FCC 47 CFR PART 22 SUBPART H

TEST REPORT

For

Applicant :	**LINKUS GROUP CORP**
Address :	**25 WEST 27ST NEW YORK NEW YORK 10001 USA**
Product Name :	**MADISON PHONE**
Model Name :	**NEW MADISON**
Brand Name :	**LGG**
FCC ID :	**2AB5QLGG**
Report No. :	**STS140334F2**
Date of Issue :	**April 07,2014**

Issued by :	**Shenzhen Super Test Service Technology Co., Ltd.**
Address :	**No.5, Langshan 2nd Rd., North Hi-Tech Industrial Park , Nanshan, Shenzhen, Guangdong ,China**
Tel :	**86-755-2795 8522**
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1. VERIFICATION OF CONFORMITY

Equipment Under Test:	MADISON PHONE
Brand Name:	LGG
Model Number:	NEW MADISON
Series Model Name:	N/A
Series Model Difference description:	N/A
FCC ID：	2AB5QLGG
Applicant:	LINKUS GROUP CORP
	25 WEST 27ST NEW YORK NEW YORK 10001 USA
Manufacturer:	LINKUS GROUP CORP
	25 WEST 27ST NEW YORK NEW YORK 10001 USA
Technical Standards:	47 CFR Part 2 47 CFR Part 22 Subpart H
File Number:	STS140334F2
Date of test:	March 28,2014-April 07,2014
Deviation:	None
Condition of Test Sample:	Normal
Test Result:	PASS

The above equipment was tested by Shenzhen Super Test Service Technology Co., Ltd. for compliance with the requirements set forth in FCC rules and the Technical Standards mentioned above. This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment and the level of the immunity endurance of the equipment are within the compliance requirements.

The test results of this report relate only to the tested sample identified in this report.

Tested by (+ signature): Petter Ping

Petter Ping April 07,2014

Review by (+ signature): July Wen

July Wen April 07,2014

Approved by (+ signature): Terry Yang

Terry Yang April 07,2014

2. GENERAL INFORMATION

2.1 Product Information

EUT1- Mobile Phone	
Description:	MADISON PHONE
Model Name:	NEW MADISON
Brand Name:	LGG
Frequency Range:	GSM 850: 824.2-848.8MHz GSM1900:1850.2-1909.8MHz WCDMA Band II:1852.4-1907.6MHz WCDMA BandV:826.4-846.6MHz Bluetooth:2402-2480MHz WIFI: 2412MHz – 2462MHz
Hardware Version:	E2709_V1.1
Software Version:	20140218_e2709_v82_jbla828_lgg_1
EUT2- Battery	
Description:	Lithium-ion Battery
Model Name:	NEW MADISON
Brand Name:	LGG
Manufacturer:	Shenzhen Guangxunlishen Technology Co.,Ltd
Capacitance:	3300 mAh
Rated Voltage:	3.7V
Charge Limit:	4.2V
EUT3 – Power Supply	
Description:	Travel Charger
Model Name:	NEW MADISON
Brand Name:	LGG
Manufacturer:	Shenzhen Jinliyuan Communications Co.,Ltd
Rated Input:	AC 100-240V, 50/60Hz, 0.15A
Rated Output:	DC 5V, 1.0A
Length of USB cable:	1.0m

NOTE:

1. The EUT is a Mobile Station, here only Cellular 850MHz band was tested in this report.
2. The normal, high and low voltage supply for the Battery of the EUT is separately 3.7V, 4.2V and 3.6V, which are specified by the applicant.
3. Please refer to Appendix 2 for the photographs of the EUT. For a more detailed features description about the EUT, please refer to User's Manual.

2.2 Objective

The objective of the report is to perform tests according to 47 CFR Part 2, Part 22 for FCC ID Certification:

No.	Identity	Document Title
1	47 CFR Part 2 (10-1-11 Edition)	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
2	47 CFR Part 22 (10-1-11 Edition)	Public Mobile Services

2.3 Test Standards and Results

Test items and the results are as bellow:

No.	Rules	Test Type	Result	Date of Test
1	§2.106 §22.905	Frequencies	PASS	2014-4-02
2	§2.1046	Conducted RF Output Power at Antenna Terminal	PASS	2014-4-02
3	§2.1049	Occupied Bandwidth	PASS	2014-4-02
4	§2.1051 §2.1057 §22.917	Conducted Spurious Emission at Antenna Terminal	PASS	2014-4-02
5	§22.913	Transmitter Radiated Power (EIPR/ERP)	PASS	2014-4-02
6	§2.1053 §2.1057 §22.917	Radiated Spurious Emission	PASS	2014-4-02
7	§2.1055 §22.355	Frequency Stability	PASS	2014-4-02

Note: 1. The test result judgment is decided by the limit of measurement standard
2. The information of measurement uncertainty is available upon the customer's request.

2.4 Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

- Temperature: 15-35ºC
- Humidity: 30-60 %
- Atmospheric pressure: 86-106 kPa

3. TEST FACILITY

Test Site:	Compliance Certification Services Inc. (Kun shan) Laboratory
Location:	No.10 Weiye Rd, Innovation park, Eco&Tec,Development Zone, Kunshan City, Jiangsu, China
Description:	There is one 3m semi-anechoic an area test sites and two line conducted labs for final test. The Open Area Test Sites and the Line Conducted labs are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4 and CISPR 16 requirements. The FCC Registration Number is **238958.** The **CNAS** Registration Number is **CNAS L4354.**
Site Filing:	The site description is on file with the Federal Communications Commission, 7435 Oakland Mills Road, Columbia, MD 21046.
Instrument Tolerance:	All measuring equipment is in accord with ANSI C63.4:2009 and CISPR 16 requirements that meet industry regulatory agency and accreditation agency requirement.
Ground Plane:	Two conductive reference ground planes were used during the Line Conducted Emission, one in vertical and the other in horizontal. The dimensions of these ground planes are as below. The vertical ground plane was placed distancing 40 cm to the rear of the wooden test table on where the EUT and the support equipment were placed during test. The horizontal ground plane projected 50 cm beyond the footprint of the EUT system and distanced 80 cm to the wooden test table. For Radiated Emission Test, one horizontal conductive ground plane extended at least 1m beyond the periphery of the EUT and the largest measuring antenna, and covered the entire area between the EUT and the antenna.

4. TEST EQUIPMENT LIST

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due	calibration interval
Spectrum Analyzer	Agilent	E4446A	MY44020154	2014-5-12	1 year
EMI Test Receiver	R&S	ESCI	1166.5950.03	2014-8-13	1 year
Pre-Amplfier	Miteq	NSP4000-NF	870629	2014-5-12	1 year
Bilog Antenna	Sunol	JB1	A110204-2	2014-5-12	1 year
Horn-antenna	SCHWARZBECK	BBHA9120D	D:266	2014-6-07	1 year
Horn-antenna	SCHWARZBECK	BBHA9170	D:171	2014-4-28	1 year
Loop-antenna	ZHINAN	ZN30900A	N/A	2014-6-07	1 year
Turn Table	CT	CT123	4165	N.C.R	1 year
Antenna Tower	CT	CTERG23	3256	N.C.R	1 year
Controller	CT	CT1OO	95637	N.C.R	1 year
EMI TEST RECEIVER	R&S	ESCI	100781	2015-3-14	1 year
V (V-LISN)	R&S	ENV216	101604	2014-5-21	1 year
Pulse Limiter	R&S	ESH3-Z2	100524	2014-9-24	1 year
Temperature Chamber	Guangzhou Gongwen	GDS-250	N/A	2014-9-24	1 year
Signal generator	Agilent	83732B	US37101915	2014-06-04	1 year
Test Software	EZ-EMC				

Instrumentation: The following list contains equipment used at CCS for testing. The equipment conforms to the CISPR 16-1 / ANSI C63.2 Specifications for Electromagnetic Interference and Field Strength Instrumentation from 10 kHz to 1.0 GHz or above.

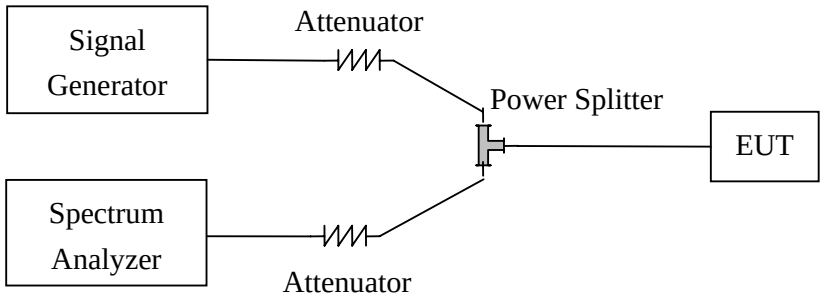
NOTE: *Equipments listed above have been calibrated and are in the period of validation.*

5. 47 CFR Part 2, Part 22H Requirements

5.1 General Information

5.1.1 Conducted Related Tests

Based on ANSI/TIA-603-C-2004

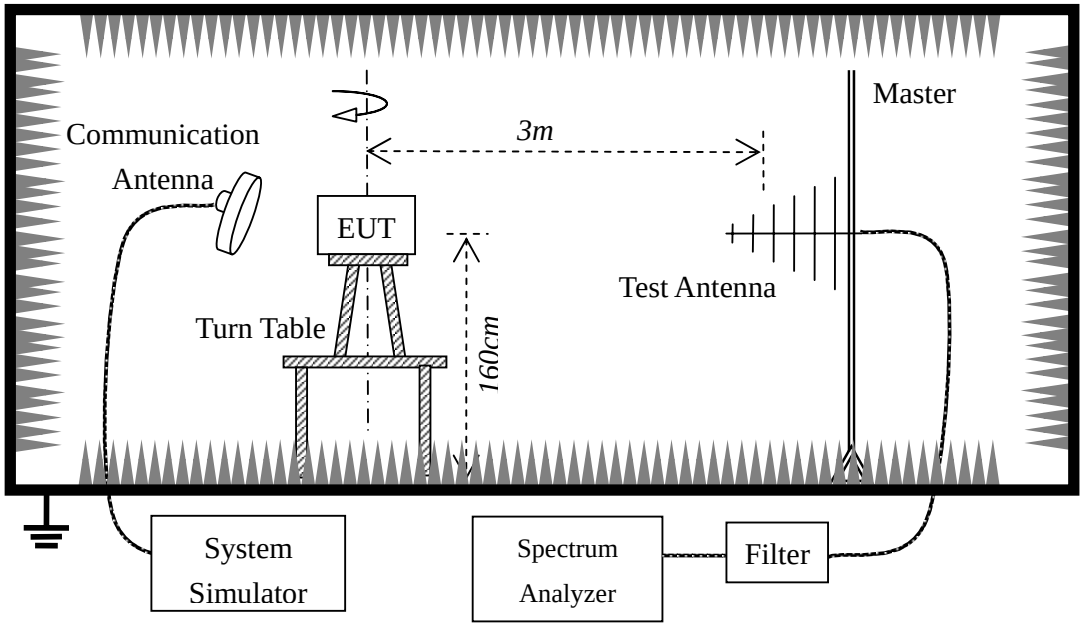


1. The EUT is coupled to the Spectrum Analyzer and the System Simulator with the suitable Attenuators through the Power Splitter; the path loss is calibrated to correct the reading.
2. The EUT is configured here as MS + Battery.
3. Set the spectrum analyzer to measure peak hold with the required settings.
4. Set the signal generator to a known output power and record the path loss in dB (LOSS) for frequencies up to the tenth harmonic of the EUT's carrier frequency. LOSS = Generator Output Power (dBm) – Analyzer reading (dBm).
5. Replace the signal generator with the EUT.
6. Adjust the settings of the Digital Radio communication Tester (DRT) to set the EUT to its maximum power at the required channel.
7. Set the spectrum analyzer to measure peak hold with the required settings. Offset the spectrum analyzer reference level by the path loss measured above.
8. Measure and record all spurious emissions up to the tenth harmonic of the carrier frequency.
9. Measurements are to be performed with the EUT set to the low, middle and high channel of each frequency band.
10. If necessary steps 6 and 7 may be performed with the spectrum analyzer set to average detector.

Note: Step 4 above is performed prior to testing and LOSS is recorded by test software. Steps 3, 7, and 8 above are performed with test software.

5.1.2 Radiated Power and Spurious Emission Tests

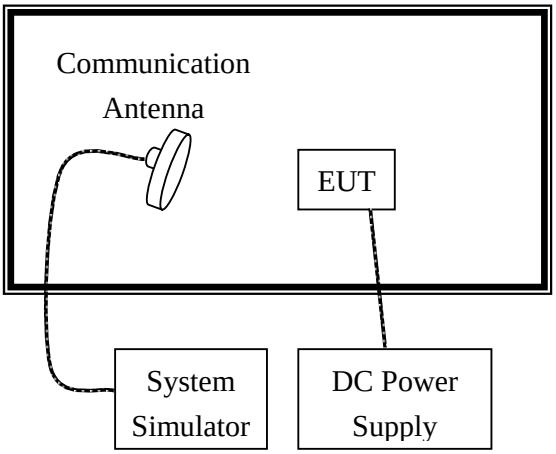
Based on ANSI/TIA-603-C-2004



1. The test is performed in a full-Anechoic Chamber, the air loss of the site and the factors of the test system are pre-calibrated using the substitution method.
2. Connect the equipment as shown in the above diagram with the EUT's antenna in a vertical orientation.
3. Adjust the setting of System Simulator to set the EUT to its maximum power at the require channel.
4. Set the Spectrum Analyzer to the channel frequency, set the analyzer to measure peak hold with the required setting.
5. Rotate the EUT 360 degree, recorded the peak level in dBm(LVL).
6. Replace the EUT with a vertically polarized half wave dipole or known gain antenna. The center of the antenna should be at the same location as the center of the EUT's antenna.
7. Connect the antenna to a signal generator with known output power and record the path loss in dB (Loss), Loss=Generator Output Power(dBm)- Spectrum Analyzer reading Power(dBm).
8. Determine the ERP using the following equation:
   ERP(dBm)=LVL(dBm)+Loss(dB)
9. Determine the EiRP using the following equation:
   EIRP(dBm)= ERP(dBm)+2.14(dB)
10. Measurements are to be performed with the EUT set to the low, middle and high channel of each frequency band.

Note: Steps 6 and 7 above are performed prior to setting and Loss is recorded by test software.

5.1.3 Frequency Stability Test



1. The test is performed in a Temperature Chamber.
2. The EUT is configured as MS + DC Power Supply.
3. The BCCH number of the SS used here is 200.

5.1.4 Test Mode Description

SIM 1 and SIM 2 are tested during all the items, According to the test data, we got the worst mode is SIM1, So we only put the worst data on the report.

6. FREQUENCIES

6.1. Requirement

According to FCC §22.905, the frequencies blocks assignment for the Cellular Radiotelephone Service are listed as below.

(a) Channel Block A:

Mobile 824 - 835MHz, Base 869 - 880MHz;

Mobile 845 - 846.5MHz, Base 890 - 891.5MHz

(b) Channel Block B:

Mobile 835 - 845 MHz, Base 880 - 890MHz;

Mobile 846.5 - 849 MHz, Base 891.5 - 894MHz

6.2 Test Procedure

1. Perform test system setup as section 5.1.1.
2. Perform test configuration as section 5.1
3. The resolution bandwidth (RBW) of the Spectrum Analyzer was set to at lease 1% of the emission bandwidth of the fundamental emission of the transmitter, e.g. for GSM modulated signal (here used): RBW=VBW=3 kHz, for WCDMA modulated signal: RBW=VBW=30 kHz.
4. The transmitter frequency arrangement of the GSM850MHz band is Fl(n)=824.2+0.2*(n-128), 128 ≤ n ≤ 251. The lowest and the highest channel were selected to perform tests respectively. Set the TCH number to 128.
5. Set the Spectrum Analyzer suitably to capture the waveform, search peak and mark, and then record the plot.
6. Set the TCH number to 251, then repeat step 5.
7. For WCDMA, Set the TCH number to 4132and 4233 as the low, middle, high channel, then repeat step 4.

6.3 Test Result

Band	Channel Number	Frequency (MHz)
GSM 850 (GPRS class 8)	128	824.224
	251	848.748
GSM 850 (EDGE class 8)	128	824.235
	251	848.788
WCDMA Band V (RMC 12.2Kbps)	4132	826.365
	4233	846.568

7. Conducted RF Output Power

7.1 Requirement

According to FCC §2.1046 (a), for transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in §2.1033 (c)(8). The electrical characteristics of the radio frequency load attached to the output terminals when this test is made shall be stated.

7.2 Test Procedure

1. Perform test system setup as section 5.1.1. (The radio frequency load attached to the EUT antenna terminal is 50Ω).
2. The resolution bandwidth of the Spectrum Analyzer is set to be comparable to the emission bandwidth of the transmitter, e.g. for GSM modulated signal (here used): RBW=VBW=1MHz, for WCDMA modulated signal: RBW=VBW=3MHz.
3. The low, middle and the high channels are selected to perform tests respectively. Set the TCH number to 128 as the low channel.
4. Set the frequency range of the Spectrum Analyzer suitably to capture the waveform; search peak and mark it; finally record the peak and the plot.
5. Set the TCH number to 190 as the middle channel, then repeat step 4.
6. Set the TCH number to 251 as the high channel, then repeat step 4.
7. For WCDMA, Set the TCH number to 4132, 4182 and 4233 as the low, middle, high channel, then repeat step 4.

7.3 Test Result

Test Mode	Channel Number	Frequency (MHz)	Measured Power		Rated Power	
			dBm	W	dBm	W
GSM 850	128	824.2	31.42	1.387	32	1.58
	190	836.6	31.38	1.374	32	1.58
	251	848.8	31.57	1.435	32	1.58
GSM 850 (GPRS class 8)	128	824.2	31.05	1.274	32	1.58
	190	836.6	31.16	1.306	32	1.58
	251	848.8	31.28	1.343	32	1.58
GSM 850 (EDGE class 8)	128	824.2	30.87	1.222	32	1.58
	190	836.6	31.05	1.274	32	1.58
	251	848.8	31.34	1.361	32	1.58
WCDMA Band V (RMC 12.2Kbps)	4132	826.4	23.94	0.248	24.5	0.282
	4182	836.4	23.75	0.237	24.5	0.282
	4233	846.6	23.88	0.244	24.5	0.282
HSDPA Band V	4132	826.4	23.19	0.208	23.5	0.224
	4182	836.4	23.46	0.222	23.5	0.224
	4233	846.6	23.31	0.214	23.5	0.224
HSUPA Band V	4132	826.4	22.01	0.159	23.5	0.224
	4182	836.4	21.69	0.148	23.5	0.224
	4233	846.6	21.52	0.142	23.5	0.224

Note: Maximum burst average power for GSM, and maximum burst average power for WCDMA.

8. OCCUPIED BANDWIDTH

8.1 Occupied Bandwidth Definition

According to FCC §2.1049, the occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.

Occupied bandwidth is also known as the 99% emission bandwidth taking the total RF output power as reference.

The emission bandwidth is defined as the width of the signal between two points, located at the 2 sides of the carrier frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

8.2 Test Procedure

1. Perform test system setup as section 5.1.1
2. The resolution bandwidth of the Spectrum Analyzer is set to at least one percent of the emission bandwidth, e.g. for GSM modulated signal (here used): RBW=VBW=3 kHz, for CDMA modulated signal: RBW=VBW=30 kHz.
3. The low, middle and the high channels are selected to perform tests respectively. Set the TCH number to 128 as the low channel.
4. Set the frequency range of the Spectrum Analyzer suitably to capture the waveform; search peak; make a line whose value is 26dB lower than the peak and for 99% occupied bandwidth; mark two points which the line intersected the waveform at; finally record the delta of the two points as the occupied bandwidth and the plot.
5. Set the TCH number to 190 as middle channel, then repeat step 4.
6. Set the TCH number to 251 as high channel, then repeat step 4.

