FCC Part 22H & 24E
Measurement and Test Report

For

Verykool USA Inc

3636 Nobel Drive, Suite 325 San Diego, CA 92122 USA

FCC ID: WA6I133

FCC Rules:	FCC Part 22H, FCC Part 24E
Product Description:	Mobile Phone
Tested Model:	I133
Report No.:	STR13058022I-1
Tested Date:	2013-05-10 to 2013-05-31
Issued Date:	2013-06-17
Tested By:	Susan Su / Engineer
Reviewed By:	Lahm Peng / EMC Manager
Approved & Authorized By:	Jandy so / PSQ Manager

Prepared By:

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant:	Verykool USA Inc
Address of applicant:	3636 Nobel Drive, Suite 325 San Diego, CA 92122 USA
Manufacturer:	Shenzhen Ginwave Technologies Ltd
Address of manufacturer:	Room 913 Software building, GaoXin M.1st Ave, Nanshan, Shenzhen, China

General Description of EUT	
Product Name:	Mobile Phone
Trade Name:	Verykool
Model No.:	I133
Adding Model:	I132
Hardware Version:	VK_Generic_Single/Dual_HW_1.0
Software Version:	VK_Generic_Single/Dual_SW_1.0
IMEI:	355473026000000
Rated Voltage:	DC 3.7V Li-ion Battery (Model:423450AR)
Power Adapter Model:	NBT-050B-B050UA (Input: AC 100-240V, Output: DC 5V 800mA)
Note: The test data is gathered from a production sample provided by the manufacturer. *Adding model: I132 basis of the tested model I133* *This model is identical circuit and PCB Layout to the original model except I132 has a camera but I133 has no.*	

Technical Characteristics of EUT	
Support Band:	GSM850/PCS1900, WCDMA Band II, Band V
GPRS Class:	Class 12
Frequency range:	GSM/GPRS 850: 824~849MHz GSM/GPRS 1900: 1850~1910MHz WCDMA/UPA/DPA Band V: 824~849MHz WCDMA/UPA/DPA Band II: 1850~1910MHz
Max. RF Power(Conducted):	GSM850: 31.64dBm GSM1900: 28.97dBm WCDMA Band V: 25.74dBm WCDMA Band II: 24.66dBm
Max. RF Power(ERP/EIRP):	GSM850: 31.05dBm GSM1900: 27.76dBm WCDMA Band V: 25.12dBm WCDMA Band II: 23.71dBm
Network Protocol:	GSM/GPRS/WCDMA/UMTS
Modulation:	GMSK for GSM/GPRS; QPSK for WCDMA
Type of Emission:	GMSK: 257KGXW 8PSK: 266KG7W QPSK: 4M54F9W
Antenna Gain:	GSM850: -2.0dBi GSM1900: 1.5dBi WCDMA Band V: -2.0dBi WCDMA Band II: 1.5dBi
Device Category:	Portable Device

1.2 Test Standards

The following report is prepared on behalf of the Verykool USA Inc 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/EIA 603-C: 2004 and ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

1.4 Test Facility

- **FCC – Registration No.: 994117**
  SEM.Test Compliance Services 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 and the Registration is 994117.

- **Industry Canada (IC) Registration No.: 7673A**
  The 3m Semi-anechoic chamber of SEM.Test Compliance Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 7673A.

- **CNAS Registration No.: L4062**
  Shenzhen SEM.Test Electronics Service Co., Ltd. is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L4062. All measurement facilities used to collect the measurement data are located at 3/F, Jinbao Commerce Building, Xin'an Fanshen Road, Bao'an District, Shenzhen, P.R.C (518101)

1.5 EUT Setup and Test Mode

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

Test Mode List		
Test Mode	Description	Remark
TM1	GSM 850	Low, Middle, High Channels
TM2	GPRS 850	Low, Middle, High Channels
TM3	GSM 1900	Low, Middle, High Channels
TM4	GPRS 1900	Low, Middle, High Channels
TM5	WCDMA Band II	Low, Middle, High Channels
TM6	WCDMA Band V	Low, Middle, High Channels
TM15	HSDPA Band V	Low, Middle, High Channels

Testing Configure			
Support Band	Support Standard	Channel Frequency	Channel Number
GSM 850	GSM/GPRS	824.2 MHz	128
		836.6 MHz	190
		848.8 MHz	251
PCS 1900	GSM/GPRS	1850.2 MHz	512
		1880.0 MHz	661
		1909.8 MHz	810
WCDMA Band II	WCDMA	1852.4 MHz	9262
		1880.0 MHz	9400
		1907.6 MHz	9538
WCDMA Band V	WCDMA	826.4 MHz	4132
		836.4 MHz	4182
		846.6 MHz	4233
Note: the transmitter has been tested on the communications mode of GSM, GPRS, WCDMA, compliance test and record the worst case.			

Special Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
USB Cable	0.8	Shielded	Without Ferrite
Earphone Cable	1.5	Unshielded	Without Ferrite

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
/	/	/	/

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
§ 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

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 transmitters and auxiliary test transmitters must not exceed 7 Watts.

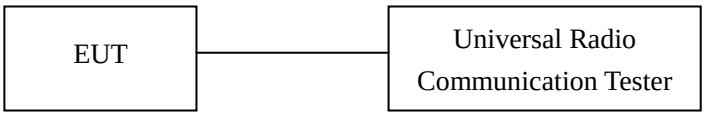
According to §24.232 (c), no any case may the peak output power of mobile or portable station transmitter exceed 2 Watt EIRP.

4.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	Rohde & Schwarz	FSP	836079/035	2013-05-07	2014-05-06
Pre-amplifier	Agilent	8447F	3113A06717	2013-05-07	2014-05-06
Pre-amplifier	Compliance Direction	PAP-0118	24002	2013-05-07	2014-05-06
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2013-04-20	2014-04-19
Horn Antenna	ETS	3117	00086197	2013-04-20	2014-04-19
Universal Radio Communication Tester	Rohde & Schwarz	CMU200	112012	2013-05-07	2014-05-06
Signal Generator	R&S	SMR20	100047	2013-05-07	2014-05-06

4.3 Test Procedure

Conducted output power test method:



Radiated power test method:

1.The setup of EUT is according with per TIA/EIA Standard 603C and ANSI C63.4-2003 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.

4.4 Environmental Conditions

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

4.5 Summary of Test Results/Plots

Radiated Power

ERP For GSM Mode GSM850

Frequency	Substitude SG	Height	Table	Polar	Cable loss	Antenna Gain	Corrected Ampl.	FCC Part 22H Limit
MHz	dBm	Meter	Degree	H / V	dB	dB	dBm	dBm
Low Channel								
824.2	30.14	1.5	0	H	1.5	0	28.64	38.45
824.2	32.55	1.5	0	V	1.5	0	31.05	38.45
Middle Channel								
836.6	29.66	1.5	0	H	1.5	0	28.16	38.45
836.6	31.99	1.5	0	V	1.5	0	30.49	38.45
High Channel								
848.8	29.17	1.5	0	H	1.5	0	27.67	38.45
848.8	31.65	1.5	0	V	1.5	0	30.15	38.45

EIRP For GSM Mode PCS1900

Frequency	Substitude SG	Height	Table	Polar	Cable loss	Antenna Gain	Corrected Ampl.	FCC Part 24E Limit
MHz	dBm	Meter	Degree	H / V	dB	dB	dBm	dBm
Low Channel								
1850.2	18.86	1.5	0	H	1.9	7.7	24.66	33
1850.2	21.96	1.5	0	V	1.9	7.7	27.76	33
Middle Channel								
1880.0	18.53	1.5	0	H	1.9	7.7	24.33	33
1880.0	21.70	1.5	0	V	1.9	7.7	27.50	33
High Channel								
1909.8	18.30	1.5	0	H	1.9	7.7	24.10	33
1909.8	20.99	1.5	0	V	1.9	7.7	26.79	33

ERP For GPRS Mode GSM850

Frequency	Substitude SG	Height	Table	Polar	Cable loss	Antenna Gain	Corrected Ampl.	FCC Part 22H Limit
MHz	dBm	Meter	Degree	H / V	dB	dB	dBm	dBm
Low Channel								
824.2	28.99	1.5	0	H	1.5	0	27.49	38.45
824.2	31.53	1.5	0	V	1.5	0	30.85	38.45
Middle Channel								
836.6	28.34	1.5	0	H	1.5	0	26.84	38.45
836.6	32.11	1.5	0	V	1.5	0	30.61	38.45
High Channel								
848.8	28.16	1.5	0	H	1.5	0	26.66	38.45
848.8	31.17	1.5	0	V	1.5	0	29.67	38.45

EIRP For GPRS Mode PCS1900

Frequency	Substitude SG	Height	Table	Polar	Cable loss	Antenna Gain	Corrected Ampl.	FCC Part 24E Limit
MHz	dBm	Meter	Degree	H / V	dB	dB	dBm	dBm
Low Channel								
1850.2	17.88	1.5	0	H	1.9	7.7	23.68	33
1850.2	27.71	1.5	0	V	1.9	7.7	27.51	33
Middle Channel								
1880.0	17.71	1.5	0	H	1.9	7.7	23.51	33
1880.0	21.33	1.5	0	V	1.9	7.7	27.13	33
High Channel								
1909.8	17.30	1.5	0	H	1.9	7.7	23.10	33
1909.8	21.09	1.5	0	V	1.9	7.7	26.89	33

ERP For WCDMA Mode Band V

Frequency	Substitude SG	Height	Table	Polar	Cable loss	Antenna Gain	Corrected Ampl.	FCC Part 22H Limit
MHz	dBm	Meter	Degree	H / V	dB	dBd	dBm	dBm
Low Channel								
826.4	23.54	1.5	0	H	1.5	0	22.04	38.45
826.4	26.62	1.5	0	V	1.5	0	25.12	38.45
Middle Channel								
836.4	23.19	1.5	0	H	1.5	0	21.69	38.45
836.4	26.56	1.5	0	V	1.5	0	25.06	38.45
High Channel								
846.6	22.74	1.5	0	H	1.5	0	21.24	38.45
846.6	26.25	1.5	0	V	1.5	0	24.75	38.45

EIRP For WCDMA Mode Band II

Frequency	Substitude SG	Height	Table	Polar	Cable loss	Antenna Gain	Corrected Ampl.	FCC Part 24E Limit
MHz	dBm	Meter	Degree	H / V	dB	dBi	dBm	dBm
Low Channel								
1852.4	14.78	1.5	0	H	1.9	7.7	20.58	33
1852.4	17.91	1.5	0	V	1.9	7.7	23.71	33
Middle Channel								
1880.0	14.34	1.5	0	H	1.9	7.7	20.14	33
1880.0	17.53	1.5	0	V	1.9	7.7	23.33	33
High Channel								
1907.6	13.93	1.5	0	H	1.9	7.7	19.73	33
1907.6	17.35	1.5	0	V	1.9	7.7	23.15	33

Max. Conducted Output Power

For Cellular Band

Test Mode	Channel	Frequency (MHz)	Output Power (dBm)	FCC Part 22.913 Limit (dBm)
GSM850	Low Channel	824.2	31.55	38.45
	Middle Channel	836.6	31.01	38.45
	High Channel	848.8	31.56	38.45
PCS1900	Low Channel	1850.2	28.26	33
	Middle Channel	1880.0	28.50	33
	High Channel	1909.8	28.90	33

For GPRS Mode Conducted peak output power

Band	Channel	Frequency (MHz)	Output Power(dBm)			
			Slot 1	Slot 2	Slot 3	Slot 4
GSM 850	128	824.2	31.64	31.07	29.86	28.96
	190	836.6	31.03	30.87	29.58	28.52
	251	848.8	31.60	31.27	30.05	28.90
PCS 1900	512	1850.2	28.40	27.95	25.43	24.55
	661	1880.0	28.61	27.98	25.65	24.68
	810	1909.8	28.97	28.04	25.70	24.82

For 3G Mode

Band	Channel	Frequency (MHz)	Output Power (dBm)	FCC Part 22.913 Limit (dBm)
WCDMA Band V	4132	826.4	25.57	38.45
	4182	836.4	25.74	38.45
	4233	846.6	25.25	38.45
WCDMA Band II	9262	1852.4	24.14	33
	9400	1880.0	24.66	33
	9538	1907.6	24.59	33

5. Emission Bandwidth

5.1 Standard Applicable

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

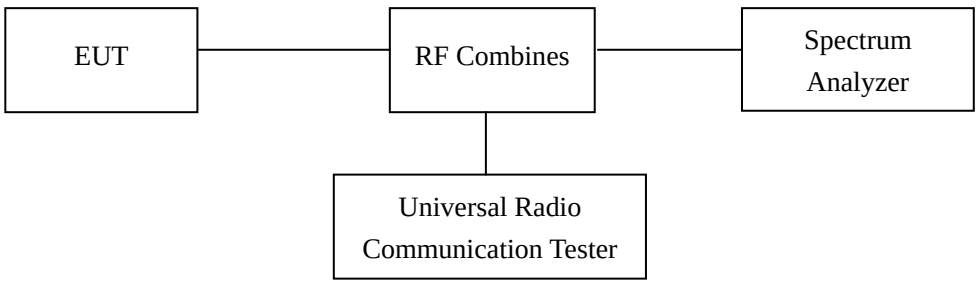
5.2 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date	Due. Date
Aglient	Spectrum Analyzer	E4402B	US41192821	2013-05-07	2014-05-06
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	112012	2013-05-07	2014-05-06

5.3 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 30kHz and the 26dB bandwidth was recorded.

Test Configuration for the emission bandwidth testing:



5.4 Environmental Conditions

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

5.5 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	253.5517	341.933
	190	836.6	256.9413	343.063
	251	848.8	253.3613	345.919
GPRS	128	824.2	254.2637	336.040
	190	836.6	255.2360	338.794
	251	848.8	255.8276	340.253

For PCS Band

Test Mode	Channel	Frequency (MHz)	99% Emission Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM	512	1850.2	254.6368	338.439
	661	1880.0	254.2335	342.607
	810	1909.8	255.4473	339.873
GPRS	512	1850.2	259.8332	347.313
	661	1880.0	256.6556	343.724
	810	1909.8	256.9920	327.322

For WCDMA Band V

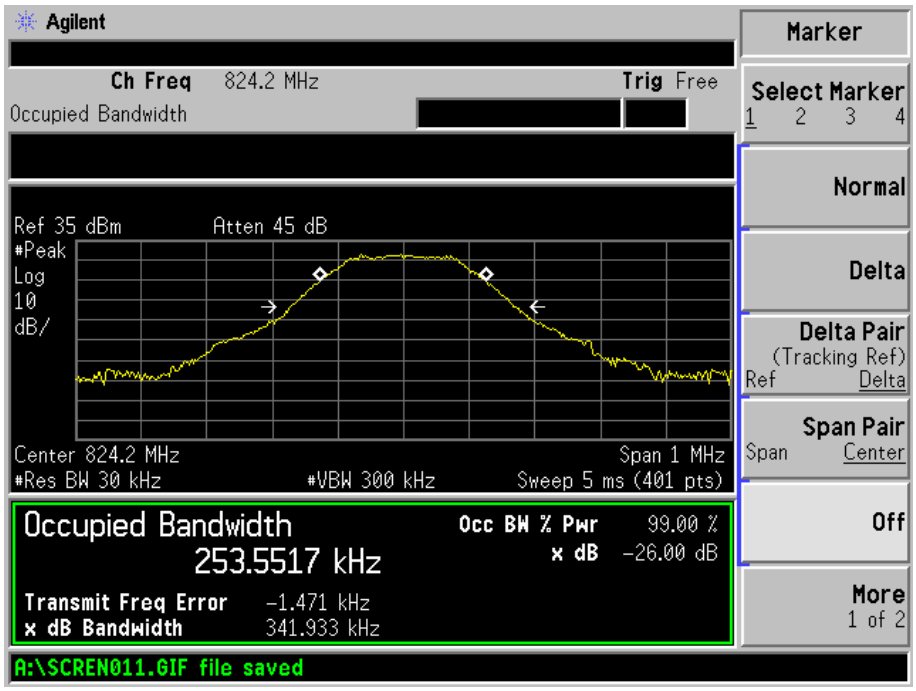
Test Mode	Channel	Frequency (MHz)	99% Emission Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
WCDMA Band V	4132	826.4	4.1566	4.655
	4182	836.4	4.1589	4.645
	4233	846.6	4.1638	4.644

For WCDMA Band II

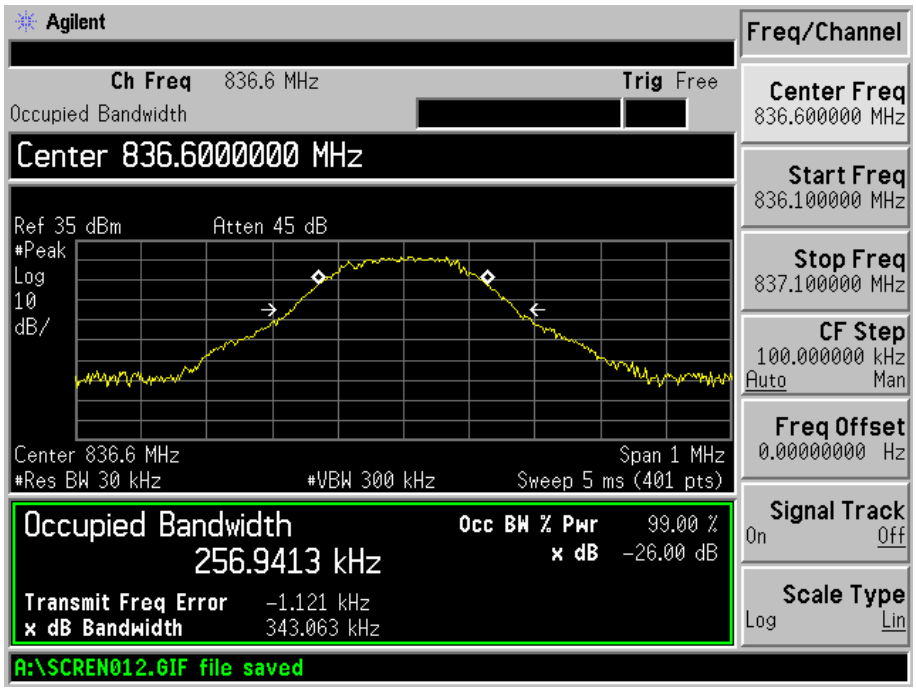
Test Mode	Channel	Frequency (MHz)	99% Emission Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
WCDMA Band II	9262	1852.4	4.1820	4.654
	9400	1880.0	4.1606	4.646
	9538	1907.6	4.1519	4.656

Please refer to the following test plots:

