

# TEST REPORT

Reference No..... : WTX21X07069992W-1  
FCC ID ..... : 2ARO3-W626SE  
Applicant ..... : Worldwide telecom limited  
Address..... : 2F Block C; Shenfang Building, Zhen Hualu, Futian, Shenzhen.  
Product Name ..... : SmartPhone  
Test Model. .... : W626SE  
Standards ..... : FCC Part 22H, FCC Part 24E  
Date of Receipt sample .... : Jul.14, 2021  
Date of Test..... : Jul.14, 2021 to Aug. 06, 2021  
Date of Issue ..... : Aug. 06, 2021  
Test Result..... : Pass

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

**Prepared By:**

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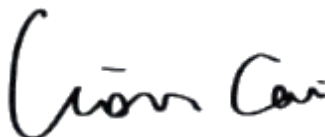
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**Report version**

| Version No. | Date of issue | Description |
|-------------|---------------|-------------|
| Rev.00      | Aug. 06, 2021 | Original    |
| /           | /             | /           |

## 1. GENERAL INFORMATION

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### 1.1 Product Description for Equipment Under Test (EUT)

#### Client Information

Applicant: Worldwide telecom limited  
Address of applicant: 2F Block C; Shenfang Building, Zhen Hualu, Futian, Shenzhen.

Manufacturer: Worldwide telecom limited  
Address of manufacturer: 2F Block C; Shenfang Building, Zhen Hualu, Futian, Shenzhen.

| General Description of EUT:                                                            |                                                                      |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| Product Name:                                                                          | SmartPhone                                                           |
| Trade Name:                                                                            | WOLKI                                                                |
| Model No.:                                                                             | W626SE                                                               |
| Adding Model(s):                                                                       | /                                                                    |
| Rated Voltage:                                                                         | DC3.8V                                                               |
| Battery:                                                                               | 2500mAh                                                              |
| Adapter Model:                                                                         | WCH05<br>Input: AC100-240V, 50/60Hz, 0.15A<br>Output: DC5.0V, 1000mA |
| Software Version:                                                                      | WOLKI_W626SE_V01_20210510                                            |
| Hardware Version:                                                                      | V213D3_MB                                                            |
| Note: The test data is gathered from a production sample provided by the manufacturer. |                                                                      |

| <b>Technical Characteristics of EUT:</b> |                                                         |
|------------------------------------------|---------------------------------------------------------|
| <b>2G</b>                                |                                                         |
| Support Networks:                        | GSM, GPRS                                               |
| Support Band:                            | GSM850/PCS1900                                          |
| Uplink Frequency:                        | GSM/GPRS 850: 824~849MHz<br>GSM/GPRS 1900: 1850~1910MHz |
| Downlink Frequency:                      | GSM/GPRS 850: 869~894MHz<br>GSM/GPRS 1900: 1930~1990MHz |
| Max RF Output Power:                     | GSM850: 32.84dBm, GSM1900: 29.36dBm                     |
| Type of Emission:                        | GSM850: 247KGXW, GSM1900: 247KGXW                       |
| Type of Modulation:                      | GMSK                                                    |
| Type of Antenna:                         | Integral Antenna                                        |
| Antenna Gain:                            | GSM850: -0.5dBi; GSM1900: 0.5dBi                        |
| GPRS/EDGE Class:                         | Class 12                                                |
| <b>3G</b>                                |                                                         |
| Support Networks:                        | WCDMA, HSDPA, HSUPA                                     |
| Support Band:                            | WCDMA Band 2, WCDMA Band 5                              |
| Uplink Frequency:                        | WCDMA Band 2: 1850~1910MHz<br>WCDMA Band 5: 824~849MHz  |
| Downlink Frequency:                      | WCDMA Band 2: 1930~1990MHz<br>WCDMA Band 5: 869~894MHz  |
| RF Output Power:                         | WCDMA Band 2: 22.58dBm,<br>WCDMA Band 5: 23.58dBm       |
| Type of Emission:                        | WCDMA Band 2: 4M19F9W<br>WCDMA Band 5: 4M16F9W          |
| Type of Modulation:                      | BPSK                                                    |
| Antenna Type:                            | Integral Antenna                                        |
| Antenna Gain:                            | WCDMA Band 2: 0.5dBi, WCDMA Band 5:-0.5dBi              |

## 1.2 Test Standards

The tests were performed according to following standards:

**FCC Rules Part 2:** Frequency Allocations and Radio Treaty Matters; General Rules and Regulations.

**FCC Rules Part 22:** Private Land Mobile Radio Services.

**FCC Rules Part 24:** Public Mobile Services.

**TIA/EIA 603 E March 2016:** Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.

**ANSI C63.26-2015:** American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services.

**KDB 971168 D01 Power Measurement License Digital Systems v03r01:** Measurement Guidance for Certification of Licensed Digital Transmitters.

**Maintenance of compliance** is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

## 1.3 Test Methodology

All measurements contained in this report were conducted with TIA/EIA 603 E/ KDB 971168/ ANSI C63.26

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted accordingly in reference to the Operating Instructions.

## 1.4 Test Facility

### Address of the test laboratory

Laboratory: Waltek Testing Group (Shenzhen) Co., Ltd.

Address: 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road, Block 70 Bao'an District, Shenzhen, Guangdong, China

### FCC – Registration No.: 125990

Waltek Testing Group (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. The Designation Number is CN5010, and Test Firm Registration Number is 125990.

### Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Waltek Testing Group (Shenzhen) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

## 1.5 EUT Setup and Test Mode

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. All testing shall be performed under maximum output power condition, and to measure its highest possible emissions level, more detailed description as follows:

| Test Mode List |              |                            |
|----------------|--------------|----------------------------|
| Test Mode      | Description  | Remark                     |
| TM1            | GSM 850      | Low, Middle, High Channels |
| TM2            | GPRS 850     | Low, Middle, High Channels |
| TM3            | GSM 1900     | Low, Middle, High Channels |
| TM4            | GPRS 1900    | Low, Middle, High Channels |
| TM5            | WCDMA Band 5 | Low, Middle, High Channels |
| TM6            | HSDPA Band 5 | Low, Middle, High Channels |
| TM7            | HSUPA Band 5 | Low, Middle, High Channels |
| TM8            | WCDMA Band 2 | Low, Middle, High Channels |
| TM9            | HSDPA Band 2 | Low, Middle, High Channels |
| TM10           | HSUPA Band 2 | Low, Middle, High Channels |

| Testing Configure |                   |                        |                |
|-------------------|-------------------|------------------------|----------------|
| Support Band      | Support Standard  | Channel Frequency(MHz) | Channel Number |
| GSM 850           | GSM/GPRS          | 824.2                  | 128            |
|                   |                   | 836.6                  | 190            |
|                   |                   | 848.8                  | 251            |
| PCS 1900          | GSM/GPRS          | 1850.2                 | 512            |
|                   |                   | 1880.0                 | 661            |
|                   |                   | 1909.8                 | 810            |
| WCDMA Band 5      | WCDMA/HSDPA/HSUPA | 826.4                  | 4132           |
|                   |                   | 836.6                  | 4183           |
|                   |                   | 846.6                  | 4233           |
| WCDMA Band 2      | WCDMA/HSDPA/HSUPA | 1852.4                 | 9262           |
|                   |                   | 1880.0                 | 9400           |
|                   |                   | 1907.6                 | 9538           |

Note: the transmitter has been tested on the communications mode of GSM, GPRS, WCDMA, HSDPA, HSUPA compliance test and record the worst case.

| Test Conditions    |           |
|--------------------|-----------|
| Temperature:       | 22~25 °C  |
| Relative Humidity: | 50~55 %.  |
| ATM Pressure:      | 1019 mbar |

| EUT Cable List and Details |            |                     |                        |
|----------------------------|------------|---------------------|------------------------|
| Cable Description          | Length (m) | Shielded/Unshielded | With / Without Ferrite |
| USB Cable                  | 1.0        | Unshielded          | Without Ferrite        |
| Earphone Cable             | 1.18       | Unshielded          | Without Ferrite        |

| Special Cable List and Details |            |                     |                        |
|--------------------------------|------------|---------------------|------------------------|
| Cable Description              | Length (m) | Shielded/Unshielded | With / Without Ferrite |
| /                              | /          | /                   | /                      |

| Auxiliary Equipment List and Details |              |                 |               |
|--------------------------------------|--------------|-----------------|---------------|
| Description                          | Manufacturer | Model           | Serial Number |
| Notebook                             | Lenovo       | TianYi310-14ISK | /             |

## 1.6 Measurement Uncertainty

| Measurement uncertainty        |            |                               |
|--------------------------------|------------|-------------------------------|
| Parameter                      | Conditions | Uncertainty                   |
| RF Output Power                | Conducted  | $\pm 0.42\text{dB}$           |
| Occupied Bandwidth             | Conducted  | $\pm 1.5\%$                   |
| Frequency Stability            | Conducted  | 2.3%                          |
| Transmitter Spurious Emissions | Conducted  | $\pm 0.42\text{dB}$           |
| Transmitter Spurious Emissions | Radiated   | 30-200MHz $\pm 4.52\text{dB}$ |
|                                |            | 0.2-1GHz $\pm 5.56\text{dB}$  |
|                                |            | 1-6GHz $\pm 3.84\text{dB}$    |
|                                |            | 6-18GHz $\pm 3.92\text{dB}$   |



**1.7 Test Equipment List and Details**

| No.       | Description             | Manufacturer           | Model                 | Serial No.  | Cal Date   | Due. Date  |
|-----------|-------------------------|------------------------|-----------------------|-------------|------------|------------|
| SEMT-1075 | Communication Tester    | Rohde & Schwarz        | CMW500                | 148650      | 2021-03-27 | 2022-03-26 |
| SEMT-1063 | GSM Tester              | Rohde & Schwarz        | CMU200                | 114403      | 2021-03-27 | 2022-03-26 |
| SEMT-1072 | Spectrum Analyzer       | Agilent                | E4407B                | MY41440400  | 2021-03-27 | 2022-03-26 |
| SEMT-1079 | Spectrum Analyzer       | Agilent                | N9020A                | US47140102  | 2021-03-27 | 2022-03-26 |
| SEMT-1080 | Signal Generator        | Agilent                | 83752A                | 3610A01453  | 2021-03-27 | 2022-03-26 |
| SEMT-1081 | Vector Signal Generator | Agilent                | N5182A                | MY47070202  | 2021-03-27 | 2022-03-26 |
| SEMT-1028 | Power Divider           | Weinschel              | 1506A                 | PM204       | 2021-03-27 | 2022-03-26 |
| SEMT-1082 | Power Divider           | RF-Lambda              | RFLT4W5M18G           | 14110400027 | 2021-03-27 | 2022-03-26 |
| SEMT-1031 | Spectrum Analyzer       | Rohde & Schwarz        | FSP30                 | 836079/035  | 2021-03-27 | 2022-03-26 |
| SEMT-1007 | EMI Test Receiver       | Rohde & Schwarz        | ESVB                  | 825471/005  | 2021-03-27 | 2022-03-26 |
| SEMT-1008 | Amplifier               | Agilent                | 8447F                 | 3113A06717  | 2021-04-12 | 2022-04-11 |
| SEMT-1043 | Amplifier               | C&D                    | PAP-1G18              | 2002        | 2021-04-12 | 2022-04-11 |
| SEMT-1069 | Loop Antenna            | Schwarz beck           | FMZB 1516             | 9773        | 2021-03-19 | 2023-03-18 |
| SEMT-1068 | Broadband Antenna       | Schwarz beck           | VULB9163              | 9163-333    | 2021-03-19 | 2023-03-18 |
| SEMT-1042 | Horn Antenna            | ETS                    | 3117                  | 00086197    | 2021-03-19 | 2023-03-18 |
| SEMT-1121 | Horn Antenna            | Schwarzbeck            | BBHA 9170             | BBHA9170582 | 2021-04-27 | 2023-04-26 |
| SEMT-1169 | Pre-amplifier           | Direction Systems Inc. | PAP-2640              | 14145-14153 | 2021-04-27 | 2022-04-26 |
| SEMT-1163 | Spectrum Analyzer       | Rohde & Schwarz        | FSP40                 | 100612      | 2021-03-27 | 2022-03-26 |
| SEMT-1166 | Power Limiter           | Agilent                | N9356B                | MY45450376  | 2021-03-27 | 2022-03-26 |
| SEMT-1076 | RF Switcher             | Top Precision          | RCS03-A2              | /           | 2021-03-19 | 2023-03-18 |
| SEMT-C001 | Cable                   | Zheng DI               | LL142-07-07-10M(A)    | /           | /          | /          |
| SEMT-C002 | Cable                   | Zheng DI               | ZT40-2.92J-2.92J-6M   | /           | /          | /          |
| SEMT-C003 | Cable                   | Zheng DI               | ZT40-2.92J-2.92J-2.5M | /           | /          | /          |
| SEMT-C004 | Cable                   | Zheng DI               | 2M0RFC                | /           | /          | /          |
| SEMT-C005 | Cable                   | Zheng DI               | 1M0RFC                | /           | /          | /          |
| SEMT-C006 | Cable                   | Zheng DI               | 1M0RFC                | /           | /          | /          |

| Software List                             |              |        |         |
|-------------------------------------------|--------------|--------|---------|
| Description                               | Manufacturer | Model  | Version |
| EMI Test Software<br>(Radiated Emission)* | Farad        | EZ-EMC | RA-03A1 |

\*Remark: indicates software version used in the compliance certification testing.

## 2. SUMMARY OF TEST RESULTS

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| FCC Rules              | Description of Test Item                   | Result    |
|------------------------|--------------------------------------------|-----------|
| §22.913(a), §24.232(c) | RF Output Power                            | Compliant |
| §24.51                 | Peak-to-average Ratio (PAR) of Transmitter | Compliant |
| §22.917(b), §24.238(b) | Emission Bandwidth                         | Compliant |
| §22.917(a), §24.238(a) | Spurious Emissions at Antenna Terminal     | Compliant |
| §22.917(a), §24.238(a) | Spurious Radiation Emissions               | Compliant |
| §22.917(a), §24.238(a) | Out of Band Emissions                      | Compliant |
| §22.355, §24.235       | Frequency Stability                        | Compliant |
| §2.1047                | Modulation characteristics                 | Compliant |

N/A: Not applicable.

### 3. RF Output Power

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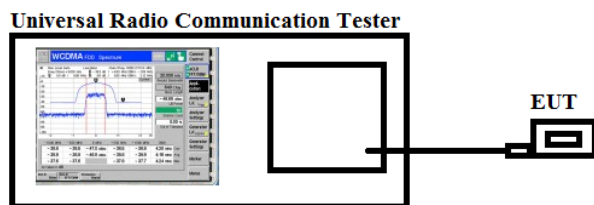
#### 3.1 Standard Applicable

According to §22.913(a)(2), the ERP of mobile and portable stations transmitters and auxiliary test transmitters must not exceed 7 Watts.

According to §24.232 (c), mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

#### 3.2 Test Procedure

- Conducted output power test method:



- Radiated power test method:

1. The setup of EUT is according with per ANSI/TIA Standard 603E and ANSI C63.26 measurement procedure.
2. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.
3. The frequency range up to tenth harmonic of the fundamental frequency was investigated.
4. Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

#### 3.3 Summary of Test Results/Plots

➤ **Max. Radiated Power**

| Mode    | Channel | Antenna Polar | ERP (dBm) | Limit (dBm) | Result |
|---------|---------|---------------|-----------|-------------|--------|
| GSM850  | 128     | V             | 28.74     | <38.45      | Pass   |
|         |         | H             | 23.64     |             |        |
|         | 190     | V             | 28.41     |             |        |
|         |         | H             | 23.46     |             |        |
|         | 251     | V             | 28.02     |             |        |
|         |         | H             | 23.90     |             |        |
| GPRS850 | 128     | V             | 28.31     | <38.45      | Pass   |
|         |         | H             | 22.87     |             |        |
|         | 190     | V             | 28.72     |             |        |
|         |         | H             | 22.36     |             |        |
|         | 251     | V             | 28.67     |             |        |
|         |         | H             | 22.93     |             |        |

| Mode     | Channel | Antenna Polar | EIRP (dBm) | Limit (dBm) | Result |
|----------|---------|---------------|------------|-------------|--------|
| PCS1900  | 512     | V             | 26.32      | <33.00      | Pass   |
|          |         | H             | 20.45      |             |        |
|          | 661     | V             | 26.39      |             |        |
|          |         | H             | 20.39      |             |        |
|          | 810     | V             | 26.12      |             |        |
|          |         | H             | 20.44      |             |        |
| GPRS1900 | 512     | V             | 26.02      | <33.00      | Pass   |
|          |         | H             | 20.74      |             |        |
|          | 661     | V             | 26.49      |             |        |
|          |         | H             | 20.36      |             |        |
|          | 810     | V             | 26.79      |             |        |
|          |         | H             | 20.13      |             |        |

| Mode         | Channel | Antenna Polar | ERP   | Limit (dBm) | Result |
|--------------|---------|---------------|-------|-------------|--------|
| WCDMA Band V | 4132    | V             | 20.46 | <38.45      | Pass   |
|              |         | H             | 15.39 |             |        |
|              | 4183    | V             | 20.79 |             |        |
|              |         | H             | 15.02 |             |        |
|              | 4233    | V             | 20.46 |             |        |
|              |         | H             | 15.17 |             |        |

| Mode          | Channel | Antenna Polar | EIRP  | Limit (dBm) | Result |
|---------------|---------|---------------|-------|-------------|--------|
| WCDMA Band II | 9262    | V             | 20.39 | <33.00      | Pass   |
|               |         | H             | 15.02 |             |        |
|               | 9400    | V             | 20.79 |             |        |
|               |         | H             | 15.36 |             |        |
|               | 9538    | V             | 20.02 |             |        |
|               |         | H             | 15.79 |             |        |

Note: Pre-scan mode WCDMA/HSDPA/HSUPA find the worst case at WCDMA mode and recorded in the test report.

➤ **Max. Conducted Power (Average power)**

**Please refer to Appendix A**

## 4. Peak-to-average Ratio (PAR) of Transmitter

---

### 4.1 Standard Applicable

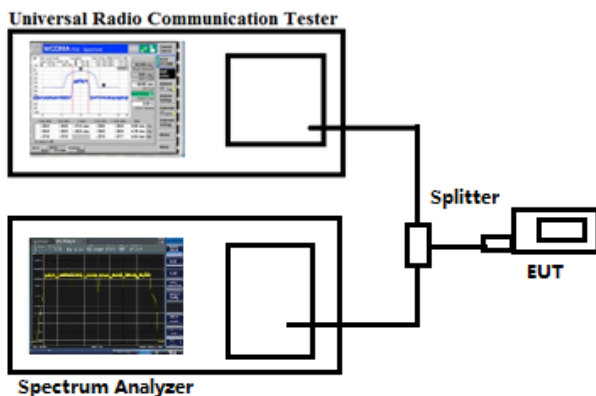
According to §24.232(d), power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of §24.51, in measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13dB.

### 4.2 Test Procedure

According with KDB 971168

1. The signal analyzer's CCDF measurement profile is enabled.
2. Frequency = carrier center frequency.
3. Measurement BW > Emission bandwidth of signal.
4. The signal analyzer was set to collect one million samples to generate the CCDF curve.
5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms. For burst transmissions, the spectrum analyzer is set to use an internal "RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the "on time" of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power.

Test Configuration for the emission bandwidth testing:



### 4.3 Summary of Test Results

Please refer to Appendix B.

## 5. Emission Bandwidth

---

### 5.1 Standard Applicable

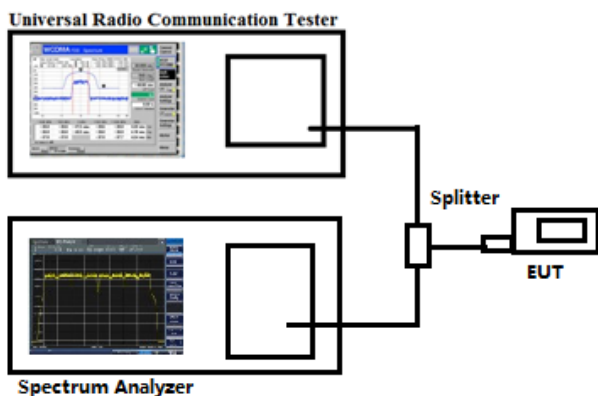
According to §22.917(b), the emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26dB below the transmitter power.

According to §24.238(b), the emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26dB below the transmitter power.

### 5.2 Test Procedure

The RF output terminal of the transmitter was connected to the input of the spectrum analyzer via a suitable attenuation. The RBW of the spectrum analyzer was set to 10kHz for GSM mode and 100kHz for WCDMA mode, VBW shall be at least 3 times the RBW, and the 26dB bandwidth was recorded.

Test Configuration for the emission bandwidth testing:



### 5.3 Summary of Test Results/Plots

Please refer to Appendix C



## 6. Out of Band Emissions at Antenna Terminal

---

### 6.1 Standard Applicable

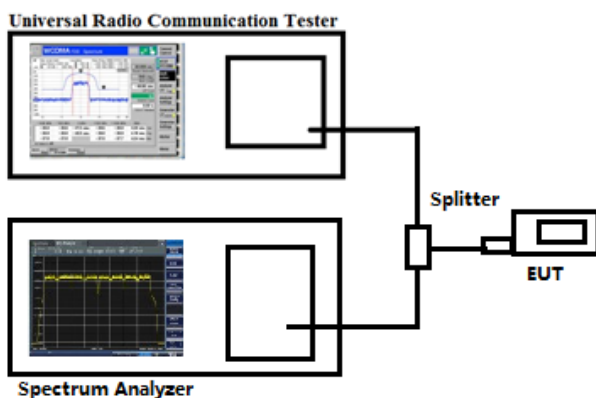
According to §22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

According to §24.238(a), the power of any emissions 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.

### 6.2 Test Procedure

The RF output terminal of the transmitter was connected to the input of the spectrum analyzer via a suitable attenuation. The RBW of the spectrum analyzer was set to 100kHz and 1MHz for the scan frequency from 30MHz to 1GHz and the scan frequency from 1GHz to up to  $10^{\text{th}}$  harmonic.

Test Configuration for the out of band emissions testing:



### 6.3 Summary of Test Results/Plots

Note: Pre-scan mode WCDMA/HSDPA/HSUPA find the worst case at WCDMA mode and recorded in the test report.

Please refer to Appendix D

## 7. Spurious Radiated Emissions

---

### 7.1 Standard Applicable

According to §22.917(a), the power of any emissions 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.

According to §24.238(a), the power of any emissions 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.

### 7.2 Test Procedure

1. The setup of EUT is according with per ANSI/TIA Standard 603E and ANSI C63.26 measurement procedure.
2. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.
3. The frequency range up to tenth harmonic of the fundamental frequency was investigated.
4. Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

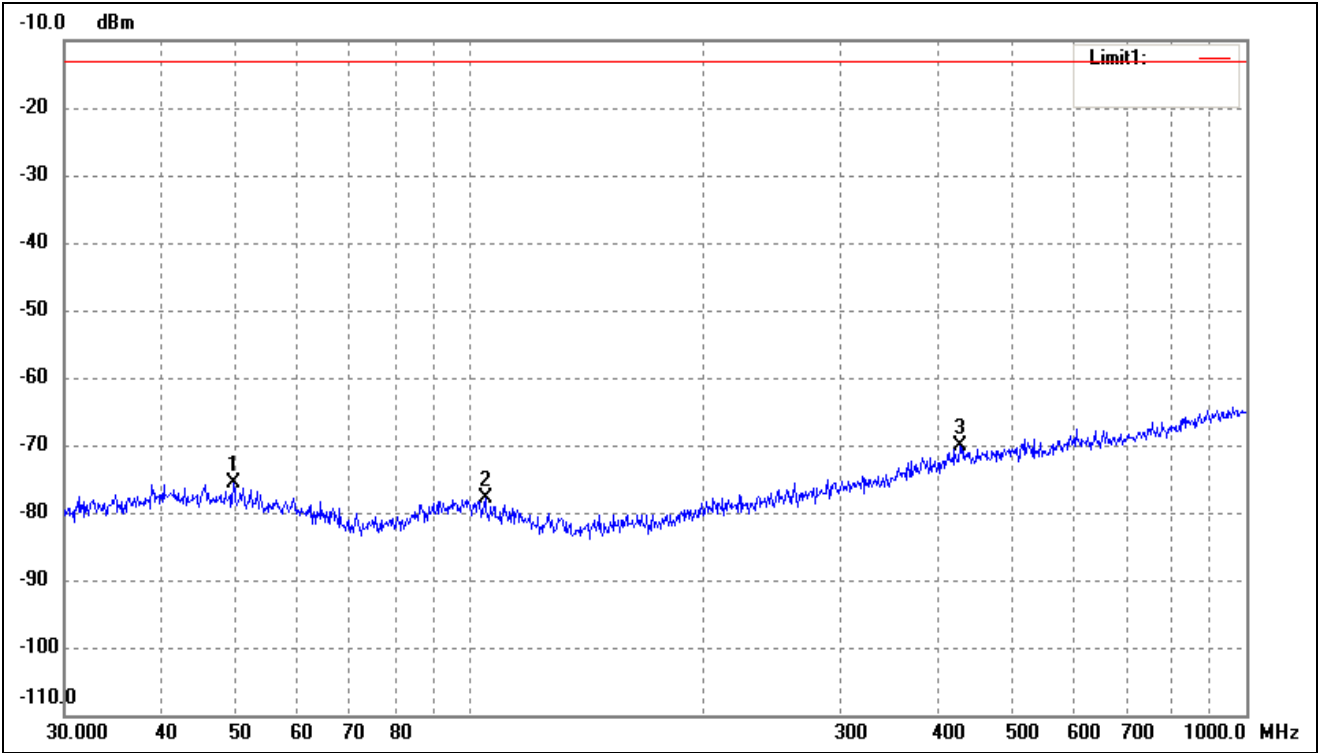
Spurious attenuation limit in dB =  $43 + 10 \log_{10}(\text{power out in Watts})$

### 7.3 Summary of Test Results/Plots

*Note: this EUT was tested in 3 orthogonal positions and the worst case position data was reported.*

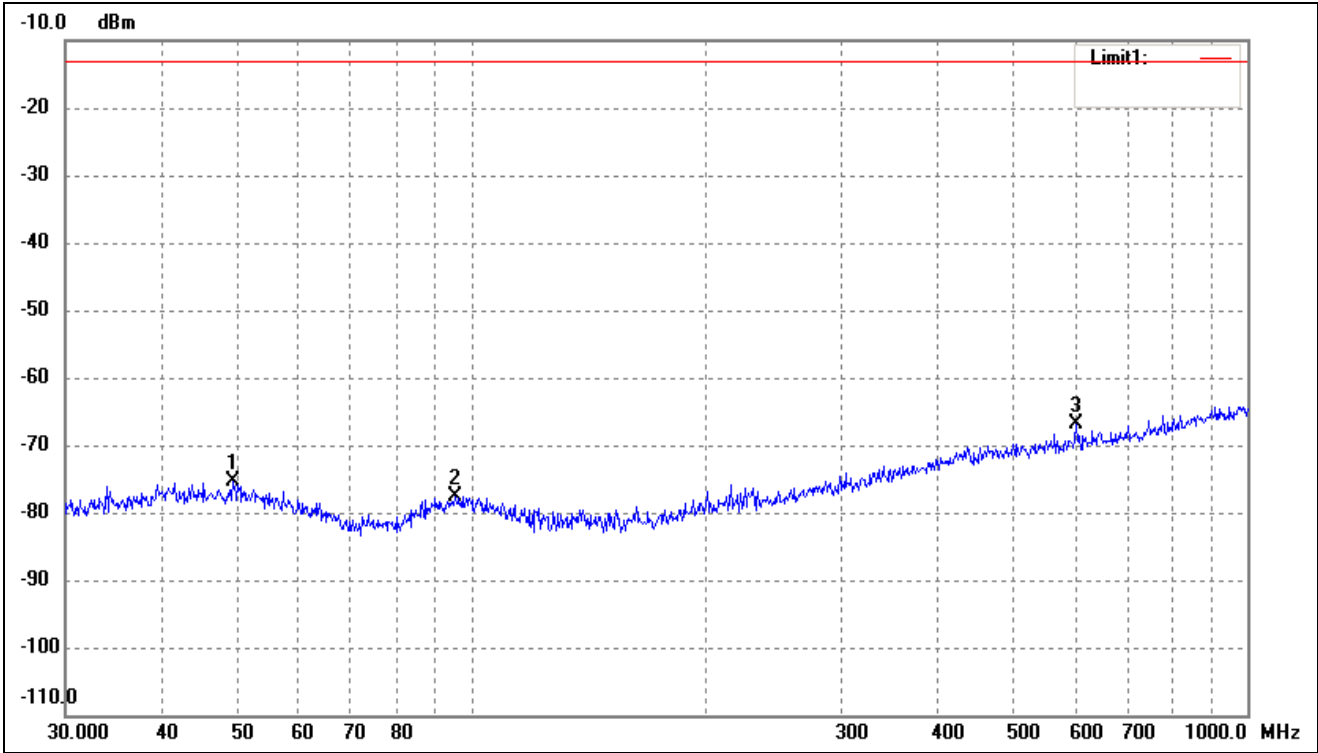
➤ Spurious Emissions Below 1GHz

|                   |        |           |            |
|-------------------|--------|-----------|------------|
| For Cellular Band |        |           |            |
| Test Channel      | GSM850 | Polarity: | Horizontal |



