

TEST REPORT

Reference No..... : WTX21X05049596W-1
FCC ID : 2AHAF-MDT661
Applicant : TOPICON HK LIMITED
Address..... : Room 2314-2316, Tower C, Huangdu Plaza, Yitian Road, Futian District,
Shenzhen, China
Product Name : Rugged Phone
Test Model. : MDT661
Standards : FCC Part 22H, FCC Part 24E, FCC Part 27
Date of Receipt sample : May. 24, 2021
Date of Test..... : May. 24, 2021 to Sep. 07, 2021
Date of Issue : Sep. 07, 2021
Test Result..... : **Pass**

Remarks:

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

Prepared By:

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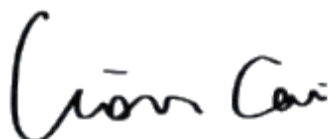
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Reviewed By:

Approved & Authorized By:



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Silin Chen / Manager

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Report version

Version No.	Date of issue	Description
Rev.00	Sep. 07, 2021	Original
/	/	/

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: TOPICON HK LIMITED
 Address of applicant: Room 2314-2316, Tower C, Huangdu Plaza, Yitian Road,
 Futian District, Shenzhen, China

Manufacturer: TOPICON HK LIMITED
 Address of manufacturer: Room 2314-2316, Tower C, Huangdu Plaza, Yitian Road,
 Futian District, Shenzhen, China

General Description of EUT:	
Product Name:	Rugged Phone
Trade Name:	/
Model No.:	MDT661
Adding Model(s):	MDT660, MDT662, OBC661, PN6043, M620, M620A, MDT615D, X6, Paceblade SDT 121
Rated Voltage/ Battery:	Adapter DC5V; Built-in battery DC3.8V; External rechargeable battery DC12, 24V
Adapter Model:	GA-0502000 Input: AC100-240V, 50/60Hz Output:DC5V, 2000mA
Software Version:	mdt661_1.3.5
Hardware Version:	MDT661_V1.0
<p><i>Note: The test data is gathered from a production sample provided by the manufacturer. The appearance of others models listed in the report is different from main-test model MDT661, but the circuit and the electronic construction do not change, declared by the manufacturer.</i></p>	

Technical Characteristics of EUT:	
2G	
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: 32.95dBm, GSM1900: 29.36dBm EDGE850: 25.53dBm, EDGE1900: 25.17dBm
Type of Emission:	GSM850: 253KGXW, GSM1900:252KGXW EDGE850: 264KG7W, EDGE1900: 263KG7W
Type of Modulation:	GMSK, 8PSK
Type of Antenna:	Integral Antenna
Antenna Gain:	GSM850: 1dBi; GSM1900: 1dBi
GPRS/EDGE Class:	Class 12
3G	
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: 22.96dBm, WCDMA Band 4: 23.10dBm WCDMA Band 5: 22.45dBm
Type of Emission:	WCDMA Band 2: 4M20F9W WCDMA Band 4: 4M19F9W WCDMA Band 5: 4M20F9W
Type of Modulation:	BPSK
Antenna Type:	Integral Antenna
Antenna Gain:	WCDMA Band 2: 1dBi, WCDMA Band 4: 1dBi, WCDMA Band 5: 1dBi

1.2 Test Standards

The tests were performed according to following standards:

FCC Rules Part 2: Frequency Alloca-Tions and Radio Treaty Mat-Ters; General Rules and Reg-Ulations.

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.

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

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
USB-C Cable	1.0	Shielded	With Ferrite
DC Cable	3.2	Unshielded	Without Ferrite

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

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
Notebook	Lenovo	TianYi310-14ISK	/
Battery	JIADe	DC12-24V	/

1.6 Measurement Uncertainty

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

1.7 Test Equipment List and Details

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

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

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

2. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test Item	Result
§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

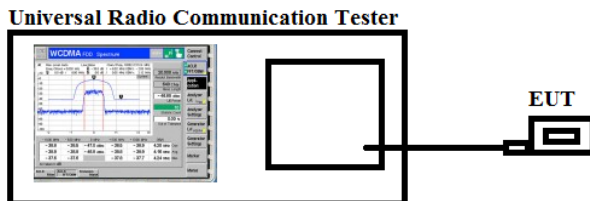
According to §22.913(a)(2), the ERP of mobile and portable stations transmitters and auxiliary test transmitters must not exceed 7 Watts.

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	29.47	<38.45	Pass
		H	24.35		
	190	V	29.98		
		H	23.87		
	251	V	29.40		
		H	23.69		
GPRS850	128	V	29.71	<38.45	Pass
		H	25.02		
	190	V	29.14		
		H	25.17		
	251	V	29.24		
		H	24.97		
EGPRS850	128	V	23.57	<38.45	Pass
		H	20.02		
	190	V	23.98		
		H	19.41		
	251	V	23.74		
		H	19.28		

Mode	Channel	Antenna Polar	EIRP (dBm)	Limit (dBm)	Result
PCS1900	512	V	27.05	<33.00	Pass
		H	23.02		
	661	V	27.16		
		H	23.32		
	810	V	27.41		
		H	23.02		
GPRS1900	512	V	27.35	<33.00	Pass
		H	23.32		
	661	V	27.46		
		H	23.02		
	810	V	27.46		
		H	23.13		
EGPRS1900	512	V	23.02	<33.00	Pass
		H	19.41		
	661	V	23.32		
		H	19.36		
	810	V	23.74		
		H	19.21		

Mode	Channel	Antenna Polar	ERP	Limit (dBm)	Result
WCDMA Band V	4132	V	20.43	<38.45	Pass
		H	16.24		
	4183	V	20.49		
		H	16.28		
	4233	V	20.75		
		H	16.36		

Mode	Channel	Antenna Polar	EIRP	Limit (dBm)	Result
WCDMA Band IV	1312	V	21.13	<30.00	Pass
		H	17.42		
	1412	V	21.25		
		H	17.62		
	1513	V	21.04		
		H	17.43		

Mode	Channel	Antenna Polar	EIRP	Limit (dBm)	Result
WCDMA Band II	9262	V	20.36	<33.00	Pass
		H	15.97		
	9400	V	20.46		
		H	15.87		
	9538	V	20.25		
		H	15.67		

➤ **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.

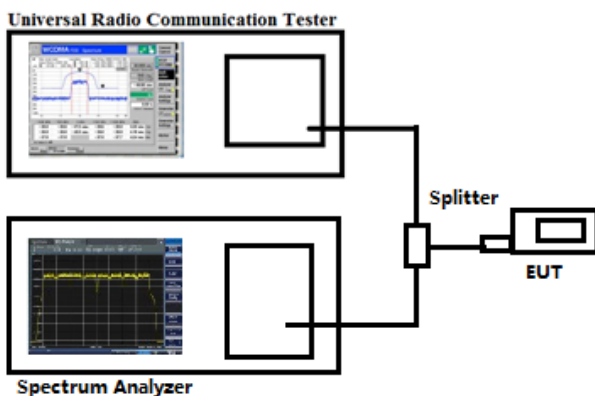
According to §27.50(B), the peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13dB. The PAPR measurements should be made using either an instrument with complementary cumulative distribution function (CCDF) capabilities to determine that PAPR will not exceed 13dB for 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.

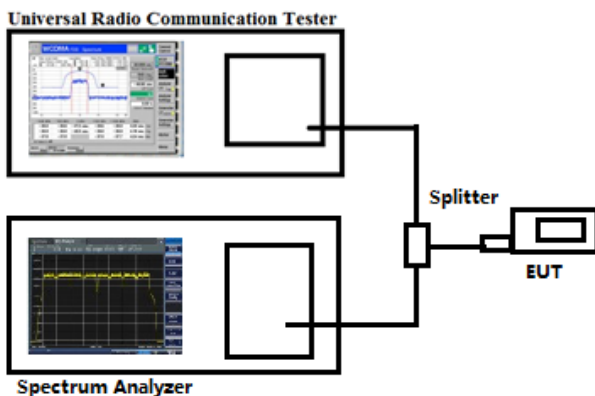
According to §24.238(b), the emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26dB below the transmitter power.

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.

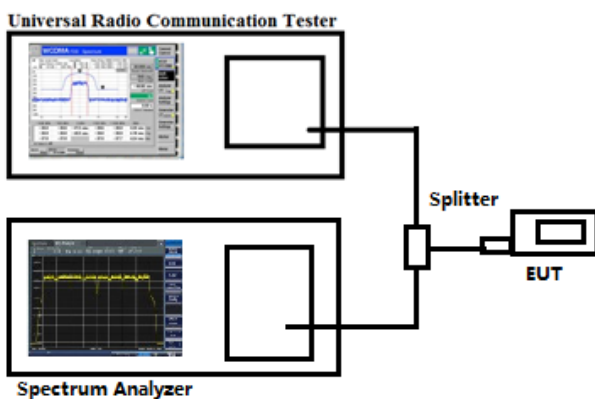
According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

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 10th 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.

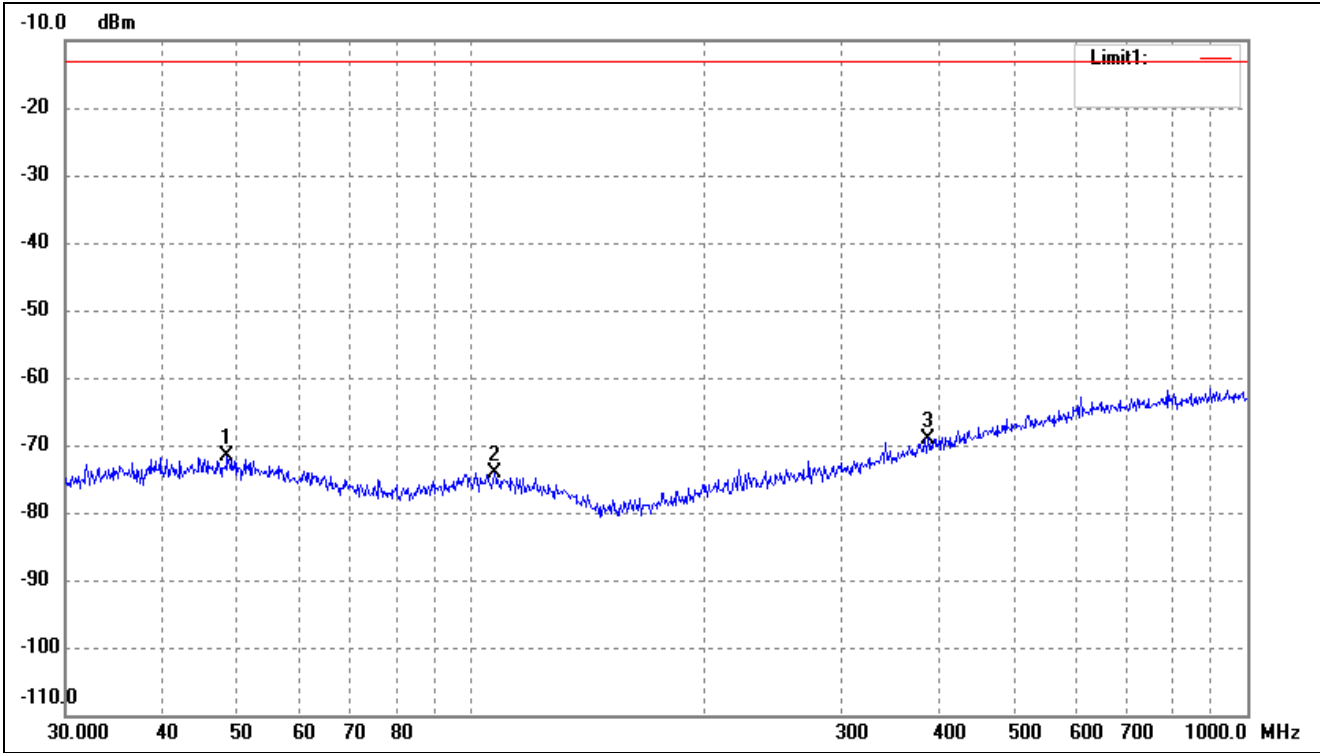
$$\text{Spurious attenuation limit in dB} = 43 + 10 \log_{10}(\text{power out in Watts})$$

7.3 Summary of Test Results/Plots

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

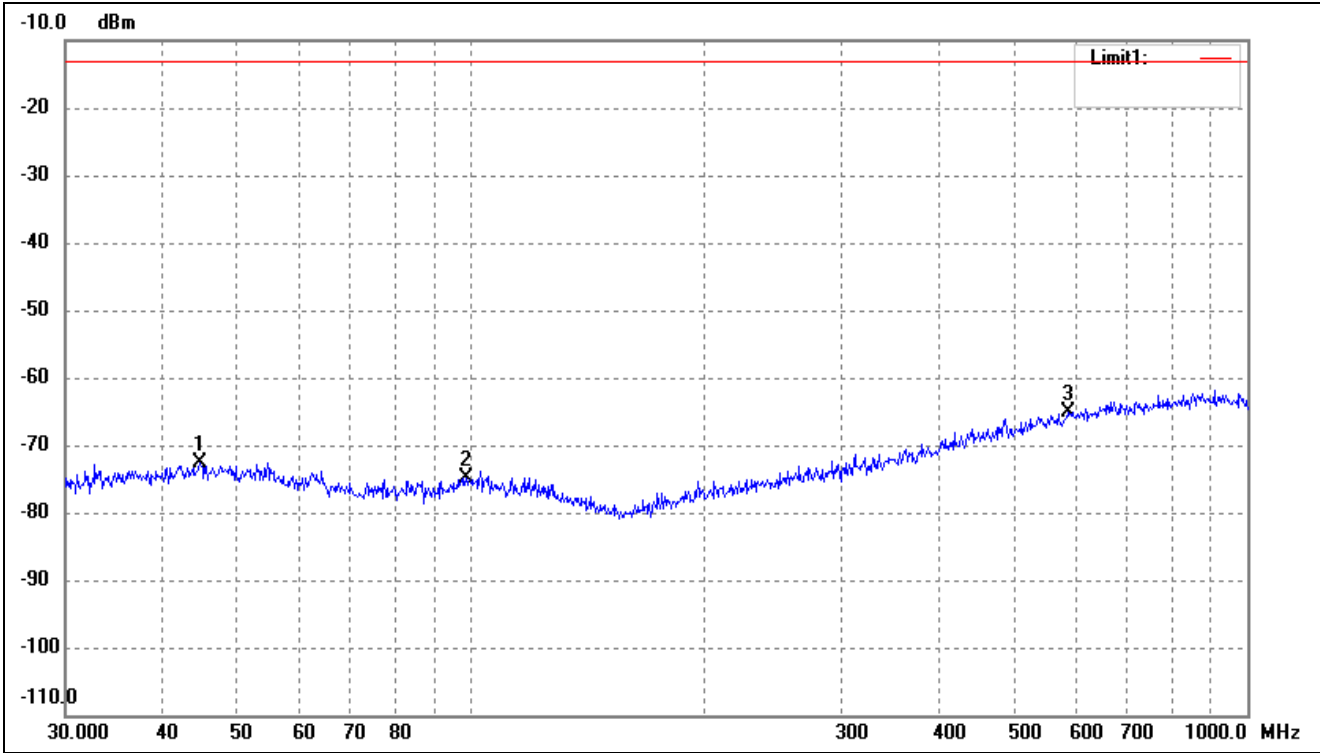
➤ Spurious Emissions Below 1GHz

For Cellular Band			
Test Channel	GSM850	Polarity:	Horizontal



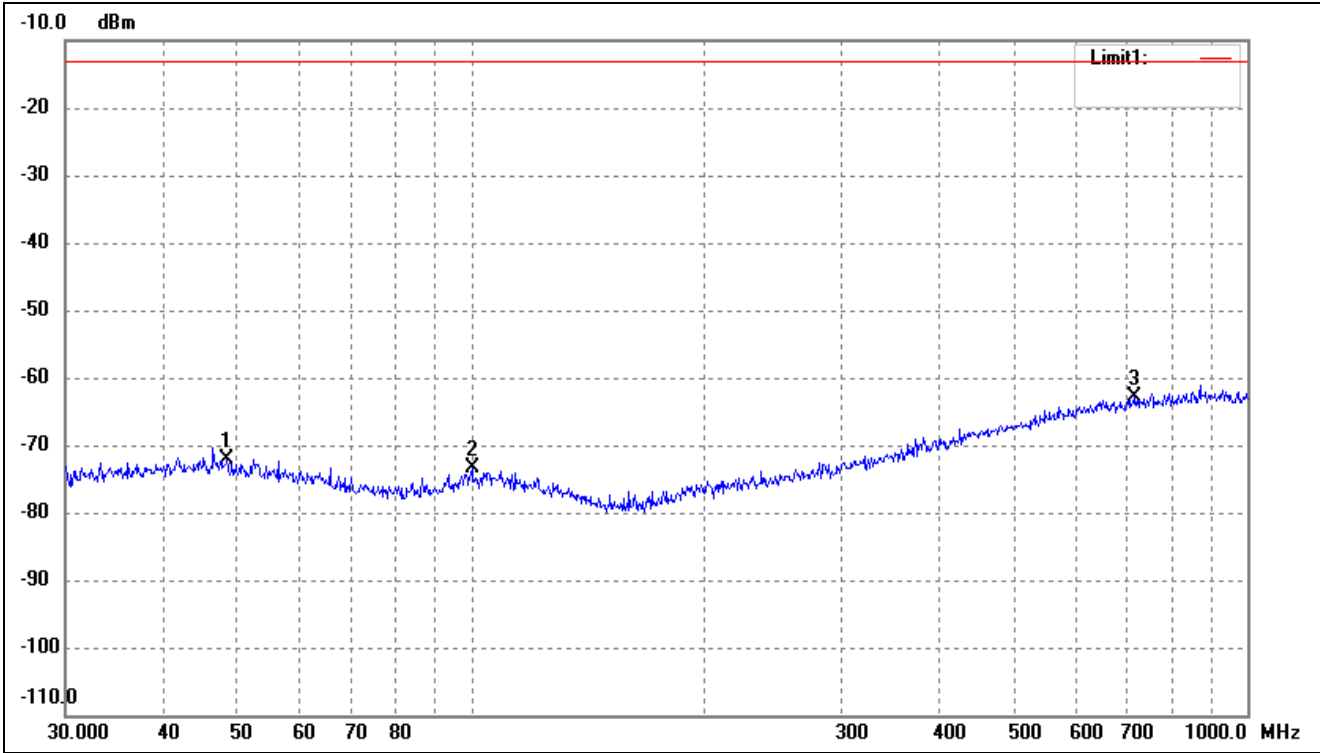
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	48.5016	-76.48	4.83	-71.65	-13.00	-58.65	ERP
2	107.1337	-76.97	2.97	-74.00	-13.00	-61.00	ERP
3	387.9920	-76.55	7.55	-69.00	-13.00	-56.00	ERP

For Cellular Band			
Test Channel	GSM850	Polarity:	Vertical



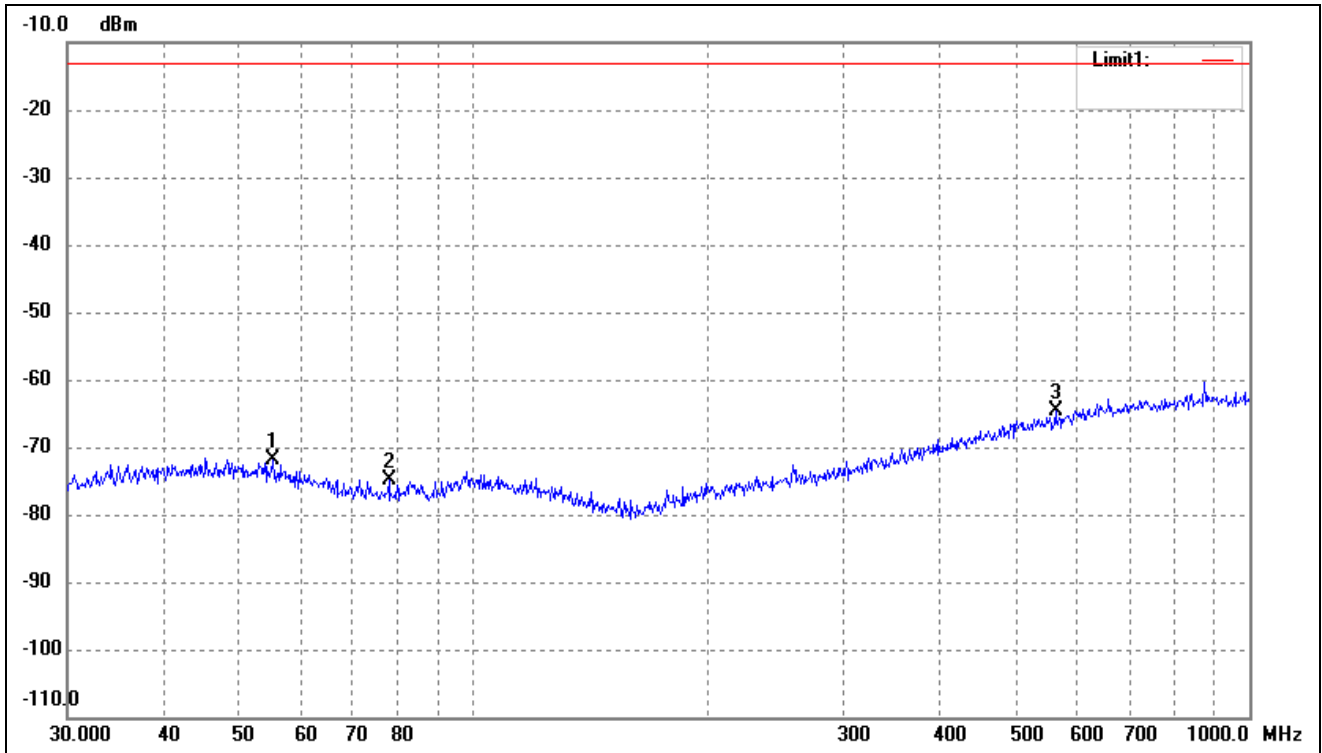
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	44.7434	-77.33	4.82	-72.51	-13.00	-59.51	ERP
2	98.4866	-77.56	2.79	-74.77	-13.00	-61.77	ERP
3	586.8437	-77.15	11.95	-65.20	-13.00	-52.20	ERP

For Cellular Band			
Test Channel	GSM1900	Polarity:	Horizontal



No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	48.5016	-77.02	4.83	-72.19	-13.00	-59.19	ERP
2	100.2286	-76.36	3.07	-73.29	-13.00	-60.29	ERP
3	716.6820	-76.17	13.34	-62.83	-13.00	-49.83	ERP

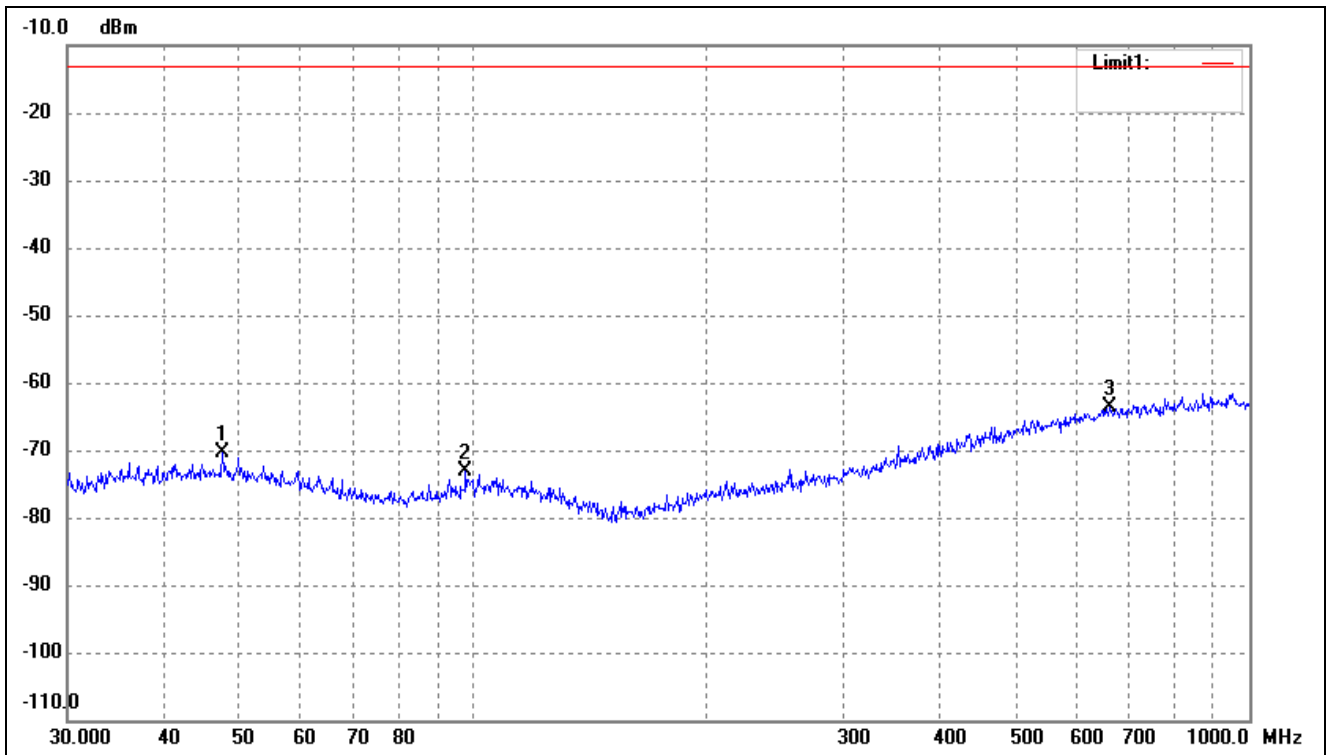
For Cellular Band			
Test Channel	GSM1900	Polarity:	Vertical



No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	55.2207	-75.97	4.07	-71.90	-13.00	-58.90	ERP
2	77.8654	-76.00	1.19	-74.81	-13.00	-61.81	ERP
3	562.6624	-76.29	11.55	-64.74	-13.00	-51.74	ERP

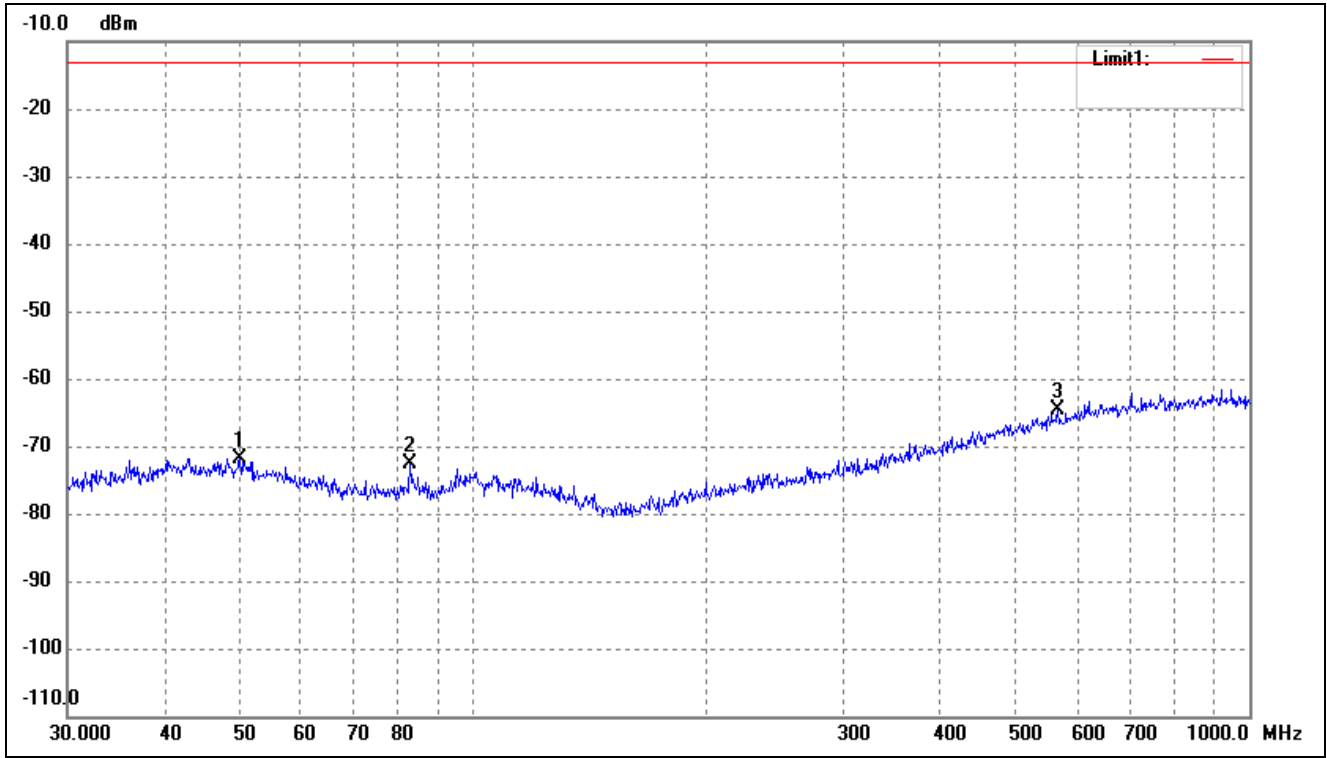
Note: Margin= (Reading+ Correct)- Limit

Test Channel	WCDMA Band V	Polarity:	Horizontal
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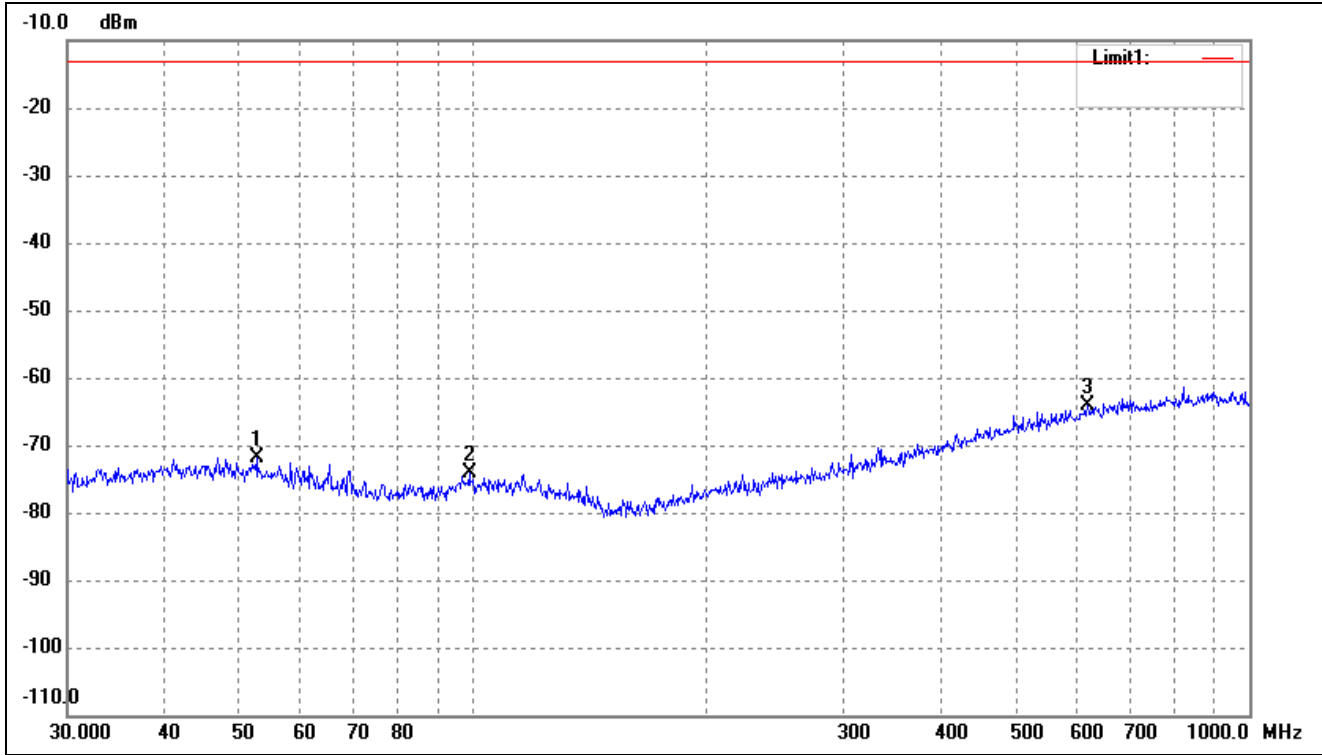
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	47.4918	-75.23	4.83	-70.40	-13.00	-57.40	ERP
2	97.7983	-75.90	2.67	-73.23	-13.00	-60.23	ERP
3	661.1505	-76.50	12.84	-63.66	-13.00	-50.66	ERP

Test Channel	WCDMA Band V	Polarity:	Vertical
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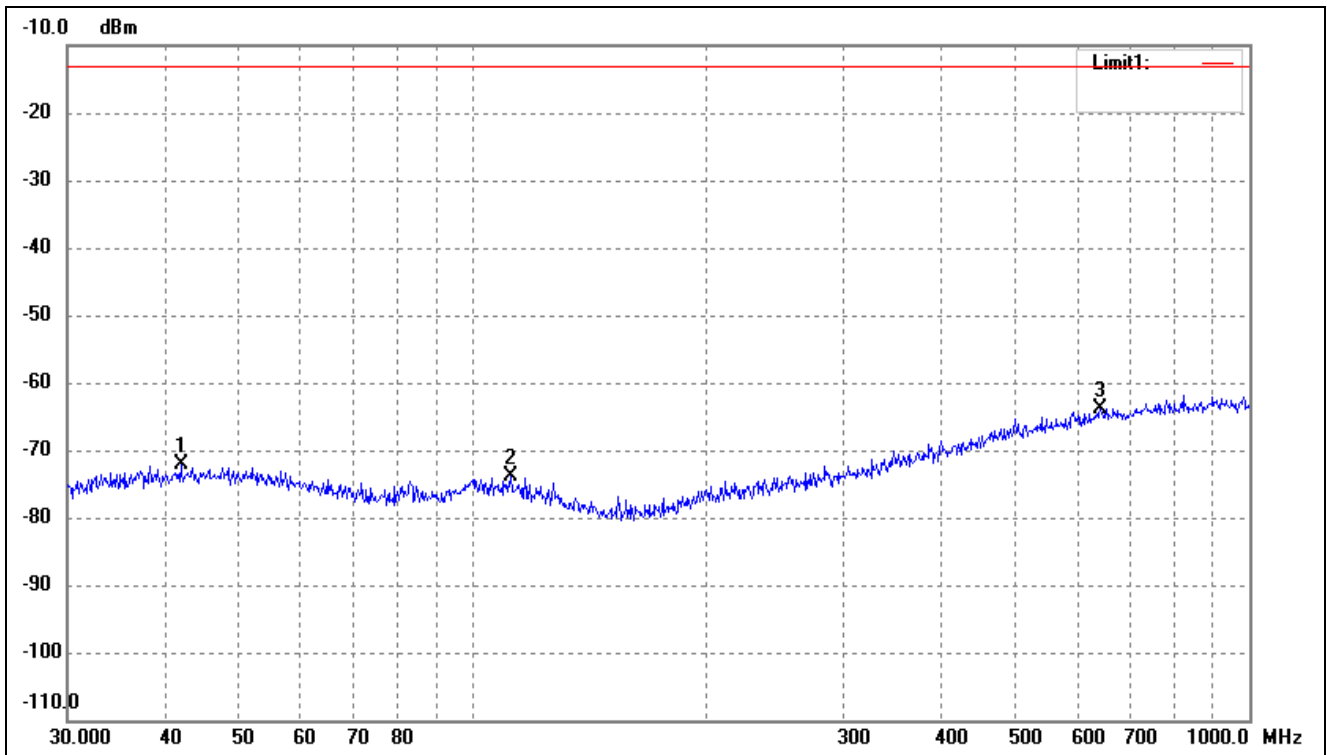
No.	Frequency (MHz)	Reading (dBm)	Correct (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	50.0566	-76.59	4.83	-71.76	-13.00	-58.76	ERP
2	82.9385	-73.71	1.11	-72.60	-13.00	-59.60	ERP
3	566.6223	-76.29	11.60	-64.69	-13.00	-51.69	ERP

Test Channel	WCDMA Band IV	Polarity:	Horizontal
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No.	Frequency (MHz)	Reading (dBm)	Correct (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	52.5753	-76.37	4.47	-71.90	-13.00	-58.90	ERP
2	98.8326	-77.05	2.86	-74.19	-13.00	-61.19	ERP
3	618.5369	-76.51	12.37	-64.14	-13.00	-51.14	ERP

