

# TEST REPORT

Reference No..... : WTX21X12136503W-1  
FCC ID ..... : YHLBLUF91  
Applicant ..... : BLU Products Inc.  
Address..... : 10814 NW 33rd St # 100 Doral, FL 33172,USA  
Product Name ..... : Smart Phone  
Test Model. .... : F91 5G  
Standards ..... : FCC Part 22H, FCC Part 24E, FCC Part 27  
Date of Receipt sample .... : Dec. 08, 2021  
Date of Test..... : Dec. 08, 2021 to Jan.19, 2022  
Date of Issue ..... : Jan.19, 2022  
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:**

**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

Tel.: +86-755-33663308

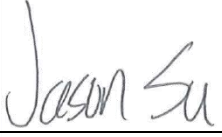
Fax.: +86-755-33663309

Tested by:

Reviewed By:

Approved & Authorized By:

  
Mike Shi / Project Engineer

  
Jason Su / RF Manager

  
Silin Chen / Manager

**TABLE OF CONTENTS**

<b>1. GENERAL INFORMATION</b> .....	<b>4</b>
1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT).....	4
1.2 TEST STANDARDS.....	6
1.3 TEST METHODOLOGY.....	6
1.4 TEST FACILITY.....	6
1.5 EUT SETUP AND TEST MODE.....	7
1.6 MEASUREMENT UNCERTAINTY.....	9
1.7 TEST EQUIPMENT LIST AND DETAILS.....	10
<b>2. SUMMARY OF TEST RESULTS</b> .....	<b>13</b>
<b>3. RF OUTPUT POWER</b> .....	<b>14</b>
3.1 STANDARD APPLICABLE.....	14
3.2 TEST PROCEDURE.....	14
3.3 SUMMARY OF TEST RESULTS/PLOTS.....	14
<b>4. PEAK-TO-AVERAGE RATIO (PAR) OF TRANSMITTER</b> .....	<b>18</b>
4.1 STANDARD APPLICABLE.....	18
4.2 TEST PROCEDURE.....	18
4.3 SUMMARY OF TEST RESULTS.....	18
<b>5. EMISSION BANDWIDTH</b> .....	<b>19</b>
5.1 STANDARD APPLICABLE.....	19
5.2 TEST PROCEDURE.....	19
5.3 SUMMARY OF TEST RESULTS/PLOTS.....	19
<b>6. OUT OF BAND EMISSIONS AT ANTENNA TERMINAL</b> .....	<b>20</b>
6.1 STANDARD APPLICABLE.....	20
6.2 TEST PROCEDURE.....	20
6.3 SUMMARY OF TEST RESULTS/PLOTS.....	20
<b>7. SPURIOUS RADIATED EMISSIONS</b> .....	<b>21</b>
7.1 STANDARD APPLICABLE.....	21
7.2 TEST PROCEDURE.....	21
7.3 SUMMARY OF TEST RESULTS/PLOTS.....	21
<b>8. FREQUENCY STABILITY</b> .....	<b>35</b>
8.1 STANDARD APPLICABLE.....	35
8.2 TEST PROCEDURE.....	35
8.3 SUMMARY OF TEST RESULTS/PLOTS.....	35
<b>9. MODULATION CHARACTERISTICS</b> .....	<b>36</b>
9.1 STANDARD APPLICABLE.....	36
9.2 TEST PROCEDURE.....	36
9.3 SUMMARY OF TEST RESULTS/PLOTS.....	36
<b>APPENDIX SUMMARY</b> .....	<b>37</b>
<b>APPENDIX A</b> .....	<b>38</b>
<b>APPENDIX B</b> .....	<b>40</b>
<b>APPENDIX C</b> .....	<b>41</b>
<b>APPENDIX D</b> .....	<b>58</b>
<b>APPENDIX E</b> .....	<b>112</b>
<b>APPENDIX F</b> .....	<b>116</b>
<b>APPENDIX PHOTOGRAPHS</b> .....	<b>118</b>

**Report version**

Version No.	Date of issue	Description
Rev.00	Jan.19, 2022	Original
/	/	/

## 1. GENERAL INFORMATION

---

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

#### Client Information

Applicant: BLU Products Inc.  
 Address of applicant: 10814 NW 33rd St # 100 Doral, FL 33172,USA

Manufacturer: BLU Products Inc.  
 Address of manufacturer: 10814 NW 33rd St # 100 Doral, FL 33172,USA

General Description of EUT:	
Product Name:	Smart Phone
Trade Name:	BLU
Model No.:	F91 5G
Adding Model(s):	/
Rated Voltage:	DC3.85V
Battery:	5000mAh(C886549500P)
Adapter Model:	US-KB-2009 INPUT:AC100-240V, 50/60Hz, 0.6A Output:DC9V, 2000mA
Software Version:	BLU_F0030UU_V11.0.02.01_GENERIC_20211130_1144
Hardware Version:	KF5F-02
<p><i>Note: The Antenna Gain is provided by the customer.</i></p> <p><i>The test data is gathered from a production sample provided by the manufacturer.</i></p>	

<b>Technical Characteristics of EUT:</b>	
<b>2G</b>	
Support Networks:	GSM, GPRS, EDGE
Support Band:	GSM850/PCS1900
Uplink Frequency:	GSM/GPRS/EDGE 850: 824~849MHz GSM/GPRS/EDGE 1900: 1850~1910MHz
Downlink Frequency:	GSM/GPRS/EDGE 850: 869~894MHz GSM/GPRS/EDGE 1900: 1930~1990MHz
Max RF Output Power:	GSM850: 33.93dBm, GSM1900: 29.25dBm EDGE850: 27.38dBm, EDGE1900: 25.05dBm
Type of Emission:	GSM850: 246KGXW, GSM1900: 247KGXW EDGE850: 249KG7W, EDGE1900: 249KG7W
Type of Modulation:	GMSK, 8PSK
Type of Antenna:	Integral Antenna
Antenna Gain:	GSM850: -0.7dBi; GSM1900: -0.65dBi
GPRS/EDGE Class:	Class 12
<b>3G</b>	
Support Networks:	WCDMA, HSDPA, HSUPA
Support Band:	WCDMA Band 2, WCDMA Band 4, WCDMA Band 5
Uplink Frequency:	WCDMA Band 2: 1850~1910MHz WCDMA Band 4: 1710~1755MHz WCDMA Band 5: 824~849MHz
Downlink Frequency:	WCDMA Band 2: 1930~1990MHz WCDMA Band 4: 2110~2155MHz WCDMA Band 5: 869~894MHz
RF Output Power:	WCDMA Band 2: 23.08dBm, WCDMA Band 4: 22.96dBm WCDMA Band 5: 24.57dBm
Type of Emission:	WCDMA Band 2: 4M16F9W WCDMA Band 4: 4M17F9W WCDMA Band 5: 4M16F9W
Type of Modulation:	BPSK
Antenna Type:	Integral Antenna
Antenna Gain:	WCDMA Band 2:-0.3dBi, WCDMA Band 4: -0.5dBi, WCDMA Band 5: -0.7dBi

## 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.

**FCC Rules Part 27:** Miscellaneous Wireless Communications 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 Meas 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	EDGE 850	Low, Middle, High Channels
TM4	GSM 1900	Low, Middle, High Channels
TM5	GPRS 1900	Low, Middle, High Channels
TM6	EDGE 1900	Low, Middle, High Channels
TM7	WCDMA Band 5	Low, Middle, High Channels
TM8	HSDPA Band 5	Low, Middle, High Channels
TM9	HSUPA Band 5	Low, Middle, High Channels
TM10	WCDMA Band 4	Low, Middle, High Channels
TM11	HSDPA Band 4	Low, Middle, High Channels
TM12	HSUPA Band 4	Low, Middle, High Channels
TM13	WCDMA Band 2	Low, Middle, High Channels
TM14	HSDPA Band 2	Low, Middle, High Channels
TM15	HSUPA Band 2	Low, Middle, High Channels

Testing Configure			
Support Band	Support Standard	Channel Frequency	Channel Number
GSM 850	GSM/GPRS/EDGE	824.2 MHz	128
		836.6 MHz	190
		848.8 MHz	251
PCS 1900	GSM/GPRS/EDGE	1850.2 MHz	512
		1880.0 MHz	661
		1909.8 MHz	810
WCDMA Band 5	WCDMA/HSDPA/HSUPA	826.4 MHz	4132
		836.6 MHz	4183
		846.6 MHz	4233
WCDMA Band 4	WCDMA/HSDPA/HSUPA	1712.4 MHz	1312
		1732.4 MHz	1412
		1752.6 MHz	1513
WCDMA Band 2	WCDMA/HSDPA/HSUPA	1852.4 MHz	9262
		1880.0 MHz	9400
		1907.6 MHz	9538

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

<b>Test Conditions</b>	
Temperature:	22~25 °C
Relative Humidity:	50~55 %.
ATM Pressure:	1019 mbar

<b>EUT Cable List and Details</b>			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
USB Cable	1.04	Shielded	Without Ferrite
DC Cable	1.2	Unshielded	Without Ferrite

<b>Special Cable List and Details</b>			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/

<b>Auxiliary Equipment List and Details</b>			
Description	Manufacturer	Model	Serial Number
/	/	/	/



**1.6 Measurement Uncertainty**

<b>Measurement uncertainty</b>		
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-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	/	/	/
<input checked="" type="checkbox"/> Chamber A: Below 1GHz						
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-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
<input checked="" type="checkbox"/> Chamber A: Above 1GHz						
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-1043	Amplifier	C&D	PAP-1G18	2002	2021-04-12	2022-04-11
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	Rohde &	FSP40	100612	2021-03-27	2022-03-26

	Analyzer	Schwarz				
SEMT-1166	Power Limiter	Agilent	N9356B	MY45450376	2021-03-27	2022-03-26
<input type="checkbox"/> Chamber B: Below 1GHz						
SEMT-1068	Trilog Broadband Antenna	Schwarz beck	VULB9163(B)	9163-635	2021-04-09	2023-04-08
SEMT-1067	Amplifier	Agilent	8447D	2944A10179	2021-04-12	2022-04-11
SEMT-1066	EMI Test Receiver	Rohde & Schwarz	ESPI	101391	2021-05-06	2022-05-05
<input type="checkbox"/> Chamber C: Below 1GHz						
SEMT-1319	EMI Test Receiver	Rohde & Schwarz	ESIB 26	100401	2021-12-03	2022-12-02
SEMT-1343	Trilog Broadband Antenna	Schwarz beck	VULB 9168	1194	2021-05-28	2023-05-27
SEMT-1333	Amplifier	HP	8447F	2944A03869	2021-04-15	2022-04-14

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

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

## 2. SUMMARY OF TEST RESULTS

---

<b>FCC Rules</b>	<b>Description of Test Item</b>	<b>Result</b>
§22.913(a), §24.232(c), §27.50(d)	RF Output Power	Compliant
§24.51, §27.50	Peak-to-average Ratio (PAR) of Transmitter	Compliant
§22.917(b), §24.238(b), §27.53	Emission Bandwidth	Compliant
§22.917(a), §24.238(a), §27.53(h)	Spurious Emissions at Antenna Terminal	Compliant
§22.917(a), §24.238(a), §27.53(h)	Spurious Radiation Emissions	Compliant
§22.917(a), §24.238(a), §27.53(h)	Out of Band Emissions	Compliant
§22.355, §24.235, §27.54	Frequency Stability	Compliant

### 3. RF Output Power

---

#### 3.1 Standard Applicable

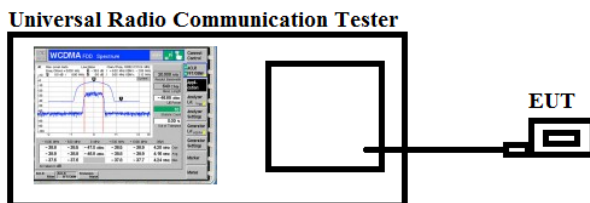
According to §22.913(a)(2), the ERP of mobile and portable stations transmitters and auxiliary test transmitters must not exceed 7 Watts.

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.

According to §27.50(d)(4), fixed, mobile, and portable (hand-held) stations operating in the 1710-1755MHz band and mobile and portable stations operating in the 1695-1710MHz and 1755-1780MHz bands are limited to 1 watt EIRP.

#### 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	21.05	<38.45	Pass
		H	16.29		
	190	V	21.13		
		H	16.41		
	251	V	21.09		
		H	16.21		
GPRS850	128	V	21.36	<38.45	Pass
		H	16.32		
	190	V	21.42		
		H	16.02		
	251	V	21.47		
		H	16.39		
EGPRS850	128	V	21.51	<38.45	Pass
		H	16.08		
	190	V	21.56		
		H	15.97		
	251	V	21.01		
		H	15.83		

Mode	Channel	Antenna Polar	EIRP (dBm)	Limit (dBm)	Result
PCS1900	512	V	20.71	<33.00	Pass
		H	14.35		
	661	V	20.32		
		H	14.47		
	810	V	20.39		
		H	14.62		
GPRS1900	512	V	20.71	<33.00	Pass
		H	14.31		
	661	V	20.97		
		H	14.31		
	810	V	20.46		
		H	14.25		
EGPRS1900	512	V	20.69	<33.00	Pass
		H	14.74		
	661	V	20.35		
		H	14.58		
	810	V	20.36		
		H	14.79		

Mode	Channel	Antenna Polar	ERP	Limit (dBm)	Result
WCDMA Band V	4132	V	20.77	<38.45	Pass
		H	14.68		
	4183	V	20.81		
		H	14.72		
	4233	V	20.35		
		H	14.87		



Mode	Channel	Antenna Polar	EIRP	Limit (dBm)	Result
WCDMA Band IV	1312	V	20.36	<30.00	Pass
		H	14.02		
	1412	V	20.46		
		H	14.87		
	1513	V	20.69		
		H	14.03		

Mode	Channel	Antenna Polar	EIRP	Limit (dBm)	Result
WCDMA Band II	9262	V	20.97	<33.00	Pass
		H	14.21		
	9400	V	20.36		
		H	14.57		
	9538	V	20.69		
		H	14.01		

➤ **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.

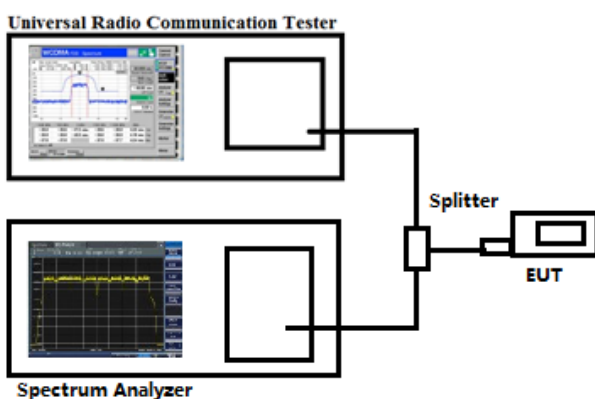
According to §27.50(B), the peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13dB. The PAPR measurements should be made using either an instrument with complementary cumulative distribution function (CCDF) capabilities to determine that PAPR will not exceed 13dB for more than 0.1 percent of the time or other Commission approved procedure. The measurement must be performed using a signal corresponding to the highest PAPR expected during periods of continuous transmission.

### 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.

Waltek Testing Group (Shenzhen) Co., Ltd.

[Http://www.waltek.com.cn](http://www.waltek.com.cn)

## 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.

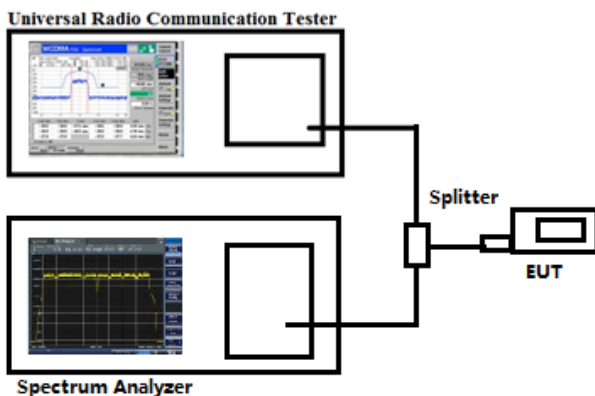
According to §24.238(b), the emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26dB below the transmitter power.

According to §27.53, 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.

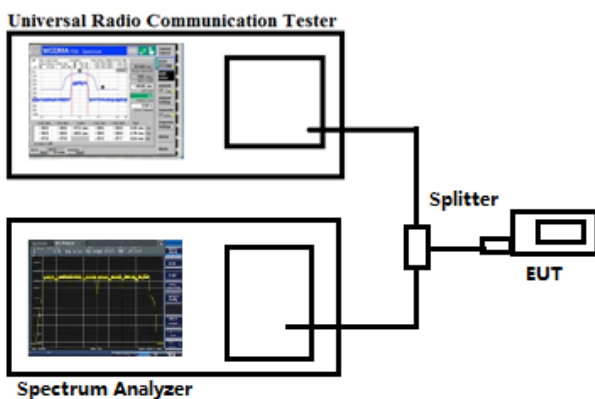
According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

According to §27.53 (h), the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10 \log_{10}(P)$  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<sup>th</sup> harmonic.

Test Configuration for the out of band emissions testing:



### 6.3 Summary of Test Results/Plots

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.

According to §27.53 (h), the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10 \log_{10}(P)$  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.

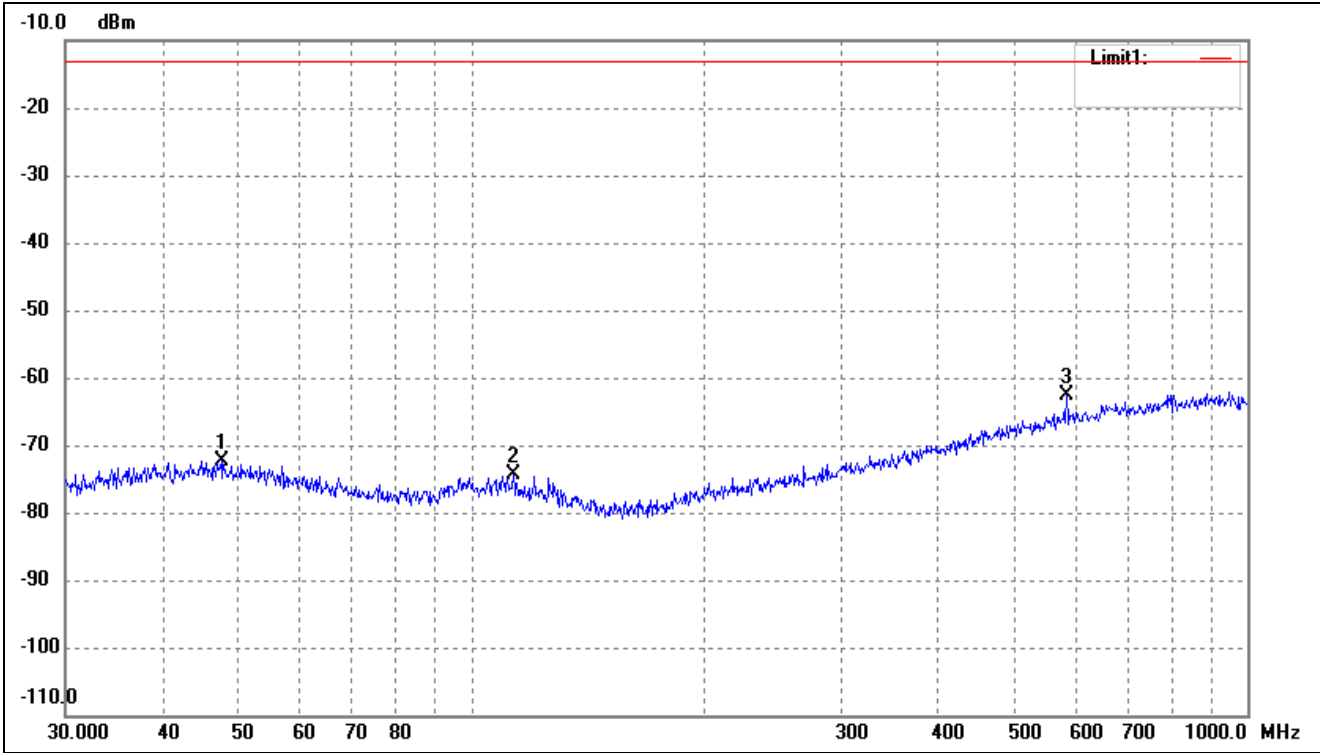
$$\text{Spurious attenuation limit in dB} = 43 + 10 \log_{10}(\text{power out in Watts})$$

### 7.3 Summary of Test Results/Plots

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

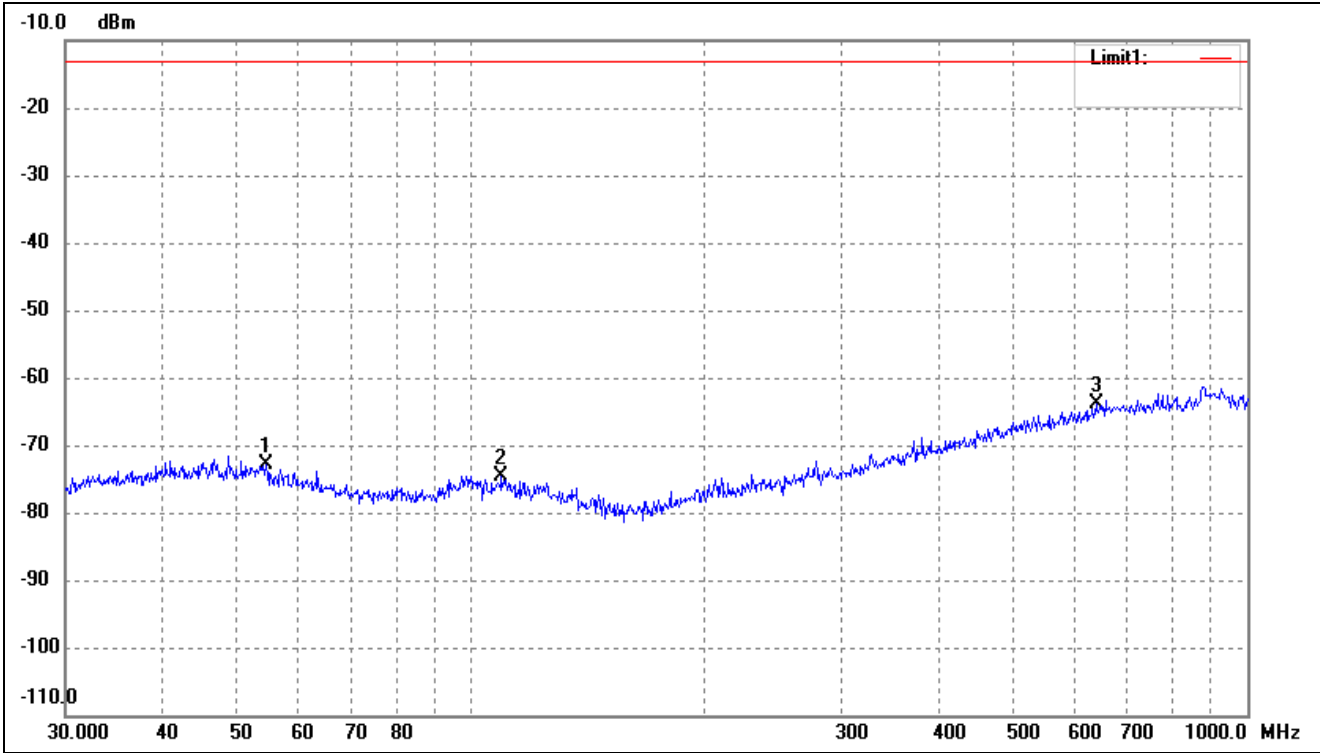
➤ Spurious Emissions Below 1GHz

For Cellular Band			
Test Channel	GSM850	Polarity:	Horizontal



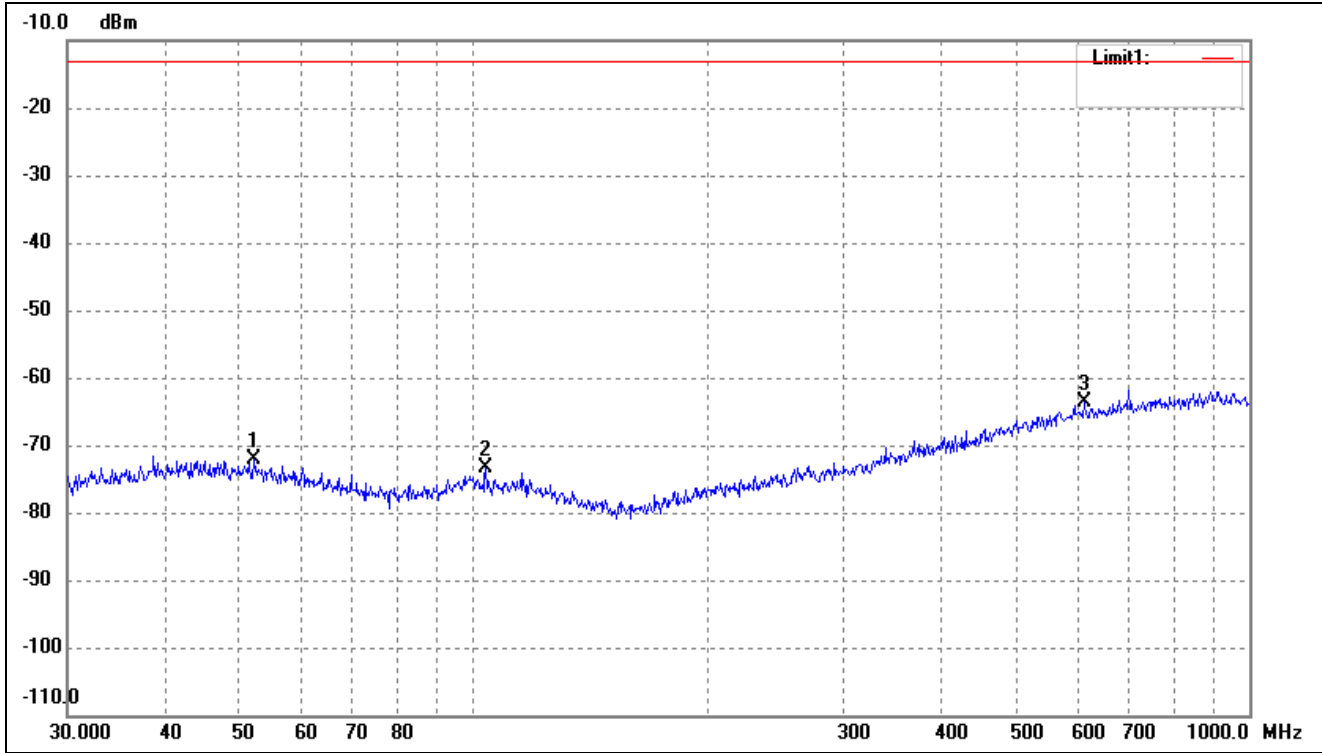
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	47.6586	-77.21	4.83	-72.38	-13.00	-59.38	ERP
2	113.3163	-77.08	2.69	-74.39	-13.00	-61.39	ERP
3	584.7895	-74.62	11.91	-62.71	-13.00	-49.71	ERP

For Cellular Band			
Test Channel	GSM850	Polarity:	Vertical



No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	54.4516	-77.11	4.18	-72.93	-13.00	-59.93	ERP
2	109.4116	-77.60	2.94	-74.66	-13.00	-61.66	ERP
3	638.3686	-76.55	12.59	-63.96	-13.00	-50.96	ERP

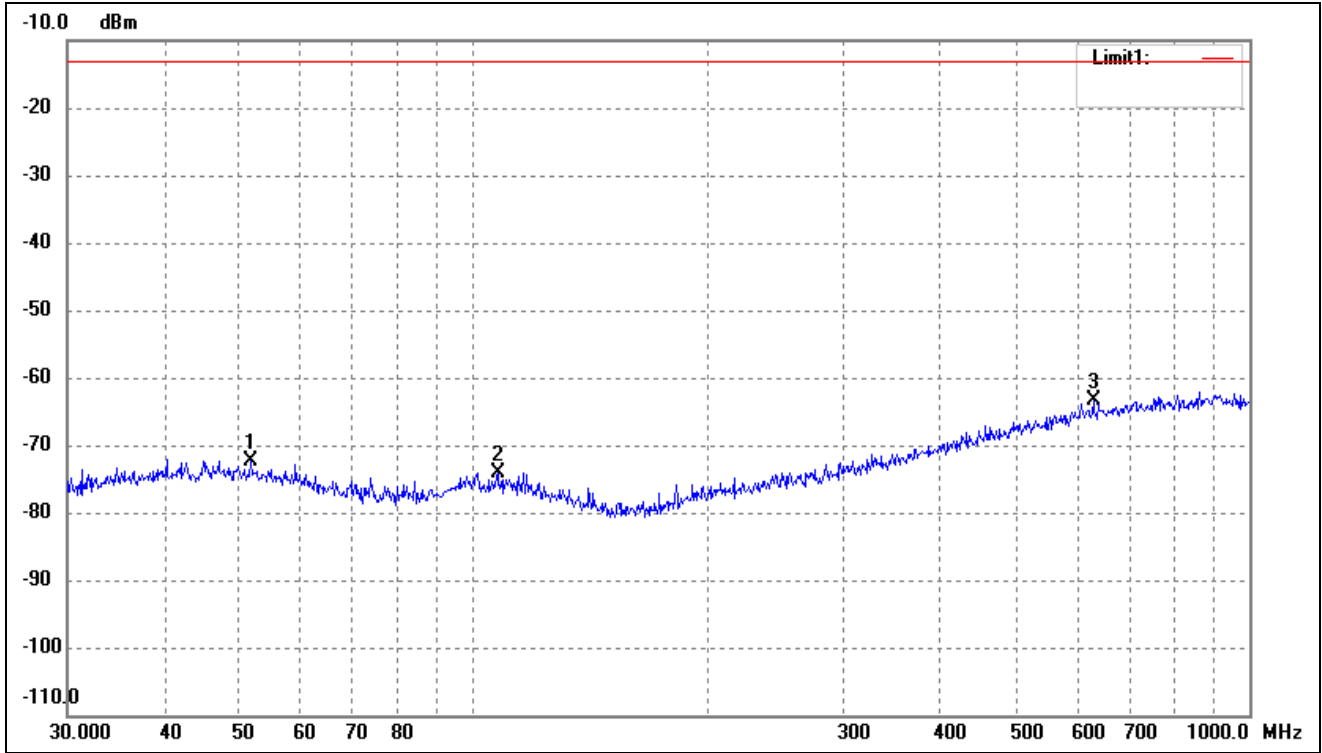
For Cellular Band			
Test Channel	GSM1900	Polarity:	Horizontal



No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	52.2079	-76.75	4.51	-72.24	-13.00	-59.24	ERP
2	103.8055	-76.50	3.01	-73.49	-13.00	-60.49	ERP
3	612.0642	-75.97	12.30	-63.67	-13.00	-50.67	ERP



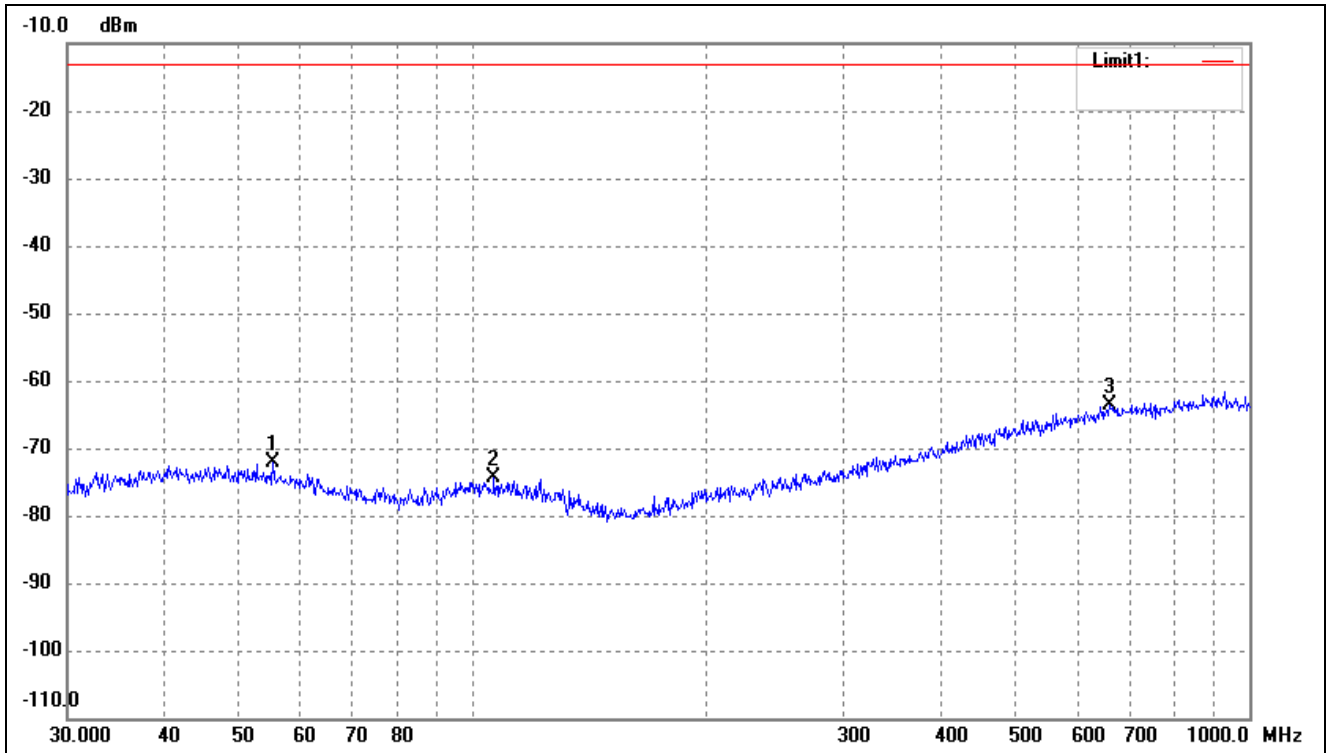
For Cellular Band			
Test Channel	GSM1900	Polarity:	Vertical



No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	51.6616	-76.90	4.60	-72.30	-13.00	-59.30	ERP
2	107.5101	-77.17	2.97	-74.20	-13.00	-61.20	ERP
3	629.4772	-75.97	12.49	-63.48	-13.00	-50.48	ERP

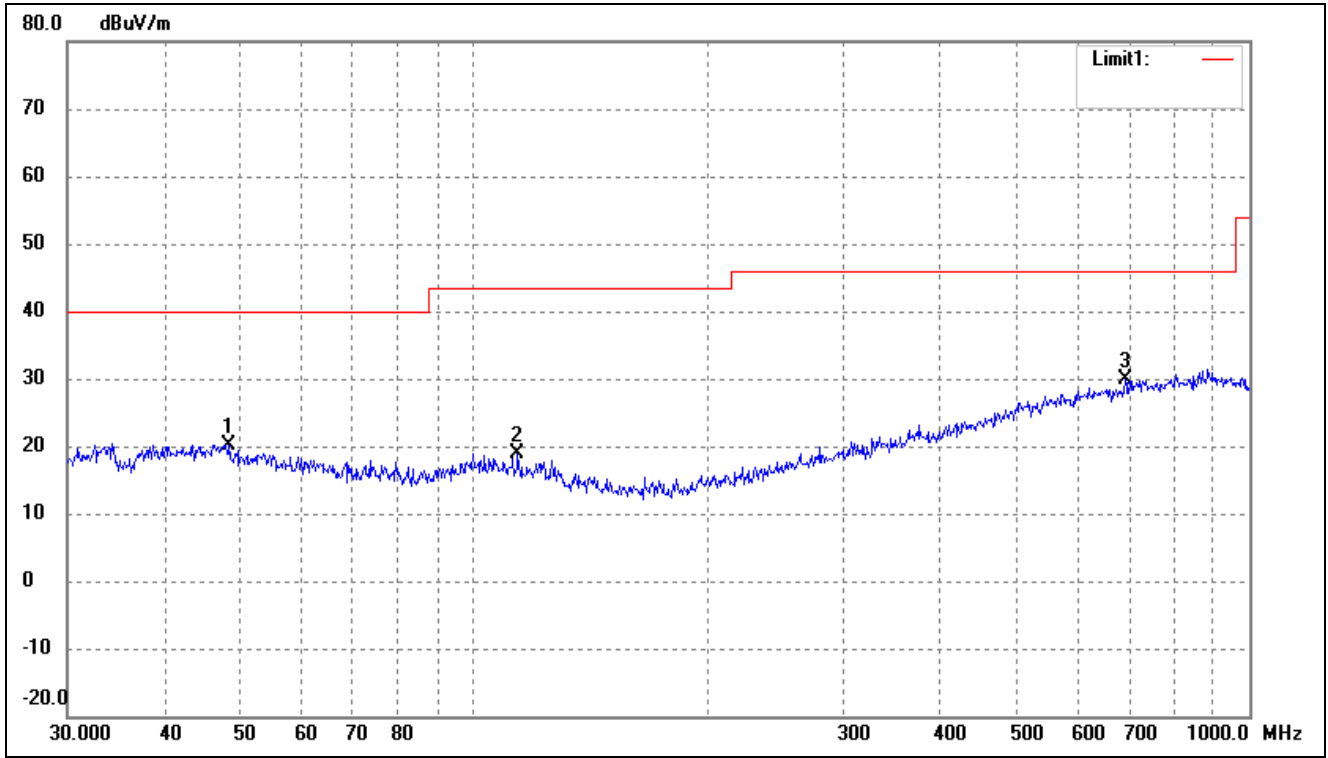
Note: Margin= (Reading+ Correct)- Limit

Test Channel	WCDMA Band V	Polarity:	Horizontal
--------------	--------------	-----------	------------