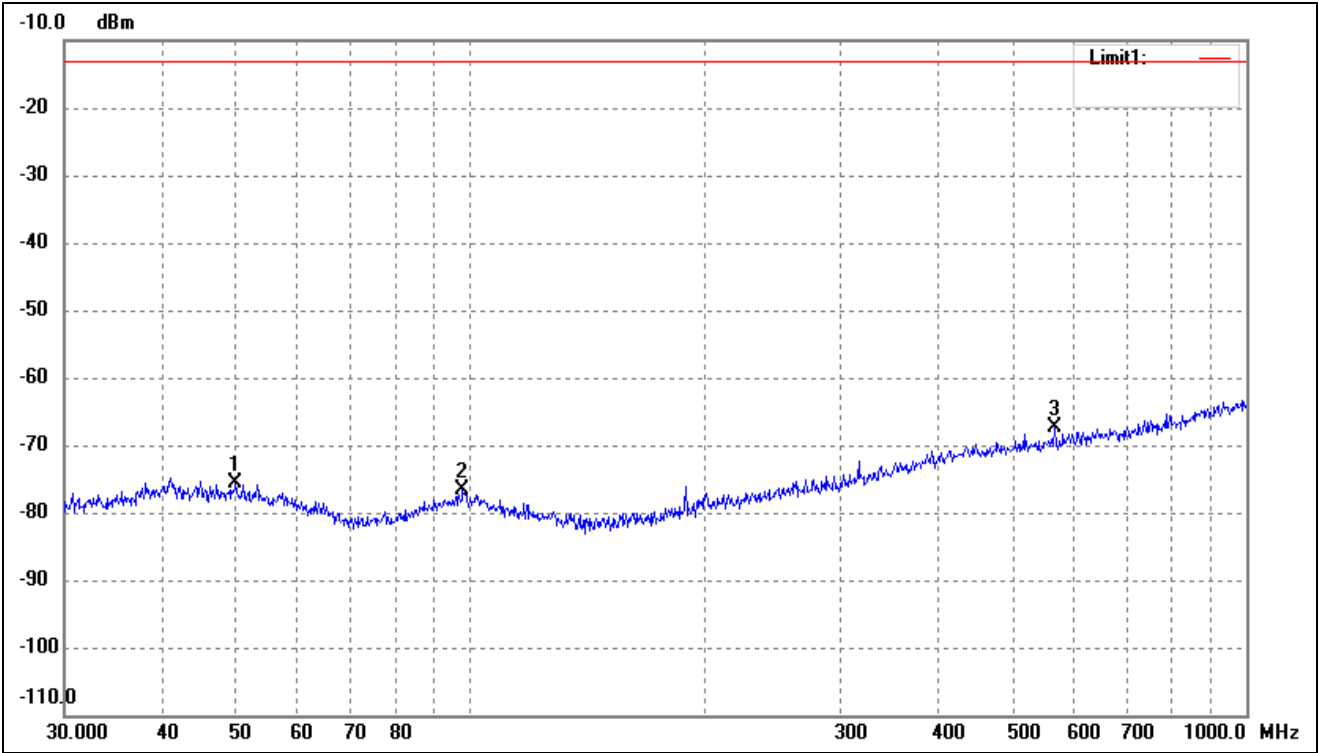
| No. | Frequency<br>(MHz) | Reading<br>(dBm) | Correct<br>dB | Result<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Degree<br>( ) | Height<br>(cm) | Remark |
|-----|--------------------|------------------|---------------|-----------------|----------------|----------------|---------------|----------------|--------|
| 1   | 49.5328            | -76.54           | 0.91          | -75.63          | -13.00         | -62.63         | -             | -              | peak   |
| 2   | 104.5361           | -77.41           | -0.51         | -77.92          | -13.00         | -64.92         | -             | -              | peak   |
| 3   | 428.0193           | -76.55           | 6.37          | -70.18          | -13.00         | -57.18         | -             | -              | peak   |

|                   |        |           |          |
|-------------------|--------|-----------|----------|
| For Cellular Band |        |           |          |
| Test Channel      | GSM850 | Polarity: | Vertical |



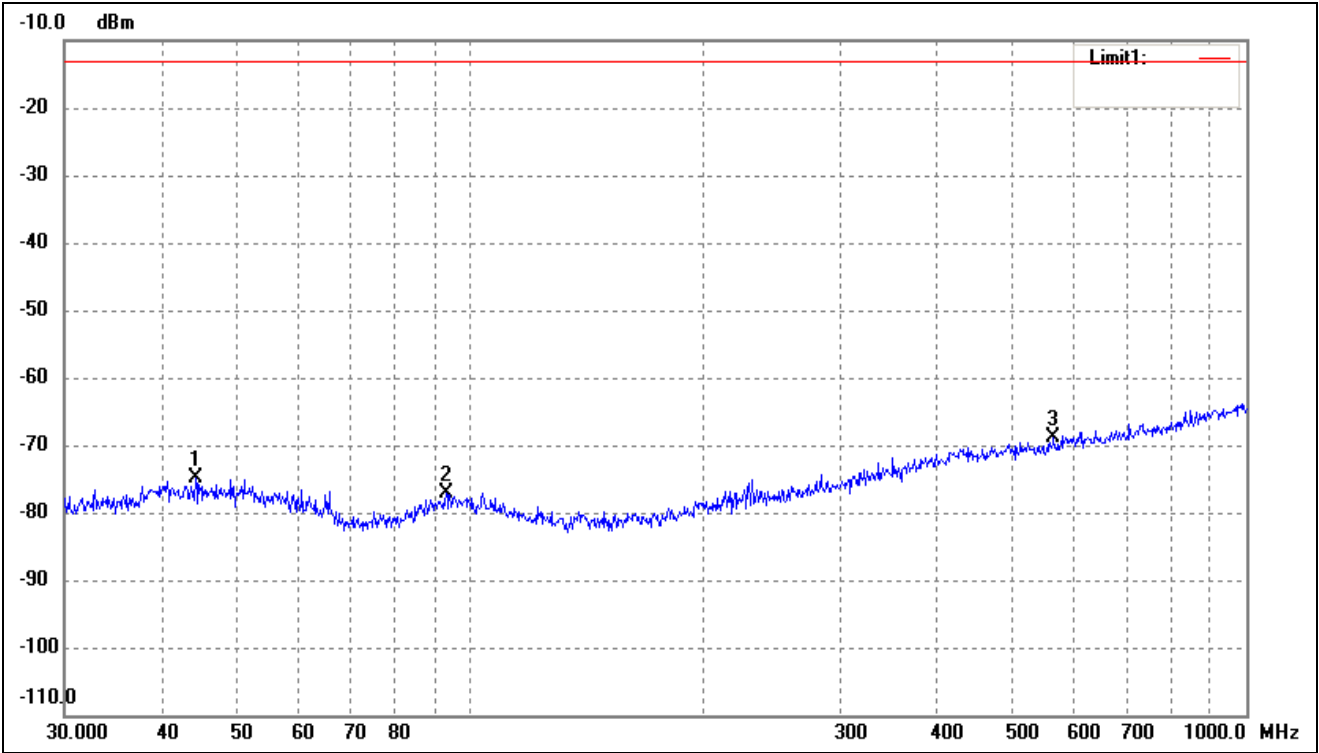
| No. | Frequency<br>(MHz) | Reading<br>(dBm) | Correct<br>dB | Result<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Degree<br>( ) | Height<br>(cm) | Remark |
|-----|--------------------|------------------|---------------|-----------------|----------------|----------------|---------------|----------------|--------|
| 1   | 49.3594            | -76.23           | 0.91          | -75.32          | -13.00         | -62.32         | -             | -              | peak   |
| 2   | 95.4270            | -77.00           | -0.56         | -77.56          | -13.00         | -64.56         | -             | -              | peak   |
| 3   | 601.4265           | -75.04           | 8.06          | -66.98          | -13.00         | -53.98         | -             | -              | peak   |

|                   |         |           |            |
|-------------------|---------|-----------|------------|
| For Cellular Band |         |           |            |
| Test Channel      | GSM1900 | Polarity: | Horizontal |



| No. | Frequency (MHz) | Reading (dBm) | Correct (dB) | Result (dBm) | Limit (dBm) | Margin (dB) | Degree ( ) | Height (cm) | Remark |
|-----|-----------------|---------------|--------------|--------------|-------------|-------------|------------|-------------|--------|
| 1   | 49.8814         | -76.44        | 0.91         | -75.53       | -13.00      | -62.53      | -          | -           | peak   |
| 2   | 97.7983         | -76.13        | -0.41        | -76.54       | -13.00      | -63.54      | -          | -           | peak   |
| 3   | 566.6223        | -74.82        | 7.43         | -67.39       | -13.00      | -54.39      | -          | -           | peak   |

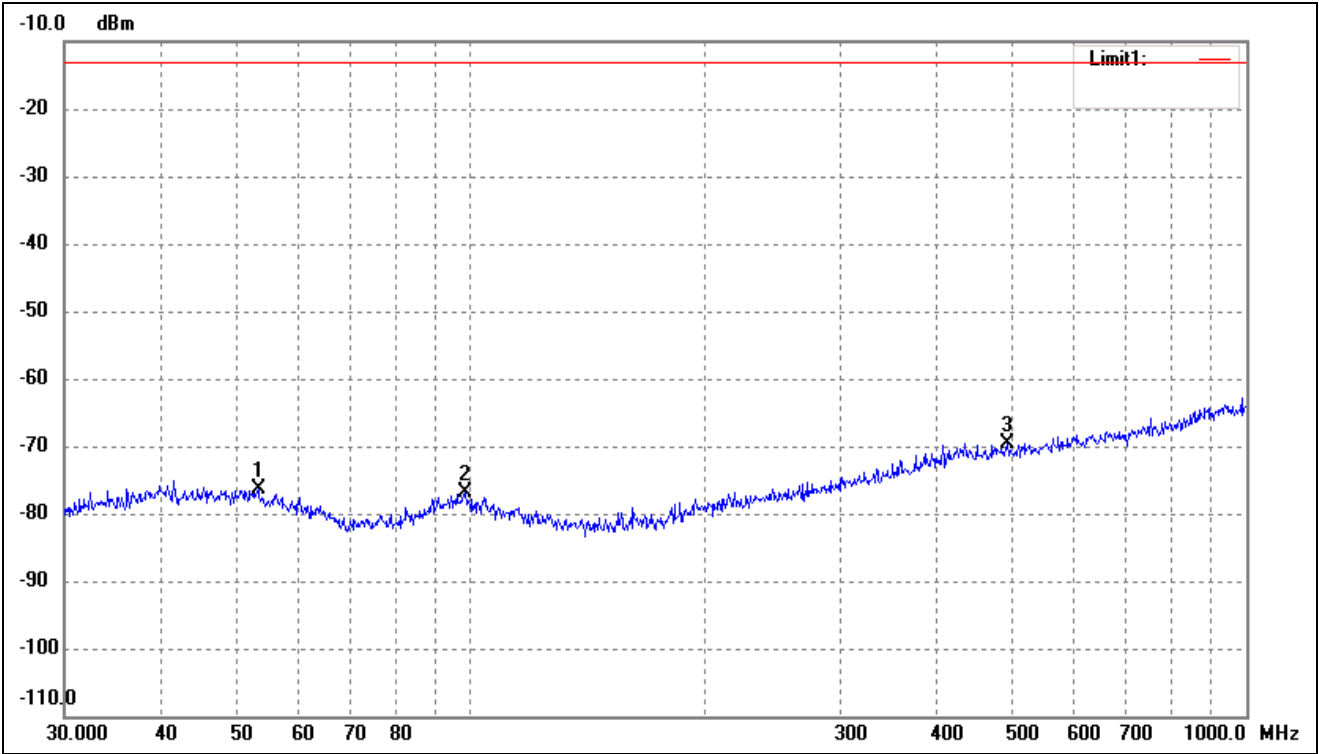
|                   |         |           |          |
|-------------------|---------|-----------|----------|
| For Cellular Band |         |           |          |
| Test Channel      | GSM1900 | Polarity: | Vertical |



| No. | Frequency<br>(MHz) | Reading<br>(dBm) | Correct<br>dB | Result<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Degree<br>( ) | Height<br>(cm) | Remark |
|-----|--------------------|------------------|---------------|-----------------|----------------|----------------|---------------|----------------|--------|
| 1   | 44.2752            | -75.86           | 0.91          | -74.95          | -13.00         | -61.95         | -             | -              | peak   |
| 2   | 93.1132            | -76.40           | -0.77         | -77.17          | -13.00         | -64.17         | -             | -              | peak   |
| 3   | 564.6389           | -76.35           | 7.39          | -68.96          | -13.00         | -55.96         | -             | -              | peak   |

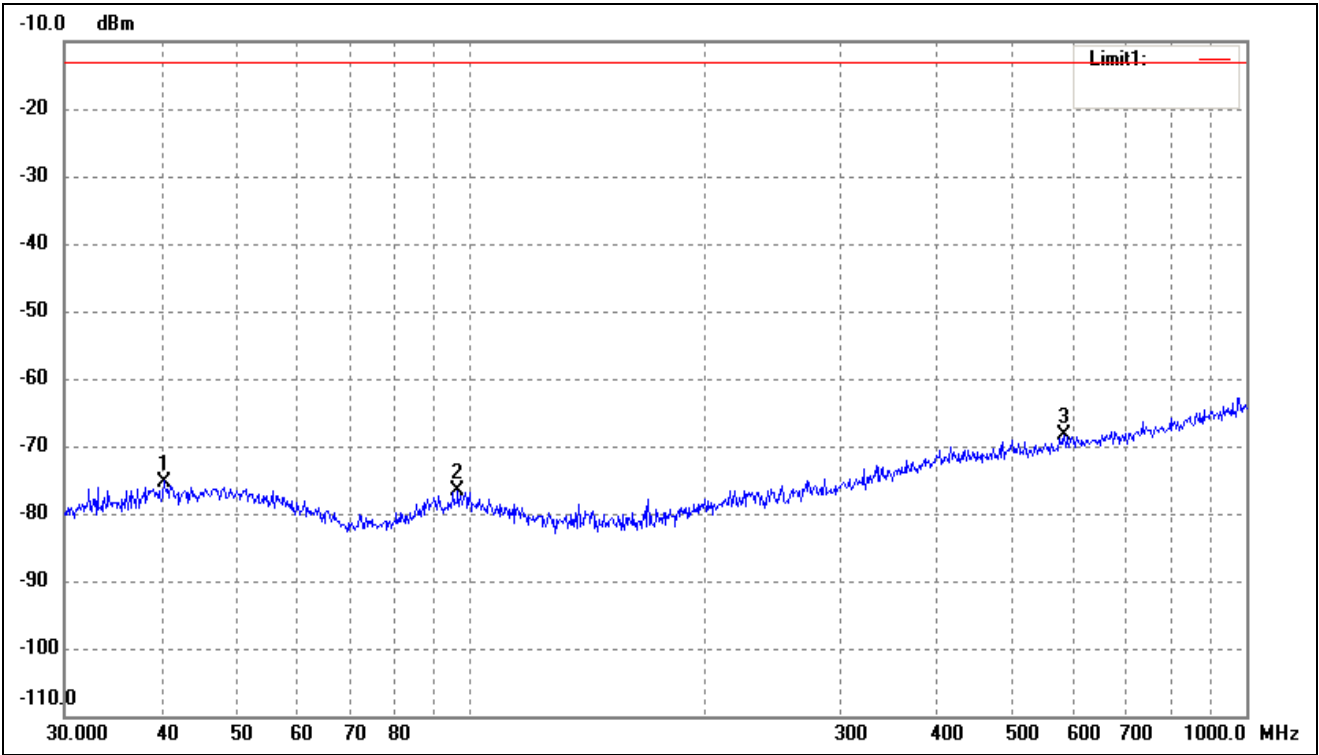
Note:  $\text{Margin} = (\text{Reading} + \text{Correct}) - \text{Limit}$

|              |        |           |            |
|--------------|--------|-----------|------------|
| Test Channel | band 5 | Polarity: | Horizontal |
|--------------|--------|-----------|------------|



| No. | Frequency<br>(MHz) | Reading<br>(dBm) | Correct<br>dB | Result<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Degree<br>( ) | Height<br>(cm) | Remark |
|-----|--------------------|------------------|---------------|-----------------|----------------|----------------|---------------|----------------|--------|
| 1   | 53.3179            | -76.60           | 0.27          | -76.33          | -13.00         | -63.33         | -             | -              | peak   |
| 2   | 98.4866            | -76.46           | -0.38         | -76.84          | -13.00         | -63.84         | -             | -              | peak   |
| 3   | 492.4685           | -76.21           | 6.62          | -69.59          | -13.00         | -56.59         | -             | -              | peak   |

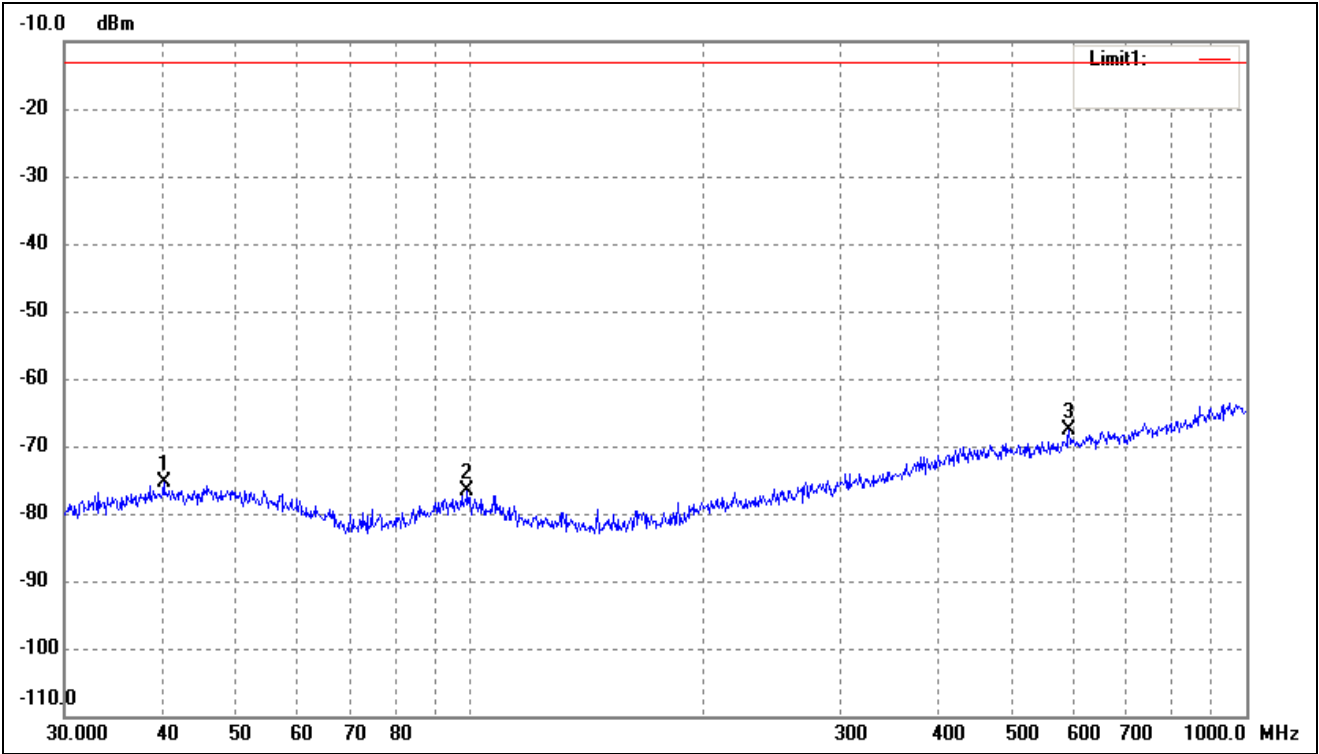
|              |        |           |          |
|--------------|--------|-----------|----------|
| Test Channel | band 5 | Polarity: | Vertical |
|--------------|--------|-----------|----------|



| No. | Frequency<br>(MHz) | Reading<br>(dBm) | Correct<br>dB | Result<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Degree<br>( ) | Height<br>(cm) | Remark |
|-----|--------------------|------------------|---------------|-----------------|----------------|----------------|---------------|----------------|--------|
| 1   | 40.2757            | -76.14           | 0.89          | -75.25          | -13.00         | -62.25         | -             | -              | peak   |
| 2   | 96.4362            | -76.21           | -0.50         | -76.71          | -13.00         | -63.71         | -             | -              | peak   |
| 3   | 582.7425           | -76.14           | 7.73          | -68.41          | -13.00         | -55.41         | -             | -              | peak   |

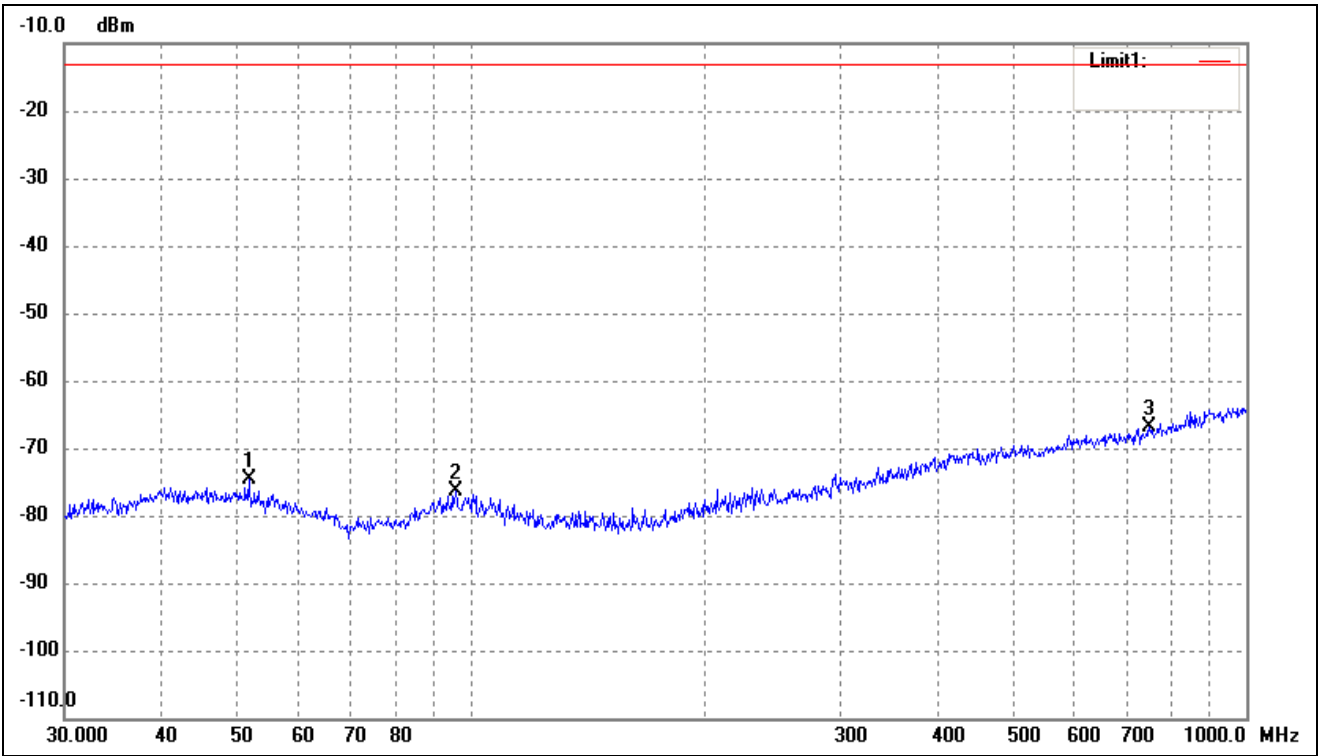


|              |        |           |            |
|--------------|--------|-----------|------------|
| Test Channel | band 2 | Polarity: | Horizontal |
|--------------|--------|-----------|------------|



| No. | Frequency<br>(MHz) | Reading<br>(dBm) | Correct<br>dB | Result<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Degree<br>( ) | Height<br>(cm) | Remark |
|-----|--------------------|------------------|---------------|-----------------|----------------|----------------|---------------|----------------|--------|
| 1   | 40.2757            | -76.38           | 0.89          | -75.49          | -13.00         | -62.49         | -             | -              | peak   |
| 2   | 99.1797            | -76.39           | -0.33         | -76.72          | -13.00         | -63.72         | -             | -              | peak   |
| 3   | 590.9737           | -75.47           | 7.88          | -67.59          | -13.00         | -54.59         | -             | -              | peak   |

|              |        |           |          |
|--------------|--------|-----------|----------|
| Test Channel | band 2 | Polarity: | Vertical |
|--------------|--------|-----------|----------|



| No. | Frequency<br>(MHz) | Reading<br>(dBm) | Correct<br>dB | Result<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Degree<br>( ) | Height<br>(cm) | Remark |
|-----|--------------------|------------------|---------------|-----------------|----------------|----------------|---------------|----------------|--------|
| 1   | 51.8430            | -75.22           | 0.56          | -74.66          | -13.00         | -61.66         | -             | -              | peak   |
| 2   | 95.7622            | -75.77           | -0.54         | -76.31          | -13.00         | -63.31         | -             | -              | peak   |
| 3   | 750.1083           | -76.60           | 9.66          | -66.94          | -13.00         | -53.94         | -             | -              | peak   |

Note:  $Margin = (Reading + Correct) - Limit$

Remark: ‘-’ Means the test Degree and Height are not recorded by the test software and only show the worst case in the test report.

- Spurious Emissions Above 1GHz
- For Cellular Band\_GSM850 Mode

| Frequency                 | Reading | Correct | Result | Limit | Margin | Polar |
|---------------------------|---------|---------|--------|-------|--------|-------|
| (MHz)                     | (dBm)   | dB      | (dBm)  | (dBm) | (dB)   | H/V   |
| Low Channel (824.2MHz)    |         |         |        |       |        |       |
| 1648.4                    | -36.01  | 4.94    | -31.07 | -13   | -18.07 | H     |
| 2472.6                    | -44.14  | 8.46    | -35.68 | -13   | -22.68 | H     |
| 1648.4                    | -34.67  | 4.94    | -29.73 | -13   | -16.73 | V     |
| 2472.6                    | -41.18  | 8.46    | -32.72 | -13   | -19.72 | V     |
| Middle Channel (836.6MHz) |         |         |        |       |        |       |
| 1673.2                    | -34.39  | 5.11    | -29.28 | -13   | -16.28 | H     |
| 2509.8                    | -43.68  | 8.54    | -35.14 | -13   | -22.14 | H     |
| 1673.2                    | -35.82  | 5.11    | -30.71 | -13   | -17.71 | V     |
| 2509.8                    | -43.68  | 8.54    | -35.14 | -13   | -22.14 | V     |
| High Channel (848.8MHz)   |         |         |        |       |        |       |
| 1697.6                    | -37.16  | 5.25    | -31.91 | -13   | -18.91 | H     |
| 2546.4                    | -42.67  | 8.57    | -34.1  | -13   | -21.1  | H     |
| 1697.6                    | -34.86  | 5.25    | -29.61 | -13   | -16.61 | V     |
| 2546.4                    | -44.68  | 8.57    | -36.11 | -13   | -23.11 | V     |

- For PCS Band\_GSM1900 Mode

| Frequency                | Reading | Correct | Result | Limit | Margin | Polar |
|--------------------------|---------|---------|--------|-------|--------|-------|
| (MHz)                    | (dBm)   | dB      | (dBm)  | (dBm) | (dB)   | H/V   |
| Low Channel (1850.2MHz)  |         |         |        |       |        |       |
| 3700.4                   | -41.48  | 10.54   | -30.94 | -13   | -17.94 | H     |
| 5550.6                   | -46.29  | 13.37   | -32.92 | -13   | -19.92 | H     |
| 3700.4                   | -40.48  | 10.54   | -29.94 | -13   | -16.94 | V     |
| 5550.6                   | -49.99  | 13.37   | -36.62 | -13   | -23.62 | V     |
| Middle Channel (1880MHz) |         |         |        |       |        |       |
| 3760.0                   | -39.3   | 10.64   | -28.66 | -13   | -15.66 | H     |
| 5640.0                   | -49.45  | 13.54   | -35.91 | -13   | -22.91 | H     |
| 3760.0                   | -42.59  | 10.64   | -31.95 | -13   | -18.95 | V     |
| 5640.0                   | -48.63  | 13.54   | -35.09 | -13   | -22.09 | V     |
| High Channel (1909.8MHz) |         |         |        |       |        |       |
| 3819.6                   | -40.54  | 10.74   | -29.8  | -13   | -16.8  | H     |
| 5729.4                   | -49.75  | 13.71   | -36.04 | -13   | -23.04 | H     |
| 3819.6                   | -41.85  | 10.74   | -31.11 | -13   | -18.11 | V     |
| 5729.4                   | -47.83  | 13.71   | -34.12 | -13   | -21.12 | V     |

## ➤ For WCDMA Band V Mode

| Frequency                 | Reading | Correct | Result | Limit | Margin | Polar |
|---------------------------|---------|---------|--------|-------|--------|-------|
| (MHz)                     | (dBm)   | dB      | (dBm)  | (dBm) | (dB)   | H/V   |
| Low Channel (826.4MHz)    |         |         |        |       |        |       |
| 1652.8                    | -36.26  | 4.94    | -31.32 | -13   | -18.32 | H     |
| 2479.2                    | -44.89  | 8.46    | -36.43 | -13   | -23.43 | H     |
| 1652.8                    | -37.55  | 4.94    | -32.61 | -13   | -19.61 | V     |
| 2479.2                    | -42.2   | 8.46    | -33.74 | -13   | -20.74 | V     |
| Middle Channel (836.6MHz) |         |         |        |       |        |       |
| 1672.8                    | -37.16  | 5.11    | -32.05 | -13   | -19.05 | H     |
| 2509.2                    | -43.73  | 8.54    | -35.19 | -13   | -22.19 | H     |
| 1672.8                    | -36.18  | 5.11    | -31.07 | -13   | -18.07 | V     |
| 2509.2                    | -42.79  | 8.54    | -34.25 | -13   | -21.25 | V     |
| High Channel (846.6MHz)   |         |         |        |       |        |       |
| 1693.2                    | -35.54  | 5.25    | -30.29 | -13   | -17.29 | H     |
| 2539.8                    | -44.32  | 8.57    | -35.75 | -13   | -22.75 | H     |
| 1693.2                    | -35.05  | 5.25    | -29.8  | -13   | -16.8  | V     |
| 2539.8                    | -42.96  | 8.57    | -34.39 | -13   | -21.39 | V     |

## ➤ For WCDMA Band II Mode

| Frequency                | Reading | Correct | Result | Limit | Margin | Polar |
|--------------------------|---------|---------|--------|-------|--------|-------|
| (MHz)                    | (dBm)   | dB      | (dBm)  | (dBm) | (dB)   | H/V   |
| Low Channel (1852.4MHz)  |         |         |        |       |        |       |
| 3704.8                   | -42.94  | 10.54   | -32.4  | -13   | -19.4  | H     |
| 5557.2                   | -48.04  | 13.37   | -34.67 | -13   | -21.67 | H     |
| 3704.8                   | -39.55  | 10.54   | -29.01 | -13   | -16.01 | V     |
| 5557.2                   | -49.14  | 13.37   | -35.77 | -13   | -22.77 | V     |
| Middle Channel (1880MHz) |         |         |        |       |        |       |
| 3760.8                   | -39.13  | 10.64   | -28.49 | -13   | -15.49 | H     |
| 5640.0                   | -49.9   | 13.54   | -36.36 | -13   | -23.36 | H     |
| 3760.8                   | -40.89  | 10.64   | -30.25 | -13   | -17.25 | V     |
| 5640.0                   | -48     | 13.54   | -34.46 | -13   | -21.46 | V     |
| High Channel (1907.6MHz) |         |         |        |       |        |       |
| 3815.2                   | -41.75  | 10.74   | -31.01 | -13   | -18.01 | H     |
| 5722.8                   | -48.62  | 13.71   | -34.91 | -13   | -21.91 | H     |
| 3815.2                   | -40.48  | 10.74   | -29.74 | -13   | -16.74 | V     |
| 5722.8                   | -46.44  | 13.71   | -32.73 | -13   | -19.73 | H     |

Note: Result=Reading+ Correct, Margin= Result- Limit

Note: Testing is carried out with frequency rang 9kHz to the tenth harmonics, other than listed in the table above are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

## **8. Frequency Stability**

---

### **8.1 Standard Applicable**

According to §22.355, §24.235 the limit is 2.5ppm.

