47 CFR PART 22 H, 24E

TEST REPORT

of

HSDPA USB Modem

Model Name: One Touch X060
Brand Name: Alcatel
Report No.: SZ08110085E02
FCC ID: RAD108

prepared for

TCT Mobile Limited.
4/F, South Building,No.2966, Jinke Road, Zhangjiang High-Tech Park, Pudong, Shanghai, 201203, P.R.China

prepared by

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Bluetooth® CTIA Authorized Test Lab
LAB CODE 20081223-00

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1. Test Result Certification

Equipment under Test:	HSDPA USB Modem
Brand Name:	Alcatel
Model Name:	One Touch X060
FCC ID:	RAD108
Applicant:	TCT Mobile Limited. 4/F, South Building,No.2966, Jinke Road, Zhangjiang High-Tech Park, Pudong, Shanghai, 201203, P.R.China
Manufacturer:	TCL Mobile Communication Co., LTD. No. 23 Zone, Zhongkai High-Technology Development Zone, Huizhou, Guangdong, 516006, China
Test Standards:	47 CFR Part 2 47 CFR Part 22 Subpart H 47 CFR Part 24 Subpart E
Test date:	January 1, 2009 –June 16, 2009
Test Result:	PASS

*** We Hereby Certify That:**

The equipment under test was tested by Shenzhen Morlab Communications Technology Co., Ltd. The test data, data evaluation, test procedures and equipment configurations shown in this report were made in accordance with the requirement of related FCC rules.

The test results of this report only apply for the tested sample equipment identified above. The test report shall be invalid without all the signatures of the test engineer, the reviewer and the approver.

Tested by: Luo Biao Dated: 2009.06.23

Luo Biao

Reviewed by: Wei Yanquan Dated: 2009.06.23

Wei Yanquan

Approved by: Shu Luan Dated: 2009.6.23

Shu Luan

2. General Information

2.1 Equipment under Test (EUT) Description

Description	:	HSDPA USB Modem
Model Name	:	One Touch X060
Serial No.	:	(n.a, marked #1 by test site)
MEID	:	(n.a)
Hardware Version	:	Proto
Software Version	:	(n.a)
Emission Designator	:	300KGXW
Modulation	:	GMSK
Frequency	:	GSM 850MHz: Tx: 824.20 - 848.80MHz (at intervals of 200kHz); Rx: 869.20 - 893.80MHz (at intervals of 200kHz) GSM 1900MHz: Tx: 1850.20 - 1909.80MHz (at intervals of 200kHz); Rx: 1930.20 - 1989.80MHz (at intervals of 200kHz)

NOTE:

1. The EUT is the HSDPA USB Modem; it supports GSM 850MHz,900MHz,1800MHz, 1900MHz bands and WCDMA850MHz,1900MHz,2100MHz, and support EDGE. GSM 850MHz, 1900MHz bands and EDGE are tested in this report. When testing, the EUT was powered by a PC via USB point, and a connecting between EUT and base station was established at the start of the test, and maintained during the all test in this report.
2. The transmitter (Tx) frequency arrangement of the Cellular 850MHz band used by the EUT can be represented with the formula F(n)=824.2+0.2*(n-128), 128<=n<=251; the lowest, middle, highest channel numbers (ARFCHs) used and tested in this report are separately 128 (824.2MHz), 190 (836.6MHz) and 251 (848.8MHz).
3. The transmitter (Tx) frequency arrangement of the PCS 1900MHz band used by the EUT can be represented with the formula F(n)=1850.2+0.2*(n-512), 512<=n<=810; the lowest, middle and highest channel numbers (ARFCHs) used and tested in this report are separately 512 (1850.2MHz), 661 (1880.0MHz) and 810 (1909.8MHz).
4. For detailed features about the EUT, please see user manual supplied by the applicant.

2.2 Test Standards and Results

The objective of the report is to perform tests according to 47 CFR Part 15 Part 22 and Part 24 for FCC ID Certification:

No.	Identity	Document Title
1	47 CFR Part 2 (10-1-05 Edition)	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
2	47 CFR Part 22 (10-1-05 Edition)	Public Mobile Services
3	47 CFR Part 24 (10-1-05 Edition)	Personal Communications Services

Test detailed items and the results are as below:

No.	Section	Description	Result
FCC Part 22, 24 Requirement			
1	2.106; 22.905 24.229	Frequencies	PASS
2	2.1046	Conducted RF Output Power	PASS
3	2.1049	20dB Occupied Bandwidth	PASS
4	2.1055; 22.355 24.235	Frequency Stability	PASS
5	2.1051; 2.1057 22.917; 24.238	Conducted Out of Band Emissions	PASS
6	2.1051; 2.1057 22.917; 24.238	Band Edge	PASS
7	22.913; 24.232	Transmitter Radiated Power (EIPR/ERP)	PASS
8	2.1053; 2.1057 22.917; 24.238	Radiated Out of Band Emissions	PASS

2.3 Facilities and Accreditations

2.3.1 Facilities

Shenzhen Electronic Product Quality Testing Center Morlab Laboratory is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is CNAS L1659.

All measurement facilities used to collect the measurement data are located at Electronic Testing Building, Shahe Road, Xili, Nanshan District, Shenzhen, P. R. China. The site was constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22, the FCC registration number is 741109.