7. For WCDMA, Set the TCH number to 4132, 4182 and 4233 as the low, middle, high channel, then repeat step 4.

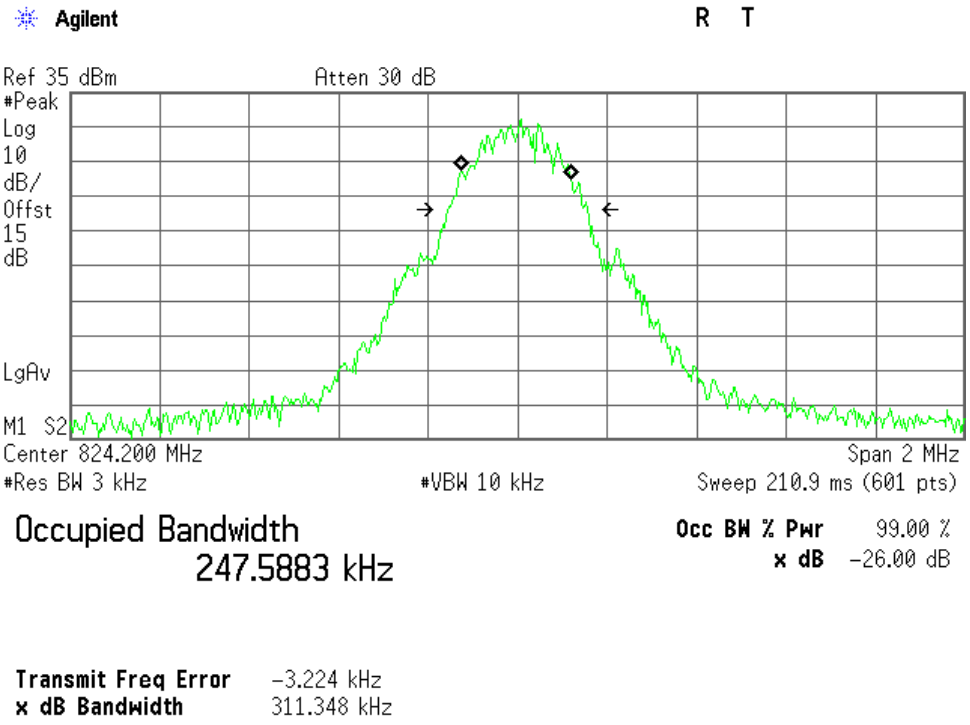
8.3 Test Result

Band	Channel	Frequency (MHz)	Measured Occupied Bandwidth (kHz)	
			99% Emission Bandwidth	26dB Emission Bandwidth
GSM 850	128	824.2	247.59	311.35
	190	836.6	251.94	311.78
	251	848.8	246.96	311.99
GSM 850 (GPRS class 8)	128	824.2	247.84	318.42
	190	836.6	248.15	315.66
	251	848.8	245.89	310.34
GSM 850 (EDGE class 8)	128	824.2	244.97	313.52
	190	836.6	247.40	311.03
	251	848.8	246.16	316.66
WCDMA Band V (RMC 12.2Kbps)	4132	826.4	4151	4671
	4182	836.4	4161	4668
	4233	846.6	4182	4664

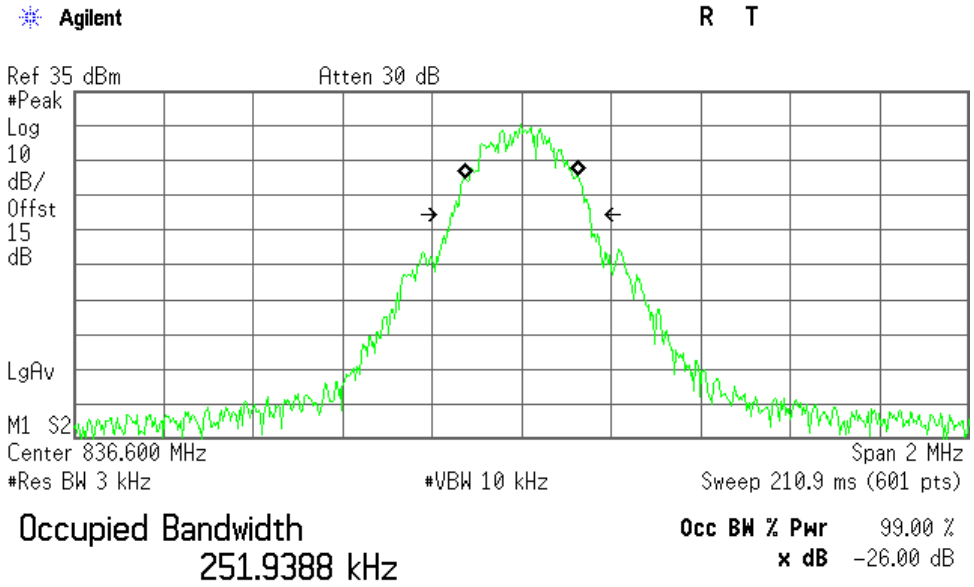
HSDPA Band V	4132	826.4	4167	4681
	4182	836.4	4144	4678
	4233	846.6	4165	4680
HSUPA Band V	4132	826.4	4164	4656
	4182	836.4	4144	4685
	4233	846.6	4150	4680

GSM850 Band:

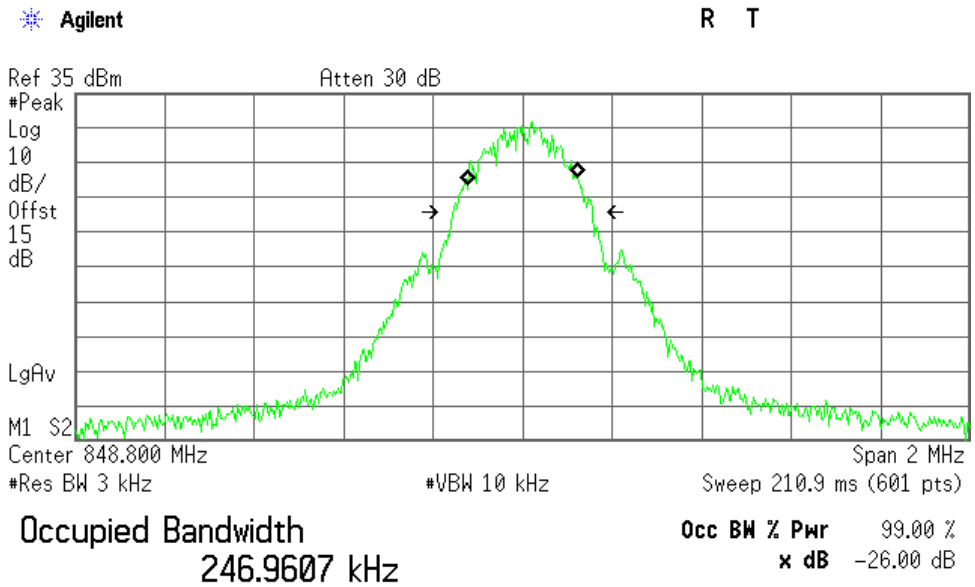
1. Occupied Bandwidth when the TCH number set to 128:



2. Occupied Bandwidth when the TCH number set to 190:

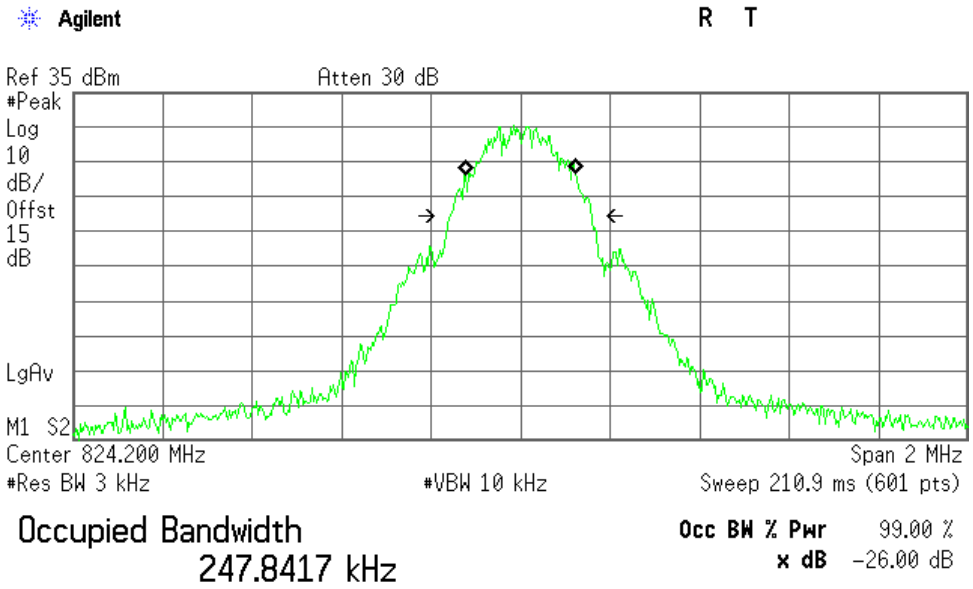


3. Occupied Bandwidth when the TCH number set to 251:



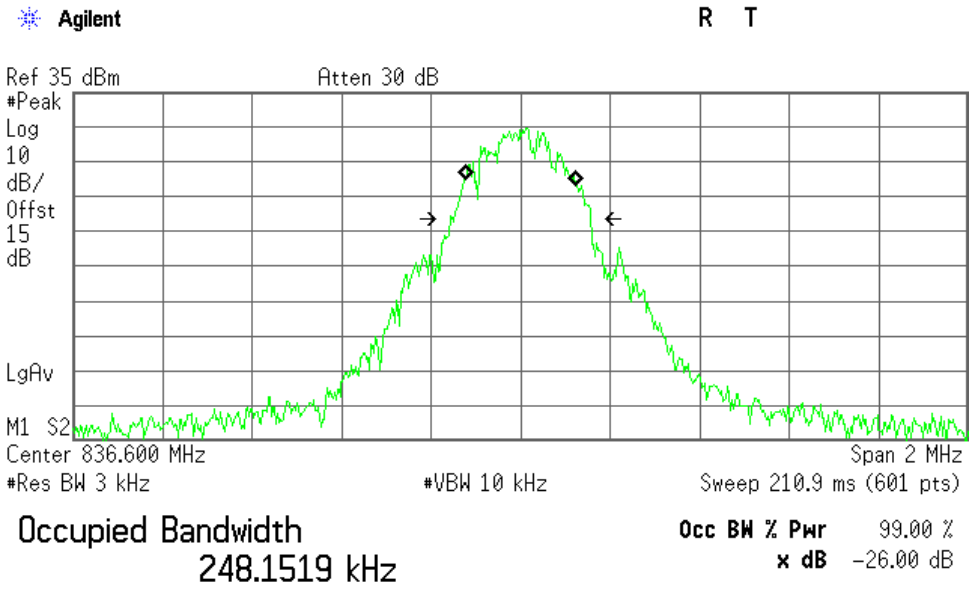
GSM 850(GPRS class 8)

4. Occupied Bandwidth when the TCH number set to 128:



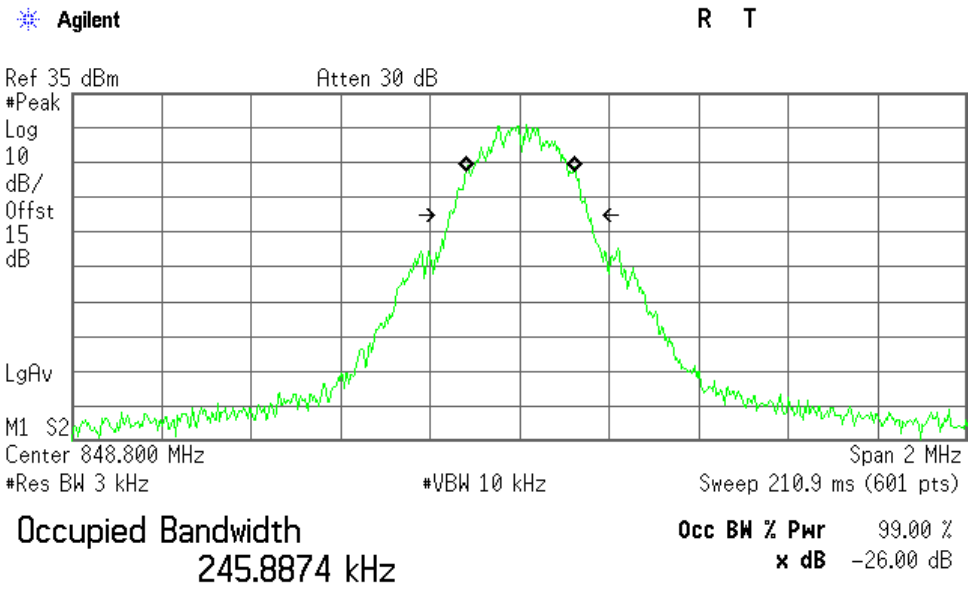
Transmit Freq Error 28.401 Hz
x dB Bandwidth 318.416 kHz

5. Occupied Bandwidth when the TCH number set to 190:



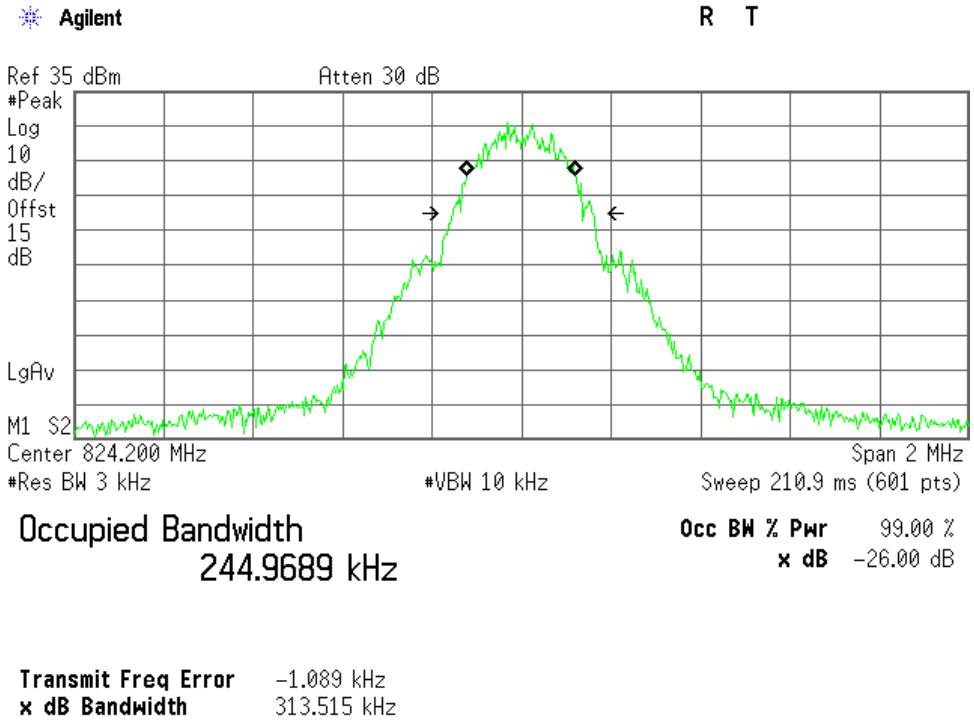
Transmit Freq Error 894.290 Hz
x dB Bandwidth 315.660 kHz

6. Occupied Bandwidth when the TCH number set to 251:

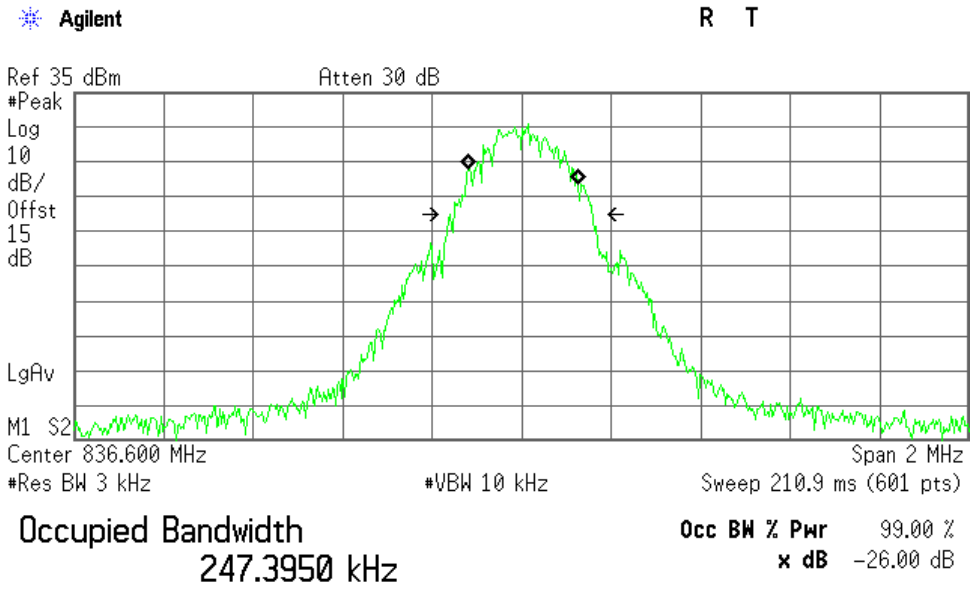


GSM 850(EDGE class 8)

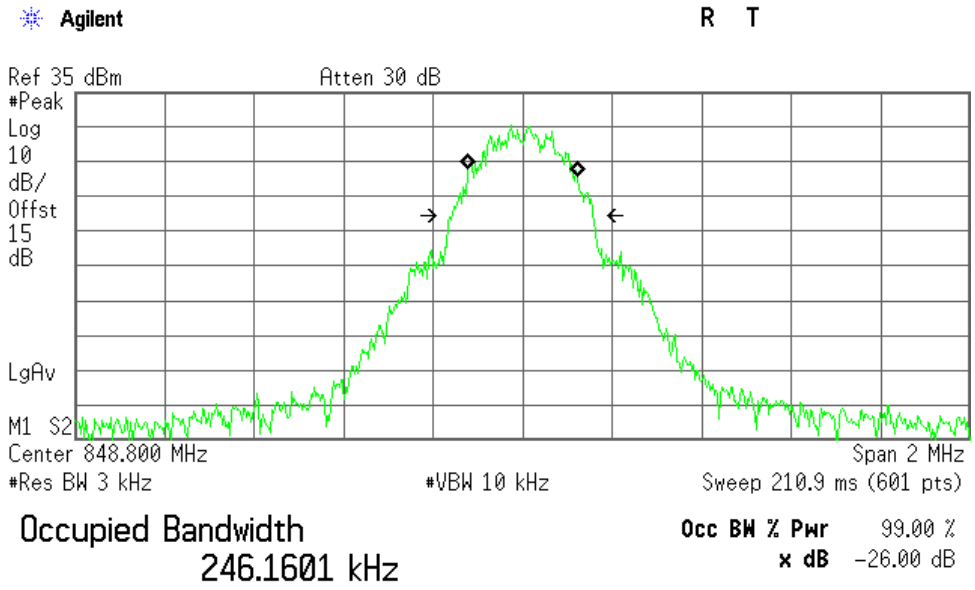
7. Occupied Bandwidth when the TCH number set to 128:



8. Occupied Bandwidth when the TCH number set to 190:

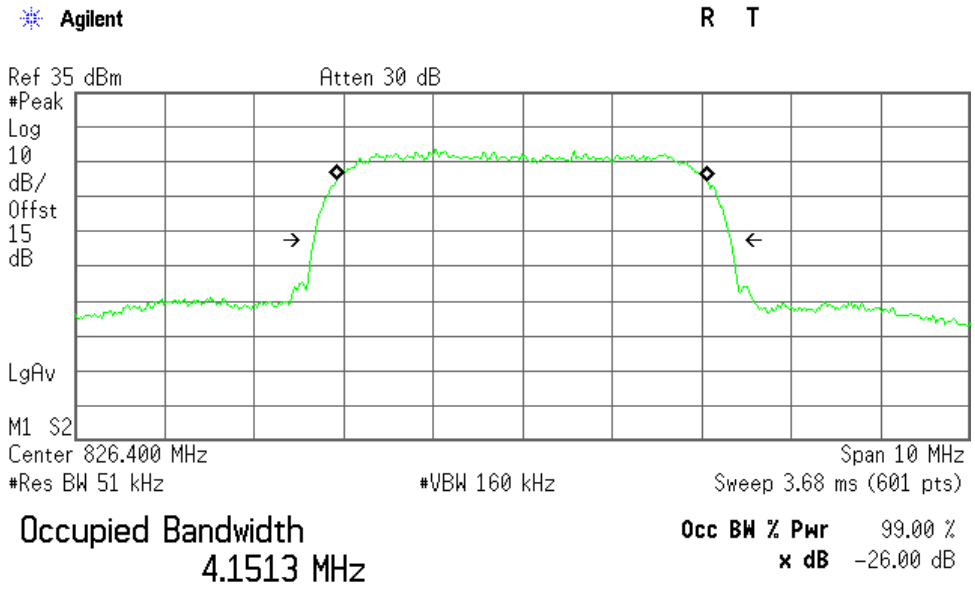


9. Occupied Bandwidth when the TCH number set to 251:

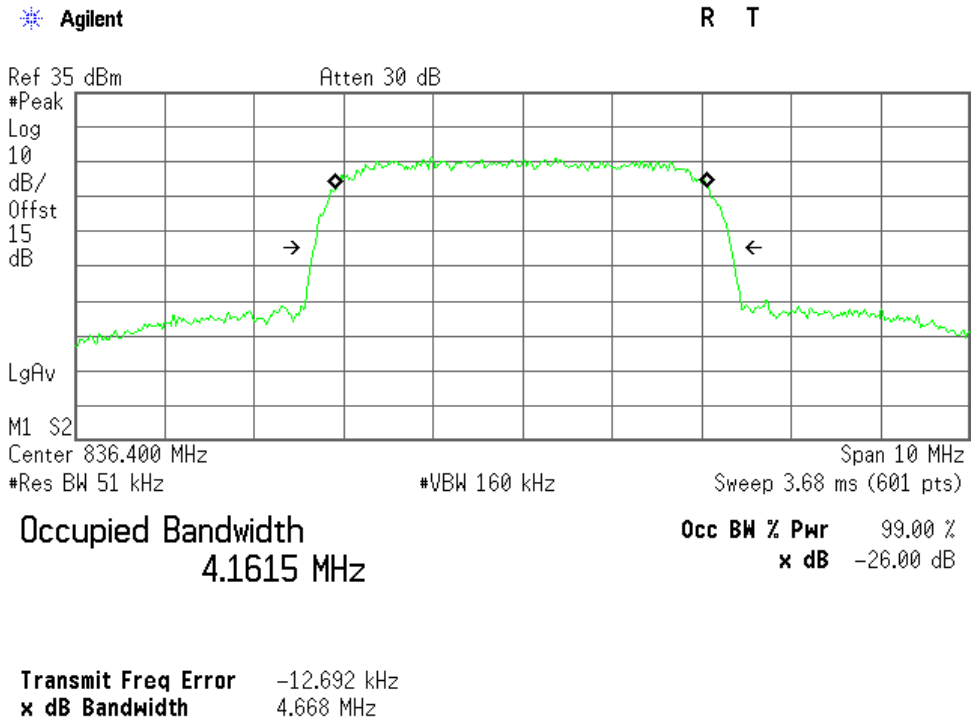


WCDMA Band V (RMC 12.2Kbps) Band:

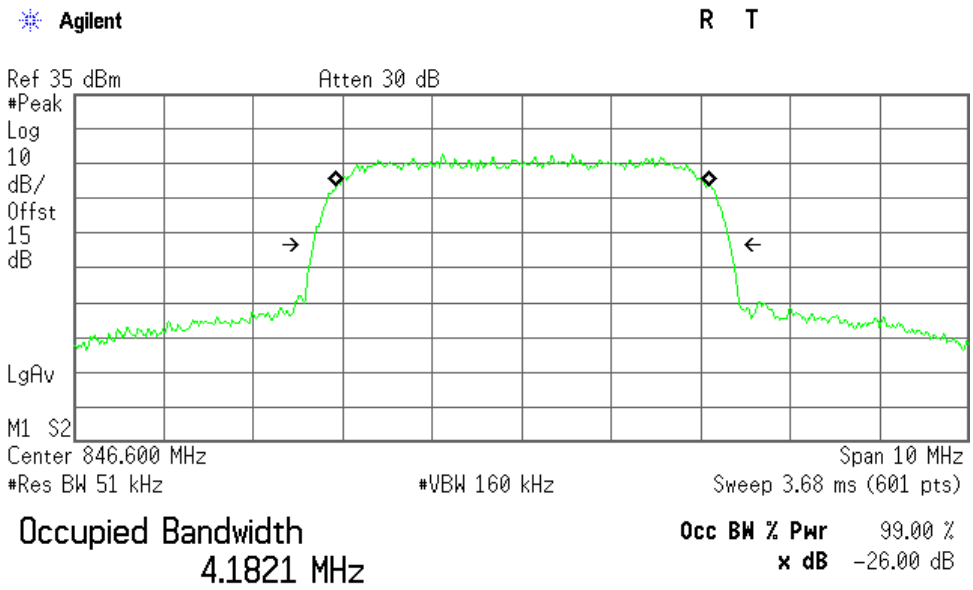
1. Occupied Bandwidth when the TCH number set to 4132:



2. Occupied Bandwidth when the TCH number set to 4182:

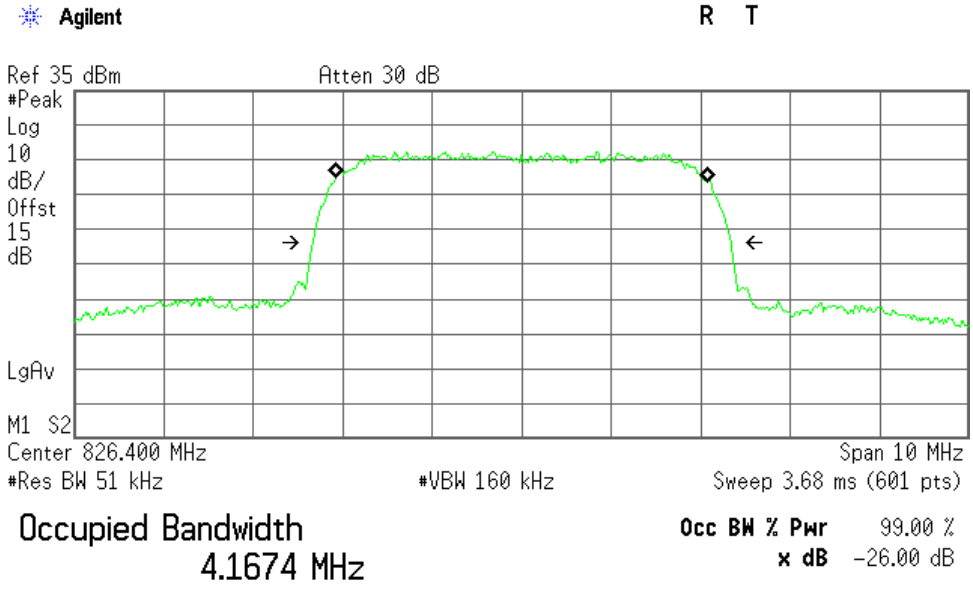


3. Occupied Bandwidth when the TCH number set to 4233:

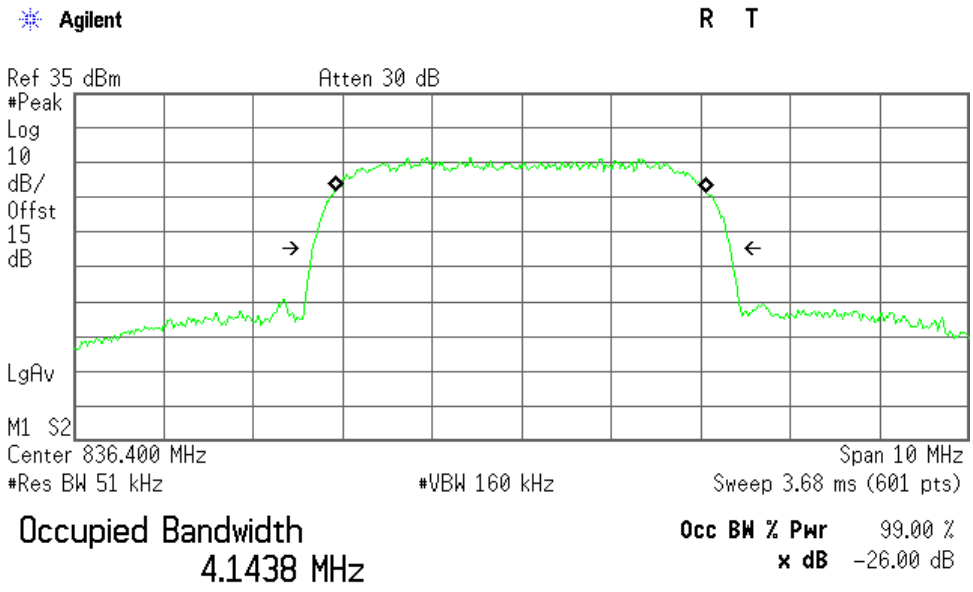


HSDPA Band V

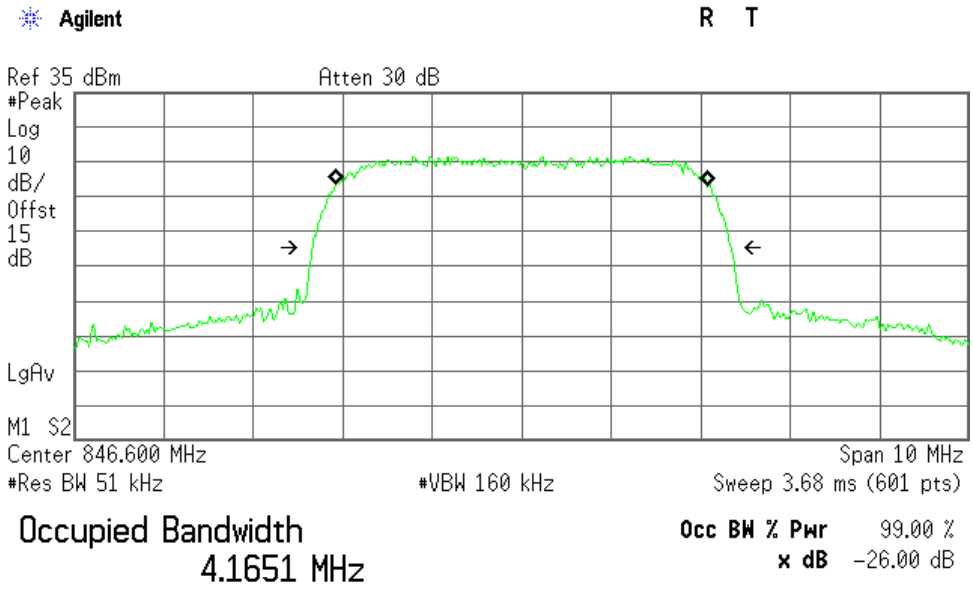
4. Occupied Bandwidth when the TCH number set to 4132:



5. Occupied Bandwidth when the TCH number set to 4182:

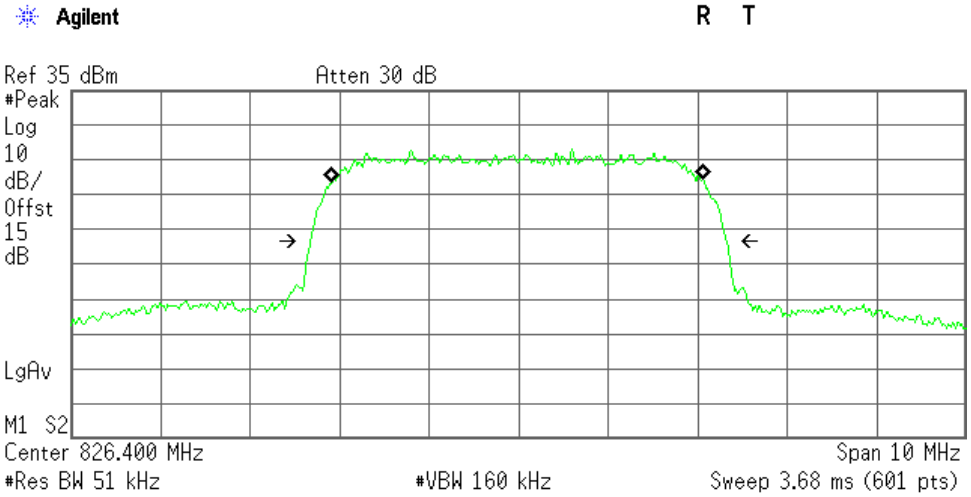


6. Occupied Bandwidth when the TCH number set to 4233:



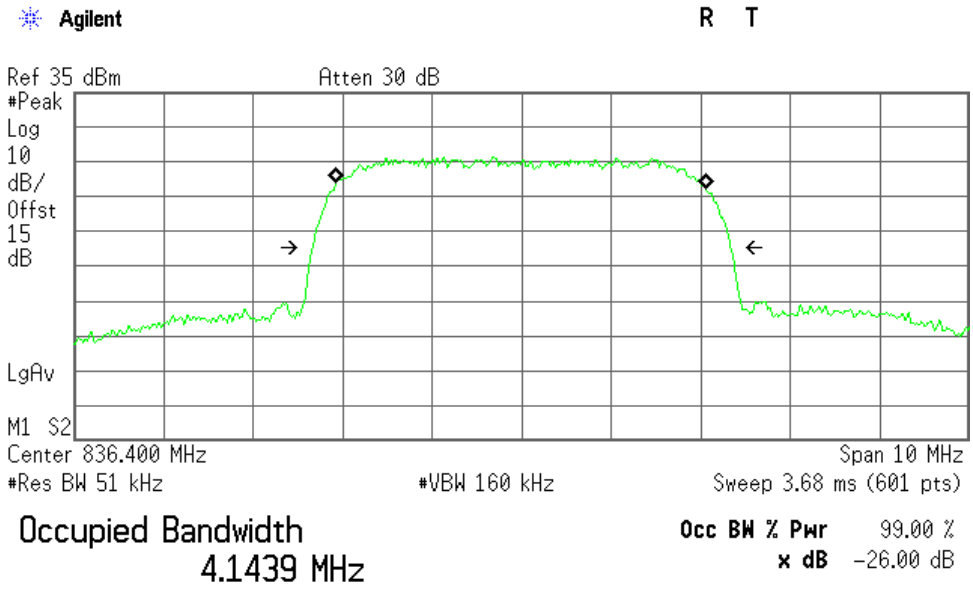
HSUPA Band V

7. Occupied Bandwidth when the TCH number set to 4132:



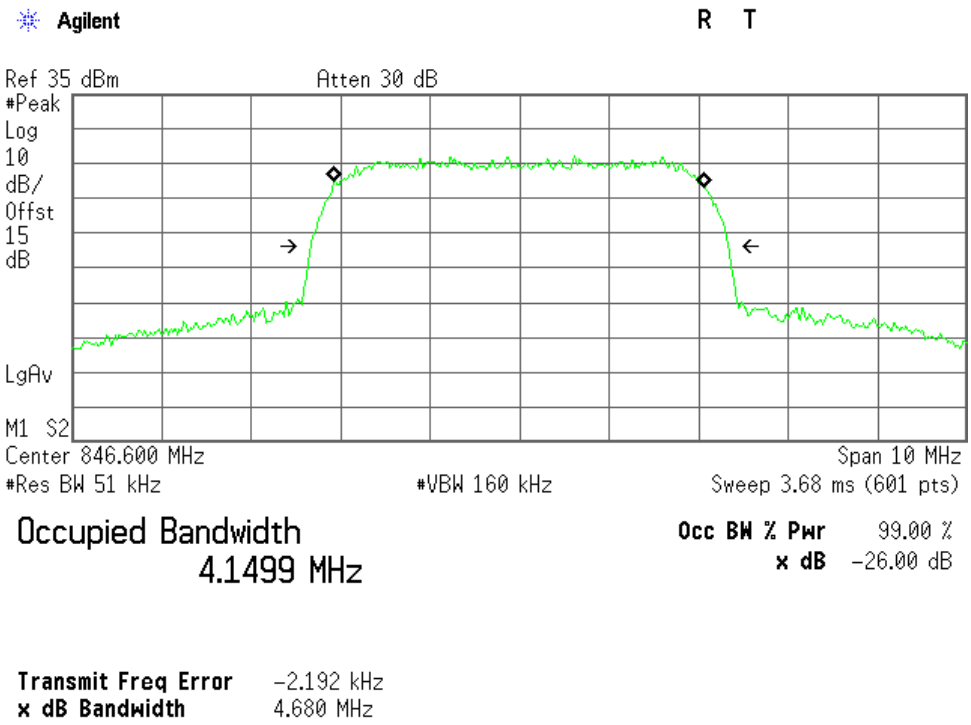
Transmit Freq Error -12.002 kHz
x dB Bandwidth 4.656 MHz

8. Occupied Bandwidth when the TCH number set to 4182:



Transmit Freq Error -12.812 kHz
x dB Bandwidth 4.685 MHz

9. Occupied Bandwidth when the TCH number set to 4233:



9. CONDUCTED SPURIOUS EMISSION

9.1 Requirement

According to FCC §22.917(a), the power of any emission 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. This calculated to be -13dBm.

According to FCC §22.917 (a), in the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. Thus the 26dB emission bandwidth is measurement for showing compliance at the band-edge.

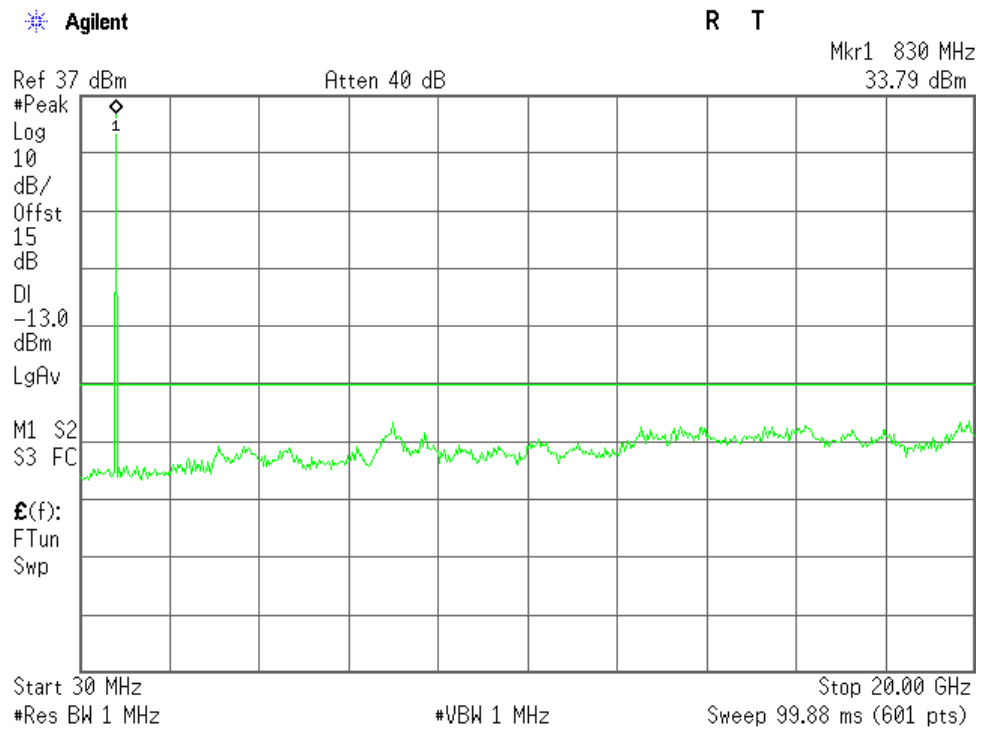
9.2 Test Procedure

1. Perform test system setup as section 5.1.1.
2. Make a limit line whose value is -13dBm on the Spectrum Analyzer.
3. The lowest, middle and the highest channels are selected to perform tests respectively. Set the TCH number to 128 as the lowest channel.
4. Set the RBW of the Spectrum Analyzer to 1MHz, and the measuring frequency range from 9kHz to 10^{th} harmonic of the fundamental frequency (here used 26.5GHz); mark the fundamental frequency and the harmonics thereof; finally record the harmonics and the plot. Note, the measuring frequency range can be divided into several parts to perform tests.
5. In the 1MHz bands immediately outside and adjacent to the frequency black, the RBW of the Spectrum Analyzer was set to at least one percent of the emission bandwidth of the fundamental emission of the transmitter, e.g. for GSM modulated signal (here used): RBW=3kHz, for WCDMA modulated signal: RBW=30kHz.
6. Set the TCH number to 190 as the middle channel, then repeat step 4.
7. Set the TCH number to 251 as the highest channel, then repeat step 4 and 5.
8. For WCDMA, Set the TCH number to 4132, 4182 and 4233 as the low, middle, high channel, then repeat step 4 and 5.

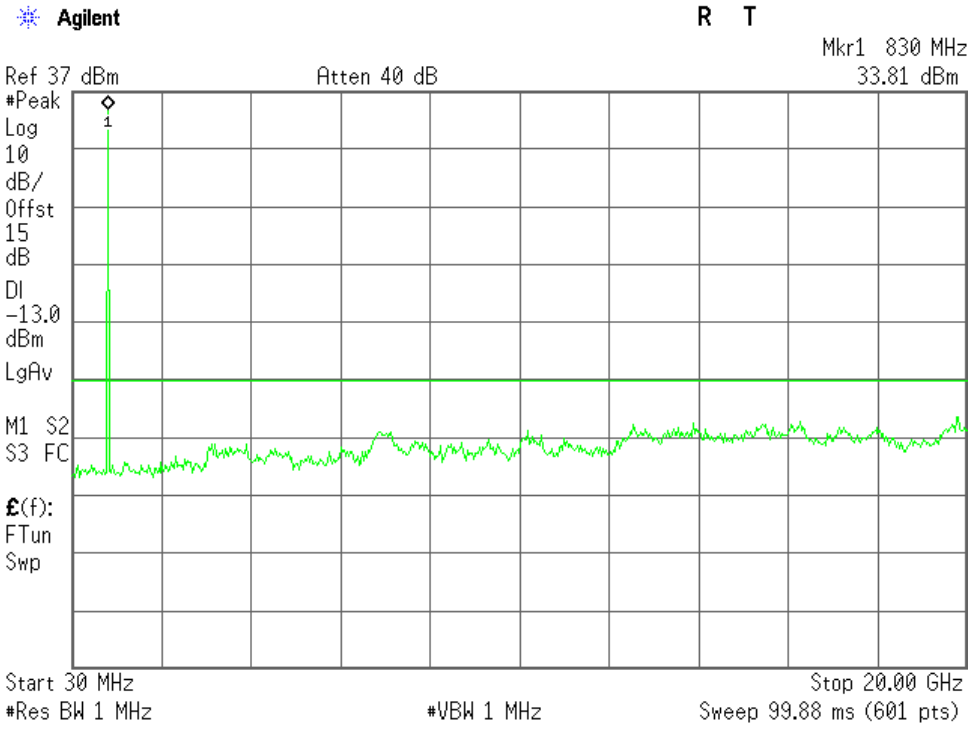
9.3 Test Result

1. GSM850 Band:

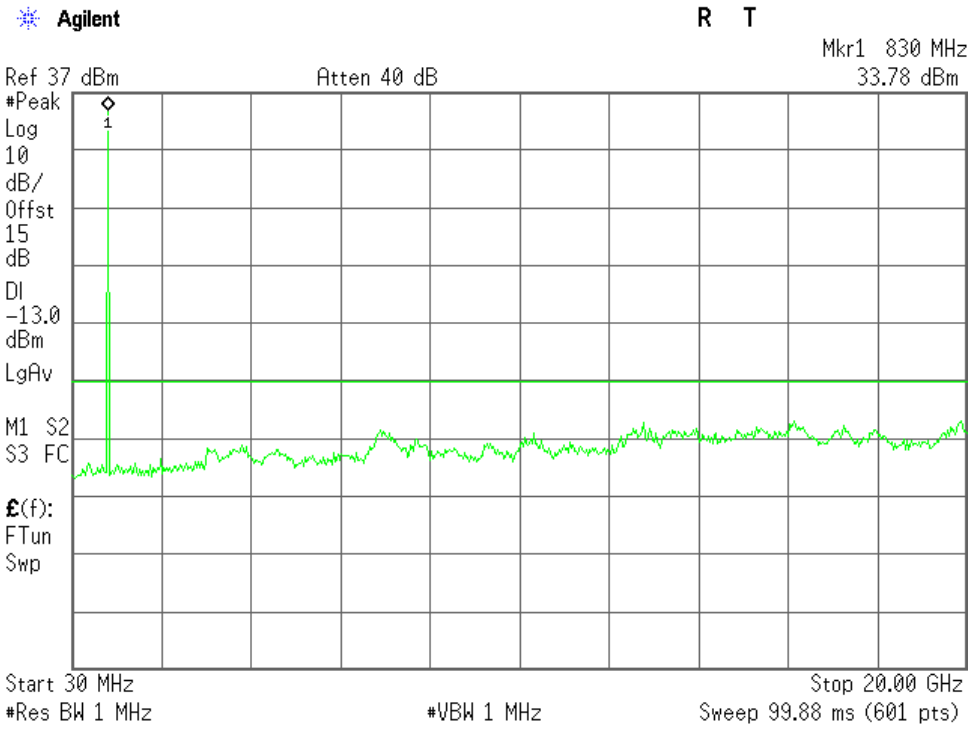
Plot when the GSM850 TCH number set to 128:



Plot when the GSM850 TCH number set to 190:

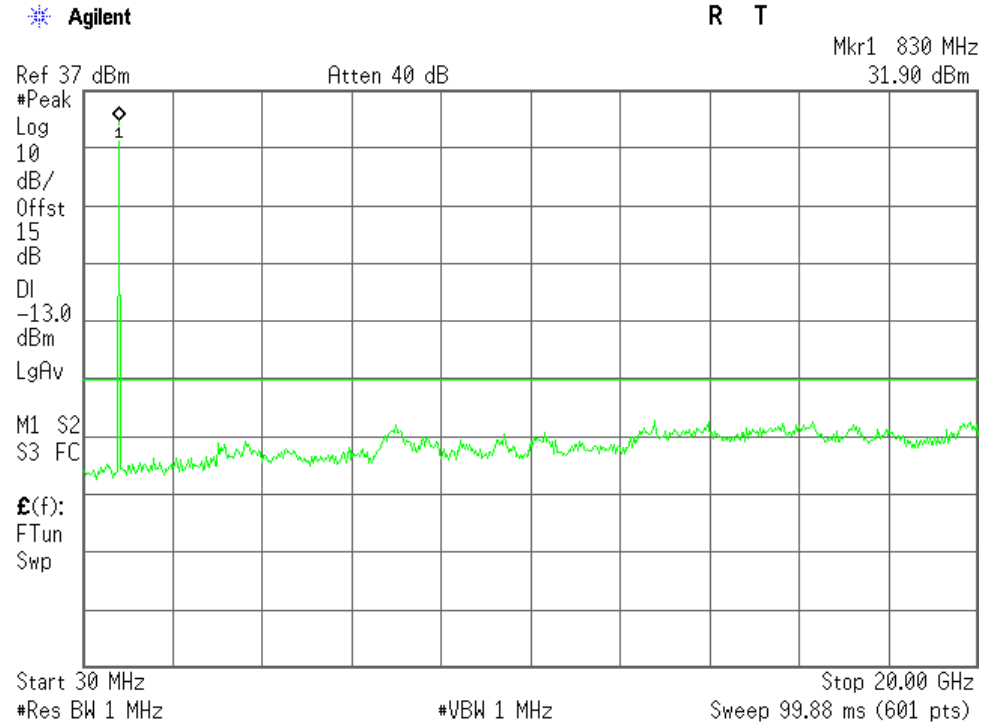


Plot when the GSM850 TCH number set to 251:

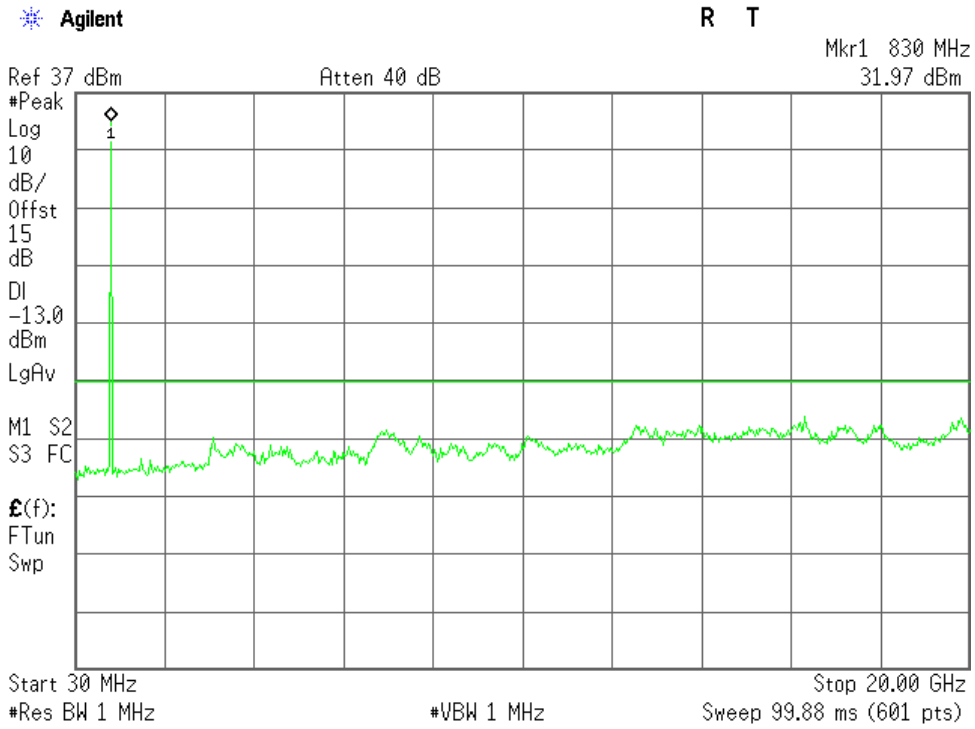


2.GSM850 (GPRS class 8) Band:

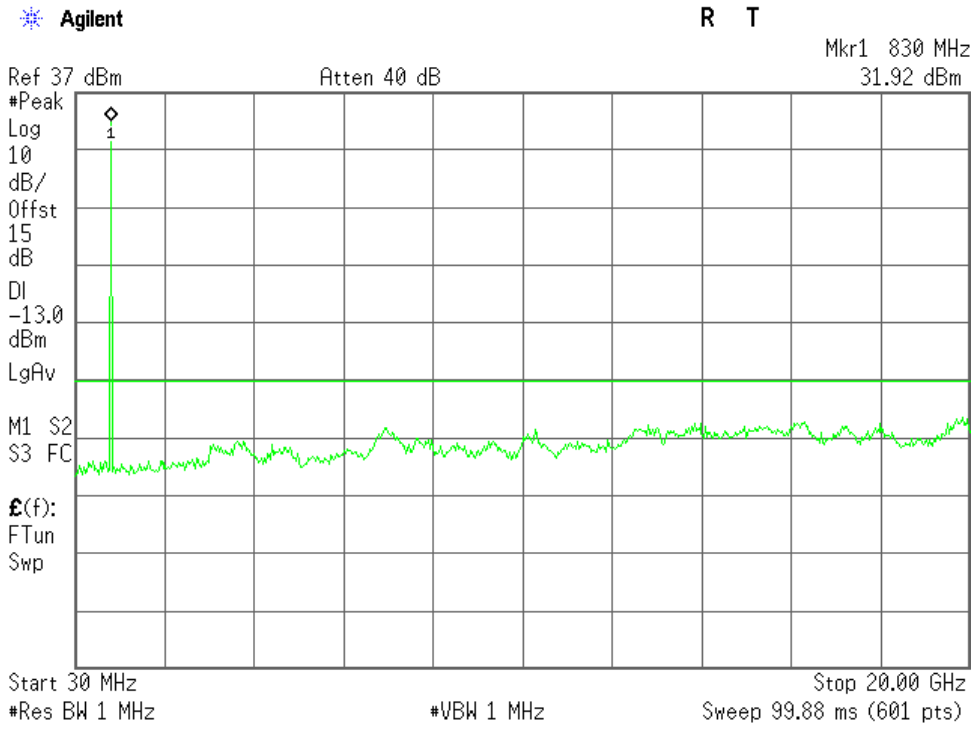
Plot when the GSM850 TCH number set to 128:



Plot when the GSM850 TCH number set to 190:

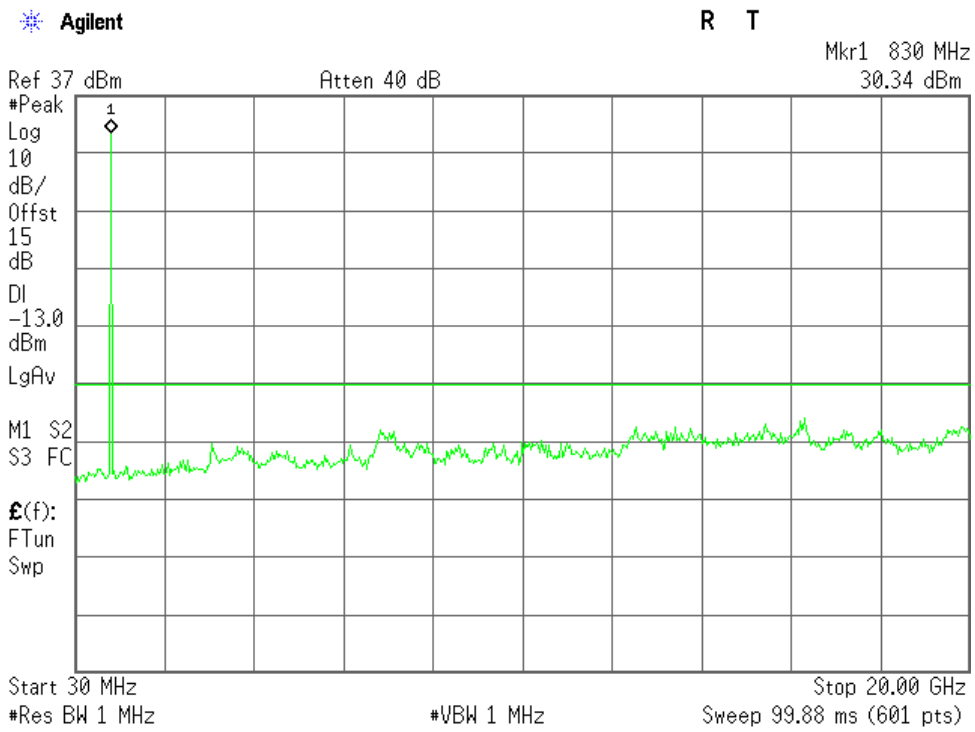


Plot when the GSM850 TCH number set to 251:

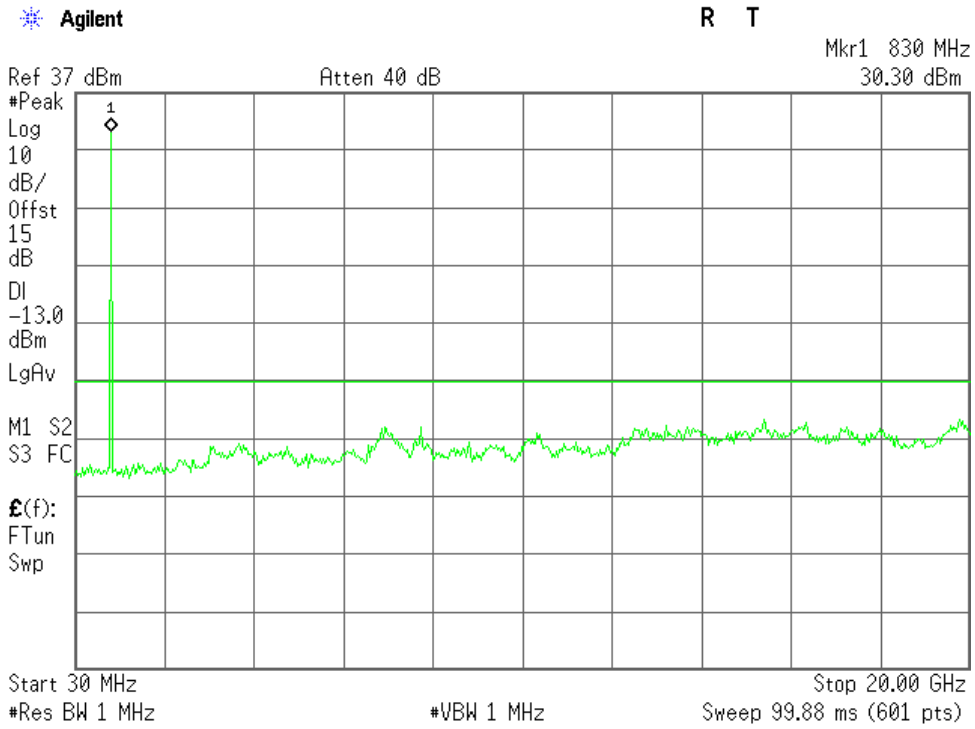


3.GSM850 (EDGE class 8) Band:

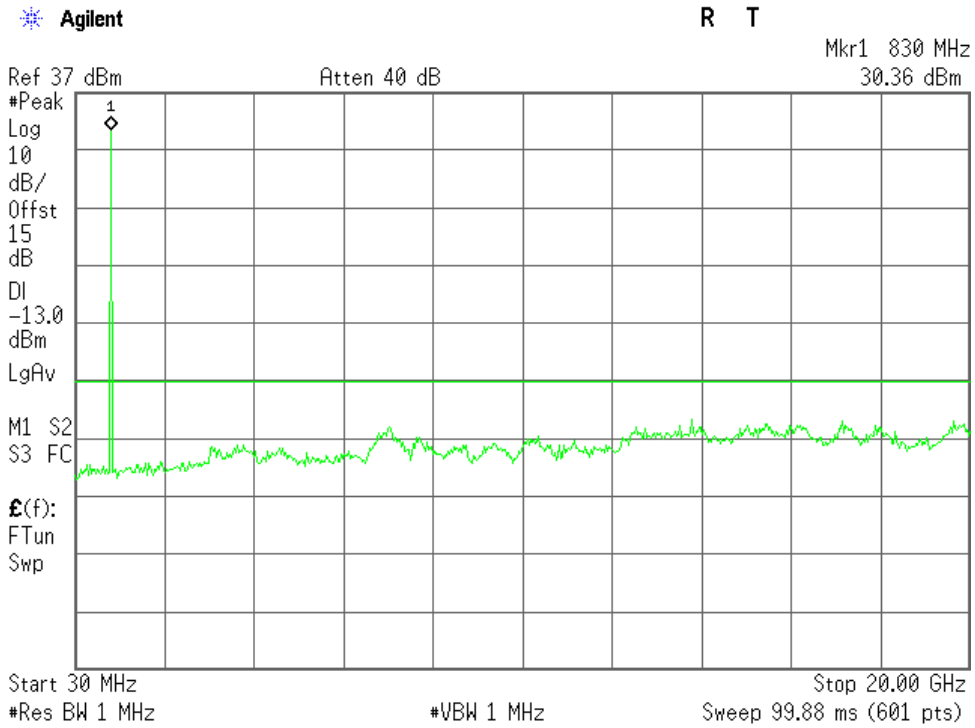
Plot when the GSM850 TCH number set to 128:



Plot when the GSM850 TCH number set to 190:



Plot when the GSM850 TCH number set to 251:

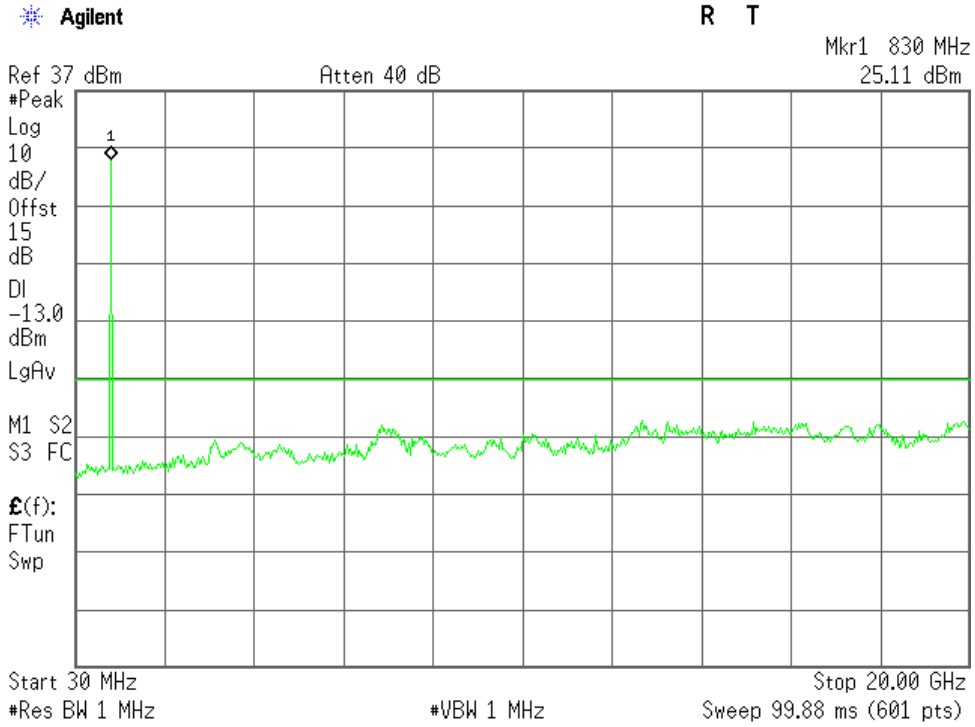


NOTE:

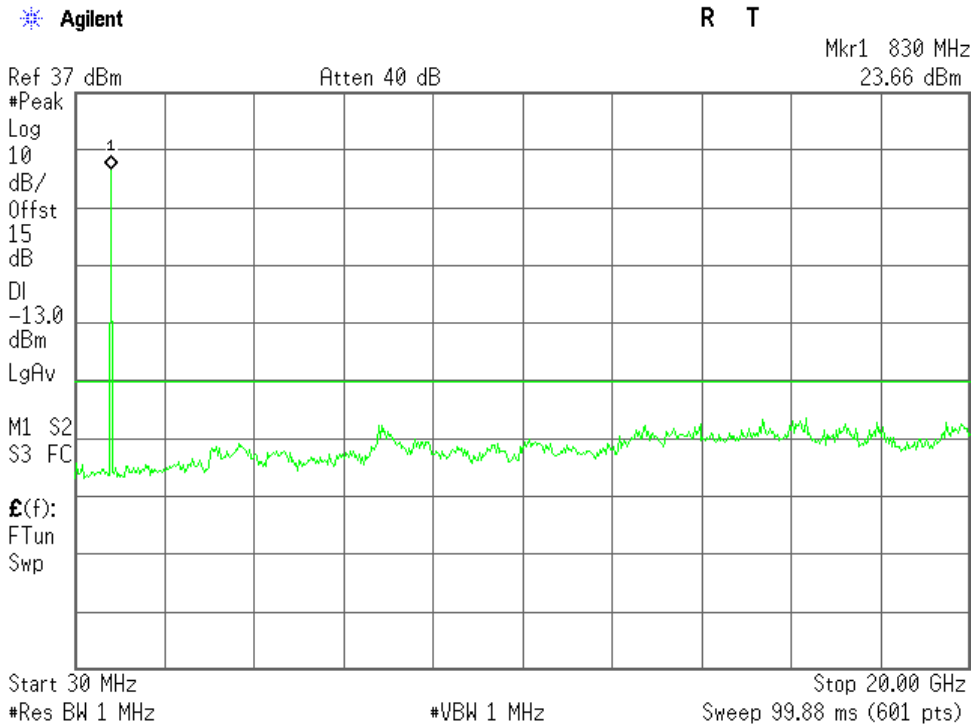
1.The marker points are the Mobile Phone and/or System Simulator transmitting frequencies which should be ignored.

4.WCDMA Band V (RMC 12.2Kbps):

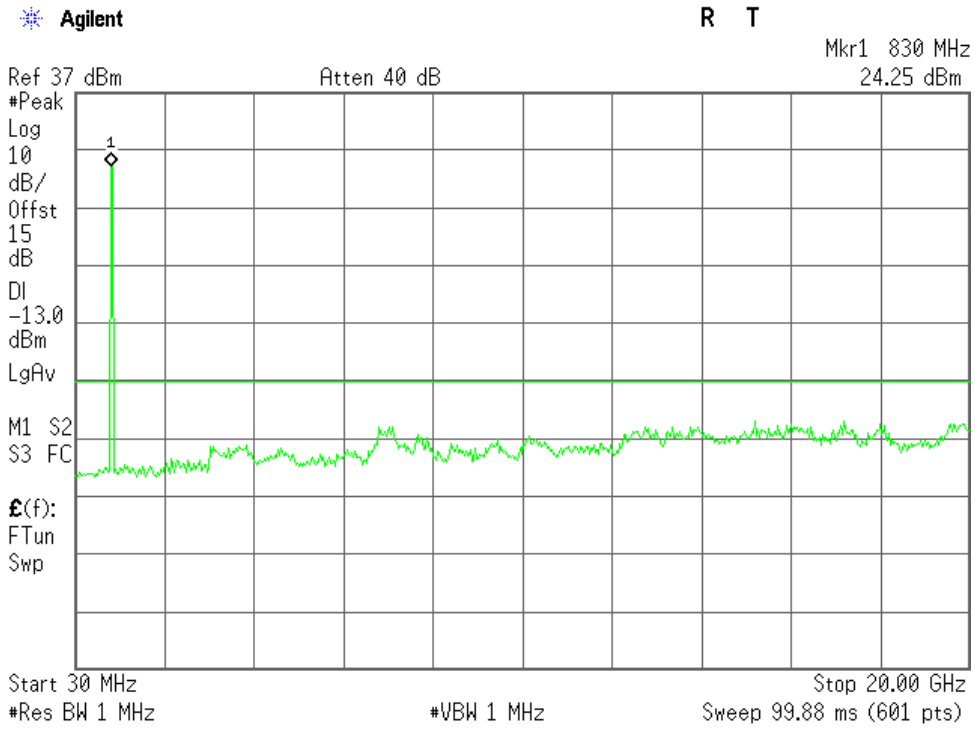
Plot when the WCDMA Band V TCH number set to 4132:



Plot when the WCDMA Band V TCH number set to 4183

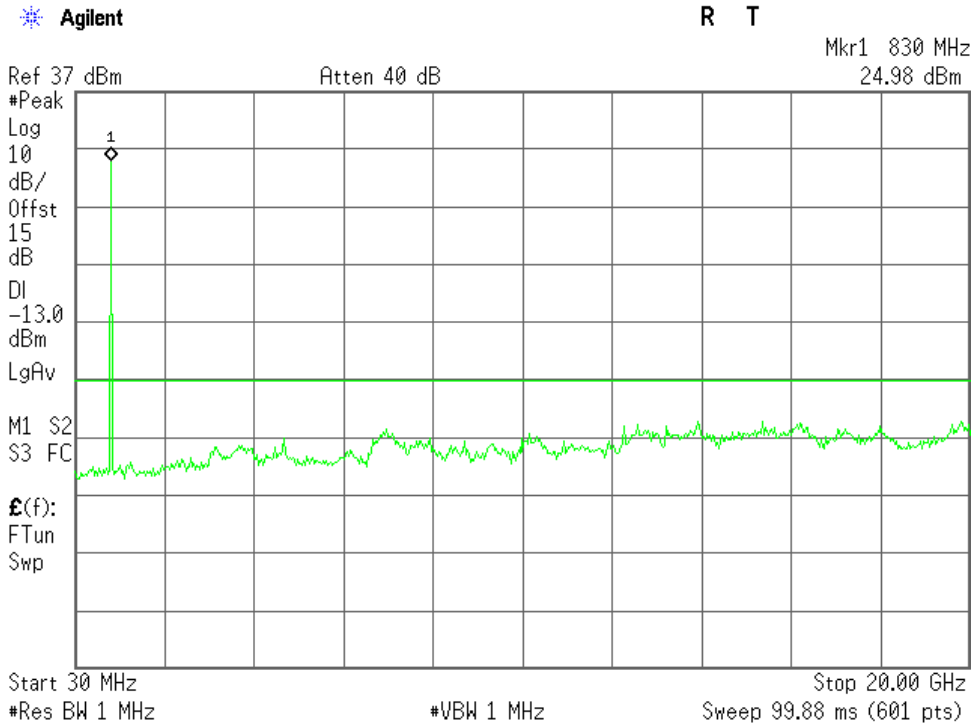


Plot when the WCDMA Band V TCH number set to 4233:

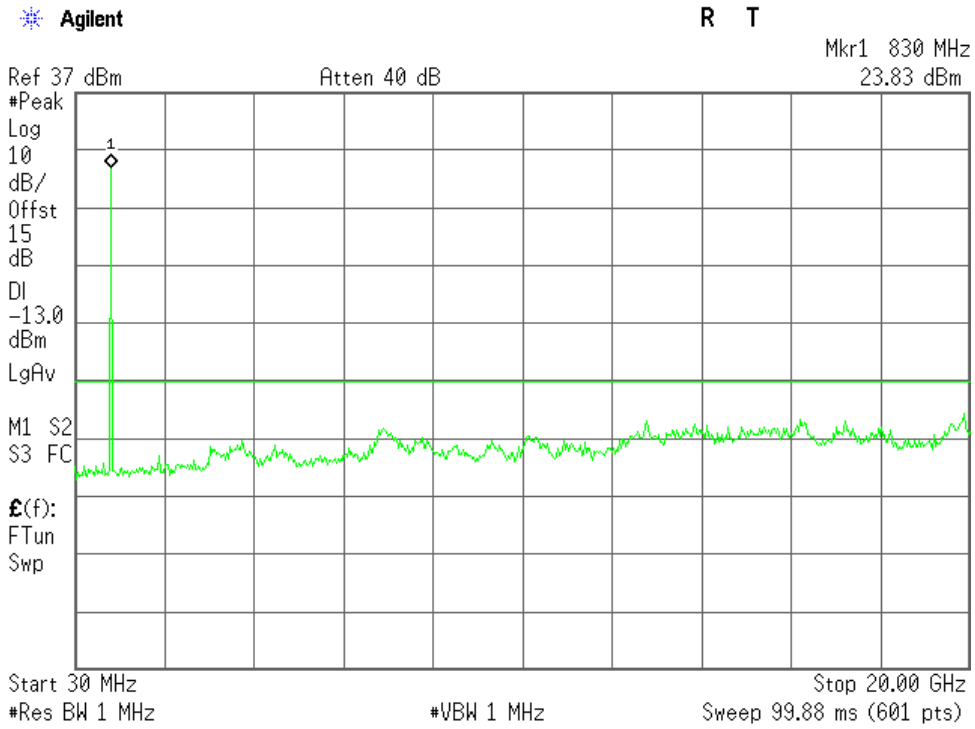


5.HSDPA Band V:

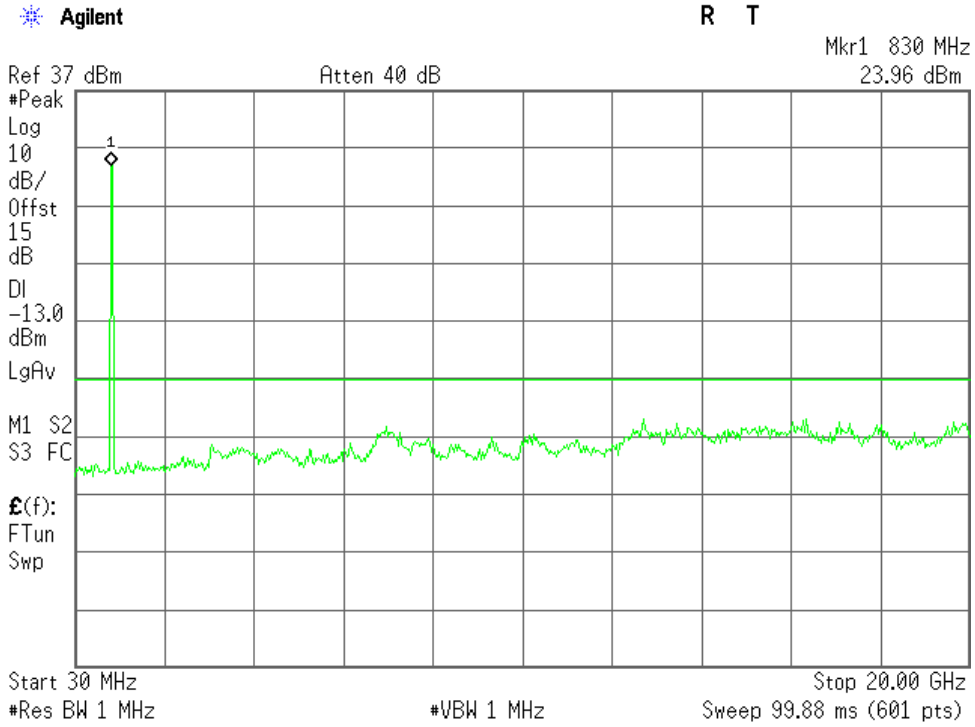
Plot when the HSDPA Band V TCH number set to 4132:



Plot when the HSDPA Band V TCH number set to 4183

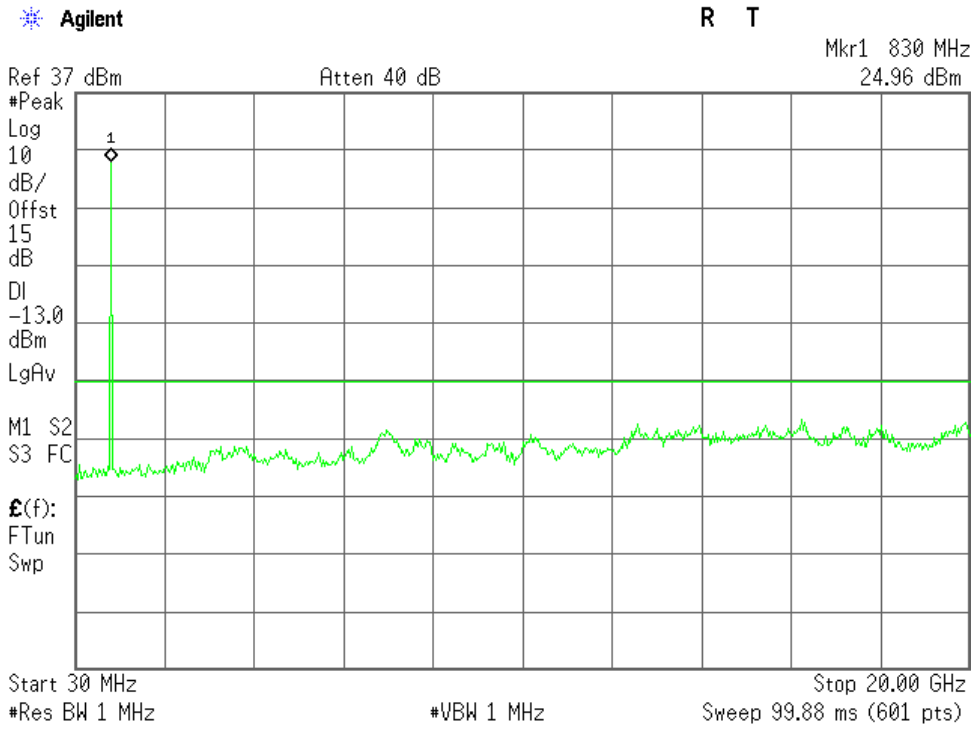


Plot when the HSDPA Band V TCH number set to 4233:

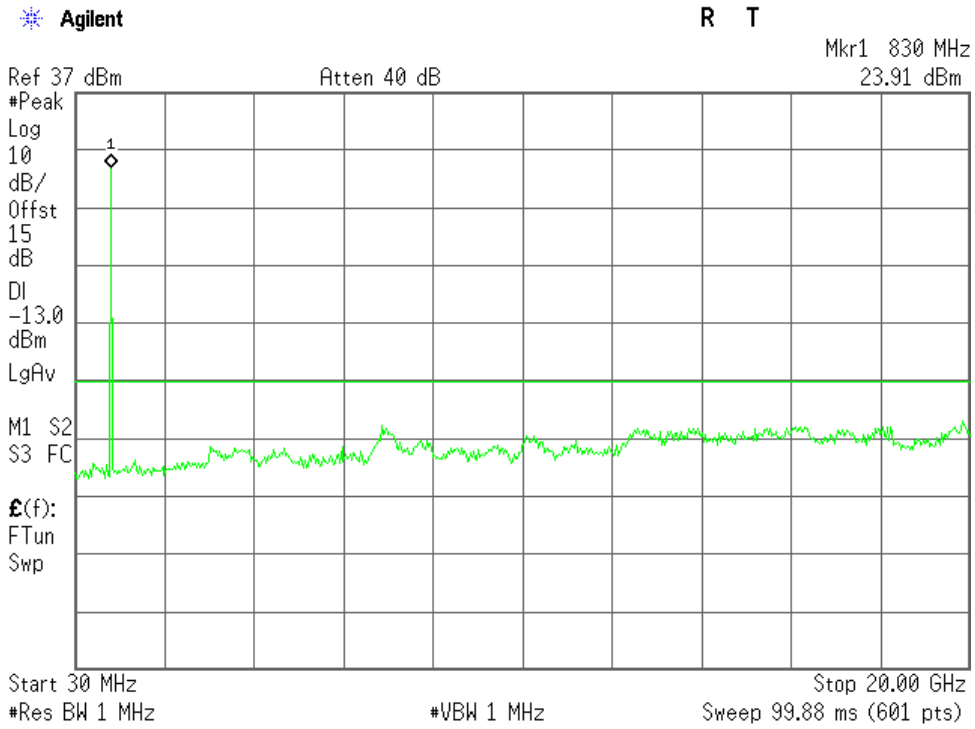


6.HSUPA Band V:

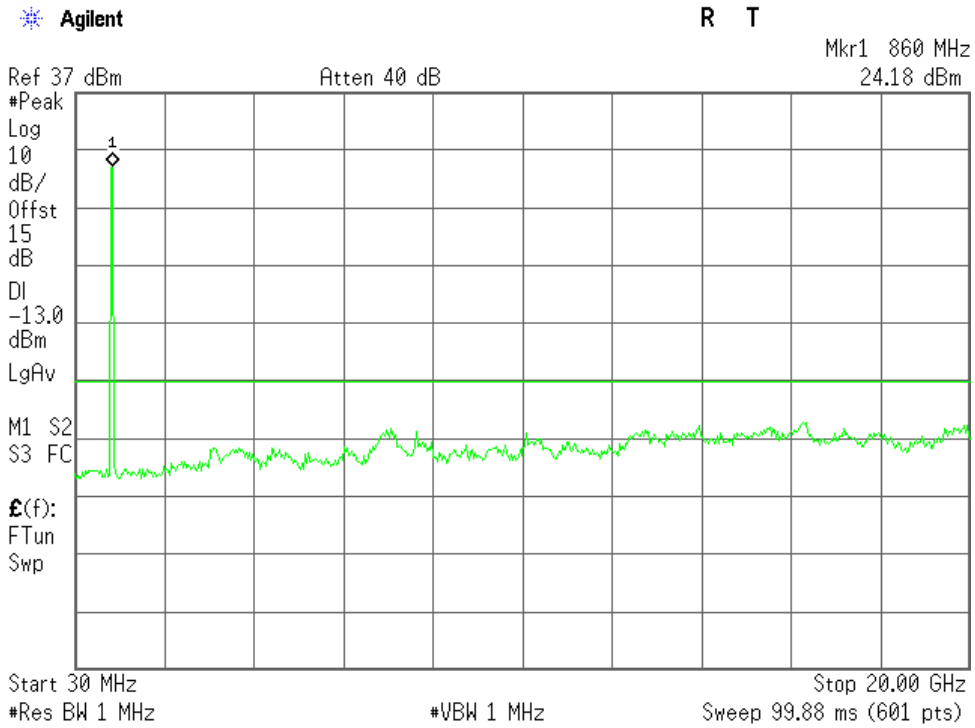
Plot when the HSUPA Band V TCH number set to 4132:



Plot when the HSUPA Band V TCH number set to 4183



Plot when the HSUPA Band V TCH number set to 4233:



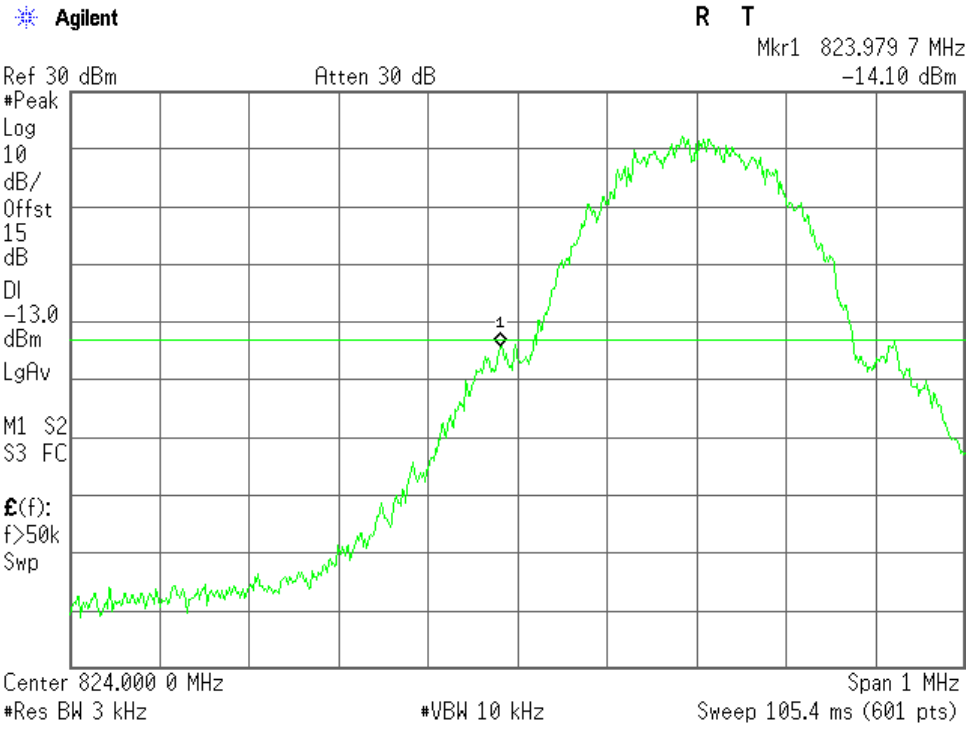
NOTE:

1.The marker points are the Mobile Phone and/or System Simulator transmitting frequencies which should be ignored.

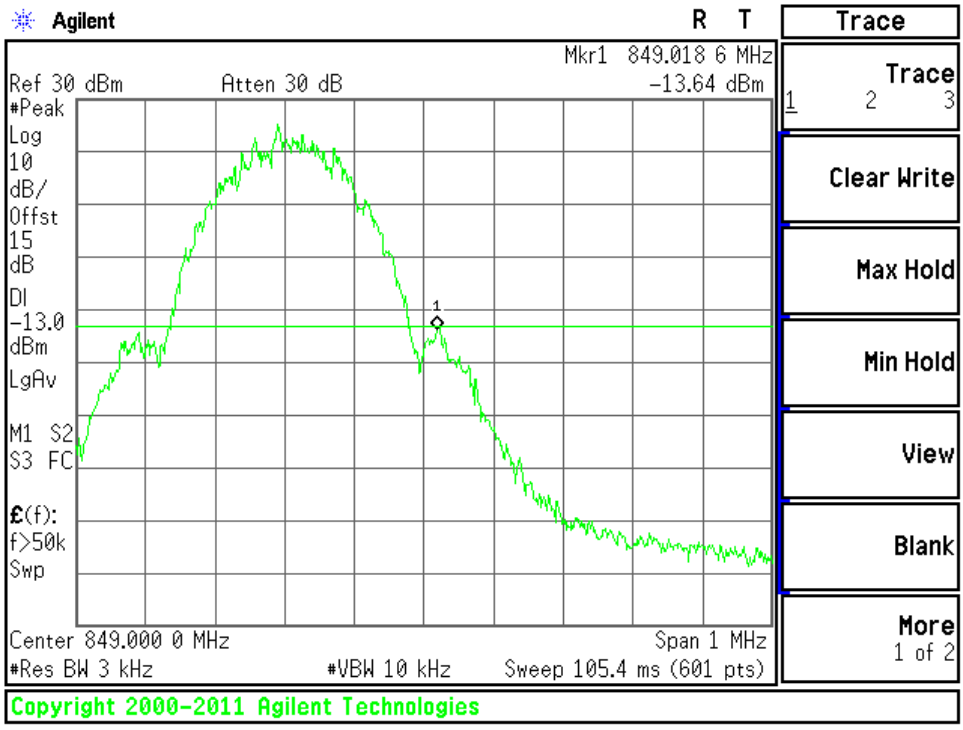
7. Plot for Band-edge

7.1 GSM850 Band

Plot when the GSM850 TCH number set to 128:

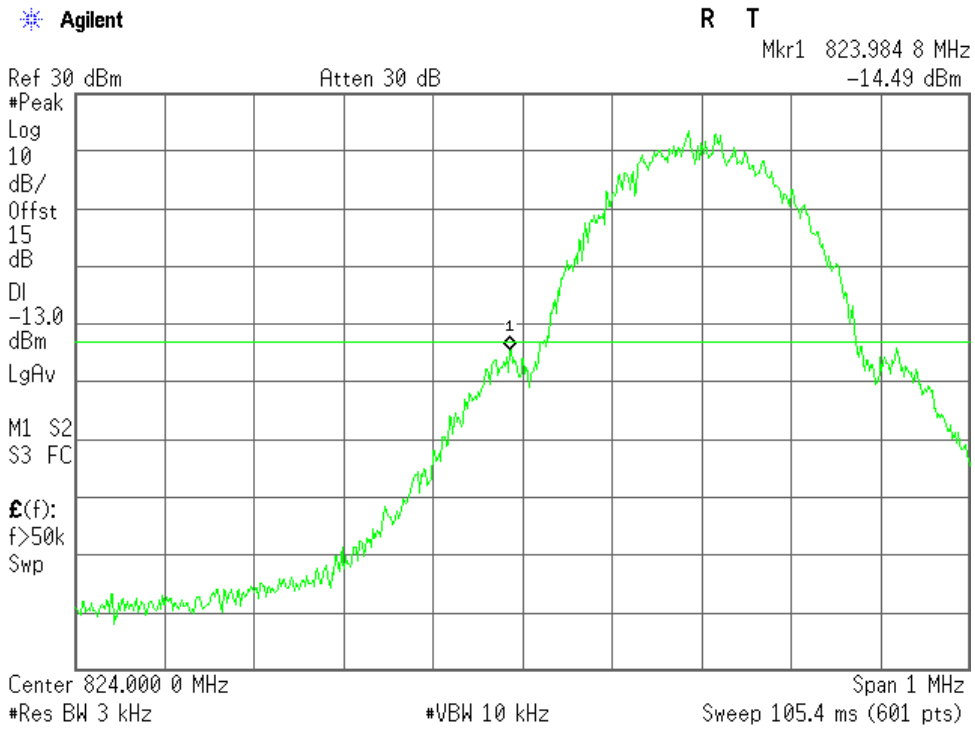


Plot when the GSM850 TCH number set to 251:

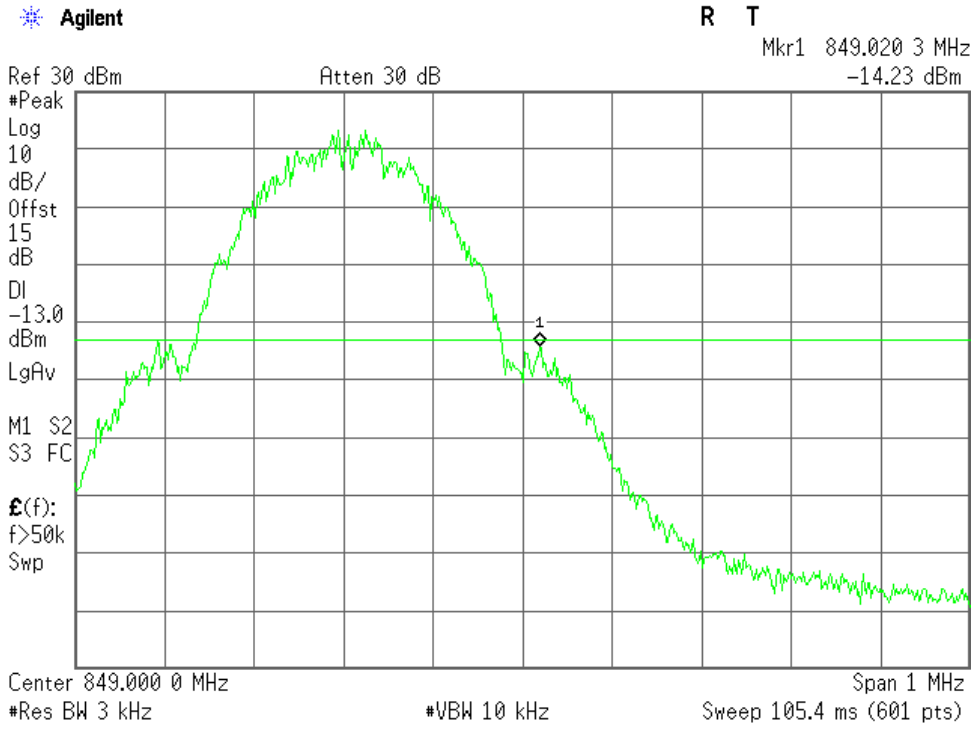


7.2 GSM 850(GPRS class 8) Band

Plot when the GSM850 TCH number set to 128:

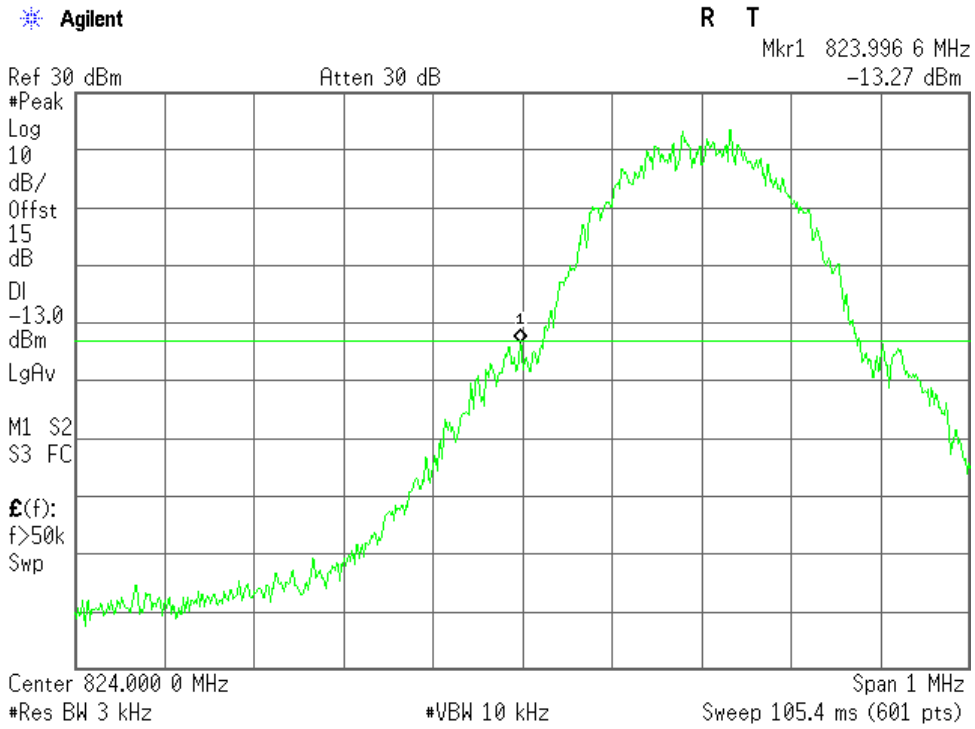


Plot when the GSM850 TCH number set to 251:

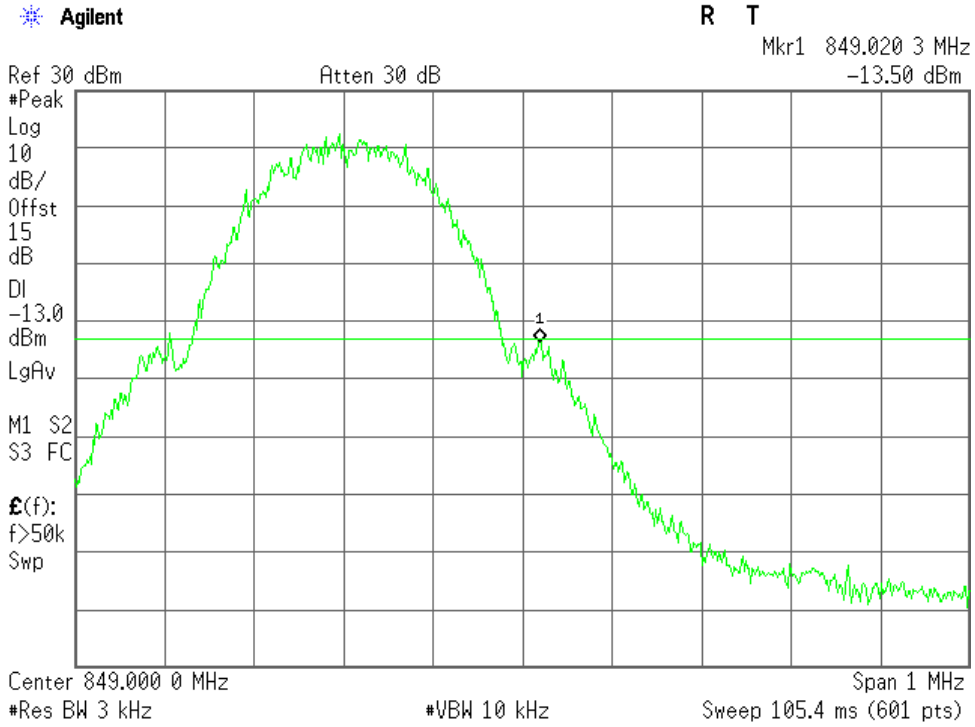


7.3 GSM 850(EDGE class 8) Band

Plot when the GSM850 TCH number set to 128:

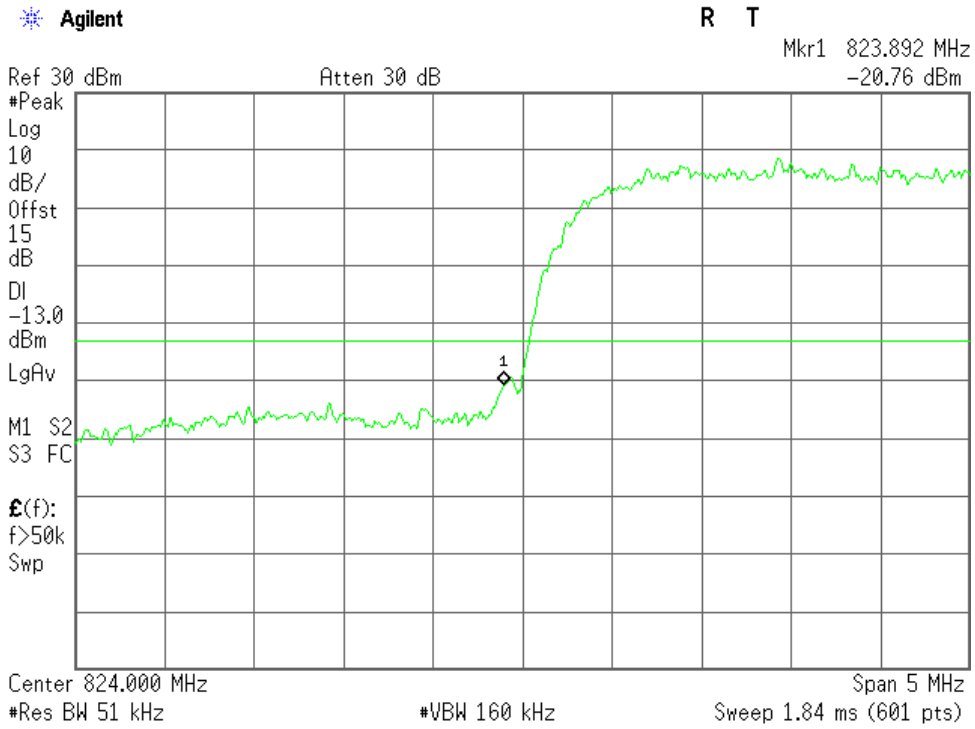


Plot when the GSM850 TCH number set to 251:

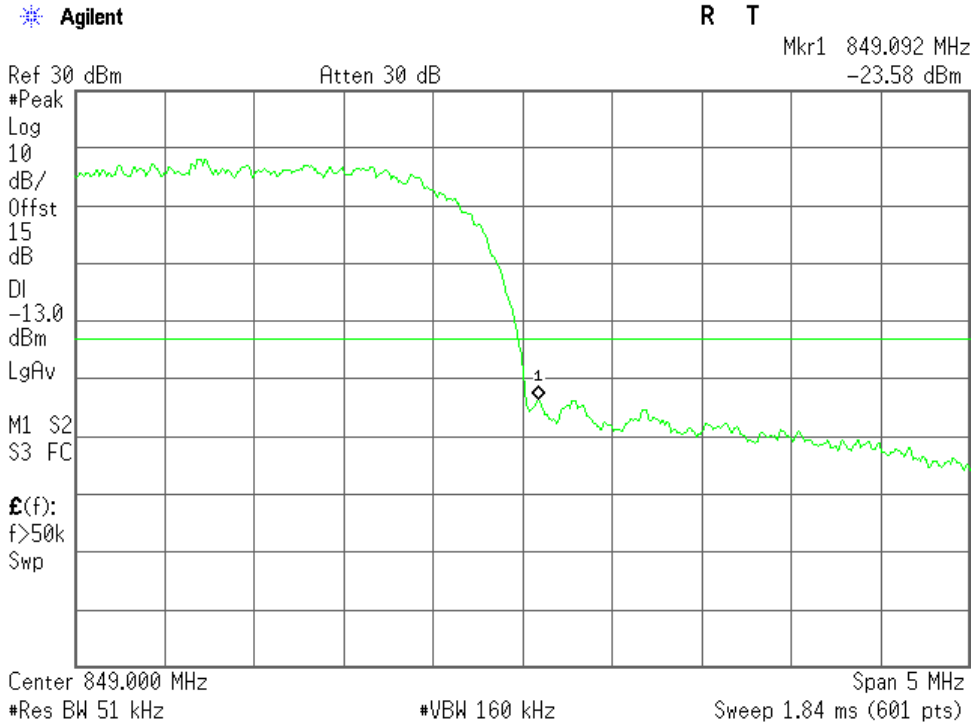


7.3 WCDMA Band V (RMC 12.2Kbps):

Plot when the WCDMA Band V TCH number set to 4132:

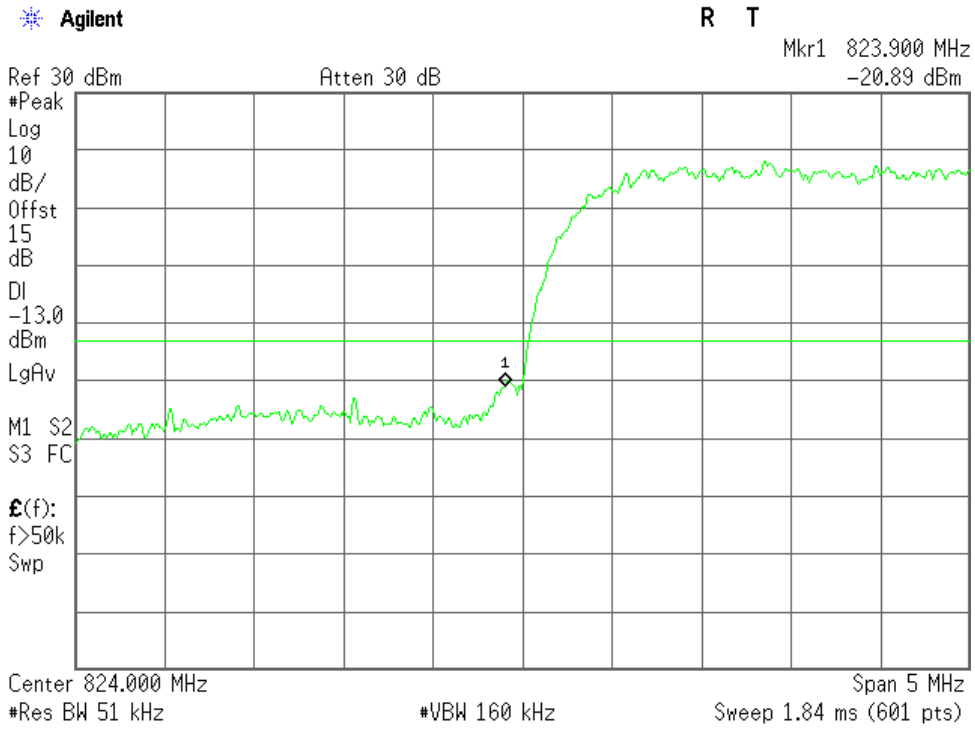


Plot when the WCDMA Band V TCH number set to 4233:

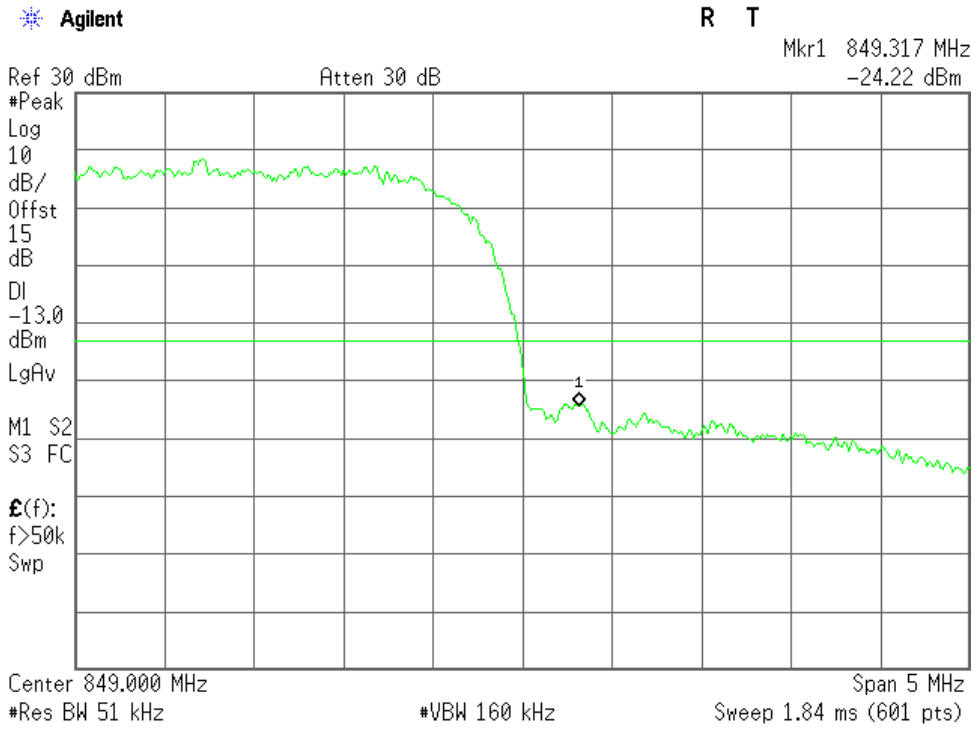


7.4 HSDPA Band V

Plot when the WCDMA Band V TCH number set to 4132:

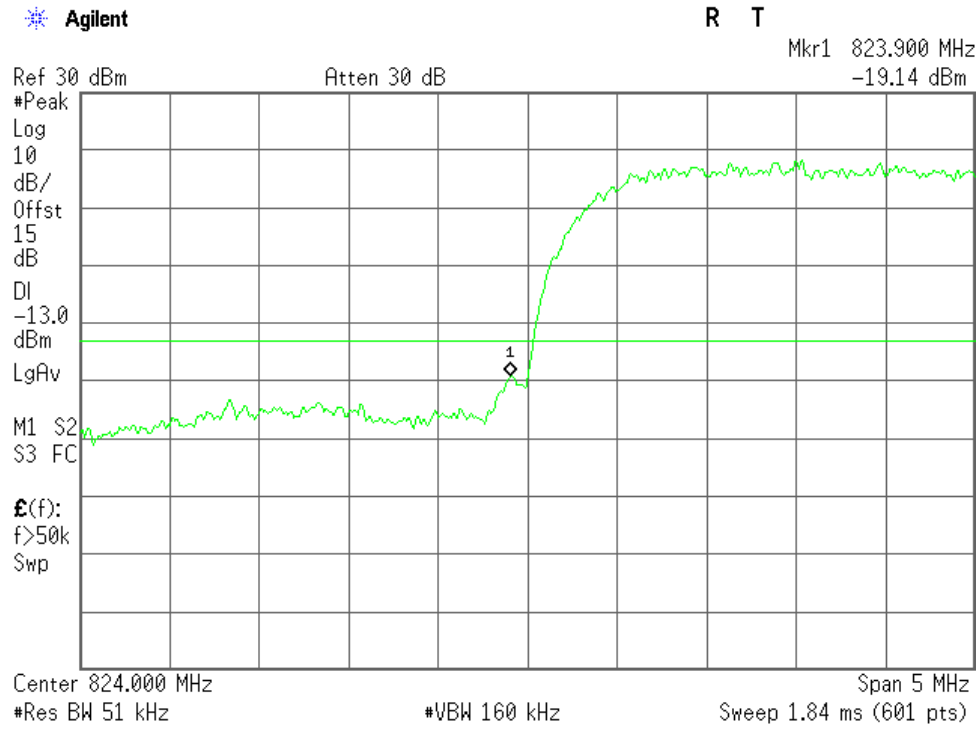


Plot when the WCDMA Band V TCH number set to 4233:

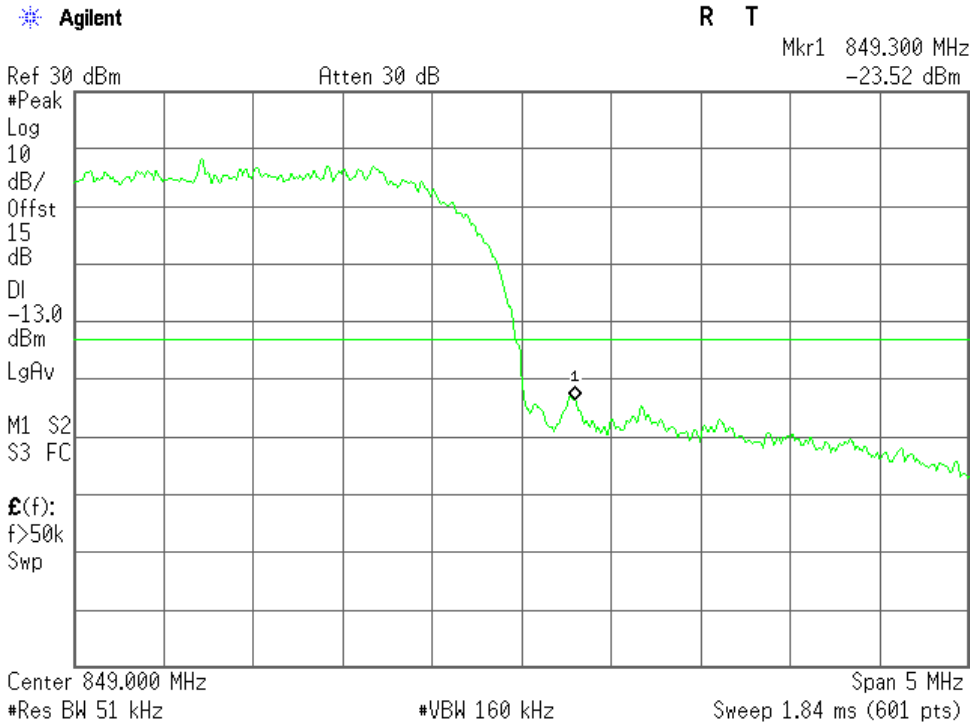


7.4 HSUPA Band V

Plot when the WCDMA Band V TCH number set to 4132:



Plot when the WCDMA Band V TCH number set to 4233:



10. Transmitter Radiated Power (EIRP/ERP)

10.1 Requirement

According to FCC §22.913, the ERP of Cellular mobile transmitters must not exceed 7 Watts (38.5dBm).

10.2 Test Procedure

1. Perform test system setup as section 5.1.1.
2. The resolution bandwidth of the Spectrum Analyzer is set to be comparable to the emission bandwidth of the transmitter, e.g. for GSM modulated signal (here used): RBW=VBW=1MHz, for CDMA modulated signal: RBW=VBW=3MHz.
3. The low, middle and the high channels are selected to perform tests respectively. Set the TCH number to 128 as the low channel.
4. Employ the bi-log Test Antenna as the test system receiving antenna; set the polarization of the Test Antenna to be the same as that of the EUT transmitting antenna.
5. Set the frequency range of the Spectrum Analyzer suitably to capture the waveform; actuate the Turn Table to turn from 0 degrees to 360 degrees to find the maximum reading via the Spectrum Analyzer, mark the peak; finally record the peak and the plot.
6. Set the TCH number to 190 as the middle channel, then repeat step 5.
7. Set the TCH number to 251 as the high channel, then repeat step 5.
8. For WCDMA, Set the TCH number to 4132, 4182 and 4233 as the low, middle, high channel, then repeat step 4.

10.3 Test Result

Band	Channel	Frequency (MHz)	Measured ERP	Antenna	Limit ERP	Result
			dBm	Pol.	DBm	
GSM 850	128	824.20	31.42	V	< 38.5	PASS
			31.19	H	< 38.5	PASS
	190	836.60	31.26	V	< 38.5	PASS
			30.45	H	< 38.5	PASS
	251	848.80	31.78	V	< 38.5	PASS
			31.54	H	< 38.5	PASS
GSM 850 (GPRS class 8)	128	824.20	31.13	V	< 38.5	PASS
			30.69	H	< 38.5	PASS
	190	836.60	31.09	V	< 38.5	PASS
			30.78	H	< 38.5	PASS
	251	848.80	31.34	V	< 38.5	PASS
			30.98	H	< 38.5	PASS
GSM 850 (EDGE class 8)	128	824.20	30.86	V	< 38.5	PASS
			29.57	H	< 38.5	PASS
	190	836.60	31.15	V	< 38.5	PASS
			30.29	H	< 38.5	PASS
	251	848.80	31.22	V	< 38.5	PASS
			30.76	H	< 38.5	PASS
WCDMA Band V (RMC 12.2Kbps)	4132	826.4	24.46	V	< 38.5	PASS
			22.25	H	< 38.5	PASS
	4182	836.4	24.05	V	< 38.5	PASS
			22.54	H	< 38.5	PASS
	4233	846.6	23.86	V	< 38.5	PASS
			22.11	H	< 38.5	PASS
HSDPA Band V	4132	826.4	23.45	V	< 38.5	PASS
			21.48	H	< 38.5	PASS
	4182	836.4	23.26	V	< 38.5	PASS
			21.02	H	< 38.5	PASS
	4233	846.6	23.09	V	< 38.5	PASS
			20.87	H	< 38.5	PASS
HSUPA Band V	4132	826.4	21.89	V	< 38.5	PASS
			19.46	H	< 38.5	PASS
	4182	836.4	21.65	V	< 38.5	PASS
			19.38	H	< 38.5	PASS
	4233	846.6	21.59	V	< 38.5	PASS
			19.24	H	< 38.5	PASS

11. Radiated Spurious Emission

11.1 Requirement

According to FCC §22.917(a), the power of any emission 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. This calculated to be -13dBm.