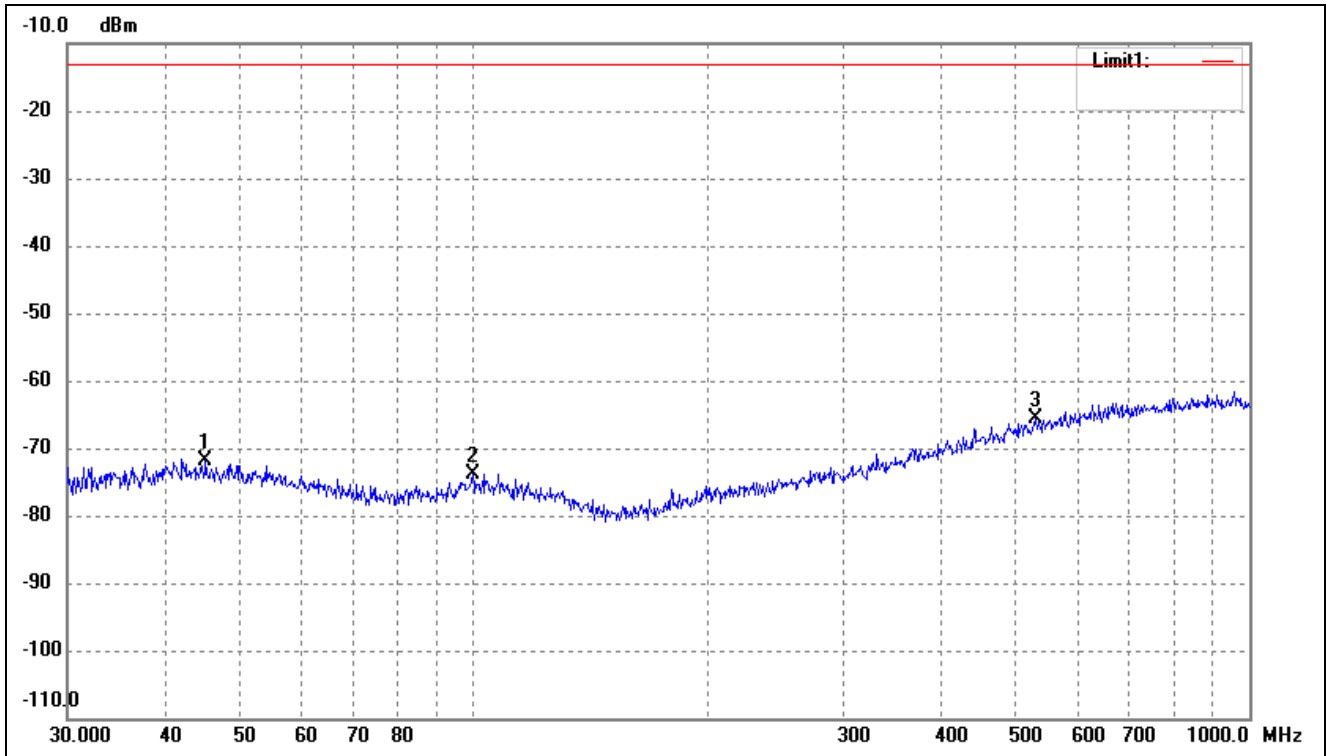
Test Channel	WCDMA Band IV	Polarity:	Vertical
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No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	42.0066	-76.83	4.81	-72.02	-13.00	-59.02	ERP
2	111.7380	-76.67	2.81	-73.86	-13.00	-60.86	ERP
3	642.8613	-76.41	12.64	-63.77	-13.00	-50.77	ERP

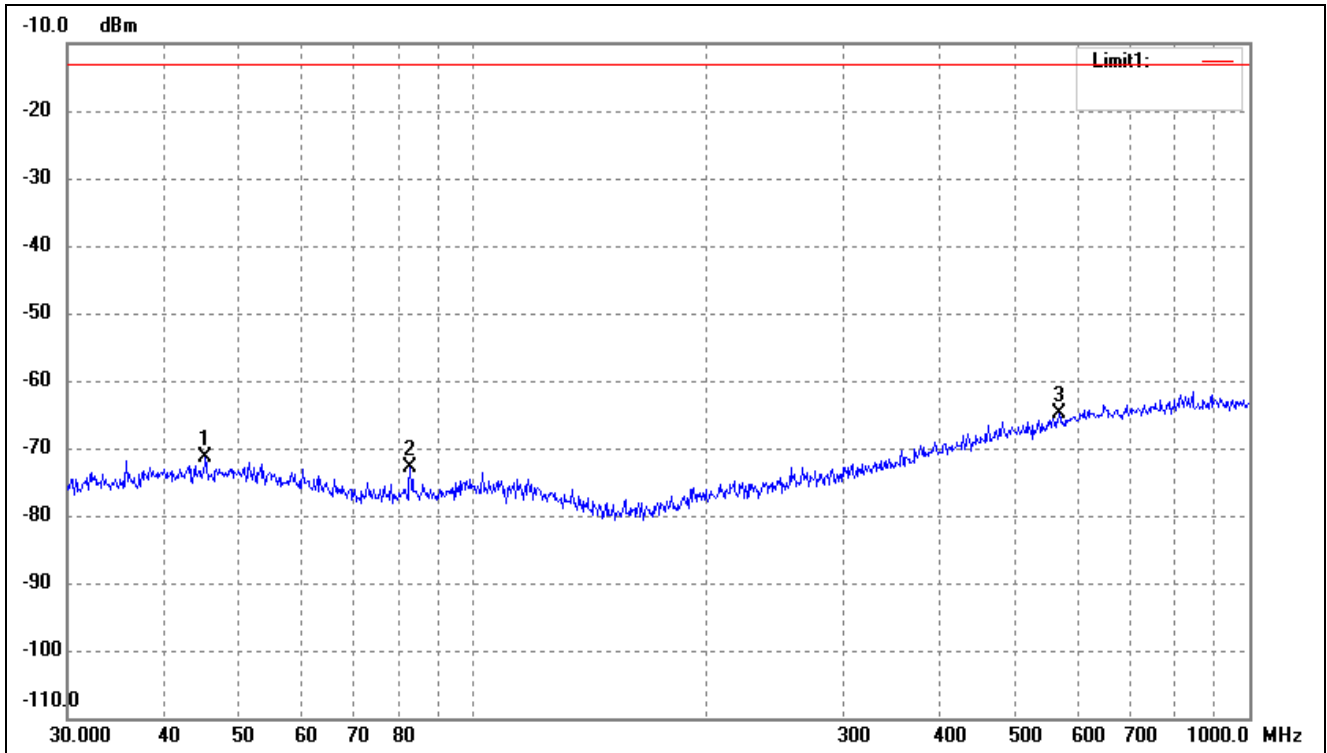
Note: Margin= (Reading+ Correct)- Limit

Test Channel	WCDMA Band II	Polarity:	Horizontal
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No.	Frequency (MHz)	Reading (dBm)	Correct (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	45.2166	-76.56	4.81	-71.75	-13.00	-58.75	ERP
2	99.8777	-76.87	3.05	-73.82	-13.00	-60.82	ERP
3	530.1014	-76.74	11.00	-65.74	-13.00	-52.74	ERP

Test Channel	WCDMA Band II	Polarity:	Vertical
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No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	45.2166	-76.06	4.81	-71.25	-13.00	-58.25	ERP
2	82.9385	-73.88	1.11	-72.77	-13.00	-59.77	ERP
3	568.6127	-76.51	11.65	-64.86	-13.00	-51.86	ERP

Note: Margin= (Reading+ Correct)- Limit

- Spurious Emissions Above 1GHz
- For Cellular Band_GSM850 Mode

Frequency (MHz)	Reading (dBm)	Correct dB	Result (dBm)	Limit (dBm)	Margin (dB)	Polar H/V
Low Channel (824.2MHz)						
1648.4	-36.63	4.94	-31.69	-13	-18.69	H
2472.6	-42.46	8.46	-34	-13	-21	H
1648.4	-34.41	4.94	-29.47	-13	-16.47	V
2472.6	-43.84	8.46	-35.38	-13	-22.38	V
Middle Channel (836.6MHz)						
1673.2	-37.86	5.11	-32.75	-13	-19.75	H
2509.8	-41.82	8.54	-33.28	-13	-20.28	H
1673.2	-34.19	5.11	-29.08	-13	-16.08	V
2509.8	-44.22	8.54	-35.68	-13	-22.68	V
High Channel (848.8MHz)						
1697.6	-34.98	5.25	-29.73	-13	-16.73	H
2546.4	-43.17	8.57	-34.6	-13	-21.60	H
1697.6	-37.67	5.25	-32.42	-13	-19.42	V
2546.4	-42.65	8.57	-34.08	-13	-21.08	V

- For PCS Band_GSM1900 Mode

Frequency (MHz)	Reading (dBm)	Correct dB	Result (dBm)	Limit (dBm)	Margin (dB)	Polar H/V
Low Channel (1850.2MHz)						
3700.4	-41.92	10.54	-31.38	-13	-18.38	H
5550.6	-48.32	13.37	-34.95	-13	-21.95	H
3700.4	-39.77	10.54	-29.23	-13	-16.23	V
5550.6	-46.67	13.37	-33.3	-13	-20.3	V
Middle Channel (1880MHz)						
3760.0	-39.63	10.64	-28.99	-13	-15.99	H
5640.0	-46.06	13.54	-32.52	-13	-19.52	H
3760.0	-42.33	10.64	-31.69	-13	-18.69	V
5640.0	-49.55	13.54	-36.01	-13	-23.01	V
High Channel (1909.8MHz)						
3819.6	-40.73	9.87	-30.86	-13	-17.86	H
5729.4	-49.83	13.02	-36.81	-13	-23.81	H
3819.6	-40.11	9.87	-30.24	-13	-17.24	V
5729.4	-49.83	13.02	-36.81	-13	-23.81	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	-34.65	4.94	-29.71	-13	-16.71	H
2479.2	-44.49	8.46	-36.03	-13	-23.03	H
1652.8	-34.01	4.94	-29.07	-13	-16.07	V
2479.2	-43.78	8.46	-35.32	-13	-22.32	V
Middle Channel (836.6MHz)						
1672.8	-36.76	5.11	-31.65	-13	-18.65	H
2509.2	-43.36	8.54	-34.82	-13	-21.82	H
1672.8	-36.50	5.11	-31.39	-13	-18.39	V
2509.2	-42.24	8.54	-33.7	-13	-20.70	V
High Channel (846.6MHz)						
1693.2	-34.28	5.25	-29.03	-13	-16.03	H
2539.8	-42.63	8.57	-34.06	-13	-21.06	H
1693.2	-34.07	5.25	-28.82	-13	-15.82	V
2539.8	-44.12	8.57	-35.55	-13	-22.55	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	-32.14	8.65	-23.49	-13	-10.49	H
5137.2	-40.86	12.03	-28.83	-13	-15.83	H
3424.8	-33.05	8.65	-24.4	-13	-11.4	V
5137.2	-41.1	12.03	-29.07	-13	-16.07	V
Middle Channel (1732.4MHz)						
3466.8	-34.35	8.91	-25.44	-13	-12.44	H
5200.2	-40.99	12.29	-28.7	-13	-15.7	H
3466.8	-34.16	8.91	-25.25	-13	-12.25	V
5200.2	-40.88	12.29	-28.59	-13	-15.59	V
High Channel (1752.6MHz)						
3505.2	-33.38	9.11	-24.27	-13	-11.27	H
5257.8	-39.25	12.56	-26.69	-13	-13.69	H
3505.2	-35.09	9.11	-25.98	-13	-12.98	V
5257.8	-39.83	12.56	-27.27	-13	-14.27	V

➤ For WCDMA Band II Mode

Frequency (MHz)	Reading (dBm)	Correct dB	Result (dBm)	Limit (dBm)	Margin (dB)	Polar H/V
Low Channel (1852.4MHz)						
3704.8	-41.75	10.54	-31.21	-13	-18.21	H
5557.2	-48.43	13.37	-35.06	-13	-22.06	H
3704.8	-41.22	10.54	-30.68	-13	-17.68	V
5557.2	-49.9	13.37	-36.53	-13	-23.53	V
Middle Channel (1880MHz)						
3760.0	-39.63	10.64	-28.99	-13	-15.99	H
5640.0	-46.73	13.54	-33.19	-13	-20.19	H
3760.0	-39.34	10.64	-28.7	-13	-15.7	V
5640.0	-49.72	13.54	-36.18	-13	-23.18	V
High Channel (1907.6MHz)						
3815.2	-41.21	10.74	-30.47	-13	-17.47	H
5722.8	-47.61	13.71	-33.9	-13	-20.9	H
3815.2	-40.12	10.74	-29.38	-13	-16.38	V
5722.8	-47.55	13.71	-33.84	-13	-20.84	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

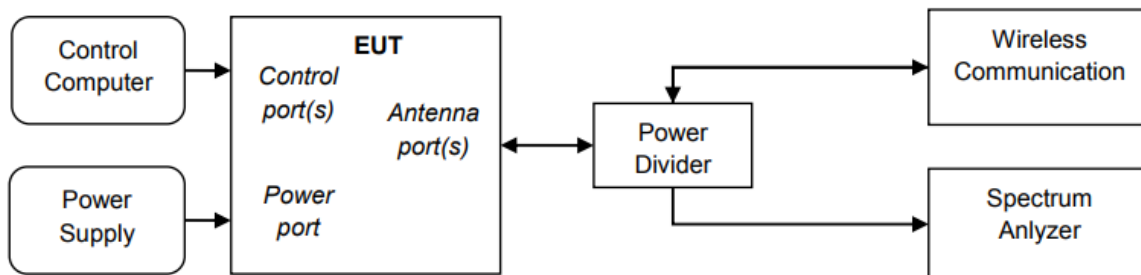
9.1 Standard Applicable

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.	WTX21X05049596W	Test Engineer	Gala
Start date	2021/8/20	Finish date	2021/8/20
Temperature	24°C	Humidity	50%
RF specifications	GSM/WCDMA		

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

APPENDIX A**Conducted Average power**

Conducted Average power (dBm)						
Band	GSM850			PCS1900		
Channel	128	190	251	512	661	810
Frequency(MHz)	824.20	836.60	848.80	1850.20	1880.00	1909.80
GSM	32.84	32.52	32.72	29.23	29.07	29.33
GPRS(1Slot)	32.75	32.87	32.95	29.26	29.14	29.36
EGPRS(1Slot)	25.39	25.53	25.42	25.17	24.35	24.34

Conducted Average power (dBm)						
Band	WCDMA Band V			WCDMA Band II		
Channel	4132	4183	4233	9262	9400	9538
Frequency(MHz)	826.4	836.6	846.6	1852.4	1880.0	1907.6
RMC 12.2k	23.05	23.10	23.09	22.96	22.90	22.80
HSDPA Subtest-1	22.07	22.16	22.16	21.94	22.01	21.86
HSDPA Subtest-2	22.05	22.13	22.13	21.92	21.96	21.85
HSDPA Subtest-3	22.04	22.14	22.14	21.91	21.97	21.84
HSDPA Subtest-4	22.05	22.14	22.14	21.90	21.98	21.84
HSUPA Subtest-1	22.06	22.10	22.10	21.78	21.80	21.88
HSUPA Subtest-2	22.04	22.08	22.09	21.75	21.78	21.85
HSUPA Subtest-3	22.04	22.09	22.08	21.76	21.79	21.86
HSUPA Subtest-4	22.05	22.07	22.07	21.75	21.76	21.87
HSUPA Subtest-5	22.04	22.08	22.08	21.75	21.78	21.85

Conducted Average power (dBm)						
Band	WCDMA Band IV					
Channel	1312	1312	1312			
Frequency(MHz)	1712.4	1712.4	1712.4			
RMC 12.2k	22.39	22.43	22.45			
HSDPA Subtest-1	21.46	21.50	21.56			
HSDPA Subtest-2	21.45	21.48	21.53			
HSDPA Subtest-3	21.43	21.49	21.54			
HSDPA Subtest-4	21.44	21.48	21.54			
HSUPA Subtest-1	21.46	21.52	21.44			
HSUPA Subtest-2	21.43	21.49	21.42			
HSUPA Subtest-3	21.44	21.46	21.43			
HSUPA Subtest-4	21.44	21.47	21.43			
HSUPA Subtest-5	21.43	21.47	21.44			

APPENDIX B

Peak-to-average Ratio (PAR) of Transmitter

PCS1900				
Test Mode	Channel	Frequency (MHz)	PAR (dB)	Limit (dB)
GSM	661	1850.2	5.98	13
GPRS(1 Slot)	661	1850.2	6.01	13
EDGE(1 Slot)	661	1850.2	6.24	13

WCDMA Band IV				
Test Mode	Channel	Frequency (MHz)	PAR (dB)	Limit (dB)
WCDMA	1312	1712.4	6.42	13
	1412	1733.4	6.05	13
	1513	1752.6	6.47	13

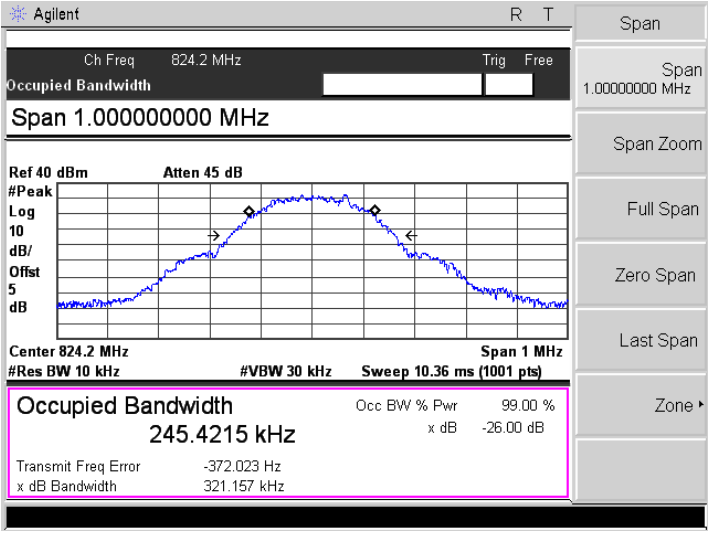
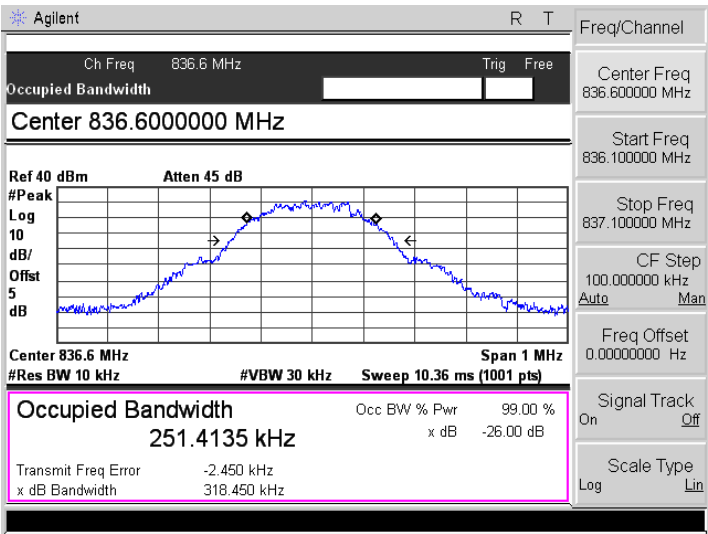
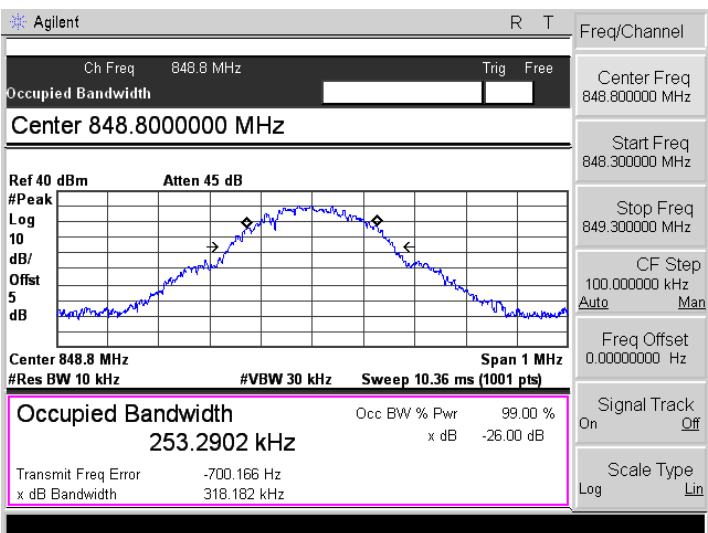
WCDMA Band II				
Test Mode	Channel	Frequency (MHz)	PAR (dB)	Limit (dB)
WCDMA	9262	1852.4	6.28	13
	9400	1880.0	6.47	13
	9538	1907.6	6.39	13

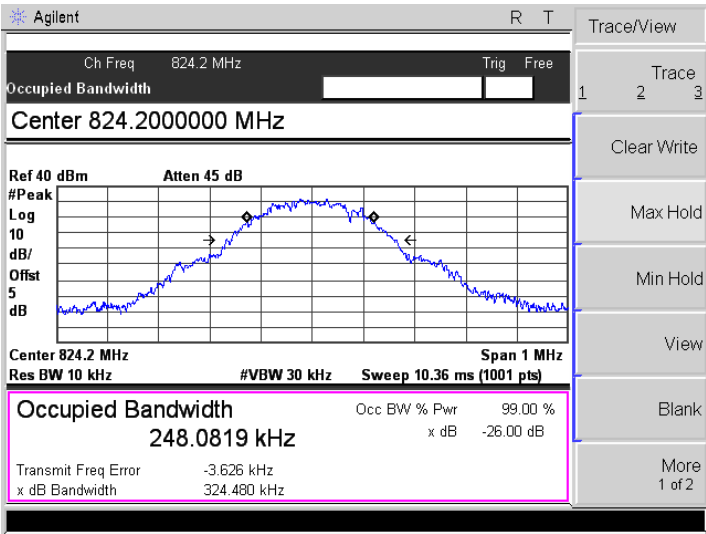
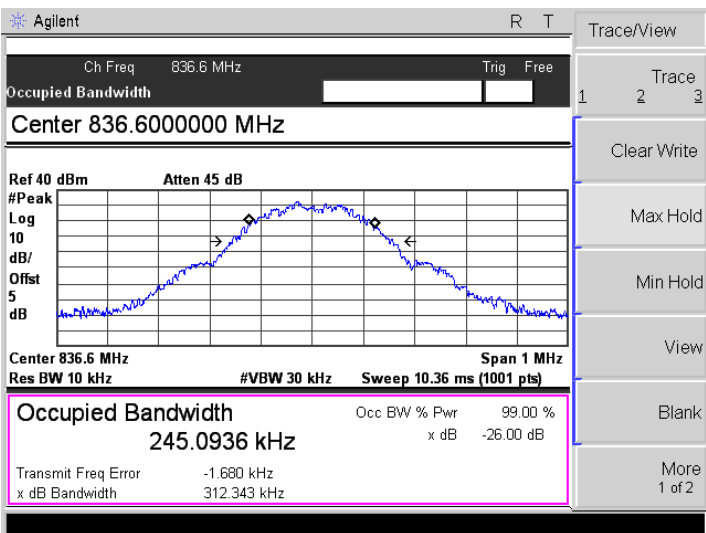
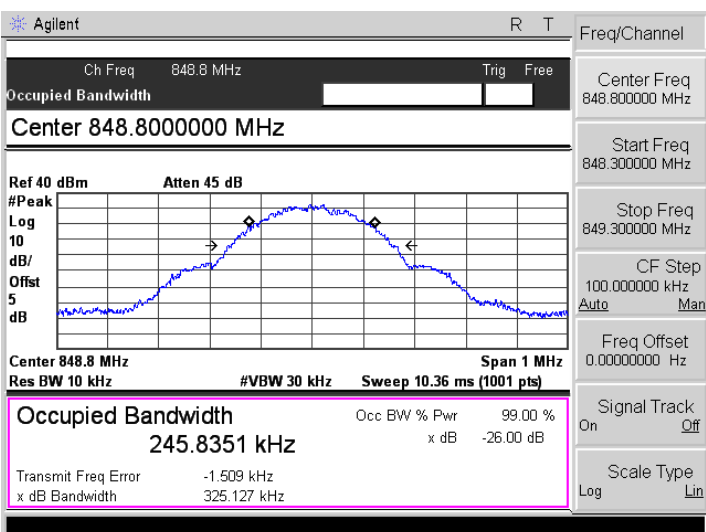
Note: Only the worst case was selected to record.

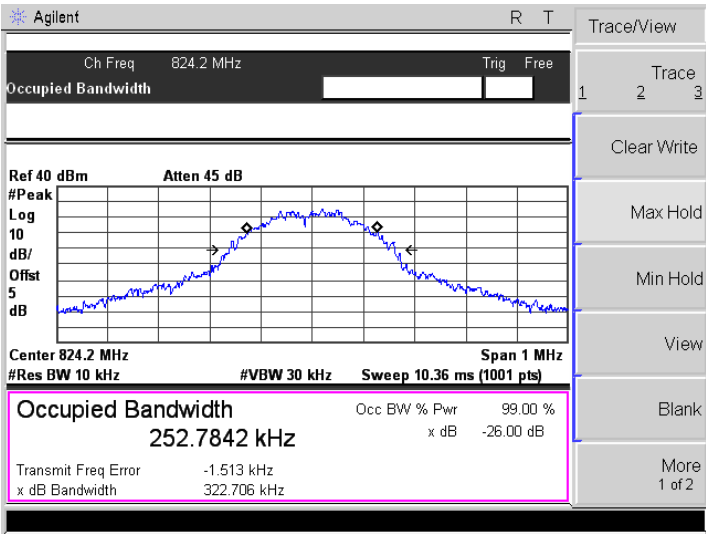
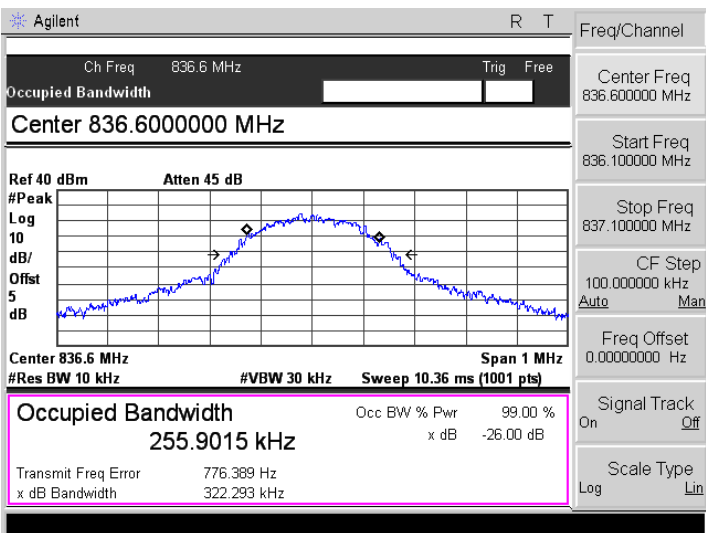
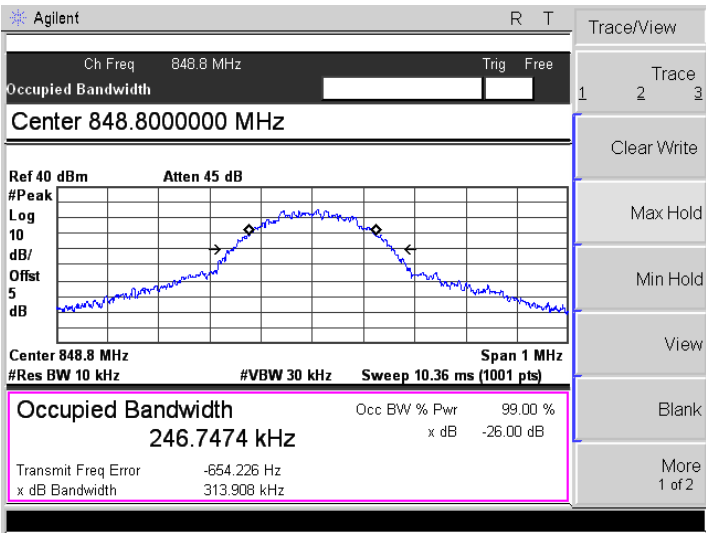
APPENDIX C

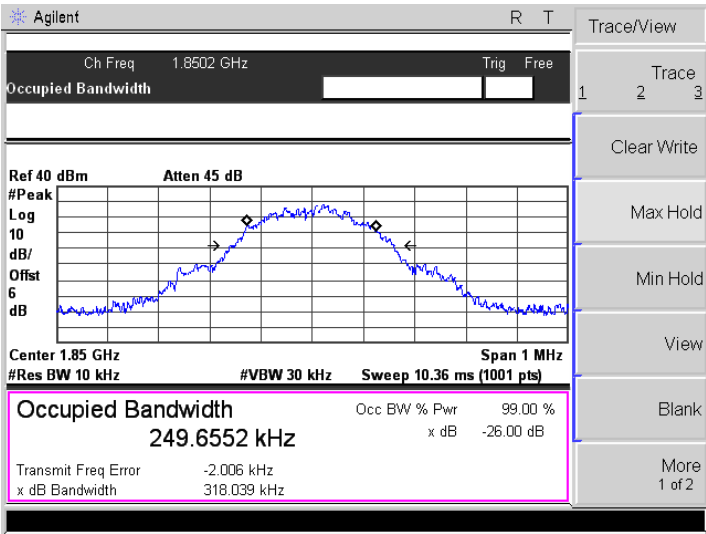
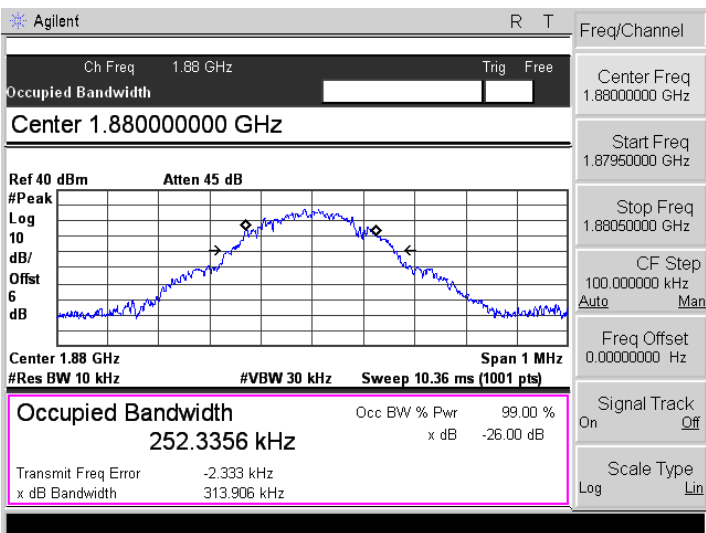
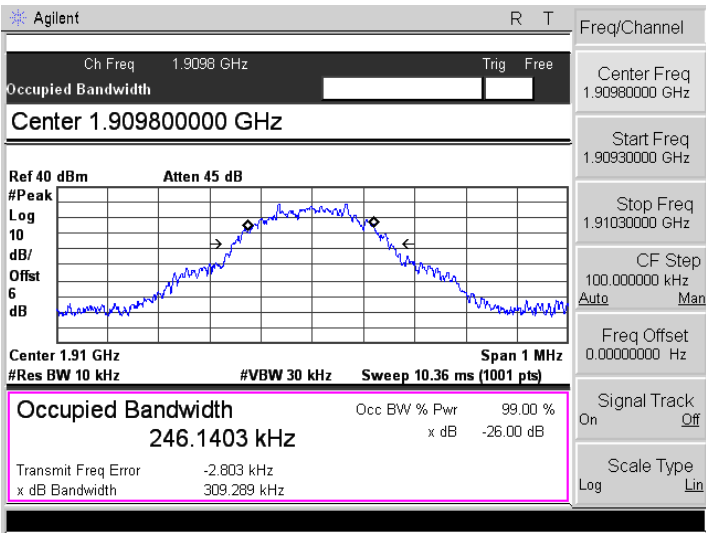
EUT Mode	Channel	Frequency (MHz)	99% Occupy bandwidth (kHz)	-26dB bandwidth (kHz)
GSM 850 (GMSK)	128	824.20	245.4215	321.157
	190	836.60	251.4135	318.450
	251	848.80	253.2902	318.182
GPRS850 (GMSK,1Slot)	128	824.20	248.0819	324.480
	190	836.60	245.0936	312.343
	251	848.80	245.8351	325.127
EGPRS850 (8PSK,1Slot)	128	824.20	252.7842	322.706
	190	836.60	255.9015	322.293
	251	848.80	264.7474	313.908
PCS1900 (GMSK)	512	1850.20	249.6552	318.039
	661	1880.00	252.3356	313.906
	810	1909.80	246.1403	309.289
GPRS1900 (GMSK,1Slot)	512	1850.20	246.3393	327.456
	661	1880.00	247.6675	317.341
	810	1909.80	242.3178	314.511
EGPRS1900 (8PSK,1Slot)	512	1850.20	259.1432	308.931
	661	1880.00	256.3619	329.130
	810	1909.80	263.4453	323.833

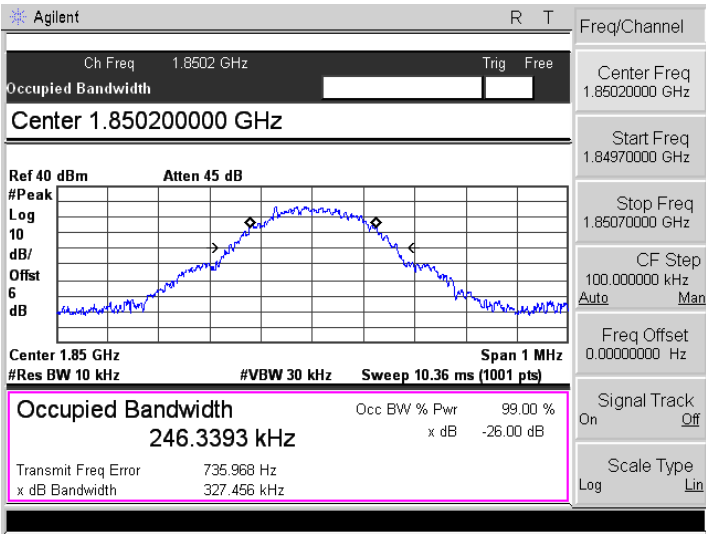
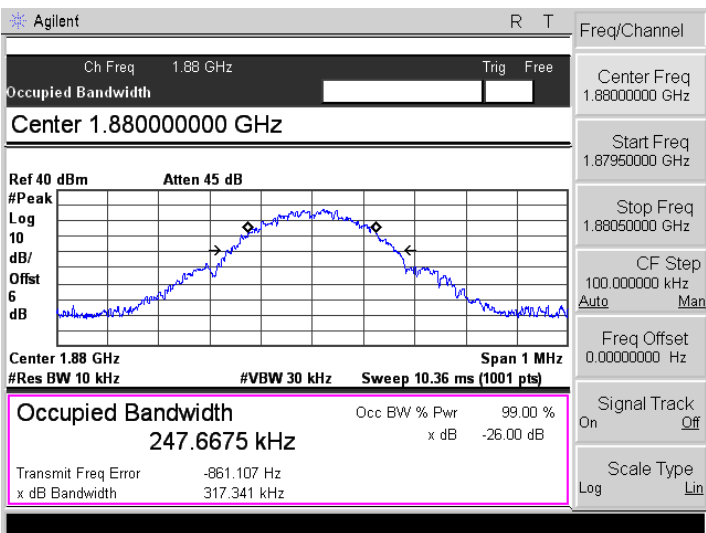
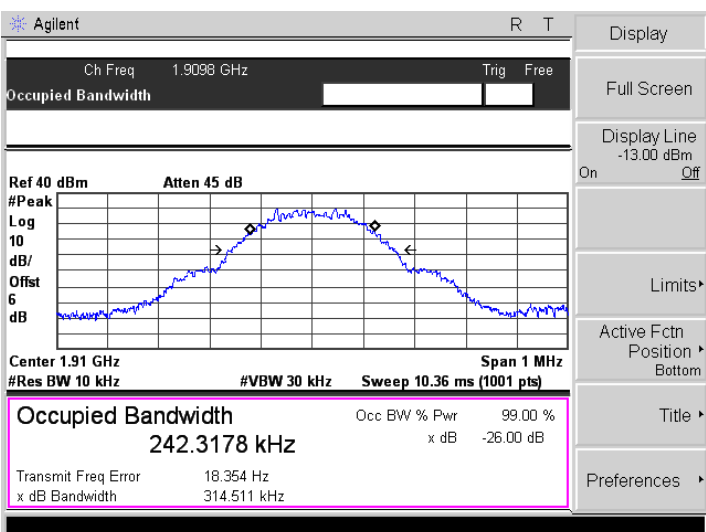
EUT Mode	Channel	Frequency (MHz)	99% Occupy bandwidth (kHz)	-26dB bandwidth (kHz)
WCDMA Band V	4132	826.40	4165.2	4715
	4183	836.60	4182.3	4728
	4233	846.60	4165.4	4713
HSDPA	4132	826.40	4195.2	5163
	4183	836.60	4184.7	4913
	4233	846.60	4182.6	4702
HSUPA	4132	826.40	4197.5	4701
	4183	836.60	4189.7	5154
	4233	846.60	4169.5	4730
WCDMA Band II	9262	1852.40	4181.4	4691
	9400	1880.00	4184.4	4702
	9538	1907.60	4182.9	4700
HSDPA	9262	1852.40	4207.4	4748
	9400	1880.00	4195.0	4722
	9538	1907.60	4189.1	4716
HSUPA	9262	1852.40	4208.2	4798
	9400	1880.00	4186.9	4746
	9538	1907.60	4190.1	4736
WCDMA Band IV	1312	1712.4	4198.7	4761
	1412	1733.4	4189.6	4730
	1513	1752.6	4194.8	4765
HSDPA	1312	1712.4	4196.2	4759
	1412	1733.4	4197.4	4737
	1513	1752.6	4203.7	4749
HSUPA	1312	1712.4	4182.7	5065
	1412	1733.4	4185.3	4758
	1513	1752.6	4200.6	4738

