FCC Part 22H & 24E
Measurement and Test Report

For

NEWSAN S.A.

Roque Perez 3650, Saavedra, Cdad. Autonoma de Buenos Aires, Argentina

FCC ID: 2AQAI-N601

FCC Rules:	FCC Part 22H, FCC Part 24E
Product Description:	FCC CERTIFICATION FOR MOBILE PHONE
Tested Model:	N601
Report No.:	STR18068385I-1
Sample Receipt Date:	2018-06-28
Tested Date:	2018-06-29 to 2018-08-21
Issued Date:	2018-09-06
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Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by Shenzhen SEM Test Technology Co., Ltd.

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: NEWSAN S.A.
Address of applicant: Roque Perez 3650, Saavedra, Cdad. Autonoma de Buenos Aires, Argentina

Manufacturer: NEWSAN S.A.
Address of manufacturer: Roque Perez 3650, Saavedra, Cdad. Autonoma de Buenos Aires, Argentina

General Description of EUT:	
Product Name:	FCC CERTIFICATION FOR MOBILE PHONE
Brand Name:	/
Model No.:	N601
Adding Model(s):	/
Rated Voltage:	DC 3.85V
Battery:	3000mAh
Adapter Model:	Model: TN-050155U2 Input:AC100-240V 50/60Hz 0.25A Output: DC5V 1.55A
Software Version:	Android 8.0.0
Hardware Version:	V1.0
Device Category:	Portable Device
The EUT Main board support GSM850/PCS1900, WCDMA Band 2/5, FDD LTE Band 2/4/7 function. It is intended for speech, Multimedia Message Service (MMS) transmission. It is equipped with GPRS/EDGE class 12 for GSM850/PCS1900, GPS, FM, NFC, Bluetooth and Wi-Fi functions. For more information see the following datasheet.	
Note: The test data is gathered from a production sample provided by the manufacturer.	

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: 33.37dBm, GSM1900: 29.61dBm EDGE850: 27.28dBm, EDGE1900: 24.62dBm
Type of Emission:	GSM850: 254KGXW, GSM1900: 250KGXW EDGE850: 250KG7W, EDGE1900: 248KG7W
Type of Modulation:	GMSK, 8PSK
Type of Antenna:	Integral Antenna
Antenna Gain:	GSM850: -3.5dBi; GSM1900: -1dBi
GPRS/EDGE Class:	Class 12
3G	
Support Networks:	WCDMA, HSDPA, HSUPA
Support Band:	WCDMA Band 2, WCDMA Band 5
Uplink Frequency:	WCDMA Band 2: 1850~1910MHz WCDMA Band 5: 824~849MHz
Downlink Frequency:	WCDMA Band 2: 1930~1990MHz WCDMA Band 5: 869~894MHz
RF Output Power:	WCDMA Band 2: 22.77dBm, WCDMA Band 5: 22.97dBm
Type of Emission:	WCDMA Band 2: 4M17F9W WCDMA Band 5: 4M15F9W
Type of Modulation:	QPSK
Antenna Type:	Integral Antenna
Antenna Gain:	WCDMA Band 2: -1dBi, WCDMA Band 5: -3.5dBi

1.2 Test Standards

The following report is prepared on behalf of the NEWSAN S.A. in accordance with FCC Part 2 subpart J, FCC Part 22 subpart H and FCC Part 24 subpart E of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 2 subpart J, FCC Part 22 subpart H and FCC Part 24 subpart E of the Federal Communication Commissions rules.

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-603-E: 2016 and ANSI C63.26-2015, American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services. The measurement guide KDB 971168 D01 Power Meas License Digital Systems v03r01 shall be performed also.

1.4 Test Facility

FCC – Registration No.: 125990

Shenzhen SEM Test Technology Co., Ltd. Laboratory has been recognized to perform compliance testing on equipment subject to the Commissions Declaration Of Conformity (DOC). The Designation Number is CN5010, and Test Firm Registration Number is 125990.

Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Shenzhen SEM.Test Technology 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 2	Low, Middle, High Channels
TM11	HSDPA Band 2	Low, Middle, High Channels
TM12	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 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.			

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
USB-C Cable	1.0	Shielded	Without Core
Earphone	1.2	Unshielded	Without Core

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
Notebook	Lenovo	E445	/

Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
/	/	/	/

1.6 Measurement Uncertainty

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

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	2018-05-22	2019-05-21
SEMT-1063	GSM Tester	Rohde & Schwarz	CMU200	114403	2018-05-22	2019-05-21
SEMT-1072	Spectrum Analyzer	Agilent	E4407B	MY41440400	2018-05-22	2019-05-21
SEMT-1079	Spectrum Analyzer	Agilent	N9020A	US47140102	2018-05-22	2019-05-21
SEMT-1080	Signal Generator	Agilent	83752A	3610A01453	2018-05-22	2019-05-21
SEMT-1081	Vector Signal Generator	Agilent	N5182A	MY47070202	2018-05-22	2019-05-21
SEMT-1028	Power Divider	Weinschel	1506A	PM204	2018-05-22	2019-05-21
SEMT-1082	Power Divider	RF-Lambda	RFLT4W5M18G	14110400027	2018-05-22	2019-05-21
SEMT-1031	Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2018-05-22	2019-05-21
SEMT-1007	EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2018-05-22	2019-05-21

SEMT-1008	Amplifier	Agilent	8447F	3113A06717	2018-05-22	2019-05-21
SEMT-1043	Amplifier	C&D	PAP-1G18	2002	2018-05-22	2019-05-21
SEMT-1069	Loop Antenna	Schwarz beck	FMZB 1516	9773	2017-06-08	2020-06-07
SEMT-1068	Broadband Antenna	Schwarz beck	VULB9163	9163-333	2017-06-08	2020-06-07
SEMT-1042	Horn Antenna	ETS	3117	00086197	2017-06-08	2020-06-07
SEMT-1121	Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170582	2017-06-08	2020-06-07
SEMT-1168	Pre-amplifier	Direction Systems Inc.	PAP-0126	14141-12838	2018-05-22	2019-05-21
SEMT-1169	Pre-amplifier	Direction Systems Inc.	PAP-2640	14145-14153	2018-05-22	2019-05-21
SEMT-1163	Spectrum Analyzer	Rohde & Schwarz	FSP40	100612	2018-05-22	2019-05-21
SEMT-1170	DRG Horn Antenna	A.H. SYSTEMS	SAS-574	571	2018-03-19	2021-03-18
SEMT-1166	Power Limiter	Agilent	N9356B	MY45450376	2018-05-22	2019-05-21
SEMT-1048	RF Limiter	ATTEN	AT-BSF-2400~2500	/	2018-05-22	2019-05-21
SEMT-1076	RF Switcher	Top Precision	RCS03-A2	/	2018-05-22	2019-05-21
SEMT-1191	Half-Wave Tuned Dipole Anbtenna	SCHWARZBECK	UHA 9105	2690	2018-05-22	2019-05-21
SEMT-C001	Cable	Zheng DI	LL142-07-07-10M(A)	/	2018-03-19	2019-03-18
SEMT-C002	Cable	Zheng DI	ZT40-2.92J-2.92J-6M	/	2018-03-19	2019-03-18
SEMT-C003	Cable	Zheng DI	ZT40-2.92J-2.92J-2.5M	/	2018-03-19	2019-03-18
SEMT-C004	Cable	Zheng DI	2M0RFC	/	2018-03-19	2019-03-18
SEMT-C005	Cable	Zheng DI	1M0RFC	/	2018-03-19	2019-03-18
SEMT-C006	Cable	Zheng DI	1M0RFC	/	2018-03-19	2019-03-18

2. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test Item	Result
§ 1.1307, § 2.1093	RF Exposure	Compliant
§ 22.913 (a), § 24.232 (c)	RF Output Power	Compliant
§ 24.232 (d)	Peak-to-average Ratio (PAR) of Transmitter	Compliant
§ 22.917 (b), § 24.238 (b)	Emission Bandwidth	Compliant
§ 22.917 (a), § 24.238 (a)	Spurious Emissions at Antenna Terminal	Compliant
§ 22.917 (a), § 24.238 (a)	Spurious Radiation Emissions	Compliant
§ 22.917 (a), § 24.238 (a)	Out of Band Emissions	Compliant
§ 22.355, § 24.235	Frequency Stability	Compliant
§ 2.1047	Modulation characteristics	Compliant

3. RF Exposure

3.1 Standard Applicable

According to § 1.1307 and § 2.1093, the portable transmitter must comply the RF exposure requirements.

3.2 Test Result

This product complied with the requirement of the RF exposure, please see the SAR report.

4. RF Output Power

4.1 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.

4.2 Test Procedure

Conducted output power test method:

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the Universal Radio Communication Tester. Read the value and record. The setup of EUT is according with per C63.25-2015 measurement procedure.

Radiated power test method:

1. The setup of EUT is according with per TIA-603-E-2016 and ANSI C63.26-2015 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.

4.3 Environmental Conditions

Temperature:	24 °C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

4.4 Summary of Test Results/Plots

Max. Radiated Power

ERP For GSM Mode GSM850

Frequency	Substitude SG	Height	Table	Polar	Cable loss	Antenna Gain	Result	FCC Part 22H Limit
MHz	dBm	Meter	Degree	H / V	dB	dB	dBm	dBm
Low Channel								
824.2	30.67	1.5	0	H	1.5	0	29.17	38.45
824.2	31.04	1.5	0	V	1.5	0	29.54	38.45
Middle Channel								
836.4	30.92	1.5	0	H	1.5	0	29.42	38.45
836.4	31.88	1.5	0	V	1.5	0	30.38	38.45
High Channel								
848.8	31.69	1.5	0	H	1.5	0	30.19	38.45
848.8	31.60	1.5	0	V	1.5	0	30.10	38.45

EIRP For GSM Mode PCS1900

Frequency	Substitude SG	Height	Table	Polar	Cable loss	Antenna Gain	Result	FCC Part 24E Limit
MHz	dBm	Meter	Degree	H / V	dB	dB	dBm	dBm
Low Channel								
1850.2	20.69	1.5	0	H	1.9	7.7	26.49	33.00
1850.2	20.69	1.5	0	V	1.9	7.7	26.49	33.00
Middle Channel								
1880.0	22.75	1.5	0	H	1.9	7.7	28.55	33.00
1880.0	22.75	1.5	0	V	1.9	7.7	28.55	33.00
High Channel								
1909.8	21.79	1.5	0	H	1.9	7.7	27.59	33.00
1909.8	22.62	1.5	0	V	1.9	7.7	28.42	33.00

ERP For GPRS Mode GSM850

Frequency	Substitude SG	Height	Table	Polar	Cable loss	Antenna Gain	Result	FCC Part 22H Limit
MHz	dBm	Meter	Degree	H / V	dB	dB	dBm	dBm
Low Channel								
824.2	29.57	1.5	0	H	1.5	0	28.07	38.45
824.2	30.27	1.5	0	V	1.5	0	28.77	38.45
Middle Channel								
836.6	29.98	1.5	0	H	1.5	0	28.48	38.45
836.6	29.48	1.5	0	V	1.5	0	27.98	38.45
High Channel								
848.8	30.3	1.5	0	H	1.5	0	28.8	38.45
848.8	29.22	1.5	0	V	1.5	0	27.72	38.45

EIRP For GPRS Mode PCS1900

Frequency	Substitude SG	Height	Table	Polar	Cable loss	Antenna Gain	Result	FCC Part 24E Limit
MHz	dBm	Meter	Degree	H / V	dB	dB	dBm	dBm
Low Channel								
1850.2	20.68	1.5	0	H	1.9	7.7	26.48	33.00
1850.2	22.06	1.5	0	V	1.9	7.7	27.86	33.00
Middle Channel								
1880.0	20.37	1.5	0	H	1.9	7.7	26.17	33.00
1880.0	20.19	1.5	0	V	1.9	7.7	25.99	33.00
High Channel								
1909.8	20.13	1.5	0	H	1.9	7.7	25.93	33.00
1909.8	20.72	1.5	0	V	1.9	7.7	26.52	33.00

ERP For EDGE Mode GSM850

Frequency	Substitude SG	Height	Table	Polar	Cable loss	Antenna Gain	Result	FCC Part 22H Limit
MHz	dBm	Meter	Degree	H / V	dB	dB	dBm	dBm
Low Channel								
824.2	28.46	1.5	0	H	1.5	0	26.96	38.45
824.2	28.02	1.5	0	V	1.5	0	26.52	38.45
Middle Channel								
836.6	27.83	1.5	0	H	1.5	0	26.33	38.45
836.6	27.75	1.5	0	V	1.5	0	26.25	38.45
High Channel								
848.8	27.64	1.5	0	H	1.5	0	26.14	38.45
848.8	28.34	1.5	0	V	1.5	0	26.84	38.45

EIRP For EDGE Mode PCS1900

Frequency	Substitude SG	Height	Table	Polar	Cable loss	Antenna Gain	Result	FCC Part 24E Limit
MHz	dBm	Meter	Degree	H / V	dB	dB	dBm	dBm
Low Channel								
1850.2	18.11	1.5	0	H	1.9	7.7	23.91	33.00
1850.2	20.28	1.5	0	V	1.9	7.7	26.08	33.00
Middle Channel								
1880.0	19.38	1.5	0	H	1.9	7.7	25.18	33.00
1880.0	20	1.5	0	V	1.9	7.7	25.8	33.00
High Channel								
1909.8	19.73	1.5	0	H	1.9	7.7	25.53	33.00
1909.8	20.44	1.5	0	V	1.9	7.7	26.24	33.00

ERP For WCDMA Mode Band 5

Frequency	Substitude SG	Height	Table	Polar	Cable loss	Antenna Gain	Result	FCC Part 22H Limit
MHz	dBm	Meter	Degree	H / V	dB	dBd	dBm	dBm
Low Channel								
826.4	23.88	1.5	0	H	1.5	0	22.38	38.45
826.4	23.58	1.5	0	V	1.5	0	22.08	38.45
Middle Channel								
836.6	23.34	1.5	0	H	1.5	0	21.84	38.45
836.6	24.68	1.5	0	V	1.5	0	23.18	38.45
High Channel								
846.6	22.84	1.5	0	H	1.5	0	21.34	38.45
846.6	24.52	1.5	0	V	1.5	0	23.02	38.45

ERP For HSDPA Mode Band 5

Frequency	Substitude SG	Height	Table	Polar	Cable loss	Antenna Gain	Result	FCC Part 22H Limit
MHz	dBm	Meter	Degree	H / V	dB	dBd	dBm	dBm
Low Channel								
826.4	21.11	1.5	0	H	1.5	0	19.61	38.45
826.4	22.16	1.5	0	V	1.5	0	20.66	38.45
Middle Channel								
836.6	22.09	1.5	0	H	1.5	0	20.59	38.45
836.6	20.16	1.5	0	V	1.5	0	18.66	38.45
High Channel								
846.6	21.6	1.5	0	H	1.5	0	20.1	38.45
846.6	21.22	1.5	0	V	1.5	0	19.72	38.45

ERP For HSUPA Mode Band 5

Frequency	Substitude SG	Height	Table	Polar	Cable loss	Antenna Gain	Result	FCC Part 22H Limit
MHz	dBm	Meter	Degree	H / V	dB	dBd	dBm	dBm
Low Channel								
826.4	21.19	1.5	0	H	1.5	0	19.69	38.45
826.4	21.42	1.5	0	V	1.5	0	19.92	38.45
Middle Channel								
836.6	22.61	1.5	0	H	1.5	0	21.11	38.45
836.6	20.97	1.5	0	V	1.5	0	19.47	38.45
High Channel								
846.6	20.07	1.5	0	H	1.5	0	18.57	38.45
846.6	21.33	1.5	0	V	1.5	0	19.83	38.45

EIRP For WCDMA Mode Band 2

Frequency	Substitude SG	Height	Table	Polar	Cable loss	Antenna Gain	Result	FCC Part 24E Limit
MHz	dBm	Meter	Degree	H / V	dB	dB	dBm	dBm
Low Channel								
1852.4	17.41	1.5	0	H	1.9	7.7	23.21	33
1852.4	16.26	1.5	0	V	1.9	7.7	22.06	33
Middle Channel								
1880.0	16.77	1.5	0	H	1.9	7.7	22.57	33
1880.0	15.93	1.5	0	V	1.9	7.7	21.73	33
High Channel								
1907.6	16.89	1.5	0	H	1.9	7.7	22.69	33
1907.6	17.95	1.5	0	V	1.9	7.7	23.75	33

EIRP For HSDPA Mode Band 2

Frequency	Substitude SG	Height	Table	Polar	Cable loss	Antenna Gain	Result	FCC Part 24E Limit
MHz	dBm	Meter	Degree	H / V	dB	dB	dBm	dBm
Low Channel								
1852.4	15.41	1.5	0	H	1.9	7.7	21.21	33
1852.4	13.91	1.5	0	V	1.9	7.7	19.71	33
Middle Channel								
1880.0	13.51	1.5	0	H	1.9	7.7	19.31	33
1880.0	15.54	1.5	0	V	1.9	7.7	21.34	33
High Channel								
1880.0	13.51	1.5	0	H	1.9	7.7	19.31	33
1880.0	15.54	1.5	0	V	1.9	7.7	21.34	33

EIRP For HSUPA Mode Band 2

Frequency	Substitude SG	Height	Table	Polar	Cable loss	Antenna Gain	Result	FCC Part 24E Limit
MHz	dBm	Meter	Degree	H / V	dB	dB	dBm	dBm
Low Channel								
1852.4	15.99	1.5	0	H	1.9	7.7	21.79	33
1852.4	14.89	1.5	0	V	1.9	7.7	20.69	33
Middle Channel								
1880.0	13.17	1.5	0	H	1.9	7.7	18.97	33
1880.0	14.65	1.5	0	V	1.9	7.7	20.45	33
High Channel								
1907.6	13.45	1.5	0	H	1.9	7.7	19.25	33
1907.6	14.04	1.5	0	V	1.9	7.7	19.84	33

Note: Result = Substitude - Cable loss + Antenna Gain

Max. Conducted Output Power

For Cellular Band (GSM850)

Test Mode	Channel	Frequency (MHz)	Average Power (dBm)	FCC Part 22.913 Limit (dBm)
GSM	Low Channel	824.2	33.26	38.45
	Middle Channel	836.6	33.04	38.45
	High Channel	848.8	33.03	38.45
GPRS(1 Slot)	Low Channel	824.2	33.37	38.45
	Middle Channel	836.6	33.13	38.45
	High Channel	848.8	33.10	38.45
EDGE(1 Slot)	Low Channel	824.2	27.28	38.45
	Middle Channel	836.6	27.14	38.45
	High Channel	848.8	27.00	38.45

For PCS Band (GSM1900)

Test Mode	Channel	Frequency (MHz)	Average Power (dBm)	FCC Part 24.232 Limit (dBm)
GSM	Low Channel	1850.2	29.25	33.0
	Middle Channel	1880.0	29.39	33.0
	High Channel	1909.8	29.49	33.0
GPRS(1 Slot)	Low Channel	1850.2	29.36	33.0
	Middle Channel	1880.0	29.52	33.0
	High Channel	1909.8	29.61	33.0
EDGE(1 Slot)	Low Channel	1850.2	24.62	33.0
	Middle Channel	1880.0	24.48	33.0
	High Channel	1909.8	24.58	33.0

For WCDMA Band 5

Test Mode	Channel	Frequency (MHz)	Average Power (dBm)	FCC Part 22.913 Limit (dBm)
WCDMA	Low Channel	826.4	22.97	38.45
	Middle Channel	836.6	22.87	38.45
	High Channel	846.6	22.96	38.45
HSDPA	Low Channel	826.4	21.96	38.45
	Middle Channel	836.6	21.88	38.45
	High Channel	846.6	21.91	38.45
HSUPA	Low Channel	826.4	21.45	38.45
	Middle Channel	836.6	21.37	38.45
	High Channel	846.6	21.43	38.45

For WCDMA Band 2

Test Mode	Channel	Frequency (MHz)	Average Power (dBm)	FCC Part 24.232 Limit (dBm)
WCDMA	Low Channel	1852.4	22.69	33.00
	Middle Channel	1880.0	22.70	33.00
	High Channel	1907.6	22.77	33.00
HSDPA	Low Channel	1852.4	21.89	33.00
	Middle Channel	1880.0	21.88	33.00
	High Channel	1907.6	21.88	33.00
HSUPA	Low Channel	1852.4	21.24	33.00
	Middle Channel	1880.0	21.41	33.00
	High Channel	1907.6	21.36	33.00

5. Peak-to-average Ratio (PAR) of Transmitter

5.1 Standard Applicable

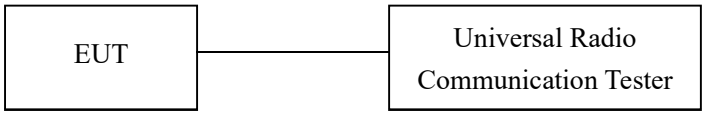
According to §24.232(d), Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (e) of this section. In both instances, equipment employed must be authorized in 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 13 dB.

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

5.2 Test Procedure

The RF output terminal of the transmitter was connected to the input of the Universal Radio Communication Tester via a suitable attenuation. Record the maximum PAPR level associated with a probability of 0.1%.

Test Configuration for the emission bandwidth testing:



5.3 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

5.4 Summary of Test Results

The Low, Middle, High channels are test, but only the worst case was selected to record

For PCS Band

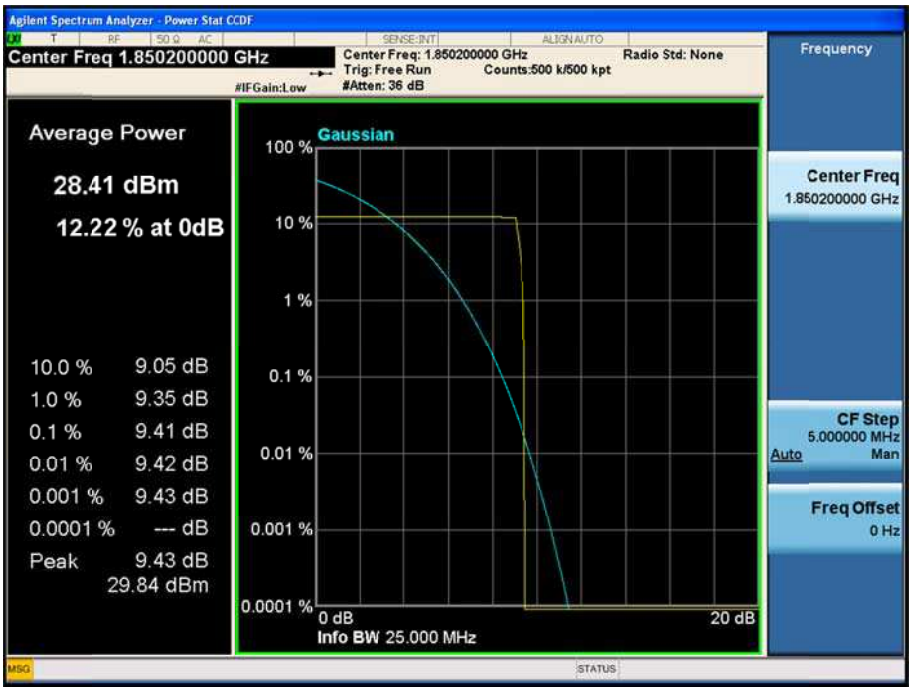
Test Mode	Channel	Frequency (MHz)	PAR (dB)	Limit (dB)
GSM	512	1850.2	9.41	13
GPRS(1 Slot)	512	1850.2	8.27	13
EDGE(1 Slot)	512	1850.2	8.68	13

For WCDMA Band 2

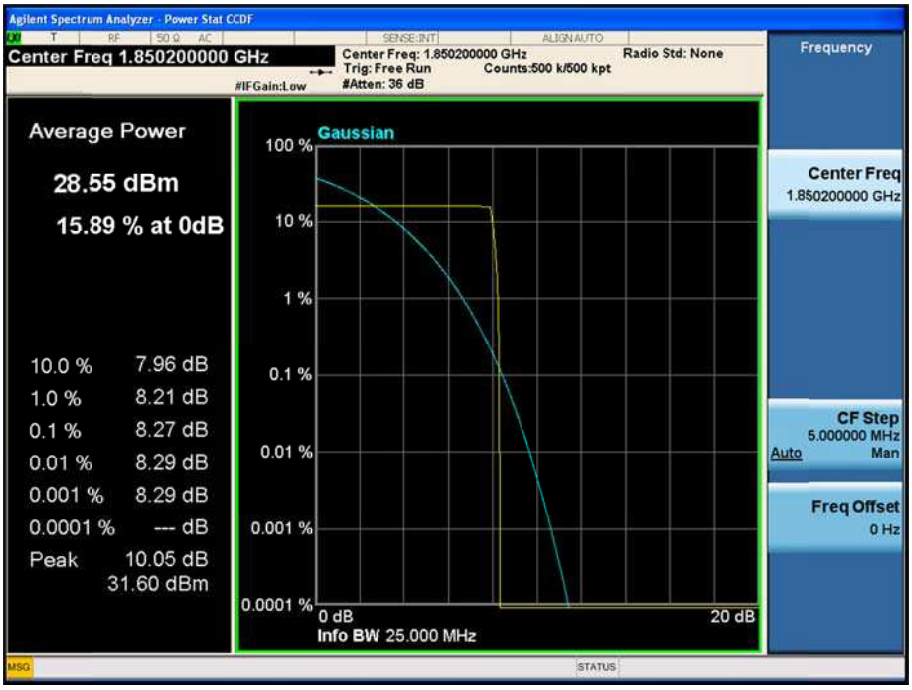
Test Mode	Channel	Frequency (MHz)	PAR (dB)	Limit (dB)
WCDMA	9400	1880	2.95	13
HSDPA	9400	1880	3.90	13
HSUPA	9400	1880	3.80	13

