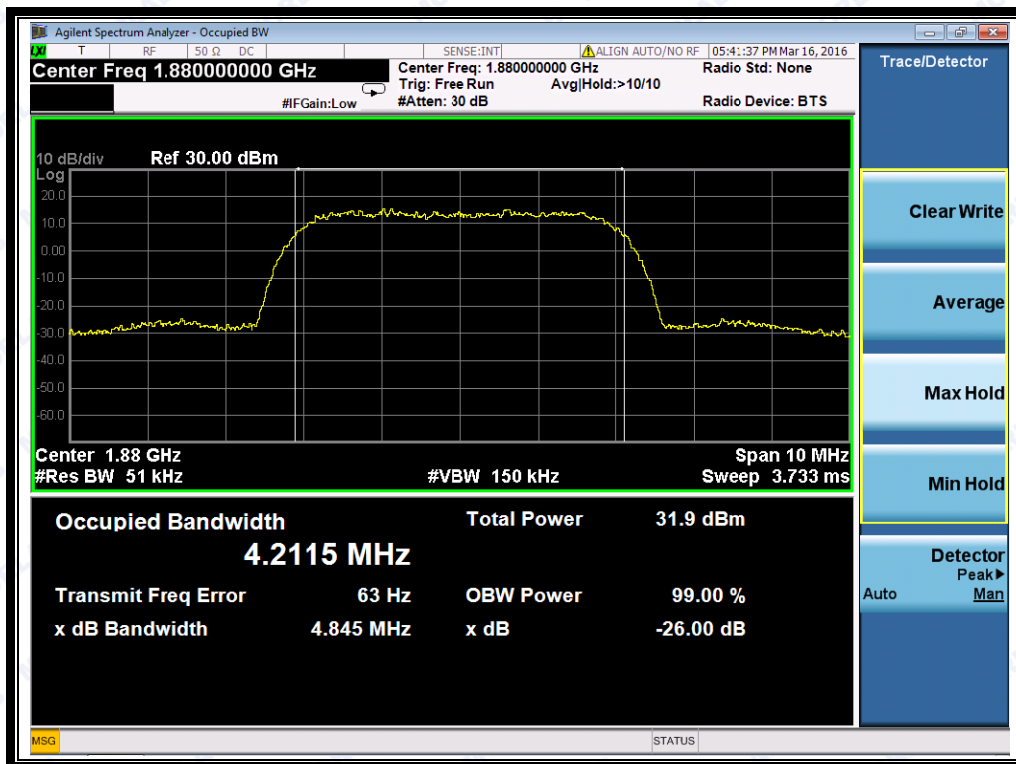
(Plot K3: HSUPA 850MHz Channel = 4233)



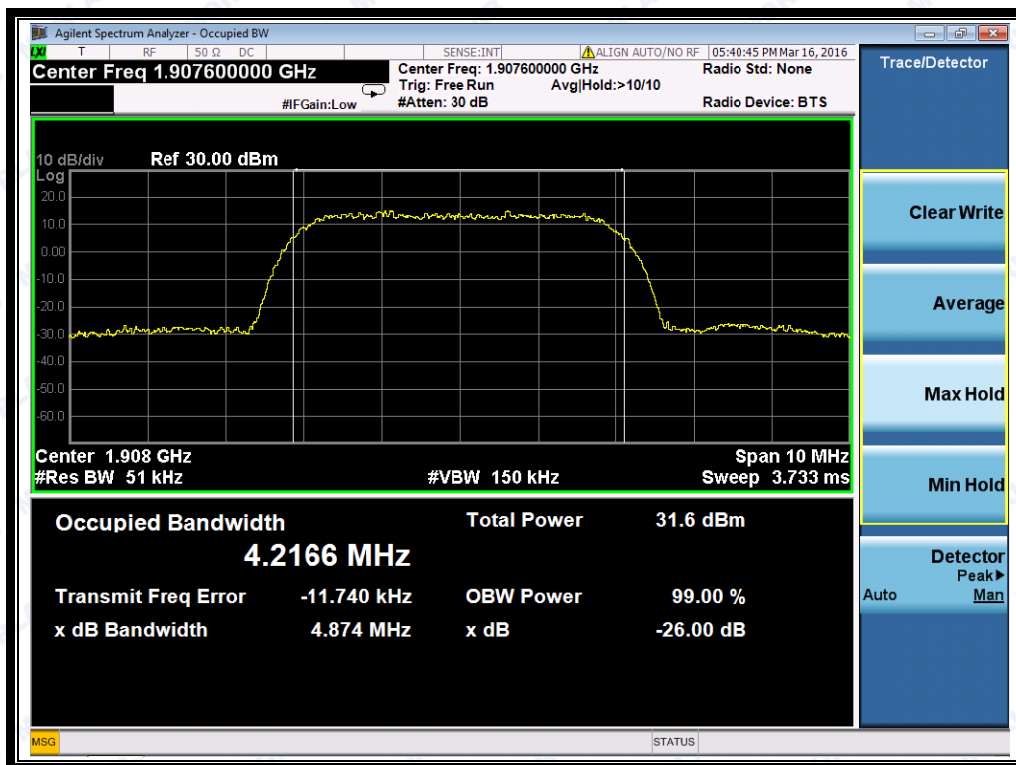
(Plot L1: HSUPA 1900MHz Channel = 9262)



REPORT No.: SZ16010163W04



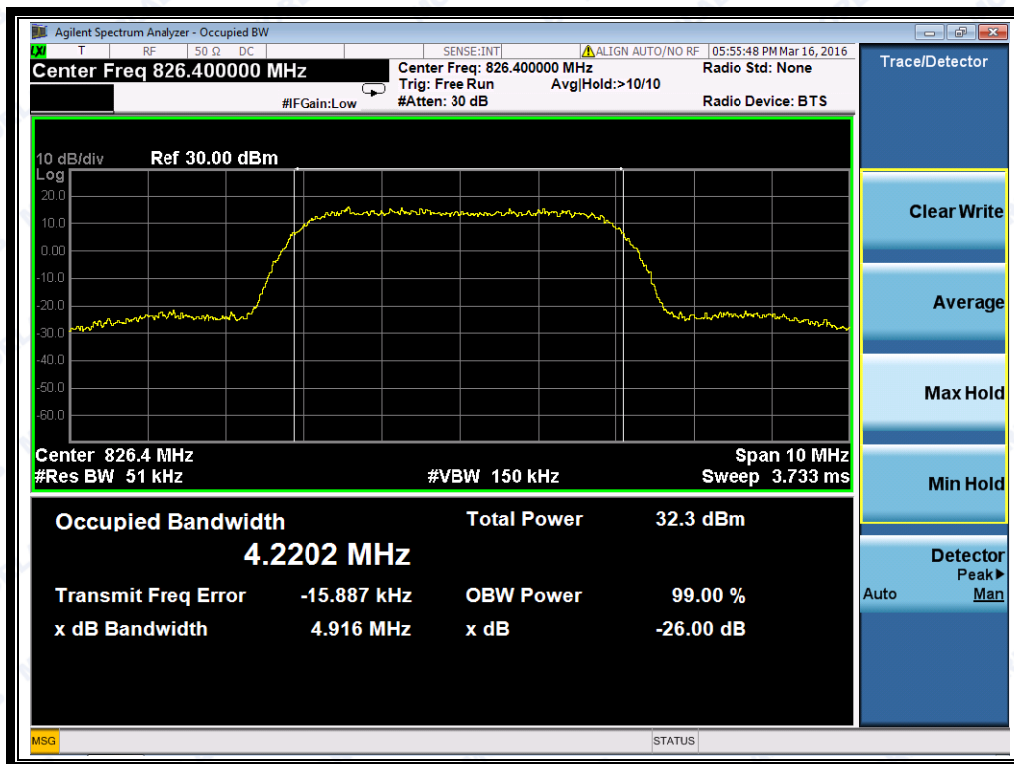
(Plot L2: HSUPA 1900 MHz Channel = 9400)



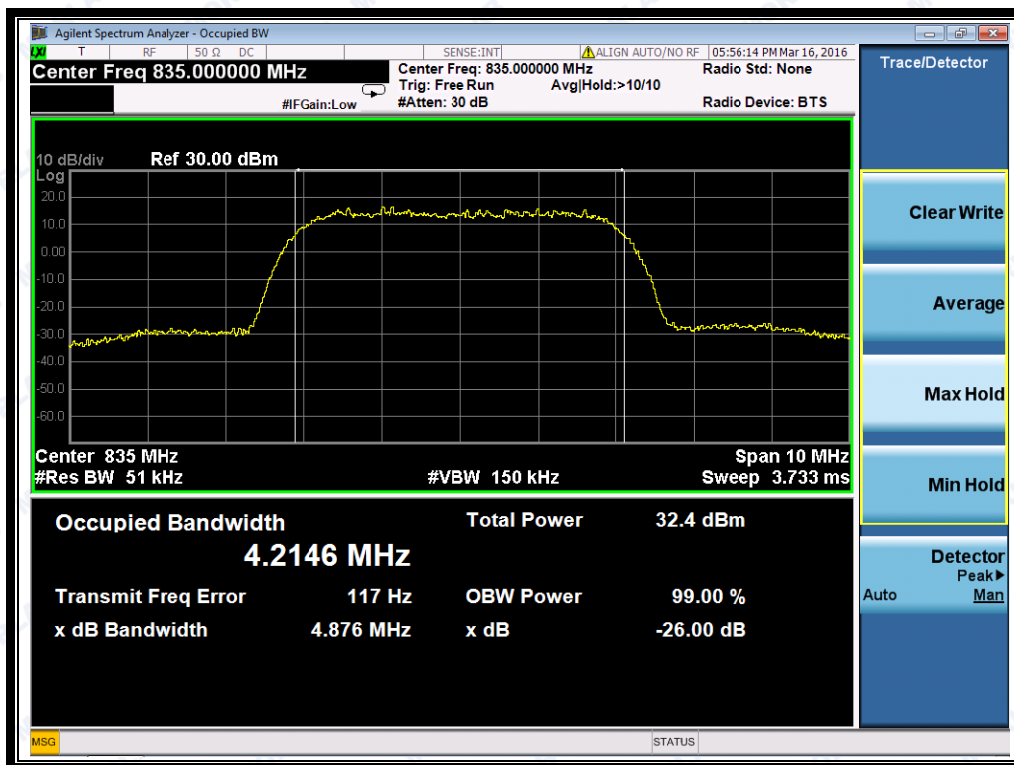
(Plot L3: HSUPA 1900MHz Channel = 9538)



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(Plot M1: HSPA+ 850MHz Channel = 4132)

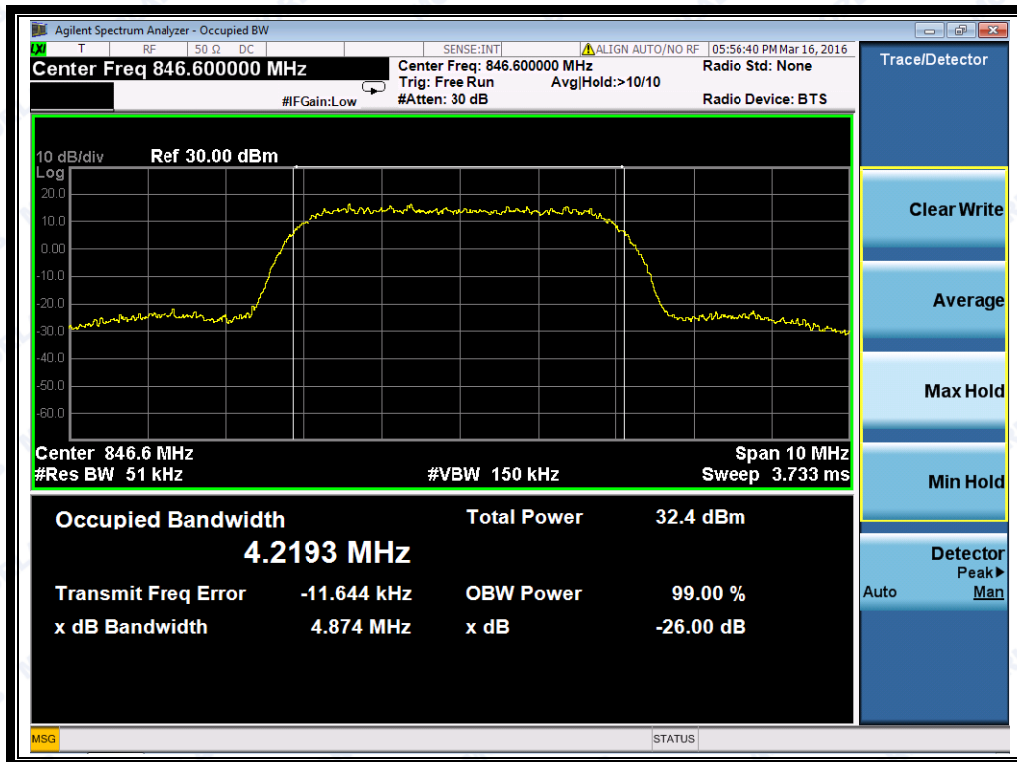


(Plot M2: HSPA+ 850 MHz Channel = 4175)

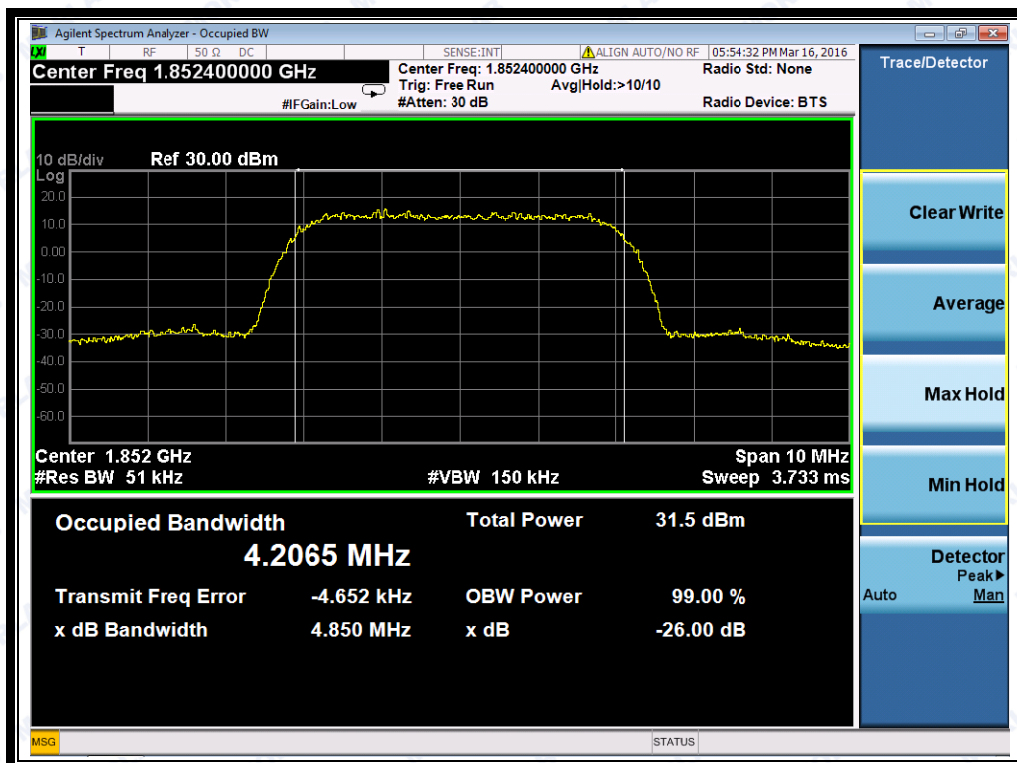




REPORT No.: SZ16010163W04



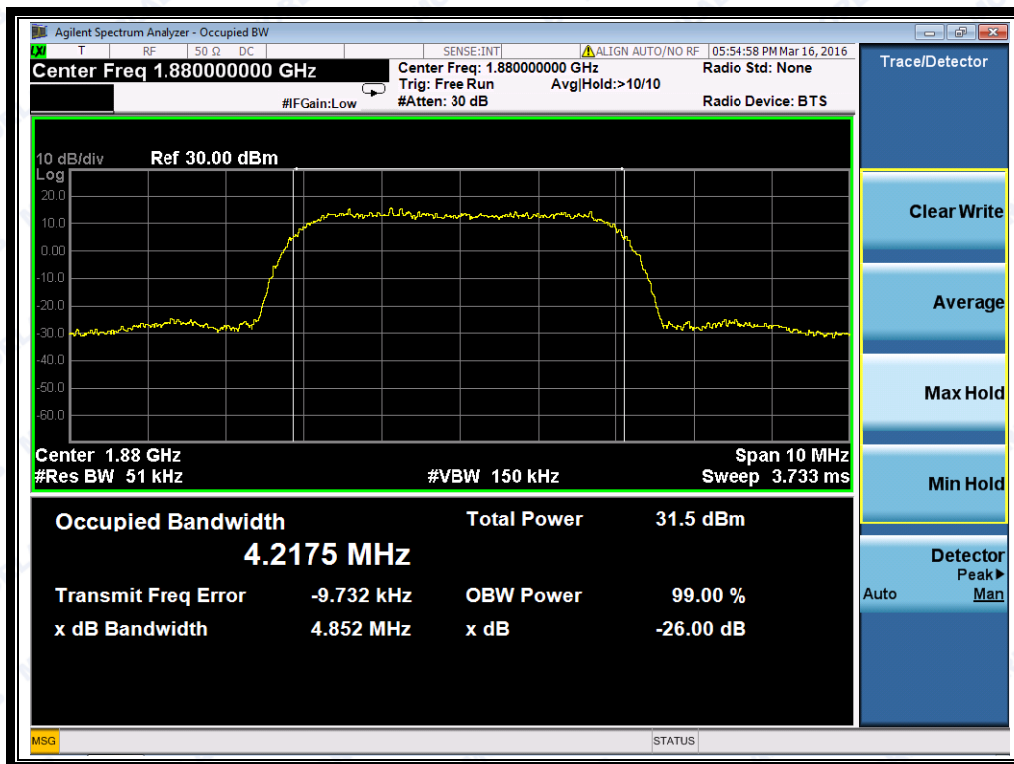
(Plot M3: HSPA+ 850MHz Channel = 4233)



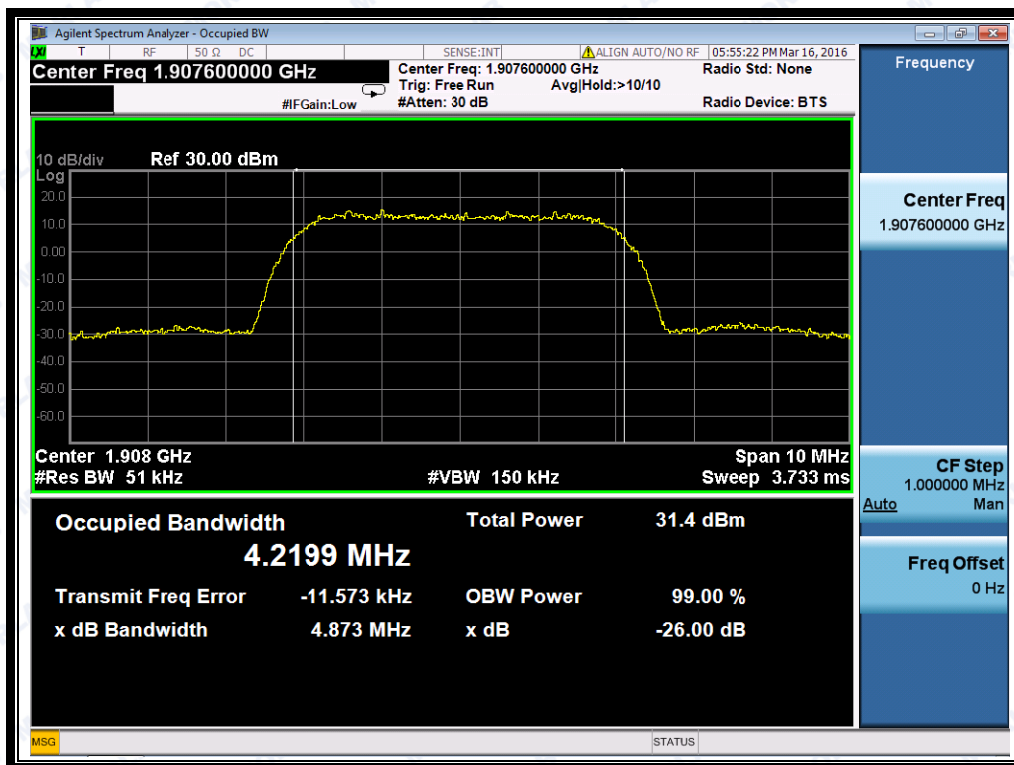
(Plot N1: HSPA+ 1900MHz Channel = 9262)



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(Plot N2: HSPA+ 1900 MHz Channel = 9400)



(Plot N3: HSPA+ 1900MHz Channel = 9538)

## 2.4 Frequency Stability

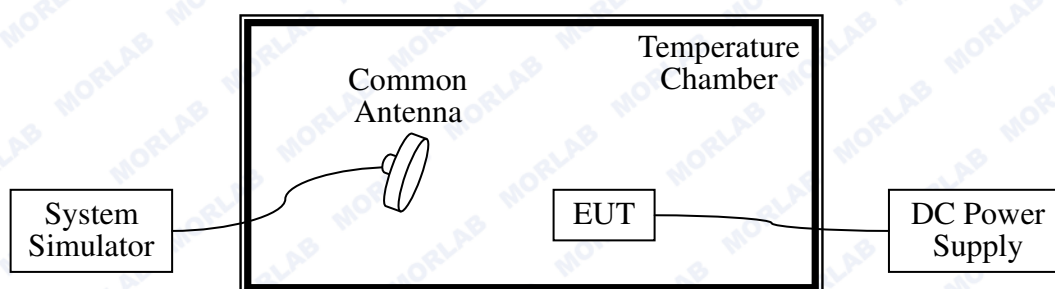
### 2.4.1 Requirement

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:

- The temperature is varied from  $-30^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$  at intervals of not more than  $10^{\circ}\text{C}$ .
- 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

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.