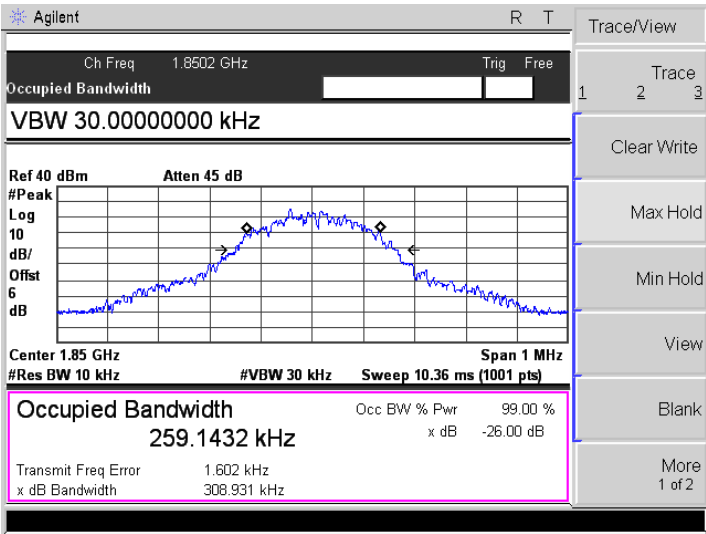
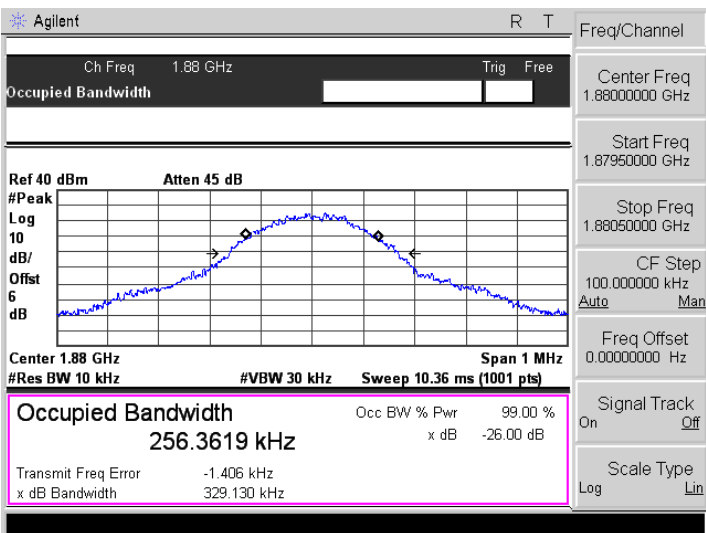
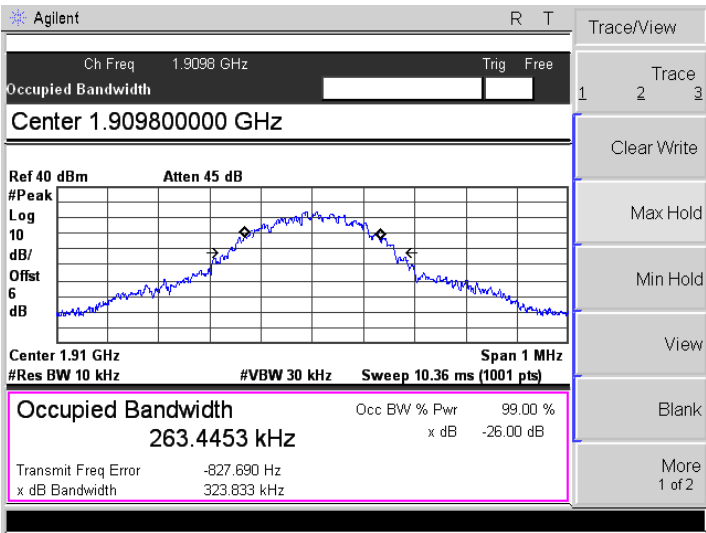
<p>GSM 850 (GMSK)-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 824.2 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Span 1.00000000 MHz</p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak</p> <p>Log</p> <p>10 dB/</p> <p>Offst</p> <p>5 dB</p> <p>Center 824.2 MHz Span 1 MHz</p> <p>#Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (1001 pts)</p> <p>Occupied Bandwidth 245.4215 kHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -372.023 Hz</p> <p>x dB Bandwidth 321.157 kHz</p> <p>Span</p> <p>Span 1.00000000 MHz</p> <p>Span Zoom</p> <p>Full Span</p> <p>Zero Span</p> <p>Last Span</p> <p>Zone ▶</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</p> <p>Log</p> <p>10 dB/</p> <p>Offst</p> <p>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 251.4135 kHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -2.450 kHz</p> <p>x dB Bandwidth 318.450 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 0.00000000 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</p> <p>Log</p> <p>10 dB/</p> <p>Offst</p> <p>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 253.2902 kHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -700.166 Hz</p> <p>x dB Bandwidth 318.182 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 Auto Man</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>Agilent R T Trace/View</p> <p>Ch Freq 824.2 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Center 824.200000 MHz</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>Occupied Bandwidth 248.0819 kHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -3.626 kHz x dB Bandwidth 324.480 kHz</p> <p>Trace/View: Trace 1 2 3, Clear Write, Max Hold, Min Hold, View, Blank, More 1 of 2</p>
<p>GPRS850 (GMSK,1Slot)-Middle</p>	 <p>Agilent R T Trace/View</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 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>Occupied Bandwidth 245.0936 kHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -1.680 kHz x dB Bandwidth 312.343 kHz</p> <p>Trace/View: Trace 1 2 3, Clear Write, Max Hold, Min Hold, View, Blank, More 1 of 2</p>
<p>GPRS850 (GMSK,1Slot)-High</p>	 <p>Agilent R T Freq/Channel</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 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>Occupied Bandwidth 245.8351 kHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -1.509 kHz x dB Bandwidth 325.127 kHz</p> <p>Freq/Channel: Center Freq 848.800000 MHz, Start Freq 848.300000 MHz, Stop Freq 849.300000 MHz, CF Step 100.000000 kHz (Auto/Man), Freq Offset 0.0000000 Hz, Signal Track On (Off), Scale Type Log (Lin)</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>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/ 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 252.7842 kHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -1.513 kHz x dB Bandwidth 322.706 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>EGPRS850 (8PSK,1Slot)-Middle</p>	 <p>Agilent R T</p> <p>Ch Freq 836.6 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Center 836.600000 MHz</p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/ 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 255.9015 kHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 776.389 Hz x dB Bandwidth 322.293 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 0.00000000 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>Center 848.800000 MHz</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</p> <p>#Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (1001 pts)</p> <p>Occupied Bandwidth 246.7474 kHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -654.226 Hz x dB Bandwidth 313.908 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>

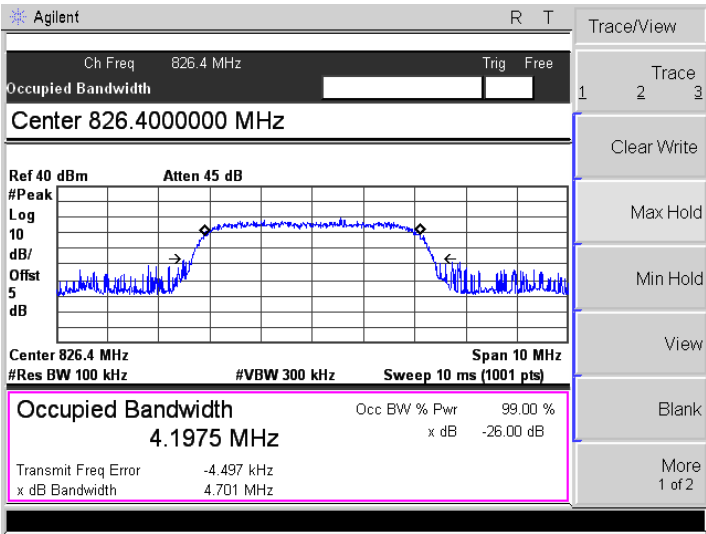
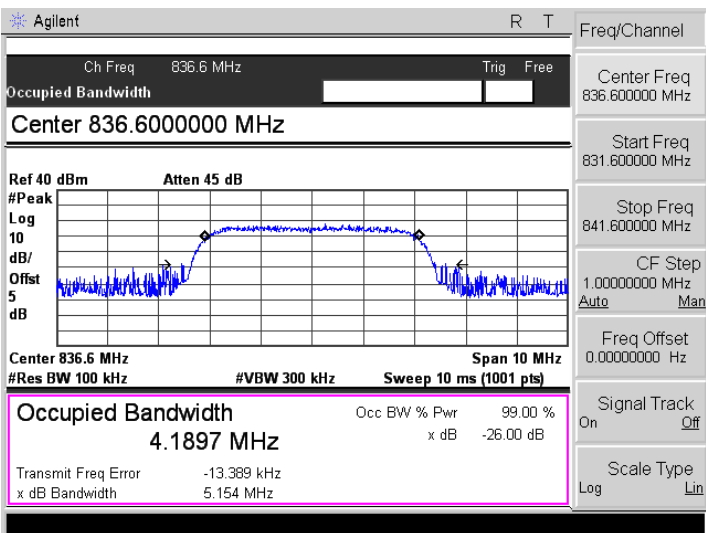
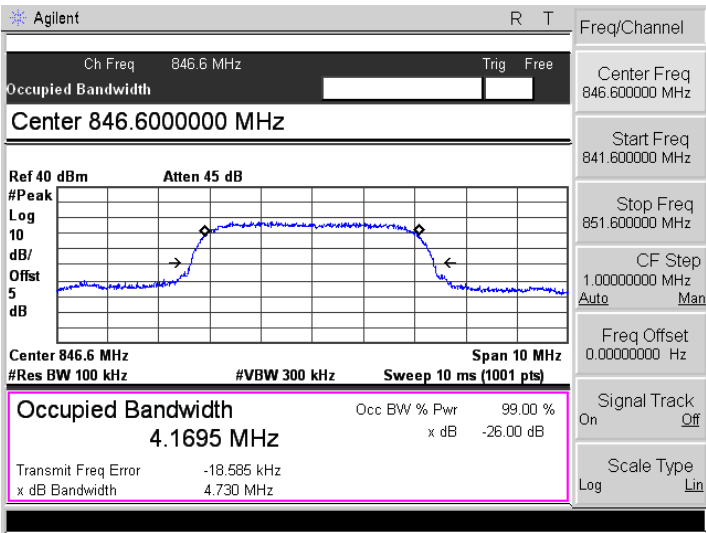
<p>PCS1900 (GMSK)-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 1.8502 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/ Offst 6 dB</p> <p>Center 1.85 GHz Span 1 MHz</p> <p>#Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (1001 pts)</p> <p>Occupied Bandwidth 249.6552 kHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -2.006 kHz x dB Bandwidth 318.039 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>PCS1900 (GMSK)-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 6 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>Occupied Bandwidth 252.3356 kHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -2.333 kHz x dB Bandwidth 313.906 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>Center 1.90980000 GHz</p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/ Offst 6 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>Occupied Bandwidth 246.1403 kHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -2.803 kHz x dB Bandwidth 309.289 kHz</p> <p>Freq/Channel</p> <p>Center Freq 1.90980000 GHz</p> <p>Start Freq 1.90930000 GHz</p> <p>Stop Freq 1.91030000 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)-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 1.8502 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Center 1.85020000 GHz</p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/ Offst 6 dB</p> <p>Center 1.85 GHz Span 1 MHz #Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (1001 pts)</p> <p>Occupied Bandwidth Occ BW % Pwr 99.00 % 246.3393 kHz x dB -26.00 dB</p> <p>Transmit Freq Error 735.968 Hz x dB Bandwidth 327.456 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>Center 1.88000000 GHz</p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/ Offst 6 dB</p> <p>Center 1.88 GHz Span 1 MHz #Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (1001 pts)</p> <p>Occupied Bandwidth Occ BW % Pwr 99.00 % 247.6675 kHz x dB -26.00 dB</p> <p>Transmit Freq Error -861.107 Hz x dB Bandwidth 317.341 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>Center 1.91 GHz</p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/ Offst 6 dB</p> <p>Center 1.91 GHz Span 1 MHz #Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (1001 pts)</p> <p>Occupied Bandwidth Occ BW % Pwr 99.00 % 242.3178 kHz x dB -26.00 dB</p> <p>Transmit Freq Error 18.354 Hz x dB Bandwidth 314.511 kHz</p> <p>Display</p> <p>Full Screen</p> <p>Display Line -13.00 dBm On Off</p> <p>Limits</p> <p>Active Fcn Position Bottom</p> <p>Title</p> <p>Preferences</p>

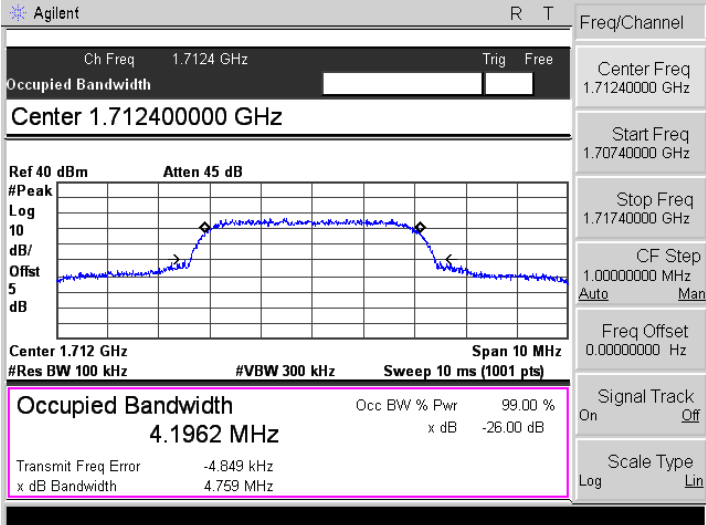
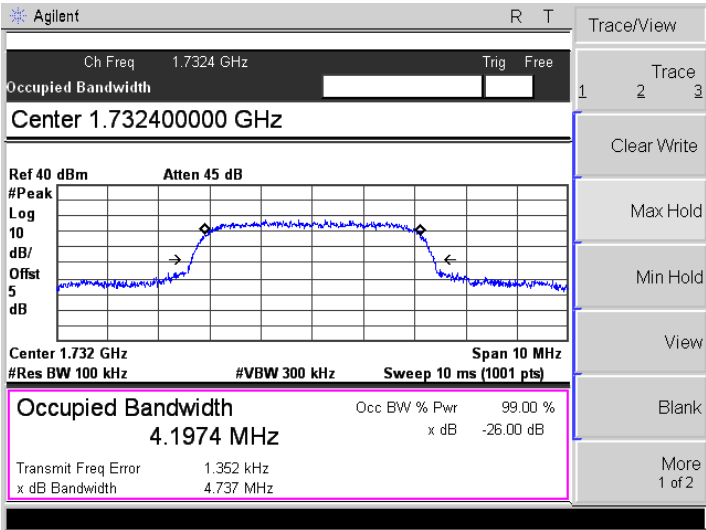
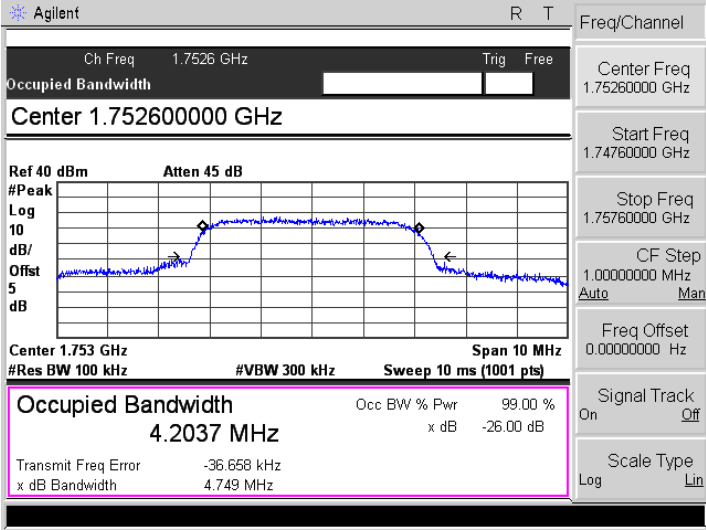
<p>EGPRS1900 (8PSK,1Slot)-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 1.8502 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>VBW 30.0000000 kHz</p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/ Offst 6 dB</p> <p>Center 1.85 GHz Span 1 MHz</p> <p>#Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (1001 pts)</p> <p>Occupied Bandwidth 259.1432 kHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 1.602 kHz x dB Bandwidth 308.931 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)-Middle</p>	 <p>Agilent R T</p> <p>Ch Freq 1.88 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/ Offst 6 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>Occupied Bandwidth 256.3619 kHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -1.406 kHz x dB Bandwidth 329.130 kHz</p> <p>Freq/Channel</p> <p>Center Freq 1.8800000 GHz</p> <p>Start Freq 1.8795000 GHz</p> <p>Stop Freq 1.8805000 GHz</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>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 6 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>Occupied Bandwidth 263.4453 kHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -827.690 Hz x dB Bandwidth 323.833 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>WCDMA Band V-Low</p>	
<p>WCDMA Band V-Middle</p>	
<p>WCDMA Band V-High</p>	

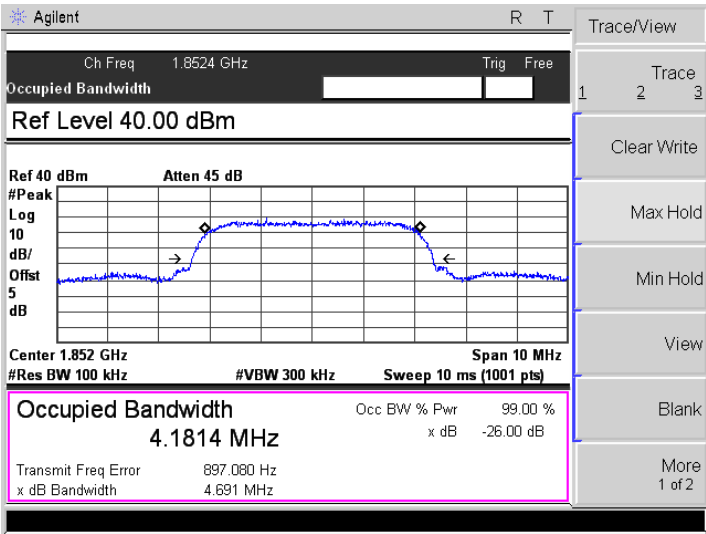
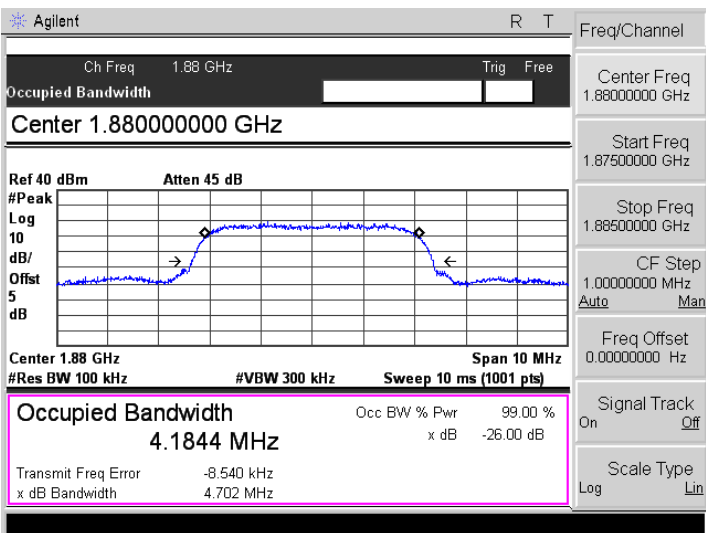
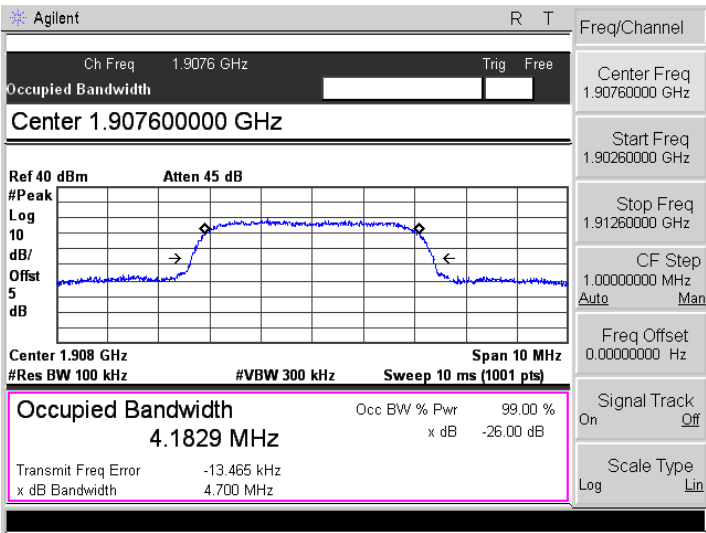
<p>HSDPA-Low</p>	<p>Agilent R T</p> <p>Ch Freq 826.4 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/ Offst 5 dB</p> <p>Center 826.4 MHz Span 10 MHz Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 4.1952 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -3.569 kHz x dB Bandwidth 5.163 MHz</p> <p>Trace/View Trace 1 2 3 Clear Write Max Hold Min Hold View Blank 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>Center 836.600000 MHz</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 Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 4.1847 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -11.220 kHz x dB Bandwidth 4.913 MHz</p> <p>Freq/Channel Center Freq 836.600000 MHz Start Freq 831.600000 MHz Stop Freq 841.600000 MHz CF Step 1.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off 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>Center 846.600000 MHz</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 Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 4.1826 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -18.418 kHz x dB Bandwidth 4.702 MHz</p> <p>Freq/Channel Center Freq 846.600000 MHz Start Freq 841.600000 MHz Stop Freq 851.600000 MHz CF Step 1.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off 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>Center 826.400000 MHz</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 #Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth Occ BW % Pwr 99.00 % 4.1975 MHz x dB -26.00 dB</p> <p>Transmit Freq Error -4.497 kHz x dB Bandwidth 4.701 MHz</p> <p>Trace/View Trace 1 2 3 Clear Write Max Hold Min Hold View Blank 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>Center 836.600000 MHz</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 #Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth Occ BW % Pwr 99.00 % 4.1897 MHz x dB -26.00 dB</p> <p>Transmit Freq Error -13.389 kHz x dB Bandwidth 5.154 MHz</p> <p>Freq/Channel Center Freq 836.600000 MHz Start Freq 831.600000 MHz Stop Freq 841.600000 MHz CF Step 1.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off 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>Center 846.600000 MHz</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 #Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth Occ BW % Pwr 99.00 % 4.1695 MHz x dB -26.00 dB</p> <p>Transmit Freq Error -18.585 kHz x dB Bandwidth 4.730 MHz</p> <p>Freq/Channel Center Freq 846.600000 MHz Start Freq 841.600000 MHz Stop Freq 851.600000 MHz CF Step 1.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off Scale Type Log Lin</p>

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

<p>HSDPA-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 1.7124 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Center 1.71240000 GHz</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 #Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 4.1962 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -4.849 kHz x dB Bandwidth 4.759 MHz</p> <p>Freq/Channel</p> <p>Center Freq 1.71240000 GHz</p> <p>Start Freq 1.70740000 GHz</p> <p>Stop Freq 1.71740000 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 1.7324 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Center 1.73240000 GHz</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 #Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 4.1974 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 1.352 kHz x dB Bandwidth 4.737 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-High</p>	 <p>Agilent R T</p> <p>Ch Freq 1.7526 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Center 1.75260000 GHz</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 #Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 4.2037 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -36.658 kHz x dB Bandwidth 4.749 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 1.7124 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Center 1.71240000 GHz</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 #Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 4.1827 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 456.396 Hz x dB Bandwidth 5.065 MHz</p> <p>Freq/Channel</p> <p>Center Freq 1.71240000 GHz</p> <p>Start Freq 1.70740000 GHz</p> <p>Stop Freq 1.71740000 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-Middle</p>	<p>Agilent R T</p> <p>Ch Freq 1.7324 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Center 1.73240000 GHz</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 #Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 4.1853 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -5.349 kHz x dB Bandwidth 4.758 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>HSUPA-High</p>	<p>Agilent R T</p> <p>Ch Freq 1.7526 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Center 1.75260000 GHz</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 #Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 4.2006 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -25.368 kHz x dB Bandwidth 4.738 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>WCDMA Band II-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 1.8524 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref Level 40.00 dBm</p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/Offset 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>Occupied Bandwidth 4.1814 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 897.080 Hz x dB Bandwidth 4.691 MHz</p> <p>Trace/View Trace 1 2 3 Clear Write Max Hold Min Hold View Blank More 1 of 2</p>
<p>WCDMA Band II-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/Offset 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>Occupied Bandwidth 4.1844 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -8.540 kHz x dB Bandwidth 4.702 MHz</p> <p>Freq/Channel Center Freq 1.88000000 GHz Start Freq 1.87500000 GHz Stop Freq 1.88500000 GHz CF Step 1.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off Scale Type Log Lin</p>
<p>WCDMA Band II-High</p>	 <p>Agilent R T</p> <p>Ch Freq 1.9076 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Center 1.90760000 GHz</p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/Offset 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>Occupied Bandwidth 4.1829 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -13.465 kHz x dB Bandwidth 4.700 MHz</p> <p>Freq/Channel Center Freq 1.90760000 GHz Start Freq 1.90260000 GHz Stop Freq 1.91260000 GHz CF Step 1.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off Scale Type Log Lin</p>

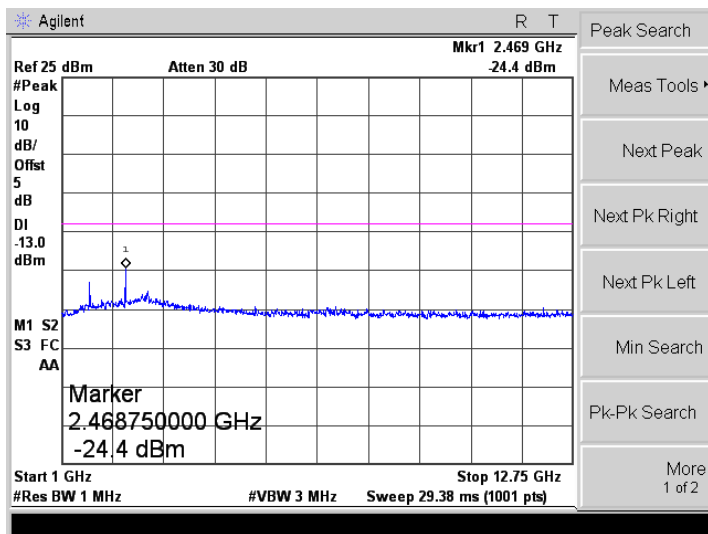
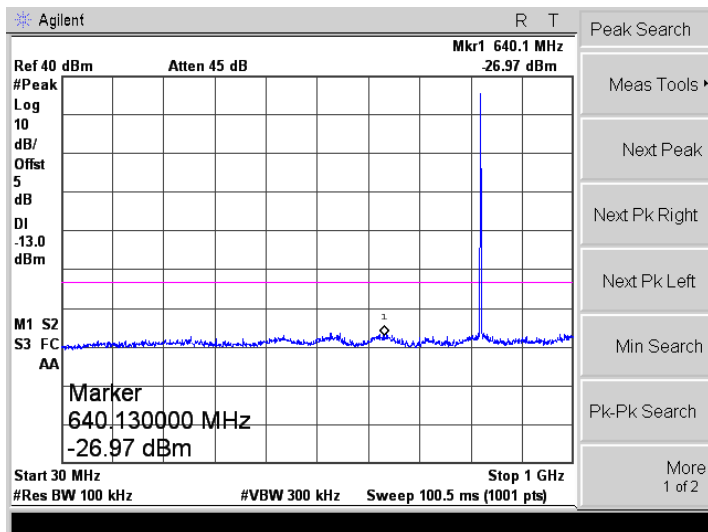
<p>HSDPA-Low</p>	<p>Agilent R T Trace/View</p> <p>Ch Freq 1.8524 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 40 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/ Offst 5 dB</p> <p>Center 1.852 GHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 1 MHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 4.2074 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -3.723 kHz x dB Bandwidth 4.748 MHz</p> <p>Trace/View: Trace 1 2 3, Clear Write, Max Hold, Min Hold, View, Blank, More 1 of 2</p>
<p>HSDPA-Middle</p>	<p>Agilent R T Trace/View</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 10 MHz</p> <p>#Res BW 100 kHz #VBW 1 MHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 4.1950 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -3.869 kHz x dB Bandwidth 4.722 MHz</p> <p>Trace/View: Trace 1 2 3, Clear Write, Max Hold, Min Hold, View, Blank, More 1 of 2</p>
<p>HSDPA-High</p>	<p>Agilent R T Trace/View</p> <p>Ch Freq 1.9076 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Center 1.90760000 GHz</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</p> <p>#Res BW 100 kHz #VBW 1 MHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 4.1891 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -13.086 kHz x dB Bandwidth 4.716 MHz</p> <p>Trace/View: Trace 1 2 3, Clear Write, Max Hold, Min Hold, View, Blank, More 1 of 2</p>

<p>HSUPA-Low</p>	<p>Agilent R T</p> <p>Ch Freq 1.8524 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Center 1.85240000 GHz</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 1 MHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 4.2082 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 2.312 kHz x dB Bandwidth 4.798 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>HSUPA-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 10 MHz #Res BW 100 kHz #VBW 1 MHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 4.1869 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -9.649 kHz x dB Bandwidth 4.746 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>Center 1.90760000 GHz</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 1 MHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 4.1901 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -8.908 kHz x dB Bandwidth 4.736 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>

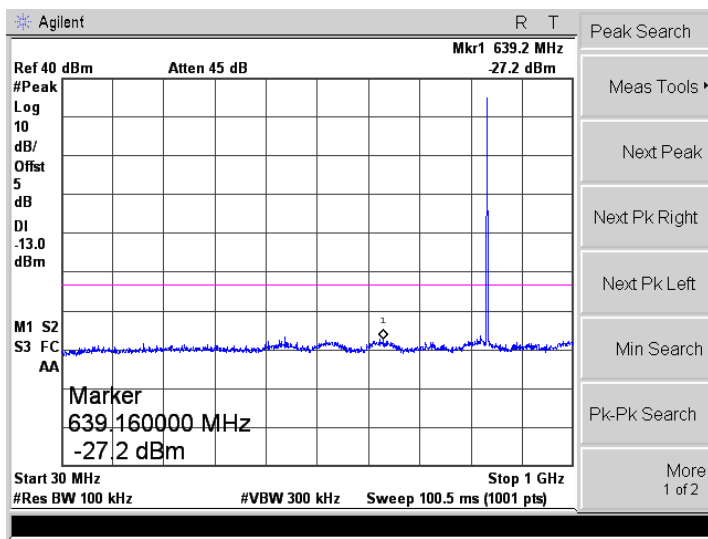
APPENDIX D

Out of Band Emissions at Antenna Terminal

GSM 850
(GMSK)-Low

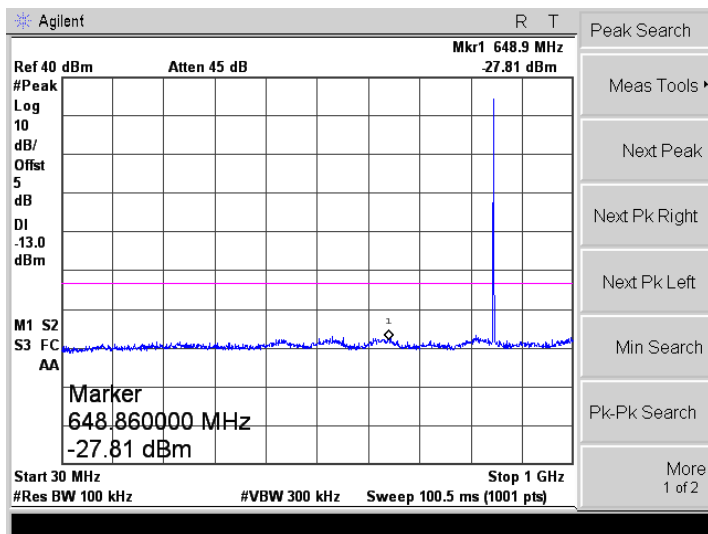


GSM 850
(GMSK)-Middle

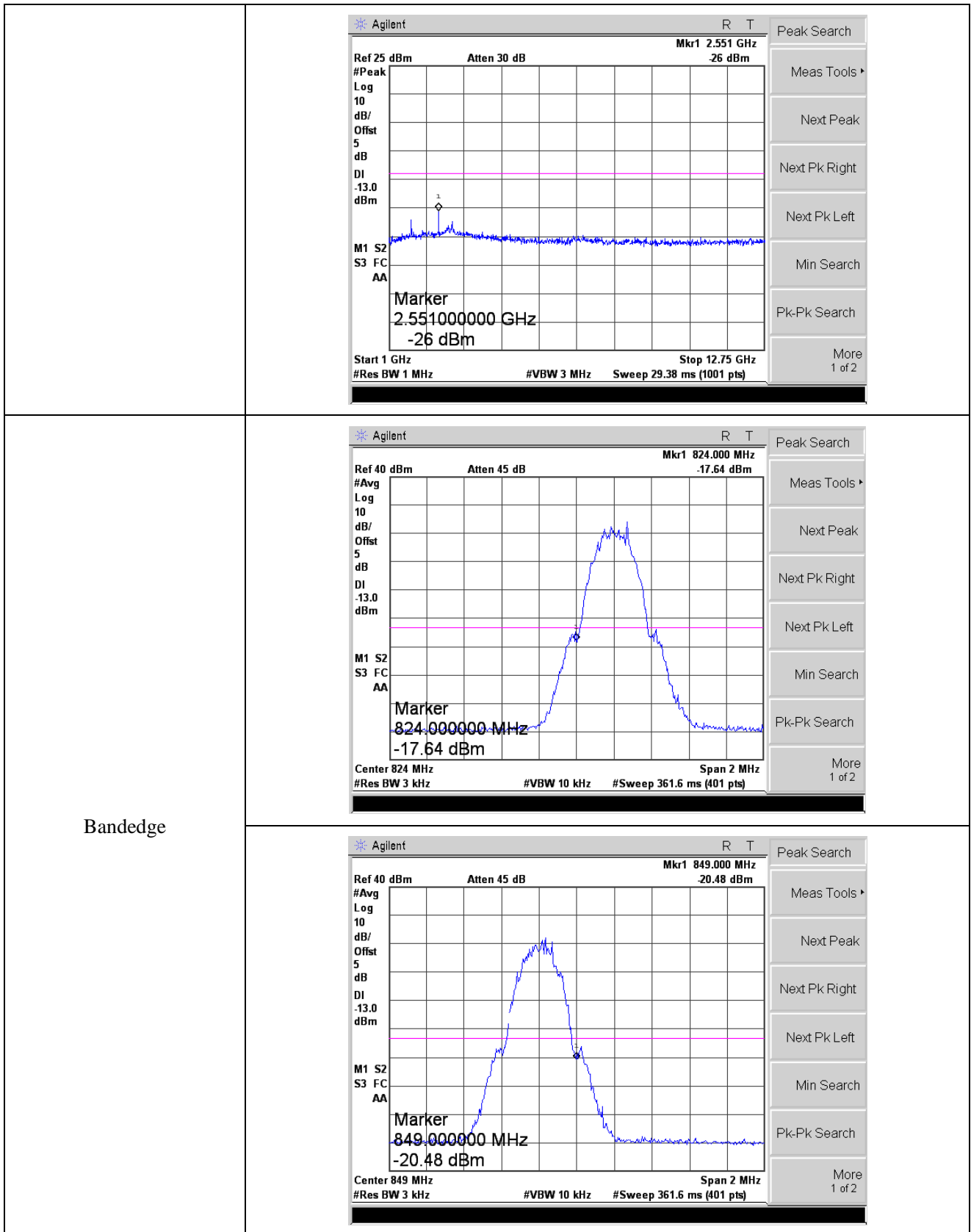


- Peak Search
- Meas Tools ▶
- Next Peak
- Next Pk Right
- Next Pk Left
- Min Search
- Pk-Pk Search
- More
1 of 2