For PCS Band

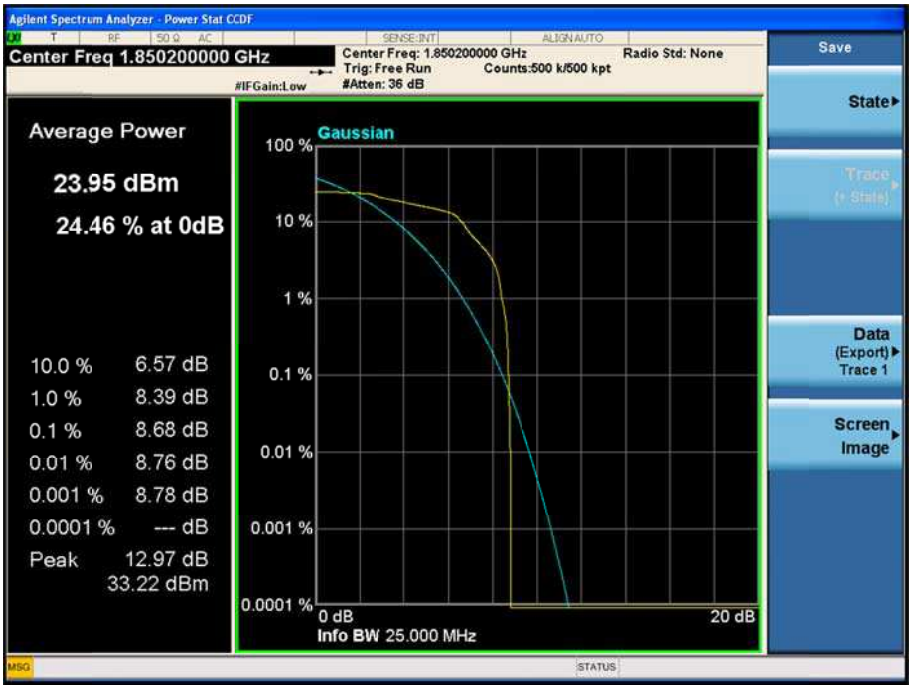
GSM



GPRS

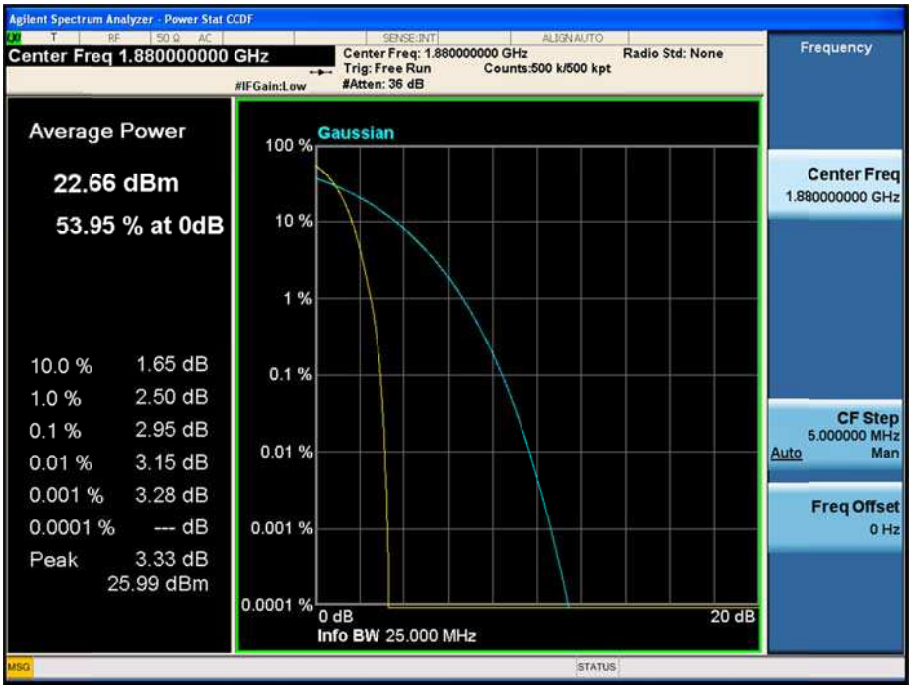


EDGE

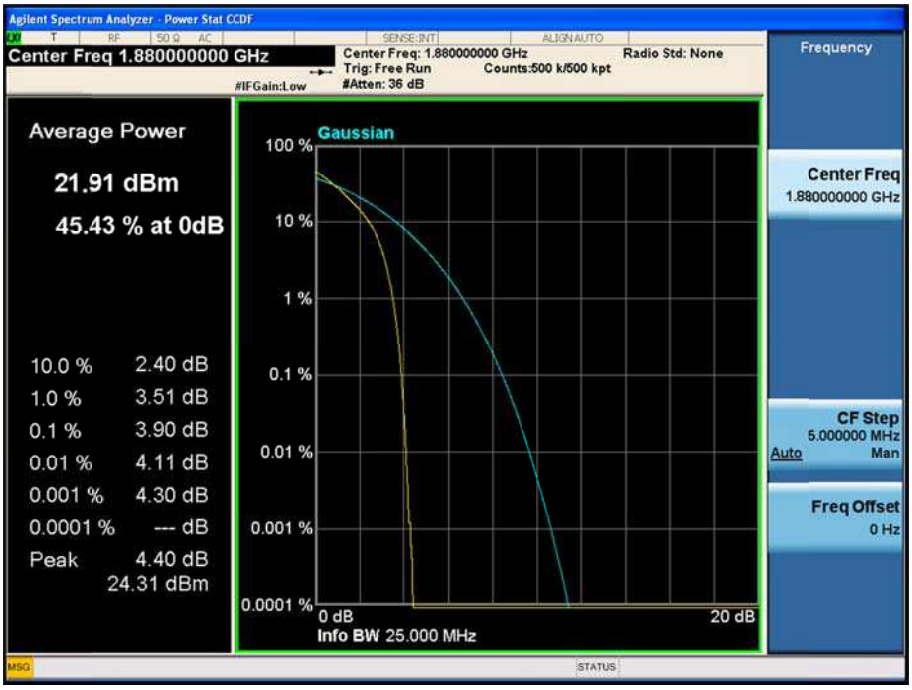


For WCDMA Band 2

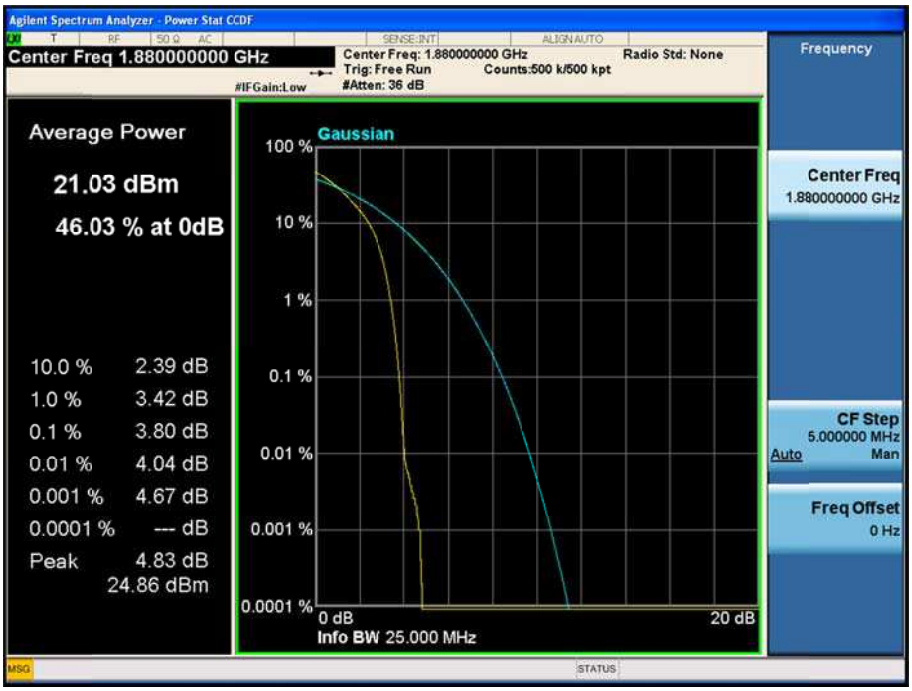
WCDMA



HSDPA


Agilent Spectrum Analyzer - Power Stat CCDF
Center Freq 1.880000000 GHz
Center Freq: 1.880000000 GHz
Trig: Free Run
Counts:500 k/500 kpt
#Atten: 36 dB
Radio Std: None
#IFGain:Low
Frequency
Average Power
21.91 dBm
45.43 % at 0dB
10.0 % 2.40 dB
1.0 % 3.51 dB
0.1 % 3.90 dB
0.01 % 4.11 dB
0.001 % 4.30 dB
0.0001 % --- dB
Peak 4.40 dB
24.31 dBm
Gaussian
100 %
10 %
1 %
0.1 %
0.01 %
0.001 %
0.0001 %
0 dB
20 dB
Info BW 25.000 MHz
Center Freq
1.880000000 GHz
CF Step
5.000000 MHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

HSUPA


Agilent Spectrum Analyzer - Power Stat CCDF
Center Freq 1.880000000 GHz
Center Freq: 1.880000000 GHz
Trig: Free Run
Counts:500 k/500 kpt
#Atten: 36 dB
Radio Std: None
#IFGain:Low
Frequency
Average Power
21.03 dBm
46.03 % at 0dB
10.0 % 2.39 dB
1.0 % 3.42 dB
0.1 % 3.80 dB
0.01 % 4.04 dB
0.001 % 4.67 dB
0.0001 % --- dB
Peak 4.83 dB
24.86 dBm
Gaussian
100 %
10 %
1 %
0.1 %
0.01 %
0.001 %
0.0001 %
0 dB
20 dB
Info BW 25.000 MHz
Center Freq
1.880000000 GHz
CF Step
5.000000 MHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

6. Emission Bandwidth

6.1 Standard Applicable

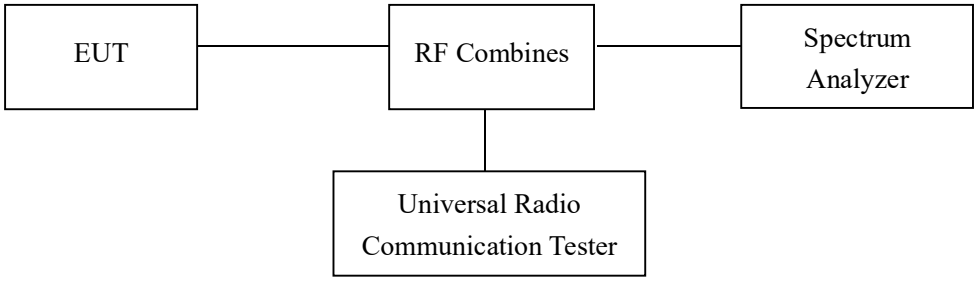
According to §22.917(b), The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

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 26 dB below the transmitter power.

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 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:



6.3 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

6.4 Summary of Test Results/Plots

For Cellular Band

Test Mode	Channel	Frequency (MHz)	99% Emission Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM	128	824.2	249.2820	316.366
	190	836.6	254.3831	316.834
	251	848.8	246.4528	319.407
GPRS	128	824.2	250.1188	315.600
	190	836.6	248.2441	325.112
	251	848.8	246.9282	322.278
EDGE	128	824.2	244.4611	321.025
	190	836.6	247.7935	308.898
	251	848.8	250.4855	315.418

For PCS Band

Test Mode	Channel	Frequency (MHz)	99% Emission Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM	512	1850.2	239.5394	317.060
	661	1880.0	242.7442	318.713
	810	1909.8	246.6013	319.574
GPRS	512	1850.2	242.3195	310.587
	661	1880.0	247.4397	316.917
	810	1909.8	250.0305	318.402
EDGE	512	1850.2	247.8073	316.623
	661	1880.0	247.9134	319.678
	810	1909.8	244.0570	318.566

For Band 5

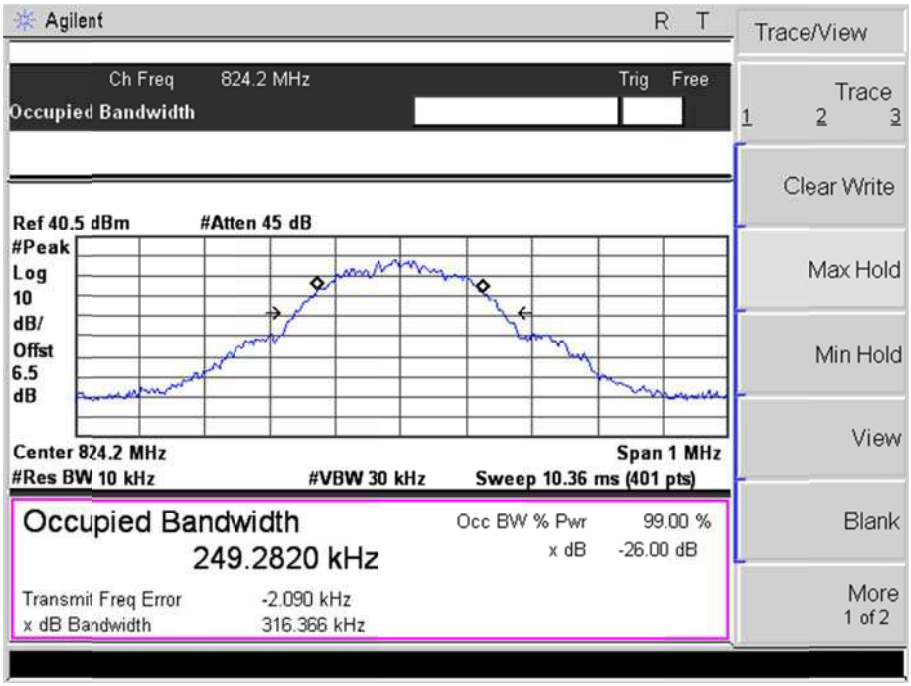
Test Mode	Channel	Frequency (MHz)	99% Emission Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
WCDMA	4132	826.4	4.1437	4.741
	4183	836.6	4.1262	4.731
	4233	846.6	4.1357	4.698
HSDPA	4132	826.4	4.1263	4.732
	4183	836.6	4.1491	4.753
	4233	846.6	4.1255	4.704
HSUPA	4132	826.4	4.1290	4.694
	4183	836.6	4.1432	4.712
	4233	846.6	4.1335	4.687

For Band 2

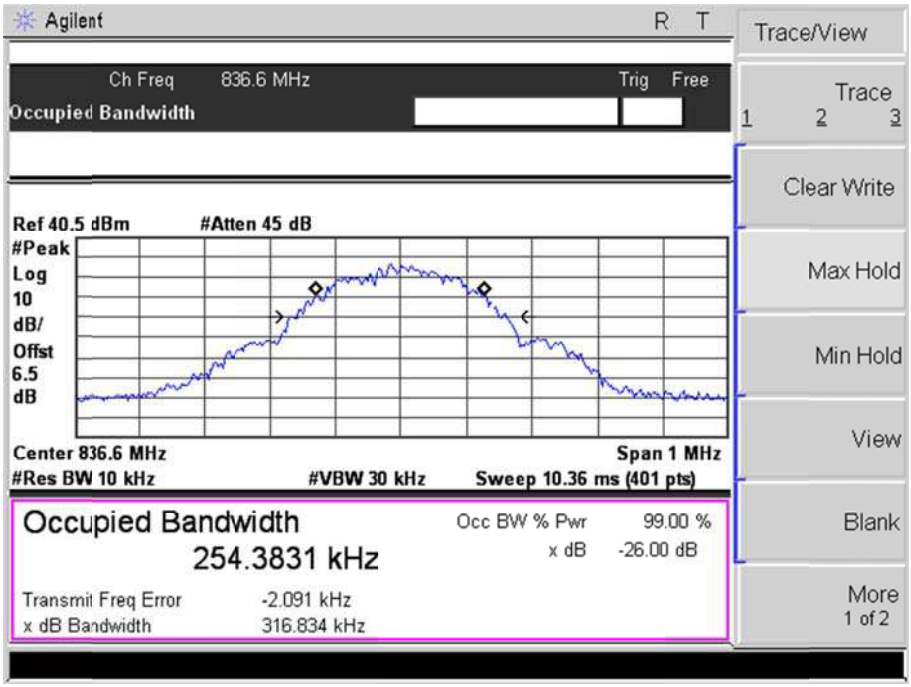
Test Mode	Channel	Frequency (MHz)	99% Emission Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
WCDMA	9262	1852.4	4.1626	4.730
	9400	1880.0	4.1595	4.693
	9538	1907.6	4.1565	4.733
HSDPA	9262	1852.4	4.1438	4.734
	9400	1880.0	4.1552	4.731
	9538	1907.6	4.1572	4.708
HSUPA	9262	1852.4	4.1520	4.723
	9400	1880.0	4.1654	4.718
	9538	1907.6	4.1586	4.711