### **8.2 Test Procedure**

According to §2.1055, the following test procedure was performed.

The Frequency Stability is measured directly with a Frequency Domain Analyzer. Frequency Deviation in ppm is calculated from the measured peak to peak value.

The Carrier Frequency Stability over Power Supply Voltage and over Temperature is measured with a Frequency Domain Analyzer in histogram mode.

### **8.3 Summary of Test Results/Plots**

**Please refer to Appendix E**

## 9. Modulation characteristics

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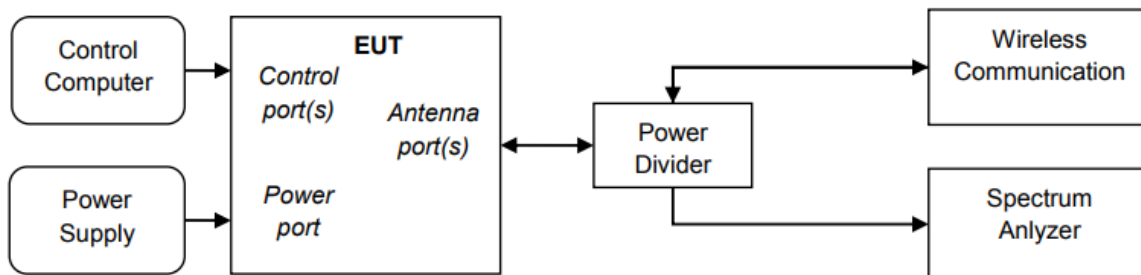
### 9.1 Standard Applicable

According to §2.1047, measurements required: Modulation characteristics is given below:

- (a) Voice modulated communication equipment. A curve or equivalent data showing the frequency response of the audio modulating circuit over a range of 100 to 5000Hz shall be submitted. For equipment required to have an audio low-pass filter, a curve showing the frequency response of the filter, or of all circuitry installed between the modulation limiter and the modulated stage shall be submitted.
- (b) Equipment which employs modulation limiting. A curve or family of curves showing the percentage of modulation versus the modulation input voltage shall be supplied. The information submitted shall be sufficient to show modulation limiting capability throughout the range of modulating frequencies and input modulating signal levels employed.
- (c) Single sideband and independent sideband radiotelephone transmitters which employ a device or circuit to limit peak envelope power. A curve showing the peak envelope power output versus the modulation input voltage shall be supplied. The modulating signals shall be the same in frequency as specified in paragraph (c) of §2.1049 for the occupied bandwidth tests.
- (d) Other types of equipment. A curve or equivalent data which shows that the equipment will meet the modulation requirements of the rules under which the equipment is to be licensed.

### 9.2 Test Procedure

According to ANSI C63.26-2015 section 5.3.2, the following test setup was performed.



### 9.3 Summary of Test Results/Plots

Only the worst case was selected to record.

**Please refer to Appendix F**

**APPENDIX SUMMARY**

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|                   |                 |               |           |
|-------------------|-----------------|---------------|-----------|
| Project No.       | WTX21X07069992W | Test Engineer | Gala      |
| Start date        | 2021/7/20       | Finish date   | 2021/7/20 |
| Temperature       | 24.8℃           | Humidity      | 51%       |
| RF specifications | GSM/WCDMA       |               |           |

| APPENDIX | Description of Test Item                   | Result    |
|----------|--------------------------------------------|-----------|
| A        | RF Output Power                            | Compliant |
| B        | Peak-to-average Ratio (PAR) of Transmitter | Compliant |
| C        | Emission Bandwidth                         | Compliant |
| D        | Out of Band Emissions at Antenna Terminal  | Compliant |
| E        | Frequency Stability                        | Compliant |
| F        | Modulation characteristics                 | Compliant |

## APPENDIX A

### Conducted Average power

| Conducted Average power (dBm) |        |        |        |         |         |         |
|-------------------------------|--------|--------|--------|---------|---------|---------|
| Band                          | GSM850 |        |        | PCS1900 |         |         |
| Channel                       | 128    | 190    | 251    | 512     | 661     | 810     |
| Frequency(MHz)                | 824.20 | 836.60 | 848.80 | 1850.20 | 1880.00 | 1909.80 |
| GSM                           | 32.66  | 32.77  | 32.84  | 29.36   | 29.02   | 28.79   |
| GPRS(1Slot)                   | 32.66  | 32.71  | 32.75  | 29.44   | 29.11   | 28.83   |

| Conducted Average power (dBm) |              |       |       |               |        |        |
|-------------------------------|--------------|-------|-------|---------------|--------|--------|
| Band                          | WCDMA Band V |       |       | WCDMA Band II |        |        |
| Channel                       | 4132         | 4183  | 4233  | 9262          | 9400   | 9538   |
| Frequency(MHz)                | 826.4        | 836.6 | 846.6 | 1852.4        | 1880.0 | 1907.6 |
| RMC 12.2k                     | 23.16        | 23.58 | 23.13 | 22.58         | 22.26  | 22.21  |
| HSDPA Subtest-1               | 22.15        | 22.44 | 22.07 | 21.91         | 21.57  | 21.79  |
| HSDPA Subtest-2               | 22.13        | 22.42 | 22.05 | 21.89         | 21.56  | 21.76  |
| HSDPA Subtest-3               | 22.14        | 22.43 | 22.04 | 21.87         | 21.54  | 21.75  |
| HSDPA Subtest-4               | 22.14        | 22.42 | 22.05 | 21.88         | 21.53  | 21.74  |
| HSUPA Subtest-1               | 22.04        | 22.51 | 22.07 | 21.89         | 21.55  | 21.69  |
| HSUPA Subtest-2               | 22.03        | 22.49 | 22.05 | 21.86         | 21.52  | 21.65  |
| HSUPA Subtest-3               | 22.04        | 22.48 | 22.04 | 21.87         | 21.53  | 21.67  |
| HSUPA Subtest-4               | 22.03        | 22.46 | 22.04 | 21.86         | 21.54  | 21.68  |
| HSUPA Subtest-5               | 22.04        | 22.48 | 22.03 | 21.85         | 21.52  | 21.67  |



## APPENDIX B

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### Peak-to-average Ratio (PAR) of Transmitter

| PCS1900      |         |                 |          |            |
|--------------|---------|-----------------|----------|------------|
| Test Mode    | Channel | Frequency (MHz) | PAR (dB) | Limit (dB) |
| GSM          | 661     | 1850.2          | 5.78     | 13         |
| GPRS(1 Slot) | 661     | 1850.2          | 5.31     | 13         |
| EDGE(1 Slot) | 661     | 1850.2          | 5.98     | 13         |

| WCDMA Band II |         |                 |          |            |
|---------------|---------|-----------------|----------|------------|
| Test Mode     | Channel | Frequency (MHz) | PAR (dB) | Limit (dB) |
| WCDMA         | 9262    | 1852.4          | 6.01     | 13         |
|               | 9400    | 1880.0          | 6.28     | 13         |
|               | 9538    | 1907.6          | 6.74     | 13         |

Note: Only the worst case was selected to record.

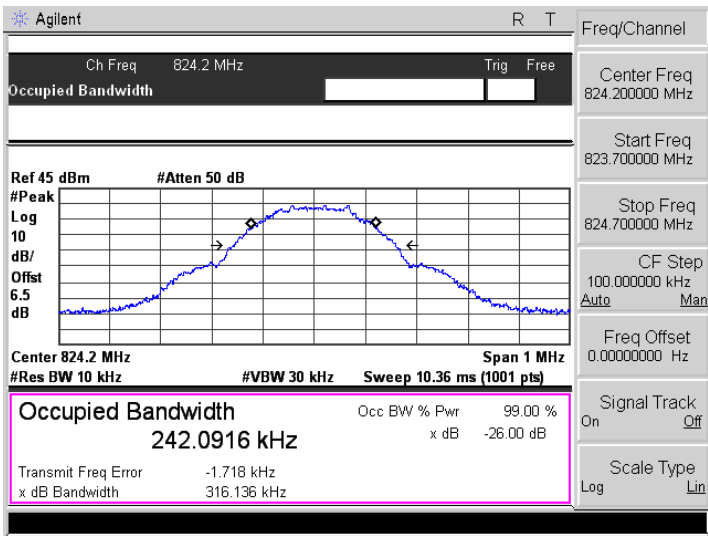
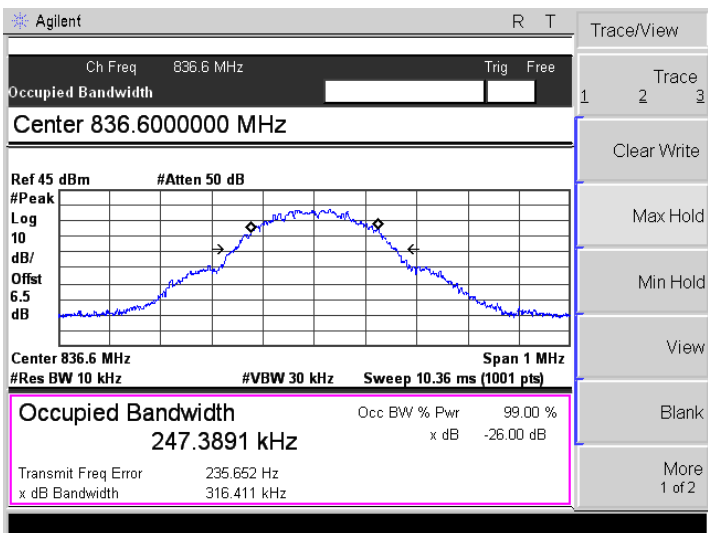
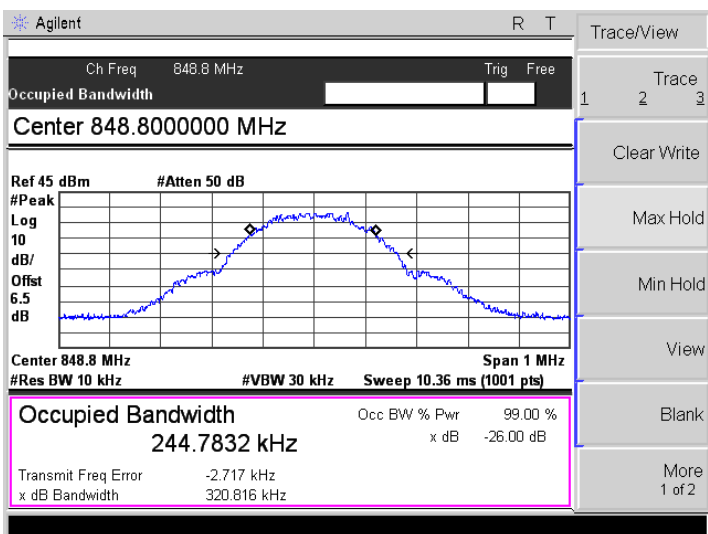
## APPENDIX C

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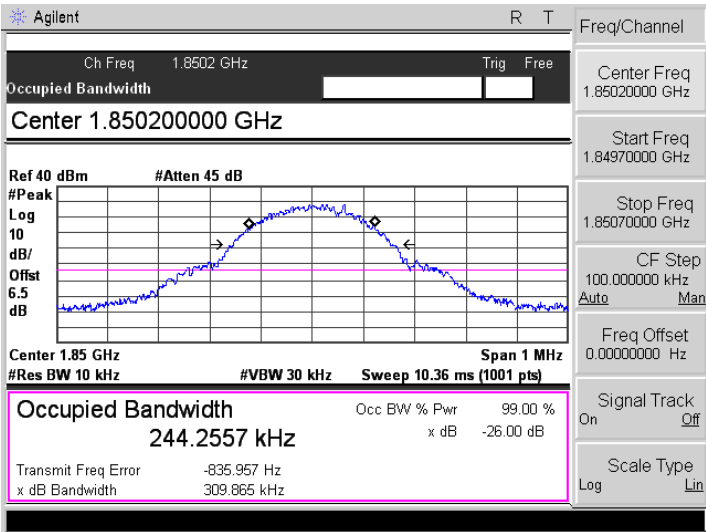
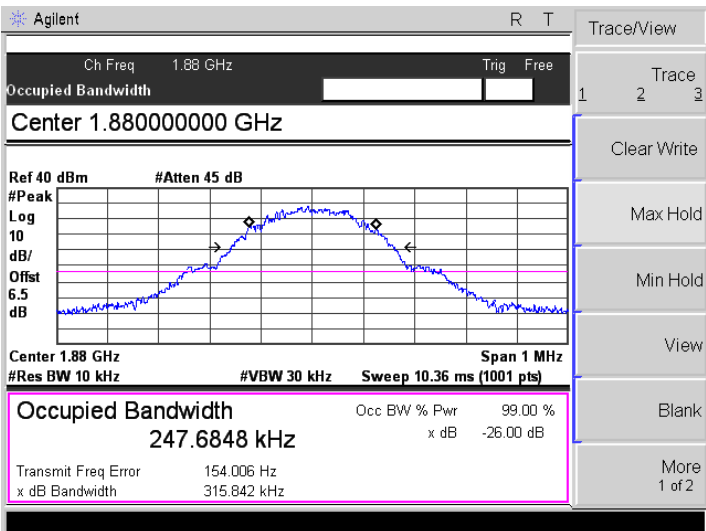
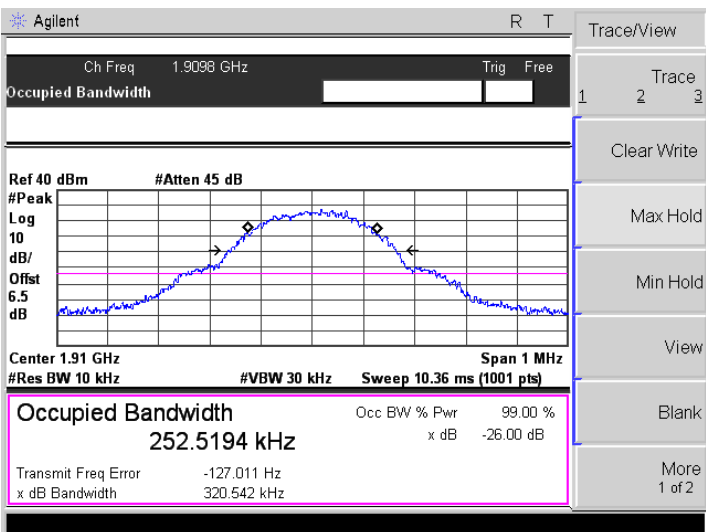
| EUT Mode              | Channel | Frequency (MHz) | 99% Occupy bandwidth (kHz) | -26dB bandwidth (kHz) |
|-----------------------|---------|-----------------|----------------------------|-----------------------|
| GSM 850 (GMSK)        | 128     | 824.20          | 242.5625                   | 303.580               |
|                       | 190     | 836.60          | 245.5028                   | 316.778               |
|                       | 251     | 848.80          | 245.9580                   | 304.755               |
| GPRS850 (GMSK,1Slot)  | 128     | 824.20          | 242.0916                   | 316.136               |
|                       | 190     | 836.60          | 247.3891                   | 316.411               |
|                       | 251     | 848.80          | 244.7832                   | 320.816               |
| PCS1900 (GMSK)        | 512     | 1850.20         | 242.8785                   | 312.107               |
|                       | 661     | 1880.00         | 246.9443                   | 319.791               |
|                       | 810     | 1909.80         | 245.4316                   | 313.887               |
| GPRS1900 (GMSK,1Slot) | 512     | 1850.20         | 244.2557                   | 309.865               |
|                       | 661     | 1880.00         | 247.6848                   | 315.842               |
|                       | 810     | 1909.80         | 252.5194                   | 320.542               |

| EUT Mode      | Channel | Frequency (MHz) | 99% Occupy bandwidth (kHz) | -26dB bandwidth (kHz) |
|---------------|---------|-----------------|----------------------------|-----------------------|
| WCDMA Band V  | 4132    | 826.40          | 4160.2                     | 4658                  |
|               | 4183    | 836.60          | 4141.2                     | 4683                  |
|               | 4233    | 846.60          | 4140.9                     | 4680                  |
| HSDPA         | 4132    | 826.40          | 4164.6                     | 4674                  |
|               | 4183    | 836.60          | 4143.2                     | 4678                  |
|               | 4233    | 846.60          | 4154.3                     | 4674                  |
| HSUPA         | 4132    | 826.40          | 4164.6                     | 4686                  |
|               | 4183    | 836.60          | 4142.5                     | 4688                  |
|               | 4233    | 846.60          | 4142.9                     | 4675                  |
| WCDMA Band II | 9262    | 1852.40         | 4194.3                     | 4780                  |
|               | 9400    | 1880.00         | 4196.7                     | 4773                  |
|               | 9538    | 1907.60         | 4158.3                     | 4724                  |
| HSDPA         | 9262    | 1852.40         | 4169.2                     | 4724                  |
|               | 9400    | 1880.00         | 4180.5                     | 4722                  |
|               | 9538    | 1907.60         | 4151.8                     | 4714                  |
| HSUPA         | 9262    | 1852.40         | 4157.7                     | 4703                  |
|               | 9400    | 1880.00         | 4173.7                     | 4712                  |
|               | 9538    | 1907.60         | 4129.1                     | 4655                  |

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GSM 850<br>(GMSK)-Low    | <div><div><div>Agilent</div><div>Ch Freq 824.2 MHz</div><div>Occupied Bandwidth</div><div>Center 824.200000 MHz</div><div>Ref 45 dBm</div><div>#Peak</div><div>Log</div><div>10</div><div>dB/</div><div>Offset</div><div>6.5</div><div>dB</div><div>Center 824.2 MHz</div><div>#Res BW 10 kHz</div><div>#VBW 30 kHz</div><div>Sweep 10.36 ms (1001 pts)</div><div>Occupied Bandwidth</div><div>242.5625 kHz</div><div>Transmit Freq Error</div><div>78.222 Hz</div><div>x dB Bandwidth</div><div>303.580 kHz</div><div>Occ BW % Pwr</div><div>99.00 %</div><div>x dB</div><div>-26.00 dB</div><div>Freq/Channel</div><div>Center Freq</div><div>824.200000 MHz</div><div>Start Freq</div><div>823.700000 MHz</div><div>Stop Freq</div><div>824.700000 MHz</div><div>CF Step</div><div>100.000000 kHz</div><div>Auto</div><div>Man</div><div>Freq Offset</div><div>0.0000000 Hz</div><div>Signal Track</div><div>On</div><div>Off</div><div>Scale Type</div><div>Log</div><div>Lin</div></div></div>   |
| GSM 850<br>(GMSK)-Middle | <div><div><div>Agilent</div><div>Ch Freq 836.6 MHz</div><div>Occupied Bandwidth</div><div>Center 836.600000 MHz</div><div>Ref 45 dBm</div><div>#Peak</div><div>Log</div><div>10</div><div>dB/</div><div>Offset</div><div>6.5</div><div>dB</div><div>Center 836.6 MHz</div><div>#Res BW 10 kHz</div><div>#VBW 30 kHz</div><div>Sweep 10.36 ms (1001 pts)</div><div>Occupied Bandwidth</div><div>245.5028 kHz</div><div>Transmit Freq Error</div><div>-469.202 Hz</div><div>x dB Bandwidth</div><div>316.778 kHz</div><div>Occ BW % Pwr</div><div>99.00 %</div><div>x dB</div><div>-26.00 dB</div><div>Freq/Channel</div><div>Center Freq</div><div>836.600000 MHz</div><div>Start Freq</div><div>836.100000 MHz</div><div>Stop Freq</div><div>837.100000 MHz</div><div>CF Step</div><div>100.000000 kHz</div><div>Auto</div><div>Man</div><div>Freq Offset</div><div>0.0000000 Hz</div><div>Signal Track</div><div>On</div><div>Off</div><div>Scale Type</div><div>Log</div><div>Lin</div></div></div> |
| GSM 850<br>(GMSK)-High   | <div><div><div>Agilent</div><div>Ch Freq 848.8 MHz</div><div>Occupied Bandwidth</div><div>Center 848.8 MHz</div><div>Ref 45 dBm</div><div>#Peak</div><div>Log</div><div>10</div><div>dB/</div><div>Offset</div><div>6.5</div><div>dB</div><div>Center 848.8 MHz</div><div>#Res BW 10 kHz</div><div>#VBW 30 kHz</div><div>Sweep 10.36 ms (1001 pts)</div><div>Occupied Bandwidth</div><div>245.9580 kHz</div><div>Transmit Freq Error</div><div>211.699 Hz</div><div>x dB Bandwidth</div><div>304.755 kHz</div><div>Occ BW % Pwr</div><div>99.00 %</div><div>x dB</div><div>-26.00 dB</div><div>Display</div><div>Full Screen</div><div>Display Line</div><div>-13.00 dBm</div><div>On</div><div>Off</div><div>Limits</div><div>Active Fctn</div><div>Position</div><div>Bottom</div><div>Title</div><div>Preferences</div></div></div>                                                                                                                                                                |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>GPRS850<br/>(GMSK,1Slot)-Low</p>    |  <p>Agilent R T</p> <p>Ch Freq 824.2 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 45 dBm #Atten 50 dB</p> <p>#Peak Log 10 dB/ Offst 6.5 dB</p> <p>Center 824.2 MHz Span 1 MHz</p> <p>#Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (1001 pts)</p> <p>Occupied Bandwidth 242.0916 kHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -1.718 kHz x dB Bandwidth 316.136 kHz</p> <p>Freq/Channel</p> <p>Center Freq 824.200000 MHz</p> <p>Start Freq 823.700000 MHz</p> <p>Stop Freq 824.700000 MHz</p> <p>CF Step 100.000000 kHz Auto Man</p> <p>Freq Offset 0.0000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p> |
| <p>GPRS850<br/>(GMSK,1Slot)-Middle</p> |  <p>Agilent R T</p> <p>Ch Freq 836.6 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Center 836.600000 MHz</p> <p>Ref 45 dBm #Atten 50 dB</p> <p>#Peak Log 10 dB/ Offst 6.5 dB</p> <p>Center 836.6 MHz Span 1 MHz</p> <p>#Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (1001 pts)</p> <p>Occupied Bandwidth 247.3891 kHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 235.652 Hz x dB Bandwidth 316.411 kHz</p> <p>Trace/View</p> <p>Trace 1 2 3</p> <p>Clear Write</p> <p>Max Hold</p> <p>Min Hold</p> <p>View</p> <p>Blank</p> <p>More 1 of 2</p>                                                                                  |
| <p>GPRS850<br/>(GMSK,1Slot)-High</p>   |  <p>Agilent R T</p> <p>Ch Freq 848.8 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Center 848.800000 MHz</p> <p>Ref 45 dBm #Atten 50 dB</p> <p>#Peak Log 10 dB/ Offst 6.5 dB</p> <p>Center 848.8 MHz Span 1 MHz</p> <p>#Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (1001 pts)</p> <p>Occupied Bandwidth 244.7832 kHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -2.717 kHz x dB Bandwidth 320.816 kHz</p> <p>Trace/View</p> <p>Trace 1 2 3</p> <p>Clear Write</p> <p>Max Hold</p> <p>Min Hold</p> <p>View</p> <p>Blank</p> <p>More 1 of 2</p>                                                                                 |

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PCS1900<br>(GMSK)-Low    | <div><div><div>Agilent</div><div>Ch Freq 1.8502 GHz</div><div>Occupied Bandwidth</div><div>VBW 30.00000000 kHz</div><div>Ref 45 dBm #Atten 50 dB</div><div><div>#Peak</div><div>Log</div><div>10</div><div>dB/</div><div>Offset</div><div>6.5</div><div>dB</div></div><div>Center 1.85 GHz</div><div>#Res BW 10 kHz</div><div>#VBW 30 kHz</div><div>Sweep 10.36 ms (1001 pts)</div><div>Span 1 MHz</div><div>Occupied Bandwidth</div><div>242.8785 kHz</div><div>Occ BW % Pwr 99.00 %</div><div>x dB -26.00 dB</div><div>Transmit Freq Error -861.622 Hz</div><div>x dB Bandwidth 312.107 kHz</div></div><div><div>Trace/View</div><div>Trace 1 2 3</div><div>Clear Write</div><div>Max Hold</div><div>Min Hold</div><div>View</div><div>Blank</div><div>More 1 of 2</div></div></div>                                                                                                                             |
| PCS1900<br>(GMSK)-Middle | <div><div><div>Agilent</div><div>Ch Freq 1.88 GHz</div><div>Occupied Bandwidth</div><div>Center 1.880000000 GHz</div><div>Ref 45 dBm #Atten 50 dB</div><div><div>#Peak</div><div>Log</div><div>10</div><div>dB/</div><div>Offset</div><div>6.5</div><div>dB</div></div><div>Center 1.88 GHz</div><div>#Res BW 10 kHz</div><div>#VBW 30 kHz</div><div>Sweep 10.36 ms (1001 pts)</div><div>Span 1 MHz</div><div>Occupied Bandwidth</div><div>246.9443 kHz</div><div>Occ BW % Pwr 99.00 %</div><div>x dB -26.00 dB</div><div>Transmit Freq Error 700.757 Hz</div><div>x dB Bandwidth 319.791 kHz</div></div><div><div>Freq/Channel</div><div>Center Freq 1.88000000 GHz</div><div>Start Freq 1.87950000 GHz</div><div>Stop Freq 1.88050000 GHz</div><div>CF Step 100.000000 kHz</div><div>Auto Man</div><div>Freq Offset 0.00000000 Hz</div><div>Signal Track On Off</div><div>Scale Type Log Lin</div></div></div>   |
| PCS1900<br>(GMSK)-High   | <div><div><div>Agilent</div><div>Ch Freq 1.9098 GHz</div><div>Occupied Bandwidth</div><div>Center 1.909800000 GHz</div><div>Ref 45 dBm #Atten 50 dB</div><div><div>#Peak</div><div>Log</div><div>10</div><div>dB/</div><div>Offset</div><div>6.5</div><div>dB</div></div><div>Center 1.91 GHz</div><div>#Res BW 10 kHz</div><div>#VBW 30 kHz</div><div>Sweep 10.36 ms (1001 pts)</div><div>Span 1 MHz</div><div>Occupied Bandwidth</div><div>245.4316 kHz</div><div>Occ BW % Pwr 99.00 %</div><div>x dB -26.00 dB</div><div>Transmit Freq Error 224.427 Hz</div><div>x dB Bandwidth 313.887 kHz</div></div><div><div>Freq/Channel</div><div>Center Freq 1.90980000 GHz</div><div>Start Freq 1.90930000 GHz</div><div>Stop Freq 1.91030000 GHz</div><div>CF Step 100.000000 kHz</div><div>Auto Man</div><div>Freq Offset 0.00000000 Hz</div><div>Signal Track On Off</div><div>Scale Type Log Lin</div></div></div> |

|                                         |                                                                                      |
|-----------------------------------------|--------------------------------------------------------------------------------------|
| <p>GPRS1900<br/>(GMSK,1Slot)-Low</p>    |    |
| <p>GPRS1900<br/>(GMSK,1Slot)-Middle</p> |   |
| <p>GPRS1900<br/>(GMSK,1Slot)-High</p>   |  |