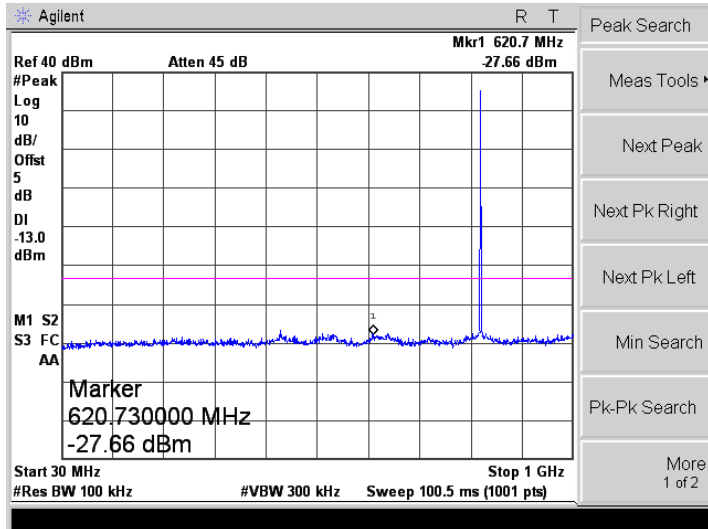
GSM 850
(GMSK)-High



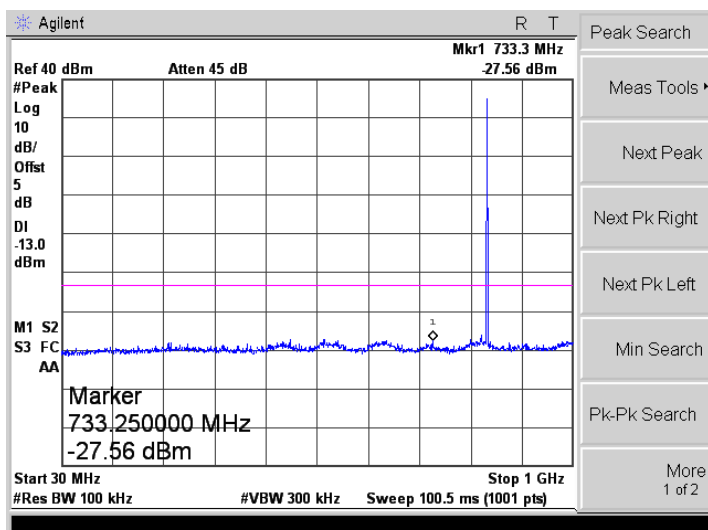
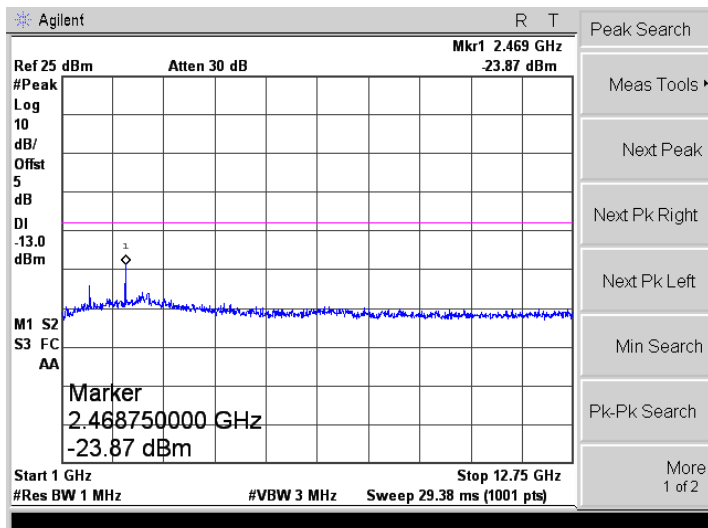
- Peak Search
- Meas Tools ▶
- Next Peak
- Next Pk Right
- Next Pk Left
- Min Search
- Pk-Pk Search
- More
1 of 2

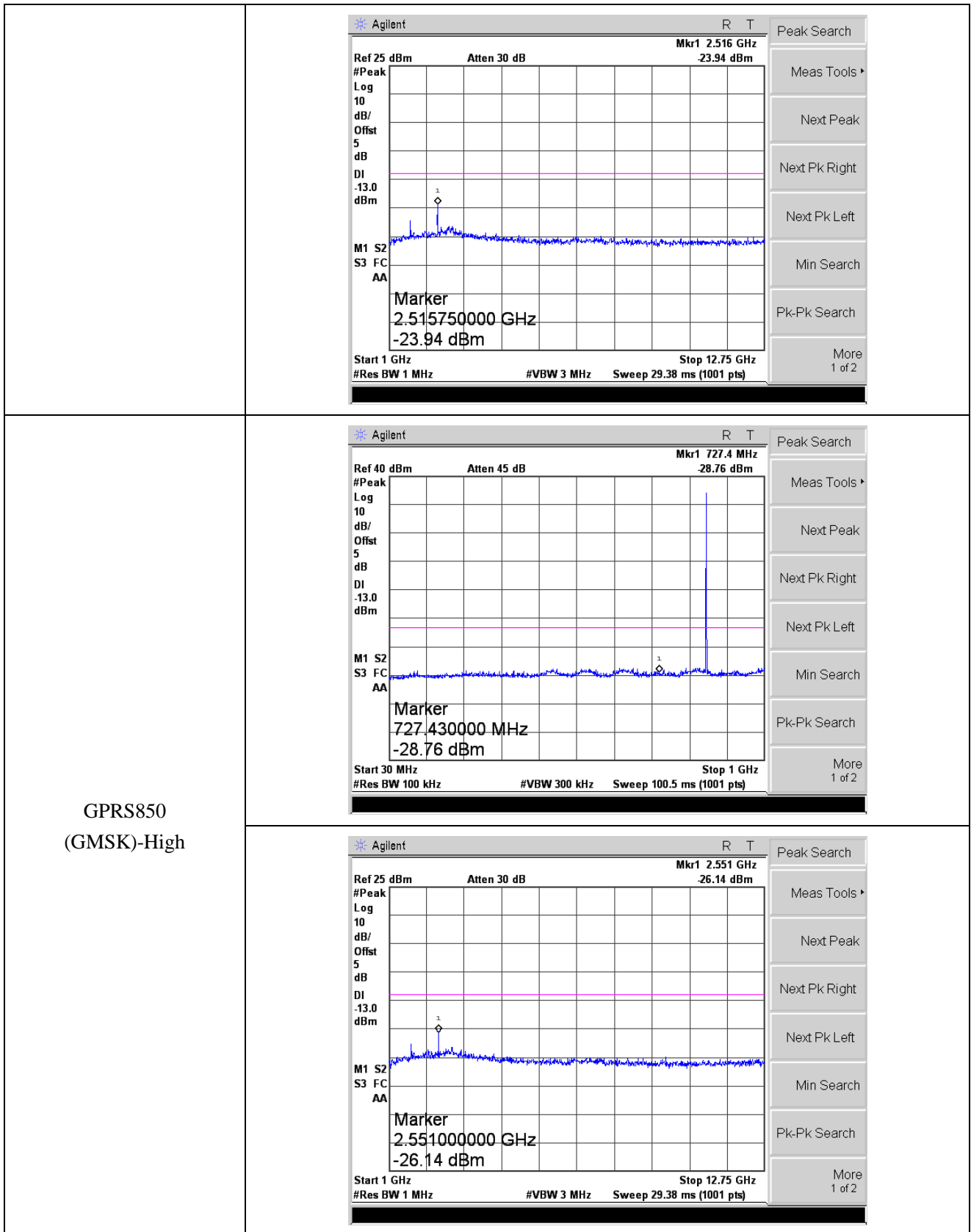


GPRS850
(GMSK,1Slot)-Low

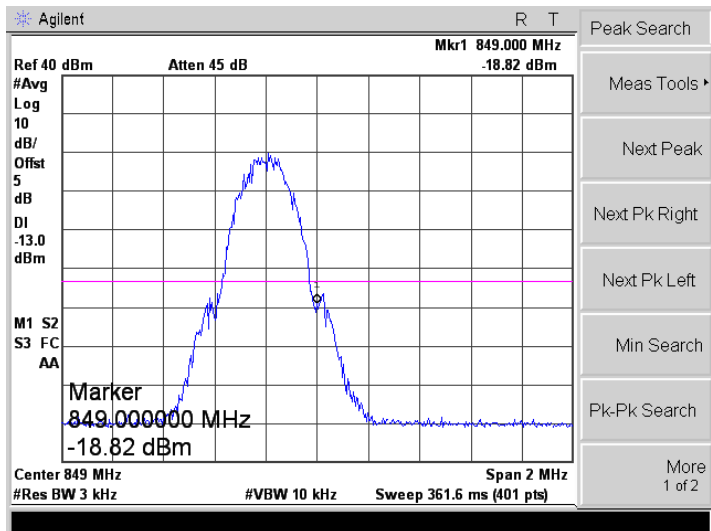
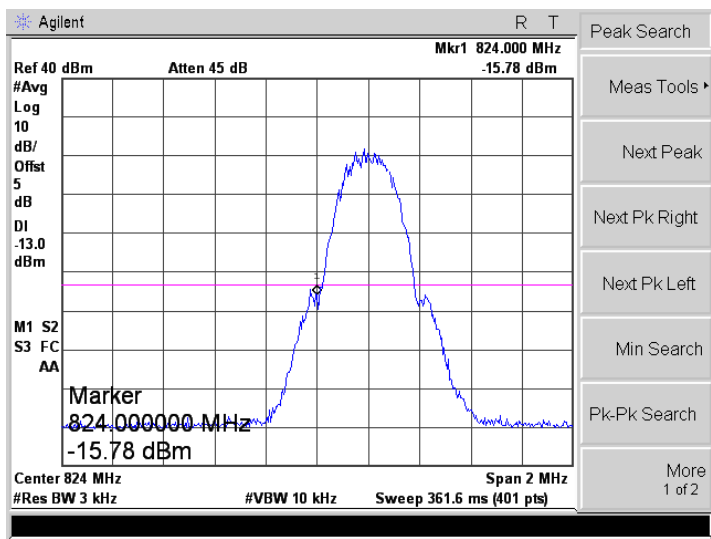


GPRS850
(GMSK,1Slot)-Middle

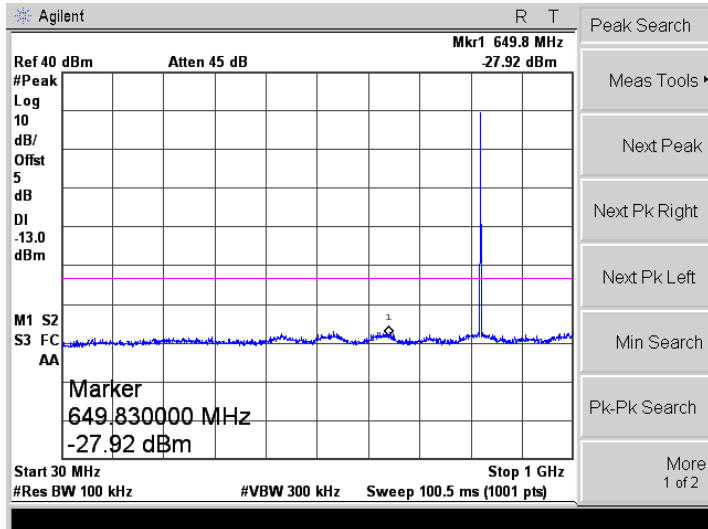




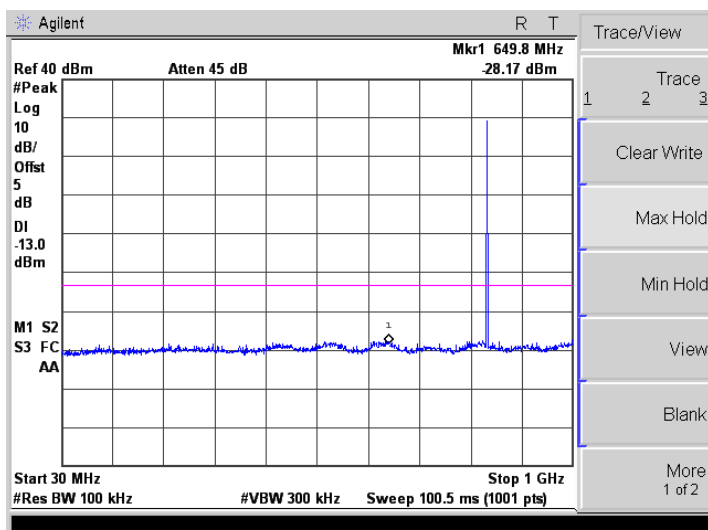
Bandedge

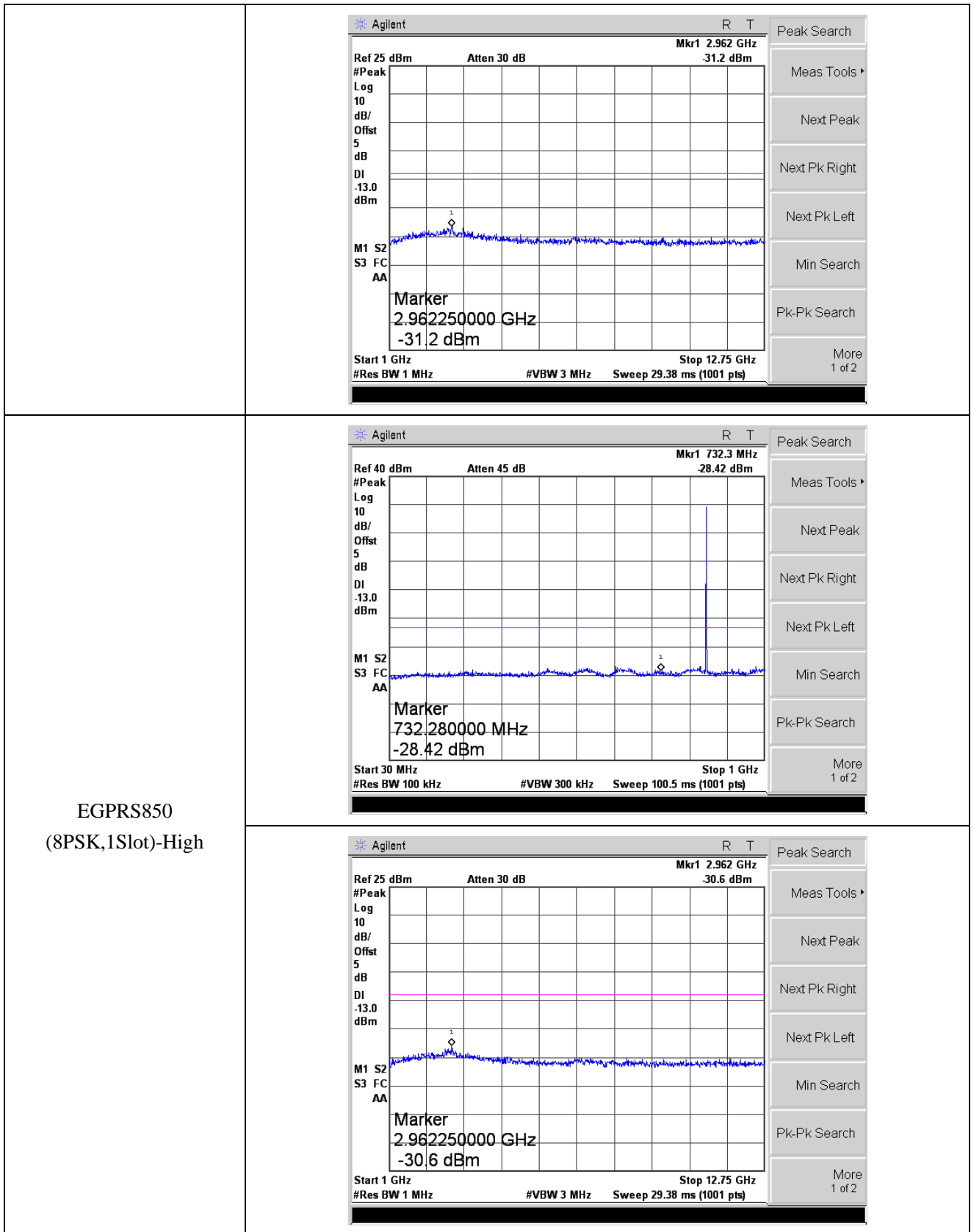


EGPRS850
(8PSK,1Slot)-Low

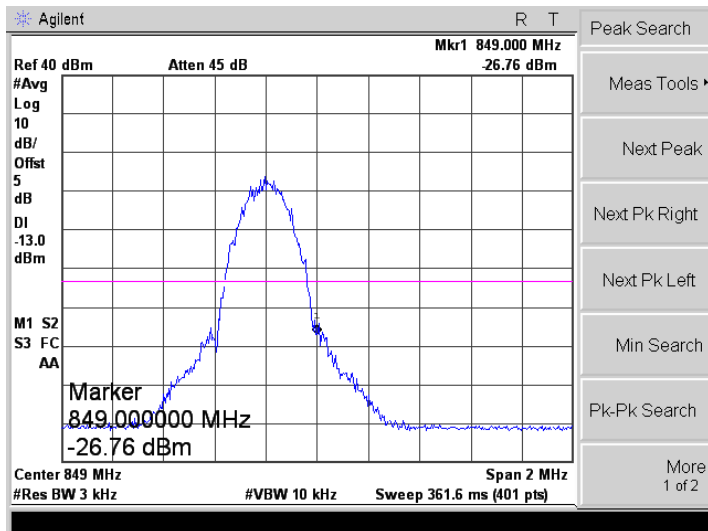
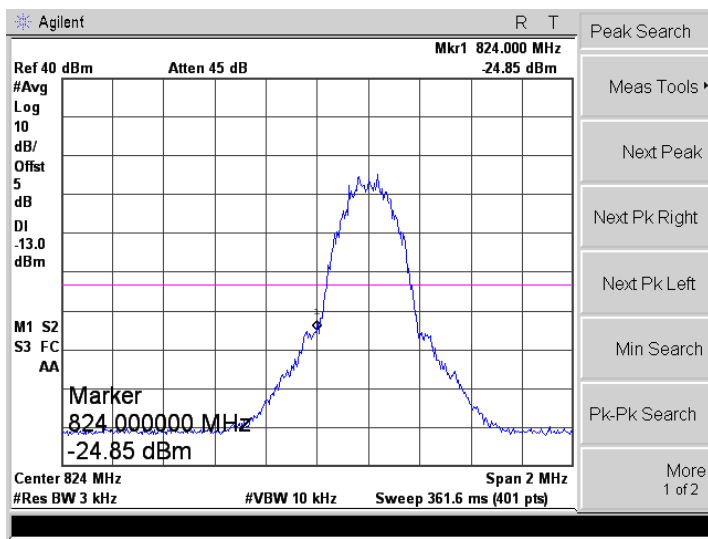


EGPRS850
(8PSK,1Slot)-Middle

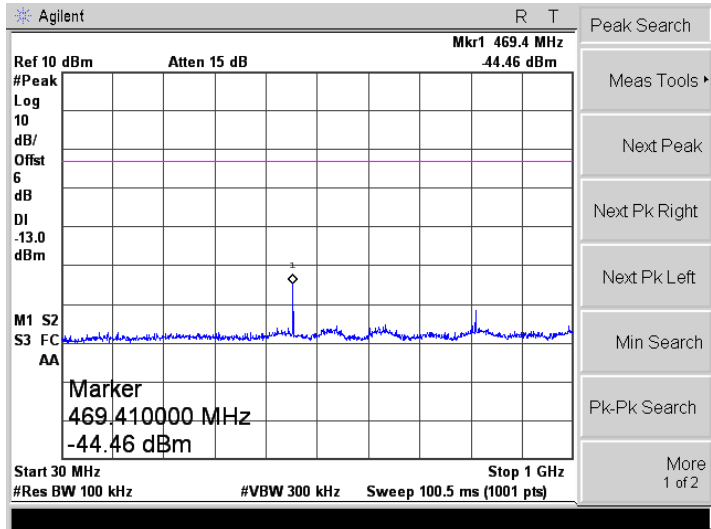




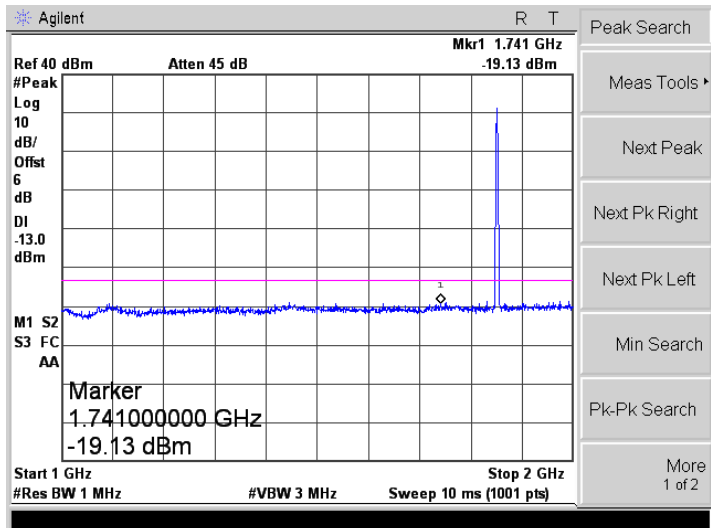
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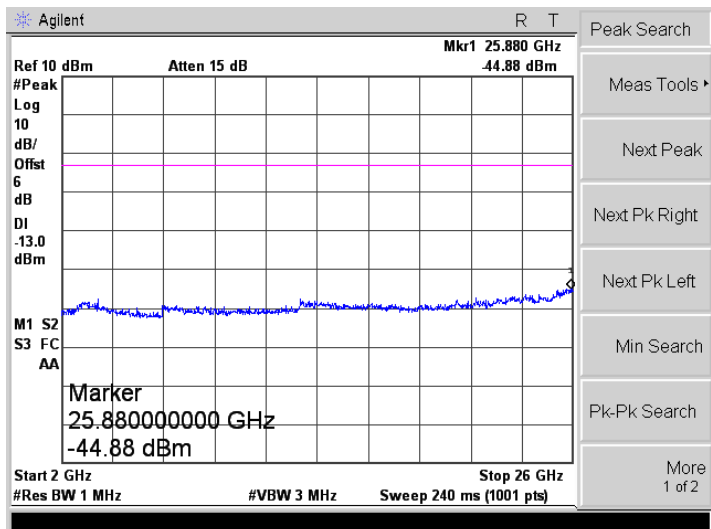
PCS1900
(GMSK)-Low



- Peak Search
- Meas Tools ▶
- Next Peak
- Next Pk Right
- Next Pk Left
- Min Search
- Pk-Pk Search
- More 1 of 2

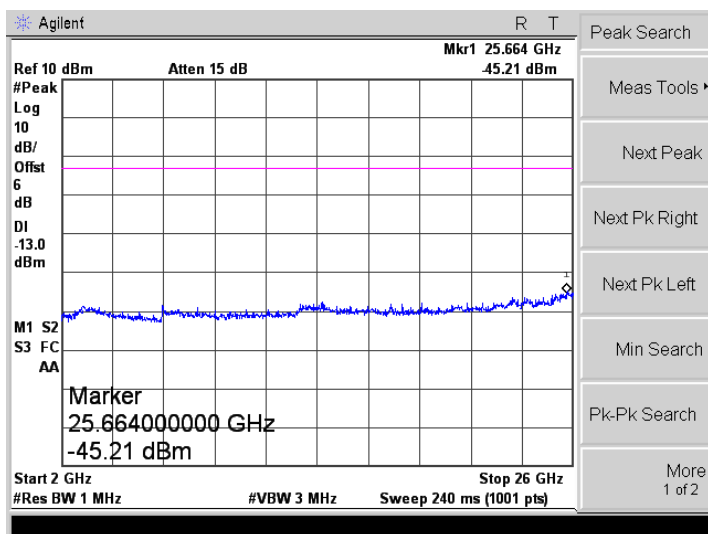
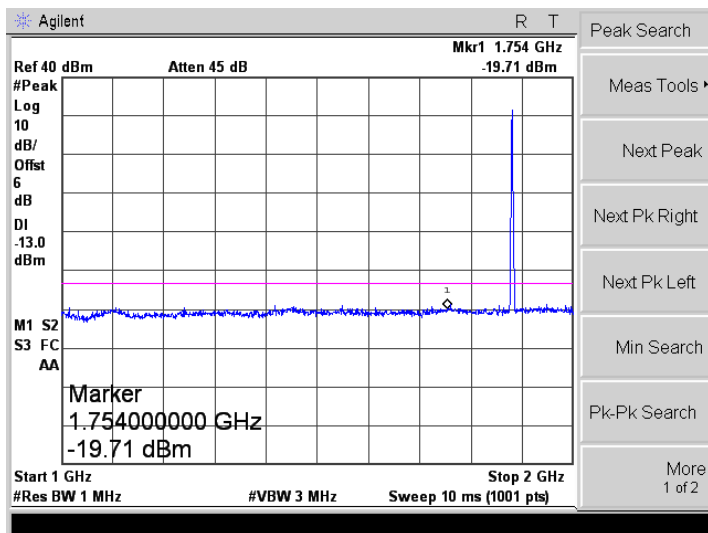
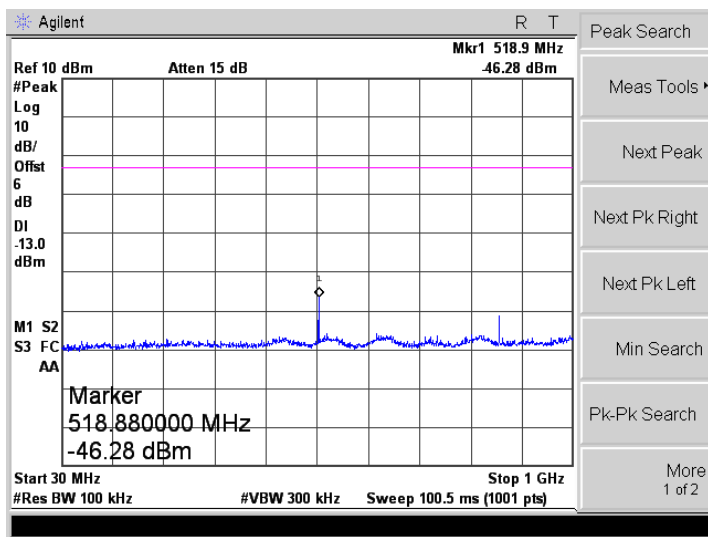


- Peak Search
- Meas Tools ▶
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- Next Pk Right
- Next Pk Left
- Min Search
- Pk-Pk Search
- More 1 of 2

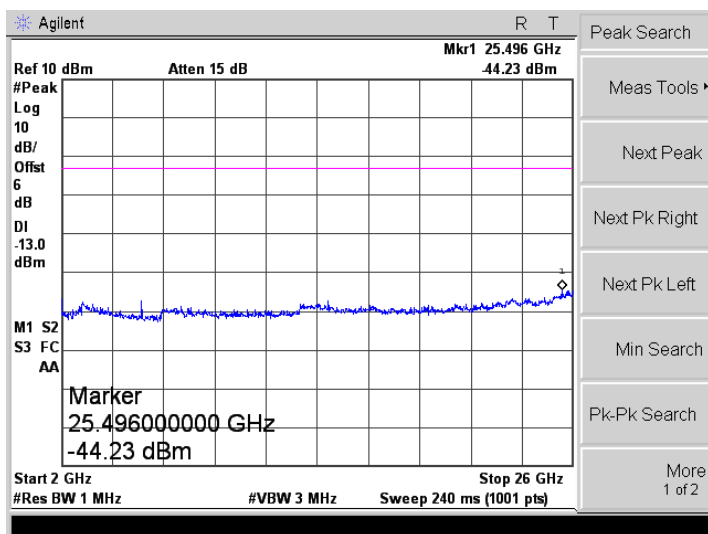
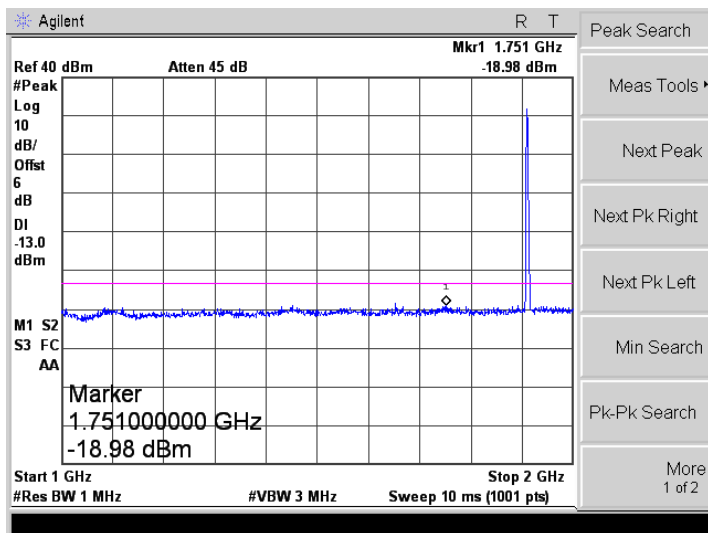
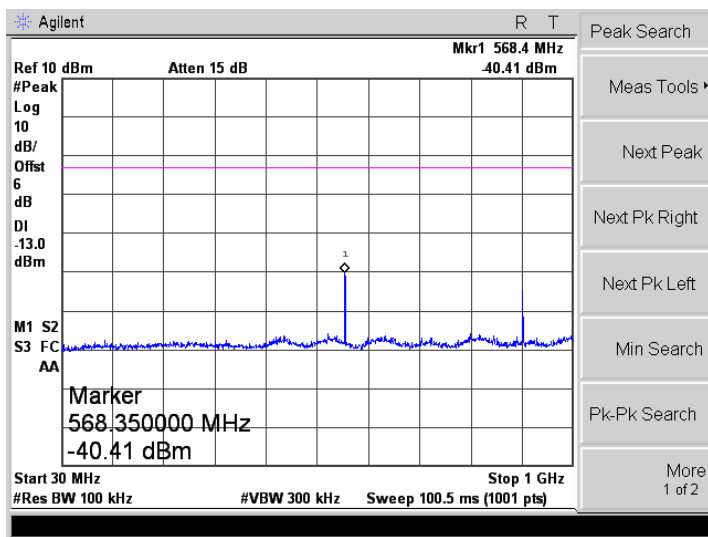


- Peak Search
- Meas Tools ▶
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- Min Search
- Pk-Pk Search
- More 1 of 2

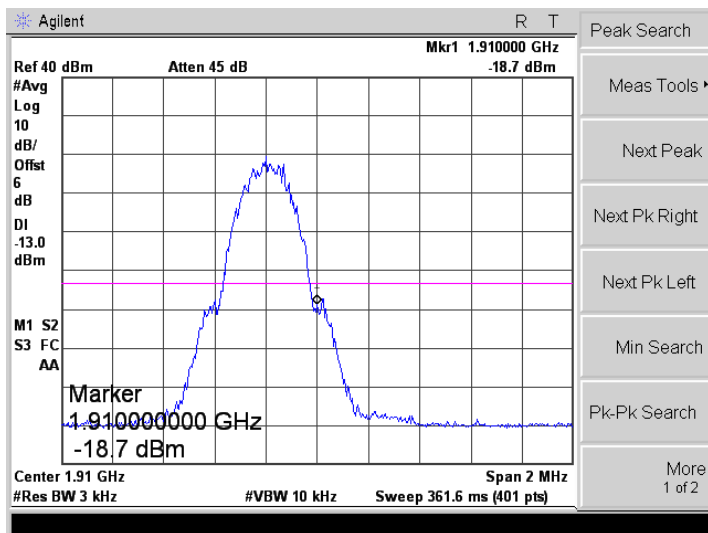
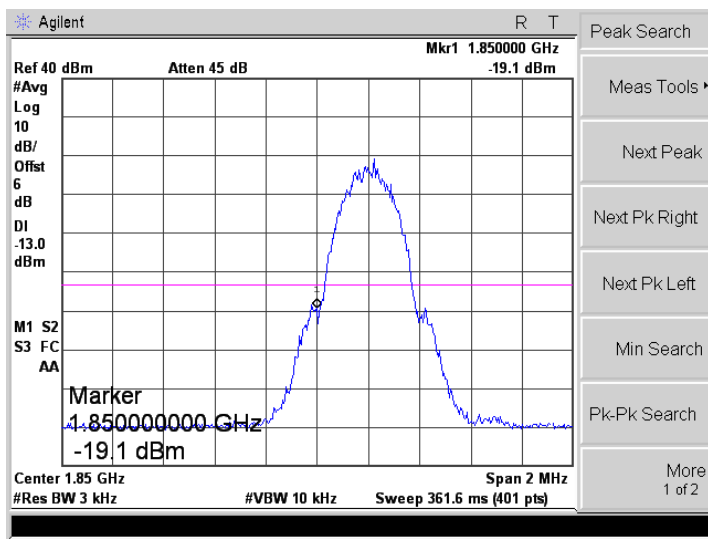
PCS1900
(GMSK)-Middle



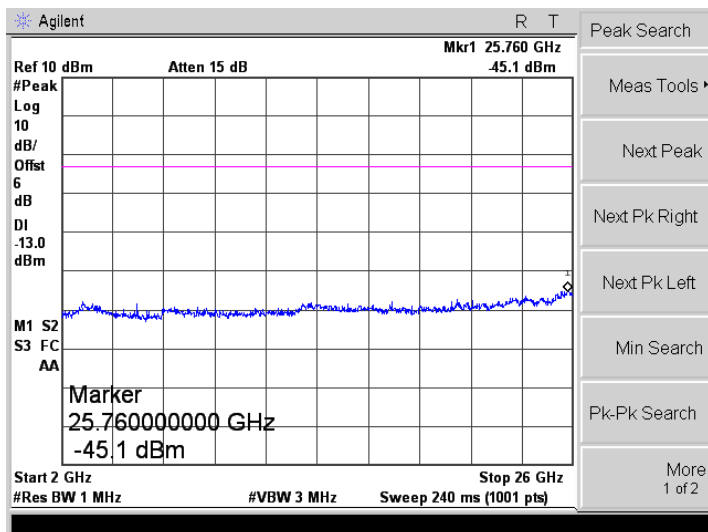
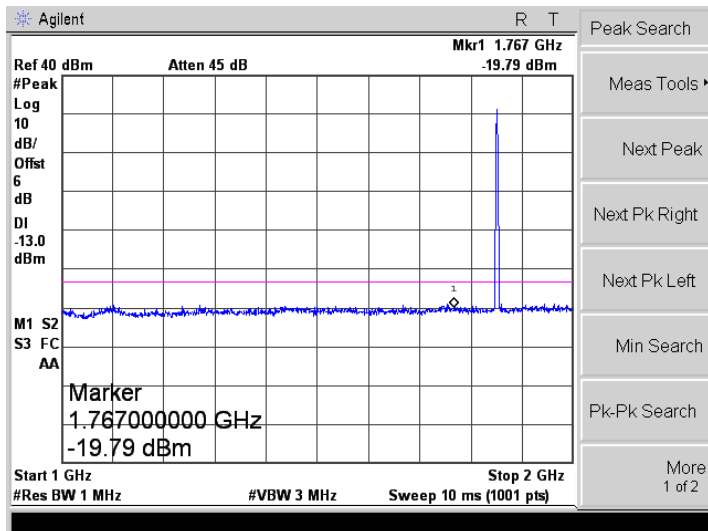
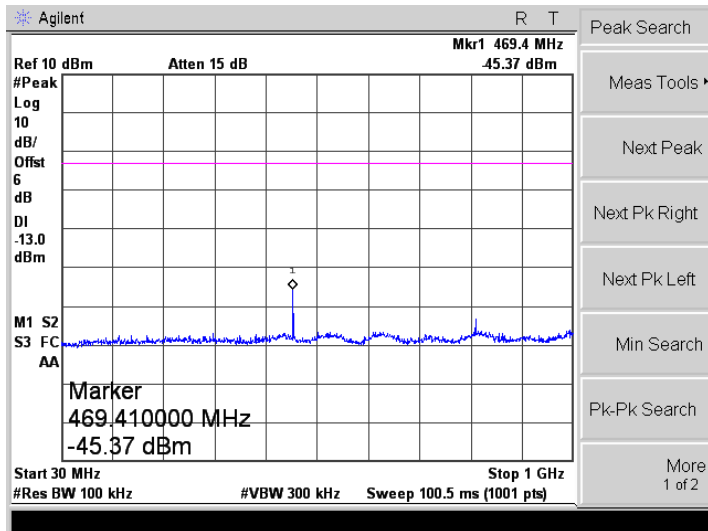
PCS1900
(GMSK)-High