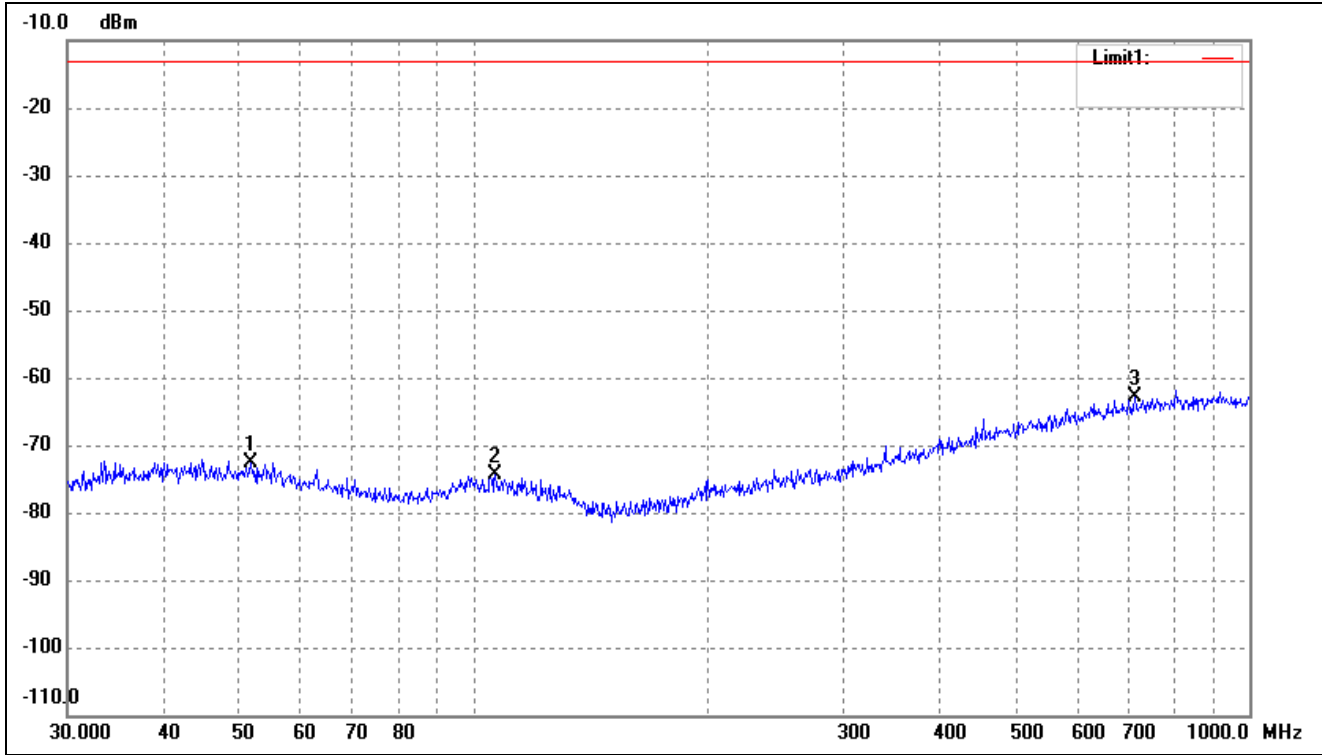
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	55.2207	-76.09	4.07	-72.02	-13.00	-59.02	ERP
2	106.3850	-77.37	2.98	-74.39	-13.00	-61.39	ERP
3	661.1505	-76.52	12.84	-63.68	-13.00	-50.68	ERP

Test Channel	WCDMA Band V	Polarity:	Vertical
--------------	--------------	-----------	----------



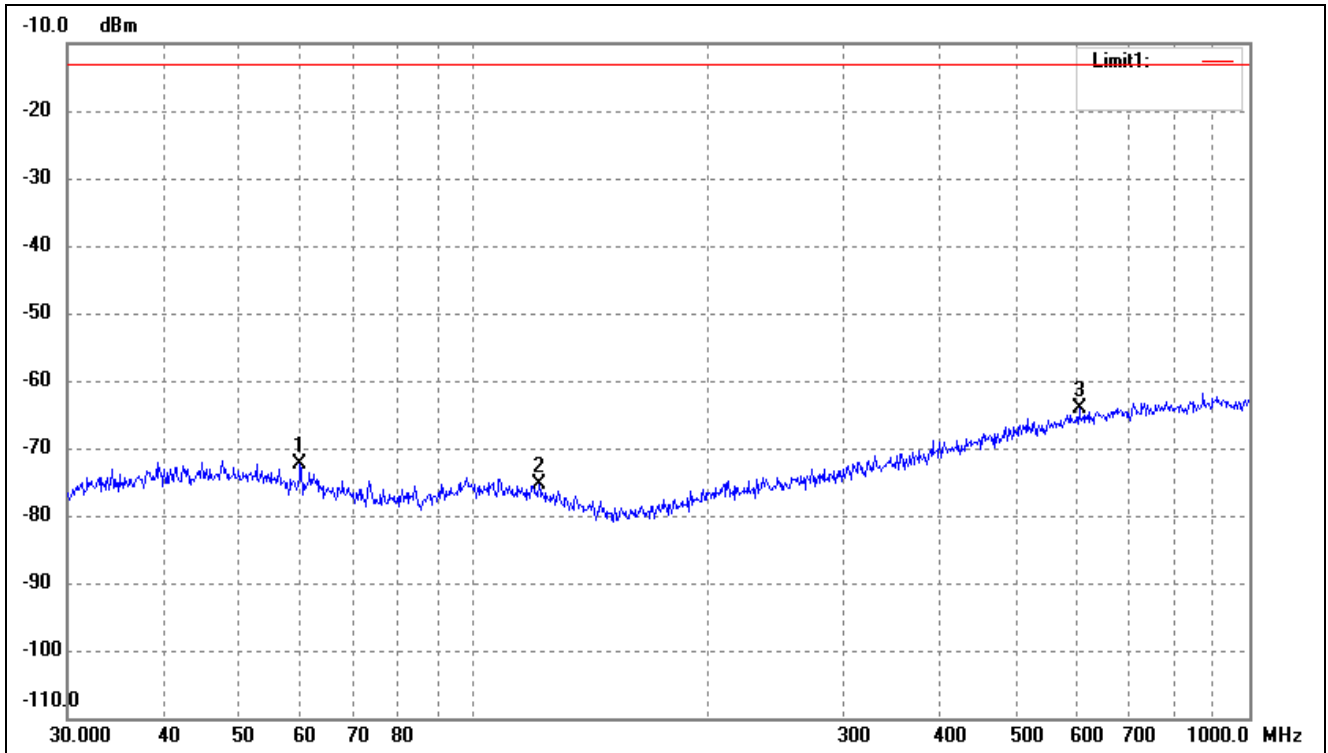
No.	Frequency (MHz)	Reading (dBm)	Correct (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	48.5016	27.18	-6.97	20.21	40.00	-19.79	ERP
2	114.1137	28.09	-9.17	18.92	43.50	-24.58	ERP
3	691.9867	28.52	1.34	29.86	46.00	-16.14	ERP

Test Channel	WCDMA Band IV	Polarity:	Horizontal
--------------	---------------	-----------	------------



No.	Frequency (MHz)	Reading (dBm)	Correct (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	51.6616	-77.17	4.60	-72.57	-13.00	-59.57	ERP
2	106.7587	-77.35	2.97	-74.38	-13.00	-61.38	ERP
3	711.6734	-76.09	13.30	-62.79	-13.00	-49.79	ERP

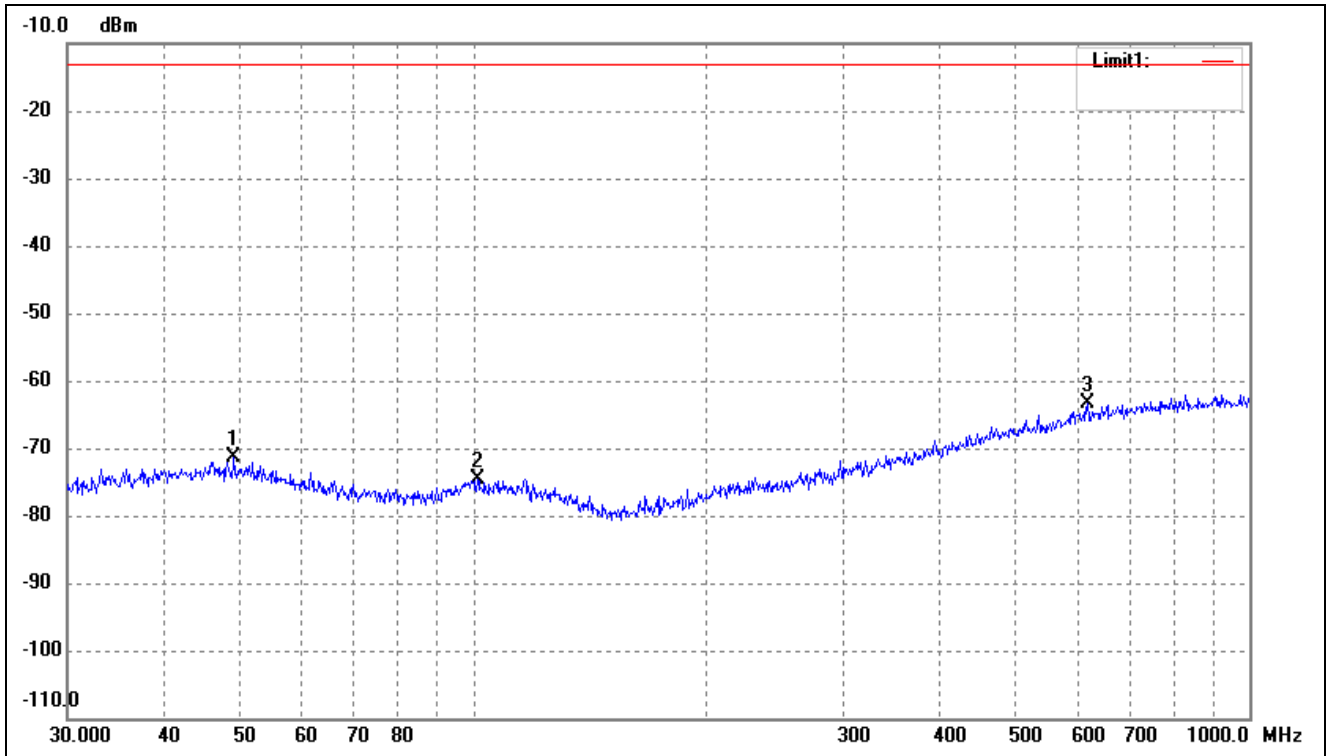
Test Channel	WCDMA Band IV	Polarity:	Vertical
--------------	---------------	-----------	----------



No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	59.8588	-75.86	3.40	-72.46	-13.00	-59.46	ERP
2	121.5486	-77.22	1.92	-75.30	-13.00	-62.30	ERP
3	603.5392	-76.27	12.21	-64.06	-13.00	-51.06	ERP

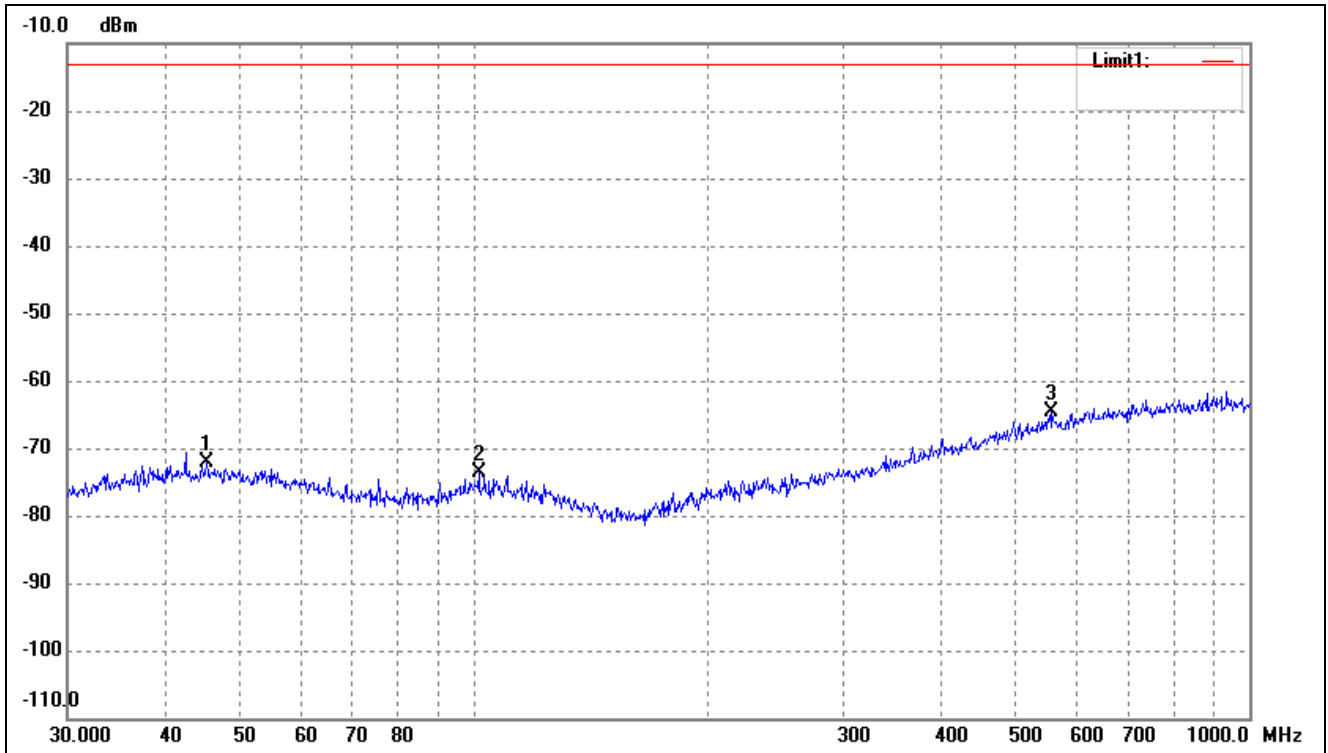
Note: Margin= (Reading+ Correct)- Limit

Test Channel	WCDMA Band II	Polarity:	Horizontal
--------------	---------------	-----------	------------



No.	Frequency (MHz)	Reading (dBm)	Correct (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	49.1866	-76.09	4.83	-71.26	-13.00	-58.26	ERP
2	101.2885	-77.55	3.05	-74.50	-13.00	-61.50	ERP
3	618.5369	-75.73	12.37	-63.36	-13.00	-50.36	ERP

Test Channel	WCDMA Band II	Polarity:	Vertical
--------------	---------------	-----------	----------



No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	45.3755	-77.04	4.83	-72.21	-13.00	-59.21	ERP
2	101.6443	-76.64	3.05	-73.59	-13.00	-60.59	ERP
3	556.7744	-76.18	11.45	-64.73	-13.00	-51.73	ERP

Note: Margin= (Reading+ Correct)- Limit

- 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	-37.33	4.94	-32.39	-13	-19.39	H
2472.6	-44.72	8.46	-36.26	-13	-23.26	H
1648.4	-36.32	4.94	-31.38	-13	-18.38	V
2472.6	-41.21	8.46	-32.75	-13	-19.75	V
Middle Channel (836.6MHz)						
1673.2	-37.95	5.11	-32.84	-13	-19.84	H
2509.8	-41.36	8.54	-32.82	-13	-19.82	H
1673.2	-35.41	5.11	-30.3	-13	-17.3	V
2509.8	-43.07	8.54	-34.53	-13	-21.53	V
High Channel (848.8MHz)						
1697.6	-34.51	5.25	-29.26	-13	-16.26	H
2546.4	-42.25	8.57	-33.68	-13	-20.68	H
1697.6	-34.27	5.25	-29.02	-13	-16.02	V
2546.4	-42.64	8.57	-34.07	-13	-21.07	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	-40.01	10.54	-29.47	-13	-16.47	H
5550.6	-46.97	13.37	-33.6	-13	-20.6	H
3700.4	-39.11	10.54	-28.57	-13	-15.57	V
5550.6	-46.52	13.37	-33.15	-13	-20.15	V
Middle Channel (1880MHz)						
3760.0	-40.05	10.64	-29.41	-13	-16.41	H
5640.0	-47.33	13.54	-33.79	-13	-20.79	H
3760.0	-40	10.64	-29.36	-13	-16.36	V
5640.0	-46.79	13.54	-33.25	-13	-20.25	V
High Channel (1909.8MHz)						
3819.6	-39.34	10.74	-28.6	-13	-15.6	H
5729.4	-49.85	13.71	-36.14	-13	-23.14	H
3819.6	-40.79	10.74	-30.05	-13	-17.05	V
5729.4	-46.4	13.71	-32.69	-13	-19.69	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	-37.53	4.94	-32.59	-13	-19.59	H
2479.2	-43.5	8.46	-35.04	-13	-22.04	H
1652.8	-37.16	4.94	-32.22	-13	-19.22	V
2479.2	-41.66	8.46	-33.2	-13	-20.2	V
Middle Channel (836.6MHz)						
1672.8	-37.65	5.11	-32.54	-13	-19.54	H
2509.2	-44.91	8.54	-36.37	-13	-23.37	H
1672.8	-36.26	5.11	-31.15	-13	-18.15	V
2509.2	-41.71	8.54	-33.17	-13	-20.17	V
High Channel (846.6MHz)						
1693.2	-36.02	5.25	-30.77	-13	-17.77	H
2539.8	-42.43	8.57	-33.86	-13	-20.86	H
1693.2	-35.45	5.25	-30.2	-13	-17.2	V
2539.8	-44.71	8.57	-36.14	-13	-23.14	V

## ➤ For WCDMA Band IV Mode

Frequency	Reading	Correct	Result	Limit	Margin	Polar
(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	H/V
Low Channel (1712.4MHz)						
3424.8	-37.45	8.65	-28.8	-13	-15.8	H
5137.2	-43.62	12.03	-31.59	-13	-18.59	H
3424.8	-35.56	8.65	-26.91	-13	-13.91	V
5137.2	-41.74	12.03	-29.71	-13	-16.71	V
Middle Channel (1732.4MHz)						
3466.8	-35.65	8.91	-26.74	-13	-13.74	H
5200.2	-41.44	12.29	-29.15	-13	-16.15	H
3466.8	-36.28	8.91	-27.37	-13	-14.37	V
5200.2	-43.41	12.29	-31.12	-13	-18.12	V
High Channel (1752.6MHz)						
3505.2	-34.63	9.11	-25.52	-13	-12.52	H
5257.8	-43.88	12.56	-31.32	-13	-18.32	H
3505.2	-35.8	9.11	-26.69	-13	-13.69	V
5257.8	-42.36	12.56	-29.8	-13	-16.8	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	-42.47	10.54	-31.93	-13	-18.93	H
5557.2	-46.61	13.37	-33.24	-13	-20.24	H
3704.8	-39.71	10.54	-29.17	-13	-16.17	V
5557.2	-46.79	13.37	-33.42	-13	-20.42	V
Middle Channel (1880MHz)						
3760.0	-40.99	10.64	-30.35	-13	-17.35	H
5640.0	-46.86	13.54	-33.32	-13	-20.32	H
3760.0	-42.37	10.64	-31.73	-13	-18.73	V
5640.0	-49.15	13.54	-35.61	-13	-22.61	V
High Channel (1907.6MHz)						
3815.2	-39.92	10.74	-29.18	-13	-16.18	H
5722.8	-47.31	13.71	-33.6	-13	-20.6	H
3815.2	-39.99	10.74	-29.25	-13	-16.25	V
5722.8	-49.69	13.71	-35.98	-13	-22.98	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, §27.54 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

---

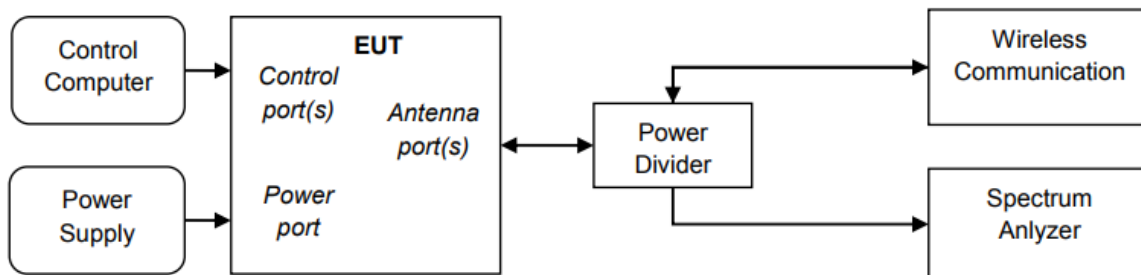
### 9.1 Standard Applicable

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

Please refer to Appendix F

**APPENDIX SUMMARY**

---

Project No.	WTX21X12136503W	Test Engineer	Gala
Start date	2021/12/16	Finish date	2021/12/24
Temperature	23°C	Humidity	32%
RF specifications	GSM/WCDMA		

<b>APPENDIX</b>	<b>Description of Test Item</b>	<b>Result</b>
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	33.93	33.59	33.44	29.21	29.01	28.88
GPRS(1Slot)	33.56	33.55	33.38	29.25	29.06	28.94
EGPRS(1Slot)	27.35	27.35	27.38	25.05	24.57	24.19

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	24.57	23.88	24.10	23.06	22.96	23.08
HSDPA Subtest-1	23.52	22.98	23.24	22.06	21.96	22.00
HSDPA Subtest-2	23.51	22.96	23.22	22.04	21.93	21.96
HSDPA Subtest-3	23.50	22.97	23.21	22.03	21.94	21.97
HSDPA Subtest-4	23.51	22.96	23.22	22.04	21.95	21.98
HSUPA Subtest-1	23.51	22.91	23.23	22.05	21.96	21.94
HSUPA Subtest-2	23.48	22.87	23.21	22.02	21.94	21.91
HSUPA Subtest-3	23.49	22.86	23.2	22.01	21.94	21.92
HSUPA Subtest-4	23.47	22.87	23.19	22.01	21.95	21.92
HSUPA Subtest-5	23.46	22.86	23.22	22.03	21.93	21.93

Conducted Average power (dBm)						
Band	WCDMA Band IV					
Channel	1312	1412	1513			
Frequency(MHz)	1712.4	1733.4	1752.6			
RMC 12.2k	22.96	22.87	22.87			
HSDPA Subtest-1	21.98	21.86	21.88			
HSDPA Subtest-2	21.95	21.84	21.86			
HSDPA Subtest-3	21.94	21.83	21.87			
HSDPA Subtest-4	21.95	21.84	21.85			
HSUPA Subtest-1	21.94	21.83	21.90			
HSUPA Subtest-2	21.92	21.8	21.87			
HSUPA Subtest-3	21.91	21.82	21.89			
HSUPA Subtest-4	21.91	21.81	21.87			
HSUPA Subtest-5	21.92	21.82	21.88			

## APPENDIX B

---

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

PCS1900				
Test Mode	Channel	Frequency (MHz)	PAR (dB)	Limit (dB)
GSM	661	1850.2	4.28	13
GPRS(1 Slot)	661	1850.2	4.98	13
EDGE(1 Slot)	661	1850.2	4.02	13

WCDMA Band IV				
Test Mode	Channel	Frequency (MHz)	PAR (dB)	Limit (dB)
WCDMA	1312	1712.4	5.13	13
	1412	1733.4	5.62	13
	1513	1752.6	5.87	13

WCDMA Band II				
Test Mode	Channel	Frequency (MHz)	PAR (dB)	Limit (dB)
WCDMA	9262	1852.4	5.79	13
	9400	1880.0	6.02	13
	9538	1907.6	5.54	13

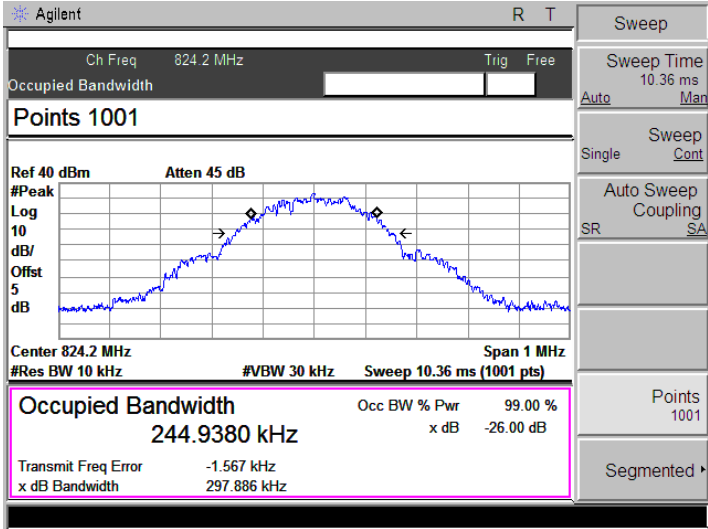
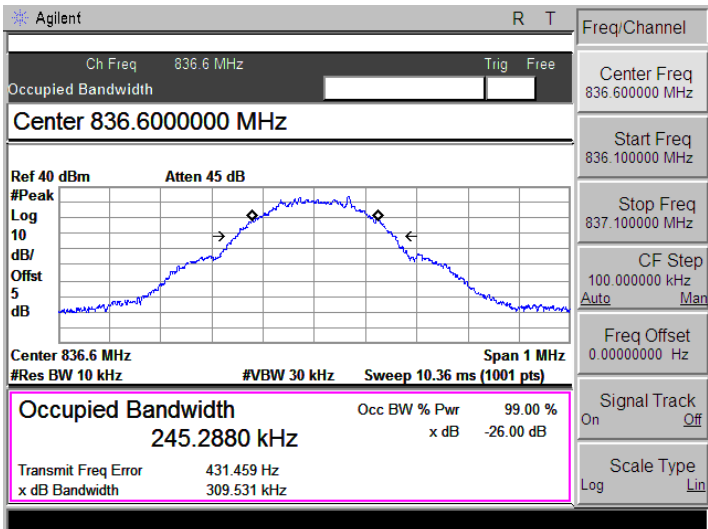
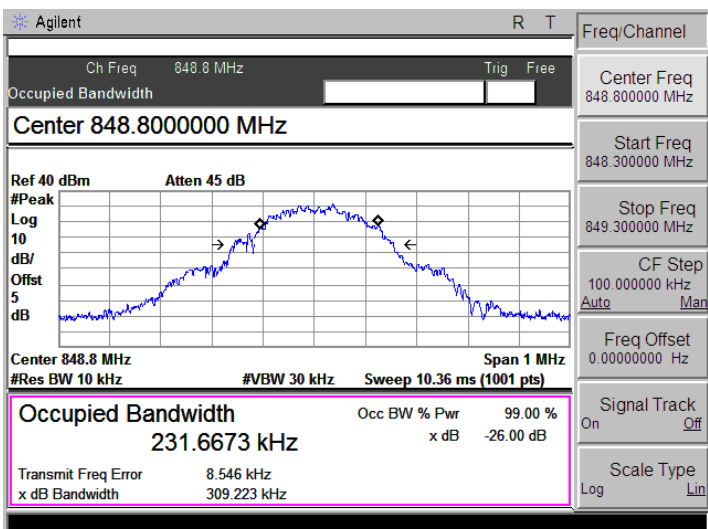
Note: Only the worst case was selected to record.

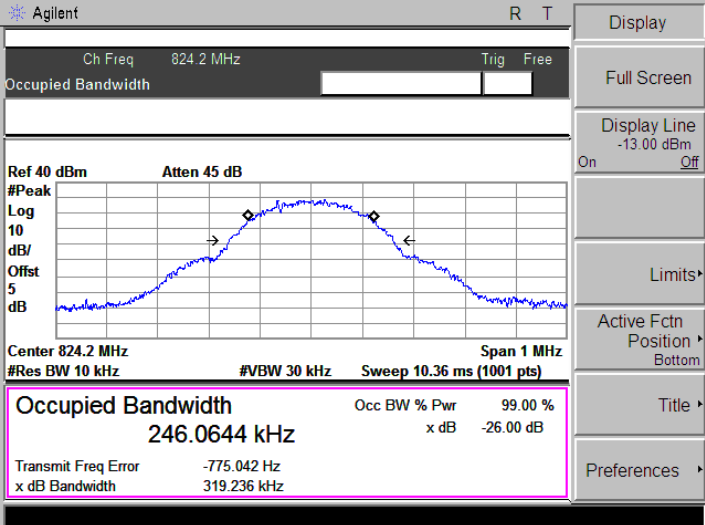
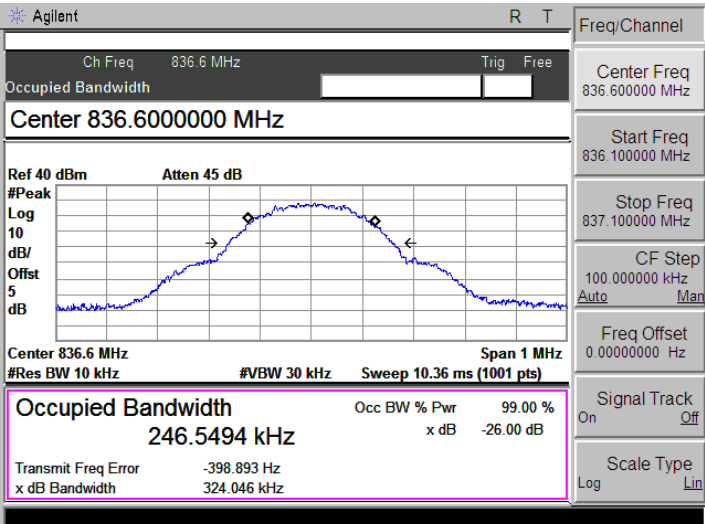
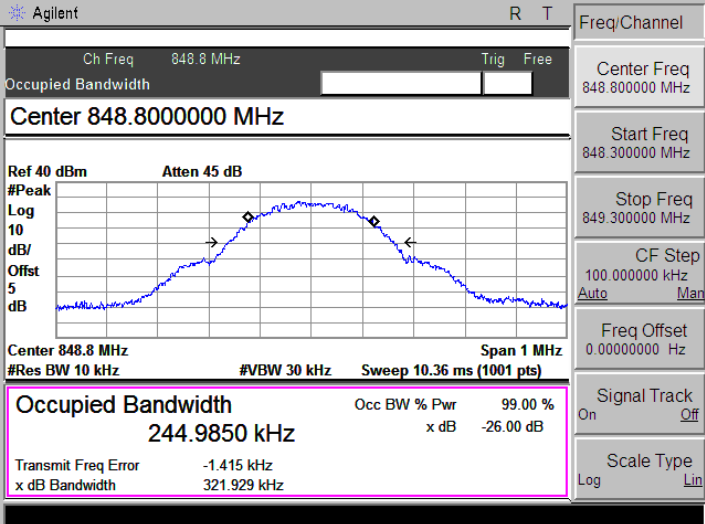


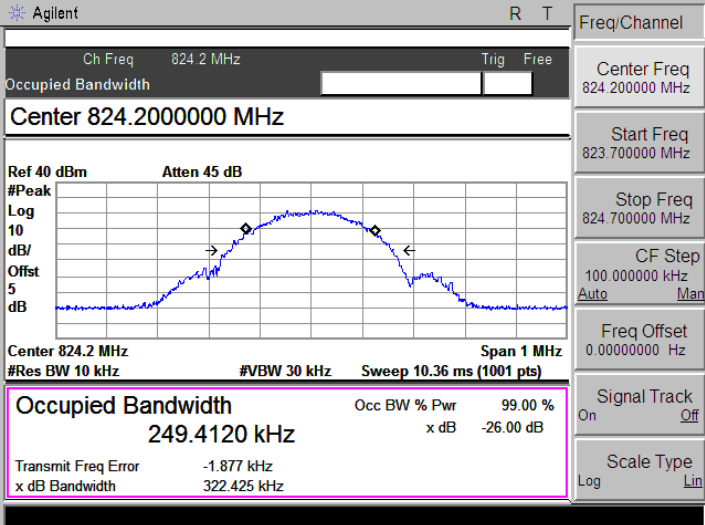
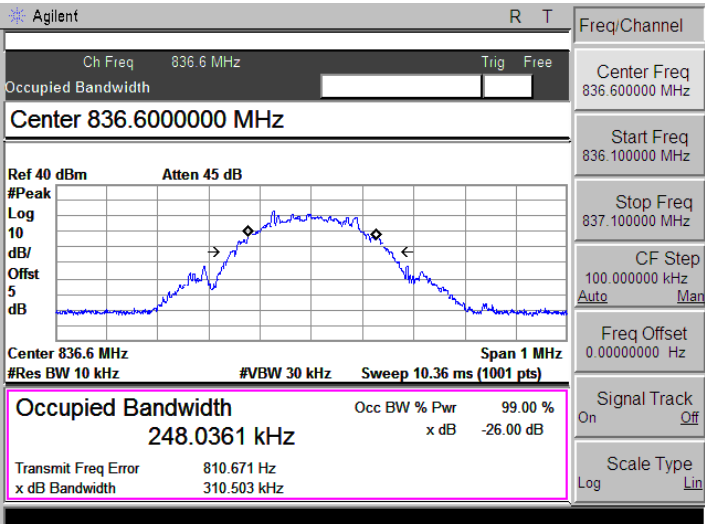
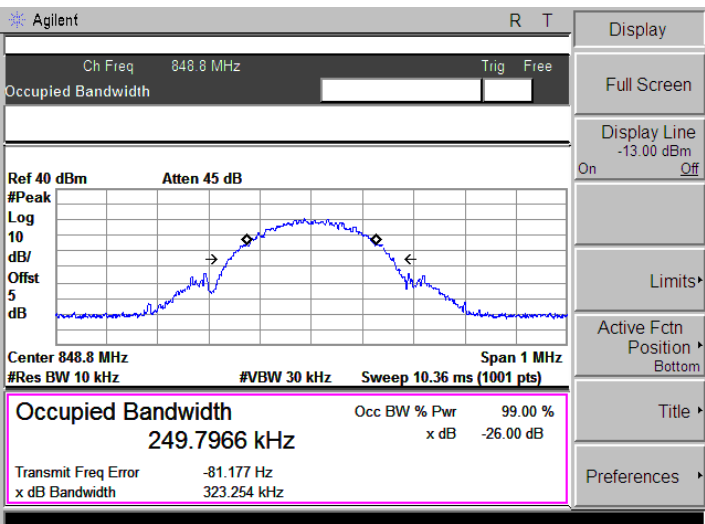
**APPENDIX C**

EUT Mode	Channel	Frequency (MHz)	99% Occupy bandwidth (kHz)	-26dB bandwidth (kHz)
GSM 850 (GMSK)	128	824.20	244.9380	297.886
	190	836.60	245.2880	309.531
	251	848.80	231.6673	309.223
GPRS850 (GMSK,1Slot)	128	824.20	246.0644	319.236
	190	836.60	246.5494	324.046
	251	848.80	244.9850	321.929
EGPRS850 (8PSK,1Slot)	128	824.20	249.4120	322.425
	190	836.60	248.0361	310.503
	251	848.80	249.7966	323.254
PCS1900 (GMSK)	512	1850.20	241.1560	310.701
	661	1880.00	239.7373	309.168
	810	1909.80	245.2509	325.186
GPRS1900 (GMSK,1Slot)	512	1850.20	243.1556	323.327
	661	1880.00	247.4781	308.126
	810	1909.80	244.6200	314.259
EGPRS1900 (8PSK,1Slot)	512	1850.20	245.1546	306.130
	661	1880.00	246.4089	306.995
	810	1909.80	249.1600	312.576

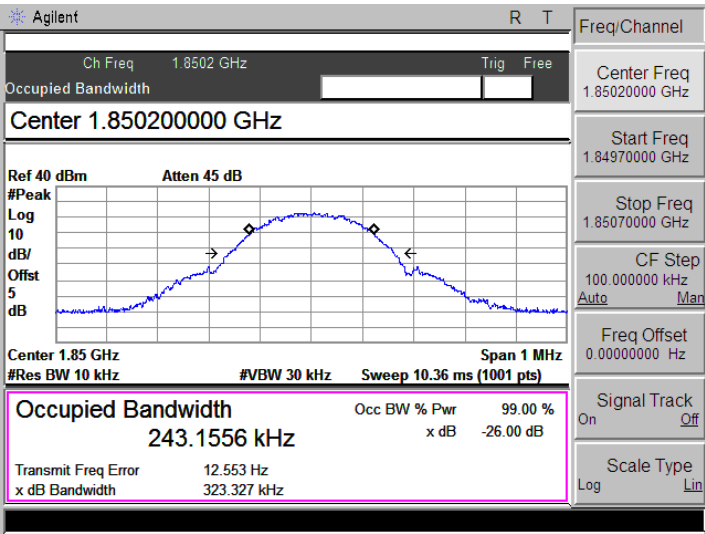
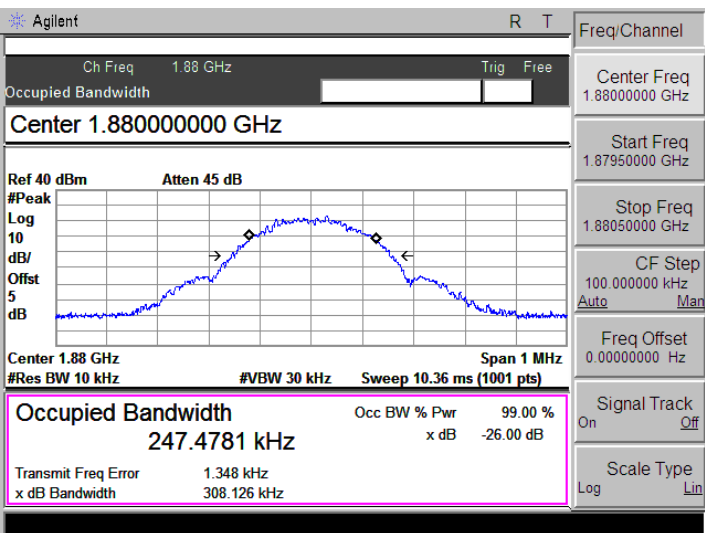
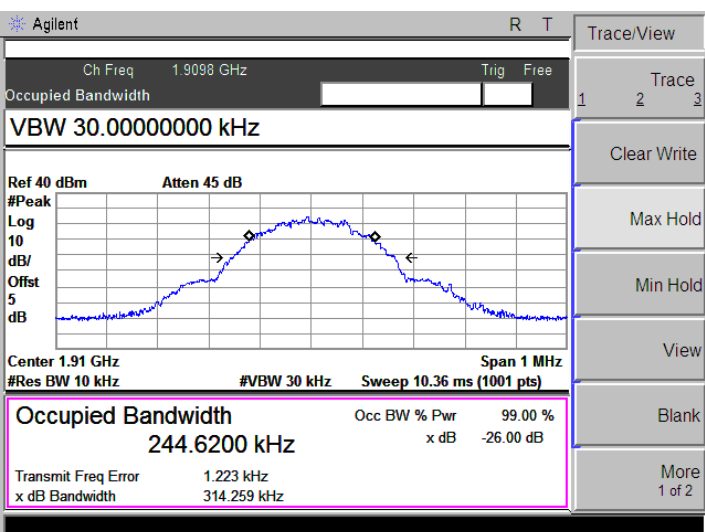
EUT Mode	Channel	Frequency (MHz)	99% Occupy bandwidth (kHz)	-26dB bandwidth (kHz)
WCDMA Band V	4132	826.40	4162.8	4712
	4183	836.60	4133.4	4667
	4233	846.60	4133.0	4701
HSDPA	4132	826.40	4161.9	4699
	4183	836.60	4150.8	4655
	4233	846.60	4165.7	4703
HSUPA	4132	826.40	4154.5	4685
	4183	836.60	4158.2	4714
	4233	846.60	4167.8	4683
WCDMA Band II	9262	1852.40	4154.6	4719
	9400	1880.00	4151.1	4718
	9538	1907.60	4154.2	4729
HSDPA	9262	1852.40	4154.7	4694
	9400	1880.00	4165.1	4708
	9538	1907.60	4166.9	4709
HSUPA	9262	1852.40	4164.2	4680
	9400	1880.00	4164.6	4690
	9538	1907.60	4151.7	4694
WCDMA Band IV	1312	1712.4	4153.6	4701
	1412	1733.4	4148.2	4704
	1513	1752.6	4146.6	4710
HSDPA	1312	1712.4	4166.1	4710
	1412	1733.4	4154.9	4698
	1513	1752.6	4160.5	4695
HSUPA	1312	1712.4	4164.0	4703
	1412	1733.4	4171.5	4688
	1513	1752.6	4159.0	4692

