

# TEST REPORT

Reference No..... : WTX20X09068188W-1  
FCC ID ..... : 2AI3KCM17XA  
Applicant ..... : Cyrus Technology GmbH  
Address ..... : Hergelsbendenstrasse 49, D-52080 Aachen, Germany  
Product Name ..... : Rugged Phone  
Test Model. .... : CM17XA  
Standards ..... : FCC Part 22H, FCC Part 24E, FCC Part 27  
Date of Receipt sample .... : Sep.18, 2020  
Date of Test..... : Sep.18, 2020 to Oct.23, 2020  
Date of Issue ..... : Oct.23, 2020  
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.

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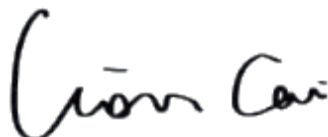
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**Report version**

Version No.	Date of issue	Description
Rev.00	Oct.23, 2020	Original
/	/	/

## 1. GENERAL INFORMATION

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

#### Client Information

Applicant: Cyrus Technology GmbH  
 Address of applicant: Hergelsbendenstrasse 49, D-52080 Aachen, Germany

Manufacturer: Cyrus Technology GmbH  
 Address of manufacturer: Hergelsbendenstrasse 49, D-52080 Aachen, Germany

General Description of EUT:	
Product Name:	Rugged Phone
Trade Name:	CYRUS
Model No.:	CM17XA
Adding Model(s):	/
Rated Voltage:	DC3.8V
Battery:	/
Adapter Model:	MKC-0502000SU INPUT: AC100-240V, 50/60Hz, 0.4A; Output: DC 5V, 2000mA
Software Version:	CM17XA_ROW_1_1.0
Hardware Version:	L925_MB_V1.1
<i>Note: The test data is gathered from a production sample provided by the manufacturer.</i>	

<b>Technical Characteristics of EUT:</b>	
<b>2G</b>	
Support Networks:	GSM, GPRS, EDGE
Support Band:	GSM850/PCS1900
Uplink Frequency:	GSM/GPRS/EDGE 850: 824~849MHz GSM/GPRS/EDGE 1900: 1850~1910MHz
Downlink Frequency:	GSM/GPRS/EDGE 850: 869~894MHz GSM/GPRS/EDGE 1900: 1930~1990MHz
Max RF Output Power:	GSM850: 31.76dBm, GSM1900: 28.63dBm EDGE850: 26.70dBm, EDGE1900: 25.4dBm
Type of Emission:	GSM850: 252KGXW, GSM1900: 250KGXW EDGE850: 248KG7W, EDGE1900: 249KG7W
Type of Modulation:	GMSK, 8PSK
Type of Antenna:	Integral Antenna
Antenna Gain:	GSM850: 1.15dBi; GSM1900: 1.11dBi
GPRS/EDGE Class:	Class 12
<b>3G</b>	
Support Networks:	WCDMA, HSDPA, HSUPA
Support Band:	WCDMA Band 2, WCDMA Band 4, WCDMA Band 5
Uplink Frequency:	WCDMA Band 2: 1850~1910MHz WCDMA Band 4: 1710~1755MHz WCDMA Band 5: 824~849MHz
Downlink Frequency:	WCDMA Band 2: 1930~1990MHz WCDMA Band 4: 2110~2155MHz WCDMA Band 5: 869~894MHz
RF Output Power:	WCDMA Band 2: 21.66dBm, WCDMA Band 4: 22.00dBm WCDMA Band 5: 22.31dBm
Type of Emission:	WCDMA Band 2: 4M20F9W WCDMA Band 4: 4M19F9W WCDMA Band 5: 4M18F9W
Type of Modulation:	BPSK
Antenna Type:	Integral Antenna
Antenna Gain:	WCDMA Band 2: 1.35dBi, WCDMA Band 4: 1.14dBi, WCDMA Band 5: 1.35dBi

## 1.2 Test Standards

The tests were performed according to following standards:

**FCC Rules Part 2:** FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS.

**FCC Rules Part 22:** PRIVATE LAND MOBILE RADIO SERVICES.

**FCC Rules Part 24:** PUBLIC MOBILE SERVICES.

**FCC Rules Part 27:** MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES.

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

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

**KDB 971168 D01 Power Meas License Digital Systems v03r01:** MEASUREMENT GUIDANCE FOR CERTIFICATION OF LICENSED DIGITAL TRANSMITTERS.

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

## 1.3 Test Methodology

All measurements contained in this report were conducted with TIA/EIA 603 E/ KDB 971168/ ANSI C63.26. The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted accordingly in reference to the Operating Instructions.

## 1.4 Test Facility

### Address of the test laboratory

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

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

### FCC – Registration No.: 125990

Waltek Testing Group (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. The Designation Number is CN5010, and Test Firm Registration Number is 125990.

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

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

## 1.5 EUT Setup and Test Mode

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

Test Mode List		
Test Mode	Description	Remark
TM1	GSM 850	Low, Middle, High Channels
TM2	GPRS 850	Low, Middle, High Channels
TM3	EDGE 850	Low, Middle, High Channels
TM4	GSM 1900	Low, Middle, High Channels
TM5	GPRS 1900	Low, Middle, High Channels
TM6	EDGE 1900	Low, Middle, High Channels
TM7	WCDMA Band 5	Low, Middle, High Channels
TM8	HSDPA Band 5	Low, Middle, High Channels
TM9	HSUPA Band 5	Low, Middle, High Channels
TM10	WCDMA Band 4	Low, Middle, High Channels
TM11	HSDPA Band 4	Low, Middle, High Channels
TM12	HSUPA Band 4	Low, Middle, High Channels
TM13	WCDMA Band 2	Low, Middle, High Channels
TM14	HSDPA Band 2	Low, Middle, High Channels
TM15	HSUPA Band 2	Low, Middle, High Channels

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

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

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

<b>EUT Cable List and Details</b>			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
USB Cable	1.0	Unshielded	Without Ferrite
Earphone Cable	1.2	Unshielded	Without Ferrite

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

<b>Auxiliary Equipment List and Details</b>			
Description	Manufacturer	Model	Serial Number
Notebook	Lenovo	TianYi310-14ISK	/
Wireless Charger	/	WP03	/

## 1.6 Measurement Uncertainty

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



**1.7 Test Equipment List and Details**

No.	Description	Manufacturer	Model	Serial No.	Cal Date	Due. Date
SEMT-1075	Communication Tester	Rohde & Schwarz	CMW500	148650	2020-04-28	2021-04-27
SEMT-1063	GSM Tester	Rohde & Schwarz	CMU200	114403	2020-04-28	2021-04-27
SEMT-1072	Spectrum Analyzer	Agilent	E4407B	MY41440400	2020-04-28	2021-04-27
SEMT-1079	Spectrum Analyzer	Agilent	N9020A	US47140102	2020-04-28	2021-04-27
SEMT-1080	Signal Generator	Agilent	83752A	3610A01453	2020-04-28	2021-04-27
SEMT-1081	Vector Signal Generator	Agilent	N5182A	MY47070202	2020-04-28	2021-04-27
SEMT-1028	Power Divider	Weinschel	1506A	PM204	2020-04-28	2021-04-27
SEMT-1082	Power Divider	RF-Lambda	RFLT4W5M18G	14110400027	2020-04-28	2021-04-27
SEMT-1031	Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2020-04-28	2021-04-27
SEMT-1007	EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2020-04-28	2021-04-27
SEMT-1008	Amplifier	Agilent	8447F	3113A06717	2020-04-28	2021-04-27
SEMT-1043	Amplifier	C&D	PAP-1G18	2002	2020-04-28	2021-04-27
SEMT-1069	Loop Antenna	Schwarz beck	FMZB 1516	9773	2019-05-05	2021-05-04
SEMT-1068	Broadband Antenna	Schwarz beck	VULB9163	9163-333	2019-05-05	2021-05-04
SEMT-1042	Horn Antenna	ETS	3117	00086197	2019-05-05	2021-05-04
SEMT-1121	Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170582	2019-05-05	2021-05-04
SEMT-1168	Pre-amplifier	Direction Systems Inc.	PAP-0126	14141-12838	2020-04-28	2021-04-27
SEMT-1169	Pre-amplifier	Direction Systems Inc.	PAP-2640	14145-14153	2020-04-28	2021-04-27
SEMT-1163	Spectrum Analyzer	Rohde & Schwarz	FSP40	100612	2020-04-28	2021-04-27
SEMT-1170	DRG Horn Antenna	A.H. SYSTEMS	SAS-574	571	2019-05-05	2021-05-04
SEMT-1166	Power Limiter	Agilent	N9356B	MY45450376	2020-04-28	2021-04-27
SEMT-1048	RF Limiter	ATTEN	AT-BSF-2400~2500	/	2020-04-28	2021-04-27
SEMT-1076	RF Switcher	Top Precision	RCS03-A2	/	2020-04-28	2021-04-27
SEMT-C001	Cable	Zheng DI	LL142-07-07-10M(A)	/	2020-03-17	2021-03-16
SEMT-C002	Cable	Zheng DI	ZT40-2.92J-2.92J-6M	/	2020-03-17	2021-03-16
SEMT-C003	Cable	Zheng DI	ZT40-2.92J-2.92J-2.5M	/	2020-03-17	2021-03-16
SEMT-C004	Cable	Zheng DI	2M0RFC	/	2020-03-17	2021-03-16

SEMT-C005	Cable	Zheng DI	1M0RFC	/	2020-03-17	2021-03-16
SEMT-C006	Cable	Zheng DI	1M0RFC	/	2020-03-17	2021-03-16

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

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

## 2. SUMMARY OF TEST RESULTS

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<b>FCC Rules</b>	<b>Description of Test Item</b>	<b>Result</b>
§1.1307, §2.1093	RF Exposure	Compliant
§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 Exposure**

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#### **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

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### 4.1 Standard Applicable

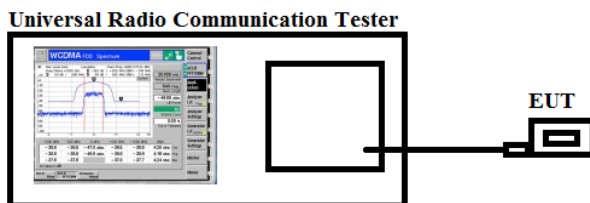
According to §22.913(a)(2), the ERP of mobile and portable stations transmitters and auxiliary test transmitters must not exceed 7 Watts.

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.

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

### 4.2 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.

### 4.3 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	29.12		
		H	23.98		
	251	V	29.59		
		H	23.79		
GPRS850	128	V	29.31	<38.45	Pass
		H	23.02		
	190	V	29.75		
		H	23.36		
	251	V	29.14		
		H	23.75		
EGPRS850	128	V	23.47	<38.45	Pass
		H	19.53		
	190	V	23.36		
		H	19.49		
	251	V	23.39		
		H	19.98		

Mode	Channel	Antenna Polar	EIRP (dBm)	Limit (dBm)	Result
PCS1900	512	V	26.78	<33.00	Pass
		H	21.53		
	661	V	26.47		
		H	21.79		
	810	V	26.70		
		H	21.24		
GPRS1900	512	V	26.79	<33.00	Pass
		H	21.79		
	661	V	26.75		
		H	21.35		
	810	V	26.47		
		H	21.48		
EGPRS1900	512	V	24.02	<33.00	Pass
		H	18.68		
	661	V	24.16		
		H	18.35		
	810	V	24.35		
		H	18.49		

Mode	Channel	Antenna Polar	ERP	Limit (dBm)	Result
WCDMA Band V	4132	V	20.46	<38.45	Pass
		H	16.68		
	4183	V	20.52		
		H	16.05		
	4233	V	20.69		
		H	16.45		

Mode	Channel	Antenna Polar	EIRP	Limit (dBm)	Result
WCDMA Band IV	1312	V	19.68	<30.00	Pass
		H	15.42		
	1412	V	19.39		
		H	15.78		
	1513	V	19.63		
		H	15.42		

Mode	Channel	Antenna Polar	EIRP	Limit (dBm)	Result
WCDMA Band II	9262	V	20.49	<33.00	Pass
		H	15.12		
	9400	V	20.28		
		H	15.29		
	9538	V	20.46		
		H	15.67		

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



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

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	31.62	31.76	31.61	28.61	28.52	28.53
GPRS(1Slot)	31.64	31.76	31.65	28.63	28.52	28.57
EGPRS(1Slot)	26.70	26.66	26.59	25.26	25.18	25.4

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	22.25	22.31	22.09	21.46	21.50	21.66
HSDPA Subtest-1	21.99	22.03	21.82	21.17	21.22	21.36
HSDPA Subtest-2	21.96	22.01	21.78	21.15	21.19	21.34
HSDPA Subtest-3	21.97	22.02	21.78	21.14	21.18	21.35
HSDPA Subtest-4	21.96	22.01	21.78	21.15	21.19	21.35
HSUPA Subtest-1	22.00	22.02	21.77	21.05	21.16	21.35
HSUPA Subtest-2	21.96	22.01	21.75	21.03	21.15	21.32
HSUPA Subtest-3	21.97	22	21.74	21.04	21.14	21.33
HSUPA Subtest-4	21.98	22.01	21.75	21.04	21.14	21.34
HSUPA Subtest-5	21.98	22.01	21.74	21.02	21.13	21.34

Conducted Average power (dBm)						
Band	WCDMA Band IV					
Channel	1312	1412	1513			
Frequency(MHz)	1712.4	1733.4	1752.6			
RMC 12.2k	21.98	21.96	22.00			
HSDPA Subtest-1	21.71	21.71	21.81			
HSDPA Subtest-2	21.68	21.67	21.78			
HSDPA Subtest-3	21.68	21.68	21.79			
HSDPA Subtest-4	21.69	21.69	21.78			
HSUPA Subtest-1	21.70	21.64	21.76			
HSUPA Subtest-2	21.68	21.62	21.75			
HSUPA Subtest-3	21.69	21.61	21.74			
HSUPA Subtest-4	21.67	21.62	21.74			
HSUPA Subtest-5	21.68	21.61	21.73			

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

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### 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.

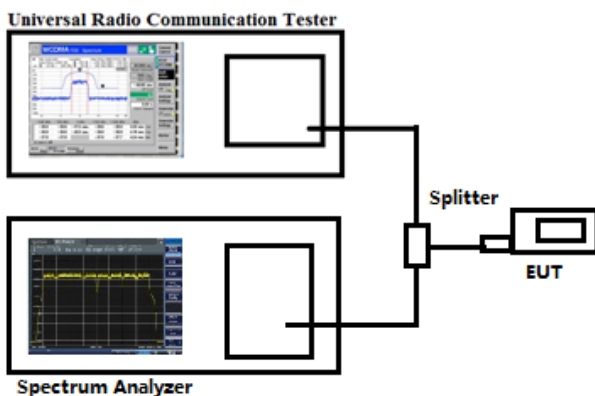
According to §27.50(B), the peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB. The PAPR measurements should be made using either an instrument with complementary cumulative distribution function (CCDF) capabilities to determine that PAPR will not exceed 13 dB for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

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:



### 5.3 Summary of Test Results

PCS1900				
Test Mode	Channel	Frequency (MHz)	PAR (dB)	Limit (dB)
GSM	661	1850.2	5.78	13
GPRS(1 Slot)	661	1850.2	4.02	13
EDGE(1 Slot)	661	1850.2	5.35	13

WCDMA Band IV				
Test Mode	Channel	Frequency (MHz)	PAR (dB)	Limit (dB)
WCDMA	1312	1712.4	5.69	13
	1412	1733.4	4.58	13
	1513	1752.6	5.11	13

WCDMA Band II				
Test Mode	Channel	Frequency (MHz)	PAR (dB)	Limit (dB)
WCDMA	9262	1852.4	5.39	13
	9400	1880.0	4.98	13
	9538	1907.6	5.28	13

Note: Only the worst case was selected to record.

## 6. Emission Bandwidth

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### 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.

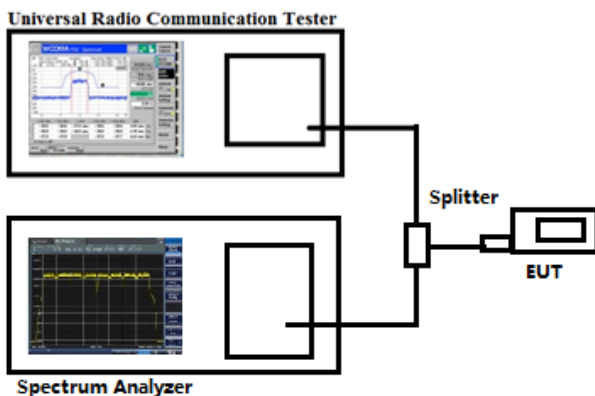
According to §24.238(b), the emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

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 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 Summary of Test Results/Plots

EUT Mode	Channel	Frequency (MHz)	99% Occupy bandwidth (kHz)	-26dB bandwidth (kHz)
GSM 850 (GMSK)	128	824.20	252.2992	321.222
	190	836.60	251.7773	317.348
	251	848.80	244.4735	323.370
GPRS850 (GMSK,1Slot)	128	824.20	248.7022	317.196
	190	836.60	238.5961	304.649
	251	848.80	247.6899	314.485
EGPRS850 (8PSK,1Slot)	128	824.20	232.4421	310.692
	190	836.60	250.1864	314.341
	251	848.80	239.3908	306.887
PCS1900 (GMSK)	512	1850.20	247.5975	320.081
	661	1880.00	244.0298	315.932
	810	1909.80	243.4199	309.334
GPRS1900 (GMSK,1Slot)	512	1850.20	245.6780	318.365
	661	1880.00	245.0408	307.949
	810	1909.80	245.2771	309.246
EGPRS1900 (8PSK,1Slot)	512	1850.20	243.4391	317.895
	661	1880.00	248.6463	315.405
	810	1909.80	246.6000	305.009

EUT Mode	Channel	Frequency (MHz)	99% Occupy bandwidth (kHz)	-26dB bandwidth (kHz)
WCDMA Band V	4132	826.40	4177.9	4730
	4183	836.60	4176.7	4719
	4233	846.60	4130.6	4685
HSDPA	4132	826.40	4184.3	4710
	4183	836.60	4163.1	4706
	4233	846.60	4139.1	4702
HSUPA	4132	826.40	4177.7	4740
	4183	836.60	4179.8	4697
	4233	846.60	4148.9	4709
WCDMA Band II	9262	1852.40	4179.0	4728
	9400	1880.00	4200.6	4740
	9538	1907.60	4184.5	4744
HSDPA	9262	1852.40	4191.4	5031
	9400	1880.00	4194.0	4744
	9538	1907.60	4191.4	4730
HSUPA	9262	1852.40	4182.2	4720
	9400	1880.00	4194.3	4894
	9538	1907.60	4182.0	5044
WCDMA Band IV	1312	1712.4	4182.0	4663
	1412	1733.4	4160.6	4714
	1513	1752.6	4191.6	4710
HSDPA	1312	1712.4	4192.5	4807
	1412	1733.4	4175.8	4705
	1513	1752.6	4188.4	4715
HSUPA	1312	1712.4	4175.9	4720
	1412	1733.4	4181.5	4737
	1513	1752.6	4181.9	4702

GSM900	
Low Channel	<p>Agilent R T</p> <p>Ch Freq 824.2 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 40.5 dBm Atten 45 dB</p> <p>#Peak</p> <p>Log 10 dB/Offset 6.5 dB</p> <p>Center 824.2 MHz Span 1 MHz</p> <p>#Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (1001 pts)</p> <p><b>Occupied Bandwidth</b> 252.2992 kHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -740.239 Hz</p> <p>x dB Bandwidth 321.222 kHz</p> <p>Freq/Channel</p> <p>Center Freq 824.200000 MHz</p> <p>Start Freq 823.700000 MHz</p> <p>Stop Freq 824.700000 MHz</p> <p>CF Step 100.000000 kHz Auto Man</p> <p>Freq Offset 0.0000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
Middle Channel	<p>Agilent R T</p> <p>Ch Freq 836.6 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 40.5 dBm Atten 45 dB</p> <p>#Peak</p> <p>Log 10 dB/Offset 6.5 dB</p> <p>Center 836.6 MHz Span 1 MHz</p> <p>#Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (1001 pts)</p> <p><b>Occupied Bandwidth</b> 251.7773 kHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -1.429 kHz</p> <p>x dB Bandwidth 317.348 kHz</p> <p>Freq/Channel</p> <p>Center Freq 836.600000 MHz</p> <p>Start Freq 836.100000 MHz</p> <p>Stop Freq 837.100000 MHz</p> <p>CF Step 100.000000 kHz Auto Man</p> <p>Freq Offset 0.0000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
High Channel	<p>Agilent R T</p> <p>Ch Freq 848.8 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 40.5 dBm Atten 45 dB</p> <p>#Peak</p> <p>Log 10 dB/Offset 6.5 dB</p> <p>Center 848.8 MHz Span 1 MHz</p> <p>#Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (1001 pts)</p> <p><b>Occupied Bandwidth</b> 244.4735 kHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -479.165 Hz</p> <p>x dB Bandwidth 323.370 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 0.0000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>

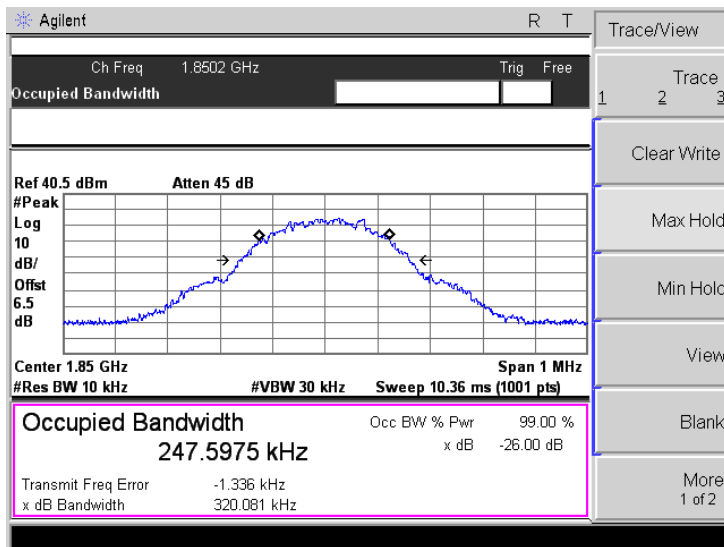


GPRS900	
Low Channel	<p>Agilent R T</p> <p>Ch Freq 824.2 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 40.5 dBm Atten 45 dB</p> <p>#Peak</p> <p>Log</p> <p>10</p> <p>dB/</p> <p>Offset</p> <p>6.5</p> <p>dB</p> <p>Center 824.2 MHz Span 1 MHz</p> <p>#Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (1001 pts)</p> <p><b>Occupied Bandwidth</b> 248.7022 kHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB -26.00 dB</p> <p>Transmit Freq Error -2.509 kHz</p> <p>x dB Bandwidth 317.196 kHz</p> <p>Freq/Channel</p> <p>Center Freq 824.200000 MHz</p> <p>Start Freq 823.700000 MHz</p> <p>Stop Freq 824.700000 MHz</p> <p>CF Step 100.000000 kHz</p> <p>Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
Middle Channel	<p>Agilent R T</p> <p>Ch Freq 836.6 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 40.5 dBm Atten 45 dB</p> <p>#Peak</p> <p>Log</p> <p>10</p> <p>dB/</p> <p>Offset</p> <p>6.5</p> <p>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><b>Occupied Bandwidth</b> 238.5961 kHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB -26.00 dB</p> <p>Transmit Freq Error -2.958 kHz</p> <p>x dB Bandwidth 304.649 kHz</p> <p>Trace/View</p> <p>1 2 3</p> <p>Trace</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>
High Channel	<p>Agilent R T</p> <p>Ch Freq 848.8 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 40.5 dBm Atten 45 dB</p> <p>#Peak</p> <p>Log</p> <p>10</p> <p>dB/</p> <p>Offset</p> <p>6.5</p> <p>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><b>Occupied Bandwidth</b> 247.6899 kHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB -26.00 dB</p> <p>Transmit Freq Error 572.393 Hz</p> <p>x dB Bandwidth 314.485 kHz</p> <p>Freq/Channel</p> <p>Center Freq 848.800000 MHz</p> <p>Start Freq 848.300000 MHz</p> <p>Stop Freq 849.300000 MHz</p> <p>CF Step 100.000000 kHz</p> <p>Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>

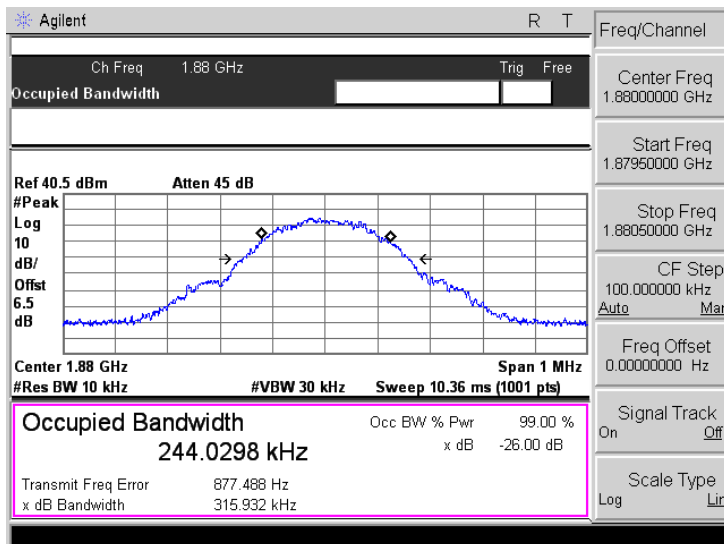
EGPRS900	
Low Channel	<p>Agilent R T</p> <p>Ch Freq 824.2 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 40.5 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/Offset 6.5 dB</p> <p>Center 824.2 MHz Span 1 MHz</p> <p>#Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (1001 pts)</p> <p><b>Occupied Bandwidth</b> 232.4421 kHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 1.214 kHz</p> <p>x dB Bandwidth 310.692 kHz</p> <p>Freq/Channel</p> <p>Center Freq 824.200000 MHz</p> <p>Start Freq 823.700000 MHz</p> <p>Stop Freq 824.700000 MHz</p> <p>CF Step 100.000000 kHz Auto Man</p> <p>Freq Offset 0.0000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
Middle Channel	<p>Agilent R T</p> <p>Ch Freq 836.6 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 40.5 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/Offset 6.5 dB</p> <p>Center 836.6 MHz Span 1 MHz</p> <p>#Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (1001 pts)</p> <p><b>Occupied Bandwidth</b> 250.1864 kHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 2.393 kHz</p> <p>x dB Bandwidth 314.341 kHz</p> <p>Freq/Channel</p> <p>Center Freq 836.600000 MHz</p> <p>Start Freq 836.100000 MHz</p> <p>Stop Freq 837.100000 MHz</p> <p>CF Step 100.000000 kHz Auto Man</p> <p>Freq Offset 0.0000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
High Channel	<p>Agilent R T</p> <p>Ch Freq 848.8 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 40.5 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/Offset 6.5 dB</p> <p>Center 848.8 MHz Span 1 MHz</p> <p>#Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (1001 pts)</p> <p><b>Occupied Bandwidth</b> 239.3908 kHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -741.381 Hz</p> <p>x dB Bandwidth 306.887 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 0.0000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>