Equipments List:

| Description         | Manufacturer              | Model       | Serial No. | Cal. Date  | Cal. Due   |
|---------------------|---------------------------|-------------|------------|------------|------------|
| System Simulator    | Agilent                   | E5515C      | GB43130131 | 2015.03.26 | 2016.03.25 |
| DC Power Supply     | Good Will                 | GPS -3030DD | EF920938   | 2015.03.26 | 2016.03.25 |
| Temperature Chamber | YinHe Experimental Equip. | HL4003T     | (n.a.)     | 2015.03.26 | 2016.03.25 |





### 2.4.3 Test Verdict

The nominal, highest and lowest extreme voltages are separately 3.8VDC, 4.2VDC and 3.45VDC, 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 |         |
| 3.80            | -20              | 9.38                     | ±2060.5 | 8.06                     | ±2091.5 | -9.97                    | ±2122  | PASS    |
|                 | -10              | -13.25                   |         | 6.94                     |         | 11.87                    |        |         |
|                 | 0                | -8.74                    |         | 7.02                     |         | -17.27                   |        |         |
|                 | +10              | 5.41                     |         | 11.14                    |         | 23.46                    |        |         |
|                 | +20              | -4.08                    |         | 4.16                     |         | 24.87                    |        |         |
|                 | +30              | 9.34                     |         | 10.48                    |         | -11.26                   |        |         |
|                 | +40              | 27.31                    |         | -1.84                    |         | 23.46                    |        |         |
|                 | +50              | -12.75                   |         | 0.29                     |         | 18.07                    |        |         |
|                 | +60              | -3.06                    |         | 10.36                    |         | -9.9                     |        |         |
| 4.35            | +25              | -13.25                   |         | 11.93                    |         | 11.87                    |        |         |
| 3.40            | +25              | -8.74                    |         | 14.16                    |         | -11.34                   |        |         |

#### 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  |         |
| 3.80            | -20              | -12.97                    | ±1850.2 | 11.99                     | ±1880.0 | -14.85                    | ±1909.8 | PASS    |
|                 | -10              | 30.55                     |         | 21.78                     |         | -1.18                     |         |         |
|                 | 0                | -8.96                     |         | -14.56                    |         | 23.54                     |         |         |
|                 | +10              | -14.6                     |         | -13.19                    |         | 21.95                     |         |         |
|                 | +20              | -24.96                    |         | 35.98                     |         | -13.26                    |         |         |
|                 | +30              | 12.2                      |         | -7.54                     |         | 24.54                     |         |         |
|                 | +40              | -15.4                     |         | -13.15                    |         | 18.15                     |         |         |
|                 | +50              | 22.72                     |         | 15.18                     |         | -9.44                     |         |         |
|                 | +60              | 16.37                     |         | 22.32                     |         | 12.16                     |         |         |
| 4.35            | +25              | 34.58                     |         | -23.6                     |         | -1.18                     |         |         |
| 3.40            | +25              | -18.72                    |         | 11.79                     |         | 23.56                     |         |         |





## 3. EDGE 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 |             |
| 3.80            | -20              | 15.44                    | ±2060.5 | -17.42                   | ±2091.5 | 0.52                     | ±2122  | <u>PASS</u> |
|                 | -10              | 31.21                    |         | 28.75                    |         | 22.56                    |        |             |
|                 | 0                | 32.1                     |         | 44.77                    |         | 16.56                    |        |             |
|                 | +10              | -7.95                    |         | -16.66                   |         | 3.42                     |        |             |
|                 | +20              | 26.24                    |         | 11.64                    |         | -10.41                   |        |             |
|                 | +30              | 11.13                    |         | 7.36                     |         | 32.73                    |        |             |
|                 | +40              | -6.14                    |         | 29.66                    |         | 15.56                    |        |             |
|                 | +50              | -12.65                   |         | 19.95                    |         | -10.41                   |        |             |
|                 | +60              | 36.9                     |         | 22.92                    |         | 1.52                     |        |             |
| 4.35            | +25              | 3.05                     |         | 27.52                    |         | 17.71                    |        |             |
| 3.40            | +25              | 13.22                    |         | 19.66                    |         | -34.9                    |        |             |

## 4. EDGE 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  |             |
| 3.80            | -20              | -14.37                    | ±1850.2 | 15.38                     | ±1880.0 | 6.46                      | ±1909.8 | <u>PASS</u> |
|                 | -10              | -11.86                    |         | -14.4                     |         | -22.55                    |         |             |
|                 | 0                | 11.68                     |         | 41.25                     |         | -1.03                     |         |             |
|                 | +10              | 3.68                      |         | -18.91                    |         | -18.45                    |         |             |
|                 | +20              | 33.61                     |         | -12.96                    |         | -21.38                    |         |             |
|                 | +30              | -28.43                    |         | 20.91                     |         | 14.81                     |         |             |
|                 | +40              | 17.89                     |         | 18.79                     |         | -0.45                     |         |             |
|                 | +50              | -18.32                    |         | 20.48                     |         | 37.1                      |         |             |
|                 | +60              | 25.14                     |         | -14.4                     |         | 3.9                       |         |             |
| 4.35            | +25              | -12.41                    |         | -13.56                    |         | 17.18                     |         |             |
| 3.40            | +25              | 6.13                      |         | -12.55                    |         | 35.46                     |         |             |



## 5. WCDMA 850MHz Band

| Test Conditions |                  | Frequency Deviation       |       |                         |         |                           |         | Verdict |
|-----------------|------------------|---------------------------|-------|-------------------------|---------|---------------------------|---------|---------|
| Power (VDC)     | Temperature (°C) | Channel = 4123 (826.4MHz) |       | Channel = 4175 (835MHz) |         | Channel = 4233 (846.6MHz) |         |         |
|                 |                  | Hz                        | Limit | Hz                      | Limit   | Hz                        | Limit   |         |
| 3.80            | -20              | 27.72                     | ±2066 | 12.99                   | ±2087.5 | -17.6                     | ±2116.5 | PASS    |
|                 | -10              | 13.23                     |       | 13.91                   |         | 29.27                     |         |         |
|                 | 0                | 25.23                     |       | 4.85                    |         | 10.67                     |         |         |
|                 | +10              | -11.2                     |       | -8.38                   |         | 46.85                     |         |         |
|                 | +20              | 10.83                     |       | 0.27                    |         | 62.58                     |         |         |
|                 | +30              | 9.45                      |       | 15.71                   |         | -3.98                     |         |         |
|                 | +40              | 17.07                     |       | 7.71                    |         | 3.12                      |         |         |
|                 | +50              | 11.27                     |       | 7.71                    |         | 0.78                      |         |         |
|                 | +60              | 13.83                     |       | -0.18                   |         | 0.84                      |         |         |
| 4.35            | +25              | 27.12                     |       | 19.98                   |         | 9.08                      |         |         |
| 3.40            | +25              | 12.2                      |       | -15.63                  |         | 7.81                      |         |         |

## 6. 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  |         |
| 3.80            | -20              | 7.66                       | ±1852.4 | -14.32                     | ±1880  | -17.34                     | ±1907.6 | PASS    |
|                 | -10              | -1.4                       |         | 38.85                      |        | 35.83                      |         |         |
|                 | 0                | -14.63                     |         | -21.36                     |        | -24.38                     |         |         |
|                 | +10              | -5.98                      |         | -15.41                     |        | -18.43                     |         |         |
|                 | +20              | 9.46                       |         | 18.46                      |        | 15.44                      |         |         |
|                 | +30              | 1.46                       |         | 16.34                      |        | 13.32                      |         |         |
|                 | +40              | -6.43                      |         | 4.37                       |        | 1.35                       |         |         |
|                 | +50              | 6.74                       |         | 14.65                      |        | 11.63                      |         |         |
|                 | +60              | 8.64                       |         | -16.85                     |        | -19.87                     |         |         |
| 4.35            | +25              | 7.66                       |         | 14.65                      |        | 11.63                      |         |         |
| 3.40            | +25              | -21.64                     |         | 16.92                      |        | 13.90                      |         |         |



## 7. HSDPA 850MHz Band

| Test Conditions |                  | Frequency Deviation       |       |                         |         |                           |         | Verdict |
|-----------------|------------------|---------------------------|-------|-------------------------|---------|---------------------------|---------|---------|
| Power (VDC)     | Temperature (°C) | Channel = 4123 (826.4MHz) |       | Channel = 4175 (835MHz) |         | Channel = 4233 (846.6MHz) |         |         |
|                 |                  | Hz                        | Limit | Hz                      | Limit   | Hz                        | Limit   |         |
| 3.80            | -20              | 1.47                      | ±2066 | 12.32                   | ±2087.5 | 17.56                     | ±2116.5 | PASS    |
|                 | -10              | -7.57                     |       | 21.36                   |         | -3.96                     |         |         |
|                 | 0                | 16.38                     |       | 12.82                   |         | 11.3                      |         |         |
|                 | +10              | -35.39                    |       | 4.52                    |         | 14.19                     |         |         |
|                 | +20              | 1.47                      |       | -4.52                   |         | 12.34                     |         |         |
|                 | +30              | -7.57                     |       | 19.43                   |         | 9.73                      |         |         |
|                 | +40              | 17.37                     |       | -32.34                  |         | -17.54                    |         |         |
|                 | +50              | -32.89                    |       | 28.37                   |         | -3.13                     |         |         |
|                 | +60              | 20.52                     |       | 25                      |         | -14.02                    |         |         |
| 4.35            | +25              | 1.47                      |       | -35.8                   |         | -8.56                     |         |         |
| 3.40            | +25              | -17.92                    |       | 22.79                   |         | 15.04                     |         |         |

## 8. 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  |         |
| 3.80            | -20              | 19.89                      | ±1852.4 | 23.98                      | ±1880  | 18.26                      | ±1907.6 | PASS    |
|                 | -10              | 23.7                       |         | -18.54                     |        | -13.95                     |         |         |
|                 | 0                | 32.43                      |         | -13.95                     |        | 1.32                       |         |         |
|                 | +10              | -15.84                     |         | -14.43                     |        | 3.77                       |         |         |
|                 | +20              | -13.13                     |         | -1.72                      |        | -12.55                     |         |         |
|                 | +30              | 22.73                      |         | -13.19                     |        | -8.03                      |         |         |
|                 | +40              | -4.56                      |         | 28.23                      |        | 3.32                       |         |         |
|                 | +50              | 15.16                      |         | -13.13                     |        | 3.77                       |         |         |
|                 | +60              | 29.83                      |         | -1.78                      |        | 27.52                      |         |         |
| 4.35            | +25              | 30.49                      |         | 7.37                       |        | -0.81                      |         |         |
| 3.40            | +25              | -6.37                      |         | 11.20                      |        | 20.01                      |         |         |



9. HSUPA 850MHz Band

| Test Conditions |                  | Frequency Deviation       |       |                         |         |                           |         | Verdict |
|-----------------|------------------|---------------------------|-------|-------------------------|---------|---------------------------|---------|---------|
| Power (VDC)     | Temperature (°C) | Channel = 4123 (826.4MHz) |       | Channel = 4175 (835MHz) |         | Channel = 4233 (846.6MHz) |         |         |
|                 |                  | Hz                        | Limit | Hz                      | Limit   | Hz                        | Limit   |         |
| 3.80            | -20              | 8.8                       | ±2066 | 33.61                   | ±2087.5 | -8.92                     | ±2116.5 | PASS    |
|                 | -10              | 4.12                      |       | 29.17                   |         | 3.53                      |         |         |
|                 | 0                | -3.64                     |       | 8.66                    |         | 3.88                      |         |         |
|                 | +10              | 17.49                     |       | 3.35                    |         | 17.69                     |         |         |
|                 | +20              | -0.65                     |       | -3.69                   |         | -11.38                    |         |         |
|                 | +30              | 24.63                     |       | 17.26                   |         | -7.92                     |         |         |
|                 | +40              | 0.73                      |       | -0.51                   |         | 3.43                      |         |         |
|                 | +50              | -10.74                    |       | 24.2                    |         | 5.02                      |         |         |
|                 | +60              | -4.8                      |       | 14.83                   |         | -4.07                     |         |         |
| 4.35            | +25              | 26.59                     |       | -6.04                   |         | 10.68                     |         |         |
| 3.40            | +25              | -15.67                    |       | 22.62                   |         | 1.04                      |         |         |

10. 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  |         |
| 3.80            | -20              | 15.58                      | ±1852.4 | 12.42                      | ±1880  | 29.89                      | ±1907.6 | PASS    |
|                 | -10              | -16.55                     |         | 26.29                      |        | 25.45                      |         |         |
|                 | 0                | -11.01                     |         | 34.88                      |        | 4.94                       |         |         |
|                 | +10              | 0.34                       |         | -9.45                      |        | -0.37                      |         |         |
|                 | +20              | 0.79                       |         | -7.04                      |        | -7.41                      |         |         |
|                 | +30              | -5.86                      |         | 19.22                      |        | 13.54                      |         |         |
|                 | +40              | 25.03                      |         | -8.07                      |        | -4.23                      |         |         |
|                 | +50              | 10.41                      |         | 11.65                      |        | 20.48                      |         |         |
|                 | +60              | 24.54                      |         | 26.32                      |        | 11.11                      |         |         |
| 4.35            | +25              | -3.79                      |         | 26.98                      |        | -9.76                      |         |         |
| 3.40            | +25              | 5.83                       |         | -9.93                      |        | 18.9                       |         |         |





## 11. HSPA+ 850MHz Band

| Test Conditions |                  | Frequency Deviation       |       |                         |         |                           |         | Verdict |
|-----------------|------------------|---------------------------|-------|-------------------------|---------|---------------------------|---------|---------|
| Power (VDC)     | Temperature (°C) | Channel = 4123 (826.4MHz) |       | Channel = 4175 (835MHz) |         | Channel = 4233 (846.6MHz) |         |         |
|                 |                  | Hz                        | Limit | Hz                      | Limit   | Hz                        | Limit   |         |
| 3.80            | -20              | -8.23                     | ±2066 | 7.12                    | ±2087.5 | 4.64                      | ±2116.5 | PASS    |
|                 | -10              | 17.49                     |       | -20.3                   |         | -7.55                     |         |         |
|                 | 0                | 10.15                     |       | 16.37                   |         | -11.99                    |         |         |
|                 | +10              | -15.43                    |       | -6.76                   |         | -7.48                     |         |         |
|                 | +20              | 6.38                      |       | 17.96                   |         | 6.67                      |         |         |
|                 | +30              | -9.03                     |       | 16.37                   |         | -2.82                     |         |         |
|                 | +40              | 30.09                     |       | -18.76                  |         | 10.6                      |         |         |
|                 | +50              | 4.14                      |       | 18.96                   |         | 28.57                     |         |         |
|                 | +60              | -30.1                     |       | 12.57                   |         | -11.49                    |         |         |
| 4.35            | +25              | 25.31                     |       | -14.03                  |         | -1.8                      |         |         |
| 3.40            | +25              | -6.59                     |       | 6.88                    |         | 17.45                     |         |         |

## 12. HSPA+ 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  |         |
| 3.80            | -20              | 25.41                      | ±1852.4 | 10.51                      | ±1880  | -18.96                     | ±1907.6 | PASS    |
|                 | -10              | -10.61                     |         | 11.11                      |        | -8.55                      |         |         |
|                 | 0                | 19.6                       |         | 17.27                      |        | 41.64                      |         |         |
|                 | +10              | 11.83                      |         | -28.67                     |        | -1.9                       |         |         |
|                 | +20              | -15.8                      |         | -18.26                     |        | -7.54                      |         |         |
|                 | +30              | 7.73                       |         | 30.93                      |        | -17.96                     |         |         |
|                 | +40              | -2.54                      |         | -12.61                     |        | 19.29                      |         |         |
|                 | +50              | 16.09                      |         | -18.25                     |        | -8.34                      |         |         |
|                 | +60              | -24.66                     |         | 22.07                      |        | 29.78                      |         |         |
| 4.35            | +25              | 28.98                      |         | 3.62                       |        | 14.34                      |         |         |
| 3.40            | +25              | 17.46                      |         | -1.52                      |        | -25.8                      |         |         |



## 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. Equipment List

| Description       | Manufacturer | Model  | Serial No. | Cal. Date  | Cal. Due   |
|-------------------|--------------|--------|------------|------------|------------|
| System Simulator  | Agilent      | E5515C | GB43130131 | 2015.03.26 | 2016.03.25 |
| Spectrum Analyzer | Agilent      | E7405A | US44210471 | 2015.03.26 | 2016.03.25 |
| Power Meter       | Agilent      | E4418B | GB43318055 | 2015.03.26 | 2016.03.25 |
| Power Sensor      | Agilent      | 8482A  | MY41091706 | 2015.03.26 | 2016.03.25 |
| Power Splitter    | Weinschel    | 1506A  | NW521      | 2015.03.26 | 2016.03.25 |
| Attenuator 1      | Resnet       | 20dB   | (n.a.)     | 2015.03.26 | 2016.03.25 |
| Attenuator 2      | Resnet       | 3dB    | (n.a.)     | 2015.03.26 | 2016.03.25 |