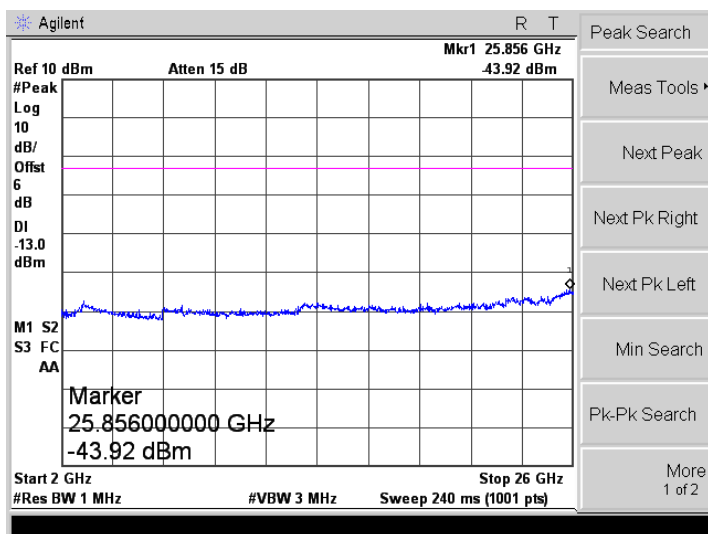
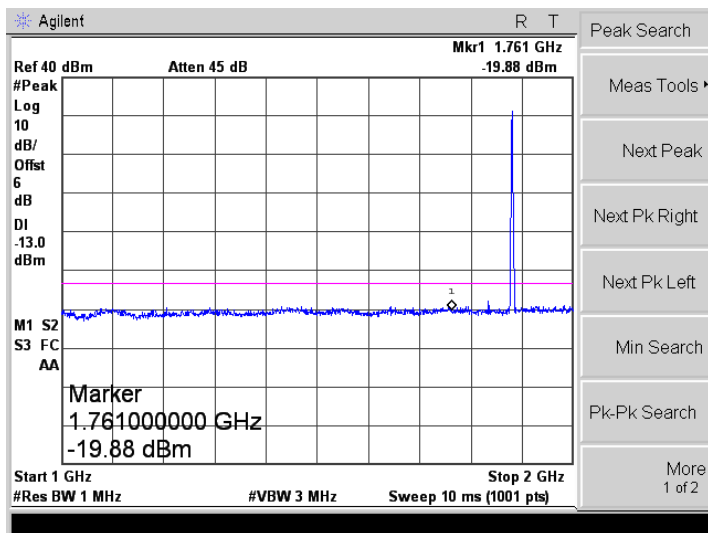
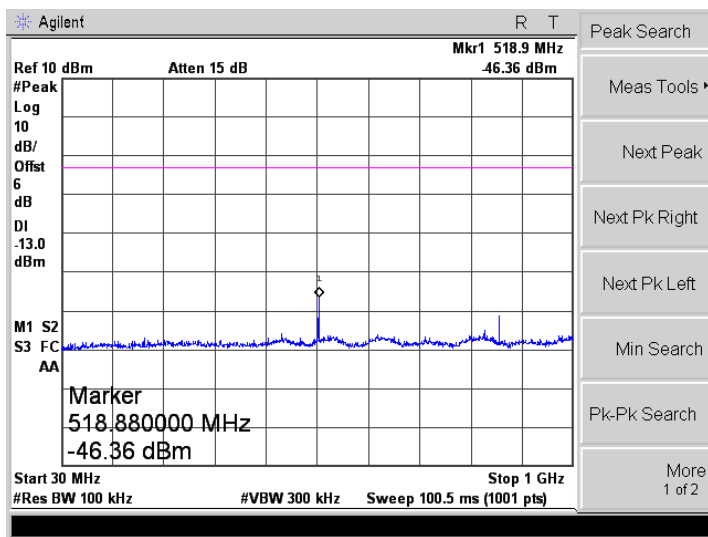
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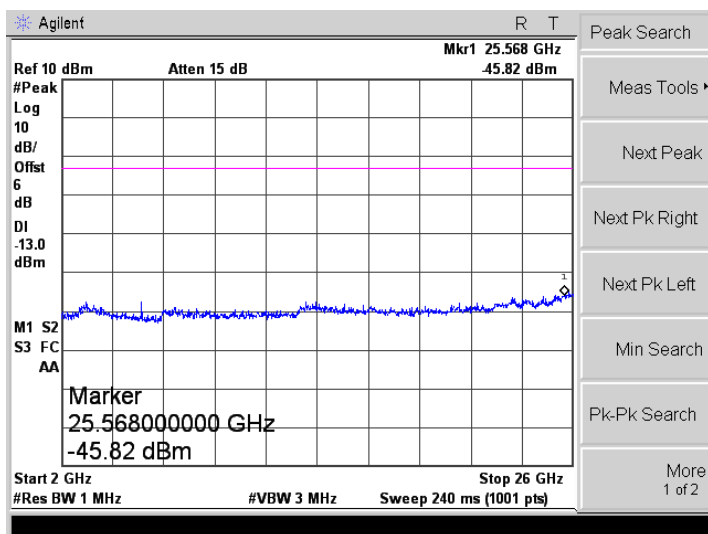
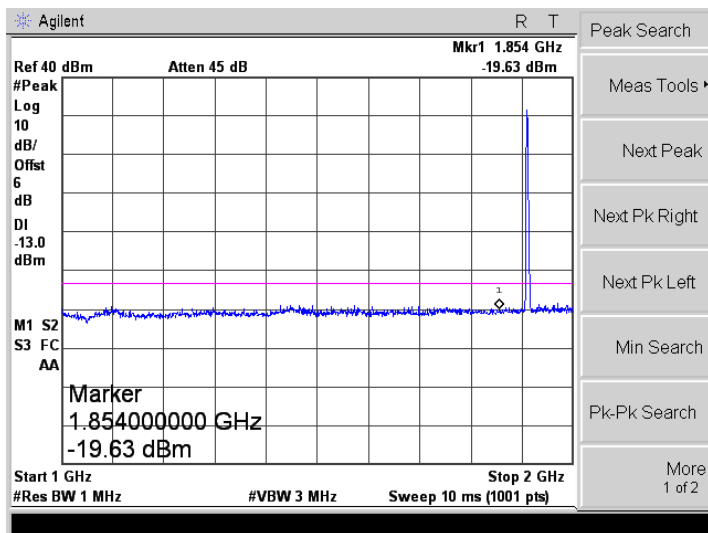
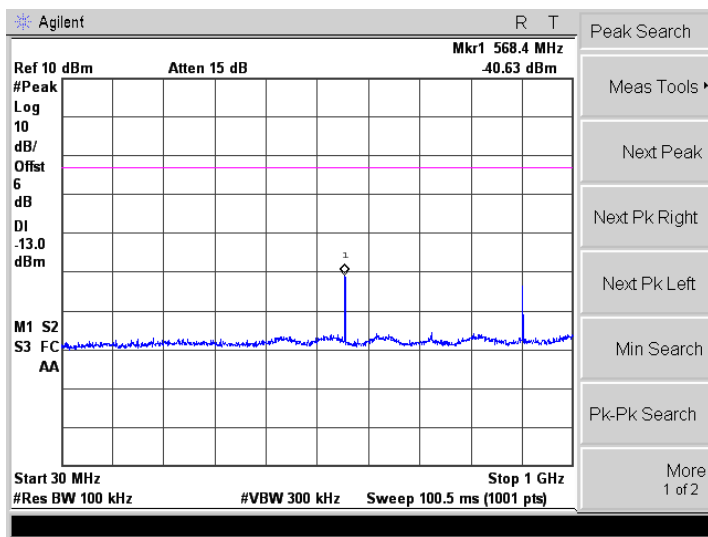
GPRS1900
(GMSK,1Slot)-Low



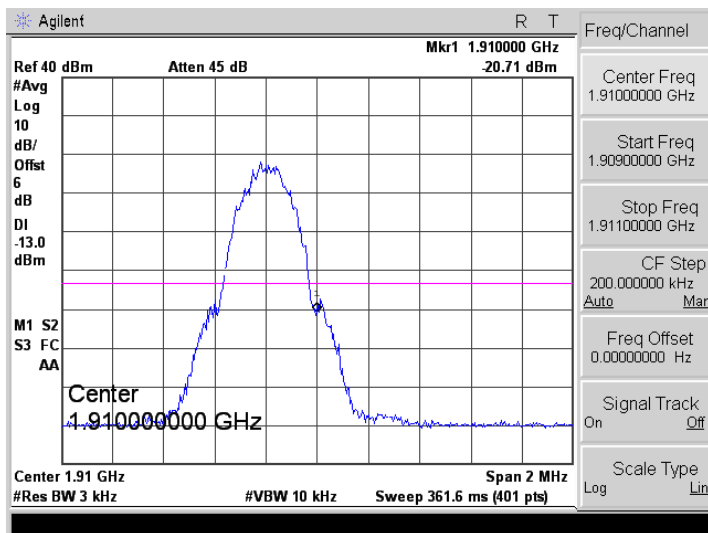
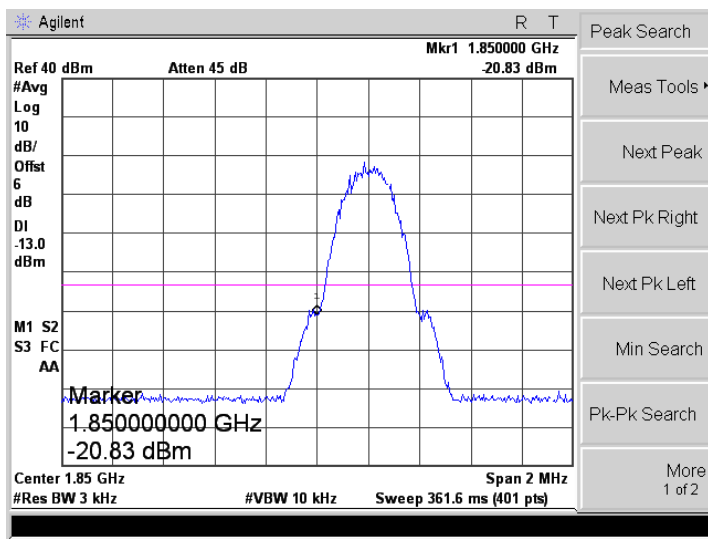
GPRS1900
(GMSK,1Slot)-Middle



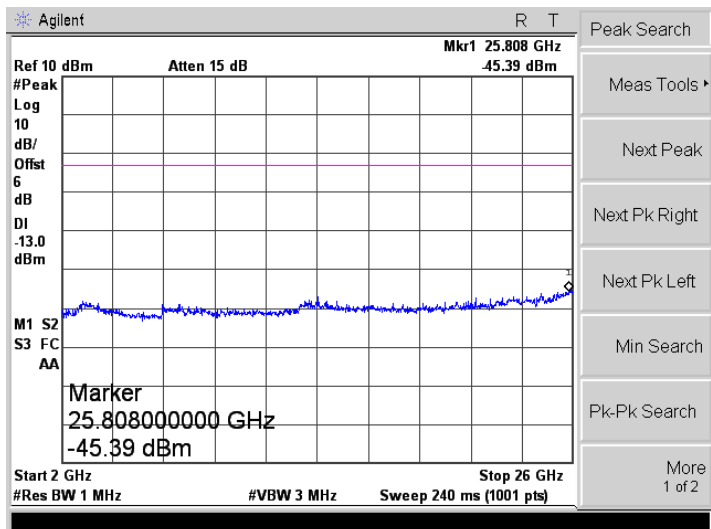
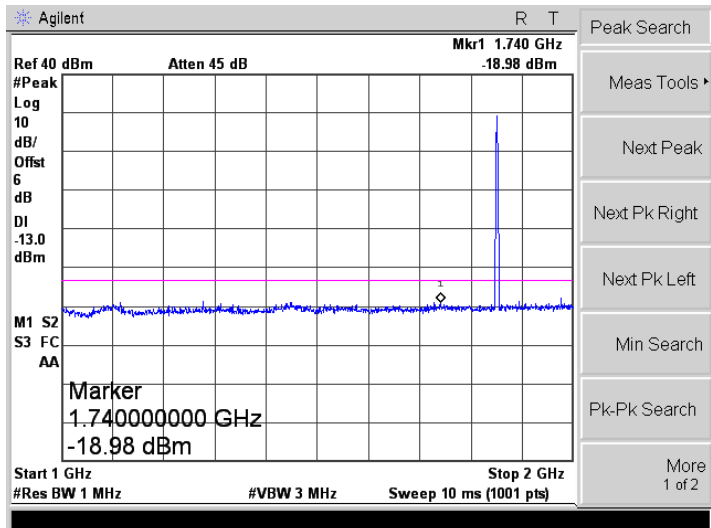
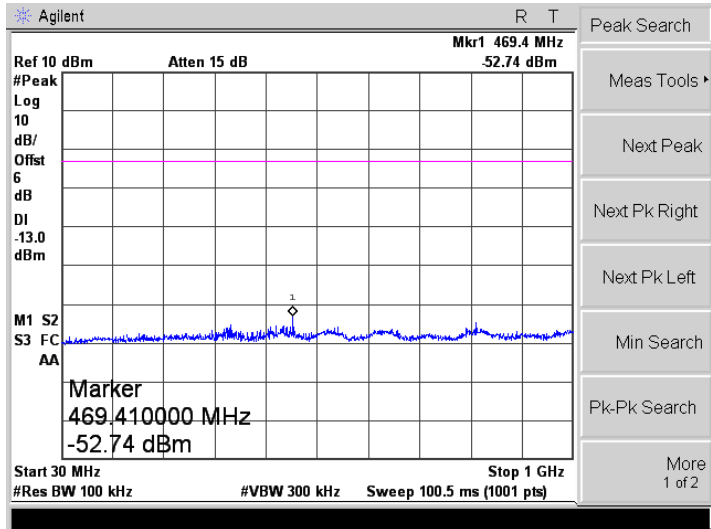
GPRS1900
(GMSK,1Slot)-High



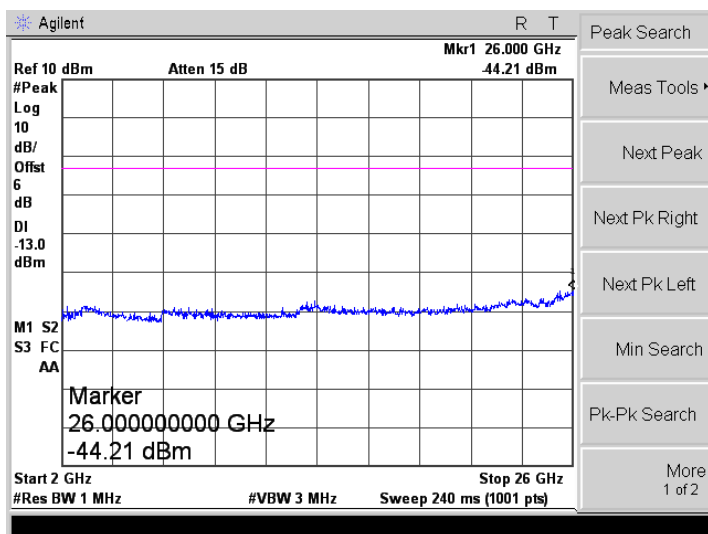
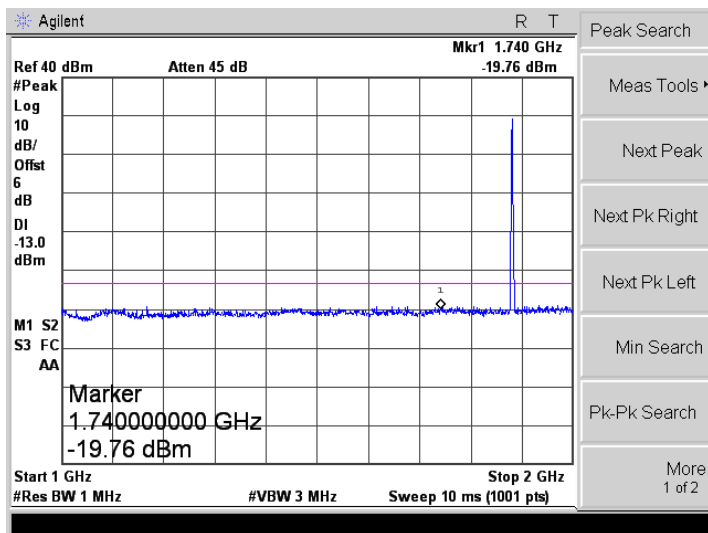
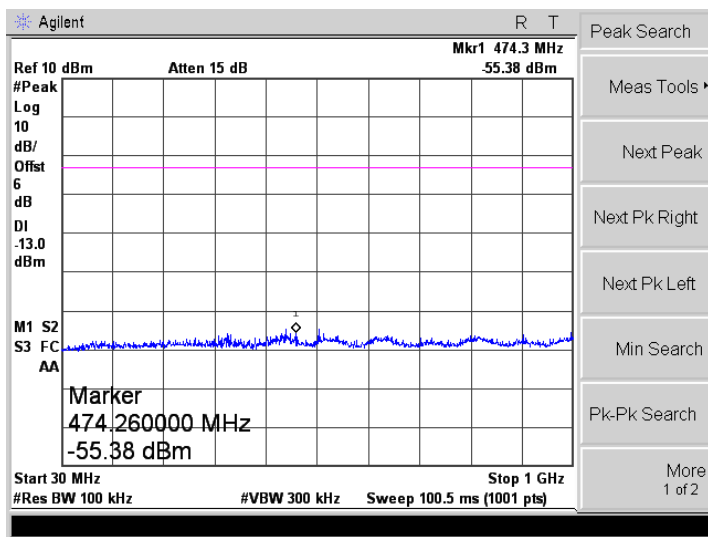
Bandedge



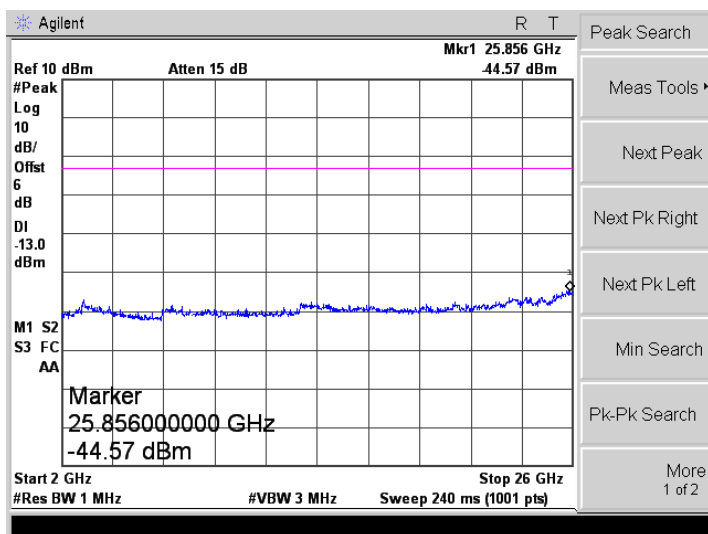
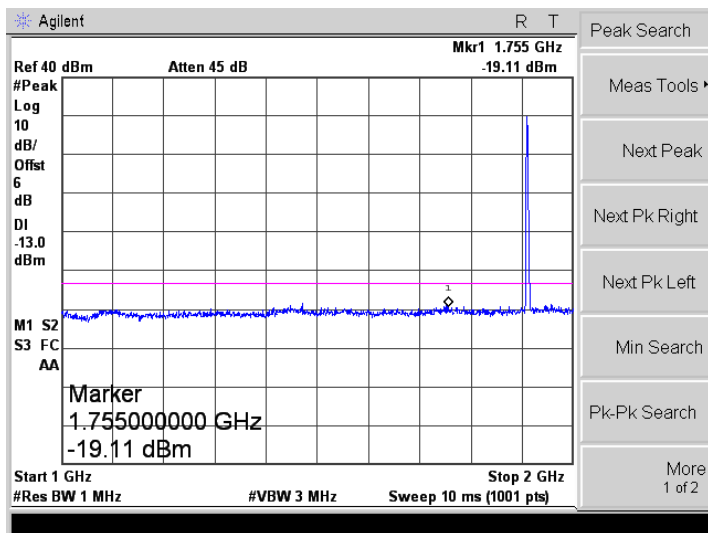
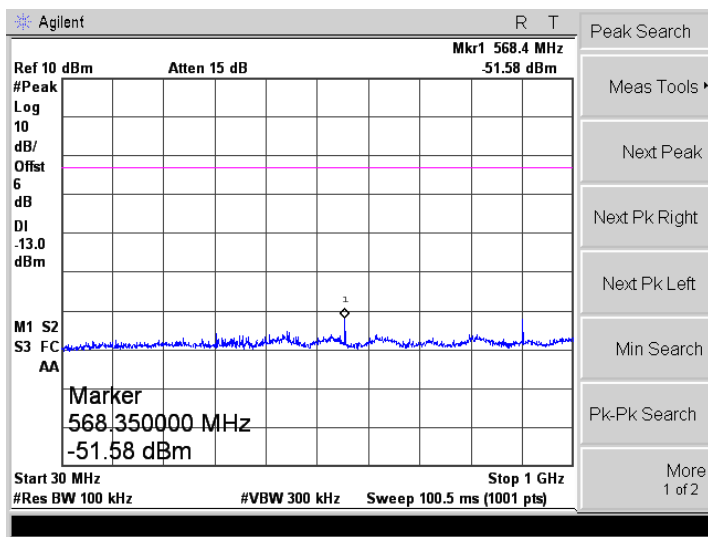
EGPRS1900
(8PSK,1Slot)-Low



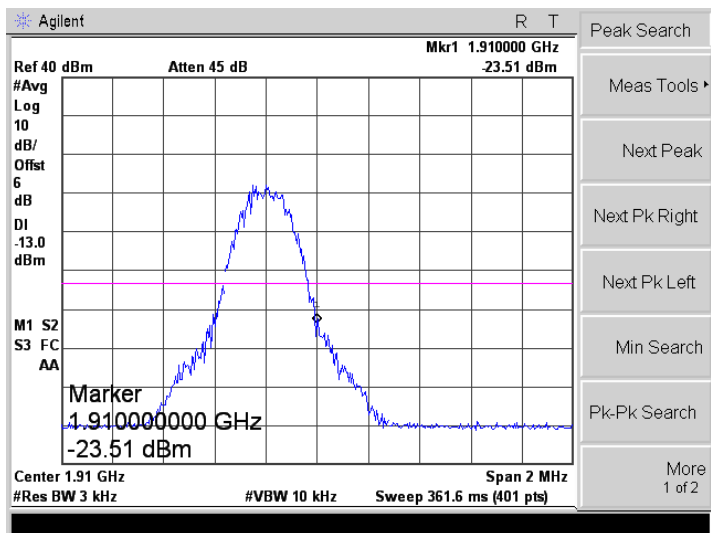
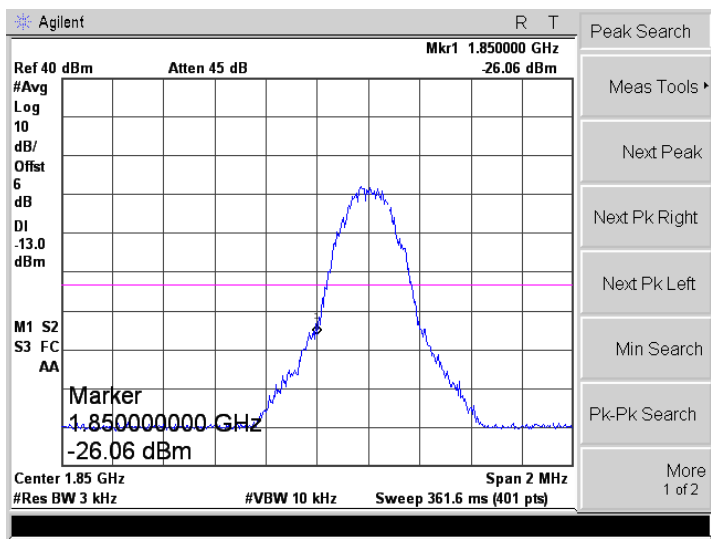
EGPRS1900
(8PSK,1Slot)-Middle



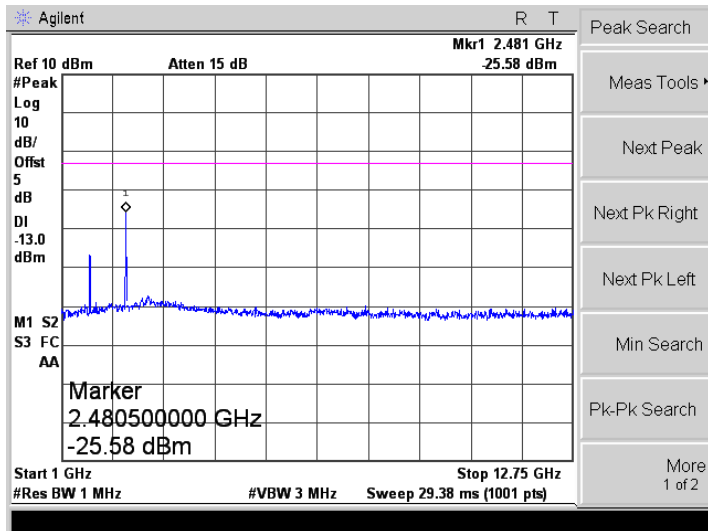
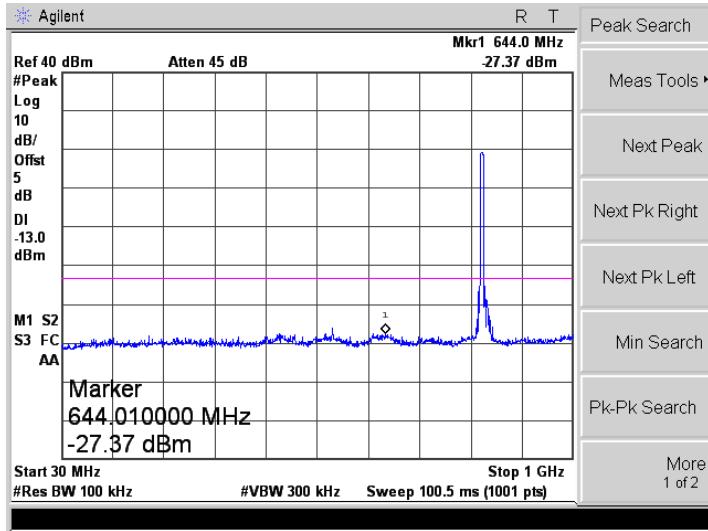
EGPRS1900
(8PSK,1Slot)-High



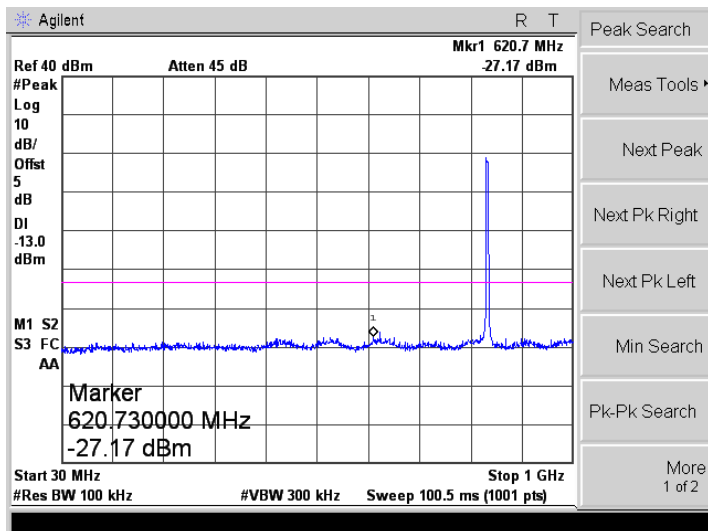
Bandedge

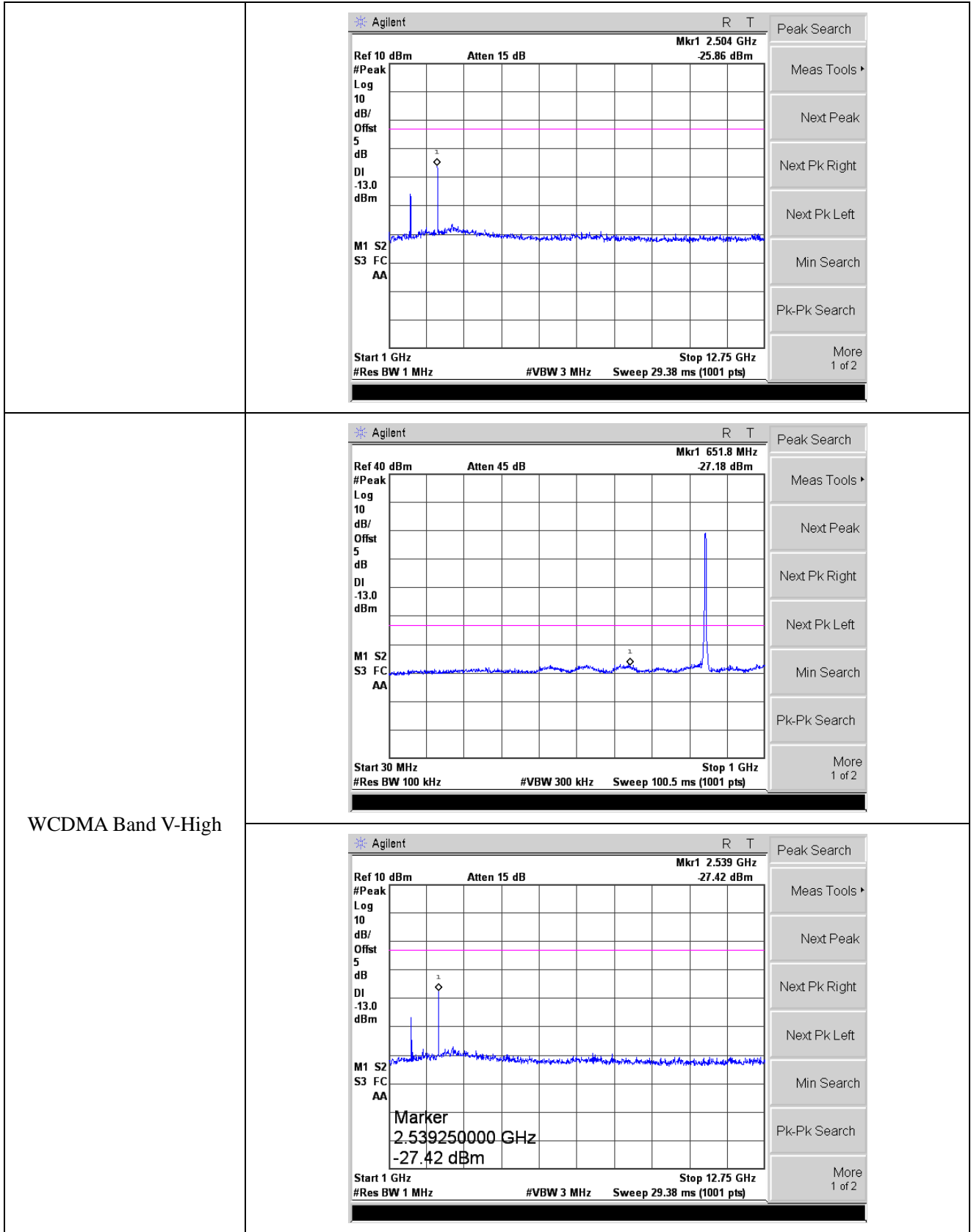


WCDMA Band V-Low

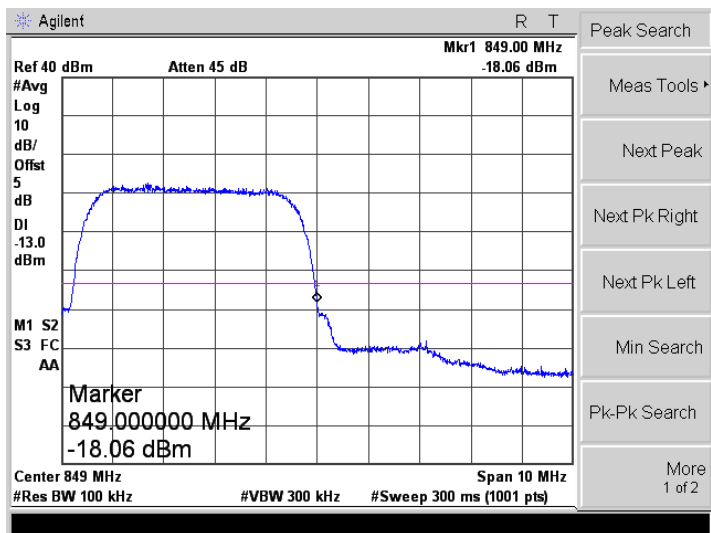
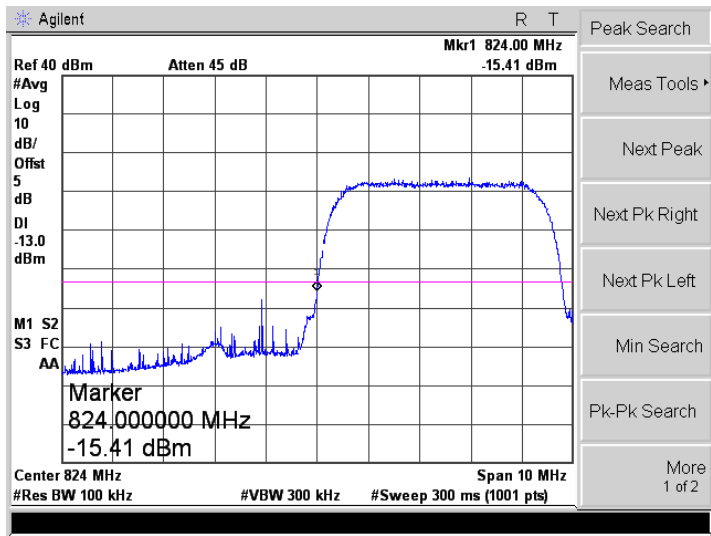


WCDMA Band V-Middle

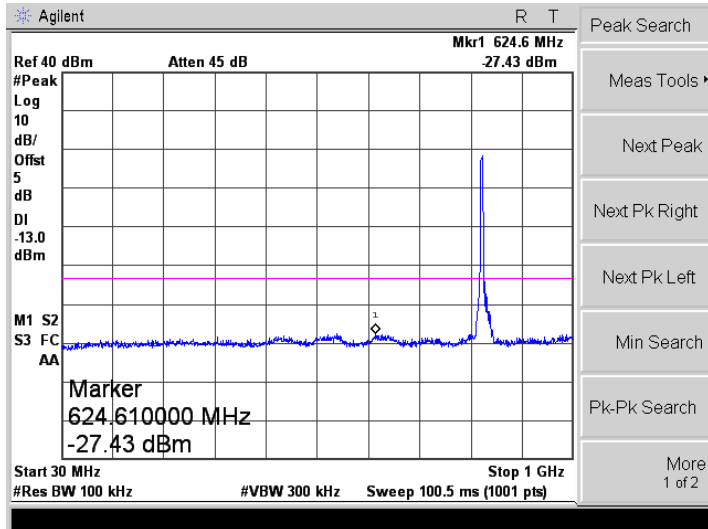




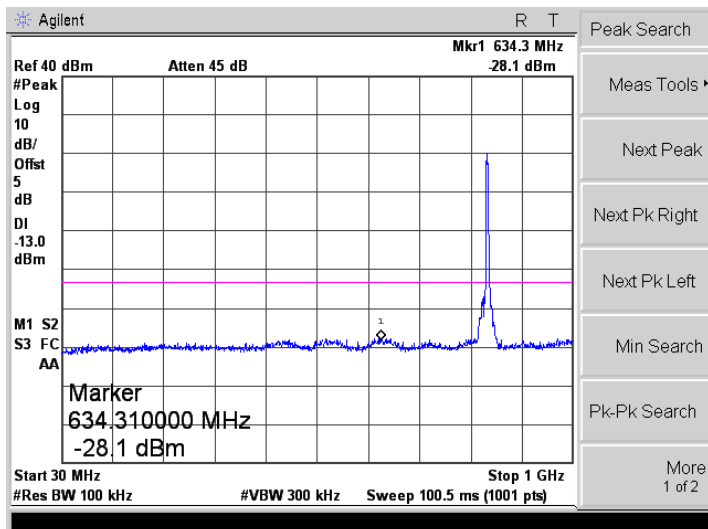
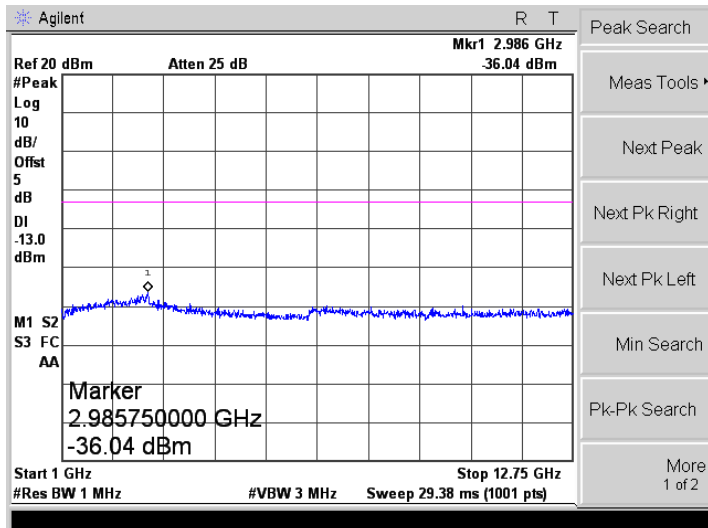
Bandedge