PCS1900

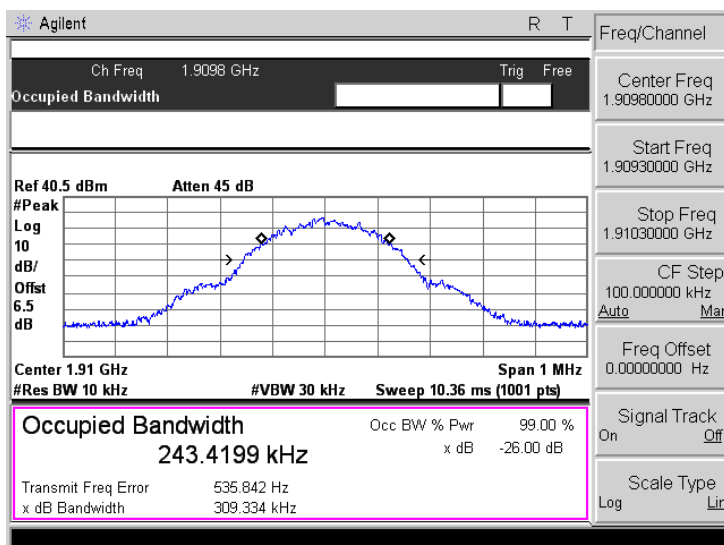
Low Channel



Middle Channel



High Channel

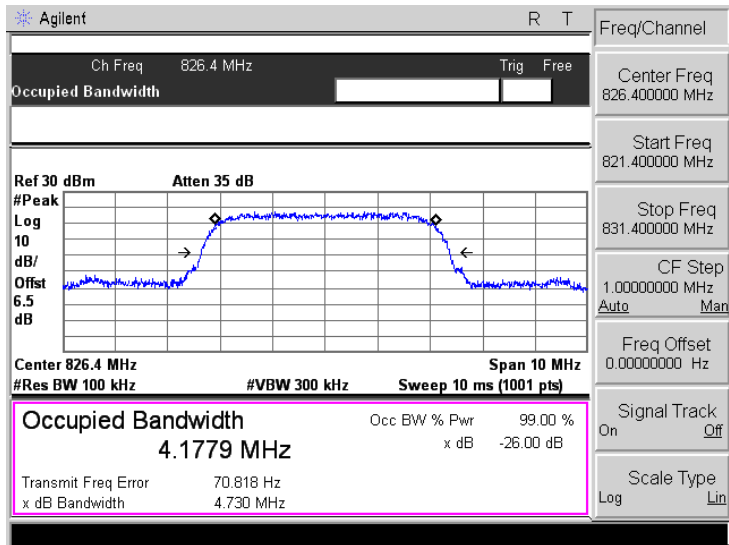


GPRS1900	
Low Channel	<p>Agilent R T</p> <p>Ch Freq 1.8502 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 40.5 dBm Atten 45 dB</p> <p>#Peak</p> <p>Log 10 dB/</p> <p>Offset 6.5 dB</p> <p>Center 1.85 GHz Span 1 MHz</p> <p>#Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (1001 pts)</p> <p><b>Occupied Bandwidth</b> 245.6780 kHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB -26.00 dB</p> <p>Transmit Freq Error 1.291 kHz</p> <p>x dB Bandwidth 318.365 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</p> <p>Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
Middle Channel	<p>Agilent R T</p> <p>Ch Freq 1.88 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 40.5 dBm Atten 45 dB</p> <p>#Peak</p> <p>Log 10 dB/</p> <p>Offset 6.5 dB</p> <p>Center 1.88 GHz Span 1 MHz</p> <p>#Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (1001 pts)</p> <p><b>Occupied Bandwidth</b> 245.0408 kHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB -26.00 dB</p> <p>Transmit Freq Error -1.781 kHz</p> <p>x dB Bandwidth 307.949 kHz</p> <p>Trace/View</p> <p>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>
High Channel	<p>Agilent R T</p> <p>Ch Freq 1.9098 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 40.5 dBm Atten 45 dB</p> <p>#Peak</p> <p>Log 10 dB/</p> <p>Offset 6.5 dB</p> <p>Center 1.91 GHz Span 1 MHz</p> <p>#Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (1001 pts)</p> <p><b>Occupied Bandwidth</b> 245.2771 kHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB -26.00 dB</p> <p>Transmit Freq Error -58.749 Hz</p> <p>x dB Bandwidth 309.246 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</p> <p>Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>

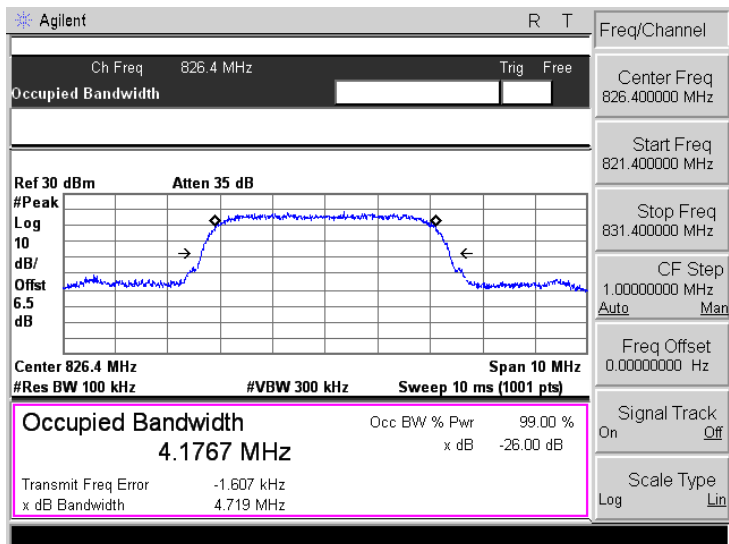
EGPRS1900	
Low Channel	<p>Agilent R T</p> <p>Ch Freq 1.8502 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 40.5 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/Offset 6.5 dB</p> <p>Center 1.85 GHz Span 1 MHz</p> <p>#Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (1001 pts)</p> <p><b>Occupied Bandwidth</b> 243.4391 kHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 1.988 kHz</p> <p>x dB Bandwidth 317.895 kHz</p>
Middle Channel	<p>Agilent R T</p> <p>Ch Freq 1.88 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 40.5 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/Offset 6.5 dB</p> <p>Center 1.88 GHz Span 1 MHz</p> <p>#Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (1001 pts)</p> <p><b>Occupied Bandwidth</b> 248.6463 kHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 2.780 kHz</p> <p>x dB Bandwidth 315.405 kHz</p>
High Channel	<p>Agilent R T</p> <p>Ch Freq 1.9098 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 40.5 dBm Atten 45 dB</p> <p>#Peak Log 10 dB/Offset 6.5 dB</p> <p>Center 1.91 GHz Span 1 MHz</p> <p>#Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (1001 pts)</p> <p><b>Occupied Bandwidth</b> 246.6000 kHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 3.319 kHz</p> <p>x dB Bandwidth 305.009 kHz</p>

WCDMA Band V

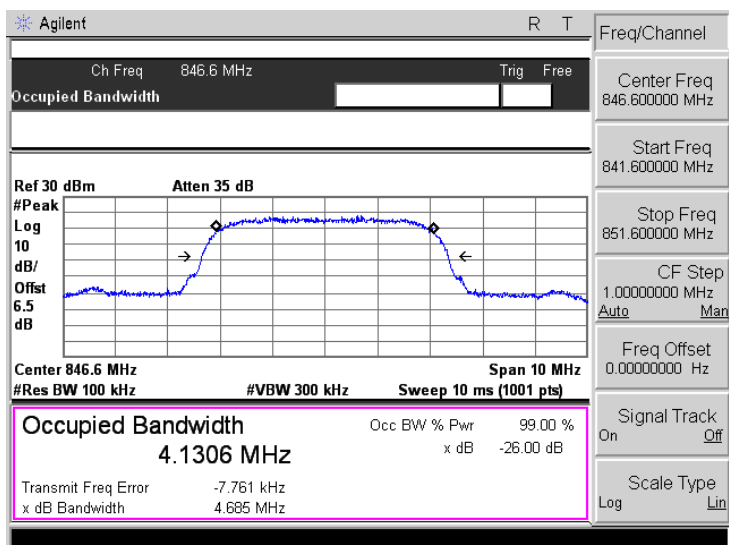
Low Channel



Middle Channel



High Channel



WCDMA Band V- HSDPA	
Low Channel	<p>Agilent R T</p> <p>Ch Freq 826.4 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 30 dBm Atten 35 dB</p> <p>#Peak Log 10 dB/ Offst 6.5 dB</p> <p>Center 826.4 MHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth</b> 4.1843 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -11.283 kHz</p> <p>x dB Bandwidth 4.710 MHz</p> <p>Freq/Channel</p> <p>Center Freq 826.400000 MHz</p> <p>Start Freq 821.400000 MHz</p> <p>Stop Freq 831.400000 MHz</p> <p>CF Step 1.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
Middle Channel	<p>Agilent R T</p> <p>Ch Freq 836.6 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 30 dBm Atten 35 dB</p> <p>#Peak Log 10 dB/ Offst 6.5 dB</p> <p>Center 836.6 MHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth</b> 4.1631 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -30.202 kHz</p> <p>x dB Bandwidth 4.706 MHz</p> <p>Freq/Channel</p> <p>Center Freq 836.600000 MHz</p> <p>Start Freq 831.600000 MHz</p> <p>Stop Freq 841.600000 MHz</p> <p>CF Step 1.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
High Channel	<p>Agilent R T</p> <p>Ch Freq 846.6 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 30 dBm Atten 35 dB</p> <p>#Peak Log 10 dB/ Offst 6.5 dB</p> <p>Center 846.6 MHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth</b> 4.1391 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -8.695 kHz</p> <p>x dB Bandwidth 4.702 MHz</p> <p>Freq/Channel</p> <p>Center Freq 846.600000 MHz</p> <p>Start Freq 841.600000 MHz</p> <p>Stop Freq 851.600000 MHz</p> <p>CF Step 1.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>

WCDMA Band V- HSUPA	
Low Channel	<p>Agilent R T</p> <p>Ch Freq 826.4 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 30 dBm Atten 35 dB</p> <p>#Peak Log 10 dB/ Offst 6.5 dB</p> <p>Center 826.4 MHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth</b> 4.1777 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -7.549 kHz</p> <p>x dB Bandwidth 4.740 MHz</p>
Middle Channel	<p>Agilent R T</p> <p>Ch Freq 836.6 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 30 dBm Atten 35 dB</p> <p>#Peak Log 10 dB/ Offst 6.5 dB</p> <p>Center 836.6 MHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth</b> 4.1798 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -20.593 kHz</p> <p>x dB Bandwidth 4.697 MHz</p>
High Channel	<p>Agilent R T</p> <p>Ch Freq 846.6 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 30 dBm Atten 35 dB</p> <p>#Peak Log 10 dB/ Offst 6.5 dB</p> <p>Center 846.6 MHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth</b> 4.1489 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -8.977 kHz</p> <p>x dB Bandwidth 4.709 MHz</p>



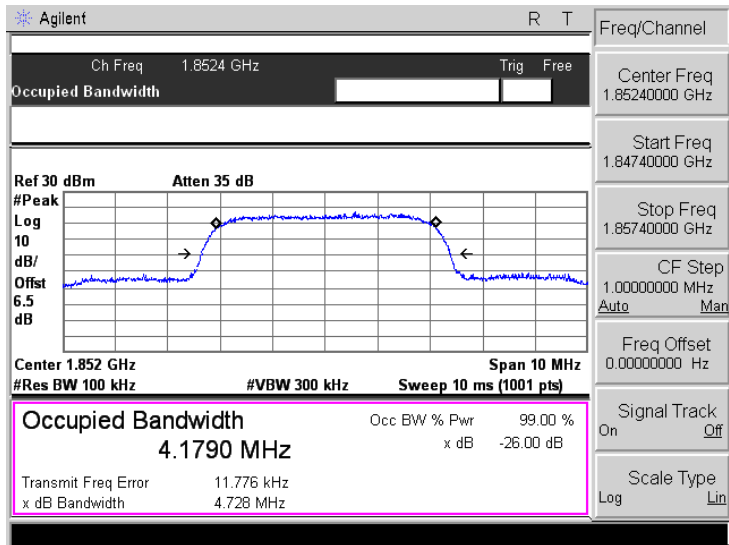
WCDMA Band IV	
Low Channel	<p>Agilent R T</p> <p>Ch Freq 1.7124 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 30 dBm Atten 35 dB</p> <p>#Peak Log 10 dB/ Offst 6.5 dB</p> <p>Center 1.712 GHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth</b> 4.1820 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 1.927 kHz</p> <p>x dB Bandwidth 4.663 MHz</p>
Middle Channel	<p>Agilent R T</p> <p>Ch Freq 1.7324 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 30 dBm Atten 35 dB</p> <p>#Peak Log 10 dB/ Offst 6.5 dB</p> <p>Center 1.732 GHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth</b> 4.1606 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 197.473 kHz</p> <p>x dB Bandwidth 4.714 MHz</p>
High Channel	<p>Agilent R T</p> <p>Ch Freq 1.7526 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 30 dBm Atten 35 dB</p> <p>#Peak Log 10 dB/ Offst 6.5 dB</p> <p>Center 1.753 GHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth</b> 4.1916 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -218.859 kHz</p> <p>x dB Bandwidth 4.710 MHz</p>

WCDMA Band IV- HSDPA	
Low Channel	<p>Agilent R T</p> <p>Ch Freq 1.7124 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 30 dBm Atten 35 dB</p> <p>#Peak Log 10 dB/ Offst 6.5 dB</p> <p>Center 1.712 GHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth</b> 4.1925 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -3.202 kHz</p> <p>x dB Bandwidth 4.807 MHz</p>
Middle Channel	<p>Agilent R T</p> <p>Ch Freq 1.7324 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 30 dBm Atten 35 dB</p> <p>#Peak Log 10 dB/ Offst 6.5 dB</p> <p>Center 1.732 GHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth</b> 4.1758 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -3.986 kHz</p> <p>x dB Bandwidth 4.705 MHz</p>
High Channel	<p>Agilent R T</p> <p>Ch Freq 1.7526 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 30 dBm Atten 35 dB</p> <p>#Peak Log 10 dB/ Offst 6.5 dB</p> <p>Center 1.753 GHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth</b> 4.1884 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -210.283 kHz</p> <p>x dB Bandwidth 4.715 MHz</p>

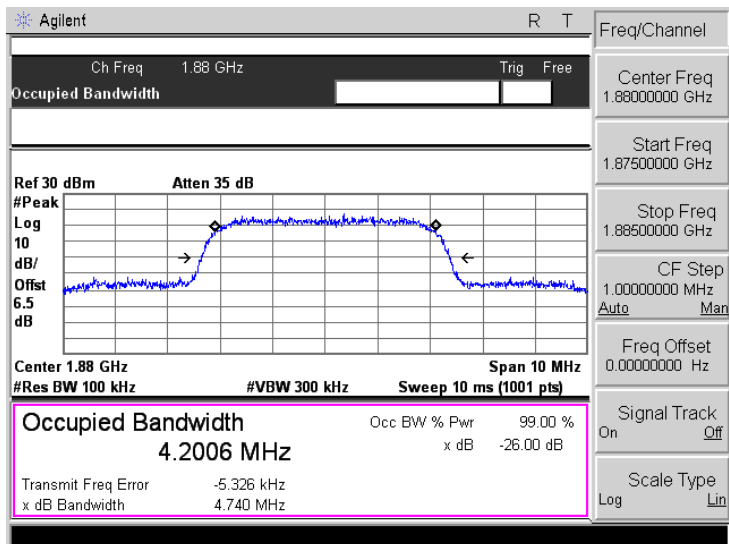
WCDMA Band IV- HSUPA	
Low Channel	<p>Agilent R T</p> <p>Ch Freq 826.4 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 30 dBm Atten 35 dB</p> <p>#Peak Log 10 dB/ Offst 6.5 dB</p> <p>Center 826.4 MHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth</b> 4.1759 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -7.042 kHz</p> <p>x dB Bandwidth 4.720 MHz</p>
Middle Channel	<p>Agilent R T</p> <p>Ch Freq 1.732 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 30 dBm Atten 35 dB</p> <p>#Peak Log 10 dB/ Offst 6.5 dB</p> <p>Center 1.732 GHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth</b> 4.1815 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 189.836 kHz</p> <p>x dB Bandwidth 4.737 MHz</p>
High Channel	<p>Agilent R T</p> <p>Ch Freq 1.753 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 30 dBm Atten 35 dB</p> <p>#Peak Log 10 dB/ Offst 6.5 dB</p> <p>Center 1.753 GHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth</b> 4.1819 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -8.670 kHz</p> <p>x dB Bandwidth 4.702 MHz</p>

WCDMA Band II

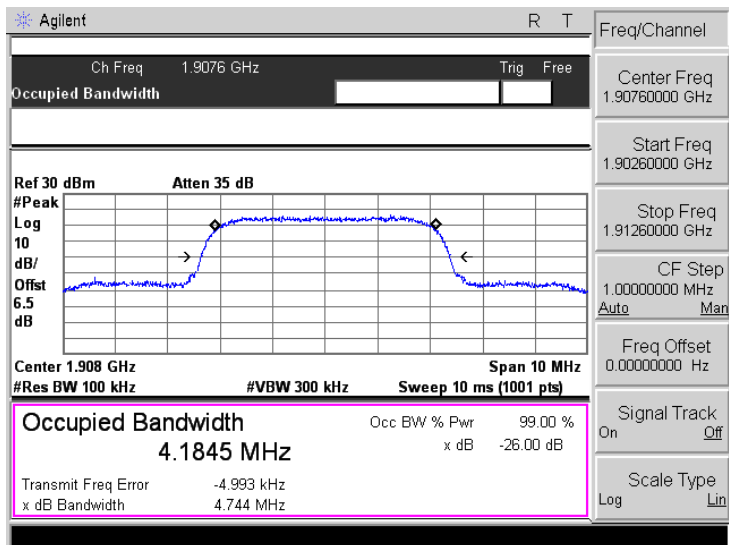
Low Channel



Middle Channel



High Channel



WCDMA Band II- HSDPA	
Low Channel	<p>Agilent R T</p> <p>Ch Freq 1.8524 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 30 dBm Atten 35 dB</p> <p>#Peak Log 10 dB/ Offst 6.5 dB</p> <p>Center 1.852 GHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth</b> 4.1914 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 10.936 kHz</p> <p>x dB Bandwidth 5.031 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>
Middle Channel	<p>Agilent R T</p> <p>Ch Freq 1.88 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 30 dBm Atten 35 dB</p> <p>#Peak Log 10 dB/ Offst 6.5 dB</p> <p>Center 1.88 GHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 1 MHz Sweep 4 ms (401 pts)</p> <p><b>Occupied Bandwidth</b> 4.1940 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -1.382 kHz</p> <p>x dB Bandwidth 4.744 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>
High Channel	<p>Agilent R T</p> <p>Ch Freq 1.9076 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 30 dBm Atten 35 dB</p> <p>#Peak Log 10 dB/ Offst 6.5 dB</p> <p>Center 1.908 GHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth</b> 4.1914 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -3.402 kHz</p> <p>x dB Bandwidth 4.730 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>

WCDMA Band II- HSUPA	
Low Channel	<p>Agilent R T</p> <p>Ch Freq 1.8524 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 30 dBm Atten 35 dB</p> <p>#Peak Log 10 dB/ Offst 6.5 dB</p> <p>Center 1.852 GHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth</b> 4.1822 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 11.529 kHz</p> <p>x dB Bandwidth 4.720 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>
Middle Channel	<p>Agilent R T</p> <p>Ch Freq 1.88 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 30 dBm Atten 35 dB</p> <p>#Peak Log 10 dB/ Offst 6.5 dB</p> <p>Center 1.88 GHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth</b> 4.1943 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 1.806 kHz</p> <p>x dB Bandwidth 4.894 MHz</p> <p>Trace/View</p> <p>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>
High Channel	<p>Agilent R T</p> <p>Ch Freq 1.9076 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 30 dBm Atten 35 dB</p> <p>#Peak Log 10 dB/ Offst 6.5 dB</p> <p>Center 1.908 GHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth</b> 4.1820 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 248.864 Hz</p> <p>x dB Bandwidth 5.044 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>

## 7. Out of Band Emissions at Antenna Terminal

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### 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.

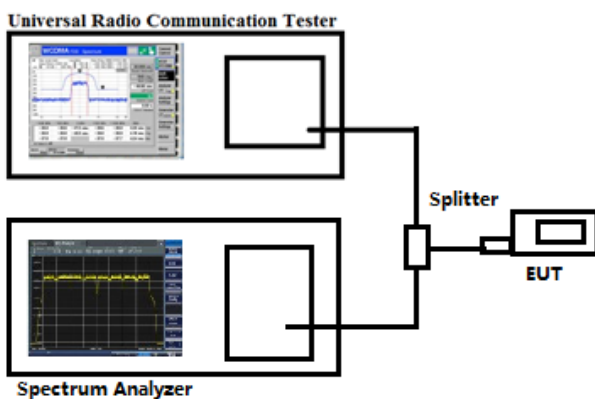
According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

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

The RF output terminal of the transmitter was connected to the input of the spectrum analyzer via a suitable attenuation. The RBW of the spectrum analyzer was set to 100kHz and 1MHz for the scan frequency from 30MHz to 1GHz and the scan frequency from 1GHz to up to 10<sup>th</sup> harmonic.

Test Configuration for the out of band emissions testing:



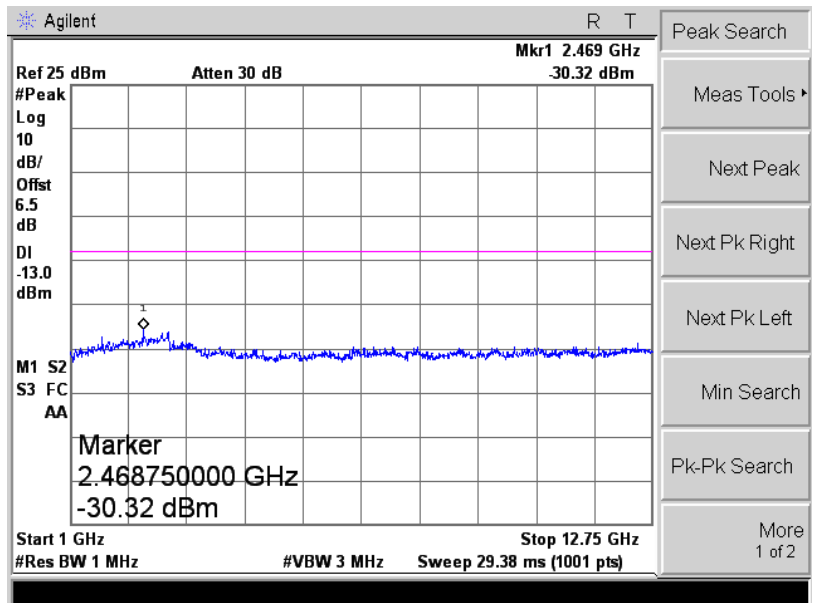
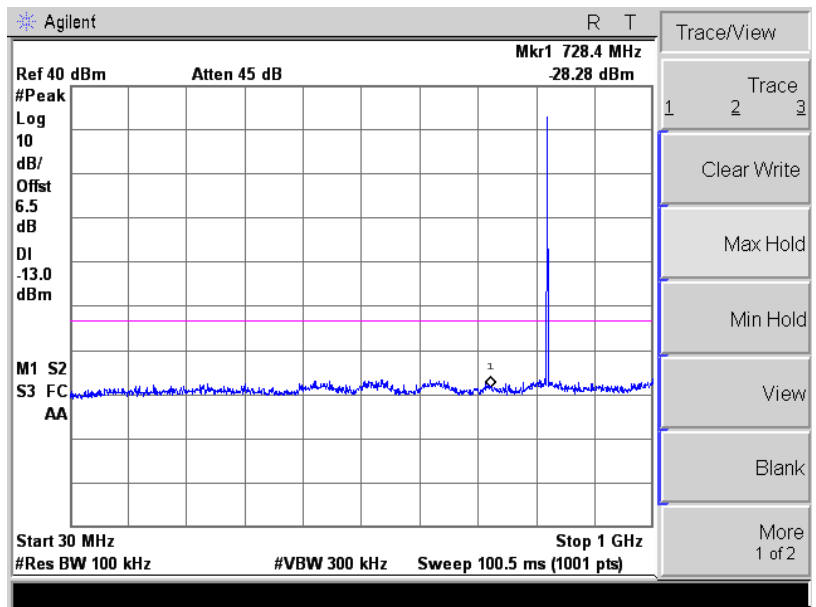
### 7.3 Summary of Test Results/Plots

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

Please refer to the following test plots

### GSM850

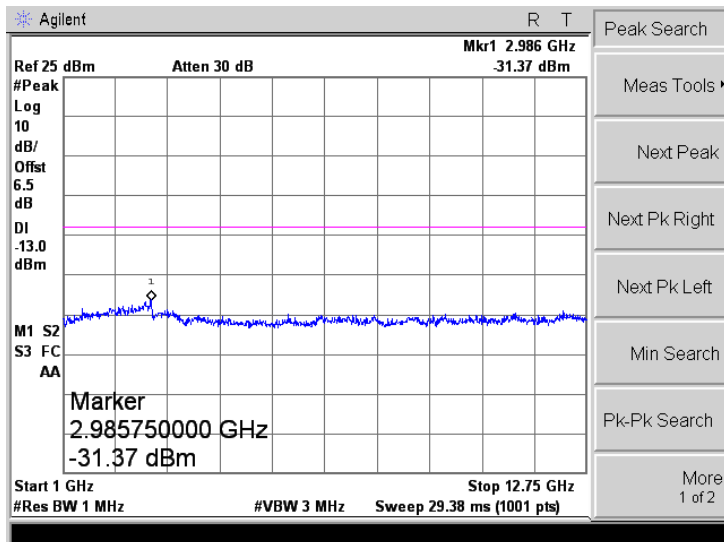
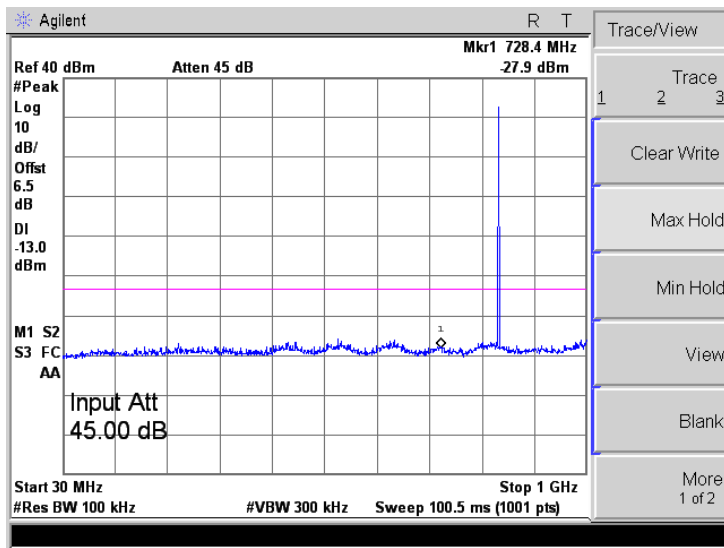
Low Channel