WCDMA Band V-High



|              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| HSDPA-Low    | <div><div><div><div>Agilent</div><div>R T</div></div><div><div>Ch Freq 826.4 MHz</div><div>Trig Free</div></div><div><div>Occupied Bandwidth</div><div>Center 826.400000 MHz</div></div><div><div>Ref 30 dBm</div><div>#Atten 35 dB</div></div><div><div>#Peak</div><div>Log</div><div>10</div><div>dB/</div><div>Offset</div><div>6.5</div><div>dB</div></div><div><div>Center 826.4 MHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Sweep 10 ms (1001 pts)</div><div>Span 10 MHz</div></div><div><div>Occupied Bandwidth</div><div>4.1646 MHz</div><div>Occ BW % Pwr 99.00 %</div><div>x dB -26.00 dB</div><div>Transmit Freq Error -3.019 kHz</div><div>x dB Bandwidth 4.674 MHz</div></div></div><div><div>Freq/Channel</div><div>Center Freq 826.400000 MHz</div><div>Start Freq 821.400000 MHz</div><div>Stop Freq 831.400000 MHz</div><div>CF Step 1.00000000 MHz</div><div>Auto Man</div><div>Freq Offset 0.00000000 Hz</div><div>Signal Track On Off</div><div>Scale Type Log Lin</div></div></div> |
| HSDPA-Middle | <div><div><div><div>Agilent</div><div>R T</div></div><div><div>Ch Freq 836.6 MHz</div><div>Trig Free</div></div><div><div>Occupied Bandwidth</div><div>Center 836.600000 MHz</div></div><div><div>Ref 30 dBm</div><div>#Atten 35 dB</div></div><div><div>#Peak</div><div>Log</div><div>10</div><div>dB/</div><div>Offset</div><div>6.5</div><div>dB</div></div><div><div>Center 836.6 MHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Sweep 10 ms (1001 pts)</div><div>Span 10 MHz</div></div><div><div>Occupied Bandwidth</div><div>4.1432 MHz</div><div>Occ BW % Pwr 99.00 %</div><div>x dB -26.00 dB</div><div>Transmit Freq Error -9.058 kHz</div><div>x dB Bandwidth 4.678 MHz</div></div></div><div><div>Trace/View</div><div>1 2 3</div><div>Trace</div><div>Clear Write</div><div>Max Hold</div><div>Min Hold</div><div>View</div><div>Blank</div><div>More 1 of 2</div></div></div>                                                                                                                 |
| HSDPA-High   | <div><div><div><div>Agilent</div><div>R T</div></div><div><div>Ch Freq 846.6 MHz</div><div>Trig Free</div></div><div><div>Occupied Bandwidth</div><div>Center 846.600000 MHz</div></div><div><div>Ref 30 dBm</div><div>#Atten 35 dB</div></div><div><div>#Peak</div><div>Log</div><div>10</div><div>dB/</div><div>Offset</div><div>6.5</div><div>dB</div></div><div><div>Center 846.6 MHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Sweep 10 ms (1001 pts)</div><div>Span 10 MHz</div></div><div><div>Occupied Bandwidth</div><div>4.1543 MHz</div><div>Occ BW % Pwr 99.00 %</div><div>x dB -26.00 dB</div><div>Transmit Freq Error -6.468 kHz</div><div>x dB Bandwidth 4.674 MHz</div></div></div><div><div>Freq/Channel</div><div>Center Freq 846.600000 MHz</div><div>Start Freq 841.600000 MHz</div><div>Stop Freq 851.600000 MHz</div><div>CF Step 1.00000000 MHz</div><div>Auto Man</div><div>Freq Offset 0.00000000 Hz</div><div>Signal Track On Off</div><div>Scale Type Log Lin</div></div></div> |

|              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| HSUPA-Low    | <div><div><div><div>Agilent</div><div>R T</div></div><div><div>Ch Freq 826.4 MHz</div><div>Trig Free</div></div><div>Occupied Bandwidth</div><div>Center 826.400000 MHz</div><div><div>Ref 30 dBm</div><div>#Peak</div><div>Log</div><div>10</div><div>dB/</div><div>Offset</div><div>6.5</div><div>dB</div></div><div><div>Center 826.4 MHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Span 10 MHz</div><div>Sweep 10 ms (1001 pts)</div></div><div><div>Occupied Bandwidth</div><div>4.1646 MHz</div><div>Occ BW % Pwr 99.00 %</div><div>x dB -26.00 dB</div><div>Transmit Freq Error -1.670 kHz</div><div>x dB Bandwidth 4.686 MHz</div></div></div><div><div>Freq/Channel</div><div>Center Freq 826.400000 MHz</div><div>Start Freq 821.400000 MHz</div><div>Stop Freq 831.400000 MHz</div><div>CF Step 1.0000000 MHz</div><div>Auto Man</div><div>Freq Offset 0.0000000 Hz</div><div>Signal Track On Off</div><div>Scale Type Log Lin</div></div></div> |
| HSUPA-Middle | <div><div><div><div>Agilent</div><div>R T</div></div><div><div>Ch Freq 836.6 MHz</div><div>Trig Free</div></div><div>Occupied Bandwidth</div><div>Center 836.600000 MHz</div><div><div>Ref 30 dBm</div><div>#Peak</div><div>Log</div><div>10</div><div>dB/</div><div>Offset</div><div>6.5</div><div>dB</div></div><div><div>Center 836.6 MHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Span 10 MHz</div><div>Sweep 10 ms (1001 pts)</div></div><div><div>Occupied Bandwidth</div><div>4.1425 MHz</div><div>Occ BW % Pwr 99.00 %</div><div>x dB -26.00 dB</div><div>Transmit Freq Error -4.149 kHz</div><div>x dB Bandwidth 4.688 MHz</div></div></div><div><div>Freq/Channel</div><div>Center Freq 836.600000 MHz</div><div>Start Freq 831.600000 MHz</div><div>Stop Freq 841.600000 MHz</div><div>CF Step 1.0000000 MHz</div><div>Auto Man</div><div>Freq Offset 0.0000000 Hz</div><div>Signal Track On Off</div><div>Scale Type Log Lin</div></div></div> |
| HSUPA-High   | <div><div><div><div>Agilent</div><div>R T</div></div><div><div>Ch Freq 846.6 MHz</div><div>Trig Free</div></div><div>Occupied Bandwidth</div><div>Ref Level 30.00 dBm</div><div><div>Ref 30 dBm</div><div>#Peak</div><div>Log</div><div>10</div><div>dB/</div><div>Offset</div><div>6.5</div><div>dB</div></div><div><div>Center 846.6 MHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Span 10 MHz</div><div>Sweep 10 ms (1001 pts)</div></div><div><div>Occupied Bandwidth</div><div>4.1429 MHz</div><div>Occ BW % Pwr 99.00 %</div><div>x dB -26.00 dB</div><div>Transmit Freq Error -10.711 kHz</div><div>x dB Bandwidth 4.675 MHz</div></div></div><div><div>Trace/View</div><div>Trace 1 2 3</div><div>Clear Write</div><div>Max Hold</div><div>Min Hold</div><div>View</div><div>Blank</div><div>More 1 of 2</div></div></div>                                                                                                                          |

The figure consists of three vertically stacked screenshots of an Agilent spectrum analyzer interface, each showing a different WCDMA Band II measurement. Each screenshot includes a power spectrum plot, a table of measurement data, and a list of controls on the right side.

**WCDMA Band II-Low (Top Screenshot):**

- Center Freq:** 1.852400000 GHz
- Occupied Bandwidth:** 4.1943 MHz
- Transmit Freq Error:** 15.763 kHz
- x dB Bandwidth:** 4.780 MHz
- Occ BW % Pwr:** 99.00 %
- x dB:** -26.00 dB

**WCDMA Band II-Middle (Middle Screenshot):**

- Center Freq:** 1.880000000 GHz
- Occupied Bandwidth:** 4.1967 MHz
- Transmit Freq Error:** 16.344 kHz
- x dB Bandwidth:** 4.773 MHz
- Occ BW % Pwr:** 99.00 %
- x dB:** -26.00 dB

**WCDMA Band II-High (Bottom Screenshot):**

- Center Freq:** 1.908 GHz
- Occupied Bandwidth:** 4.1583 MHz
- Transmit Freq Error:** -6.364 kHz
- x dB Bandwidth:** 4.724 MHz
- Occ BW % Pwr:** 99.00 %
- x dB:** -26.00 dB

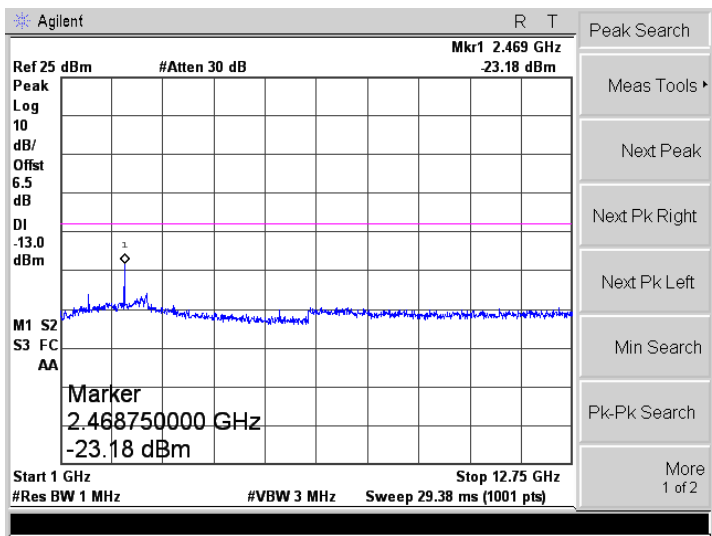
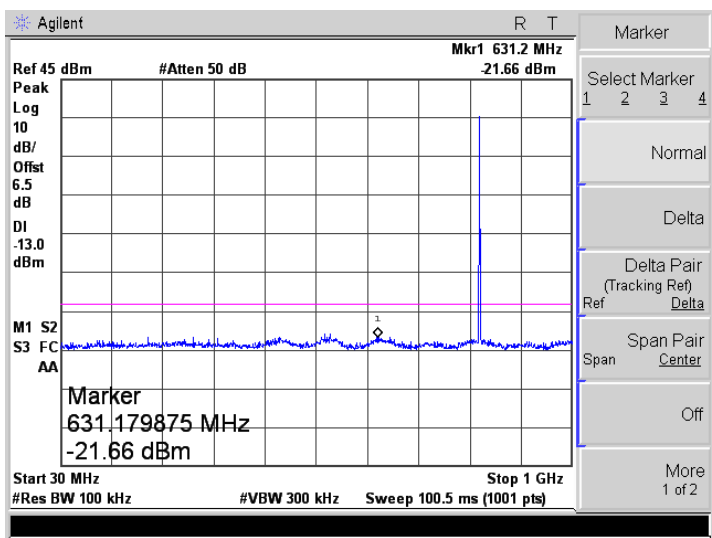
|              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| HSDPA-Low    | <div><div><div><div>Agilent</div><div>R T</div></div><div><div>Ch Freq 1.8524 GHz</div><div>Trig Free</div></div><div>Occupied Bandwidth</div><div>RBW 100.000000 kHz</div><div><div>Ref 30 dBm</div><div>#Peak</div><div>Log</div><div>10</div><div>dB/</div><div>Offset</div><div>6.5</div><div>dB</div></div><div><div>Center 1.852 GHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Span 10 MHz</div><div>Sweep 10 ms (1001 pts)</div></div><div><div>Occupied Bandwidth</div><div>4.1692 MHz</div><div>Occ BW % Pwr 99.00 %</div><div>x dB -26.00 dB</div><div>Transmit Freq Error 17.504 kHz</div><div>x dB Bandwidth 4.724 MHz</div></div></div><div><div>Trace/View</div><div>Trace 1 2 3</div><div>Clear Write</div><div>Max Hold</div><div>Min Hold</div><div>View</div><div>Blank</div><div>More 1 of 2</div></div></div>                                                                                                                              |
| HSDPA-Middle | <div><div><div><div>Agilent</div><div>R T</div></div><div><div>Ch Freq 1.88 GHz</div><div>Trig Free</div></div><div>Occupied Bandwidth</div><div>Center 1.880000000 GHz</div><div><div>Ref 30 dBm</div><div>#Peak</div><div>Log</div><div>10</div><div>dB/</div><div>Offset</div><div>6.5</div><div>dB</div></div><div><div>Center 1.88 GHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Span 10 MHz</div><div>Sweep 10 ms (1001 pts)</div></div><div><div>Occupied Bandwidth</div><div>4.1805 MHz</div><div>Occ BW % Pwr 99.00 %</div><div>x dB -26.00 dB</div><div>Transmit Freq Error 15.187 kHz</div><div>x dB Bandwidth 4.722 MHz</div></div></div><div><div>Freq/Channel</div><div>Center Freq 1.88000000 GHz</div><div>Start Freq 1.87500000 GHz</div><div>Stop Freq 1.88500000 GHz</div><div>CF Step 1.00000000 MHz</div><div>Auto Man</div><div>Freq Offset 0.00000000 Hz</div><div>Signal Track On Off</div><div>Scale Type Log Lin</div></div></div>   |
| HSDPA-High   | <div><div><div><div>Agilent</div><div>R T</div></div><div><div>Ch Freq 1.9076 GHz</div><div>Trig Free</div></div><div>Occupied Bandwidth</div><div>Center 1.907600000 GHz</div><div><div>Ref 30 dBm</div><div>#Peak</div><div>Log</div><div>10</div><div>dB/</div><div>Offset</div><div>6.5</div><div>dB</div></div><div><div>Center 1.908 GHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Span 10 MHz</div><div>Sweep 10 ms (1001 pts)</div></div><div><div>Occupied Bandwidth</div><div>4.1518 MHz</div><div>Occ BW % Pwr 99.00 %</div><div>x dB -26.00 dB</div><div>Transmit Freq Error 43.032 Hz</div><div>x dB Bandwidth 4.714 MHz</div></div></div><div><div>Freq/Channel</div><div>Center Freq 1.90760000 GHz</div><div>Start Freq 1.90260000 GHz</div><div>Stop Freq 1.91260000 GHz</div><div>CF Step 1.00000000 MHz</div><div>Auto Man</div><div>Freq Offset 0.00000000 Hz</div><div>Signal Track On Off</div><div>Scale Type Log Lin</div></div></div> |

|              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| HSUPA-Low    | <div><div><div><div>Agilent</div><div>R T</div></div><div><div>Ch Freq 1.8524 GHz</div><div>Trig Free</div></div><div>Occupied Bandwidth</div><div>Center 1.852400000 GHz</div><div><div>Ref 30 dBm</div><div>#Atten 35 dB</div></div><div><div>#Peak</div><div>Log</div><div>10</div><div>dB/</div><div>Offset</div><div>6.5</div><div>dB</div></div><div><div>Center 1.852 GHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Span 10 MHz</div><div>Sweep 10 ms (1001 pts)</div></div><div><div>Occupied Bandwidth</div><div>4.1577 MHz</div><div>Occ BW % Pwr 99.00 %</div><div>x dB -26.00 dB</div><div>Transmit Freq Error 16.635 kHz</div><div>x dB Bandwidth 4.703 MHz</div></div></div><div><div>Freq/Channel</div><div>Center Freq 1.85240000 GHz</div><div>Start Freq 1.84740000 GHz</div><div>Stop Freq 1.85740000 GHz</div><div>CF Step 1.00000000 MHz</div><div>Auto Man</div><div>Freq Offset 0.00000000 Hz</div><div>Signal Track On Off</div><div>Scale Type Log Lin</div></div></div> |
| HSUPA-Middle | <div><div><div><div>Agilent</div><div>R T</div></div><div><div>Ch Freq 1.88 GHz</div><div>Trig Free</div></div><div>Occupied Bandwidth</div><div>Center 1.880000000 GHz</div><div><div>Ref 30 dBm</div><div>#Atten 35 dB</div></div><div><div>#Peak</div><div>Log</div><div>10</div><div>dB/</div><div>Offset</div><div>6.5</div><div>dB</div></div><div><div>Center 1.88 GHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Span 10 MHz</div><div>Sweep 10 ms (1001 pts)</div></div><div><div>Occupied Bandwidth</div><div>4.1737 MHz</div><div>Occ BW % Pwr 99.00 %</div><div>x dB -26.00 dB</div><div>Transmit Freq Error 10.995 kHz</div><div>x dB Bandwidth 4.712 MHz</div></div></div><div><div>Freq/Channel</div><div>Center Freq 1.88000000 GHz</div><div>Start Freq 1.87500000 GHz</div><div>Stop Freq 1.88500000 GHz</div><div>CF Step 1.00000000 MHz</div><div>Auto Man</div><div>Freq Offset 0.00000000 Hz</div><div>Signal Track On Off</div><div>Scale Type Log Lin</div></div></div>    |
| HSUPA-High   | <div><div><div><div>Agilent</div><div>R T</div></div><div><div>Ch Freq 1.9076 GHz</div><div>Trig Free</div></div><div>Occupied Bandwidth</div><div>Center 1.907600000 GHz</div><div><div>Ref 30 dBm</div><div>#Atten 35 dB</div></div><div><div>#Peak</div><div>Log</div><div>10</div><div>dB/</div><div>Offset</div><div>6.5</div><div>dB</div></div><div><div>Center 1.908 GHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Span 10 MHz</div><div>Sweep 10 ms (1001 pts)</div></div><div><div>Occupied Bandwidth</div><div>4.1291 MHz</div><div>Occ BW % Pwr 99.00 %</div><div>x dB -26.00 dB</div><div>Transmit Freq Error 158.983 Hz</div><div>x dB Bandwidth 4.655 MHz</div></div></div><div><div>Freq/Channel</div><div>Center Freq 1.90760000 GHz</div><div>Start Freq 1.90260000 GHz</div><div>Stop Freq 1.91260000 GHz</div><div>CF Step 1.00000000 MHz</div><div>Auto Man</div><div>Freq Offset 0.00000000 Hz</div><div>Signal Track On Off</div><div>Scale Type Log Lin</div></div></div> |

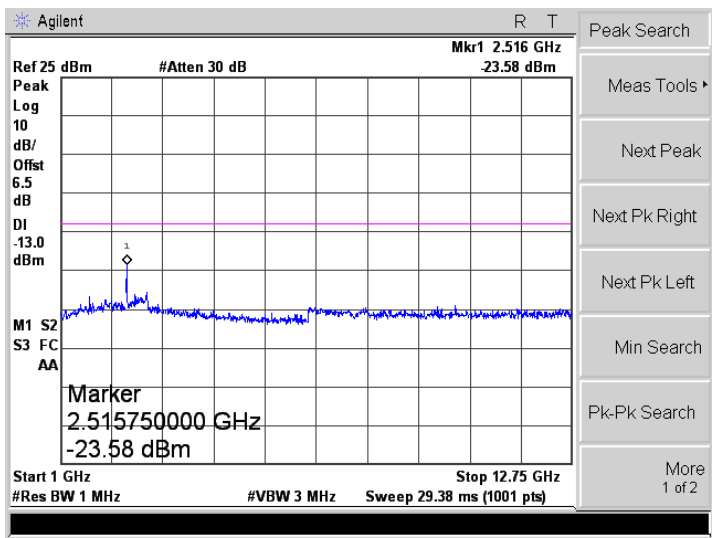
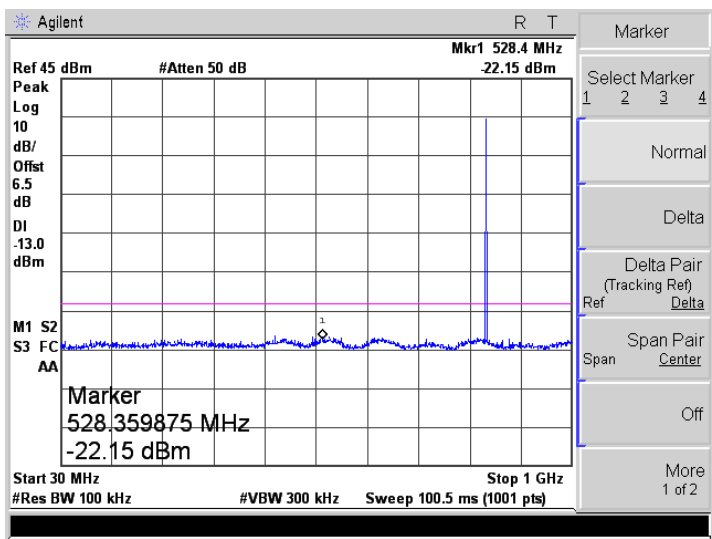
APPENDIXD

Out of Band Emissions at Antenna Terminal

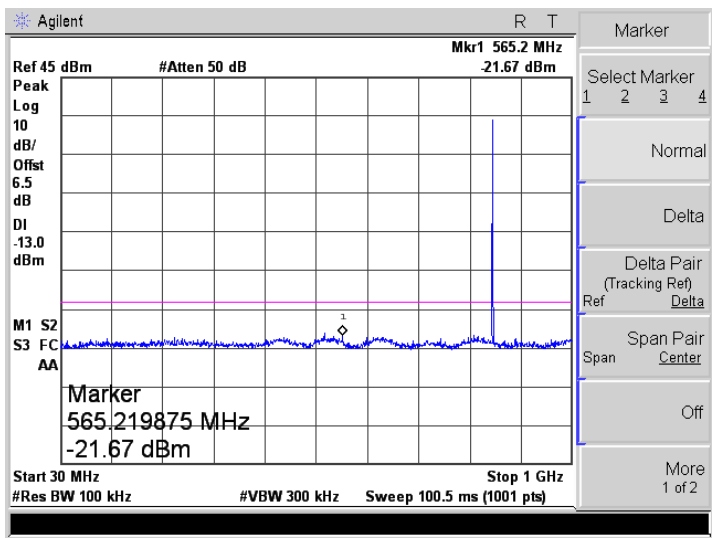
GSM 850  
(GMSK)-Low

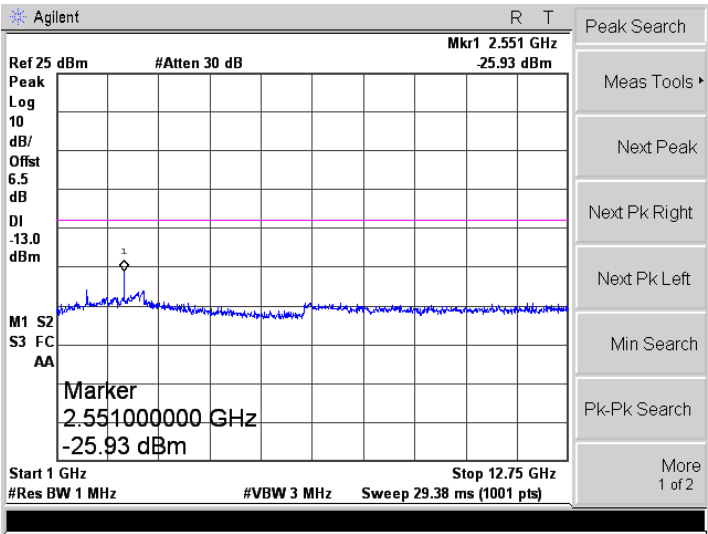
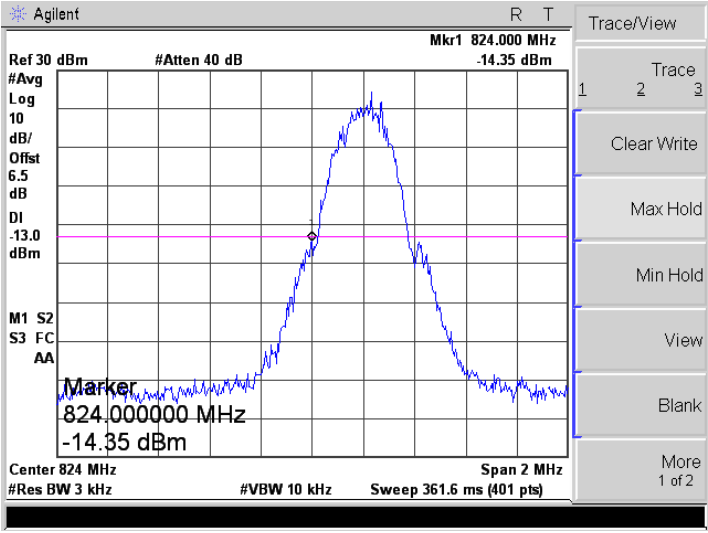
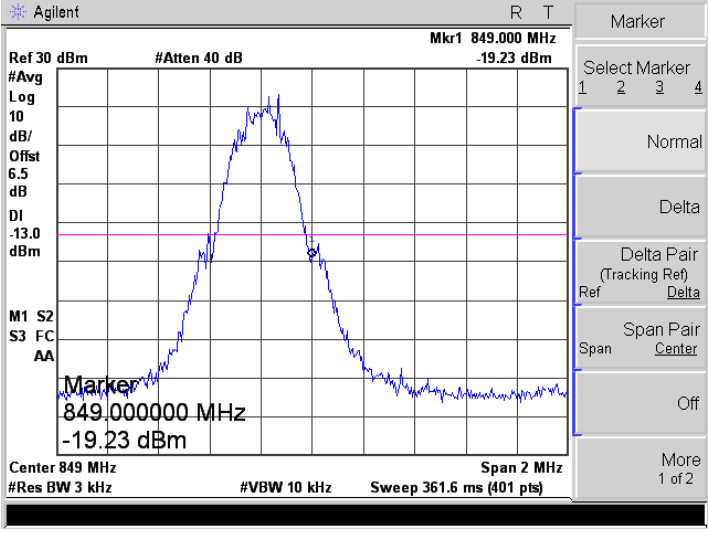