For Cellular Band

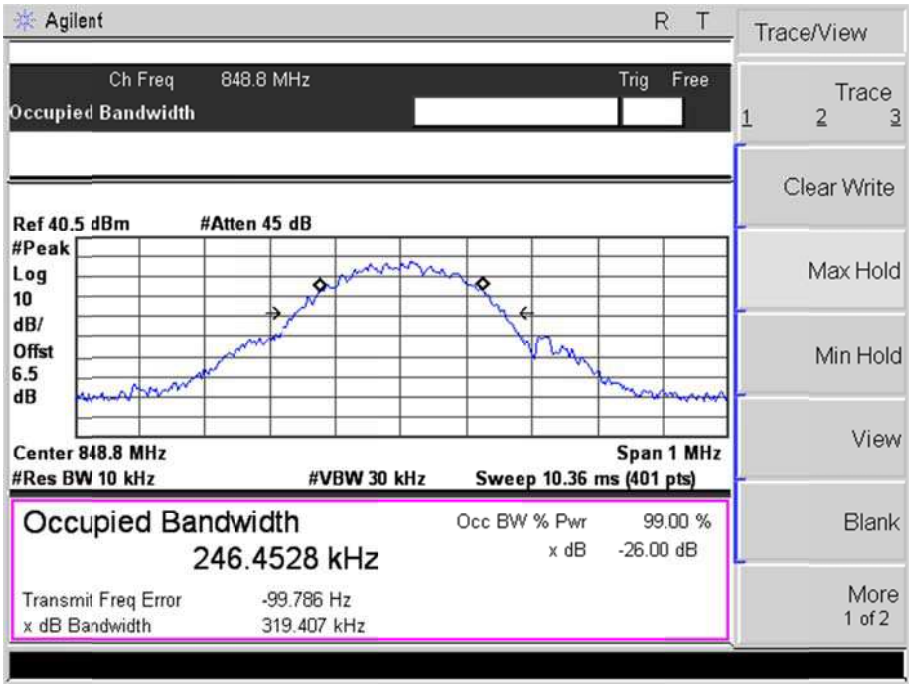
GSM Low Channel



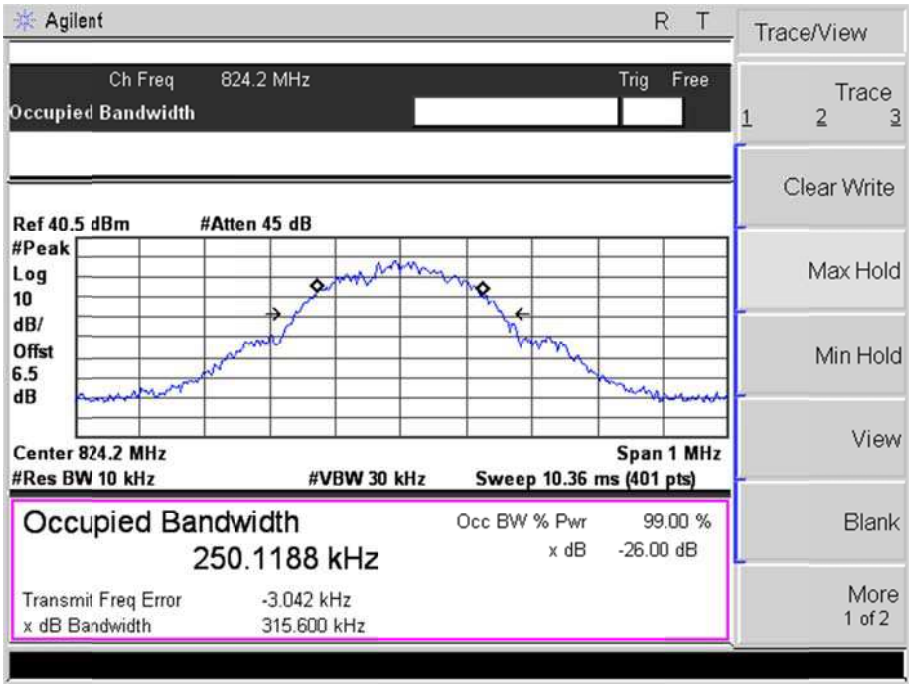
GSM Middle Channel



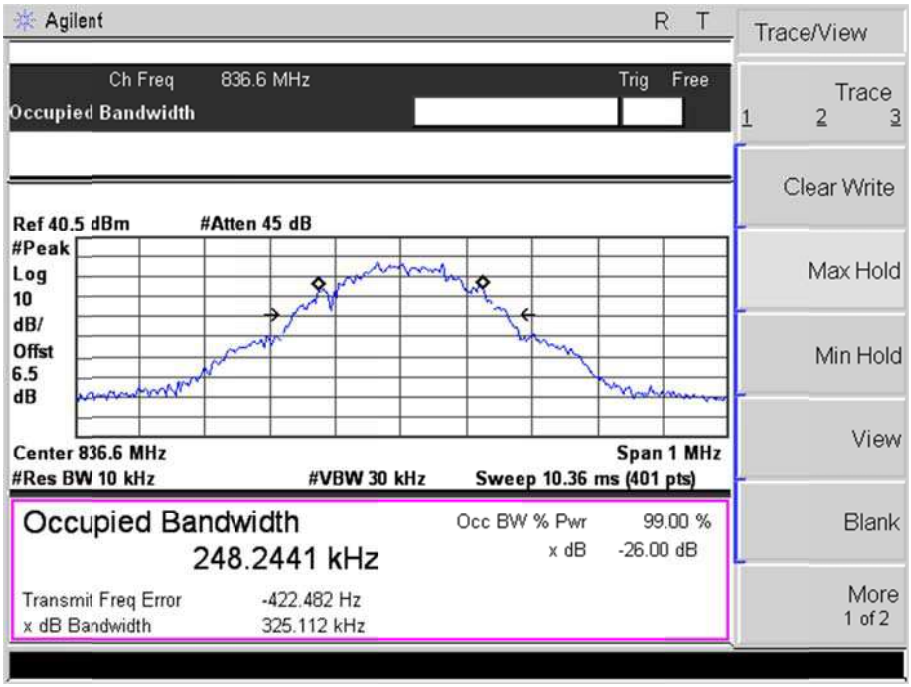
GSM High channel



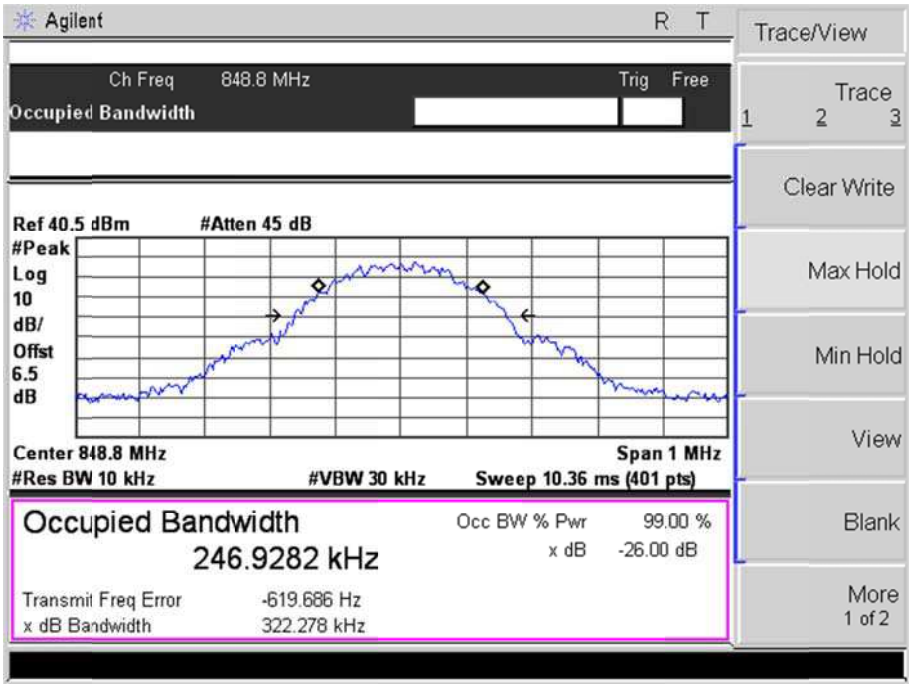
GPRS Low Channel



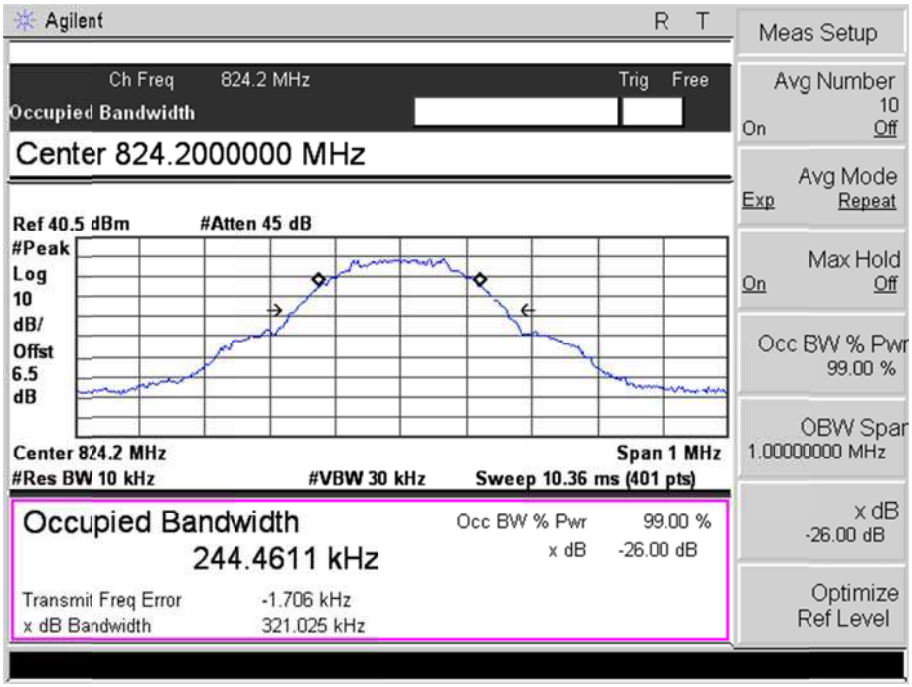
GPRS Middle Channel



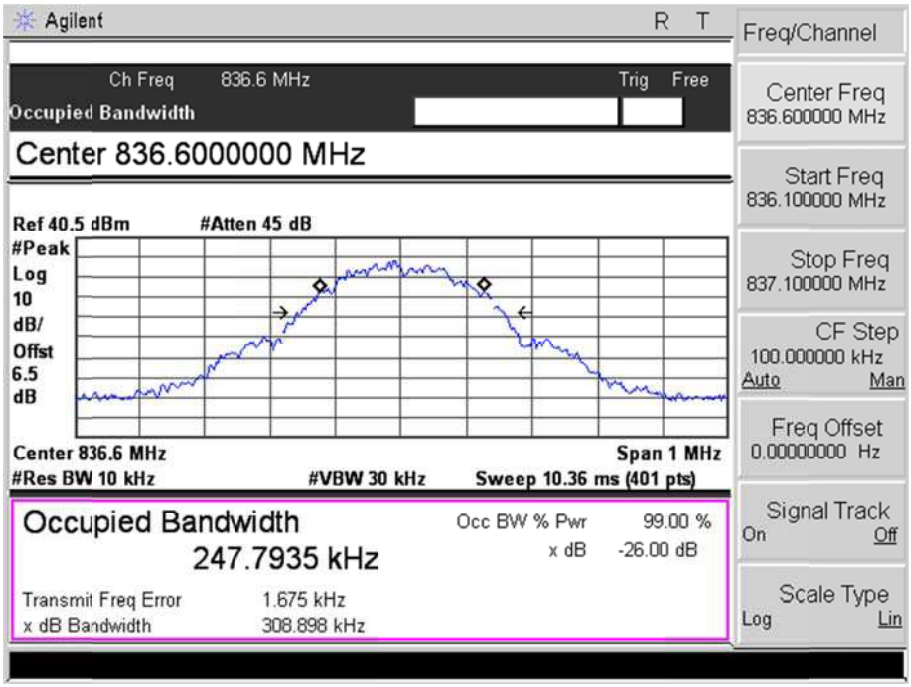
GPRS High Channel



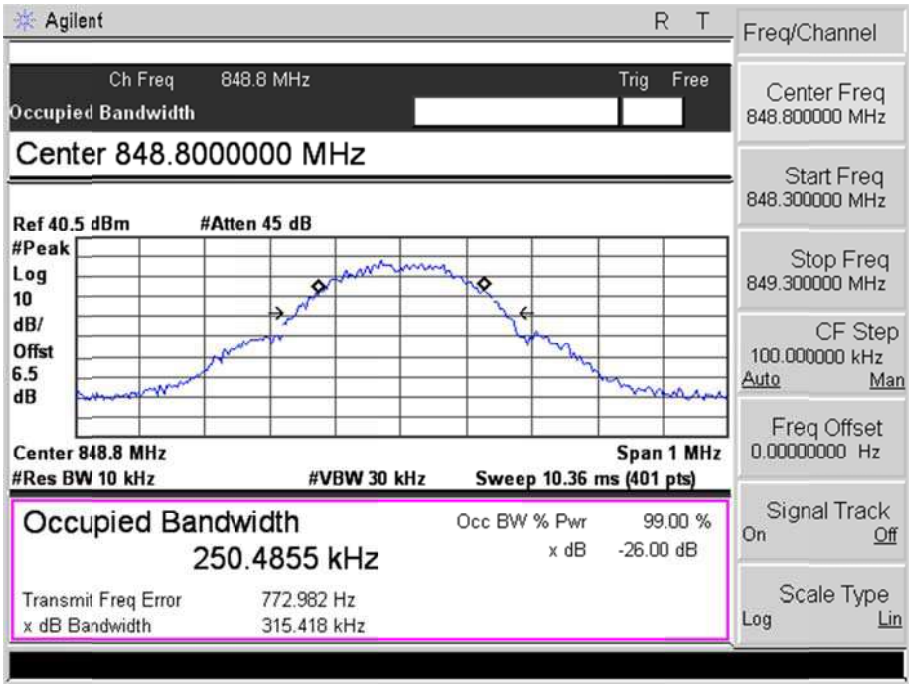
EDGE Low Channel



EDGE Middle Channel

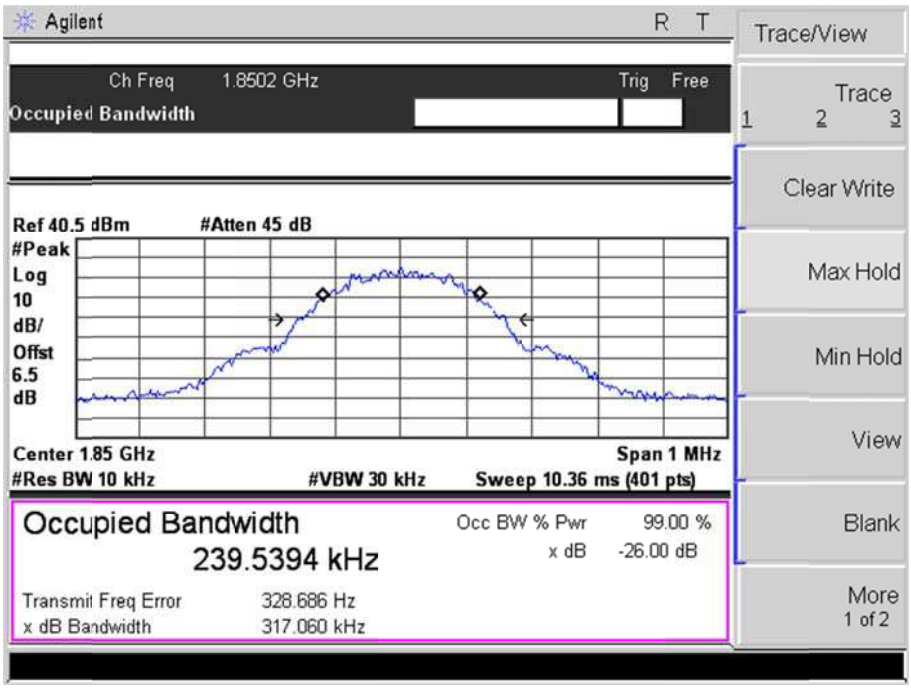


EDGE High Channel

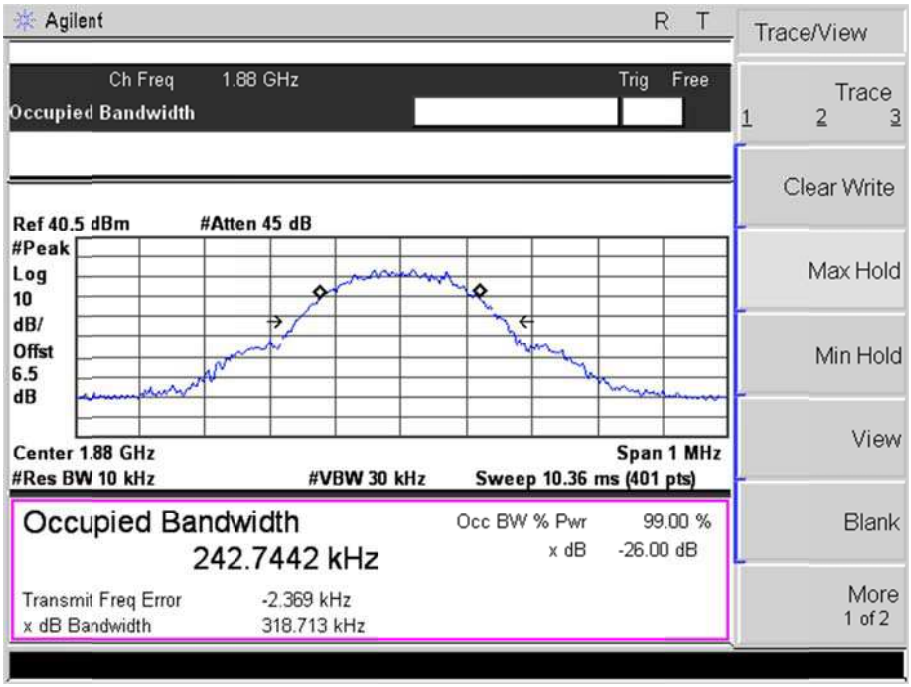


For PCS Band

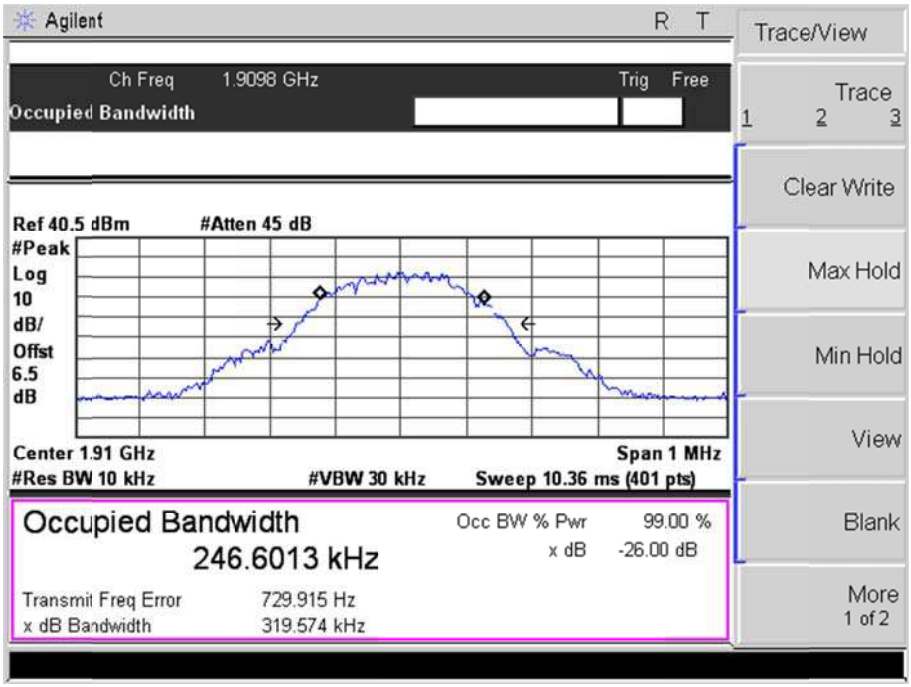
GSM Low Channel



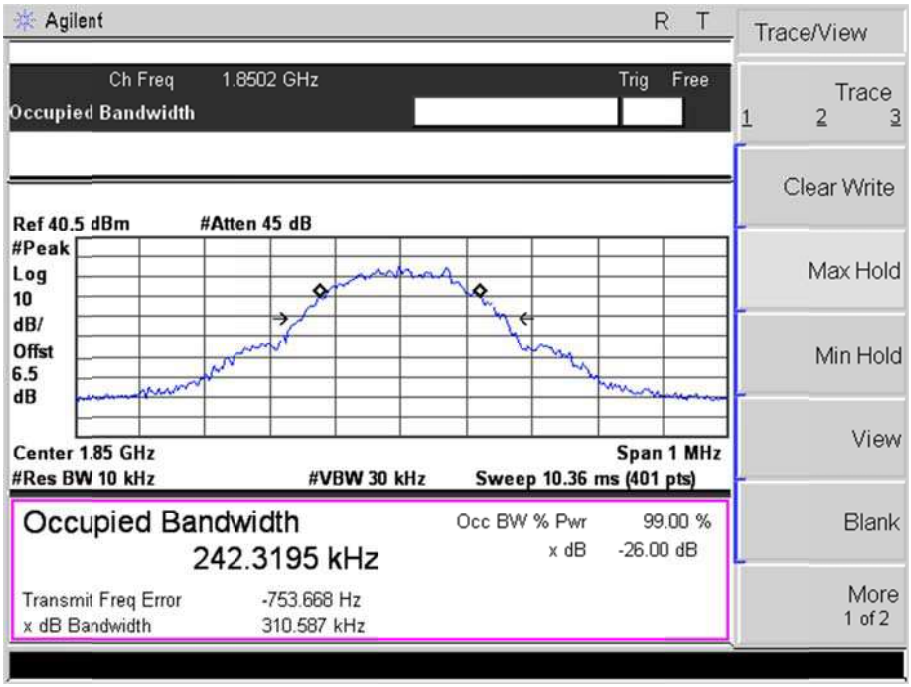
GSM Middle Channel



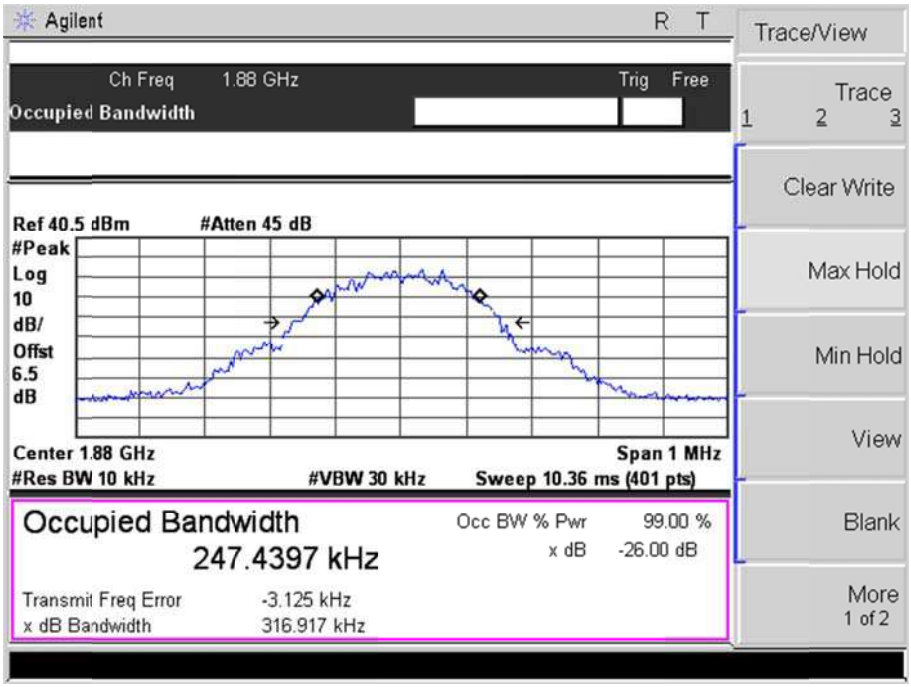
GSM High channel



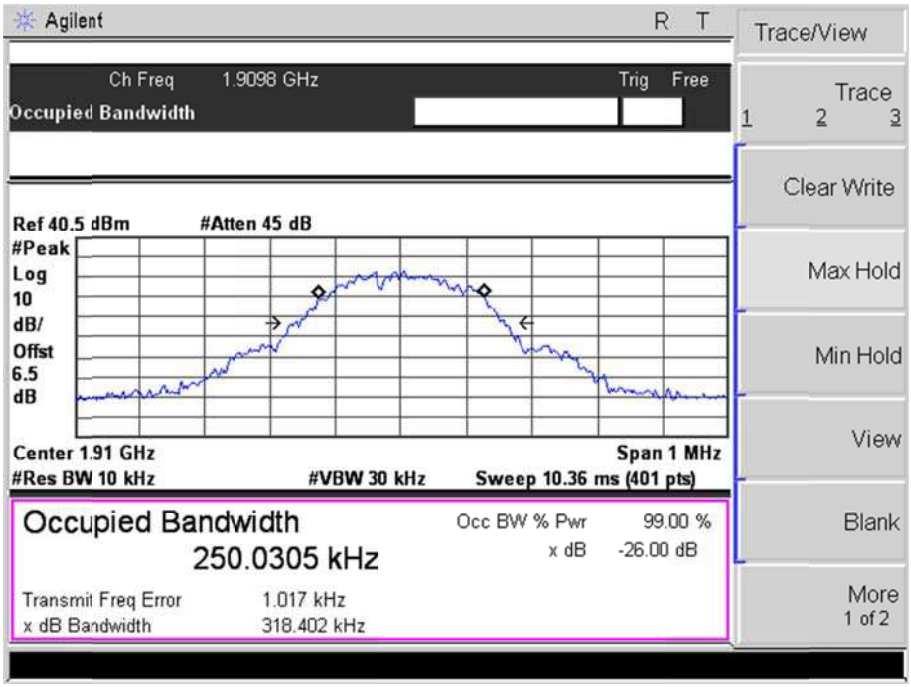
GPRS Low Channel



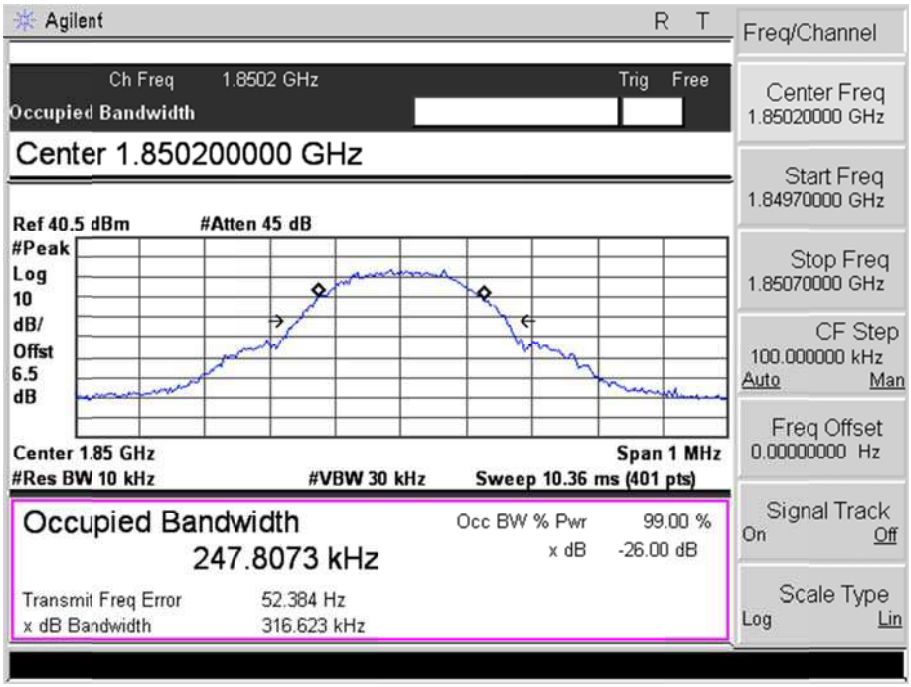
GPRS Middle Channel



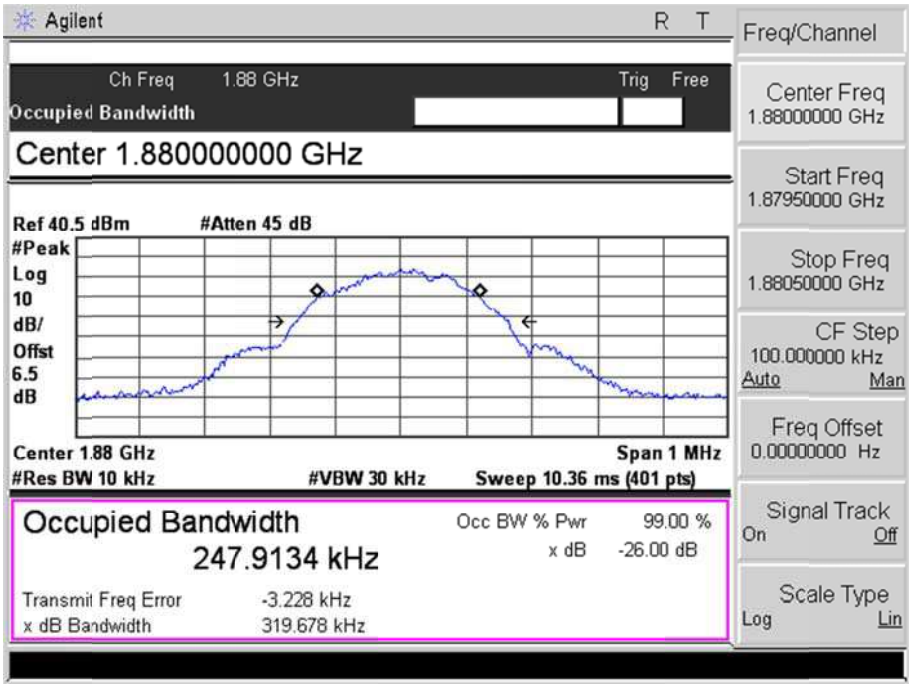
GPRS High Channel



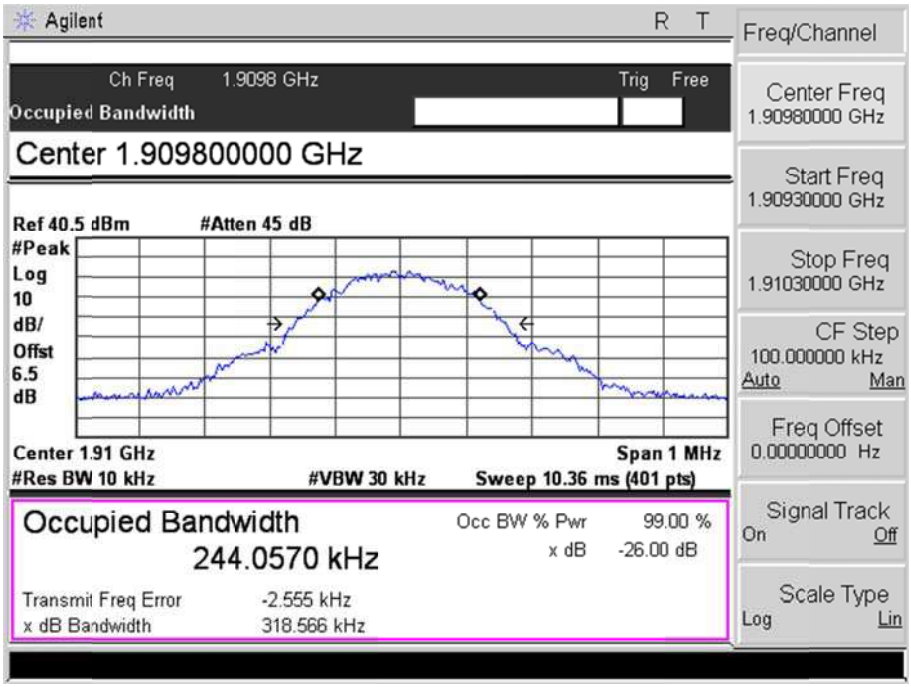
EDGE Low Channel



EDGE Middle Channel

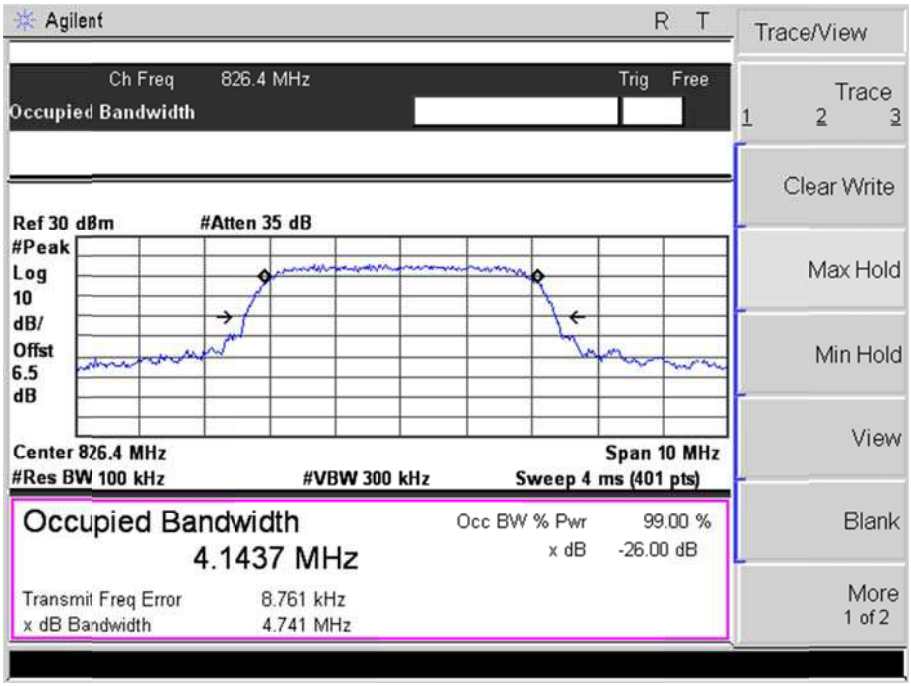


EDGE High Channel

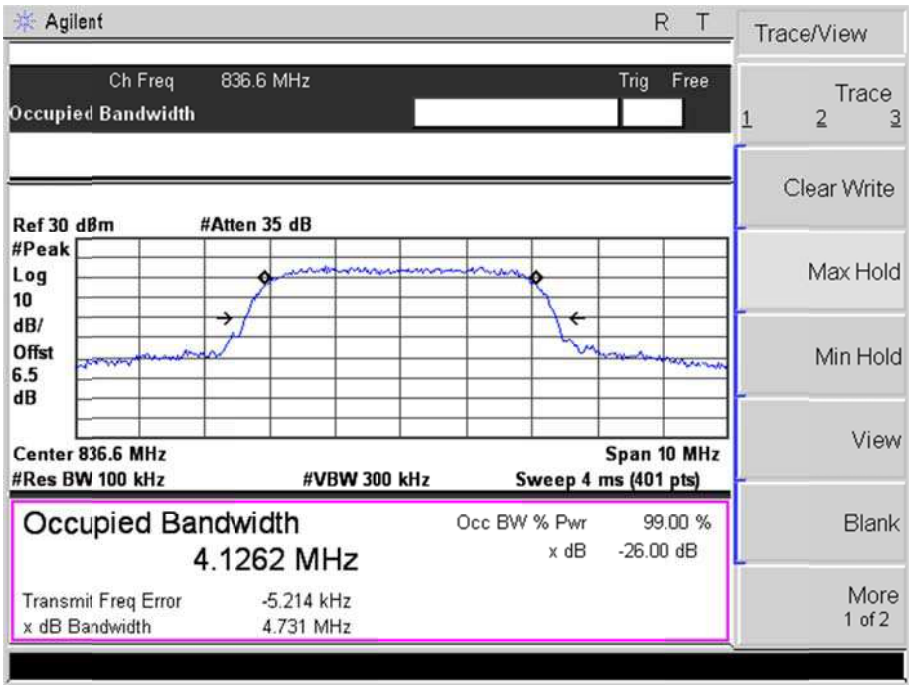


For Band V

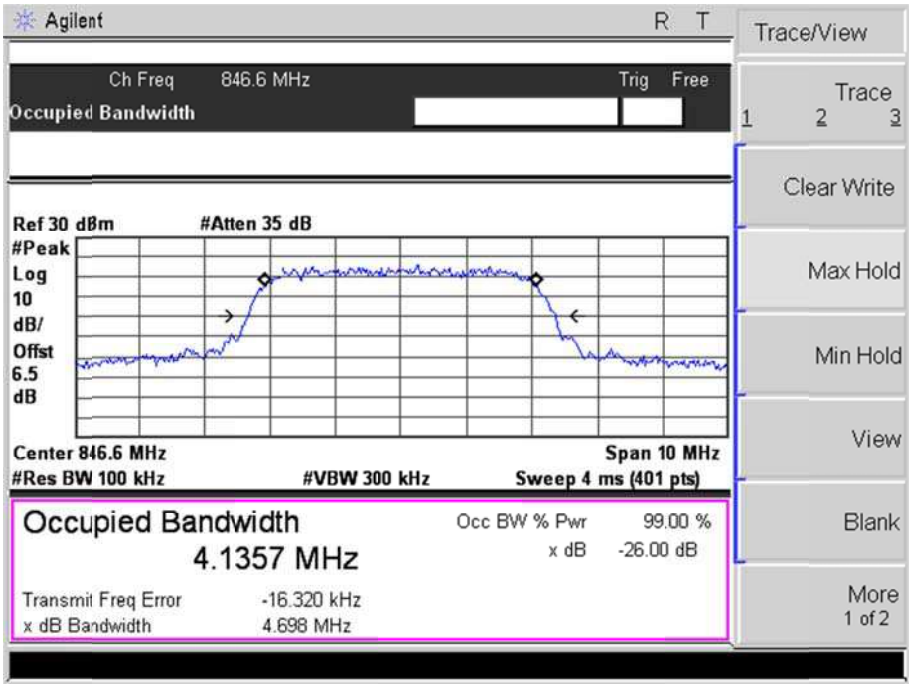
WCDMA Low Channel



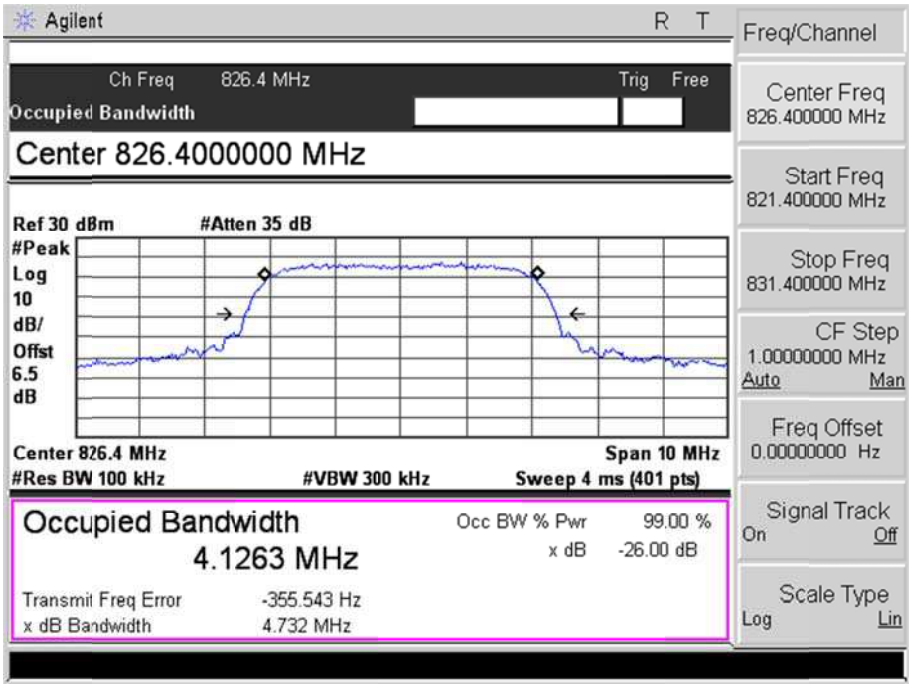