#### 2. Test Verdict:

| Band          | Channel | Frequency (MHz) | Measured Max. Spurious Emission (dBm) | Refer to Plot   | Limit (dBm) | Verdict |
|---------------|---------|-----------------|---------------------------------------|-----------------|-------------|---------|
| GSM 850MHz    | 128     | 824.2           | -29.61                                | Plot A1 to A1.1 | -13         | PASS    |
|               | 190     | 836.6           | -29.39                                | Plot A2 to A2.1 |             | PASS    |
|               | 251     | 848.8           | -29.95                                | Plot A3 to A3.1 |             | PASS    |
| GSM 1900MHz   | 512     | 1850.2          | -19.23                                | Plot B1 to B1.1 | -13         | PASS    |
|               | 661     | 1880.0          | -19.48                                | Plot B2 to B2.1 |             | PASS    |
|               | 810     | 1909.8          | -20.08                                | Plot B3 to B3.1 |             | PASS    |
| EGPRS 850MHz  | 128     | 824.2           | -29.32                                | Plot E1 to E1.1 | -13         | PASS    |
|               | 190     | 836.6           | -29.30                                | Plot E2 to E2.1 |             | PASS    |
|               | 251     | 848.8           | -29.33                                | Plot E3 to E3.1 |             | PASS    |
| EGPRS 1900MHz | 512     | 1850.2          | -19.77                                | Plot F1 to F1.1 | -13         | PASS    |
|               | 661     | 1880.0          | -19.94                                | Plot F2 to F2.1 |             | PASS    |
|               | 810     | 1909.8          | -19.19                                | Plot F3 to F3.1 |             | PASS    |



| Band          | Channel | Frequency (MHz) | Measured Max. Spurious Emission (dBm) | Refer to Plot   | Limit (dBm) | Verdict |
|---------------|---------|-----------------|---------------------------------------|-----------------|-------------|---------|
| WCDMA 850MHz  | 4132    | 826.4           | < -25                                 | Plot G1 to G1.1 | -13         | PASS    |
|               | 4175    | 835.0           | < -25                                 | Plot G2 to G2.1 |             | PASS    |
|               | 4233    | 846.6           | < -25                                 | Plot G3 to G3.1 |             | PASS    |
| WCDMA 1900MHz | 9262    | 1852.4          | < -25                                 | Plot H1 to H1.1 | -13         | PASS    |
|               | 9400    | 1880.0          | < -25                                 | Plot H2 to H2.1 |             | PASS    |
|               | 9538    | 1907.6          | < -25                                 | Plot H3 to H3.1 |             | PASS    |
| HSDPA 850MHz  | 4132    | 826.4           | < -25                                 | Plot I1 to I1.1 | -13         | PASS    |
|               | 4175    | 835.0           | < -25                                 | Plot I2 to I2.1 |             | PASS    |
|               | 4233    | 846.6           | < -25                                 | Plot I3 to I3.1 |             | PASS    |
| HSDPA 1900MHz | 9262    | 1852.4          | < -25                                 | Plot J1 to J1.1 | -13         | PASS    |
|               | 9400    | 1880.0          | < -25                                 | Plot J2 to J2.1 |             | PASS    |
|               | 9538    | 1907.6          | < -25                                 | Plot J3 to J3.1 |             | PASS    |
| HSUPA 850MHz  | 4132    | 826.4           | < -25                                 | Plot K1 to K1.1 | -13         | PASS    |
|               | 4175    | 835.0           | < -25                                 | Plot K2 to K2.1 |             | PASS    |
|               | 4233    | 846.6           | < -25                                 | Plot K3 to K3.1 |             | PASS    |
| HSUPA 1900MHz | 9262    | 1852.4          | < -25                                 | Plot L1 to L1.1 | -13         | PASS    |
|               | 9400    | 1880.0          | < -25                                 | Plot L2 to L2.1 |             | PASS    |
|               | 9538    | 1907.6          | < -25                                 | Plot L3 to L3.1 |             | PASS    |
| HSPA+ 850MHz  | 4132    | 826.4           | < -25                                 | Plot M1 to M1.1 | -13         | PASS    |
|               | 4175    | 835.0           | < -25                                 | Plot M2 to M2.1 |             | PASS    |
|               | 4233    | 846.6           | < -25                                 | Plot M3 to M3.1 |             | PASS    |
| HSPA+ 1900MHz | 9262    | 1852.4          | < -25                                 | Plot N1 to N1.1 | -13         | PASS    |
|               | 9400    | 1880.0          | < -25                                 | Plot N2 to N2.1 |             | PASS    |
|               | 9538    | 1907.6          | < -25                                 | Plot N3 to N3.1 |             | PASS    |

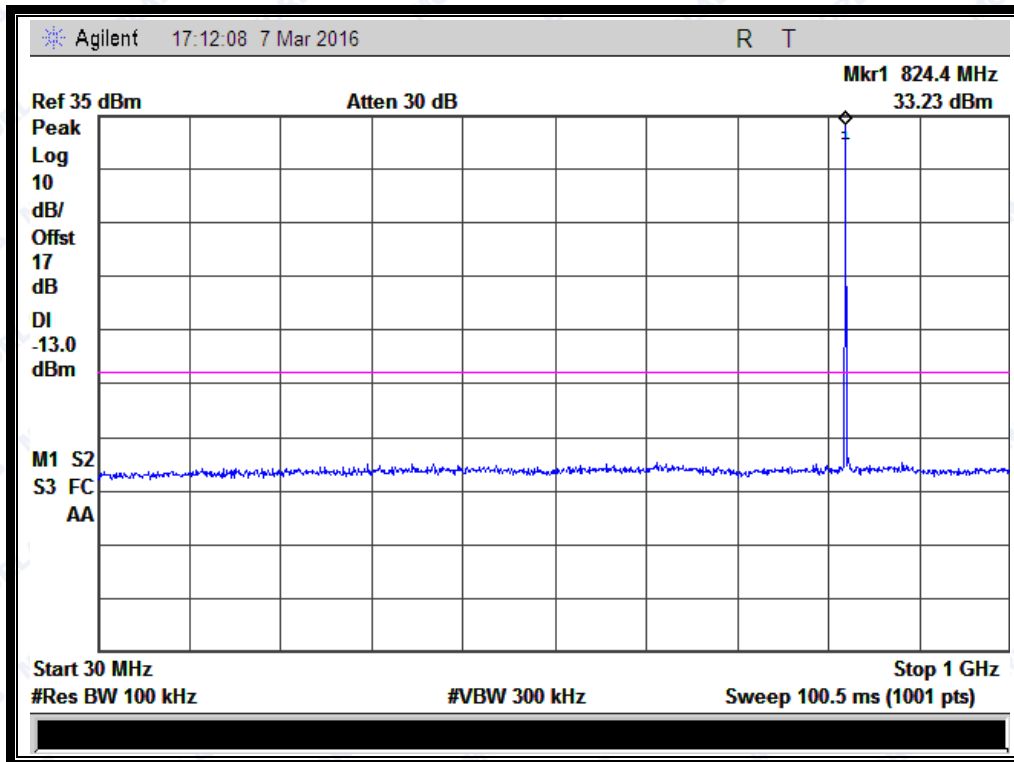
Test Plots for the Whole Measurement Frequency Range:

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

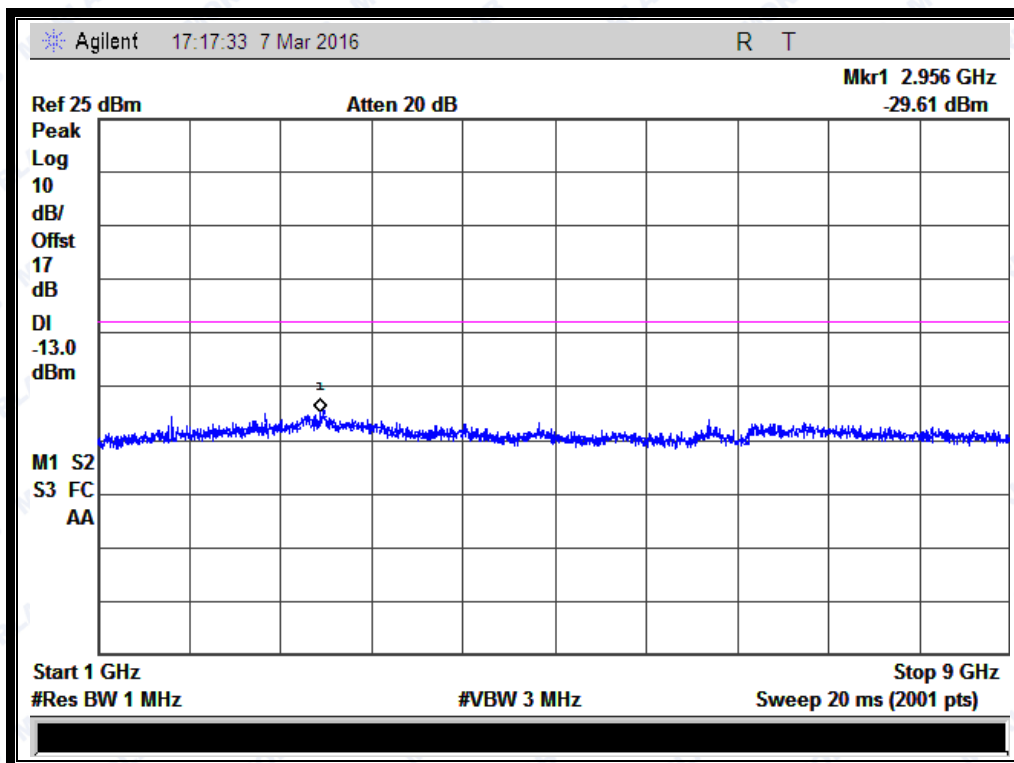




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(Plot A1: GSM 850MHz Channel = 128, 30MHz to 1GHz)

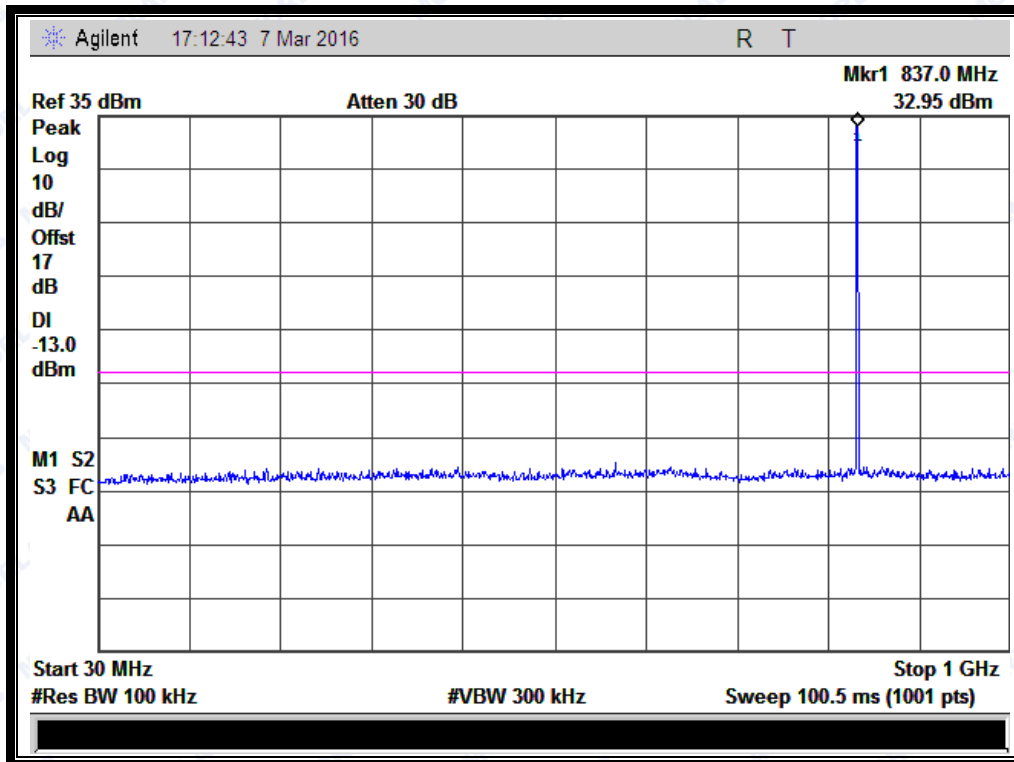


(Plot A1.1: GSM 850MHz Channel = 128, 1GHz to 9GHz)

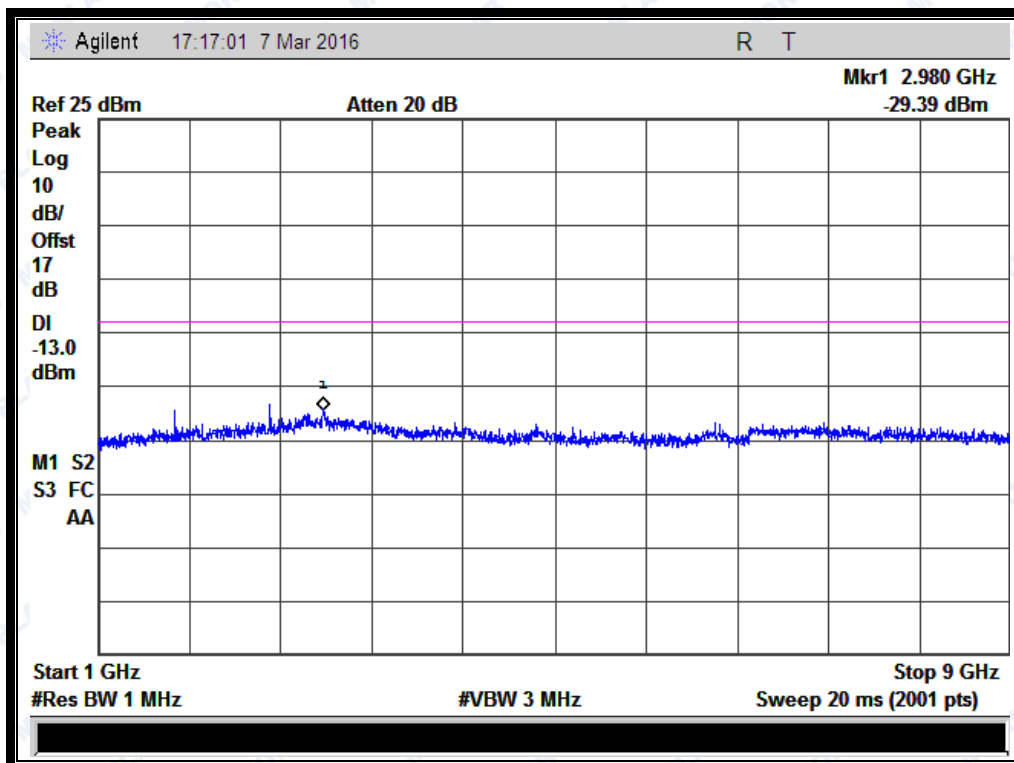




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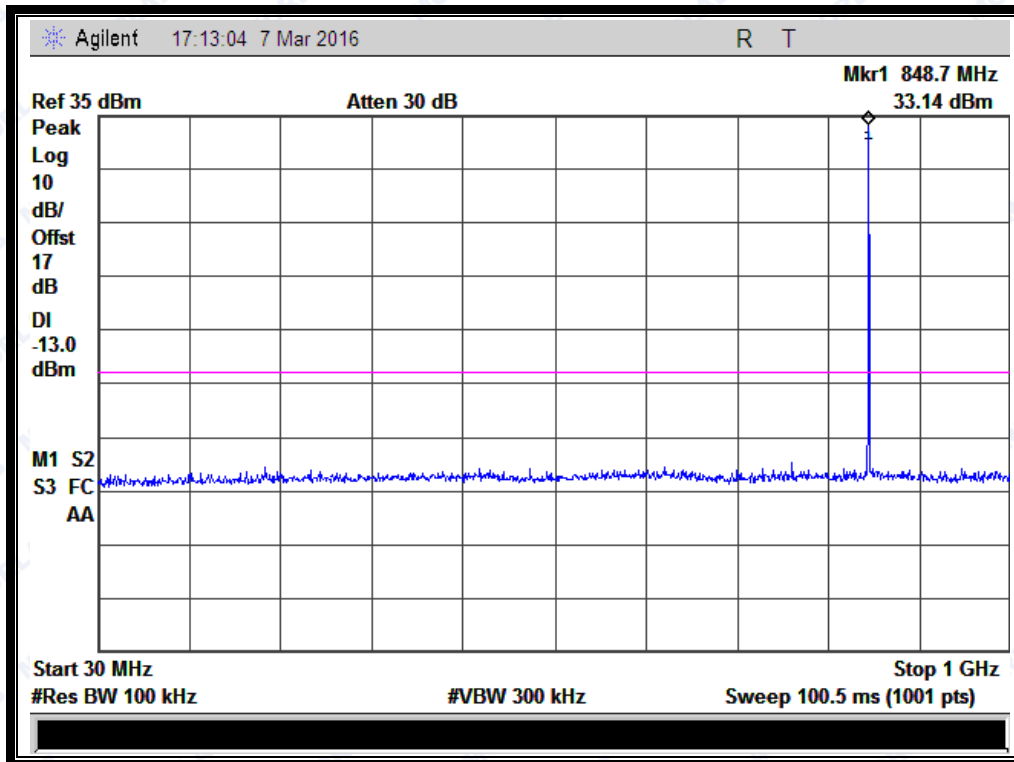
(Plot A2: GSM 850MHz Channel = 190, 30MHz to 1GHz)



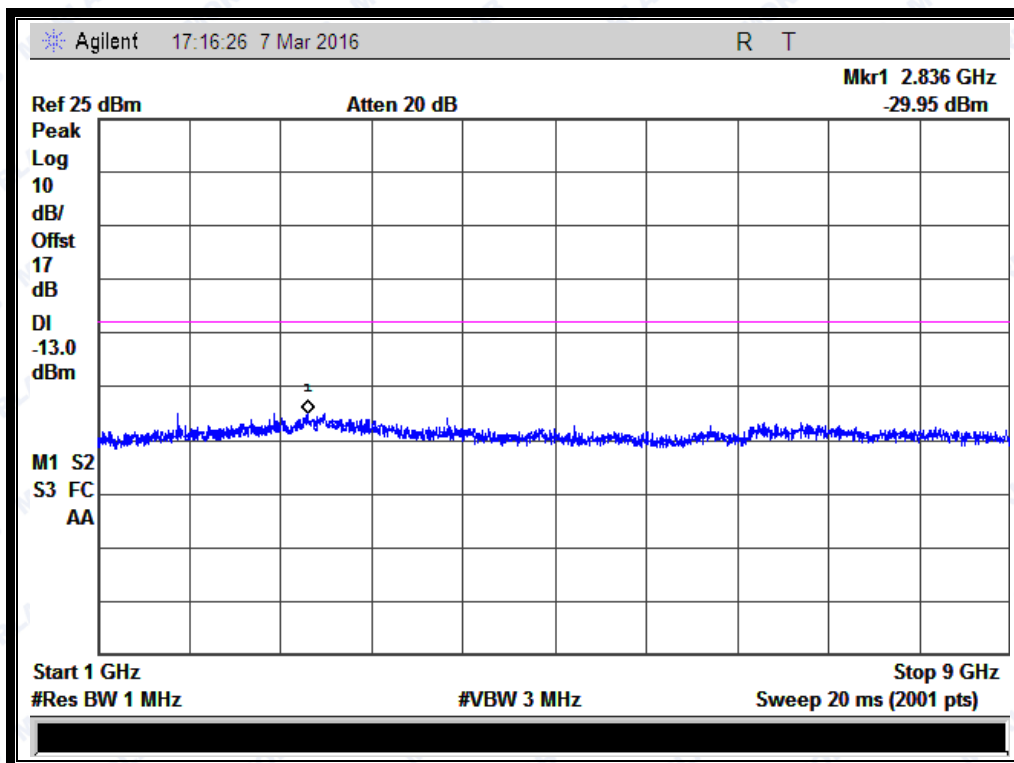
(Plot A2.1: GSM 850MHz Channel = 190, 1GHz to 9GHz)