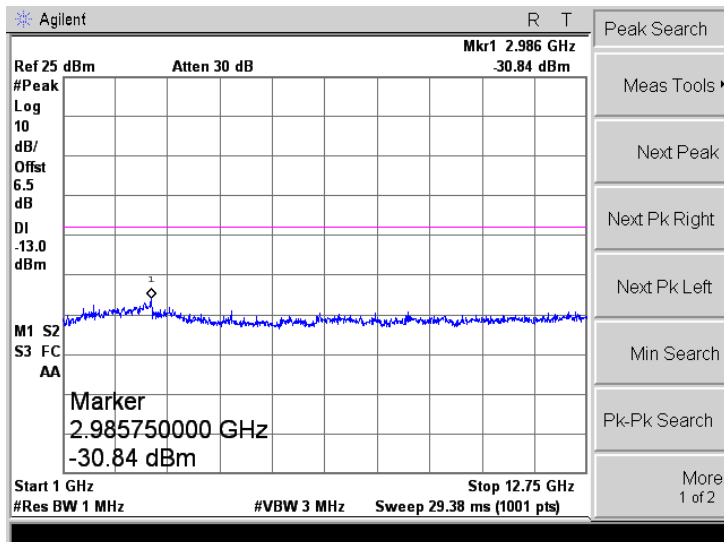
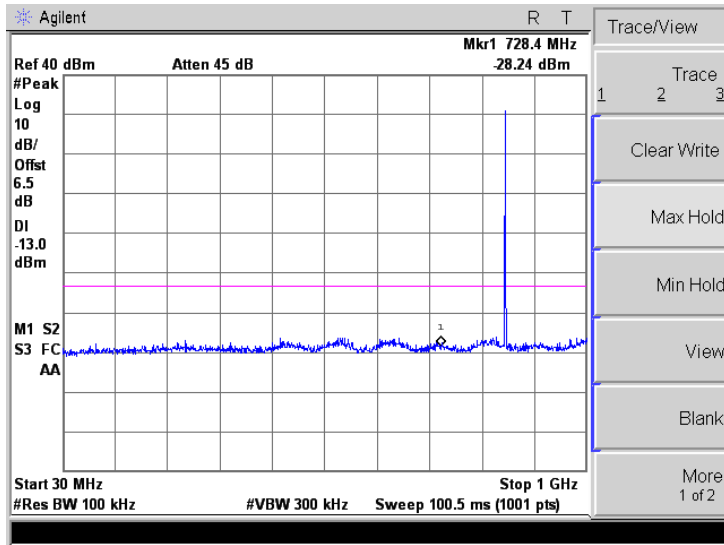
GSM850

Middle Channel



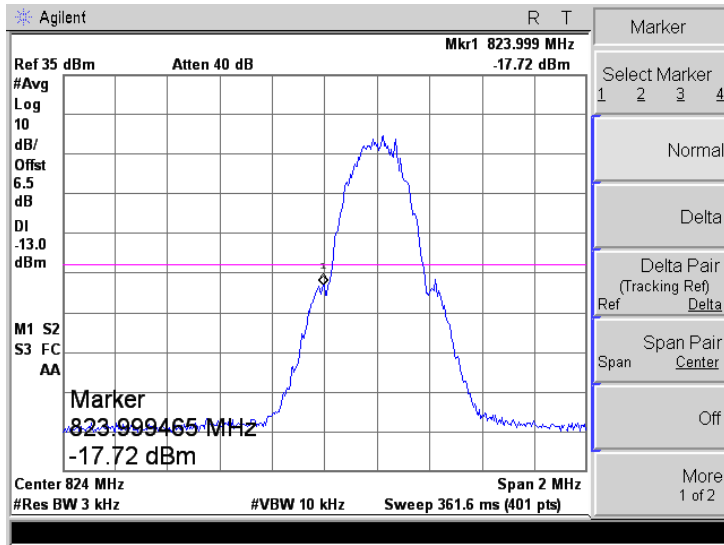
GSM850

High Channel

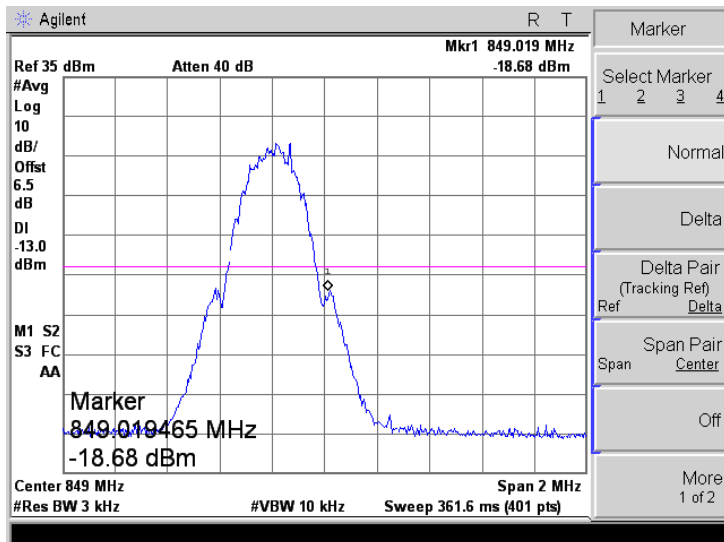


GSM850

Low Band Emission

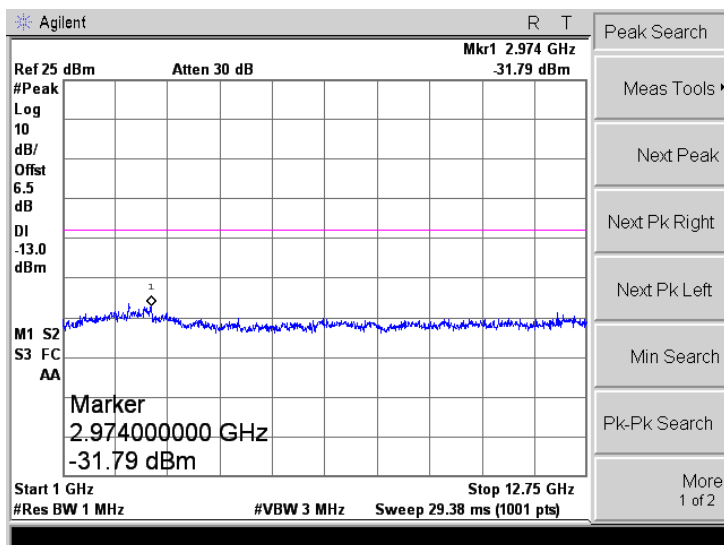
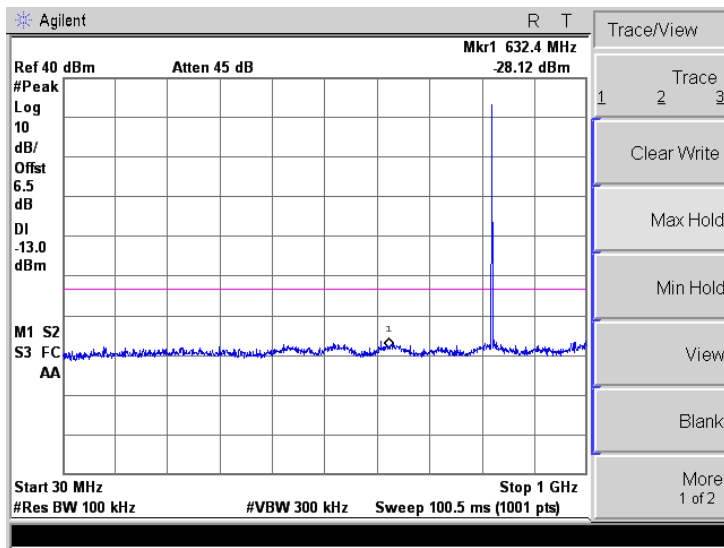


High Band Emission



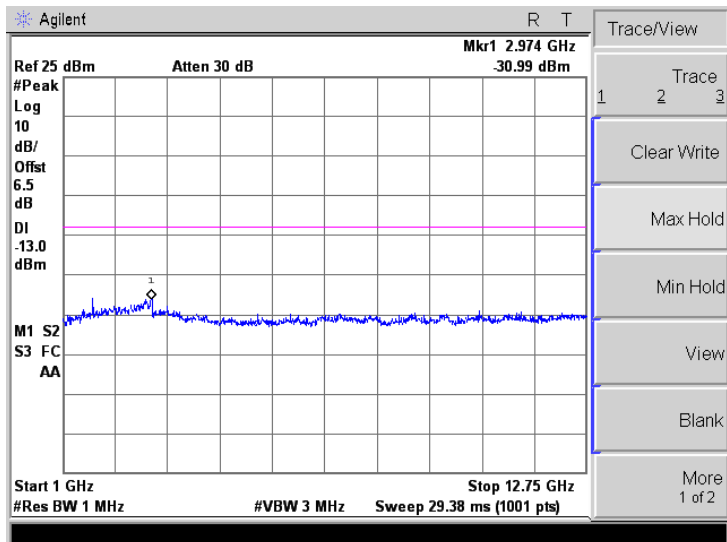
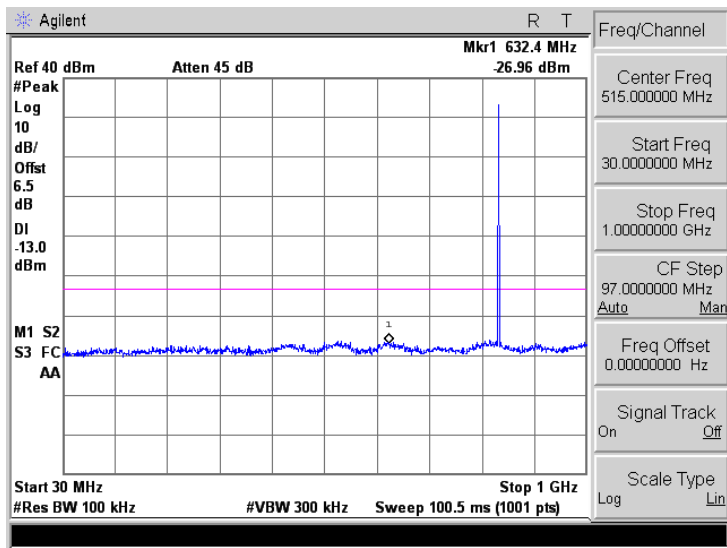
For Cellular Band

GPRS Low Channel



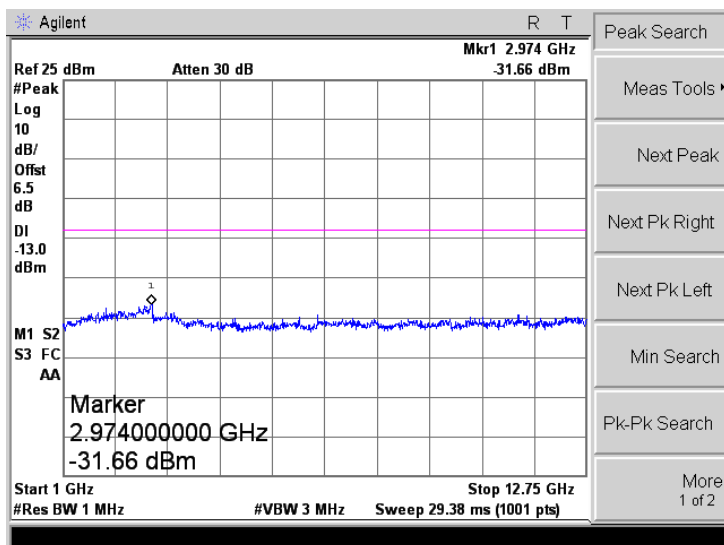
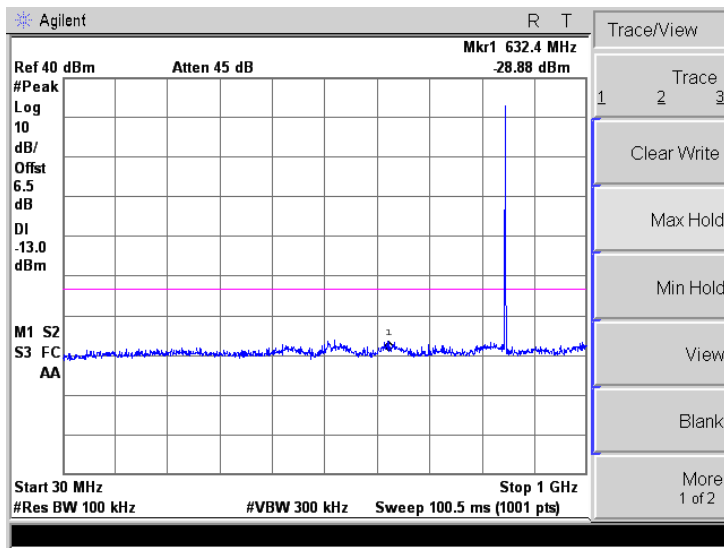
GPRS850

Middle Channel



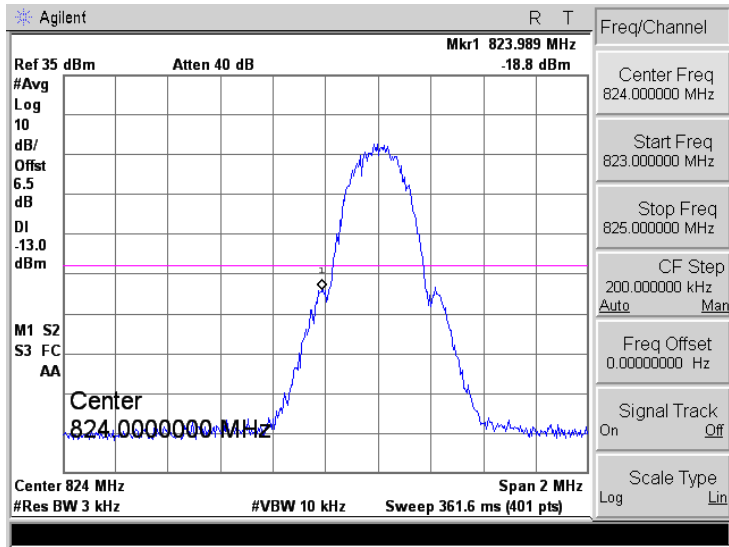
GPRS850

High Channel

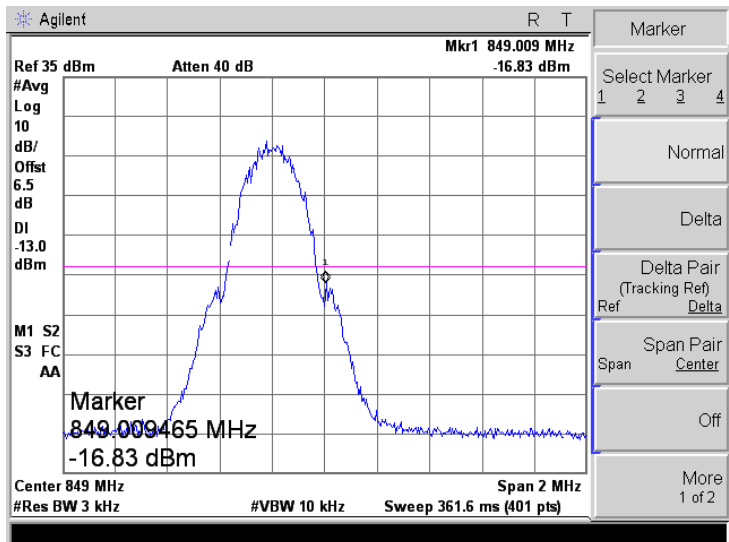


GPRS850

Low Band Emission

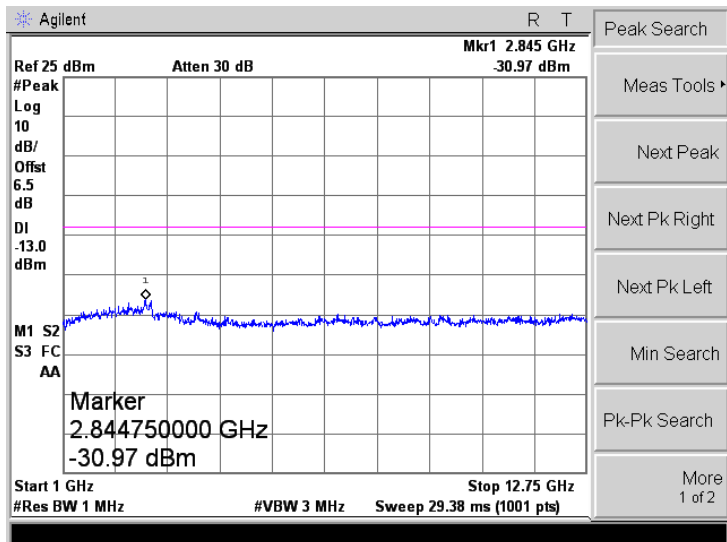
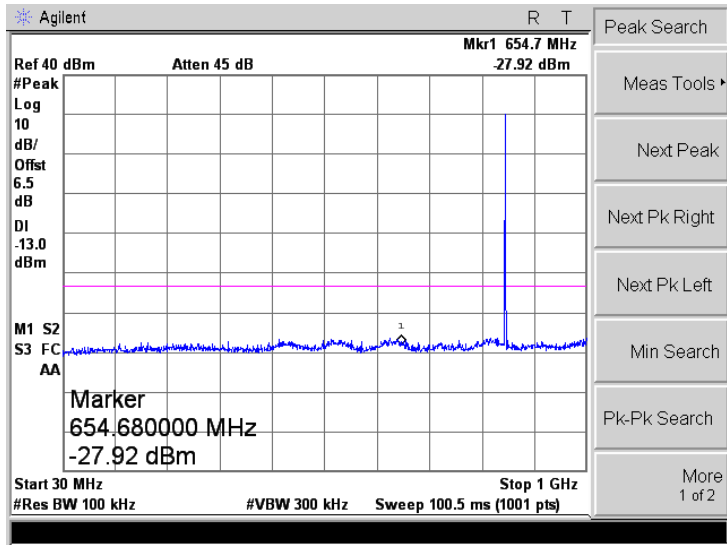


High Band Emission



EGPRS850

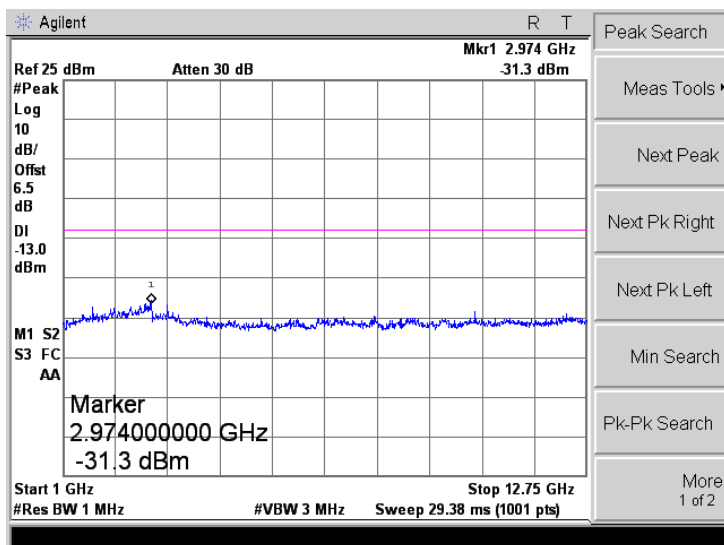
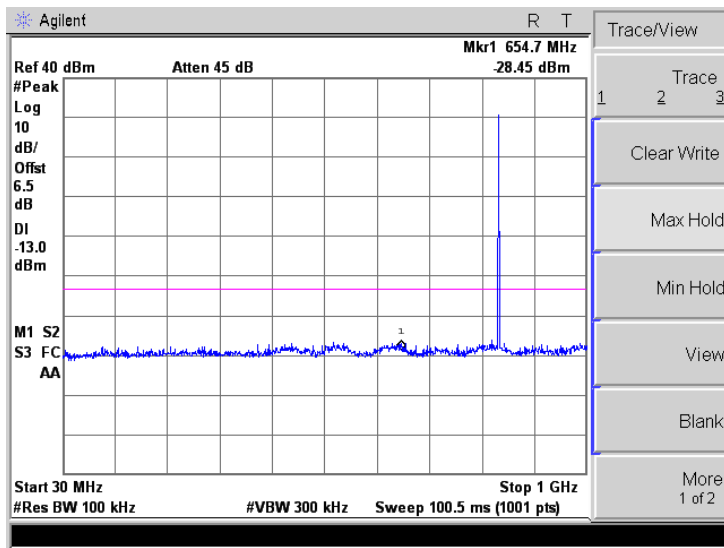
Low Channel





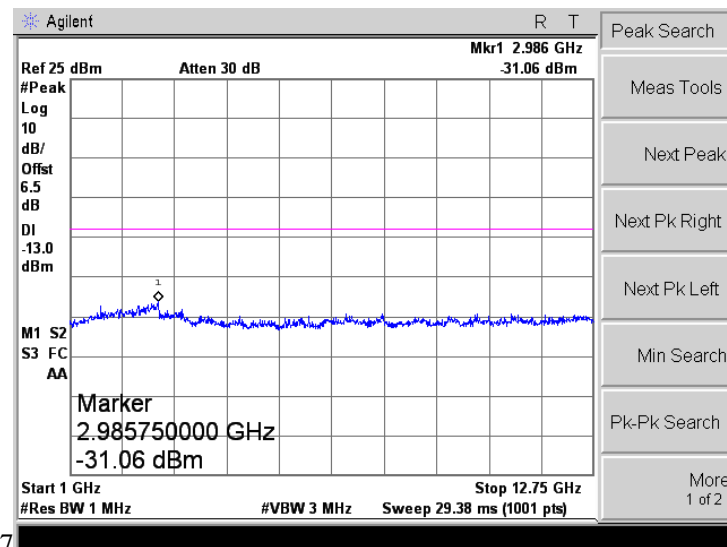
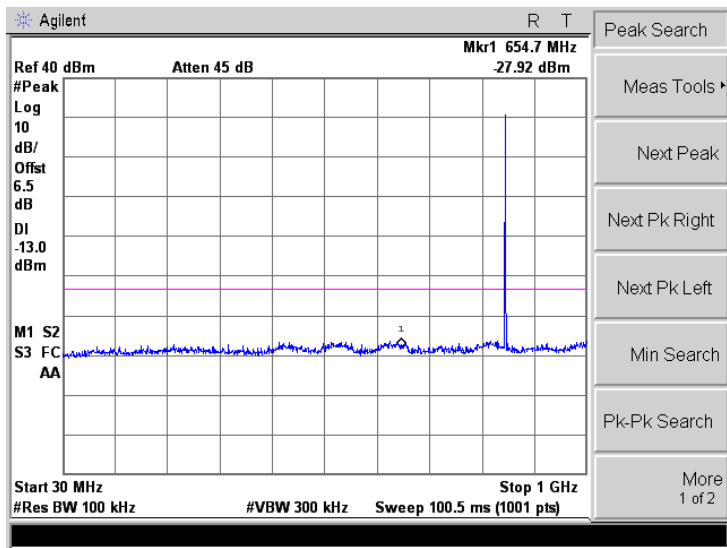
EGPRS850

Middle Channel



EGPRS850

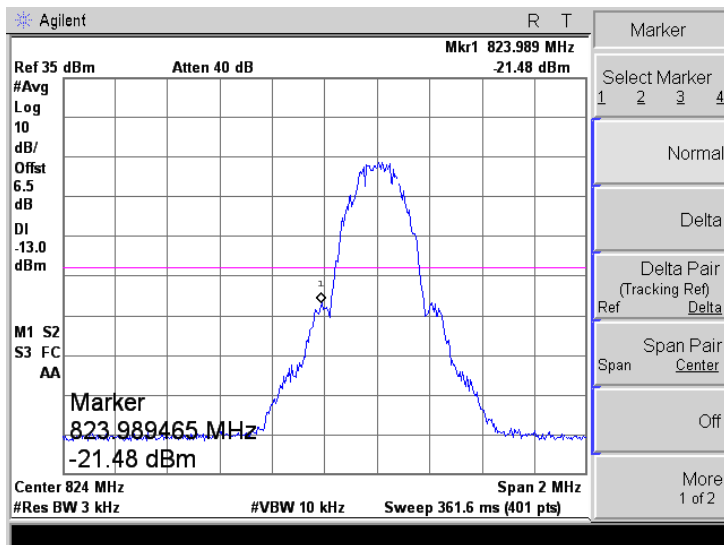
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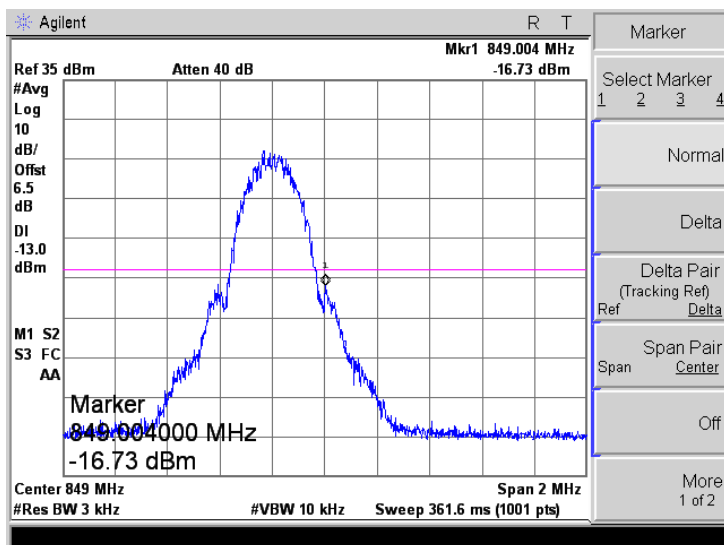
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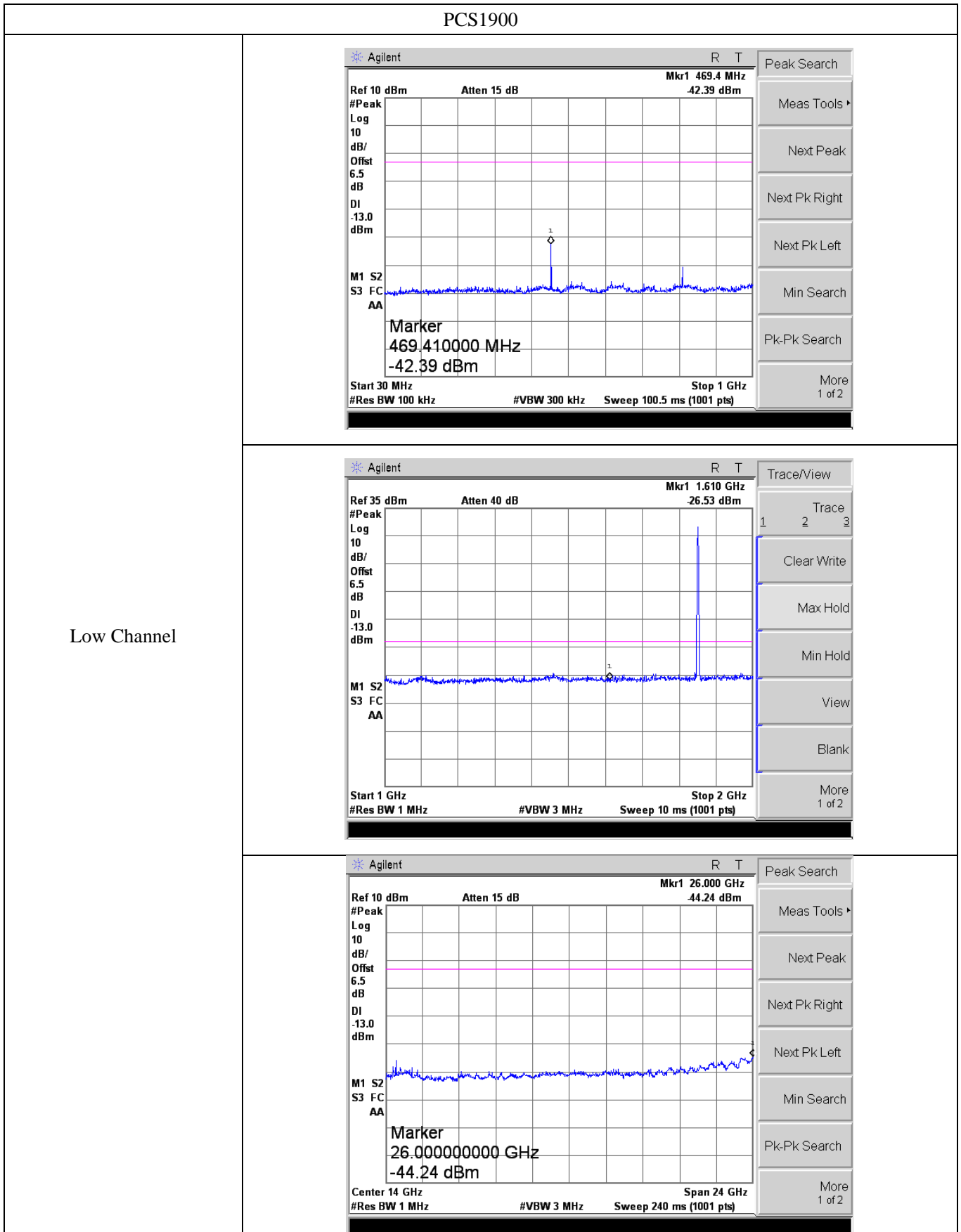
EGPRS850