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(GMSK)-Middle



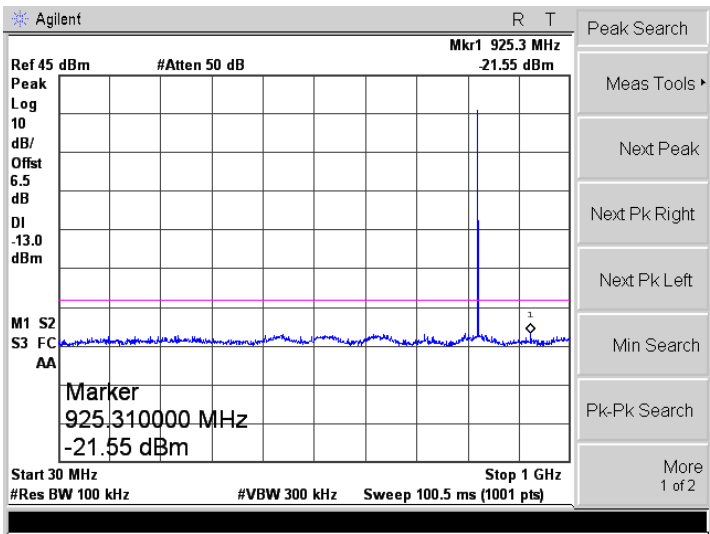
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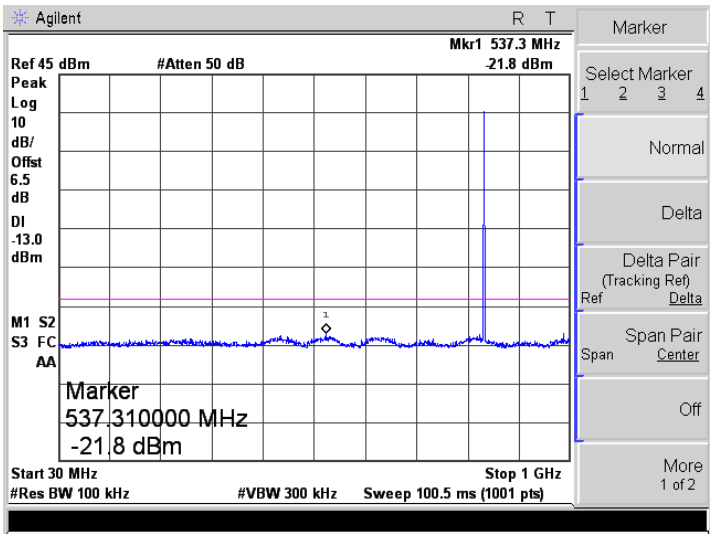
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| Bandedge | <div></div>  |
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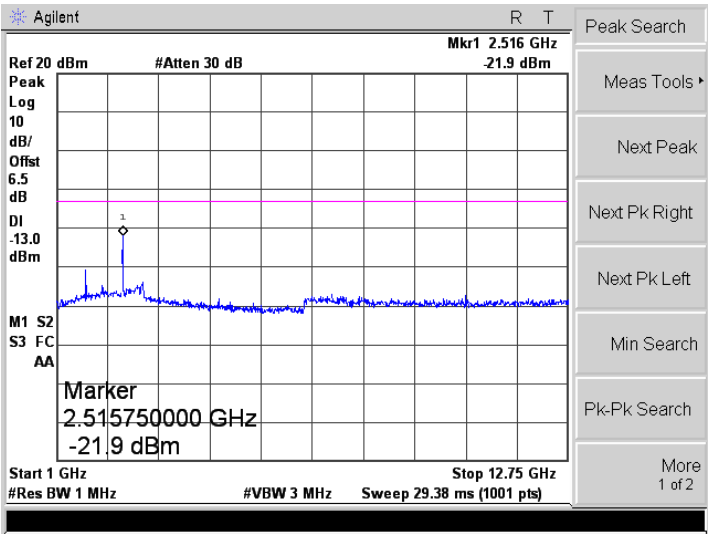
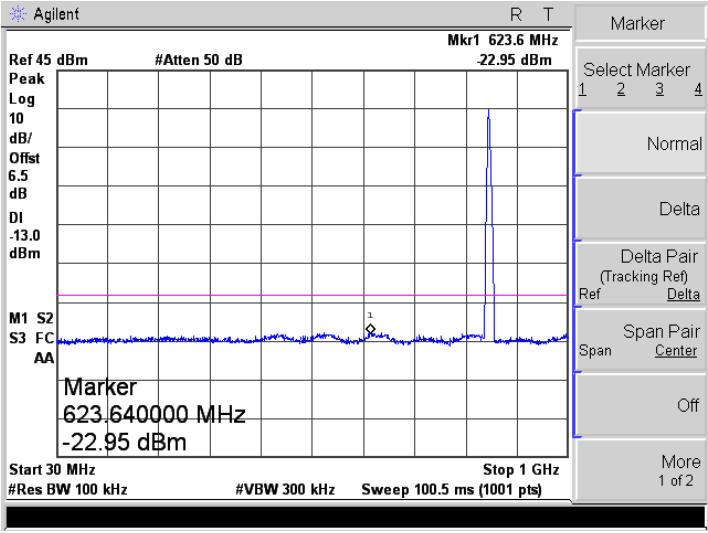
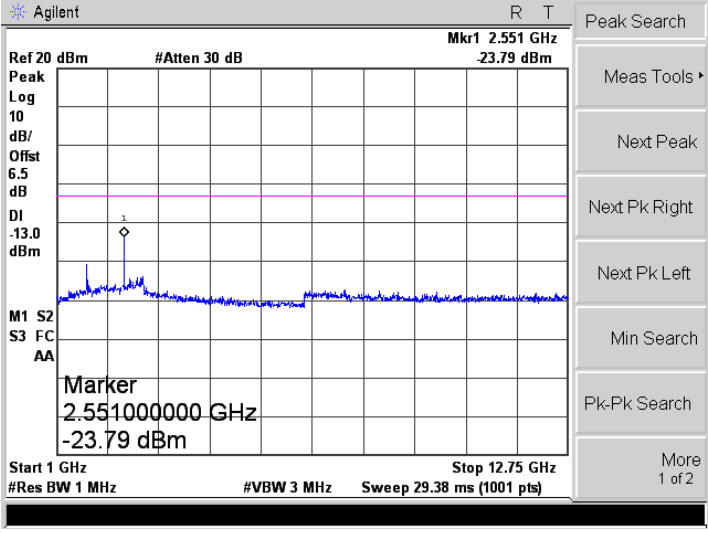


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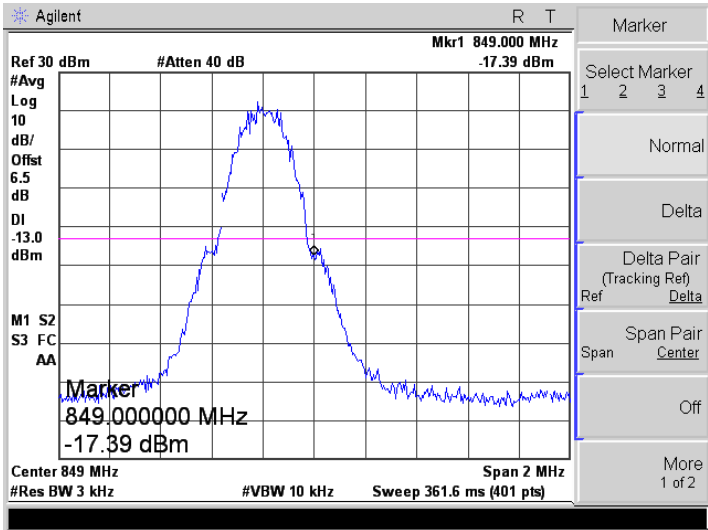
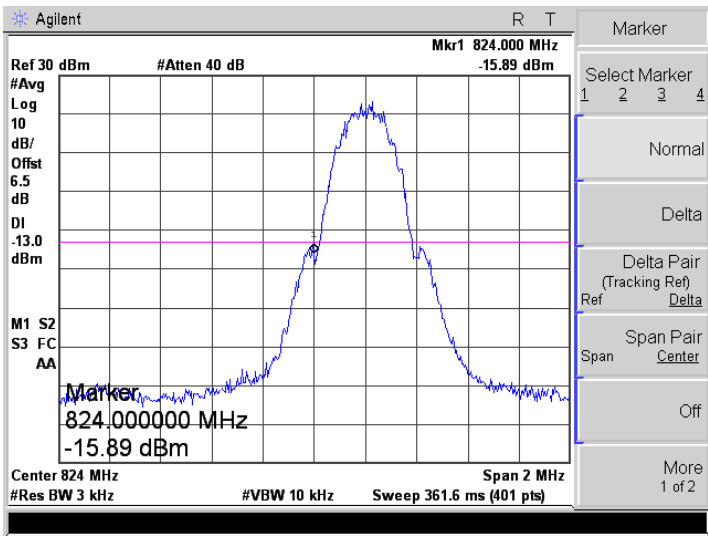


GPRS850  
(GMSK,1Slot)-Middle

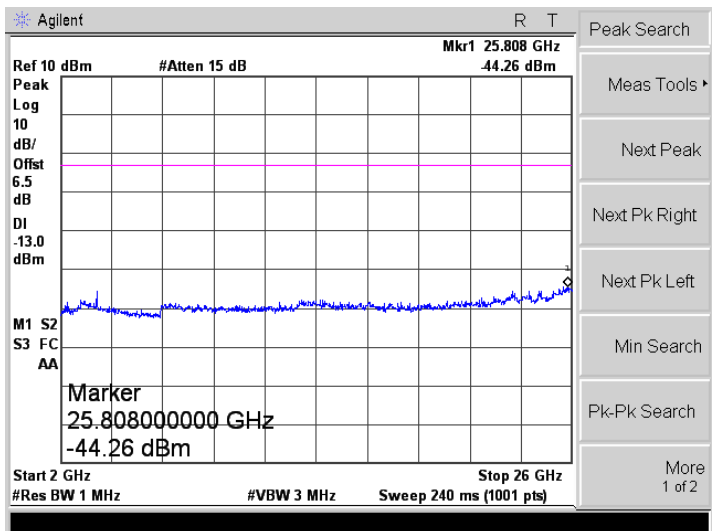
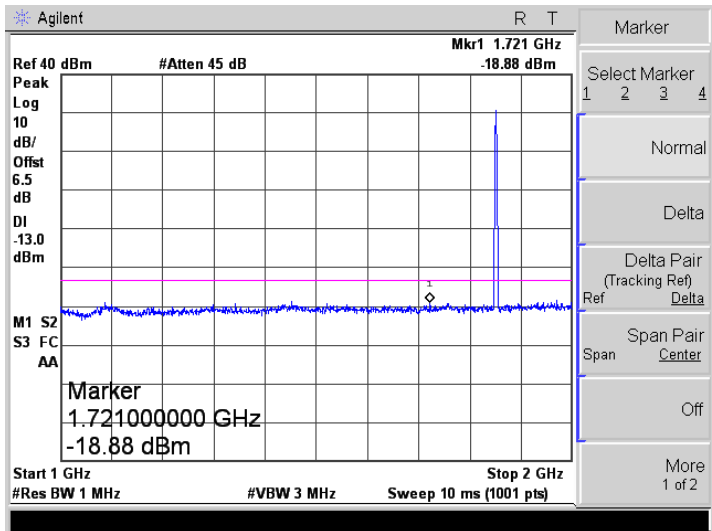
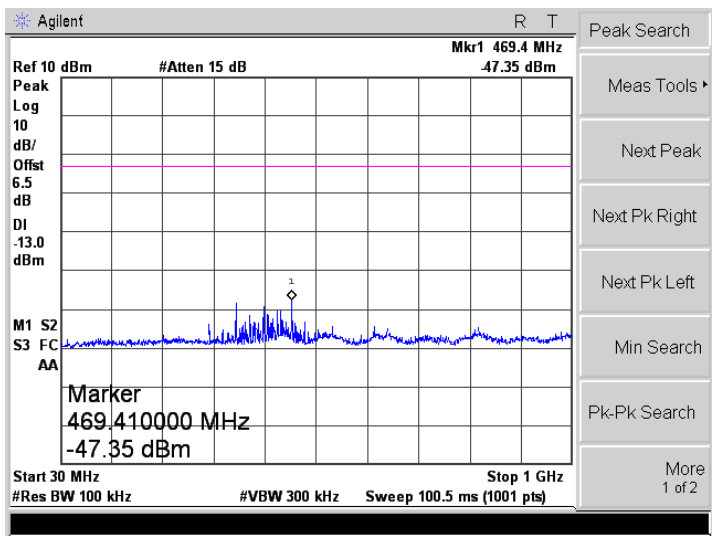


|                        |                                                                                      |
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|                        |    |
| GPRS850<br>(GMSK)-High |   |
|                        |  |

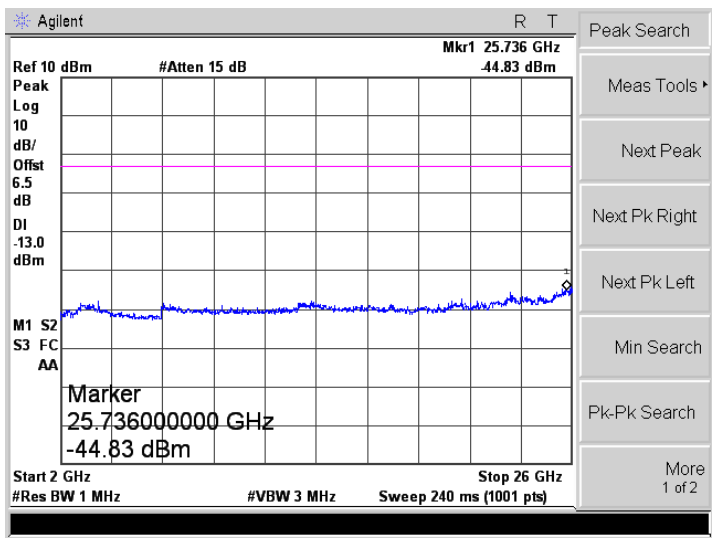
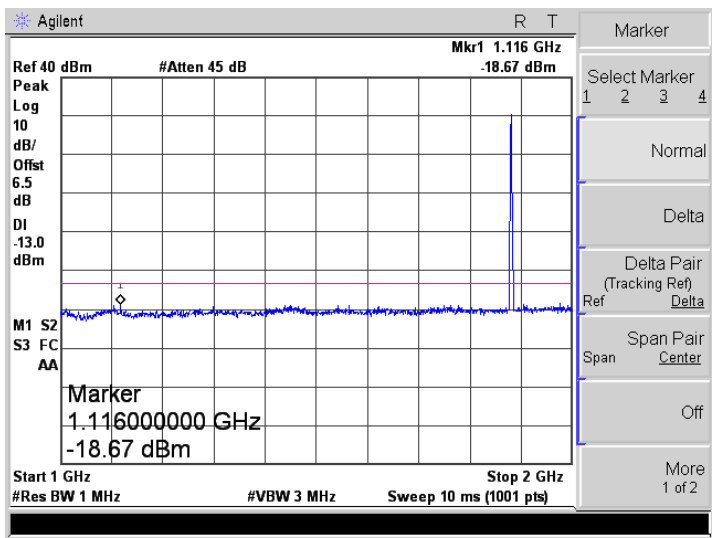
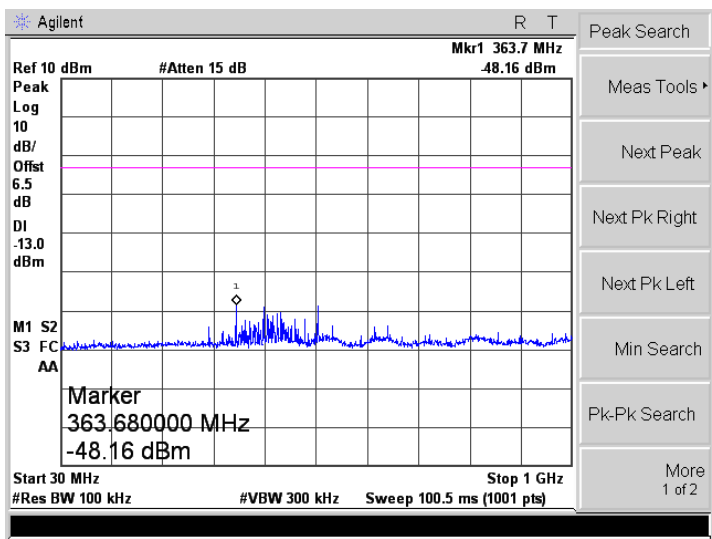
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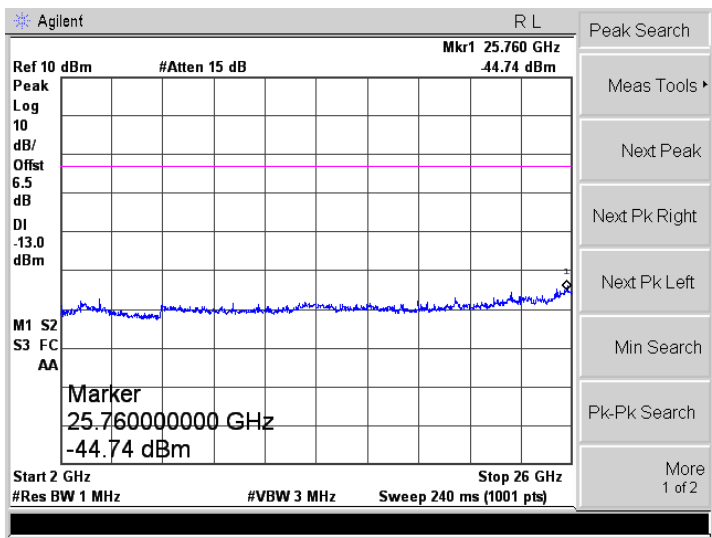
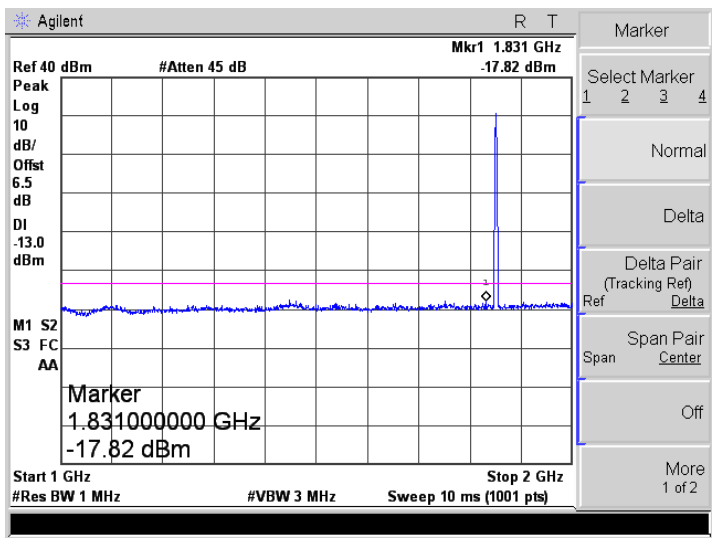
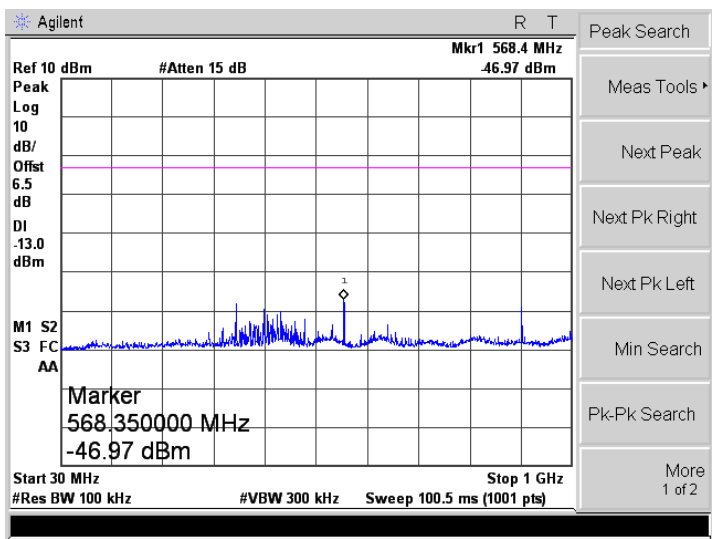
PCS1900  
(GMSK)-Low



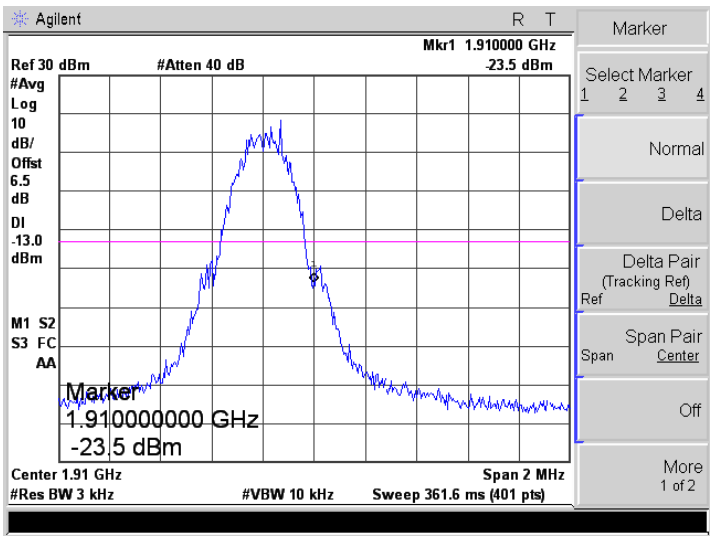
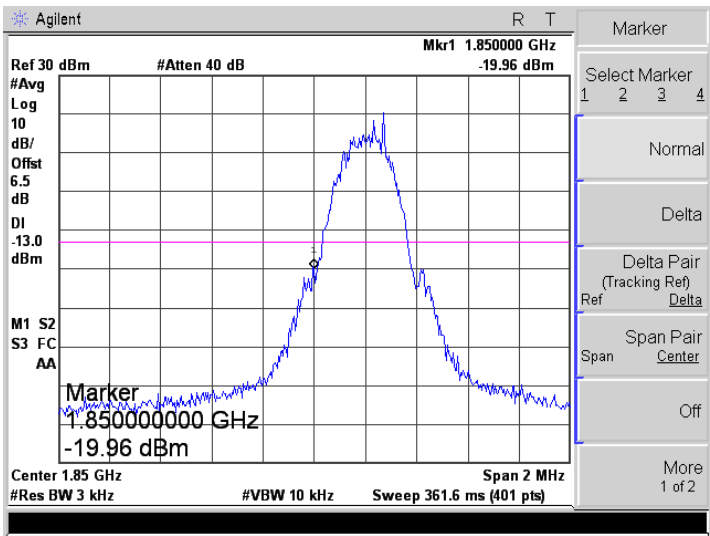
PCS1900  
(GMSK)-Middle



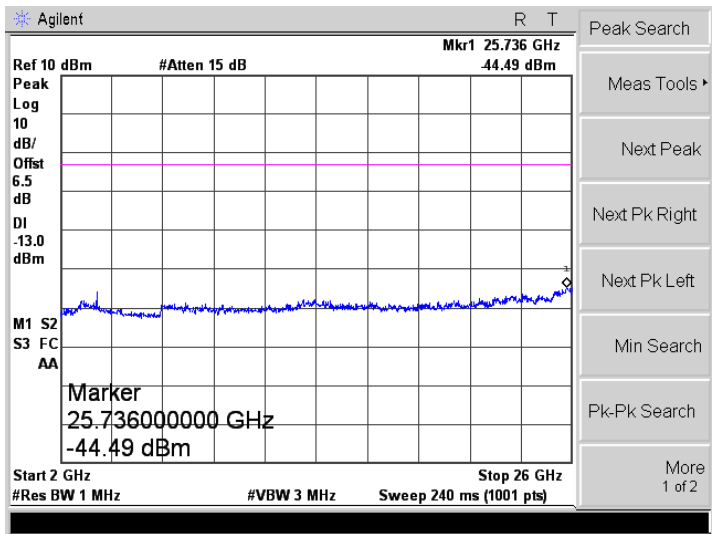
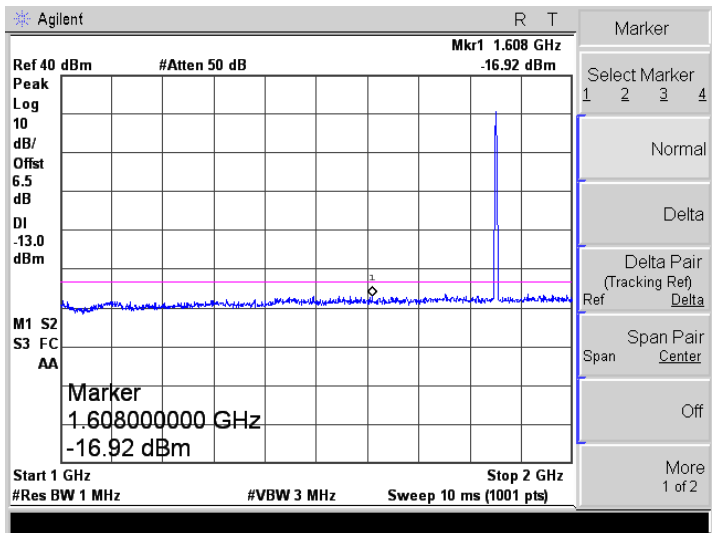
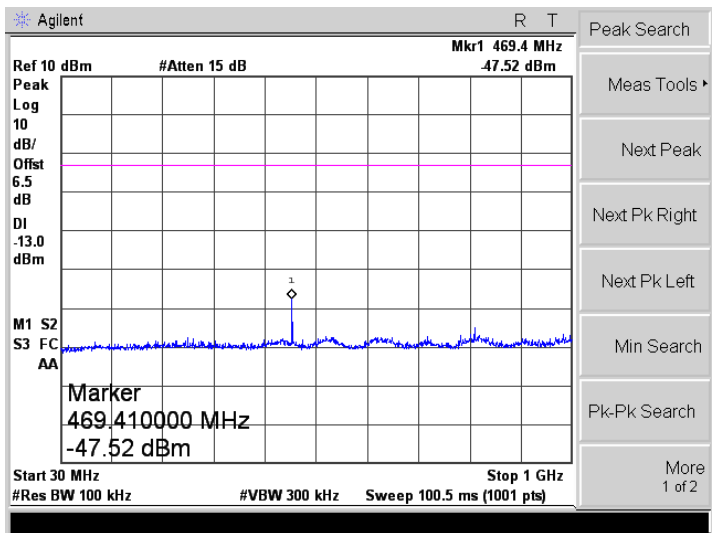
PCS1900  
(GMSK)-High



Bandedge

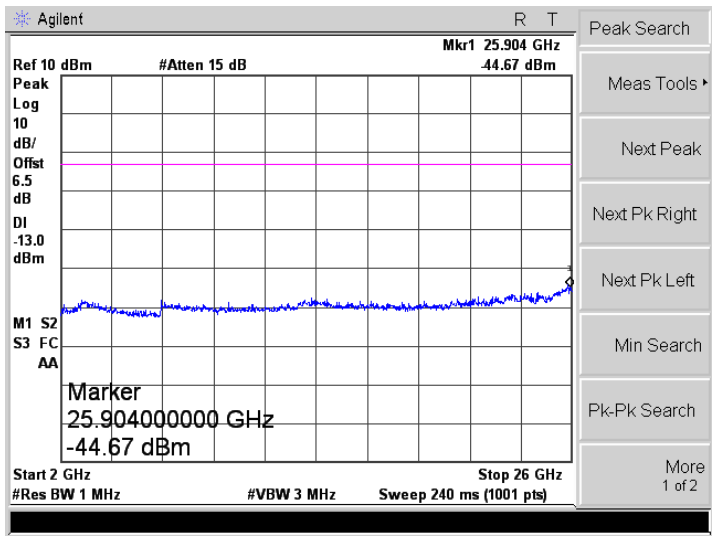
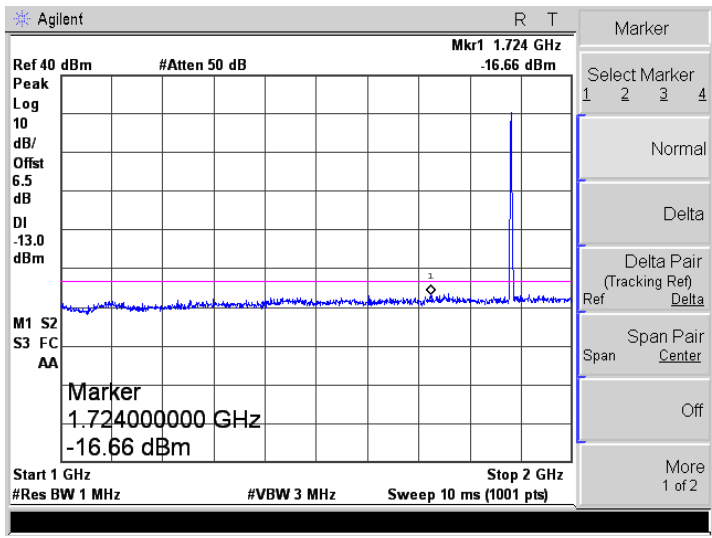
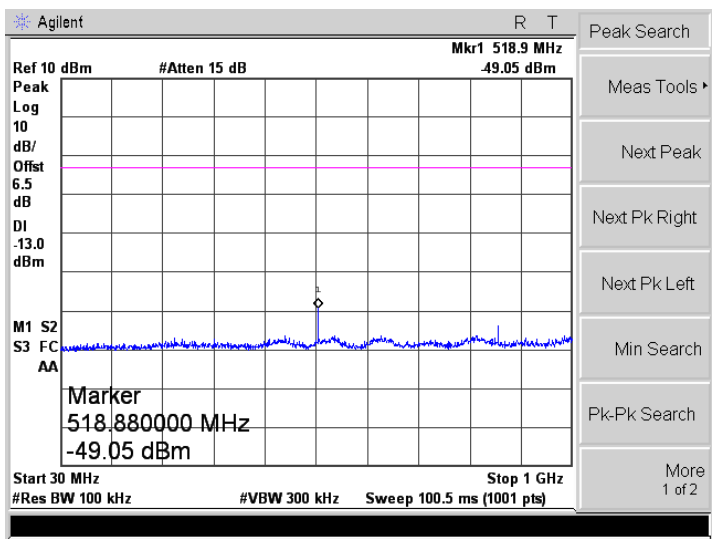


GPRS1900  
(GMSK,1Slot)-Low

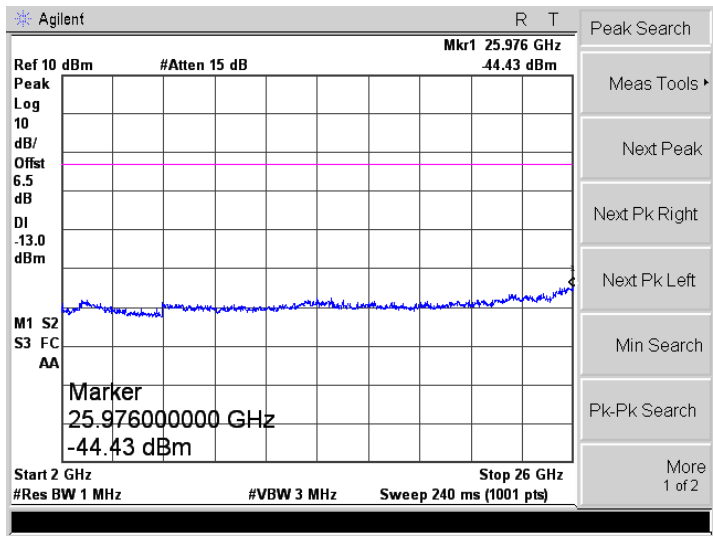
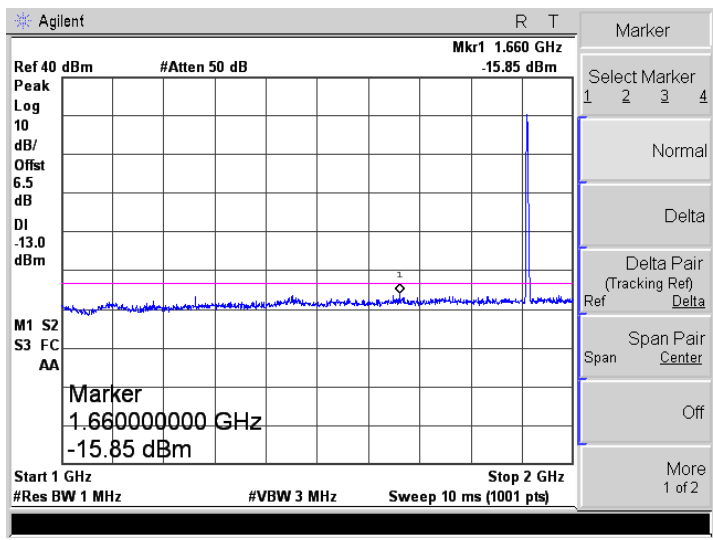
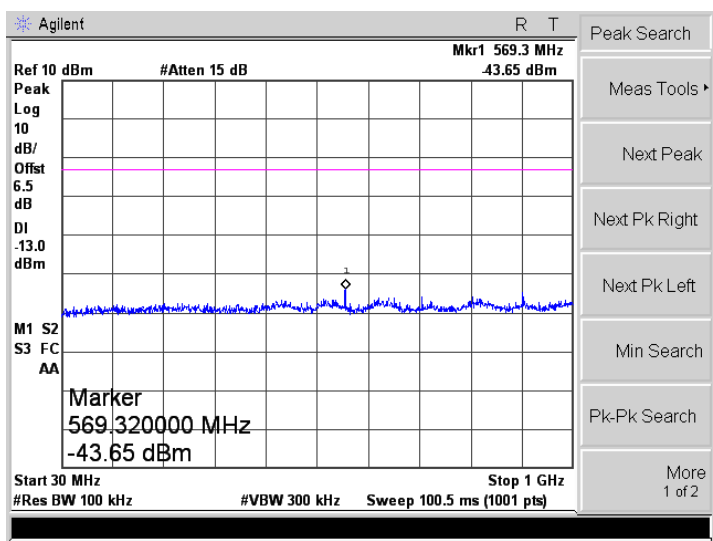