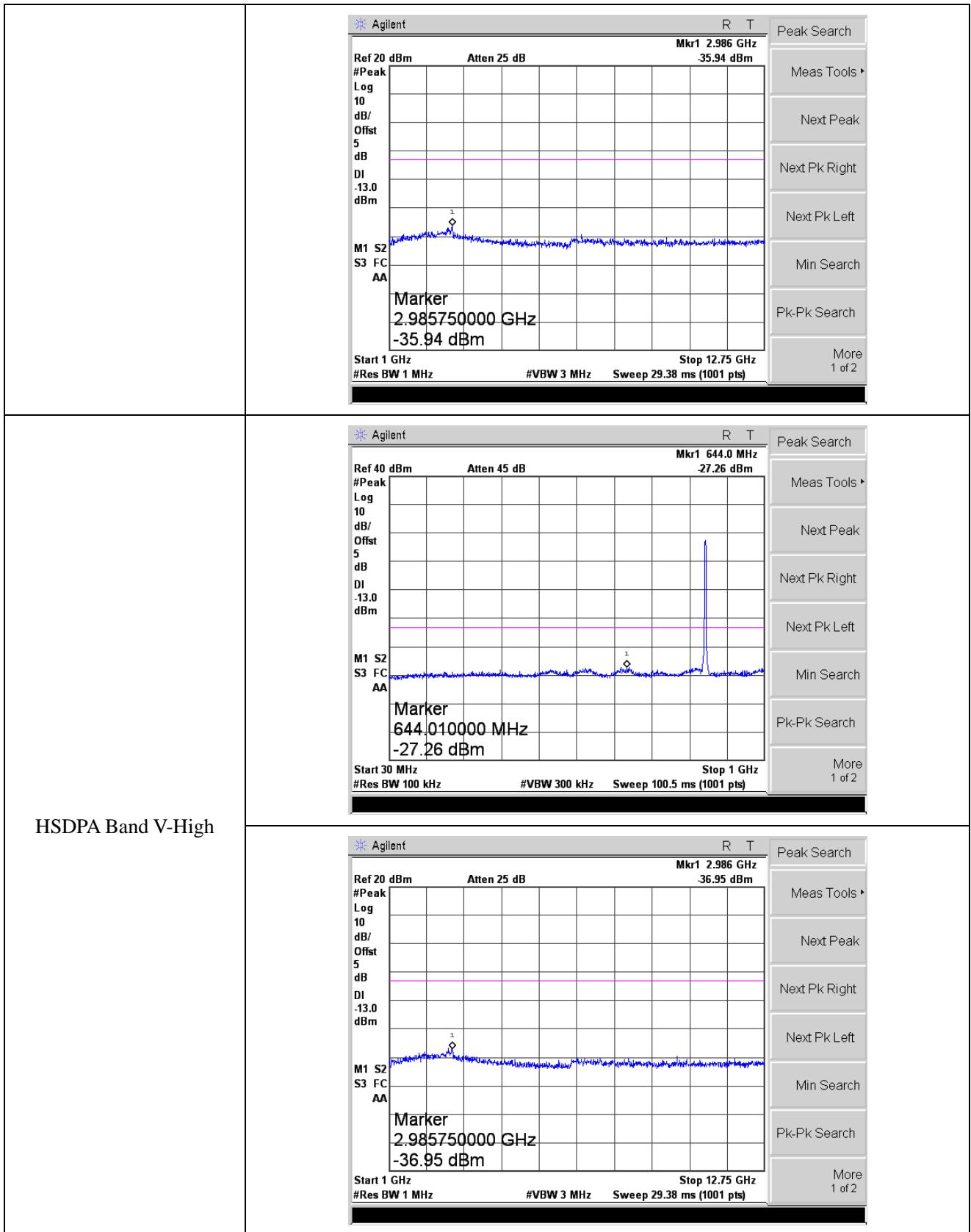


HSDPA Band V-Low

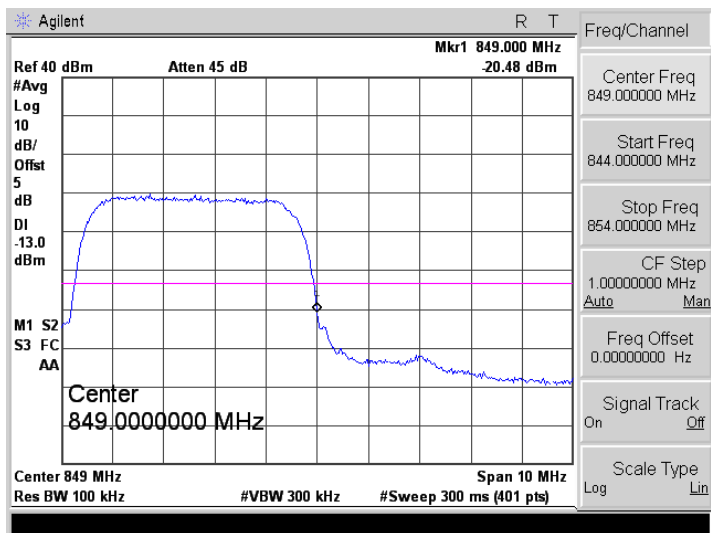
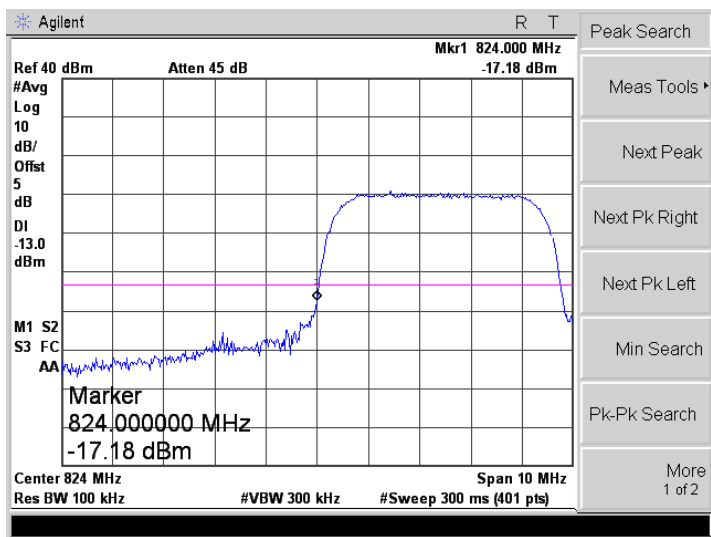


HSDPA Band V-Middle

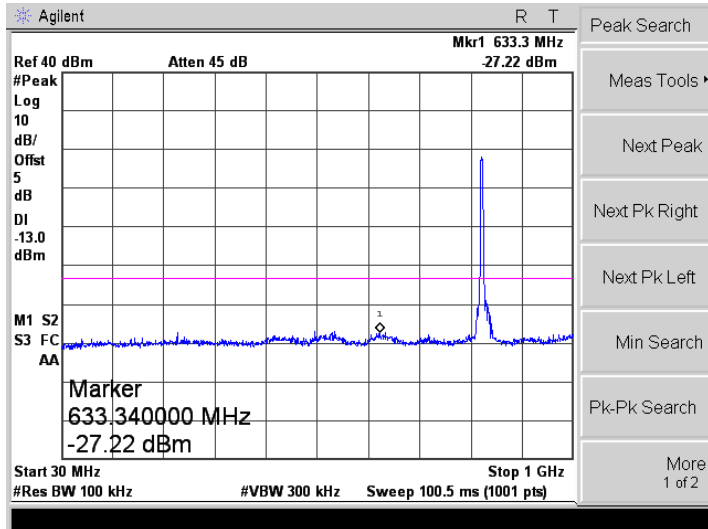




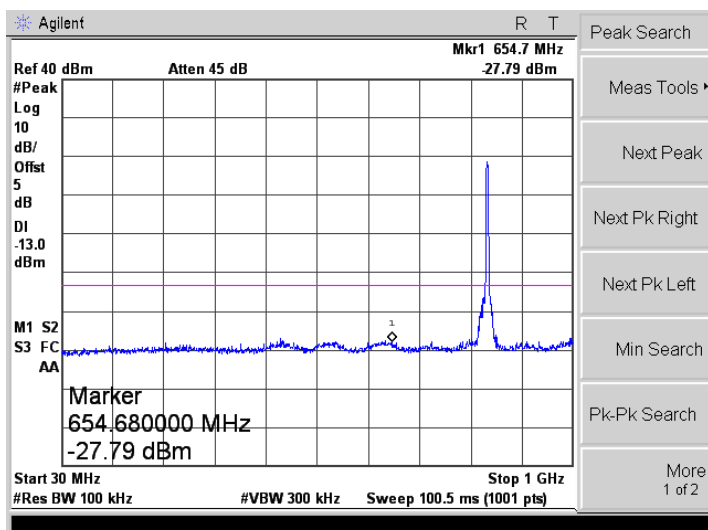
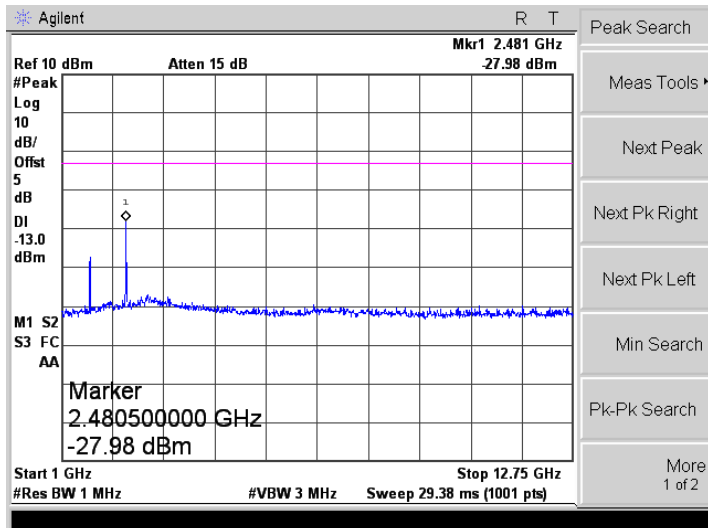
Bandedge

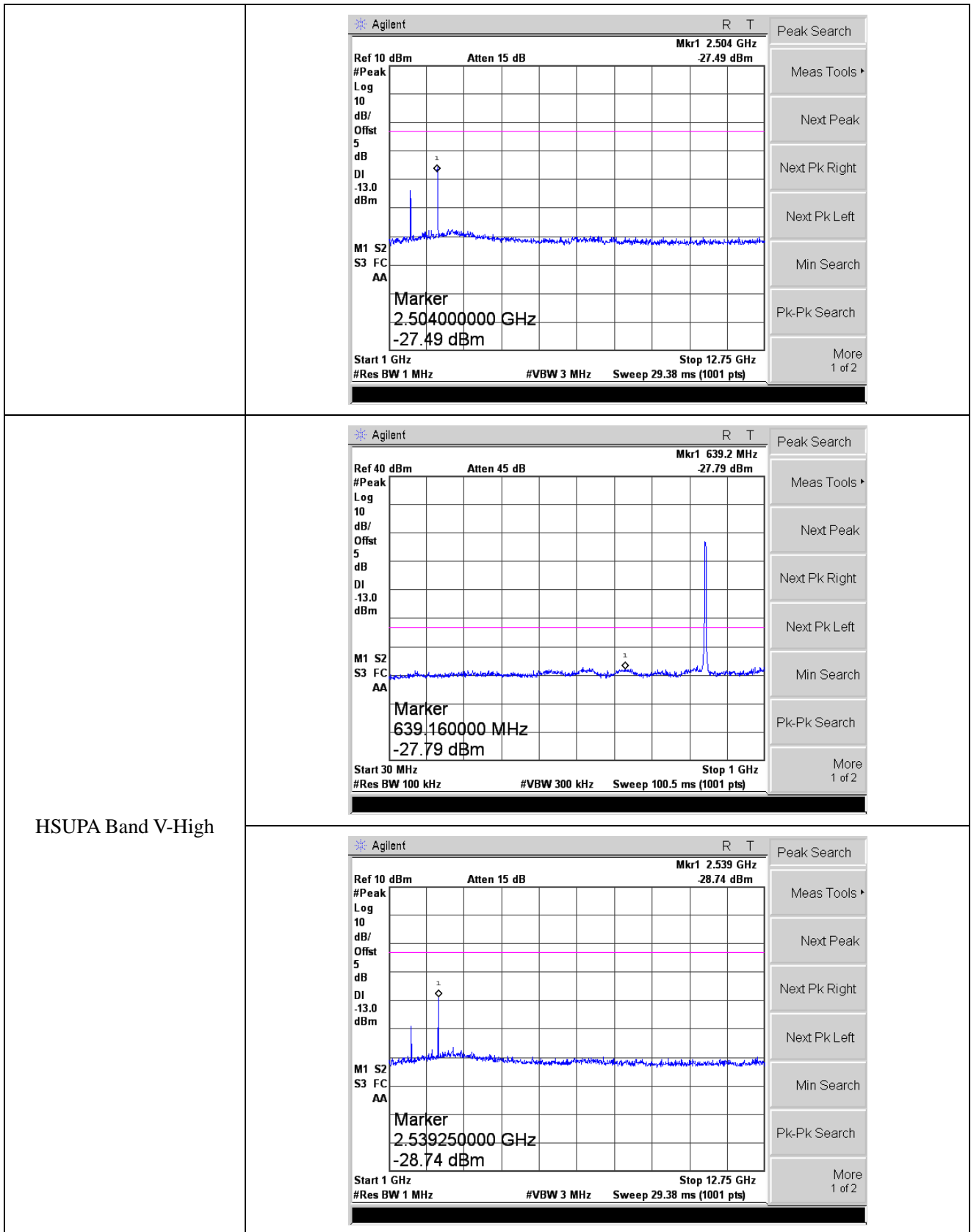


HSUPA Band V-Low

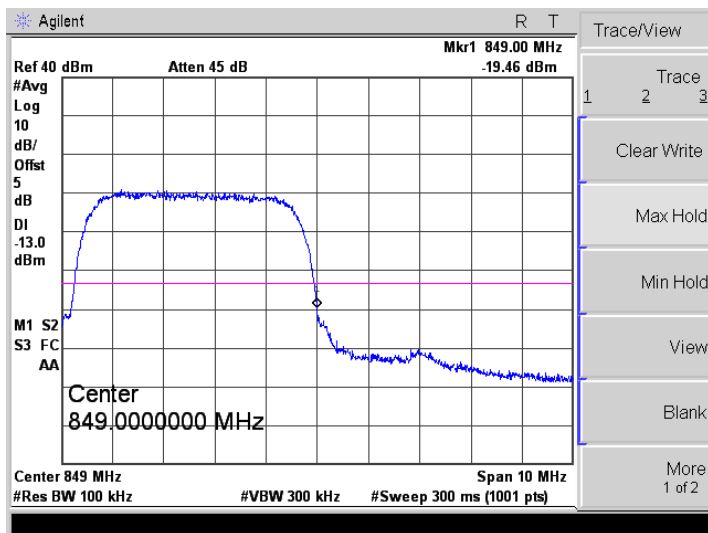
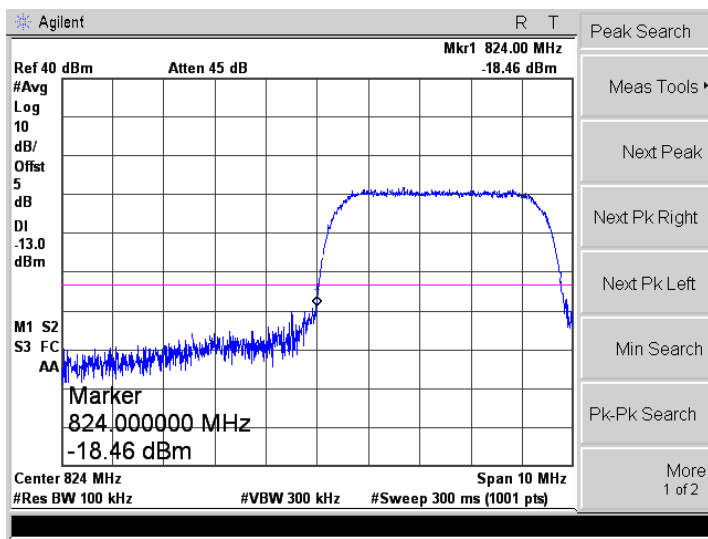


HSUPA Band V-Middle

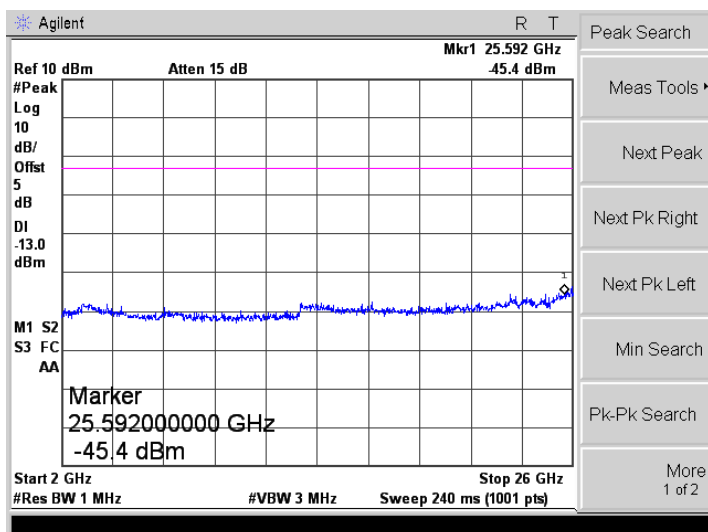
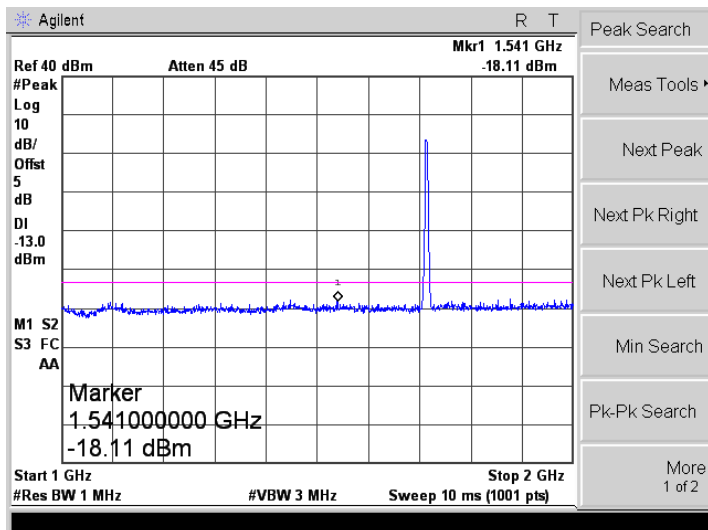
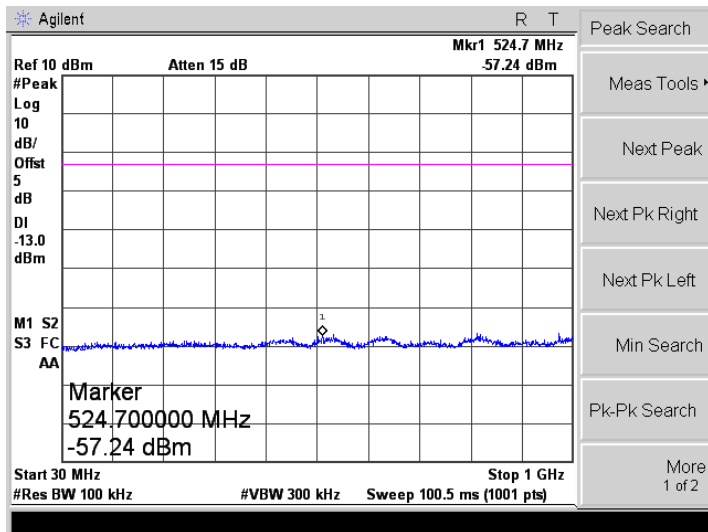




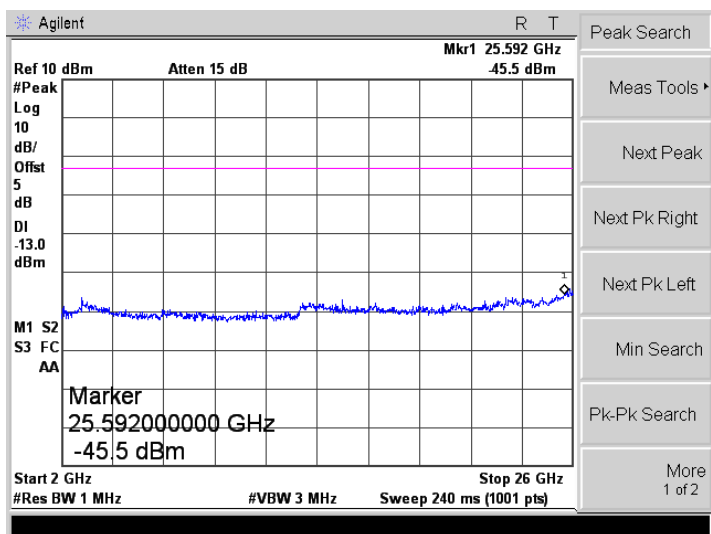
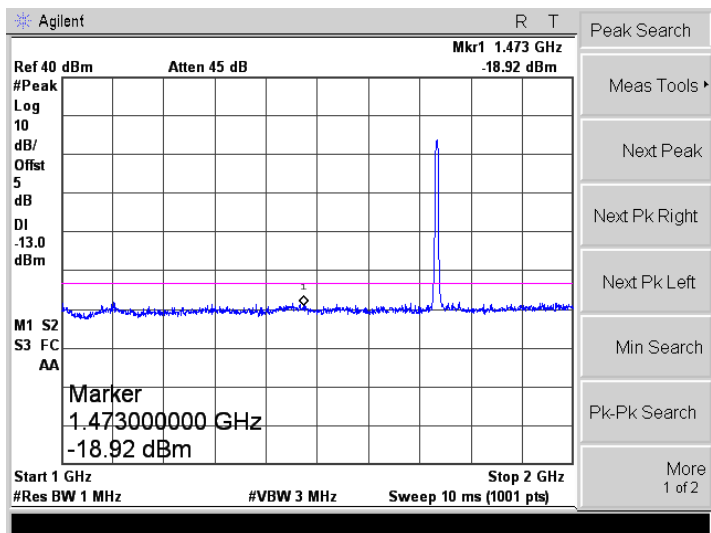
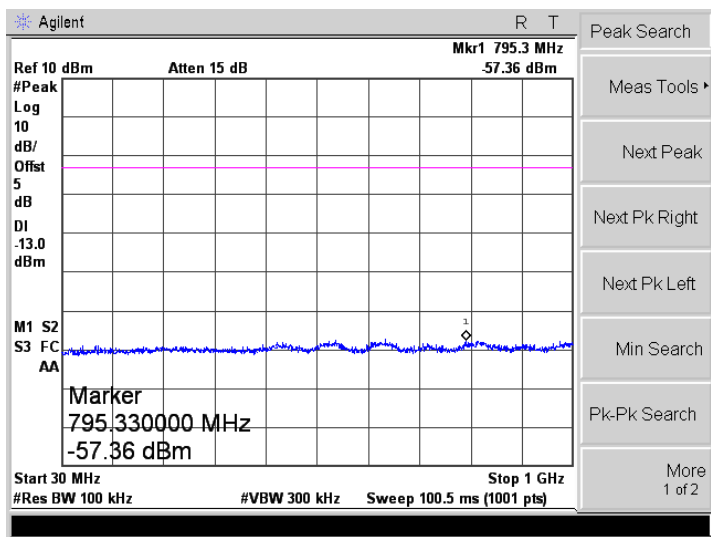
Bandedge

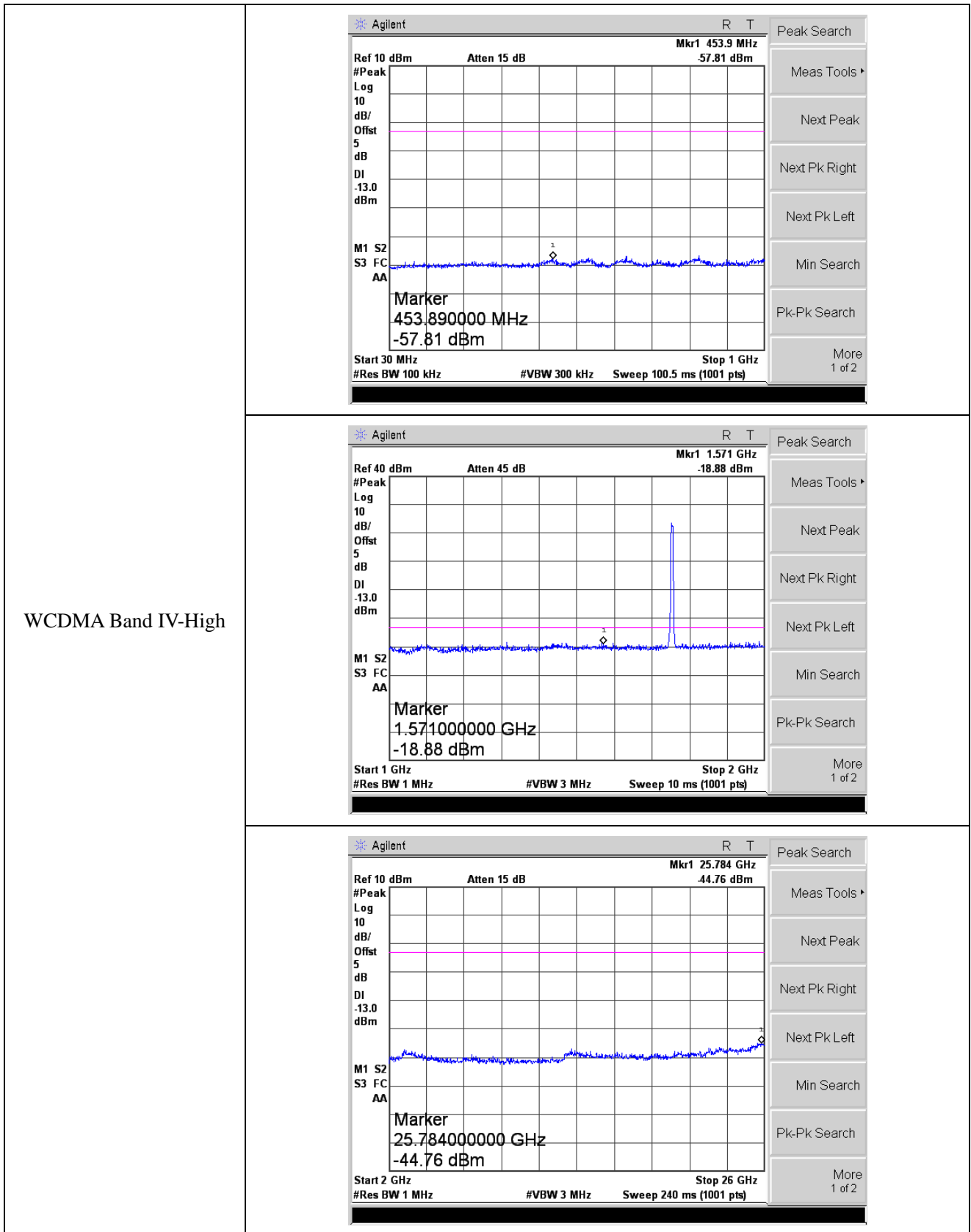


WCDMA Band IV-Low

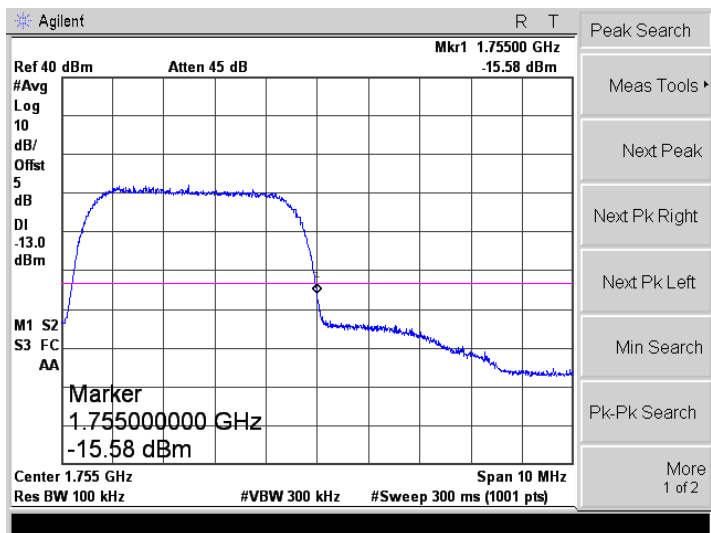
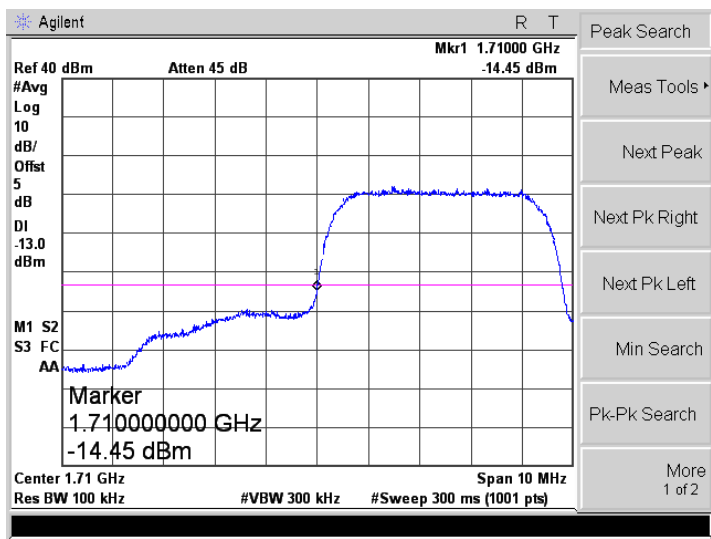


WCDMA Band IV-Middle

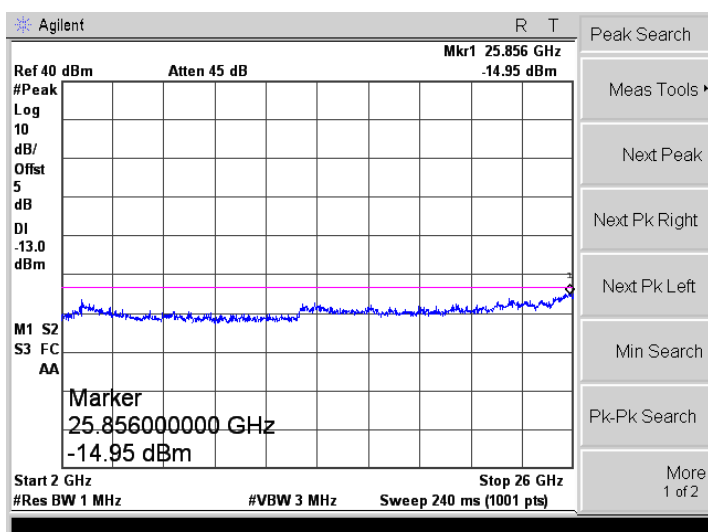
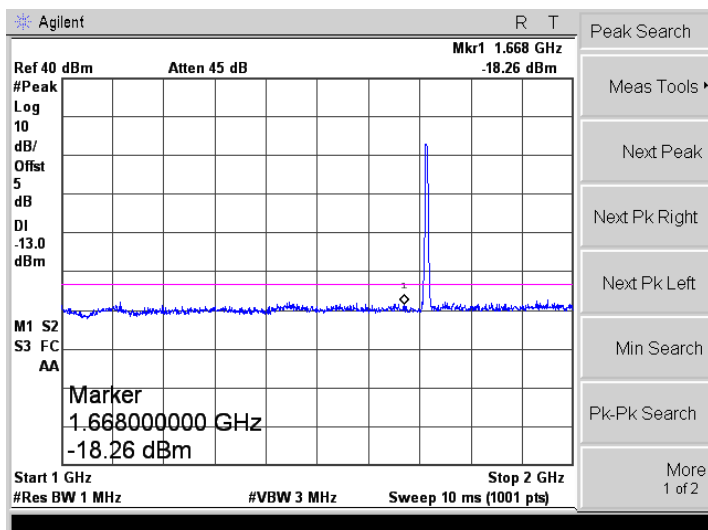
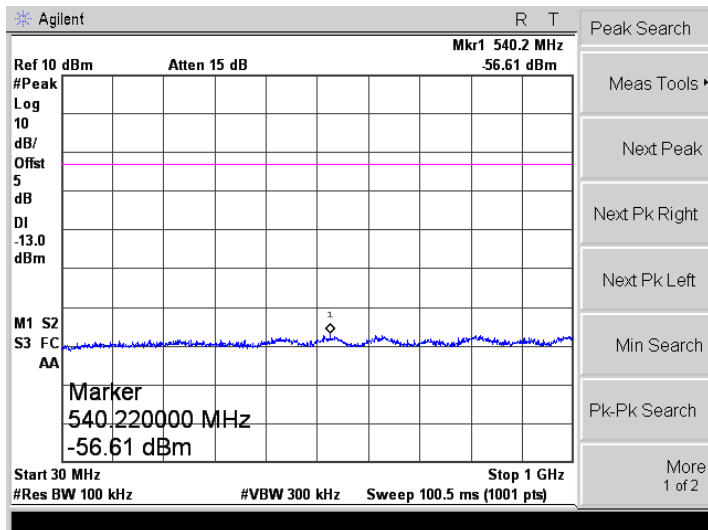