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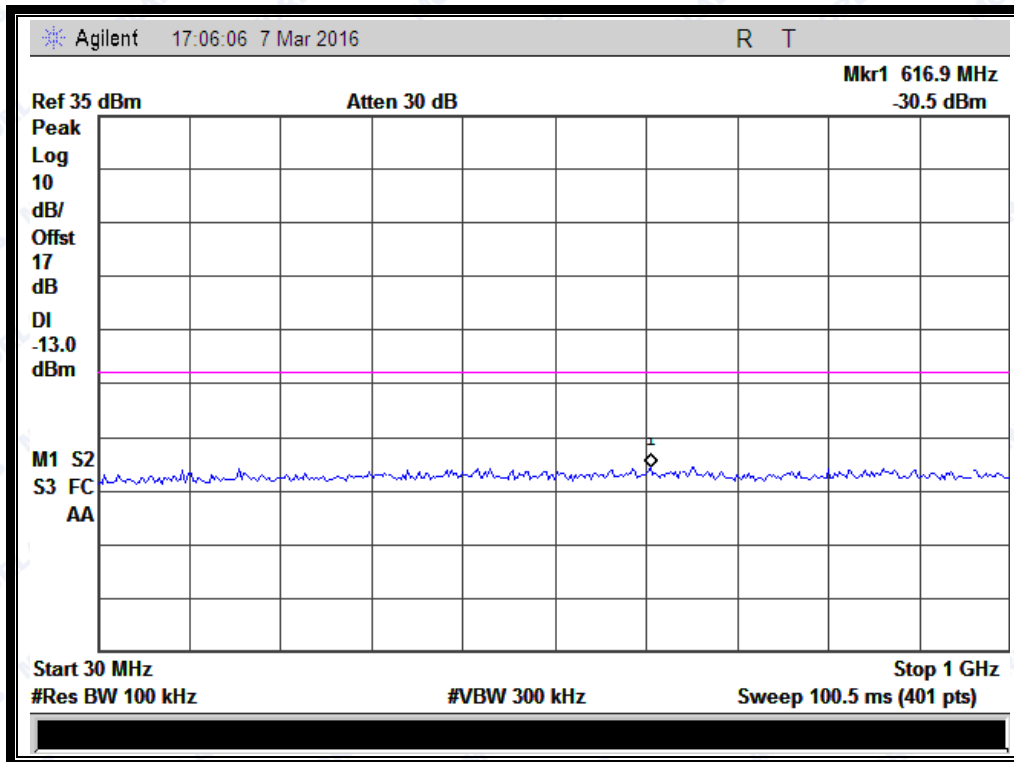
(Plot A3: GSM 850MHz Channel = 251, 30MHz to 1GHz)



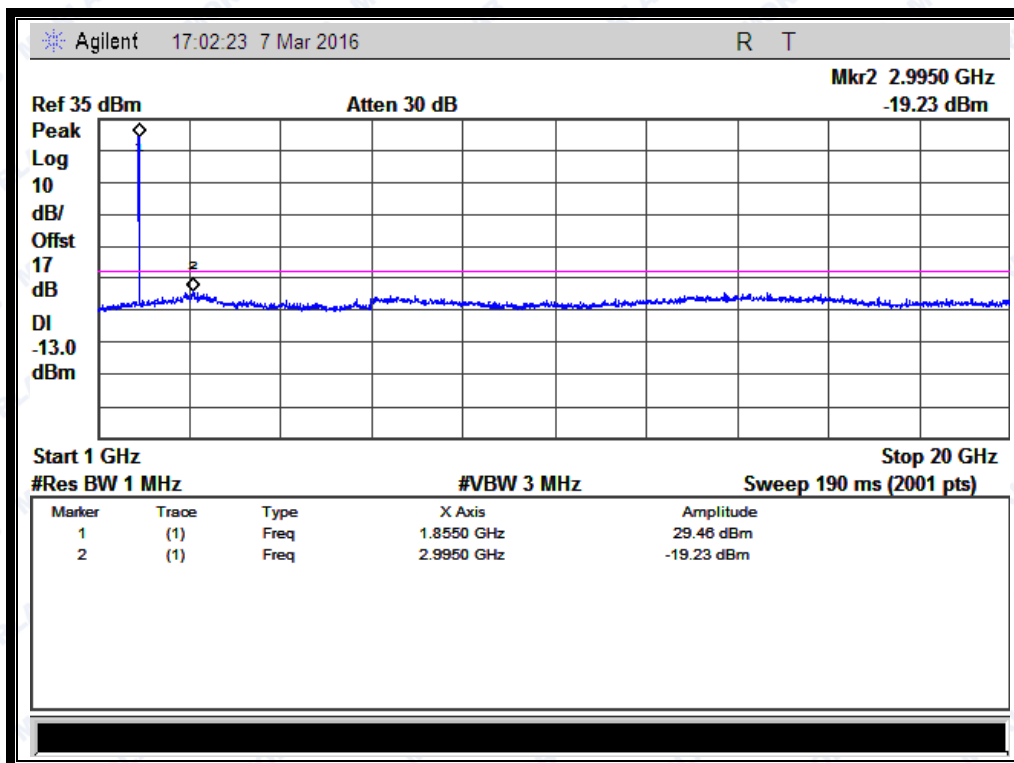
(Plot A3.1: GSM 850MHz Channel = 251, 1GHz to 9GHz)



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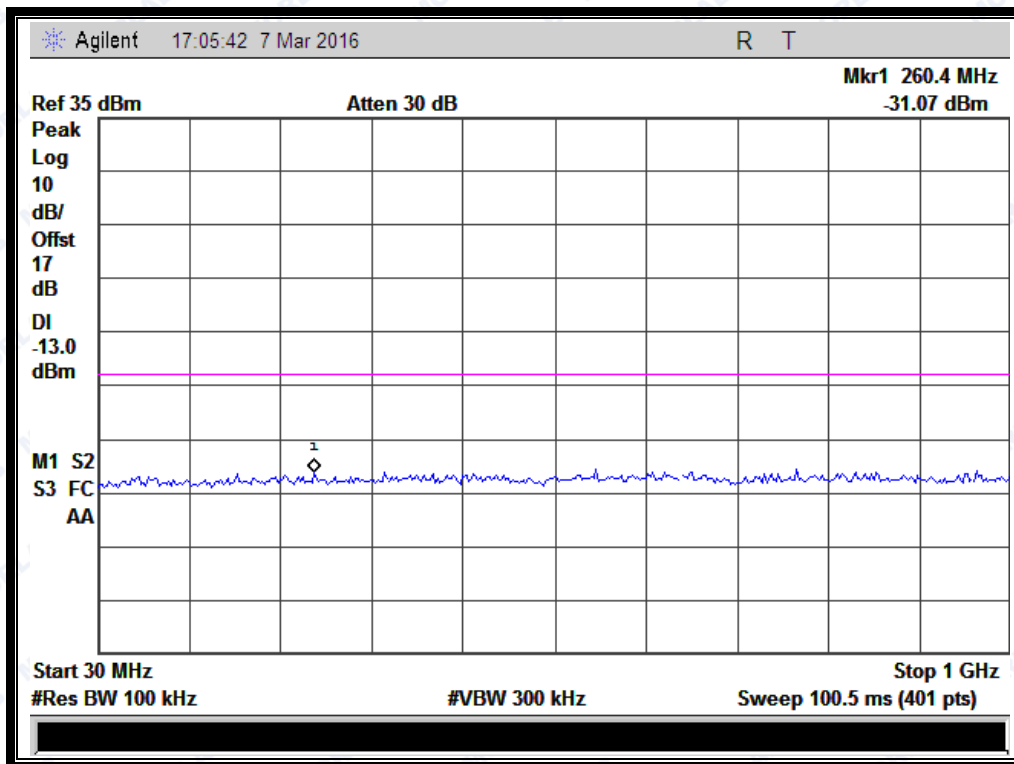
(Plot B1: GSM 1900MHz Channel = 512, 30MHz to 1GHz)



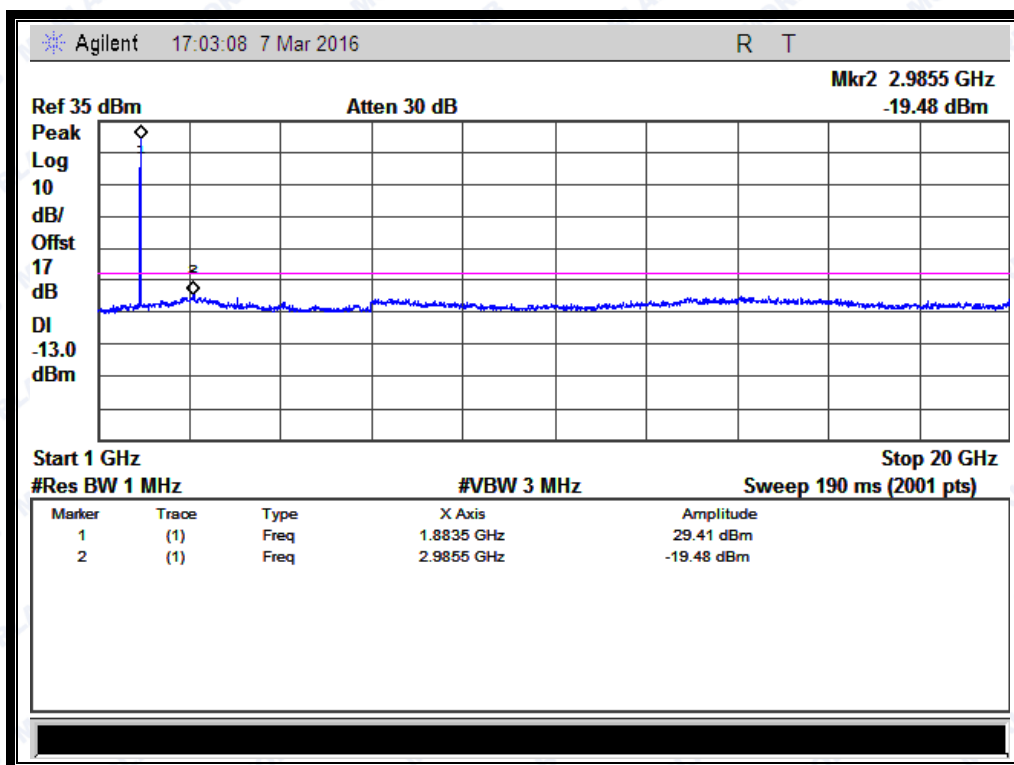
(Plot B1.1: GSM 1900MHz Channel = 512, 1GHz to 20GHz)



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

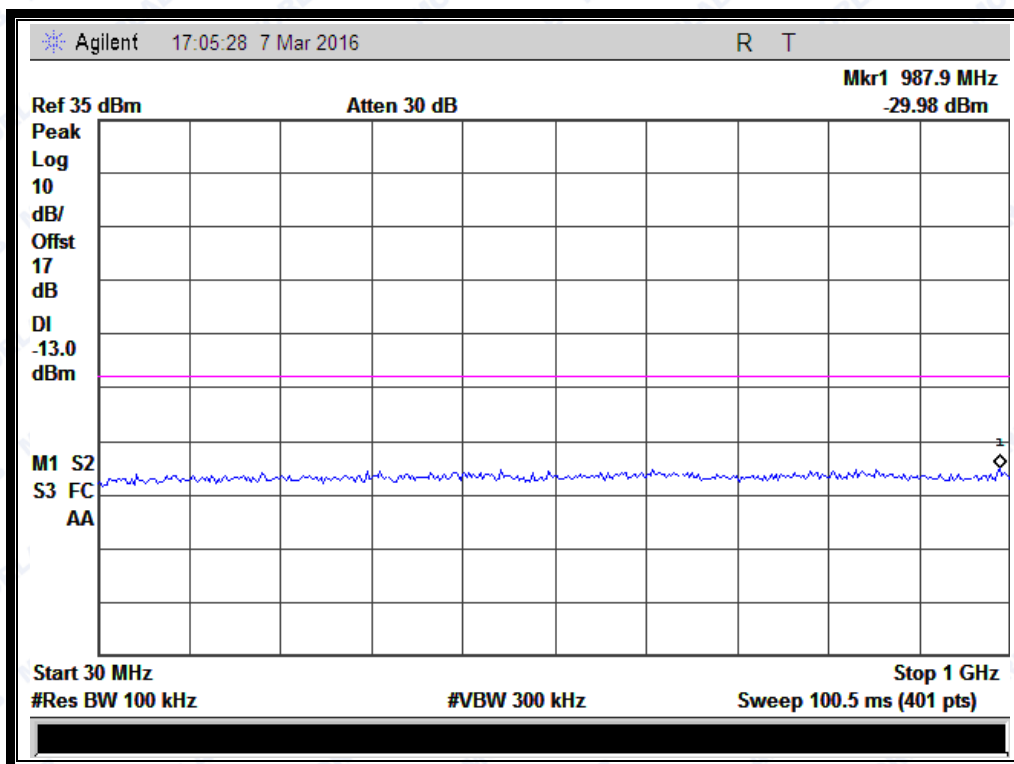


(Plot B2.1: GSM 1900MHz Channel = 661, 1GHz to 20GHz)

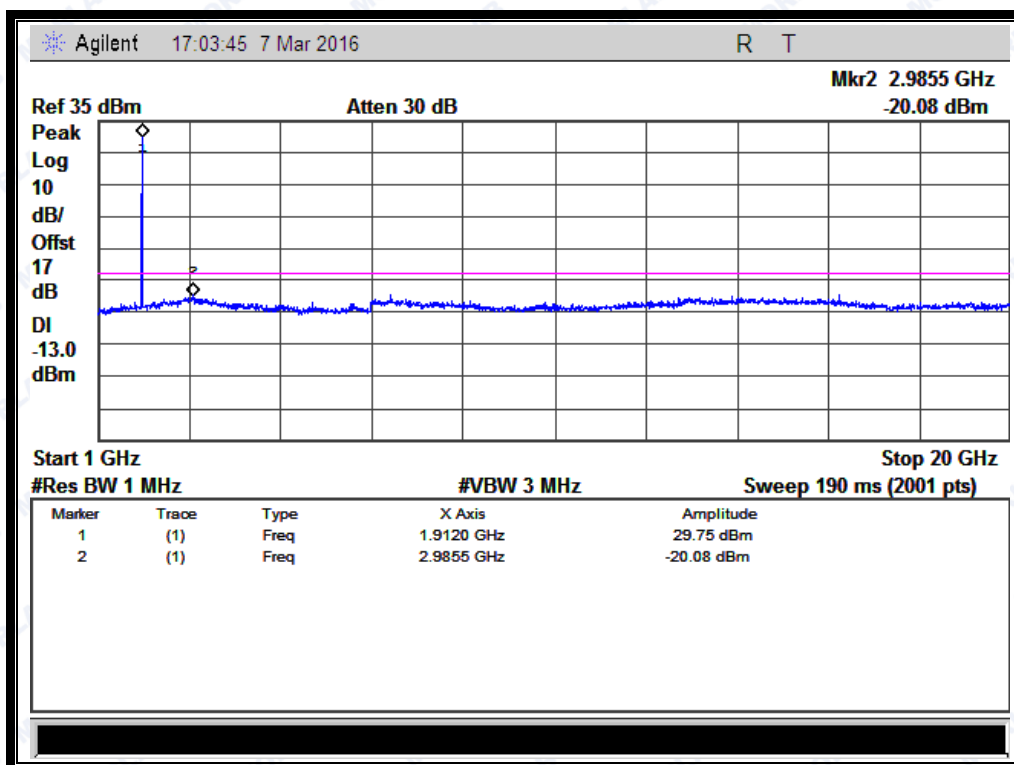




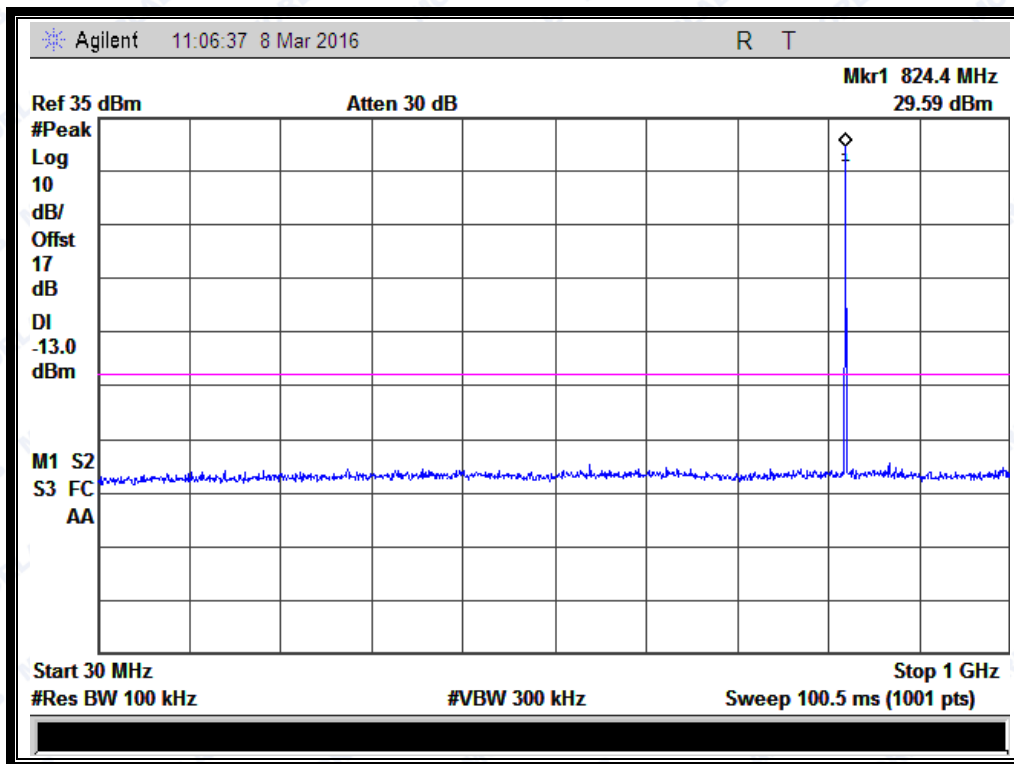
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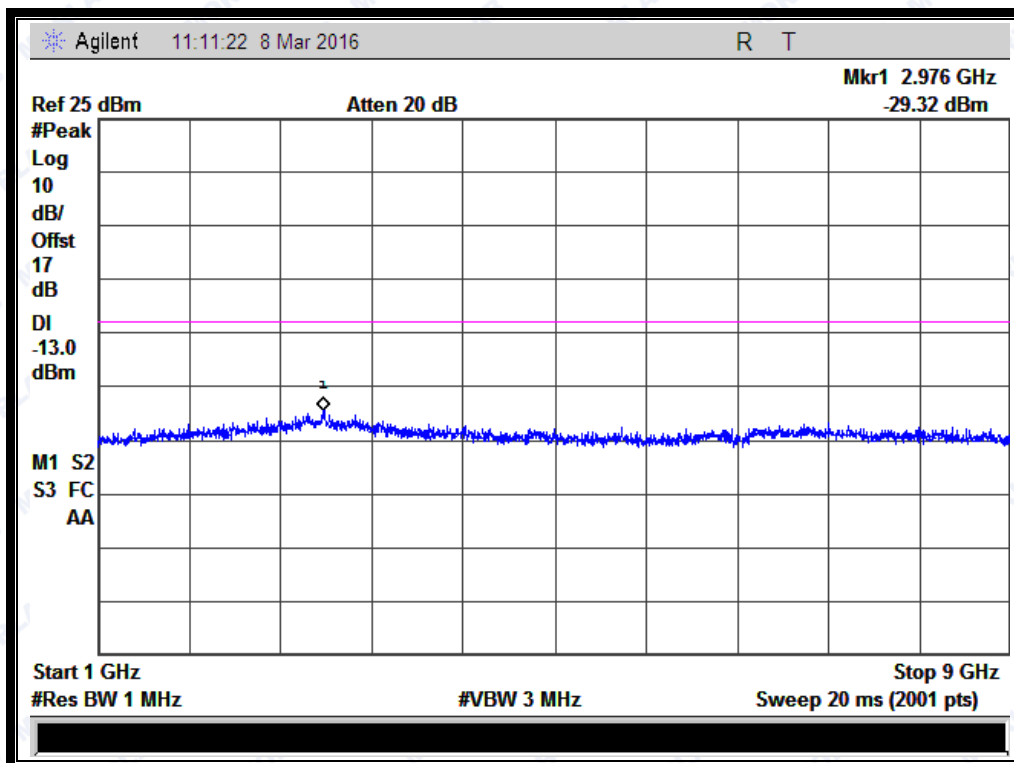
(Plot B3: GSM 1900MHz Channel = 810, 30MHz to 1GHz)