WCDMA Middle Channel



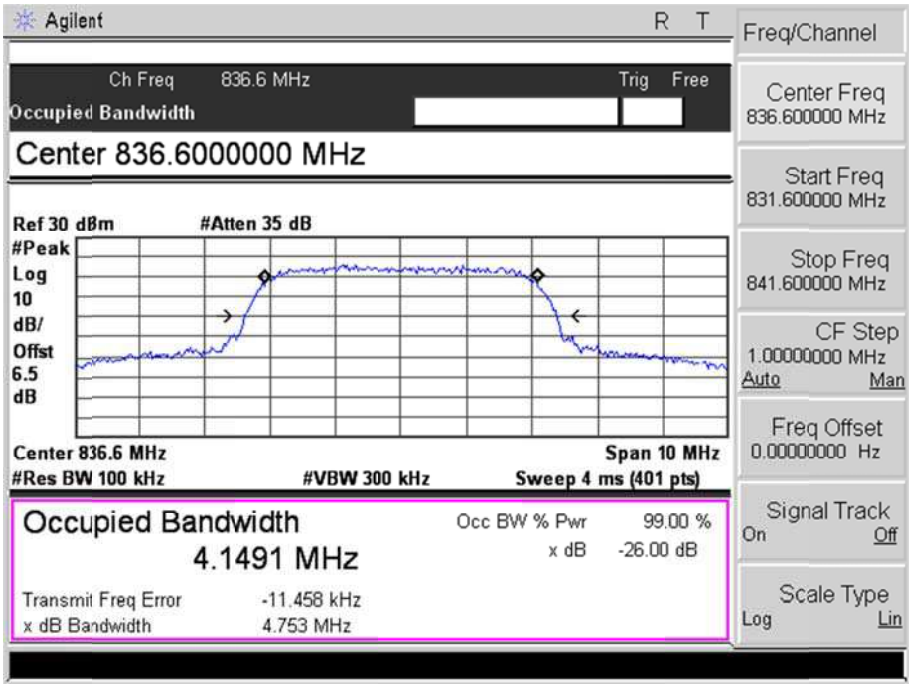
WCDMA High Channel



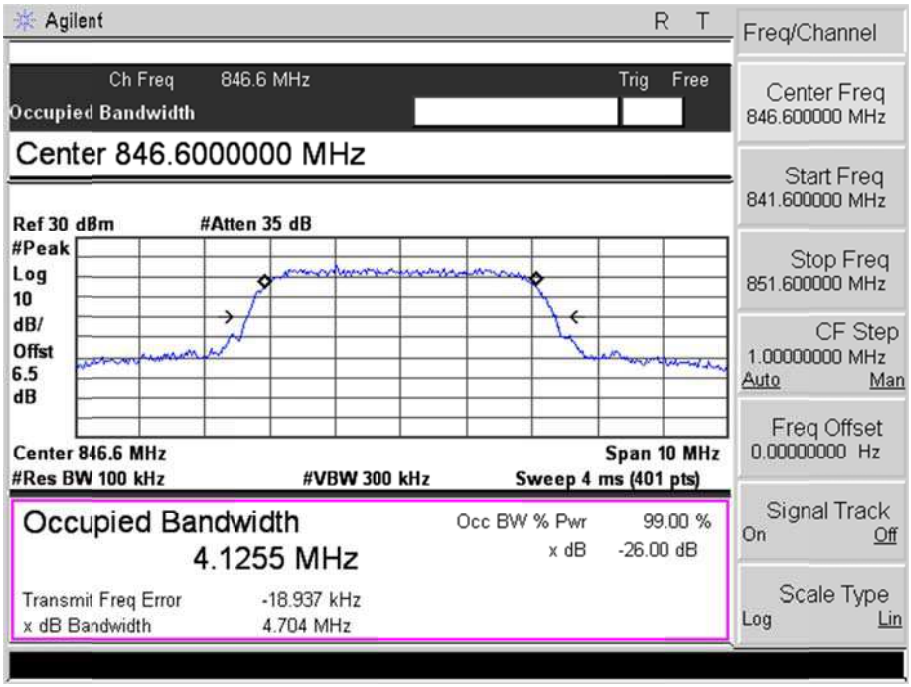
HSDPA Low Channel



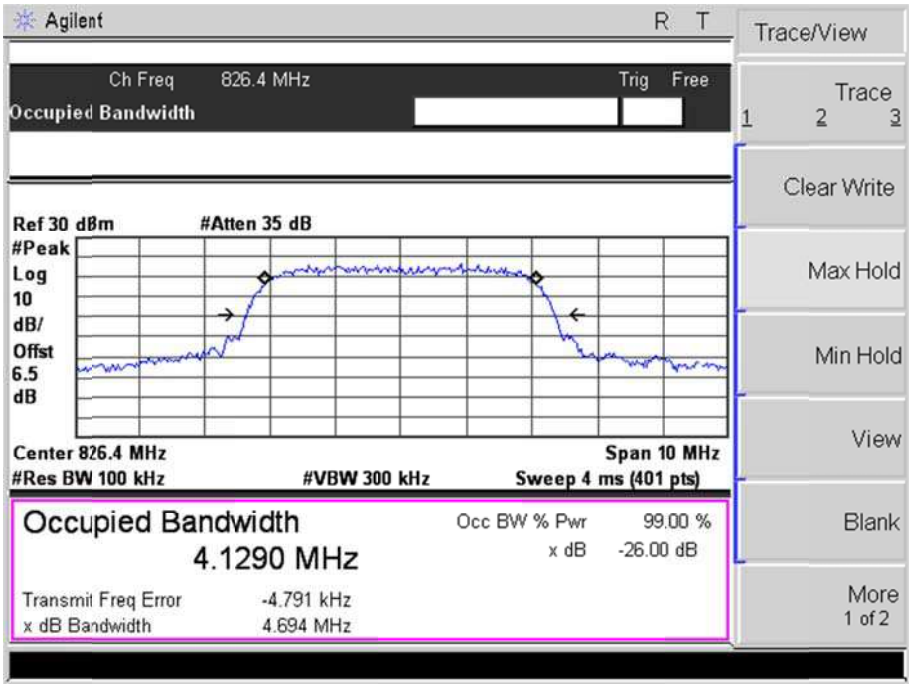
HSDPA Middle Channel



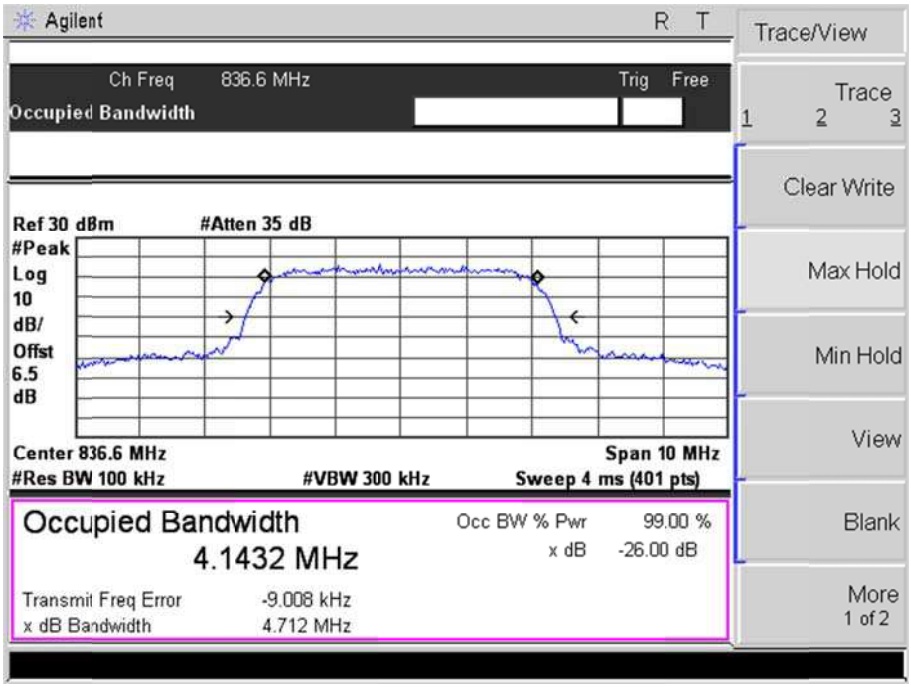
HSDPA High Channel



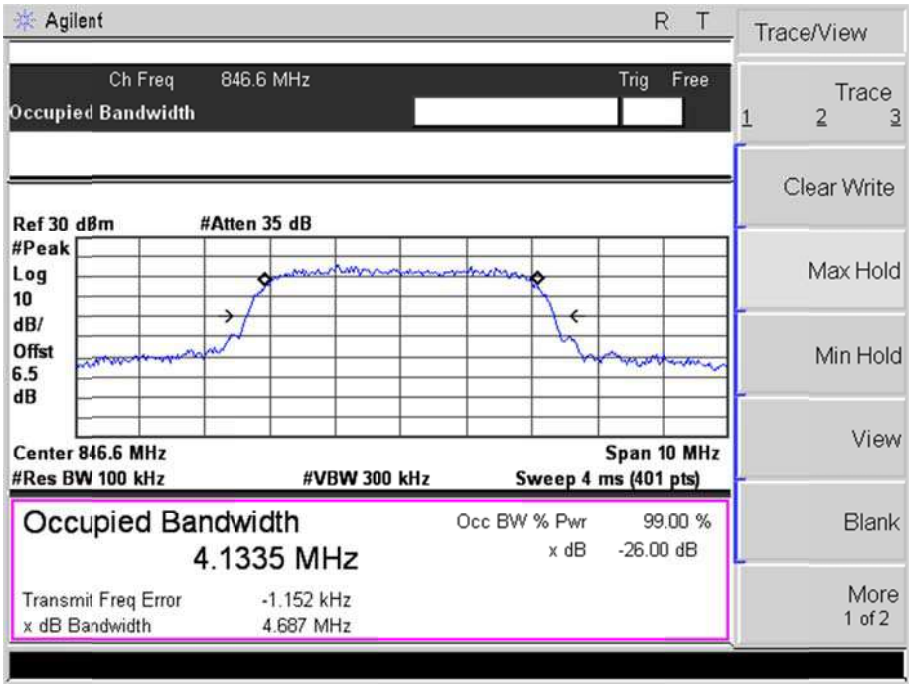
HSUPA Low Channel



HSUPA Middle Channel

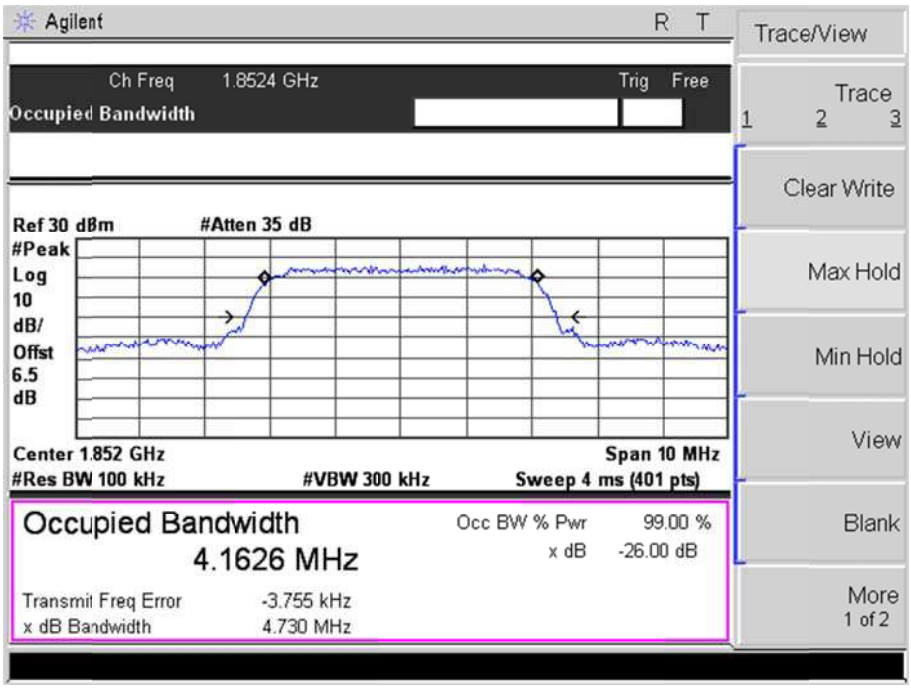


HSUPA High Channel

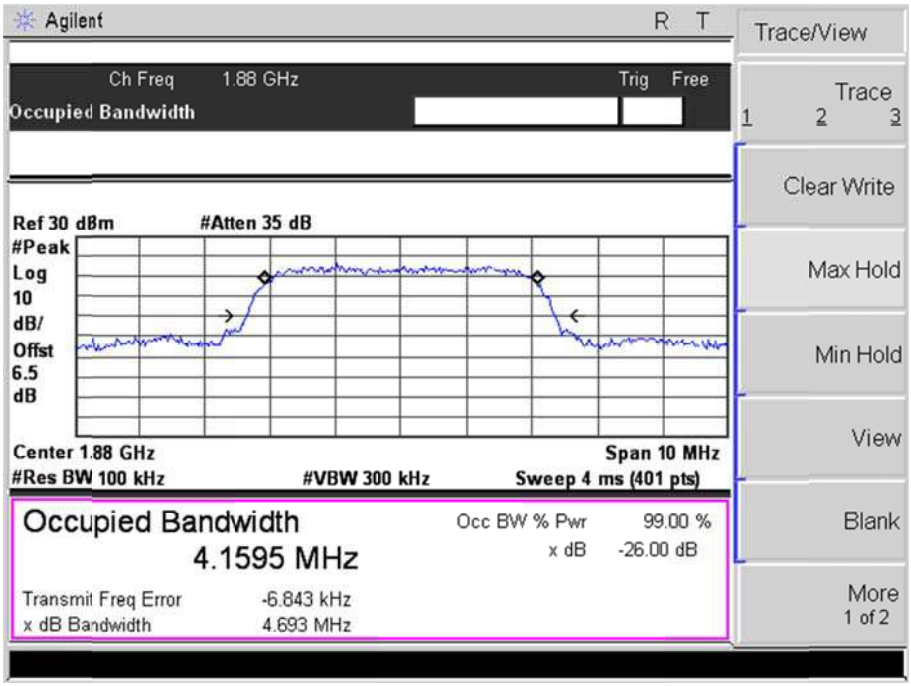


For Band II

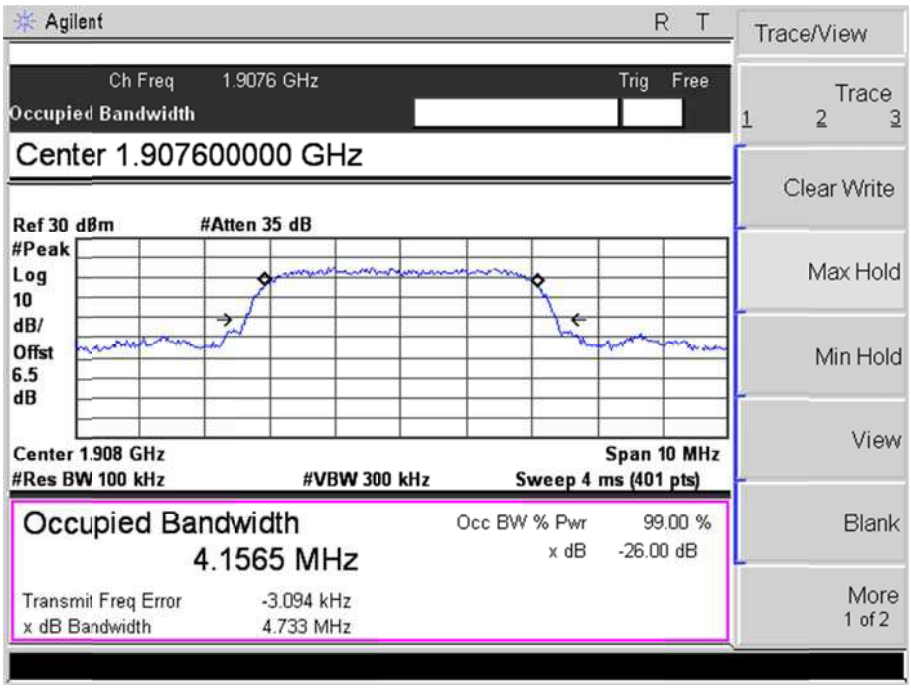
WCDMA Low Channel



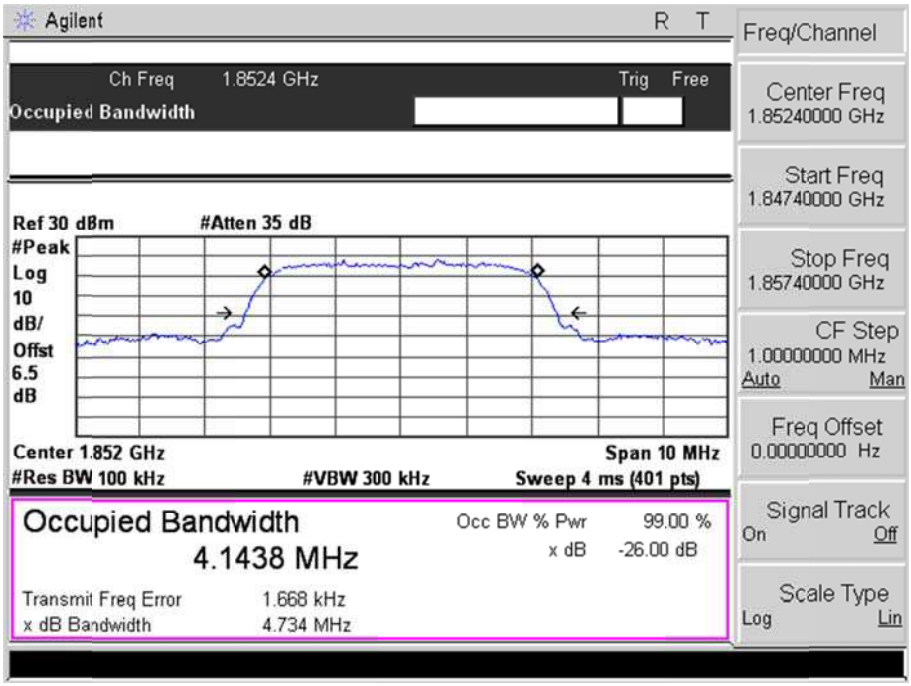
WCDMA Middle Channel



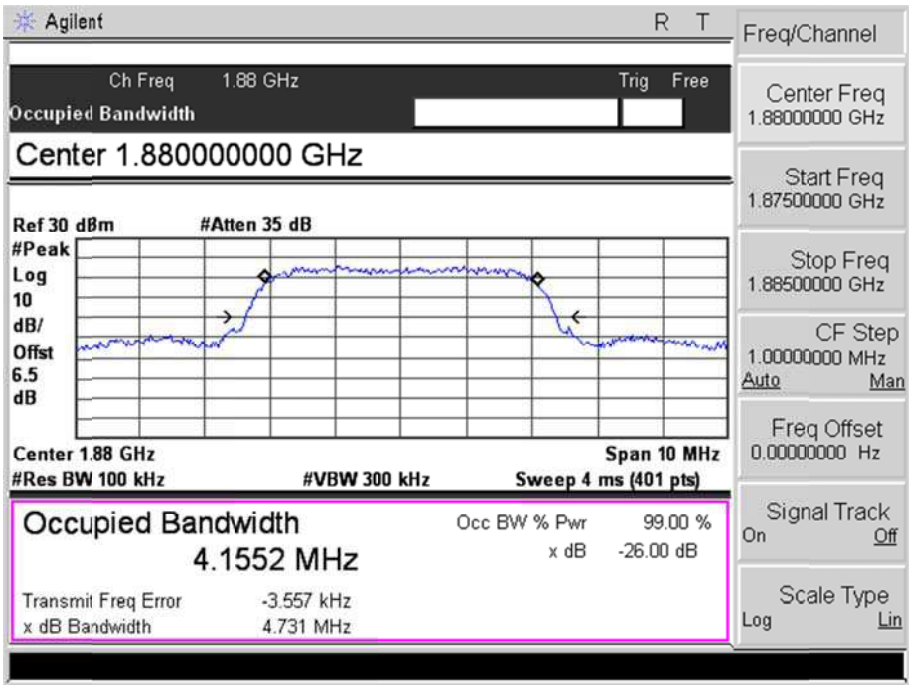
WCDMA High Channel



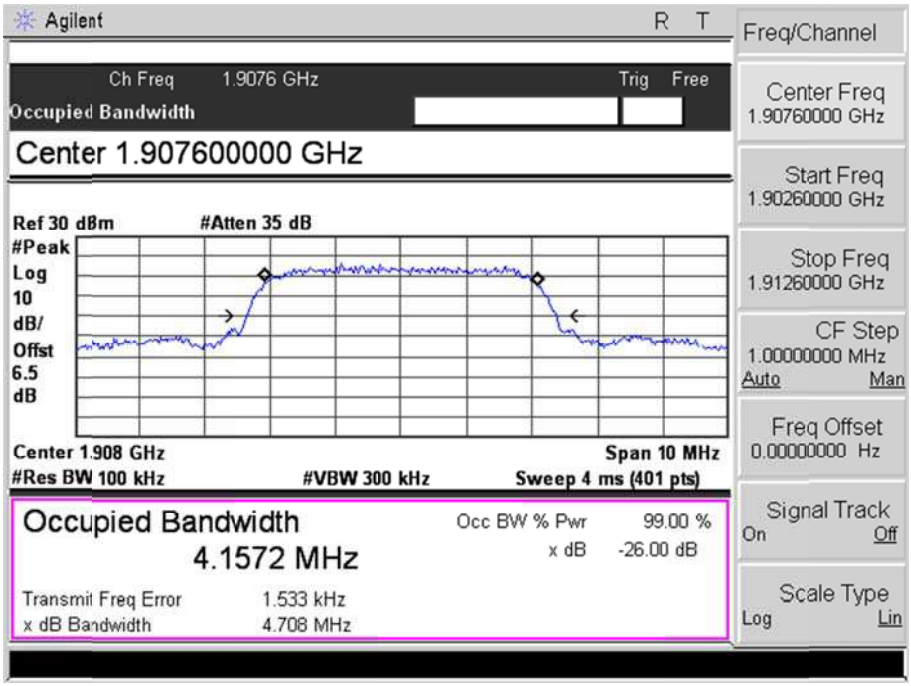
HSDPA Low Channel



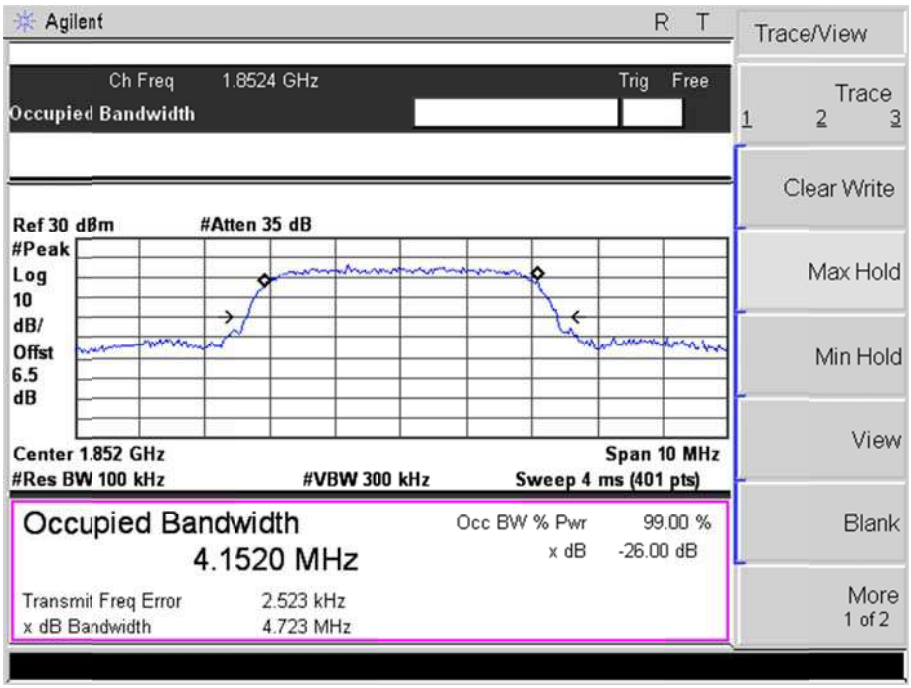
HSDPA Middle Channel



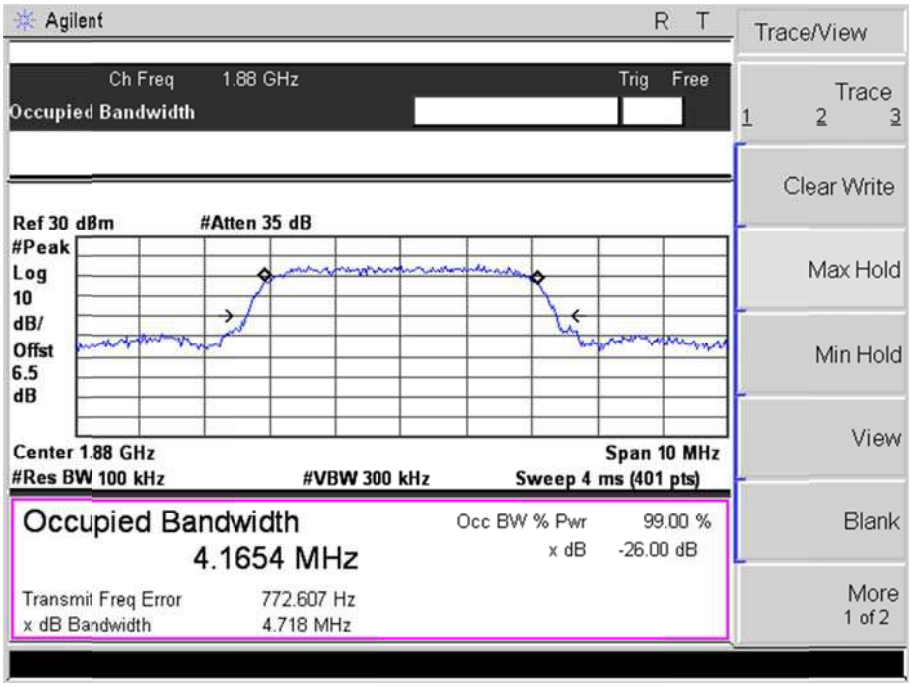
HSDPA High Channel



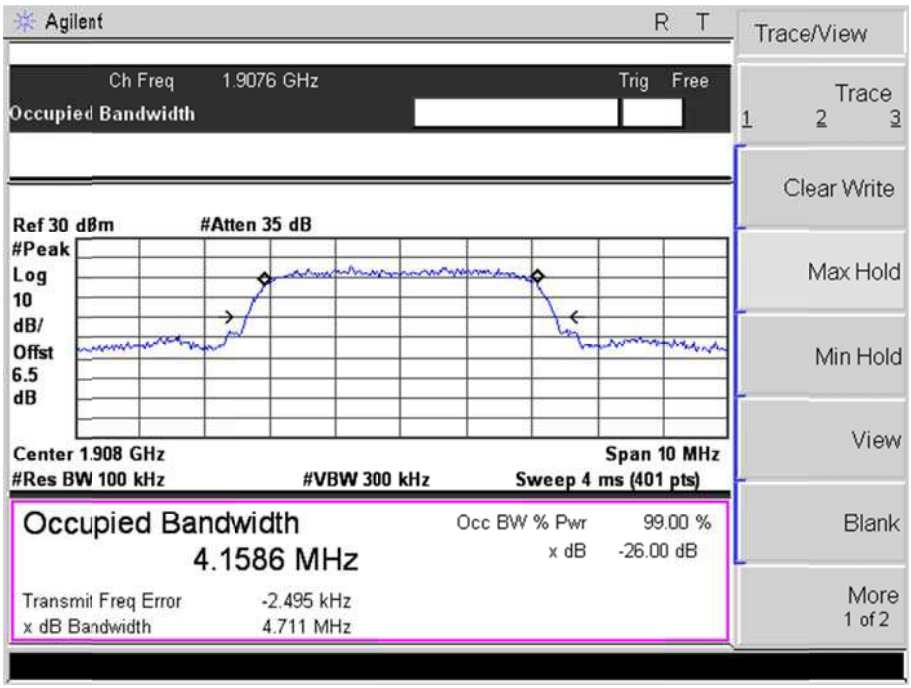
HSUPA Low Channel



HSUPA Middle Channel



HSUPA High Channel



7. Out of Band Emissions at Antenna Terminal

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.

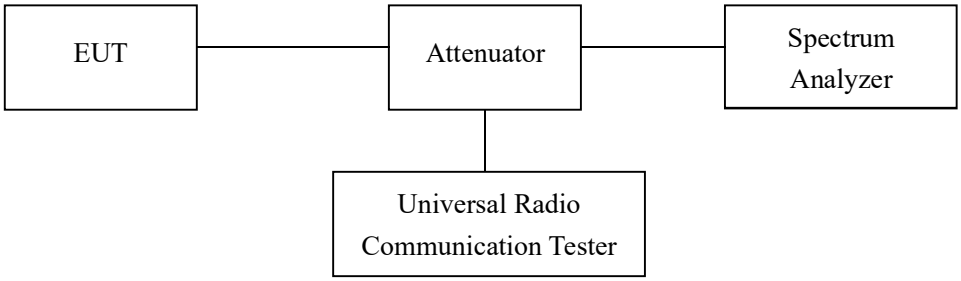
According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

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 log10 (P) dB.