Low Band Emission



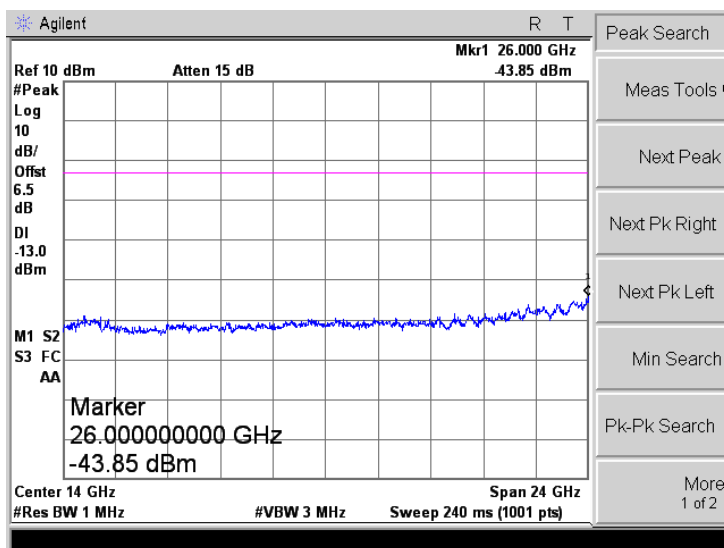
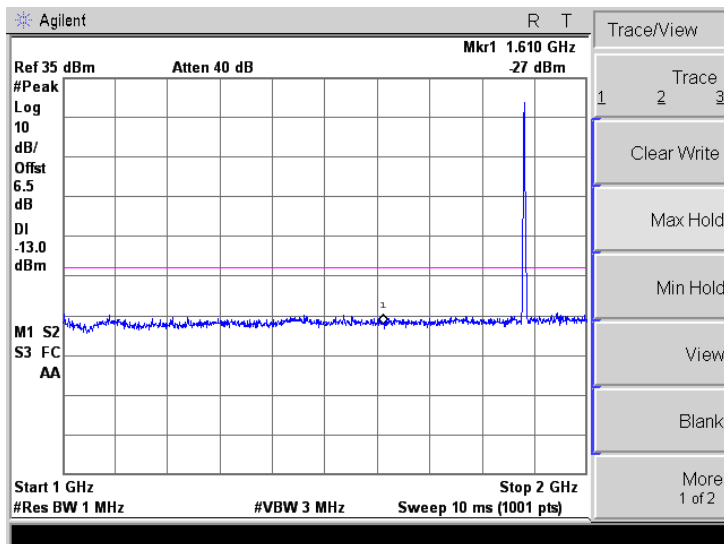
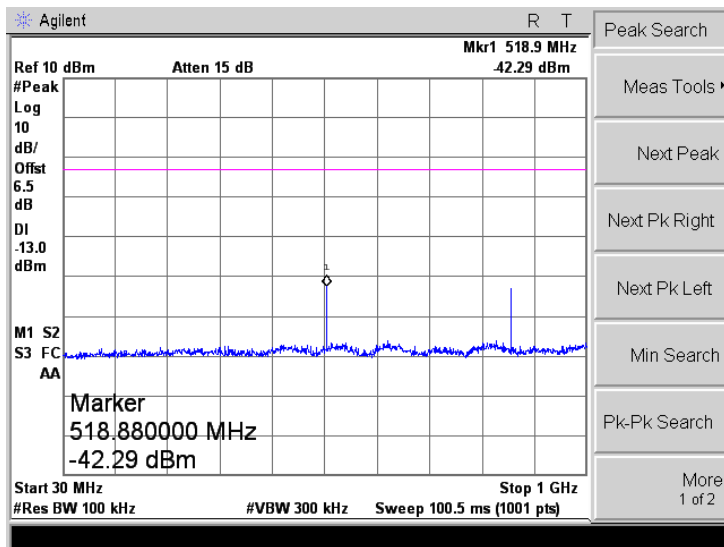
High Band Emission





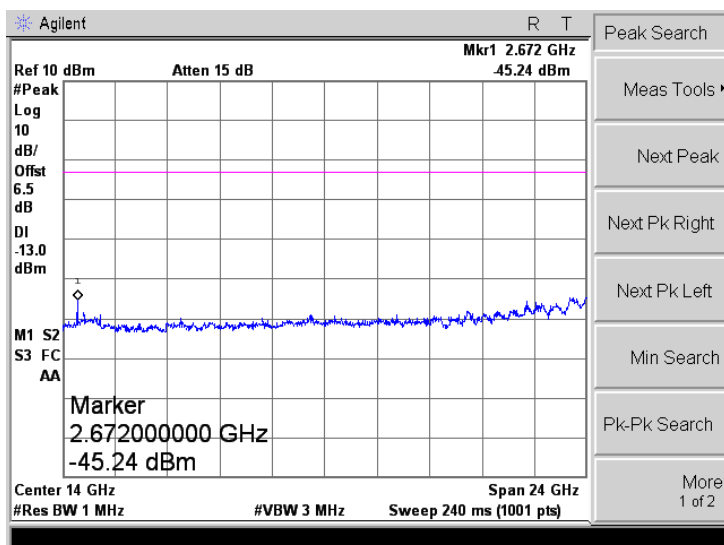
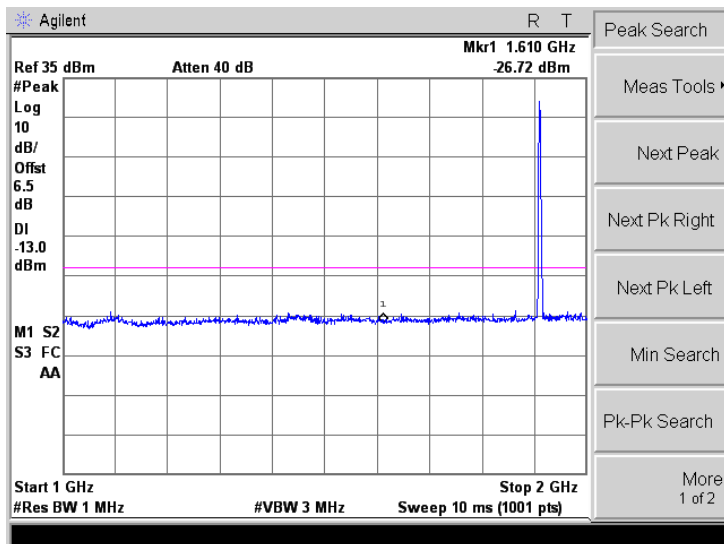
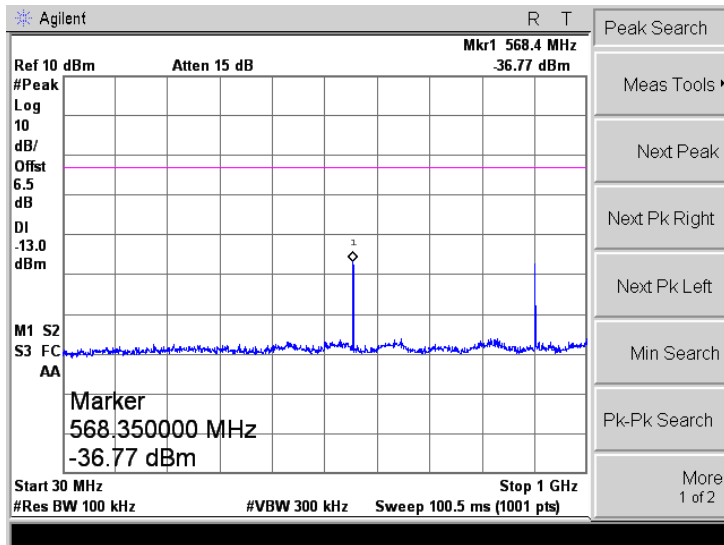
PCS1900

Middle Channel



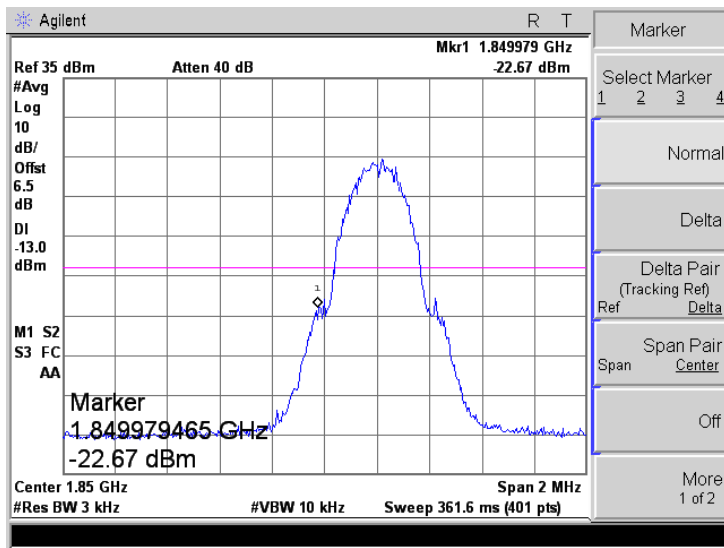
PCS1900

High Channel

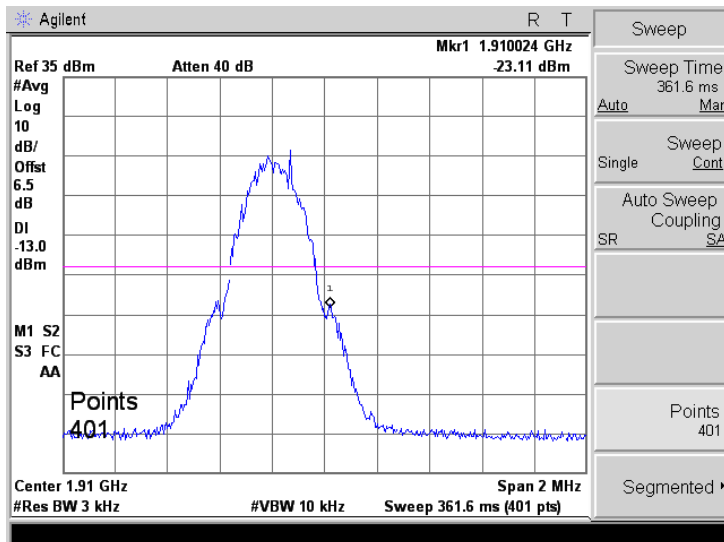


PCS1900

Low Band Emission

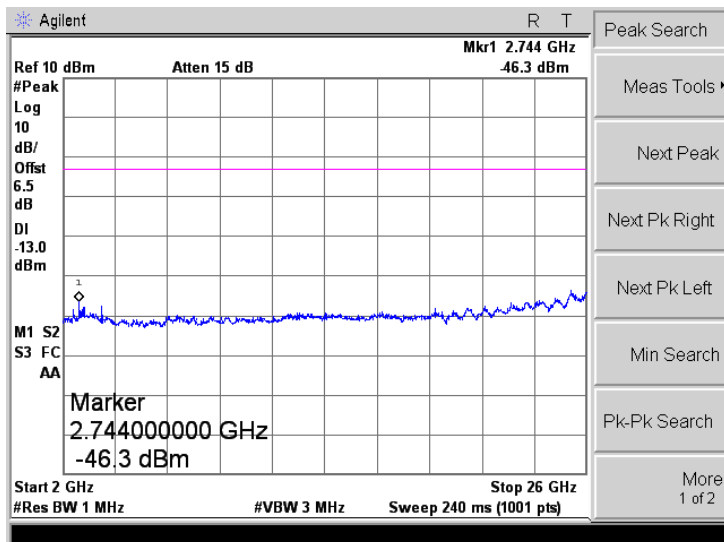
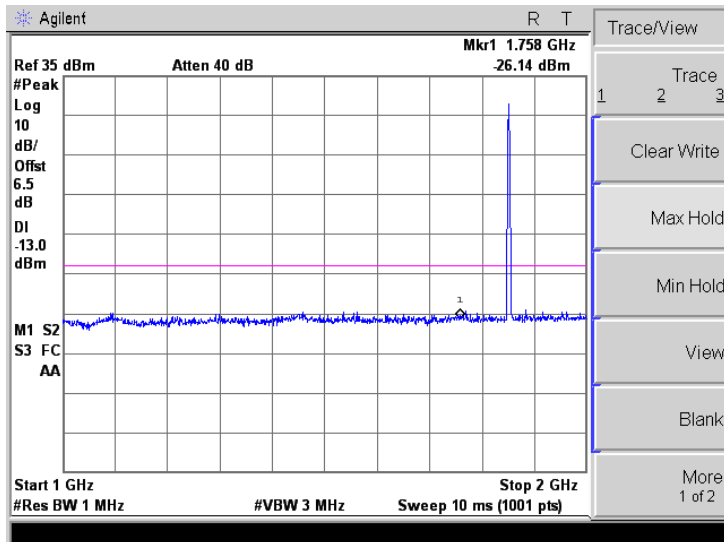
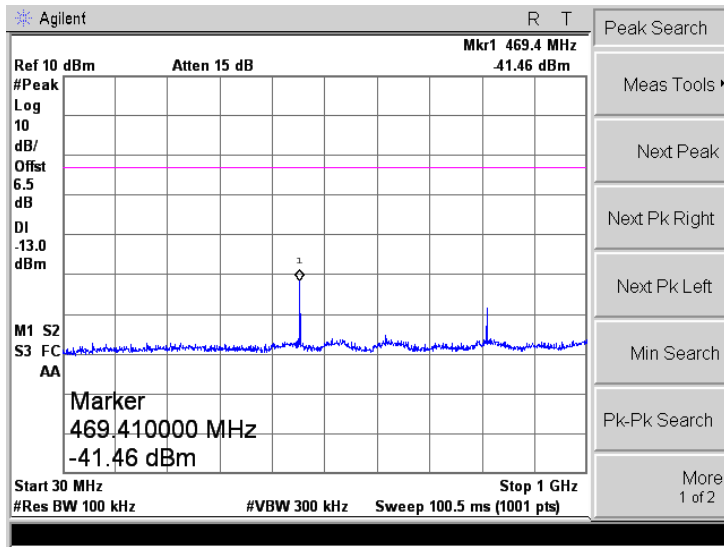


High Band Emission



GPRS1900

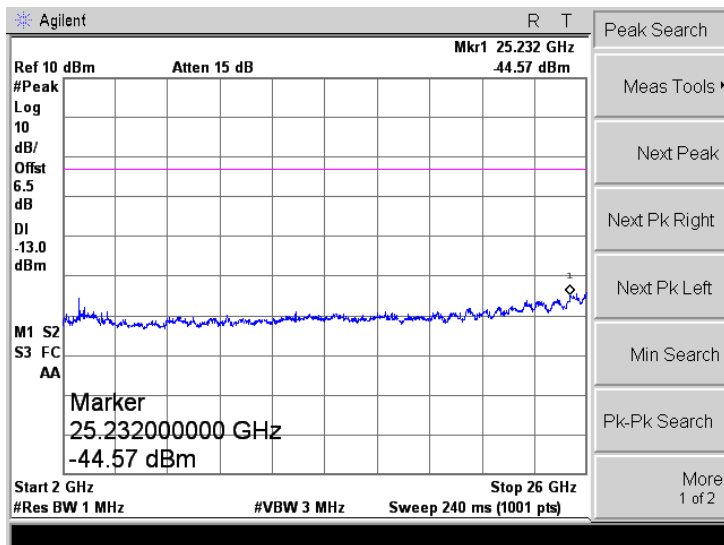
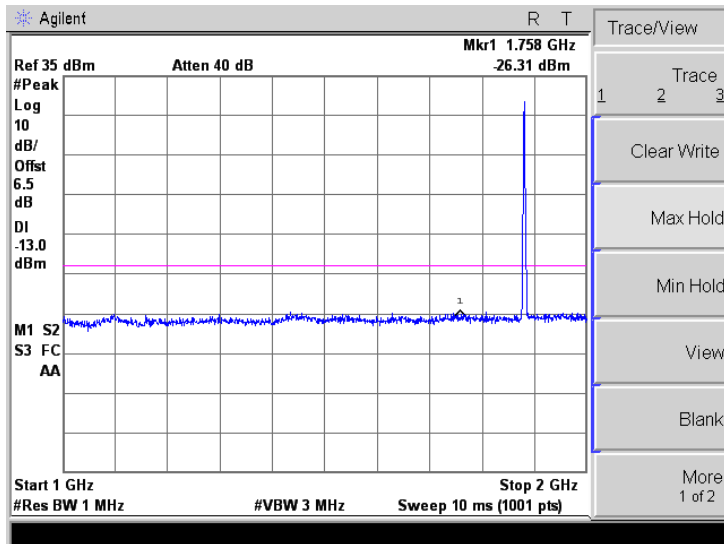
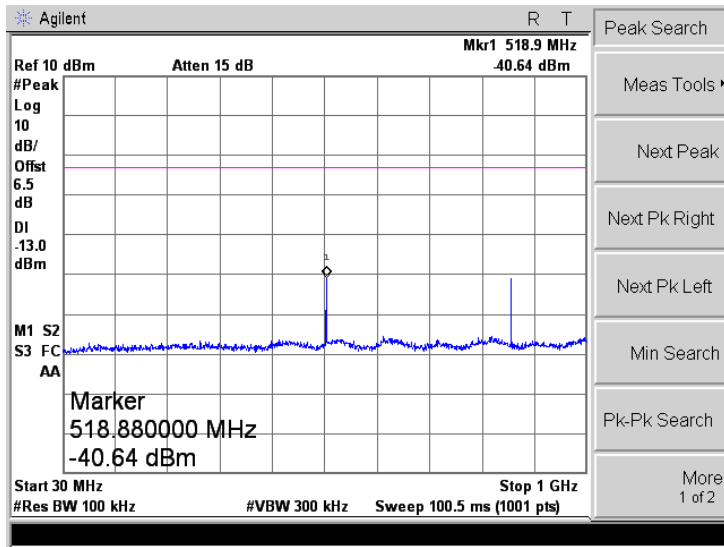
Low Channel





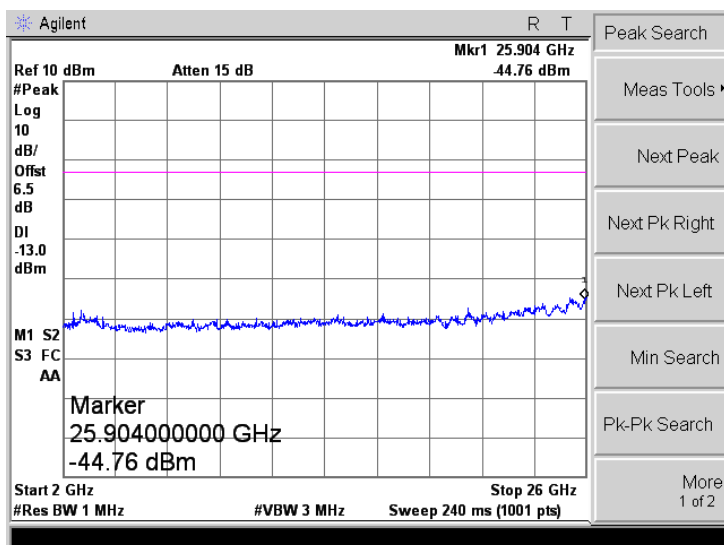
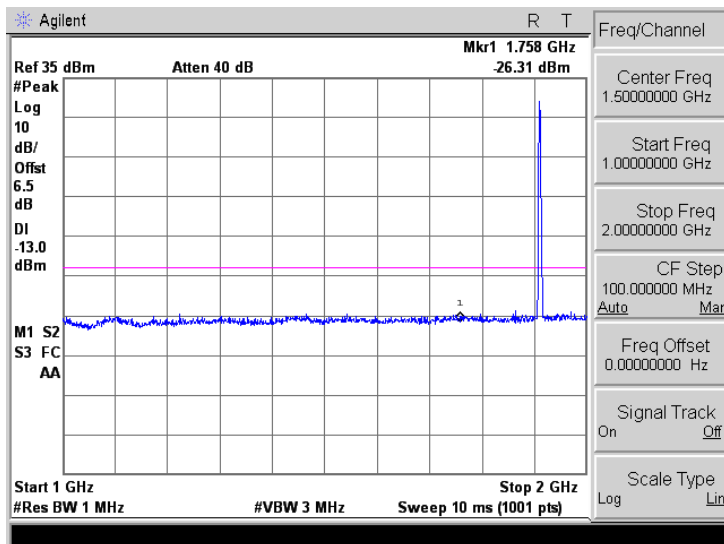
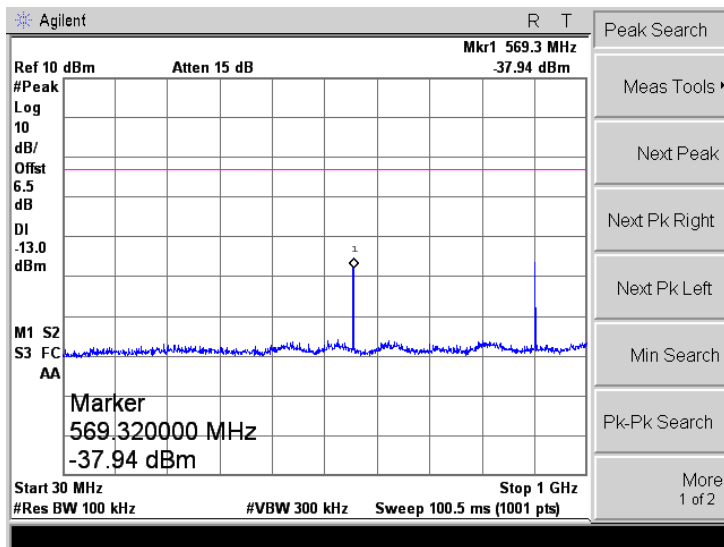
GPRS1900

Middle Channel



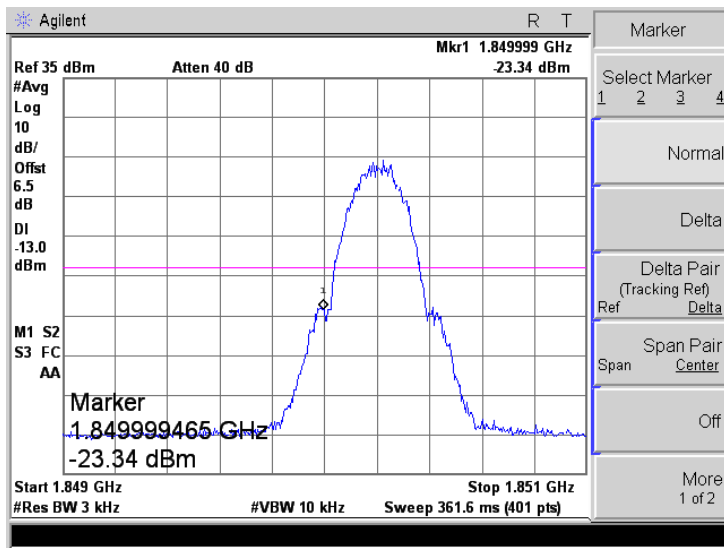
GPRS1900

High Channel

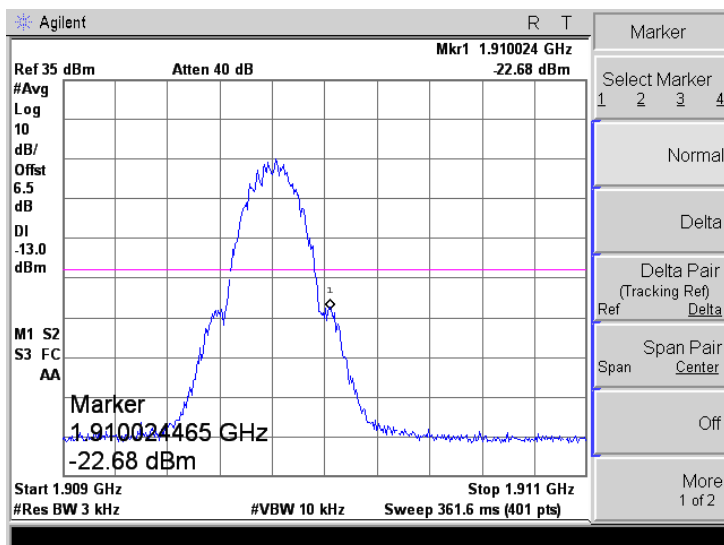


GPRS1900

Low Band Emission

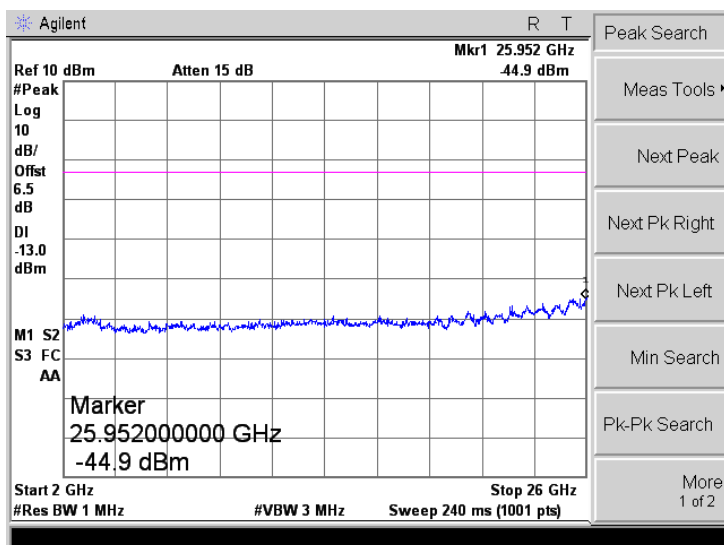
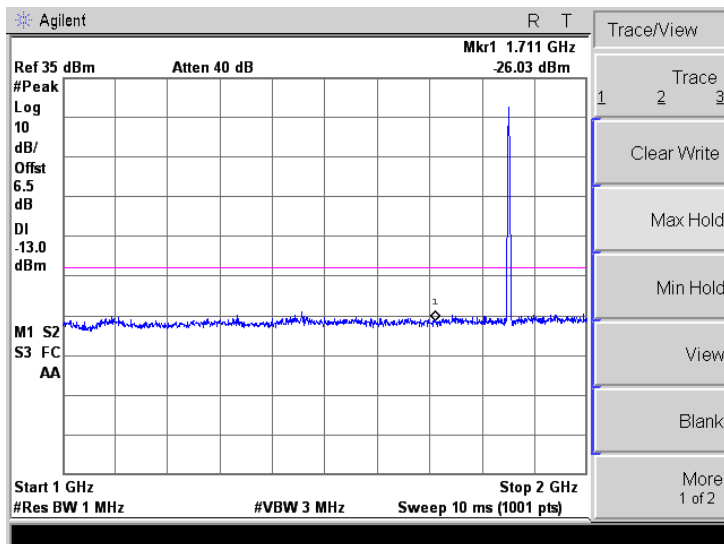
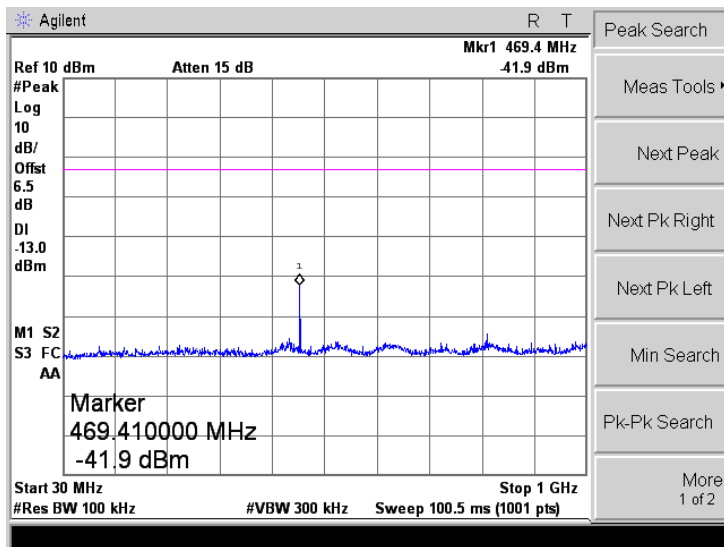