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



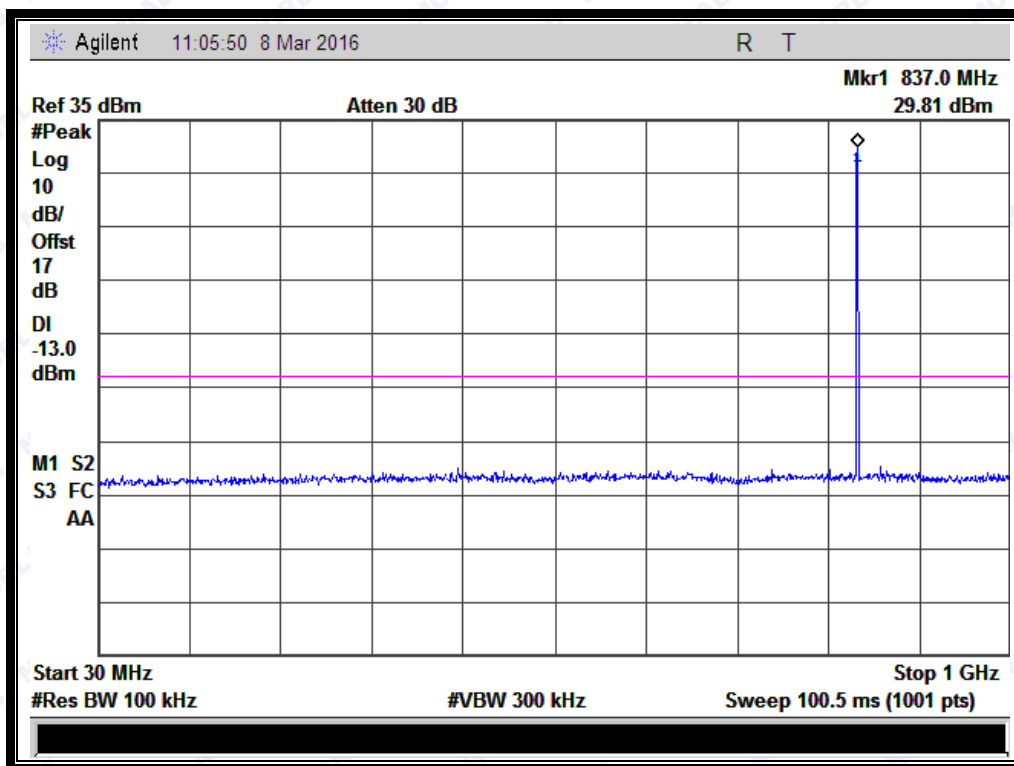
(Plot E1: EGPRS 850MHz Channel = 128, 30MHz to 1GHz)



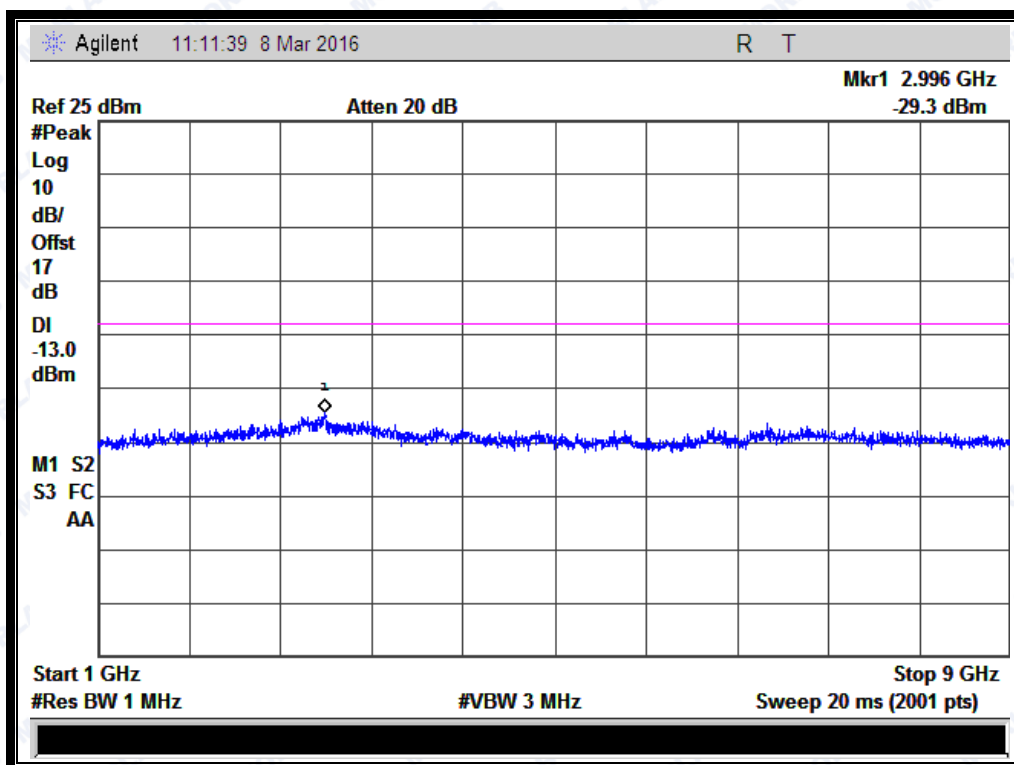
(Plot E1.1: EGPRS 850MHz Channel = 128, 1GHz to 9GHz)



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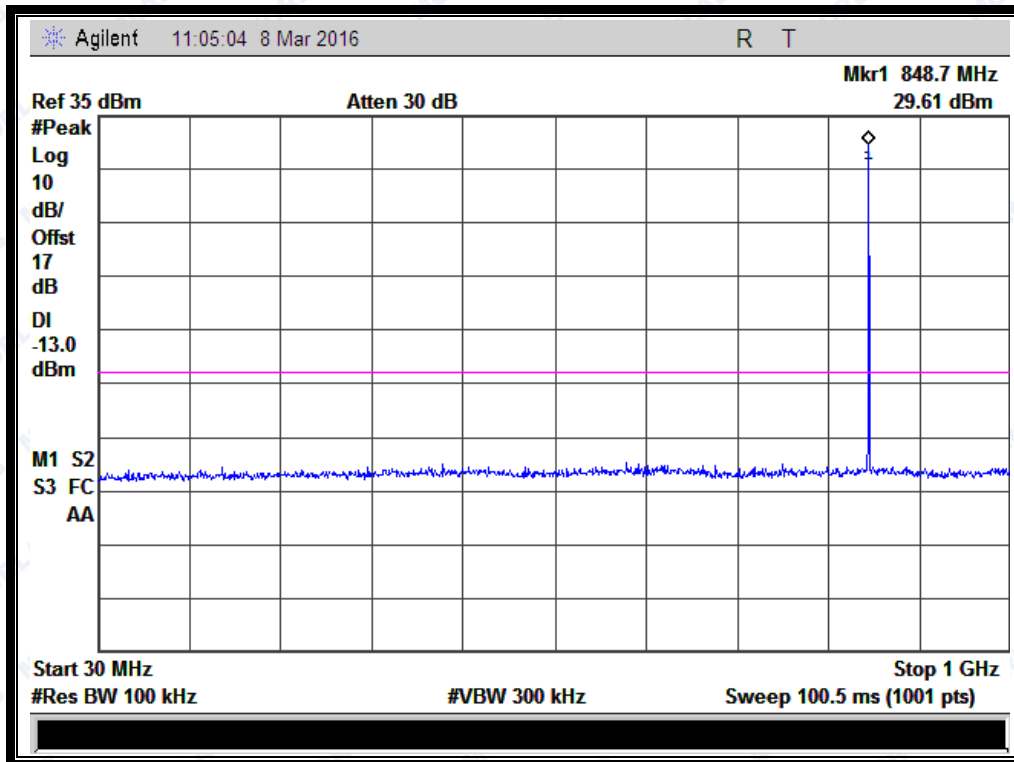
(Plot E2: EGPRS 850MHz Channel = 190, 30MHz to 1GHz)



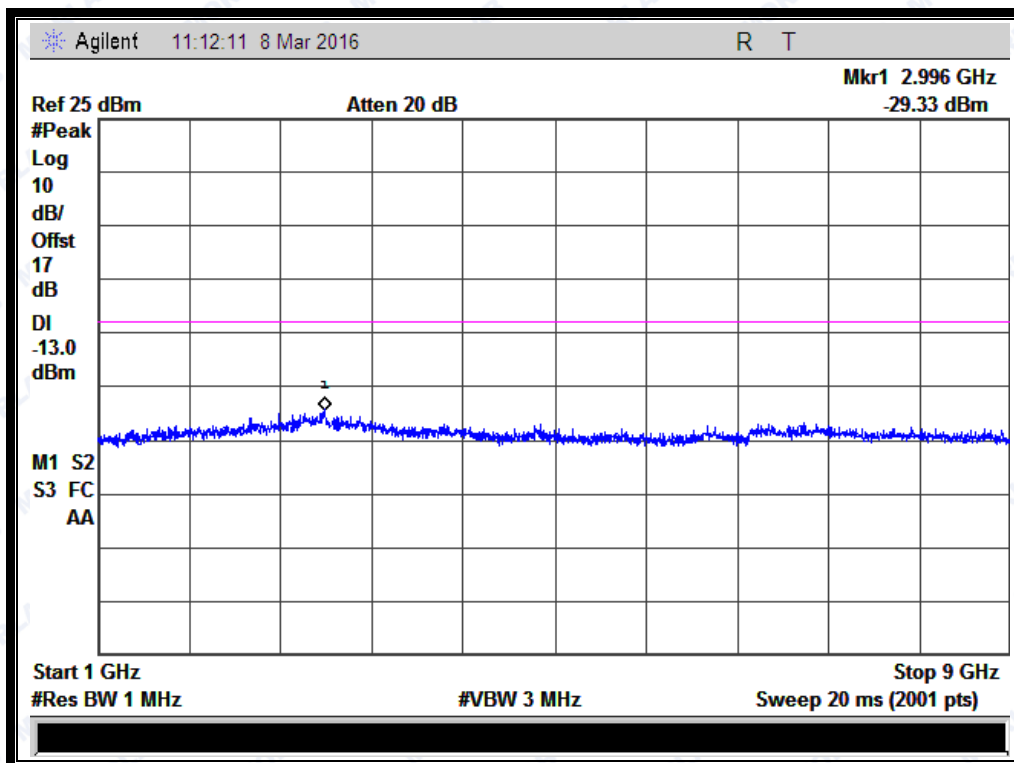
(Plot E2.1: EGPRS 850MHz Channel = 190, 1GHz to 9GHz)



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(Plot E3: EGPRS 850MHz Channel = 251, 30MHz to 1GHz)

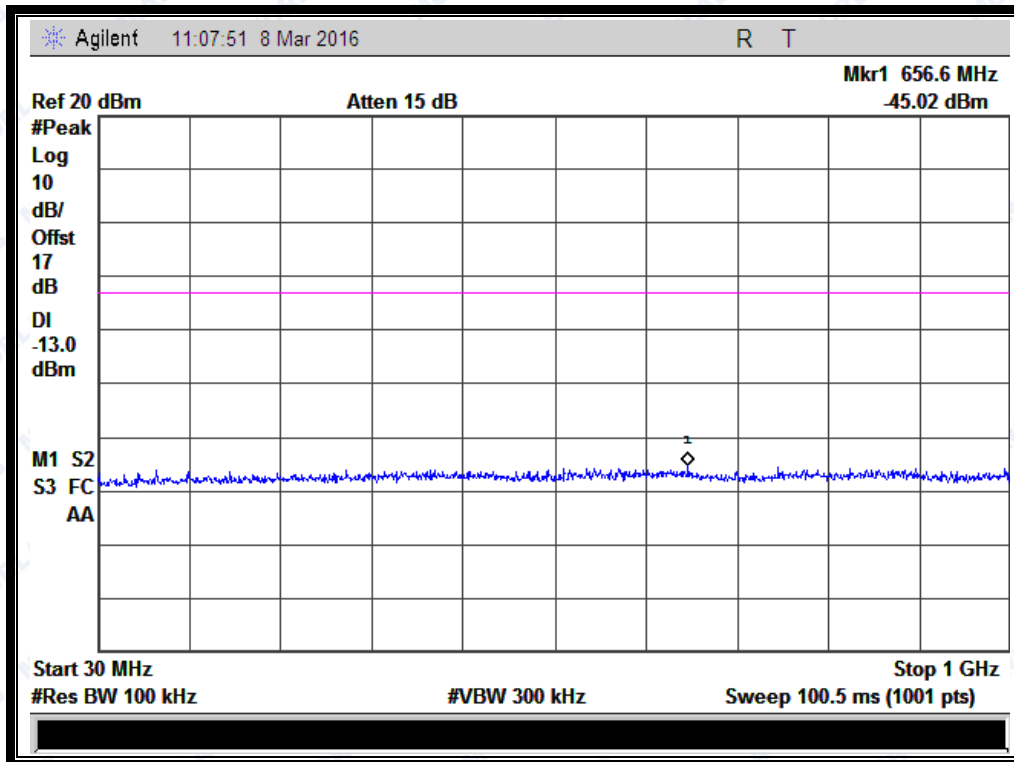


(Plot E3.1: EGPRS 850MHz Channel = 251, 1GHz to 9GHz)

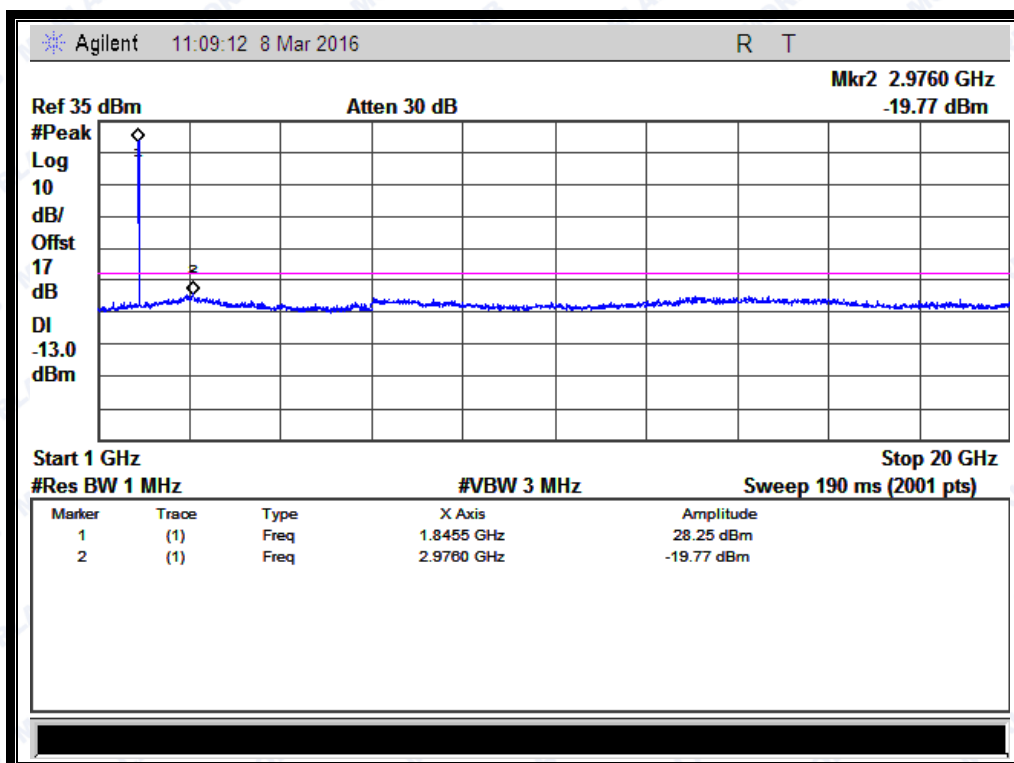




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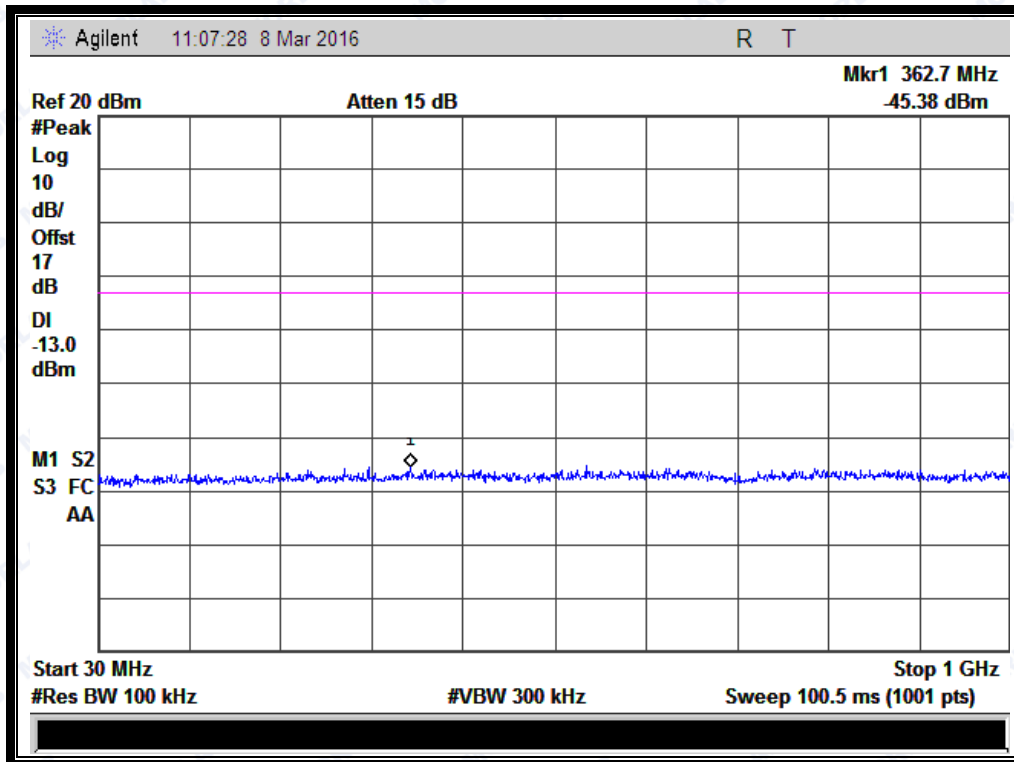
(Plot F1: EGPRS 1900MHz Channel = 512, 30MHz to 1GHz)