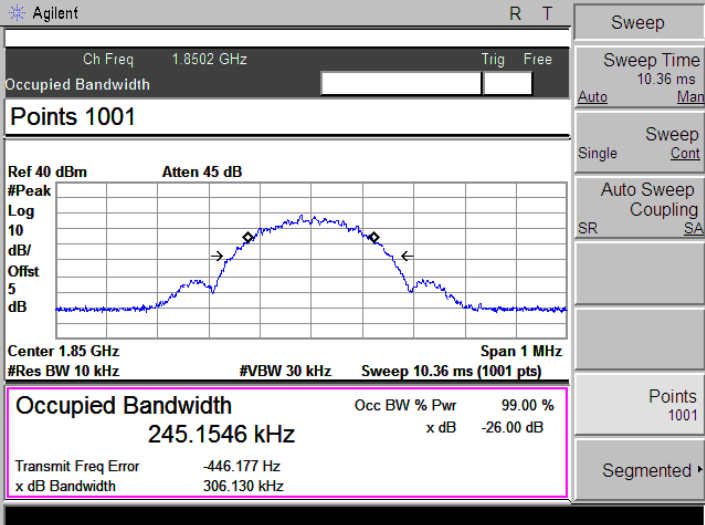
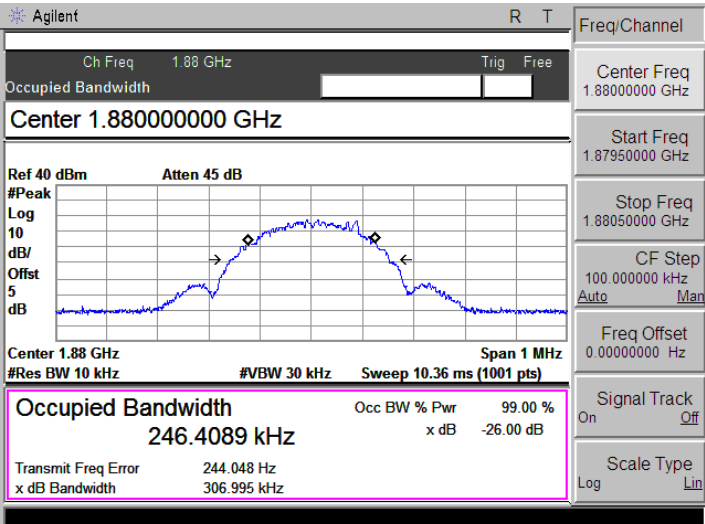
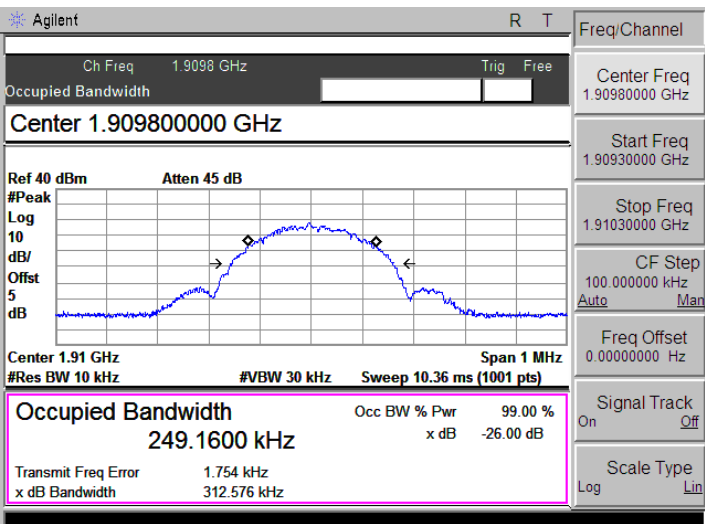
<p>GSM 850 (GMSK)-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 824.2 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Points 1001</p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log</p> <p>10 dB/</p> <p>Offst 5 dB</p> <p>Center 824.2 MHz Span 1 MHz</p> <p>#Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (1001 pts)</p> <p>Occupied Bandwidth 244.9380 kHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -1.567 kHz x dB Bandwidth 297.886 kHz</p> <p>Sweep</p> <p>Sweep Time 10.36 ms</p> <p>Auto Mar</p> <p>Single Sweep Cont</p> <p>Auto Sweep Coupling SA</p> <p>SR</p> <p>Points 1001</p> <p>Segmented</p>
<p>GSM 850 (GMSK)-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 40 dBm Atten 45 dB</p> <p>#Peak Log</p> <p>10 dB/</p> <p>Offst 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 245.2880 kHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 431.459 Hz x dB Bandwidth 309.531 kHz</p> <p>Freq/Channel</p> <p>Center Freq 836.600000 MHz</p> <p>Start Freq 836.100000 MHz</p> <p>Stop Freq 837.100000 MHz</p> <p>CF Step 100.000000 kHz</p> <p>Auto Mar</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>GSM 850 (GMSK)-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 40 dBm Atten 45 dB</p> <p>#Peak Log</p> <p>10 dB/</p> <p>Offst 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 231.6673 kHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 8.546 kHz x dB Bandwidth 309.223 kHz</p> <p>Freq/Channel</p> <p>Center Freq 848.800000 MHz</p> <p>Start Freq 848.300000 MHz</p> <p>Stop Freq 849.300000 MHz</p> <p>CF Step 100.000000 kHz</p> <p>Auto Mar</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>

<p>GPRS850 (GMSK,1Slot)-Low</p>	
<p>GPRS850 (GMSK,1Slot)-Middle</p>	
<p>GPRS850 (GMSK,1Slot)-High</p>	

<p>EGPRS850 (8PSK,1Slot)-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 824.2 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 824.200000 MHz</b></p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/Offst 5 dB</p> <p>Center 824.2 MHz Span 1 MHz #Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (1001 pts)</p> <p><b>Occupied Bandwidth 249.4120 kHz</b> Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -1.877 kHz x dB Bandwidth 322.425 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>EGPRS850 (8PSK,1Slot)-Middle</p>	 <p>Agilent R T</p> <p>Ch Freq 836.6 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 836.600000 MHz</b></p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/Offst 5 dB</p> <p>Center 836.6 MHz Span 1 MHz #Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (1001 pts)</p> <p><b>Occupied Bandwidth 248.0361 kHz</b> Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 810.671 Hz x dB Bandwidth 310.503 kHz</p> <p>Freq/Channel</p> <p>Center Freq 836.600000 MHz</p> <p>Start Freq 836.100000 MHz</p> <p>Stop Freq 837.100000 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>EGPRS850 (8PSK,1Slot)-High</p>	 <p>Agilent R T</p> <p>Ch Freq 848.8 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 848.8 MHz</b></p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/Offst 5 dB</p> <p>Center 848.8 MHz Span 1 MHz #Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (1001 pts)</p> <p><b>Occupied Bandwidth 249.7966 kHz</b> Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -81.177 Hz x dB Bandwidth 323.254 kHz</p> <p>Display</p> <p>Full Screen</p> <p>Display Line -13.00 dBm On Off</p> <p>Limits</p> <p>Active Fctn Position Bottom</p> <p>Title</p> <p>Preferences</p>

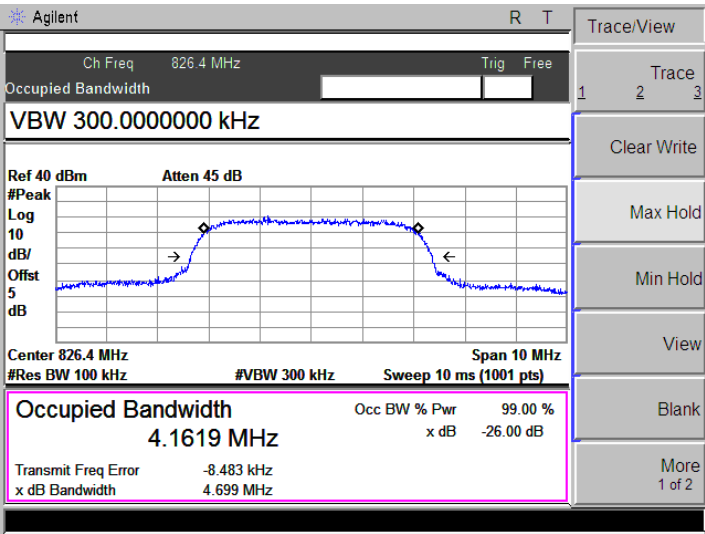
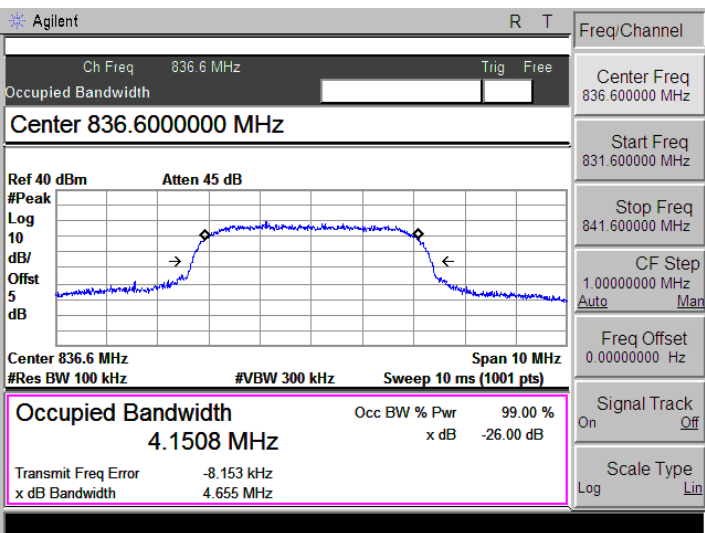
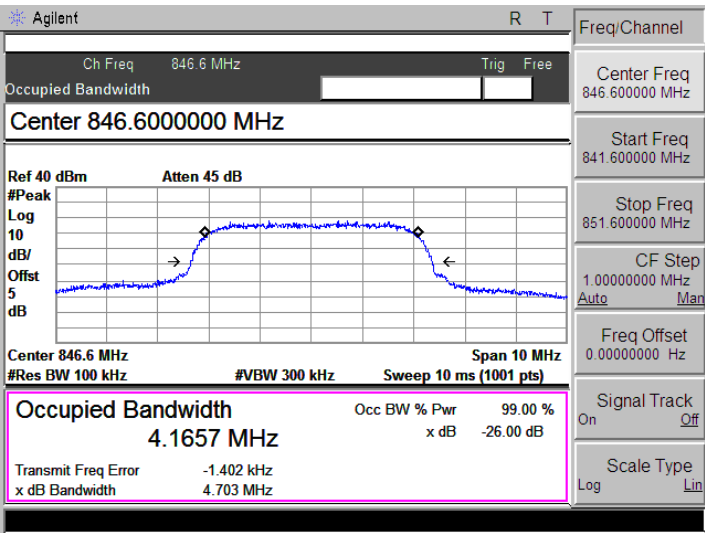
<p>PCS1900 (GMSK)-Low</p>	<p>Agilent R T</p> <p>Ch Freq 1.8502 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 1.85020000 GHz</b></p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/Offst 5 dB</p> <p>Center 1.85 GHz Span 1 MHz #Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (401 pts)</p> <p><b>Occupied Bandwidth 241.1560 kHz</b> Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 276.326 Hz x dB Bandwidth 310.701 kHz</p> <p>Freq/Channel</p> <p>Center Freq 1.85020000 GHz</p> <p>Start Freq 1.84970000 GHz</p> <p>Stop Freq 1.85070000 GHz</p> <p>CF Step 100.000000 kHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>PCS1900 (GMSK)-Middle</p>	<p>Agilent R T</p> <p>Ch Freq 1.88 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 1.88000000 GHz</b></p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/Offst 5 dB</p> <p>Center 1.88 GHz Span 1 MHz #Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (401 pts)</p> <p><b>Occupied Bandwidth 239.7373 kHz</b> Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -217.605 Hz x dB Bandwidth 309.168 kHz</p> <p>Freq/Channel</p> <p>Center Freq 1.88000000 GHz</p> <p>Start Freq 1.87950000 GHz</p> <p>Stop Freq 1.88050000 GHz</p> <p>CF Step 100.000000 kHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>PCS1900 (GMSK)-High</p>	<p>Agilent R T</p> <p>Ch Freq 1.9098 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 1.90980000 GHz</b></p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/Offst 5 dB</p> <p>Center 1.91 GHz Span 1 MHz #Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (401 pts)</p> <p><b>Occupied Bandwidth 245.2509 kHz</b> Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -97.520 Hz x dB Bandwidth 325.186 kHz</p> <p>Meas Setup</p> <p>Avg Number 10 On Off</p> <p>Avg Mode Exp Repeat</p> <p>Max Hold On Off</p> <p>Occ BW % Pwr 99.00 %</p> <p>OBW Span 1.00000000 MHz</p> <p>x dB -26.00 dB</p> <p>Optimize Ref Level</p>

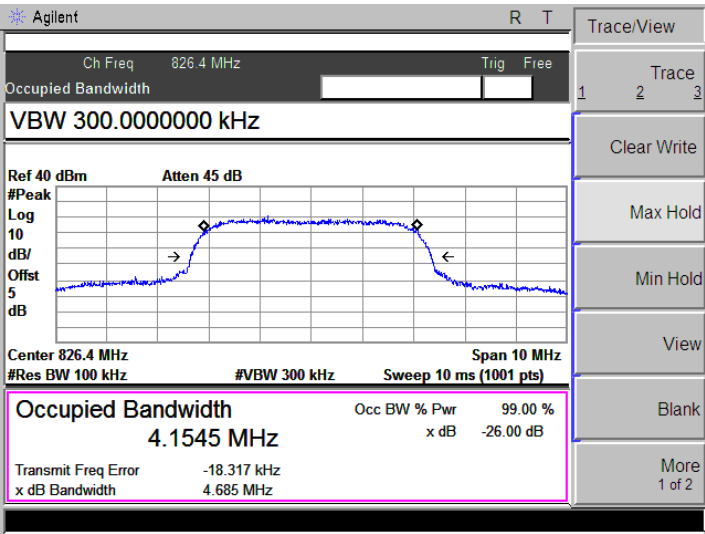
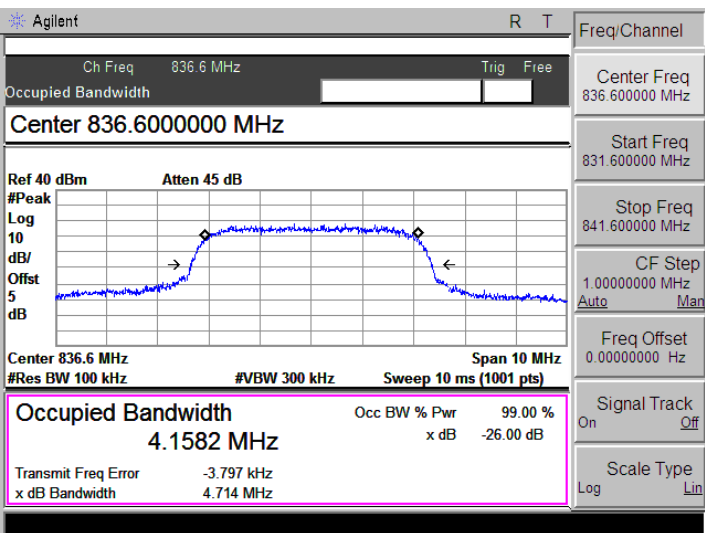
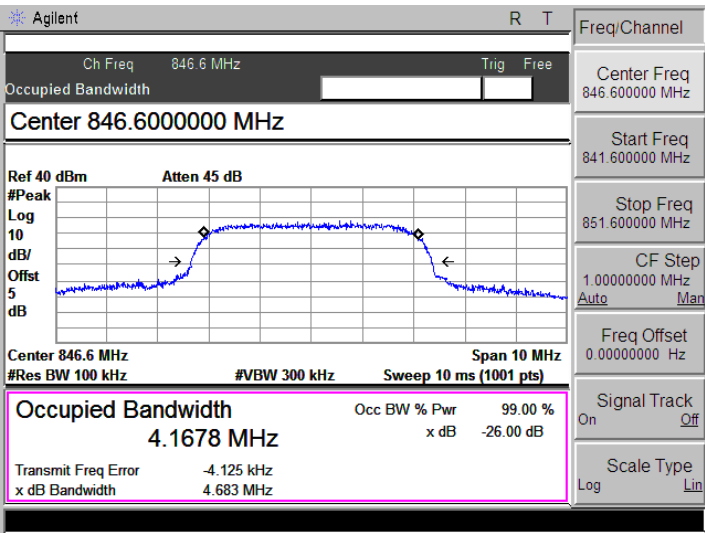
<p>GPRS1900 (GMSK,1Slot)-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 1.8502 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 1.85020000 GHz</b></p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/Offst 5 dB</p> <p>Center 1.85 GHz Span 1 MHz</p> <p>#Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (1001 pts)</p> <p><b>Occupied Bandwidth 243.1556 kHz</b> Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 12.553 Hz</p> <p>x dB Bandwidth 323.327 kHz</p> <p>Freq/Channel</p> <p>Center Freq 1.85020000 GHz</p> <p>Start Freq 1.84970000 GHz</p> <p>Stop Freq 1.85070000 GHz</p> <p>CF Step 100.000000 kHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>GPRS1900 (GMSK,1Slot)-Middle</p>	 <p>Agilent R T</p> <p>Ch Freq 1.88 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 1.88000000 GHz</b></p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/Offst 5 dB</p> <p>Center 1.88 GHz Span 1 MHz</p> <p>#Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (1001 pts)</p> <p><b>Occupied Bandwidth 247.4781 kHz</b> Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 1.348 kHz</p> <p>x dB Bandwidth 308.126 kHz</p> <p>Freq/Channel</p> <p>Center Freq 1.88000000 GHz</p> <p>Start Freq 1.87950000 GHz</p> <p>Stop Freq 1.88050000 GHz</p> <p>CF Step 100.000000 kHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>GPRS1900 (GMSK,1Slot)-High</p>	 <p>Agilent R T</p> <p>Ch Freq 1.9098 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>VBW 30.00000000 kHz</b></p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/Offst 5 dB</p> <p>Center 1.91 GHz Span 1 MHz</p> <p>#Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (1001 pts)</p> <p><b>Occupied Bandwidth 244.6200 kHz</b> Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 1.223 kHz</p> <p>x dB Bandwidth 314.259 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>EGPRS1900 (8PSK,1Slot)-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 1.8502 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Points 1001</p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/ Offst 5 dB</p> <p>Center 1.85 GHz Span 1 MHz</p> <p>#Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (1001 pts)</p> <p><b>Occupied Bandwidth</b> 245.1546 kHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -446.177 Hz x dB Bandwidth 306.130 kHz</p> <p>Sweep: Sweep Time 10.36 ms, Auto, Man, Single, Cont, Auto Sweep Coupling SA, Points 1001, Segmented</p>
<p>EGPRS1900 (8PSK,1Slot)-Middle</p>	 <p>Agilent R T</p> <p>Ch Freq 1.88 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Center 1.88000000 GHz</p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/ Offst 5 dB</p> <p>Center 1.88 GHz Span 1 MHz</p> <p>#Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (1001 pts)</p> <p><b>Occupied Bandwidth</b> 246.4089 kHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 244.048 Hz x dB Bandwidth 306.995 kHz</p> <p>Freq/Channel: Center Freq 1.88000000 GHz, Start Freq 1.87950000 GHz, Stop Freq 1.88050000 GHz, CF Step 100.000000 kHz, Auto, Man, Freq Offset 0.00000000 Hz, Signal Track On, Off, Scale Type Log, Lin</p>
<p>EGPRS1900 (8PSK,1Slot)-High</p>	 <p>Agilent R T</p> <p>Ch Freq 1.9098 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Center 1.90980000 GHz</p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/ Offst 5 dB</p> <p>Center 1.91 GHz Span 1 MHz</p> <p>#Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (1001 pts)</p> <p><b>Occupied Bandwidth</b> 249.1600 kHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 1.754 kHz x dB Bandwidth 312.576 kHz</p> <p>Freq/Channel: Center Freq 1.90980000 GHz, Start Freq 1.90930000 GHz, Stop Freq 1.91030000 GHz, CF Step 100.000000 kHz, Auto, Man, Freq Offset 0.00000000 Hz, Signal Track On, Off, Scale Type Log, Lin</p>

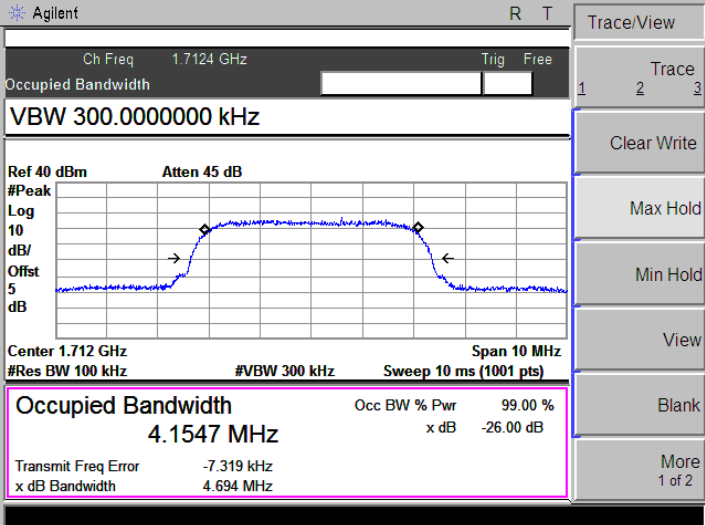
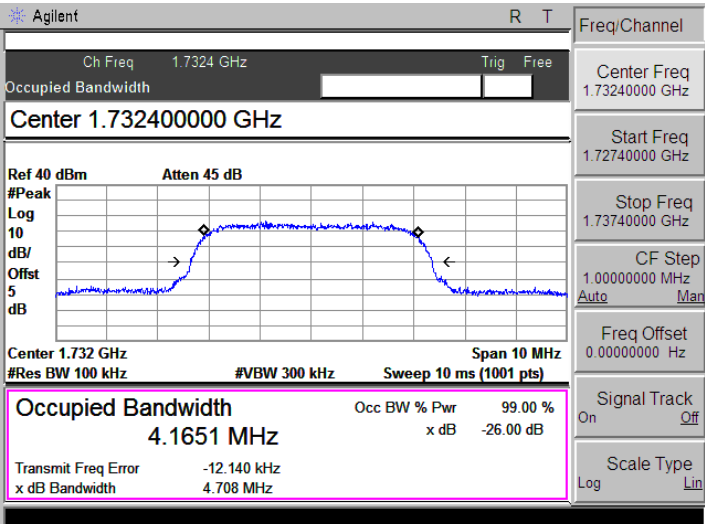
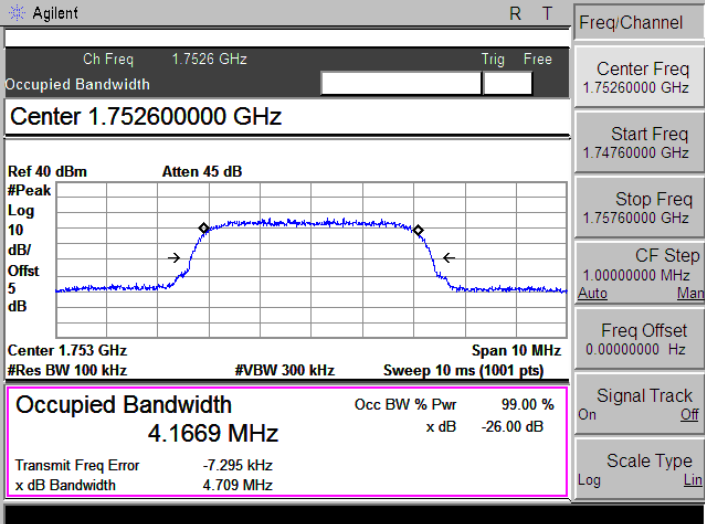


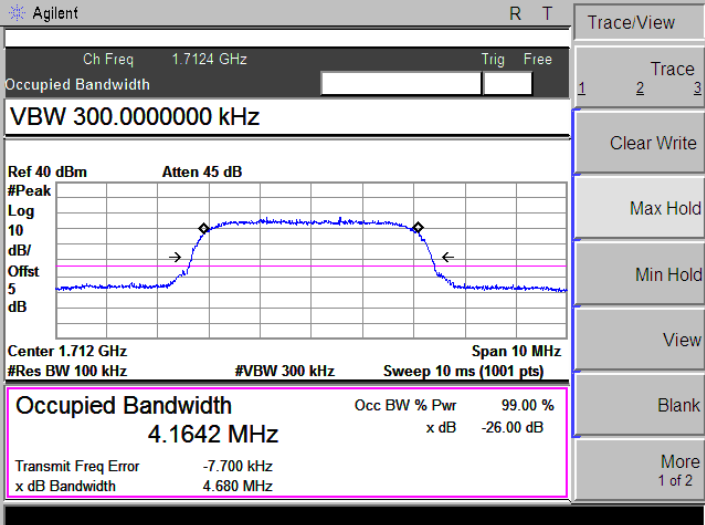
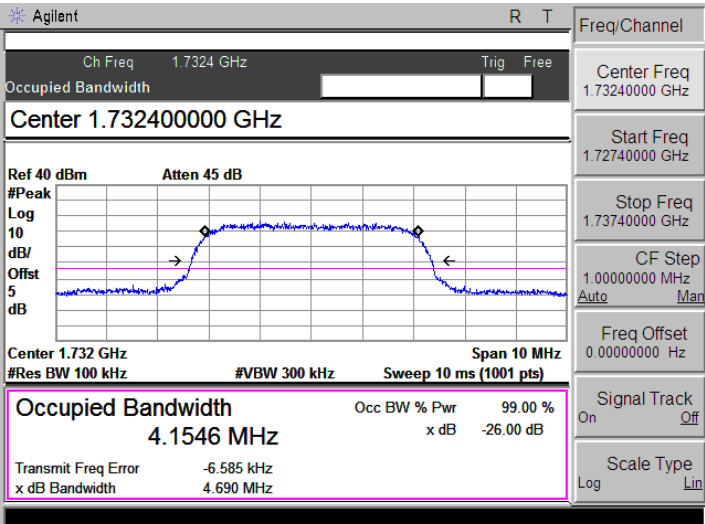
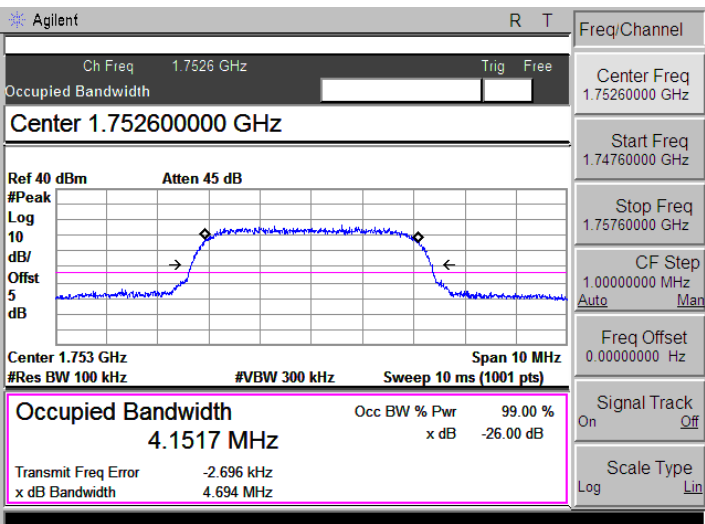
<p>WCDMA Band V-Low</p>	<p>Agilent R T</p> <p>Ch Freq 826.4 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 826.400000 MHz</b></p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/ Offset 5 dB</p> <p>Center 826.4 MHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 4.1628 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -11.305 kHz x dB Bandwidth 4.712 MHz</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>WCDMA Band V-Middle</p>	<p>Agilent R T</p> <p>Ch Freq 836.6 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 836.600000 MHz</b></p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/ Offset 5 dB</p> <p>Center 836.6 MHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 4.1434 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -8.453 kHz x dB Bandwidth 4.667 MHz</p> <p>Freq/Channel</p> <p>Center Freq 836.600000 MHz</p> <p>Start Freq 831.600000 MHz</p> <p>Stop Freq 841.600000 MHz</p> <p>CF Step 1.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>WCDMA Band V-High</p>	<p>Agilent R T</p> <p>Ch Freq 836.6 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 836.6 MHz</b></p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/ Offset 5 dB</p> <p>Center 836.6 MHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 4.1330 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -6.487 kHz x dB Bandwidth 4.701 MHz</p> <p>Freq/Channel</p> <p>Center Freq 836.600000 MHz</p> <p>Start Freq 831.600000 MHz</p> <p>Stop Freq 841.600000 MHz</p> <p>CF Step 1.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>

<p>HSDPA-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 826.4 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>VBW 300.000000 kHz</b></p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/Offst 5 dB</p> <p>Center 826.4 MHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 4.1619 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -8.483 kHz</p> <p>x dB Bandwidth 4.699 MHz</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>HSDPA-Middle</p>	 <p>Agilent R T</p> <p>Ch Freq 836.6 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 836.600000 MHz</b></p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/Offst 5 dB</p> <p>Center 836.6 MHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 4.1508 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -8.153 kHz</p> <p>x dB Bandwidth 4.655 MHz</p> <p>Freq/Channel</p> <p>Center Freq 836.600000 MHz</p> <p>Start Freq 831.600000 MHz</p> <p>Stop Freq 841.600000 MHz</p> <p>CF Step 1.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>HSDPA-High</p>	 <p>Agilent R T</p> <p>Ch Freq 846.6 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 846.600000 MHz</b></p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/Offst 5 dB</p> <p>Center 846.6 MHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 4.1657 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -1.402 kHz</p> <p>x dB Bandwidth 4.703 MHz</p> <p>Freq/Channel</p> <p>Center Freq 846.600000 MHz</p> <p>Start Freq 841.600000 MHz</p> <p>Stop Freq 851.600000 MHz</p> <p>CF Step 1.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>

<p>HSUPA-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 826.4 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>VBW 300.000000 kHz</b></p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/Offst 5 dB</p> <p>Center 826.4 MHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 4.1545 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -18.317 kHz</p> <p>x dB Bandwidth 4.685 MHz</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>HSUPA-Middle</p>	 <p>Agilent R T</p> <p>Ch Freq 836.6 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 836.600000 MHz</b></p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/Offst 5 dB</p> <p>Center 836.6 MHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 4.1582 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -3.797 kHz</p> <p>x dB Bandwidth 4.714 MHz</p> <p>Freq/Channel</p> <p>Center Freq 836.600000 MHz</p> <p>Start Freq 831.600000 MHz</p> <p>Stop Freq 841.600000 MHz</p> <p>CF Step 1.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>HSUPA-High</p>	 <p>Agilent R T</p> <p>Ch Freq 846.6 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 846.600000 MHz</b></p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/Offst 5 dB</p> <p>Center 846.6 MHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 4.1678 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -4.125 kHz</p> <p>x dB Bandwidth 4.683 MHz</p> <p>Freq/Channel</p> <p>Center Freq 846.600000 MHz</p> <p>Start Freq 841.600000 MHz</p> <p>Stop Freq 851.600000 MHz</p> <p>CF Step 1.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>

<p>WCDMA Band IV-Low</p>	<p>Agilent R T</p> <p>Ch Freq 1.7124 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/Offst 5 dB</p> <p>Center 1.712 GHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 4.1546 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -7.138 kHz</p> <p>x dB Bandwidth 4.719 MHz</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>WCDMA Band IV-Middle</p>	<p>Agilent R T</p> <p>Ch Freq 1.7324 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 1.732400000 GHz</b></p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/Offst 5 dB</p> <p>Center 1.732 GHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 4.1511 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -6.812 kHz</p> <p>x dB Bandwidth 4.718 MHz</p> <p>Freq/Channel</p> <p>Center Freq 1.73240000 GHz</p> <p>Start Freq 1.72740000 GHz</p> <p>Stop Freq 1.73740000 GHz</p> <p>CF Step 1.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>WCDMA Band IV-High</p>	<p>Agilent R T</p> <p>Ch Freq 1.7526 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 1.752600000 GHz</b></p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/Offst 5 dB</p> <p>Center 1.753 GHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 4.1542 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -6.233 kHz</p> <p>x dB Bandwidth 4.729 MHz</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>HSDPA-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 1.7124 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>VBW 300.000000 kHz</b></p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log dB/Offst 5 dB</p> <p>Center 1.712 GHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 4.1547 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -7.319 kHz</p> <p>x dB Bandwidth 4.694 MHz</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>HSDPA-Middle</p>	 <p>Agilent R T</p> <p>Ch Freq 1.7324 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 1.73240000 GHz</b></p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log dB/Offst 5 dB</p> <p>Center 1.732 GHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 4.1651 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -12.140 kHz</p> <p>x dB Bandwidth 4.708 MHz</p> <p>Freq/Channel</p> <p>Center Freq 1.73240000 GHz</p> <p>Start Freq 1.72740000 GHz</p> <p>Stop Freq 1.73740000 GHz</p> <p>CF Step 1.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>HSDPA-High</p>	 <p>Agilent R T</p> <p>Ch Freq 1.7526 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 1.75260000 GHz</b></p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log dB/Offst 5 dB</p> <p>Center 1.753 GHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 4.1669 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -7.295 kHz</p> <p>x dB Bandwidth 4.709 MHz</p> <p>Freq/Channel</p> <p>Center Freq 1.75260000 GHz</p> <p>Start Freq 1.74760000 GHz</p> <p>Stop Freq 1.75760000 GHz</p> <p>CF Step 1.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>

<p>HSUPA-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 1.712 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>VBW 300.000000 kHz</b></p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/Offst 5 dB</p> <p>Center 1.712 GHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <table border="1"> <tr> <td><b>Occupied Bandwidth</b></td> <td>Occ BW % Pwr</td> <td>99.00 %</td> </tr> <tr> <td><b>4.1642 MHz</b></td> <td>x dB</td> <td>-26.00 dB</td> </tr> <tr> <td>Transmit Freq Error</td> <td>-7.700 kHz</td> <td></td> </tr> <tr> <td>x dB Bandwidth</td> <td>4.680 MHz</td> <td></td> </tr> </table> <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>	<b>Occupied Bandwidth</b>	Occ BW % Pwr	99.00 %	<b>4.1642 MHz</b>	x dB	-26.00 dB	Transmit Freq Error	-7.700 kHz		x dB Bandwidth	4.680 MHz	
<b>Occupied Bandwidth</b>	Occ BW % Pwr	99.00 %											
<b>4.1642 MHz</b>	x dB	-26.00 dB											
Transmit Freq Error	-7.700 kHz												
x dB Bandwidth	4.680 MHz												
<p>HSUPA-Middle</p>	 <p>Agilent R T</p> <p>Ch Freq 1.7324 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 1.73240000 GHz</b></p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/Offst 5 dB</p> <p>Center 1.732 GHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <table border="1"> <tr> <td><b>Occupied Bandwidth</b></td> <td>Occ BW % Pwr</td> <td>99.00 %</td> </tr> <tr> <td><b>4.1546 MHz</b></td> <td>x dB</td> <td>-26.00 dB</td> </tr> <tr> <td>Transmit Freq Error</td> <td>-6.585 kHz</td> <td></td> </tr> <tr> <td>x dB Bandwidth</td> <td>4.690 MHz</td> <td></td> </tr> </table> <p>Freq/Channel</p> <p>Center Freq 1.73240000 GHz</p> <p>Start Freq 1.72740000 GHz</p> <p>Stop Freq 1.73740000 GHz</p> <p>CF Step 1.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>	<b>Occupied Bandwidth</b>	Occ BW % Pwr	99.00 %	<b>4.1546 MHz</b>	x dB	-26.00 dB	Transmit Freq Error	-6.585 kHz		x dB Bandwidth	4.690 MHz	
<b>Occupied Bandwidth</b>	Occ BW % Pwr	99.00 %											
<b>4.1546 MHz</b>	x dB	-26.00 dB											
Transmit Freq Error	-6.585 kHz												
x dB Bandwidth	4.690 MHz												
<p>HSUPA-High</p>	 <p>Agilent R T</p> <p>Ch Freq 1.7526 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 1.75260000 GHz</b></p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/Offst 5 dB</p> <p>Center 1.753 GHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <table border="1"> <tr> <td><b>Occupied Bandwidth</b></td> <td>Occ BW % Pwr</td> <td>99.00 %</td> </tr> <tr> <td><b>4.1517 MHz</b></td> <td>x dB</td> <td>-26.00 dB</td> </tr> <tr> <td>Transmit Freq Error</td> <td>-2.696 kHz</td> <td></td> </tr> <tr> <td>x dB Bandwidth</td> <td>4.694 MHz</td> <td></td> </tr> </table> <p>Freq/Channel</p> <p>Center Freq 1.75260000 GHz</p> <p>Start Freq 1.74760000 GHz</p> <p>Stop Freq 1.75760000 GHz</p> <p>CF Step 1.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>	<b>Occupied Bandwidth</b>	Occ BW % Pwr	99.00 %	<b>4.1517 MHz</b>	x dB	-26.00 dB	Transmit Freq Error	-2.696 kHz		x dB Bandwidth	4.694 MHz	
<b>Occupied Bandwidth</b>	Occ BW % Pwr	99.00 %											
<b>4.1517 MHz</b>	x dB	-26.00 dB											
Transmit Freq Error	-2.696 kHz												
x dB Bandwidth	4.694 MHz												