High Band Emission



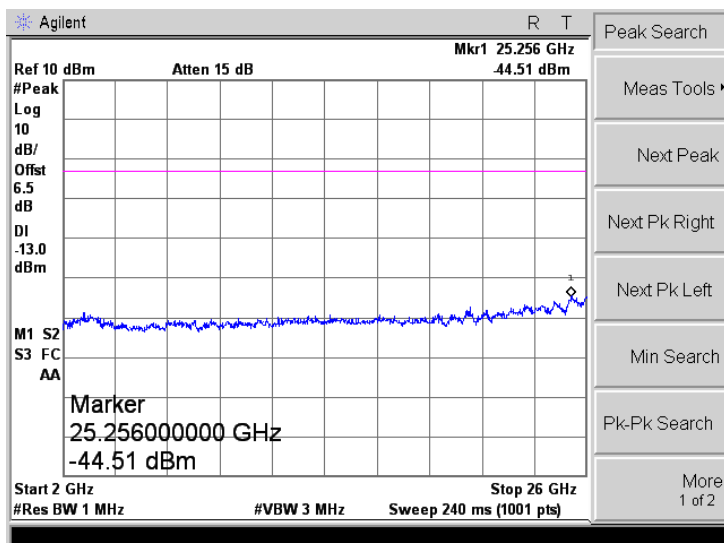
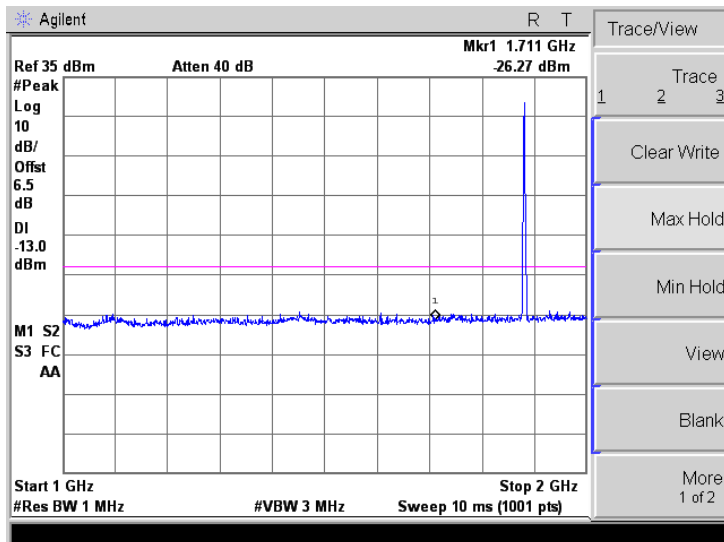
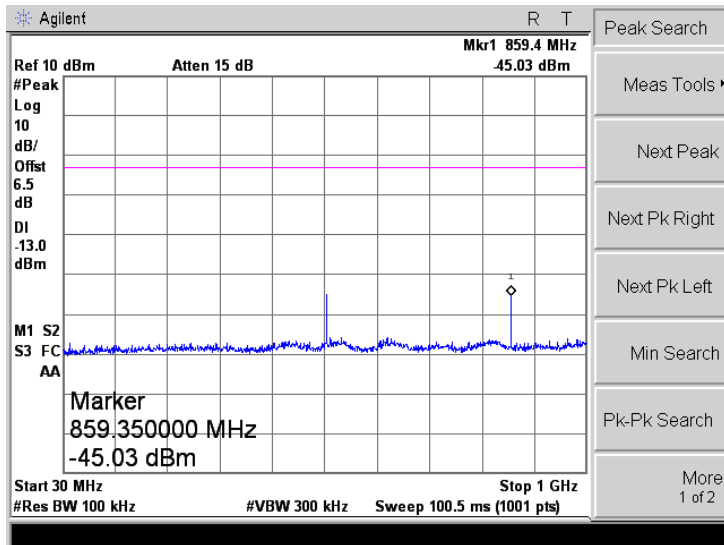
EGPRS1900

Low Channel



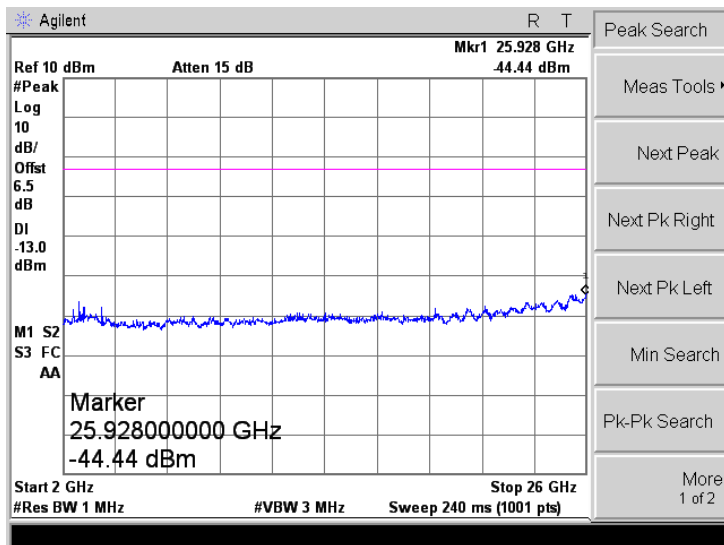
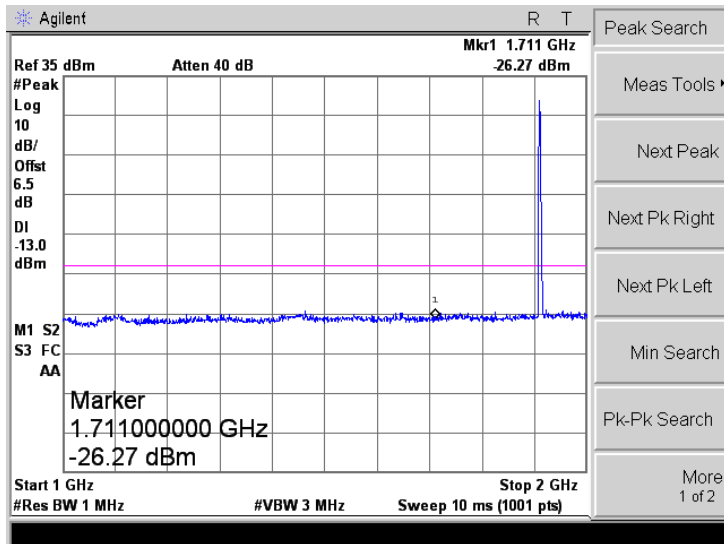
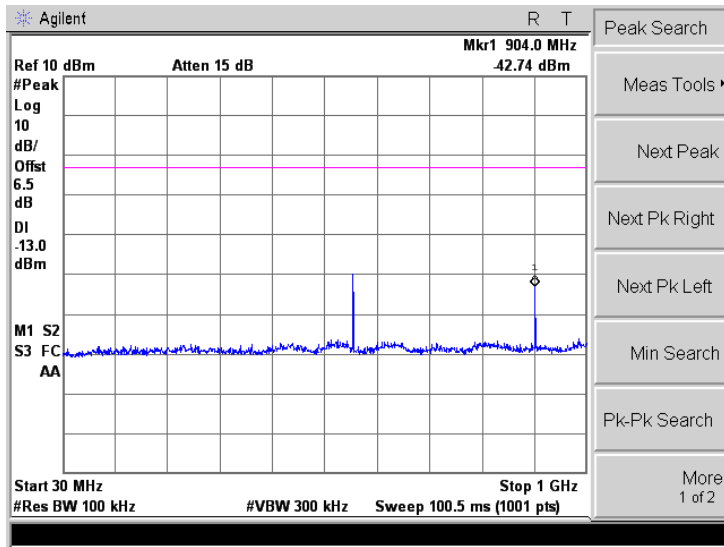
EGPRS1900

Middle Channel



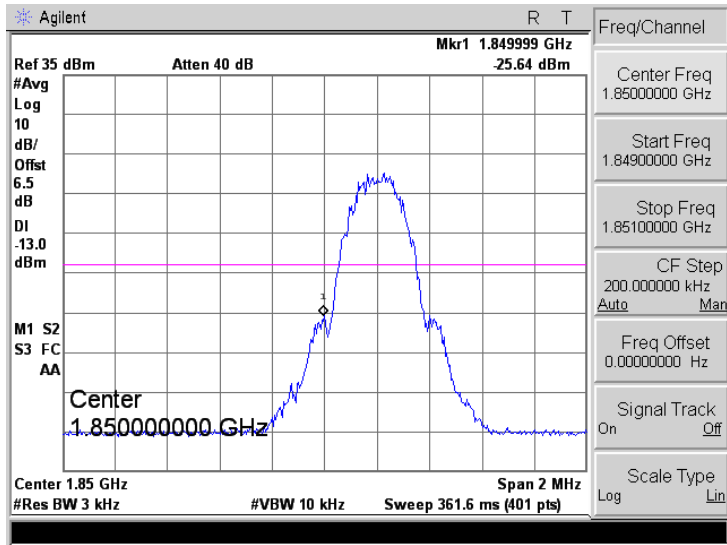
EGPRS1900

High Channel

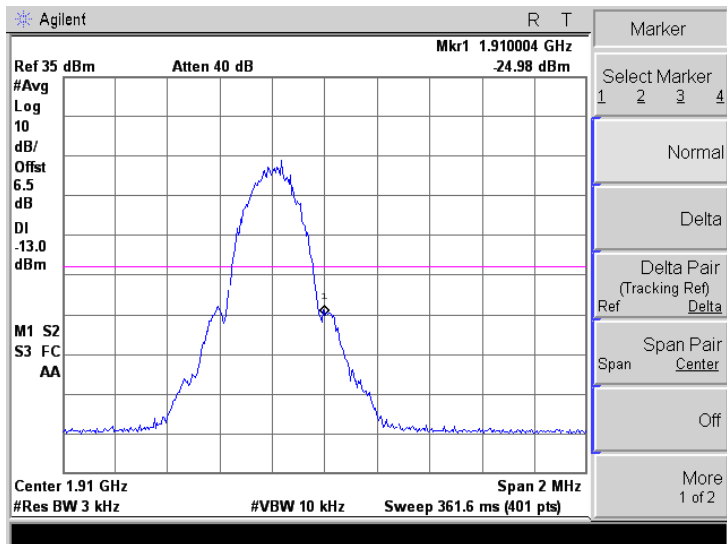


EGPRS1900

Low Band Emission

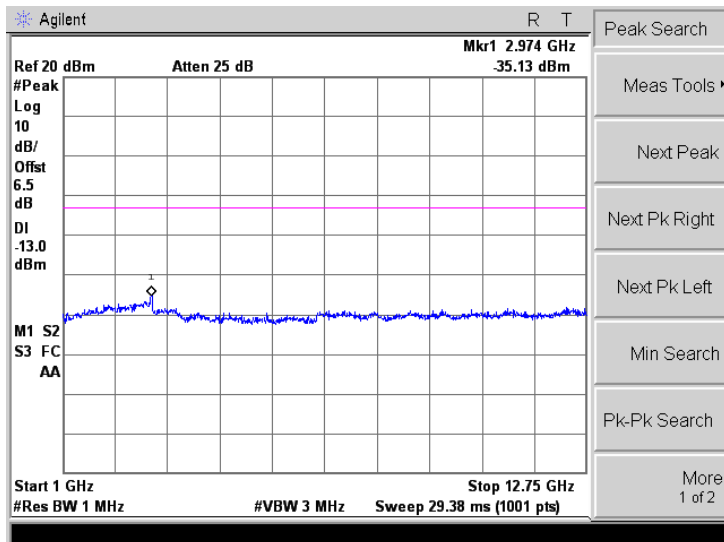
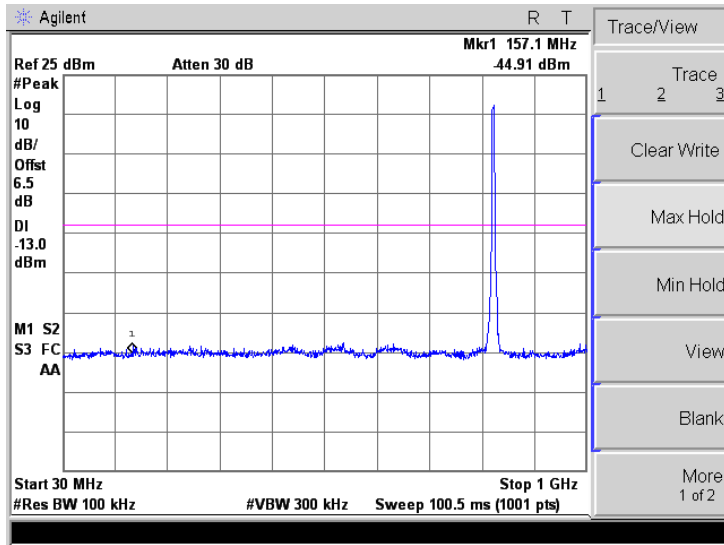


High Band Emission



WCDMA Band V

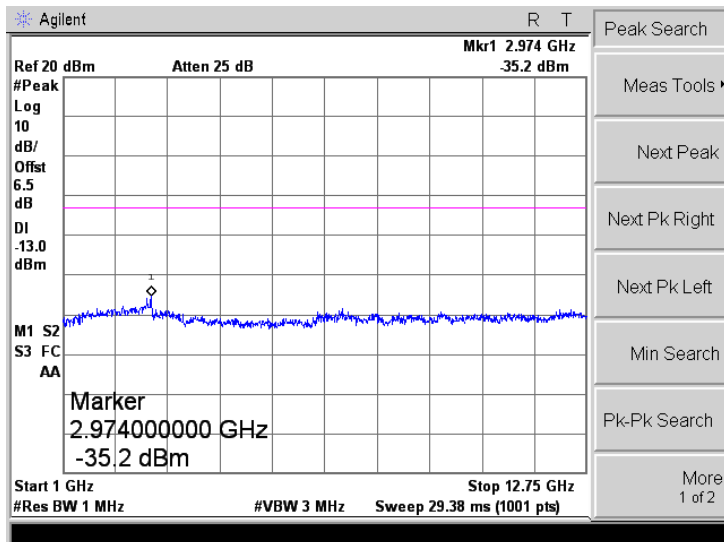
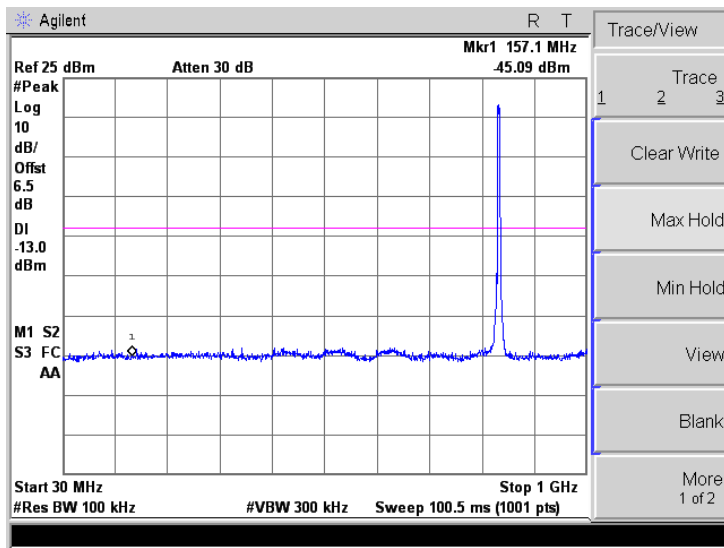
Low Channel





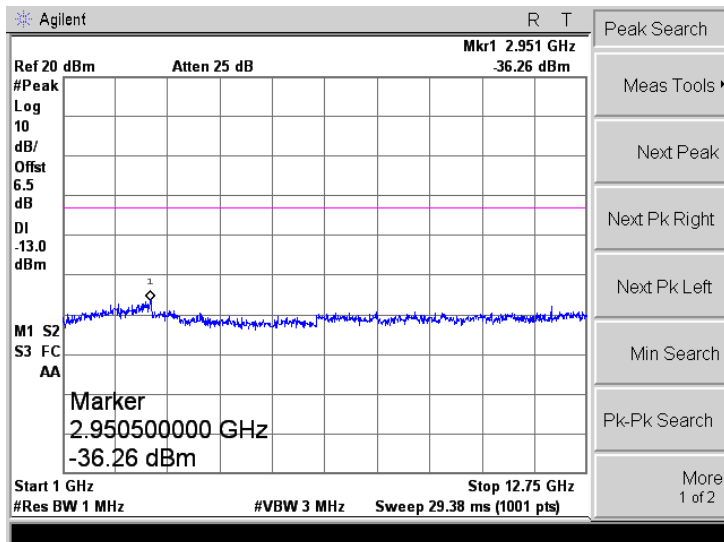
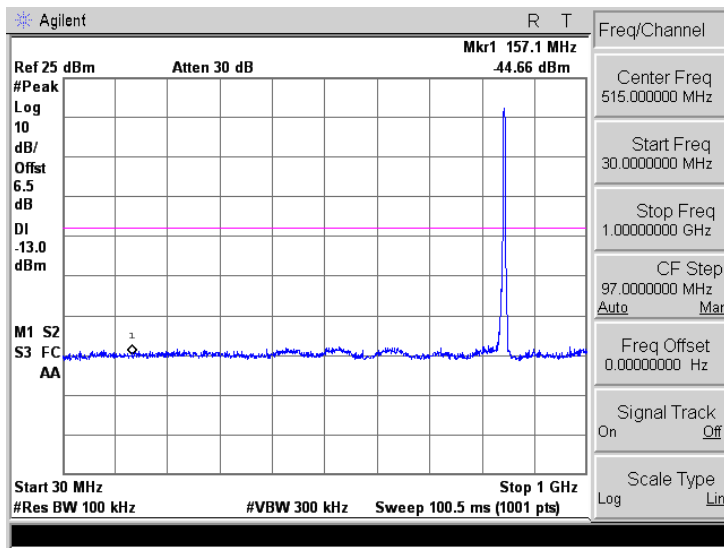
WCDMA Band V

Middle Channel



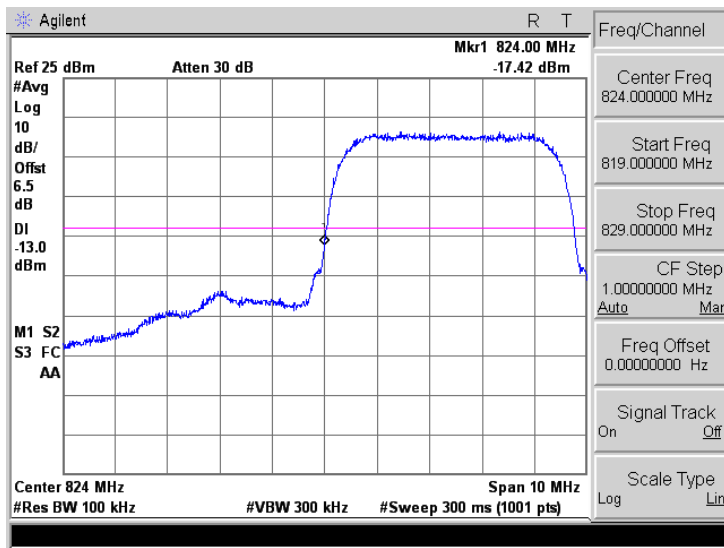
WCDMA Band V

High Channel

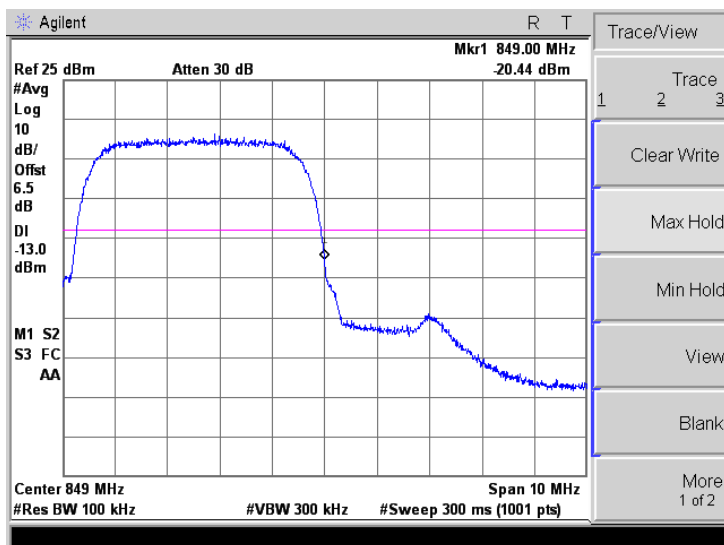


WCDMA Band V

Low Band Emission

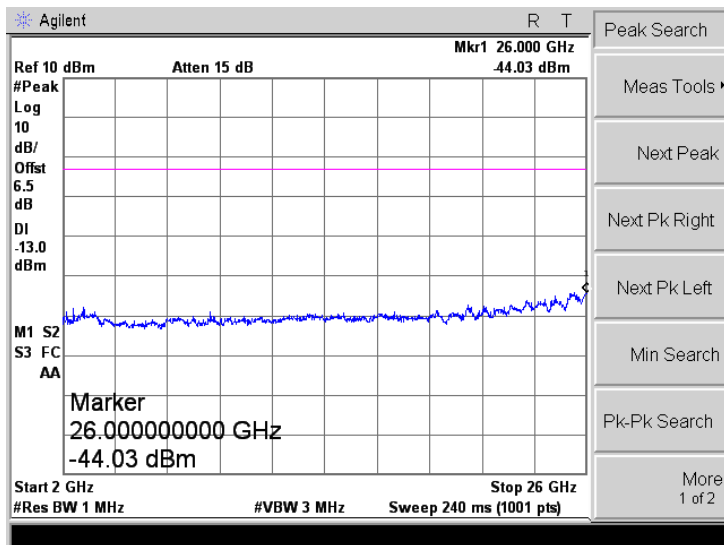
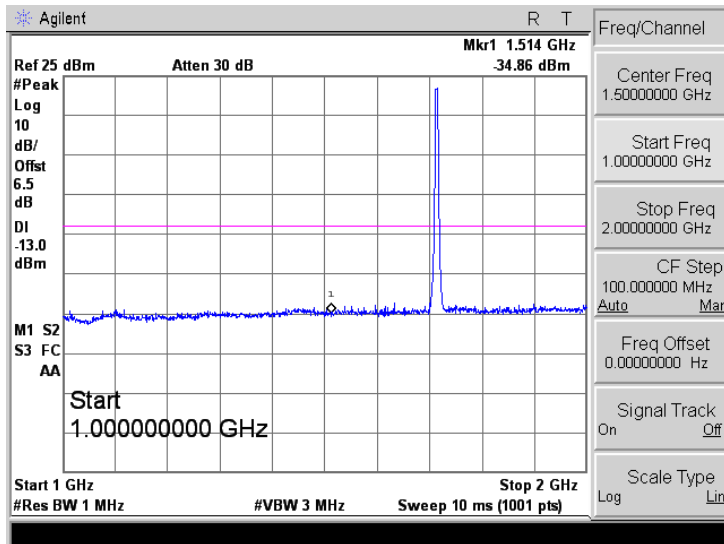
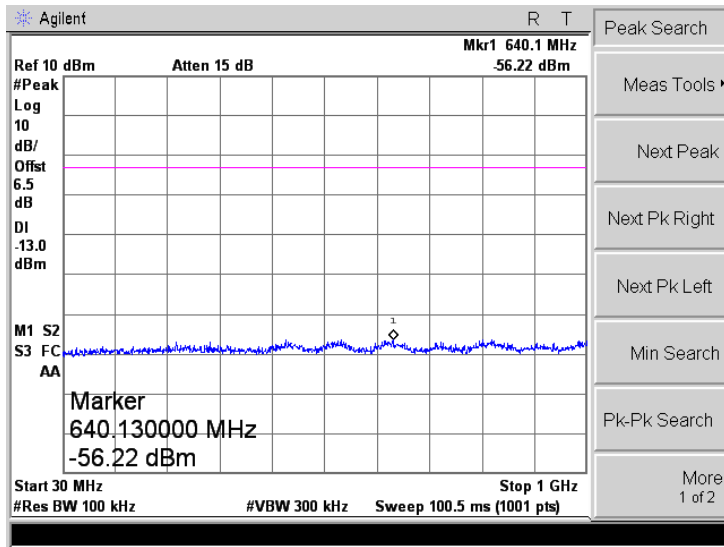