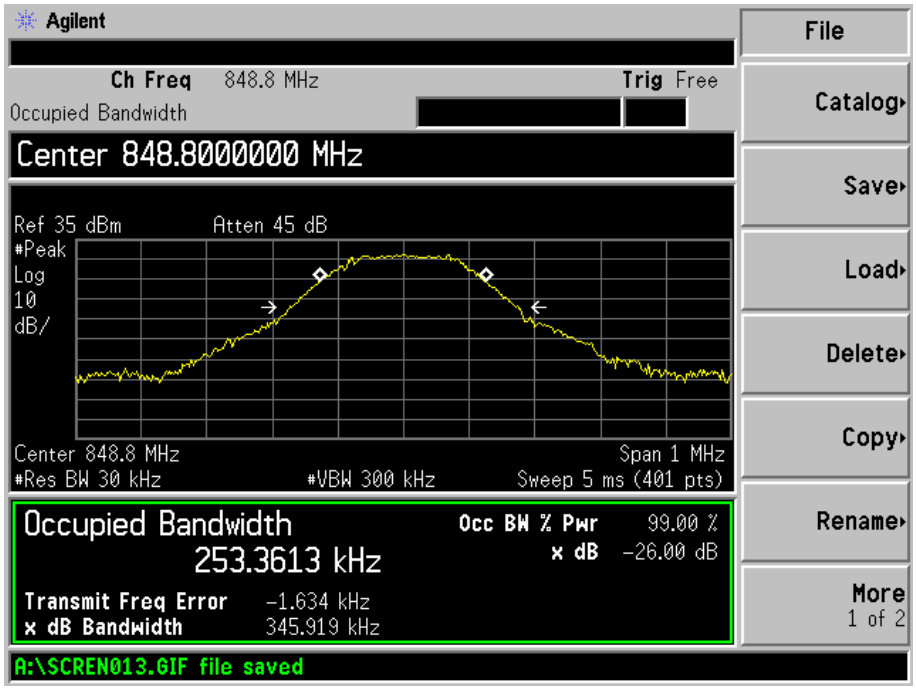
For Cellular Band
GSM Low Channel



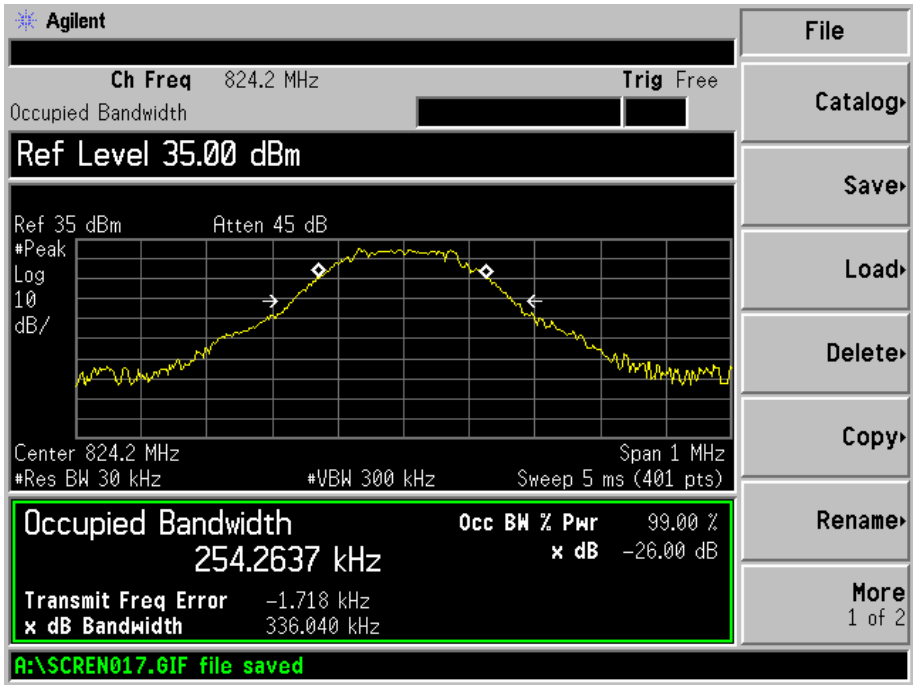
GSM Middle Channel



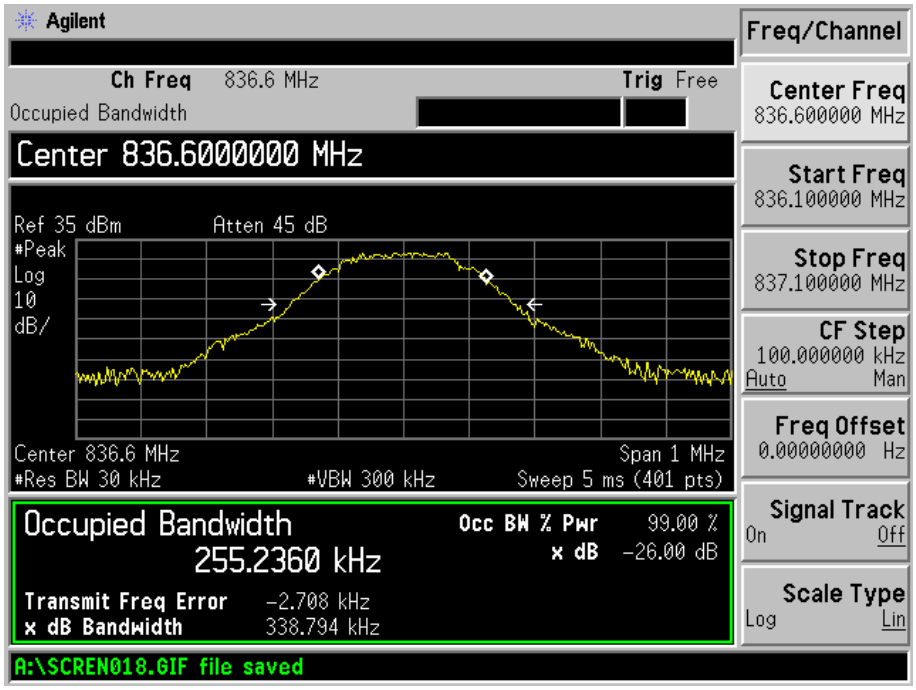
GSM High channel



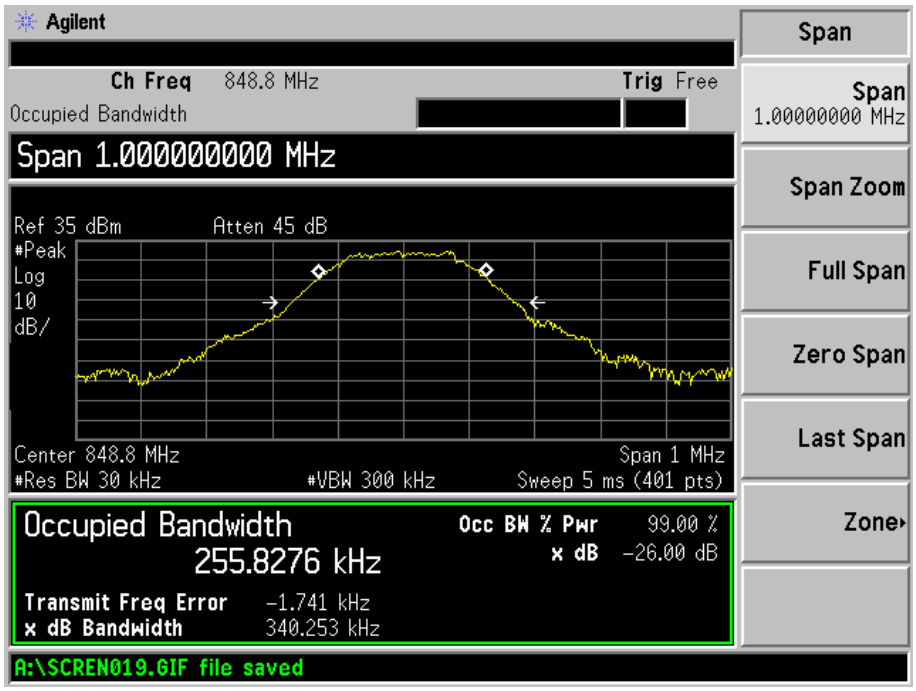
GPRS Low Channel



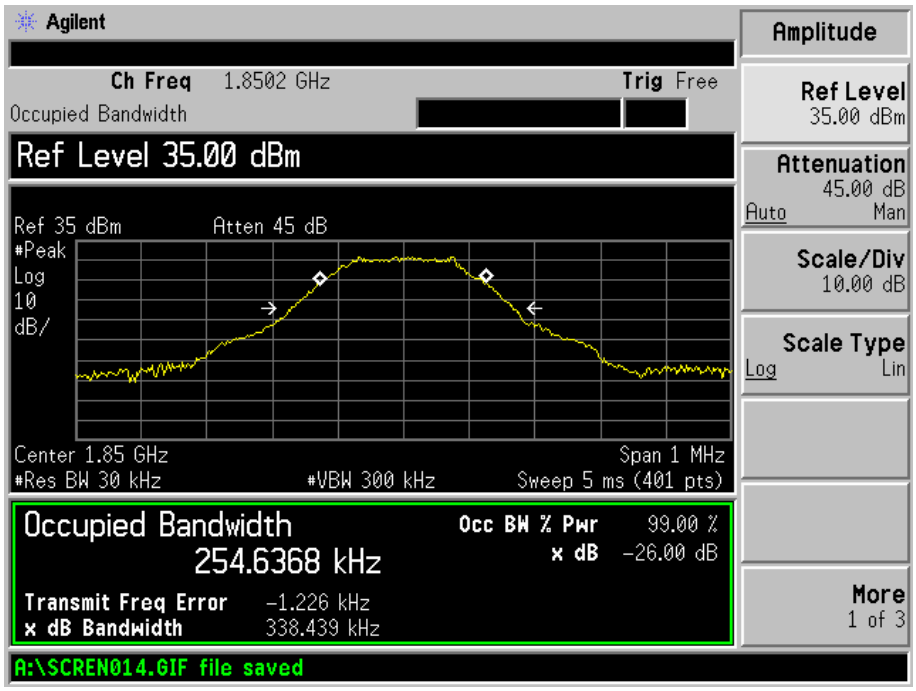
GPRS Middle Channel



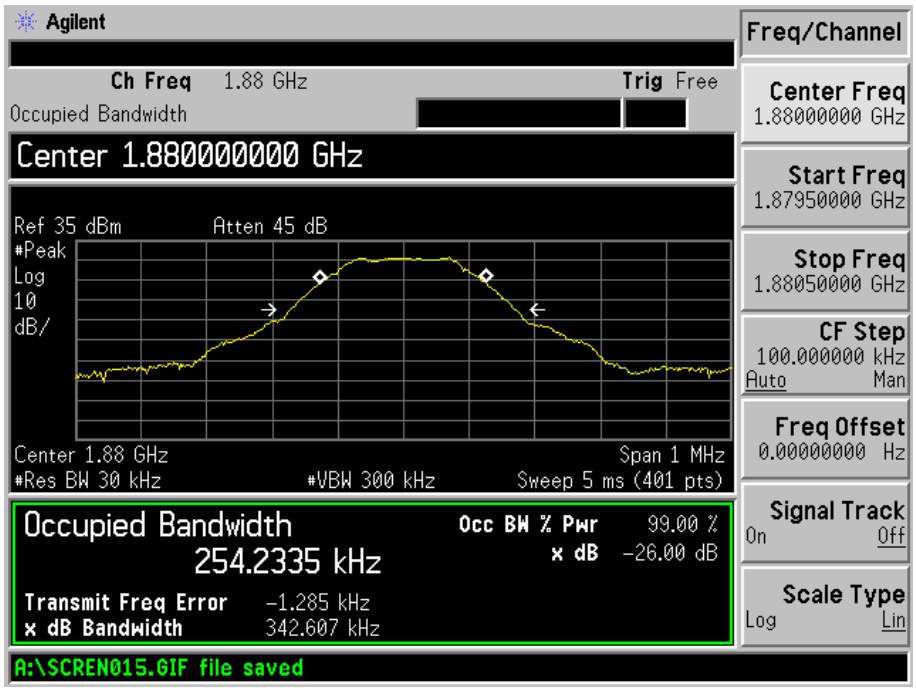
GPRS High Channel



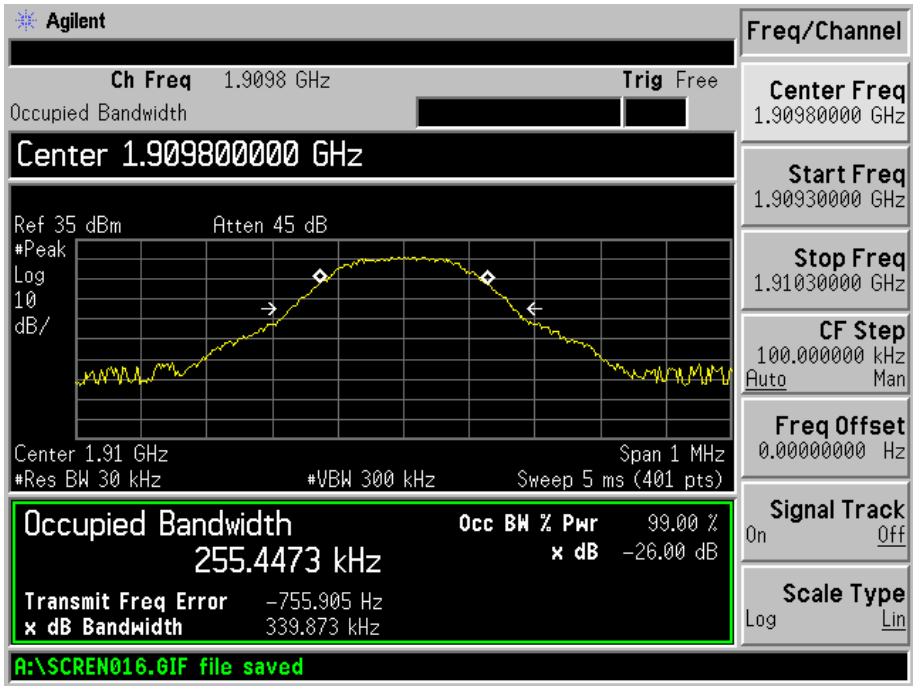
For PCS Band
GSM Low Channel



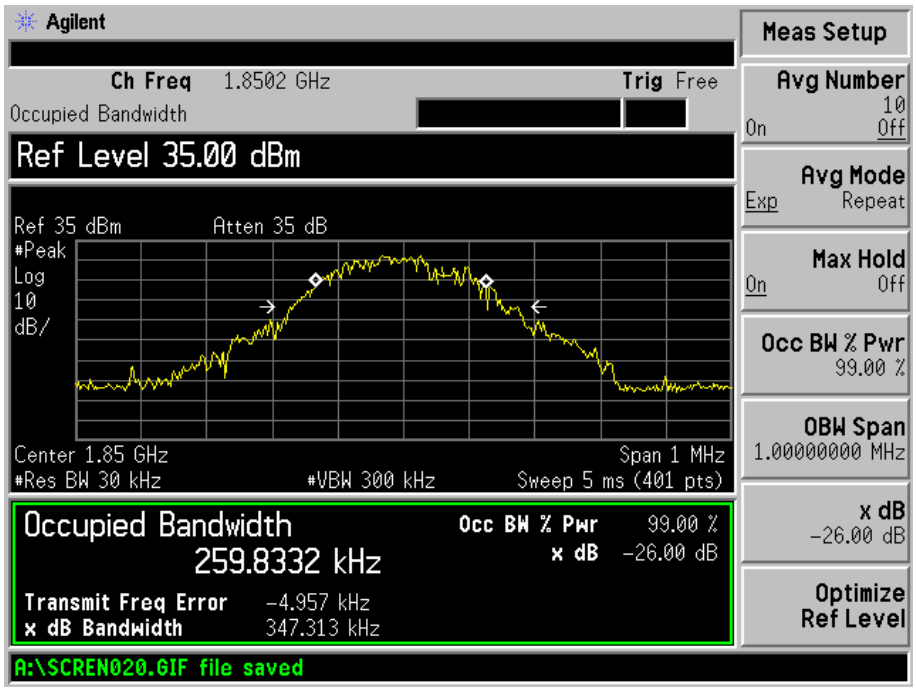
GSM Middle Channel



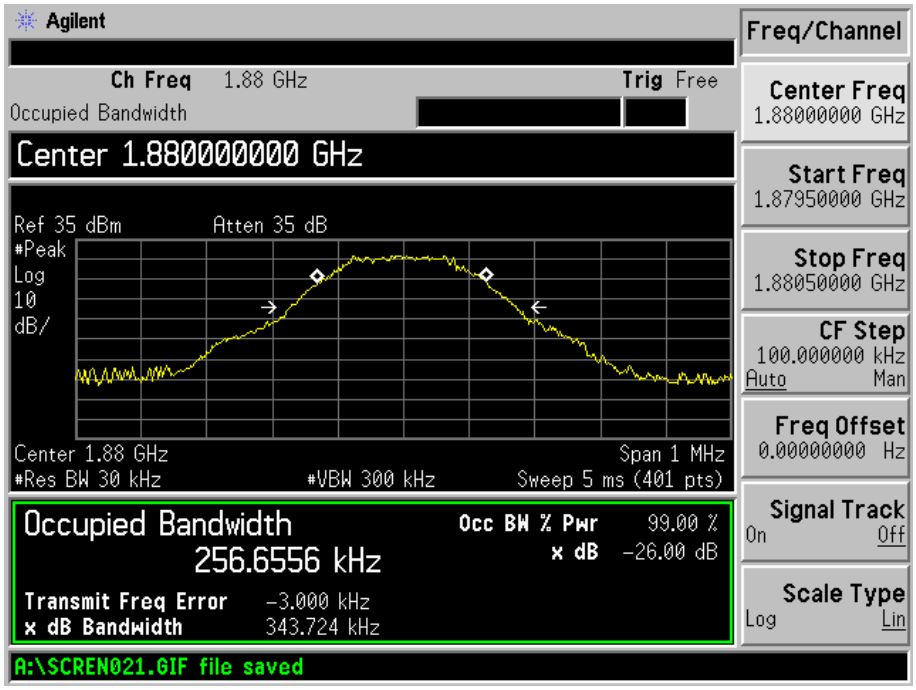
GSM High channel



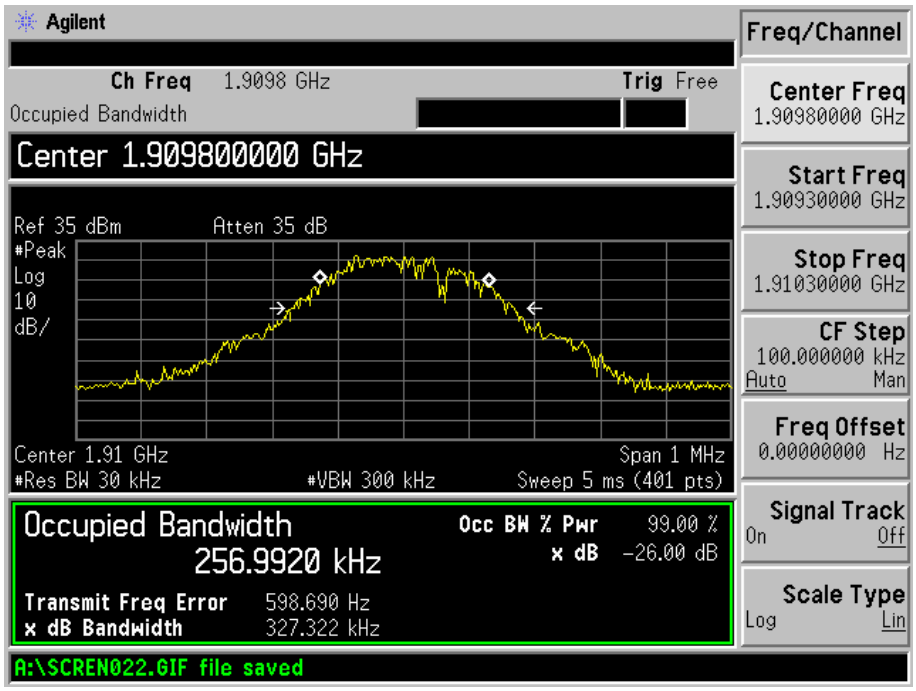
GPRS Low Channel



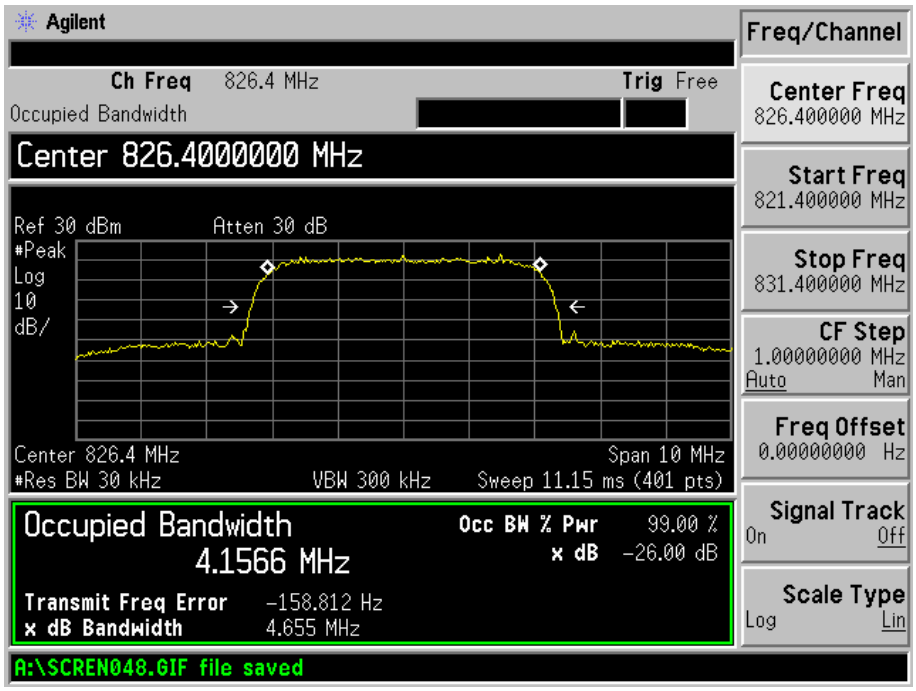
GPRS Middle Channel



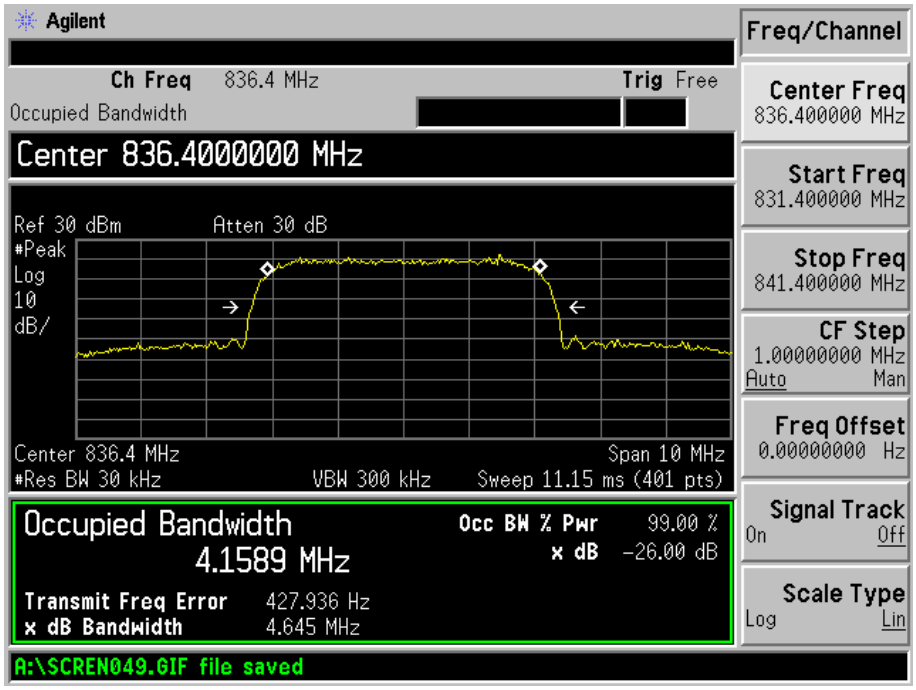
GPRS High Channel



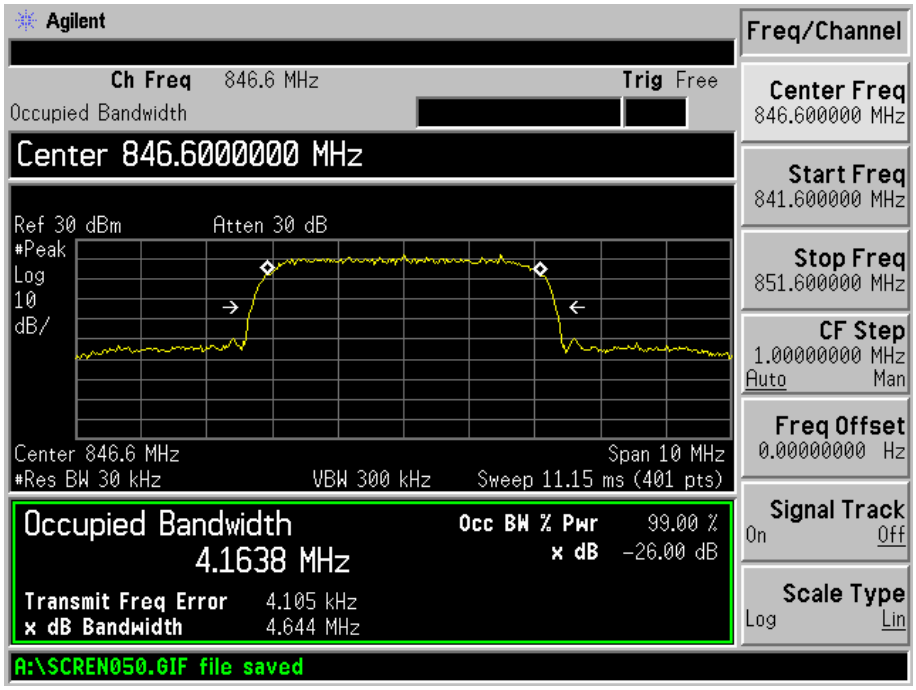
For Band V
WCDMA Low Channel



WCDMA Middle Channel

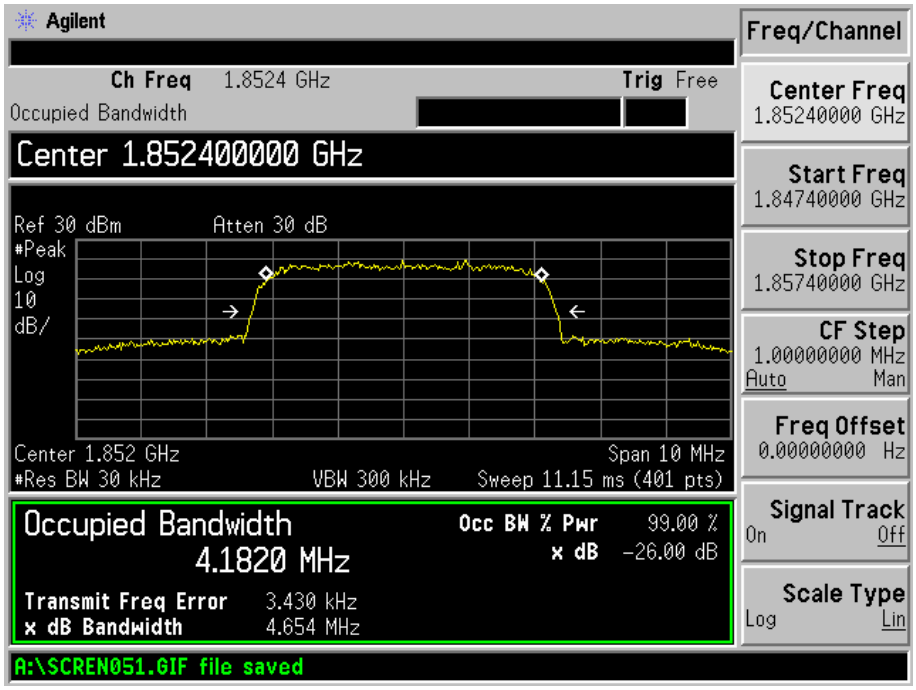


WCDMA High Channel

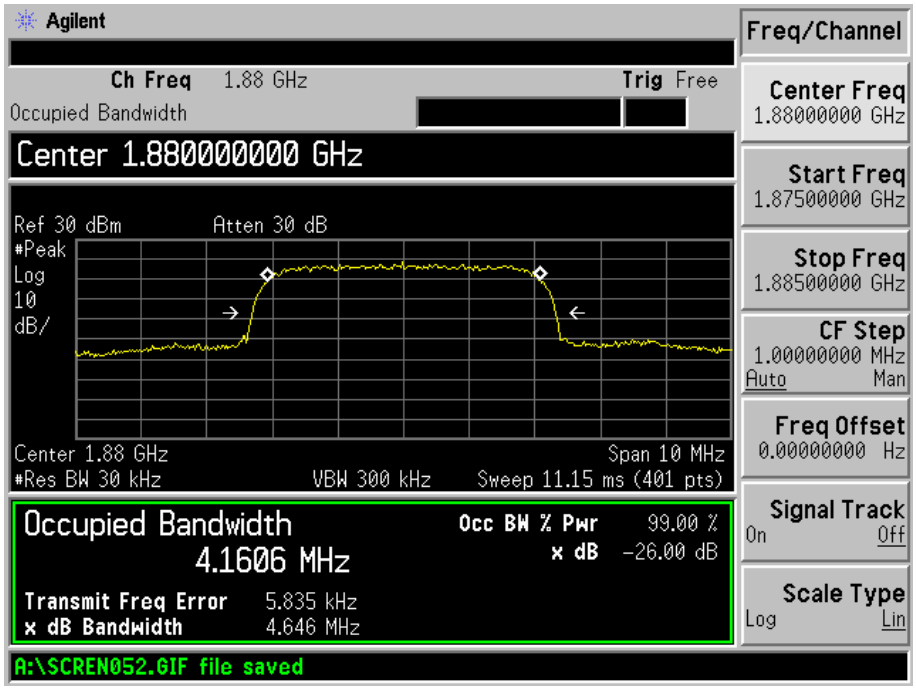


For Band II

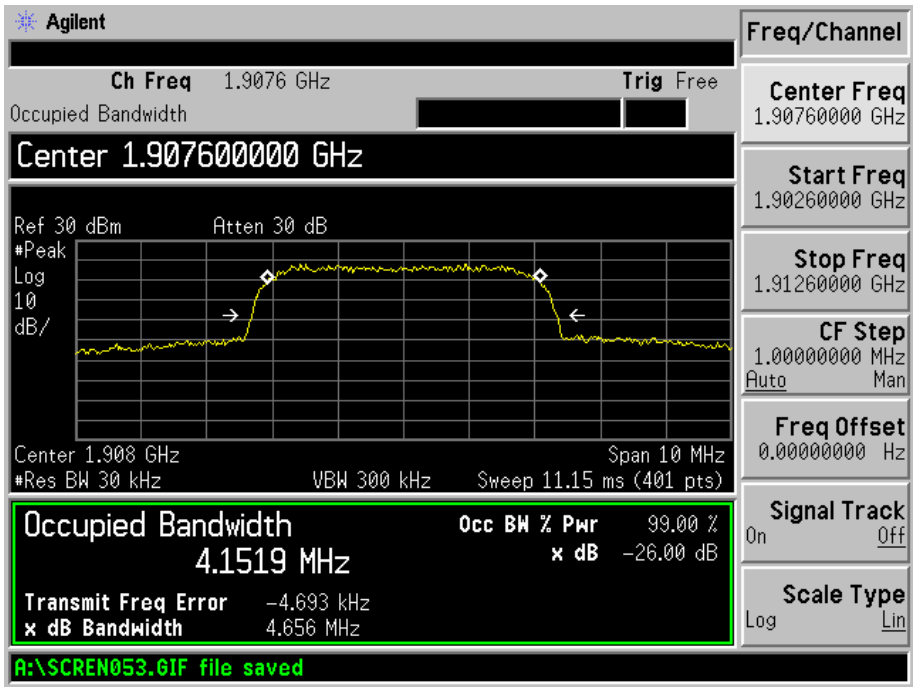
WCDMA Low Channel



WCDMA Middle Channel



WCDMA High Channel



6. Out of Band Emissions at Antenna Terminal

6.1 Standard Applicable

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

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

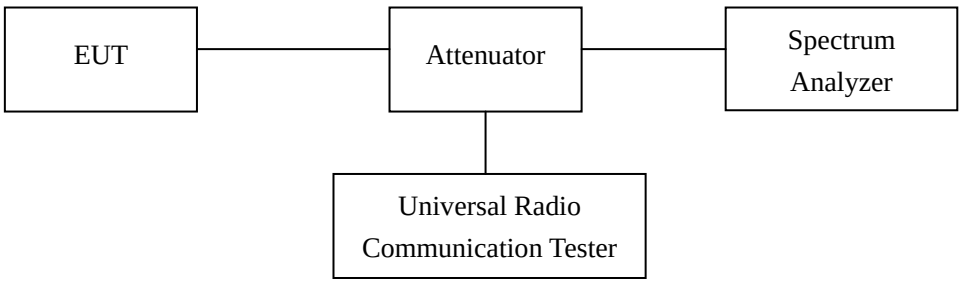
6.2 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date	Due. Date
Aglient	Spectrum Analyzer	E4402B	US41192821	2013-05-07	2014-05-06
Rohde & Schwarz	Spectrum Analyzer	FSP	836079/035	2013-05-07	2014-05-06
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	112012	2013-05-07	2014-05-06

6.3 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^{th} harmonic.

Test Configuration for the out of band emissions testing:



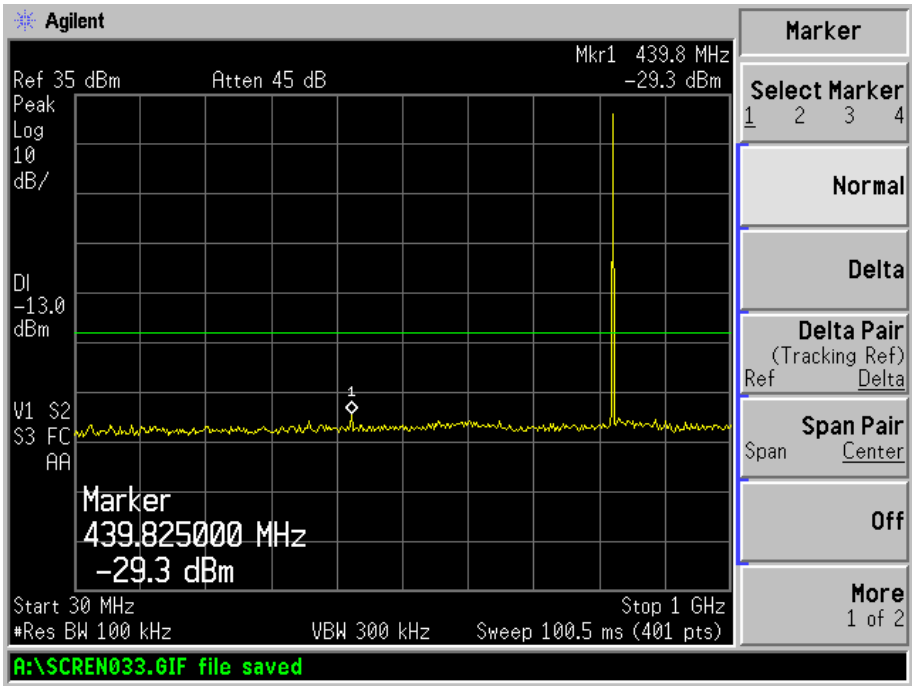
6.4 Environmental Conditions

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

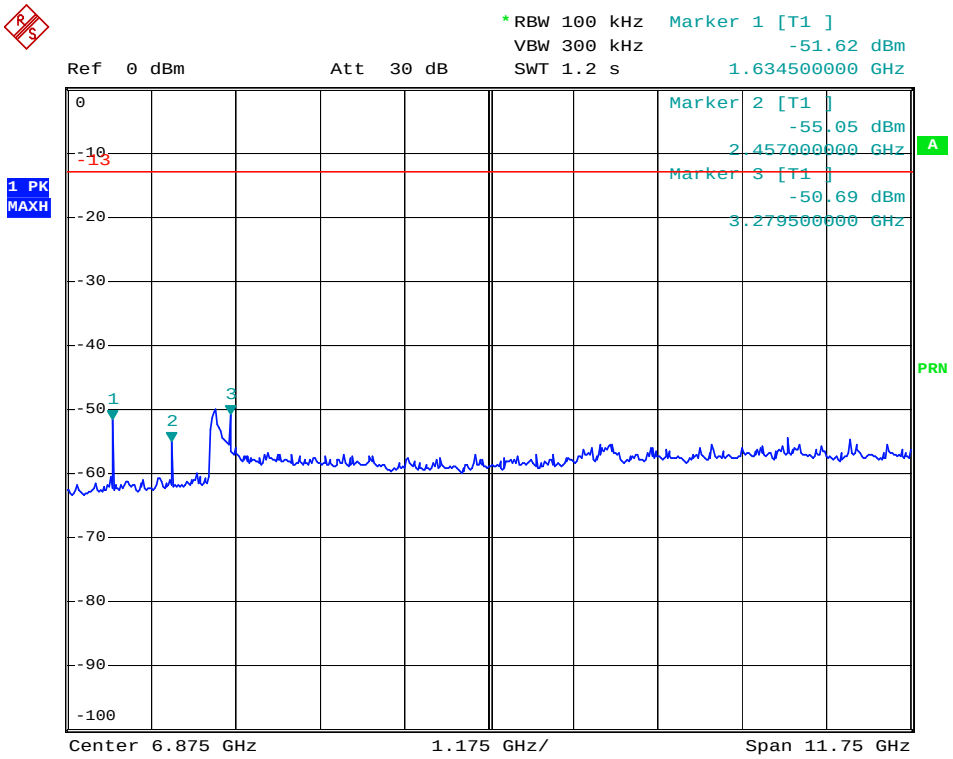
6.5 Summary of Test Results/Plots

Please refer to the following test plots For Cellular Band

GSM Low Channel 30MHz to 1GHz

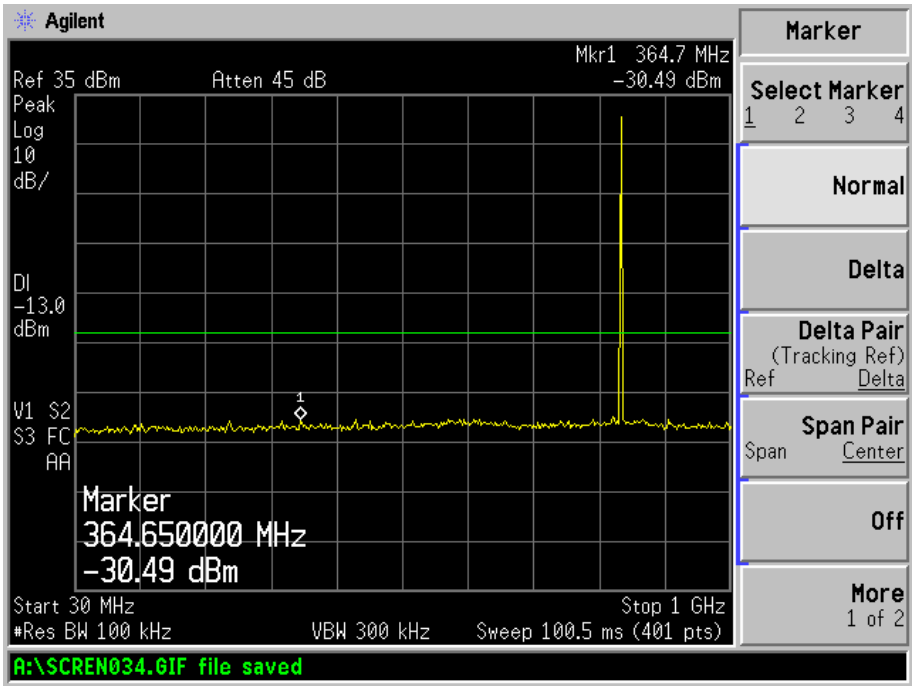


Above 1GHz

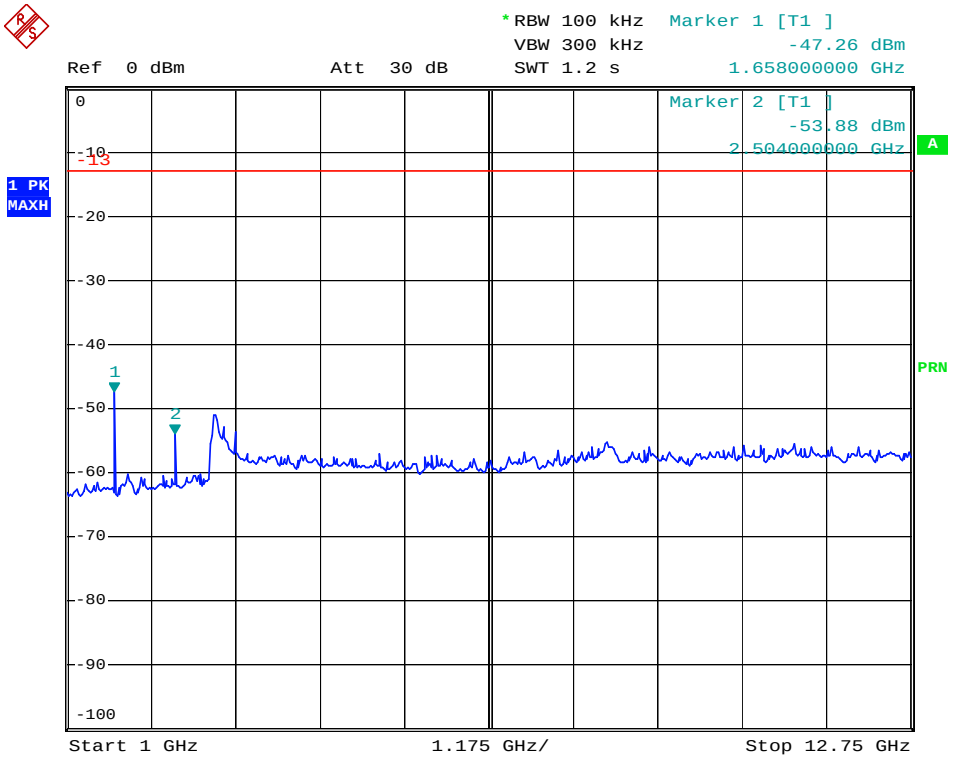


GSM Middle Channel

30MHz to 1GHz

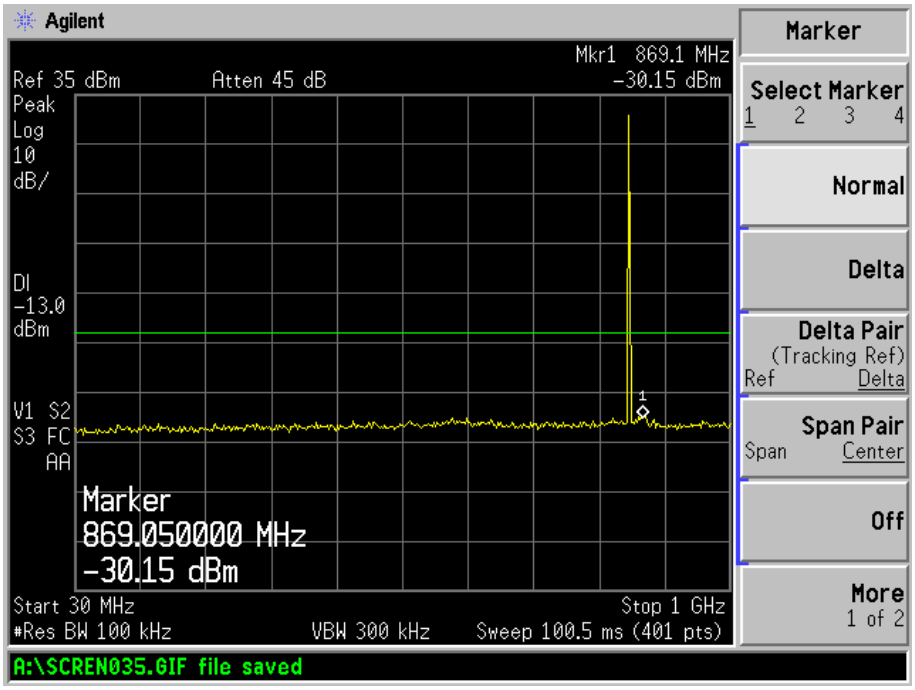


Above 1GHz

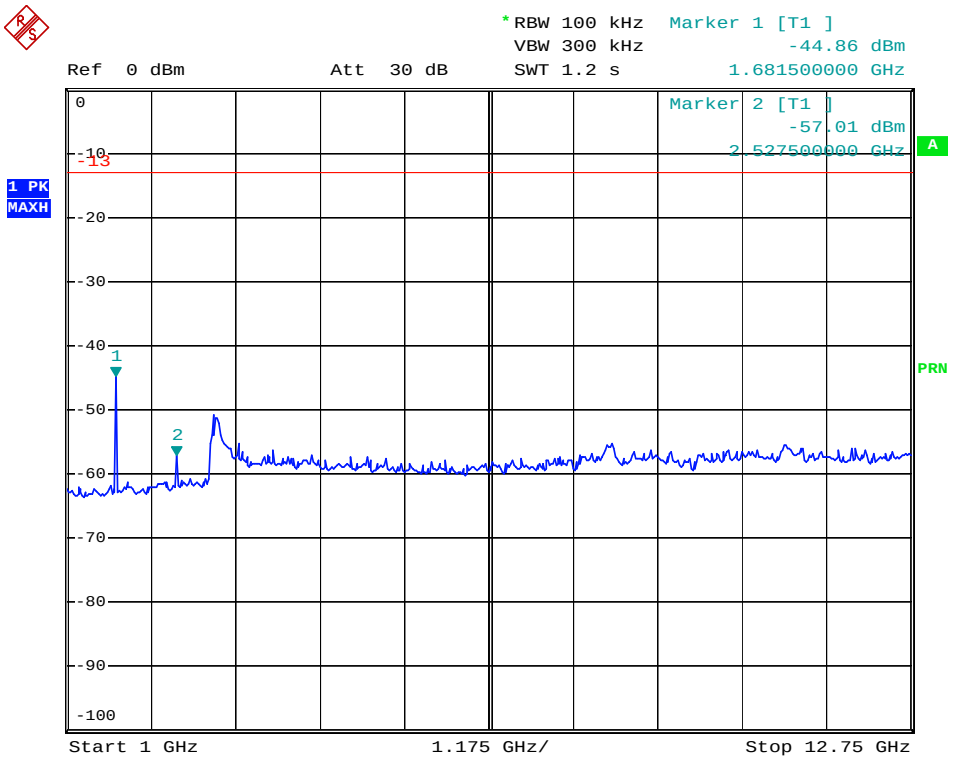


GSM High Channel

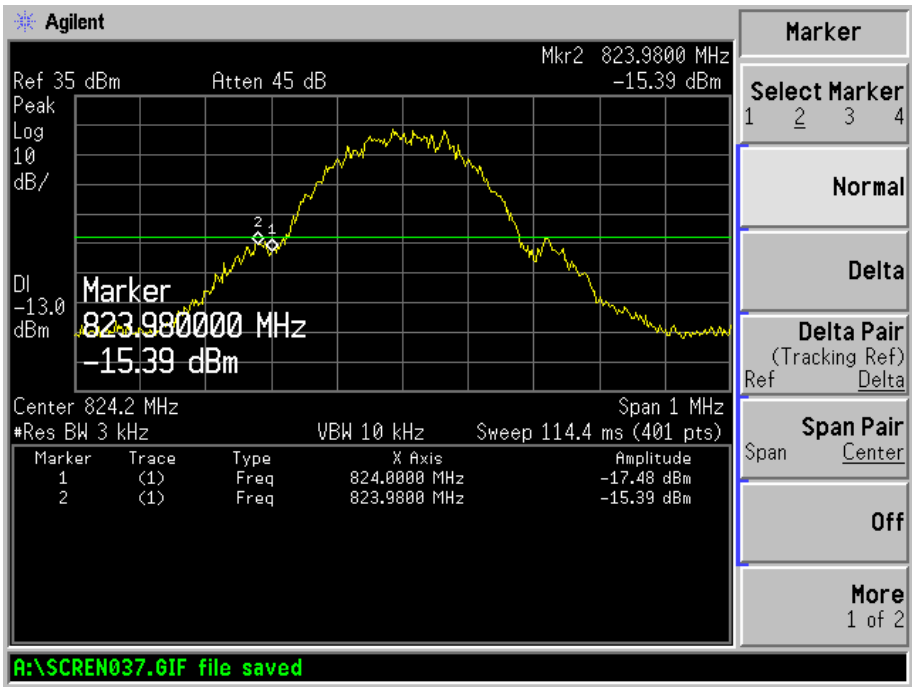
30MHz to 1GHz



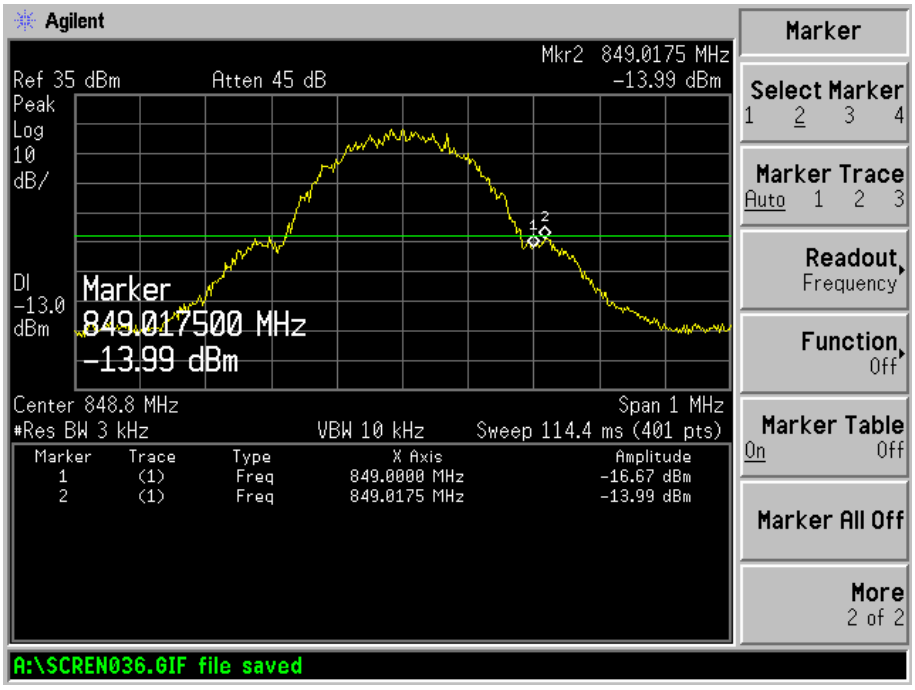
Above 1GHz



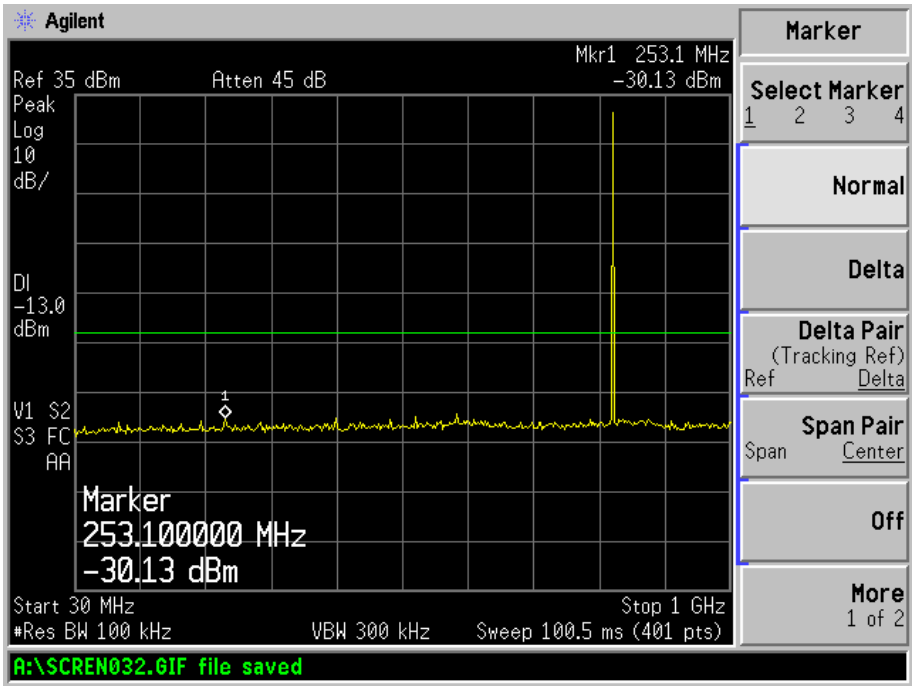
GSM Low Band Emission



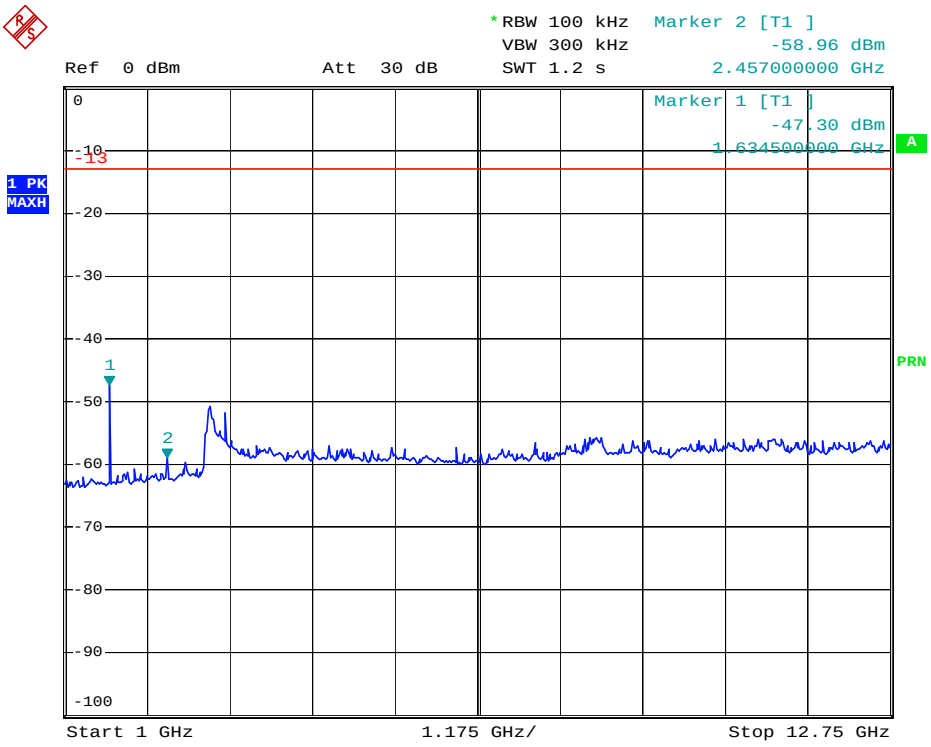
GSM High Band Emission



GPRS Low Channel
30MHz to 1GHz

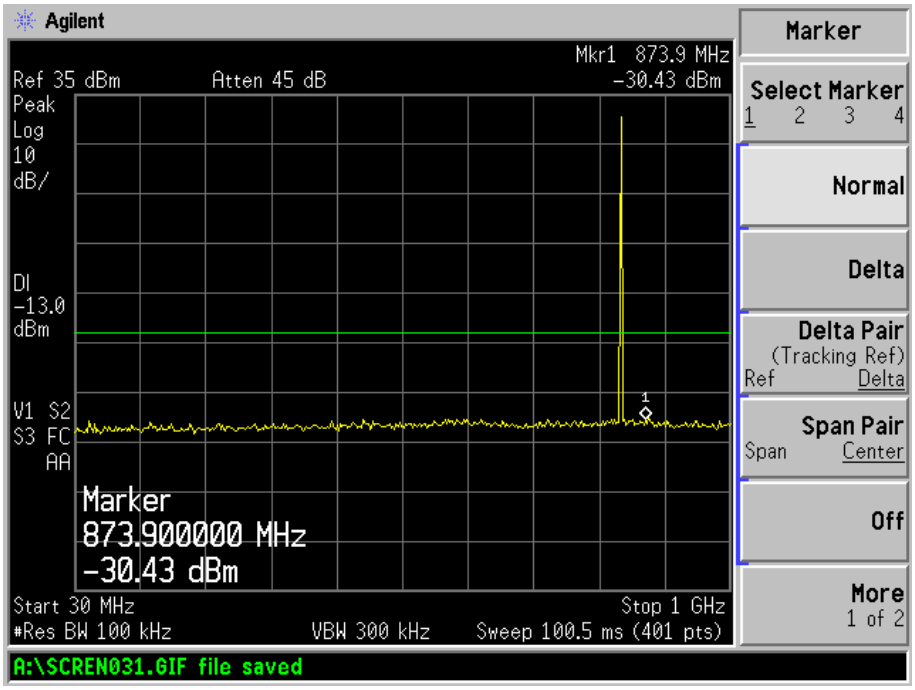


Above 1GHz

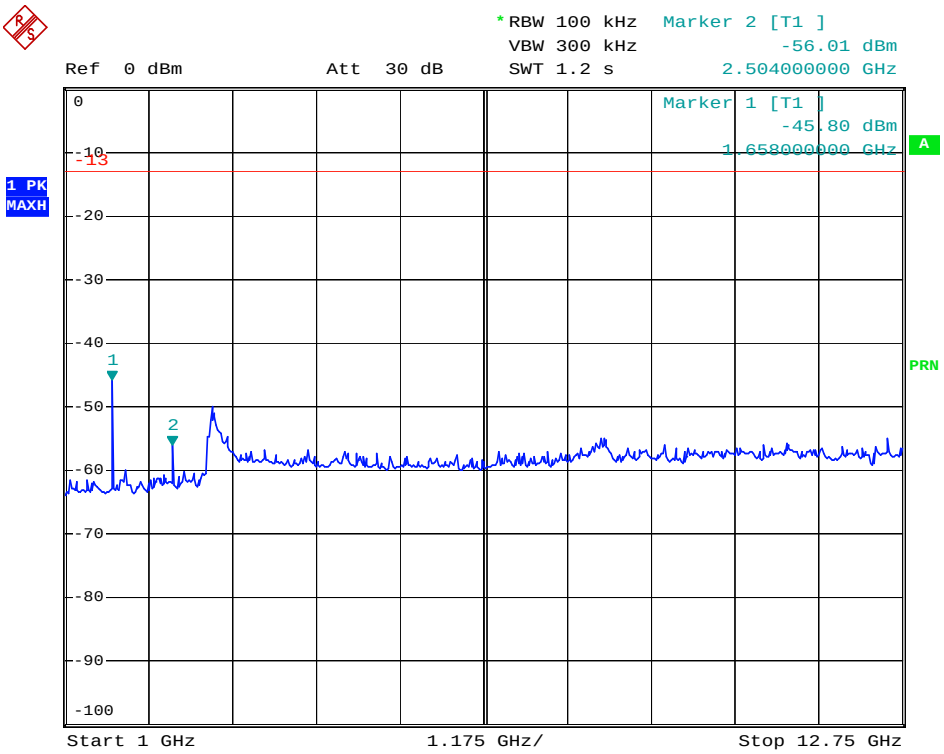


GPRS Middle Channel

30MHz to 1GHz

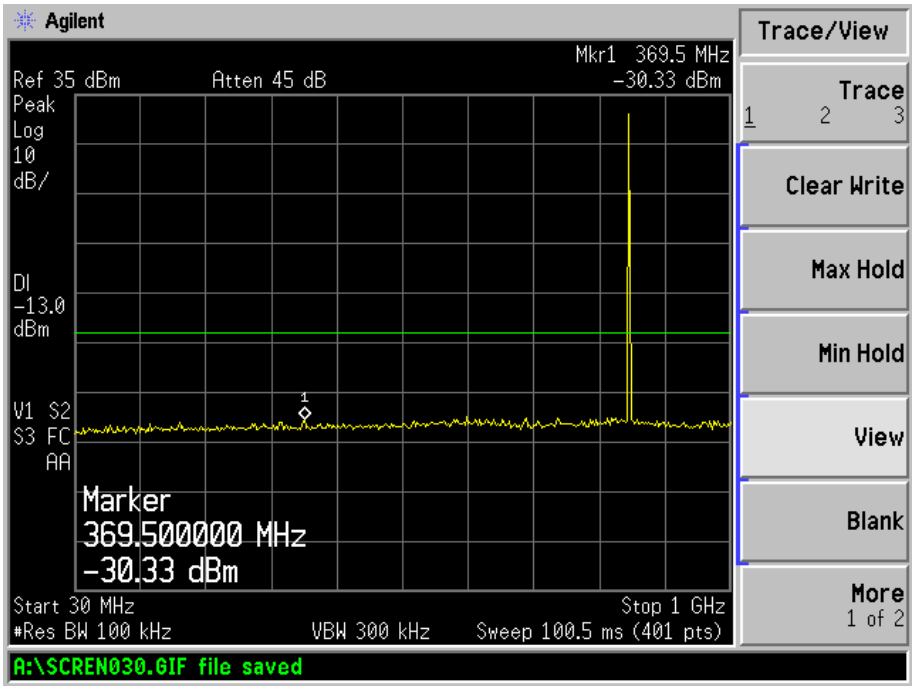


Above 1GHz

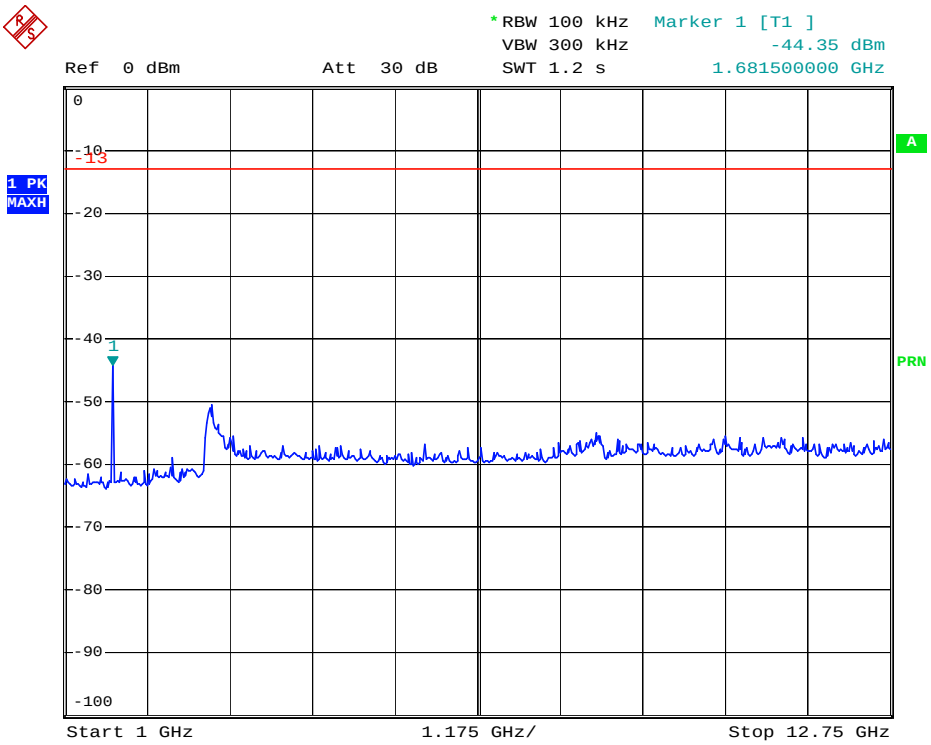


GPRS High Channel

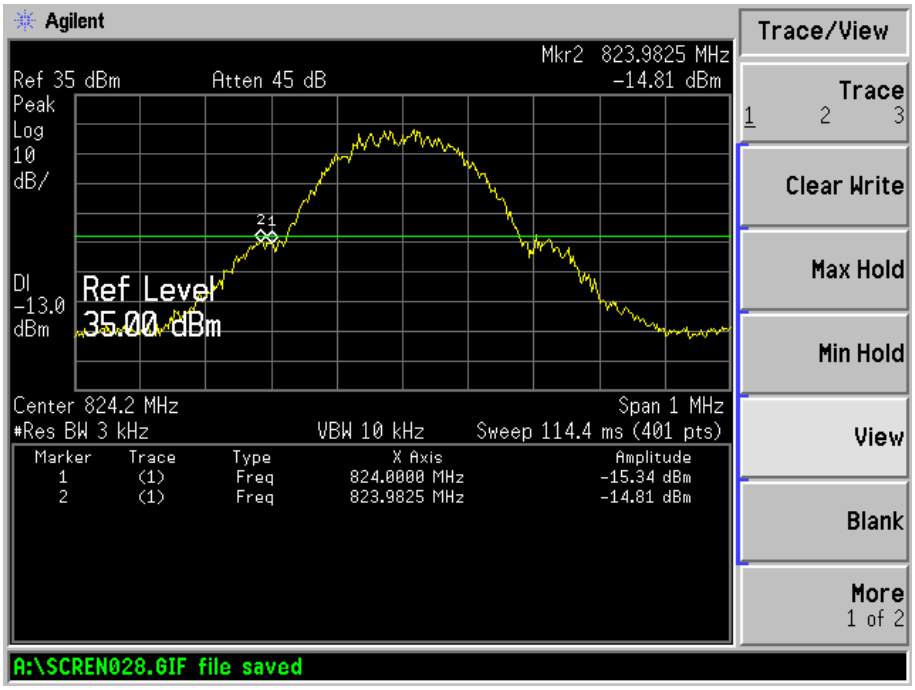
30MHz to 1GHz



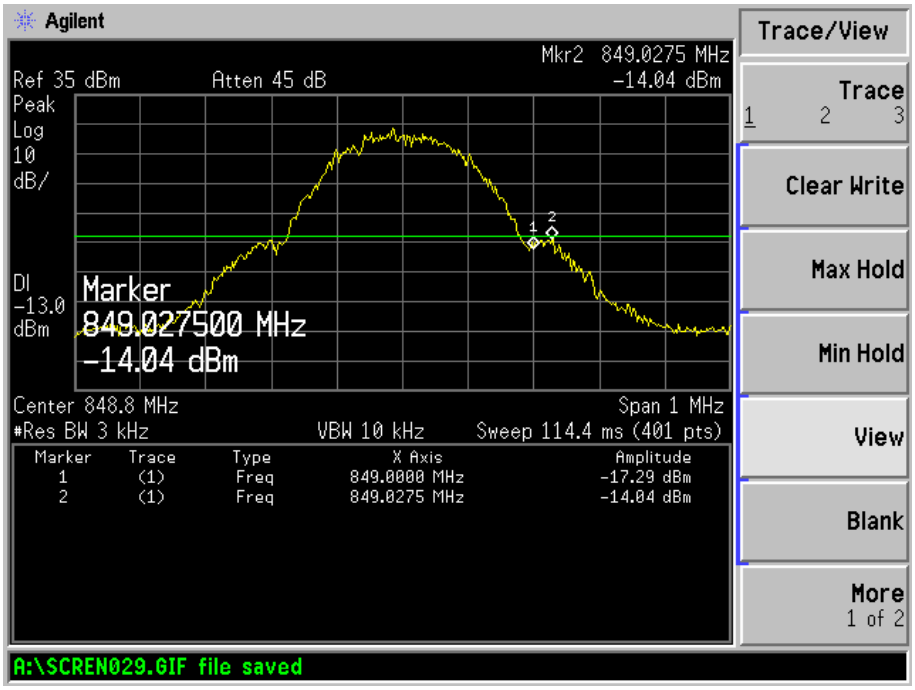
Above 1GHz



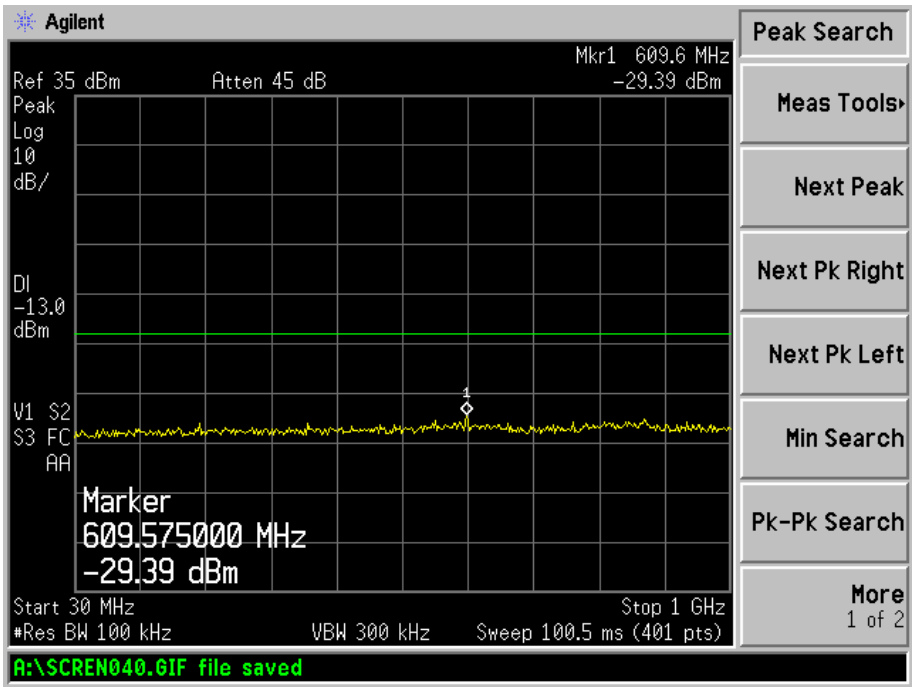
GPRS Low Band Emission



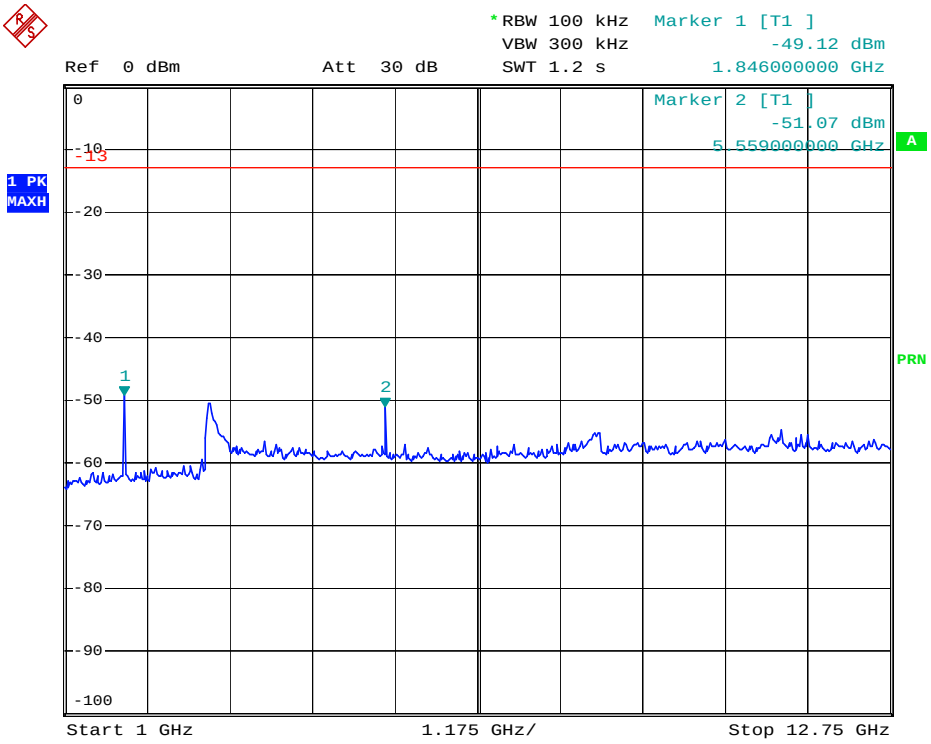
GPRS High Band Emission



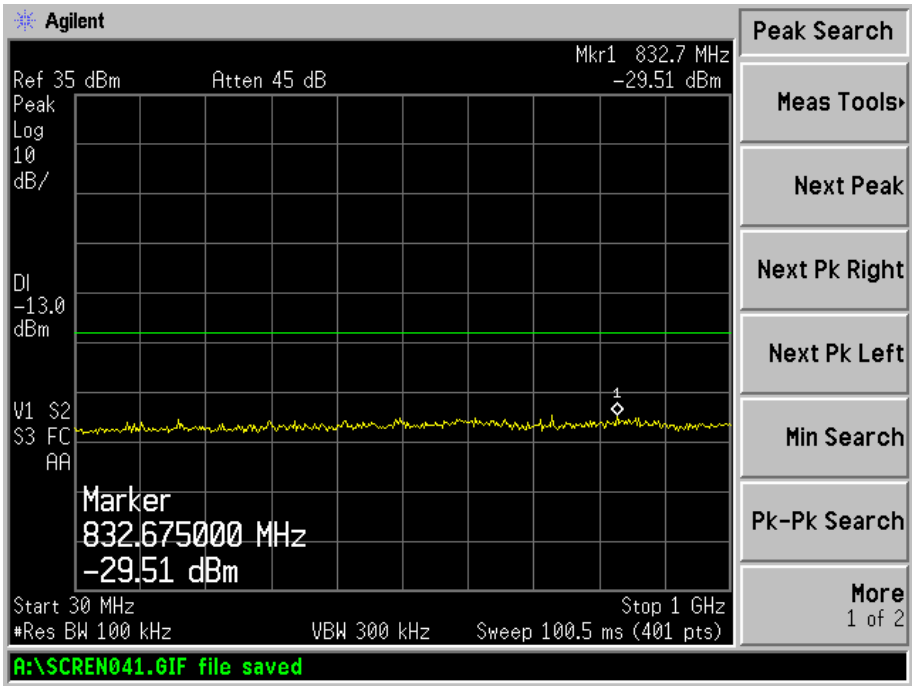
For PCS Band
GSM Low Channel
30MHz to 1GHz