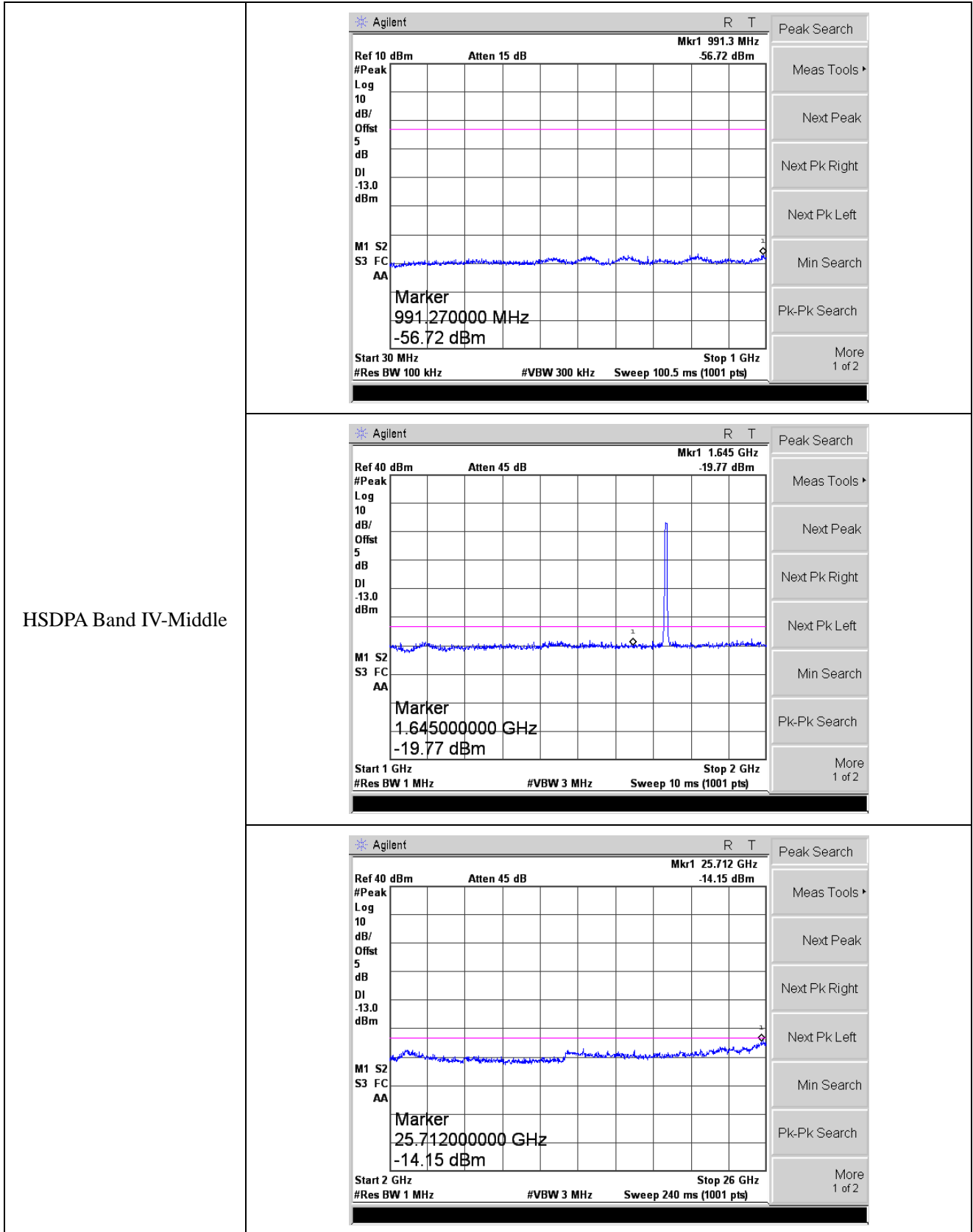


Bandedge

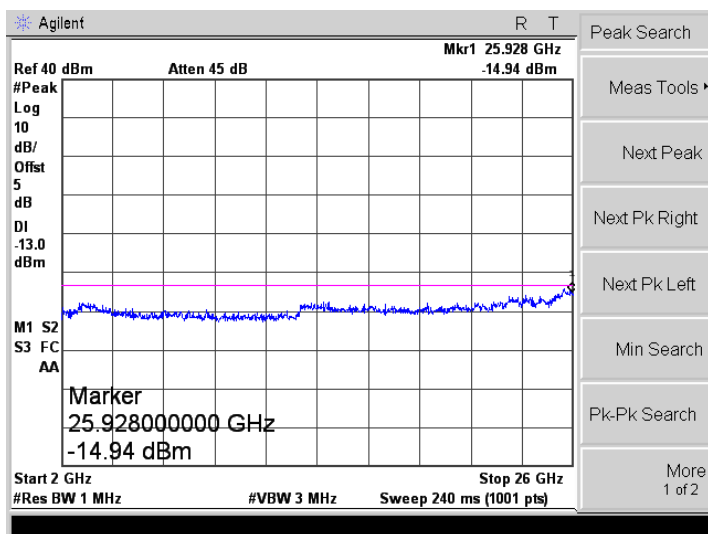
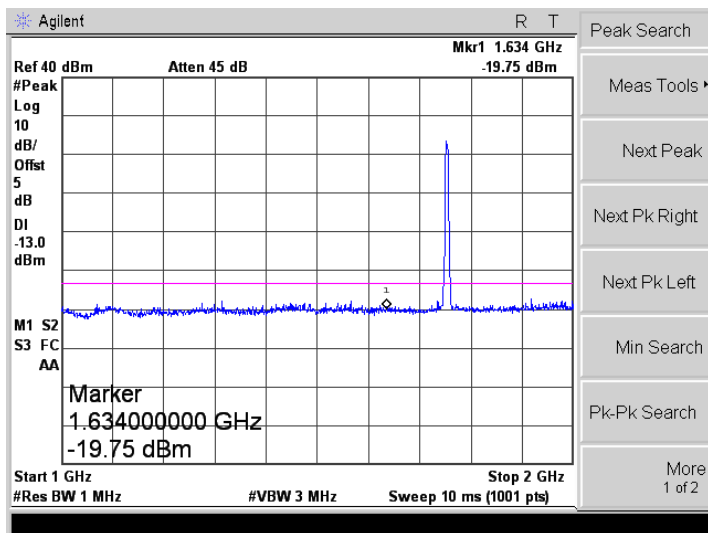
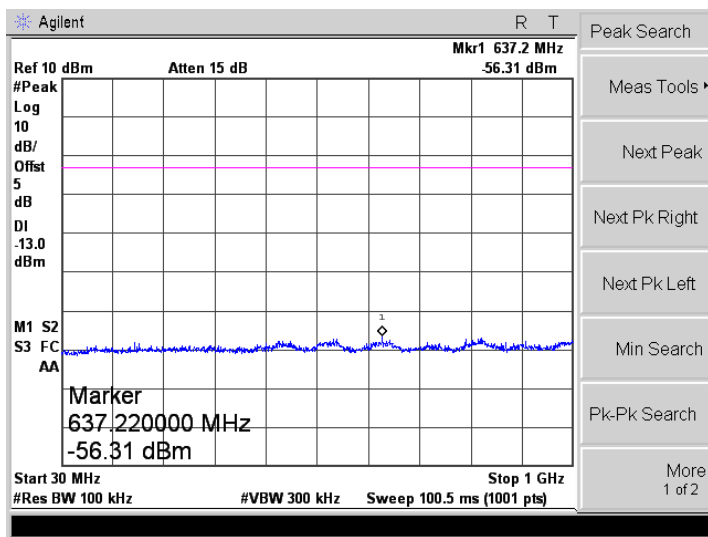


HSDPA Band IV-Low

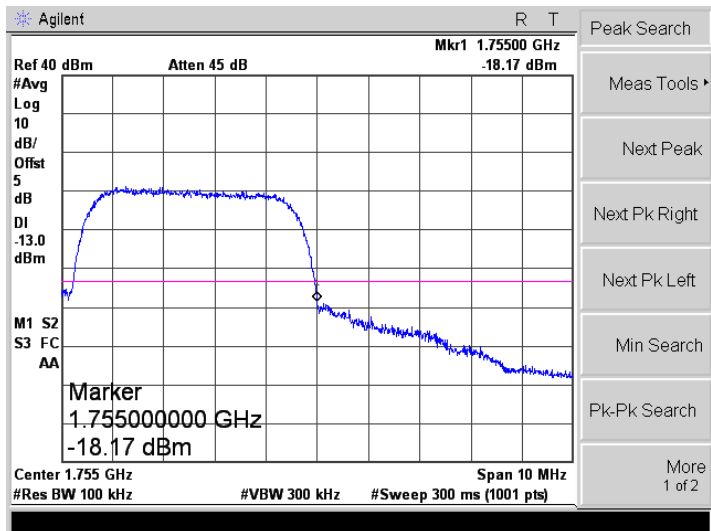
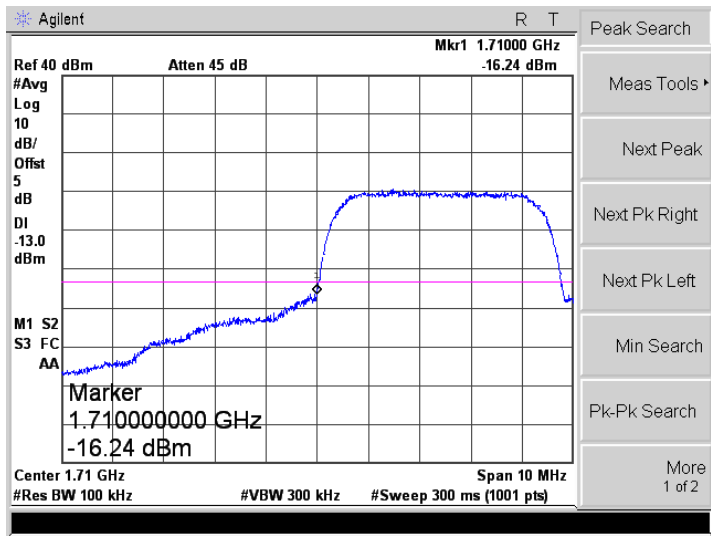




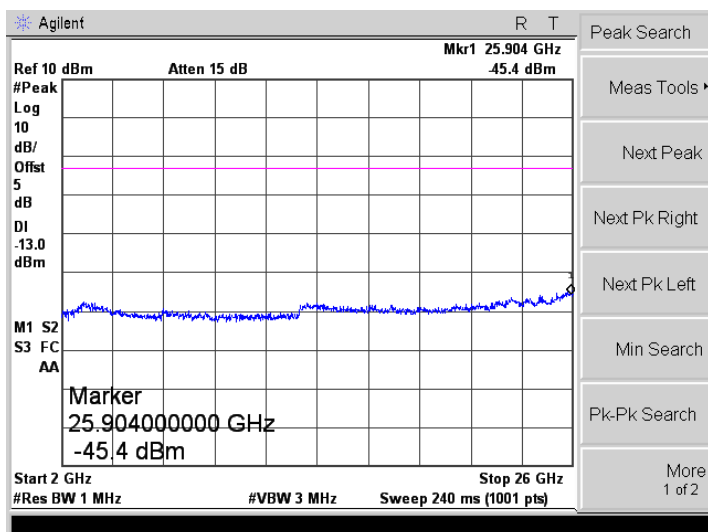
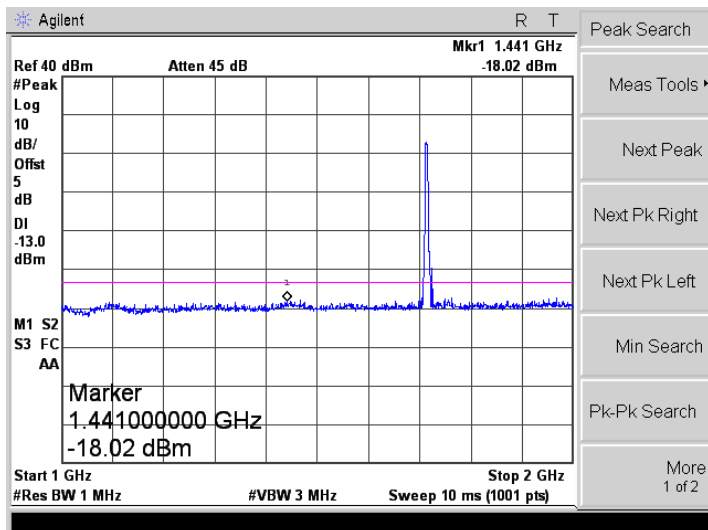
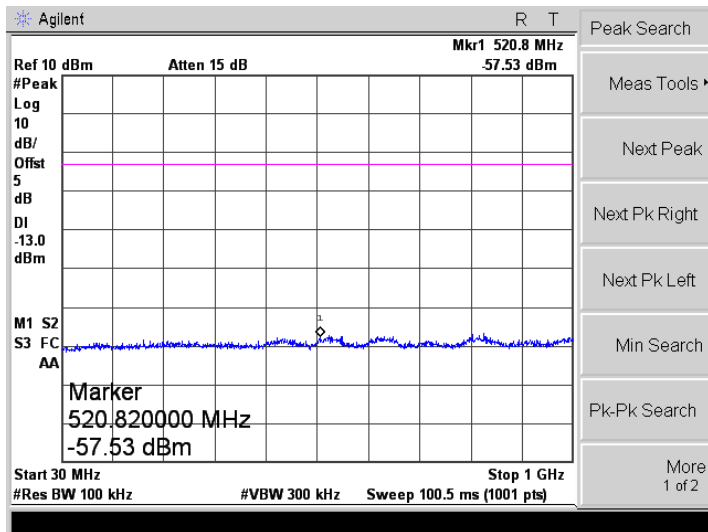
HSDPA Band IV-High



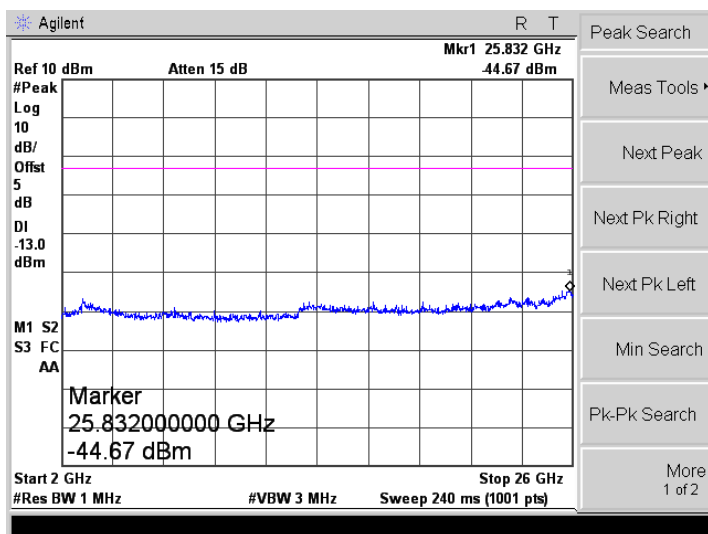
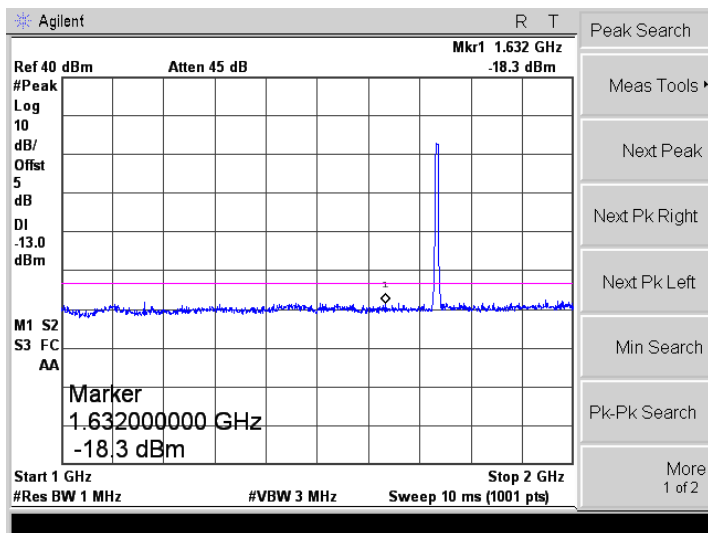
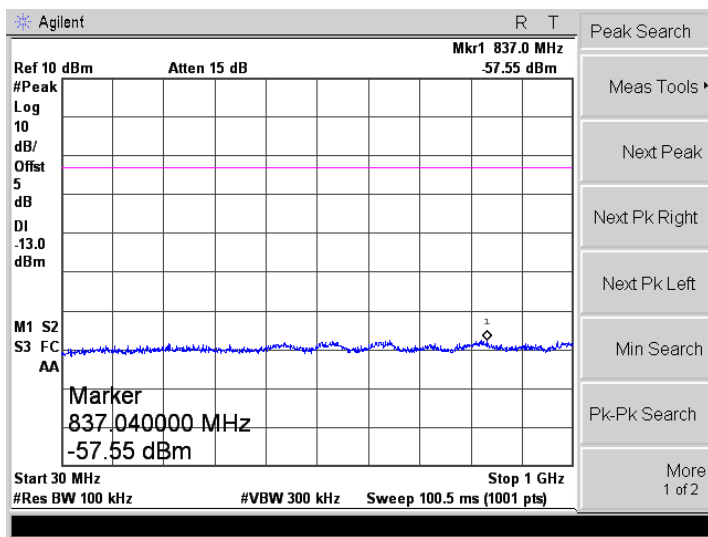
Bandedge



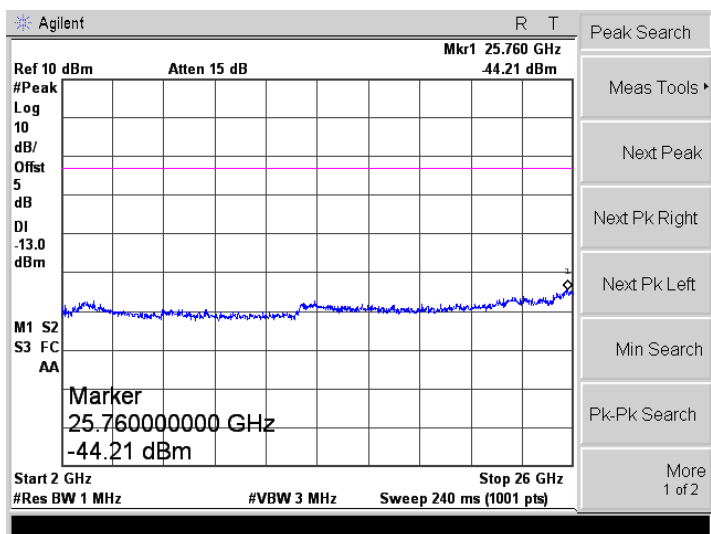
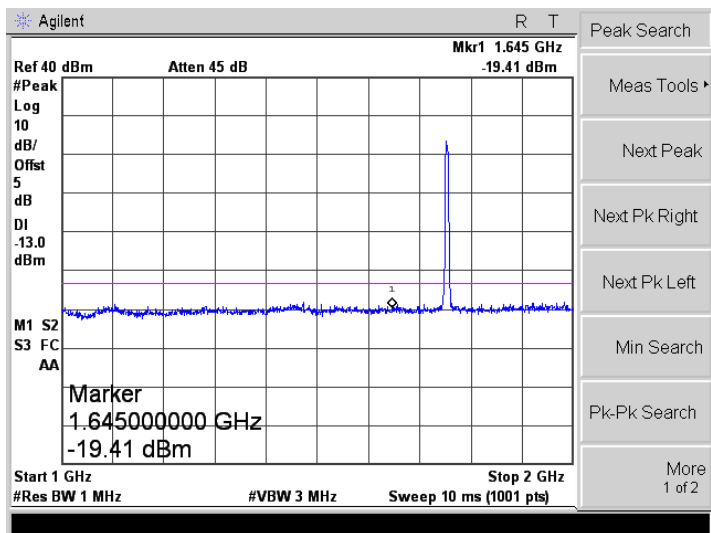
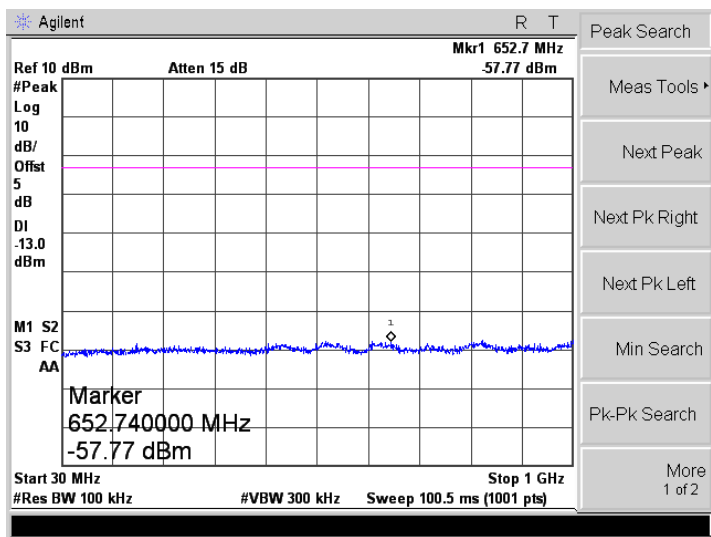
HSUPA Band IV-Low



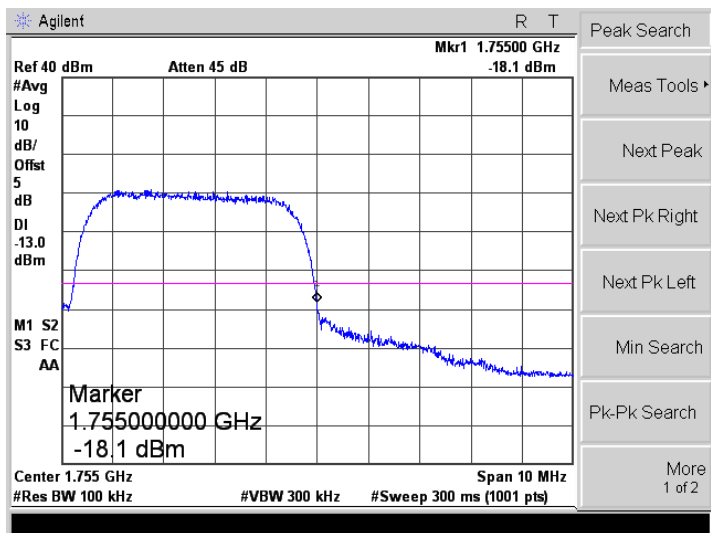
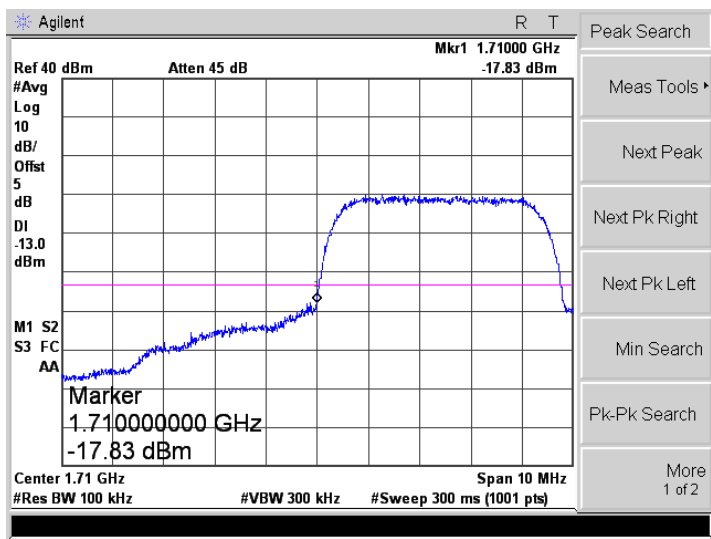
HSUPA Band IV-Middle



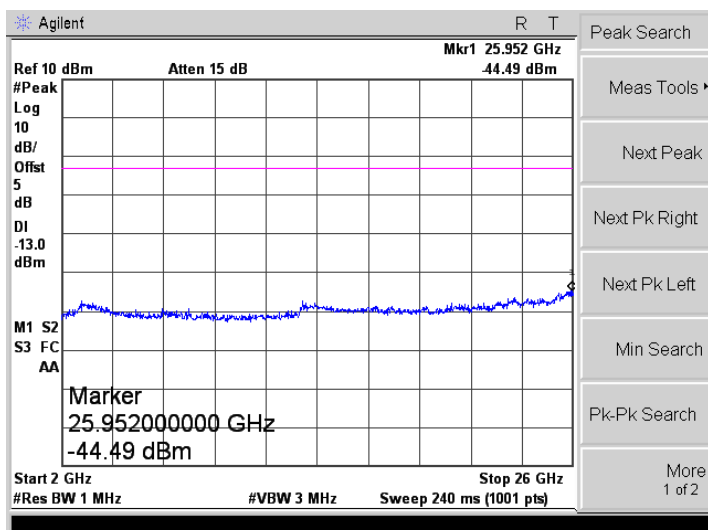
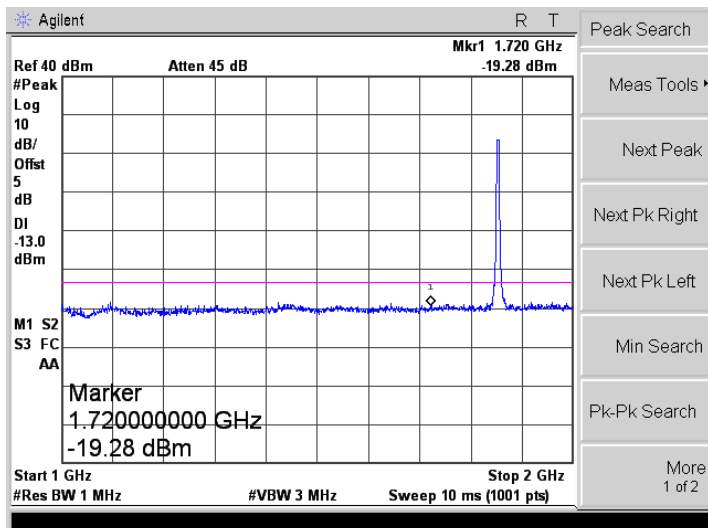
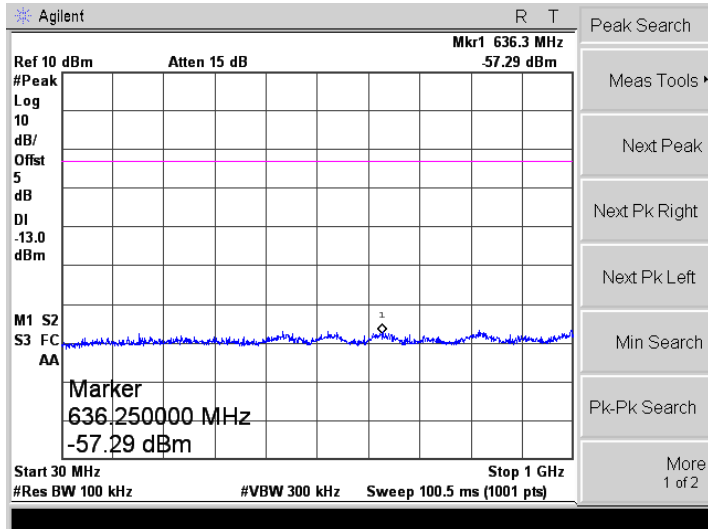
HSUPA Band IV-High



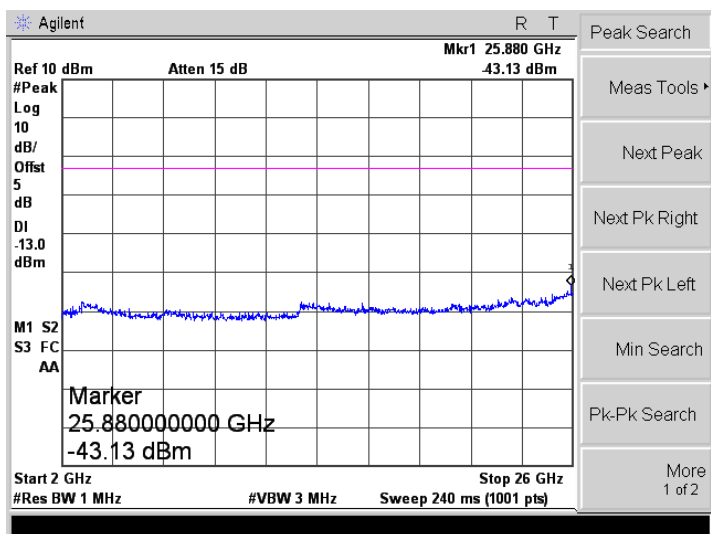
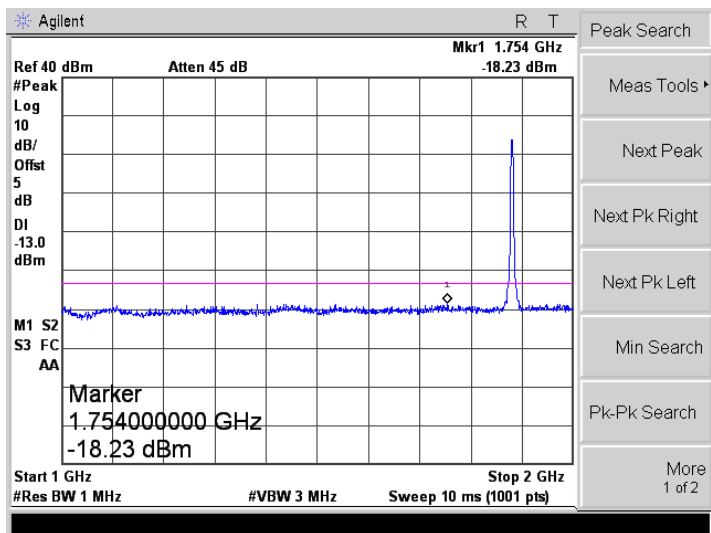
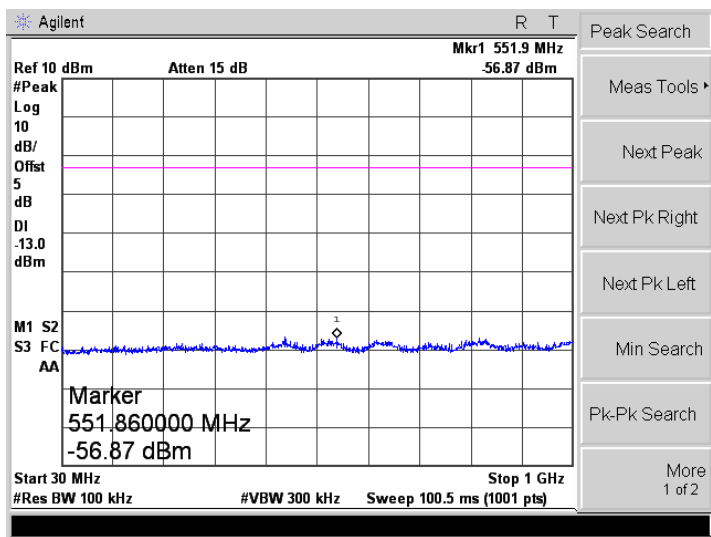
Bandedge



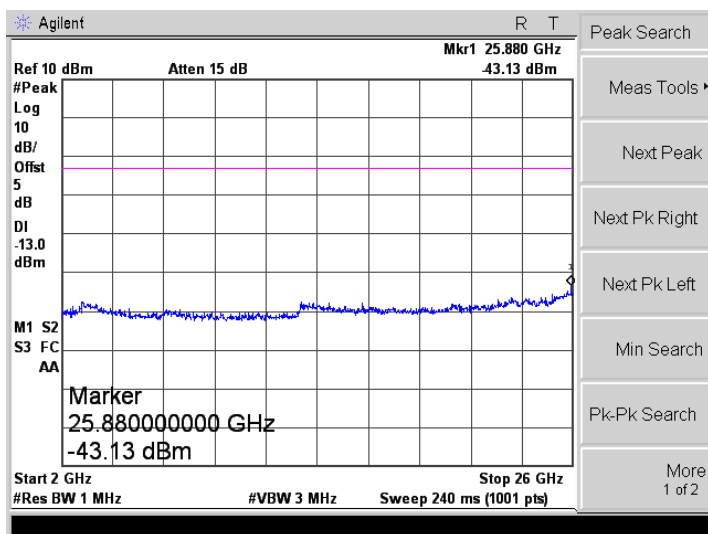
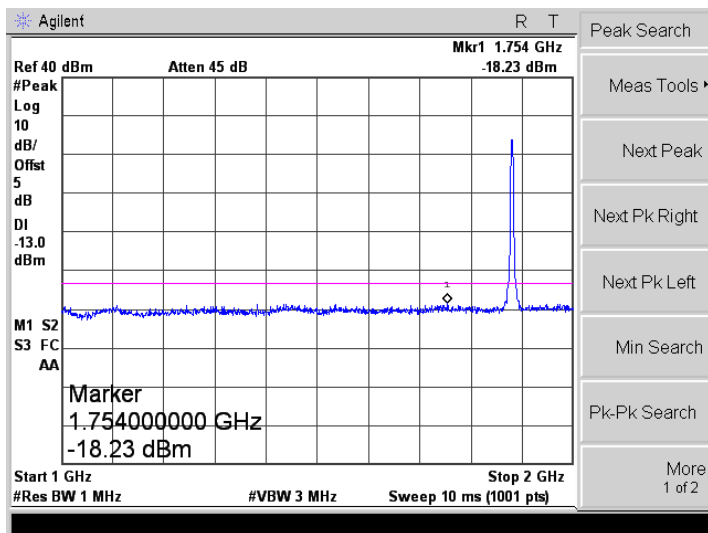
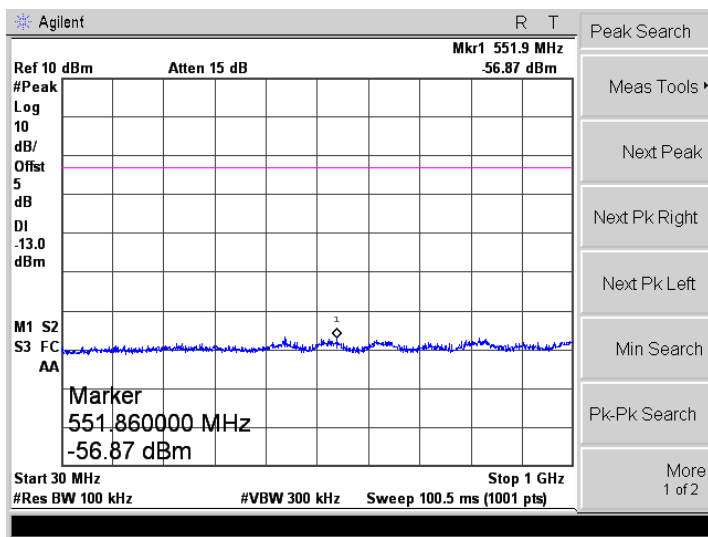
WCDMA Band II-Low



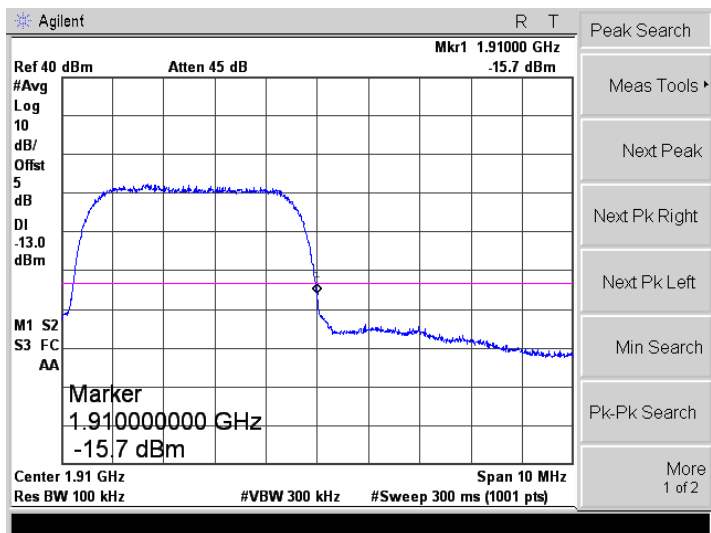
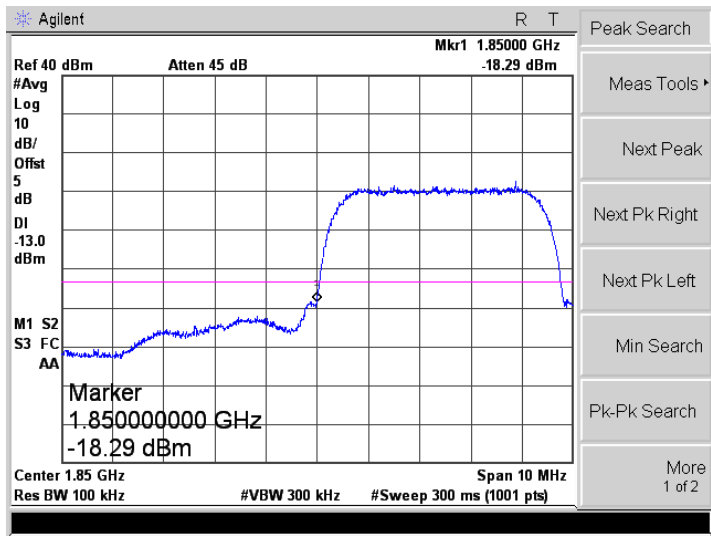
WCDMA Band II-Low