<p>WCDMA Band II-Low</p>	
<p>WCDMA Band II-Middle</p>	
<p>WCDMA Band II-High</p>	

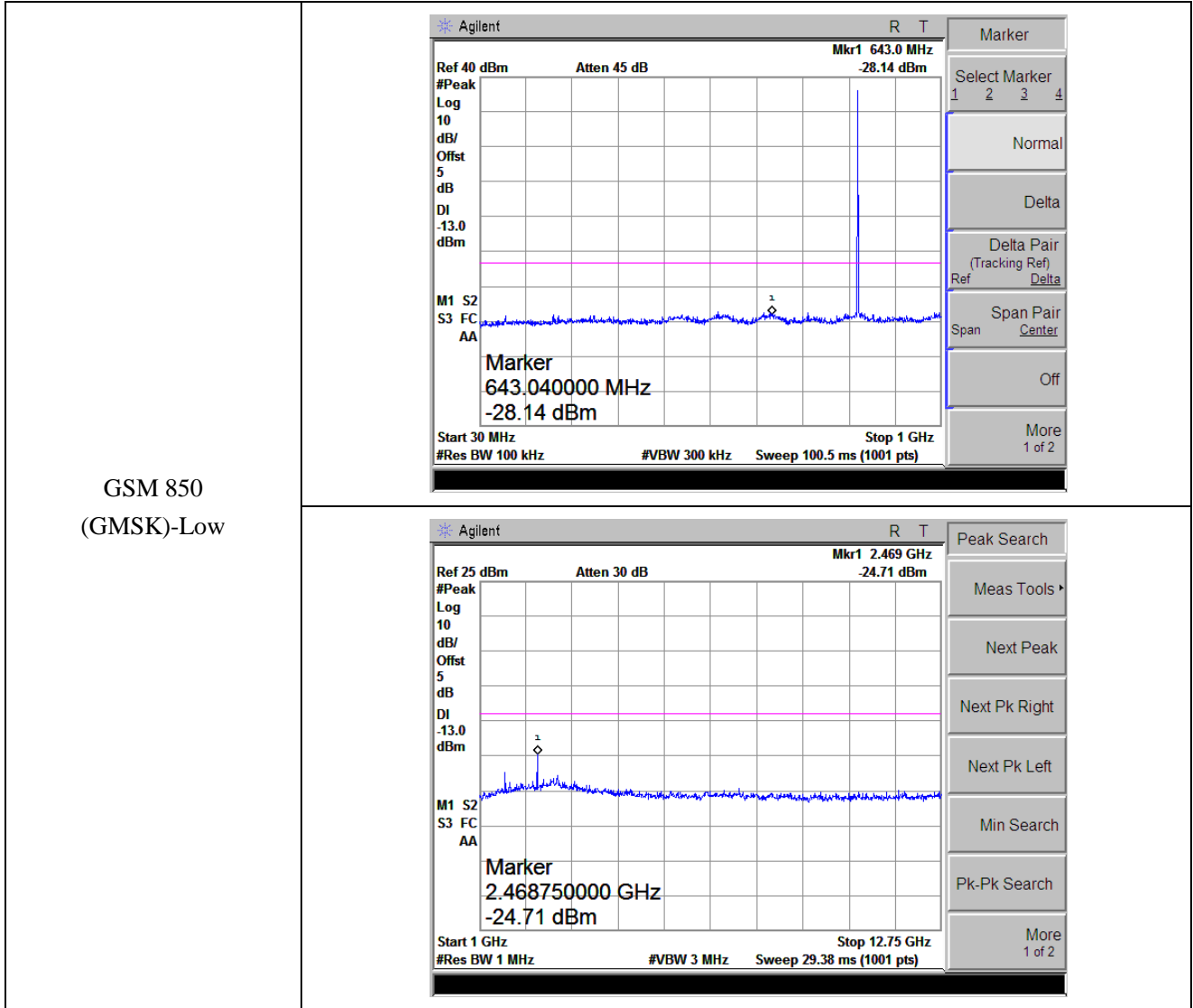
<p>HSDPA-Low</p>	<p>Agilent R T</p> <p>Ch Freq 1.8524 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 1.85240000 GHz</b></p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/Offst 5 dB</p> <p>Center 1.852 GHz Span 10 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 4.1661 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -13.091 kHz x dB Bandwidth 4.710 MHz</p> <p>Freq/Channel</p> <p>Center Freq 1.85240000 GHz</p> <p>Start Freq 1.84740000 GHz</p> <p>Stop Freq 1.85740000 GHz</p> <p>CF Step 1.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>HSDPA-Middle</p>	<p>Agilent R T</p> <p>Ch Freq 1.88 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 1.88000000 GHz</b></p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/Offst 5 dB</p> <p>Center 1.88 GHz Span 10 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 4.1549 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -18.972 kHz x dB Bandwidth 4.698 MHz</p> <p>Freq/Channel</p> <p>Center Freq 1.88000000 GHz</p> <p>Start Freq 1.87500000 GHz</p> <p>Stop Freq 1.88500000 GHz</p> <p>CF Step 1.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>HSDPA-High</p>	<p>Agilent R T</p> <p>Ch Freq 1.9076 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 1.90760000 GHz</b></p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/Offst 5 dB</p> <p>Center 1.908 GHz Span 10 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 4.1605 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -23.319 kHz x dB Bandwidth 4.695 MHz</p> <p>Freq/Channel</p> <p>Center Freq 1.90760000 GHz</p> <p>Start Freq 1.90260000 GHz</p> <p>Stop Freq 1.91260000 GHz</p> <p>CF Step 1.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>



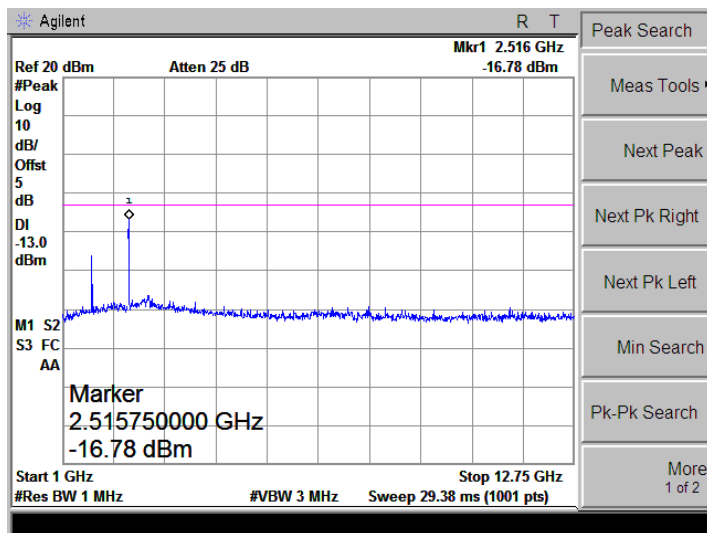
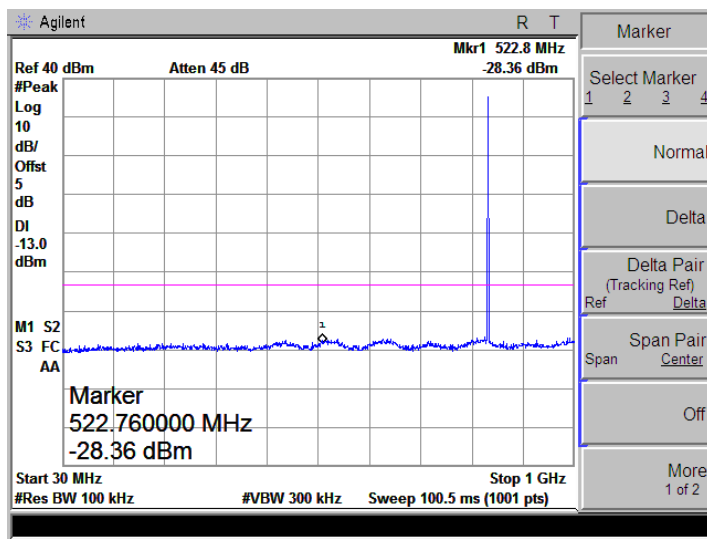
<p>HSUPA-Low</p>	<p>Agilent R T</p> <p>Ch Freq 1.852 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>VBW 300.000000 kHz</b></p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log dB/Offst 10 5 dB</p> <p>Center 1.852 GHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 4.1640 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -9.532 kHz x dB Bandwidth 4.703 MHz</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>HSUPA-Middle</p>	<p>Agilent R T</p> <p>Ch Freq 1.88 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 1.88000000 GHz</b></p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log dB/Offst 10 5 dB</p> <p>Center 1.88 GHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 4.1715 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -14.059 kHz x dB Bandwidth 4.688 MHz</p> <p>Freq/Channel</p> <p>Center Freq 1.88000000 GHz</p> <p>Start Freq 1.87500000 GHz</p> <p>Stop Freq 1.88500000 GHz</p> <p>CF Step 1.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>HSUPA-High</p>	<p>Agilent R T</p> <p>Ch Freq 1.9076 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 1.90760000 GHz</b></p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log dB/Offst 10 5 dB</p> <p>Center 1.908 GHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 4.1590 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -21.575 kHz x dB Bandwidth 4.692 MHz</p> <p>Freq/Channel</p> <p>Center Freq 1.90760000 GHz</p> <p>Start Freq 1.90260000 GHz</p> <p>Stop Freq 1.91260000 GHz</p> <p>CF Step 1.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>

## APPENDIX D

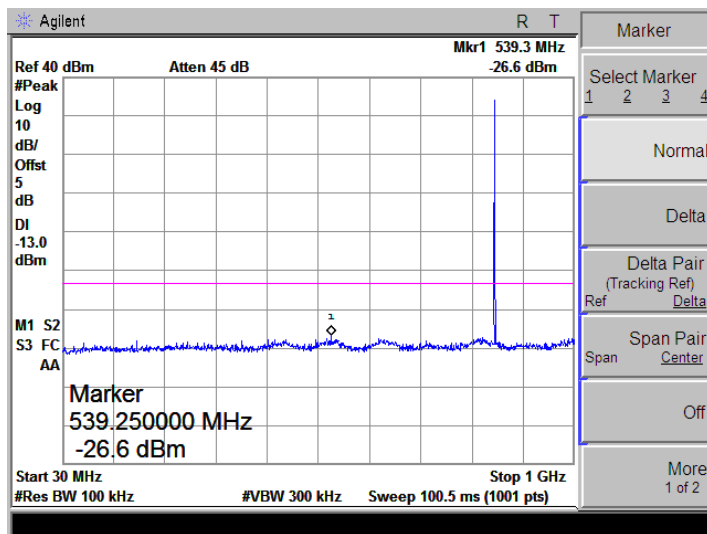
### Out of Band Emissions at Antenna Terminal

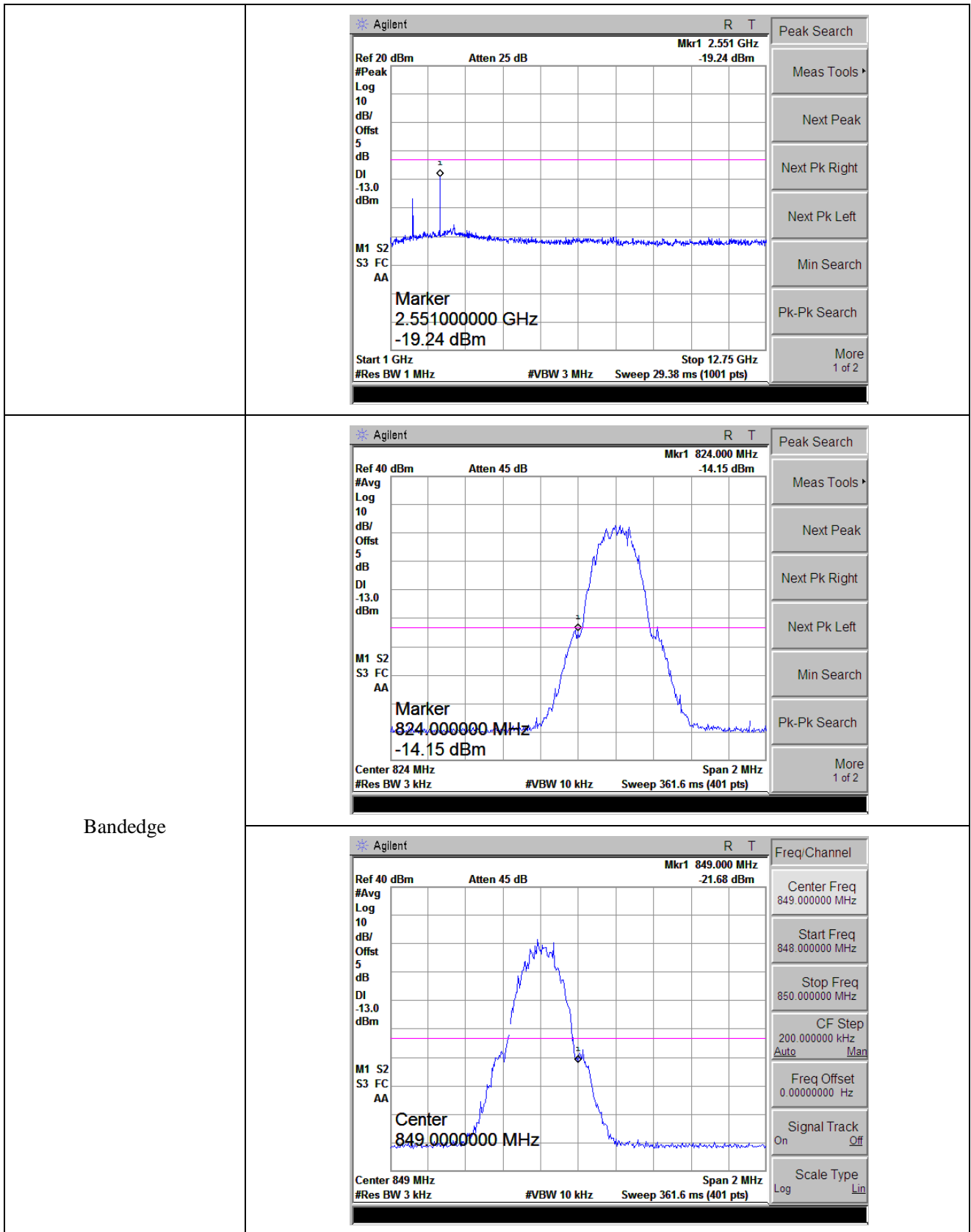


GSM 850  
(GMSK)-Middle

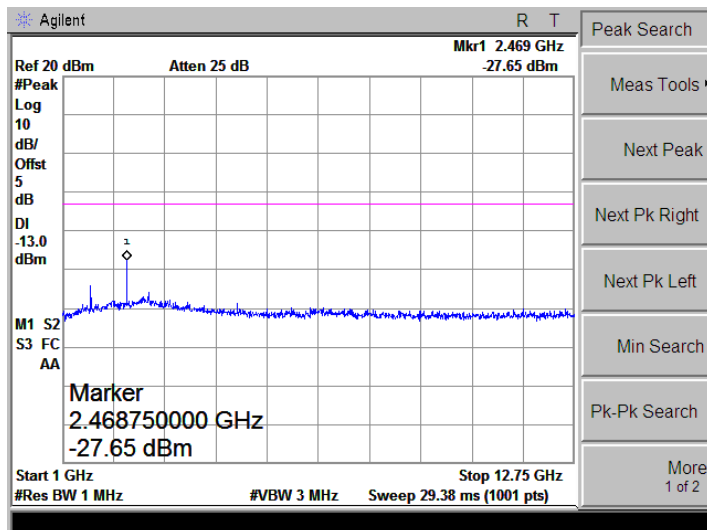
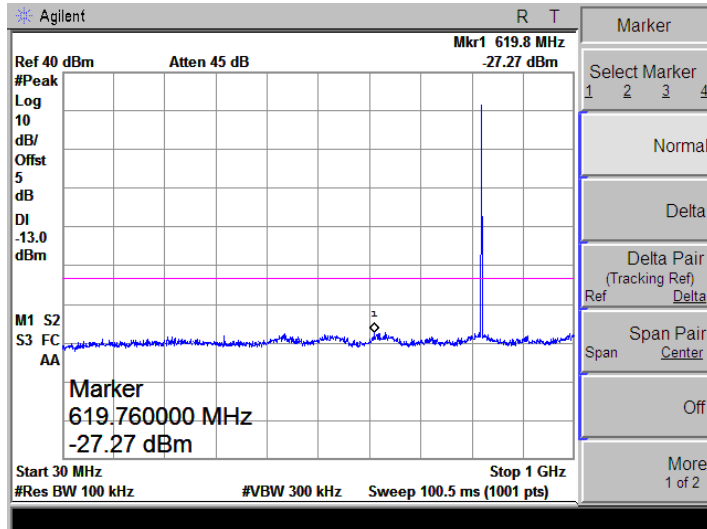


GSM 850  
(GMSK)-High

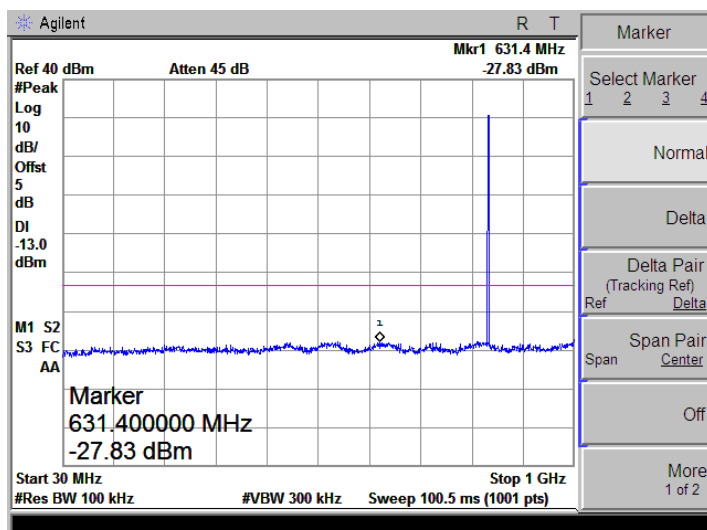


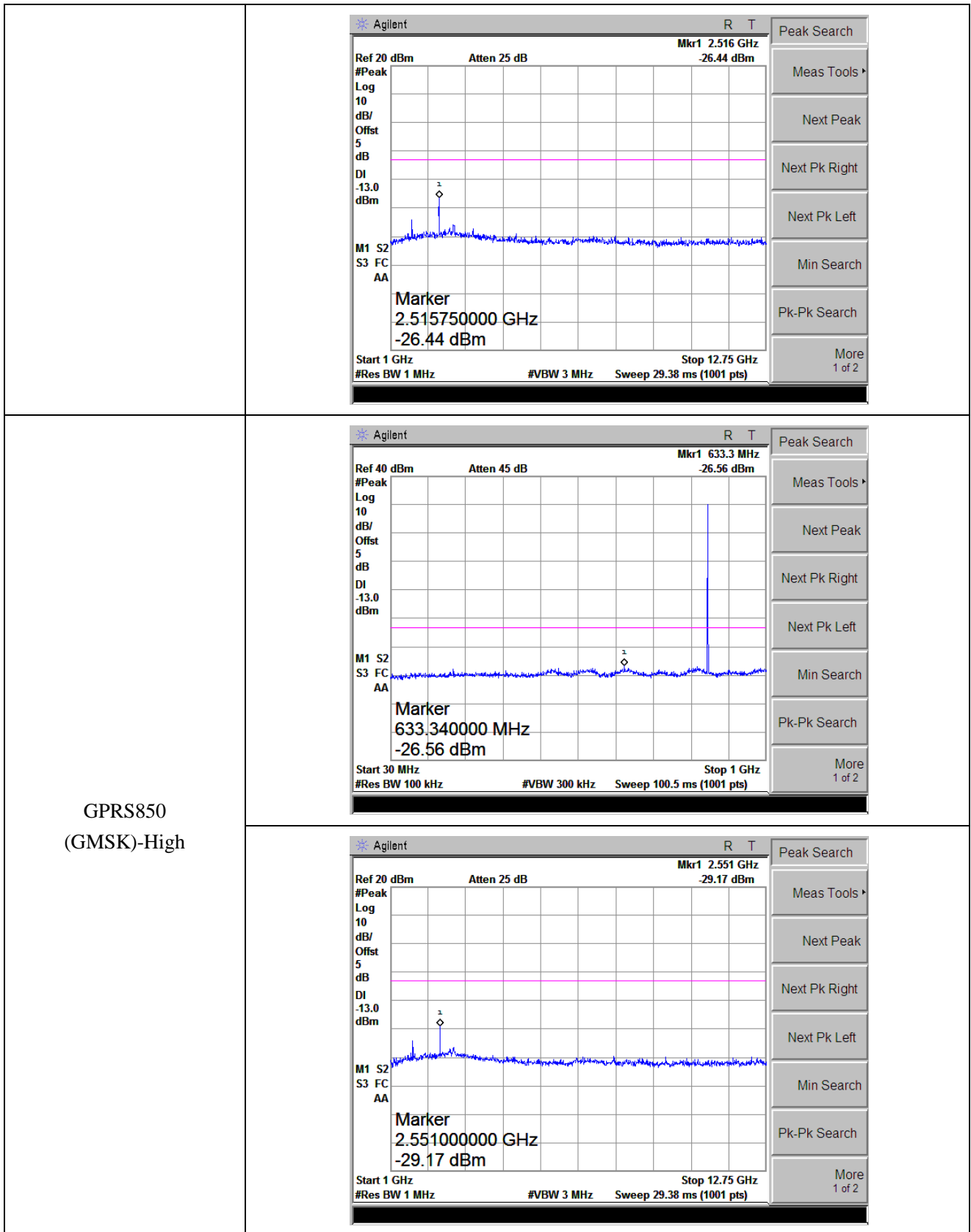


GPRS850  
(GMSK,1Slot)-Low

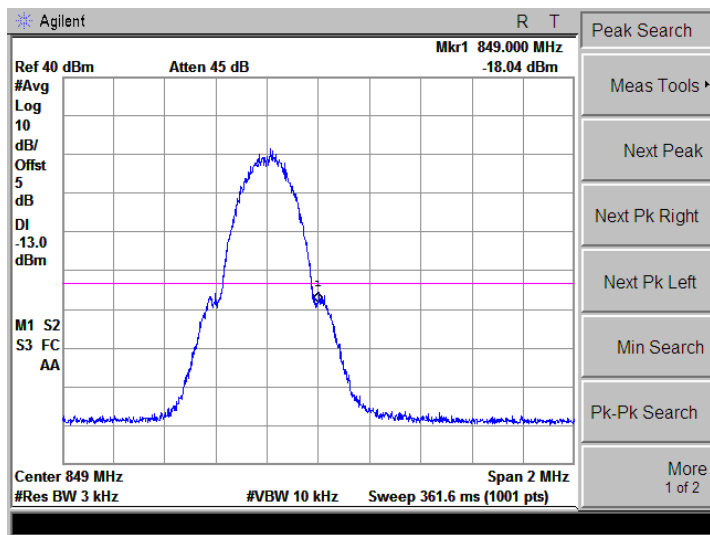
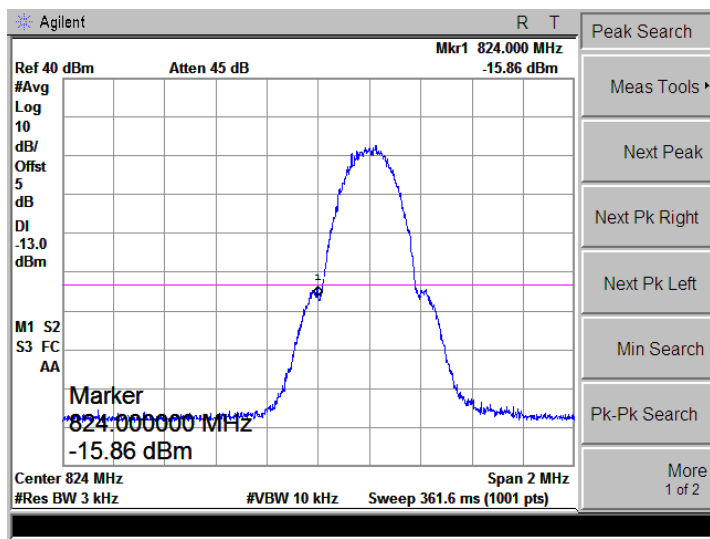


GPRS850  
(GMSK,1Slot)-Middle

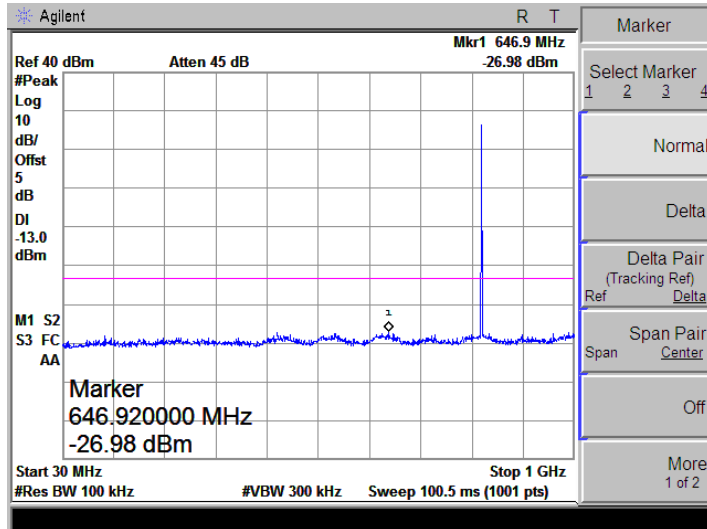




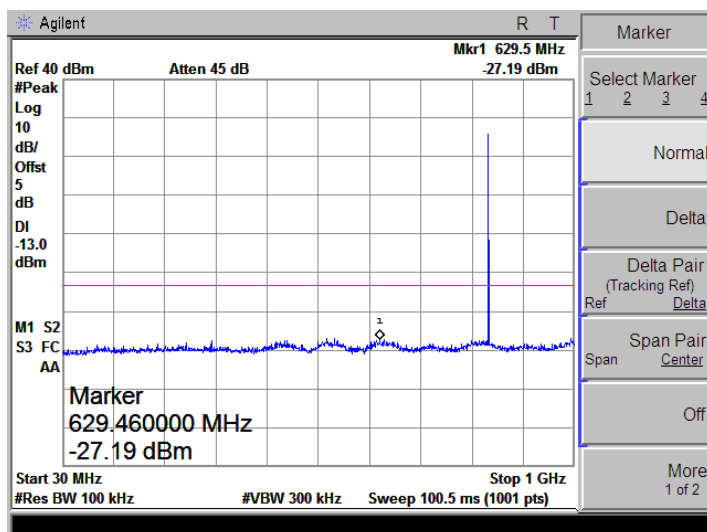
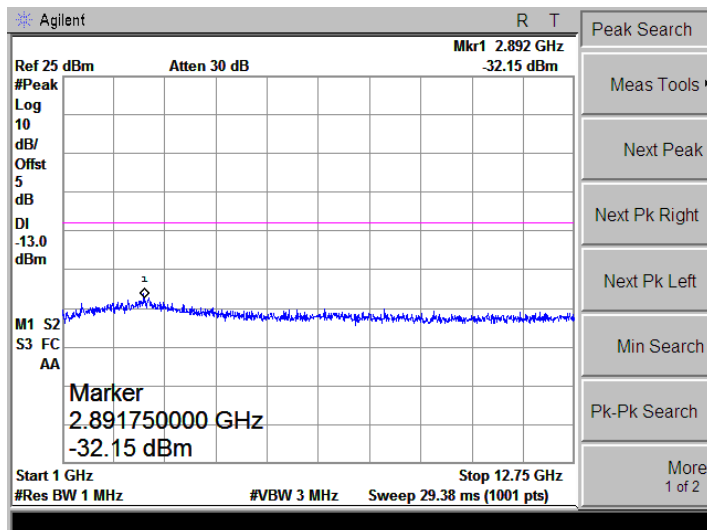
Bandedge



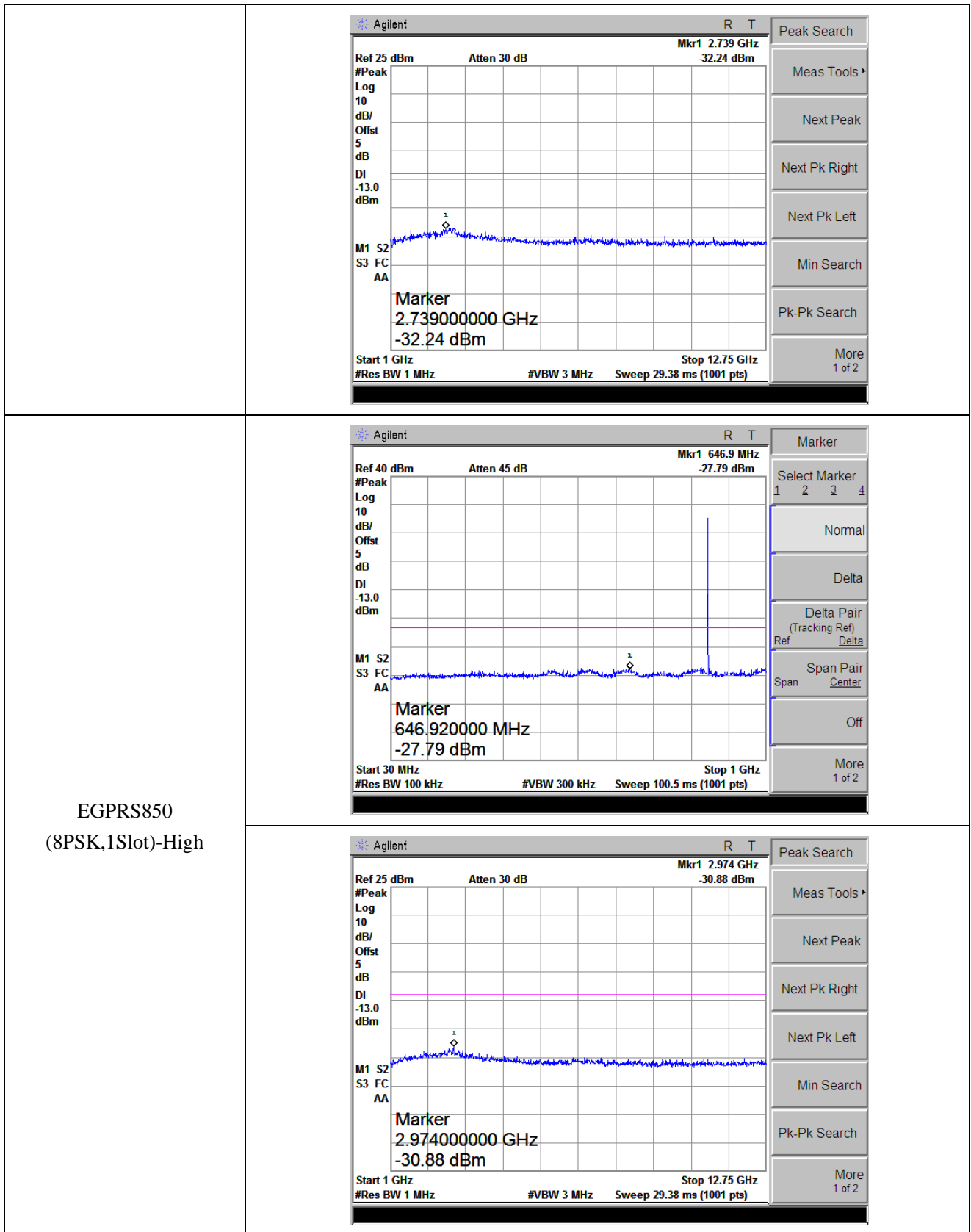
EGPRS850  
(8PSK,1Slot)-Low



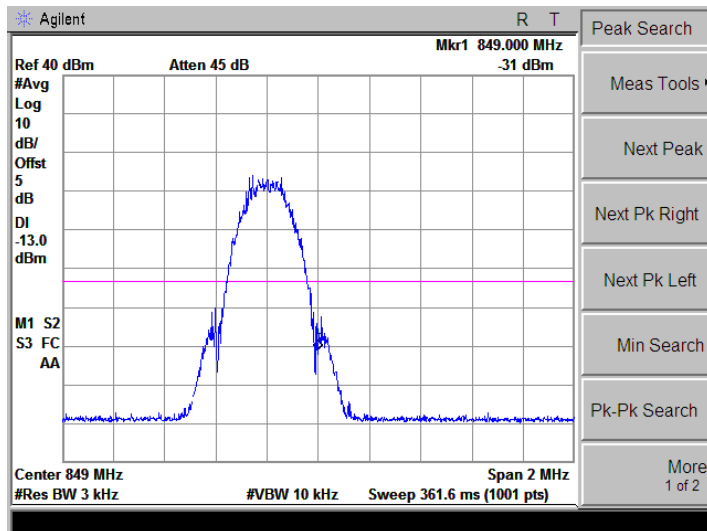
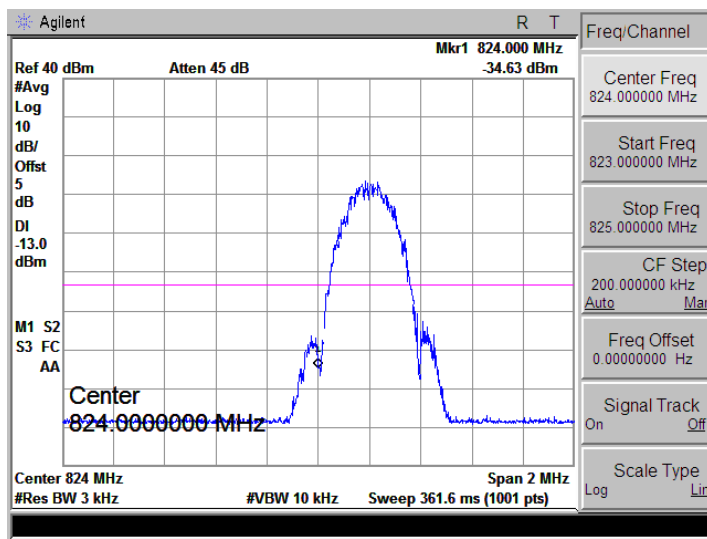
EGPRS850  
(8PSK,1Slot)-Middle



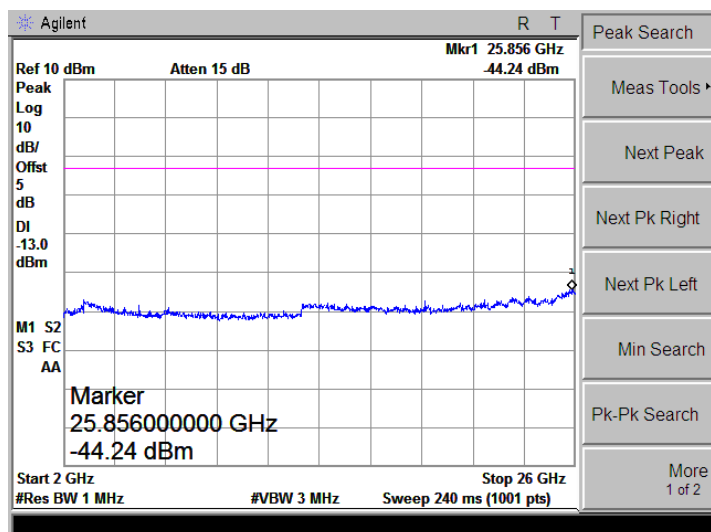
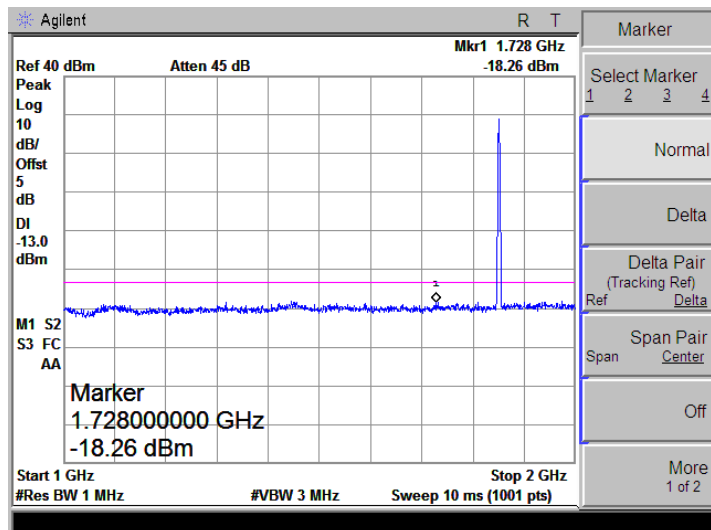
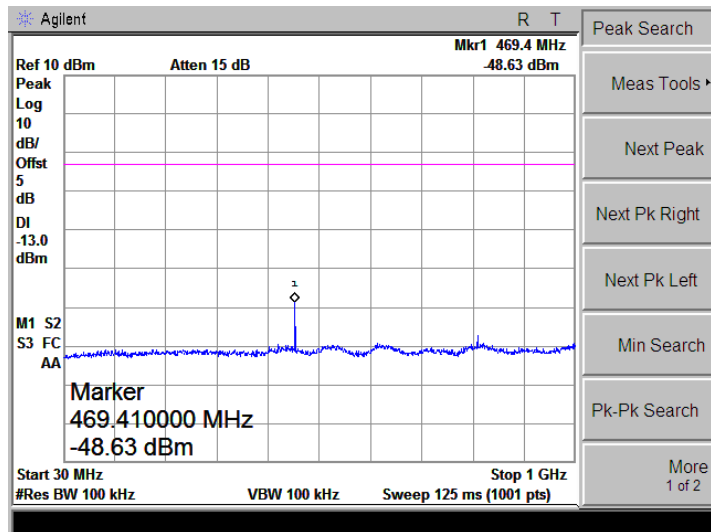




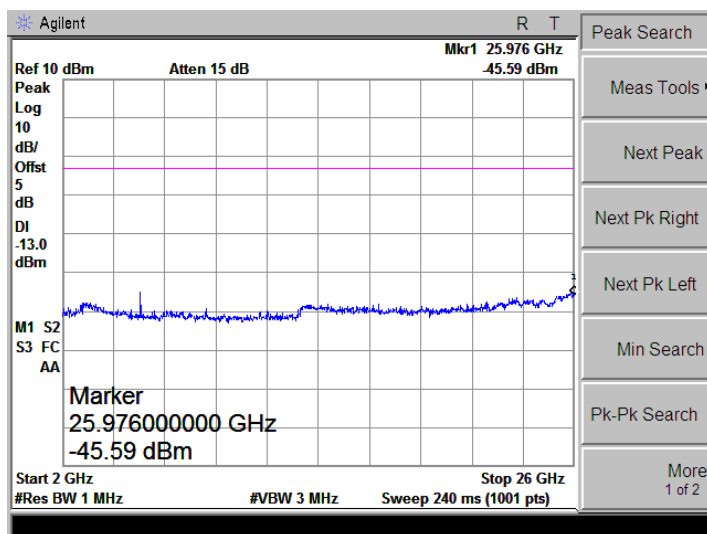
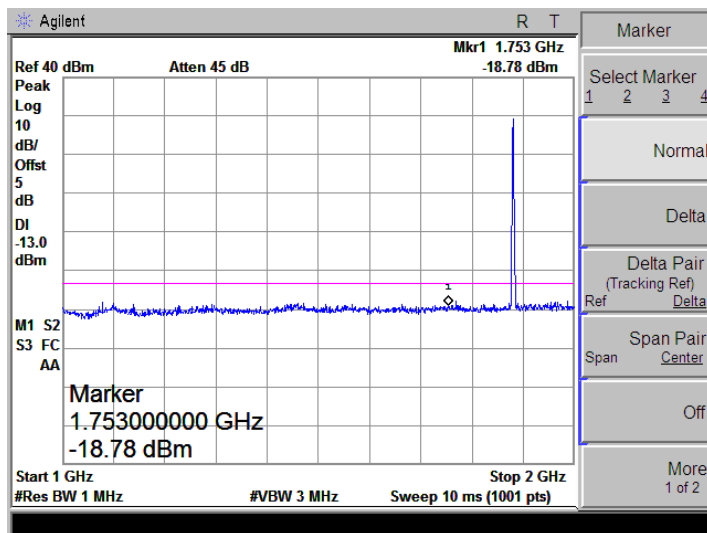
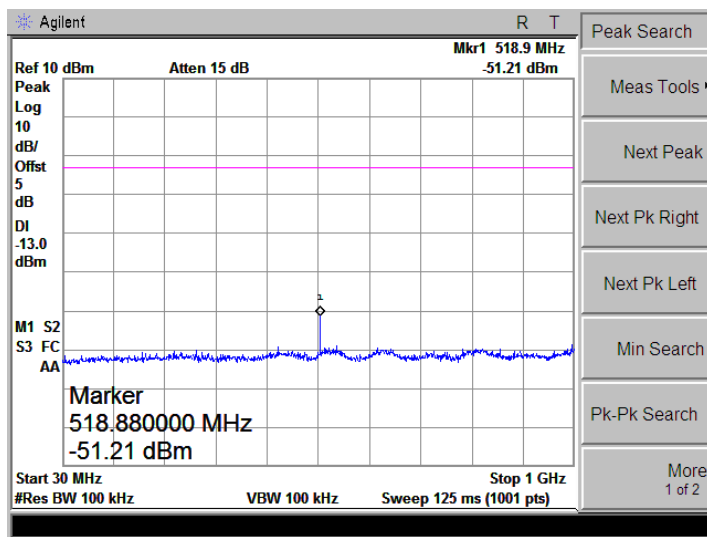
Bandedge