11.2 Test Procedure

1. Perform test system setup as section 5.1.2.
2. Make a limit line whose value is -13dBm on the Spectrum Analyzer, and set the RBW of the Spectrum Analyzer to 1MHz.
3. The low, middle and the high channels are selected to perform tests respectively. Set the TCH number to 128 as the low channel.
4. Employ the bi-log Test Antenna as the test system receiving antenna and set the frequency range of the Spectrum Analyzer from 30MHz to 3GHz.
5. The measurement is performed with the Test Antenna at both horizontal and vertical polarization respectively. Set the polarization of the Test Antenna to be horizontal.
6. Actuate the Turn Table to turn from 0 degrees to 360 degrees to find the maximum reading via the Spectrum Analyzer, mark the fundamental frequency and the harmonics thereof, after then record the harmonics and the plot.
7. Set the polarization of the Test Antenna to be vertical, then repeat step 6.
8. Employ the horn Test Antenna as the test system receiving antenna and set the frequency range of the Spectrum Analyzer from 3GHz to 10th harmonic of the fundamental frequency (here used 10GHz), then repeat step 5 to 7.
9. Set the TCH number to 190 as the middle channel, then repeat step 4 to 8.
10. Set the TCH number to 251 as the high channel, then repeat step 4 to 8.
11. For WCDMA, Set the TCH number to 4132, 4183 and 4233 as the low, middle, high channel, then repeat step 4 to 8.

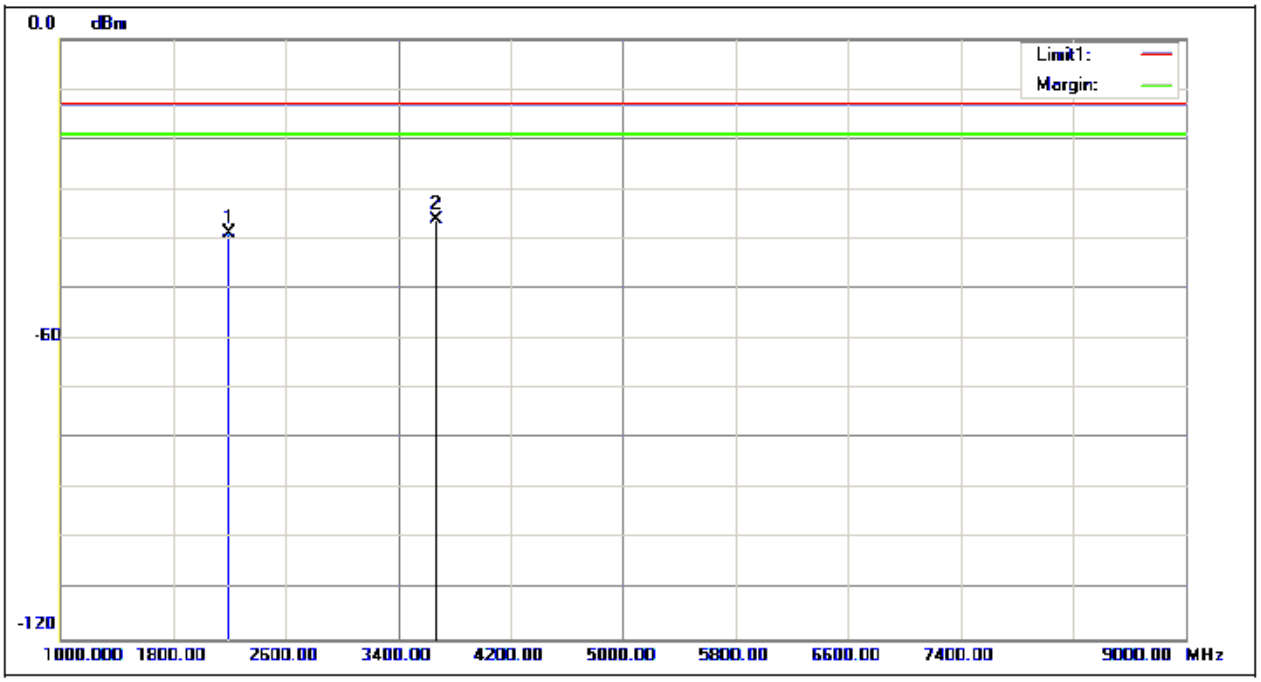
11.3 Test Result

Form 9KHz to 1000MHz:

The low frequency, which started from 9 kHz to 1000MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

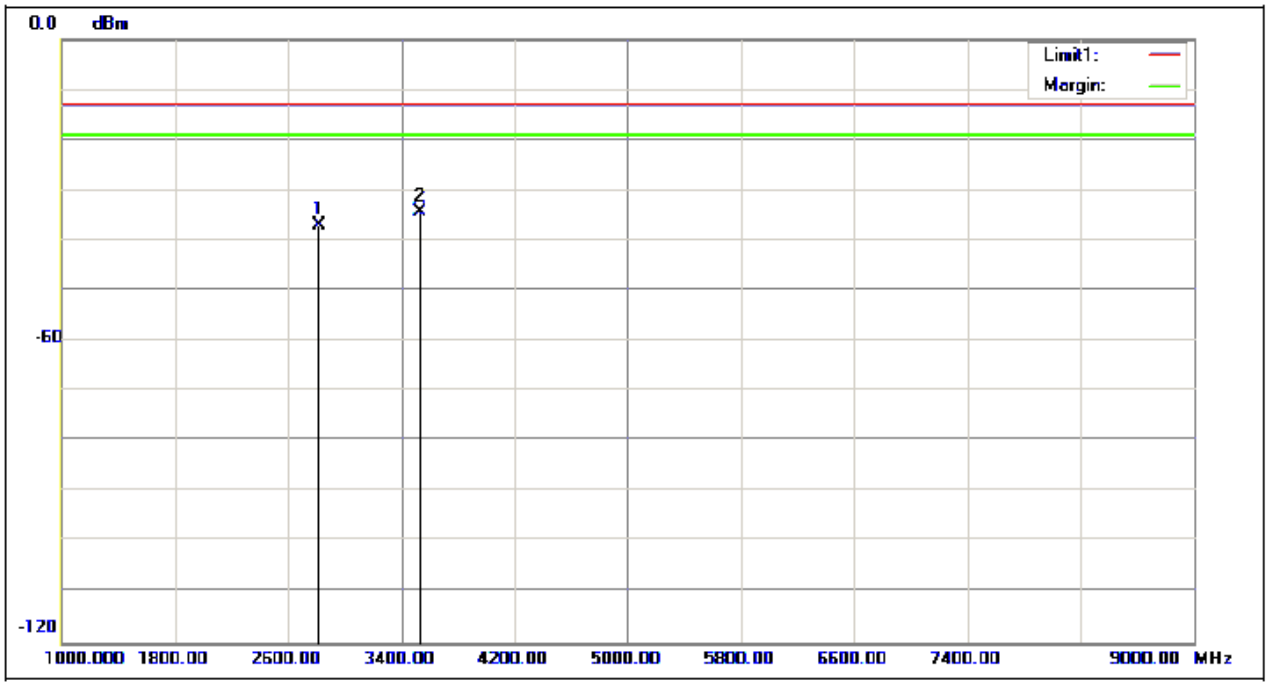
Form 1000MHz to 9000MHz:

1. GSM850 Band



No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2205.128	-41.35	2.39	-38.96	-13.00	-25.96	250	294	peak
2	3666.667	-41.54	5.26	-36.28	-13.00	-23.28	250	302	peak

Channel 251_Horizontal

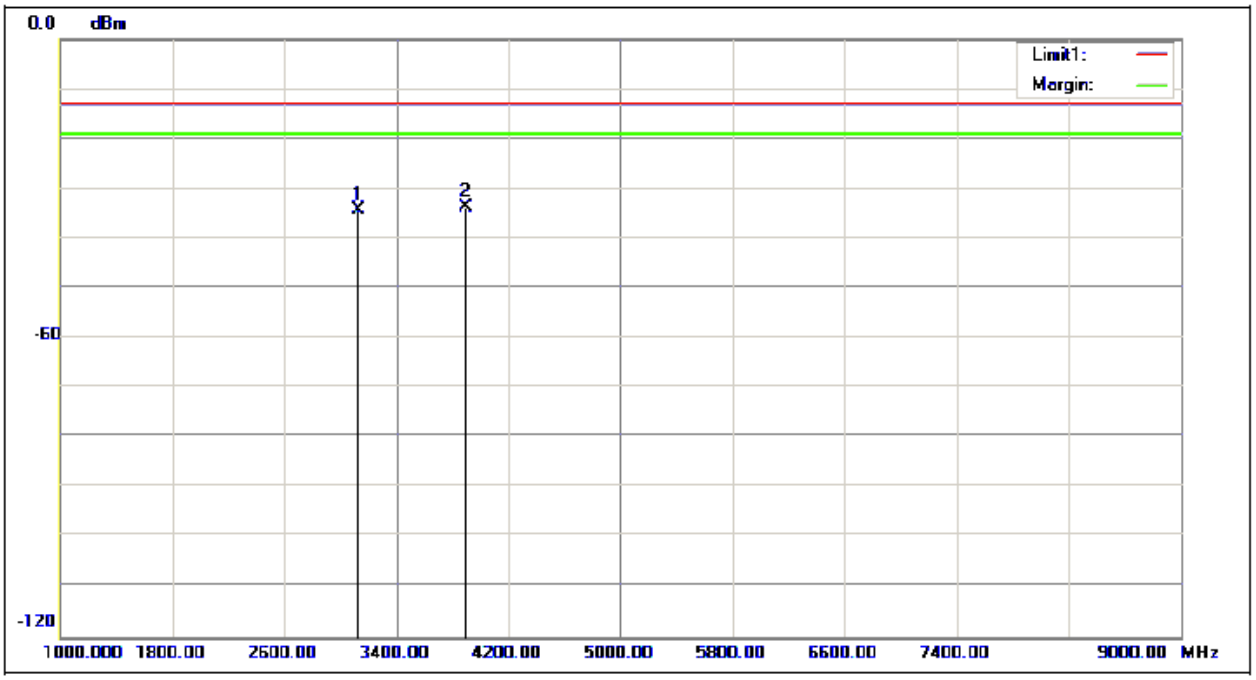


No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBm)	Factor(dB)	(dBm)	(dBm)	(dB)	(cm)	(deg.)	
1	2820.513	-41.15	3.99	-37.16	-13.00	-24.16	250	235	peak
2	3525.641	-39.56	5.30	-34.26	-13.00	-21.26	250	206	peak

Channel 251_Vertical

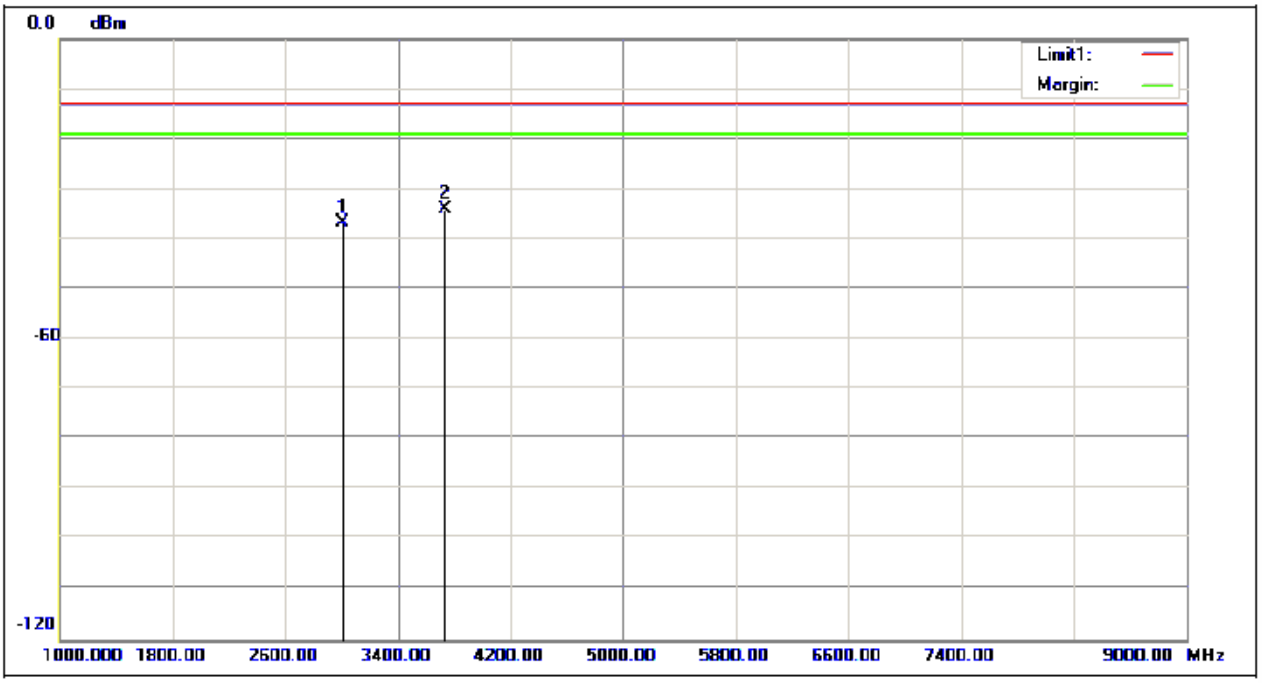
Note: Only the worst test data (GSM850 Channel 251 Mode) was display on the test report according to the recorded data for all the test channel modes.

2. GSM850 (GPRS class 8) Band



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBm)	Factor(dB)	(dBm)	(dBm)	(dB)	(cm)	(deg.)	
1	3128.205	-38.76	4.54	-34.22	-13.00	-21.22	250	360	peak
2	3897.436	-40.68	7.03	-33.65	-13.00	-20.65	250	84	peak

Channel 251_Horizontal

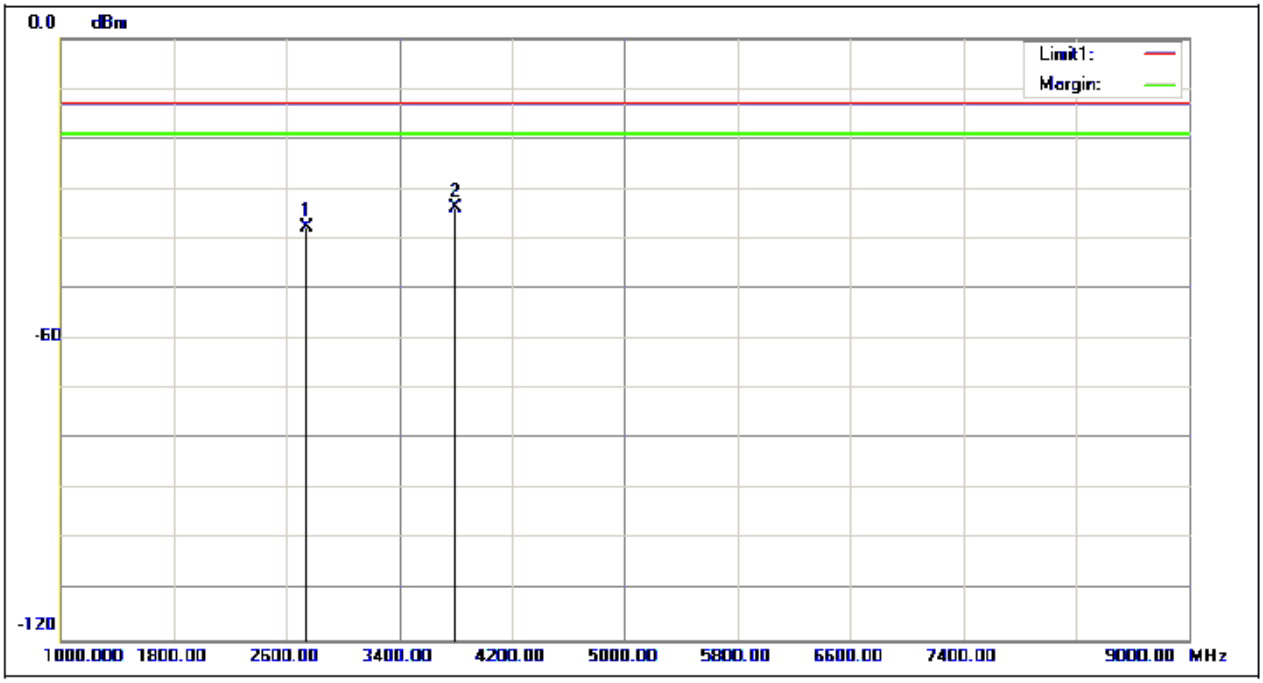


No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBm)	Factor(dB)	(dBm)	(dBm)	(dB)	(cm)	(deg.)	
1	3012.820	-40.92	4.22	-36.70	-13.00	-23.70	250	86	peak
2	3730.769	-40.41	6.23	-34.18	-13.00	-21.18	250	337	peak

Channel 251_Vertical

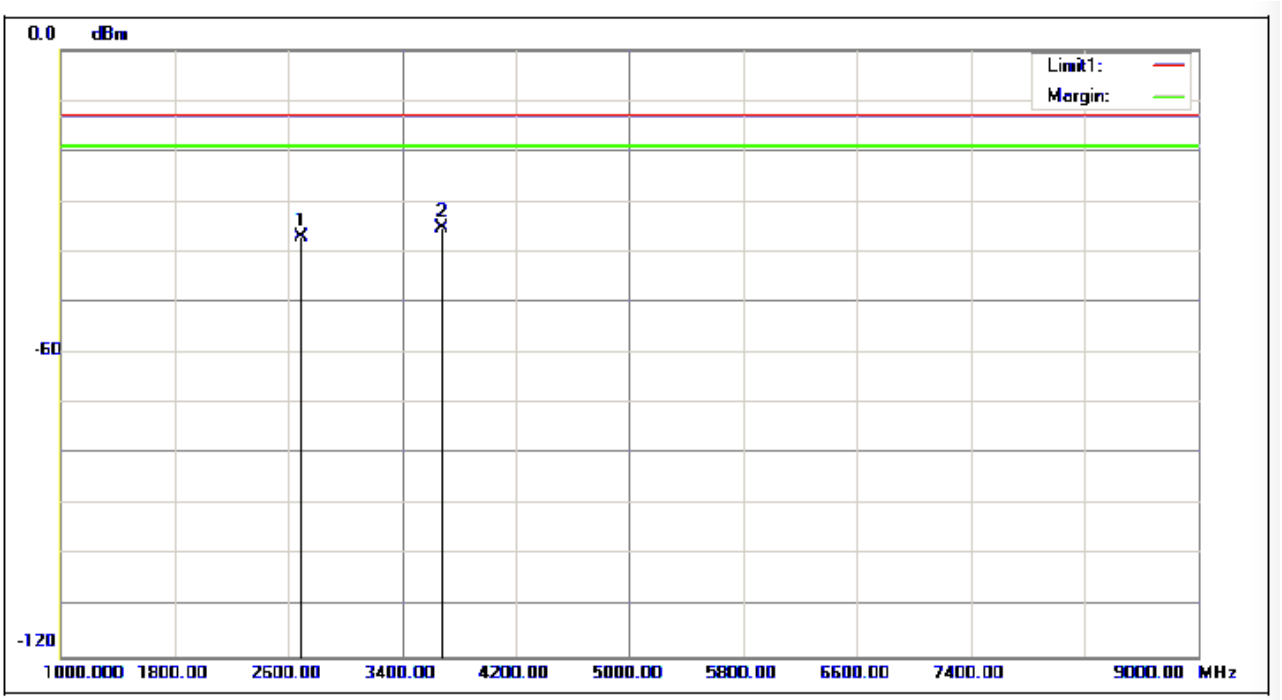
Note: Only the worst test data (GSM850 GPRS class 8 Band Channel 251 Mode) was display on the test report according to the recorded data for all the test channel modes.