7.2 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:



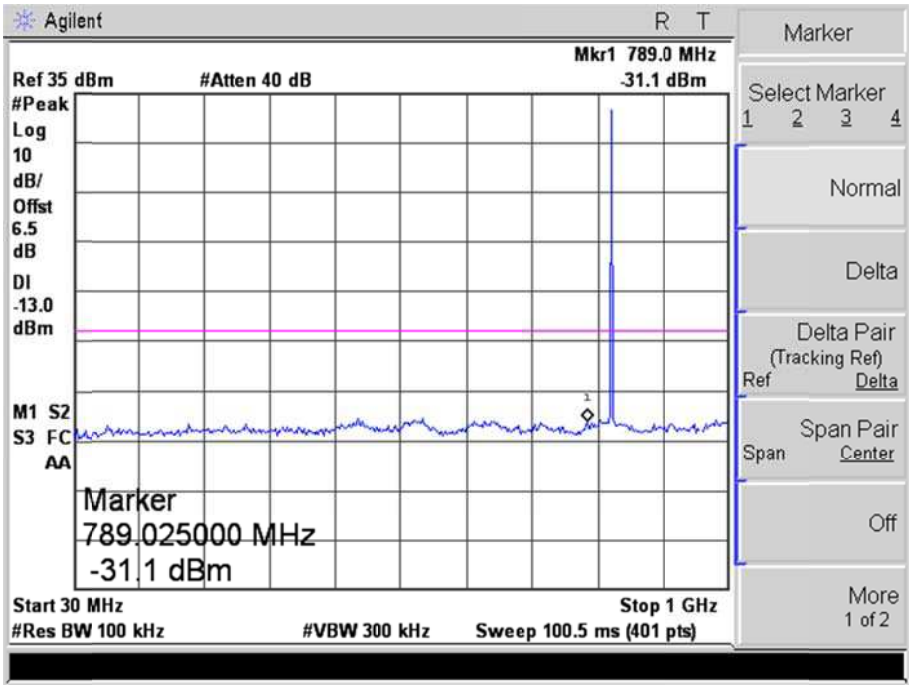
7.3 Environmental Conditions

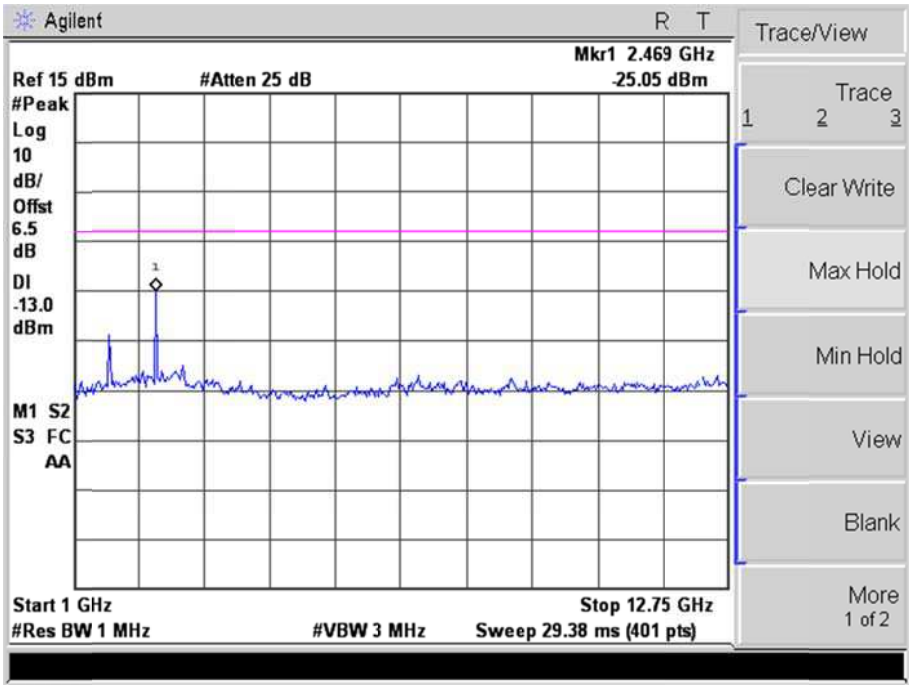
Temperature:	25 °C
Relative Humidity:	53%
ATM Pressure:	1018 mbar

7.4 Summary of Test Results/Plots

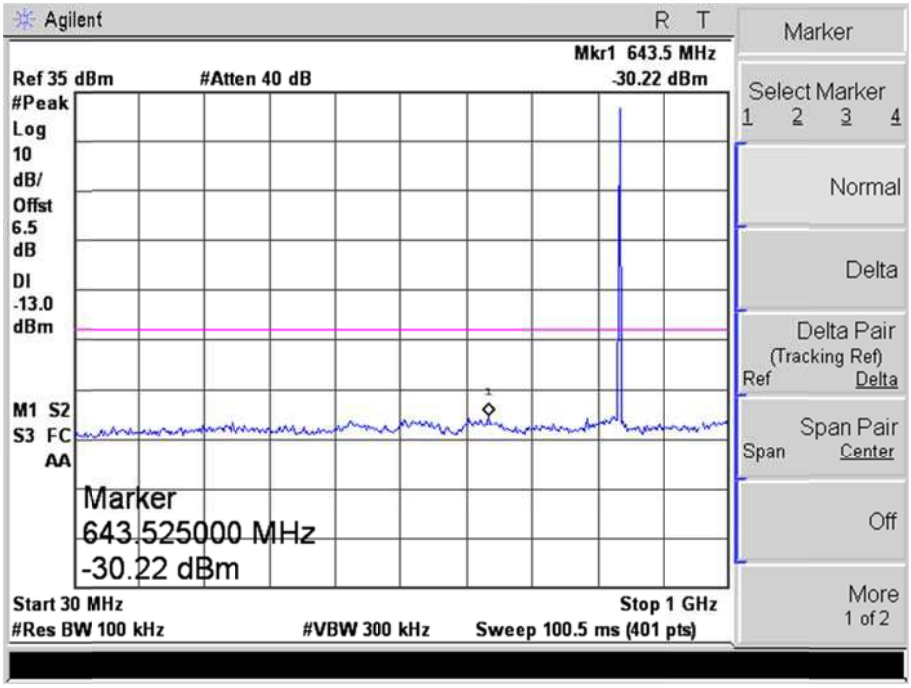
Please refer to the following test plots For Cellular Band