High Band Emission



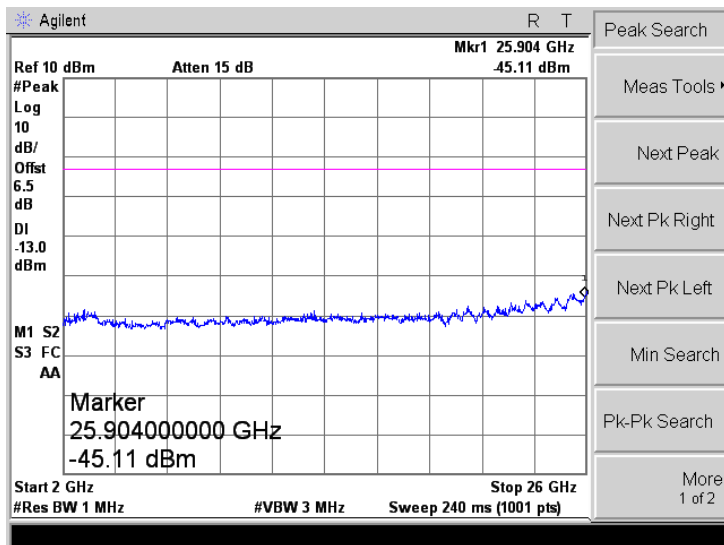
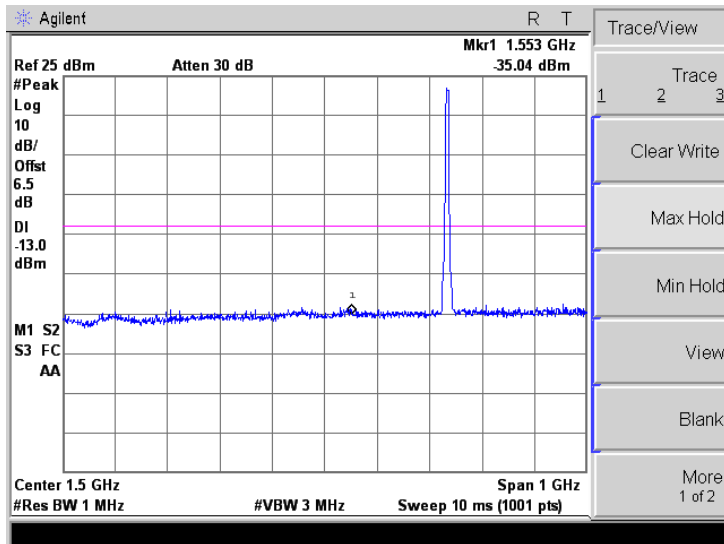
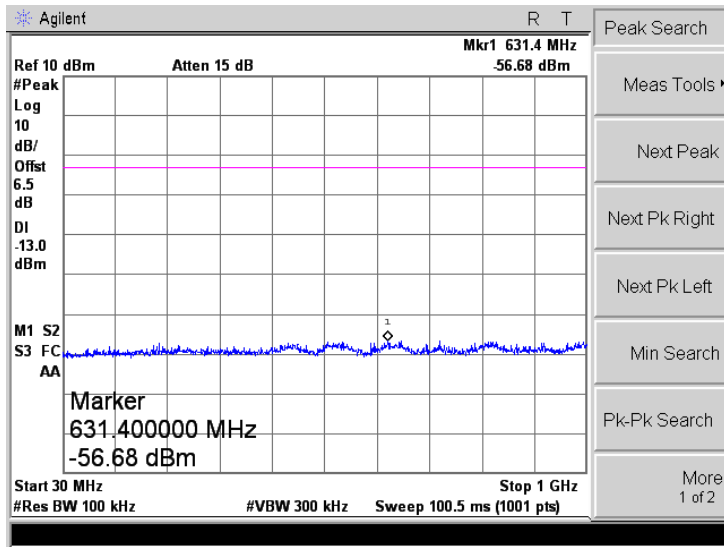
WCDMA Band IV

Low Channel



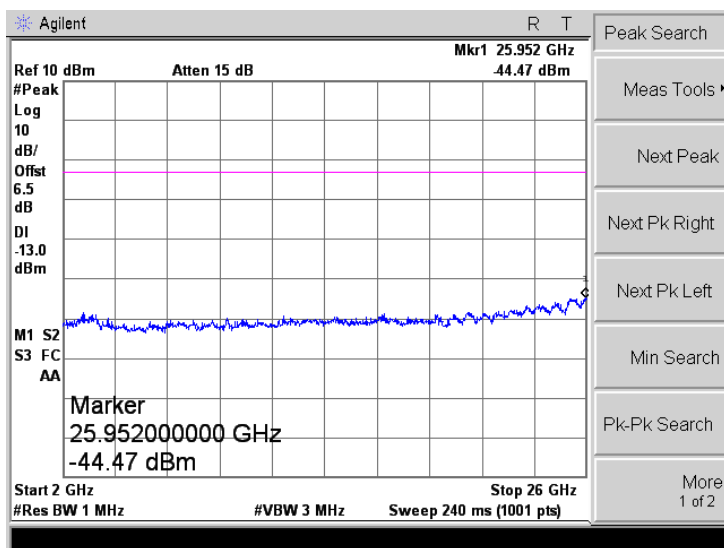
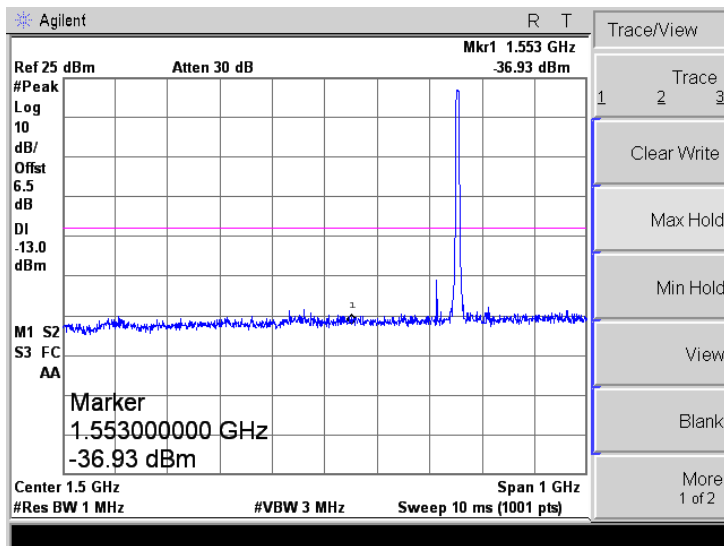
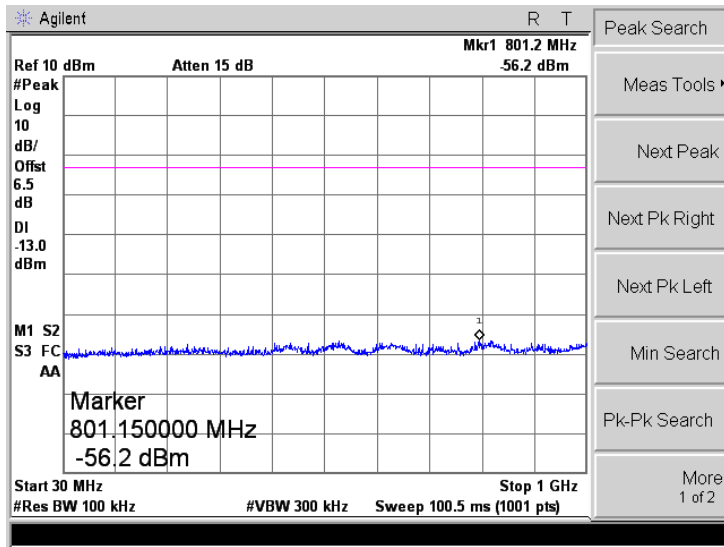
### WCDMA Band IV

Middle Channel



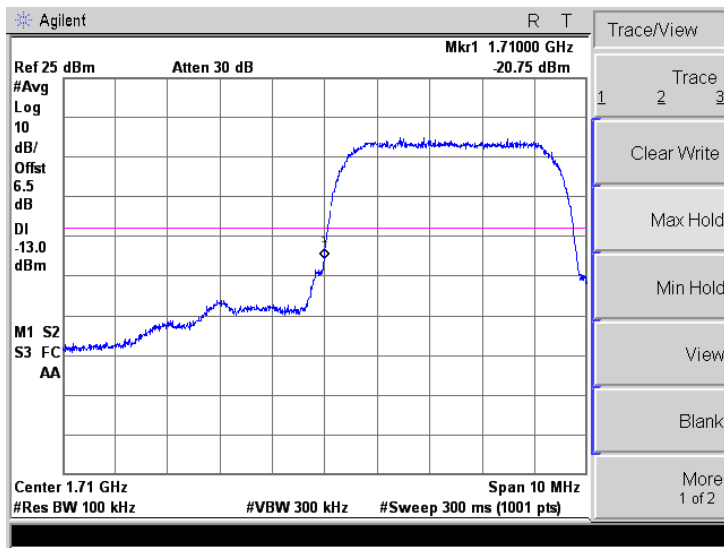
WCDMA Band IV

High Channel

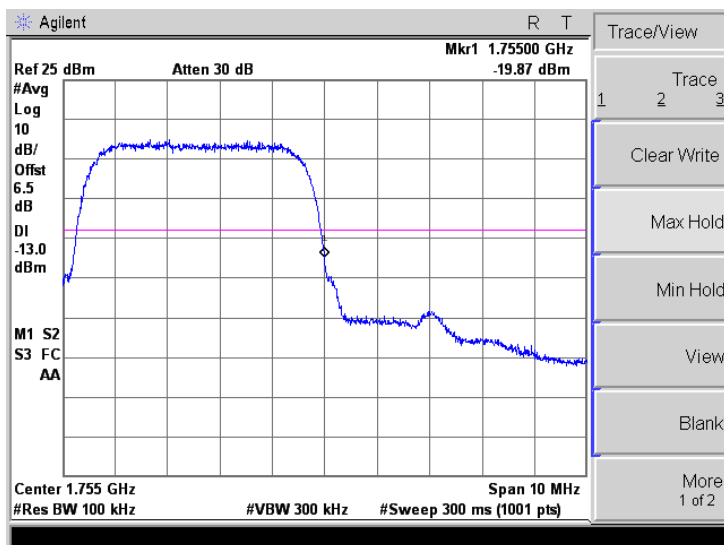


WCDMA Band IV

Low Band Emission

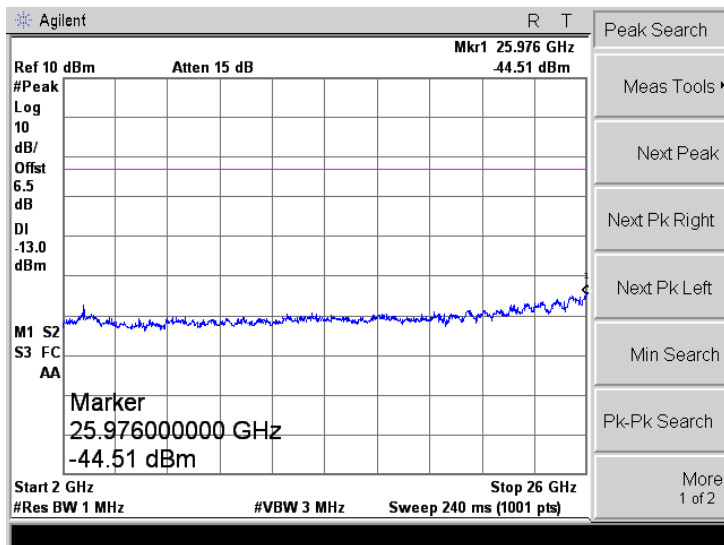
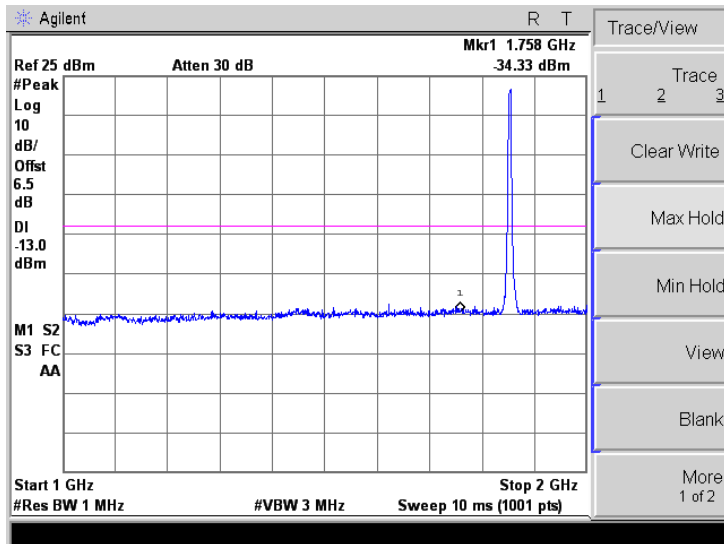
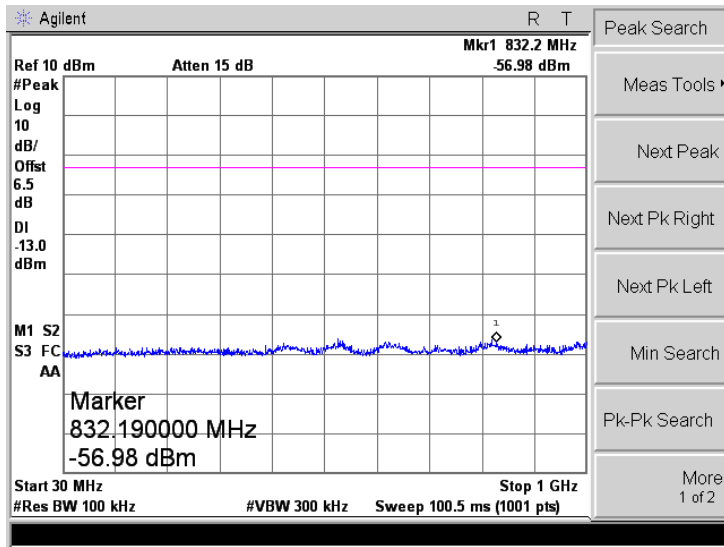


High Band Emission



WCDMA Band II

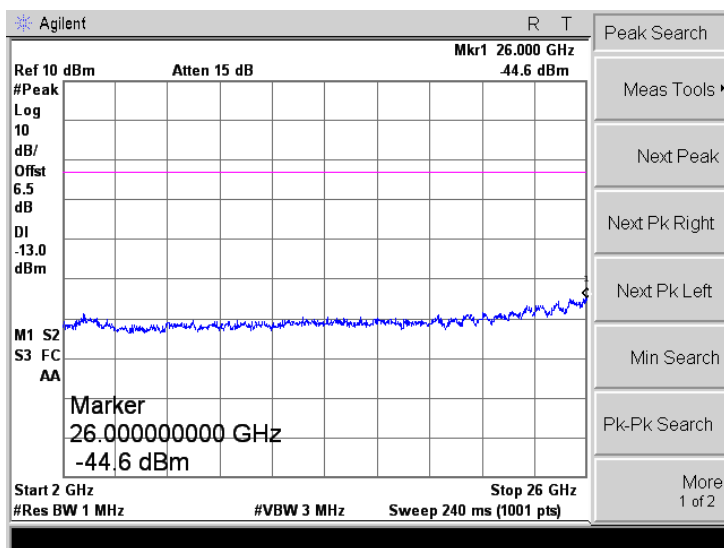
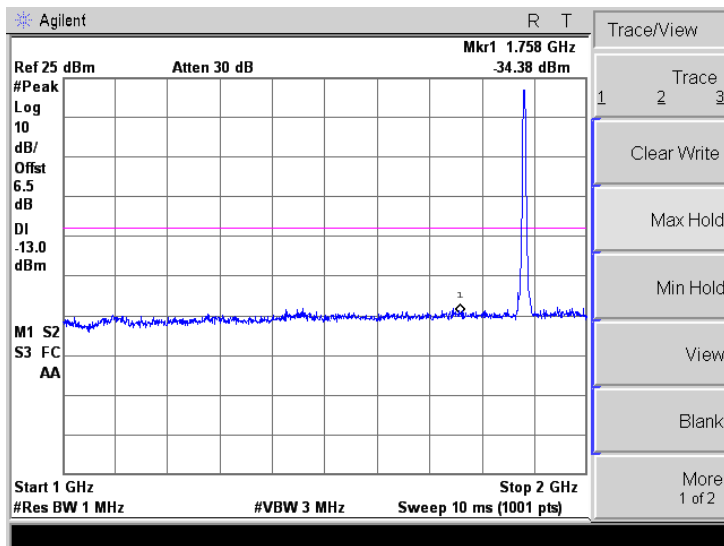
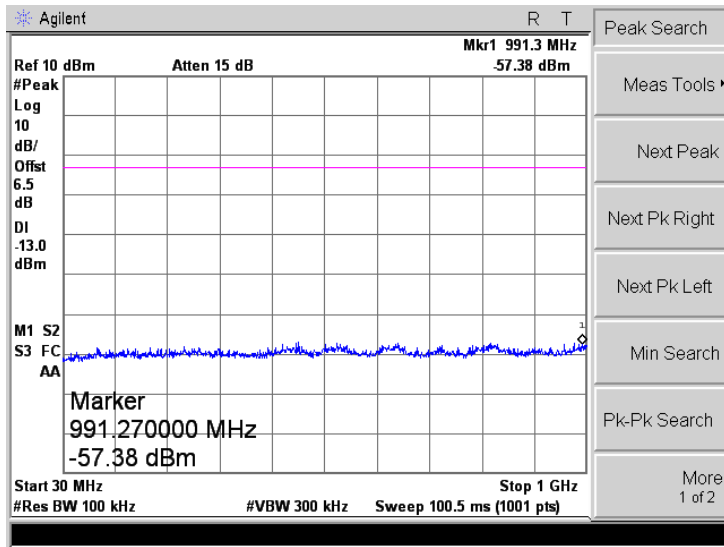
Low Channel





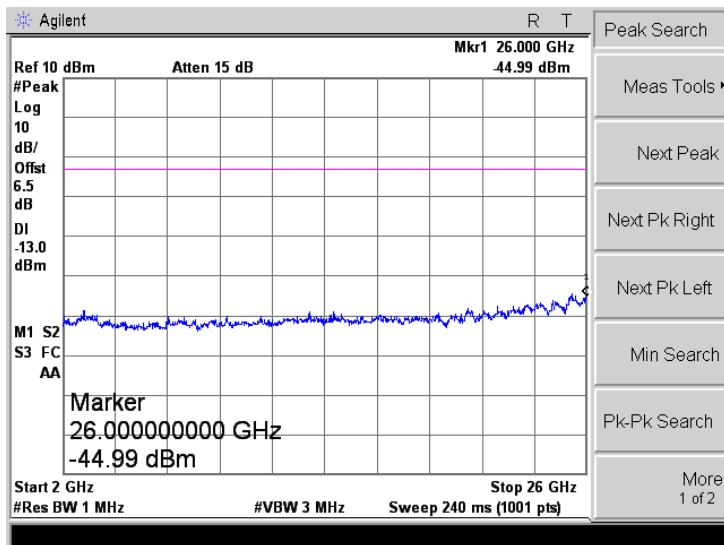
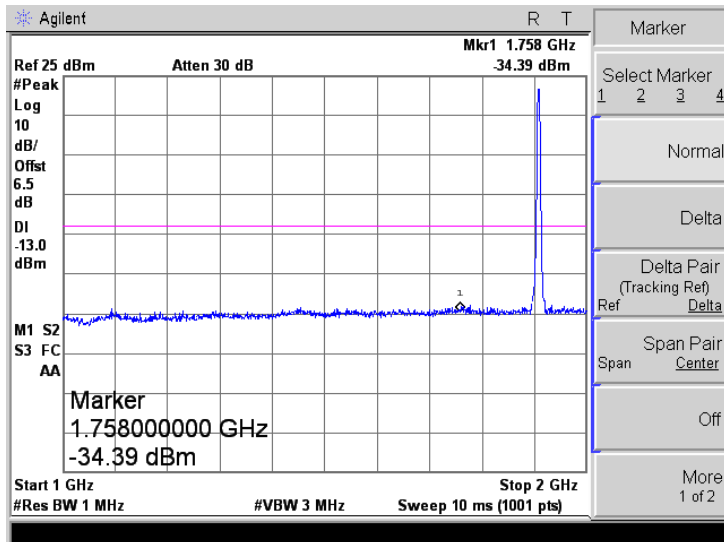
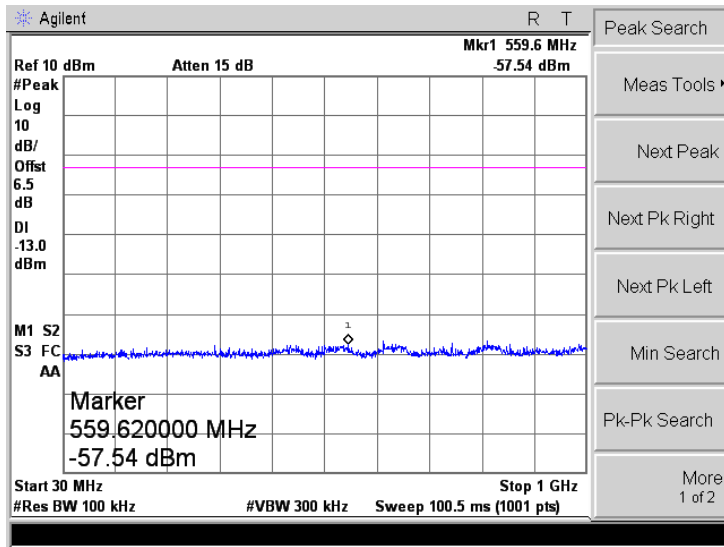
WCDMA Band II

Middle Channel



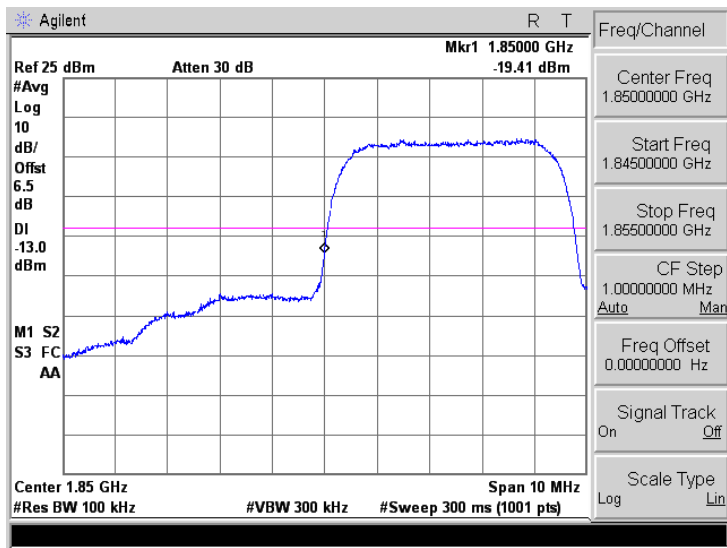
WCDMA Band II

High Channel

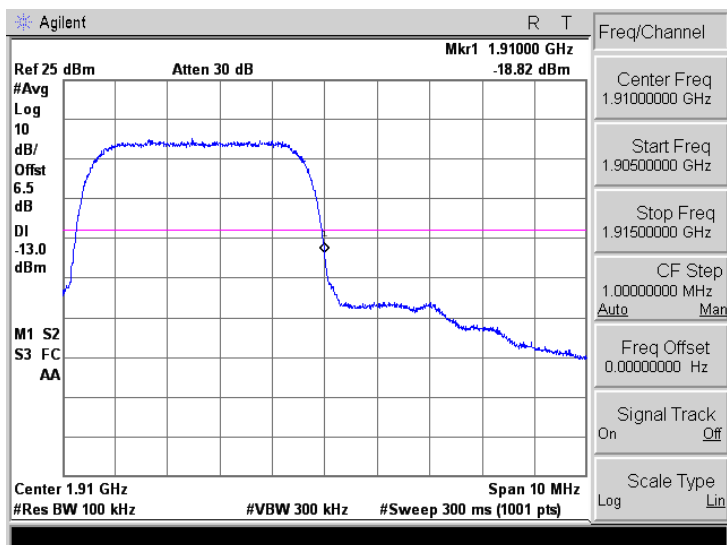


WCDMA Band II

Low Band Emission



High Band Emission



## 8. Spurious Radiated Emissions

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### 8.1 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.