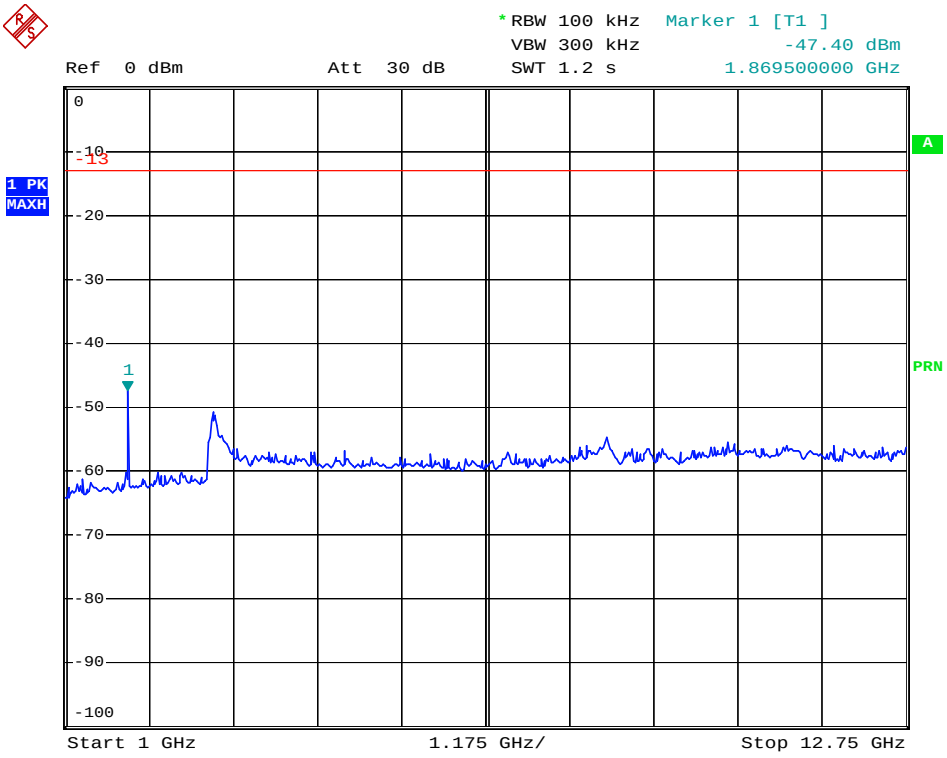
Above 1GHz



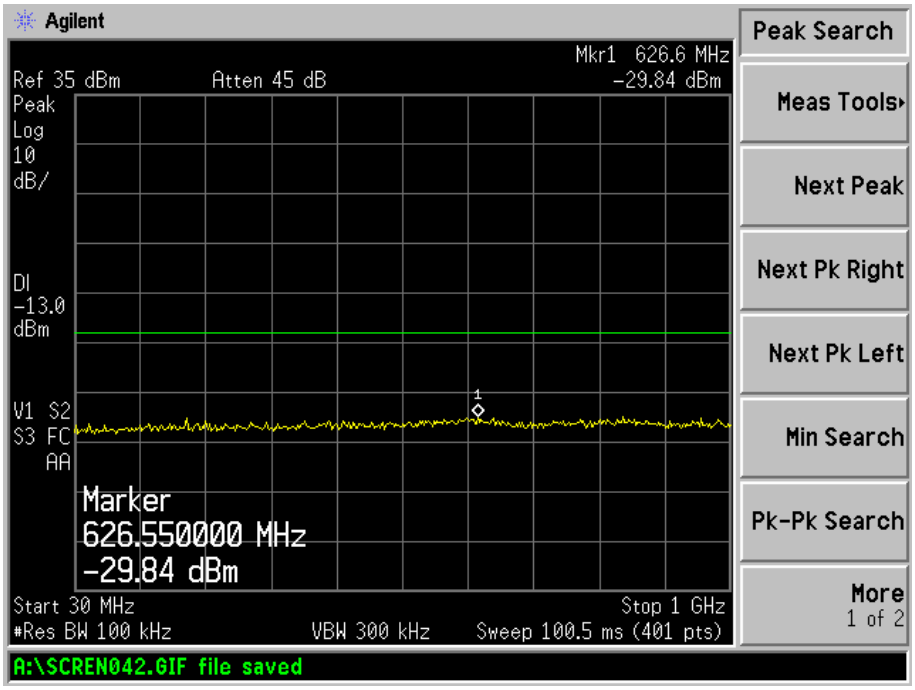
GSM Middle Channel
30MHz to 1GHz



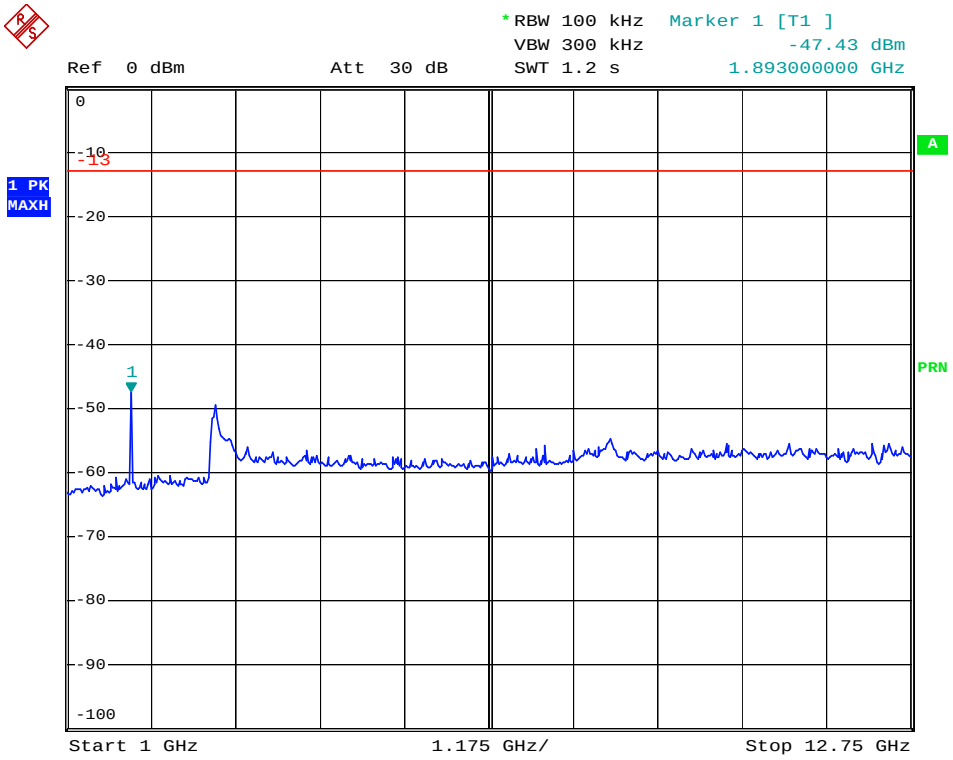
Above 1GHz



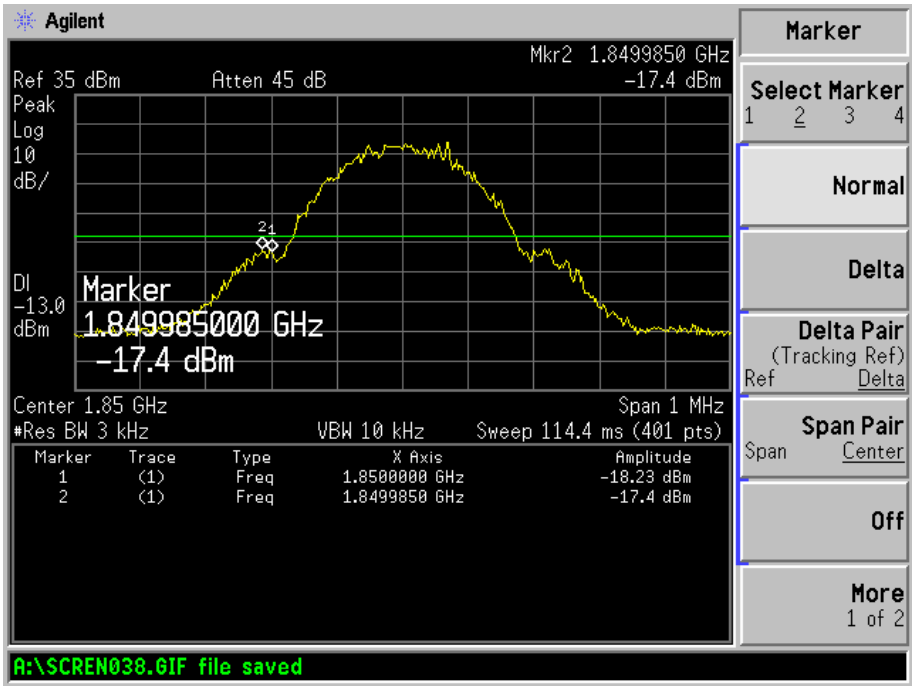
GSM High Channel
30MHz to 1GHz



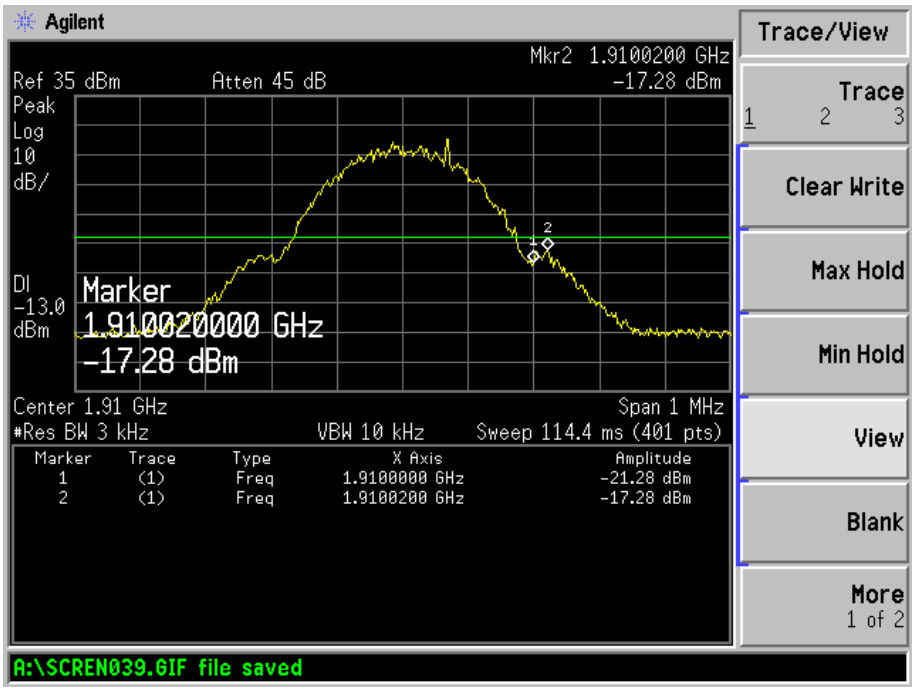
Above 1GHz



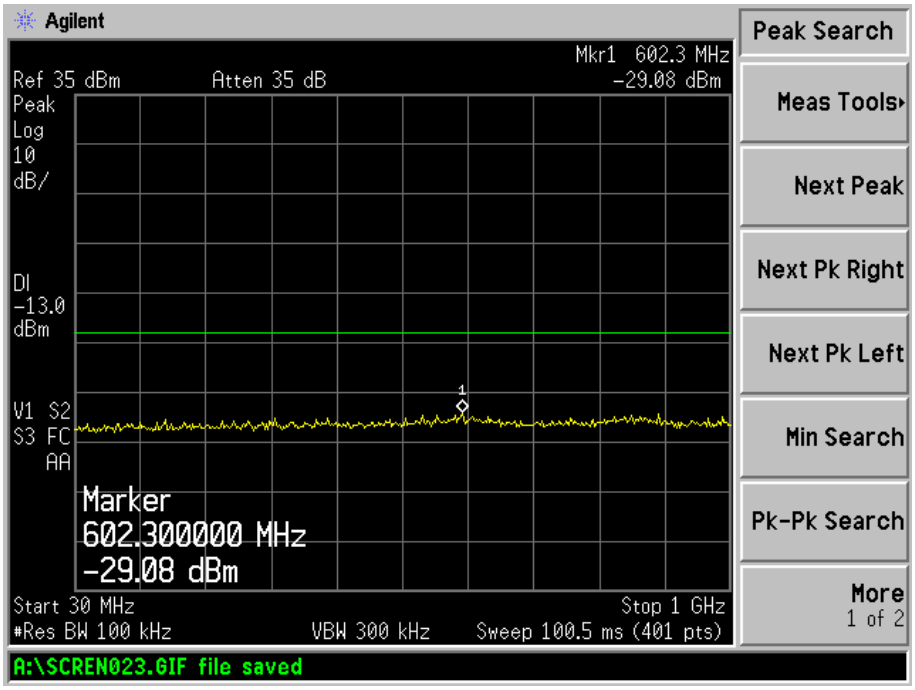
GSM Low Band Emission



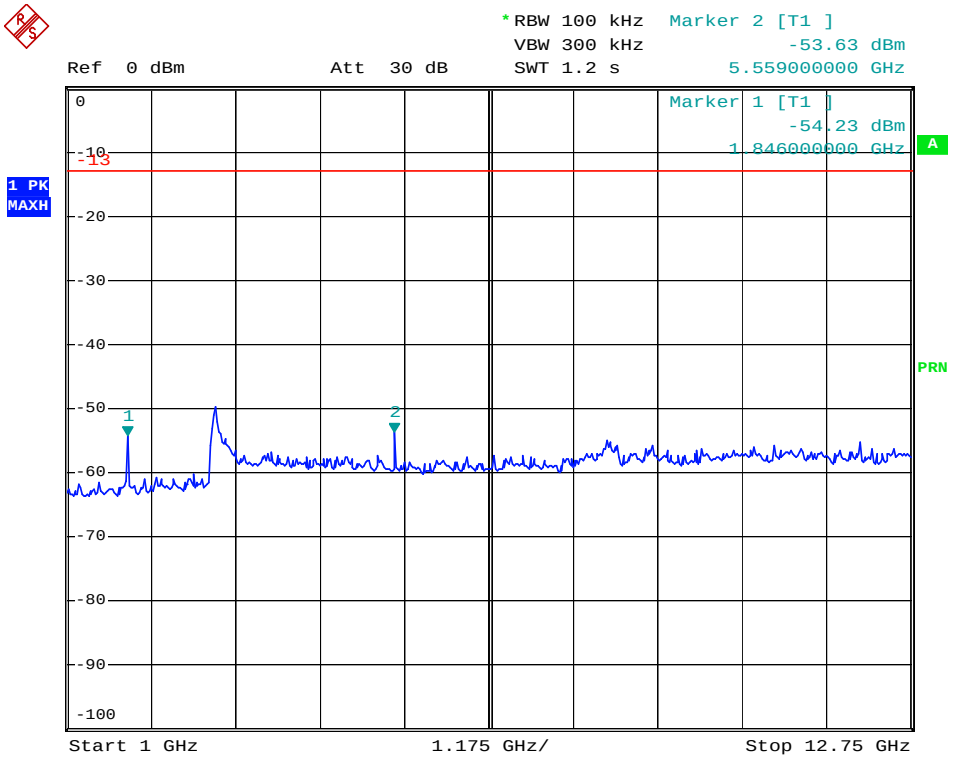
GSM High Band Emission



GPRS Low Channel
30MHz to 1GHz

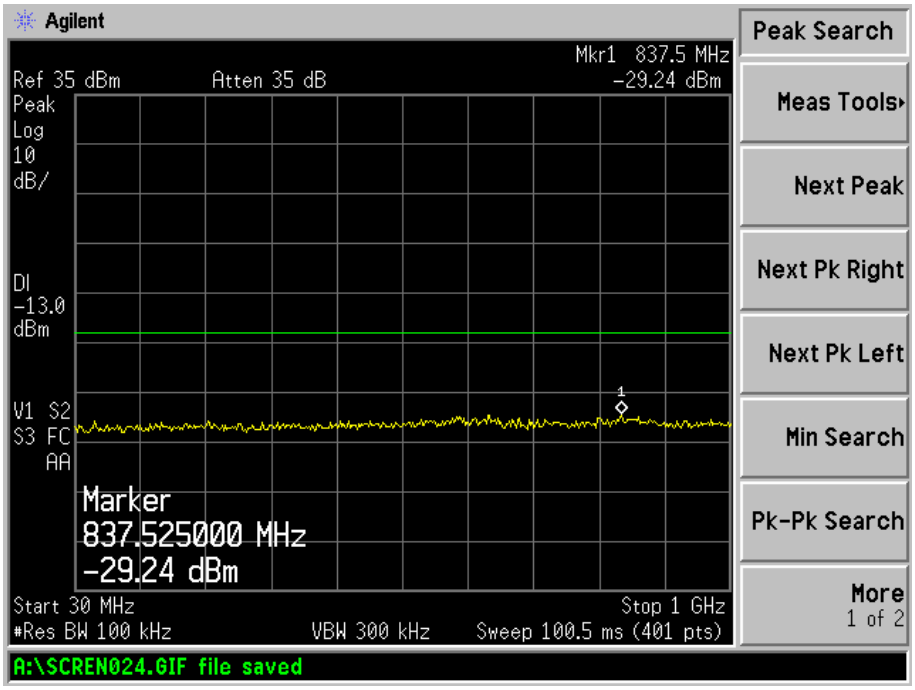


Above 1GHz

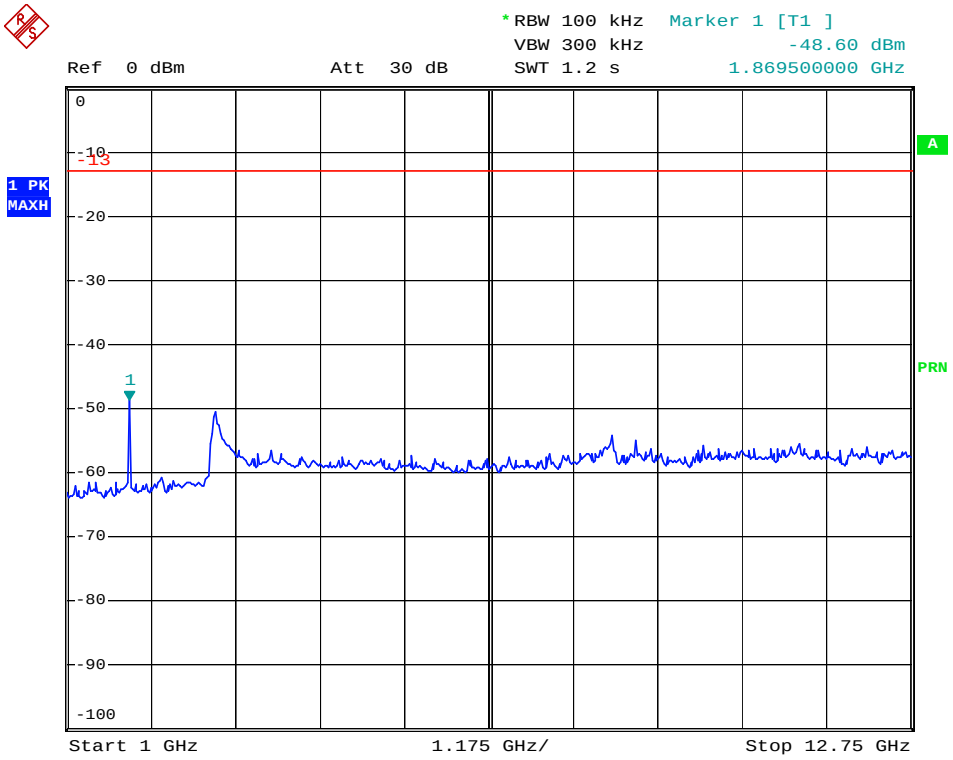


GPRS Middle Channel

30MHz to 1GHz

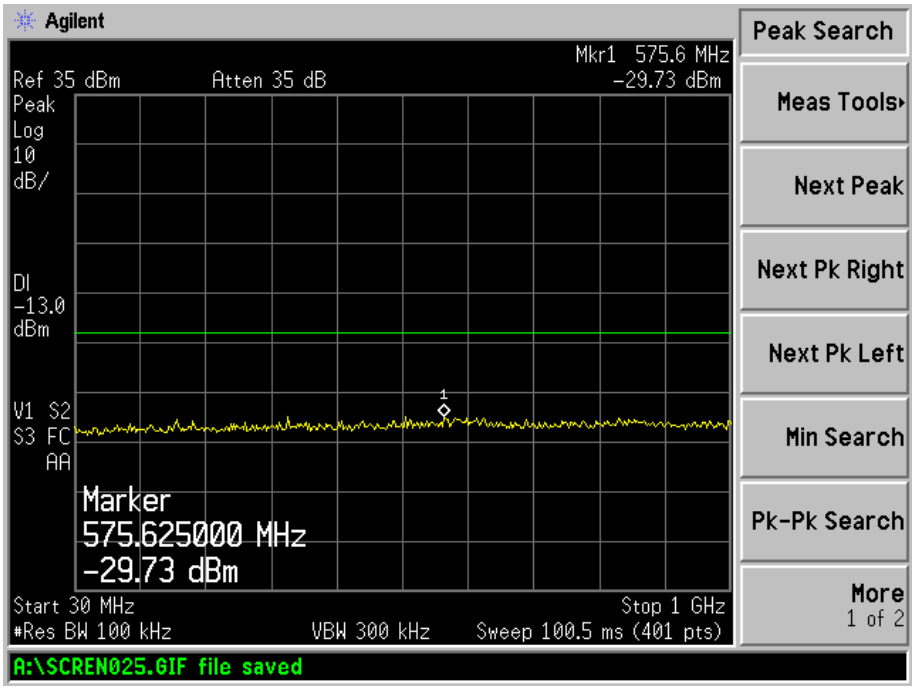


Above 1GHz

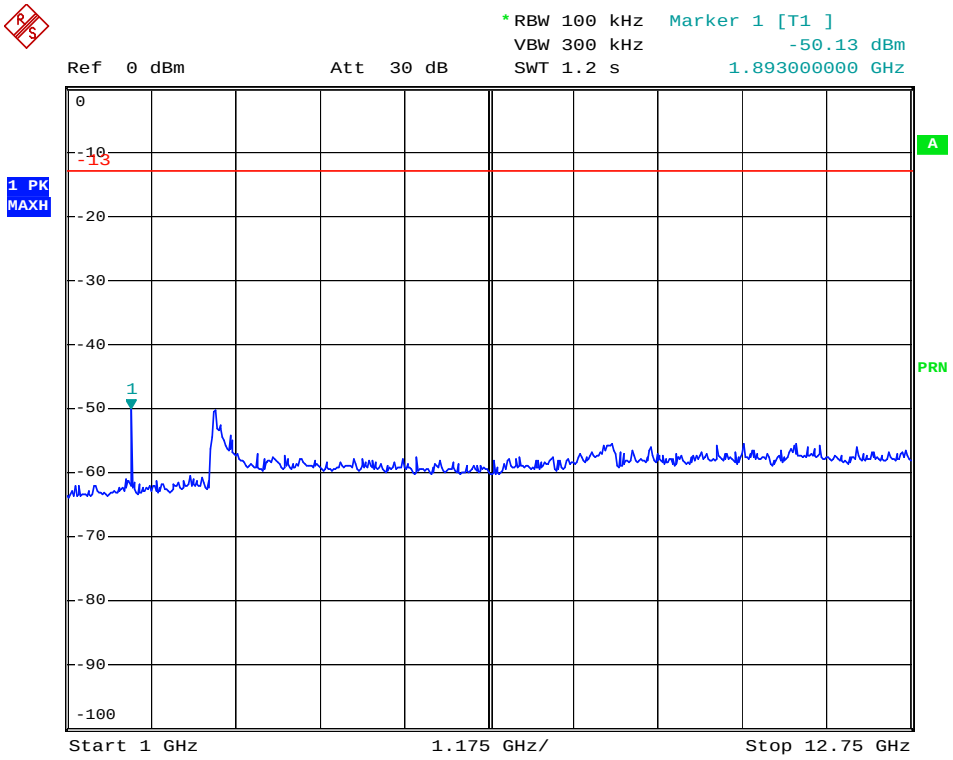


GPRS High Channel

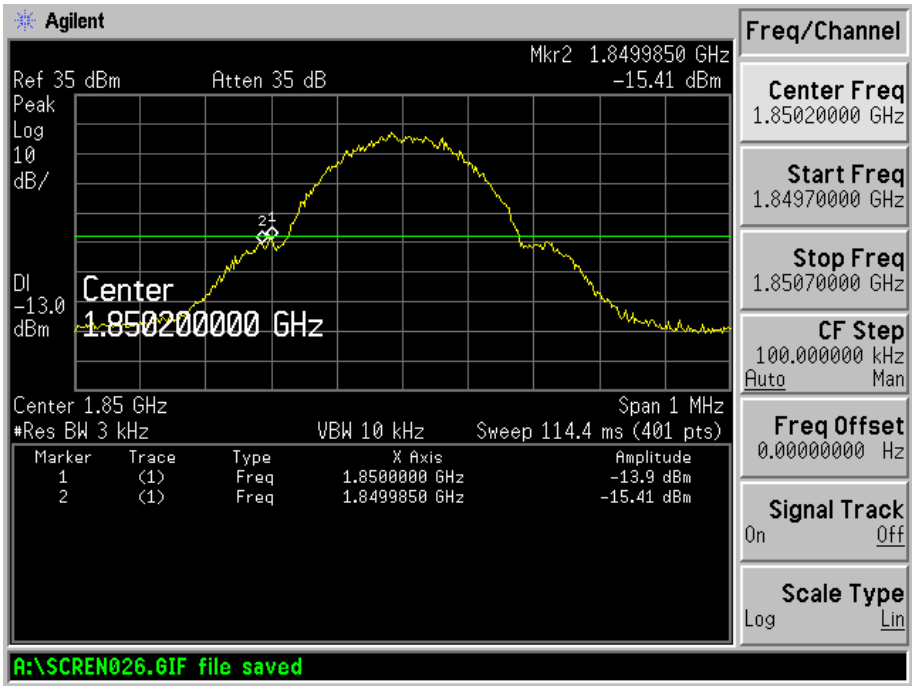
30MHz to 1GHz



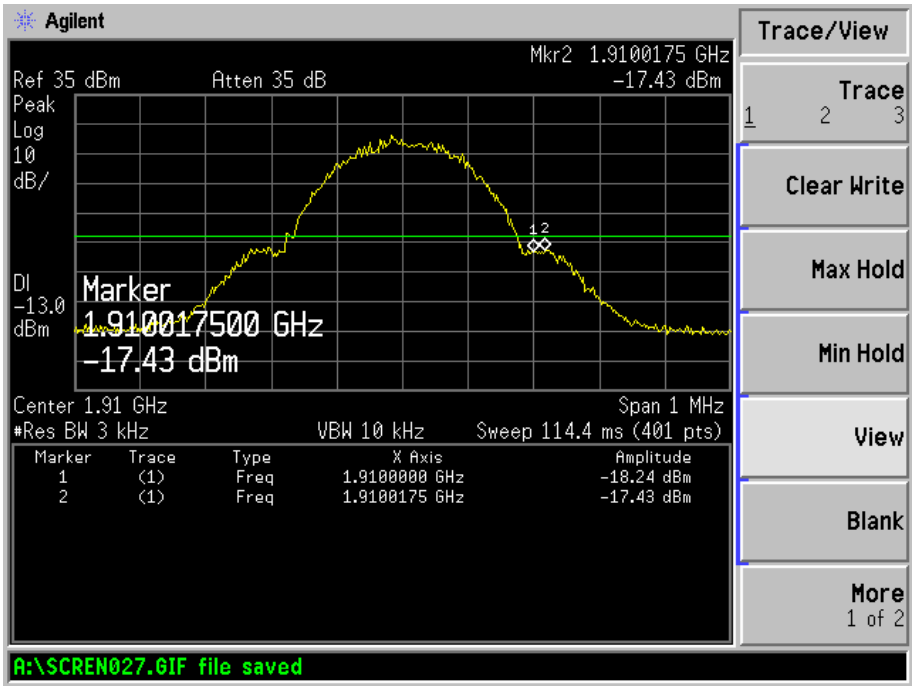
Above 1GHz



GPRS Low Band Emission



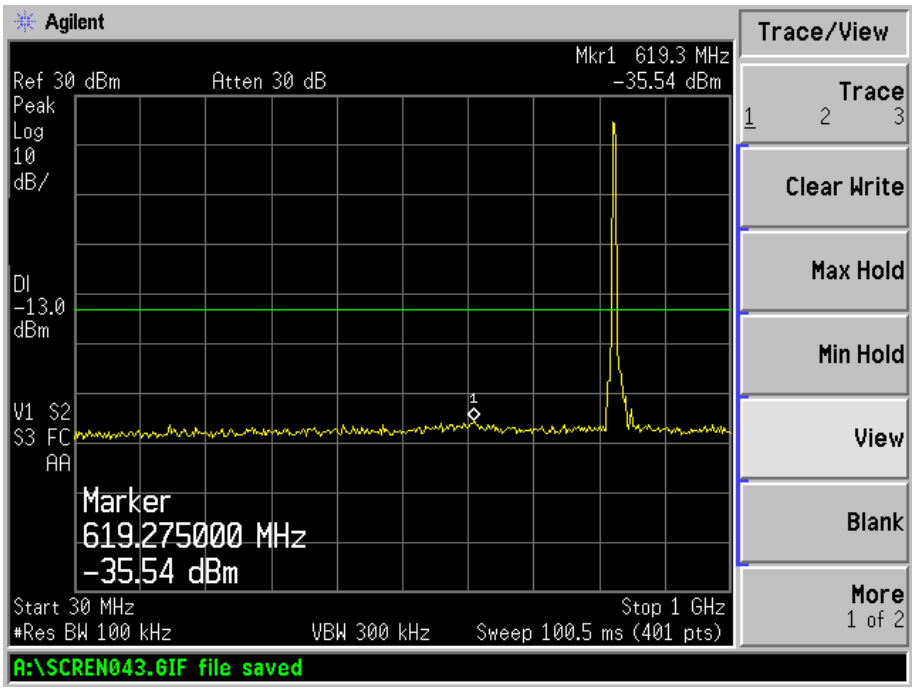
GPRS High Band Emission



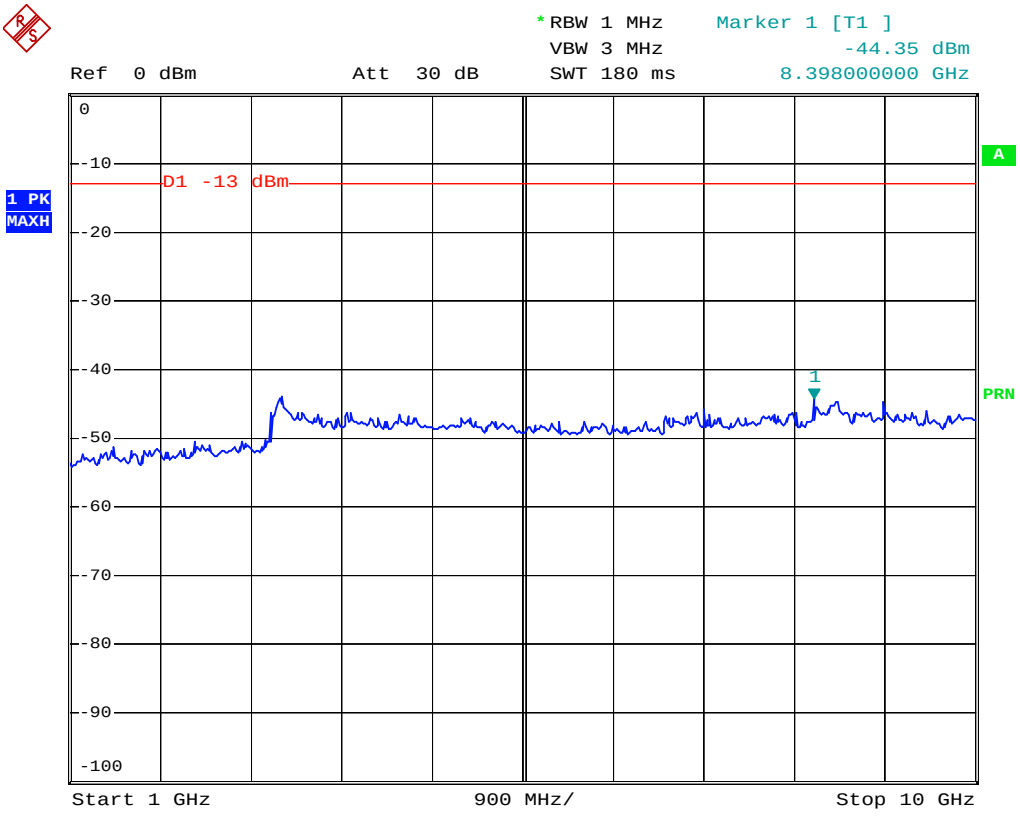
For Band V

WCDMA Low Channel

30MHz to 1GHz

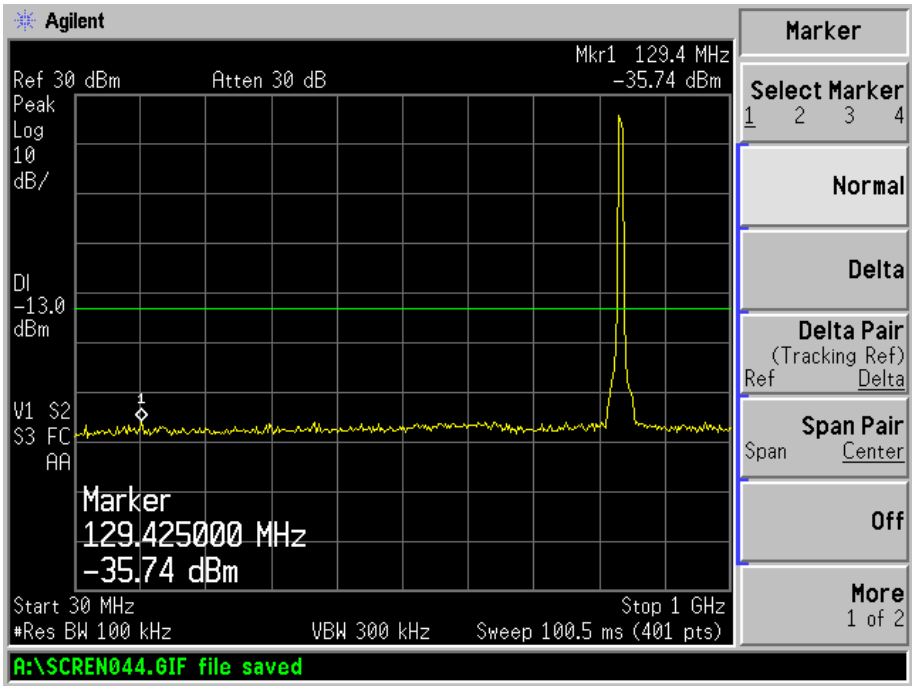


Above 1GHz

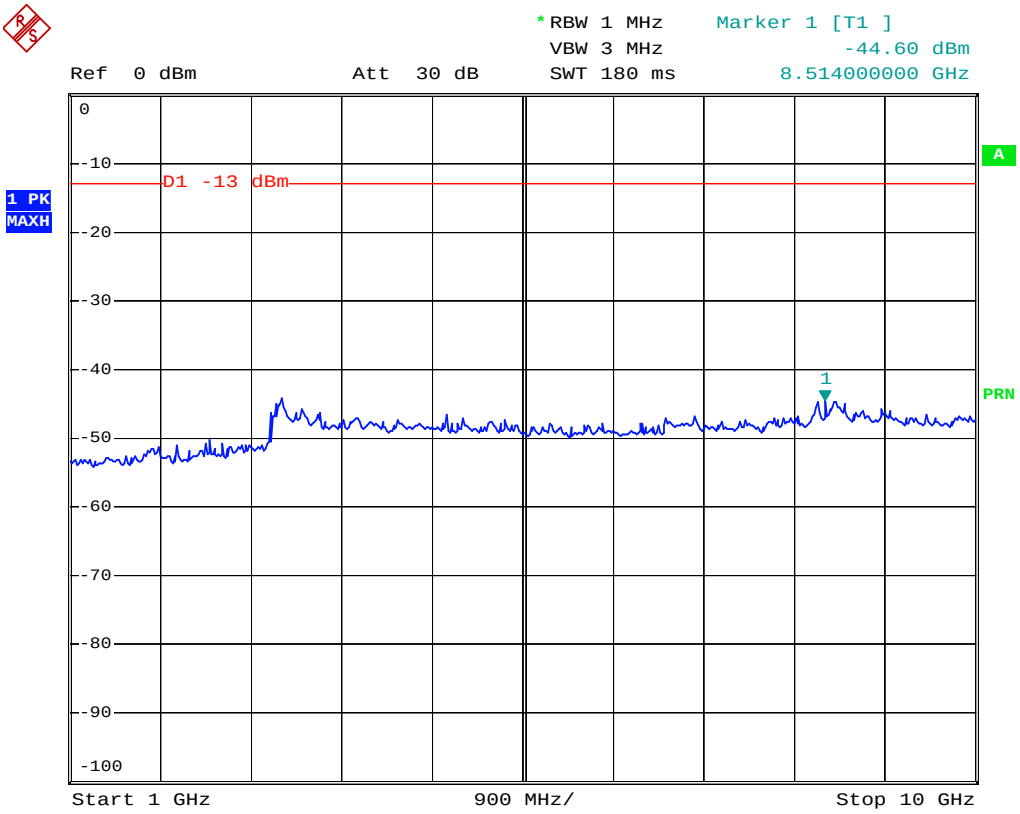


WCDMA Middle Channel

30MHz to 1GHz

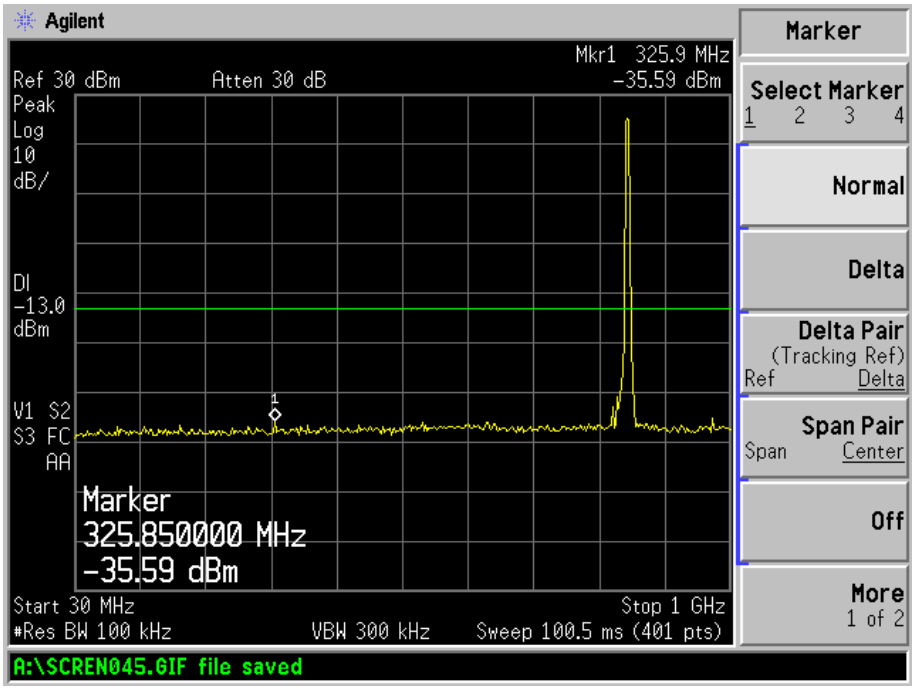


Above 1GHz

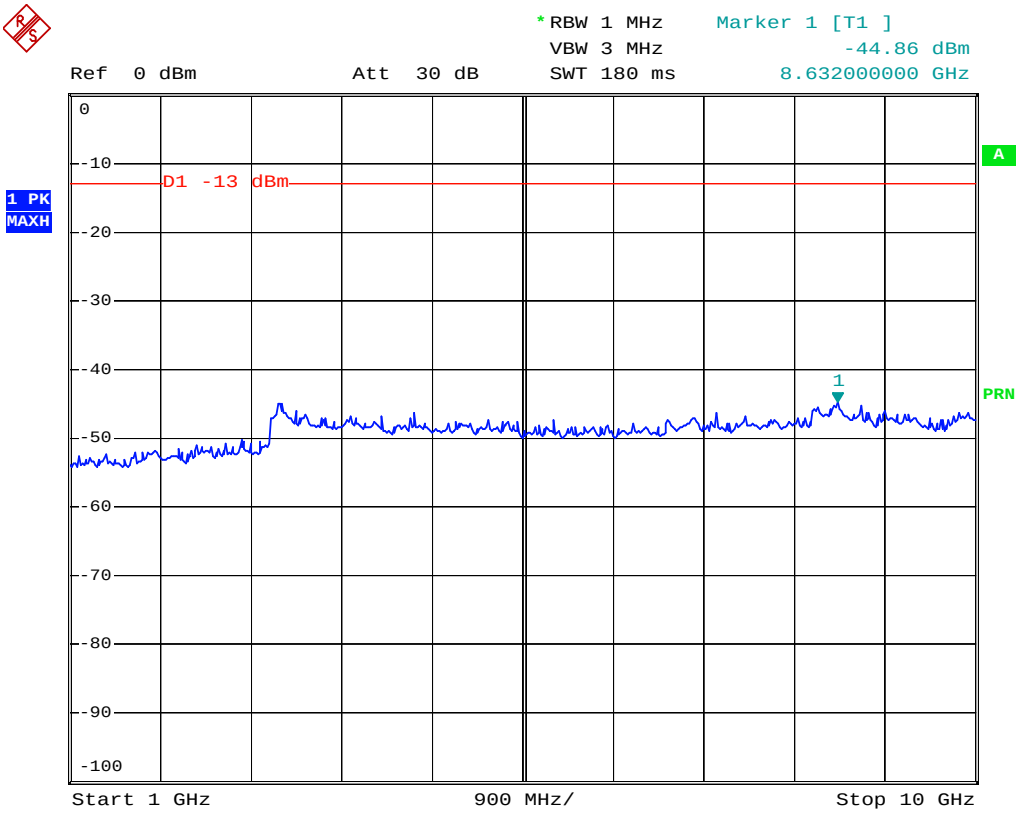


WCDMA High Channel

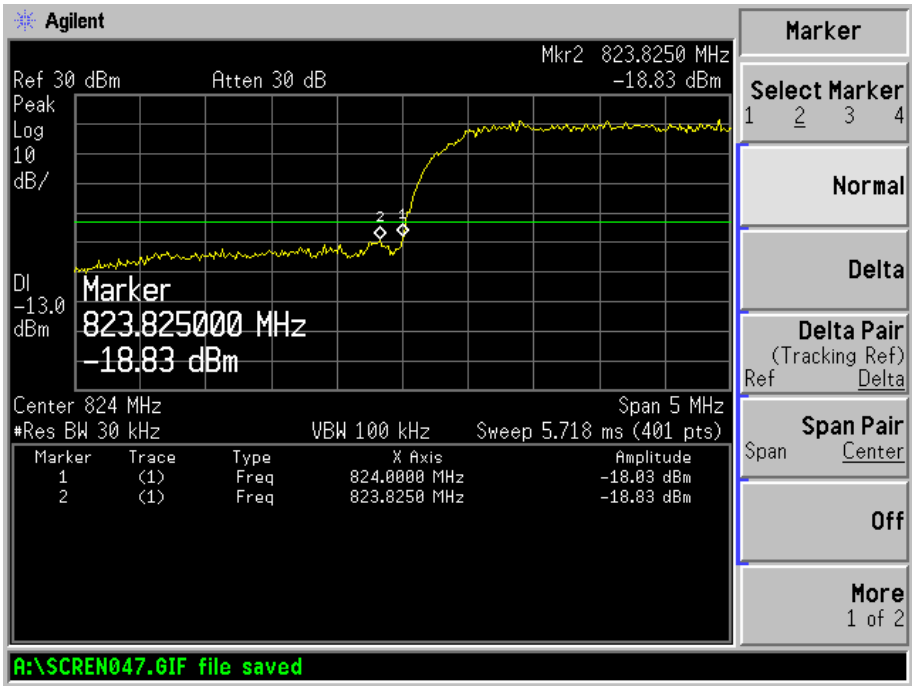
30MHz to 1GHz



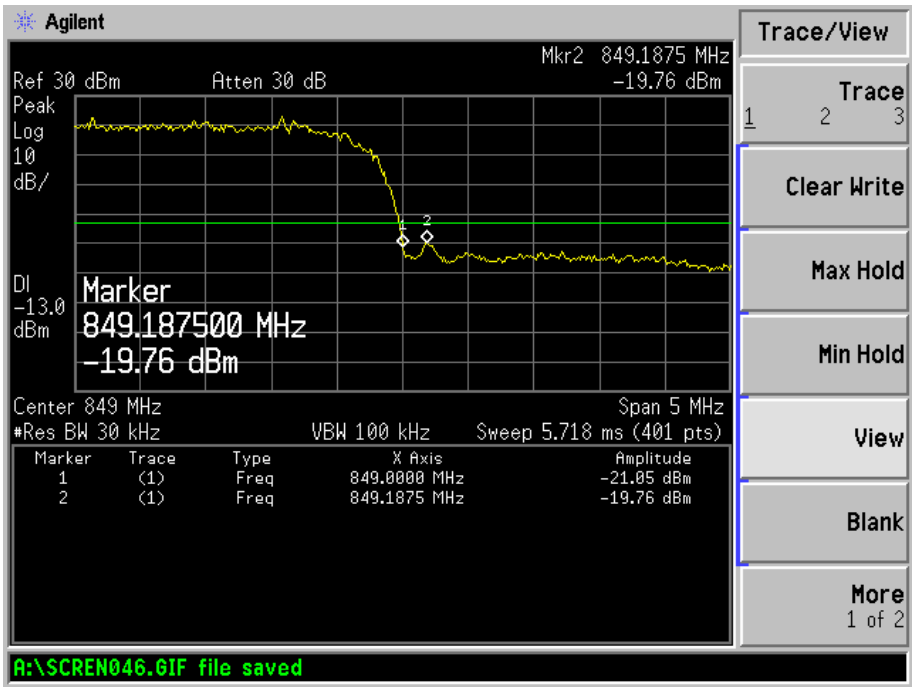
Above 1GHz



WCDMA Low Band Spurious Emission



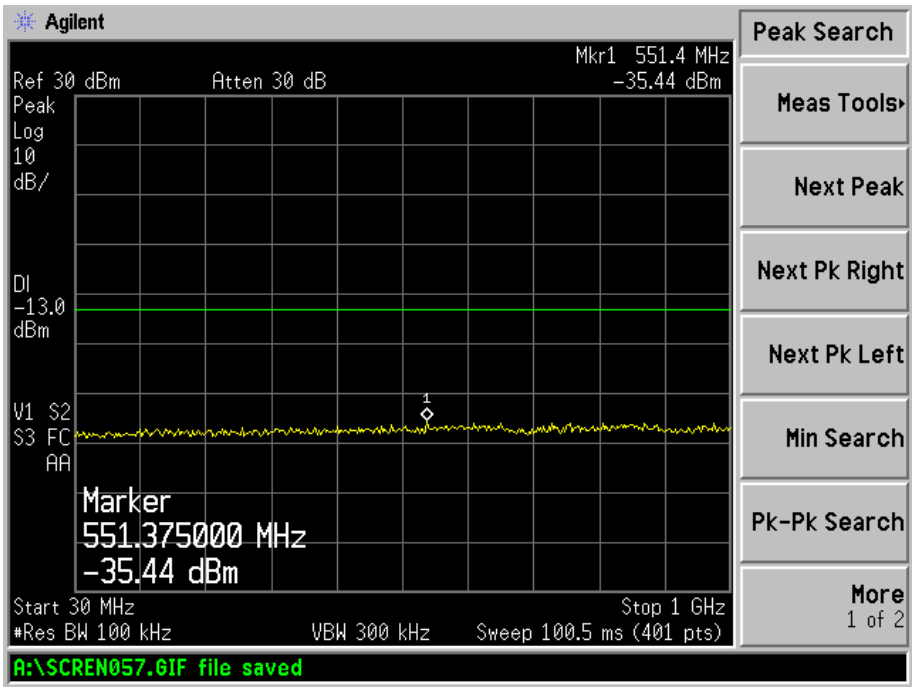
WCDMA High Band Spurious Emission



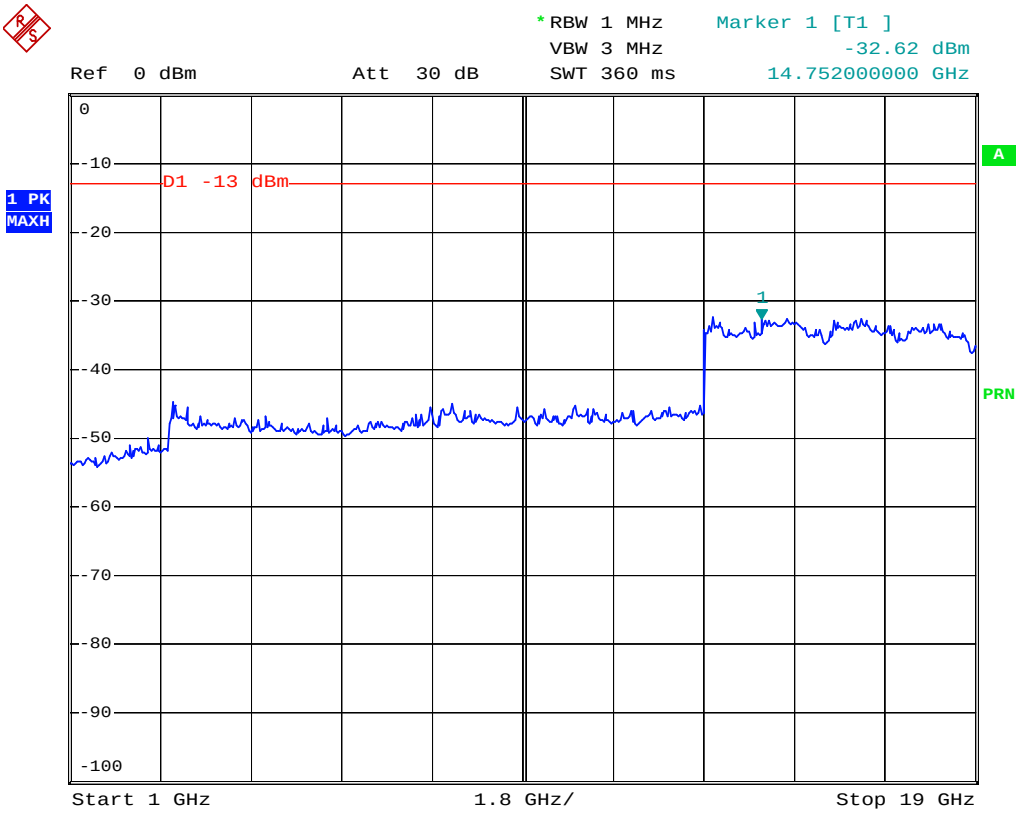
For Band II

WCDMA Low Channel

30MHz to 1GHz

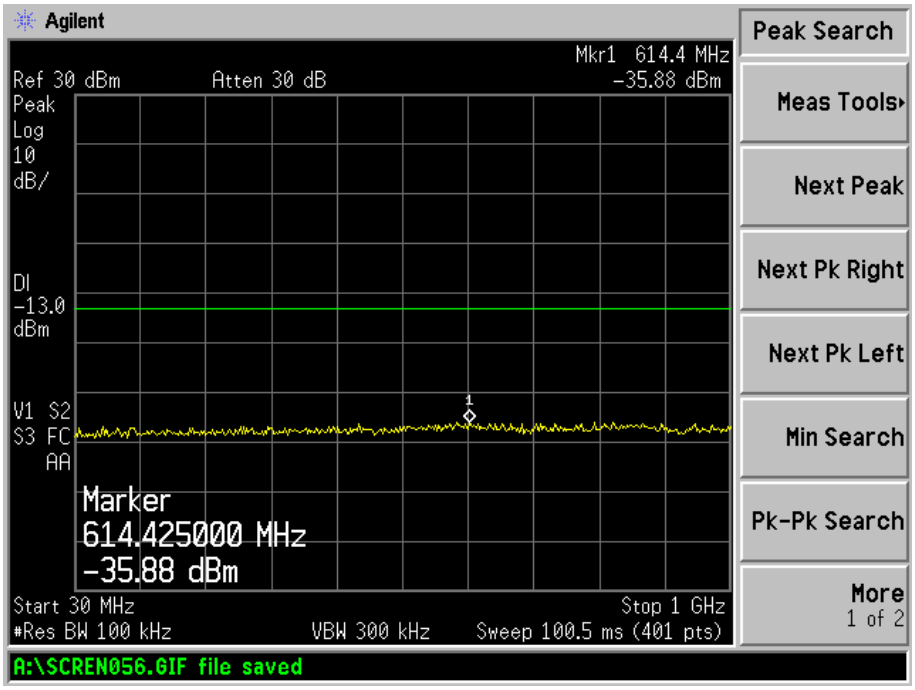


Above 1GHz

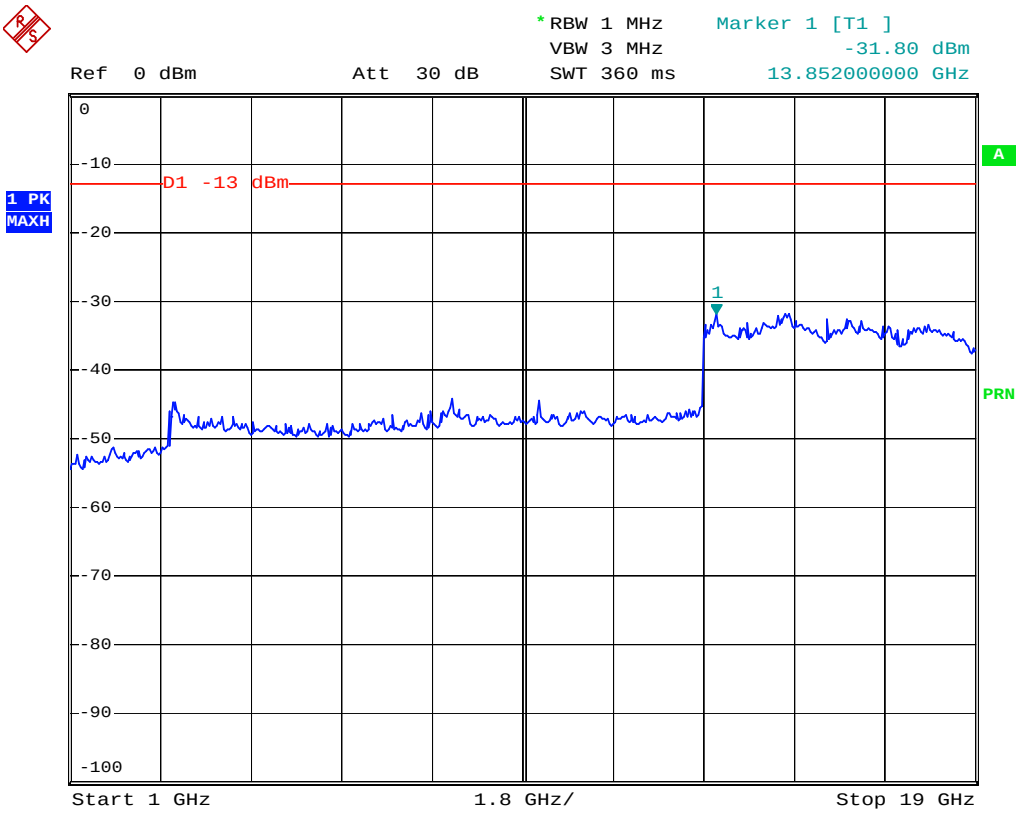


WCDMA Middle Channel

30MHz to 1GHz

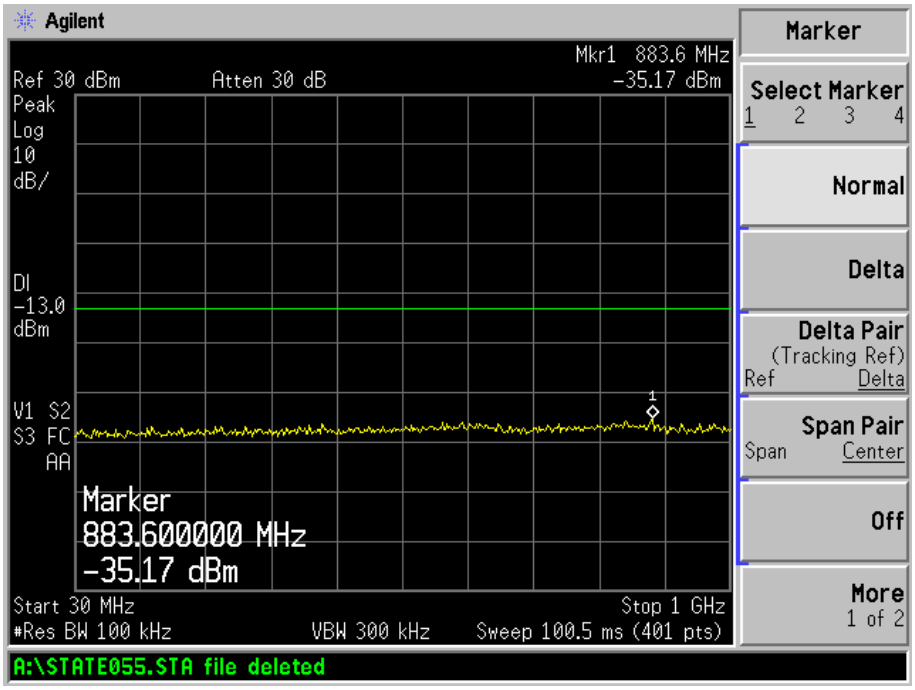


Above 1GHz

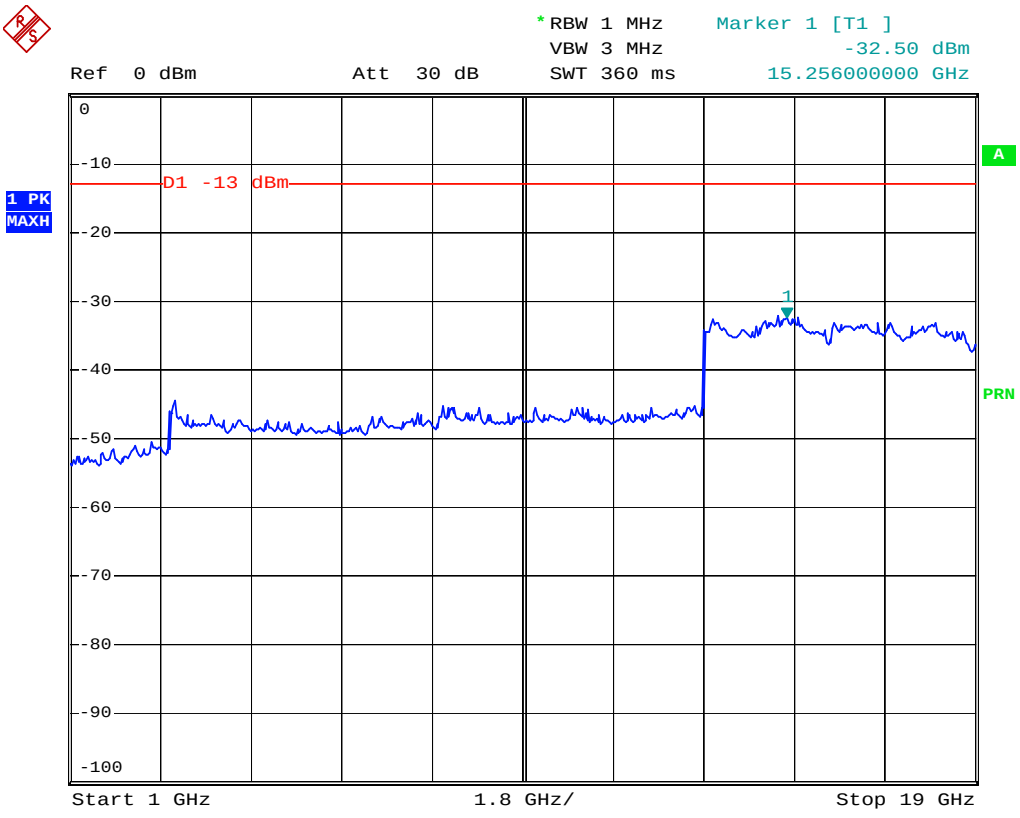


WCDMA High Channel

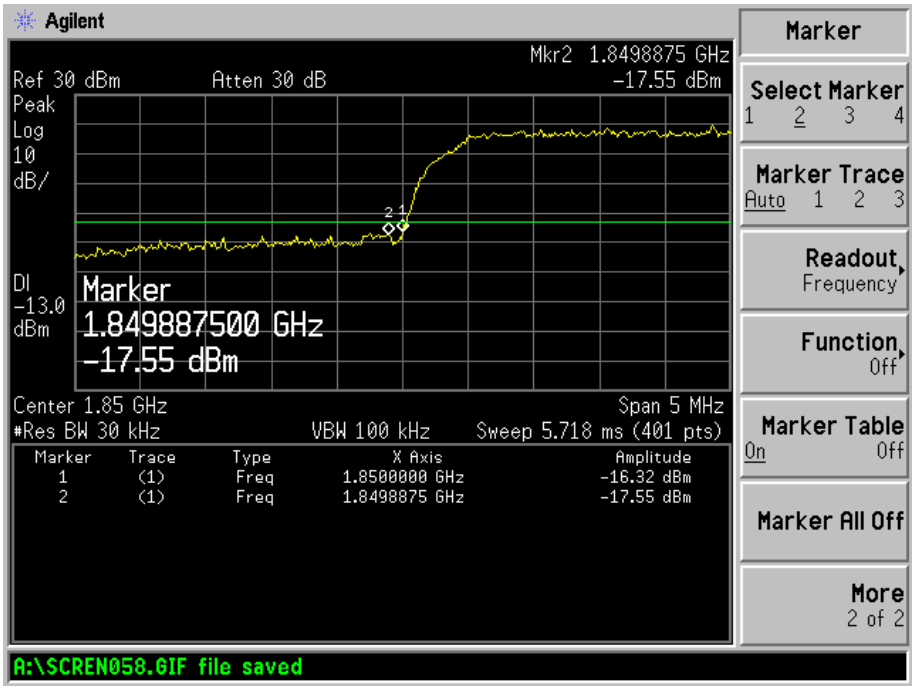
30MHz to 1GHz



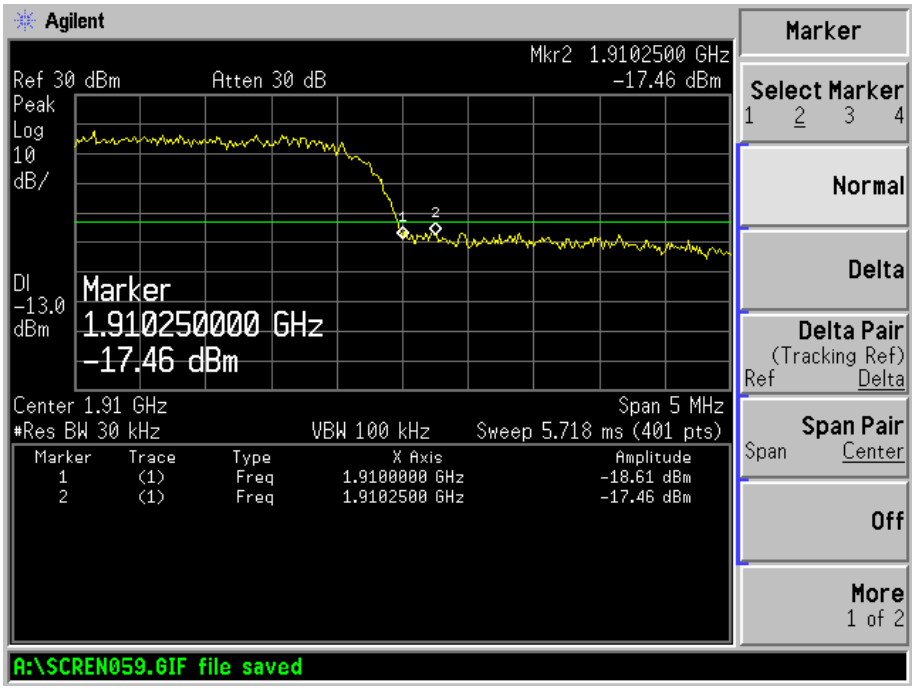
Above 1GHz



WCDMA Low Band Spurious Emission



WCDMA High Band Spurious Emission



7. Spurious Radiated Emissions

7.1 Measurement Uncertainty

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement is ±5.20 dB.

7.2 Standard Applicable

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

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

7.3 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	2013-05-07	2014-05-06
Pre-amplifier	Agilent	8447F	3113A06717	2013-05-07	2014-05-06
Pre-amplifier	Compliance Direction	PAP-0118	24002	2013-05-07	2014-05-06
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2013-04-20	2014-04-19
Horn Antenna	ETS	3117	00086197	2013-04-20	2014-04-19
Universal Radio Communication Tester	Rohde & Schwarz	CMU200	112012	2013-05-07	2014-05-06