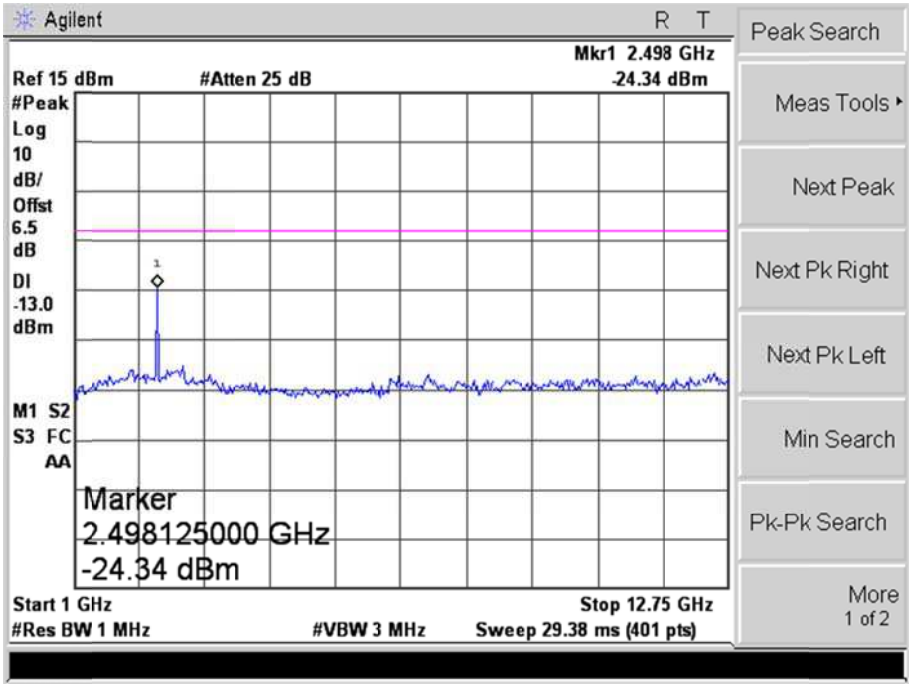
GSM Low Channel



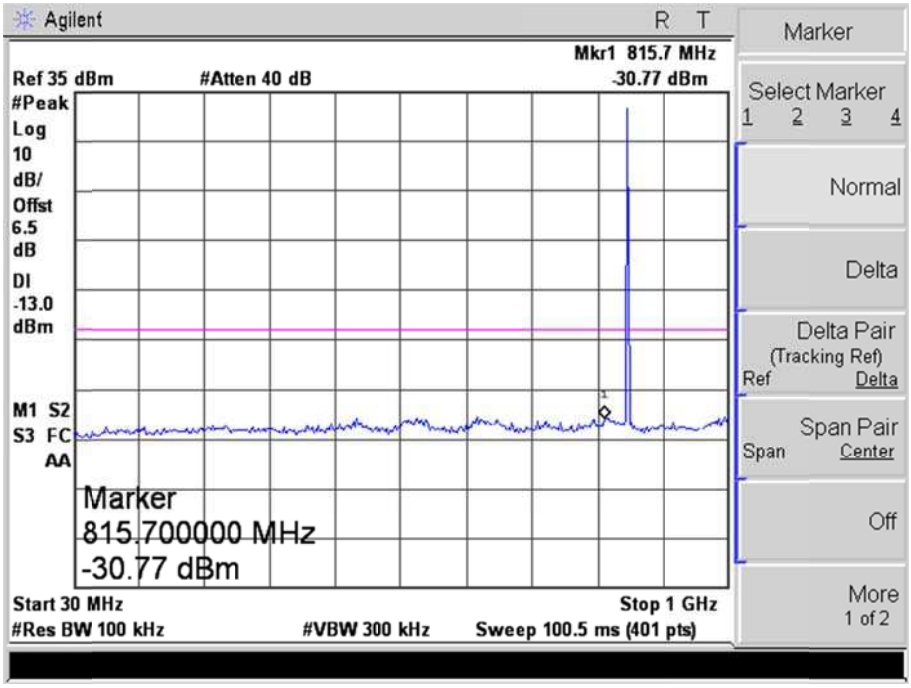


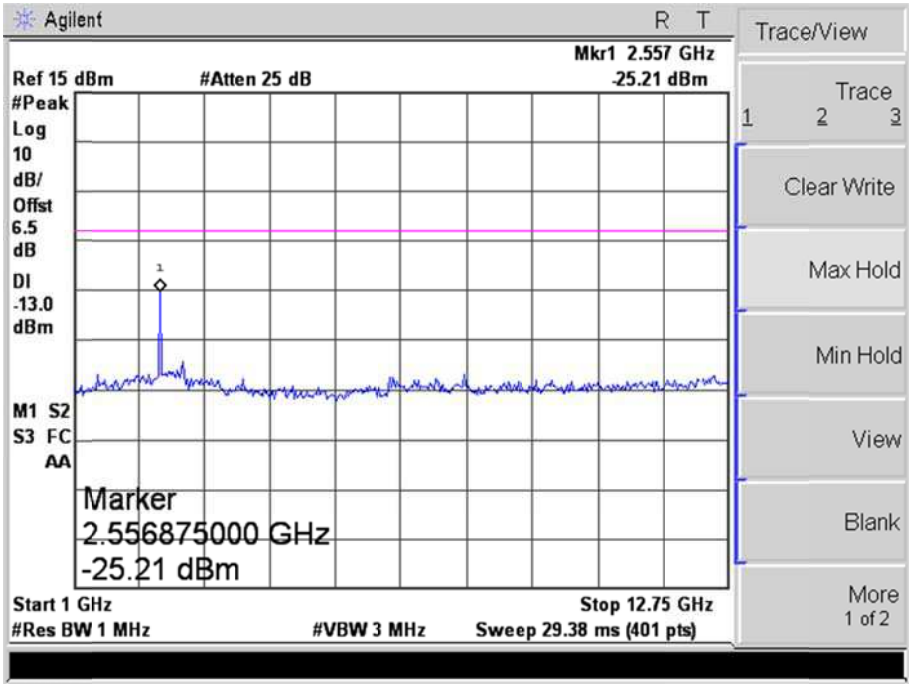
GSM Middle Channel





GSM High Channel

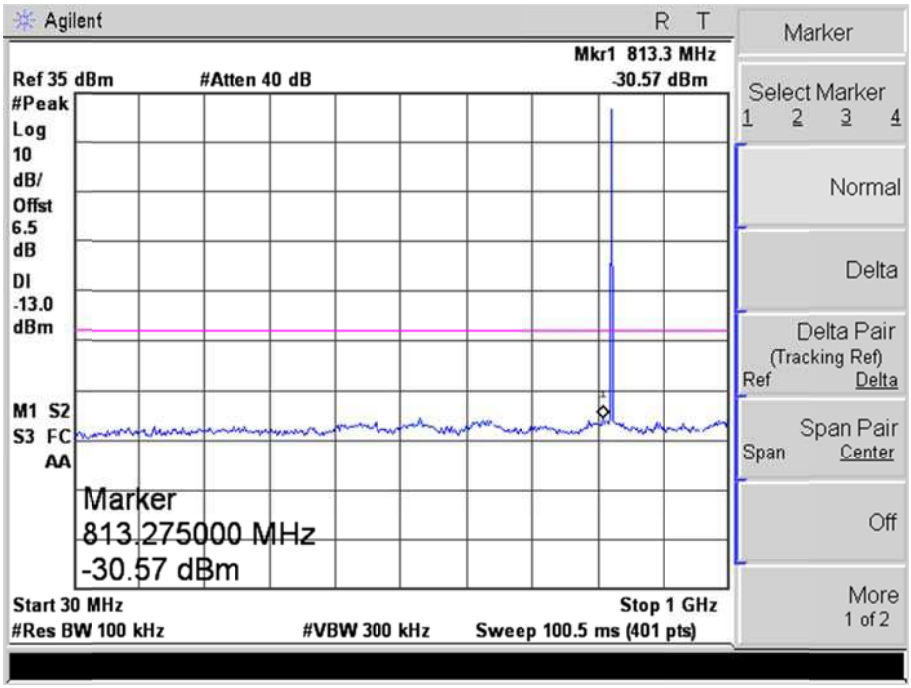


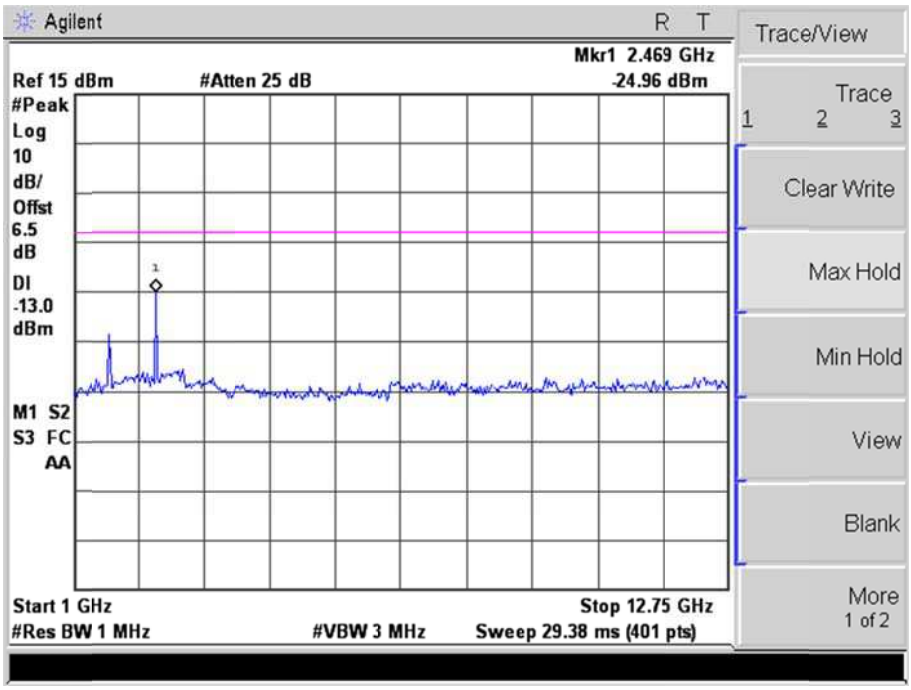


GSM Low Band Emission

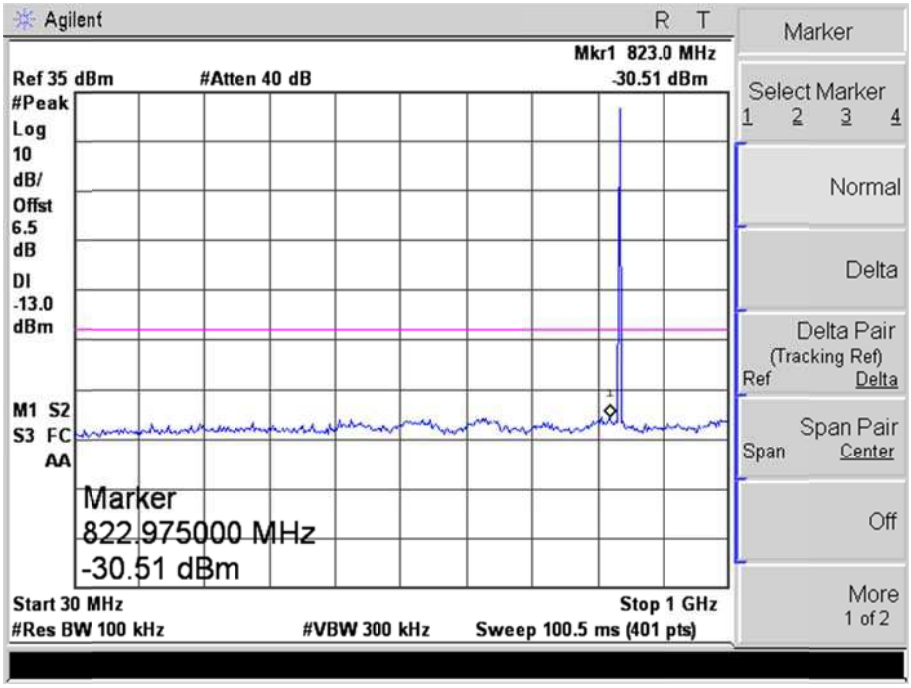
GSM High Band Emission

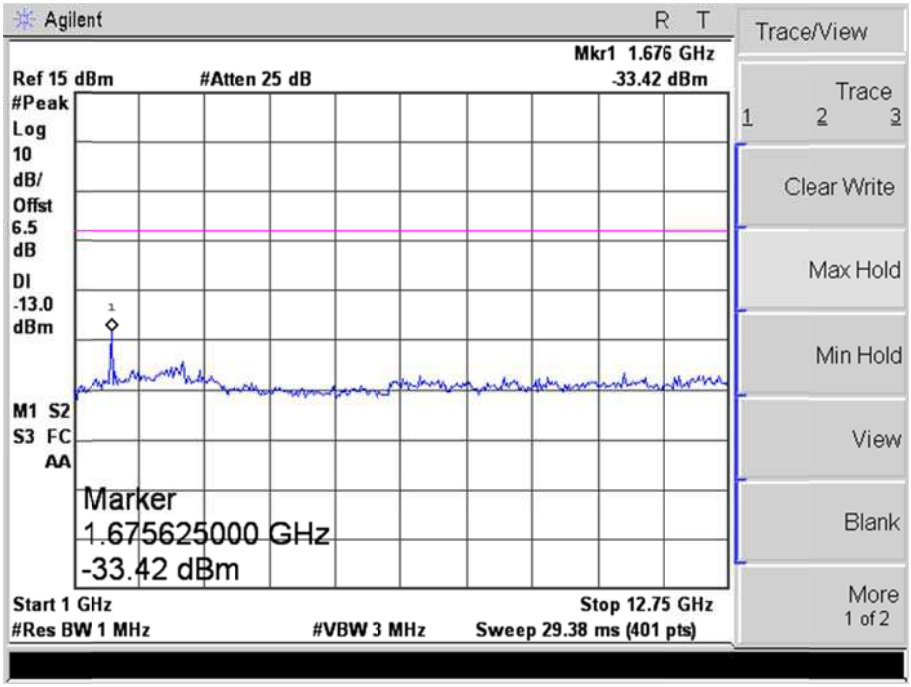
GPRS Low Channel



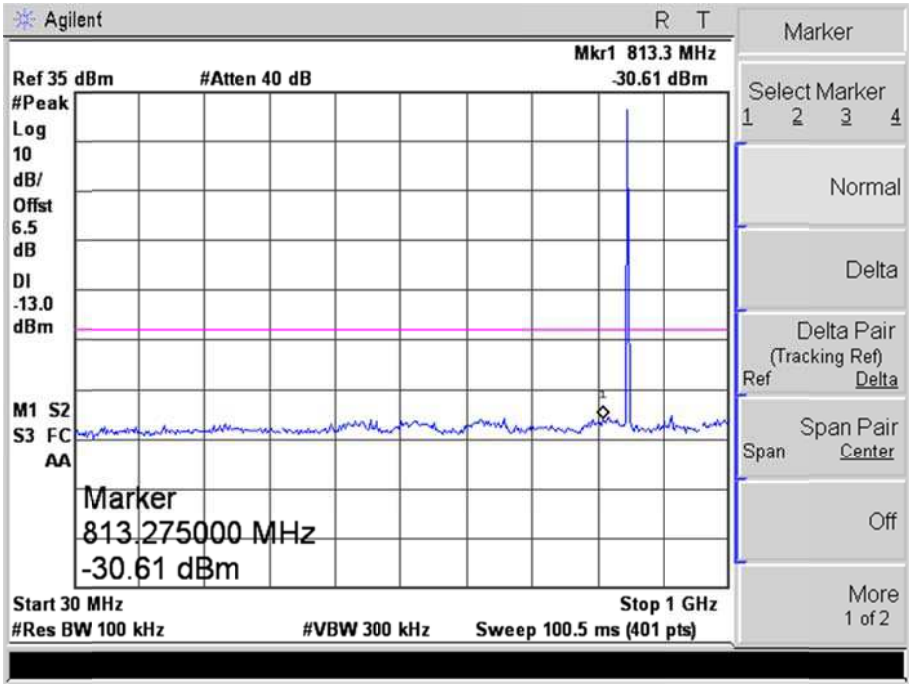


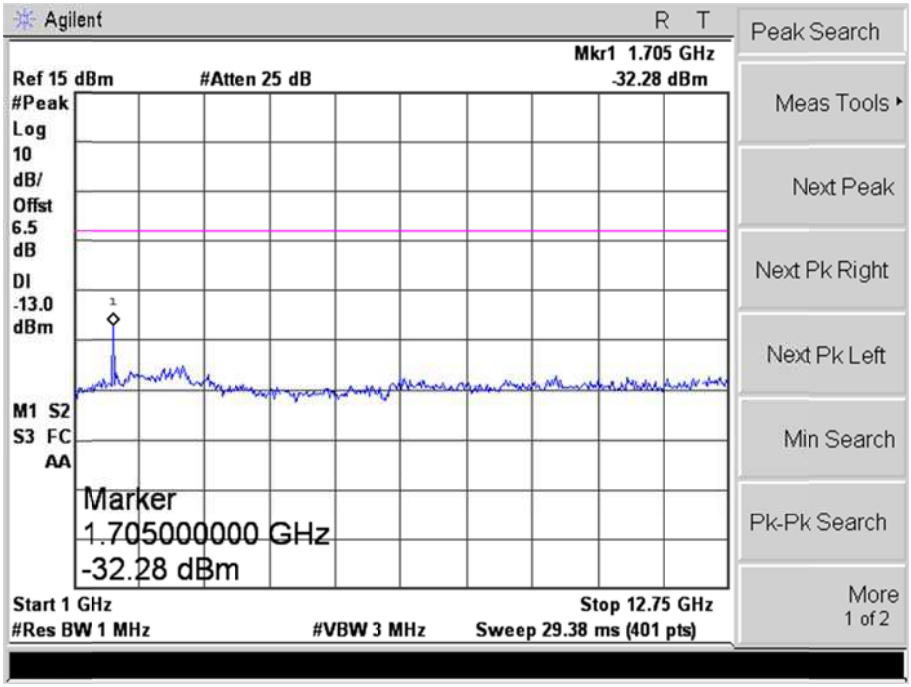
GPRS Middle Channel





GPRS High Channel

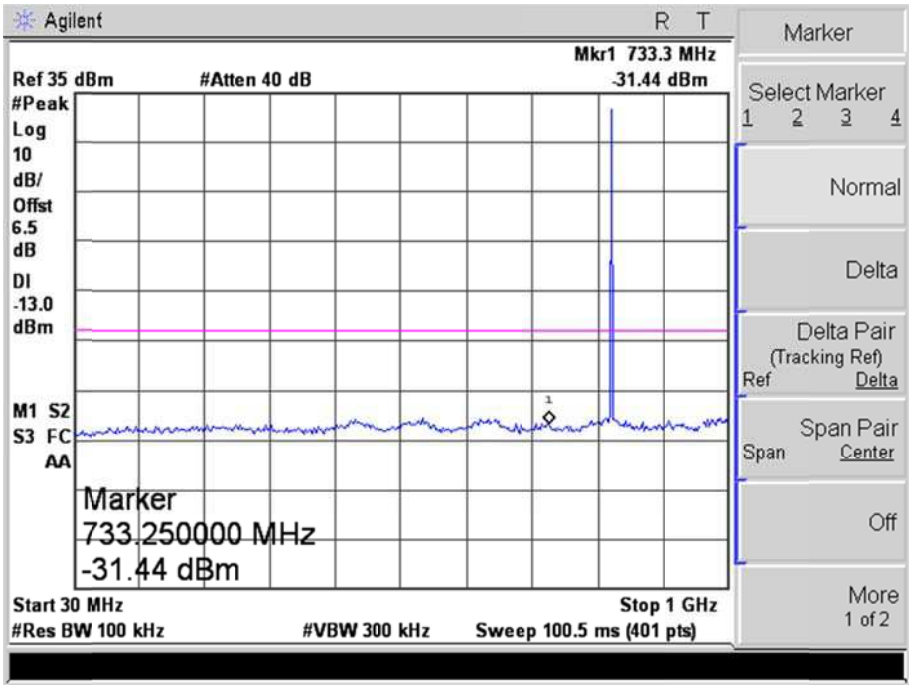


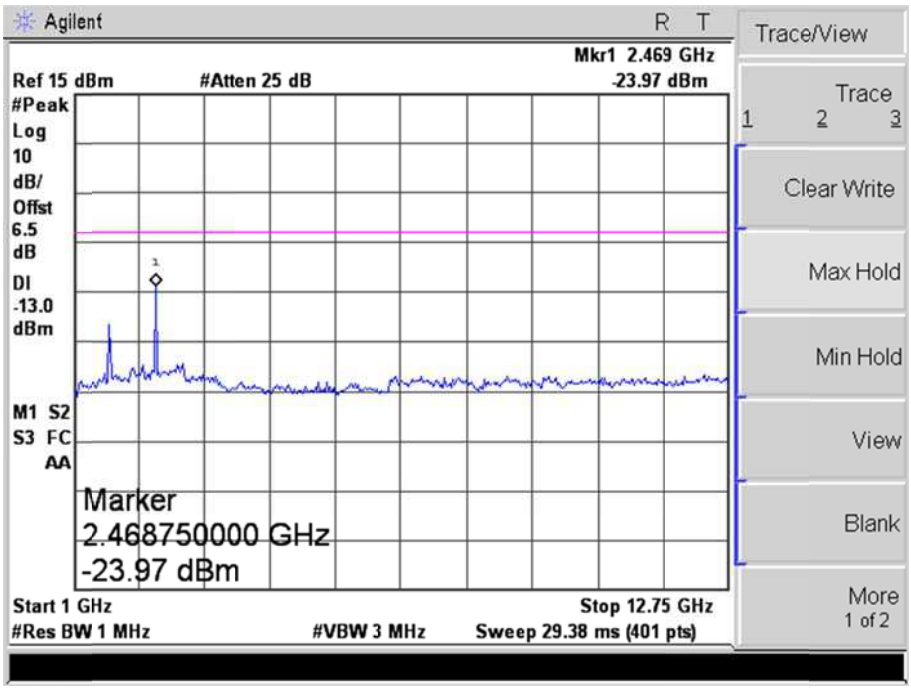


GPRS Low Band Emission

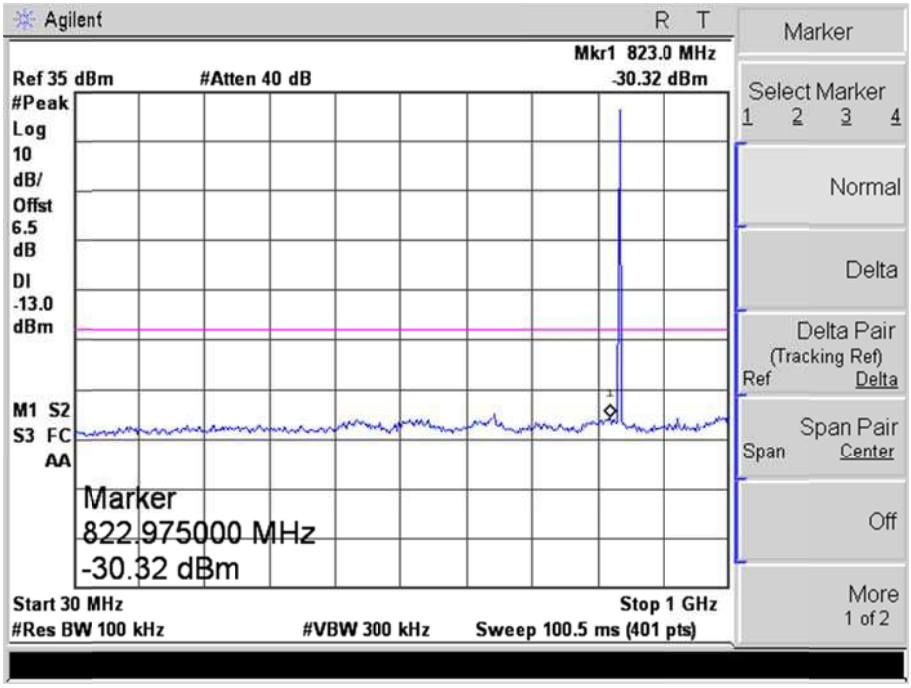
GPRS High Band Emission

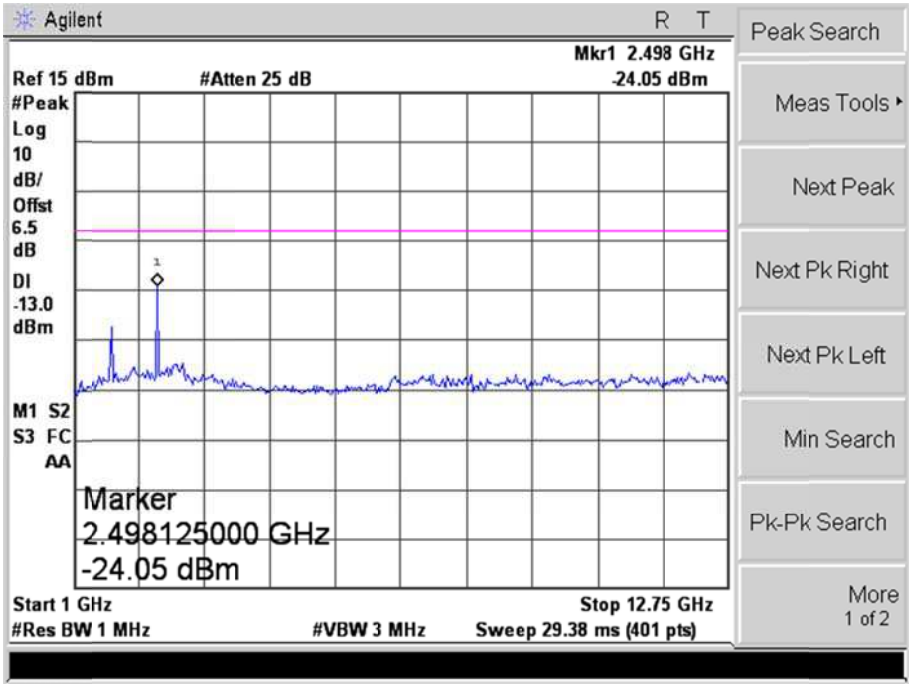
EDGE Low Channel



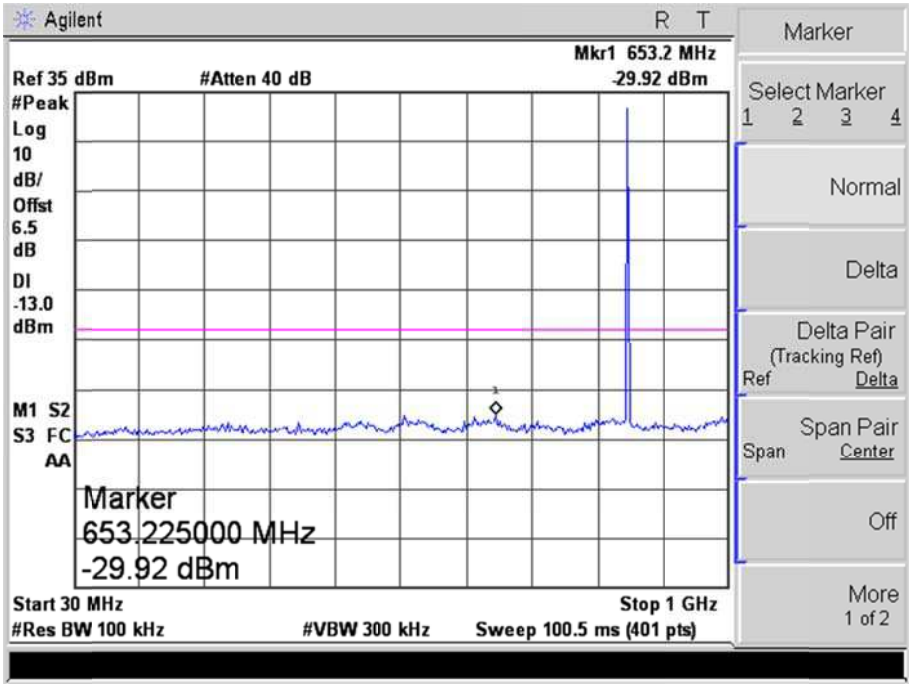


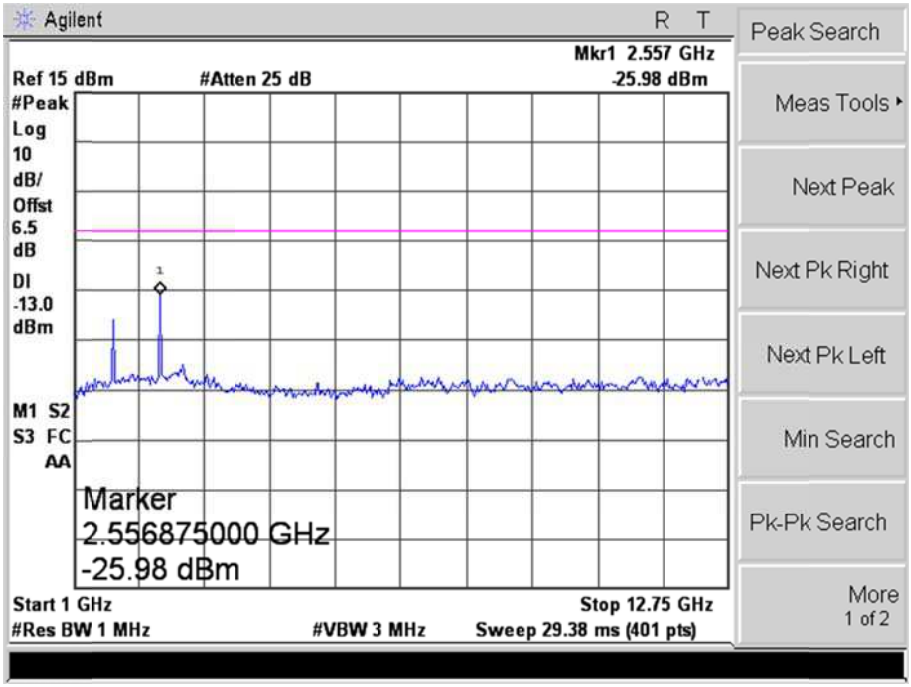
EDGE Middle Channel



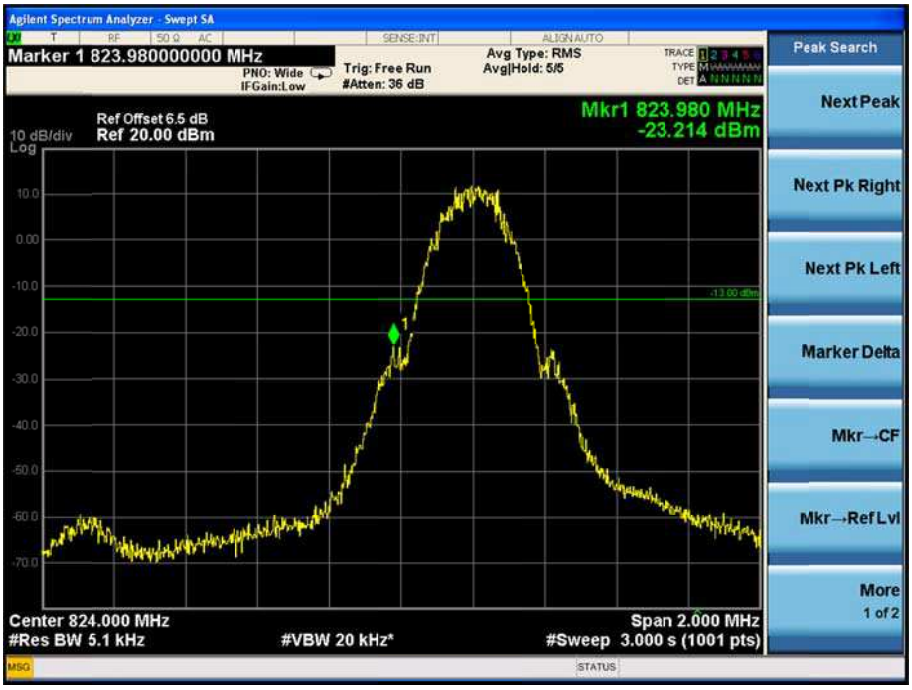


EDGE High Channel

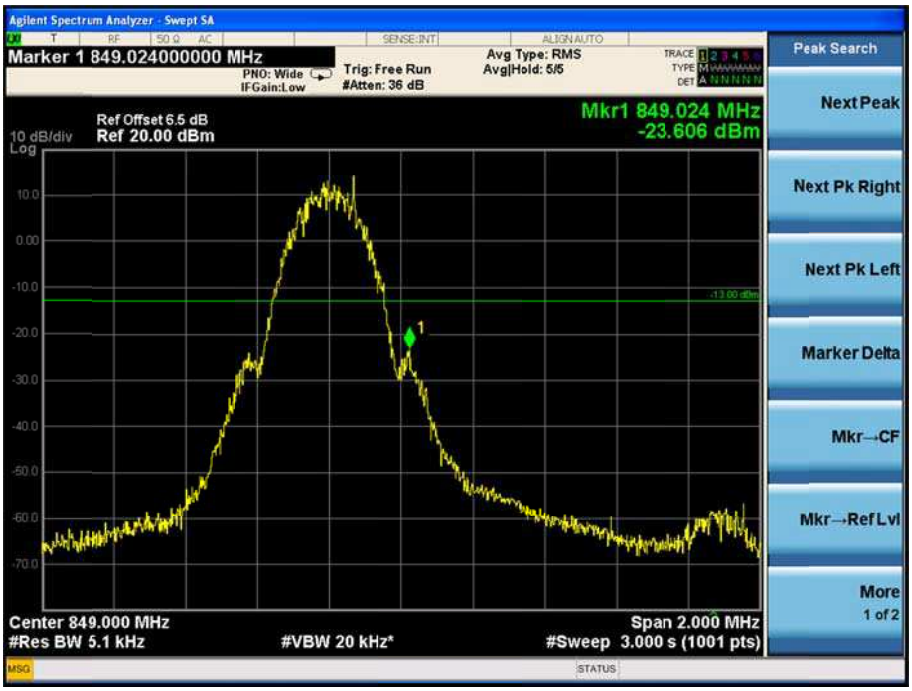




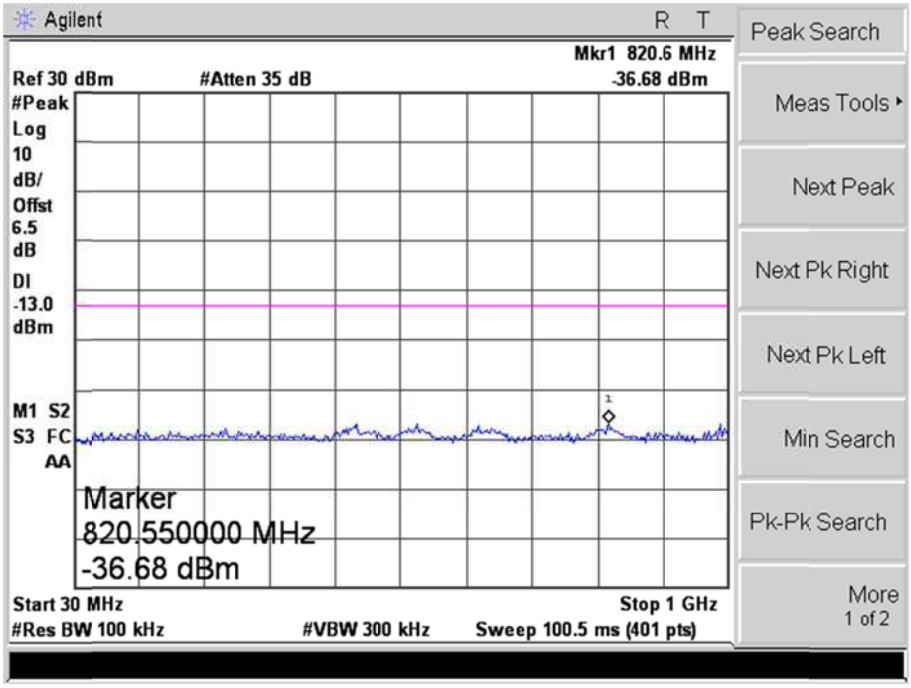
EDGE Low Band Emission

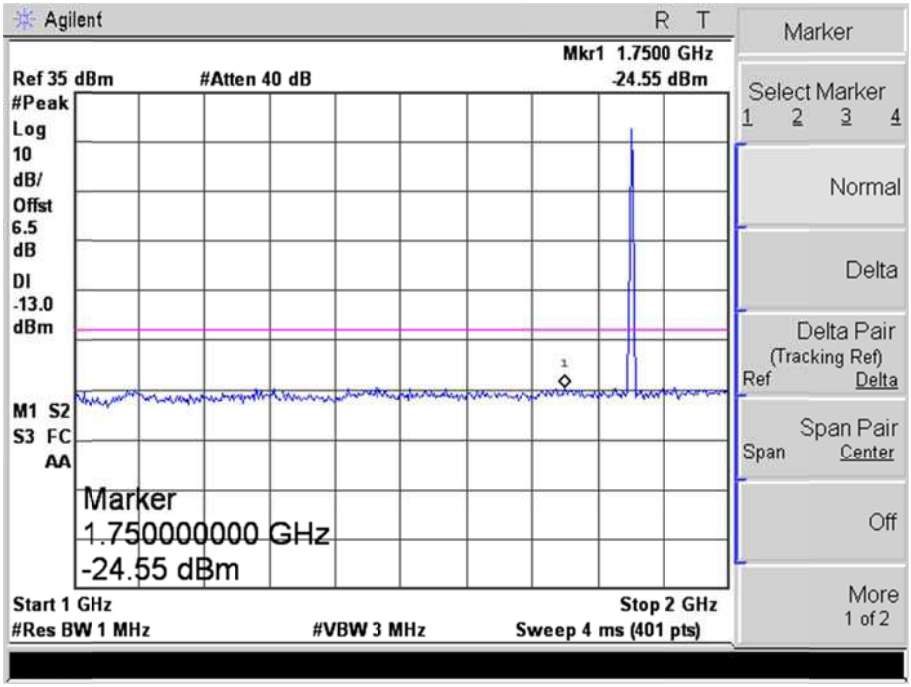


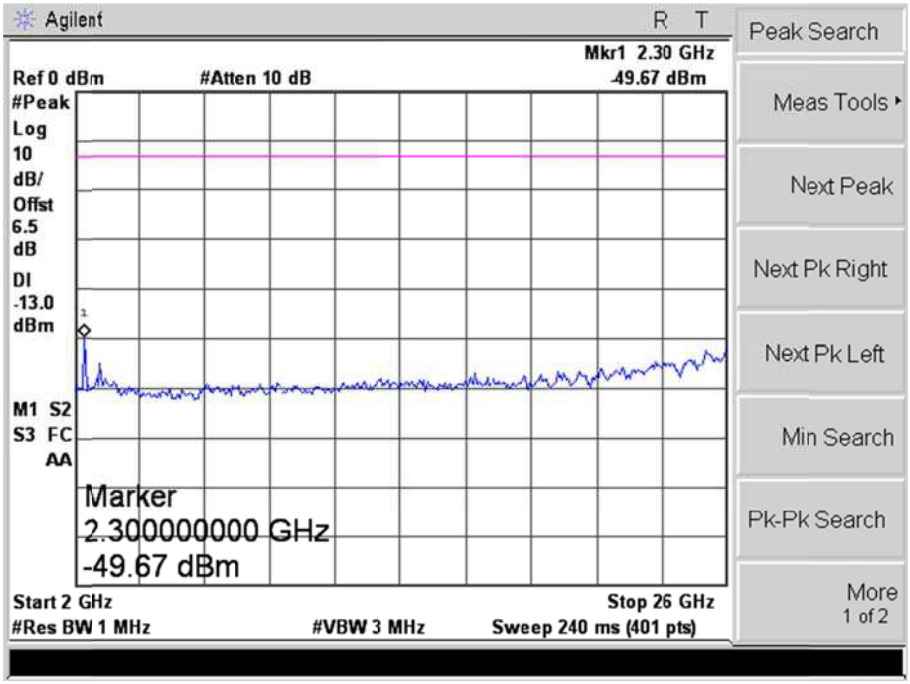
EDGE High Band Emission



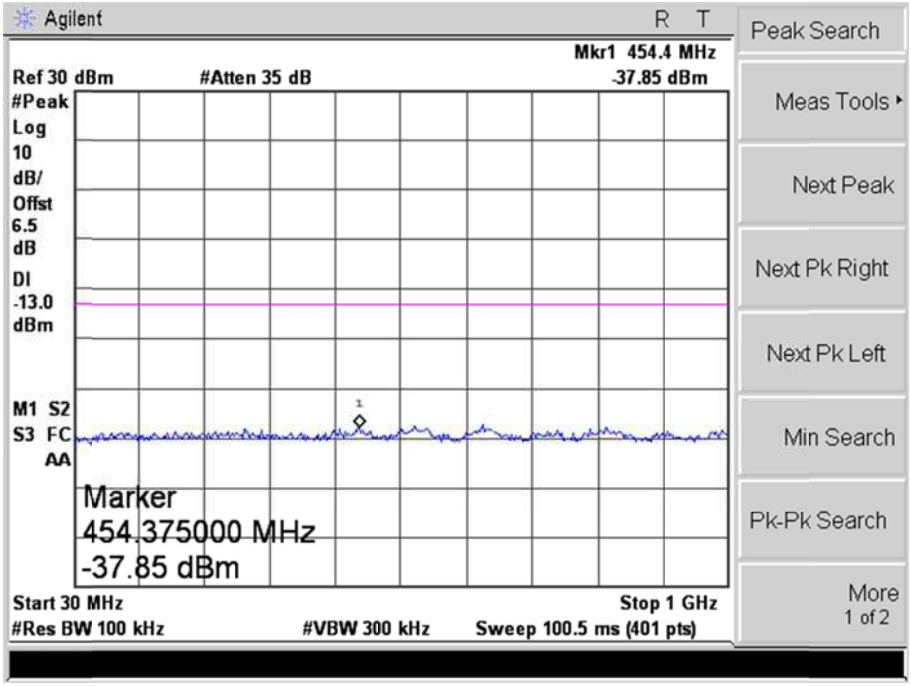
For PCS Band
GSM Low Channel

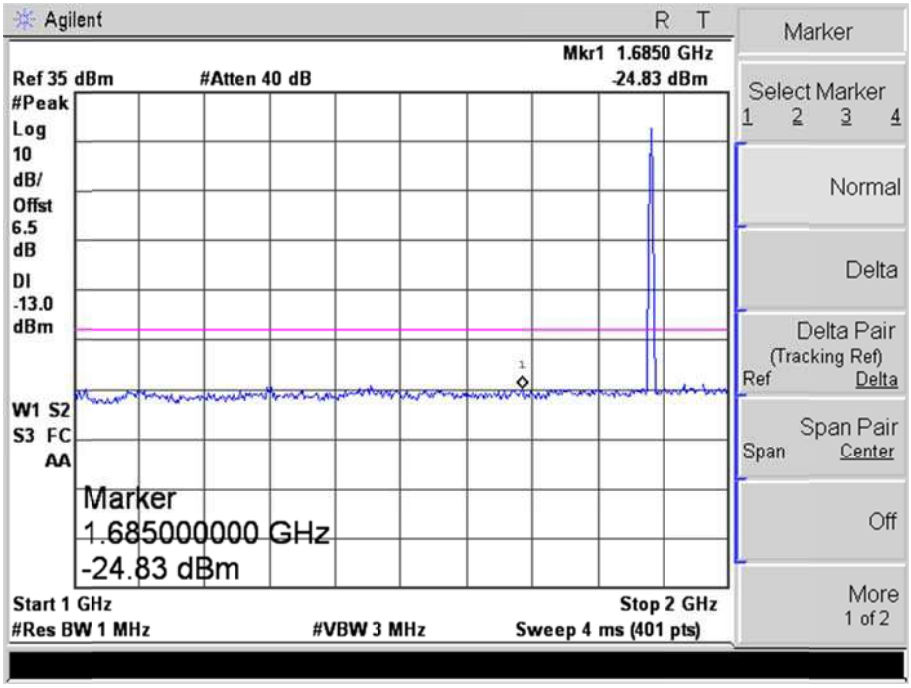


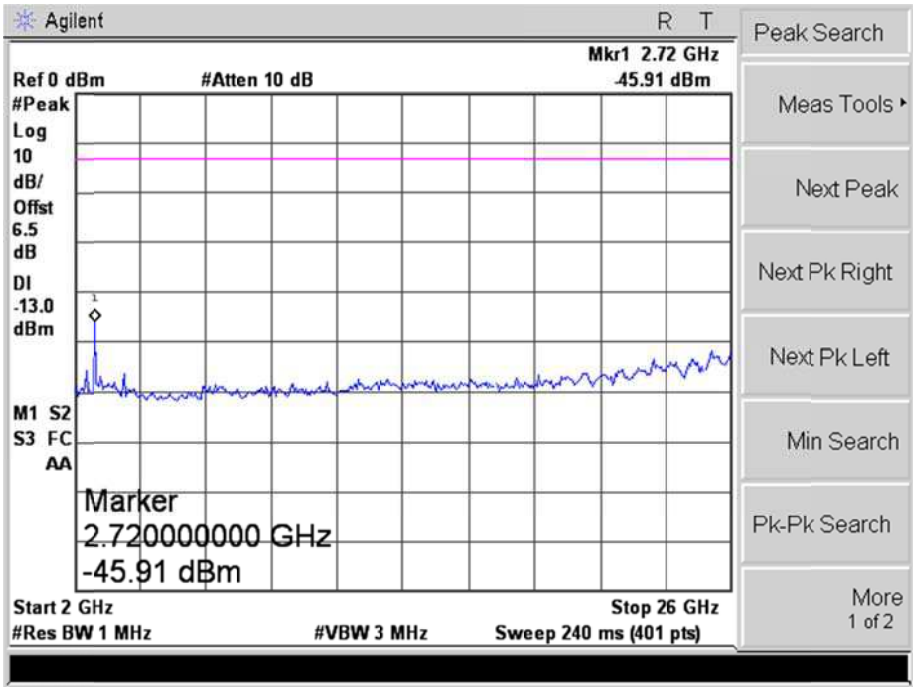




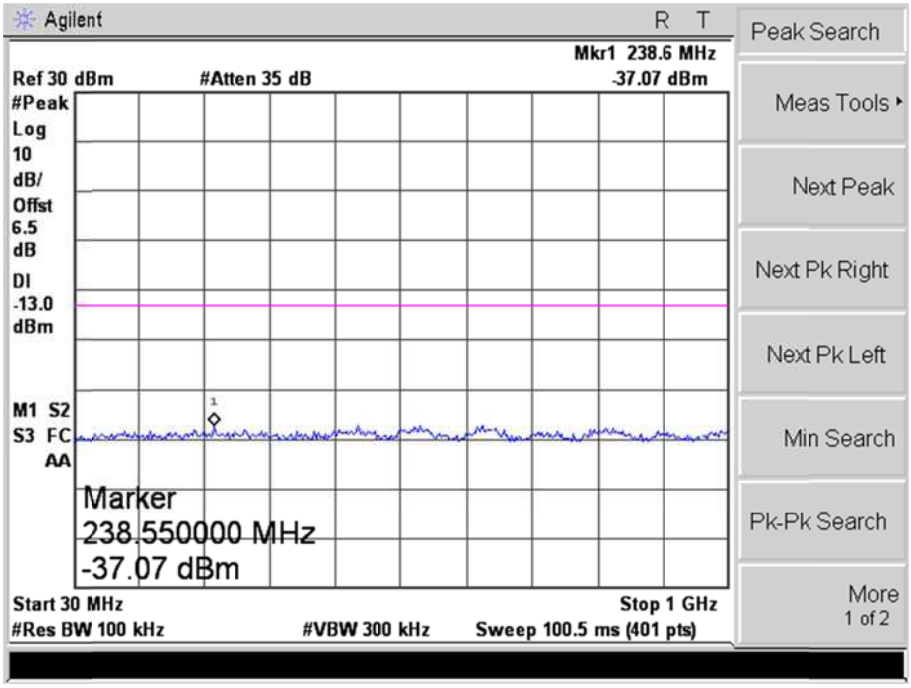
GSM Middle Channel

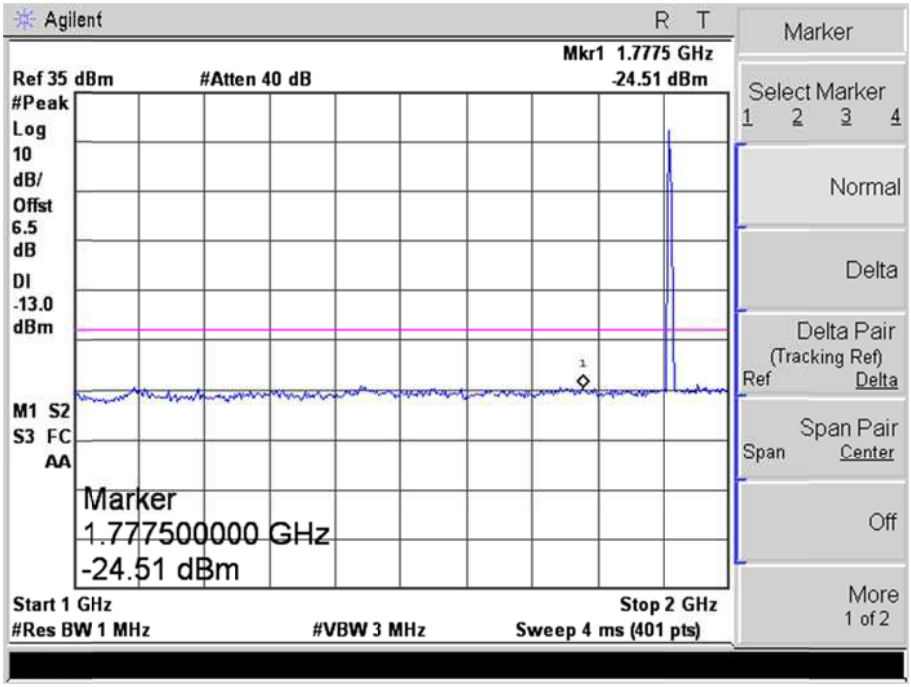


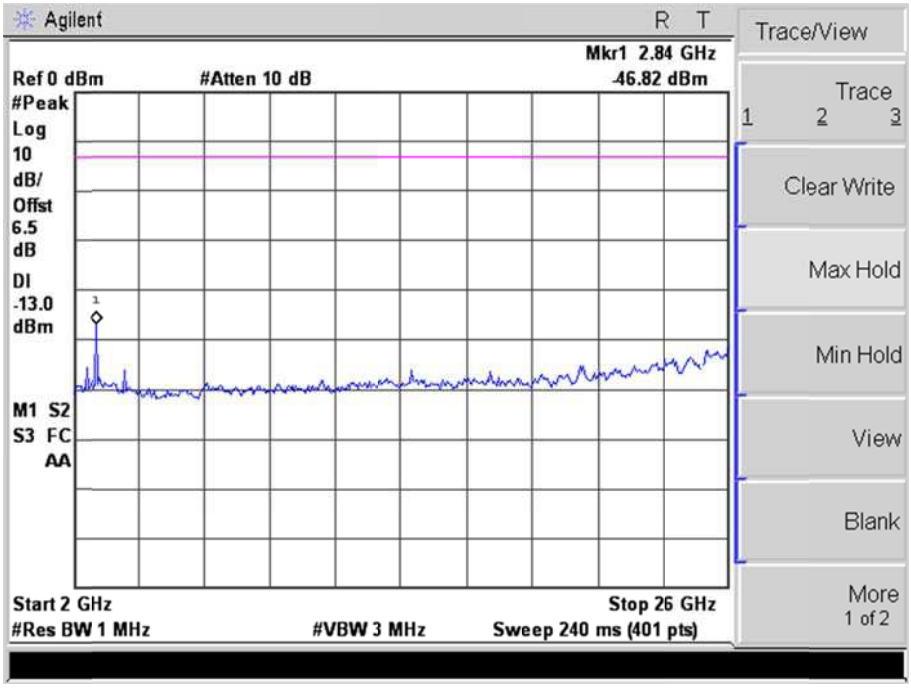

Agilent
R T
Mkr1 1.6850 GHz
Ref 35 dBm
#Atten 40 dB
-24.83 dBm
#Peak
Log
10
dB/
Offst
6.5
dB
Dl
-13.0
dBm
W1 S2
S3 FC
AA
Marker
1.685000000 GHz
-24.83 dBm
Start 1 GHz
Stop 2 GHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 4 ms (401 pts)
Marker
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref Delta
Span Pair
Span Center
Off
More
1 of 2