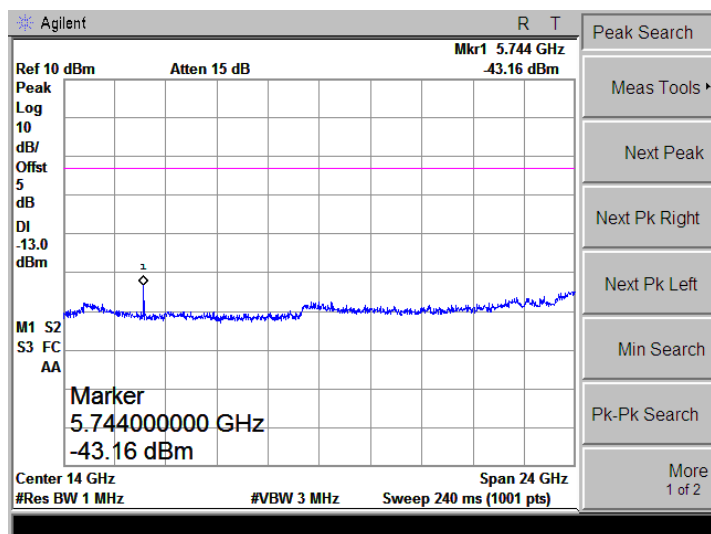
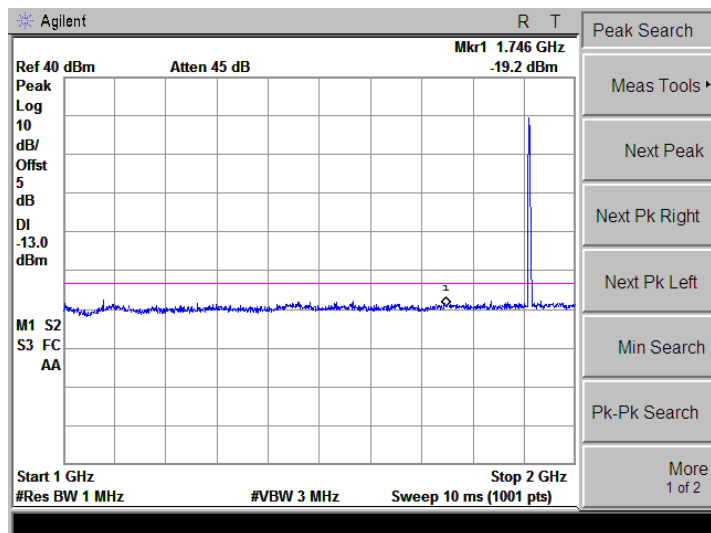
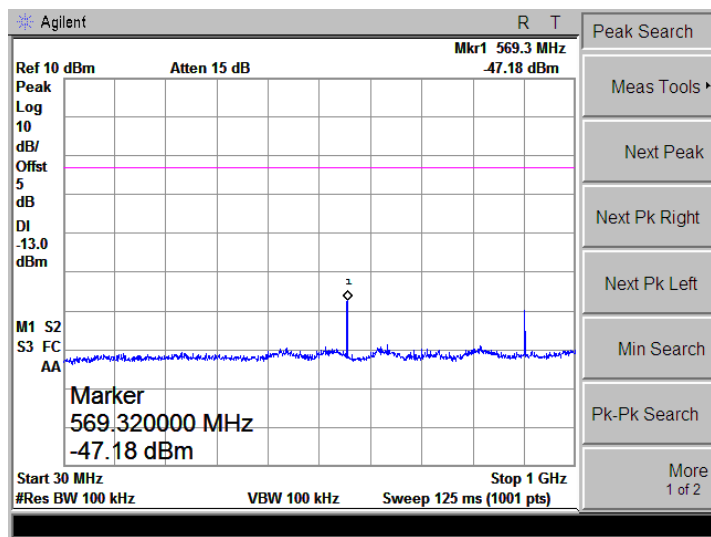
PCS1900  
(GMSK)-Low



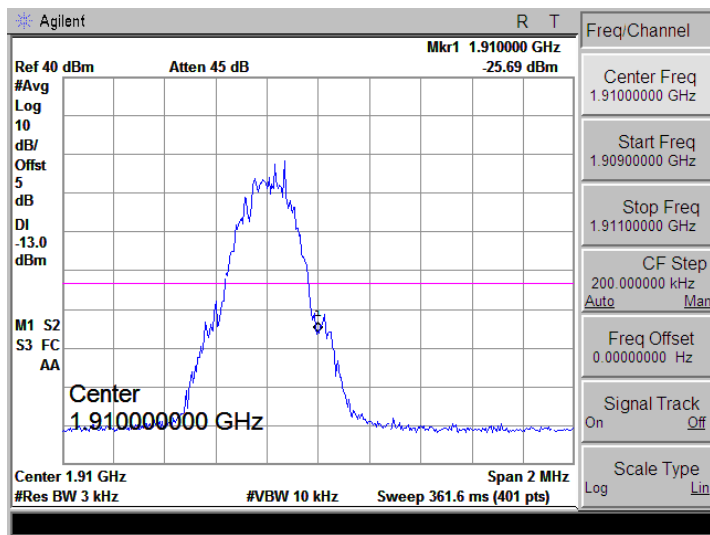
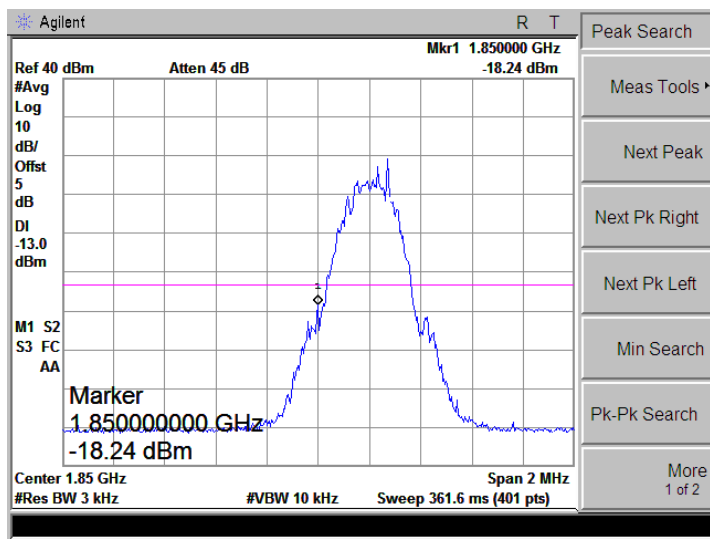
PCS1900  
(GMSK)-Middle



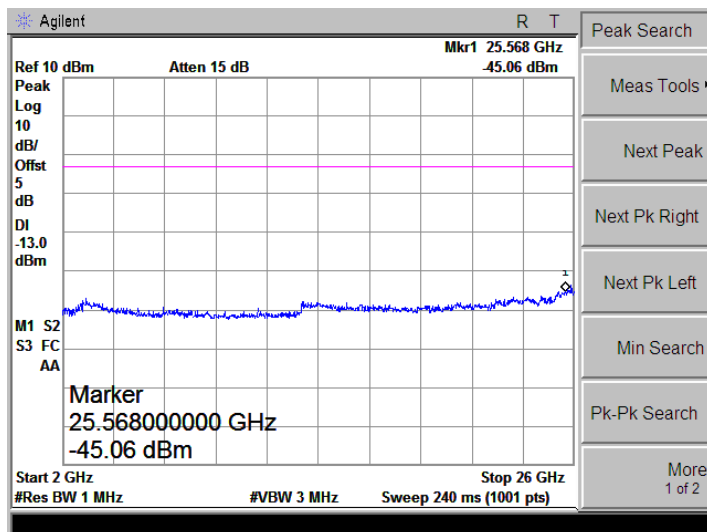
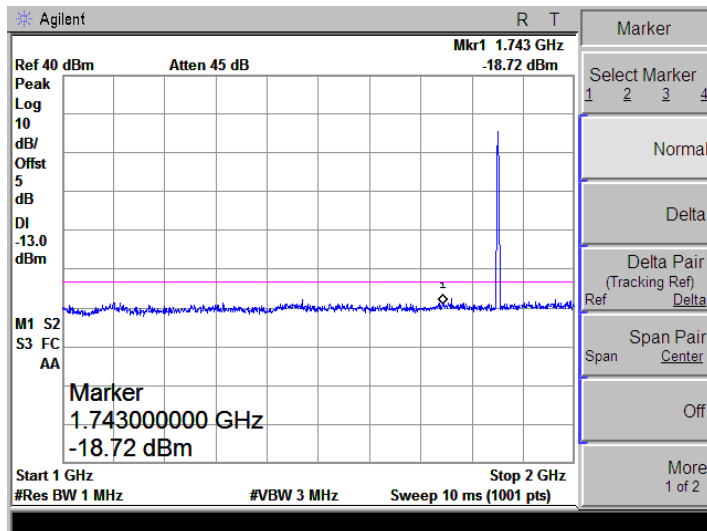
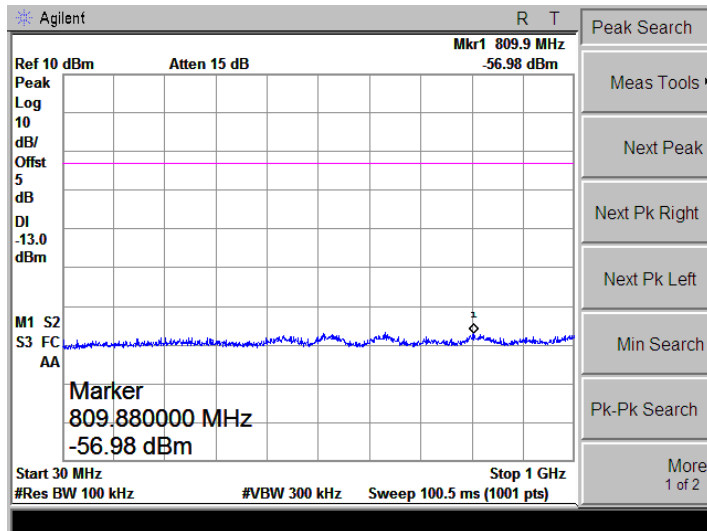
PCS1900  
(GMSK)-High



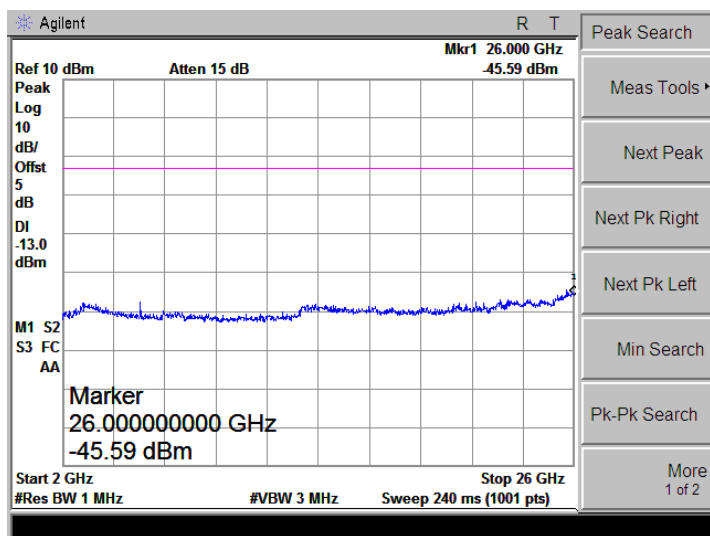
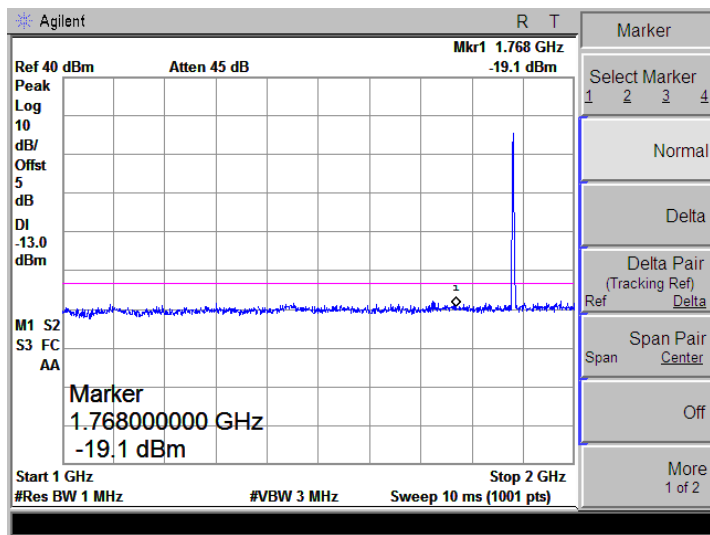
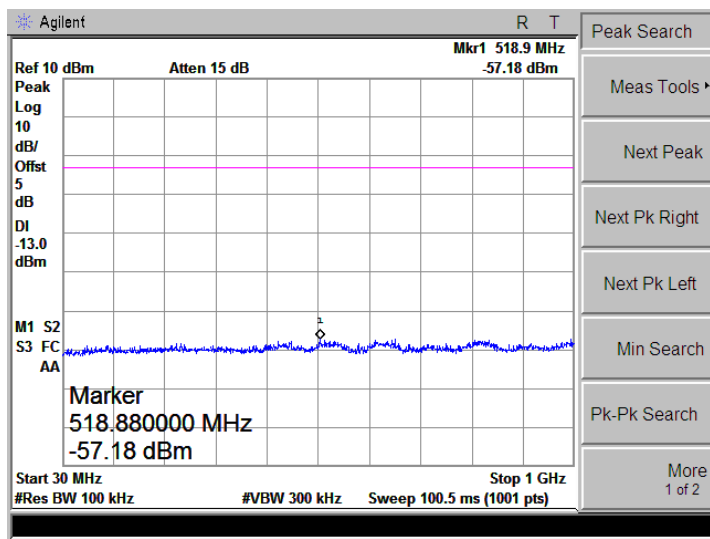
Bandedge



GPRS1900  
(GMSK,1Slot)-Low

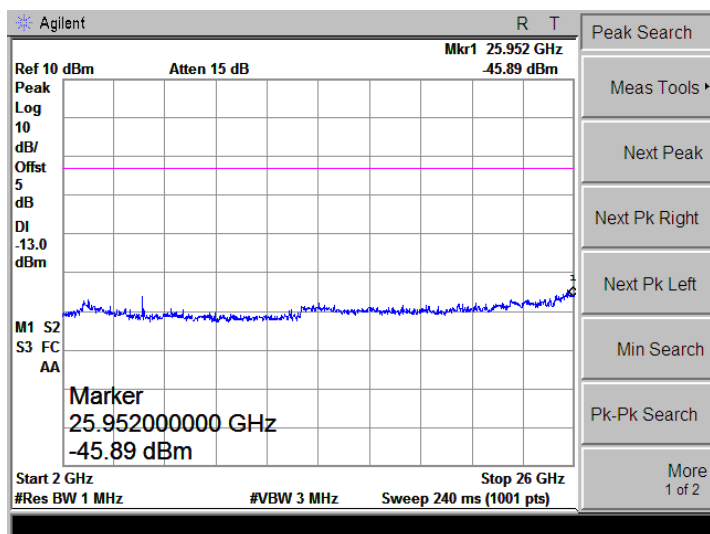
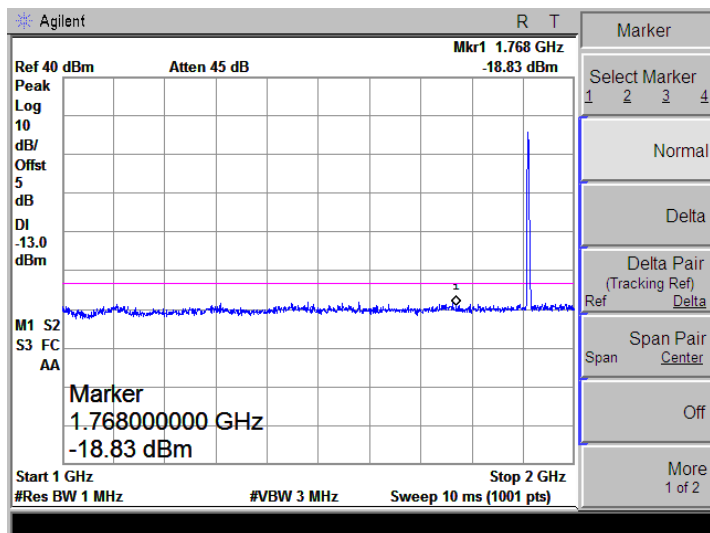
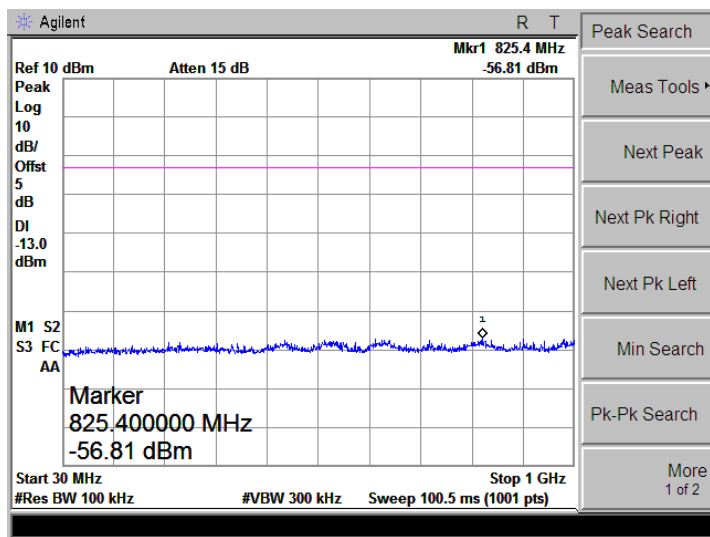


GPRS1900  
(GMSK,1Slot)-Middle

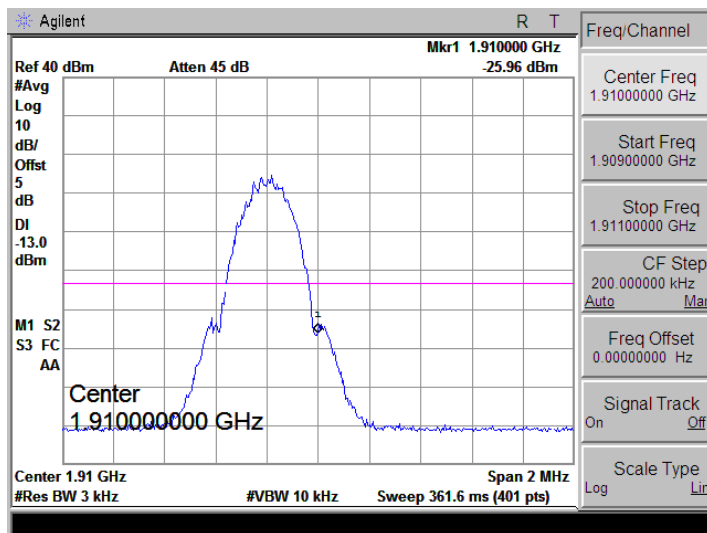
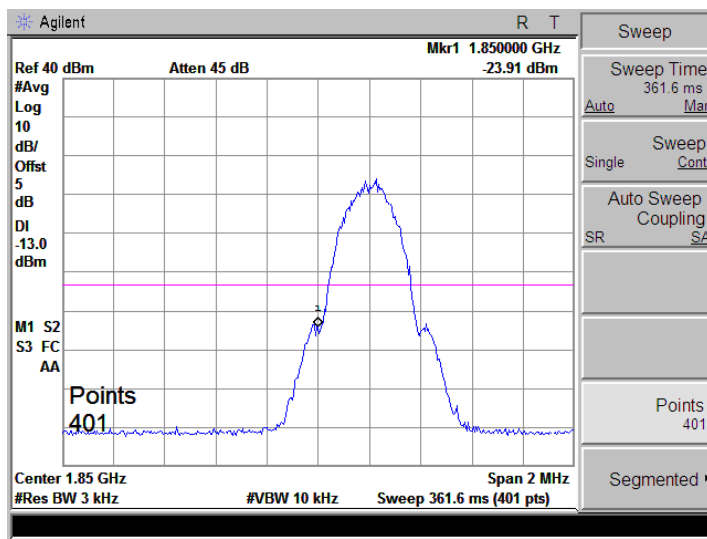




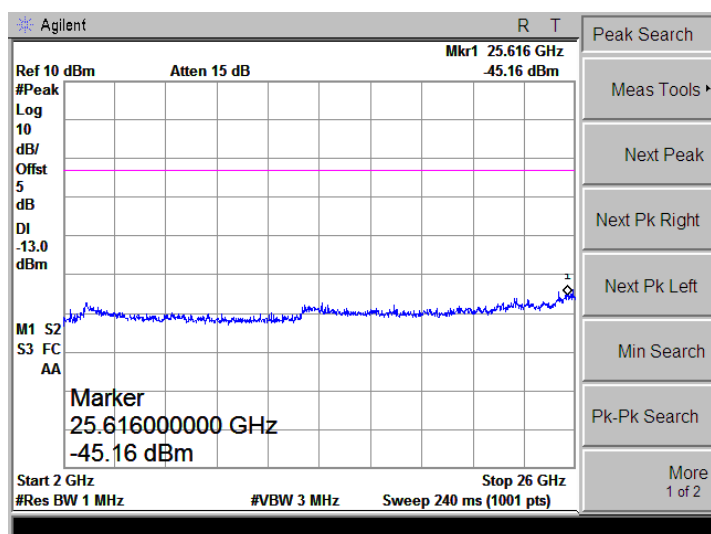
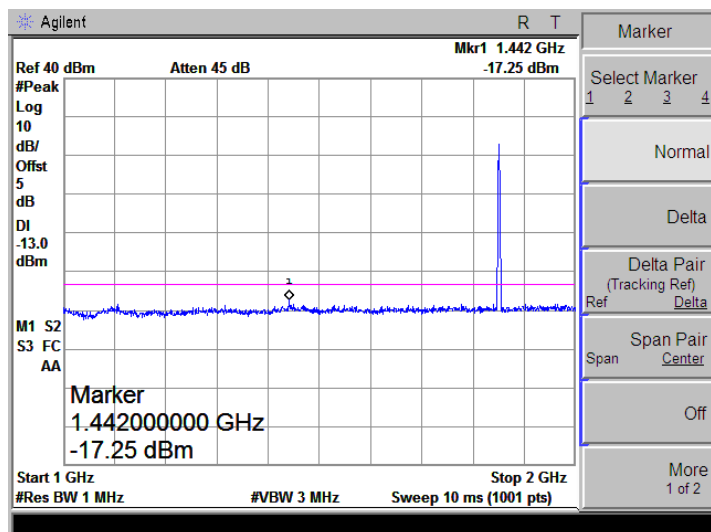
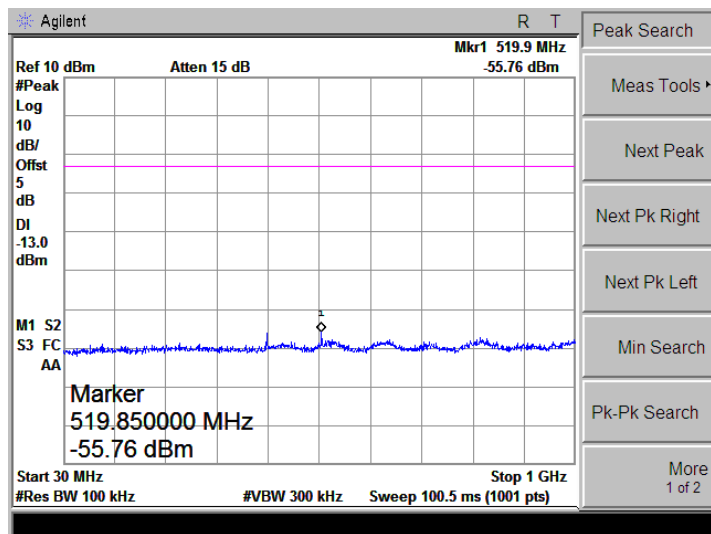
GPRS1900  
(GMSK,1Slot)-High



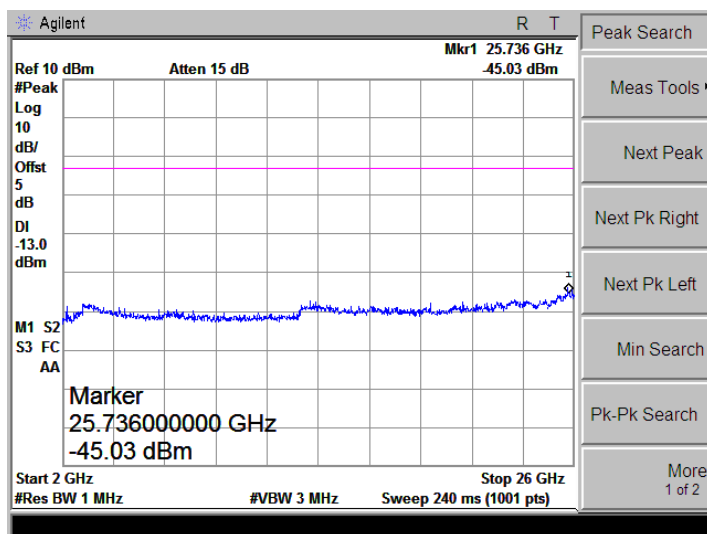
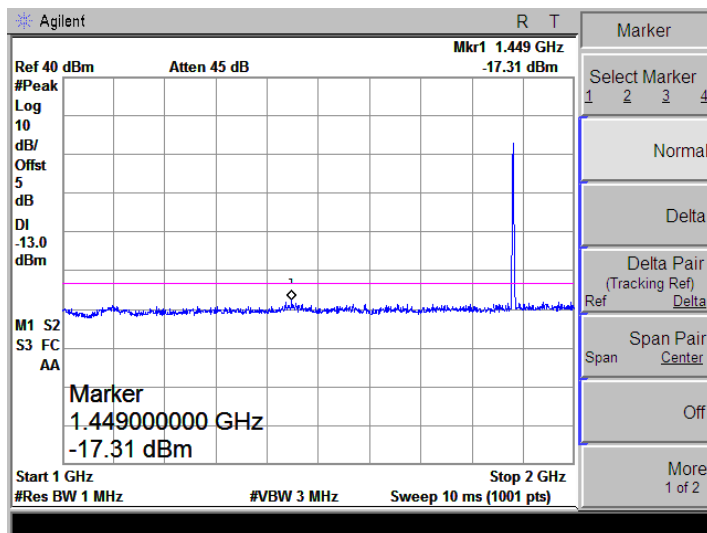
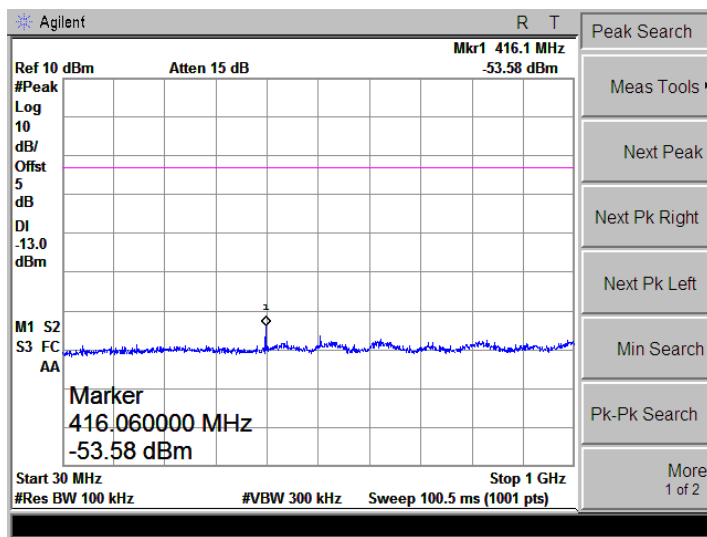
Bandedge



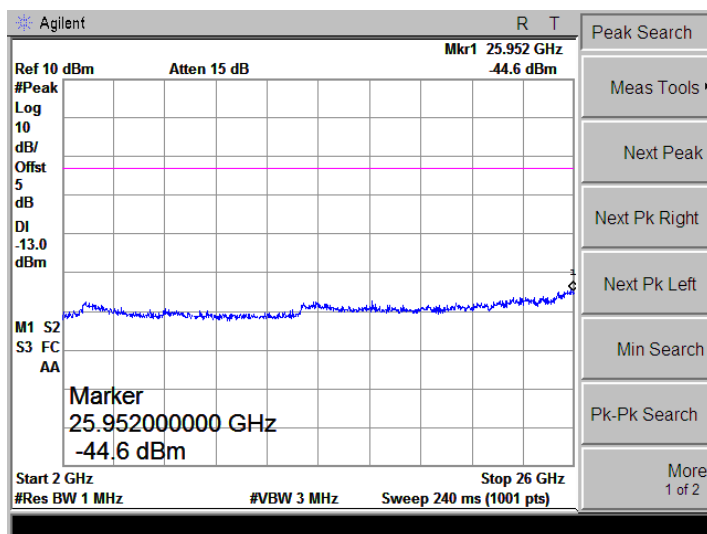
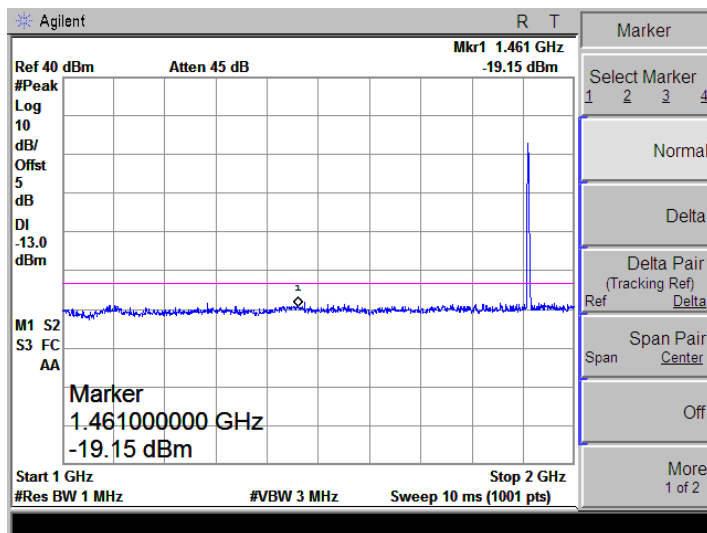
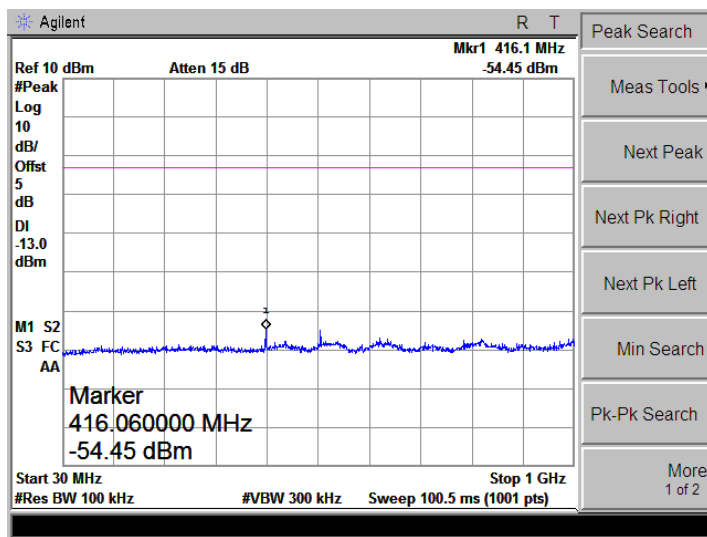
EGPRS1900  
(8PSK,1Slot)-Low



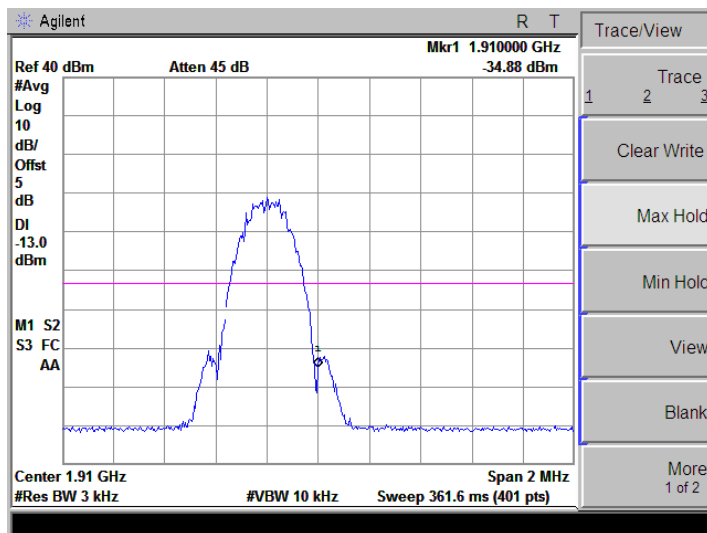
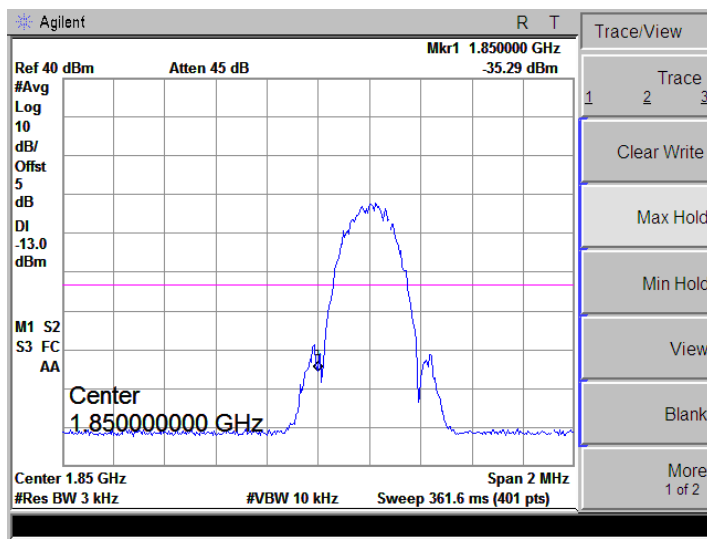
EGPRS1900  
(8PSK,1Slot)-Middle

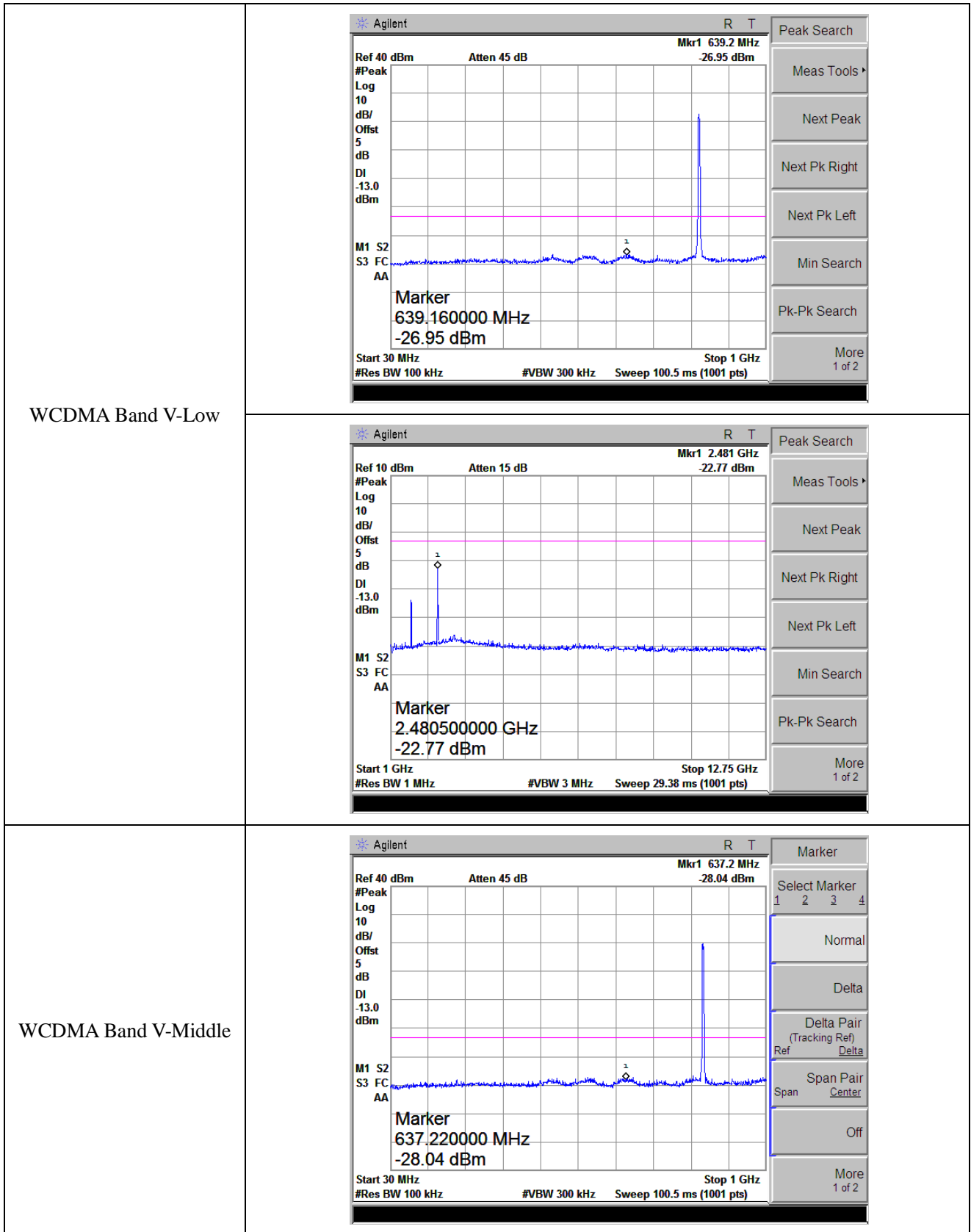


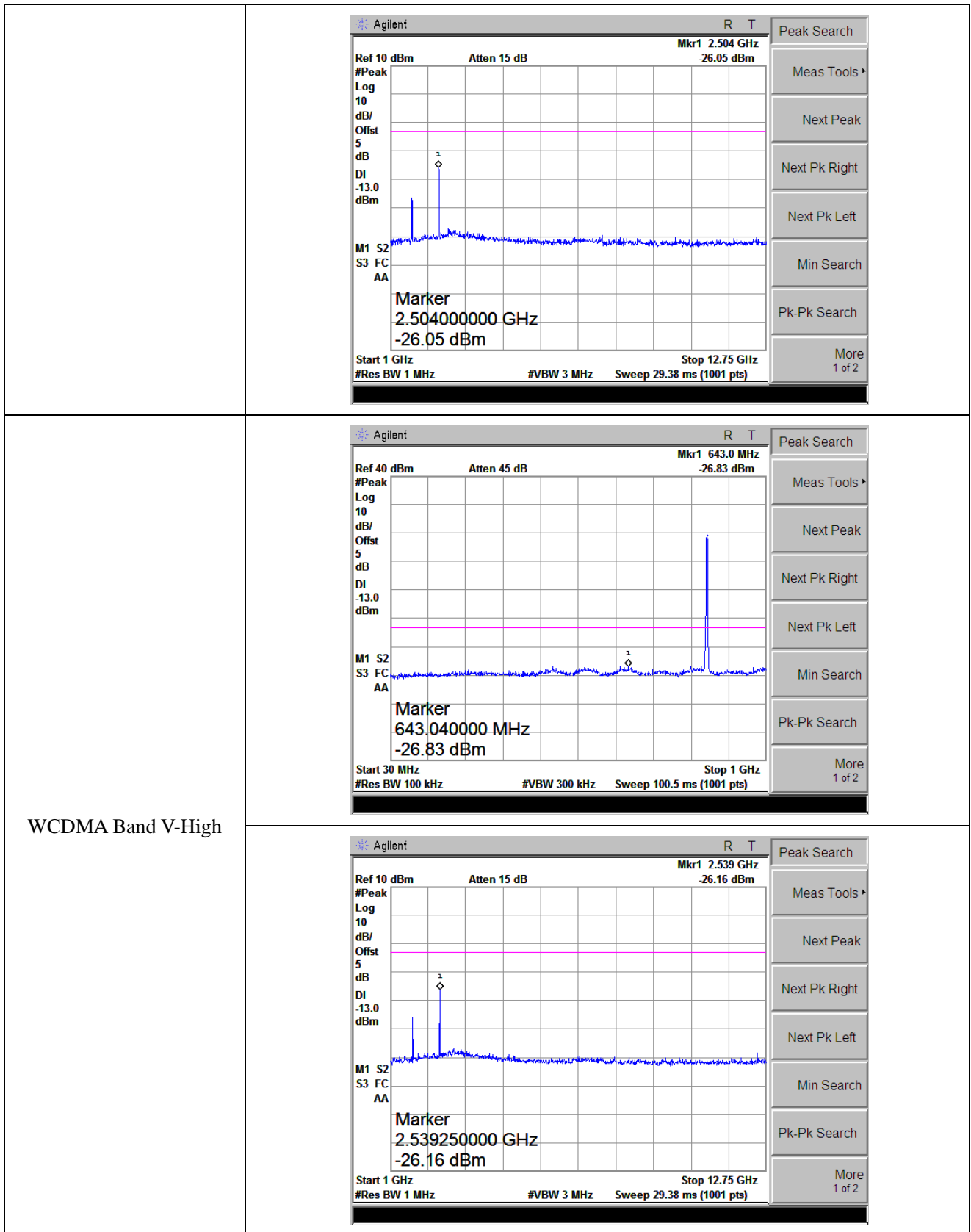
EGPRS1900  
(8PSK,1Slot)-High



Bandedge

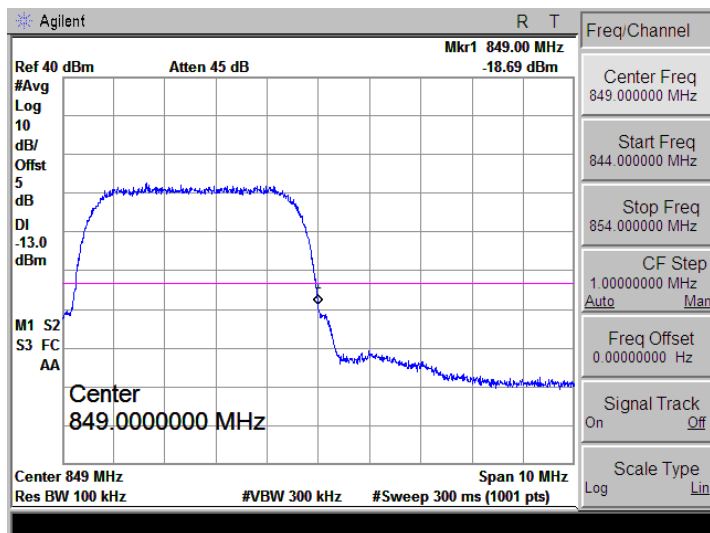
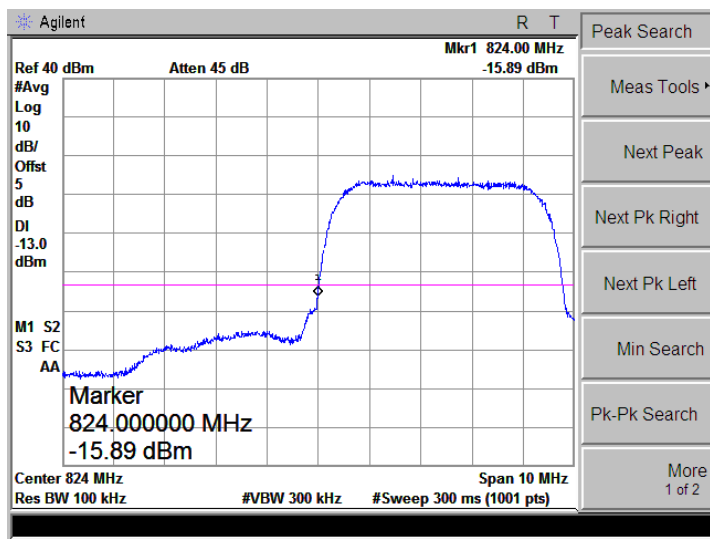