Signal Generator	R&S	SMR20	100047	2013-05-07	2014-05-06

7.4 Test Procedure

1. The setup of EUT is according with per TIA/EIA Standard 603C and ANSI C63.4-2003 measurement procedure.
2. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.
3. The frequency range up to tenth harmonic of the fundamental frequency was investigated.
4. Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious attenuation limit in dB =43+10 Log_{10} (power out in Watts)

7.5 Environmental Conditions

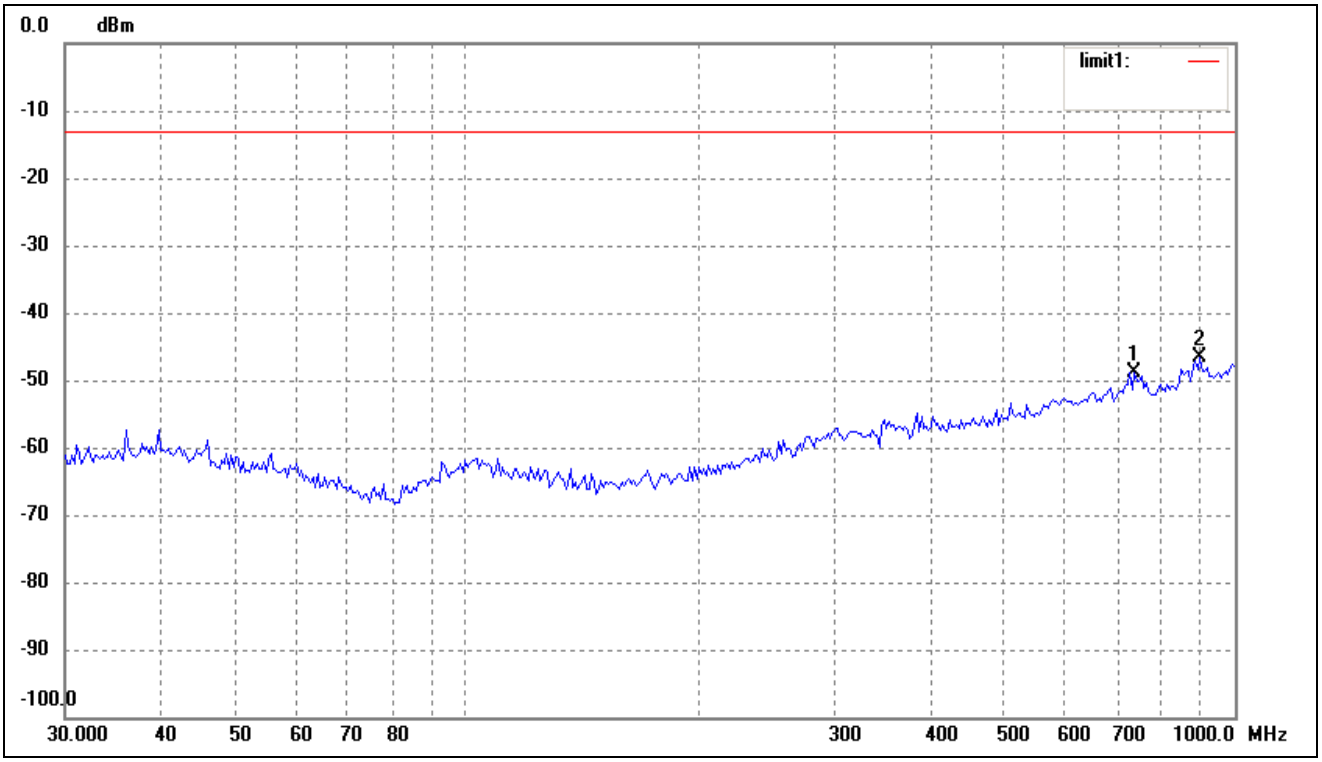
Temperature:	25 °C
Relative Humidity:	52%
ATM Pressure:	1012 mbar

7.6 Summary of Test Results/Plots

According to the data below, the FCC Part 22.917 and 24.238 standards, and had the worst margin of:

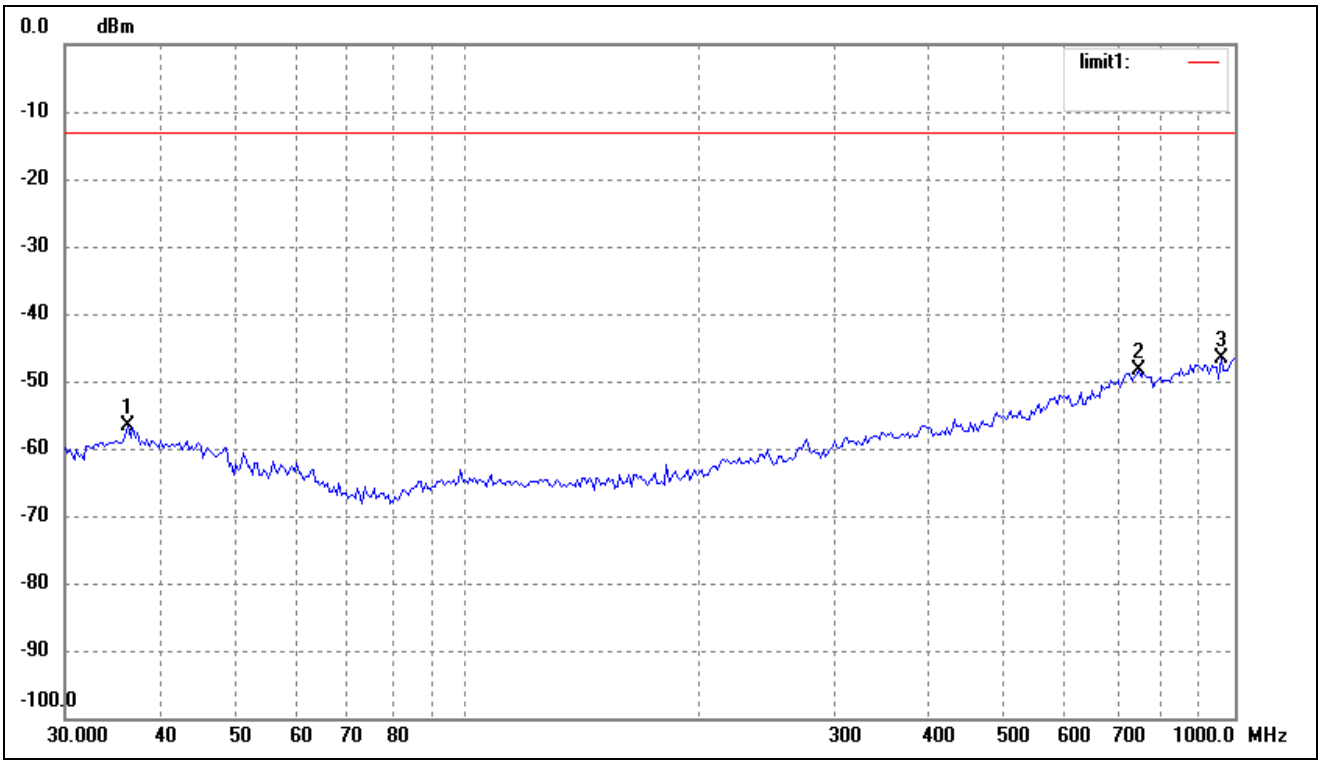
-25.60 dB at **1697.6 MHz** in the **Horizontal** polarization for **Cellular band GPRS Mode High channel**, **9 kHz to 18 GHz.**

Spurious Emission From 30MHz to 1GHz
For Cellular Band_GSM Mode Low channel
Horizontal:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	739.6604	-78.84	29.87	-48.97	-13.00	-35.97	ERP
2	900.1474	-77.73	31.18	-46.55	-13.00	-33.55	ERP

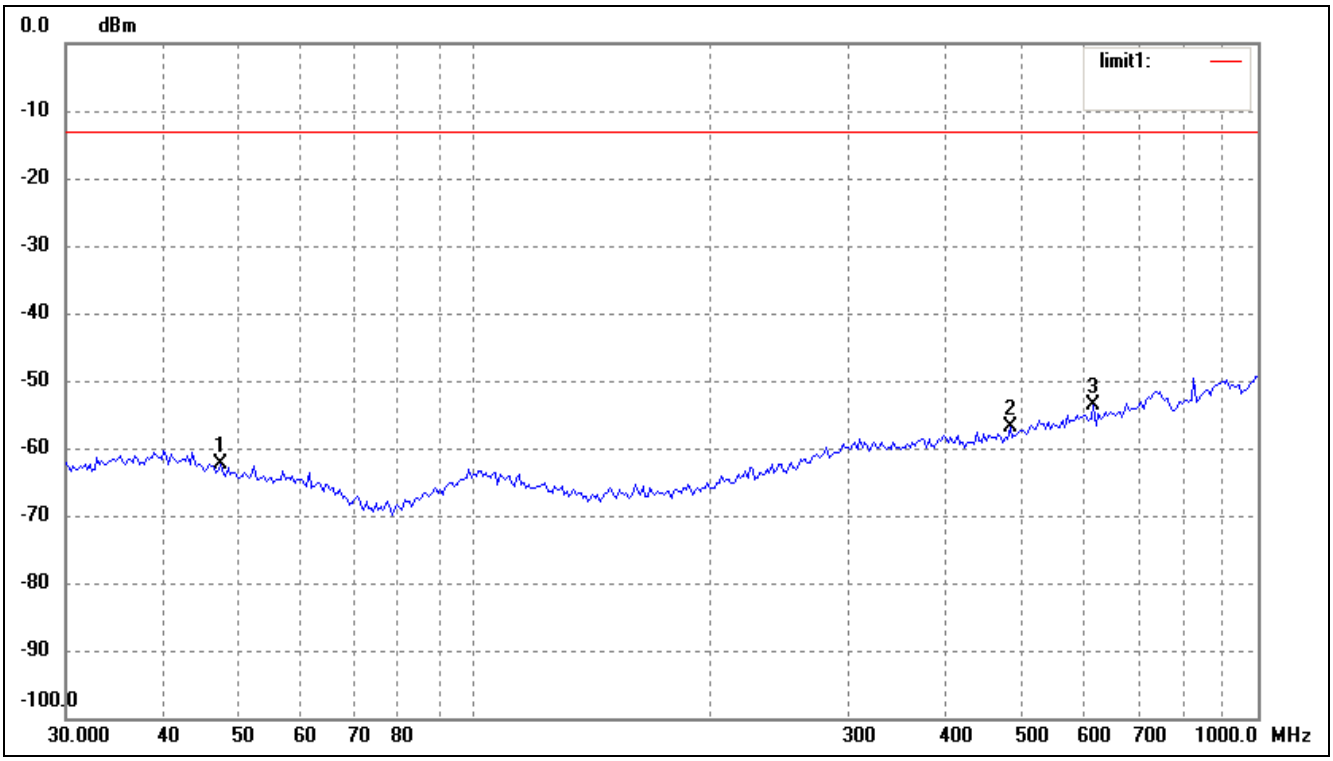
Vertical:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	36.2541	-77.52	20.89	-56.63	-13.00	-43.63	ERP
2	750.1082	-77.94	29.58	-48.36	-13.00	-35.36	ERP
3	958.7943	-76.69	29.96	-46.73	-13.00	-33.73	ERP

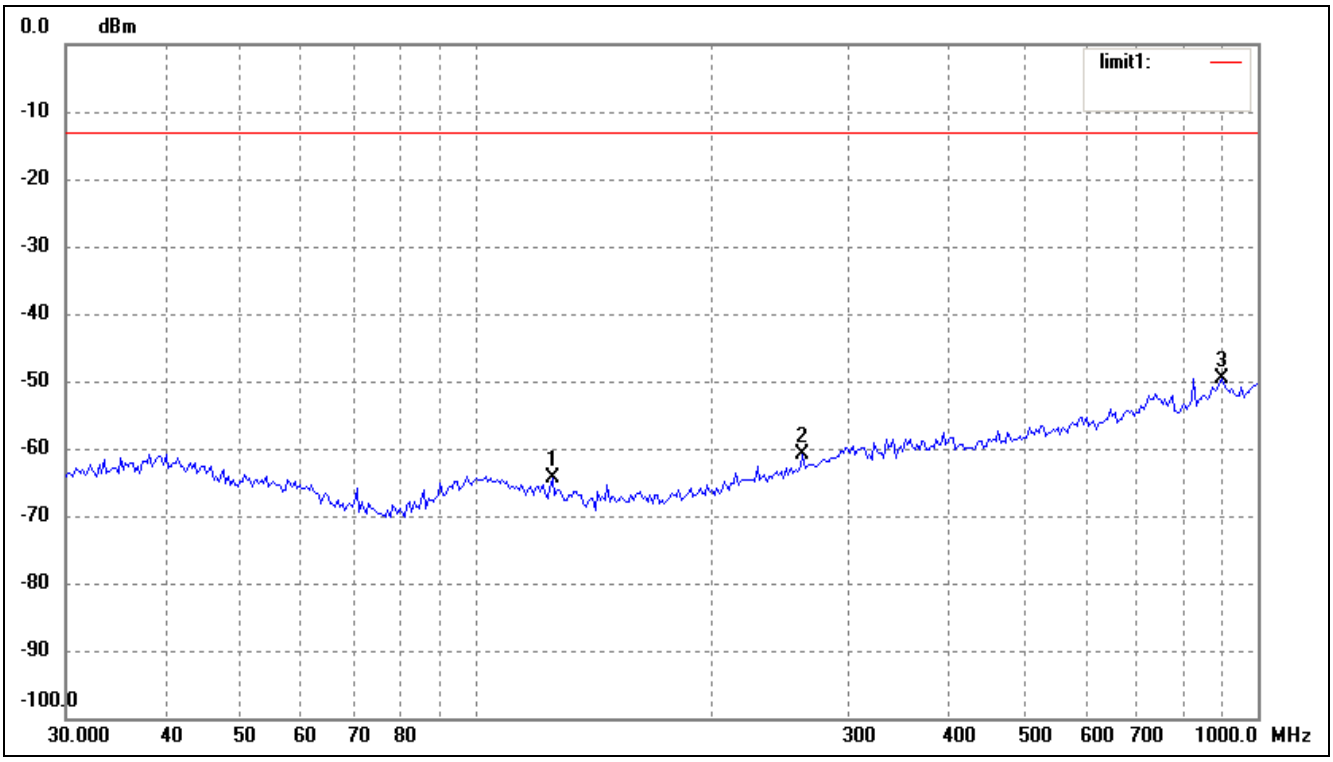
For Cellular Band_GSM Mode Middle channel

Horizontal:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	47.3255	-69.70	7.44	-62.26	-13.00	-49.26	ERP
2	482.2156	-68.42	11.49	-56.93	-13.00	-43.93	ERP
3	616.3718	-67.69	14.06	-53.63	-13.00	-40.63	ERP

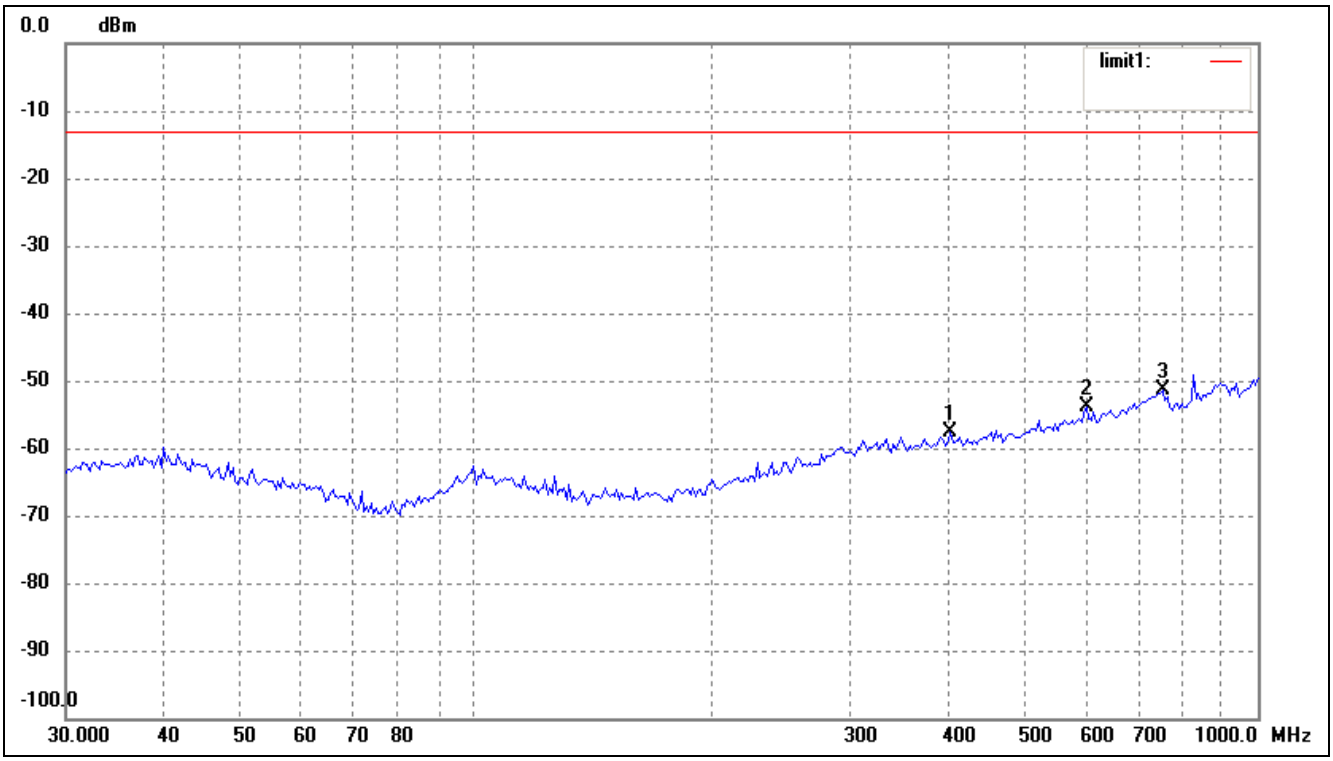
Vertical:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	125.4457	-68.90	4.46	-64.44	-13.00	-51.44	ERP
2	261.9753	-68.67	7.86	-60.81	-13.00	-47.81	ERP
3	900.1474	-68.91	19.38	-49.53	-13.00	-36.53	ERP

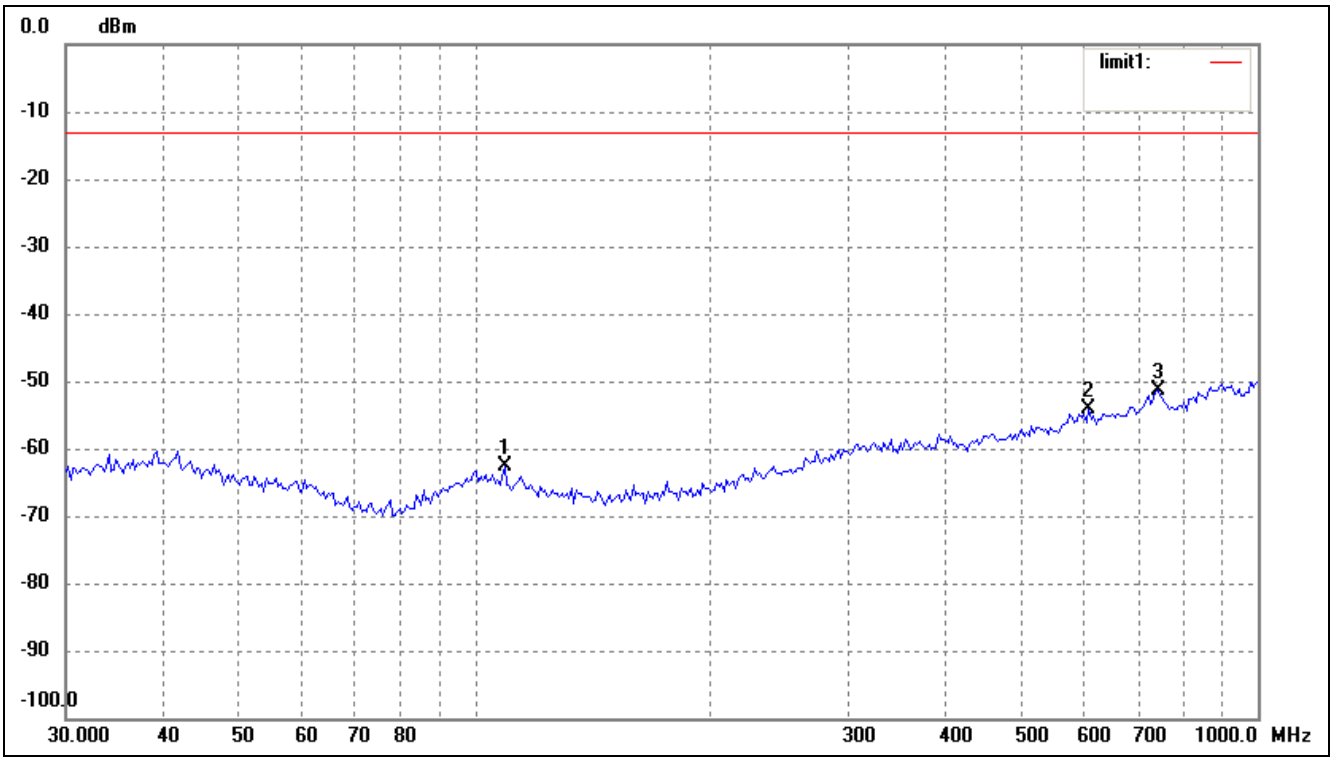
For Cellular Band_GSM Mode High channel

Horizontal:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	404.6665	-69.02	11.35	-57.67	-13.00	-44.67	ERP
2	603.5392	-68.60	14.62	-53.98	-13.00	-40.98	ERP
3	755.3873	-68.80	17.48	-51.32	-13.00	-38.32	ERP

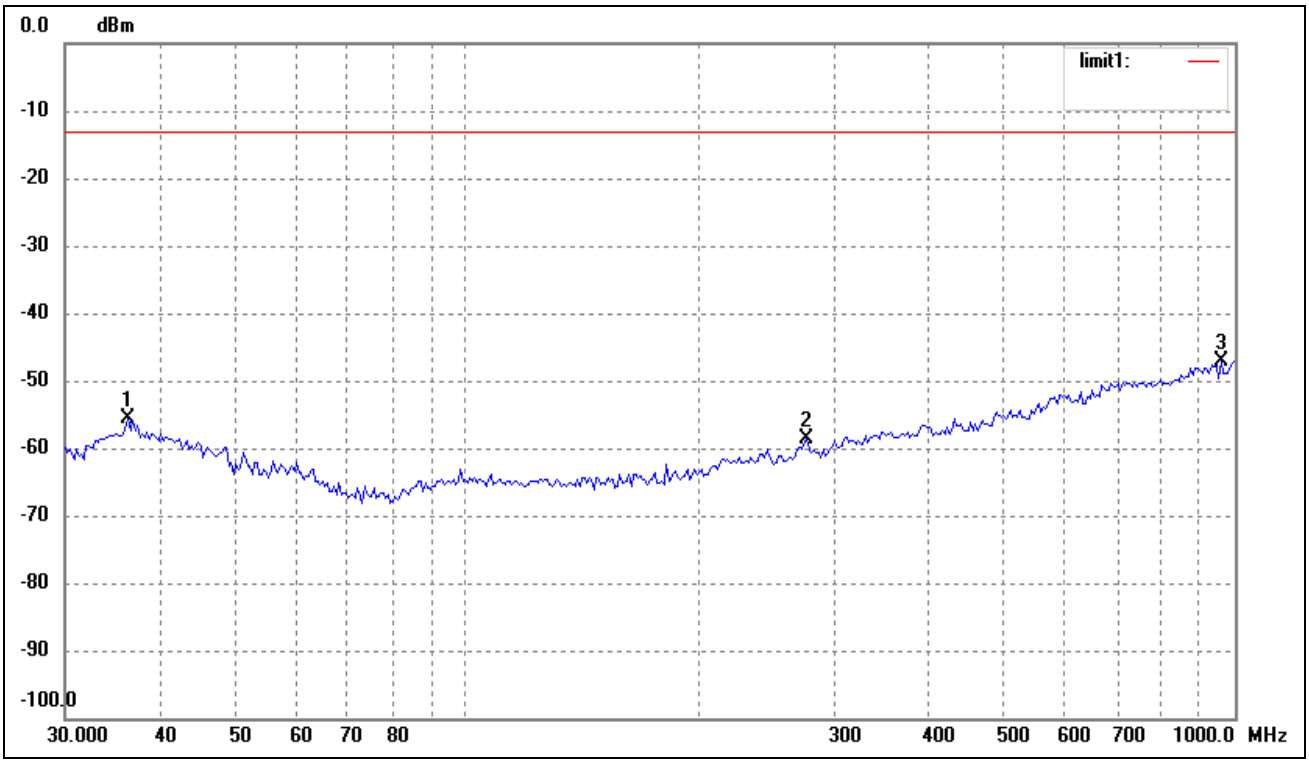
Vertical:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	109.0286	-68.68	5.95	-62.73	-13.00	-49.73	ERP
2	607.7867	-68.45	14.43	-54.02	-13.00	-41.02	ERP
3	744.8661	-69.44	17.95	-51.49	-13.00	-38.49	ERP

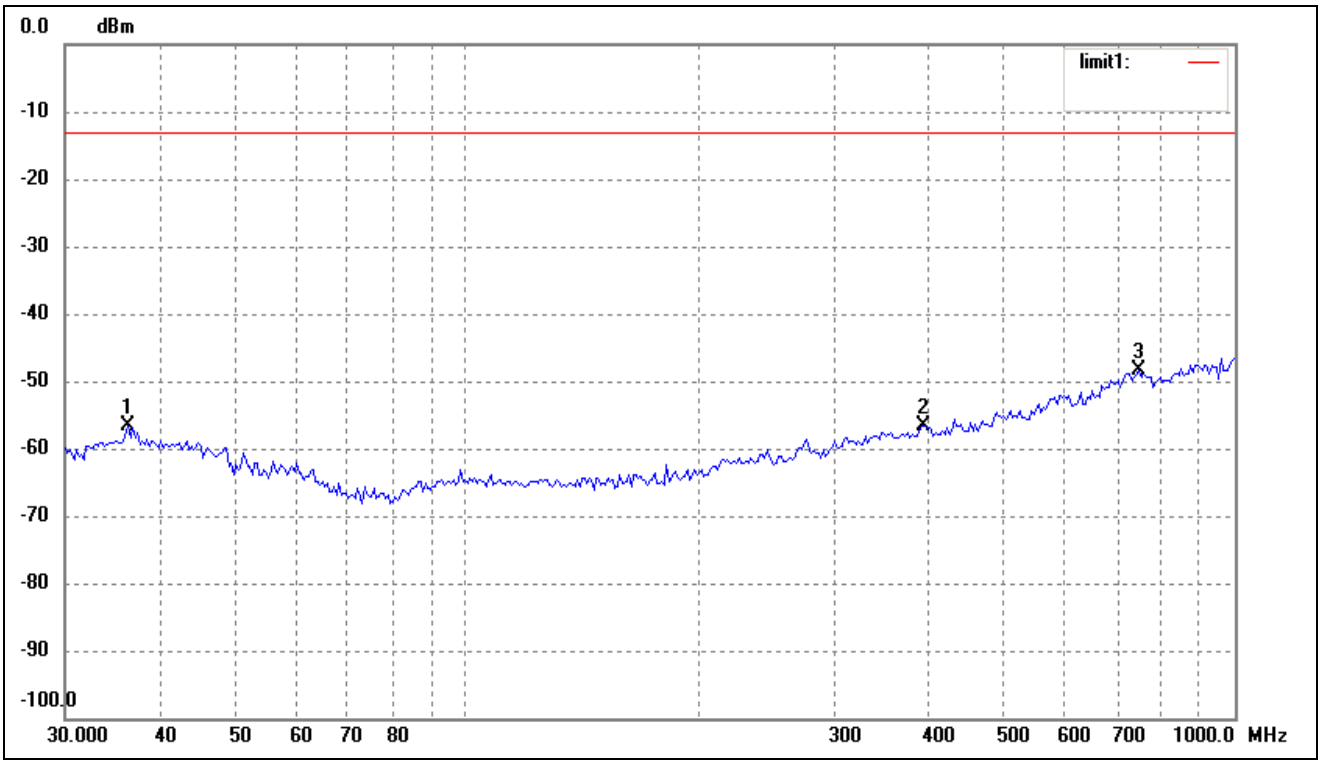
For Cellular Band_GPRS Mode Low channel

Horizontal:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	36.2541	-76.52	20.89	-55.63	-13.00	-42.63	ERP
2	277.0935	-79.46	20.81	-58.65	-13.00	-45.65	ERP
3	958.7943	-77.19	29.96	-47.23	-13.00	-34.23	ERP