Agilent
R T
Mkr1 2.72 GHz
Ref 0 dBm
#Atten 10 dB
-45.91 dBm
#Peak
Log
10
dB/
Offst
6.5
dB
Dl
-13.0
dBm
M1 S2
S3 FC
AA
Marker
2.720000000 GHz
-45.91 dBm
Start 2 GHz
Stop 26 GHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 240 ms (401 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

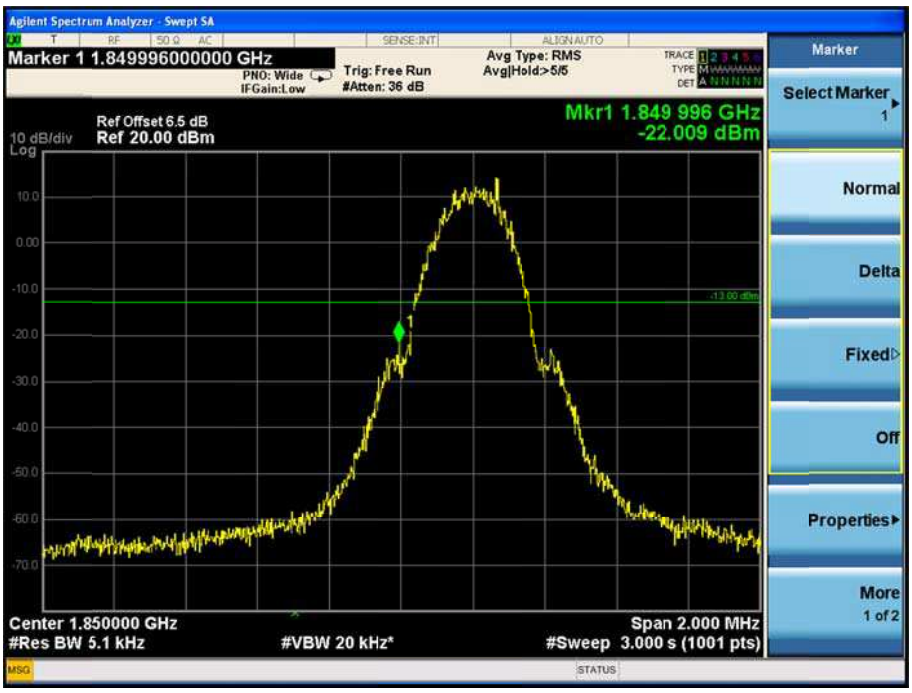
GSM High Channel



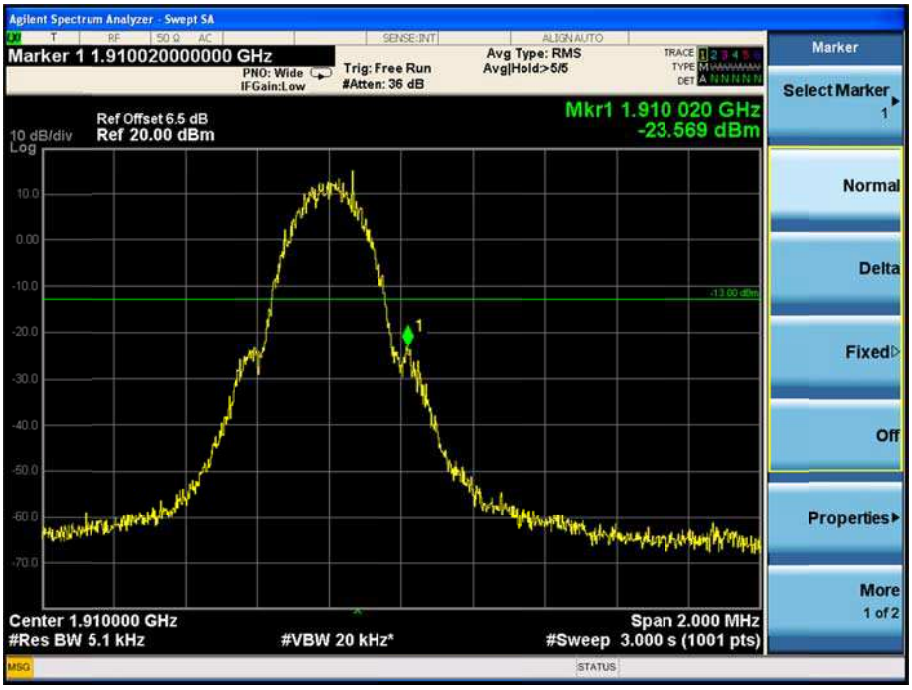




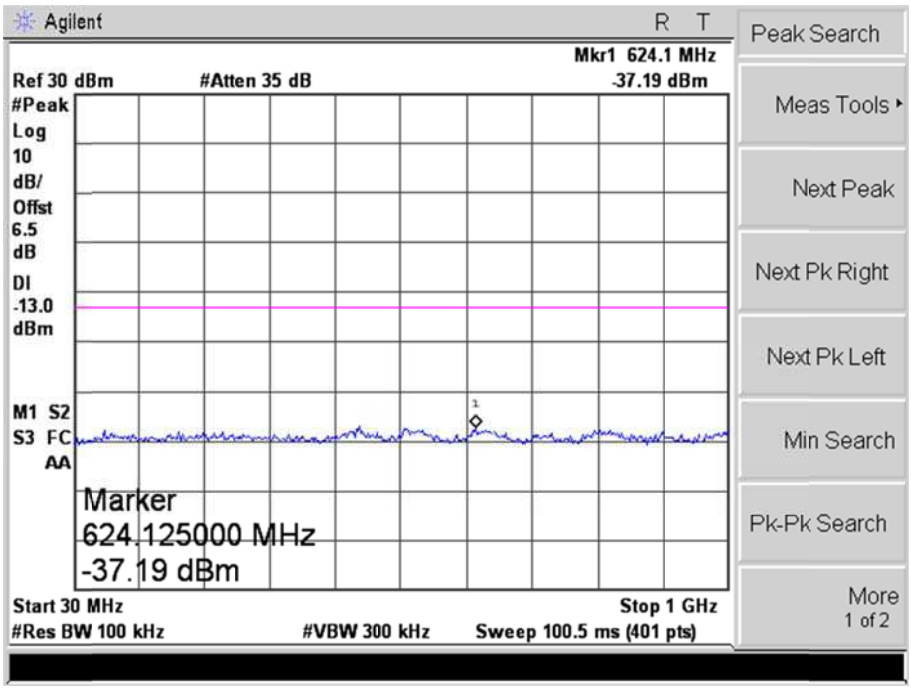
GSM Low Band Emission

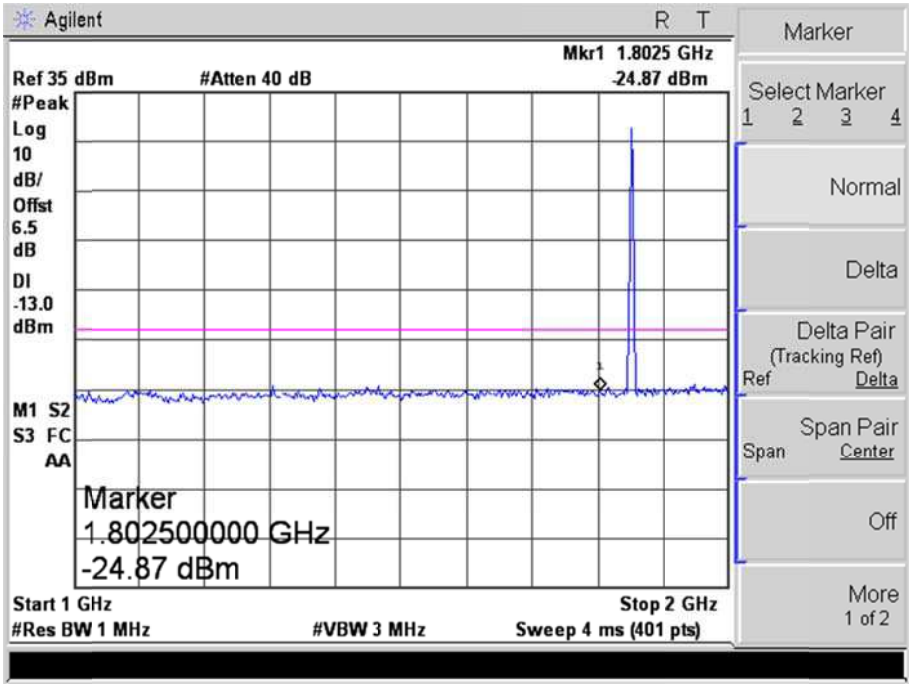


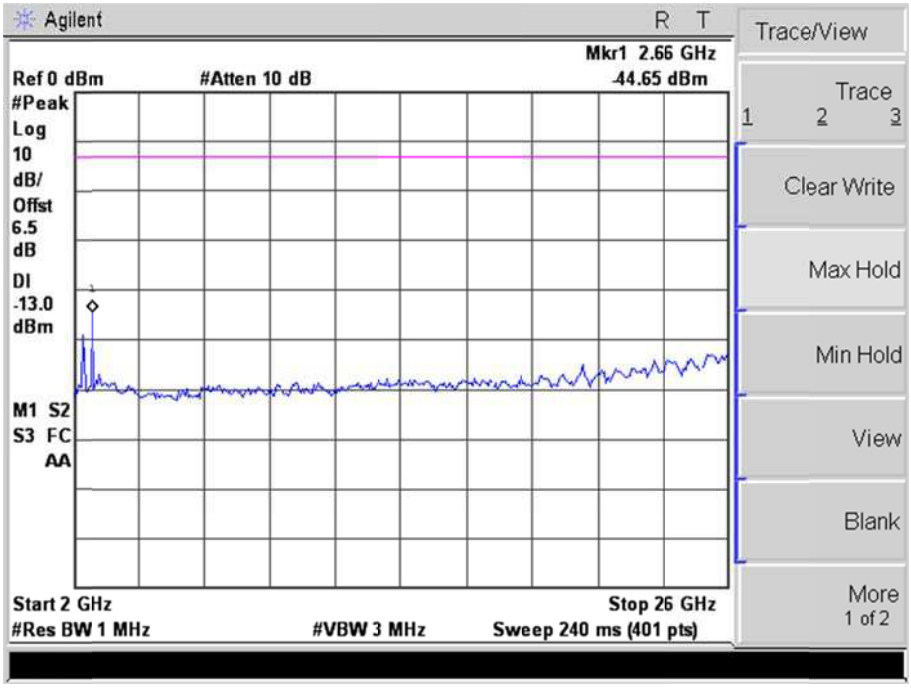
GSM High Band Emission



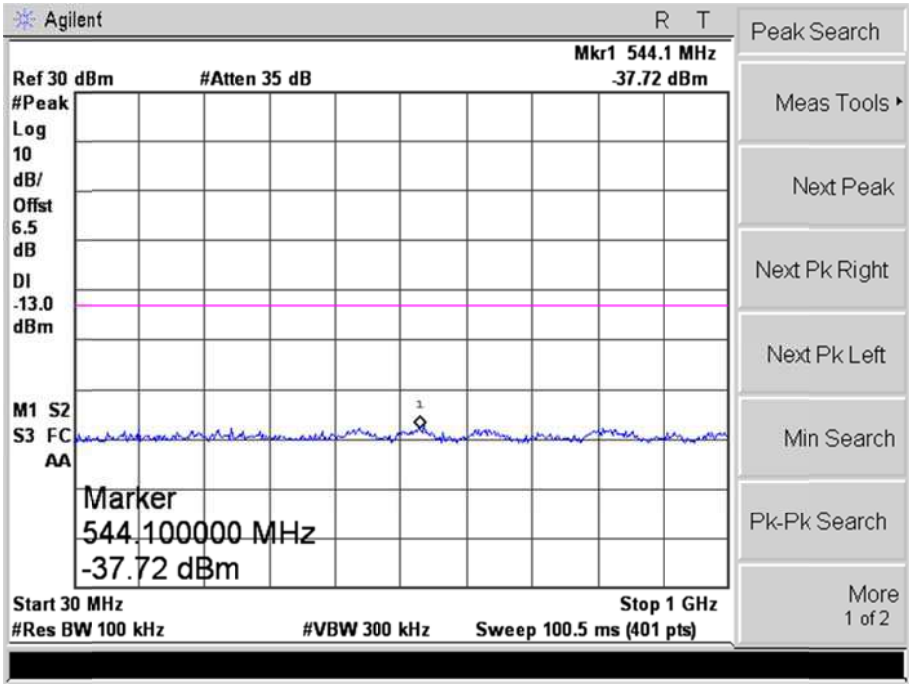
GPRS Low Channel

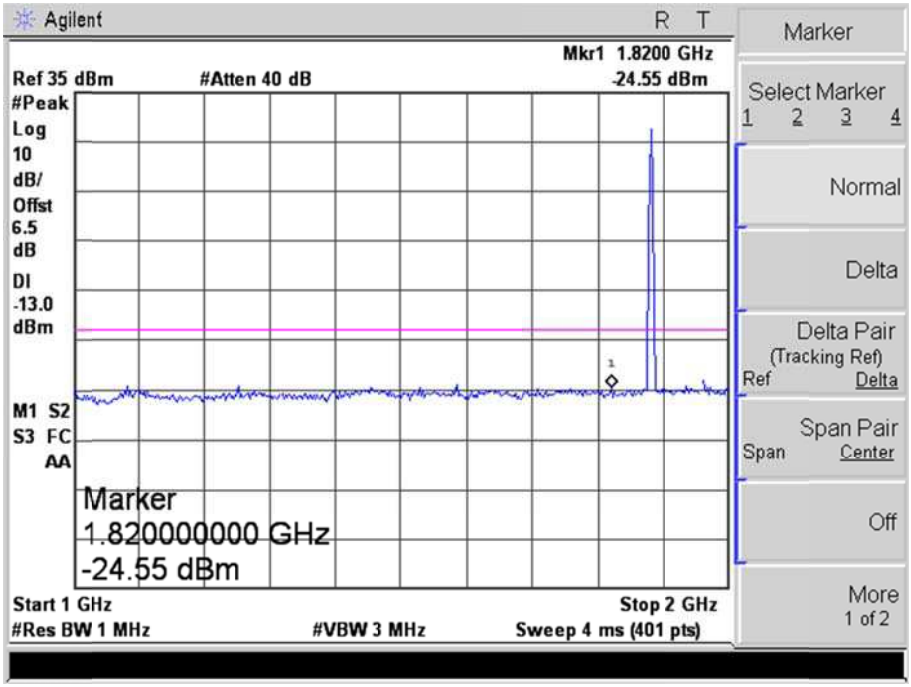


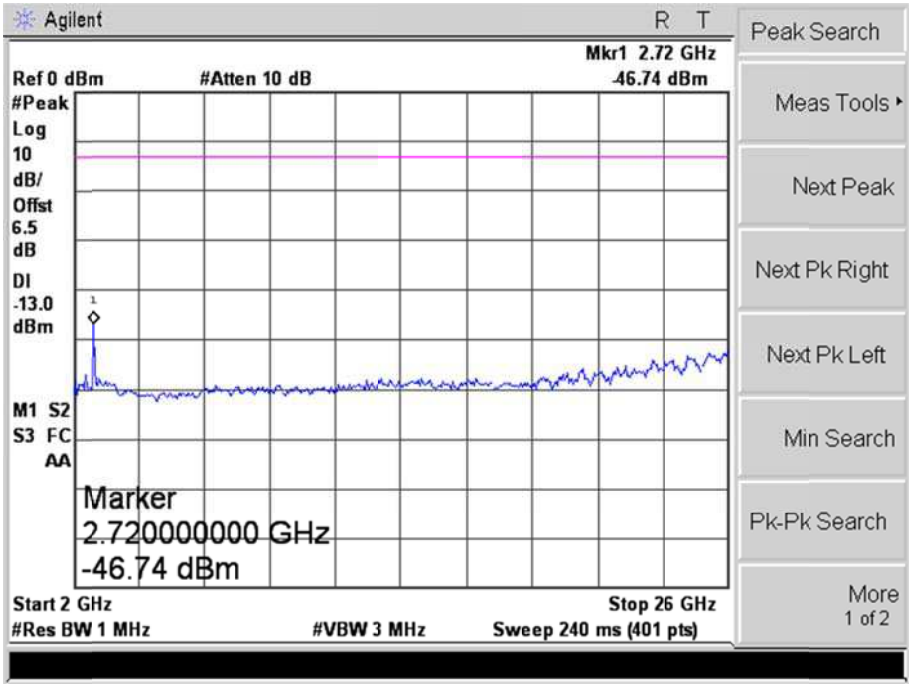

Agilent
R T
Mkr1 1.8025 GHz
Ref 35 dBm
#Atten 40 dB
-24.87 dBm
#Peak
Log
10
dB/
Offst
6.5
dB
Dl
-13.0
dBm
M1 S2
S3 FC
AA
Marker
1.802500000 GHz
-24.87 dBm
Start 1 GHz
Stop 2 GHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 4 ms (401 pts)
Marker
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref Delta
Span Pair
Span Center
Off
More
1 of 2


Agilent
R T
Mkr1 2.66 GHz
Ref 0 dBm
#Atten 10 dB
-44.65 dBm
#Peak
Log
10
dB/
Offst
6.5
dB
Dl
-13.0
dBm
M1 S2
S3 FC
AA
Start 2 GHz
Stop 26 GHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 240 ms (401 pts)
Trace/View
Trace
1 2 3
Clear Write
Max Hold
Min Hold
View
Blank
More
1 of 2

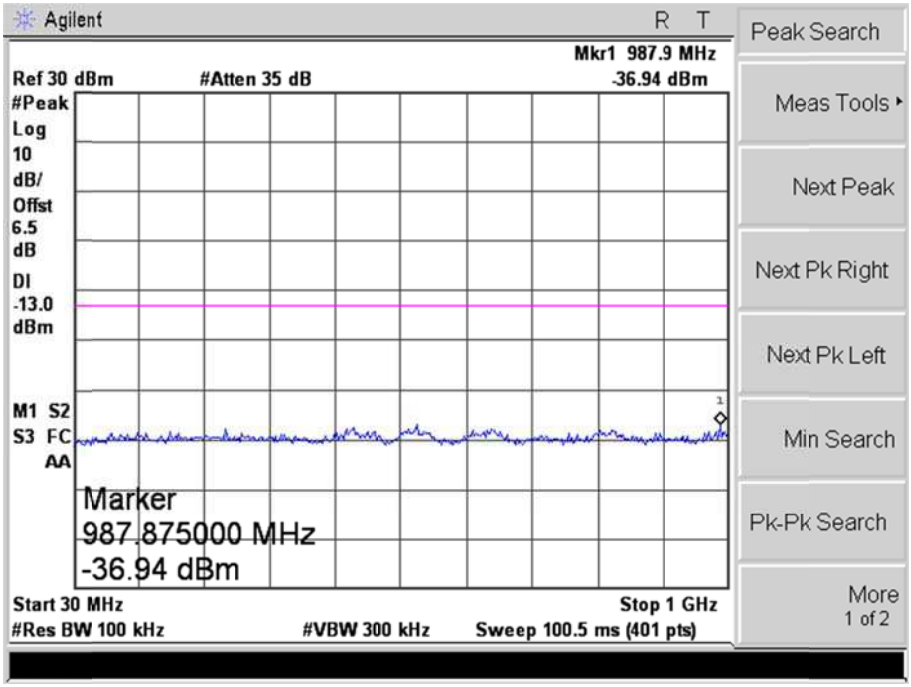
GPRS Middle Channel

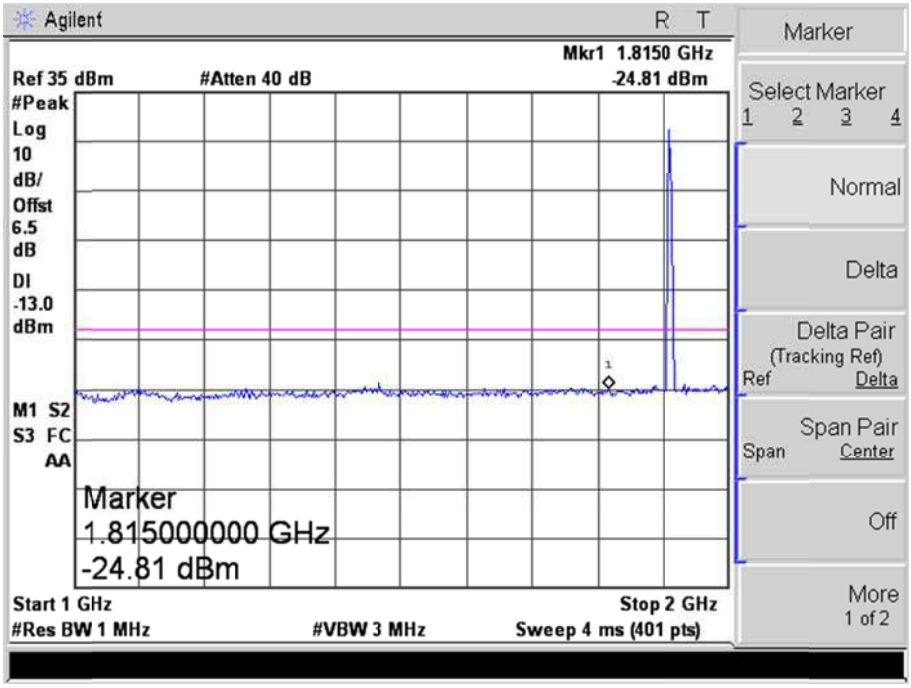


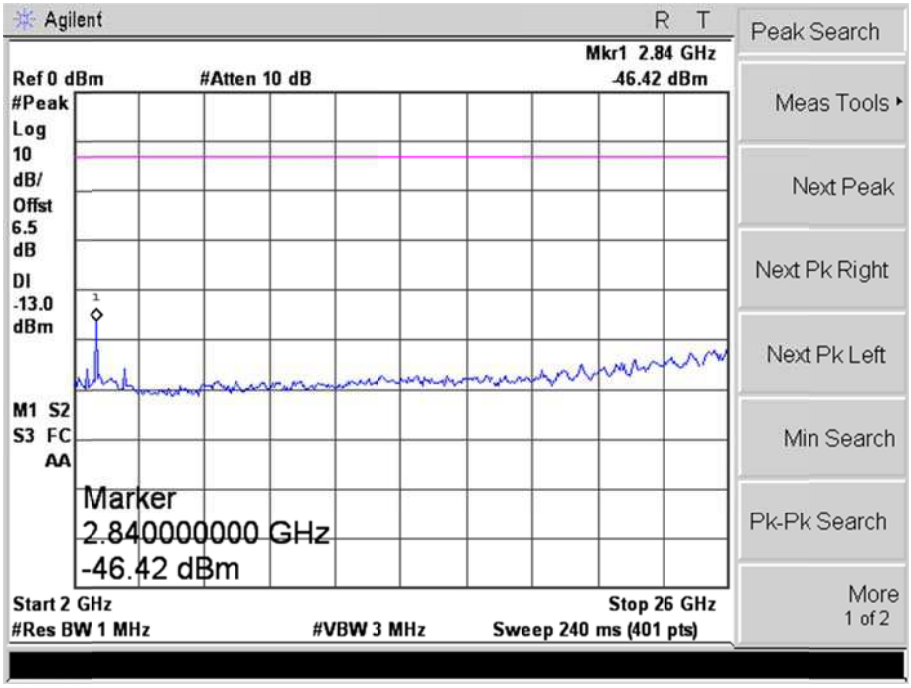




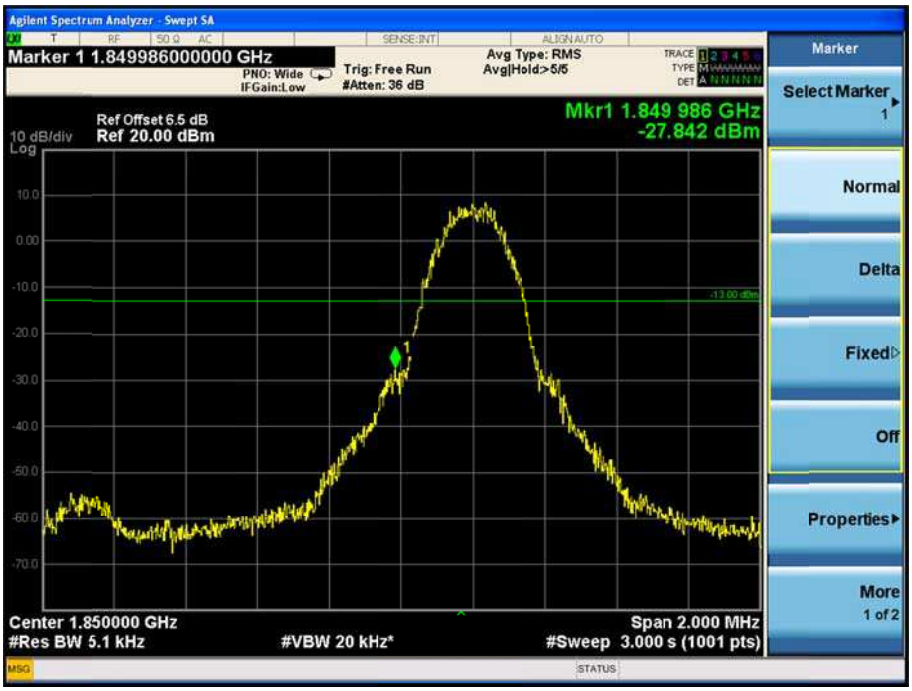
GPRS High Channel



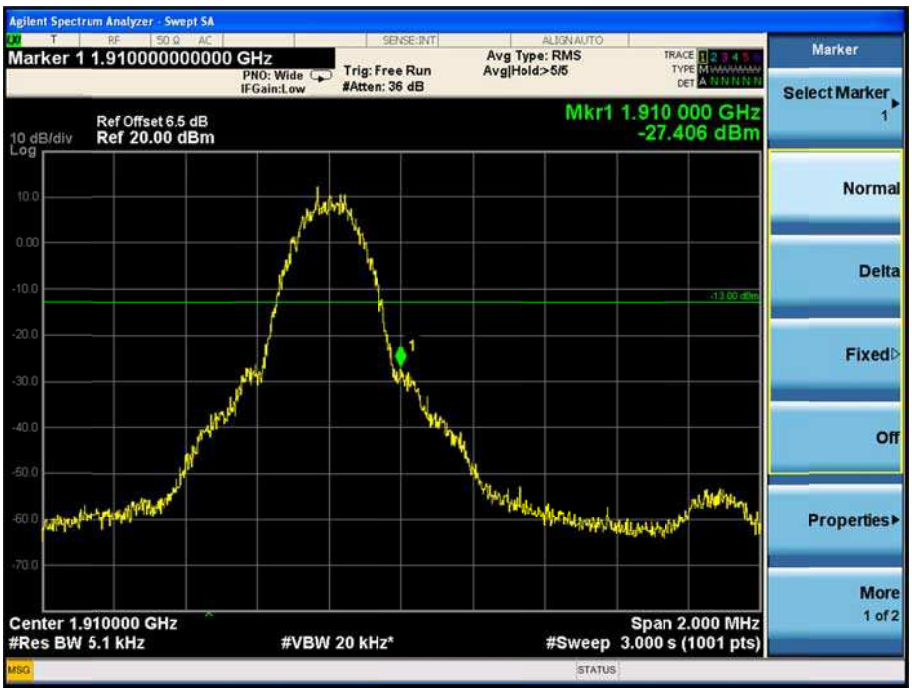

Agilent
R T
Mkr1 1.8150 GHz
Ref 35 dBm
#Atten 40 dB
-24.81 dBm
#Peak
Log
10
dB/
Offst
6.5
dB
Dl
-13.0
dBm
M1 S2
S3 FC
AA
Marker
1.815000000 GHz
-24.81 dBm
Start 1 GHz
Stop 2 GHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 4 ms (401 pts)
Marker
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref Delta
Span Pair
Span Center
Off
More
1 of 2