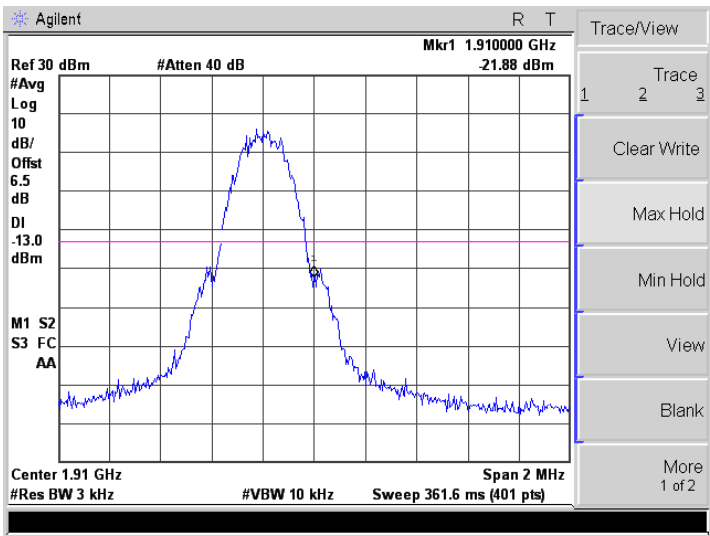
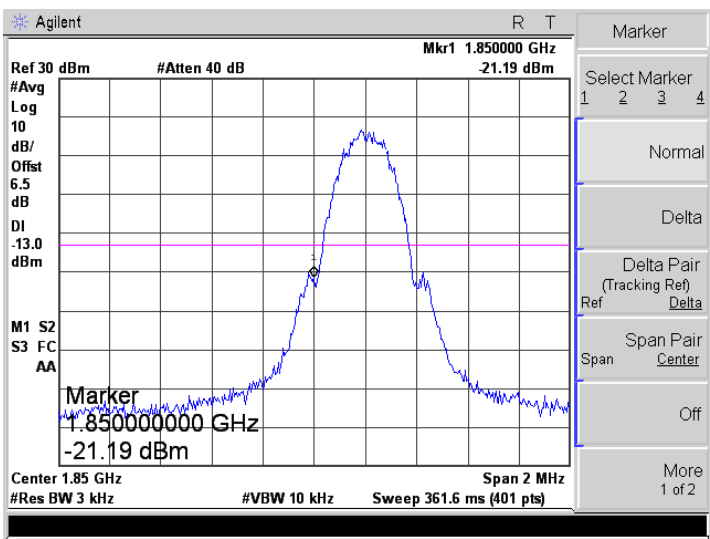
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(GMSK,1Slot)-Middle

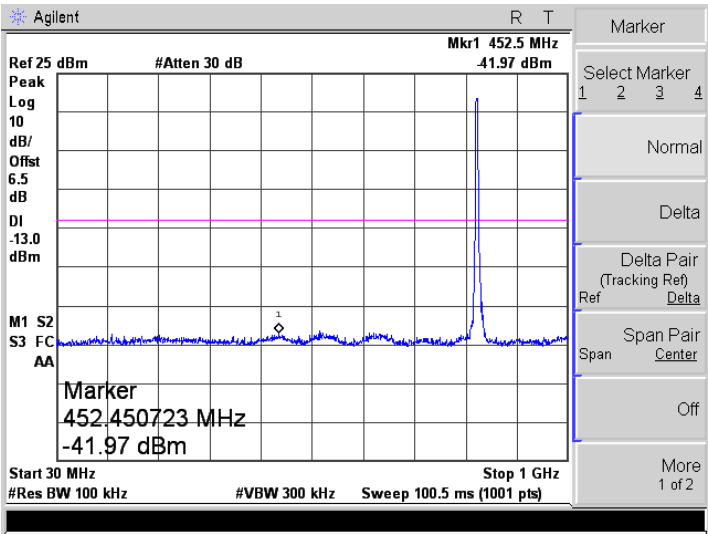
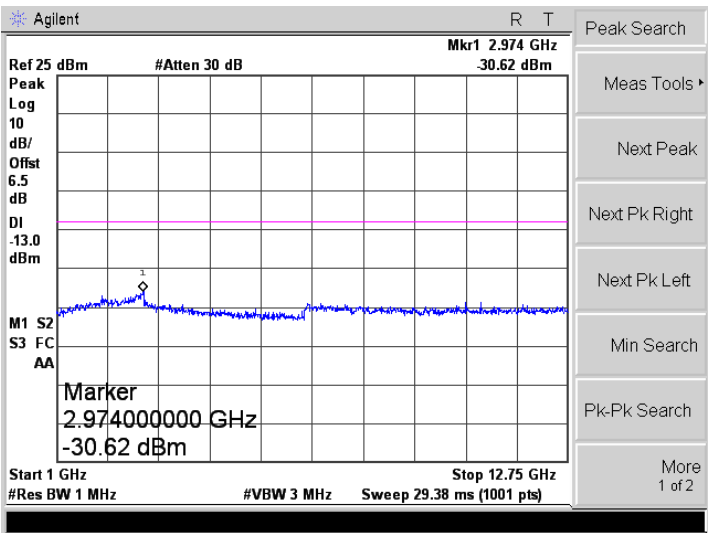
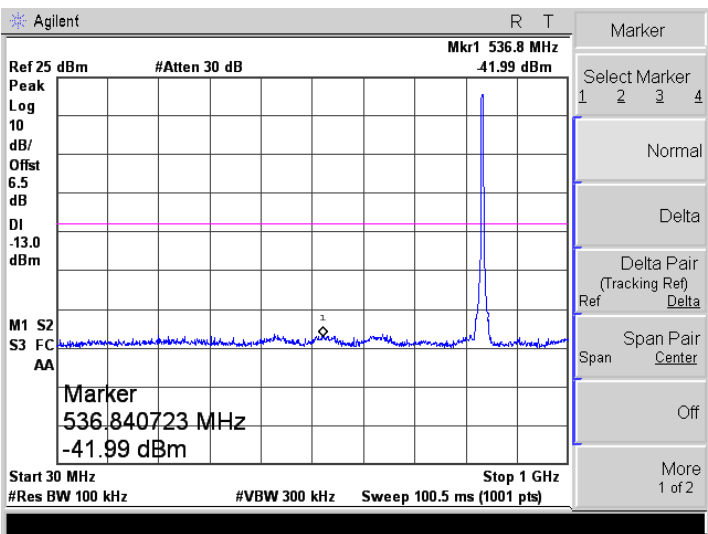


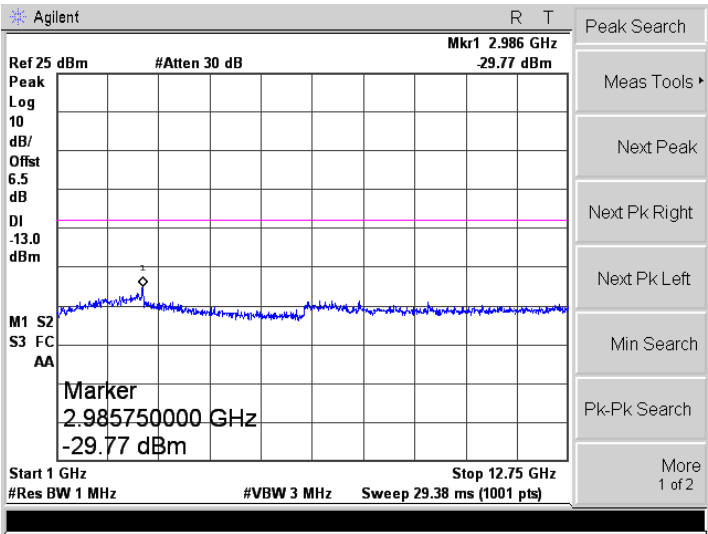
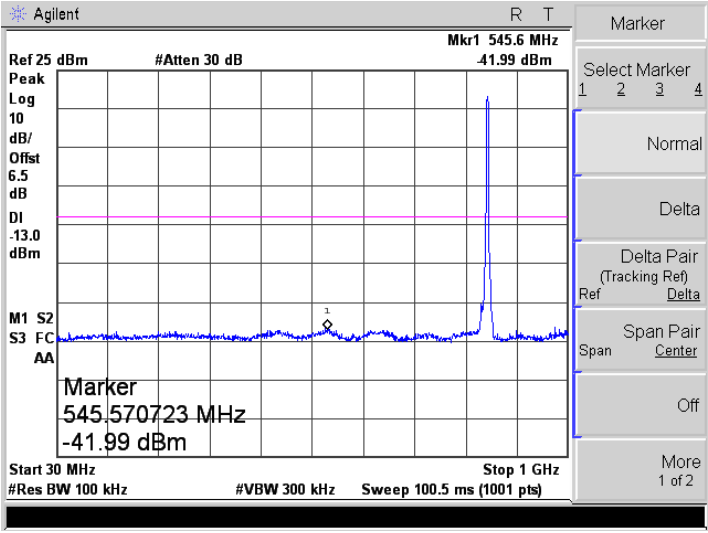
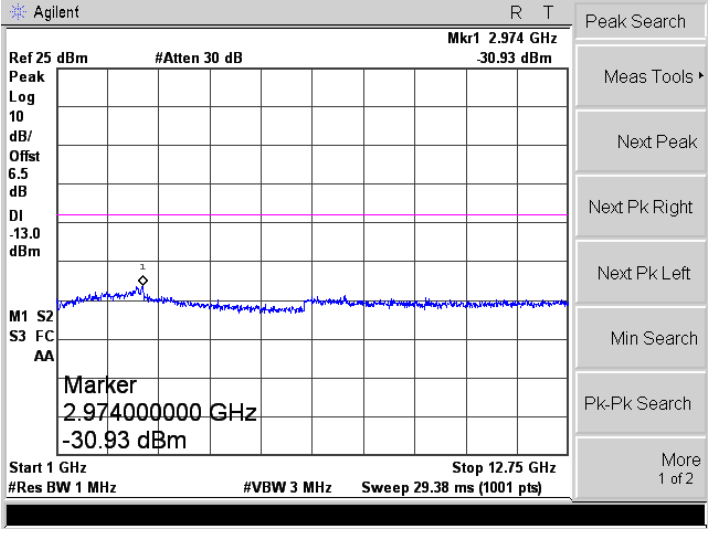
GPRS1900  
(GMSK,1Slot)-High



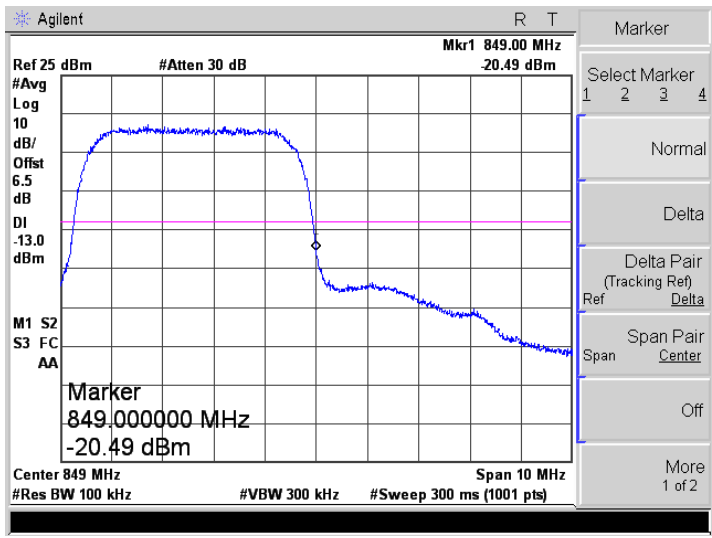
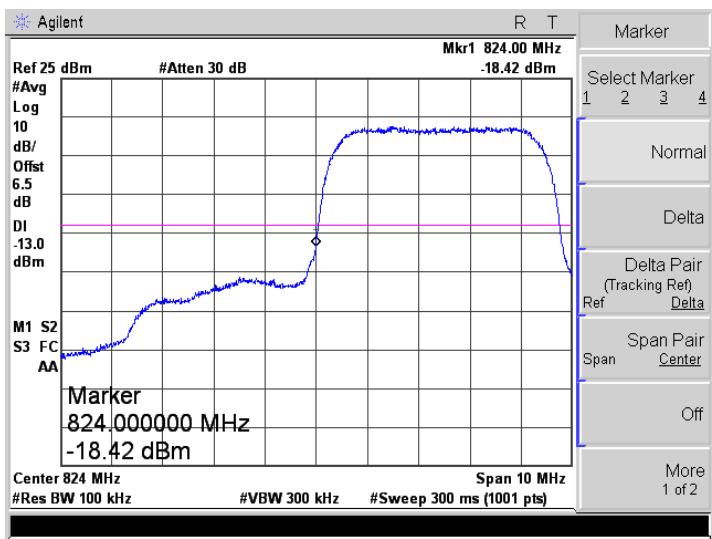
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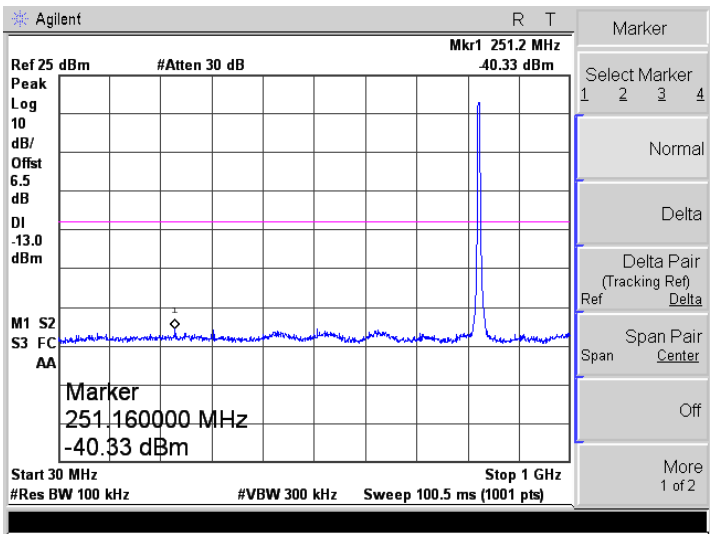
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|                            |   |
| <p>WCDMA Band V-Middle</p> |  |

|                   |                                                                                      |
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|                   |    |
| WCDMA Band V-High |   |
|                   |  |

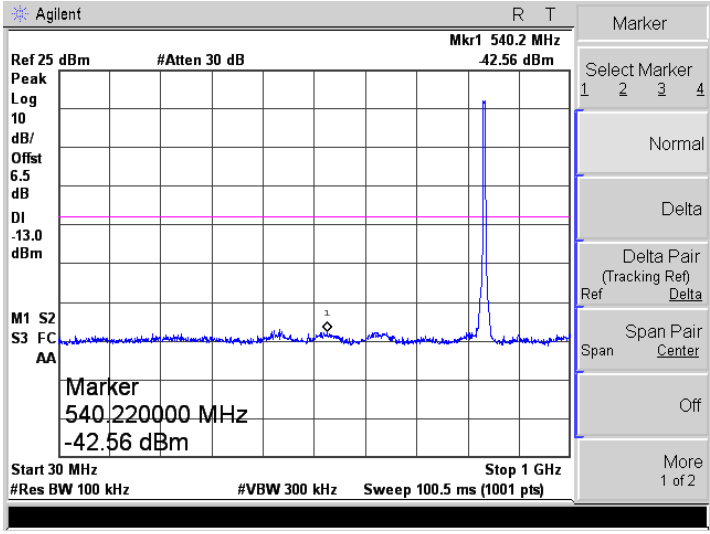
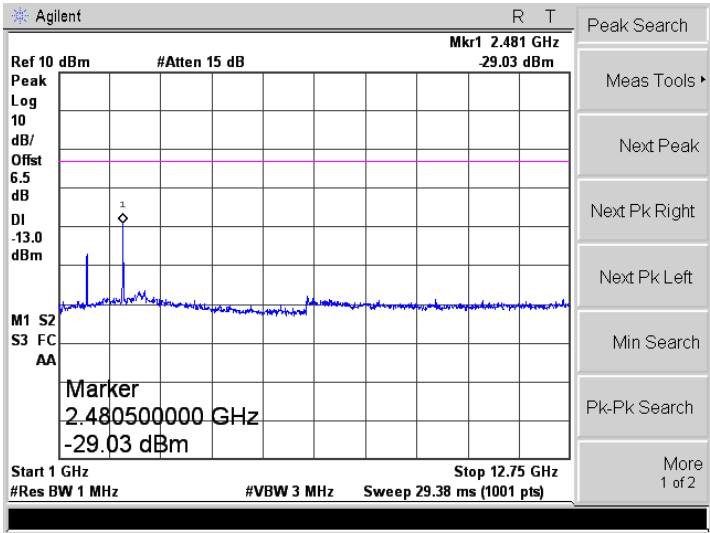
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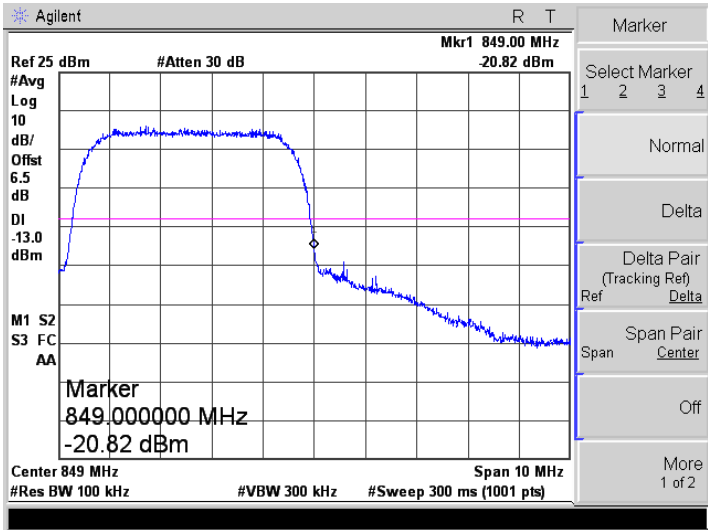
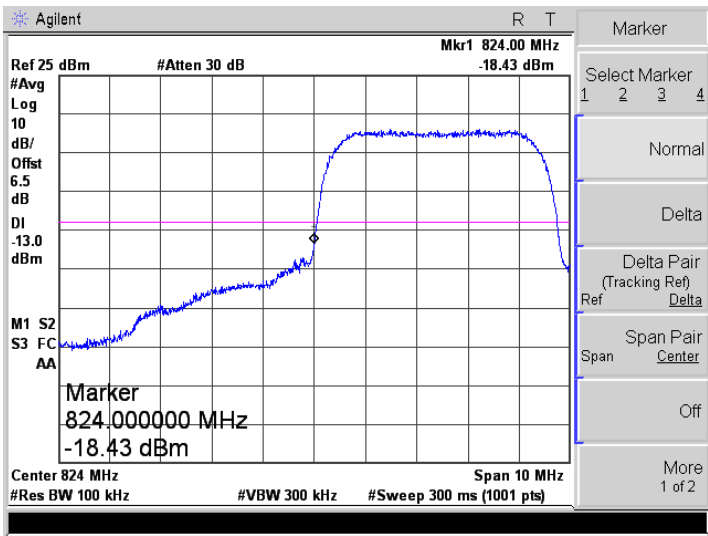
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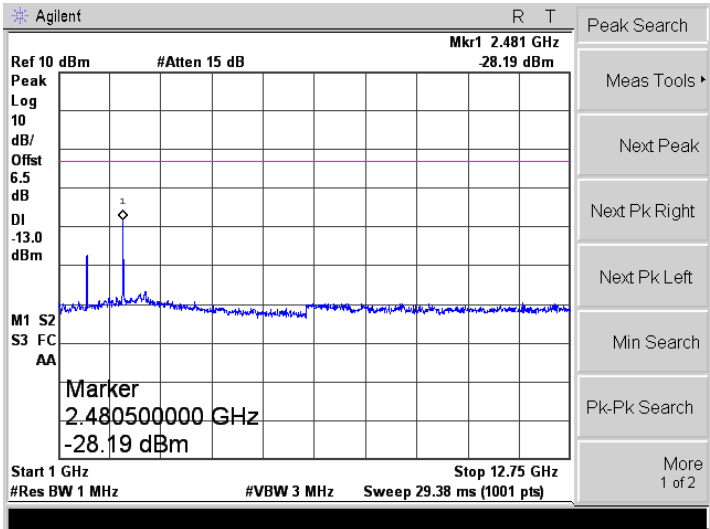
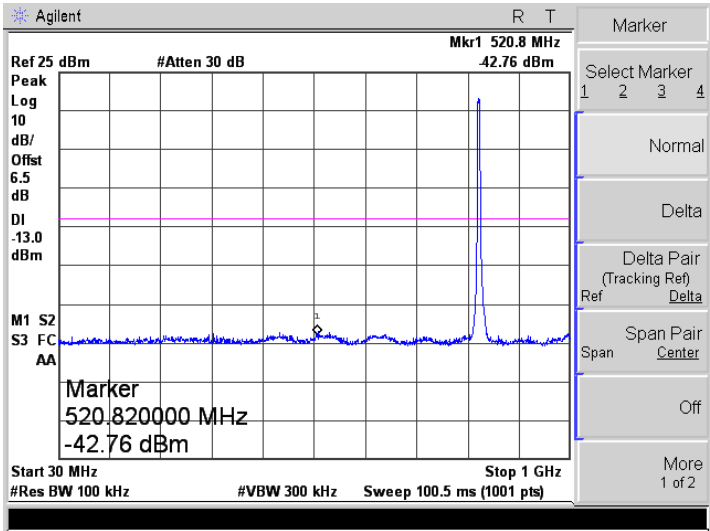
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| HSDPA Band V-High | <div></div> |
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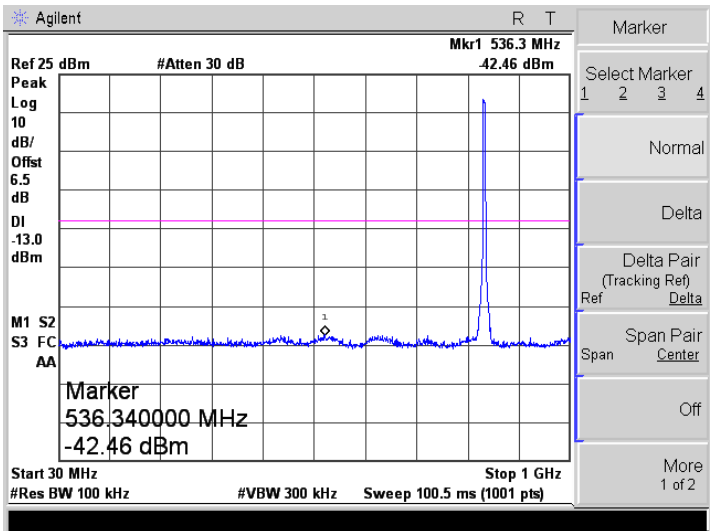
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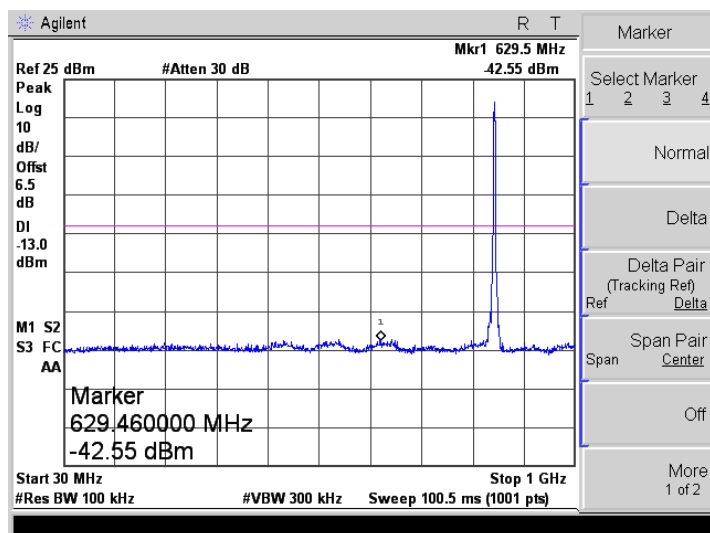
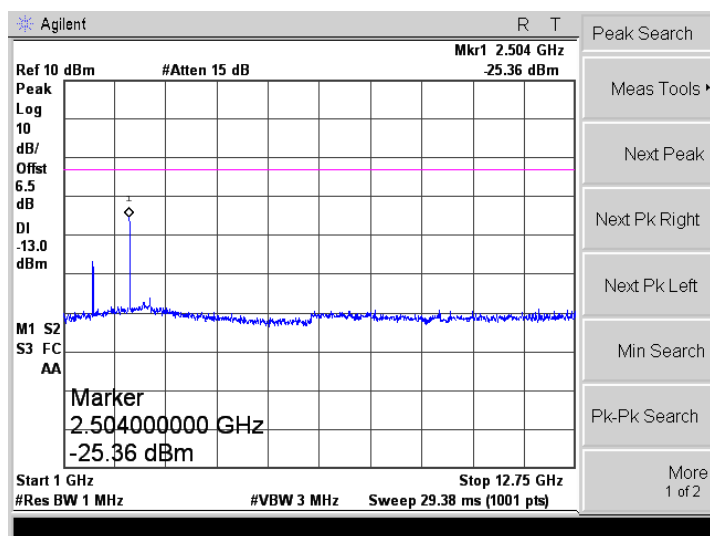


HSUPA Band V-Low

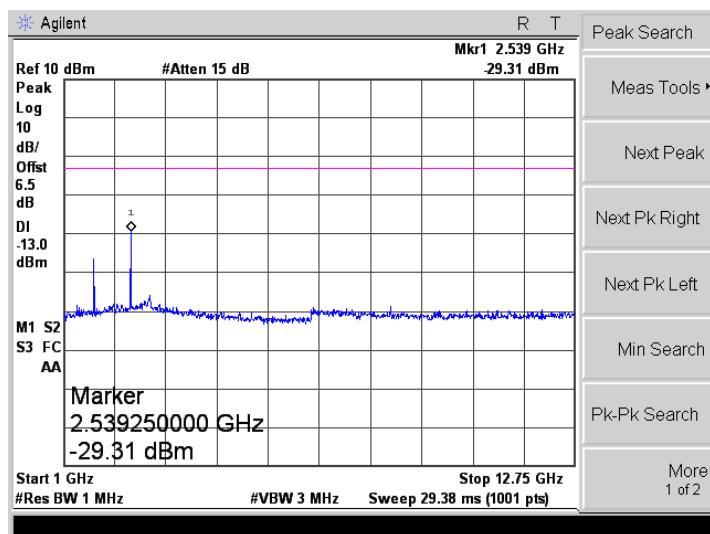


HSUPA Band V-Middle

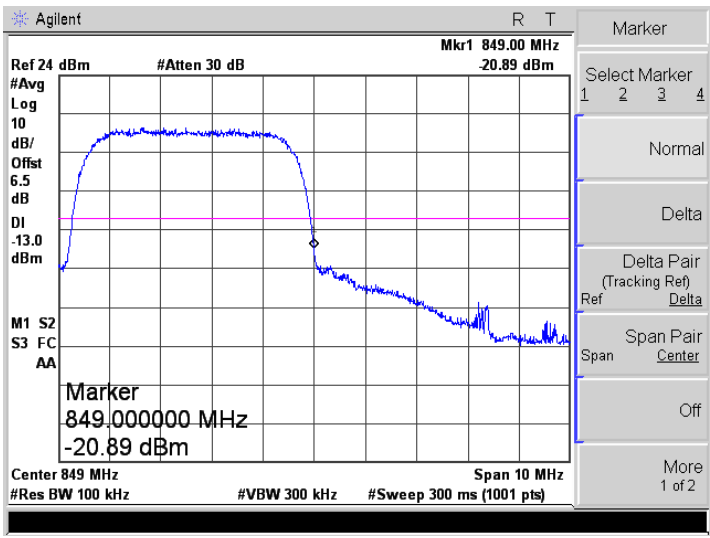
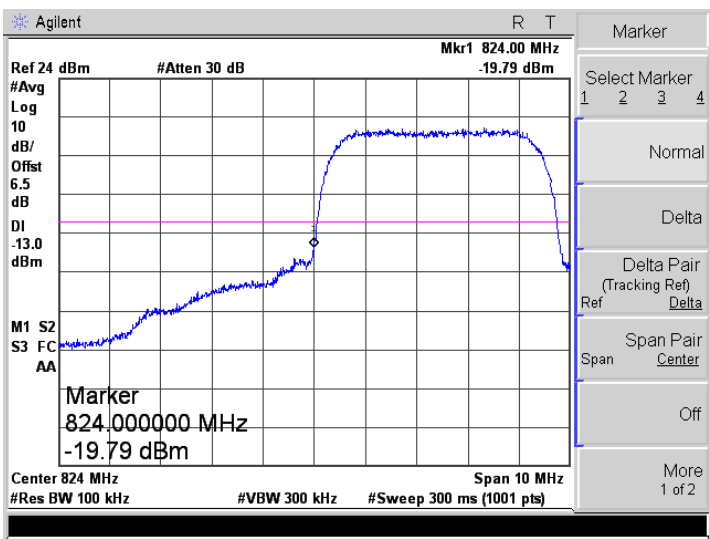