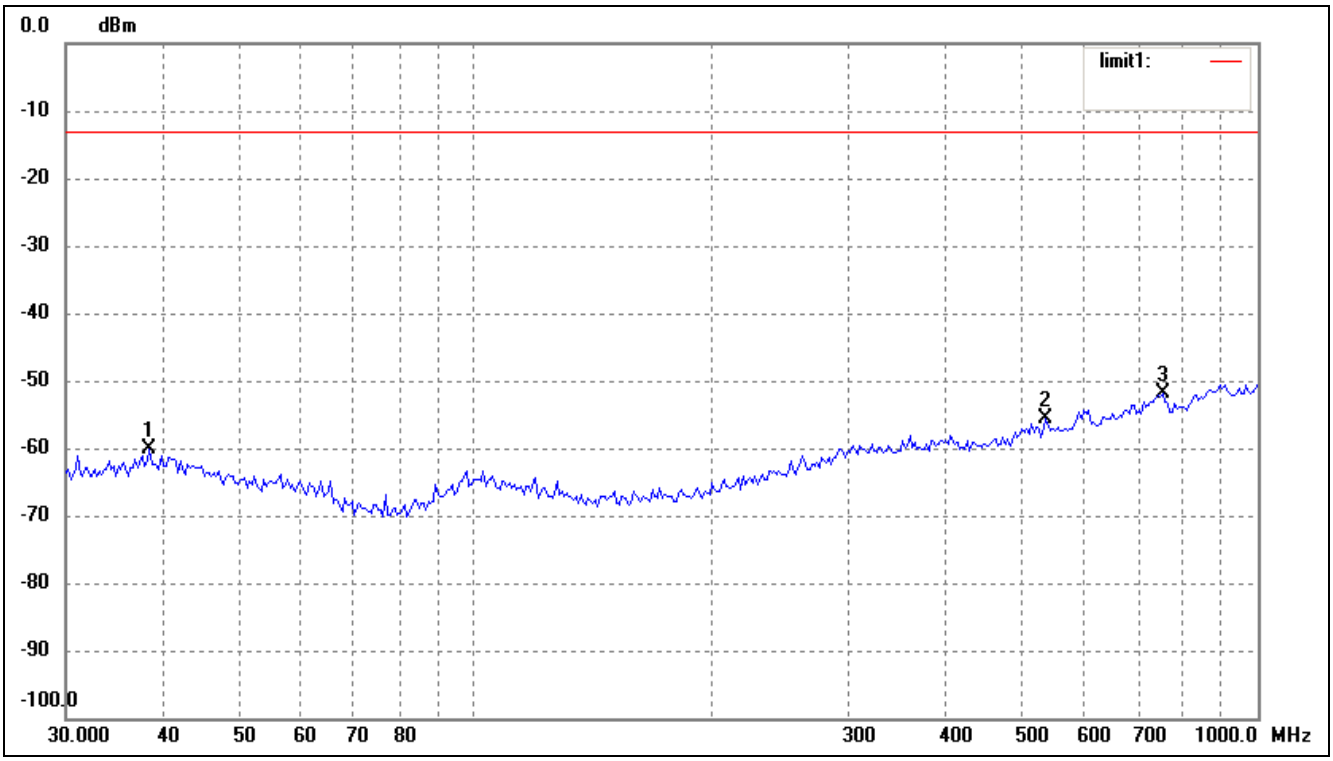
Vertical:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	36.2541	-77.52	20.89	-56.63	-13.00	-43.63	ERP
2	393.4723	-79.58	23.04	-56.54	-13.00	-43.54	ERP
3	750.1082	-77.94	29.58	-48.36	-13.00	-35.36	ERP

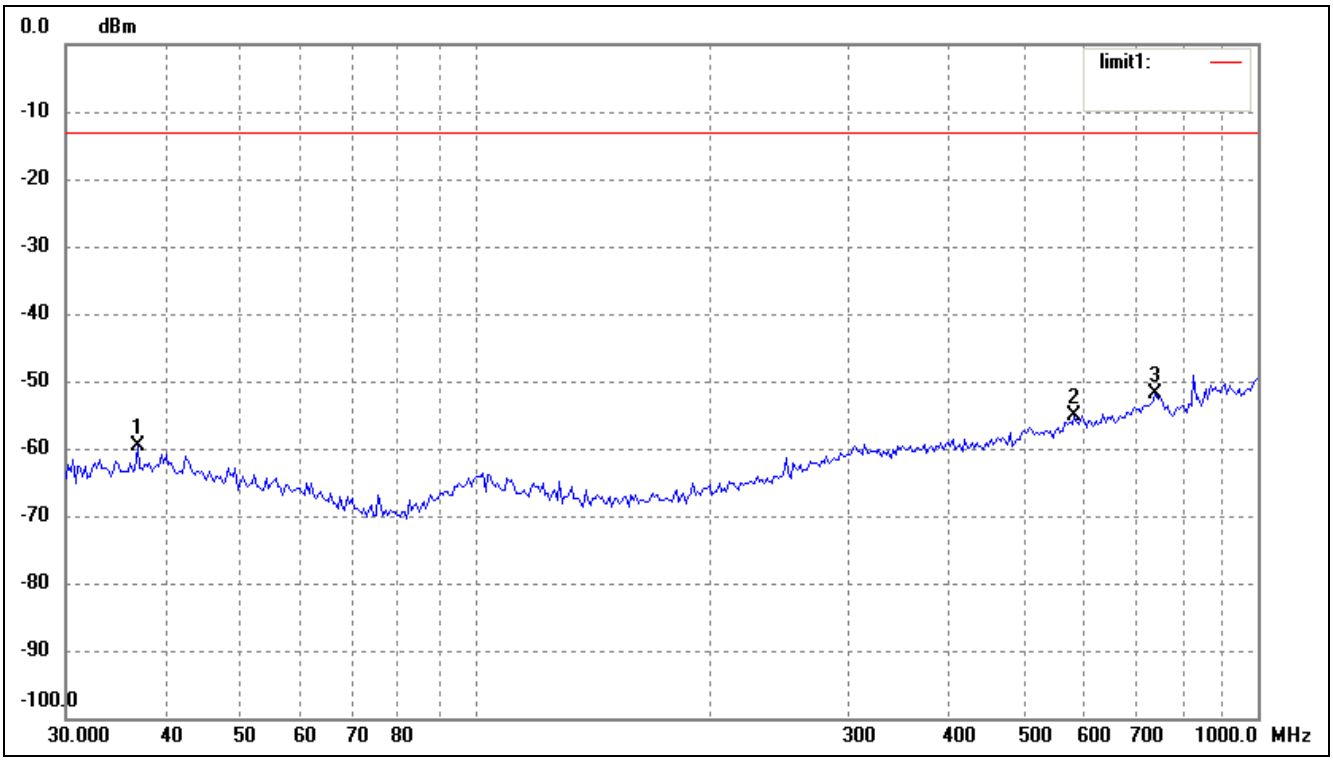
For Cellular Band_GPRS Mode Middle channel

Horizontal:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	38.3462	-69.66	9.42	-60.24	-13.00	-47.24	ERP
2	535.7073	-68.74	13.01	-55.73	-13.00	-42.73	ERP
3	755.3873	-69.38	17.48	-51.90	-13.00	-38.90	ERP

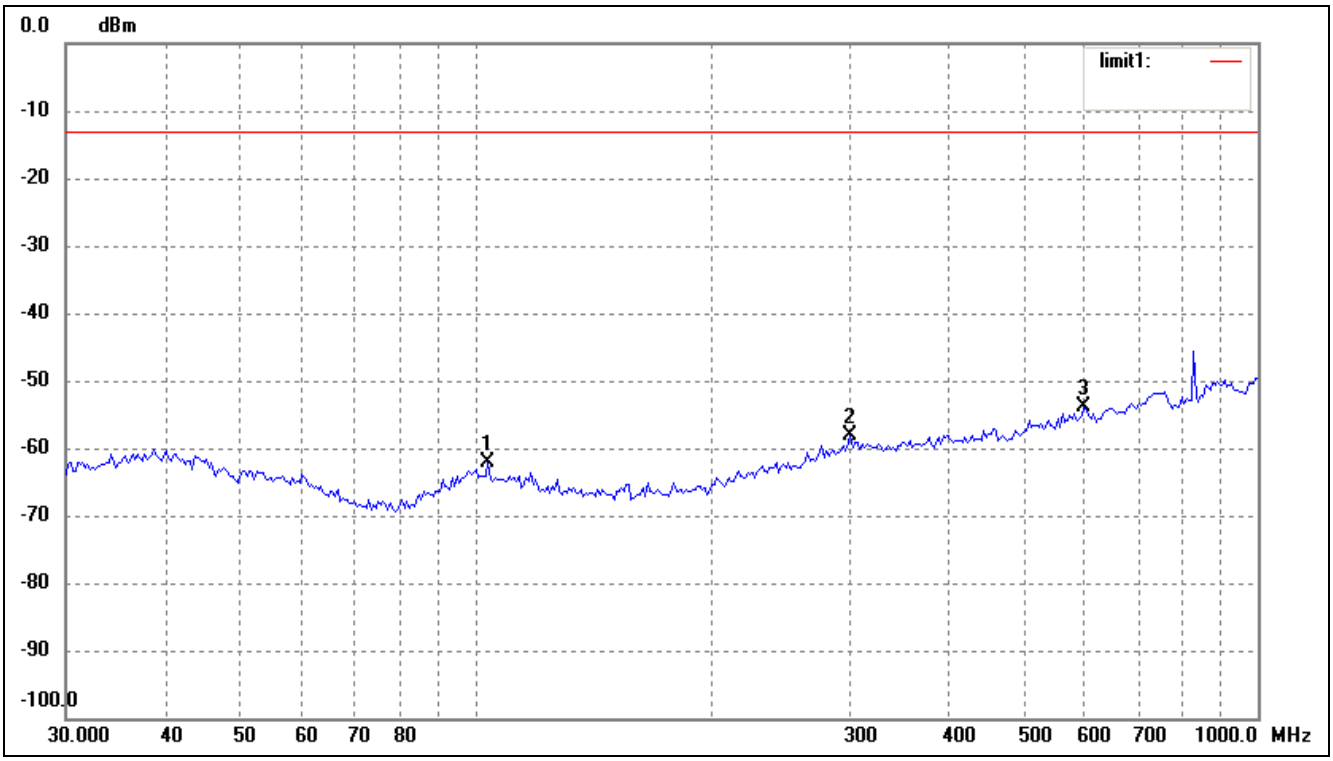
Vertical:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	37.0249	-68.85	9.21	-59.64	-13.00	-46.64	ERP
2	582.7425	-69.27	14.27	-55.00	-13.00	-42.00	ERP
3	739.6605	-69.92	18.07	-51.85	-13.00	-38.85	ERP

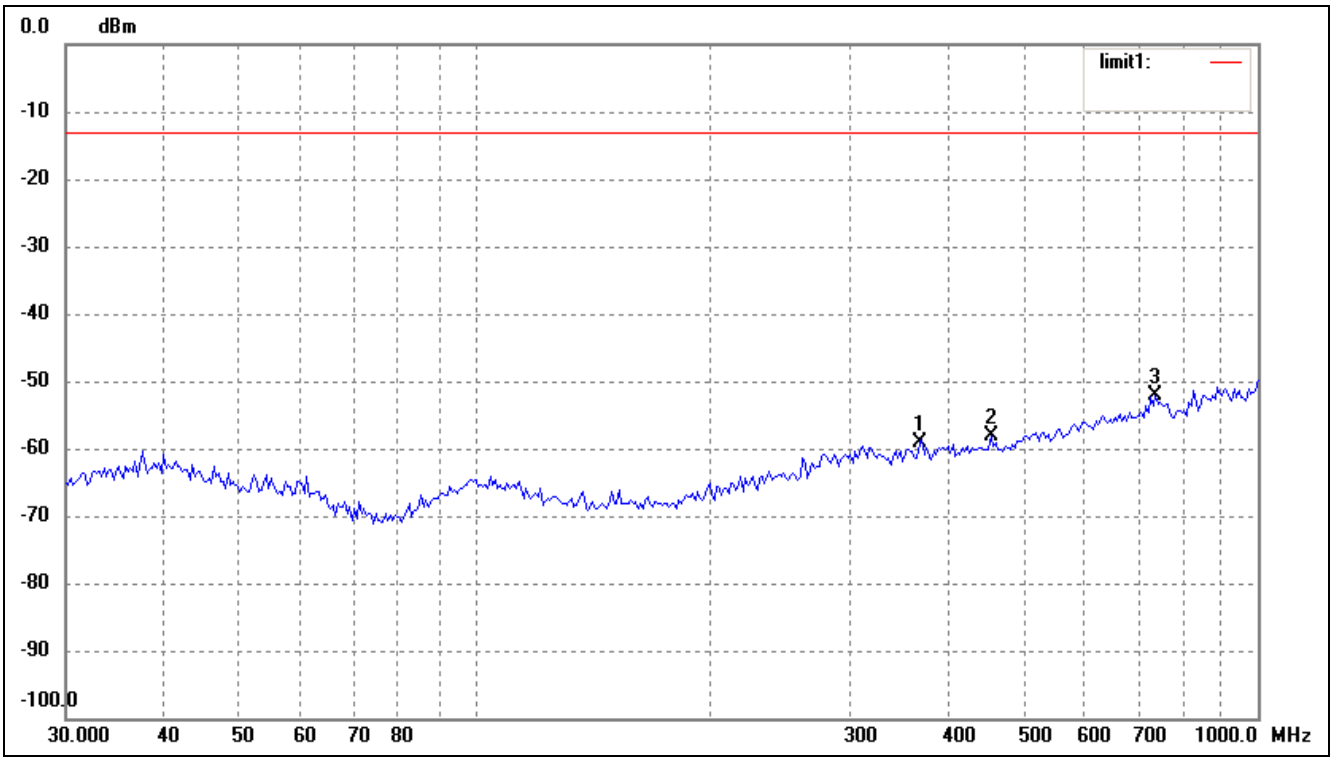
For Cellular Band_GPRS Mode High channel

Horizontal:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	103.8055	-68.64	6.46	-62.18	-13.00	-49.18	ERP
2	301.4224	-68.44	10.20	-58.24	-13.00	-45.24	ERP
3	599.3213	-68.72	14.76	-53.96	-13.00	-40.96	ERP

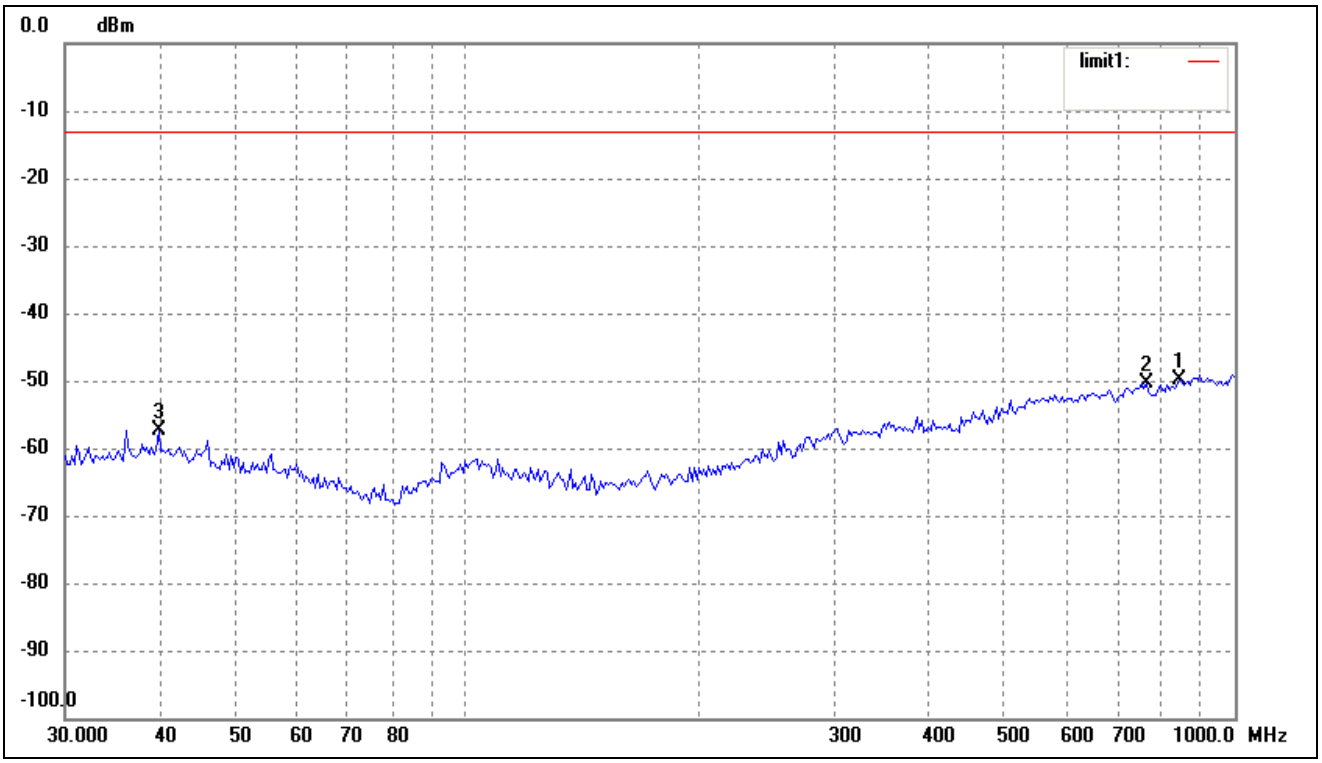
Vertical:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	369.4047	-69.87	10.67	-59.20	-13.00	-46.20	ERP
2	455.9058	-69.80	11.67	-58.13	-13.00	-45.13	ERP
3	739.6605	-70.11	18.07	-52.04	-13.00	-39.04	ERP

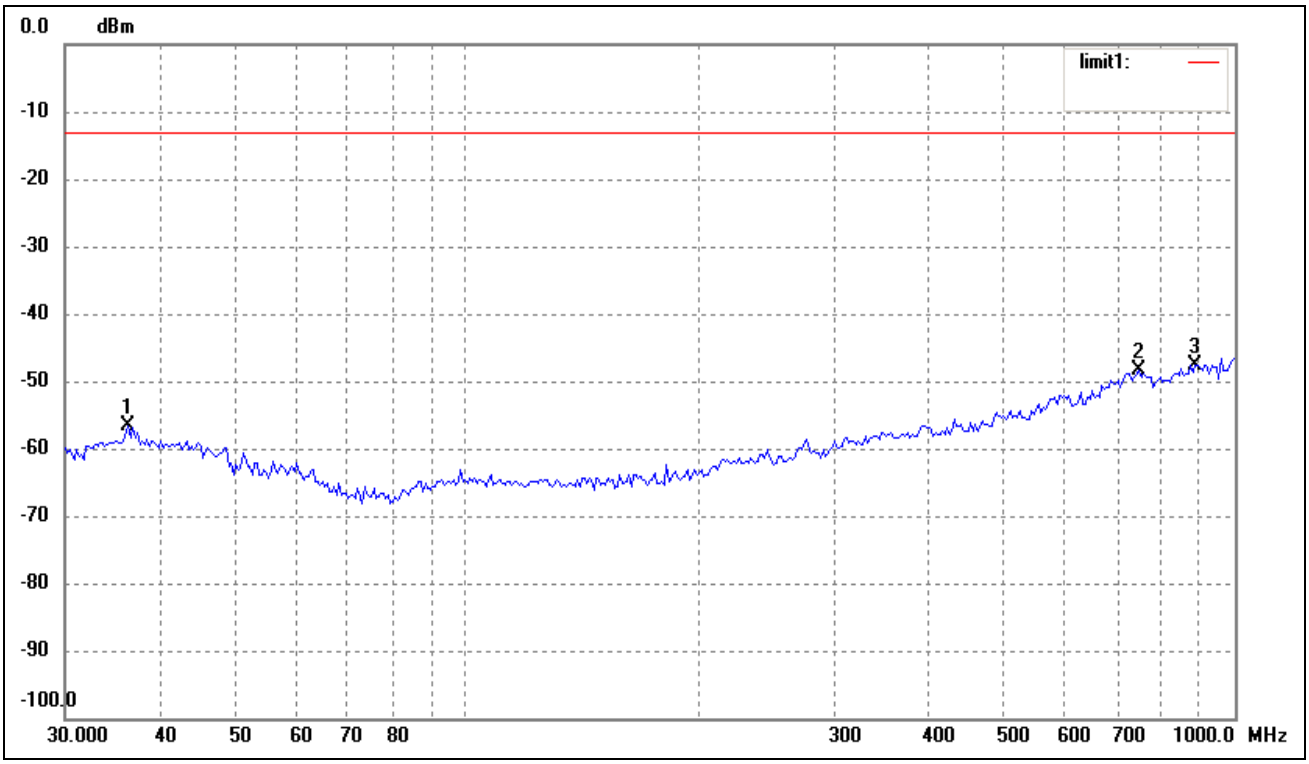
For PCS Band_GSM Mode Low Channel

Horizontal:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	845.0878	-79.04	29.25	-49.79	-13.00	-36.79	ERP
2	766.0570	-78.83	28.57	-50.26	-13.00	-37.26	ERP
3	39.7147	-78.89	21.44	-57.45	-13.00	-44.45	ERP

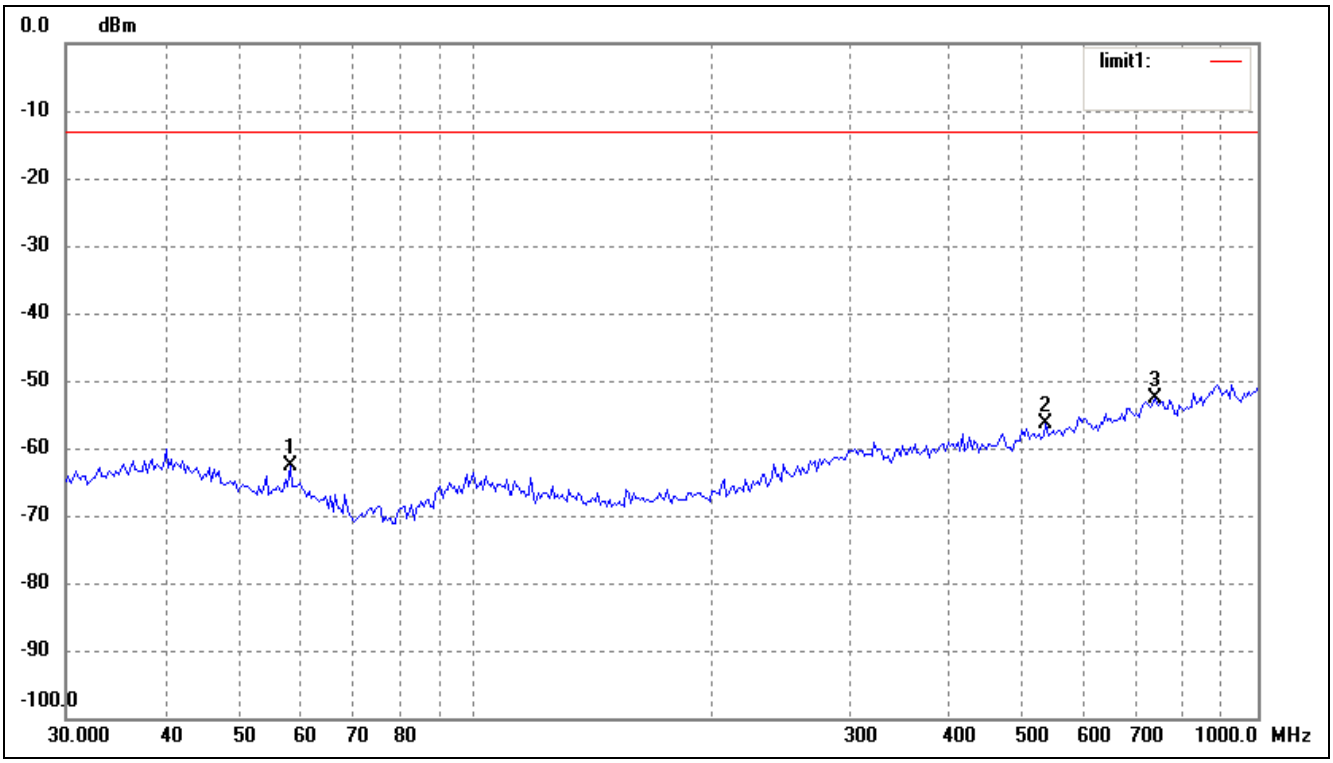
Vertical:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	36.2541	-77.52	20.89	-56.63	-13.00	-43.63	ERP
2	750.1082	-77.94	29.58	-48.36	-13.00	-35.36	ERP
3	887.6099	-78.51	30.95	-47.56	-13.00	-34.56	ERP

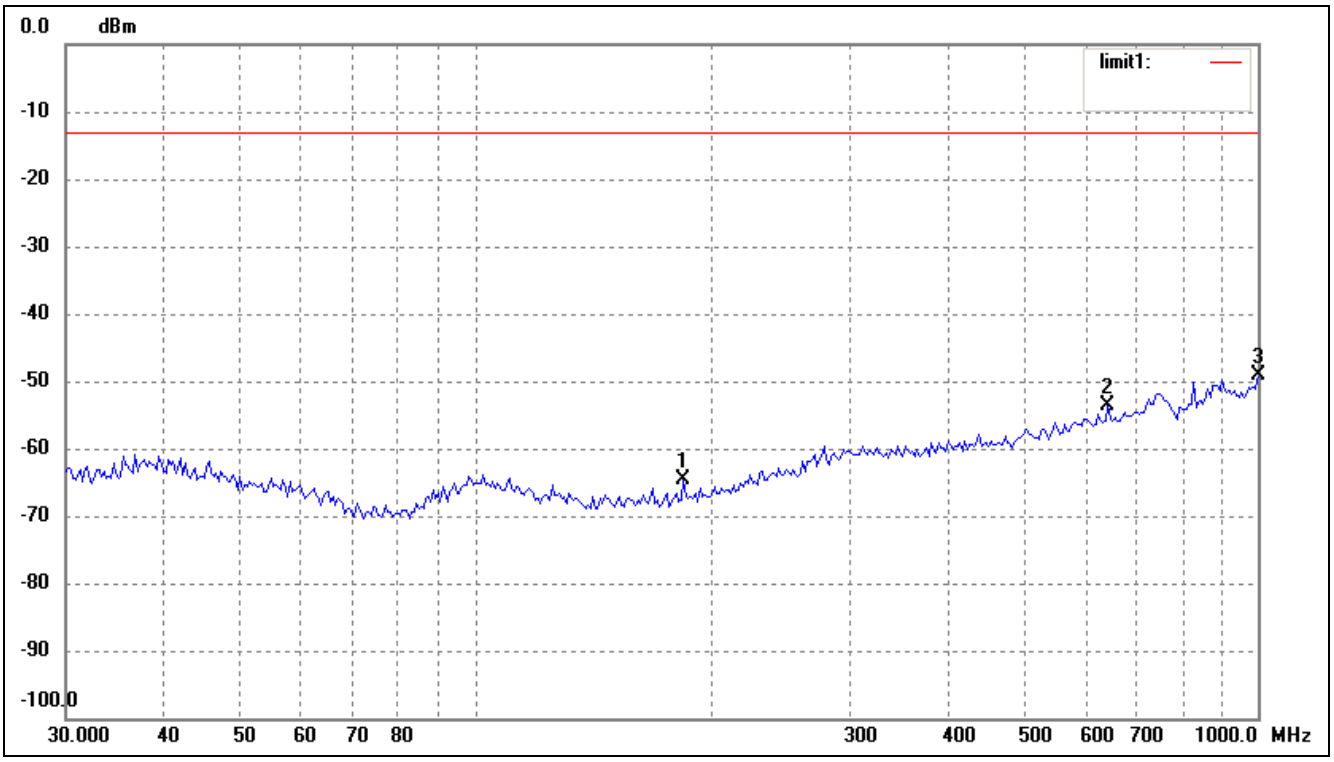
For PCS Band_GSM Mode Middle Channel

Horizontal:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	57.9993	-68.49	5.87	-62.62	-13.00	-49.62	ERP
2	535.7073	-69.39	13.01	-56.38	-13.00	-43.38	ERP
3	739.6605	-70.78	18.07	-52.71	-13.00	-39.71	ERP

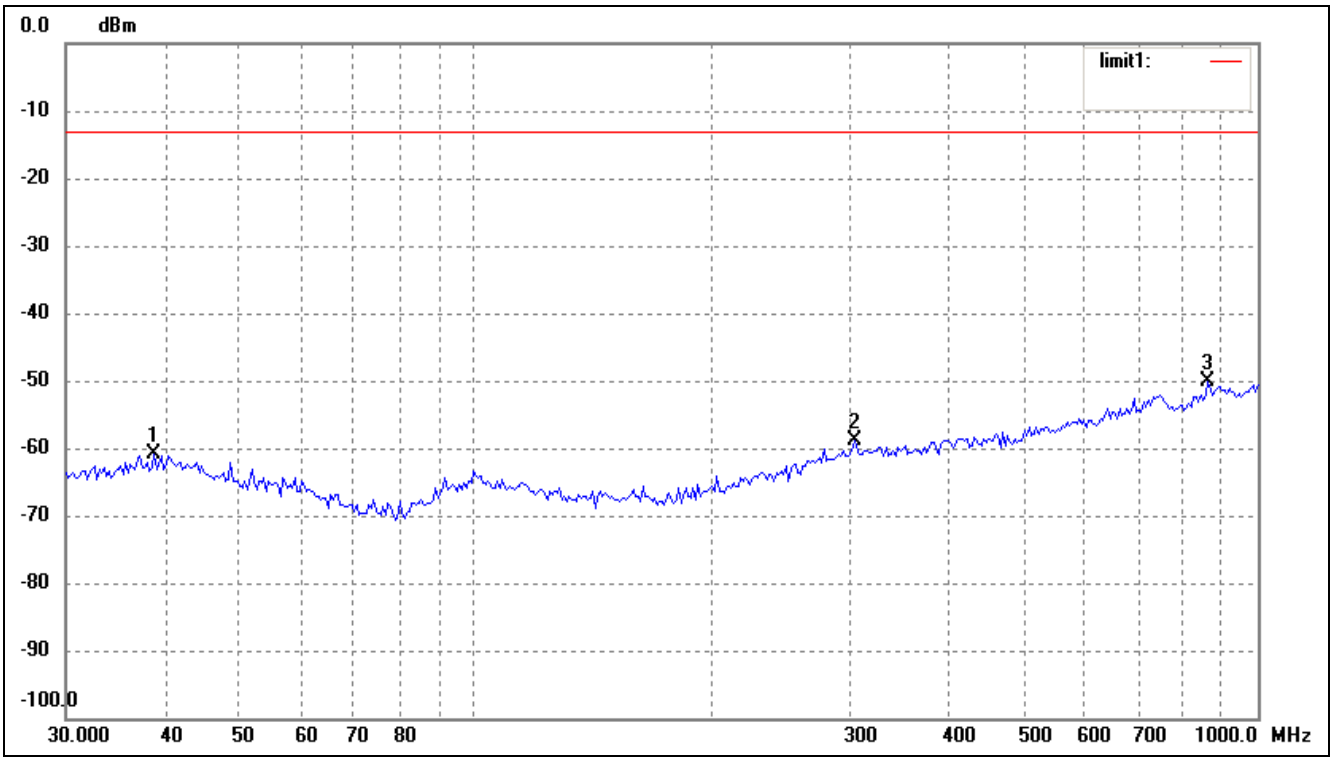
Vertical:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	184.4898	-68.50	3.95	-64.55	-13.00	-51.55	ERP
2	642.8613	-68.85	15.14	-53.71	-13.00	-40.71	ERP
3	1000.0000	-69.02	19.90	-49.12	-13.00	-36.12	ERP

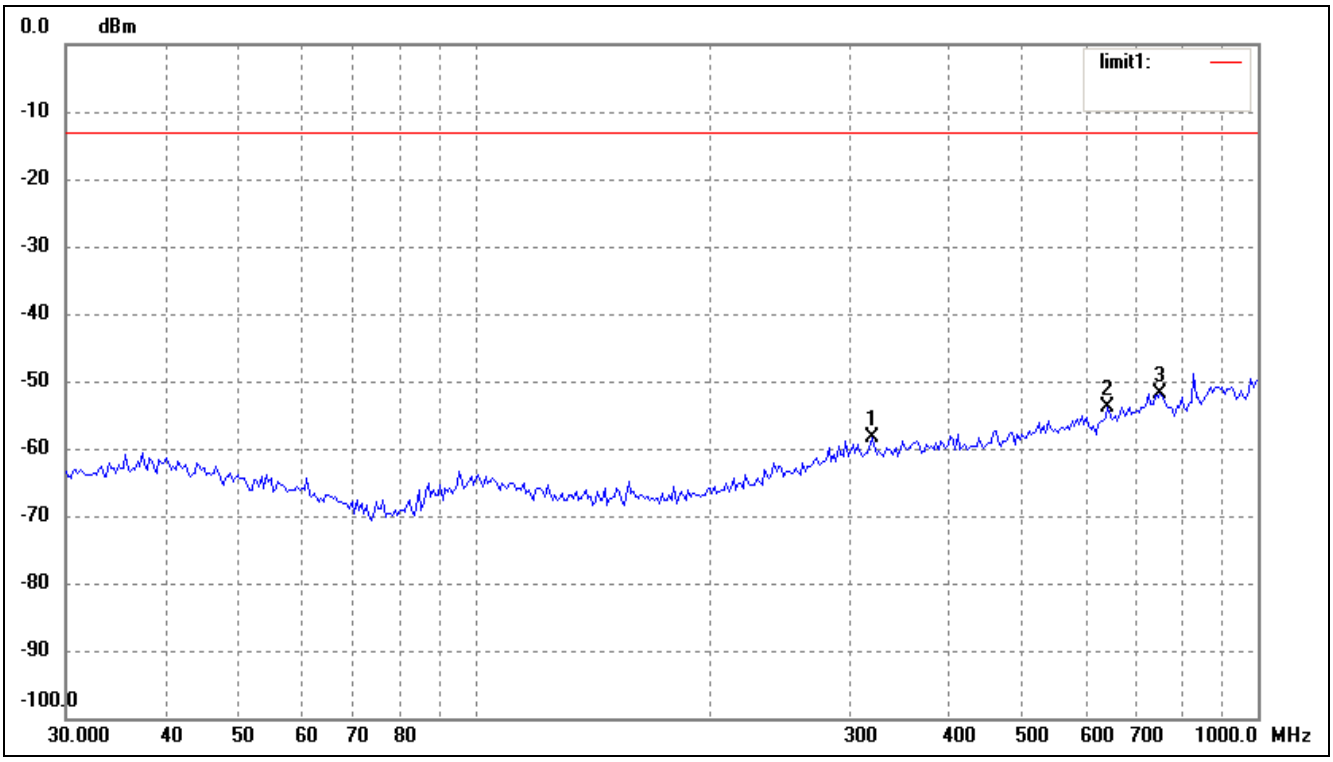
For PCS Band_GSM Mode High Channel

Horizontal:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	38.8879	-70.43	9.50	-60.93	-13.00	-47.93	ERP
2	305.6800	-69.09	10.27	-58.82	-13.00	-45.82	ERP
3	863.0562	-68.42	18.27	-50.15	-13.00	-37.15	ERP