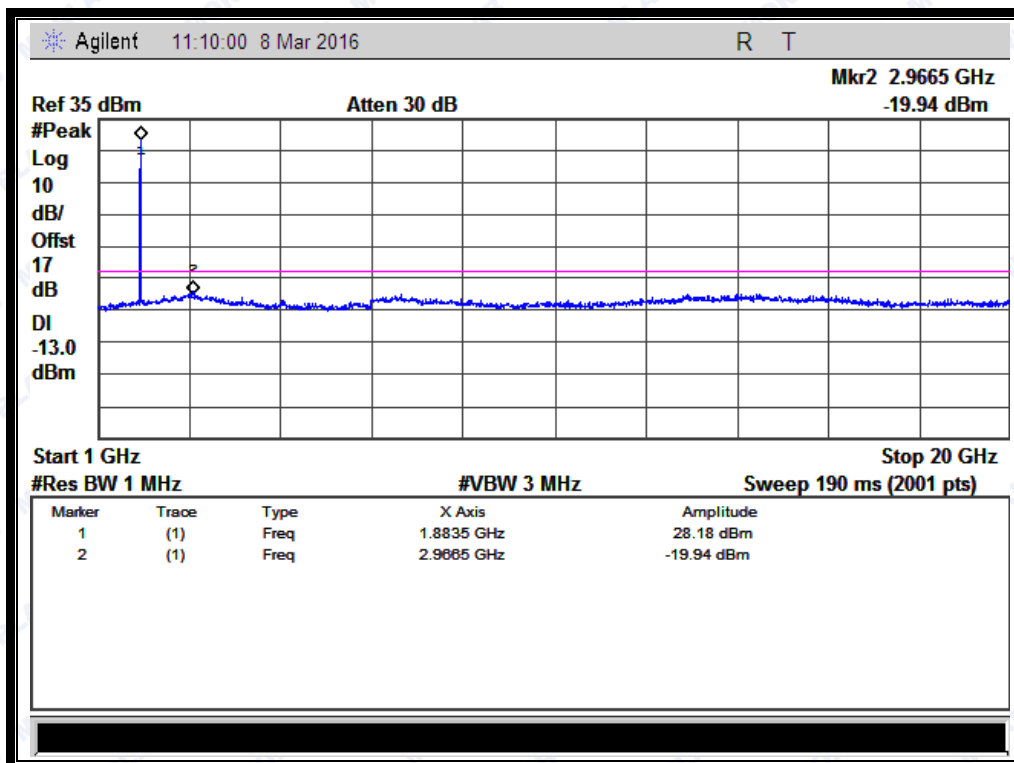
(Plot F1.1: EGPRS 1900MHz Channel = 512, 1GHz to 20GHz)



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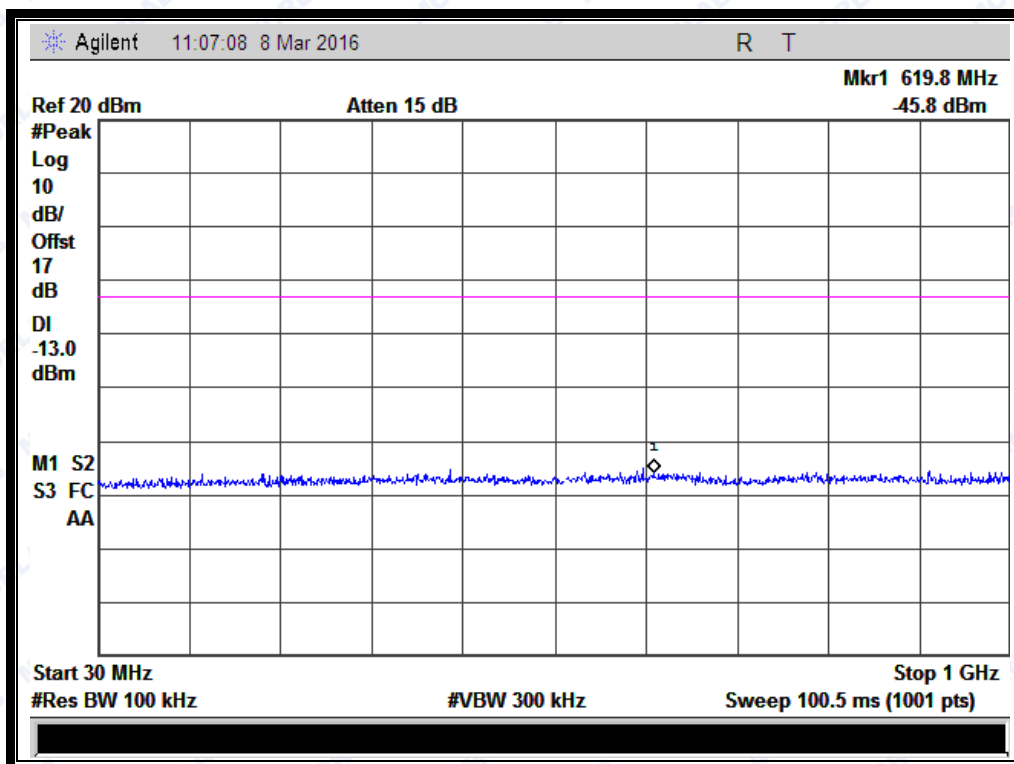
(Plot F2: EGPRS 1900MHz Channel = 661, 30MHz to 1GHz)



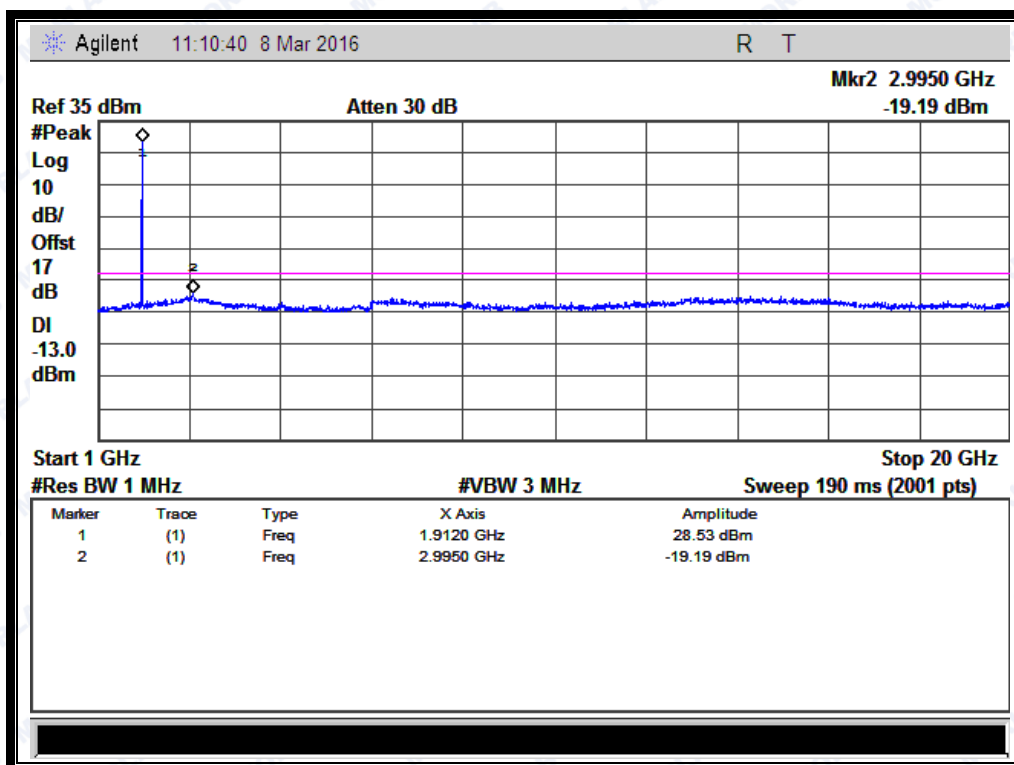
(Plot F2.1: EGPRS 1900MHz Channel = 661, 1GHz to 20GHz)



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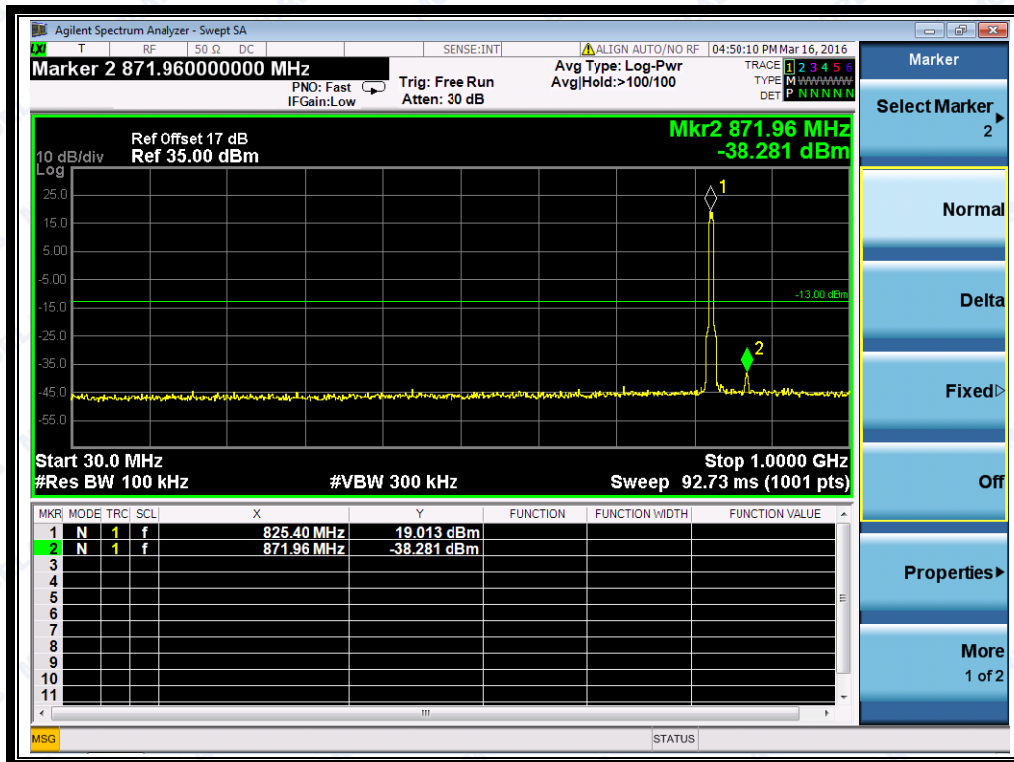
(Plot F3: EGPRS 1900MHz Channel = 810, 30MHz to 1GHz)



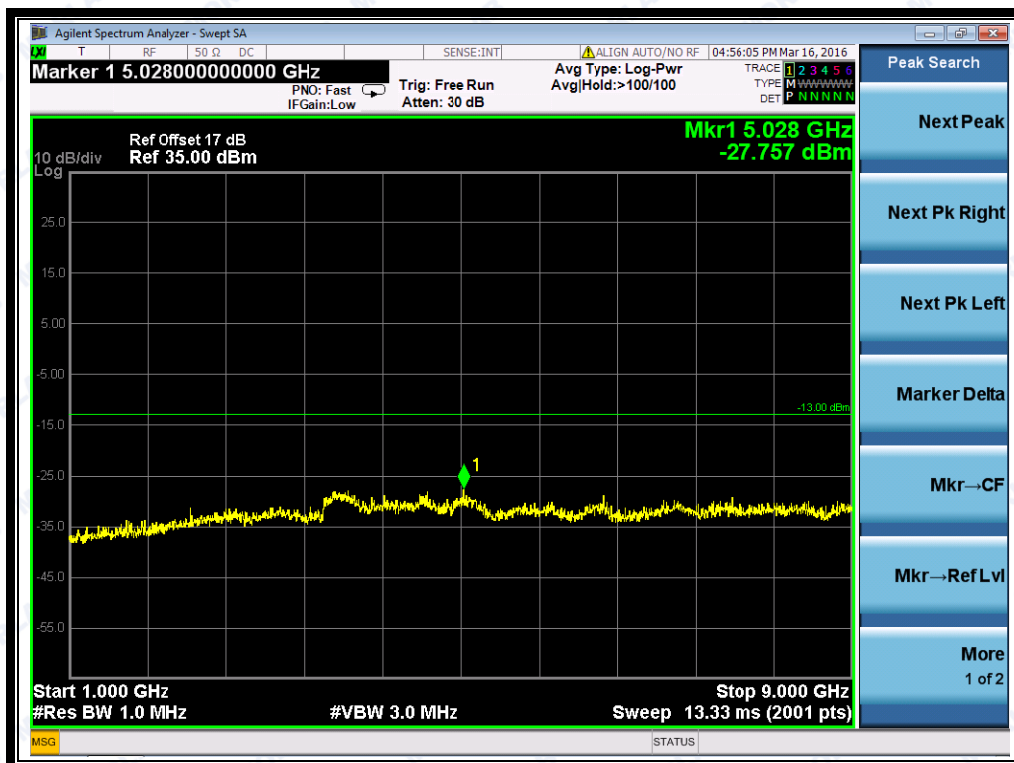
(Plot F3.1: EGPRS 1900MHz Channel = 810, 1GHz to 20GHz)



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(Plot G1: WCDMA850MHz Channel = 4132, 30MHz to 1GHz)

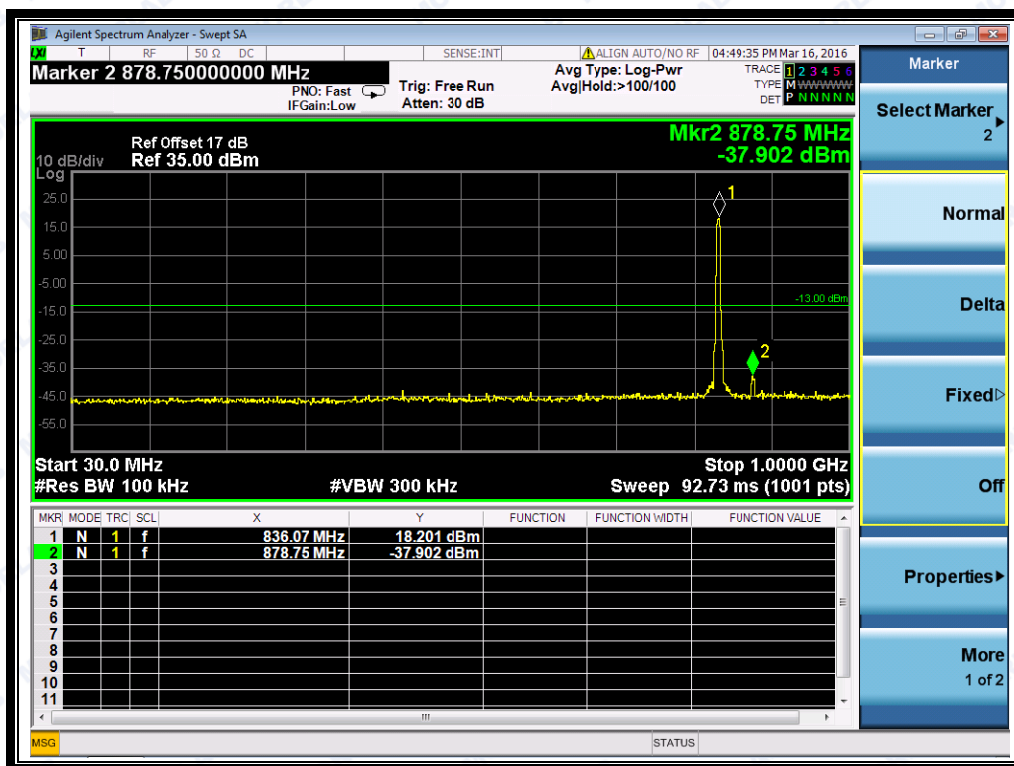


(Plot G1.1: WCDMA850MHz Channel = 4132, 1GHz to 9GHz)

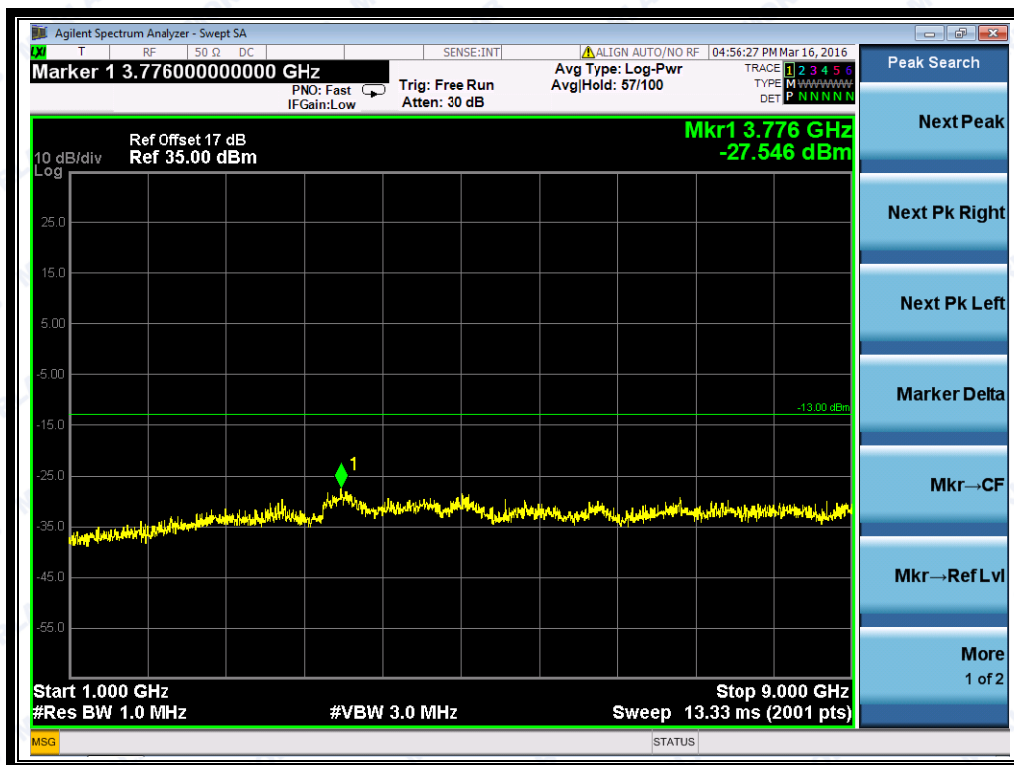




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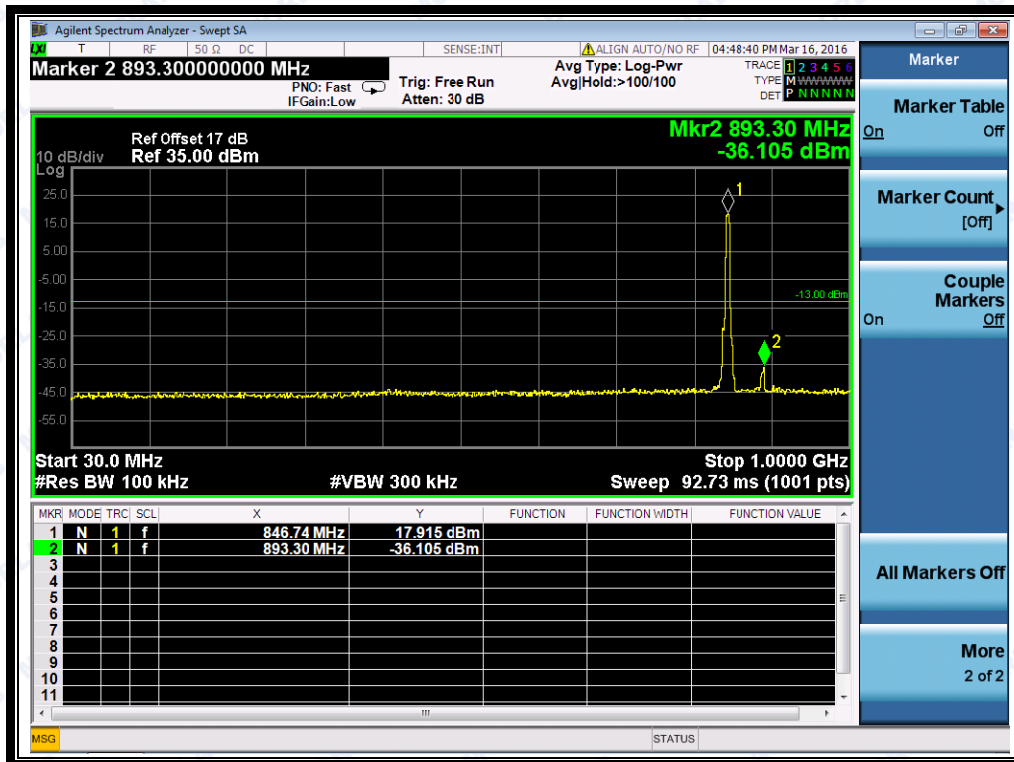
(Plot G2: WCDMA850MHz Channel = 4175, 30MHz to 1GHz)