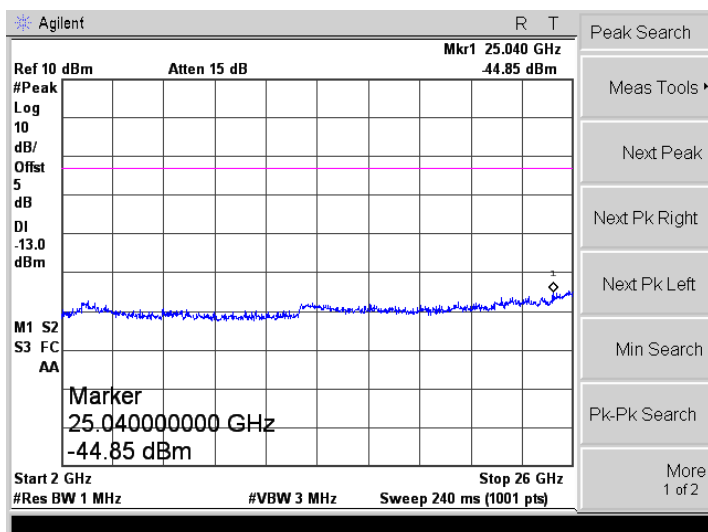
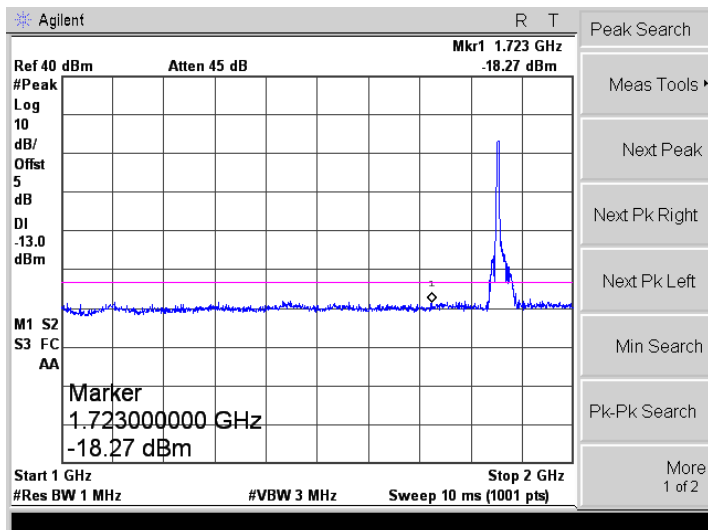
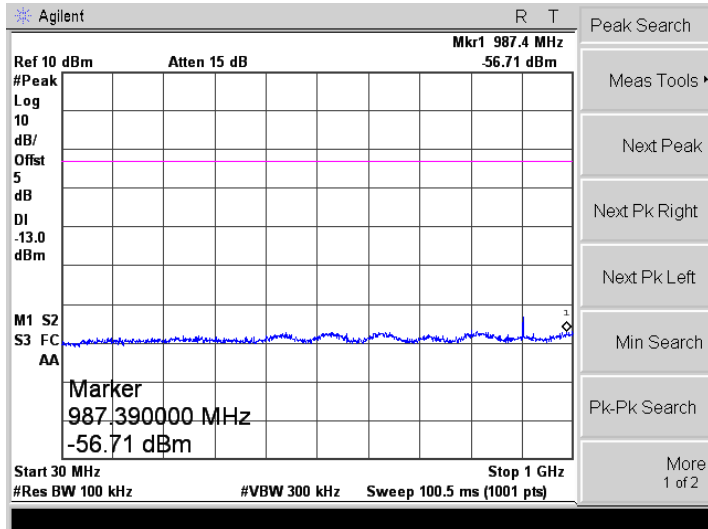
WCDMA Band II-Low



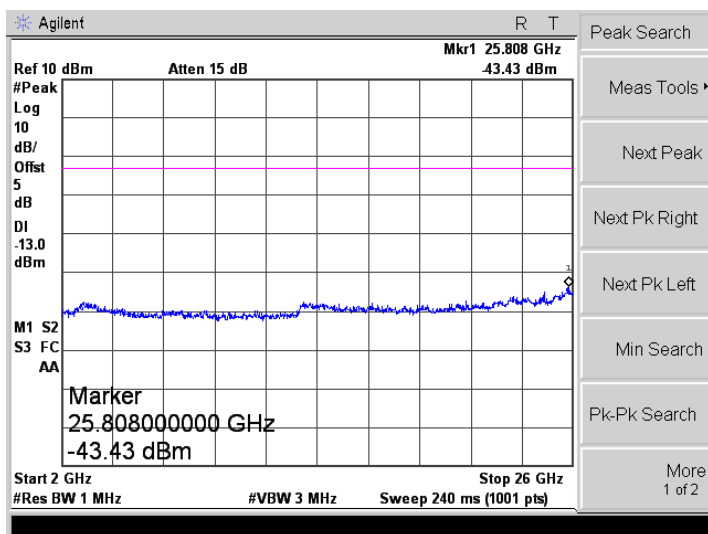
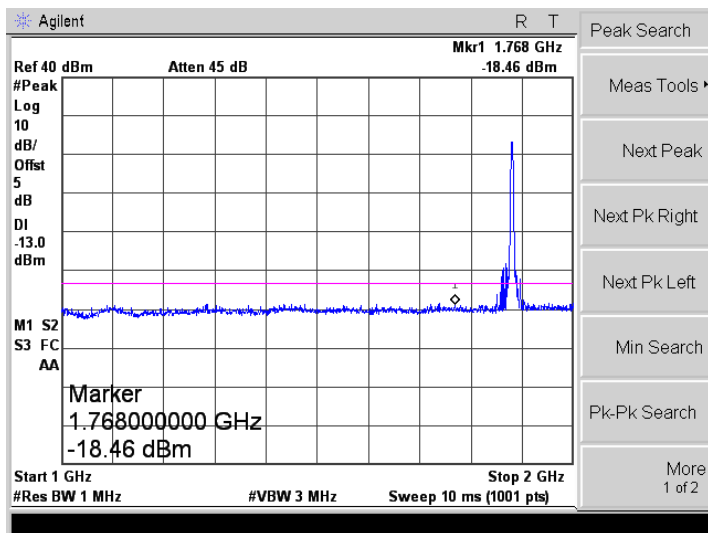
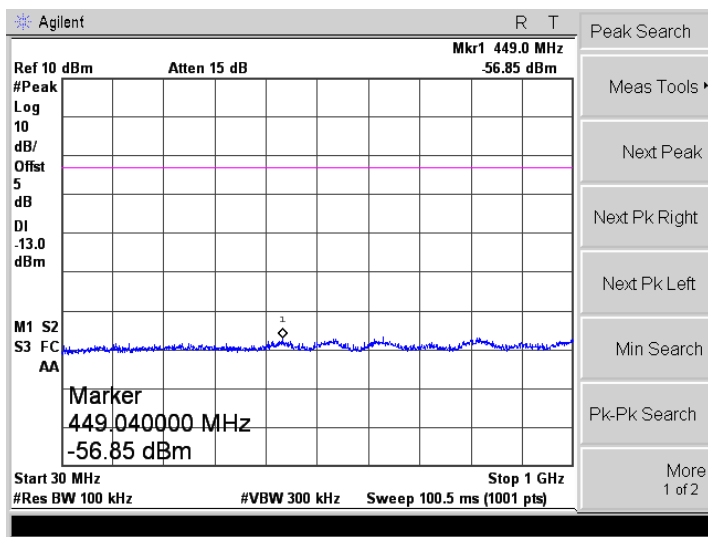
Bandedge



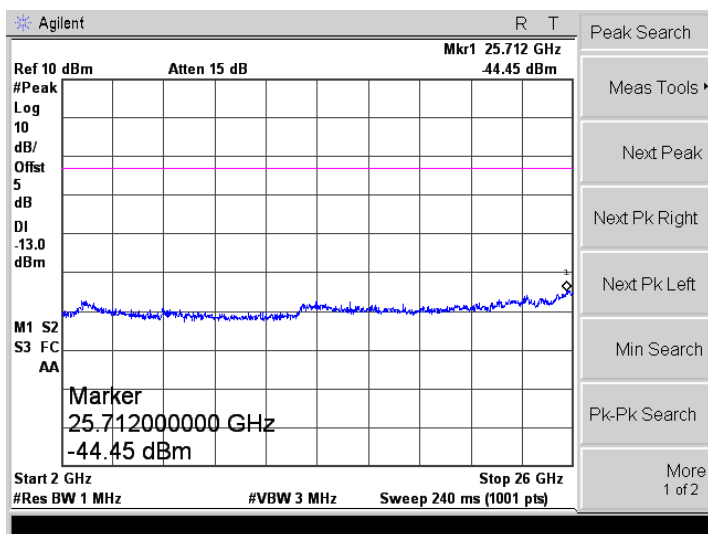
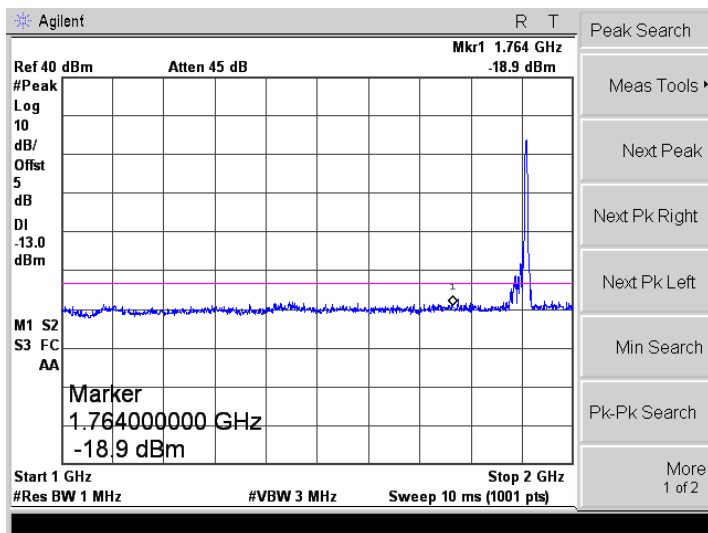
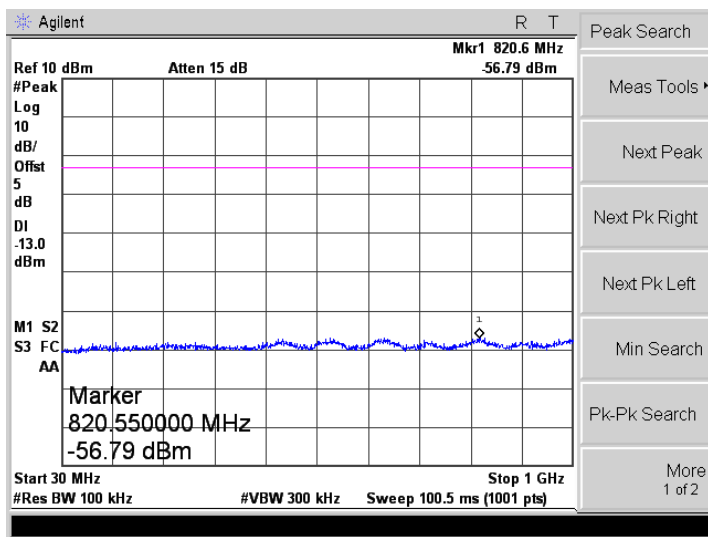
HSDPA Band II-Low



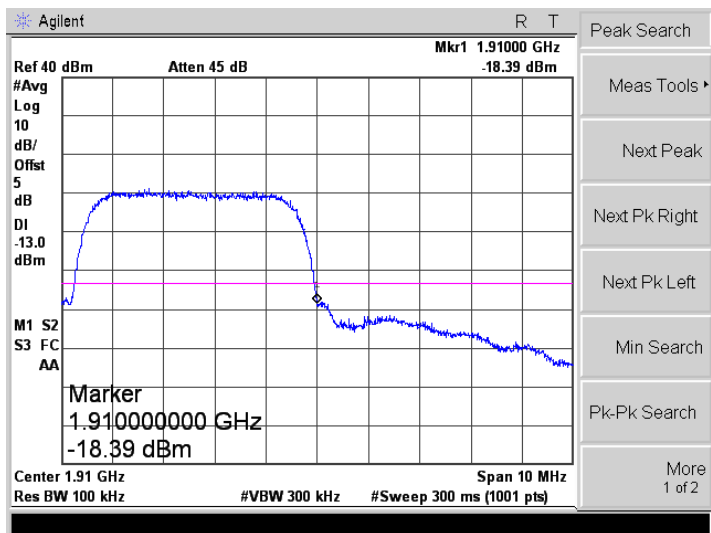
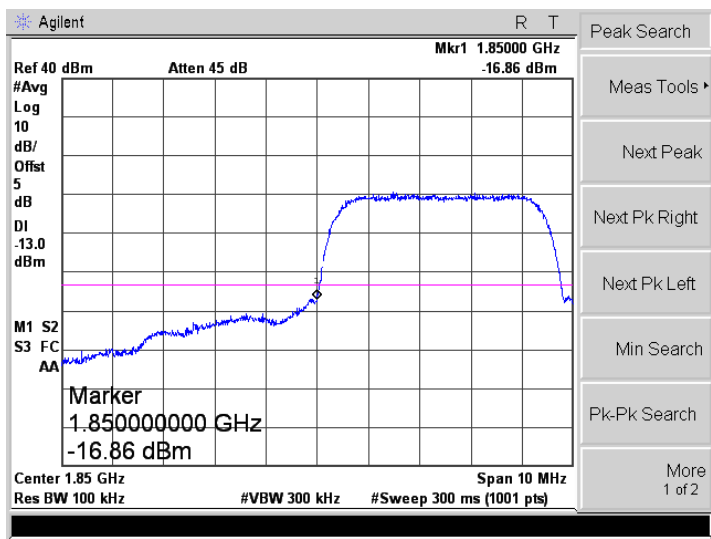
HSDPA Band II-Low



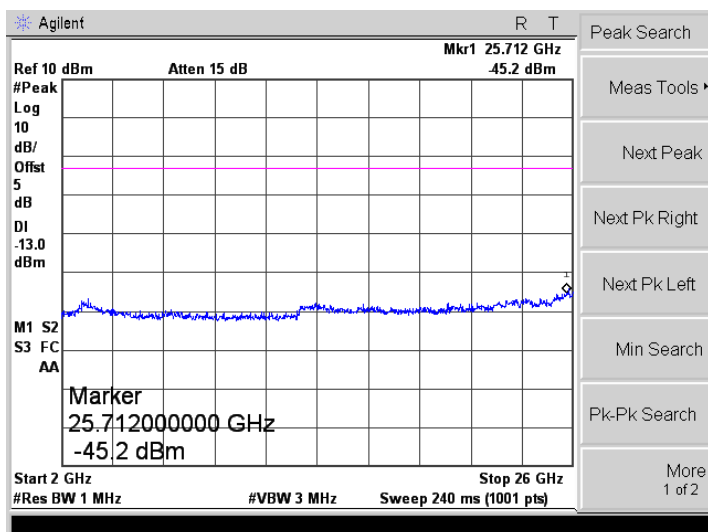
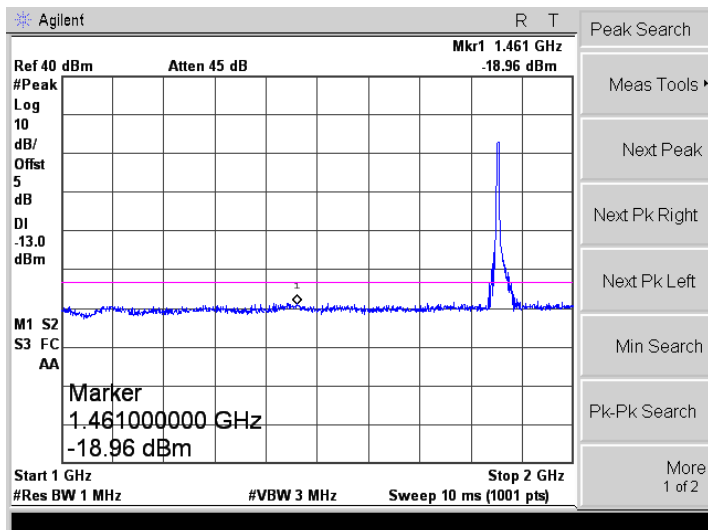
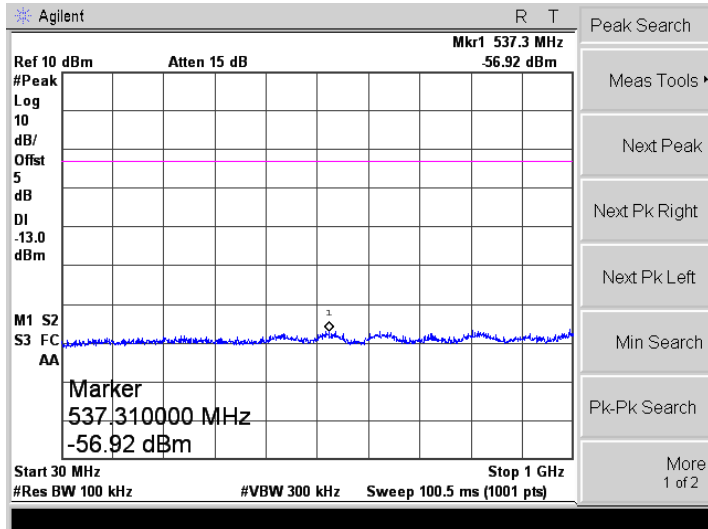
HSDPA Band II-Low



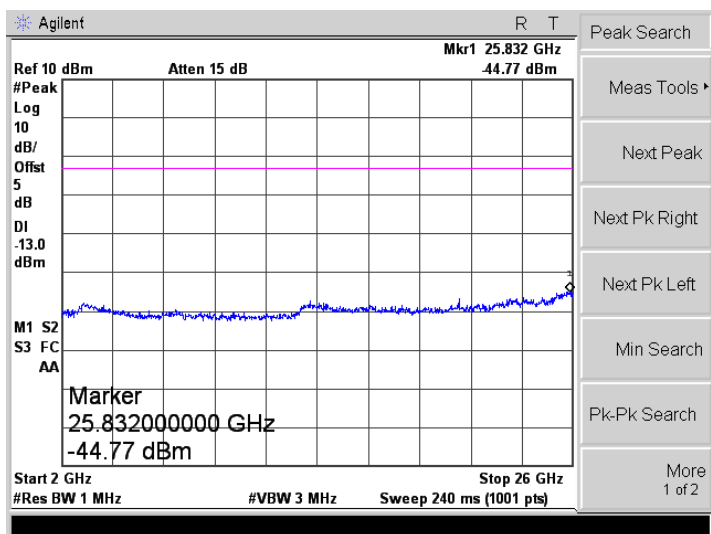
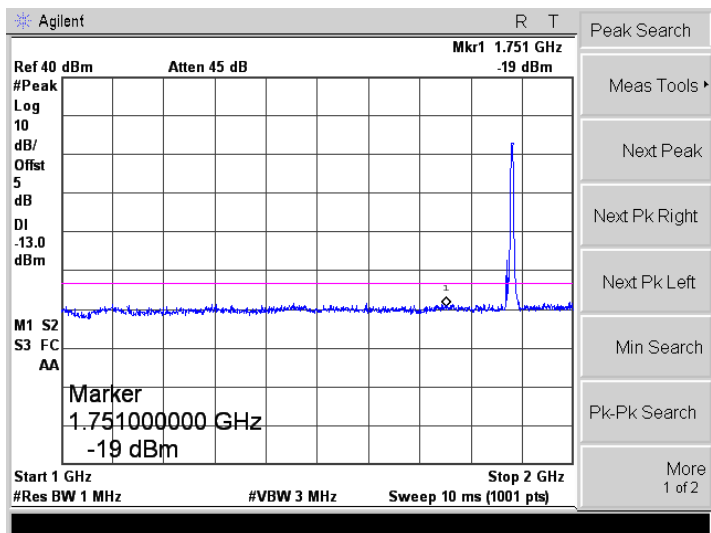
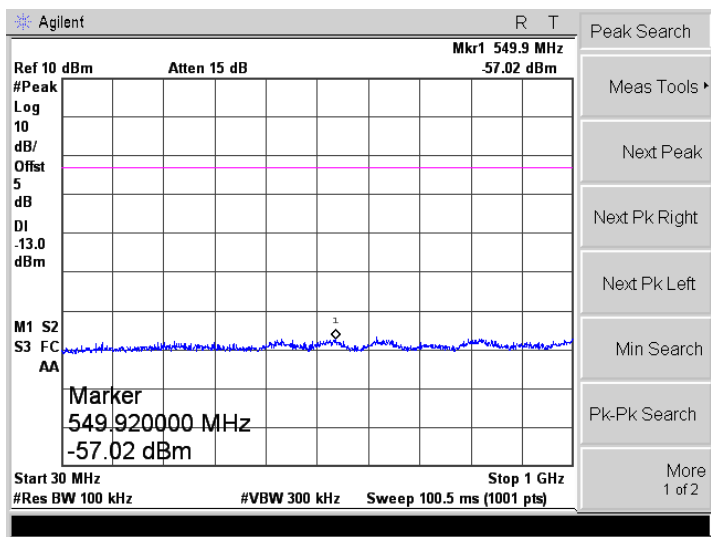
Bandedge



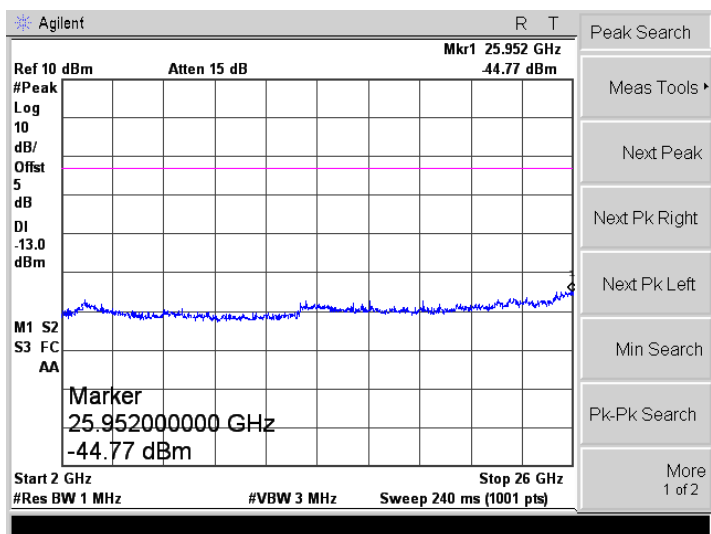
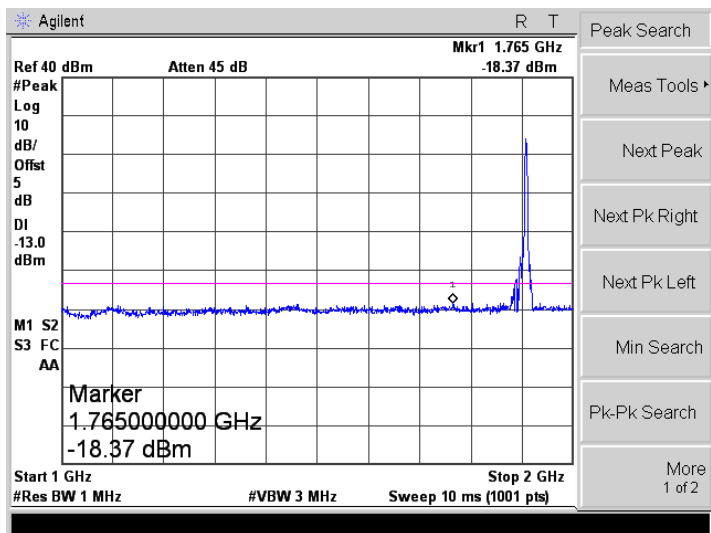
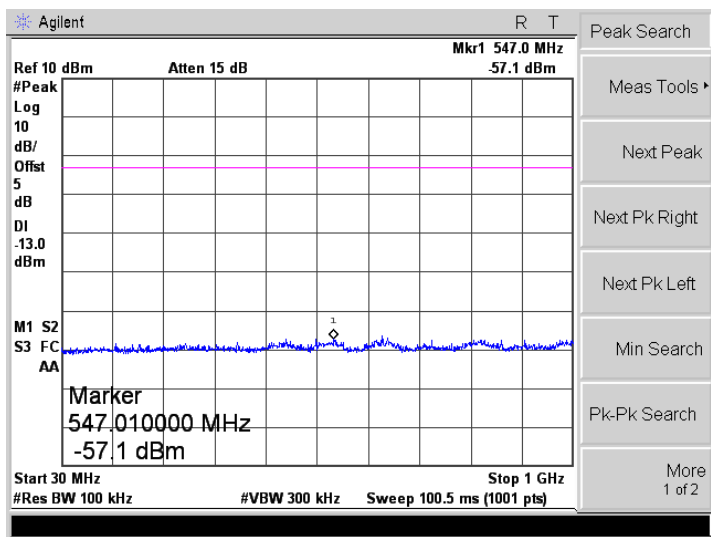
HSUPA Band II-Low



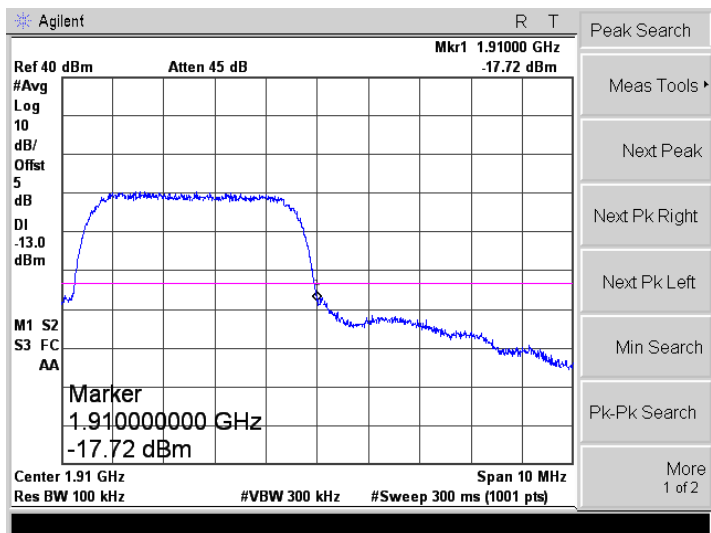
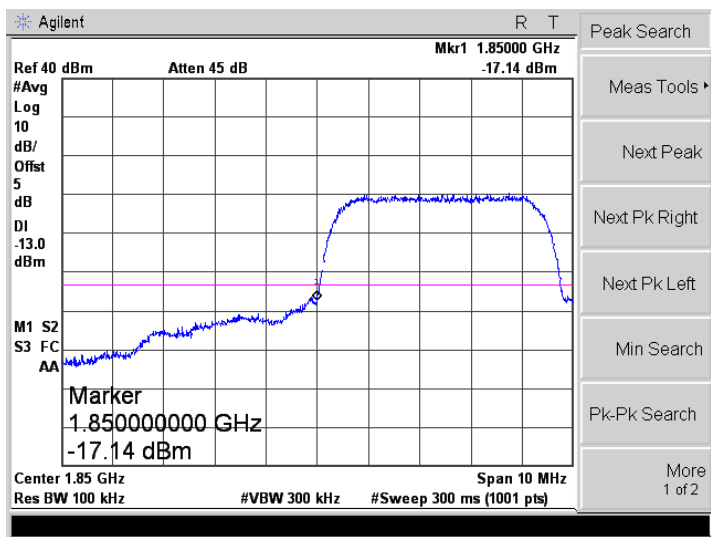
HSUPA Band II-Low



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

➤ Frequency stability V.S. Temperature measurement

Reference Frequency: GSM850 Middle channel=190 channel=836.6MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
NV	-30	47	0.0561	2.50	Pass
	-20	36	0.0432		
	-10	30	0.0359		
	0	26	0.0313		
	10	22	0.0267		
	20	18	0.0221		
	30	24	0.0285		
	40	30	0.0359		
	50	35	0.0414		
Reference Frequency: PCS1900 Middle channel=661 channel=1880MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
NV	-30	70	0.0372	2.50	Pass
	-20	61	0.0323		
	-10	52	0.0278		
	0	45	0.0241		
	10	41	0.0217		
	20	34	0.0180		
	30	41	0.0217		
	40	46	0.0245		
	50	52	0.0278		

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	68	0.0818	2.50	Pass
	-20	55	0.0662		
	-10	49	0.0588		
	0	42	0.0497		
	10	36	0.0432		
	20	30	0.0359		
	30	36	0.0432		
	40	42	0.0497		
	50	46	0.0552		
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	67	0.0386	2.50	Pass
	-20	52	0.0302		
	-10	42	0.0244		
	0	35	0.0204		
	10	28	0.0164		
	20	21	0.0120		
	30	28	0.0164		
	40	35	0.0200		
	50	42	0.0244		

Reference Frequency: WCDMA Band II Middle channel=9400 channel=1880MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
NV	-30	73	0.0389	2.50	Pass
	-20	65	0.0344		
	-10	55	0.0295		
	0	49	0.0262		
	10	42	0.0221		
	20	36	0.0192		
	30	44	0.0233		
	40	50	0.0266		
50	55	0.0295			

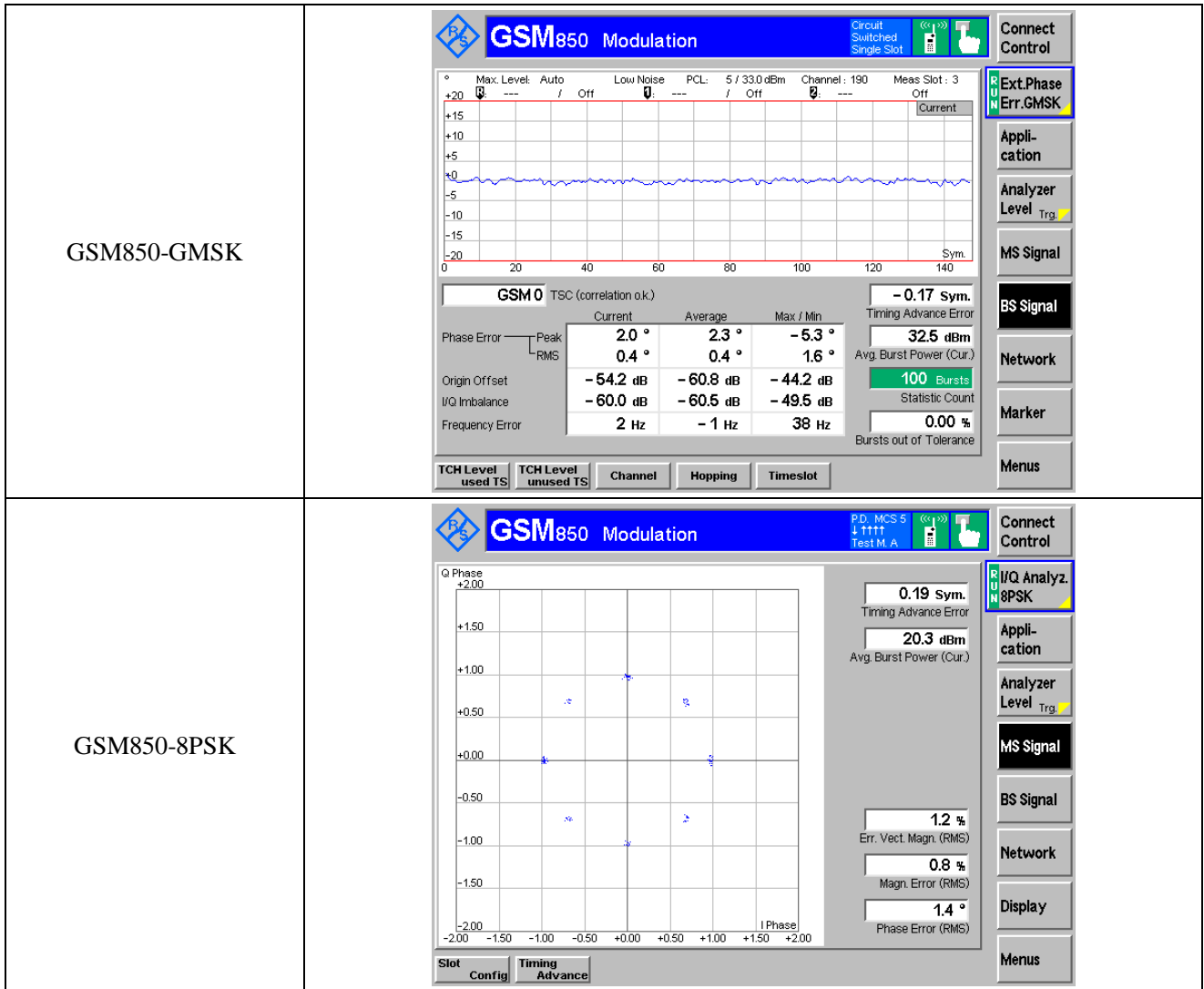
➤ Frequency stability V.S. Voltage measurement

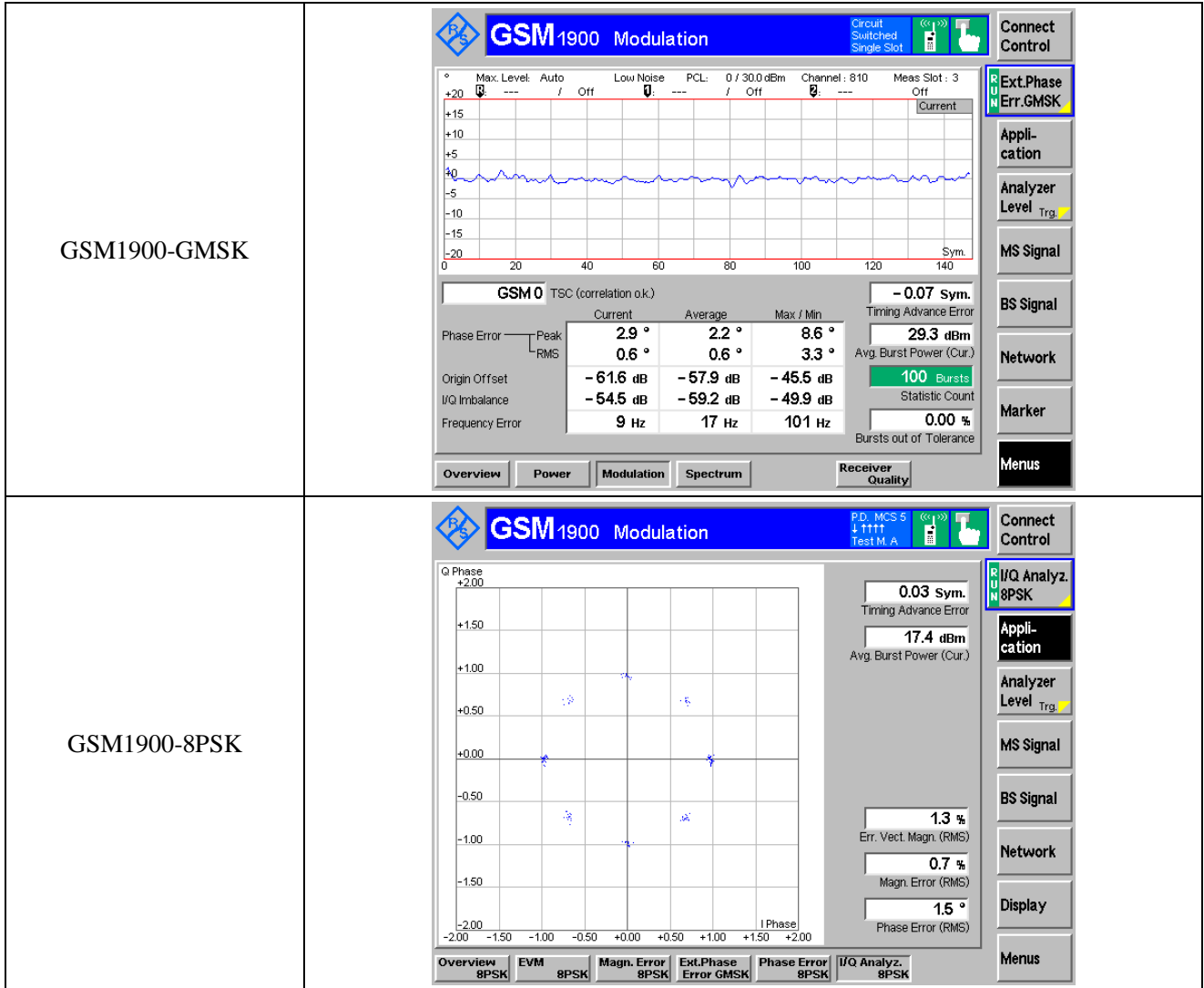
Reference Frequency: GSM850 (GSM link) Middle channel=190 channel=836.6MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	HV	52	0.0625	2.50	Pass
	NV	40	0.0478		
	LV	36	0.0432		
Reference Frequency: PCS1900 (GSM link) Middle channel=661 channel=1880MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	HV	73	0.0389	2.50	Pass
	NV	58	0.0307		
	LV	52	0.0274		

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	50	0.0598	2.50	Pass
	NV	35	0.0423		
	LV	28	0.0331		
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	62	0.0359	2.50	Pass
	NV	50	0.0288		
	LV	39	0.0226		
Reference Frequency: WCDMA Band II Middle channel=9400 channel=1880MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	HV	47	0.0250	2.50	Pass
	NV	32	0.0168		
	LV	47	0.0250		

APPENDIX F

Modulation characteristics





<p>WCDMA B5</p>	
<p>WCDMA B4</p>	
<p>WCDMA B2</p>	

APPENDIX PHOTOGRAPHS

Please refer to “ANNEX”

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