### 8.2 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.

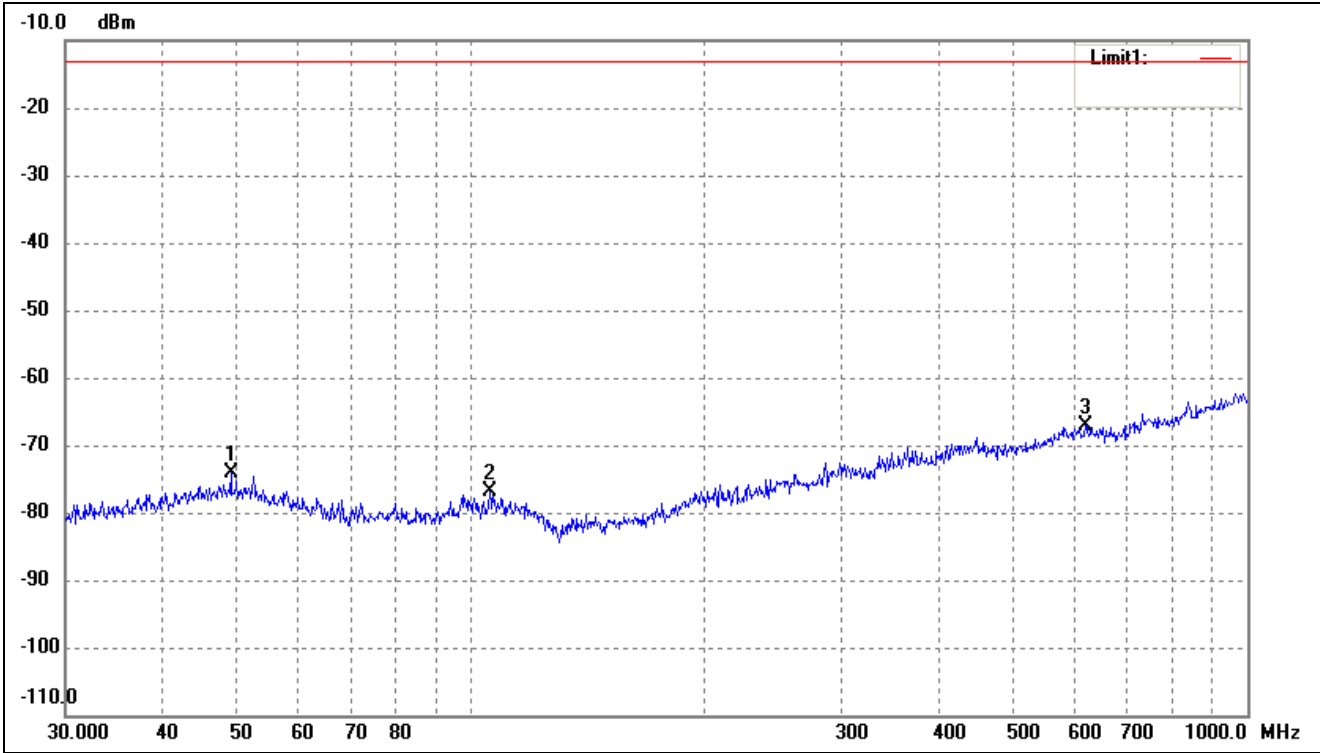
$$\text{Spurious attenuation limit in dB} = 43 + 10 \log_{10}(\text{power out in Watts})$$

### 8.3 Summary of Test Results/Plots

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

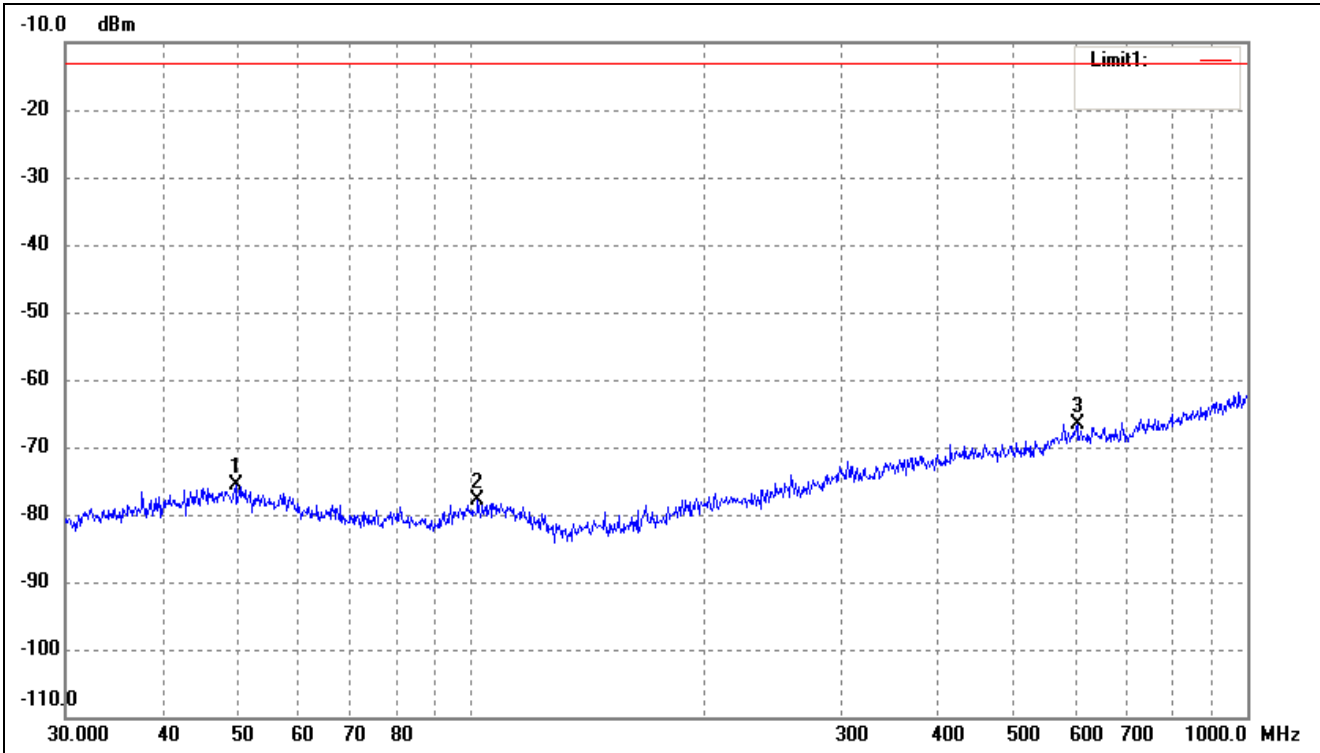
➤ Spurious Emissions Below 1GHz

For Cellular Band			
Test Channel	GSM850	Polarity:	Horizontal



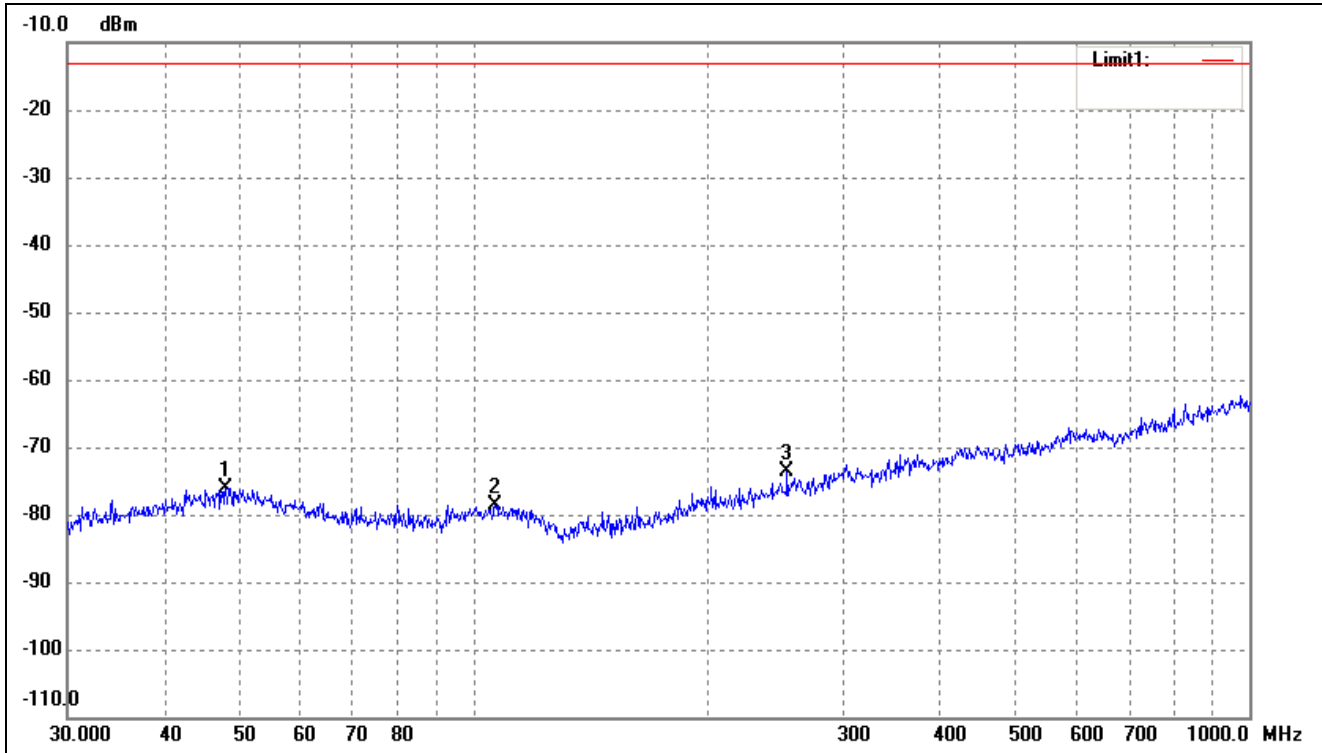
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	49.0145	-75.62	1.54	-74.08	-13.00	-61.08	ERP
2	105.6415	-76.52	-0.45	-76.97	-13.00	-63.97	ERP
3	618.5369	-76.58	9.44	-67.14	-13.00	-54.14	ERP

For Cellular Band			
Test Channel	GSM850	Polarity:	Vertical



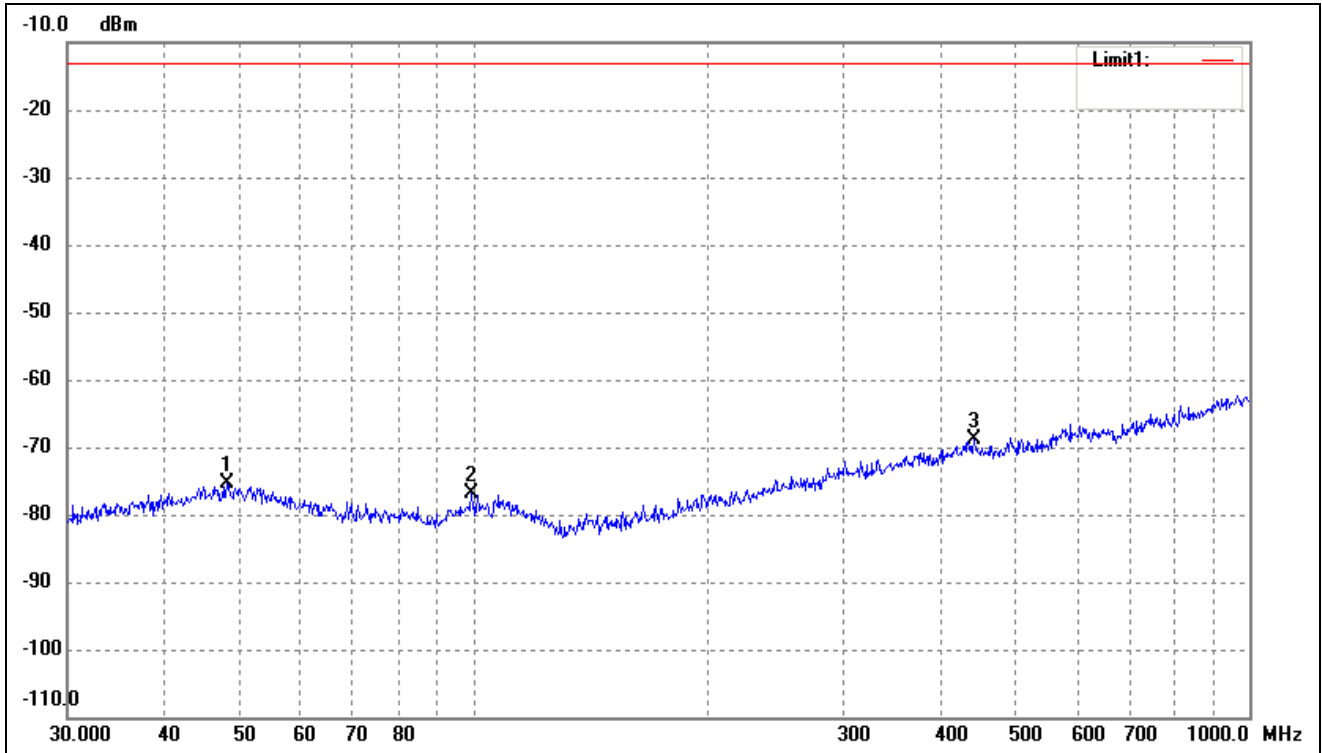
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	49.7068	-77.13	1.59	-75.54	-13.00	-62.54	ERP
2	102.0014	-77.31	-0.53	-77.84	-13.00	-64.84	ERP
3	603.5392	-76.20	9.50	-66.70	-13.00	-53.70	ERP

For Cellular Band			
Test Channel	GSM1900	Polarity:	Horizontal



No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	47.9940	-77.64	1.46	-76.18	-13.00	-63.18	ERP
2	106.7587	-78.30	-0.43	-78.73	-13.00	-65.73	ERP
3	253.8367	-76.23	2.59	-73.64	-13.00	-60.64	ERP

For Cellular Band			
Test Channel	GSM1900	Polarity:	Vertical

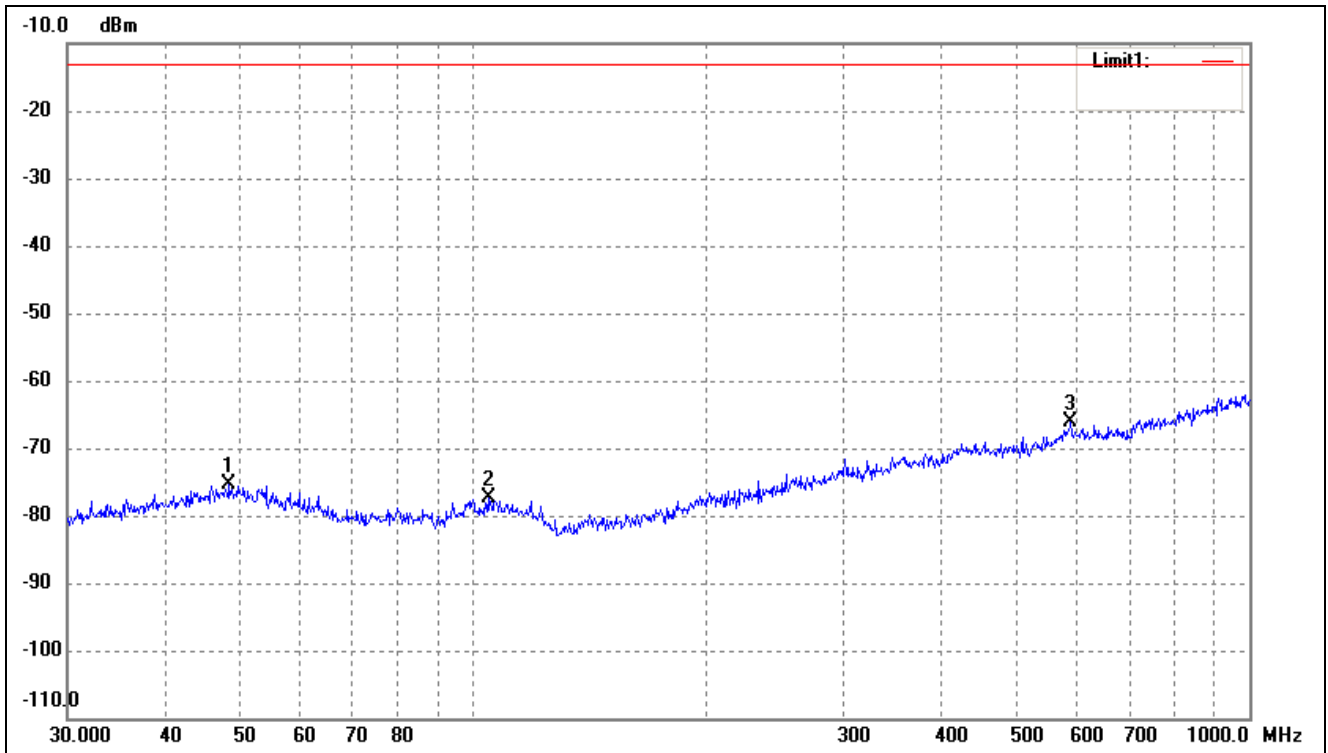


No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	48.1626	-76.78	1.47	-75.31	-13.00	-62.31	ERP
2	99.5281	-76.27	-0.68	-76.95	-13.00	-63.95	ERP
3	441.7426	-76.27	7.36	-68.91	-13.00	-55.91	ERP

Note: Margin= (Reading+ Correct)- Limit

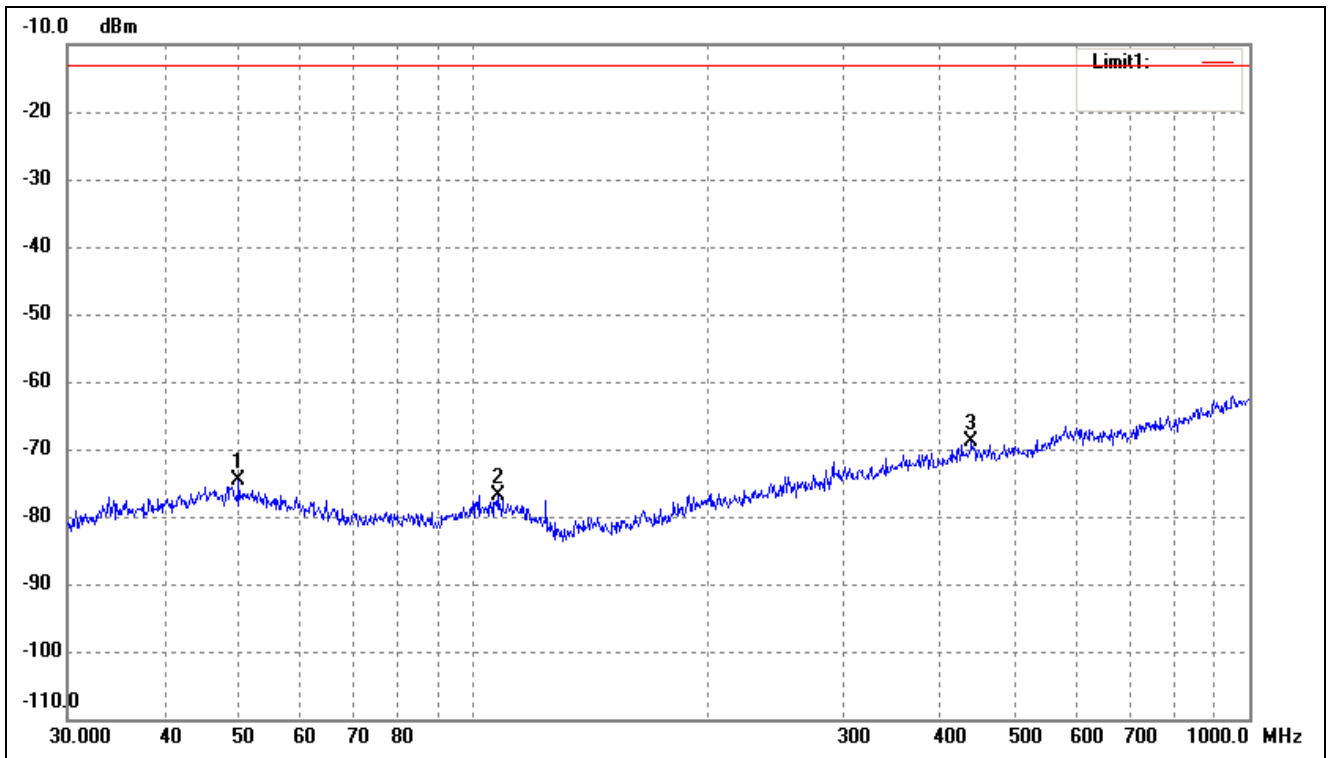


Test Channel	WCDMA Band V	Polarity:	Horizontal
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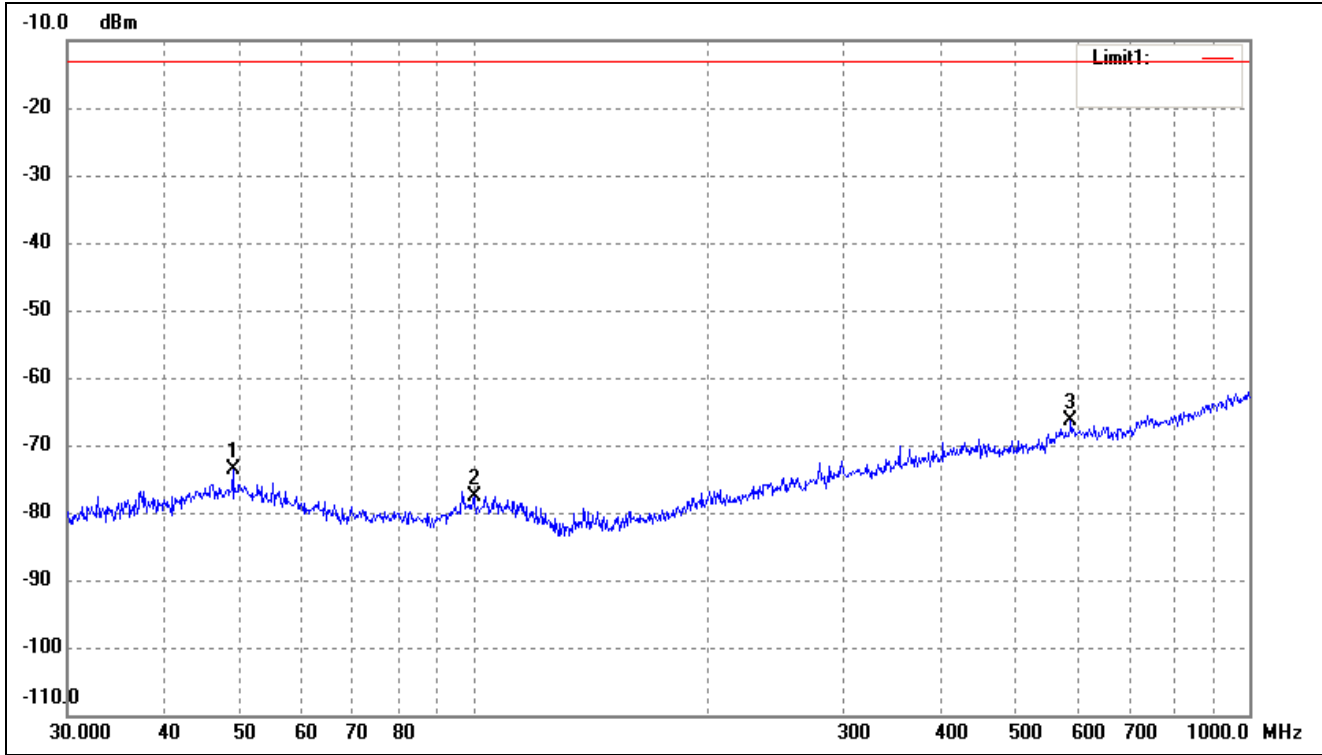
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	48.5016	-76.77	1.50	-75.27	-13.00	-62.27	ERP
2	104.5361	-76.97	-0.47	-77.44	-13.00	-64.44	ERP
3	588.9051	-75.52	9.40	-66.12	-13.00	-53.12	ERP

Test Channel	WCDMA Band V	Polarity:	Vertical
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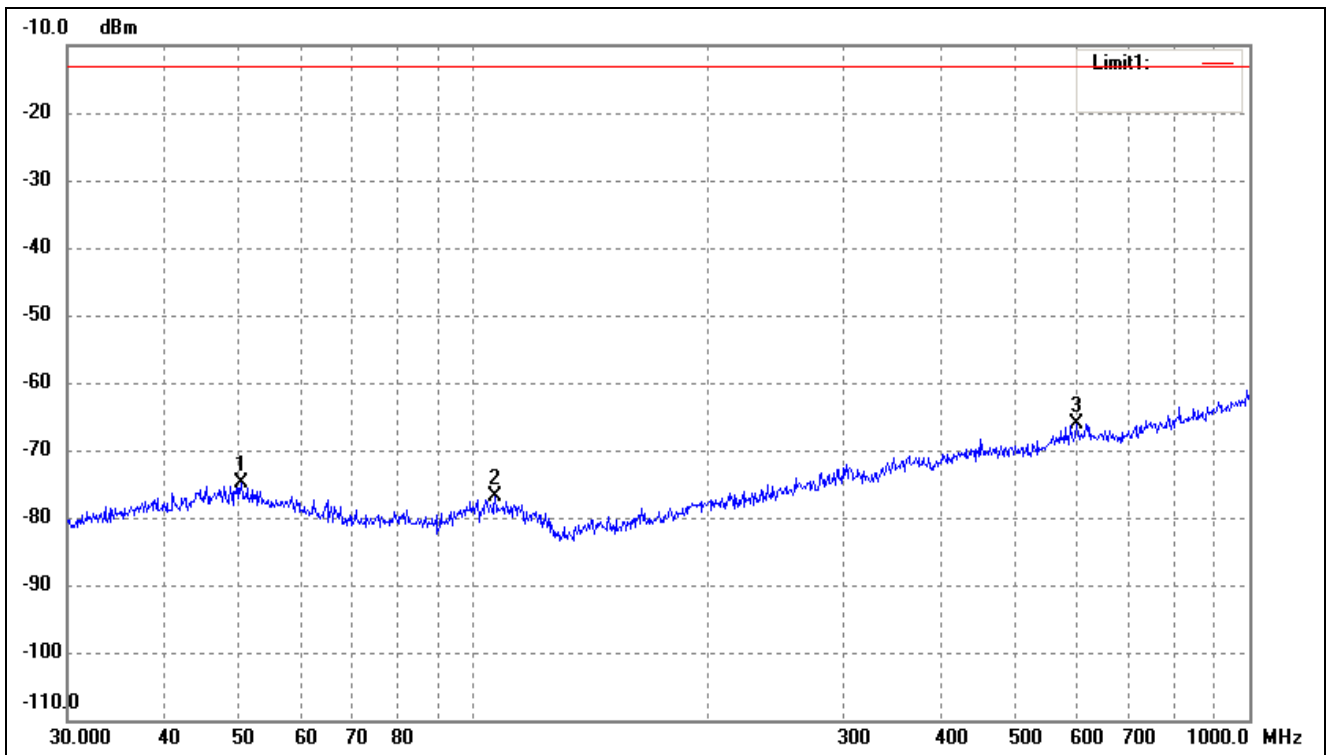
No.	Frequency (MHz)	Reading (dBm)	Correct (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	49.8814	-76.25	1.60	-74.65	-13.00	-61.65	ERP
2	107.5101	-76.41	-0.40	-76.81	-13.00	-63.81	ERP
3	438.6554	-76.27	7.39	-68.88	-13.00	-55.88	ERP

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	49.0145	-75.14	1.54	-73.60	-13.00	-60.60	ERP
2	100.2286	-76.99	-0.58	-77.57	-13.00	-64.57	ERP
3	588.9051	-75.88	9.40	-66.48	-13.00	-53.48	ERP

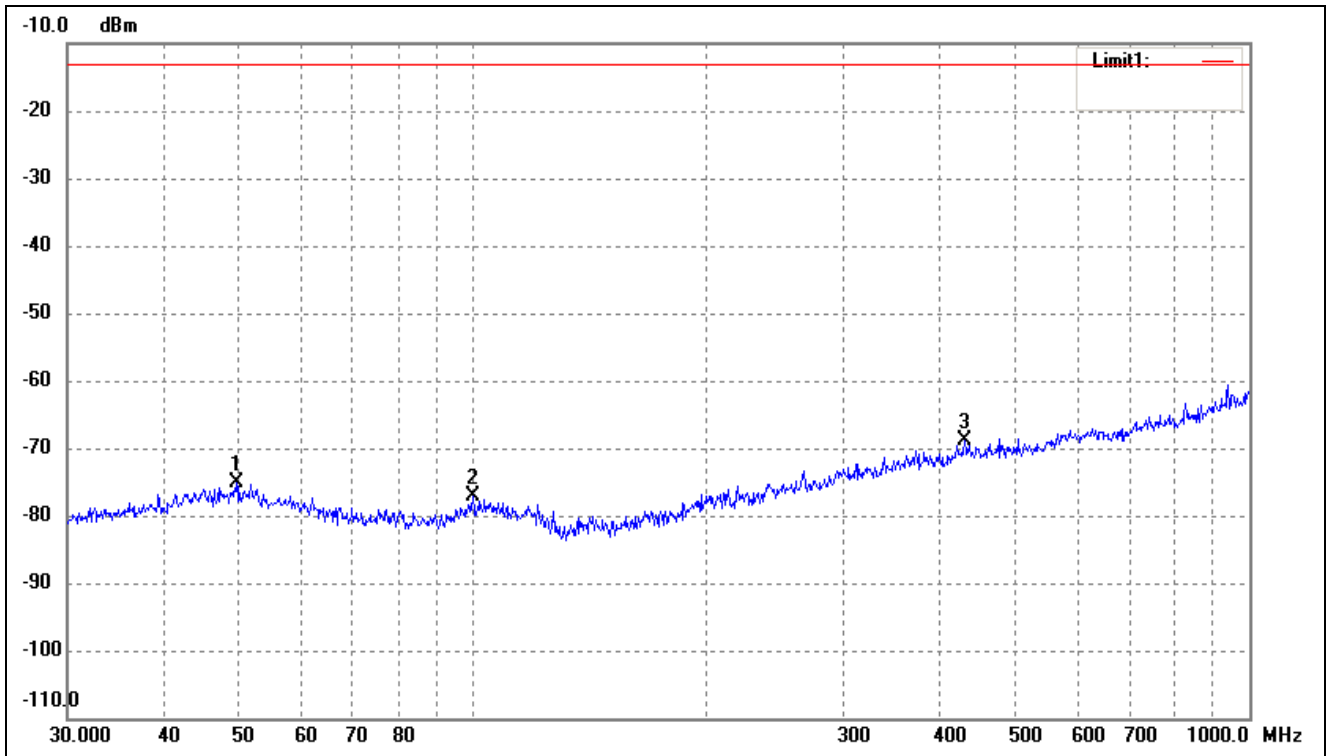
Test Channel	WCDMA Band IV	Polarity:	Vertical
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No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	50.2325	-76.46	1.56	-74.90	-13.00	-61.90	ERP
2	106.7587	-76.54	-0.43	-76.97	-13.00	-63.97	ERP
3	599.3213	-75.72	9.51	-66.21	-13.00	-53.21	ERP