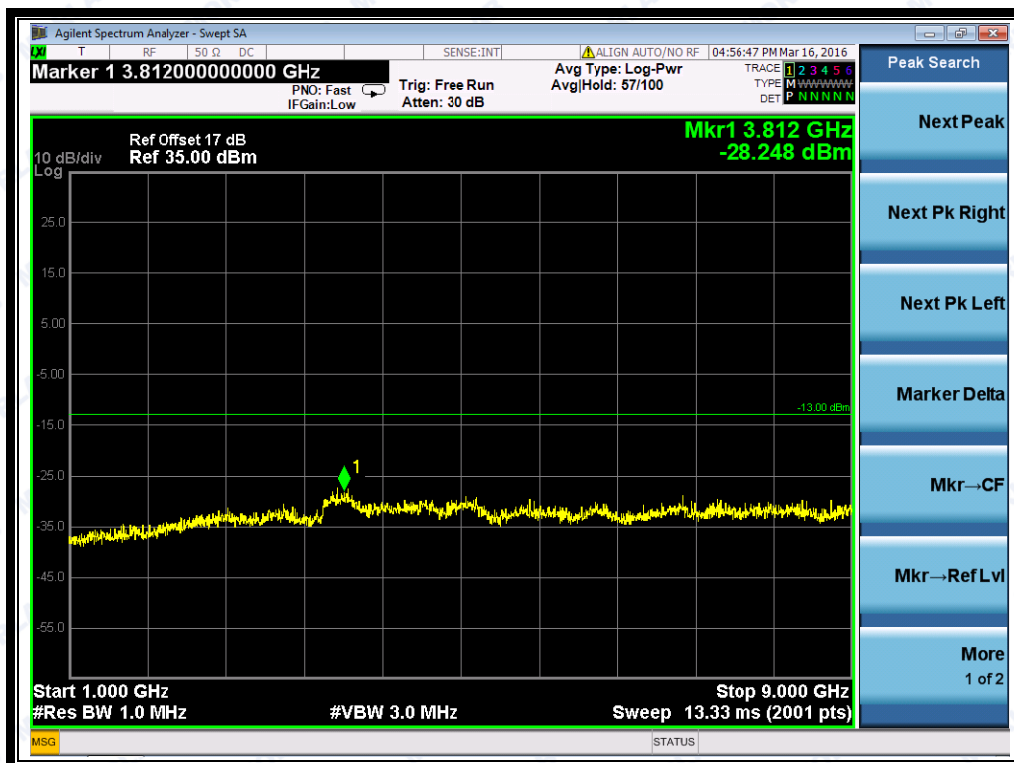
(Plot G2.1: WCDMA850MHz Channel = 4175, 1GHz to 9GHz)



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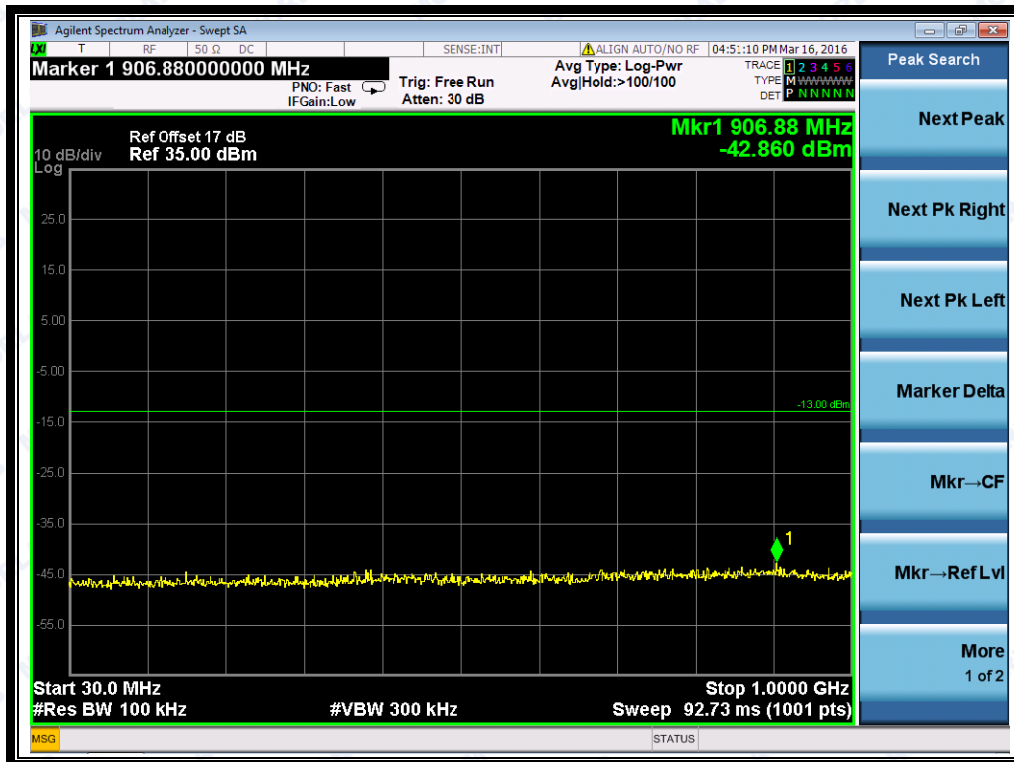
(Plot G3: WCDMA850MHz Channel = 4233, 30MHz to 1GHz)



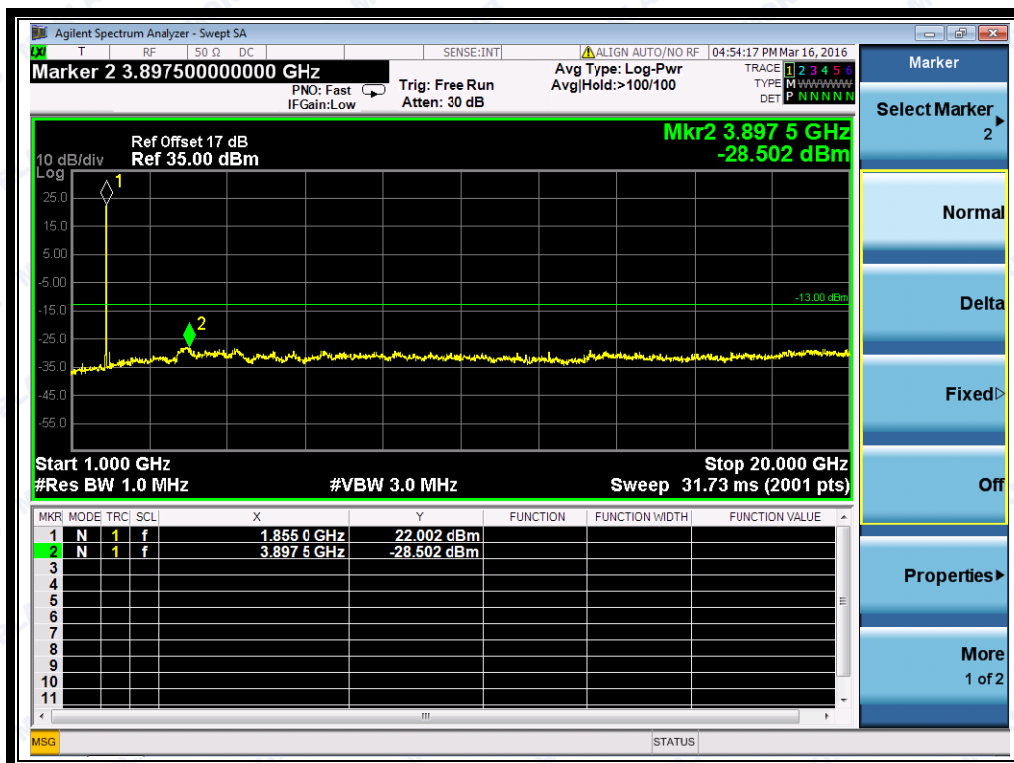
(Plot G3.1: WCDMA850MHz Channel = 4233, 1GHz to 9GHz)



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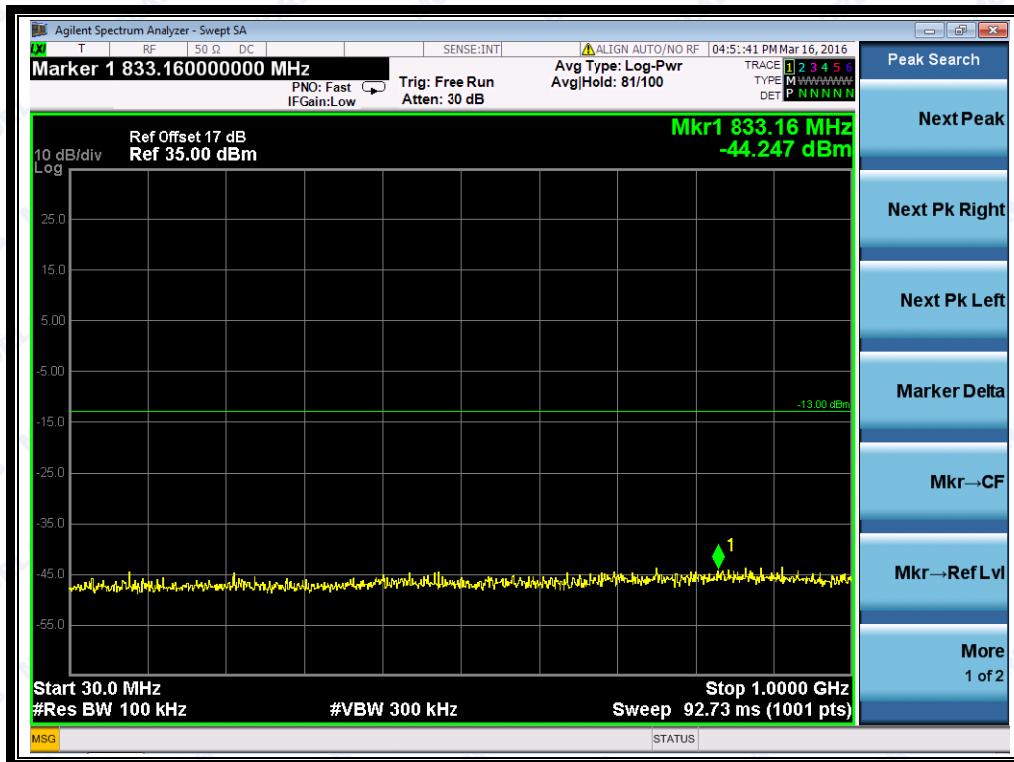
(Plot H1: WCDMA1900MHz Channel = 9262, 30MHz to 1GHz)



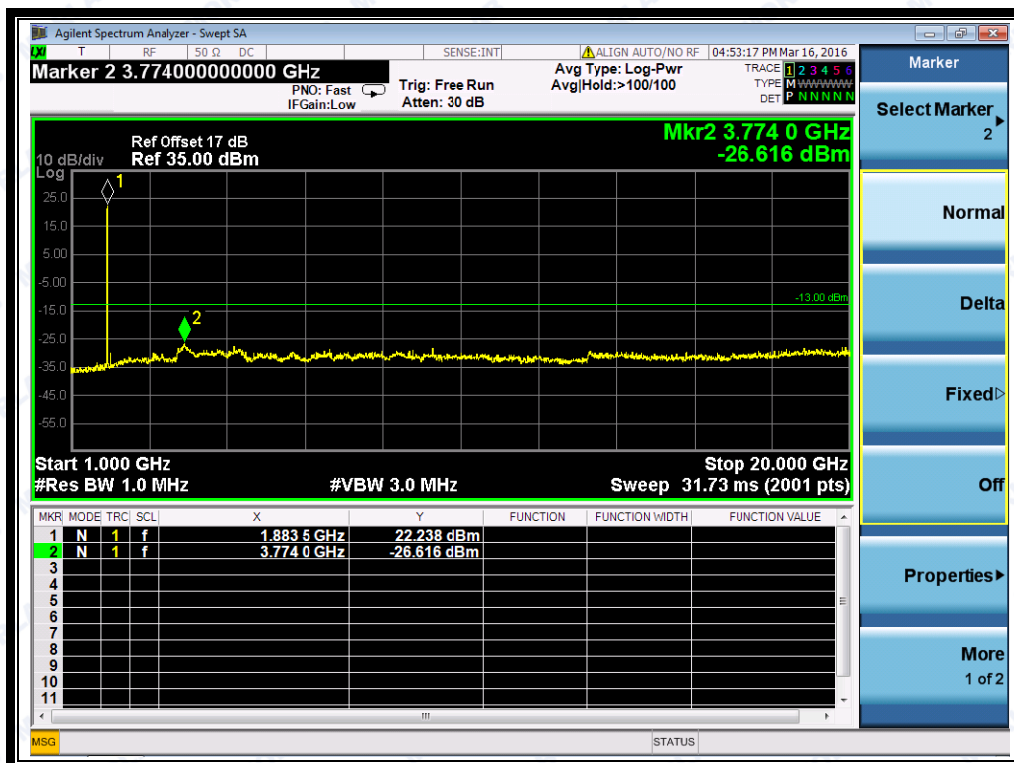
(Plot H1.1: WCDMA1900MHz Channel = 9262, 1GHz to 20GHz)



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(Plot H2: WCDMA1900MHz Channel = 9400, 30MHz to 1GHz)

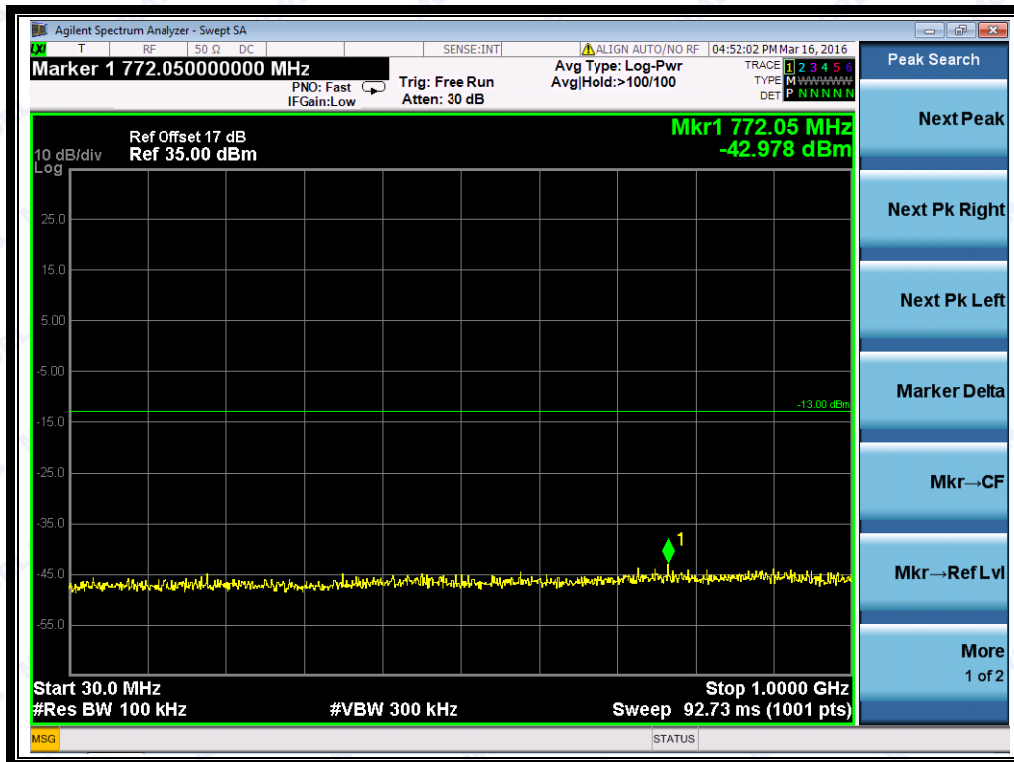


(Plot H2.1: WCDMA1900MHz Channel = 9400, 1GHz to 20GHz)

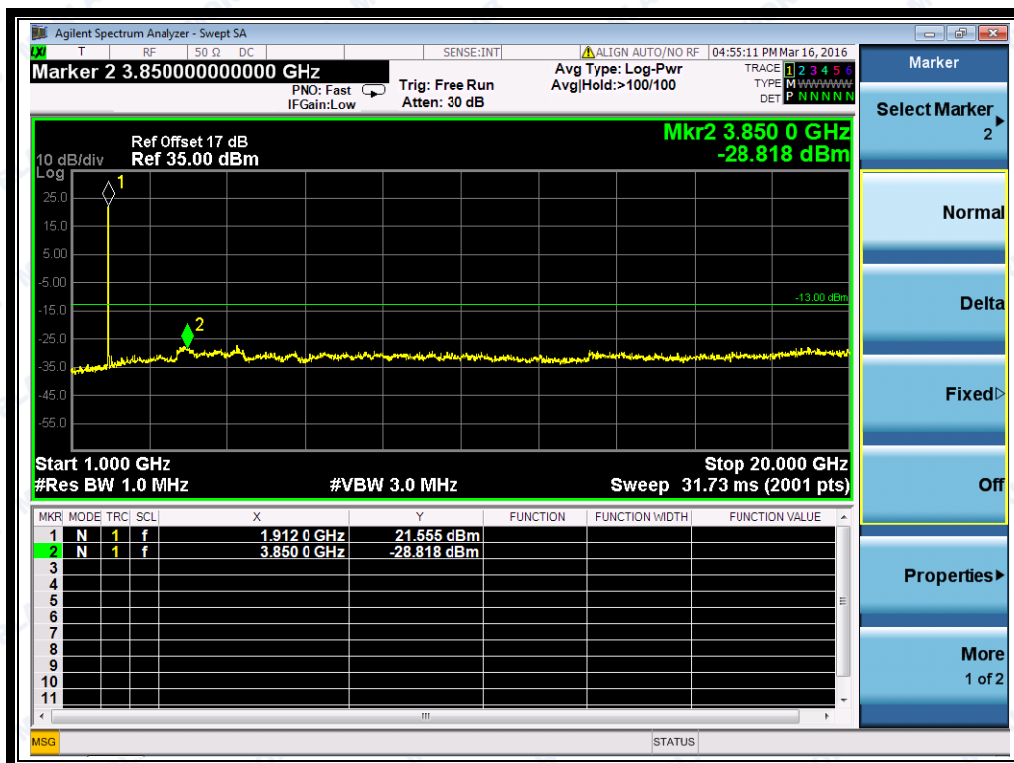




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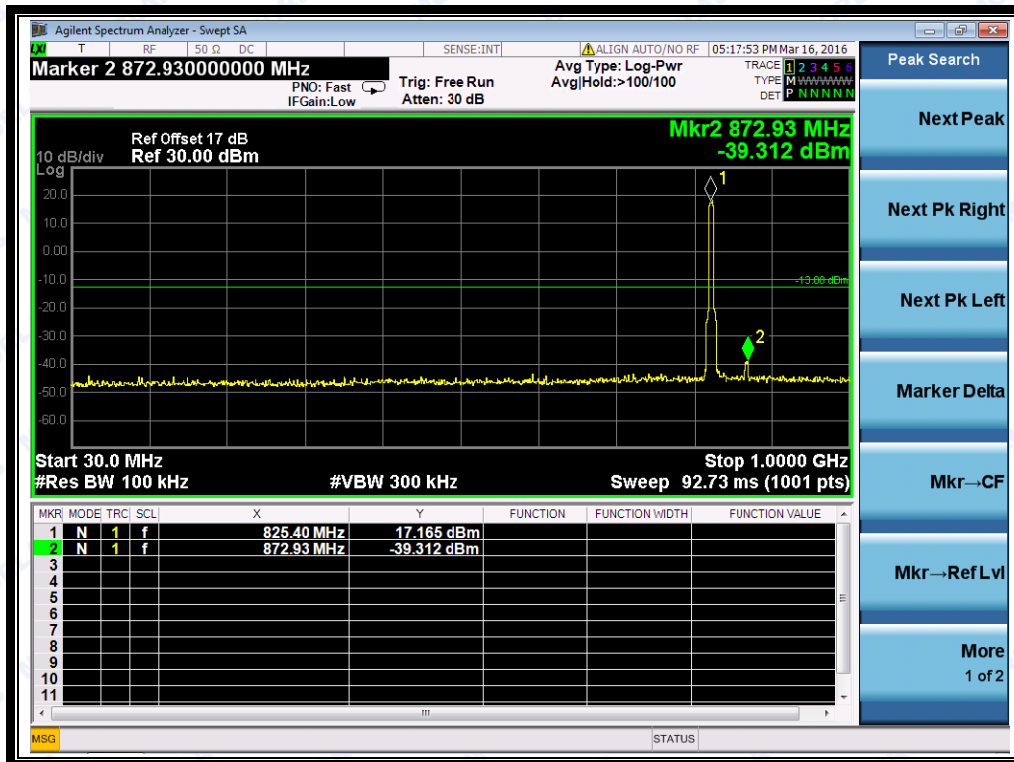
(Plot H3: WCDMA1900MHz Channel = 9538, 30MHz to 1GHz)