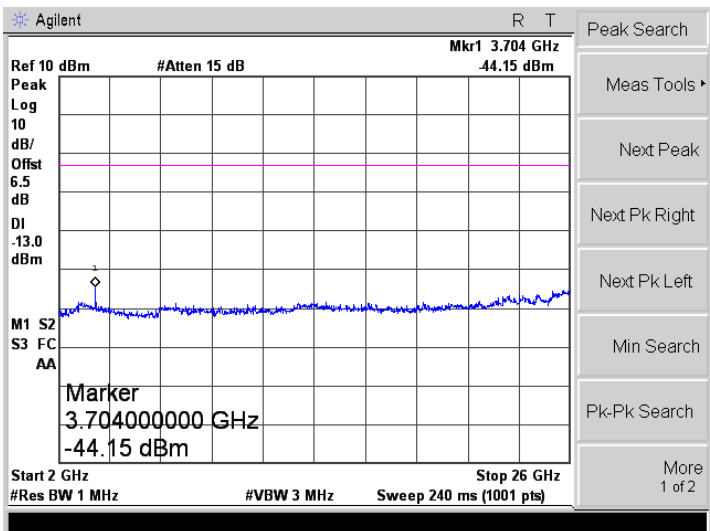
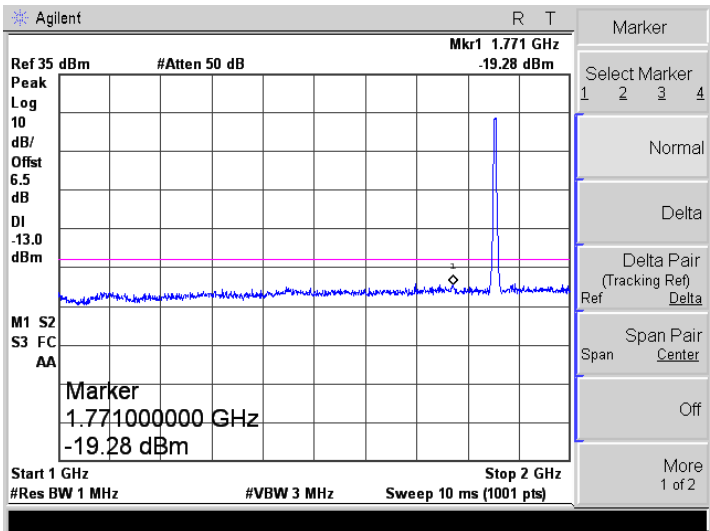
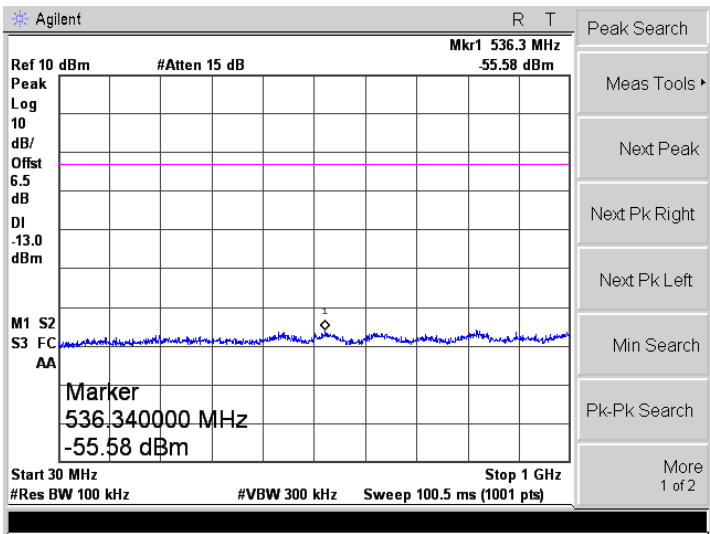
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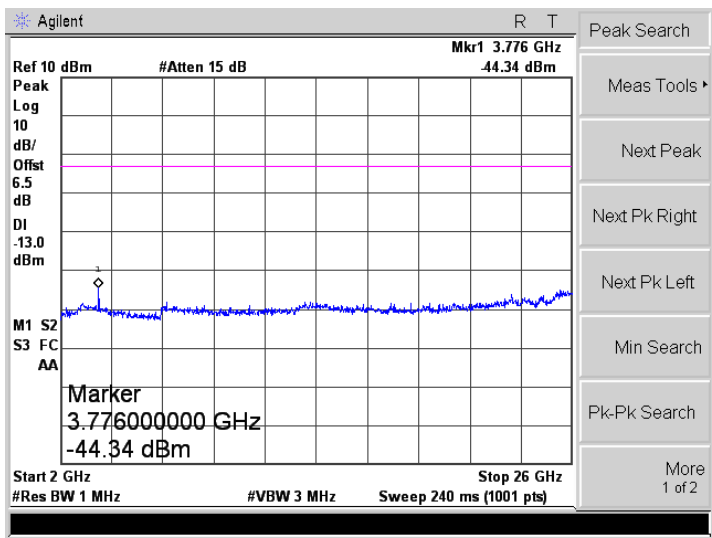
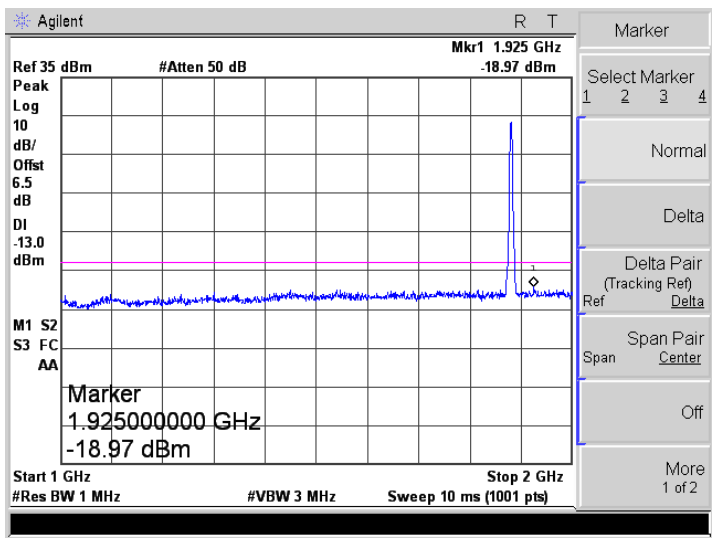
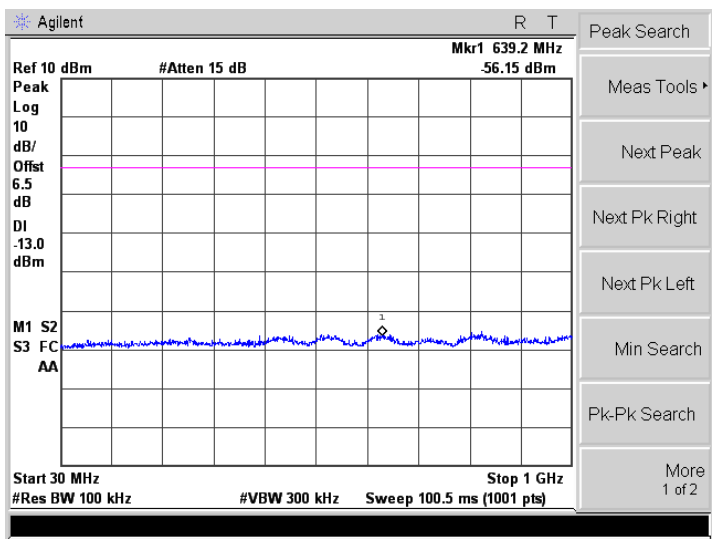
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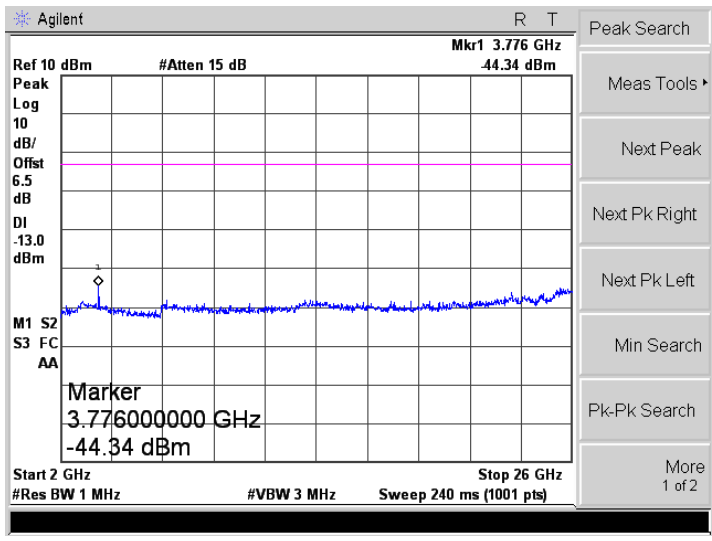
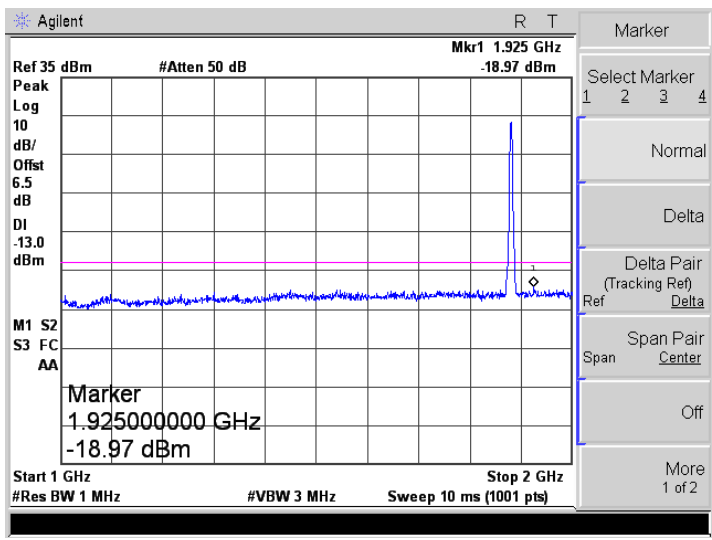
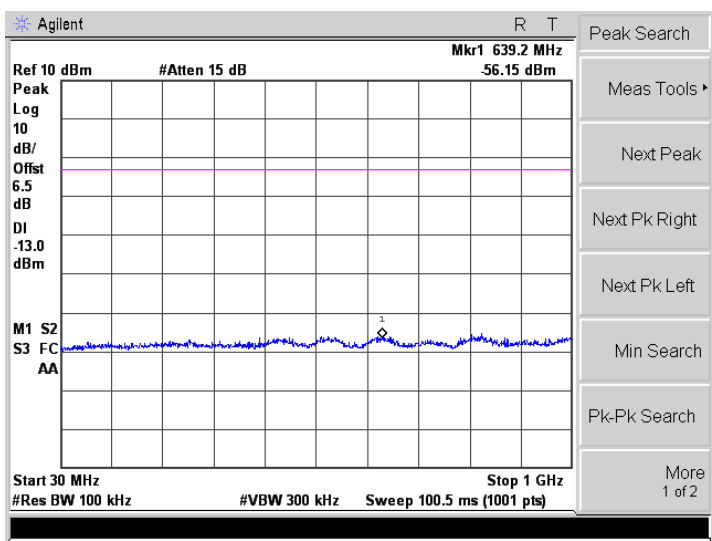
WCDMA Band II-Low



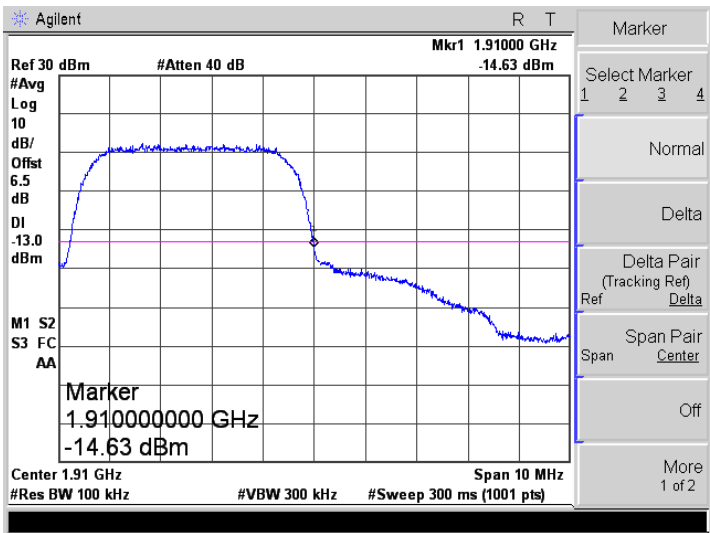
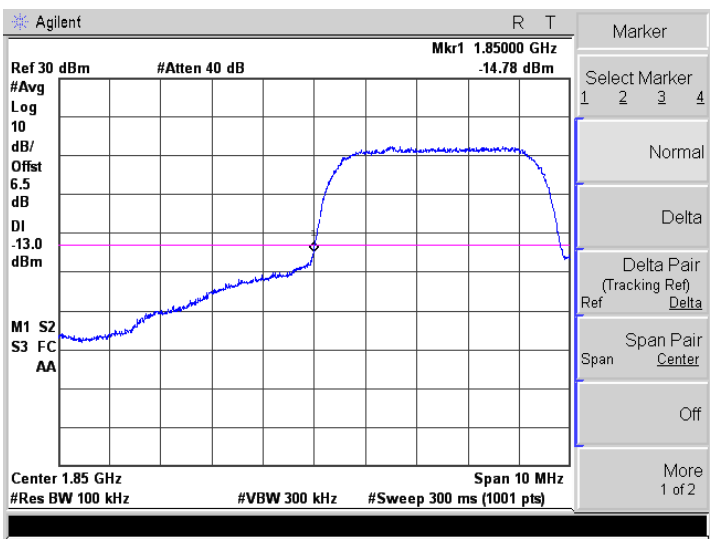
WCDMA Band II-Low



WCDMA Band II-Low

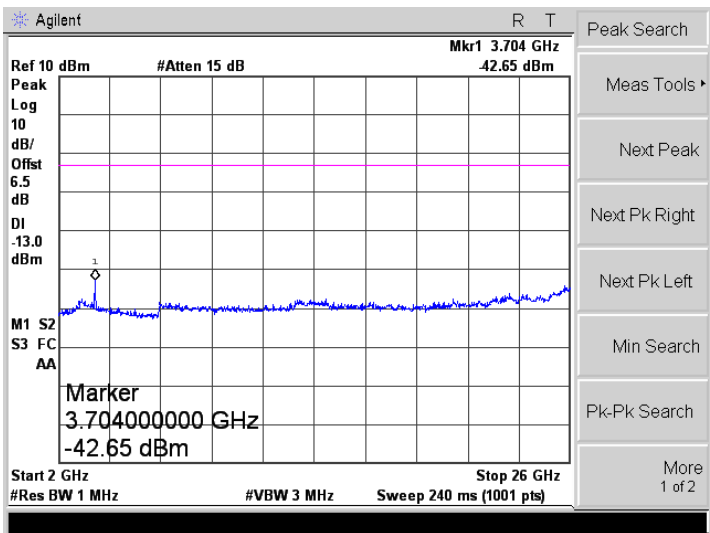
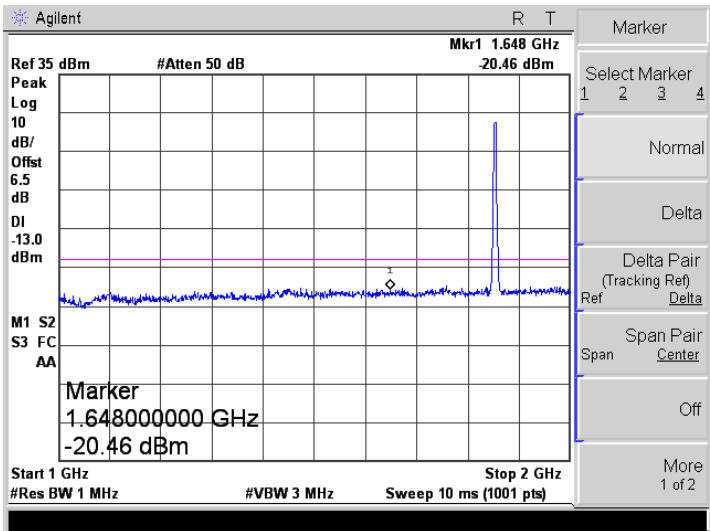
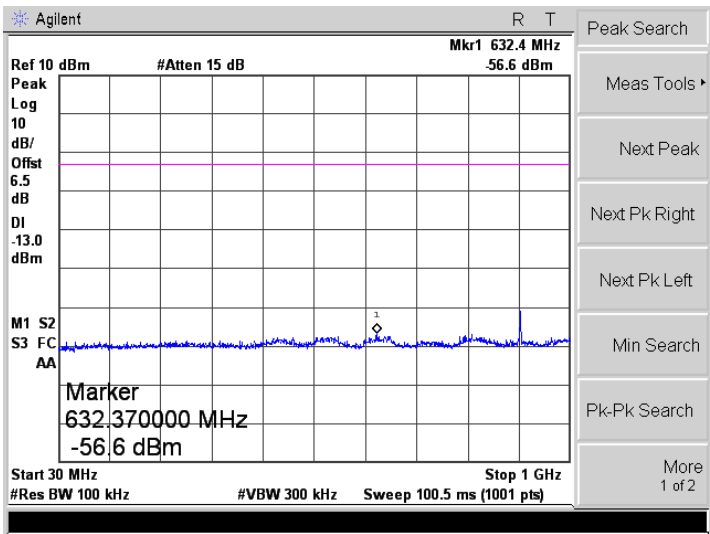


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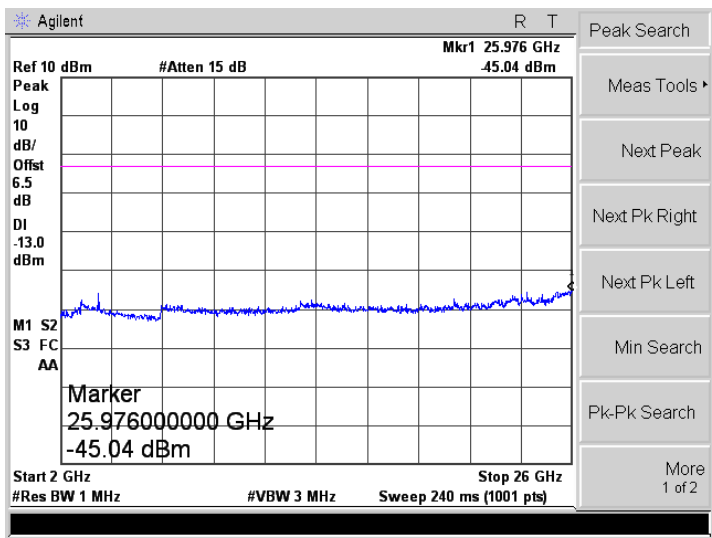
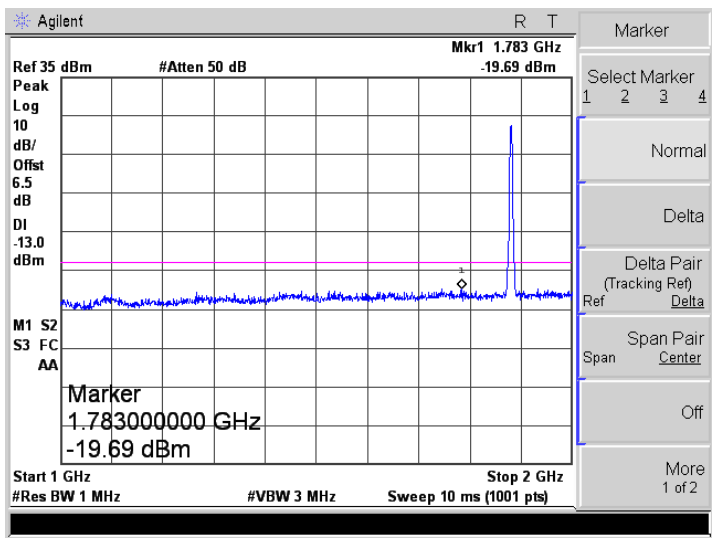
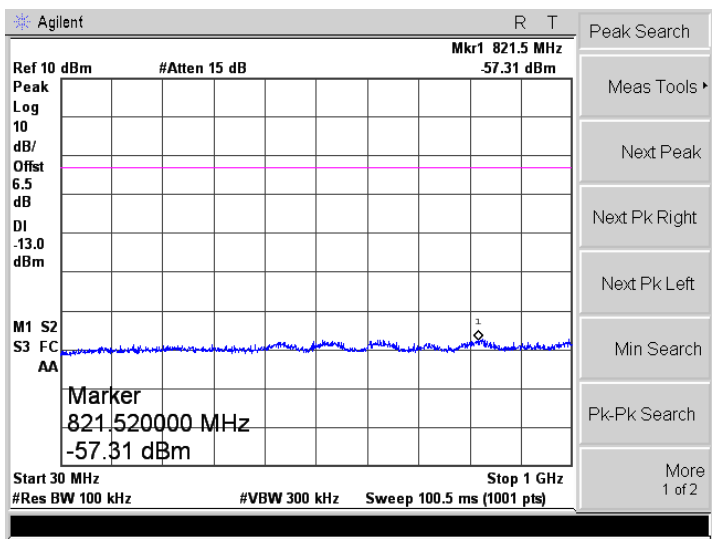




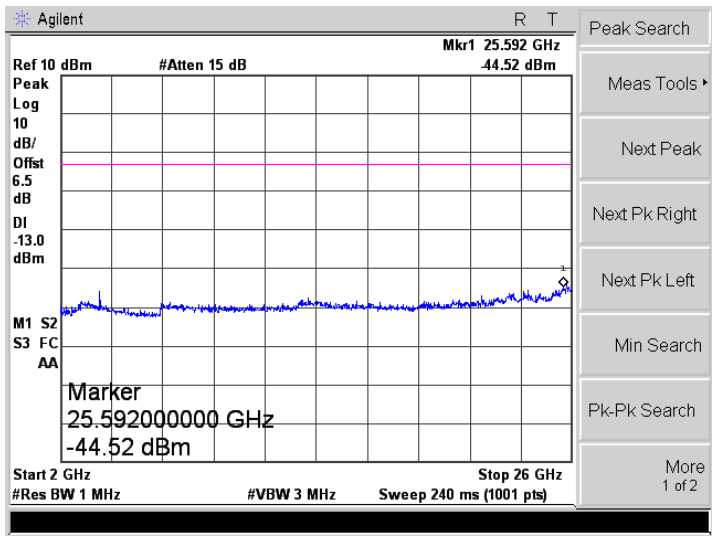
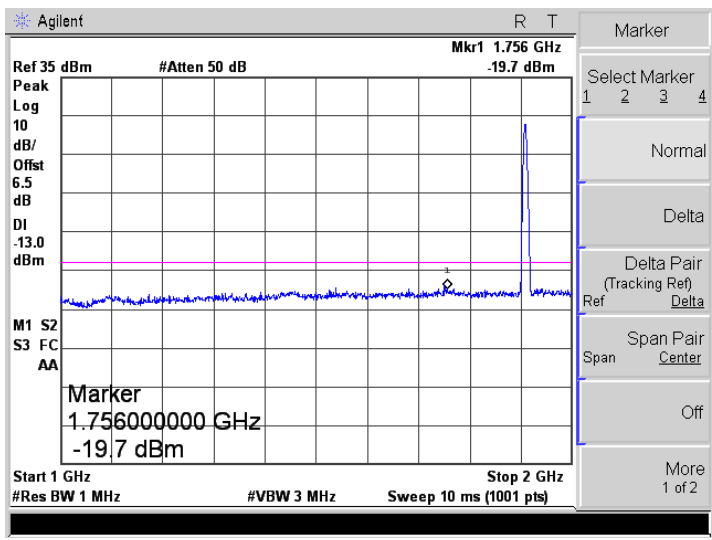
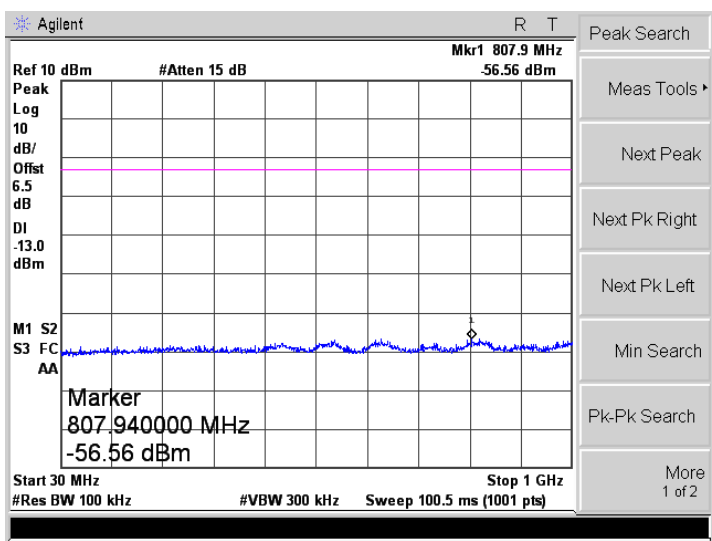
HSDPA Band II-Low



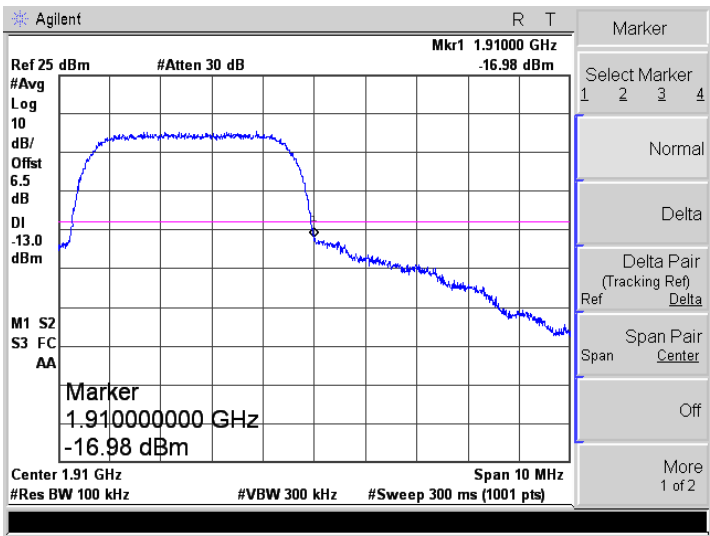
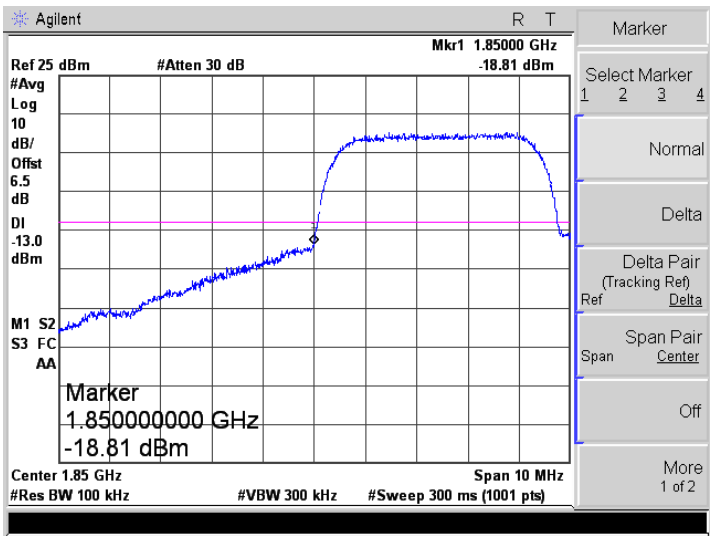
HSDPA Band II-Low