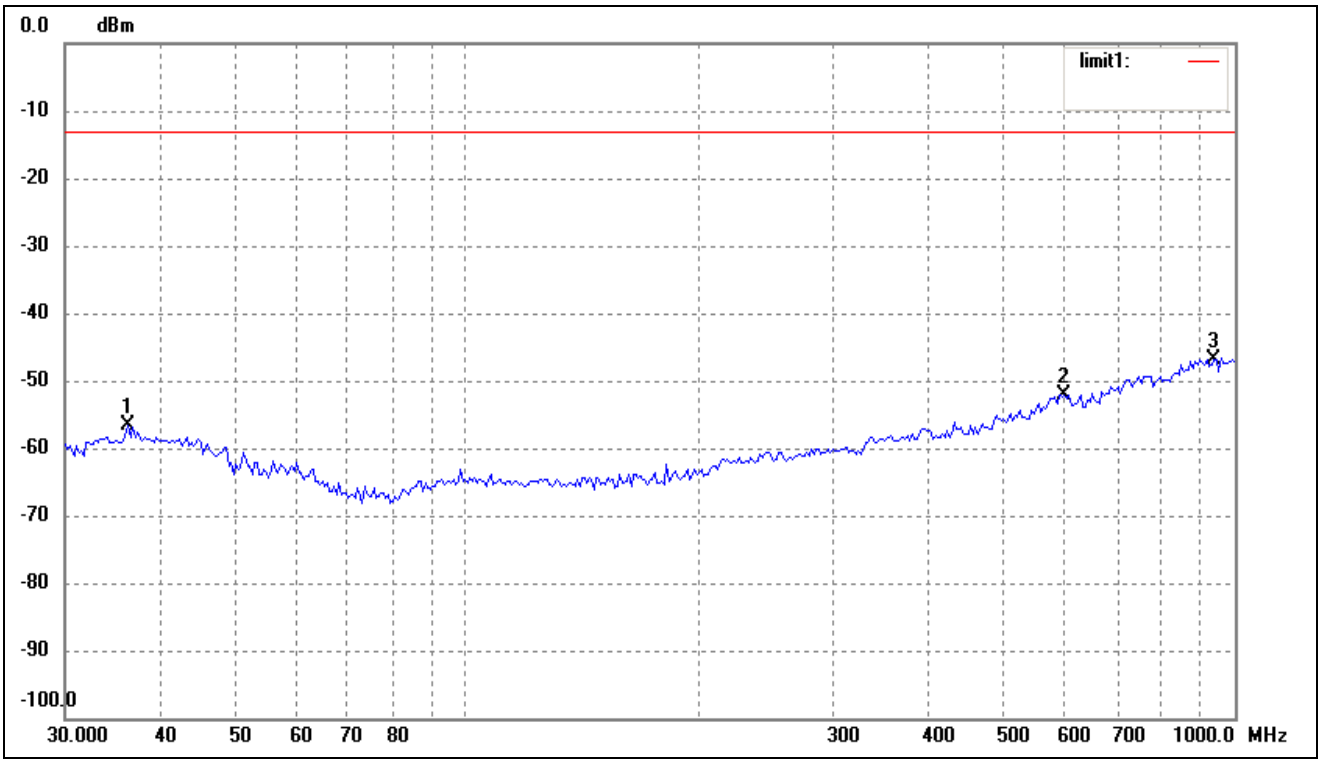
Vertical:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	321.0608	-68.75	10.46	-58.29	-13.00	-45.29	ERP
2	642.8613	-68.93	15.14	-53.79	-13.00	-40.79	ERP
3	750.1083	-69.55	17.78	-51.77	-13.00	-38.77	ERP

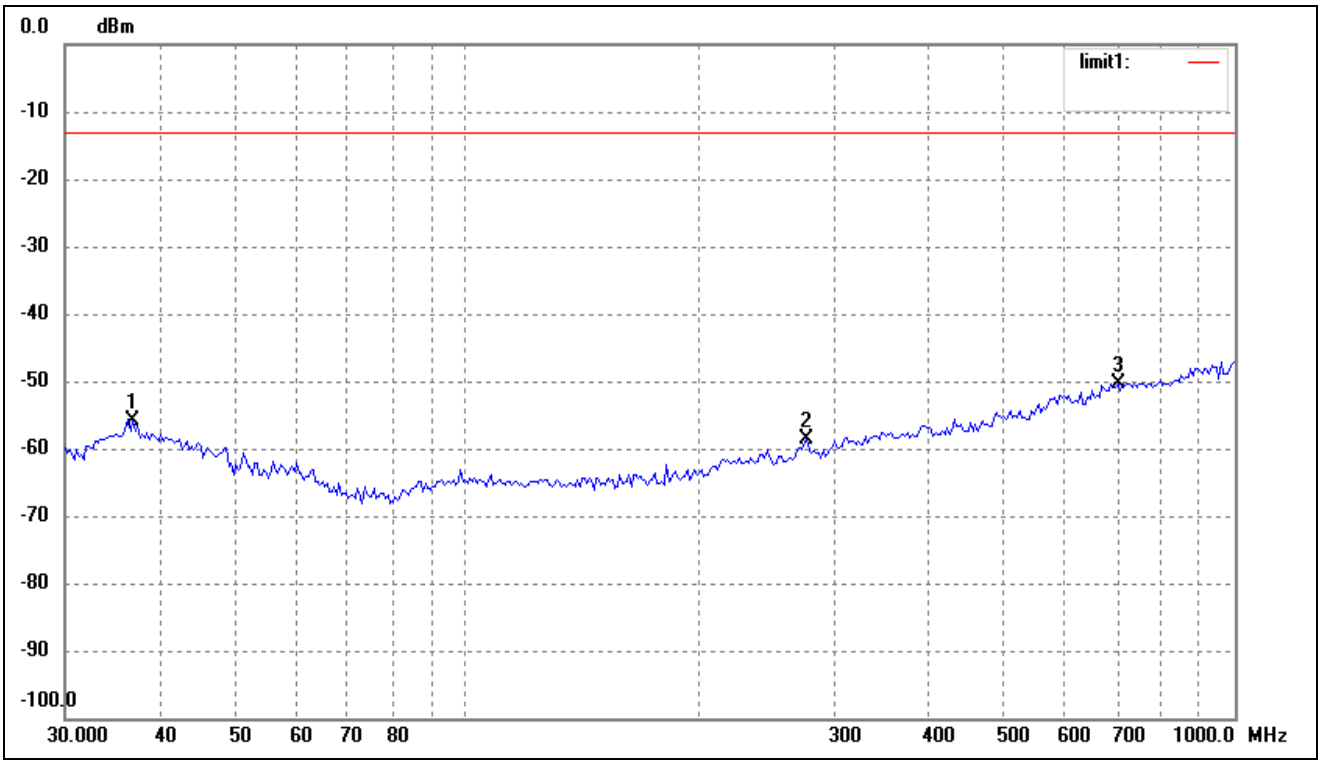
For PCS Band_GPRS Mode Low Channel

Horizontal:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	36.2541	-77.52	20.89	-56.63	-13.00	-43.63	ERP
2	599.3211	-78.56	26.56	-52.00	-13.00	-39.00	ERP
3	938.8324	-76.72	29.91	-46.81	-13.00	-33.81	ERP

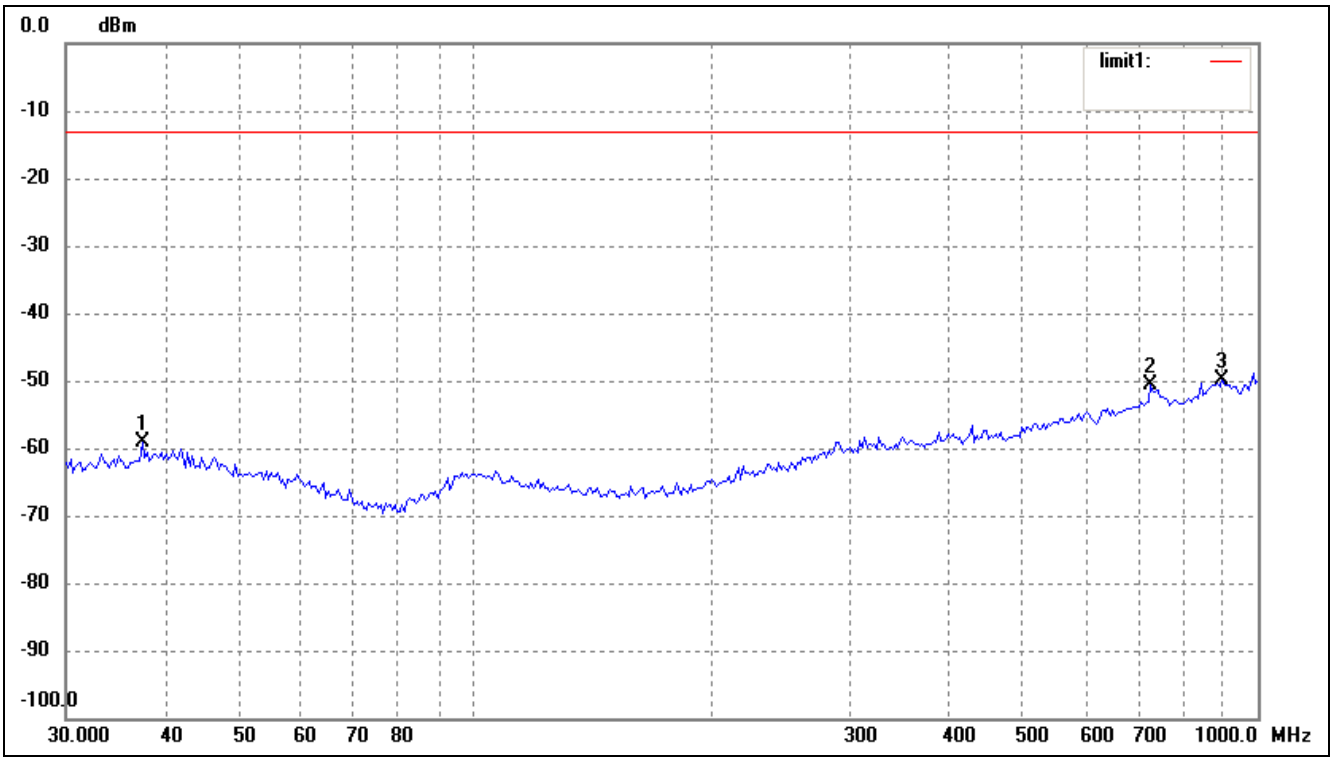
Vertical:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	36.7661	-76.87	20.96	-55.91	-13.00	-42.91	ERP
2	277.0935	-79.46	20.81	-58.65	-13.00	-45.65	ERP
3	704.2259	-77.98	27.73	-50.25	-13.00	-37.25	ERP

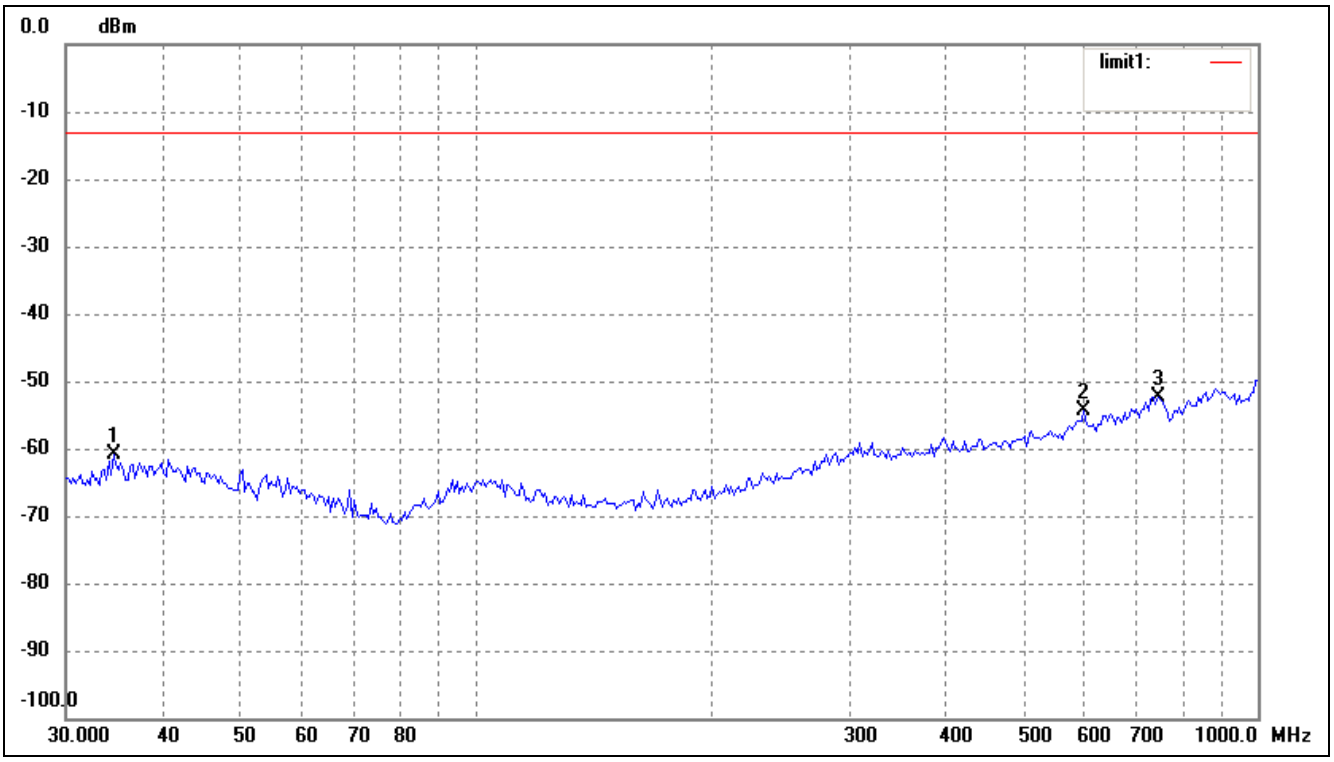
For PCS Band_GPRS Mode Middle Channel

Horizontal:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	37.5479	-68.46	9.29	-59.17	-13.00	-46.17	ERP
2	729.3583	-67.99	17.31	-50.68	-13.00	-37.68	ERP
3	900.1474	-69.20	19.38	-49.82	-13.00	-36.82	ERP

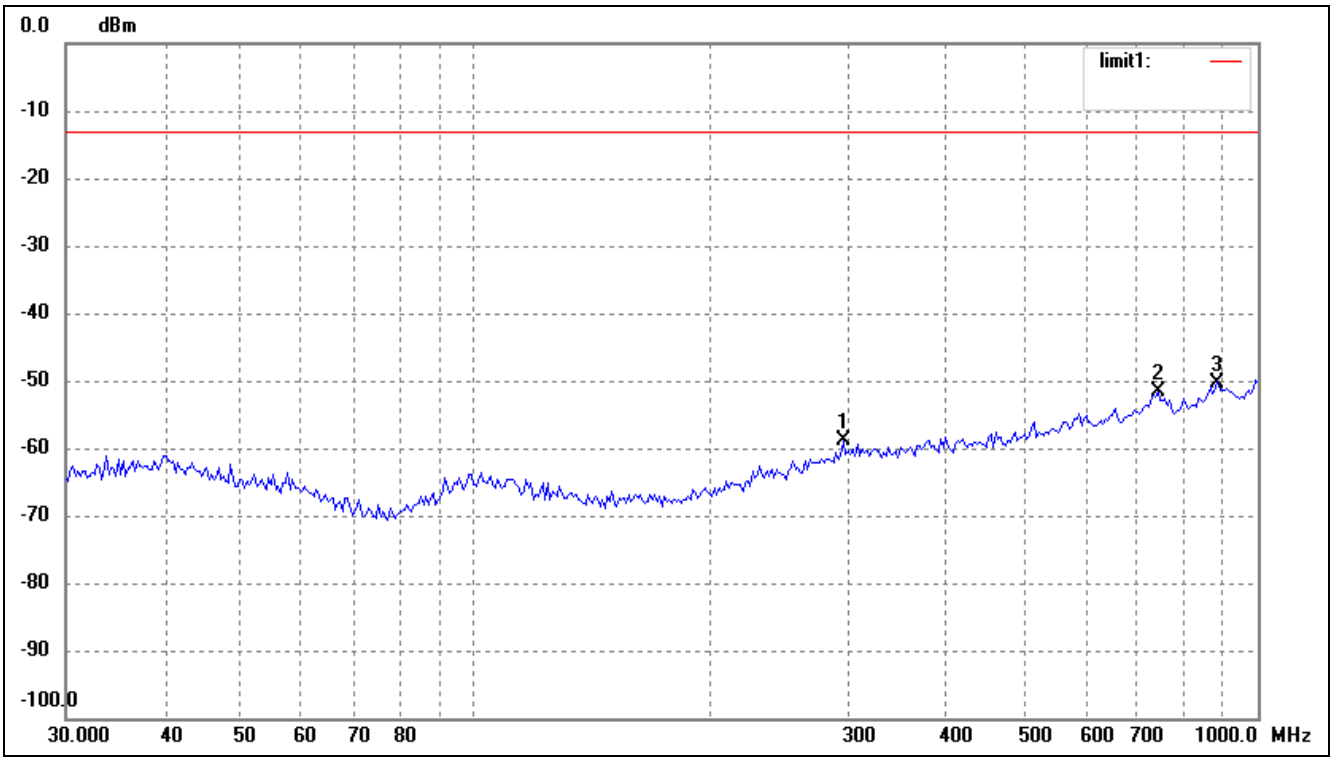
Vertical:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	34.5173	-69.59	8.80	-60.79	-13.00	-47.79	ERP
2	599.3213	-69.16	14.76	-54.40	-13.00	-41.40	ERP
3	744.8661	-70.22	17.95	-52.27	-13.00	-39.27	ERP

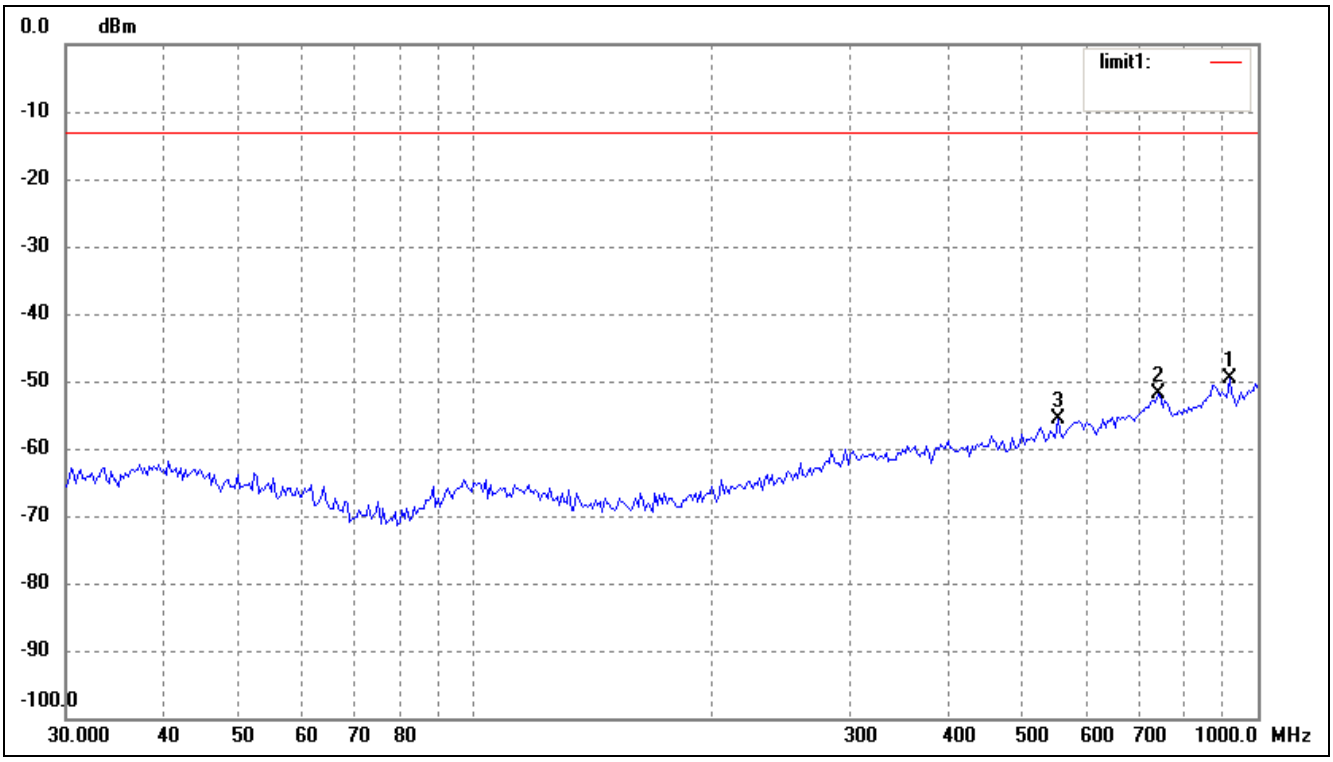
For PCS Band_GPRS Mode High Channel

Horizontal:



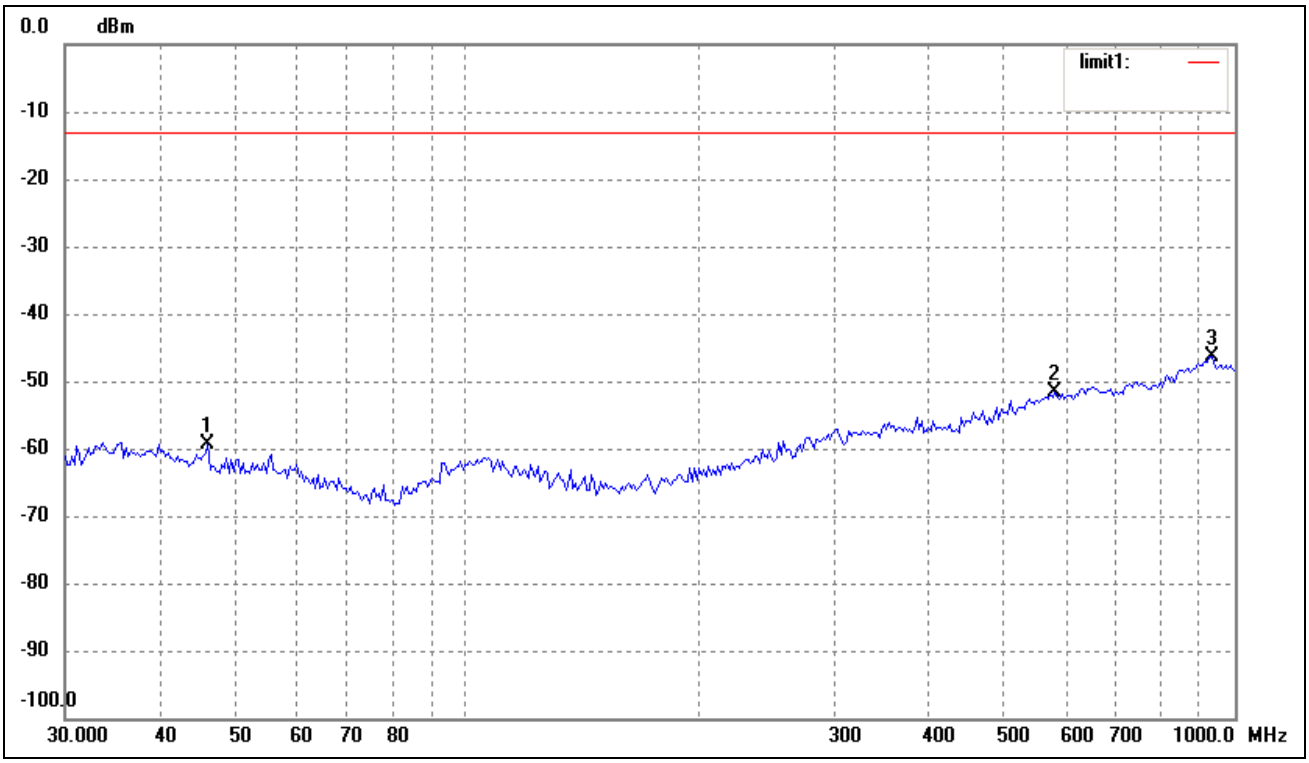
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	295.1469	-68.75	9.95	-58.80	-13.00	-45.80	ERP
2	744.8661	-69.68	17.95	-51.73	-13.00	-38.73	ERP
3	887.6099	-69.40	19.15	-50.25	-13.00	-37.25	ERP

Vertical:



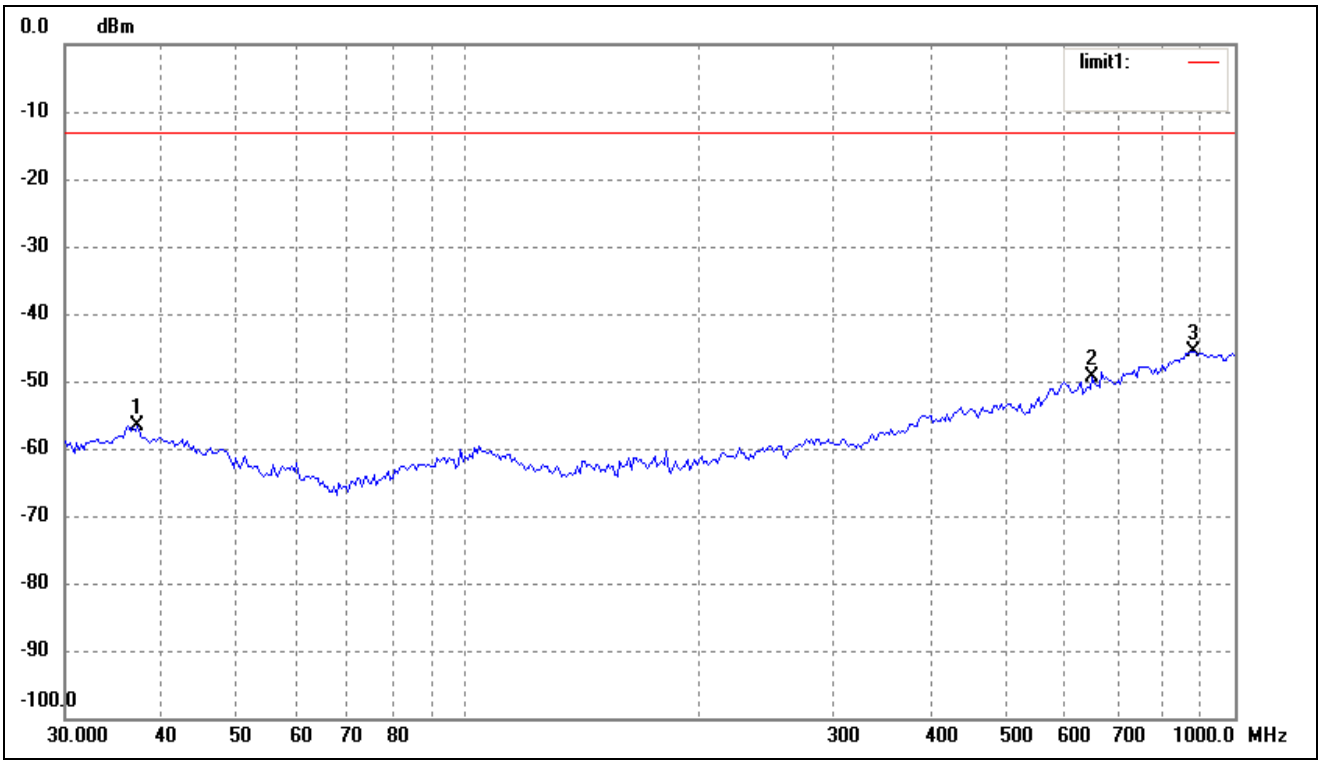
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	919.2866	-68.33	18.70	-49.63	-13.00	-36.63	ERP
2	744.8661	-69.88	17.95	-51.93	-13.00	-38.93	ERP
3	554.8254	-68.82	13.27	-55.55	-13.00	-42.55	ERP

Spurious Emission From 30MHz to 1GHz
For band V WCDMA Mode Low Channel
Horizontal:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	46.0163	-79.05	19.65	-59.40	-13.00	-46.40	ERP
2	582.7423	-77.80	26.07	-51.73	-13.00	-38.73	ERP
3	932.2713	-76.49	30.11	-46.38	-13.00	-33.38	ERP

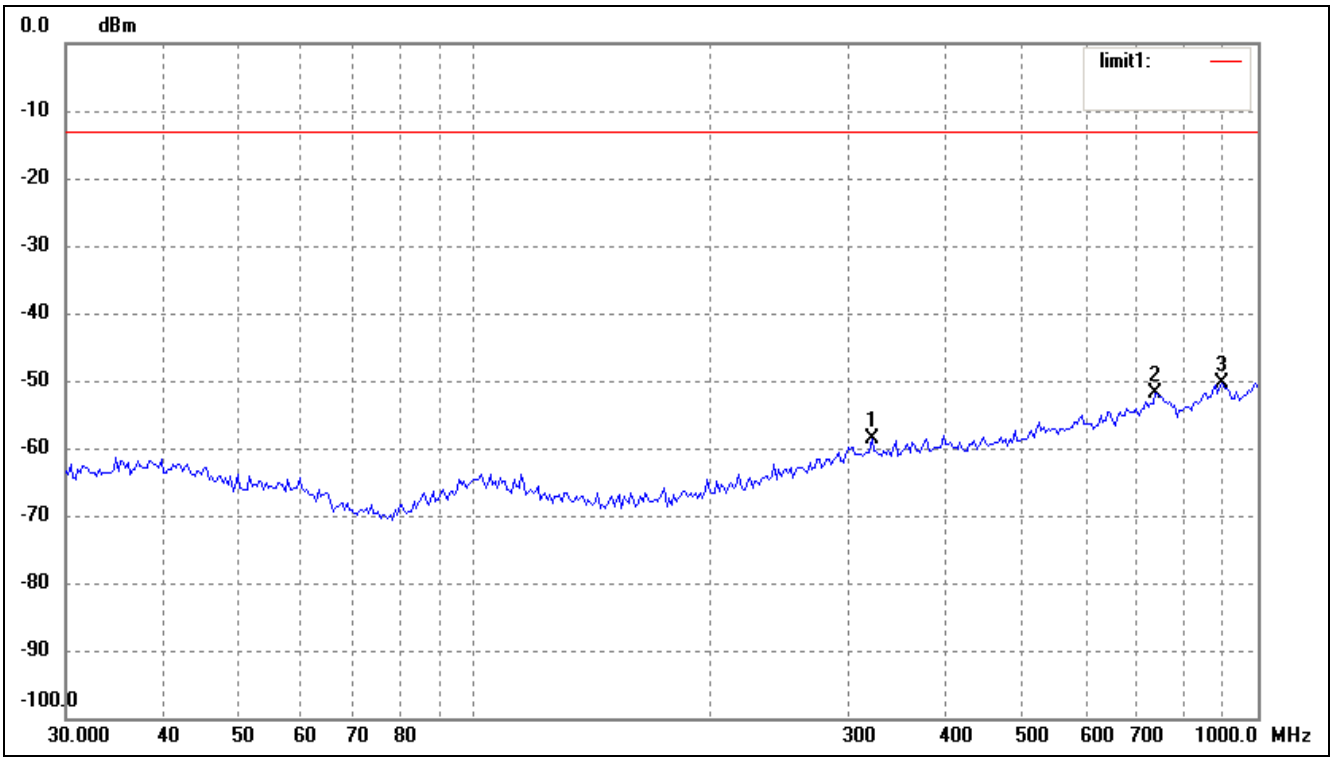
Vertical:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	37.2854	-77.65	21.05	-56.60	-13.00	-43.60	ERP
2	651.9415	-76.30	26.87	-49.43	-13.00	-36.43	ERP
3	881.4067	-76.38	30.83	-45.55	-13.00	-32.55	ERP

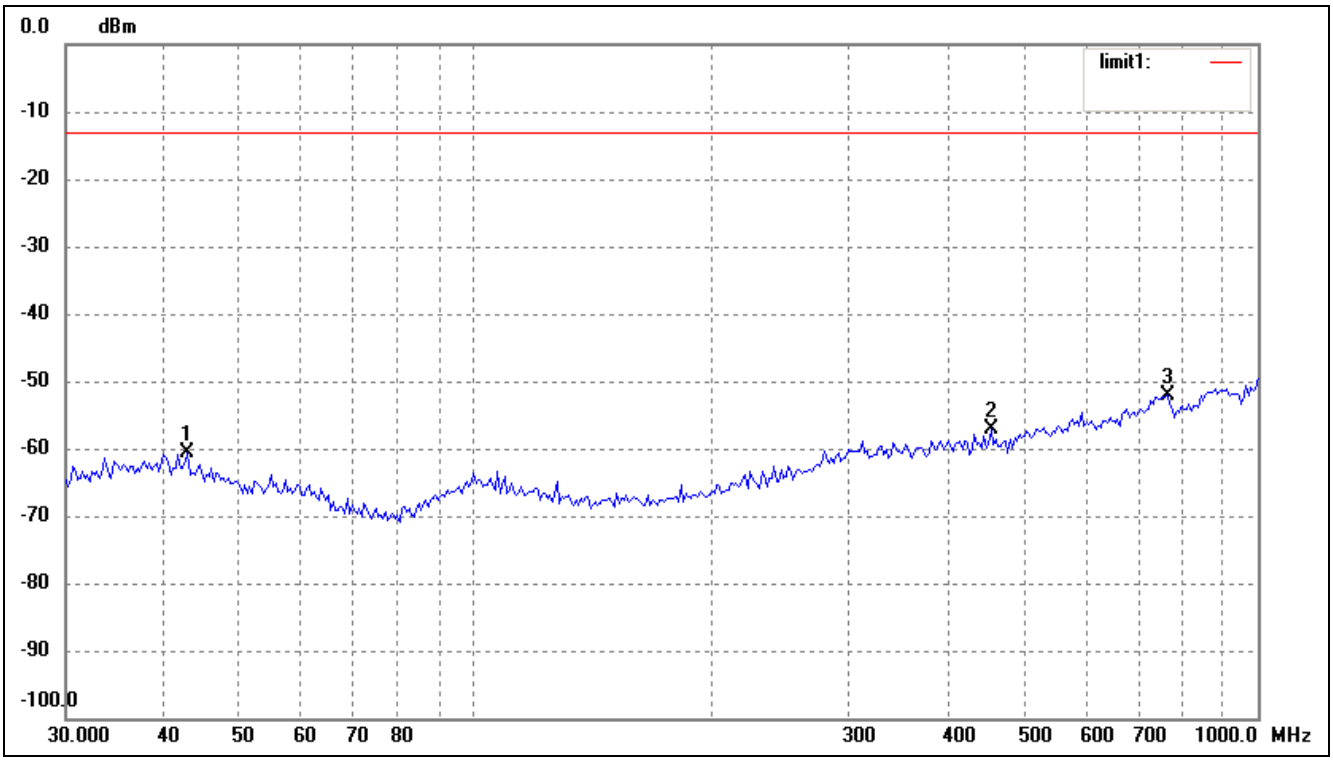
For band V WCDMA Mode Middle Channel

Horizontal:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	321.0608	-69.17	10.46	-58.71	-13.00	-45.71	ERP
2	739.6605	-69.99	18.07	-51.92	-13.00	-38.92	ERP
3	900.1474	-69.87	19.38	-50.49	-13.00	-37.49	ERP

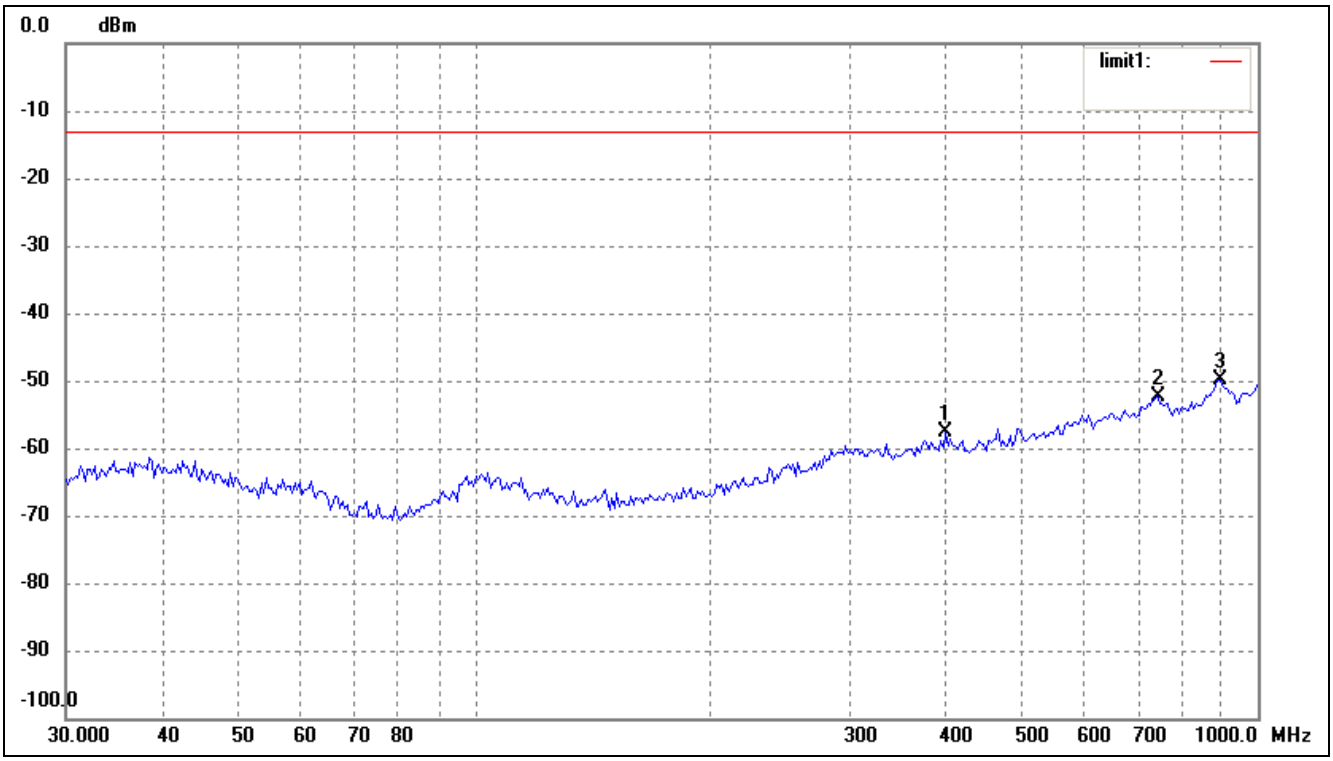
Vertical:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	42.8998	-69.44	8.79	-60.65	-13.00	-47.65	ERP
2	455.9058	-68.91	11.67	-57.24	-13.00	-44.24	ERP
3	766.0572	-68.90	16.77	-52.13	-13.00	-39.13	ERP