3. GSM850 (EDGE class 8) Band



No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2743.590	-41.06	3.41	-37.65	-13.00	-24.65	250	174	peak
2	3794.872	-40.80	6.95	-33.85	-13.00	-20.85	250	28	peak

Channel 251_Horizontal

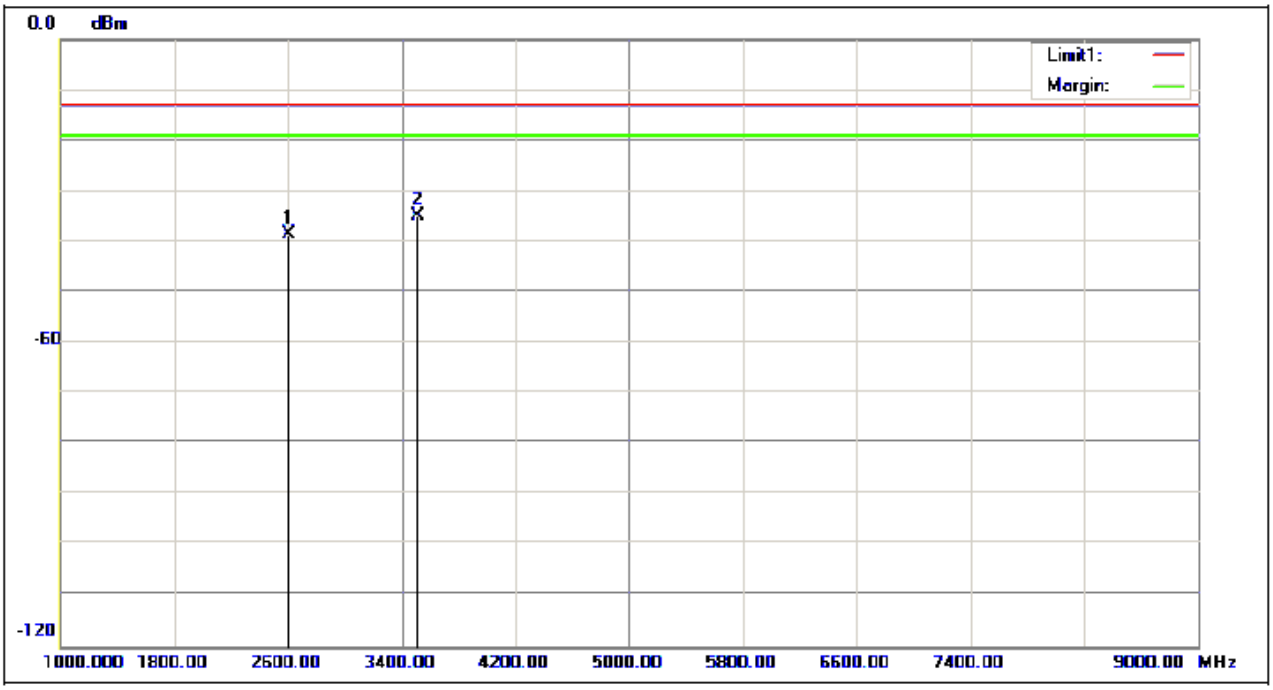


No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBm)	Factor(dB)	(dBm)	(dBm)	(dB)	(cm)	(deg.)	
1	2692.308	-40.27	3.29	-36.98	-13.00	-23.98	250	331	peak
2	3679.487	-40.90	5.56	-35.34	-13.00	-22.34	250	192	peak

Channel 251_Vertical

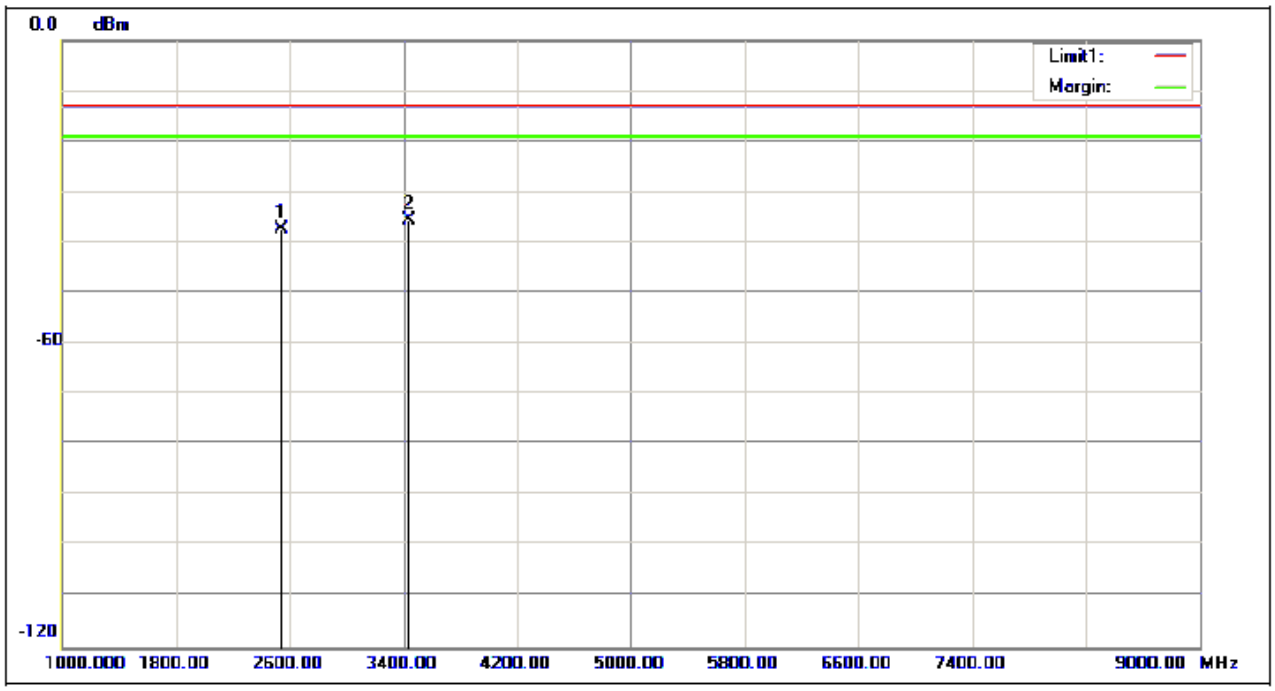
Note: Only the worst test data (GSM850 EDGE class 8 Band Channel 251 Mode) was display on the test report according to the recorded data for all the test channel modes.

4. Table for WCDMA Band V the Harmonics



No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2602.564	-40.82	2.32	-38.50	-13.00	-25.50	250	271	peak
2	3512.820	-39.83	4.99	-34.84	-13.00	-21.84	250	132	peak

Channel 4132_Horizontal

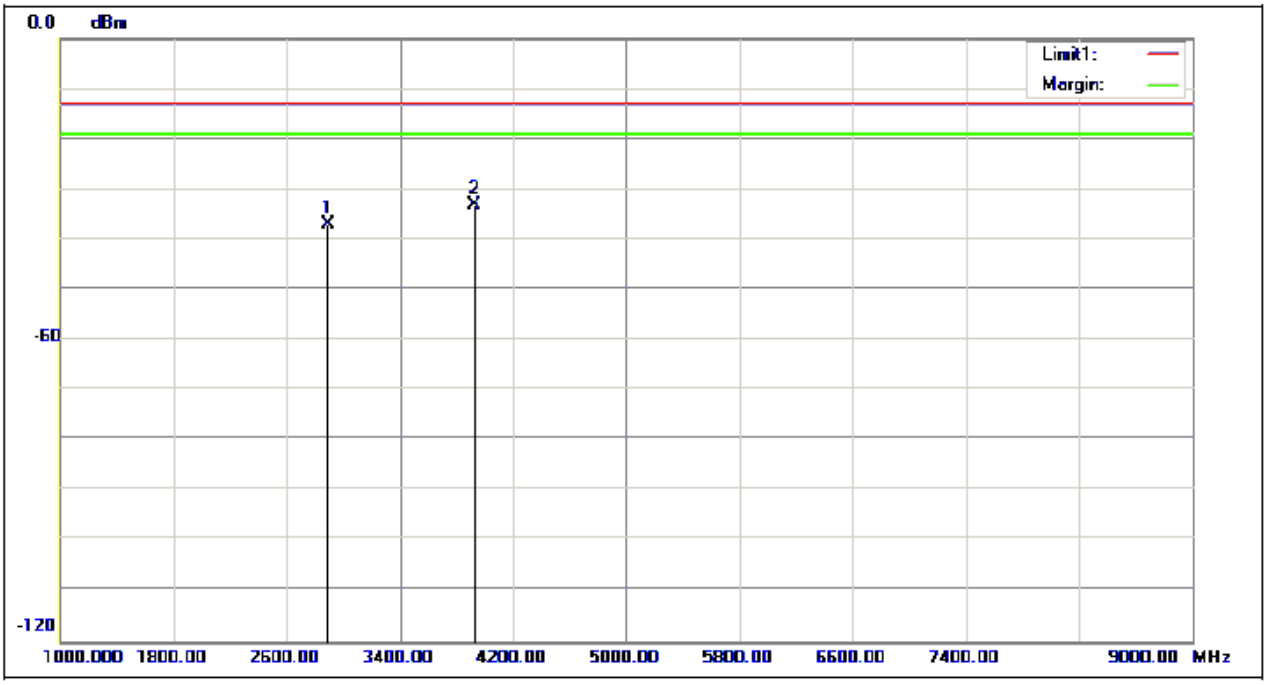


No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBm)	Factor(dB)	(dBm)	(dBm)	(dB)	(cm)	(deg.)	
1	2538.461	-39.59	2.28	-37.31	-13.00	-24.31	250	316	peak
2	3435.897	-40.10	4.68	-35.42	-13.00	-22.42	250	360	peak

Channel 4132_Vertical

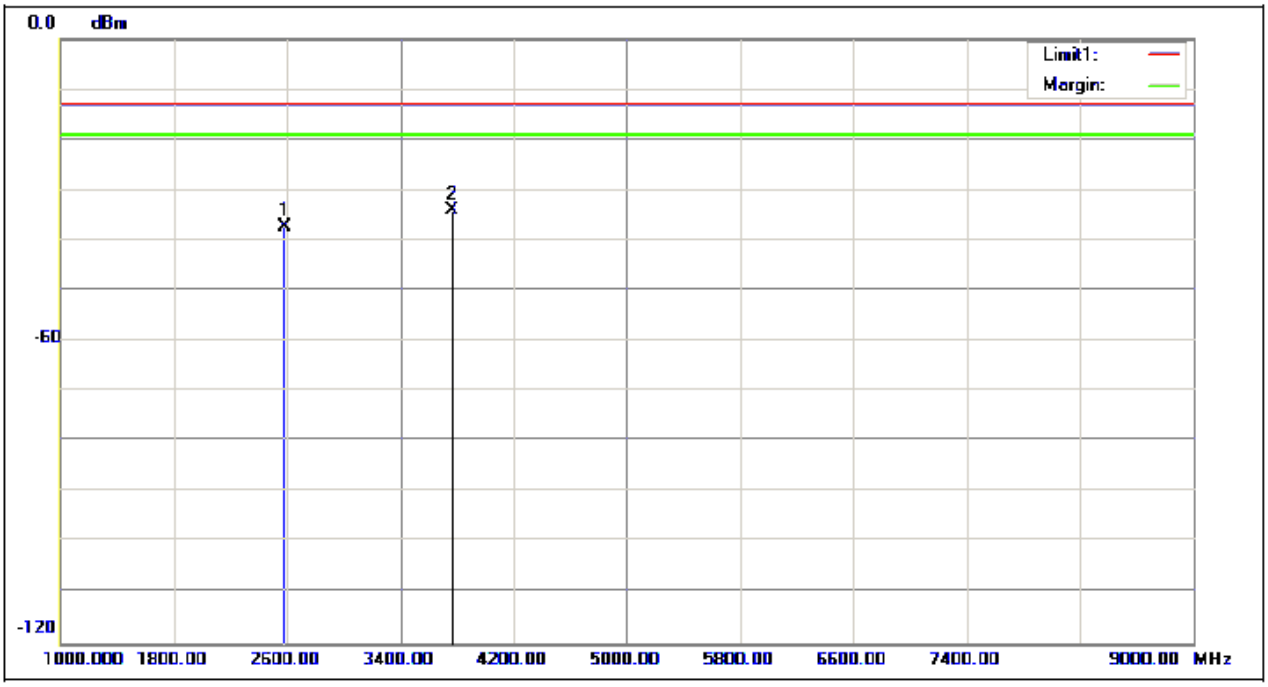
Note: Only the worst test data (WCDMA Band V Channel 4132 Mode) was display on the test report according to the recorded data for all the test channel mode.

5. Table for HSDPA Band V the Harmonics



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBm)	Factor(dB)	(dBm)	(dBm)	(dB)	(cm)	(deg.)	
1	2897.436	-40.72	3.75	-36.97	-13.00	-23.97	250	165	peak
2	3923.077	-40.34	7.10	-33.24	-13.00	-20.24	250	188	peak

Channel 4132_Horizontal

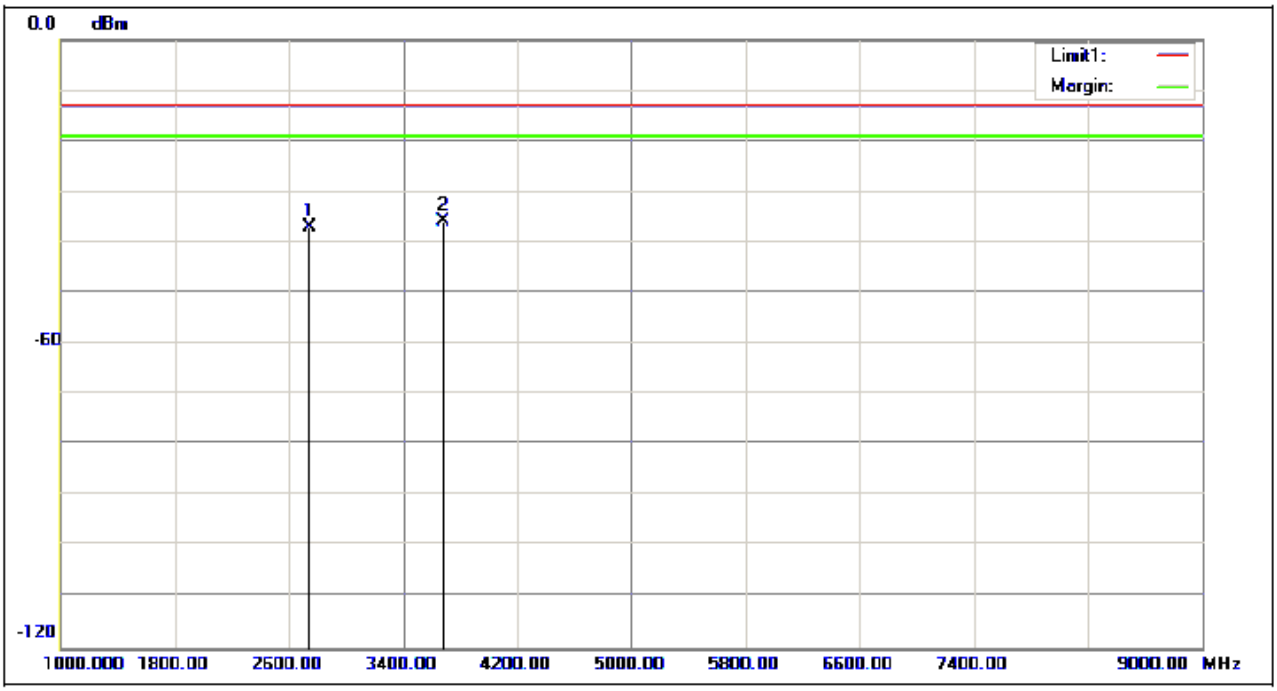


No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBm)	Factor(dB)	(dBm)	(dBm)	(dB)	(cm)	(deg.)	
1	2576.923	-39.70	2.35	-37.35	-13.00	-24.35	250	42	peak
2	3769.231	-40.75	6.80	-33.95	-13.00	-20.95	250	91	peak

Channel 4132_Vertical

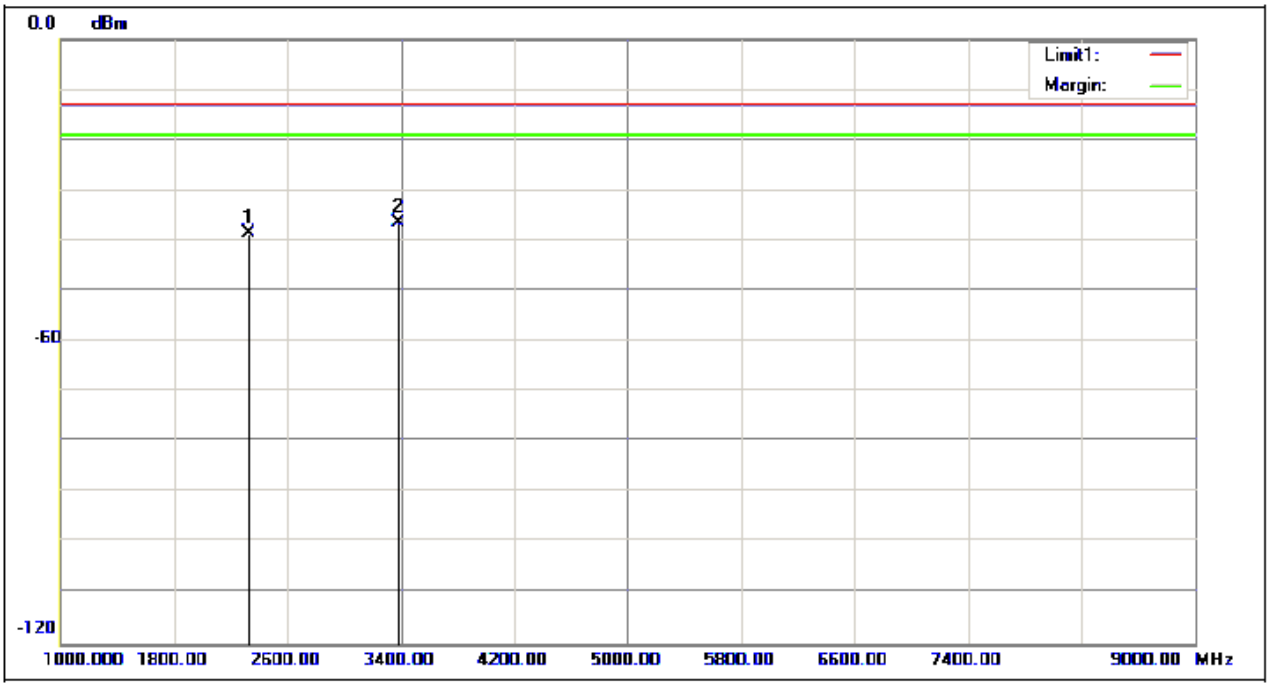
Note: Only the worst test data (HSDPA Band V Channel 4182 Mode) was display on the test report according to the recorded data for all the test channel modes

6. Table for HSUPA Band V the Harmonics



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBm)	Factor(dB)	(dBm)	(dBm)	(dB)	(cm)	(deg.)	
1	2743.590	-40.56	3.41	-37.15	-13.00	-24.15	250	83	peak
2	3679.487	-41.20	5.27	-35.93	-13.00	-22.93	250	0	peak

Channel 4132_Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBm)	Factor(dB)	(dBm)	(dBm)	(dB)	(cm)	(deg.)	
1	2333.333	-41.01	2.59	-38.42	-13.00	-25.42	250	319	peak
2	3384.615	-40.92	4.51	-36.41	-13.00	-23.41	250	123	peak

Channel 4132_Vertical

Note: Only the worst test data (HSUPA Band V Channel 4132 Mode) was display on the test report according to the recorded data for all the test channel mode

12. Frequency Stability

12.1 Frequency Stability Requirement

According to FCC §22.355, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

According to FCC §2.1055, the test conditions are:

(a) Temperature:

The temperature is varied from -30°C to +50°C at intervals of not more than 10°C.

(b) Primary Supply Voltage:

For hand carried battery powered equipment, the primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacture. The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided.

12.2 Test Procedure

1. Perform test system setup as section 5.1.3.
2. Set the voltage of the DC Power Supply to normal supply voltage (here used 3.7V) and the temperature of the Temperature Chamber to vary from -30°C to +50°C at intervals of 10°C.
3. At each temperature level, the EUT is powered off and kept in the Temperature Chamber for two hours.
4. After sufficient stabilization, turn on the EUT, command it via the System Simulator (SS) to operate at the maximum output power i.e. Power Control Level (PCL) = 0 and Power Class = 1, and then establish a communication link between the EUT and the SS.
5. The low, middle and the high channels are selected to perform tests respectively. Set the TCH number to 128 as the low channel.
6. The frequency deviation is measured (directly read from the SS, which can report the parameter) within three minutes.
7. Set the TCH number to 190 as the middle channel, then repeat step 5.
8. Set the TCH number to 251 as the high channel, then repeat step 5.
9. Adjust the temperature of the Temperature Chamber as specified in step 2, then repeat step 3 to 7.
10. Set the voltage of the DC Power Supply to high extreme supply voltage (here used 4.2V) and the temperature of the Temperature Chamber to normal (here used +22°C), then repeat step 3 to 8.
11. Set the voltage of the DC Power Supply to low extreme supply voltage (here used 3.6V) and the temperature of the Temperature Chamber to normal (here used +22°C), then repeat step 3 to 8.

12.3 Test Result

1. Tablet for GSM850 band:

No.	Test Conditions		Frequency Deviation (Hz) at Channels Used			
	Voltage	Temperature	128	190	251	Limit (±2.5ppm)
1	V-nor	-30°C	-48.15	-49.58	-49.32	(a) ±2060Hz for 128 Channel (b) ±2096Hz for 190 Channel (c) ±3055Hz for 251 Channel
2		-20°C	-42.41	-43.76	-42.63	
3		-10°C	-38.28	-38.92	-40.12	
4		0°C	-32.53	-31.64	-34.24	
5		+10°C	-30.87	-34.32	-33.56	
6		+20°C	-35.12	-30.45	-32.67	
7		+30°C	-39.24	-36.08	-36.46	
8		+40°C	-45.15	-43.61	-44.23	
9		+50°C	-48.54	-49.24	-50.26	
10	V-high	+22°C	-39.12	-38.46	-39.22	
11	V-low	+22°C	-39.86	-39.67	-41.18	
Result: PASS						

2. Tablet for GSM850 (EDGE class 8) band:

No.	Test Conditions		Frequency Deviation (Hz) at Channels Used			
	Voltage	Temperature	128	190	251	Limit (±2.5ppm)
1	V-nor	-30°C	-51.23	-53.12	-52.34	(d) ±2060Hz for 128 Channel (e) ±2096Hz for 190 Channel (f) ±3055Hz for 251 Channel
2		-20°C	-45.65	-48.26	-49.09	
3		-10°C	-39.18	-41.52	-42.76	
4		0°C	-35.84	-34.45	-36.37	
5		+10°C	-31.41	-35.07	-34.18	
6		+20°C	-36.80	-31.42	-34.65	
7		+30°C	-37.68	-36.25	-39.41	
8		+40°C	-48.10	-45.64	-46.54	
9		+50°C	-50.62	-51.02	-54.78	
10	V-high	+22°C	-41.27	-40.42	-41.45	
11	V-low	+22°C	-40.82	-39.96	-44.86	
Result: PASS						

3. Tablet for WCDMA Band V band:

No.	Test Conditions		Frequency Deviation (Hz) at Channels Used			
	Voltage	Temperature	128	190	251	Limit (±2.5ppm)
1	V-nor	-30°C	-50.24	-51.46	-49.36	(g) ±2060Hz for 4132 Channel (h) ±2096Hz for 4182 Channel (i) ±3055Hz for 4233 Channel
2		-20°C	-41.16	-40.22	-42.54	
3		-10°C	-36.32	-35.09	-38.24	
4		0°C	-30.45	-31.24	-30.62	
5		+10°C	-29.51	-30.46	-31.17	
6		+20°C	-30.43	-29.87	-30.69	
7		+30°C	-38.26	-34.14	-39.72	
8		+40°C	-44.11	-43.56	-44.81	
9		+50°C	-49.21	-48.11	-49.76	
10	V-high	+22°C	-38.85	-36.39	-40.25	
11	V-low	+22°C	-36.42	-35.26	-38.99	
Result: PASS						

------END OF REPORT------