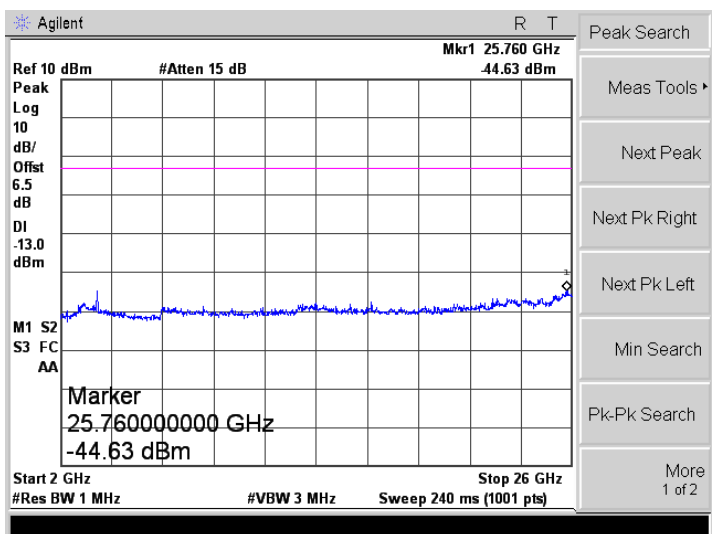
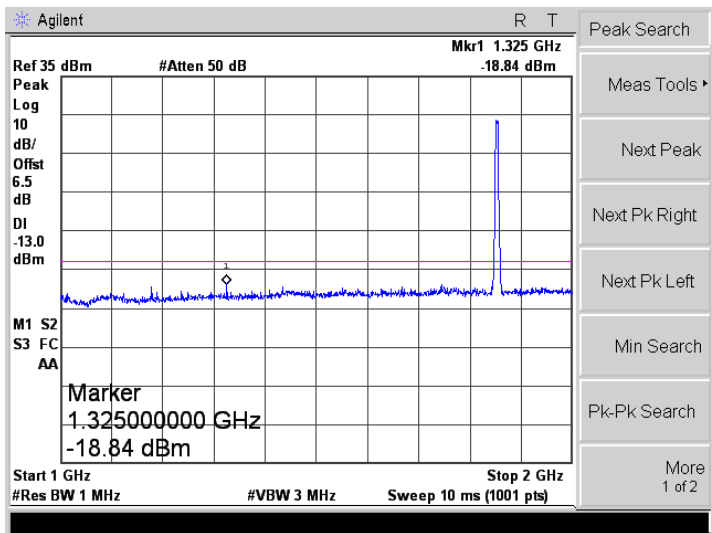
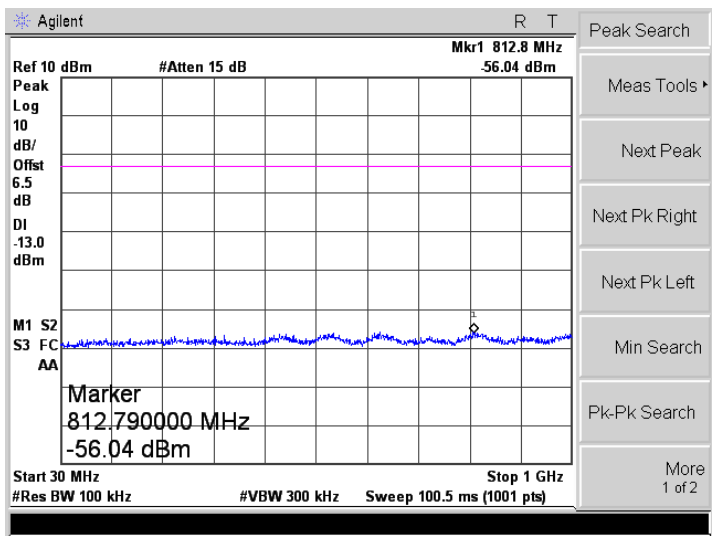
HSDPA Band II-Low



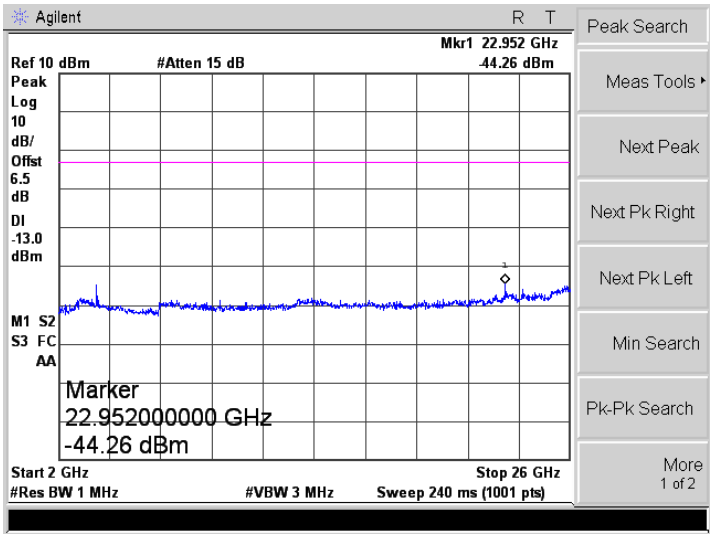
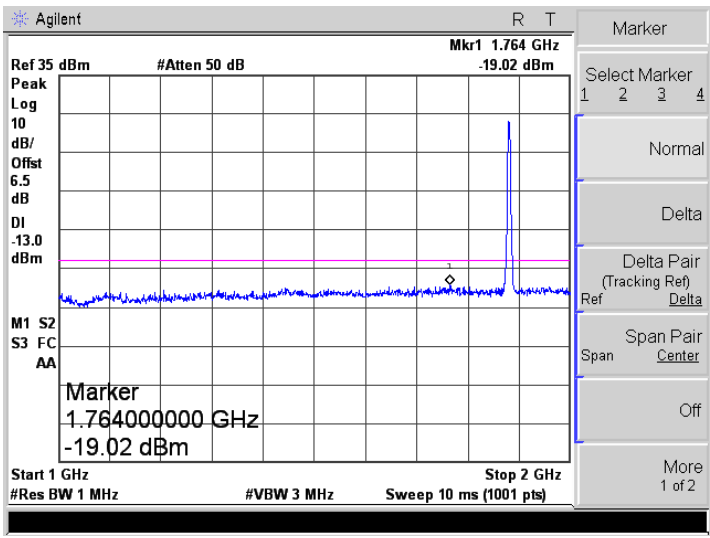
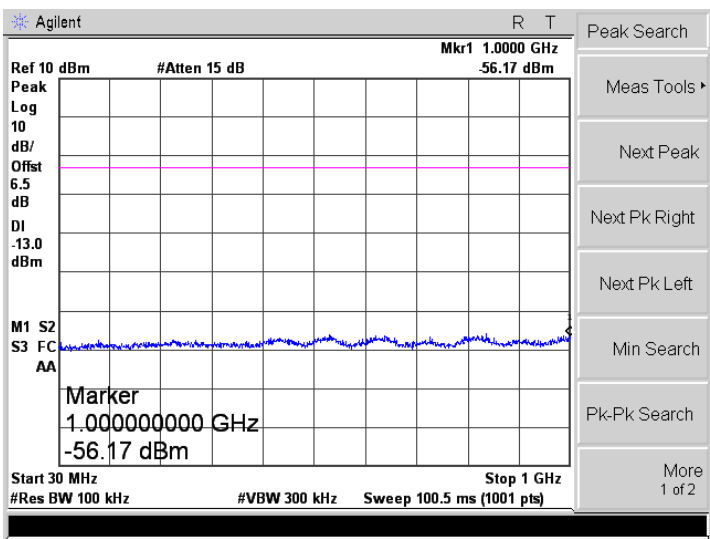
Bandedge



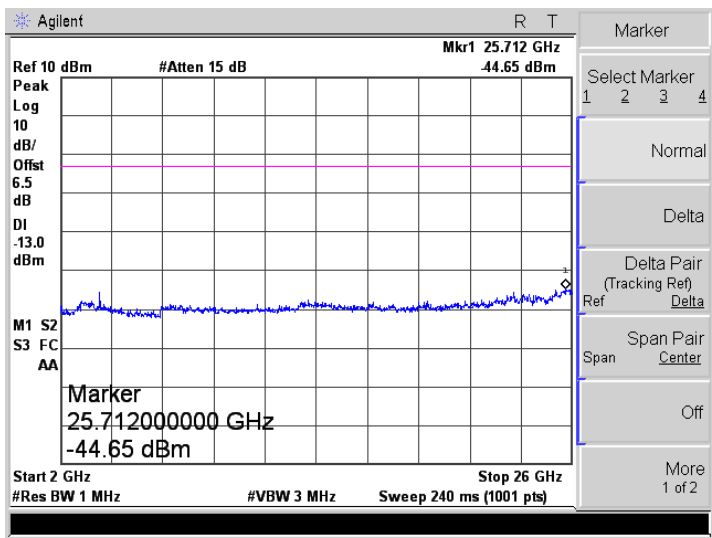
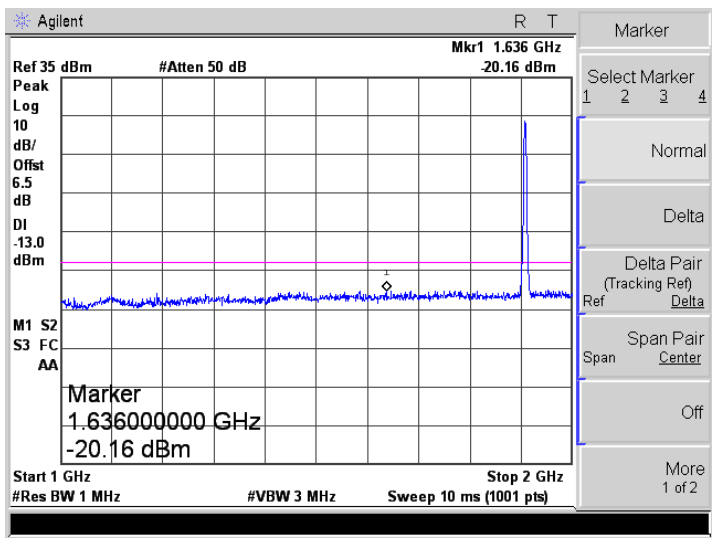
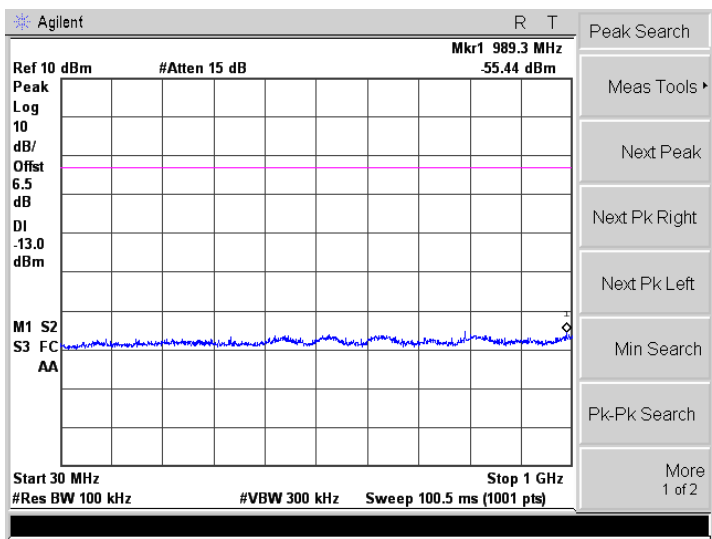
HSUPA Band II-Low



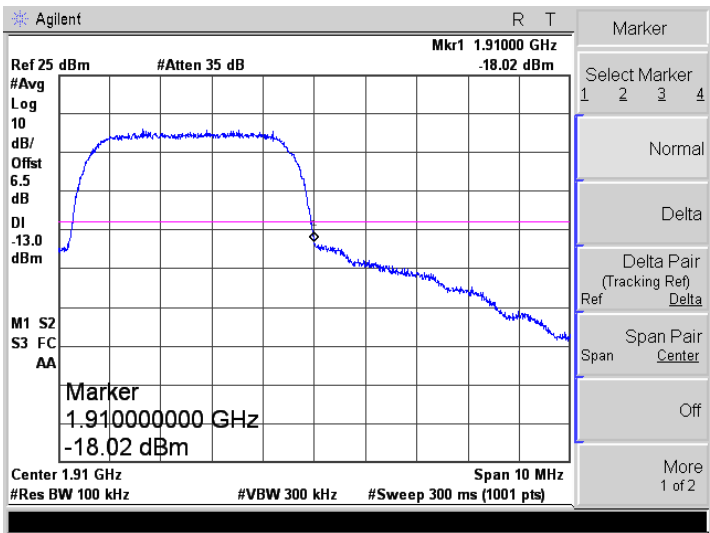
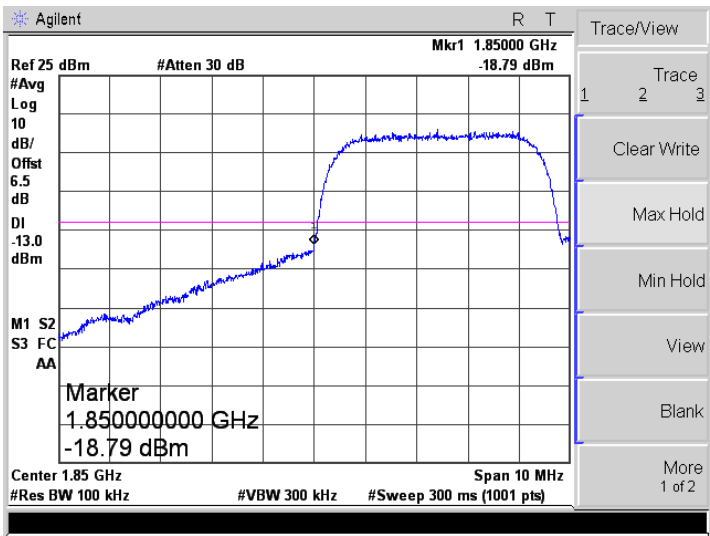
HSUPA Band II-Low



HSUPA Band II-Low



Bandedge





## APPENDIXE

### Frequency Stability

Note: 1. Worst case at GSM850/PCS1900/WCDMA B2/B5 middle channel

2. Normal Voltage NV=DC3.8V; Low Voltage LV=DC3.5V; High Voltage HV=DC4.35V

➤ Frequency stability V.S. Temperature measurement

| Reference Frequency: GSM850 Middle channel=190 channel=836.6MHz |                   |                 |        |             |        |
|-----------------------------------------------------------------|-------------------|-----------------|--------|-------------|--------|
| Power supplied (Vdc)                                            | Temperature ( °C) | Frequency error |        | Limit (ppm) | Result |
|                                                                 |                   | Hz              | ppm    |             |        |
| NV                                                              | -30               | 54              | 0.0644 | 2.50        | Pass   |
|                                                                 | -20               | 41              | 0.0487 |             |        |
|                                                                 | -10               | 35              | 0.0423 |             |        |
|                                                                 | 0                 | 31              | 0.0368 |             |        |
|                                                                 | 10                | 23              | 0.0276 |             |        |
|                                                                 | 20                | 18              | 0.0221 |             |        |
|                                                                 | 30                | 24              | 0.0285 |             |        |
|                                                                 | 40                | 28              | 0.0340 |             |        |
|                                                                 | 50                | 32              | 0.0386 |             |        |
| Reference Frequency: PCS1900 Middle channel=661 channel=1880MHz |                   |                 |        |             |        |
| Power supplied (Vdc)                                            | Temperature ( °C) | Frequency error |        | Limit (ppm) | Result |
|                                                                 |                   | Hz              | ppm    |             |        |
| NV                                                              | -30               | 65              | 0.0348 | 2.50        | Pass   |
|                                                                 | -20               | 58              | 0.0307 |             |        |
|                                                                 | -10               | 49              | 0.0262 |             |        |
|                                                                 | 0                 | 45              | 0.0237 |             |        |
|                                                                 | 10                | 37              | 0.0196 |             |        |
|                                                                 | 20                | 32              | 0.0172 |             |        |
|                                                                 | 30                | 37              | 0.0196 |             |        |
|                                                                 | 40                | 43              | 0.0229 |             |        |
|                                                                 | 50                | 51              | 0.0270 |             |        |

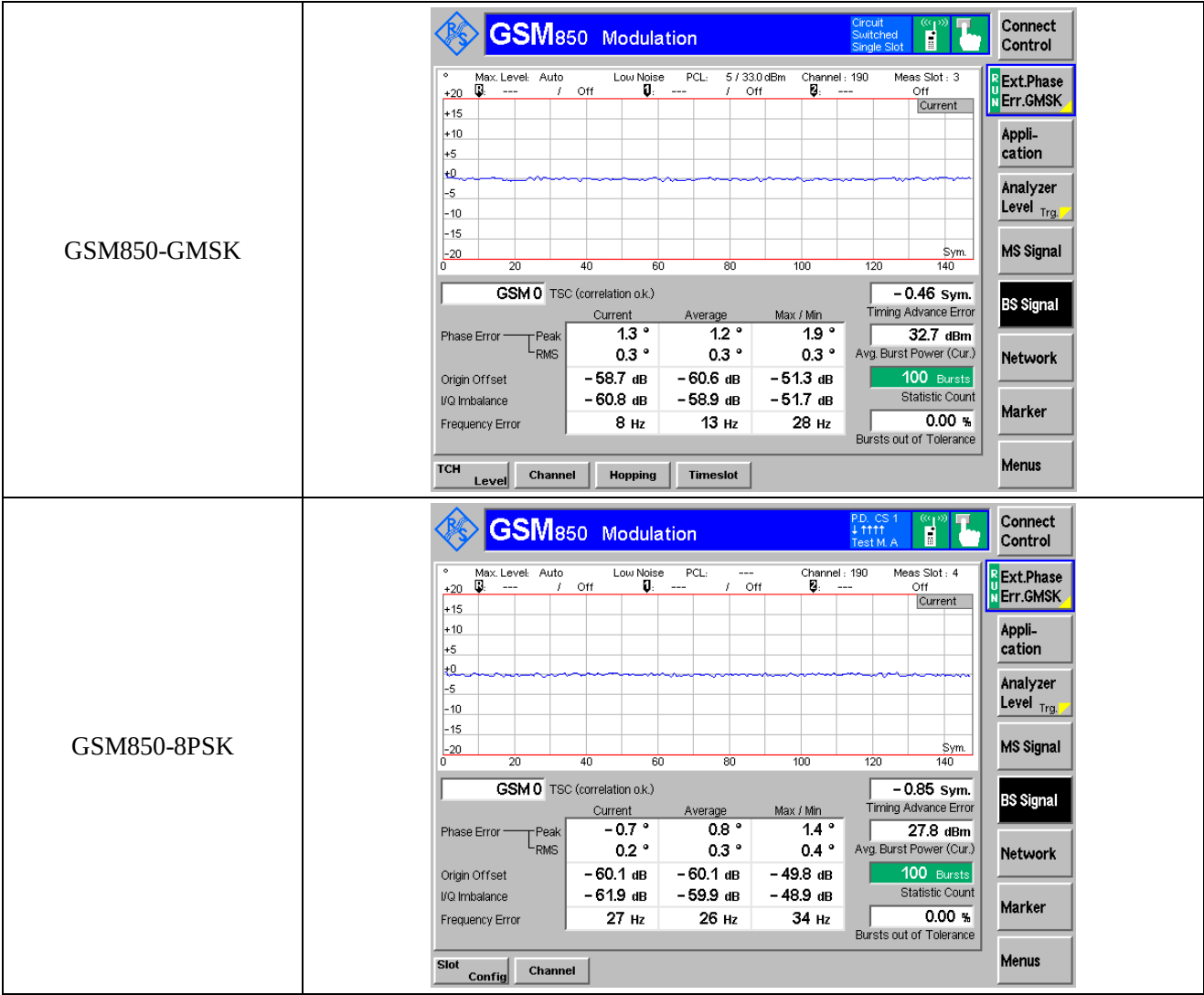
| Reference Frequency: WCDMA Band VMiddle channel=4183 channel=836.6MHz  |                  |                 |        |             |        |
|------------------------------------------------------------------------|------------------|-----------------|--------|-------------|--------|
| Power supplied (Vdc)                                                   | Temperature ( ℃) | Frequency error |        | Limit (ppm) | Result |
|                                                                        |                  | Hz              | ppm    |             |        |
| NV                                                                     | -30              | 51              | 0.0607 | 2.50        | Pass   |
|                                                                        | -20              | 43              | 0.0515 |             |        |
|                                                                        | -10              | 34              | 0.0405 |             |        |
|                                                                        | 0                | 28              | 0.0331 |             |        |
|                                                                        | 10               | 22              | 0.0267 |             |        |
|                                                                        | 20               | 15              | 0.0184 |             |        |
|                                                                        | 30               | 19              | 0.0230 |             |        |
|                                                                        | 40               | 24              | 0.0285 |             |        |
|                                                                        | 50               | 30              | 0.0359 |             |        |
| Reference Frequency: WCDMA Band II Middle channel=9400 channel=1880MHz |                  |                 |        |             |        |
| Power supplied (Vdc)                                                   | Temperature ( ℃) | Frequency error |        | Limit (ppm) | Result |
|                                                                        |                  | Hz              | ppm    |             |        |
| NV                                                                     | -30              | 54              | 0.0286 | 2.50        | Pass   |
|                                                                        | -20              | 50              | 0.0266 |             |        |
|                                                                        | -10              | 39              | 0.0209 |             |        |
|                                                                        | 0                | 34              | 0.0180 |             |        |
|                                                                        | 10               | 29              | 0.0155 |             |        |
|                                                                        | 20               | 23              | 0.0123 |             |        |
|                                                                        | 30               | 31              | 0.0164 |             |        |
|                                                                        | 40               | 36              | 0.0192 |             |        |
|                                                                        | 50               | 41              | 0.0217 |             |        |

## ➤ Frequency stability V.S. Voltage measurement

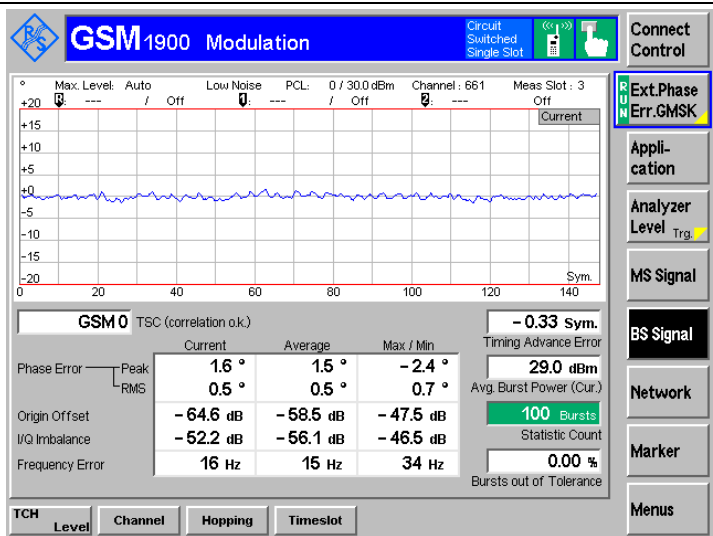
| Reference Frequency: GSM850 (GSM link) Middle channel=190 channel=836.6MHz |                      |                 |        |             |        |
|----------------------------------------------------------------------------|----------------------|-----------------|--------|-------------|--------|
| Temperature ( °C)                                                          | Power supplied (Vdc) | Frequency error |        | Limit (ppm) | Result |
|                                                                            |                      | Hz              | ppm    |             |        |
| 25                                                                         | HV                   | 48              | 0.0579 | 2.50        | Pass   |
|                                                                            | NV                   | 42              | 0.0497 |             |        |
|                                                                            | LV                   | 33              | 0.0395 |             |        |
| Reference Frequency: PCS1900 (GSM link) Middle channel=661 channel=1880MHz |                      |                 |        |             |        |
| Temperature ( °C)                                                          | Power supplied (Vdc) | Frequency error |        | Limit (ppm) | Result |
|                                                                            |                      | Hz              | ppm    |             |        |
| 25                                                                         | HV                   | 57              | 0.0303 | 2.50        | Pass   |
|                                                                            | NV                   | 51              | 0.0270 |             |        |
|                                                                            | LV                   | 42              | 0.0221 |             |        |
| Reference Frequency: WCDMA Band VMiddle channel=4183 channel=836.6MHz      |                      |                 |        |             |        |
| Temperature ( °C)                                                          | Power supplied (Vdc) | Frequency error |        | Limit (ppm) |        |
|                                                                            |                      | Hz              | ppm    | Result      |        |
| 25                                                                         | HV                   | 23              | 0.0276 | 2.50        | Pass   |
|                                                                            | NV                   | 27              | 0.0322 |             |        |
|                                                                            | LV                   | 34              | 0.0405 |             |        |
| Reference Frequency: WCDMA Band II Middle channel=9400 channel=1880MHz     |                      |                 |        |             |        |
| Temperature ( °C)                                                          | Power supplied (Vdc) | Frequency error |        | Limit (ppm) | Result |
|                                                                            |                      | Hz              | ppm    |             |        |
| 25                                                                         | HV                   | 29              | 0.0155 | 2.50        | Pass   |
|                                                                            | NV                   | 35              | 0.0188 |             |        |
|                                                                            | LV                   | 41              | 0.0217 |             |        |

APPENDIX F

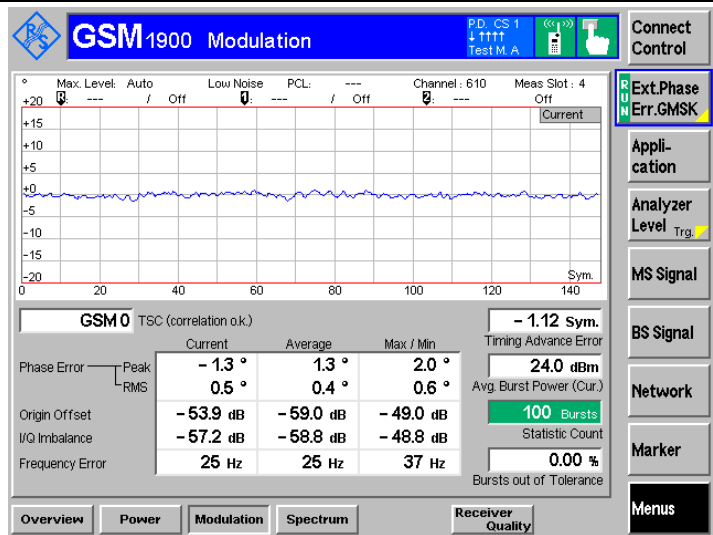
Modulation characteristics

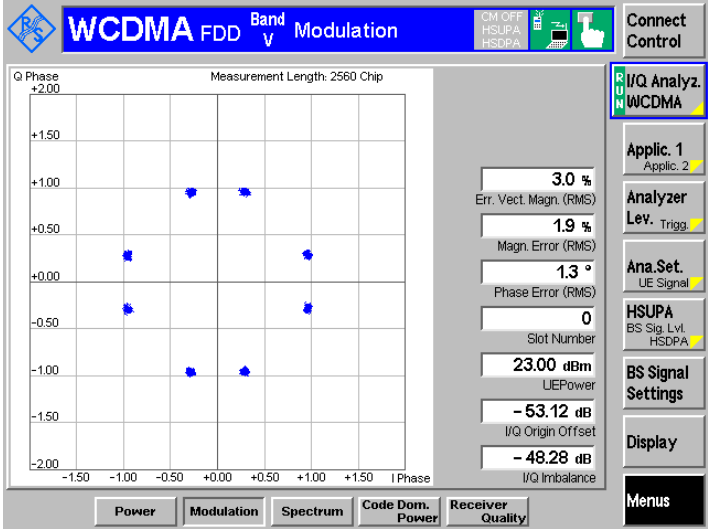
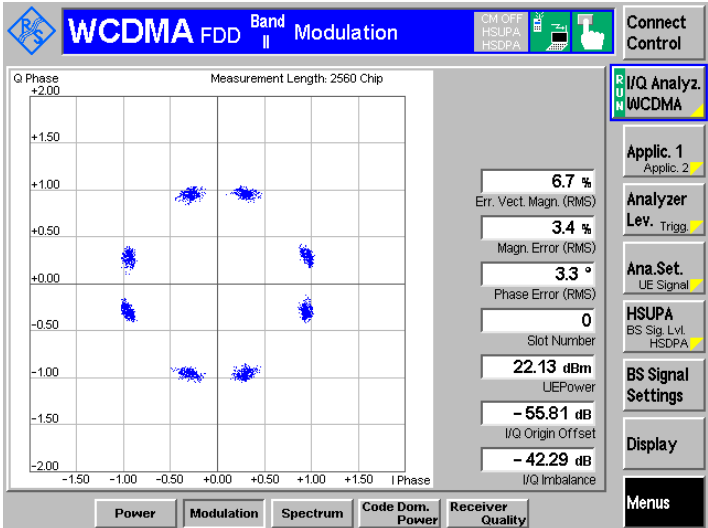


GSM1900-GMSK



GSM1900-8PSK



|          |                                                                                     |
|----------|-------------------------------------------------------------------------------------|
| WCDMA B5 |   |
| WCDMA B2 |  |

## **APPENDIXPHOTOGRAPHS**

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**Please refer to “ANNEX”**

**\*\*\*\*\* END OF REPORT \*\*\*\*\***