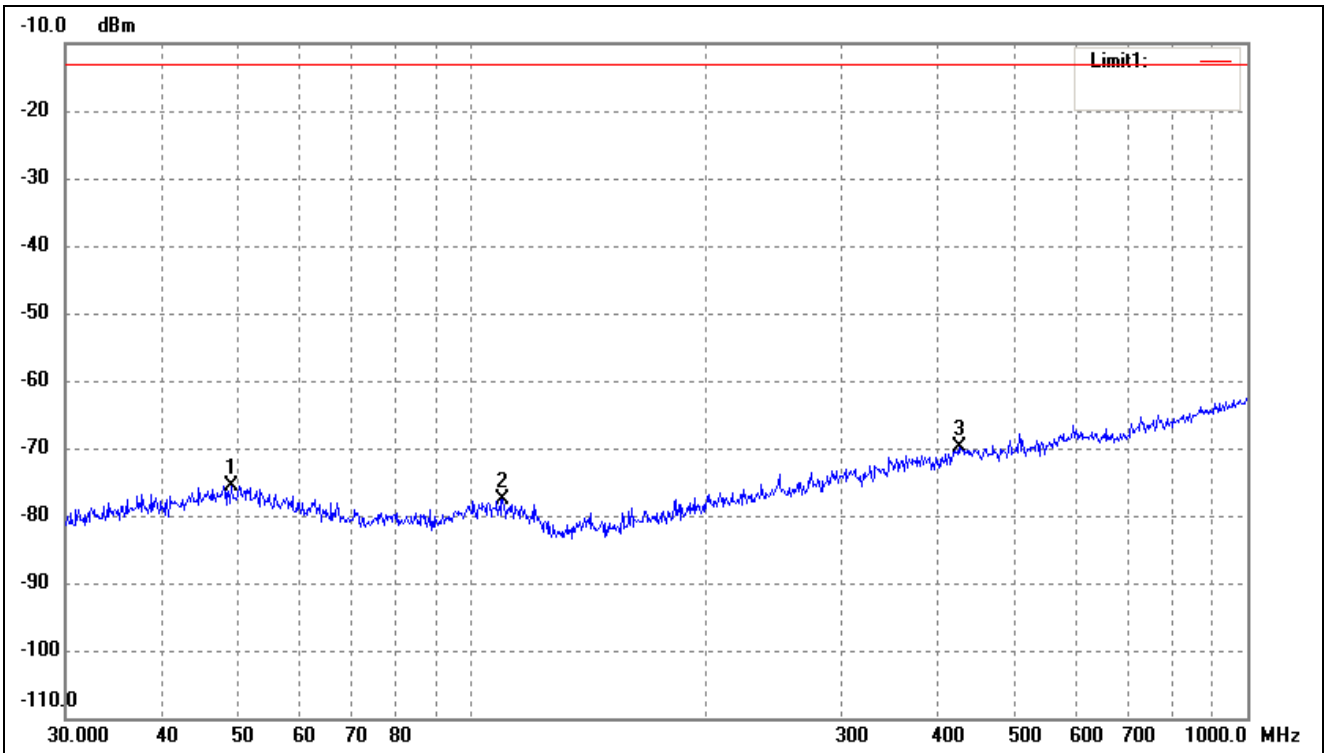
Note: Margin= (Reading+ Correct)- Limit

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	49.5328	-76.63	1.57	-75.06	-13.00	-62.06	ERP
2	99.8777	-76.44	-0.61	-77.05	-13.00	-64.05	ERP
3	429.5228	-76.22	7.42	-68.80	-13.00	-55.80	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	49.0145	-77.05	1.54	-75.51	-13.00	-62.51	ERP
2	109.7960	-77.23	-0.36	-77.59	-13.00	-64.59	ERP
3	425.0280	-77.31	7.42	-69.89	-13.00	-56.89	ERP

Note: Margin= (Reading+ Correct)- Limit

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

Frequency	Reading	Correct	Result	Limit	Margin	Polar
(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	H/V
Low Channel (824.2MHz)						
1648.4	-34.28	4.94	-29.34	-13	-16.34	H
2472.6	-42.98	8.46	-34.52	-13	-21.52	H
1648.4	-37.67	4.94	-32.73	-13	-19.73	V
2472.6	-42.98	8.46	-34.52	-13	-21.52	V
Middle Channel (836.6MHz)						
1673.2	-34.64	5.11	-29.53	-13	-16.53	H
2509.8	-44.14	8.54	-35.6	-13	-22.6	H
1673.2	-35.15	5.11	-30.04	-13	-17.04	V
2509.8	-43.88	8.54	-35.34	-13	-22.34	V
High Channel (848.8MHz)						
1697.6	-34.35	5.25	-29.1	-13	-16.1	H
2546.4	-44.91	8.57	-36.34	-13	-23.34	H
1697.6	-36.87	5.25	-31.62	-13	-18.62	V
2546.4	-44.12	8.57	-35.55	-13	-22.55	V

- For PCS Band\_GSM1900 Mode

Frequency	Reading	Correct	Result	Limit	Margin	Polar
(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	H/V
Low Channel (1850.2MHz)						
3700.4	-42.59	10.54	-32.05	-13	-19.05	H
5550.6	-47.24	13.37	-33.87	-13	-20.87	H
3700.4	-42.55	10.54	-32.01	-13	-19.01	V
5550.6	-47.58	13.37	-34.21	-13	-21.21	V
Middle Channel (1880MHz)						
3760.0	-42.65	10.64	-32.01	-13	-19.01	H
5640.0	-47.42	13.54	-33.88	-13	-20.88	H
3760.0	-40.78	10.64	-30.14	-13	-17.14	V
5640.0	-47.91	13.54	-34.37	-13	-21.37	V
High Channel (1909.8MHz)						
3819.6	-42.09	10.74	-31.35	-13	-18.35	H
5729.4	-48.57	13.71	-34.86	-13	-21.86	H
3819.6	-40.73	10.74	-29.99	-13	-16.99	V
5729.4	-47.68	13.71	-33.97	-13	-20.97	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	-34.35	4.94	-29.41	-13	-16.41	H
2479.2	-41.19	8.46	-32.73	-13	-19.73	H
1652.8	-36.29	4.94	-31.35	-13	-18.35	V
2479.2	-43.76	8.46	-35.3	-13	-22.3	V
Middle Channel (836.6MHz)						
1672.8	-34.77	5.11	-29.66	-13	-16.66	H
2509.2	-41.03	8.54	-32.49	-13	-19.49	H
1672.8	-34.82	5.11	-29.71	-13	-16.71	V
2509.2	-44.67	8.54	-36.13	-13	-23.13	V
High Channel (846.6MHz)						
1693.2	-34.55	5.25	-29.30	-13	-16.30	H
2539.8	-44.95	8.57	-36.38	-13	-23.38	H
1693.2	-35.42	5.25	-30.17	-13	-17.17	V
2539.8	-41.04	8.57	-32.47	-13	-19.47	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	-33.05	8.65	-24.4	-13	-11.4	H
5137.2	-42.49	12.03	-30.46	-13	-17.46	H
3424.8	-34.24	8.65	-25.59	-13	-12.59	V
5137.2	-40.05	12.03	-28.02	-13	-15.02	V
Middle Channel (1732.4MHz)						
3466.8	-33.8	8.91	-24.89	-13	-11.89	H
5200.2	-41.86	12.29	-29.57	-13	-16.57	H
3466.8	-32.56	8.91	-23.65	-13	-10.65	V
5200.2	-39.25	12.29	-26.96	-13	-13.96	V
High Channel (1752.6MHz)						
3505.2	-32.2	9.11	-23.09	-13	-10.09	H
5257.8	-40.78	12.56	-28.22	-13	-15.22	H
3505.2	-35.59	9.11	-26.48	-13	-13.48	V
5257.8	-42.43	12.56	-29.87	-13	-16.87	V



## ➤ For WCDMA Band II Mode

Frequency	Reading	Correct	Result	Limit	Margin	Polar
(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	H/V
Low Channel (1852.4MHz)						
3704.8	-32.43	10.54	-21.89	-13	-8.89	H
5557.2	-41.05	13.37	-27.68	-13	-14.68	H
3704.8	-35.93	10.54	-25.39	-13	-12.39	V
5557.2	-40.98	13.37	-27.61	-13	-14.61	V
Middle Channel (1880MHz)						
3760.8	-35.16	10.64	-24.52	-13	-11.52	H
5640.0	-39.94	13.54	-26.40	-13	-13.40	H
3760.8	-34.95	10.64	-24.31	-13	-11.31	V
5640.0	-40.66	13.54	-27.12	-13	-14.12	V
High Channel (1907.6MHz)						
3815.2	-33.19	10.74	-22.45	-13	-9.45	H
5722.8	-40.84	13.71	-27.13	-13	-14.13	H
3815.2	-34.61	10.74	-23.87	-13	-10.87	V
5722.8	-40.06	13.71	-26.35	-13	-13.35	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.

## 9. Frequency Stability

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### 9.1 Standard Applicable

According to §22.355, §24.235, §27.54 the limit is 2.5ppm.

### 9.2 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.

### 9.3 Summary of Test Results/Plots

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	61	0.0726	2.50	Pass
	-20	55	0.0662		
	-10	52	0.0616		
	0	45	0.0542		
	10	40	0.0478		
	20	35	0.0414		
	30	42	0.0506		
	40	46	0.0552		
	50	53	0.0634		
Reference Frequency: PCS1900 Middle channel=661 channel=1880MHz					
Power supplied (Vdc)	Temperature ( °C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
NV	-30	66	0.0352	2.50	Pass
	-20	62	0.0327		
	-10	50	0.0266		
	0	44	0.0233		
	10	36	0.0192		
	20	30	0.0160		
	30	37	0.0196		
	40	42	0.0225		
	50	48	0.0254		

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	57	0.0680		
	-10	52	0.0625		
	0	48	0.0579		
	10	42	0.0506		
	20	37	0.0441		
	30	42	0.0497		
	40	47	0.0561		
	50	53	0.0634		
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	65	0.0373	2.50	Pass
	-20	56	0.0324		
	-10	48	0.0280		
	0	45	0.0258		
	10	37	0.0213		
	20	33	0.0191		
	30	40	0.0231		
	40	48	0.0275		
	50	55	0.0315		

Reference Frequency: WCDMA Band II Middle channel=9400 channel=1880MHz					
Power supplied (Vdc)	Temperature ( °C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
NV	-30	77	0.0409	2.50	Pass
	-20	62	0.0331		
	-10	53	0.0282		
	0	47	0.0250		
	10	43	0.0229		
	20	37	0.0196		
	30	41	0.0217		
	40	45	0.0241		
	50	49	0.0262		

➤ 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	74	0.0883	2.50	Pass
	NV	65	0.0782		
	LV	54	0.0644		
Reference Frequency: PCS1900 (GSM link) Middle channel=661 channel=1880MHz					
Temperature ( °C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	HV	60	0.0319	2.50	Pass
	NV	45	0.0237		
	LV	38	0.0205		

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	34	0.0405	2.50	Pass
	NV	40	0.0478		
	LV	44	0.0524		
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	68	0.0391	2.50	Pass
	NV	60	0.0346		
	LV	49	0.0284		
Reference Frequency: WCDMA Band II Middle channel=9400 channel=1880MHz					
Temperature ( °C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	HV	31	0.0164	2.50	Pass
	NV	38	0.0200		
	LV	42	0.0225		

## 10. Modulation characteristics

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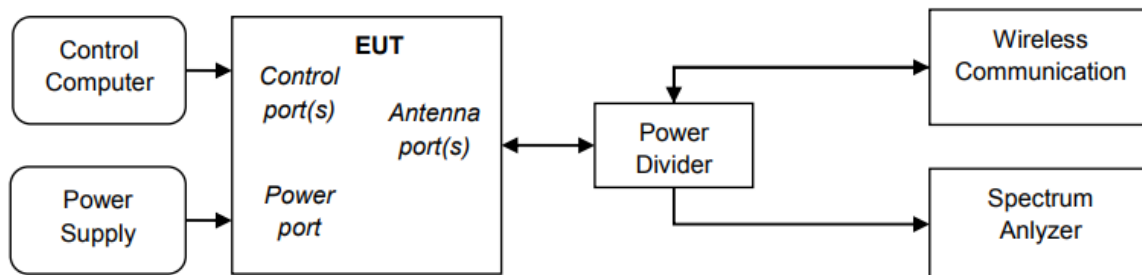
### 10.1 Standard Applicable

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 5000 Hz 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.

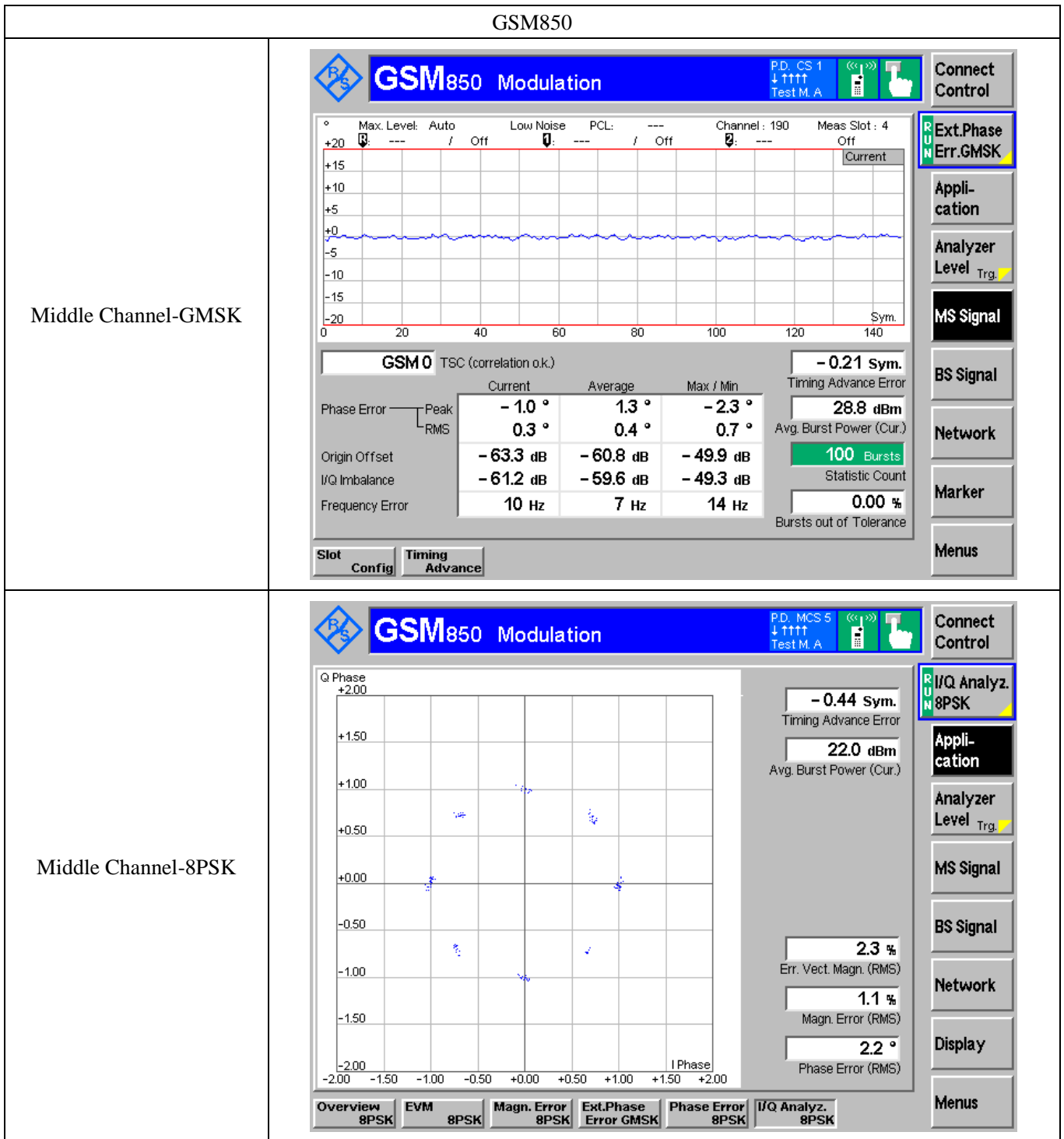
### 10.2 Test Procedure

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

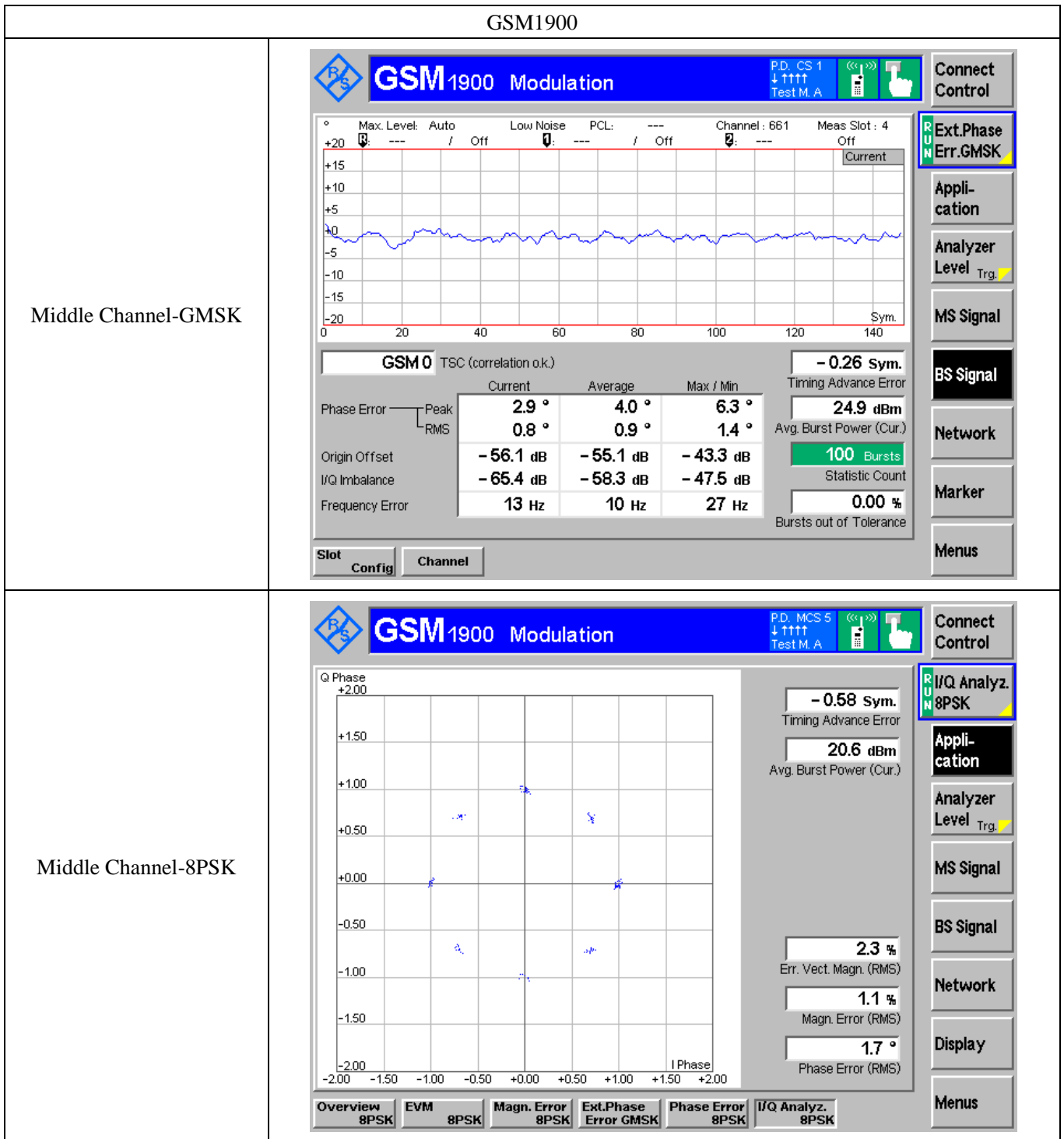


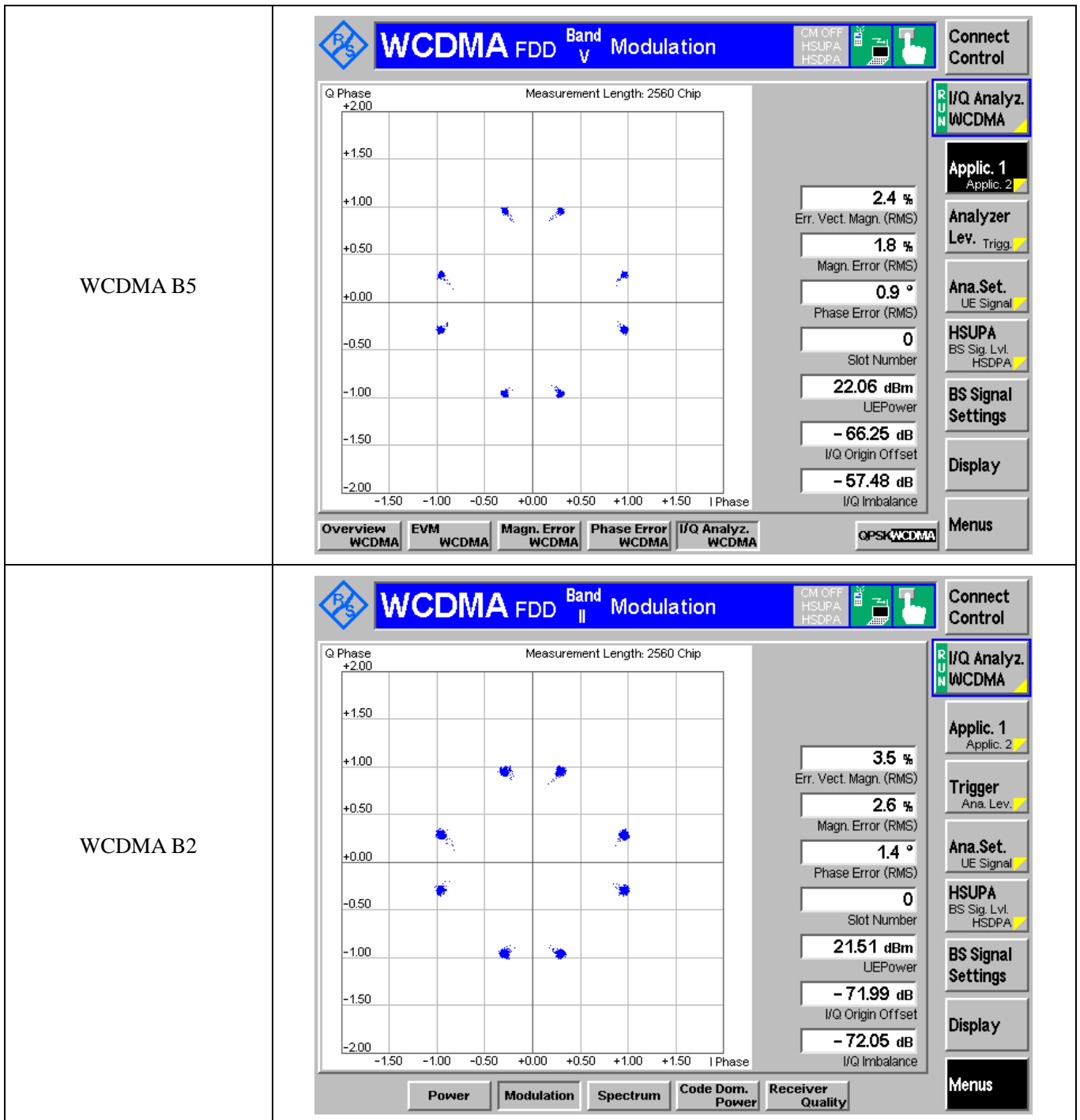
### 10.3 Summary of Test Results/Plots

Only the worst case was selected to record

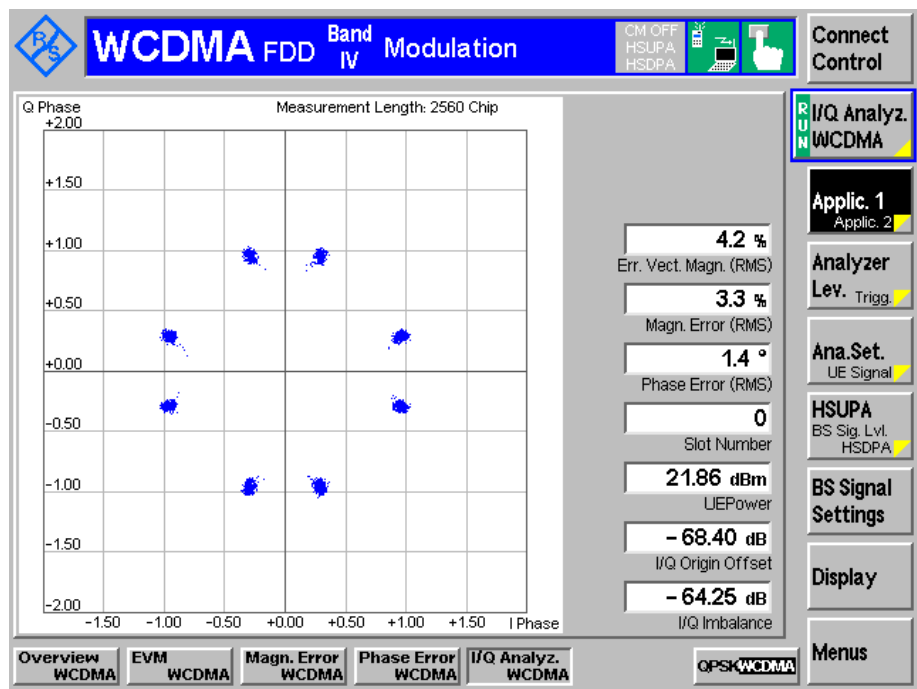








WCDMA B4



## **APPENDIX PHOTOGRAPHS**

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**Please refer to “ANNEX”**

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