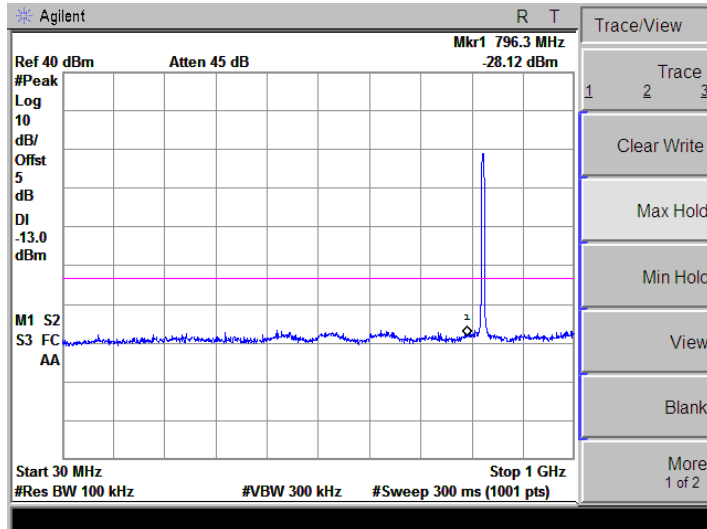




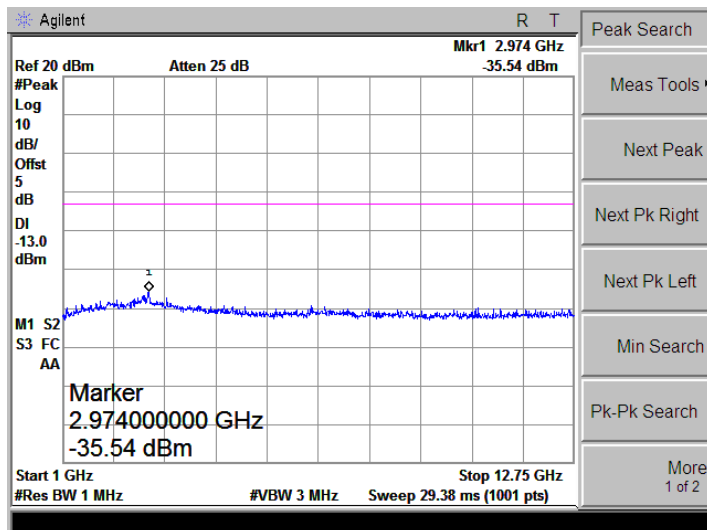
Bandedge

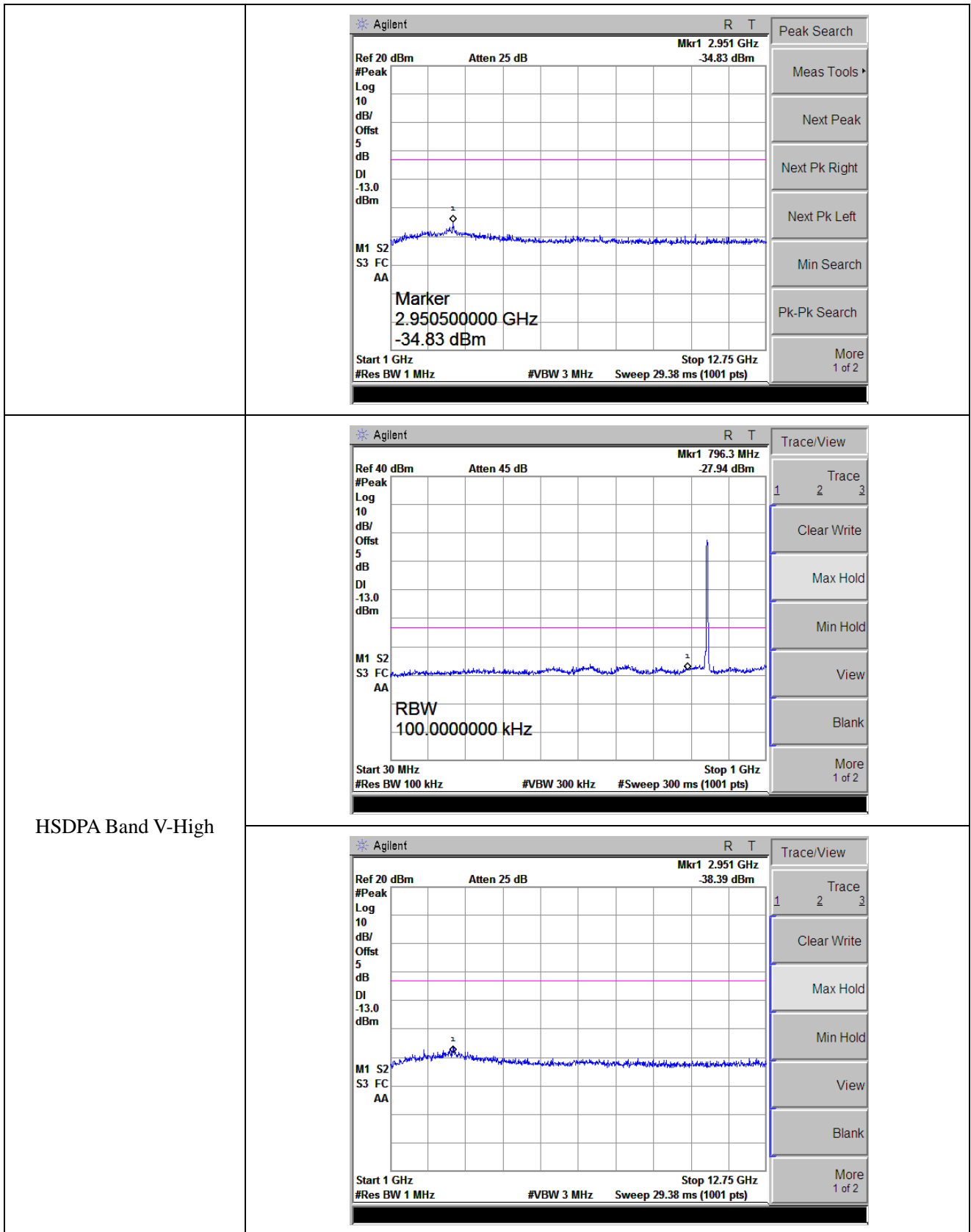


HSDPA Band V-Low

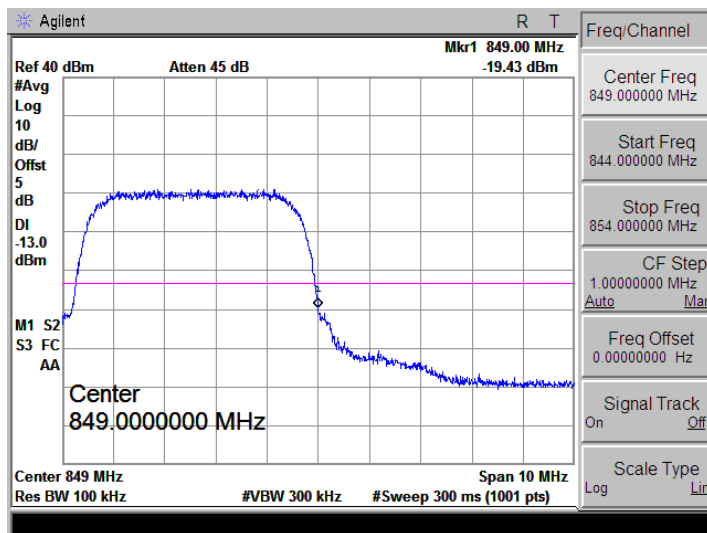
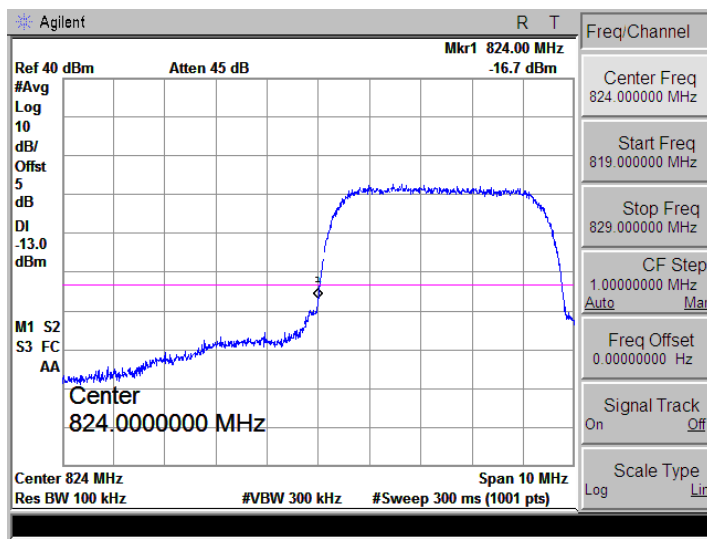


HSDPA Band V-Middle

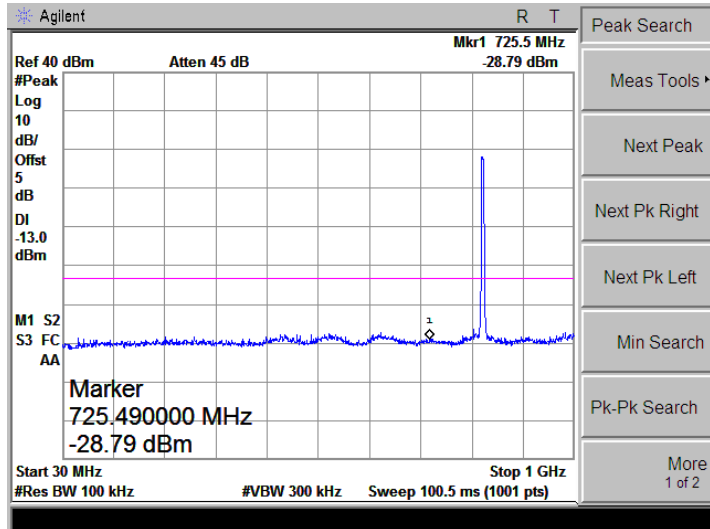




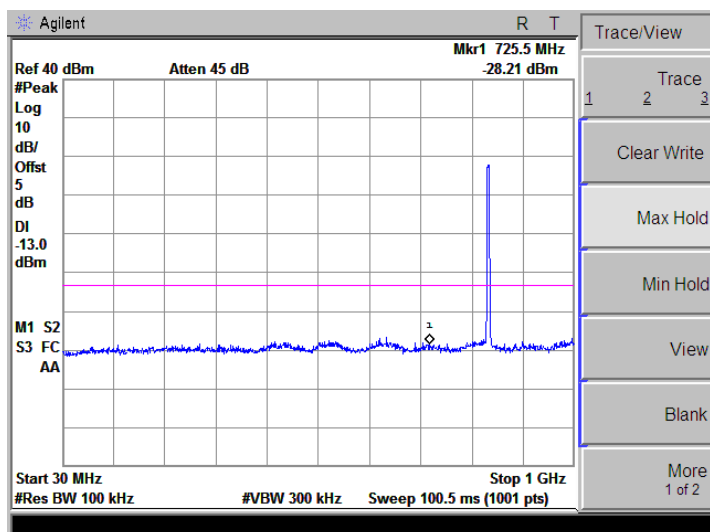
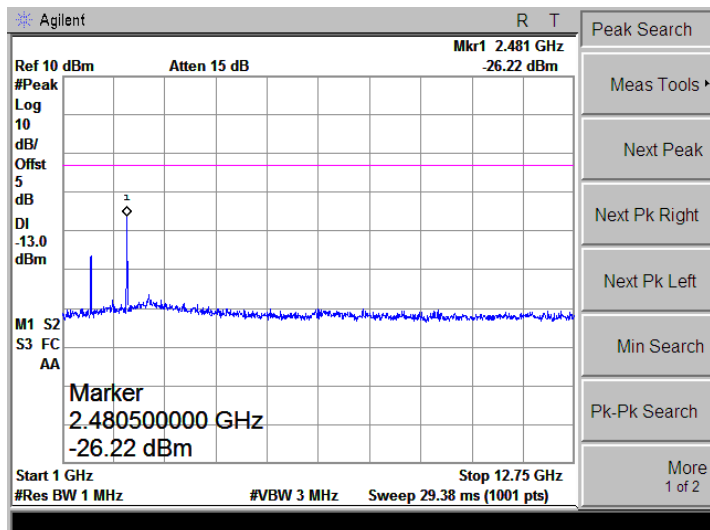
Bandedge

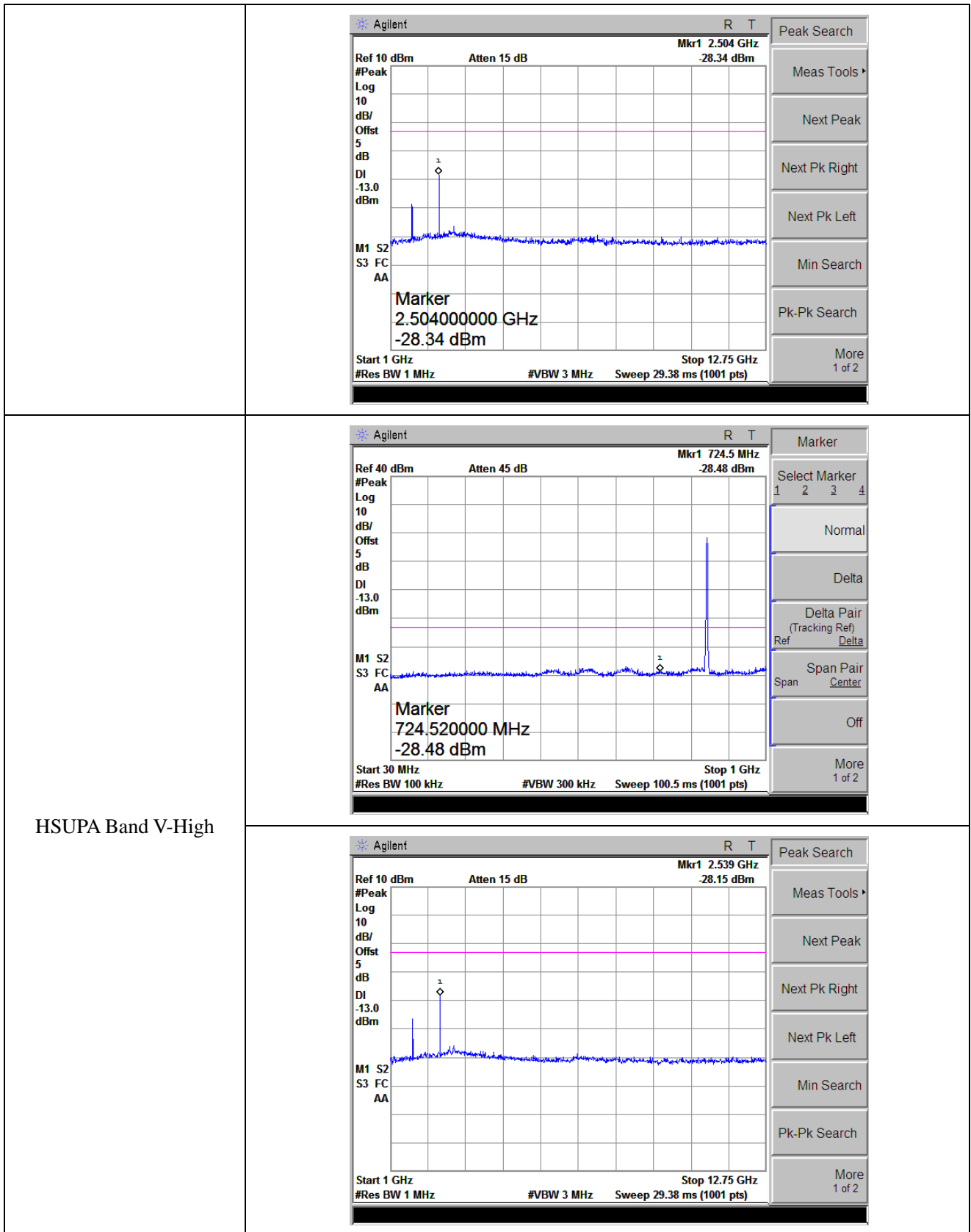


HSUPA Band V-Low

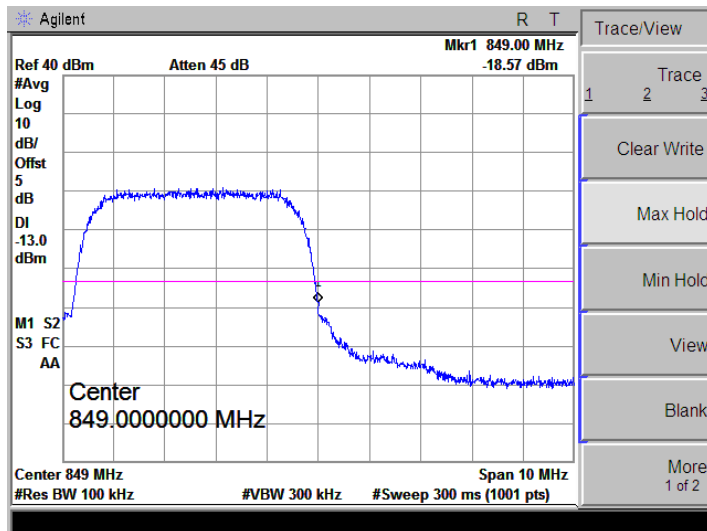
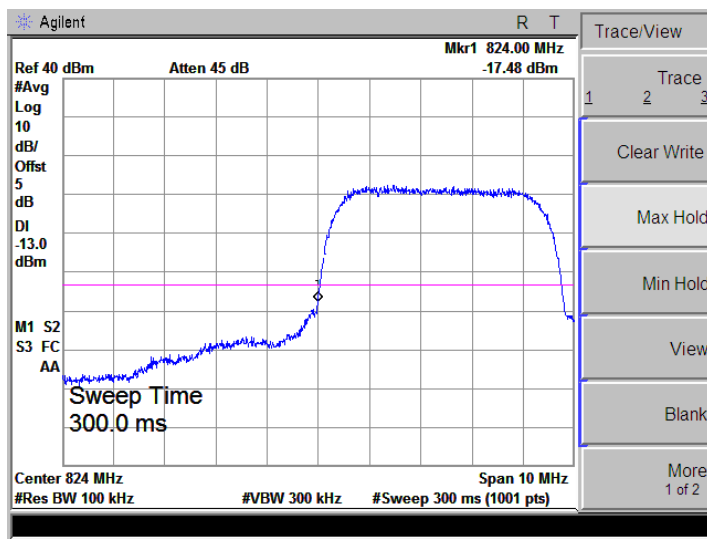


HSUPA Band V-Middle

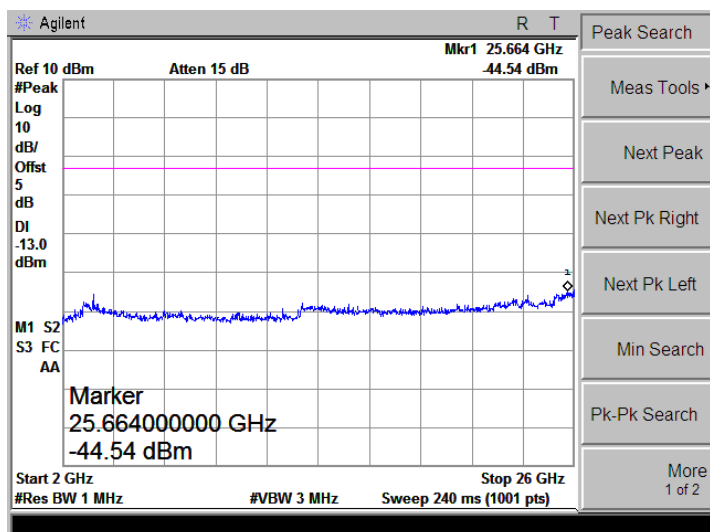
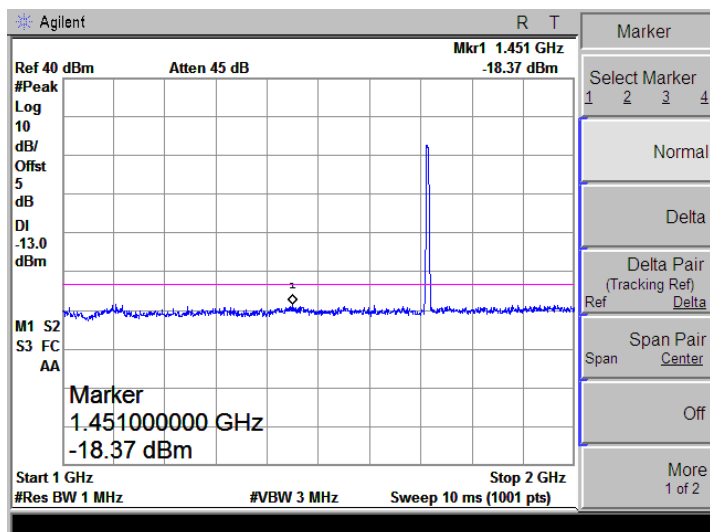
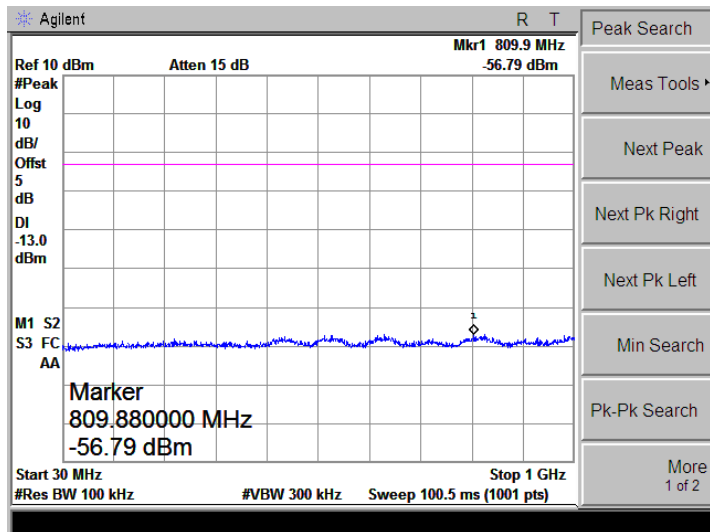




Bandedge

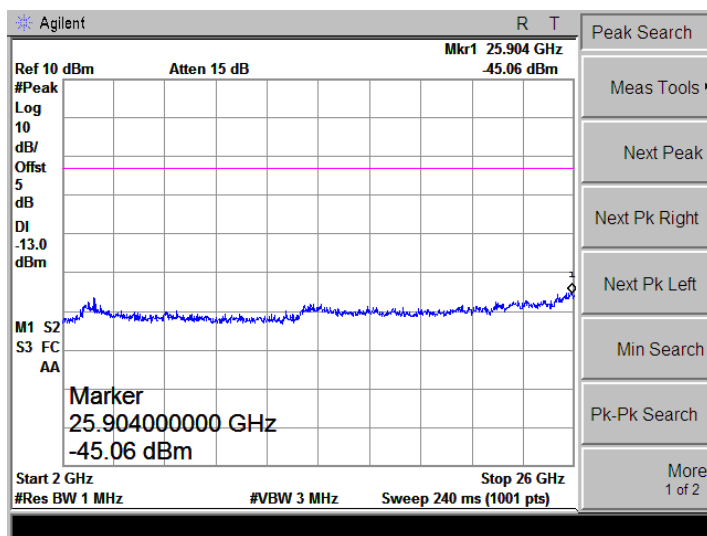
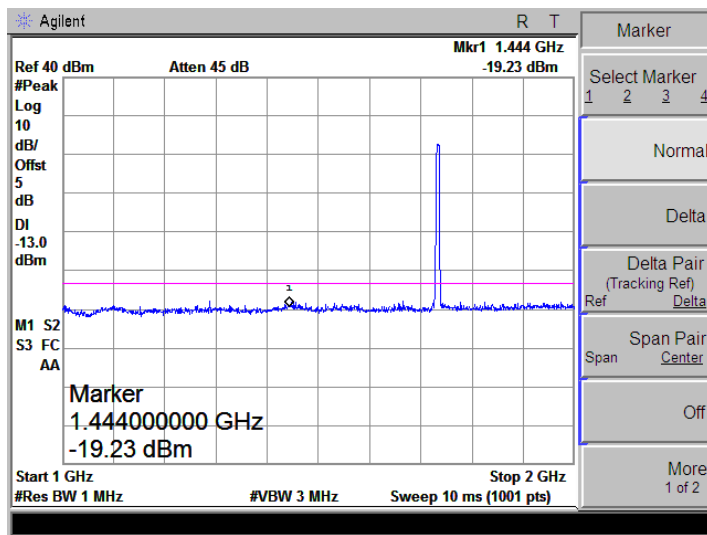
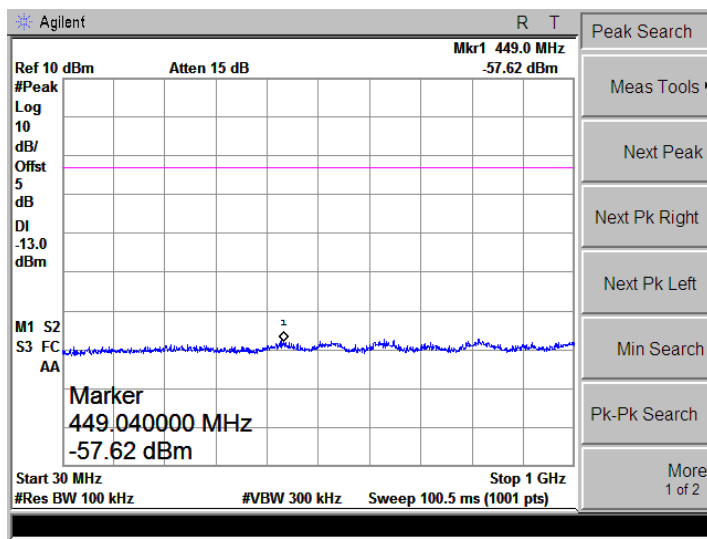


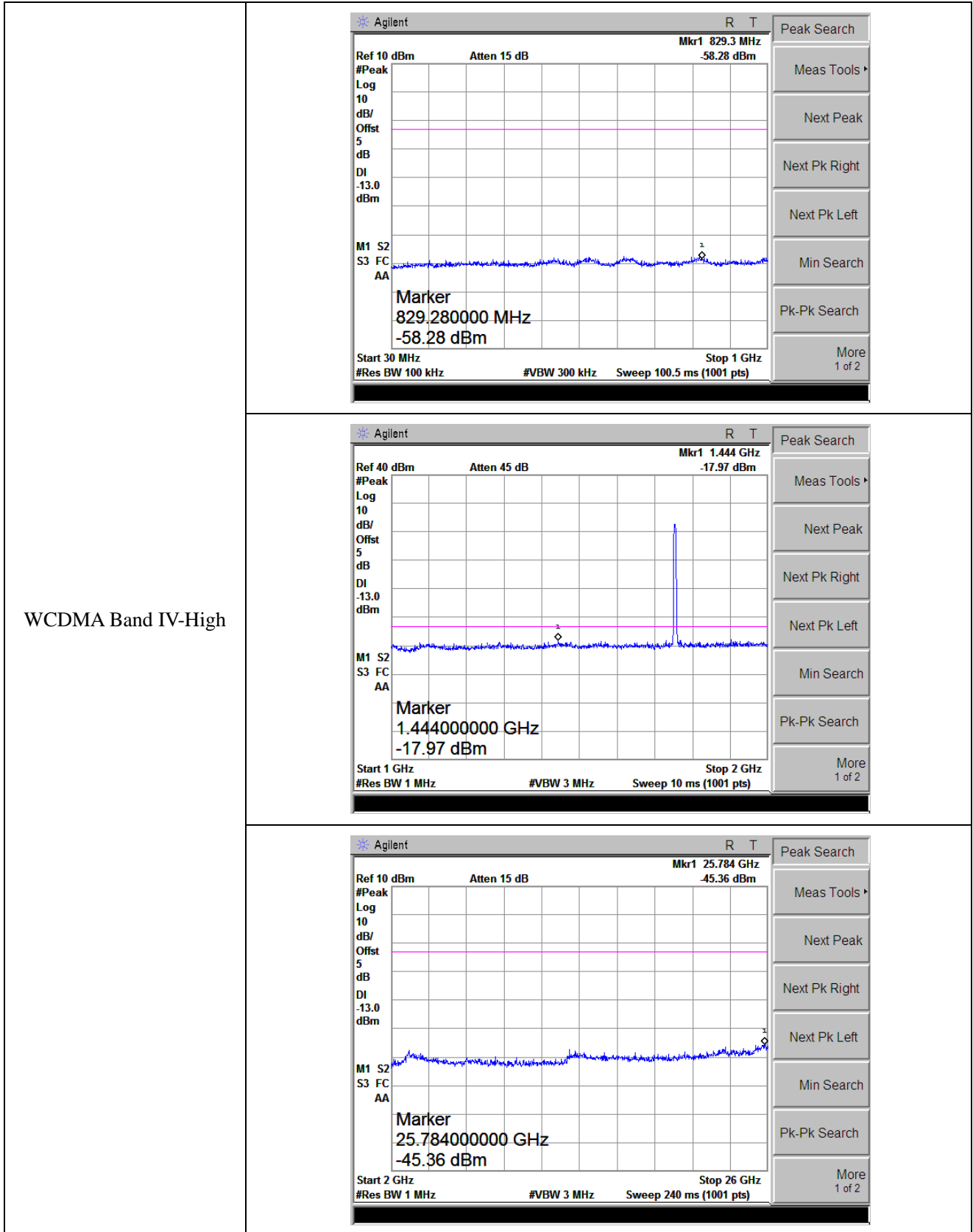
WCDMA Band IV-Low



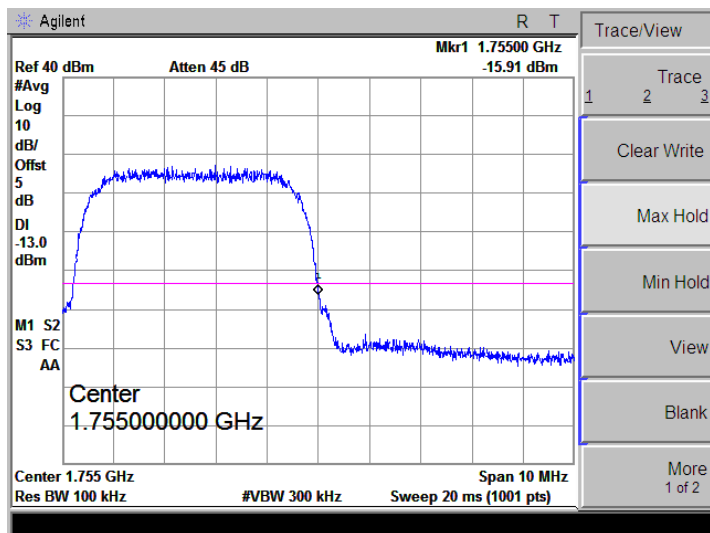
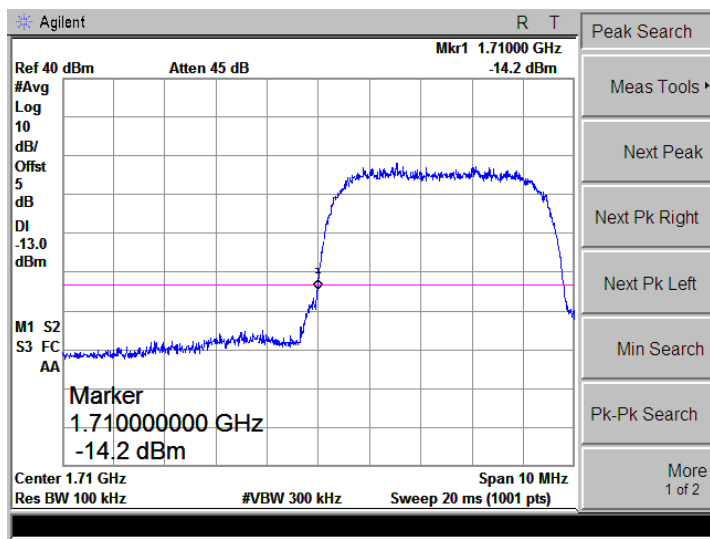


WCDMA Band IV-Middle

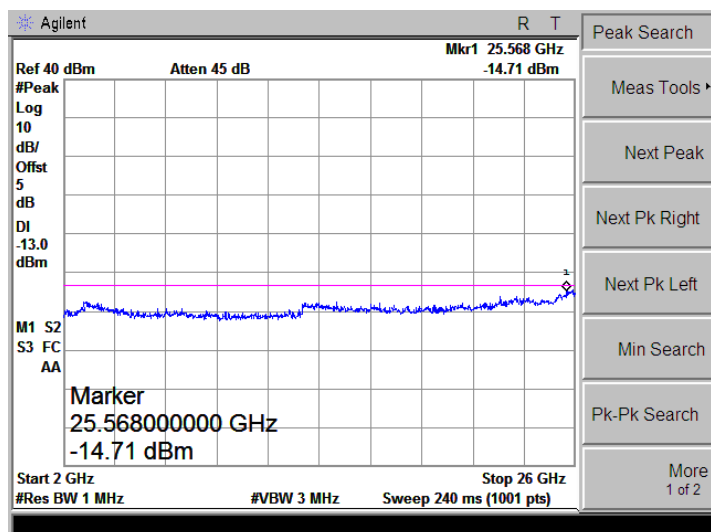
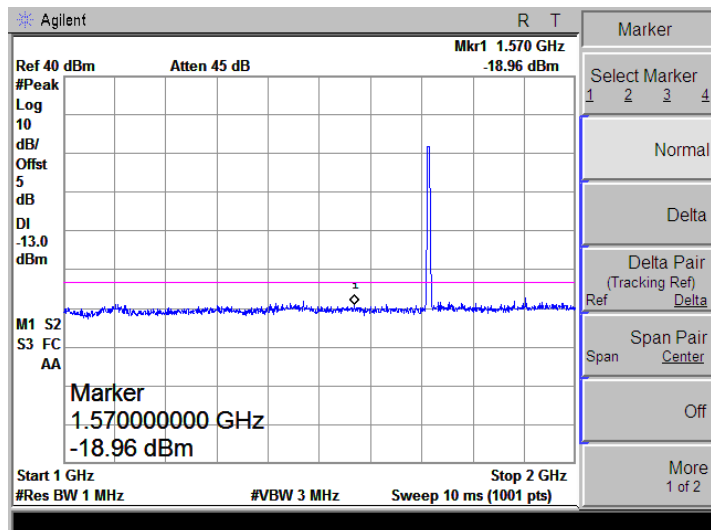
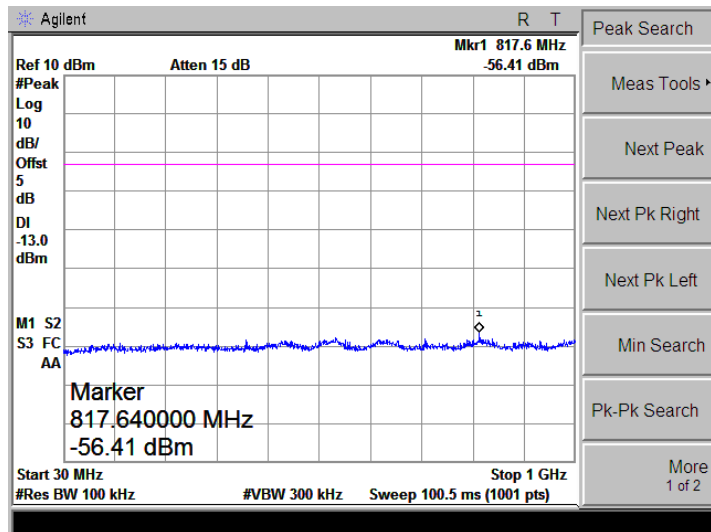