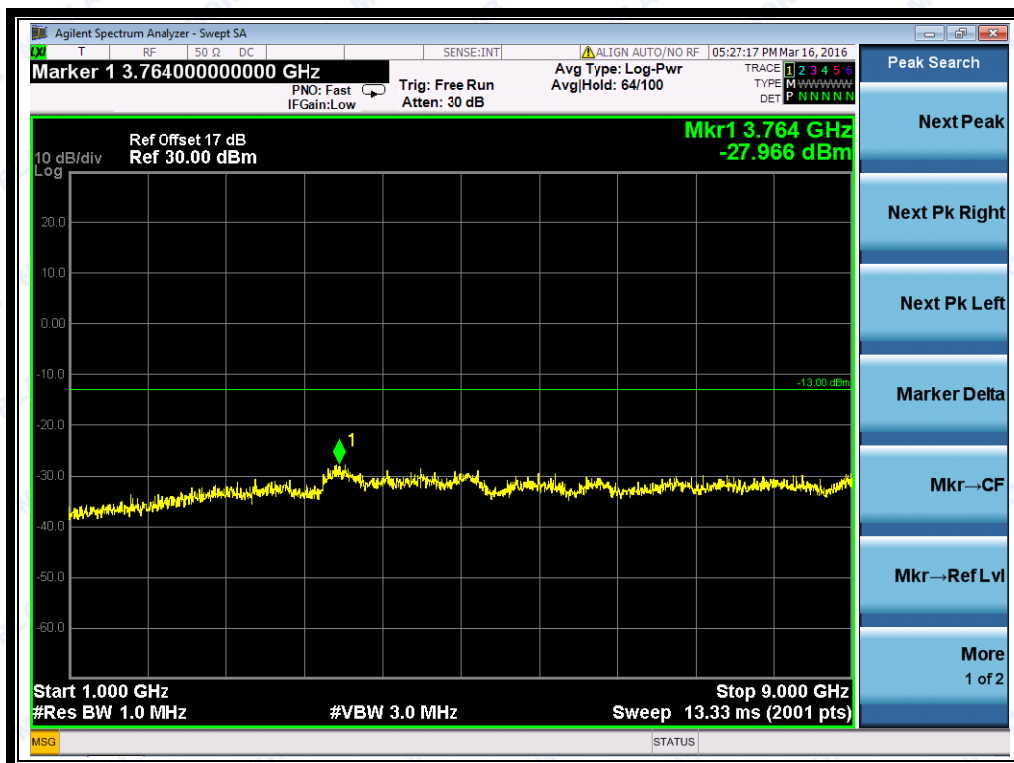
(Plot H3.1: WCDMA1900MHz Channel = 9538 1GHz to 20GHz)



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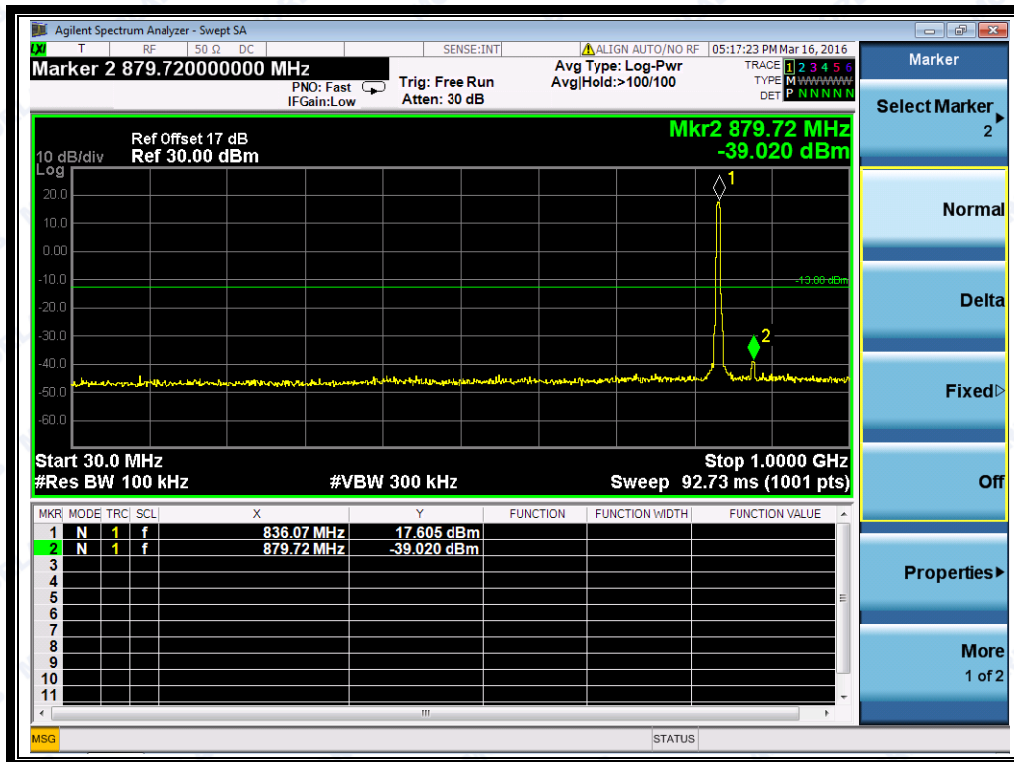
(Plot I1: HSDPA 850MHz Channel = 4132, 30MHz to 1GHz)



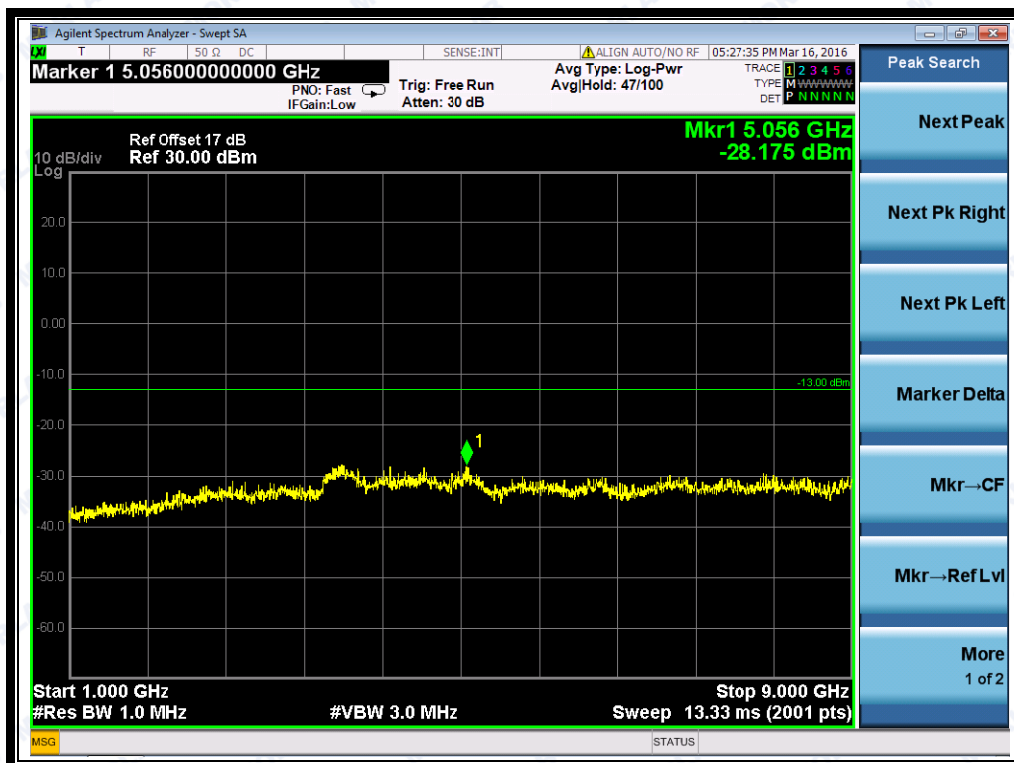
(Plot I1.1: HSDPA 850MHz Channel = 4132, 1GHz to 9GHz)



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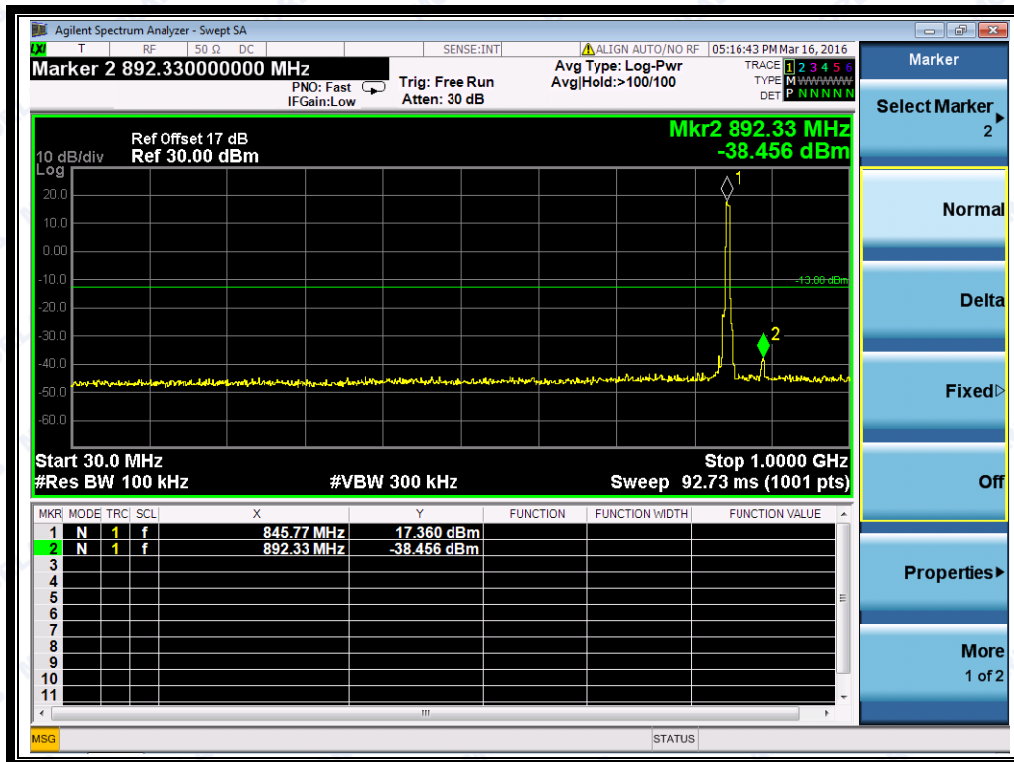
(Plot I2: HSDPA 850MHz Channel = 4175, 30MHz to 1GHz)



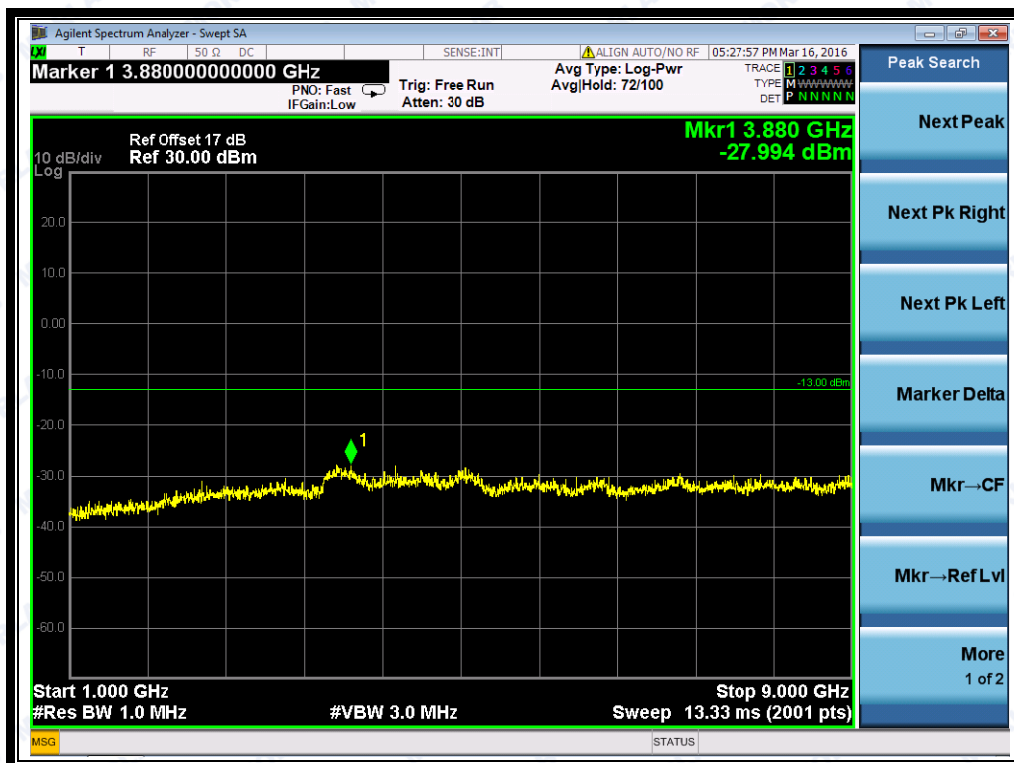
(Plot I2.1: HSDPA 850MHz Channel = 4175, 1GHz to 9GHz)



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(Plot I3: HSDPA 850MHz Channel = 4233, 30MHz to 1GHz)

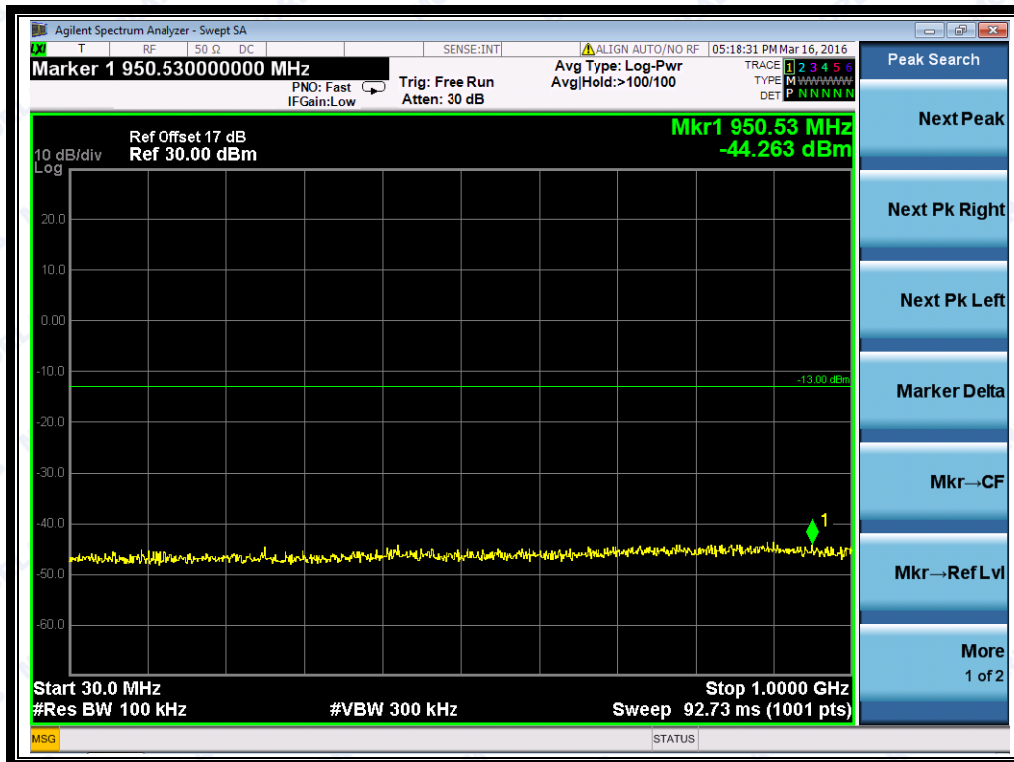


(Plot I3.1: HSDPA 850MHz Channel = 4233, 1GHz to 9GHz)

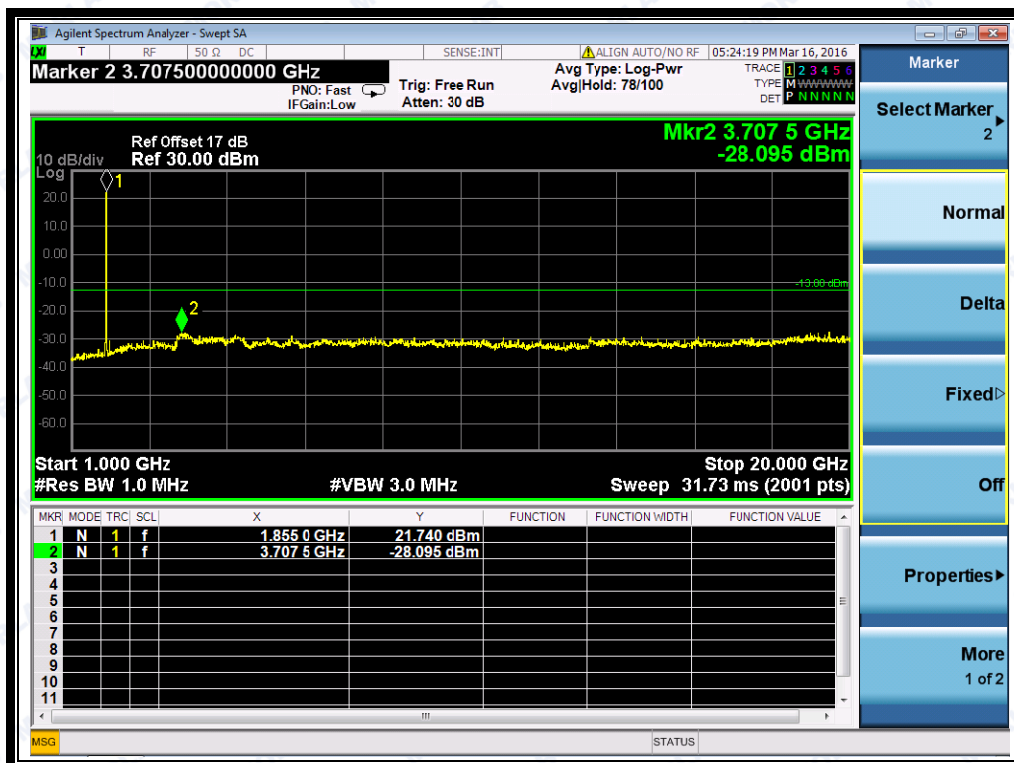




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(Plot J1: HSDPA 1900MHz Channel = 9262, 30MHz to 1GHz)



(Plot J1.1: HSDPA 1900MHz Channel = 9262, 1GHz to 20GHz)