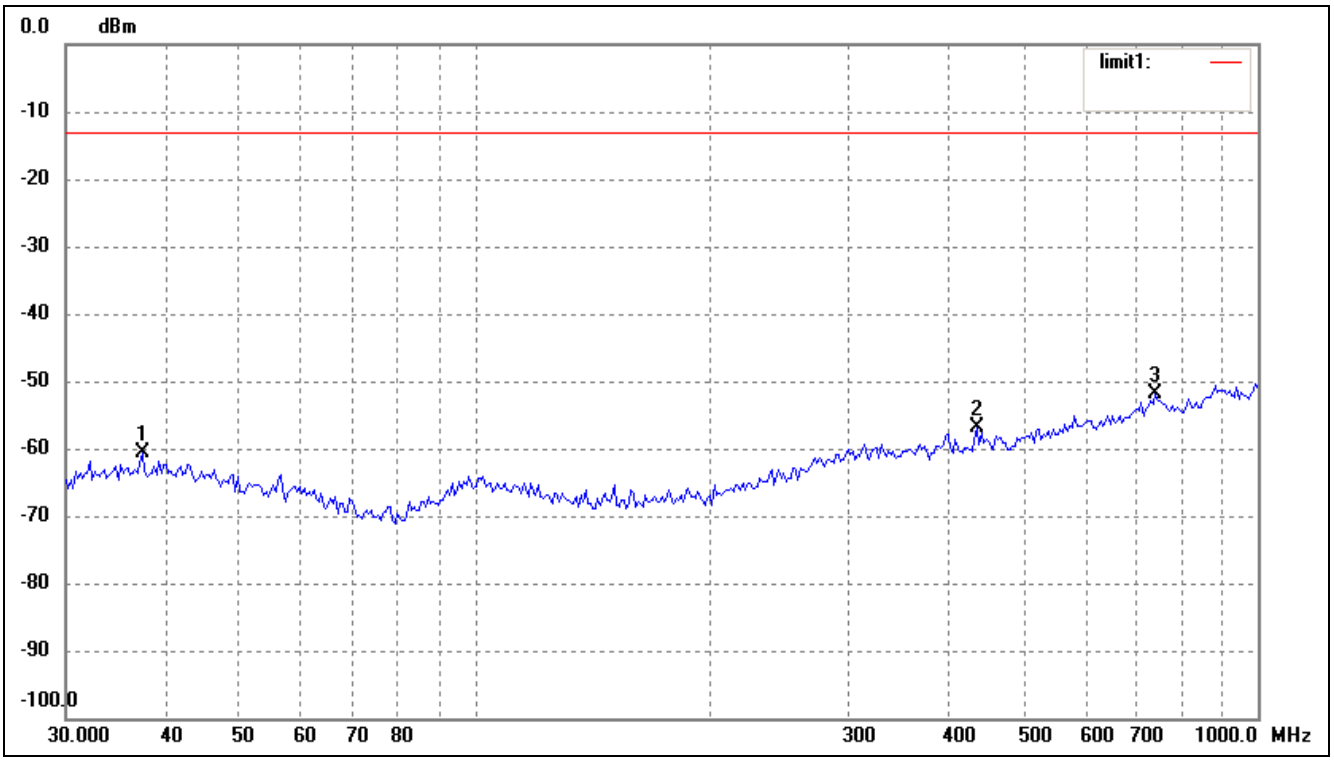
For band V WCDMA Mode High Channel

Horizontal:



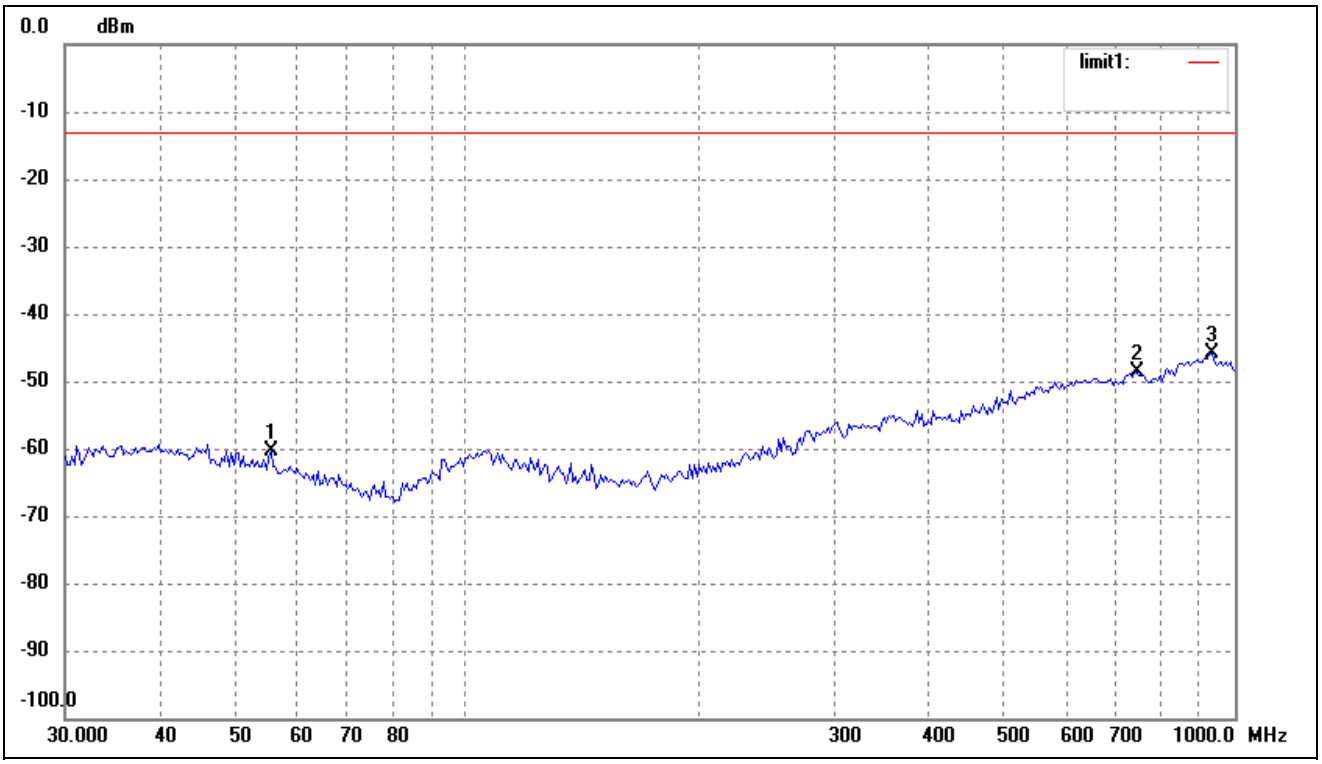
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	399.0302	-69.19	11.50	-57.69	-13.00	-44.69	ERP
2	744.8661	-70.42	17.95	-52.47	-13.00	-39.47	ERP
3	893.8567	-69.12	19.27	-49.85	-13.00	-36.85	ERP

Vertical:



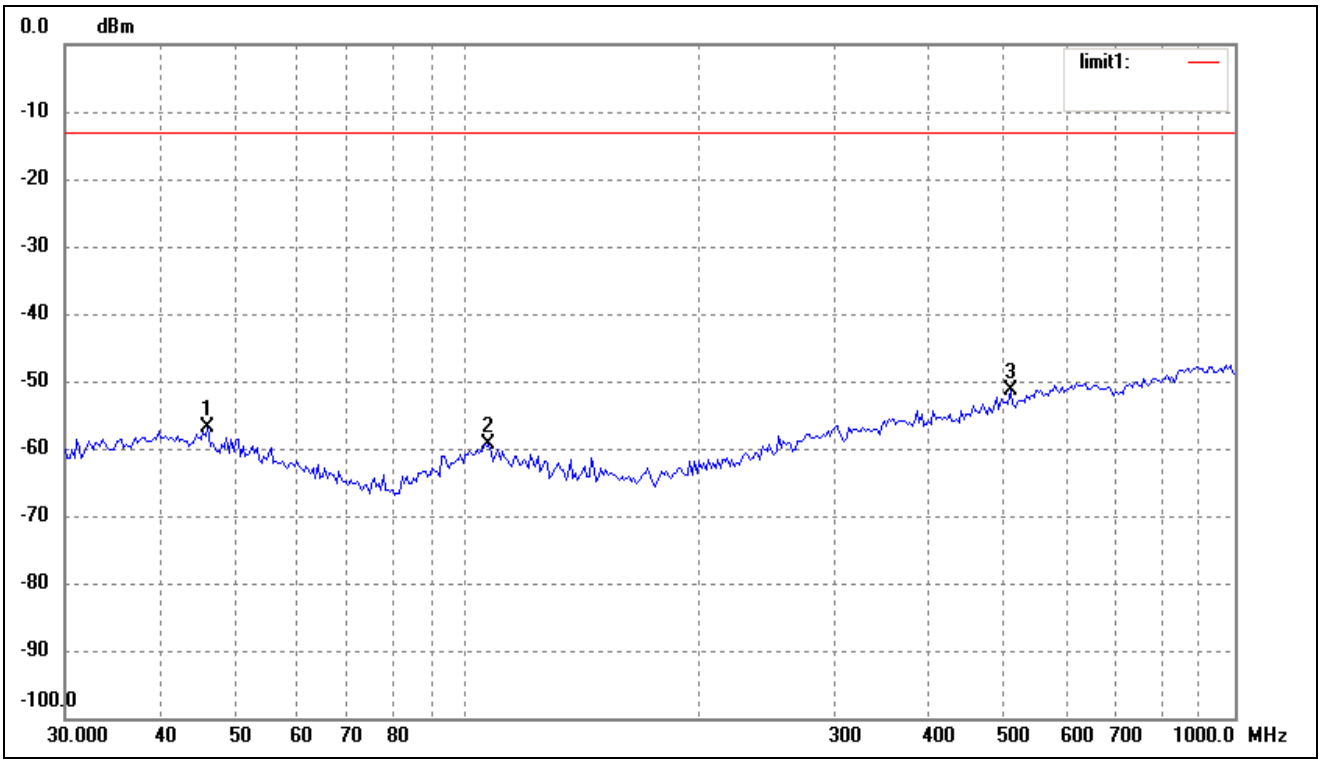
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	37.5479	-69.81	9.29	-60.52	-13.00	-47.52	ERP
2	437.1199	-68.10	11.18	-56.92	-13.00	-43.92	ERP
3	739.6605	-69.85	18.07	-51.78	-13.00	-38.78	ERP

Spurious Emission From 30MHz to 1GHz
For band II WCDMA Mode Low Channel
Horizontal:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	55.6094	-78.32	17.91	-60.41	-13.00	-47.41	ERP
2	744.8659	-78.26	29.74	-48.52	-13.00	-35.52	ERP
3	932.2713	-75.99	30.11	-45.88	-13.00	-32.88	ERP

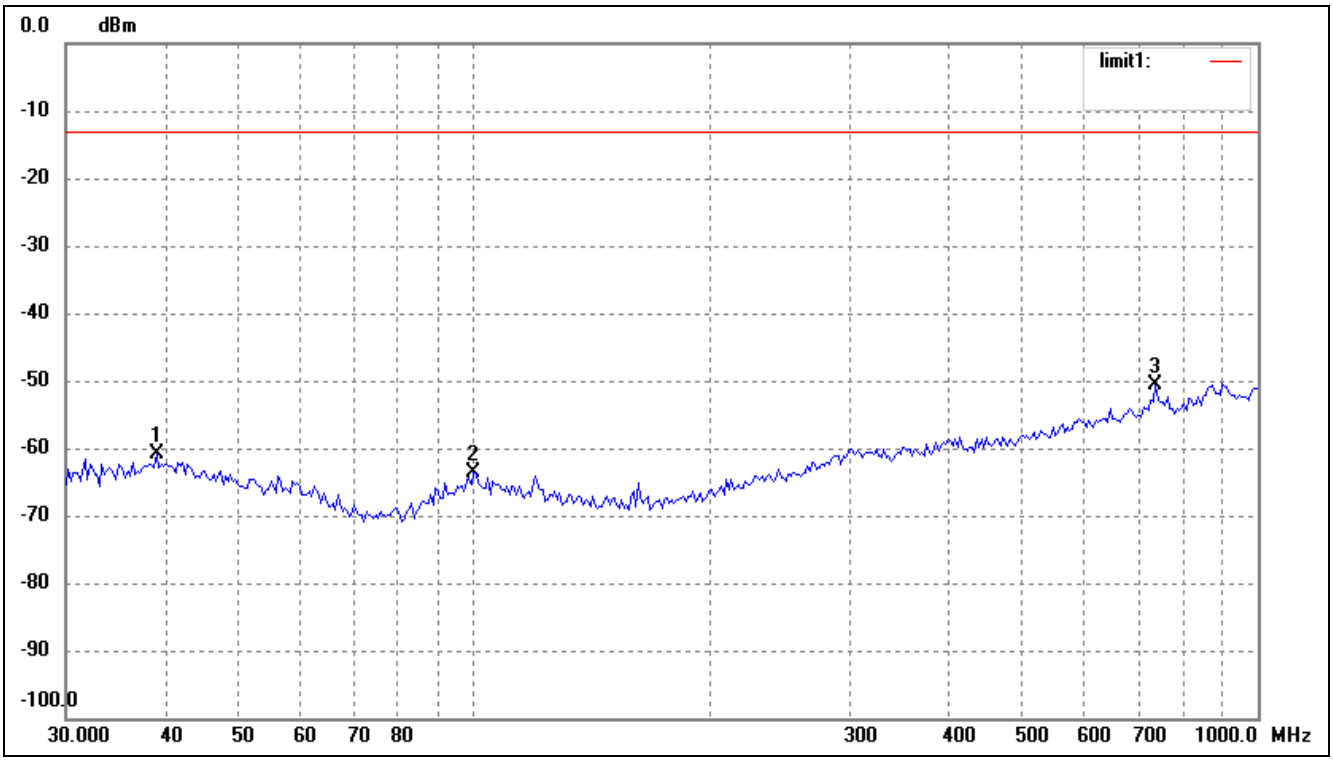
Vertical:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	46.0163	-76.55	19.65	-56.90	-13.00	-43.90	ERP
2	106.7587	-77.35	17.98	-59.37	-13.00	-46.37	ERP
3	510.0436	-75.85	24.36	-51.49	-13.00	-38.49	ERP

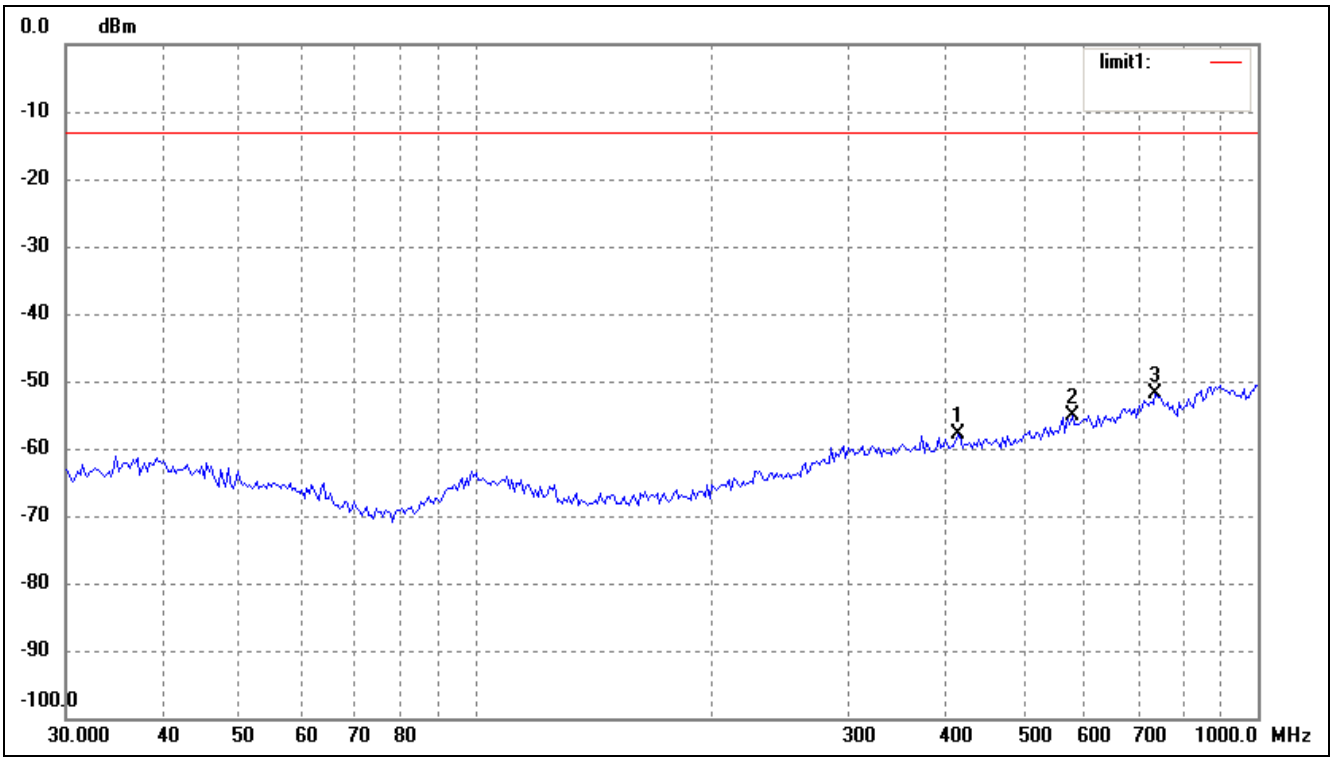
For band II WCDMA Mode Middle Channel

Horizontal:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	39.1616	-70.52	9.54	-60.98	-13.00	-47.98	ERP
2	99.5281	-70.38	6.72	-63.66	-13.00	-50.66	ERP
3	739.6605	-68.80	18.07	-50.73	-13.00	-37.73	ERP

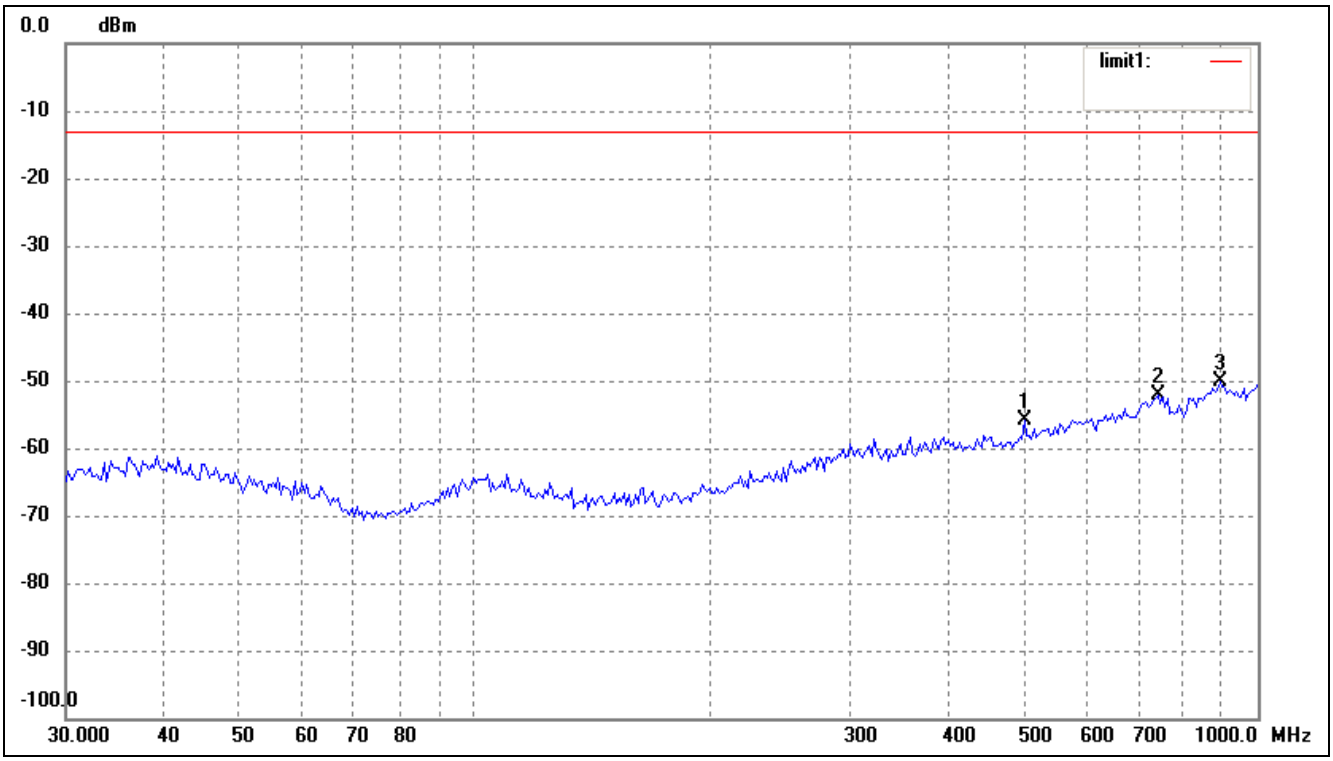
Vertical:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	413.2706	-68.91	10.98	-57.93	-13.00	-44.93	ERP
2	578.6699	-69.16	14.12	-55.04	-13.00	-42.04	ERP
3	739.6605	-69.88	18.07	-51.81	-13.00	-38.81	ERP

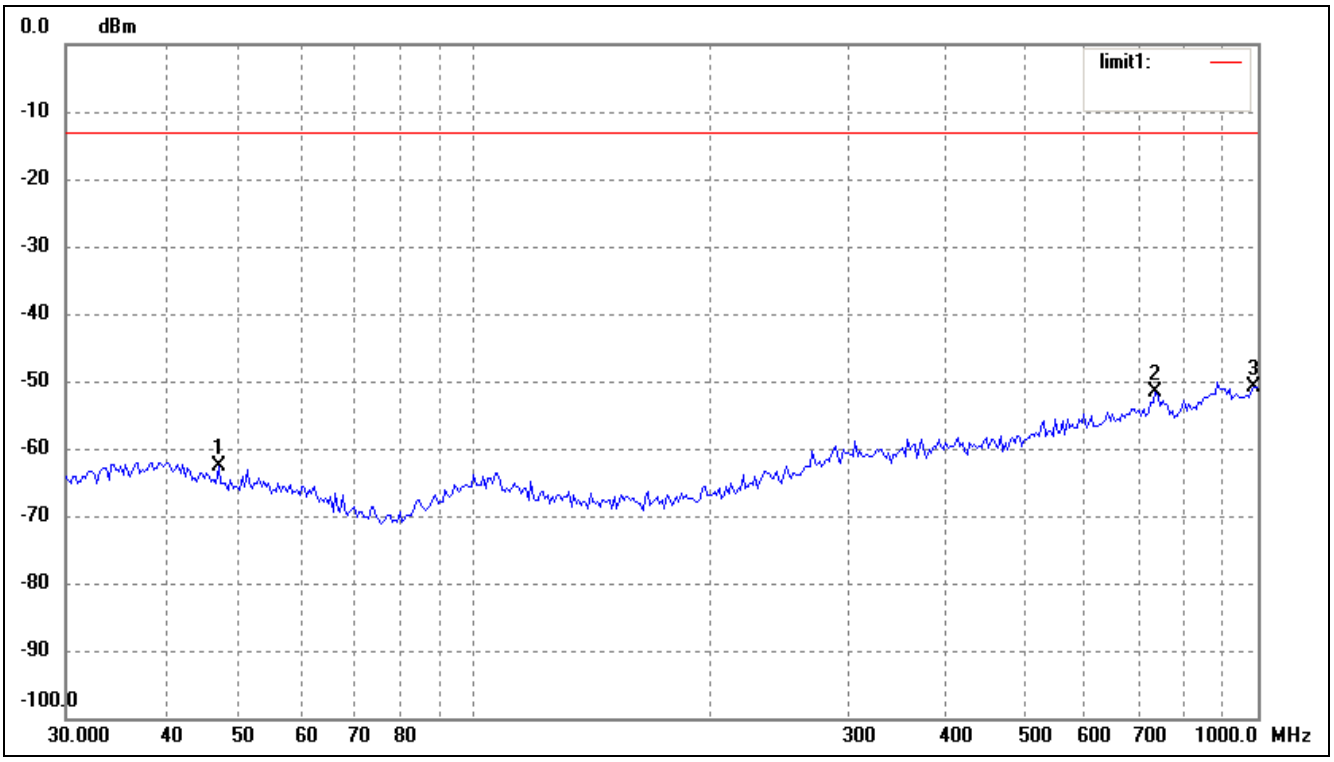
For band II WCDMA Mode High Channel

Horizontal:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	502.9395	-68.26	12.30	-55.96	-13.00	-42.96	ERP
2	744.8661	-70.18	17.95	-52.23	-13.00	-39.23	ERP
3	893.8567	-69.35	19.27	-50.08	-13.00	-37.08	ERP

Vertical:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	46.9948	-70.23	7.54	-62.69	-13.00	-49.69	ERP
2	739.6605	-69.64	18.07	-51.57	-13.00	-38.57	ERP
3	986.0717	-70.05	19.17	-50.88	-13.00	-37.88	ERP

Spurious Emissions Above 1GHz

For Cellular Band_GSM Mode

Frequency	Reading	Correct	Result	Limit	Margin	Polar
(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	H/V
Low Channel (824.2MHz)						
1648.4	-37.76	-1.84	-39.6	-13.00	-26.60	H
2472.6	-42.52	0.02	-42.5	-13.00	-29.50	H
1648.4	-38.76	-1.84	-40.6	-13.00	-27.60	V
2472.6	-43.52	0.02	-43.5	-13.00	-30.50	V
Middle Channel (836.6MHz)						
1673.2	-38.50	-1.70	-40.2	-13.00	-27.20	H
2509.8	-42.60	0.10	-42.5	-13.00	-29.50	H
1673.2	-38.90	-1.70	-40.6	-13.00	-27.60	V
2509.8	-43.90	0.10	-43.8	-13.00	-30.80	V
High Channel (848.8MHz)						
1697.6	-38.25	-1.55	-39.80	-13.00	-26.80	H
2546.4	-43.90	0.38	-43.52	-13.00	-30.52	H
1697.6	-39.09	-1.55	-40.64	-13.00	-27.64	V
2546.4	-43.74	0.38	-43.36	-13.00	-30.36	V

For Cellular Band_GPRS Mode

Frequency	Reading	Correct	Result	Limit	Margin	Polar
(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	H/V
Low Channel (824.2MHz)						
1648.4	-38.16	-1.84	-40.0	-13.00	-27.00	H
2472.6	-42.62	0.02	-42.6	-13.00	-29.60	H
1648.4	-39.36	-1.84	-41.2	-13.00	-28.20	V
2472.6	-44.62	0.02	-44.6	-13.00	-31.60	V
Middle Channel (836.6MHz)						
1673.2	-38.30	-1.70	-40.0	-13.00	-27.00	H
2509.8	-43.30	0.10	-43.2	-13.00	-30.20	H
1673.2	-38.80	-1.70	-40.5	-13.00	-27.50	V
2509.8	-43.10	0.10	-43.0	-13.00	-30.00	V
High Channel (848.8MHz)						
1697.6	-37.05	-1.55	-38.6	-13.00	-25.60	H
2546.4	-41.68	0.38	-41.3	-13.00	-28.30	H
1697.6	-38.65	-1.55	-40.2	-13.00	-27.20	V
2546.4	-43.18	0.38	-42.8	-13.00	-29.80	V

For PCS Band_GSM Mode

Frequency	Reading	Correct	Result	Limit	Margin	Polar
(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	H/V
Low Channel (1850.2MHz)						
3700.4	-46.44	5.92	-40.52	-13.00	-27.52	H
5550.6	-53.85	10.24	-43.61	-13.00	-30.61	H
3700.4	-46.59	5.92	-40.67	-13.00	-27.67	V
5550.6	-55.59	10.24	-45.35	-13.00	-32.35	V
Middle Channel (1880MHz)						
3760.0	-45.69	6.11	-39.58	-13.00	-26.58	H
5640.0	-53.37	10.17	-43.20	-13.00	-30.20	H
3760.0	-46.43	6.11	-40.32	-13.00	-27.32	V
5640.0	-54.99	10.17	-44.82	-13.00	-31.82	V
High Channel (1909.8MHz)						
3819.6	-46.61	6.28	-40.33	-13.00	-27.33	H
5729.4	-52.83	10.11	-42.72	-13.00	-29.72	H
3819.6	-47.56	6.28	-41.28	-13.00	-28.28	V
5729.4	-54.96	10.11	-44.85	-13.00	-31.85	V

For PCS Band_GPRS Mode

Frequency	Reading	Correct	Result	Limit	Margin	Polar
(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	H/V
Low Channel (824.2MHz)						
3700.4	-46.27	5.92	-40.35	-13.00	-27.35	H
5550.6	-53.45	10.24	-43.21	-13.00	-30.21	H
3700.4	-46.17	5.92	-40.25	-13.00	-27.25	V
5550.6	-55.11	10.24	-44.87	-13.00	-31.87	V
Middle Channel (1880MHz)						
3760.0	-45.59	6.11	-39.48	-13.00	-26.48	H
5640.0	-53.12	10.17	-42.95	-13.00	-29.95	H
3760.0	-46.53	6.11	-40.42	-13.00	-27.42	V
5640.0	-53.90	10.17	-43.73	-13.00	-30.73	V
High Channel (1909.8MHz)						
3819.6	-46.60	6.28	-40.32	-13.00	-27.32	H
5729.4	-54.71	10.11	-44.60	-13.00	-31.60	H
3819.6	-47.28	6.28	-41.00	-13.00	-28.00	V
5729.4	-55.92	10.11	-45.81	-13.00	-32.81	V

For Band V_WCDMA Mode

Frequency	Reading	Correct	Result	Limit	Margin	Polar
(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	H/V
Low Channel (826.4MHz)						
1652.800	-51.11	-1.82	-52.93	-13.00	-39.93	H
2479.200	-44.03	0.03	-44.00	-13.00	-31.00	H
1652.800	-49.87	-1.82	-51.69	-13.00	-38.69	V
2479.200	-44.15	0.03	-44.12	-13.00	-31.12	V
Middle Channel (836.4MHz)						
1672.800	-42.30	-1.70	-44.00	-13.00	-31.00	H
2509.200	-42.67	0.10	-42.57	-13.00	-29.57	H
1672.800	-57.19	-1.70	-58.89	-13.00	-45.89	V
2509.200	-51.79	0.10	-51.69	-13.00	-38.69	V
High Channel (846.6MHz)						
1693.200	-50.83	-1.59	-52.42	-13.00	-39.42	H
2539.800	-44.37	0.33	-44.04	-13.00	-31.04	H
1693.200	-42.37	-1.59	-43.96	-13.00	-30.96	V
2539.800	-49.23	0.33	-48.90	-13.00	-35.90	V

For Band II_WCDMA Mode

Frequency	Reading	Correct	Result	Limit	Margin	Polar
(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	H/V
Low Channel (1852.4MHz)						
3704.800	-58.45	5.93	-52.52	-13.00	-39.52	H
5557.200	-56.58	10.23	-46.35	-13.00	-33.35	H
3704.800	-59.17	5.93	-53.24	-13.00	-40.24	V
5557.200	-59.85	10.23	-49.62	-13.00	-36.62	V
Middle Channel (1880.0MHz)						
3760.000	-57.93	6.11	-51.82	-13.00	-38.82	H
5640.000	-56.70	10.17	-46.53	-13.00	-33.53	H
3760.000	-52.59	6.11	-46.48	-13.00	-33.48	V
5640.000	-54.06	10.17	-43.89	-13.00	-30.89	V
High Channel (1907.6MHz)						
3815.200	-49.76	6.27	-43.49	-13.00	-30.49	H
5722.800	-57.56	10.11	-47.45	-13.00	-34.45	H
3815.200	-60.45	6.27	-54.18	-13.00	-41.18	V
5722.800	-59.78	10.11	-49.67	-13.00	-36.67	V

Note: Testing is carried out with frequency rang 9kHz to the tenth harmonics, which above 10th Harmonics are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

8. Frequency Stability

8.1 Standard Applicable

According to §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table below:

Frequency Tolerance for Cellular Band

Frequency range (MHz)	Base, fixed (ppm)	Mobile ≤3 watts (ppm)	Mobile ≤3 watts (ppm)
25 to 50	20.0	20.0	50.0
50 to 450	5.0	5.0	50.0
450 to 512	2.5	5.0	5.0
821 to 896	1.5	2.5	2.5
928 to 929	5.0	N/A	N/A
929 to 960	1.5	N/A	N/A
2110 to 2220	10.0	N/A	N/A

According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

8.2 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date	Due. Date
Aglient	Spectrum Analyzer	E4402B-ESA	US41192821	2013-05-07	2014-05-06
Rohde & Schwarz	Universal Radio Communication	CMU200	112012	2013-05-07	2014-05-06
GONGWEN	Moisture Test Chamber	GDS-150	SEMT-0013	2013-05-07	2014-05-06

8.3 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

Temperature:	Supply Voltage
20°C	85-115% of declared nominal voltage
-30°C to +50°C	Normal

8.4 Environmental Conditions

Temperature:	20°C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

8.5 Summary of Test Results/Plots

For Cellular Band GSM Mode

Reference Frequency(Middle Channel): 836.6 MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	3.7	-73	-0.0872
40	3.7	-56	-0.0669
30	3.7	-58	-0.0693
20	3.7	-53	-0.0634
10	3.7	-50	-0.0598
0	3.7	-52	-0.0622
-10	3.7	-45	-0.0538
-20	3.7	-42	-0.0502
-30	3.7	-40	-0.0478

For PCS Band GSM Mode

Reference Frequency(Middle Channel): 1880 MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	3.7	-73	-0.0388
40	3.7	-69	-0.0367
30	3.7	-51	-0.0271
20	3.7	-67	-0.0356
10	3.7	-48	-0.0255
0	3.7	-37	-0.0197
-10	3.7	-43	-0.0229
-20	3.7	-57	-0.0303
-30	3.7	-53	-0.0282

For Cellular Band GPRS Mode

Reference Frequency(Middle Channel): 836.6 MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	3.7	-48	-0.0574
40	3.7	-57	-0.0681
30	3.7	-35	-0.0418
20	3.7	-46	-0.0550
10	3.7	-52	-0.0622
0	3.7	-46	-0.0550
-10	3.7	-55	-0.0657
-20	3.7	-60	-0.0717
-30	3.7	-63	-0.0753

For PCS Band GPRS Mode

Reference Frequency(Middle Channel): 1880 MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	3.7	65	0.0346
40	3.7	62	0.0330
30	3.7	47	0.0250
20	3.7	35	0.0186
10	3.7	40	0.0213
0	3.7	36	0.0191
-10	3.7	44	0.0234
-20	3.7	58	0.0309
-30	3.7	60	0.0319

For WCDMA Band V Mode

Reference Frequency(Middle Channel): 836.4 MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	3.7	-64	-0.0765
40	3.7	-58	-0.0693
30	3.7	-47	-0.0562
20	3.7	-52	-0.0622
10	3.7	-66	-0.0789
0	3.7	-70	-0.0837
-10	3.7	-73	-0.0873
-20	3.7	-82	-0.0980
-30	3.7	-78	-0.0933

For WCDMA Band II Mode

Reference Frequency(Middle Channel): 1732.6 MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	3.7	57	0.0329
40	3.7	48	0.0277
30	3.7	45	0.0260
20	3.7	40	0.0231
10	3.7	35	0.0202
0	3.7	43	0.0248
-10	3.7	52	0.0300
-20	3.7	56	0.0323
-30	3.7	60	0.0346

So, Frequency Stability Versus Input Voltage is:

Reference Frequency(Middle Channel): GSM 836.6MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	3.3	-73	-0.0872
	3.7	-73	-0.0872
	4.2	-68	-0.0813
Reference Frequency(Middle Channel): GSM 1880 MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	3.3	-72	-0.0383
	3.7	-73	-0.0388
	4.2	-70	-0.0372
Reference Frequency(Middle Channel): GPRS 836.6MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	3.3	-58	-0.0693
	3.7	-63	-0.0753
	4.2	-59	-0.0314
Reference Frequency(Middle Channel): GPRS 1880 MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	3.3	63	0.0335
	3.7	65	0.0346
	4.2	68	0.0362

Reference Frequency(Middle Channel): WCDMA 836.4MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	3.3	-78	-0.0933
	3.7	-82	-0.0980
	4.2	-80	-0.0956
Reference Frequency(Middle Channel): WCDMA 1880 MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	3.3	62	0.0330
	3.7	60	0.0346
	4.2	58	0.0309

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