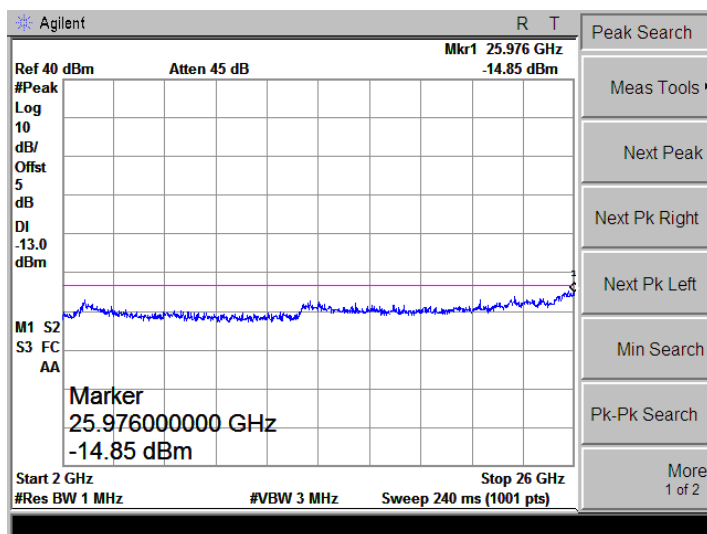
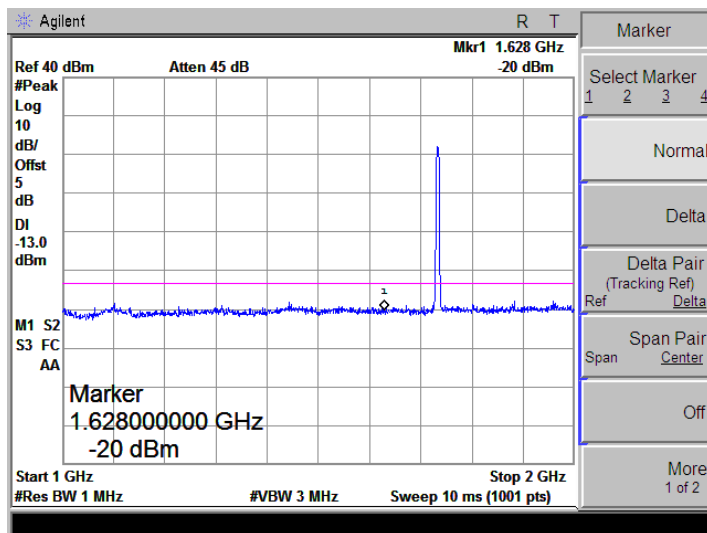
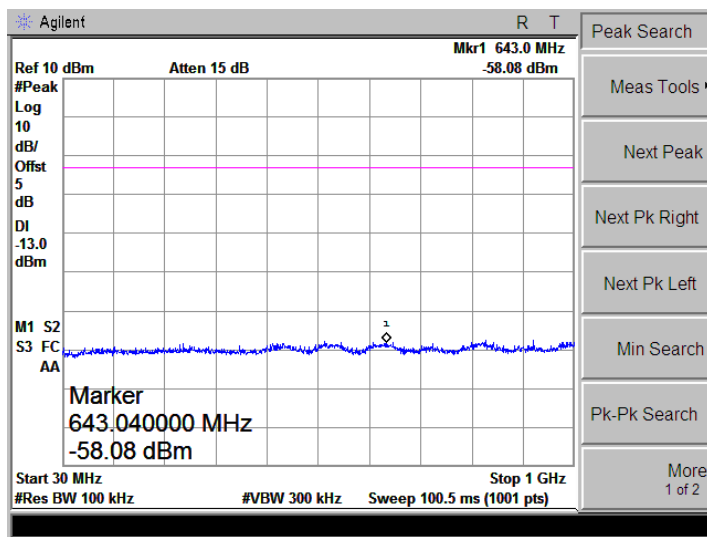
Bandedge



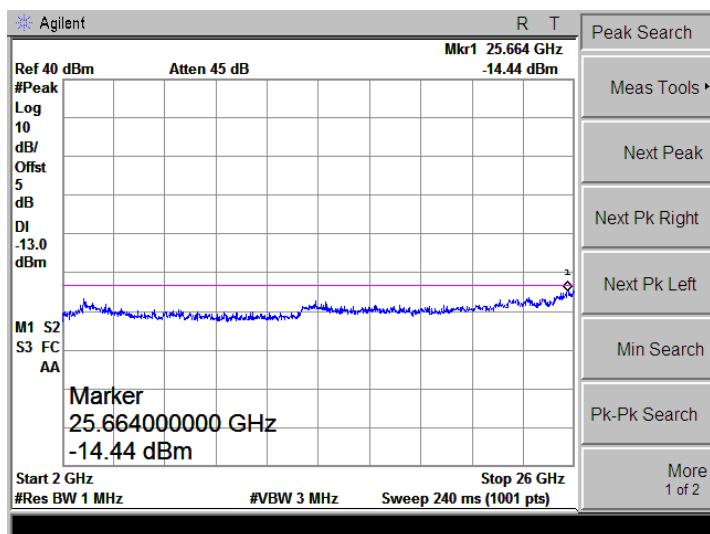
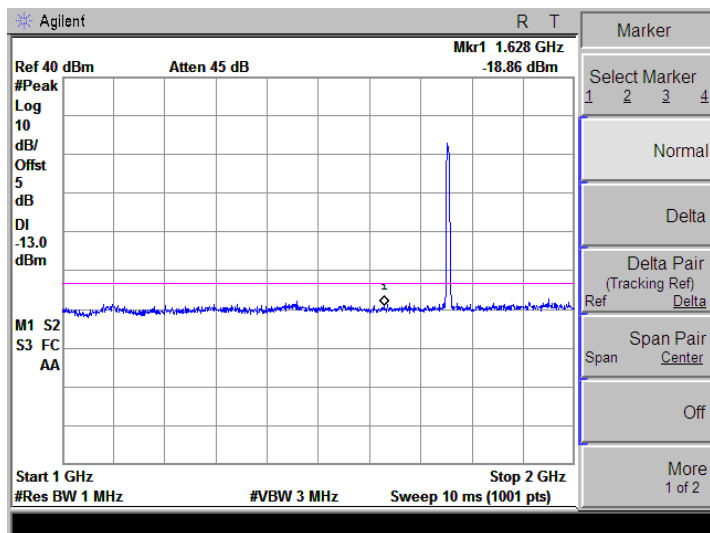
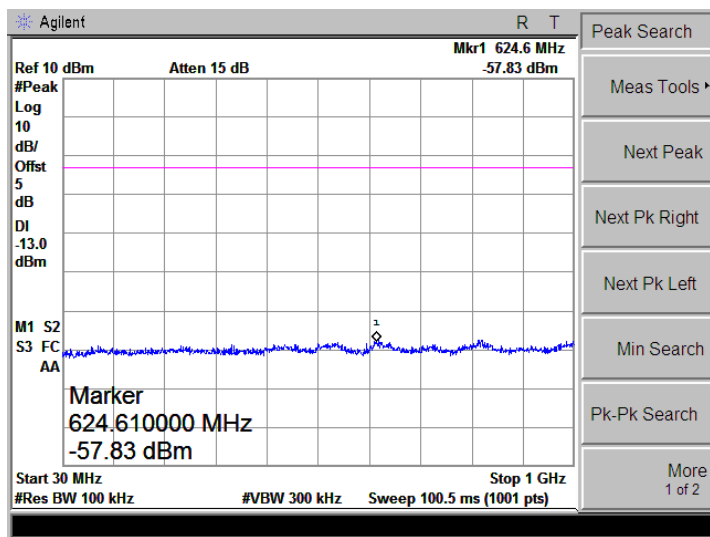
HSDPA Band IV-Low



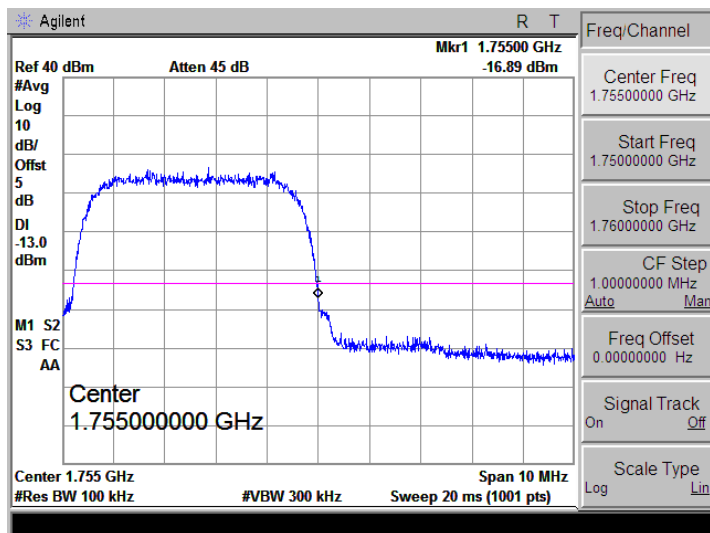
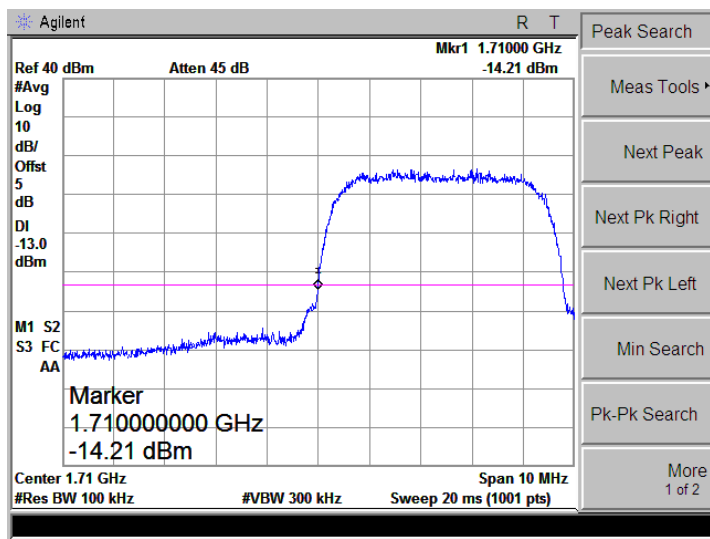
HSDPA Band IV-Middle



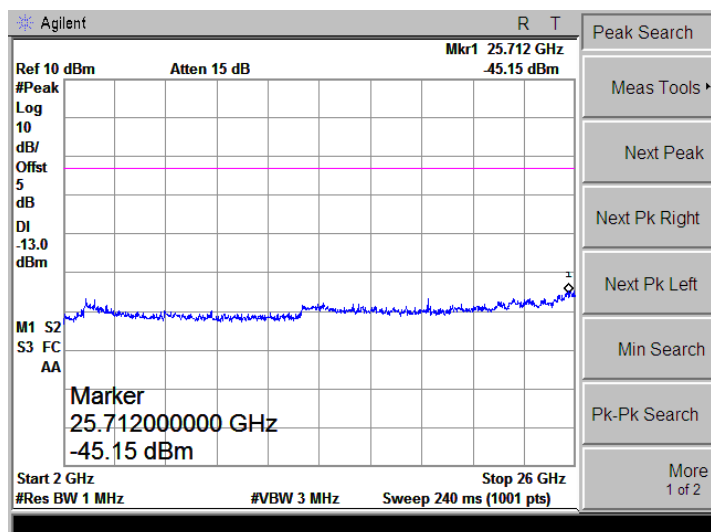
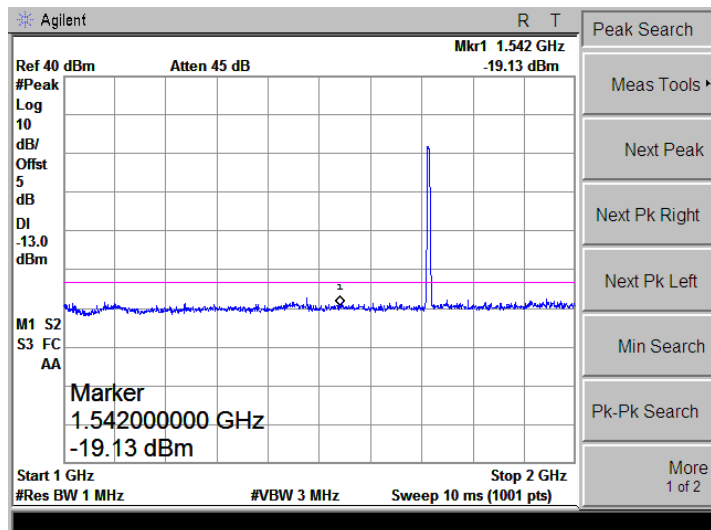
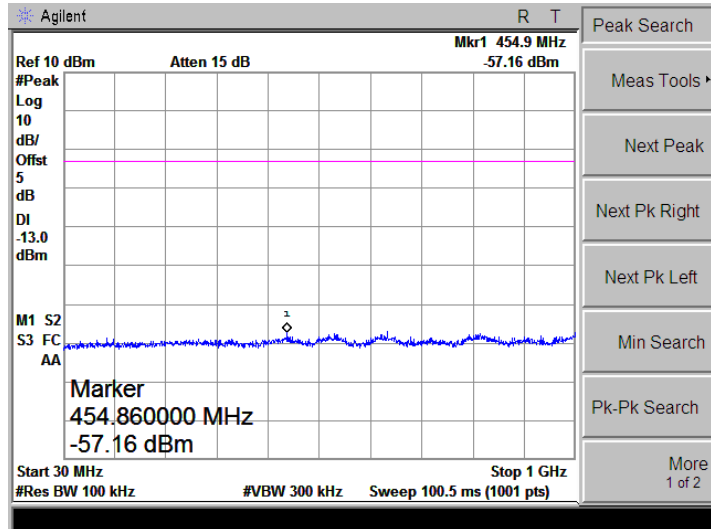
HSDPA Band IV-High



Bandedge

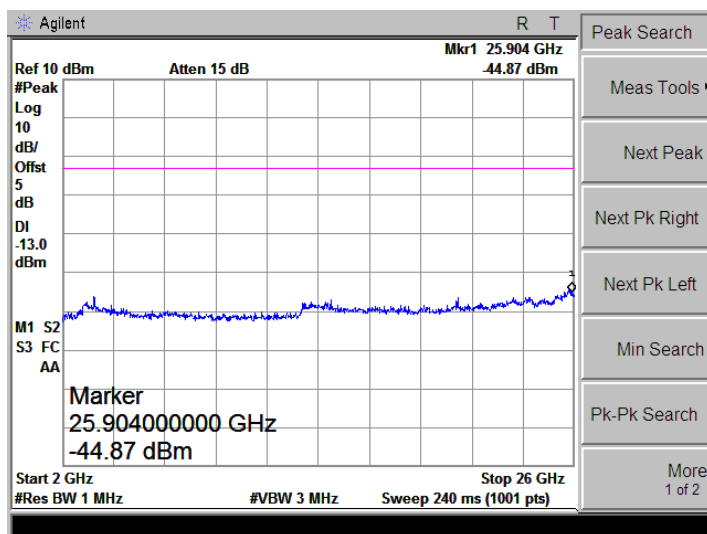
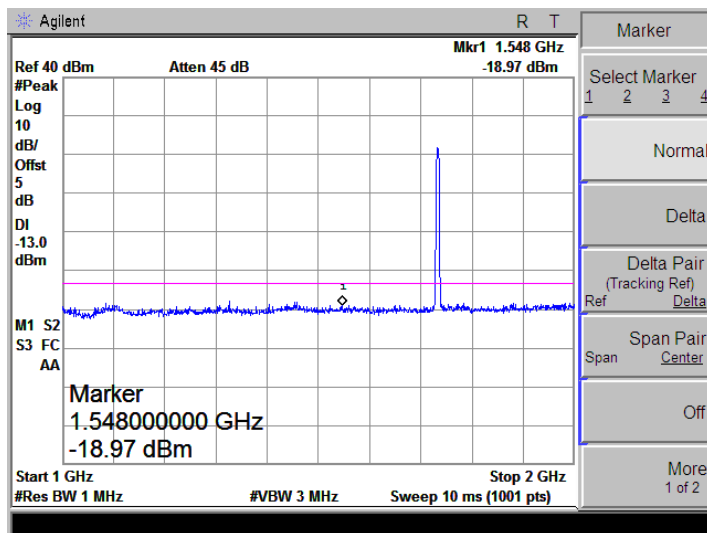
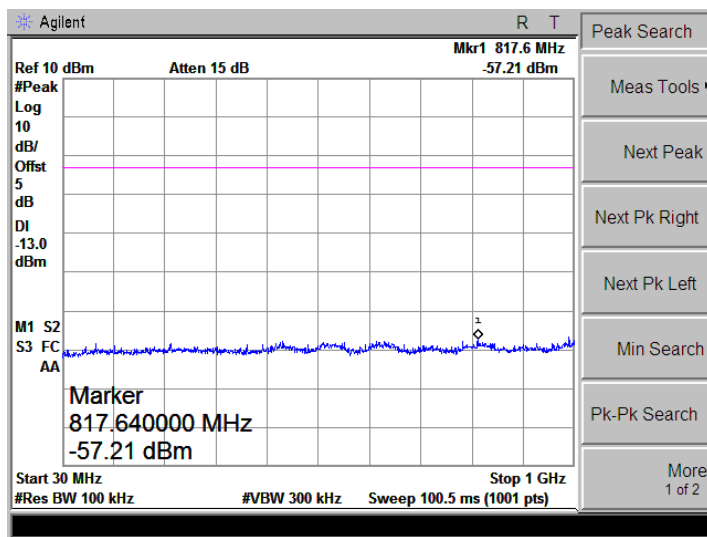


HSUPA Band IV-Low

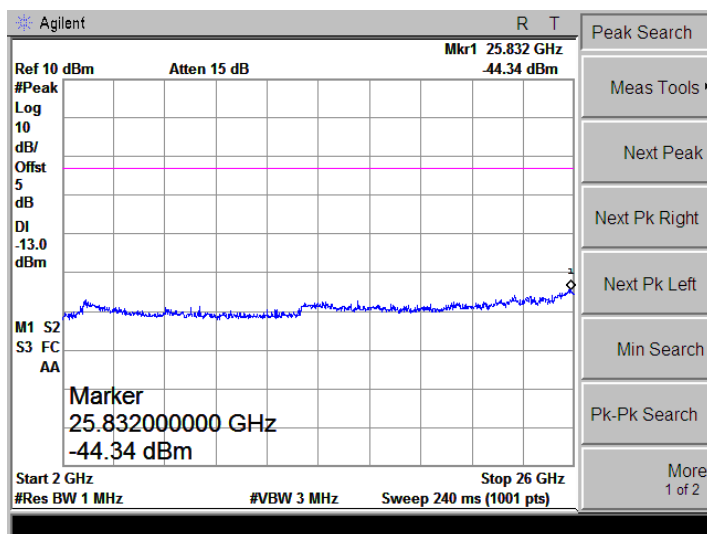
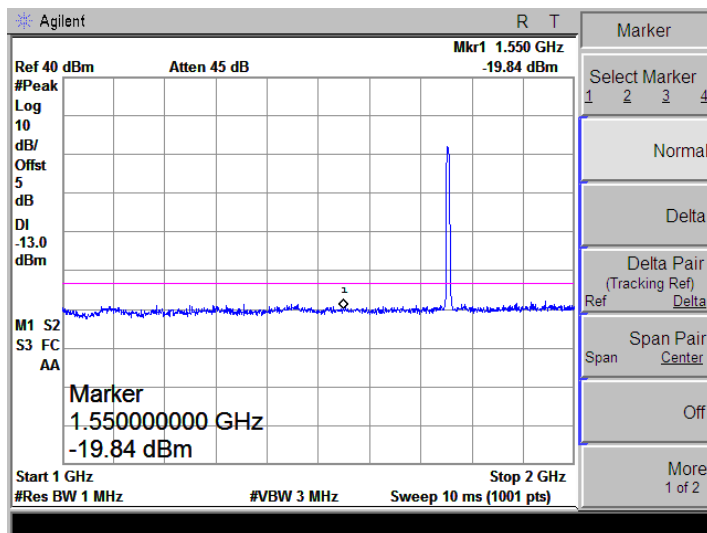
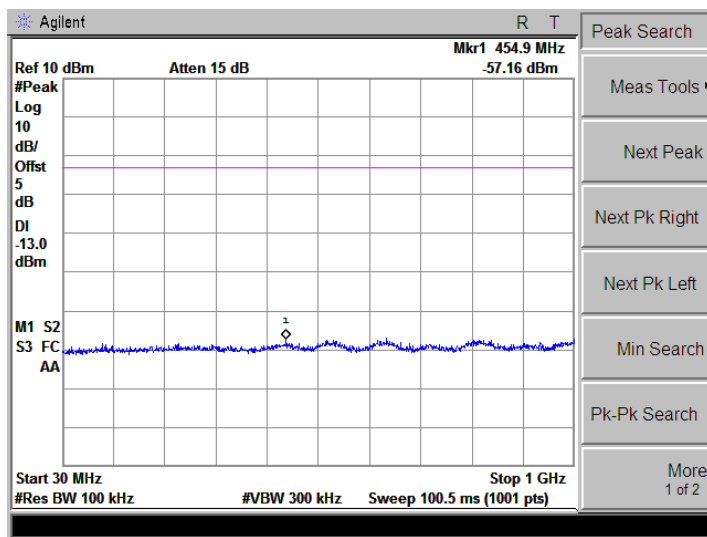




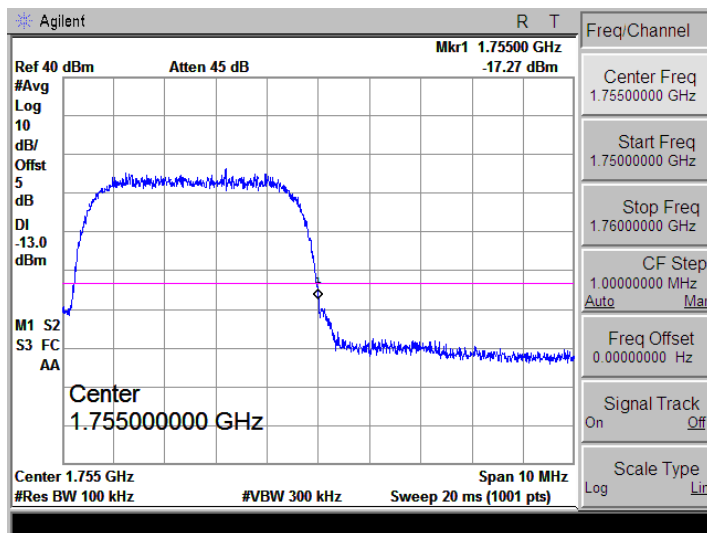
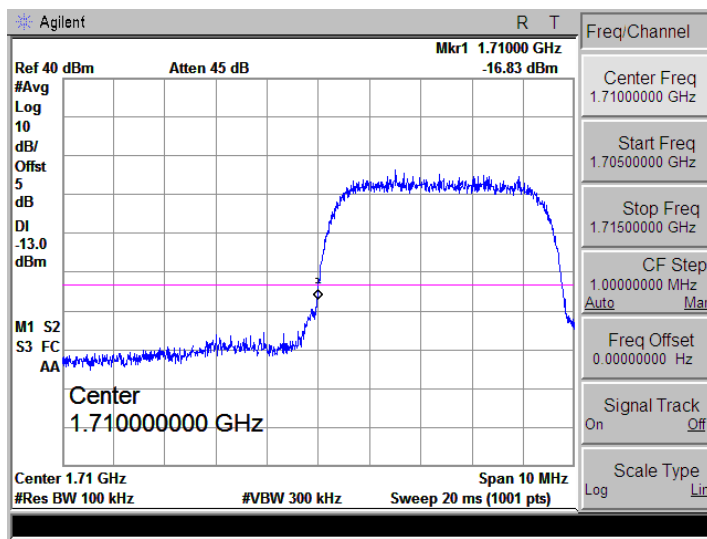
HSUPA Band IV-Middle



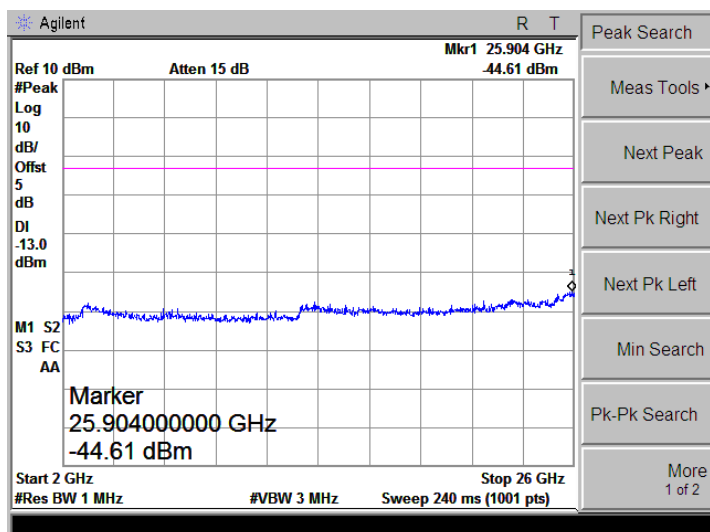
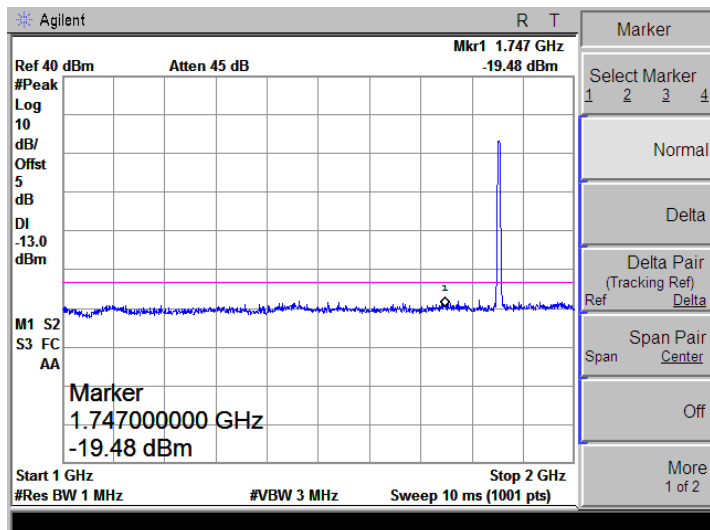
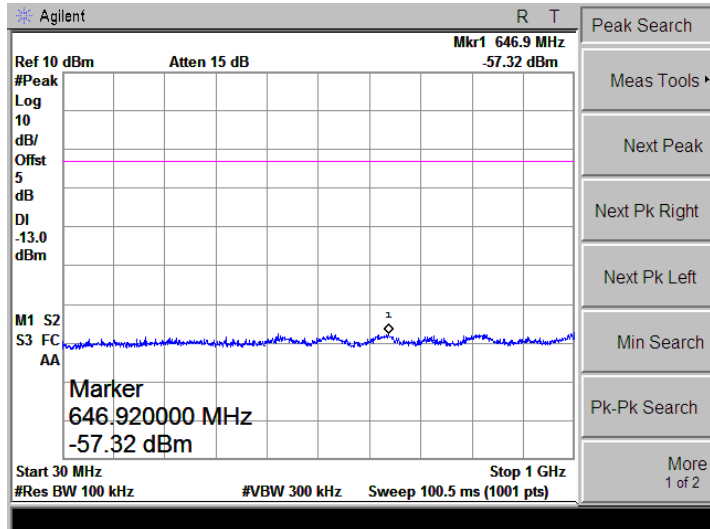
HSUPA Band IV-High



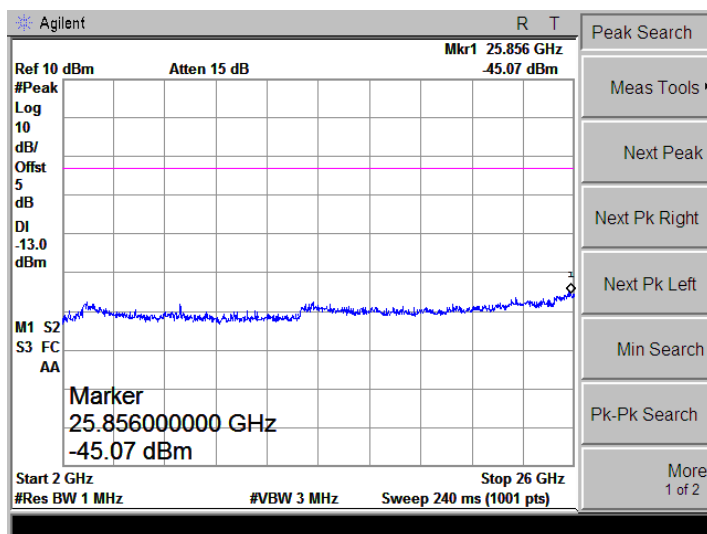
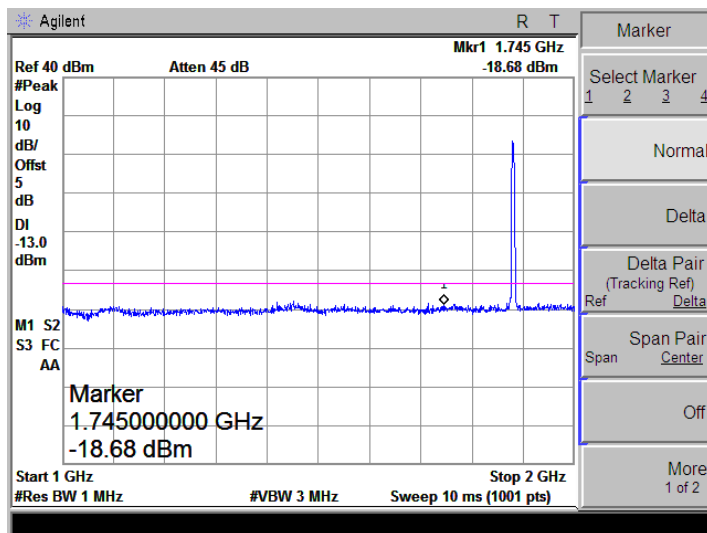
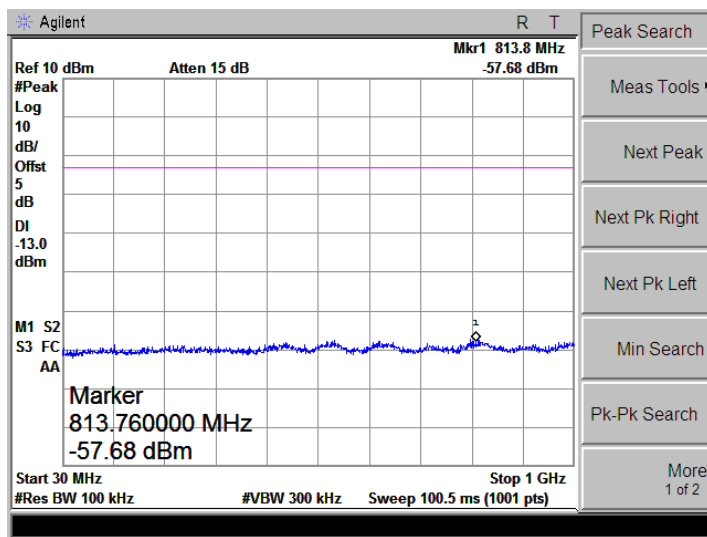
Bandedge



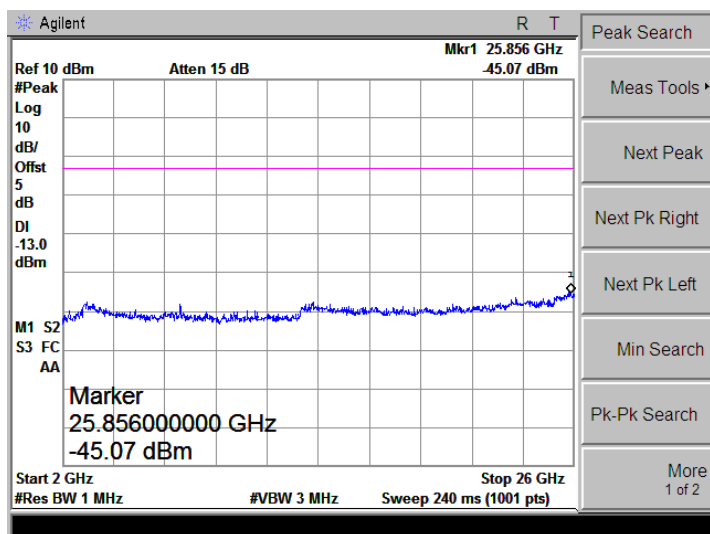
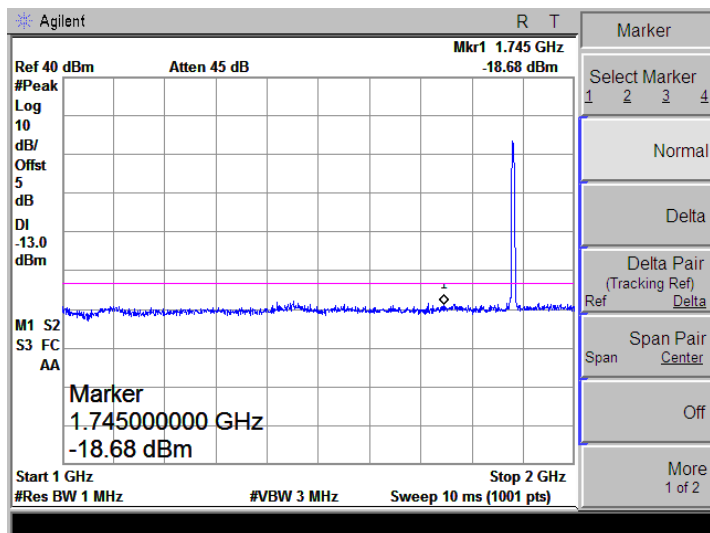
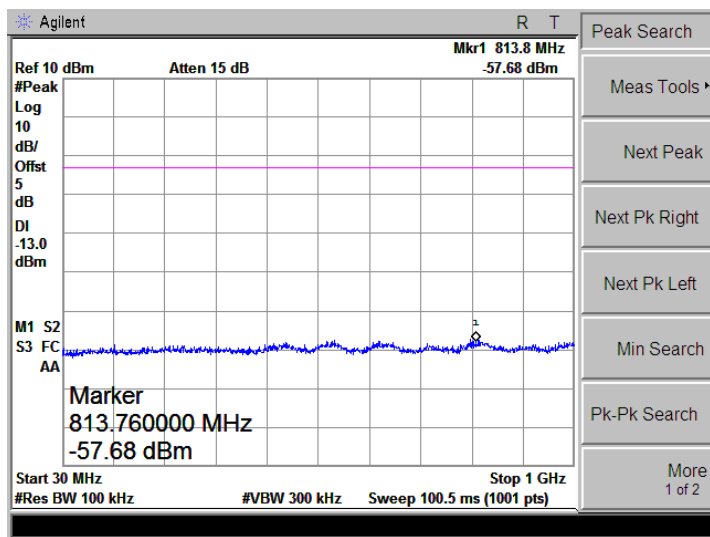
WCDMA Band II-Low



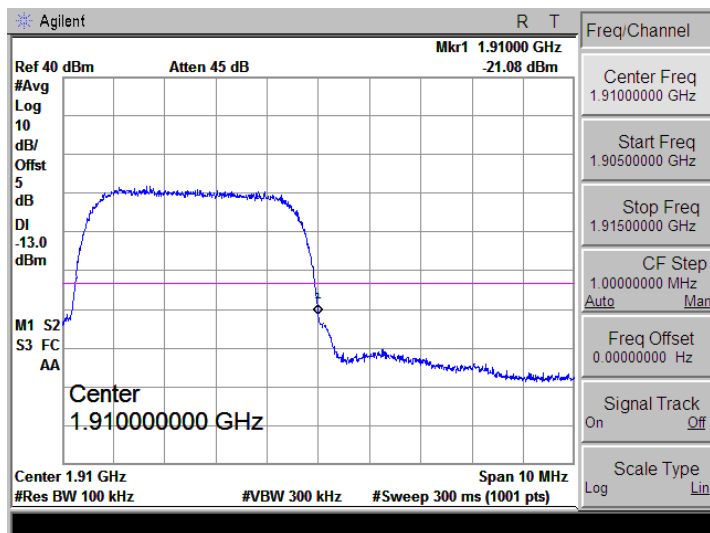
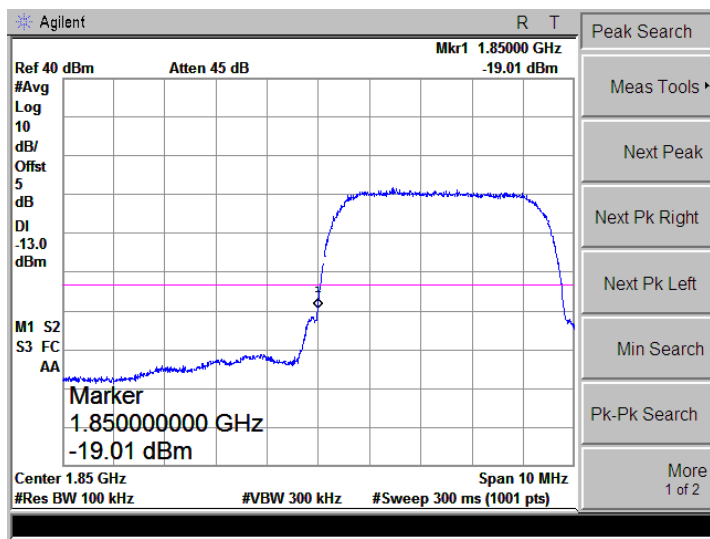
WCDMA Band II-Low