Agilent
R T
Mkr1 2.84 GHz
Ref 0 dBm
#Atten 10 dB
-46.42 dBm
#Peak
Log
10
dB/
Offst
6.5
dB
Dl
-13.0
dBm
M1 S2
S3 FC
AA
Marker
2.840000000 GHz
-46.42 dBm
Start 2 GHz
Stop 26 GHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 240 ms (401 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

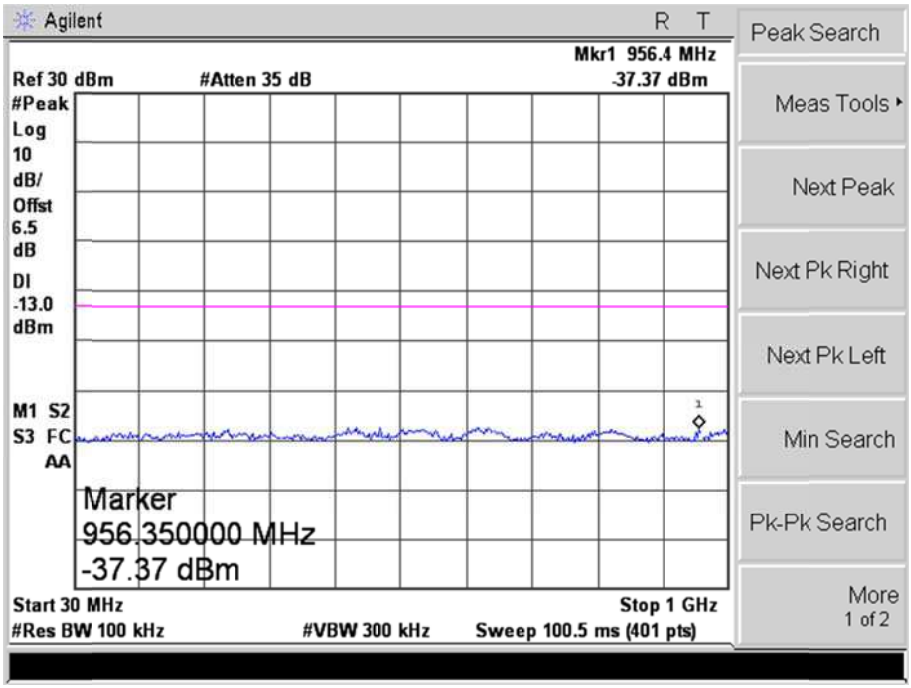
GPRS Low Band Emission

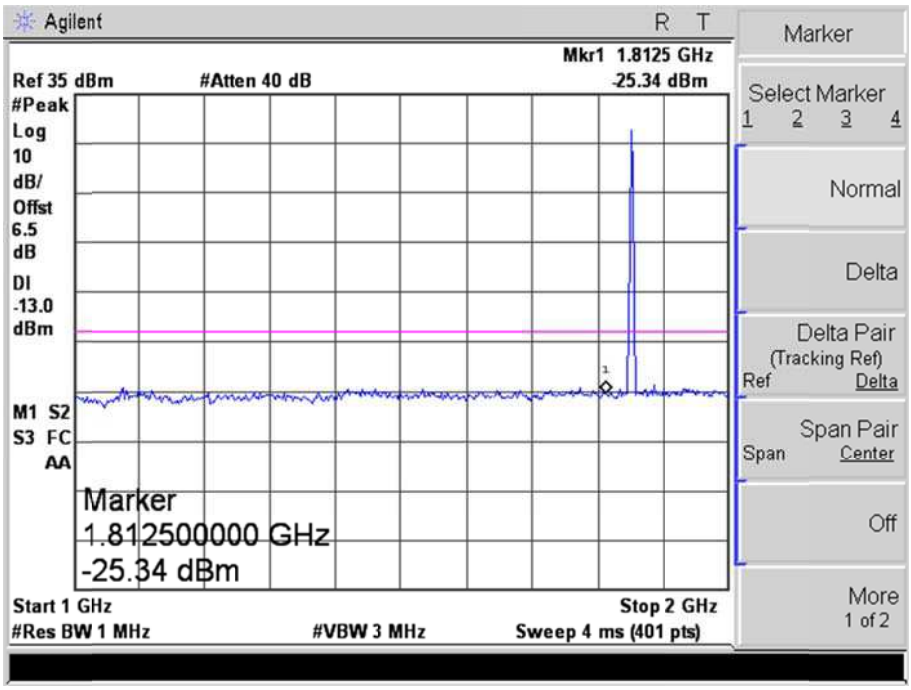


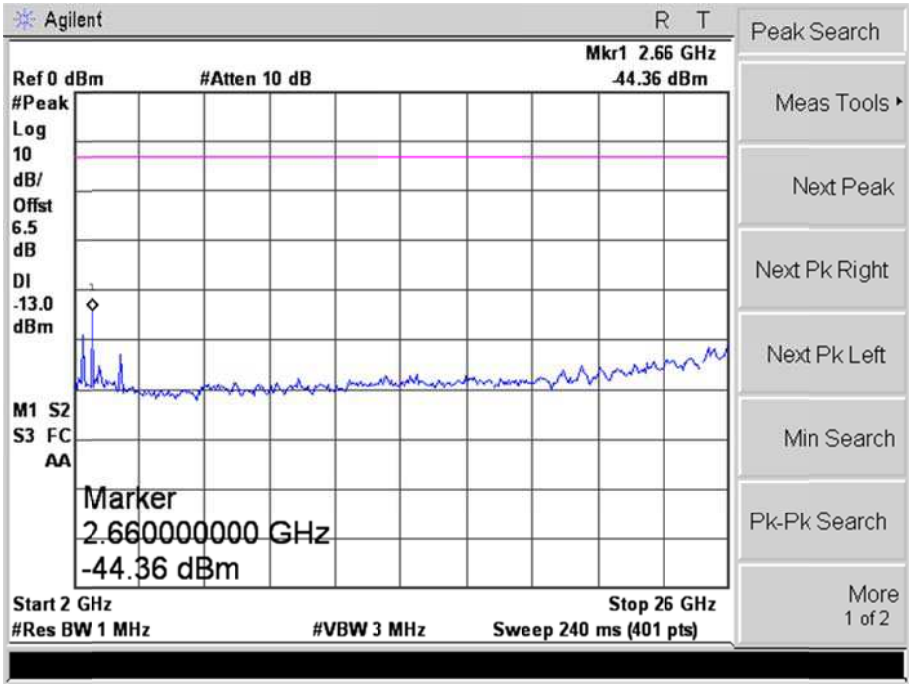
GPRS High Band Emission



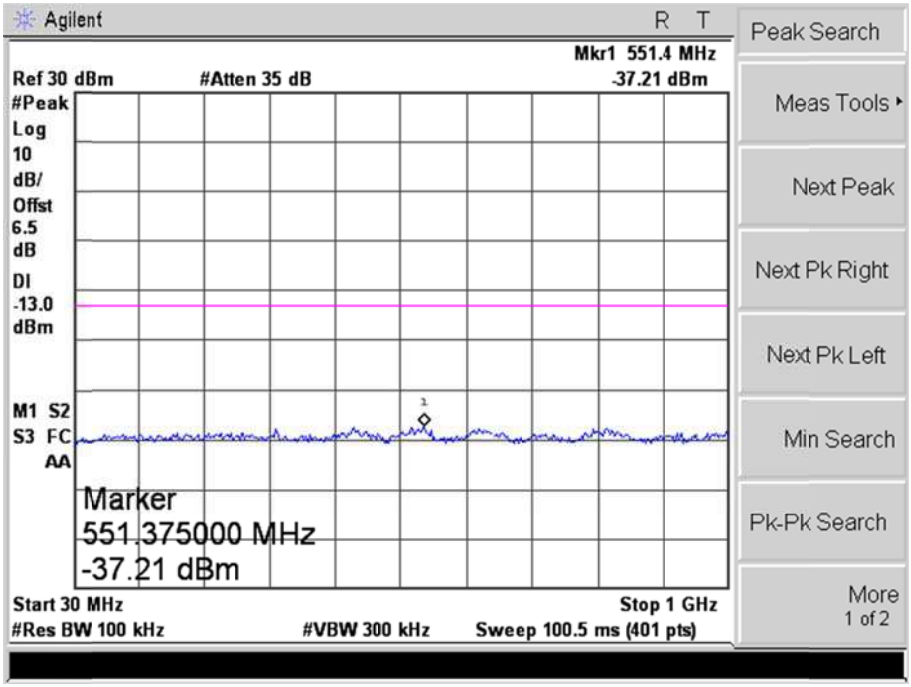
EDGE Low Channel

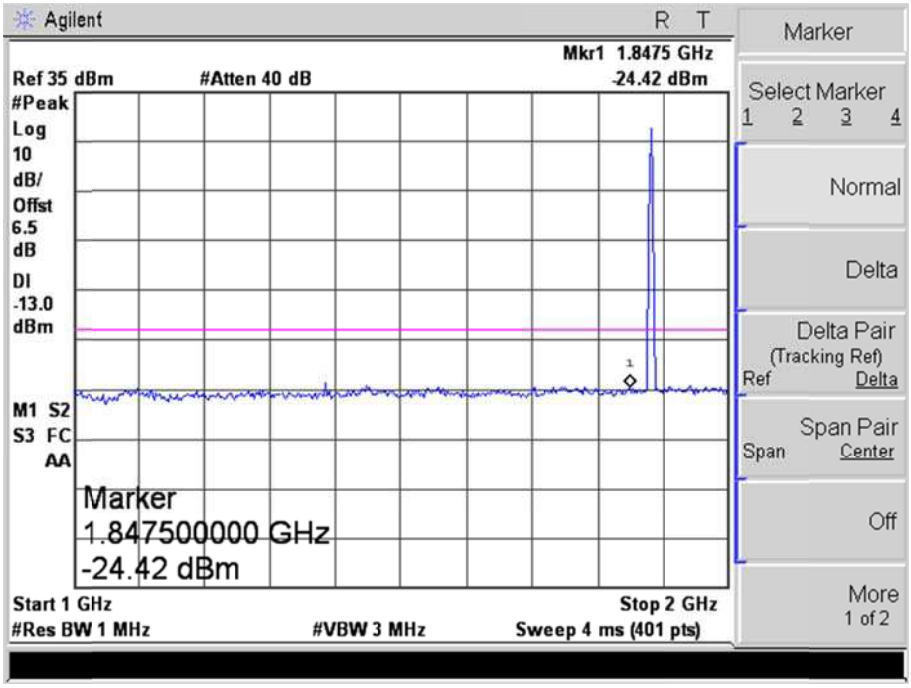


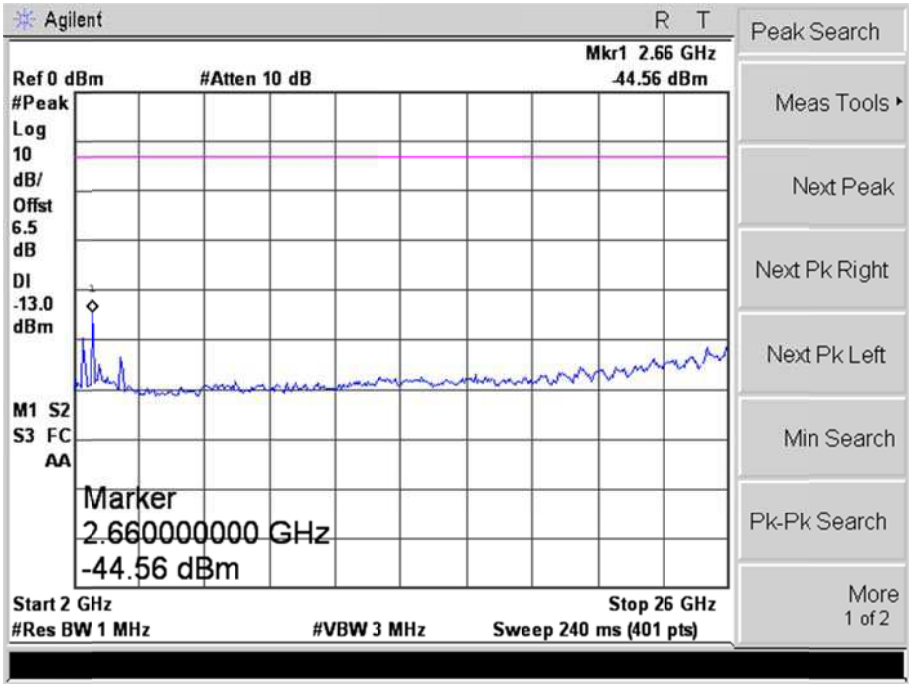




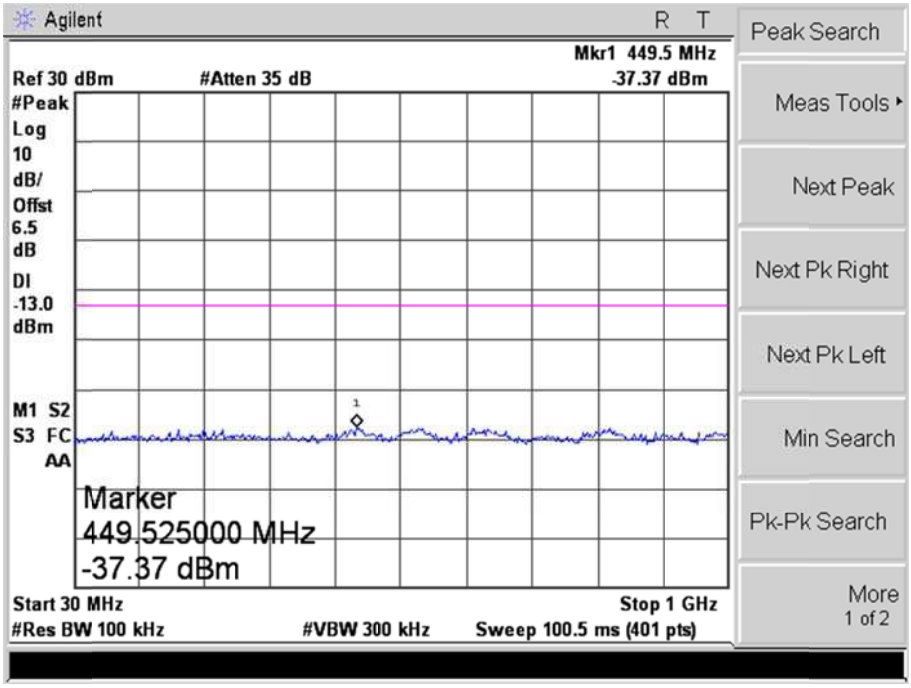
EDGE Middle Channel

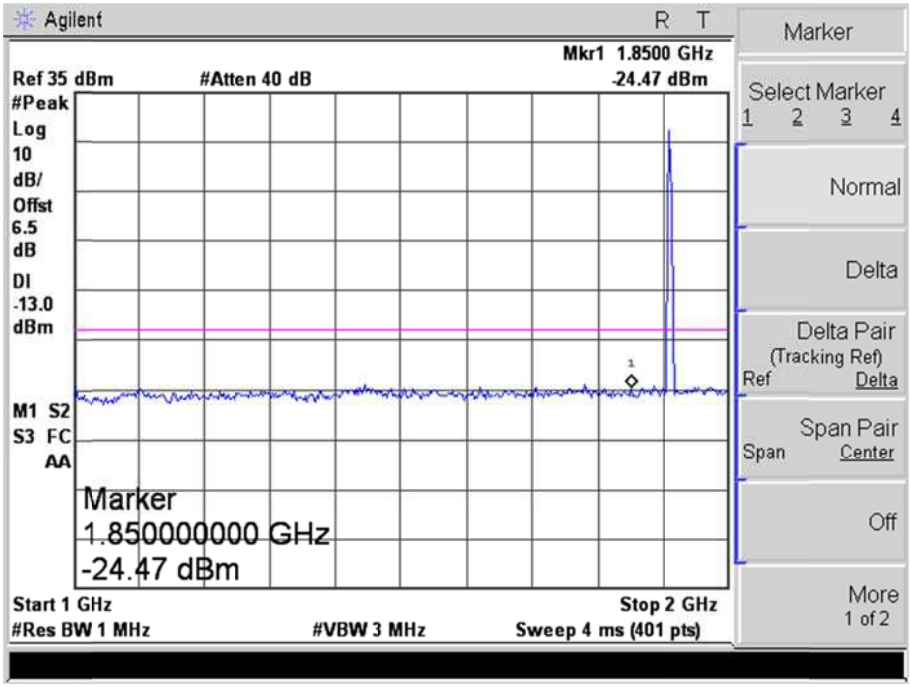


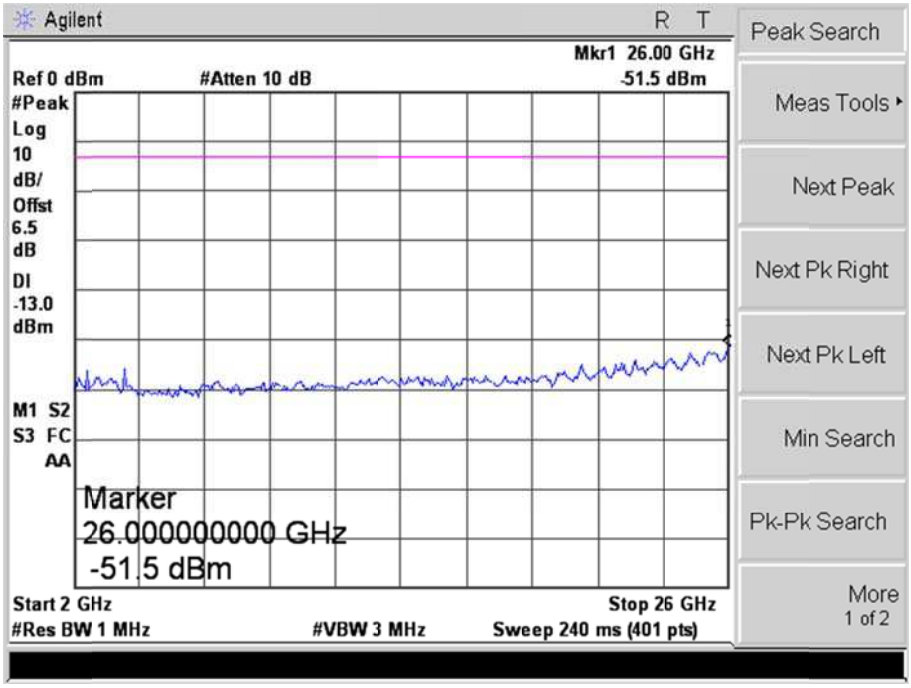

Agilent
R T
Mkr1 1.8475 GHz
Ref 35 dBm
#Atten 40 dB
-24.42 dBm
#Peak
Log
10
dB/
Offst
6.5
dB
Dl
-13.0
dBm
M1 S2
S3 FC
AA
Marker
1.847500000 GHz
-24.42 dBm
Start 1 GHz
Stop 2 GHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 4 ms (401 pts)
Marker
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref Delta
Span Pair
Span Center
Off
More
1 of 2


Agilent
R T
Mkr1 2.66 GHz
Ref 0 dBm
#Atten 10 dB
-44.56 dBm
#Peak
Log
10
dB/
Offst
6.5
dB
Dl
-13.0
dBm
M1 S2
S3 FC
AA
Marker
2.660000000 GHz
-44.56 dBm
Start 2 GHz
Stop 26 GHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 240 ms (401 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

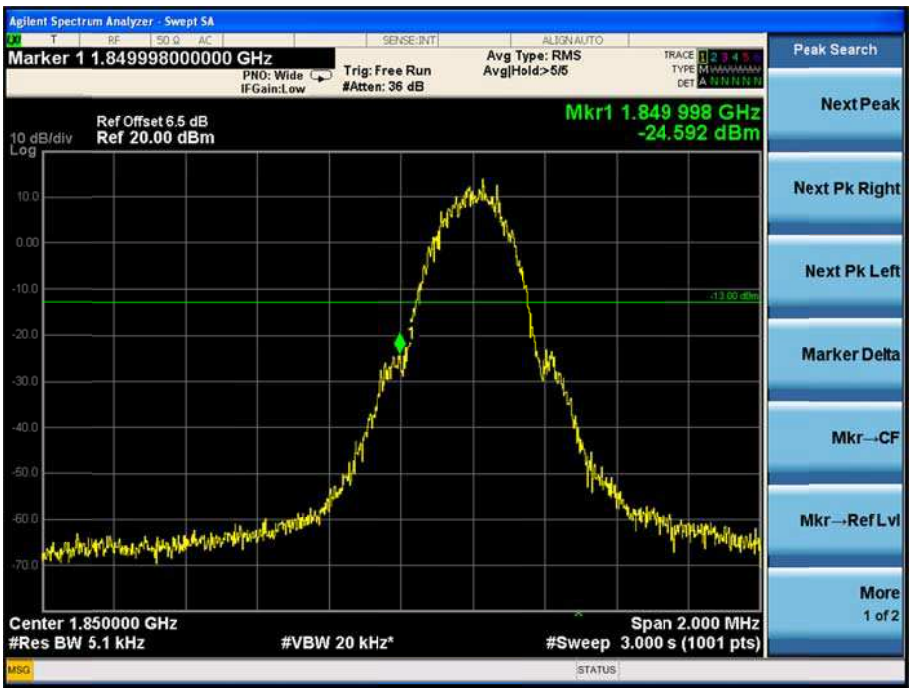
EDGE High Channel



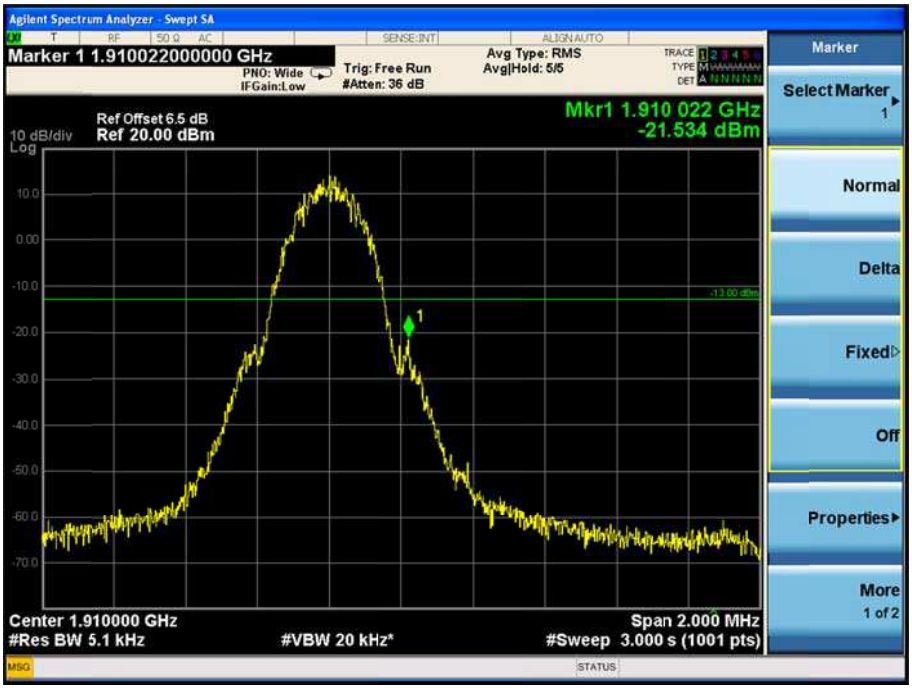


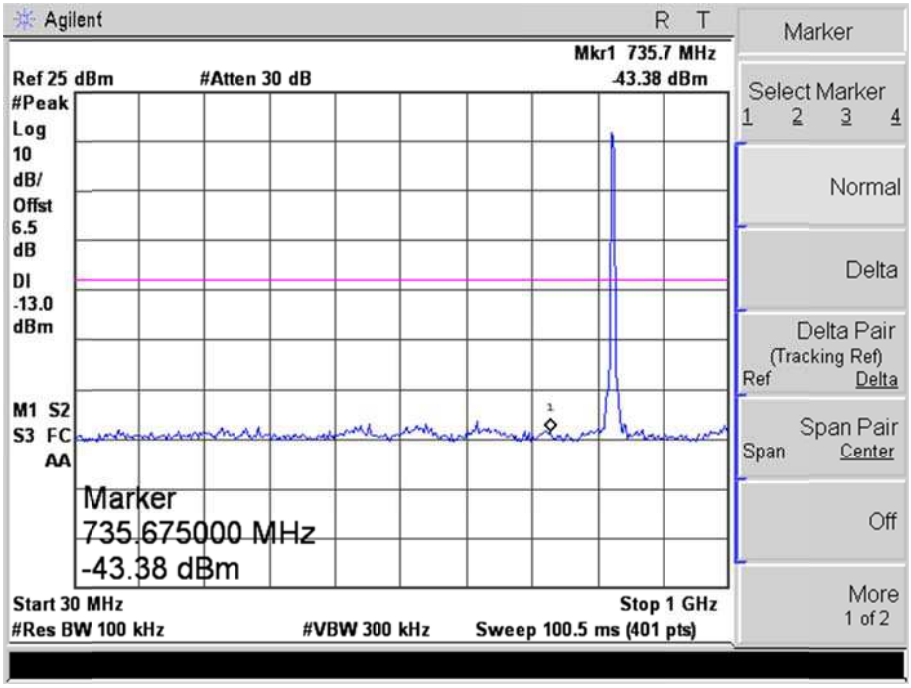


EDGE Low Band Emission



EDGE High Band Emission



For Band V

WCDMA Low Channel