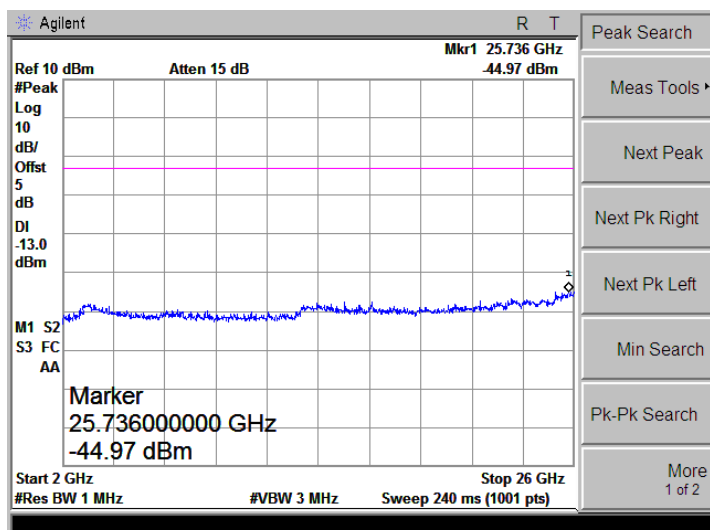
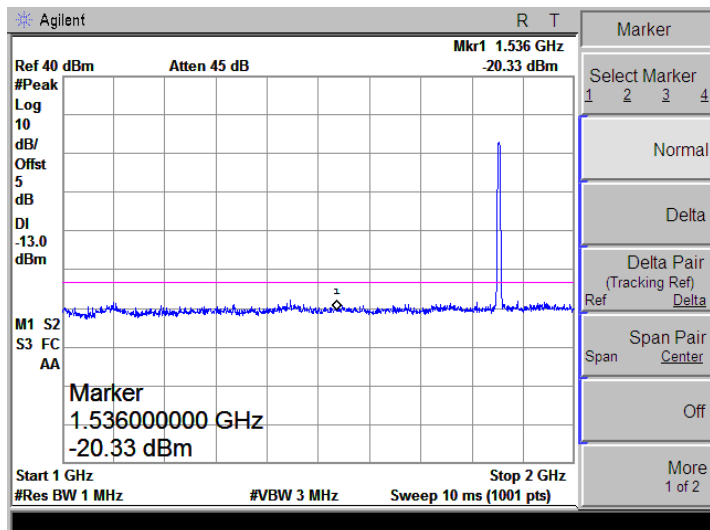
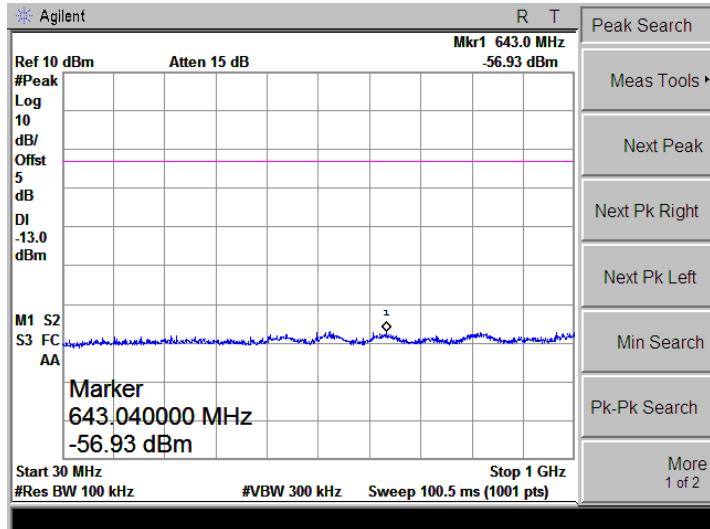
WCDMA Band II-Low



Bandedge

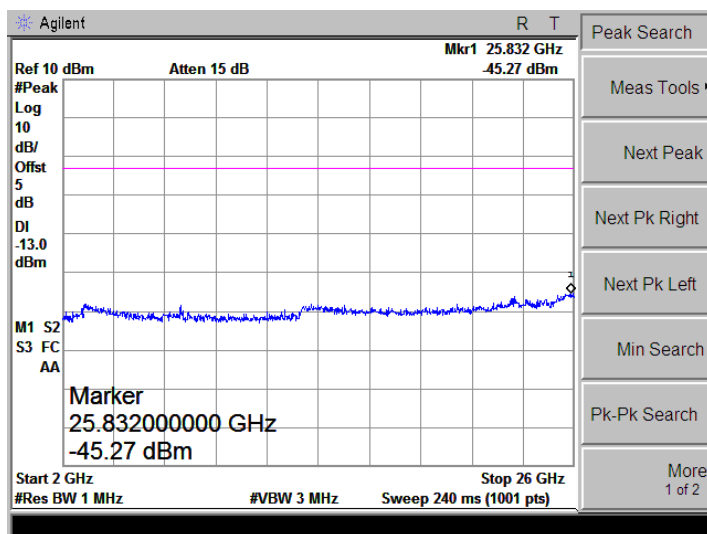
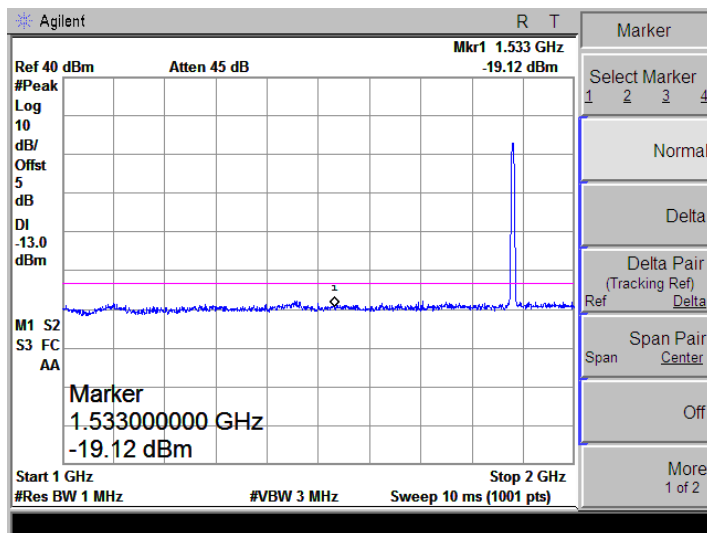
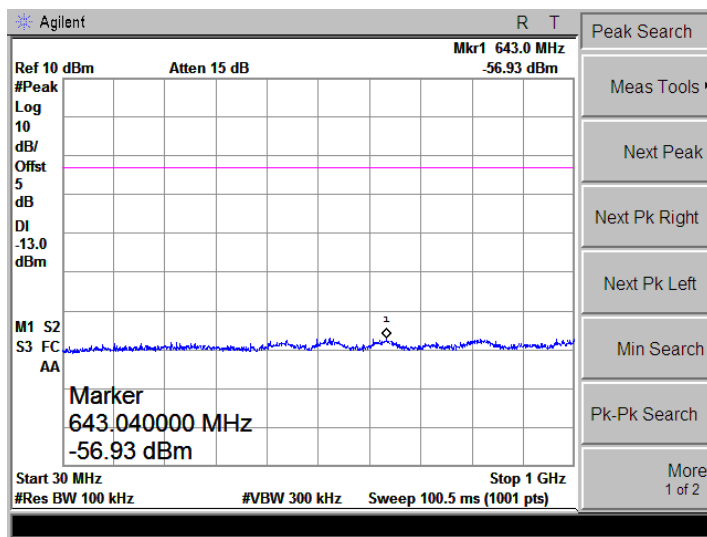


HSDPA Band II-Low

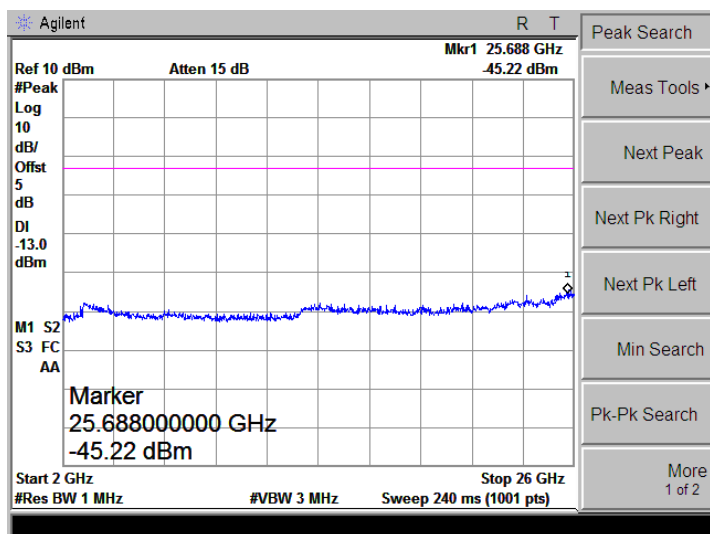
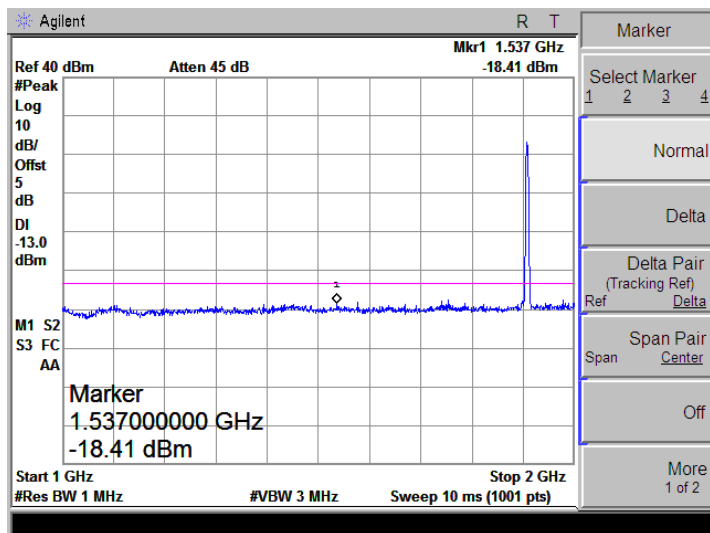
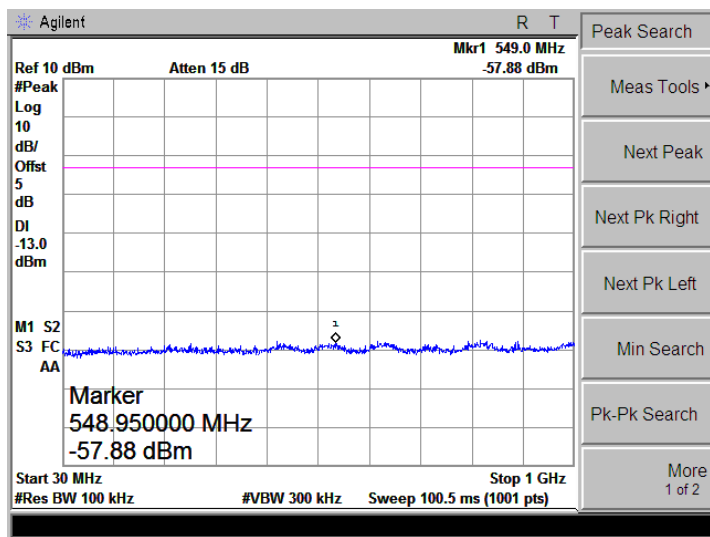




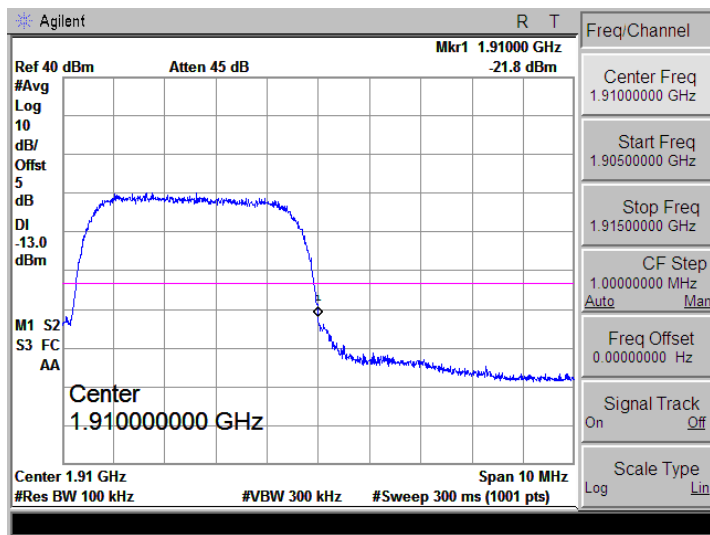
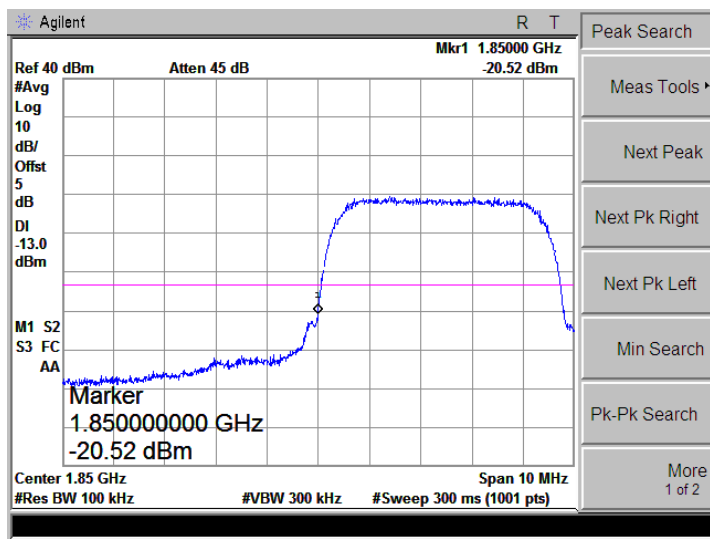
HSDPA Band II-Low



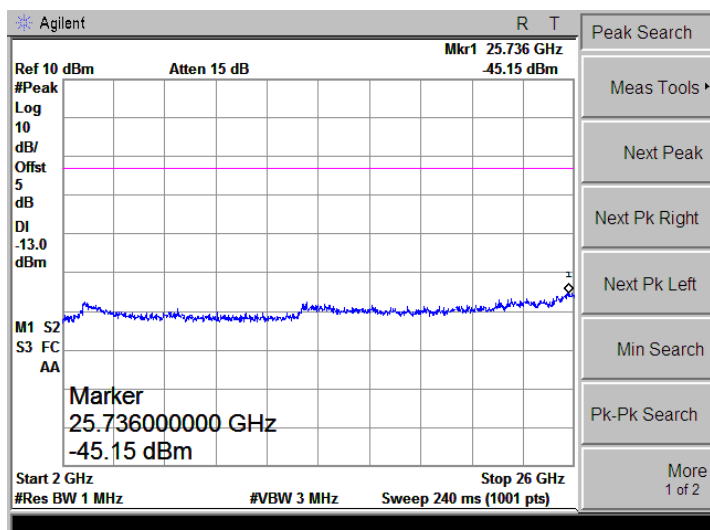
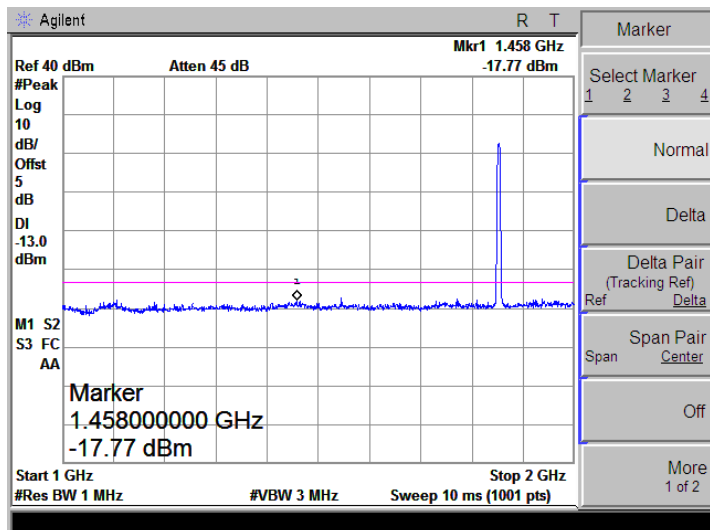
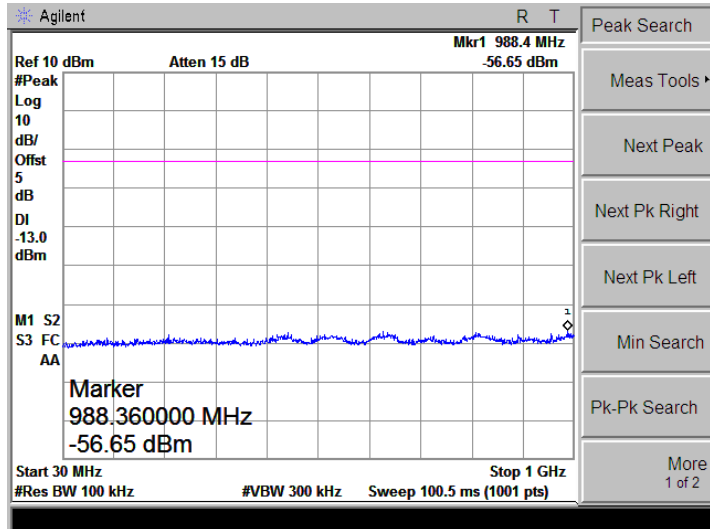
HSDPA Band II-Low



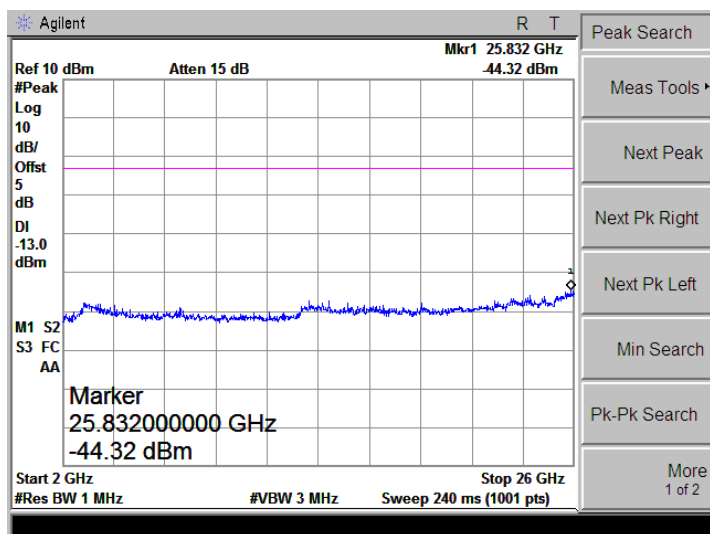
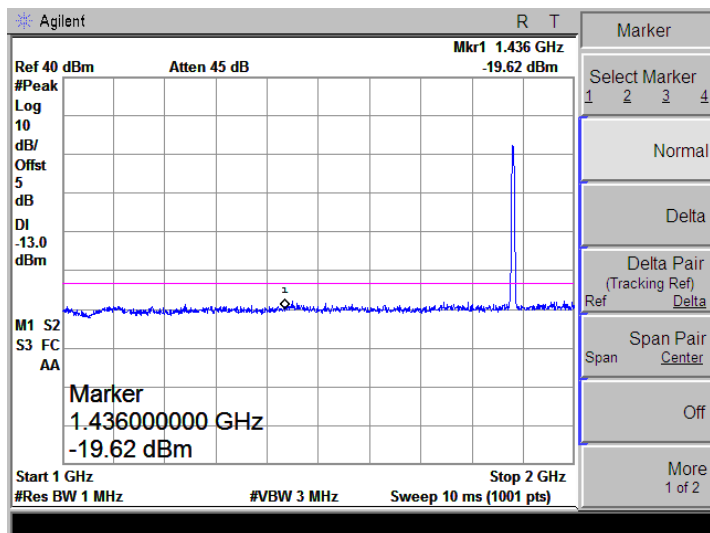
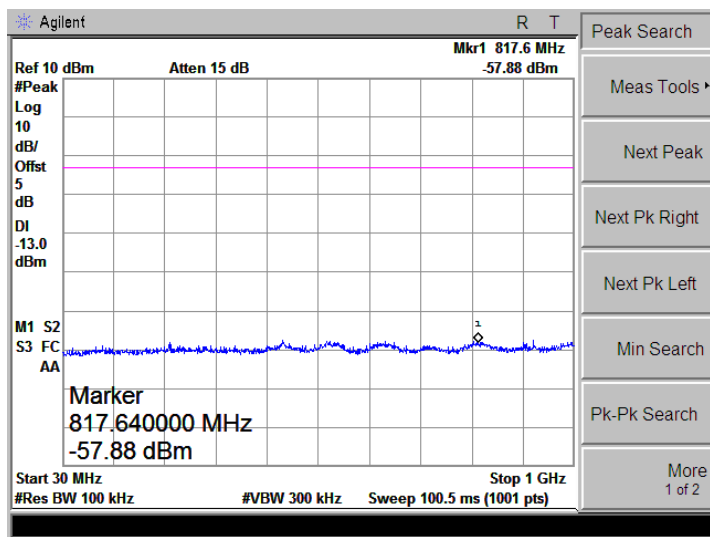
Bandedge



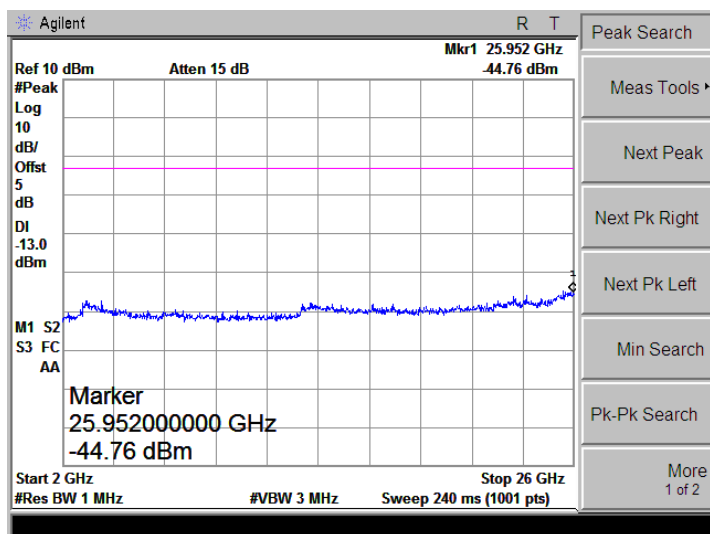
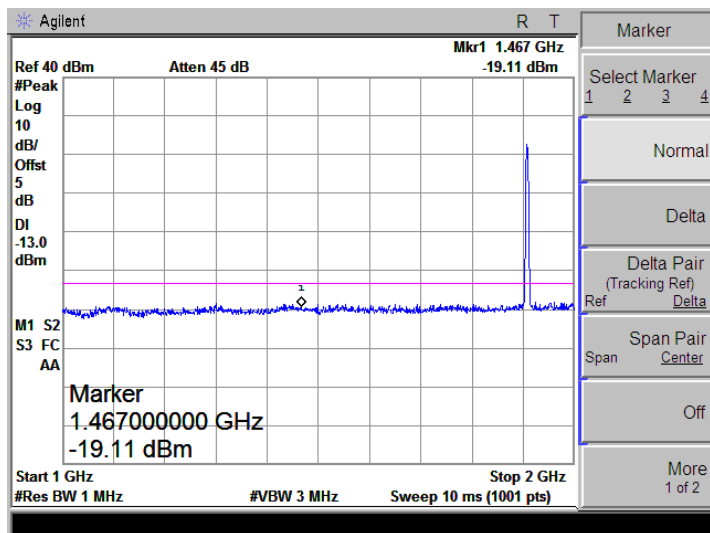
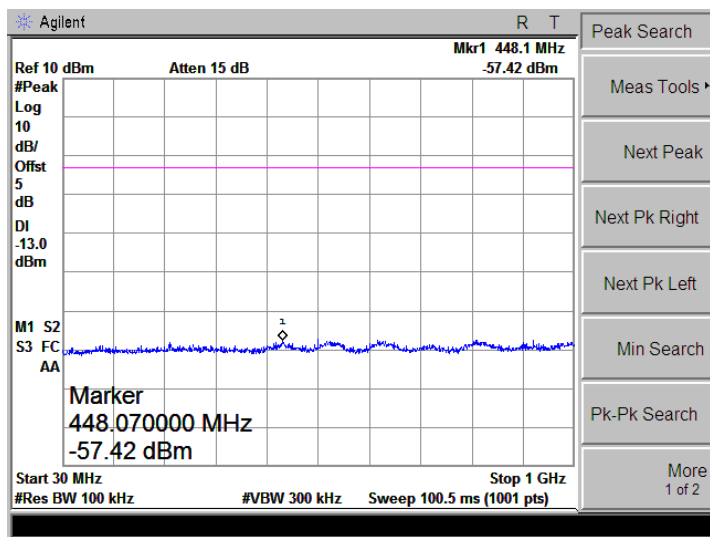
HSUPA Band II-Low



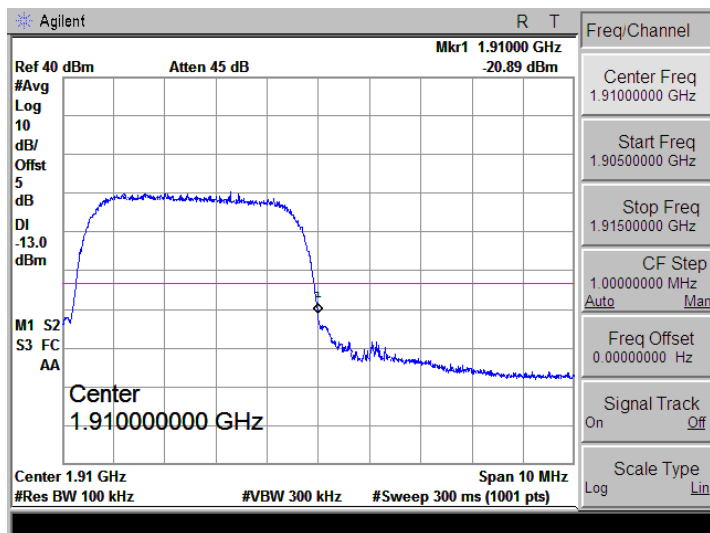
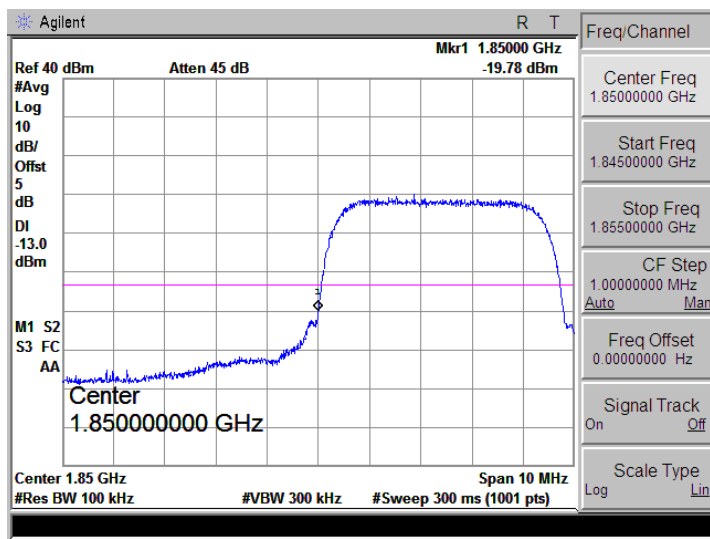
HSUPA Band II-Low



HSUPA Band II-Low



Bandedge



## APPENDIX E

### Frequency Stability

Note: 1. Worst case at GSM850/PCS1900/WCDMA B2/B4/B5 middle channel

2. Normal Voltage NV=DC3.85V; Low Voltage LV=DC3.5V;High Voltage HV=DC4.4V

➤ 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	48	0.0570	2.50	Pass
	-20	42	0.0506		
	-10	38	0.0460		
	0	35	0.0414		
	10	31	0.0368		
	20	23	0.0276		
	30	28	0.0340		
	40	33	0.0395		
	50	39	0.0469		
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	50	0.0266		
	-10	40	0.0213		
	0	33	0.0176		
	10	27	0.0143		
	20	23	0.0123		
	30	27	0.0143		
	40	32	0.0168		
	50	35	0.0188		



Reference Frequency: WCDMA Band V Middle channel=4183 channel=836.6MHz					
Power supplied (Vdc)	Temperature ( °C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
NV	-30	51	0.0607	2.50	Pass
	-20	43	0.0515		
	-10	35	0.0414		
	0	28	0.0340		
	10	22	0.0267		
	20	18	0.0211		
	30	22	0.0257		
	40	27	0.0322		
	50	31	0.0368		
Reference Frequency: WCDMA Band IV Middle channel=1412 channel=1733.6MHz					
Power supplied (Vdc)	Temperature ( °C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
NV	-30	55	0.0315	2.50	Pass
	-20	48	0.0275		
	-10	38	0.0217		
	0	33	0.0191		
	10	25	0.0146		
	20	18	0.0102		
	30	23	0.0133		
	40	28	0.0160		
	50	35	0.0200		

Reference Frequency: WCDMA Band II Middle channel=9400 channel=1880MHz					
Power supplied (Vdc)	Temperature ( °C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
NV	-30	49	0.0262	2.50	Pass
	-20	42	0.0221		
	-10	37	0.0196		
	0	30	0.0160		
	10	23	0.0123		
	20	15	0.0082		
	30	20	0.0106		
	40	28	0.0147		
	50	34	0.0180		

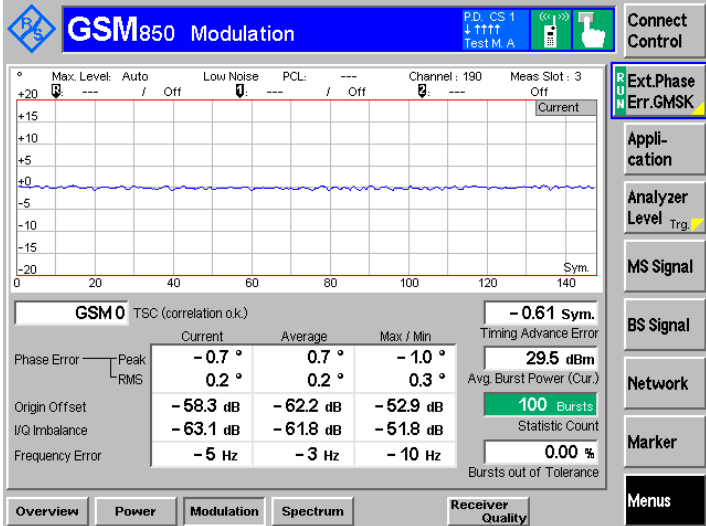
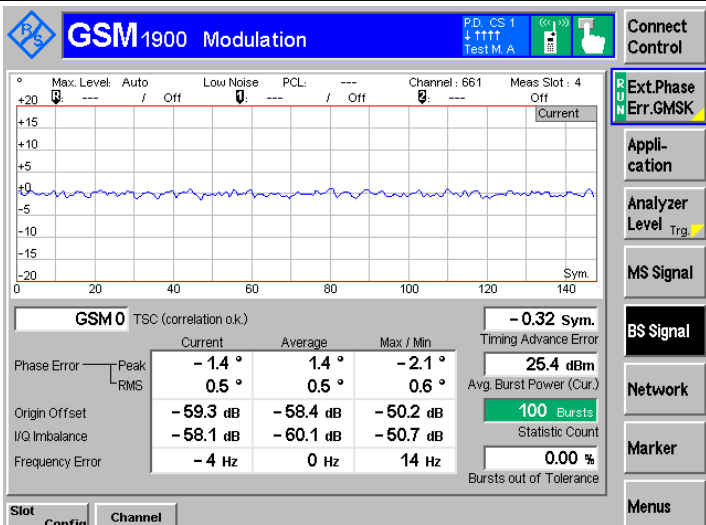
➤ Frequency stability V.S. Voltage measurement

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	68	0.0818	2.50	Pass
	NV	59	0.0708		
	LV	50	0.0598		
Reference Frequency: PCS1900 (GSM link) Middle channel=661 channel=1880MHz					
Temperature ( °C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	HV	59	0.0315	2.50	Pass
	NV	44	0.0233		
	LV	39	0.0209		

Reference Frequency: WCDMA Band V Middle channel=4183 channel=836.6MHz					
Temperature ( °C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	
		Hz	ppm	Result	
25	HV	41	0.0487	2.50	Pass
	NV	45	0.0542		
	LV	51	0.0607		
Reference Frequency: WCDMA Band IV Middle channel=1412 channel=1733.6MHz					
Temperature ( °C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	HV	54	0.0311	2.50	Pass
	NV	39	0.0226		
	LV	35	0.0200		
Reference Frequency: WCDMA Band II Middle channel=9400 channel=1880MHz					
Temperature ( °C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	HV	30	0.0160	2.50	Pass
	NV	34	0.0180		
	LV	41	0.0217		

# APPENDIX F

## Modulation characteristics

GSM850-GMSK	GSM850-GMSK																												
GSM850-8PSK	 <p><b>GSM850 Modulation</b></p> <p>Channel: 190 Meas Slot: 3</p> <table border="1"> <thead> <tr> <th colspan="4">GSM 0 TSC (correlation o.k.)</th> </tr> <tr> <th></th> <th>Current</th> <th>Average</th> <th>Max / Min</th> </tr> </thead> <tbody> <tr> <td>Phase Error</td> <td>-0.7 °</td> <td>0.7 °</td> <td>-1.0 °</td> </tr> <tr> <td></td> <td>0.2 °</td> <td>0.2 °</td> <td>0.3 °</td> </tr> <tr> <td>Origin Offset</td> <td>-58.3 dB</td> <td>-62.2 dB</td> <td>-62.9 dB</td> </tr> <tr> <td>I/Q Imbalance</td> <td>-63.1 dB</td> <td>-61.8 dB</td> <td>-51.8 dB</td> </tr> <tr> <td>Frequency Error</td> <td>-5 Hz</td> <td>-3 Hz</td> <td>-10 Hz</td> </tr> </tbody> </table> <p>Timing Advance Error: -0.61 Sym.                  Avg. Burst Power (Cur.): 29.5 dBm                  100 Bursts                  Statistic Count                  Bursts out of Tolerance: 0.00 %</p>	GSM 0 TSC (correlation o.k.)					Current	Average	Max / Min	Phase Error	-0.7 °	0.7 °	-1.0 °		0.2 °	0.2 °	0.3 °	Origin Offset	-58.3 dB	-62.2 dB	-62.9 dB	I/Q Imbalance	-63.1 dB	-61.8 dB	-51.8 dB	Frequency Error	-5 Hz	-3 Hz	-10 Hz
GSM 0 TSC (correlation o.k.)																													
	Current	Average	Max / Min																										
Phase Error	-0.7 °	0.7 °	-1.0 °																										
	0.2 °	0.2 °	0.3 °																										
Origin Offset	-58.3 dB	-62.2 dB	-62.9 dB																										
I/Q Imbalance	-63.1 dB	-61.8 dB	-51.8 dB																										
Frequency Error	-5 Hz	-3 Hz	-10 Hz																										
GSM1900-GMSK	GSM1900-GMSK																												
GSM1900-8PSK	 <p><b>GSM1900 Modulation</b></p> <p>Channel: 661 Meas Slot: 4</p> <table border="1"> <thead> <tr> <th colspan="4">GSM 0 TSC (correlation o.k.)</th> </tr> <tr> <th></th> <th>Current</th> <th>Average</th> <th>Max / Min</th> </tr> </thead> <tbody> <tr> <td>Phase Error</td> <td>-1.4 °</td> <td>1.4 °</td> <td>-2.1 °</td> </tr> <tr> <td></td> <td>0.5 °</td> <td>0.5 °</td> <td>0.6 °</td> </tr> <tr> <td>Origin Offset</td> <td>-59.3 dB</td> <td>-58.4 dB</td> <td>-50.2 dB</td> </tr> <tr> <td>I/Q Imbalance</td> <td>-58.1 dB</td> <td>-60.1 dB</td> <td>-50.7 dB</td> </tr> <tr> <td>Frequency Error</td> <td>-4 Hz</td> <td>0 Hz</td> <td>14 Hz</td> </tr> </tbody> </table> <p>Timing Advance Error: -0.32 Sym.                  Avg. Burst Power (Cur.): 25.4 dBm                  100 Bursts                  Statistic Count                  Bursts out of Tolerance: 0.00 %</p>	GSM 0 TSC (correlation o.k.)					Current	Average	Max / Min	Phase Error	-1.4 °	1.4 °	-2.1 °		0.5 °	0.5 °	0.6 °	Origin Offset	-59.3 dB	-58.4 dB	-50.2 dB	I/Q Imbalance	-58.1 dB	-60.1 dB	-50.7 dB	Frequency Error	-4 Hz	0 Hz	14 Hz
GSM 0 TSC (correlation o.k.)																													
	Current	Average	Max / Min																										
Phase Error	-1.4 °	1.4 °	-2.1 °																										
	0.5 °	0.5 °	0.6 °																										
Origin Offset	-59.3 dB	-58.4 dB	-50.2 dB																										
I/Q Imbalance	-58.1 dB	-60.1 dB	-50.7 dB																										
Frequency Error	-4 Hz	0 Hz	14 Hz																										

<p>WCDMA B5</p>	<p>WCDMA FDD Band V Modulation</p> <p>Measurement Length: 2560 Chip</p> <p>Q Phase</p> <p>I Phase</p> <p>Err. Vect. Magn. (RMS): 2.9 %</p> <p>Magn. Error (RMS): 2.0 %</p> <p>Phase Error (RMS): 1.3 °</p> <p>Slot Number: 0</p> <p>UEPower: 23.73 dBm</p> <p>I/Q Origin Offset: -53.22 dB</p> <p>I/Q Imbalance: -64.94 dB</p> <p>Buttons: Power, Modulation, Spectrum, Code Dom. Power, Receiver Quality</p> <p>Connect Control, I/Q Analyz. WCDMA, Applic. 1, Trigger, Ana.Set., HSUPA, BS Signal Settings, Display, Menus</p>
<p>WCDMA B4</p>	<p>WCDMA FDD Band IV Modulation</p> <p>Measurement Length: 2560 Chip</p> <p>Q Phase</p> <p>I Phase</p> <p>Err. Vect. Magn. (RMS): 4.6 %</p> <p>Magn. Error (RMS): 3.6 %</p> <p>Phase Error (RMS): 1.6 °</p> <p>Slot Number: 0</p> <p>UEPower: 22.77 dBm</p> <p>I/Q Origin Offset: -55.71 dB</p> <p>I/Q Imbalance: -62.06 dB</p> <p>Buttons: Power, Modulation, Spectrum, Code Dom. Power, Receiver Quality</p> <p>Connect Control, I/Q Analyz. WCDMA, Applic. 1, Trigger, Ana.Set., HSUPA, BS Signal Settings, Display, Menus</p>
<p>WCDMA B2</p>	<p>WCDMA FDD Band II Modulation</p> <p>Measurement Length: 2560 Chip</p> <p>Q Phase</p> <p>I Phase</p> <p>Err. Vect. Magn. (RMS): 8.4 %</p> <p>Magn. Error (RMS): 6.7 %</p> <p>Phase Error (RMS): 3.0 °</p> <p>Slot Number: 0</p> <p>UEPower: 22.98 dBm</p> <p>I/Q Origin Offset: -59.00 dB</p> <p>I/Q Imbalance: -53.22 dB</p> <p>Buttons: Power, Modulation, Spectrum, Code Dom. Power, Receiver Quality</p> <p>Connect Control, I/Q Analyz. WCDMA, Applic. 1, Trigger, Ana.Set., HSUPA, BS Signal Settings, Display, Menus</p>

## **APPENDIX PHOTOGRAPHS**

---

**Please refer to “ANNEX”**

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