2.3.2 Test Equipments

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
System Simulator	Agilent	E5515C	GB43130131	2008.09	1year
Spectrum Analyzer	Agilent	E7405A	US44210471	2008.09	1year
Telecommunication Antenna	European Antennas	PSA-45010R/ 356	403688-001	(n.a.)	(n.a.)
Trilogy Antenna	Schwarzbeck	VULB 9163	9163-274	2008.08	1year
Horn Antenna	Schwarzbeck	BBHA 9120C	9120C-384	2008.08	1year
Power Splitter	Weinschel	1506A	NW521	(n.a.)	(n.a.)
Anechoic Chamber	Albatross Projects GmbH	9m*6m*6m	(n.a.)	2008.08	2year
DC Power Supply	Good Will	GPS-3030DD	EF920938	2007.06	2year
Temperature Chamber	YinHe Experimental Equip.	HL4003T	(n.a.)	2009.03	1year
LISN	Schwarzbeck	NSLK 8127	812744	2008.09	1year
Pulse Limiter (20dB)	Schwarzbeck	VTSD 9561-D	9391	(n.a.)	(n.a.)
Bluetooth-Headset	Nokia	HS-36W	(n.a.)	(n.a.)	(n.a.)
Wireless Router	(n.a.)	D-Link	BN64448000052	(n.a.)	(n.a.)
T-Flash Card	SanDisk	256MB	(n.a.)	(n.a.)	(n.a.)

NOTE:

1. Equipments listed above have been calibrated and are in the period of validation.

2.3.3 Test Environment Conditions

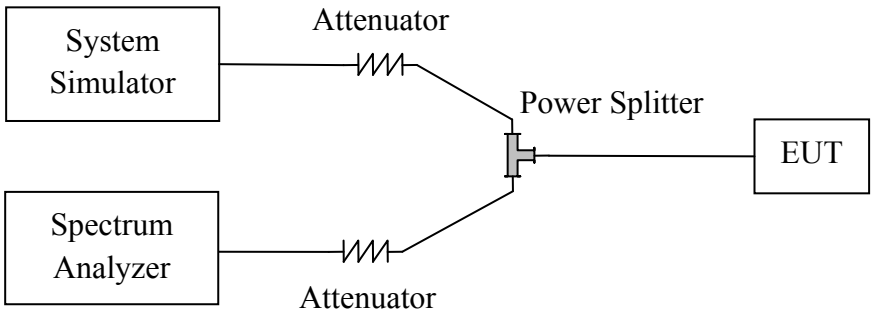
During the measurement, the environmental conditions were within the listed ranges:

Temperature:	20 - 25°C
Relative Humidity:	40 - 60%
Atmospheric Pressure:	86-106kPa

3. 47 CFR Part 2, Part 22H，Part 24E Requirements

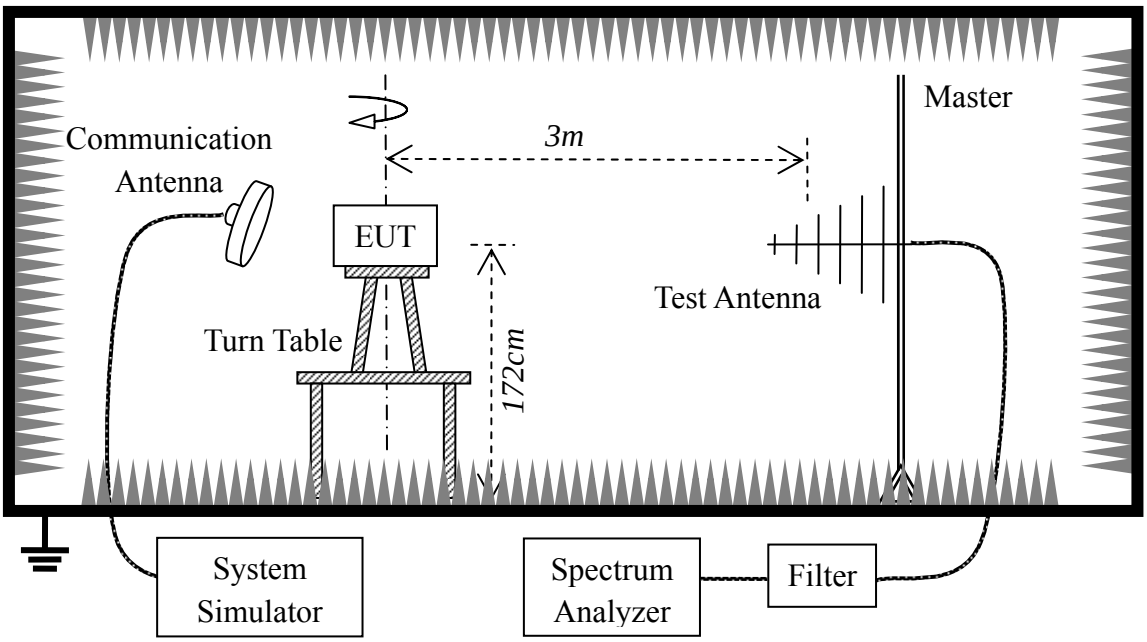
3.1 General Information

3.1.1 Conducted Related Tests



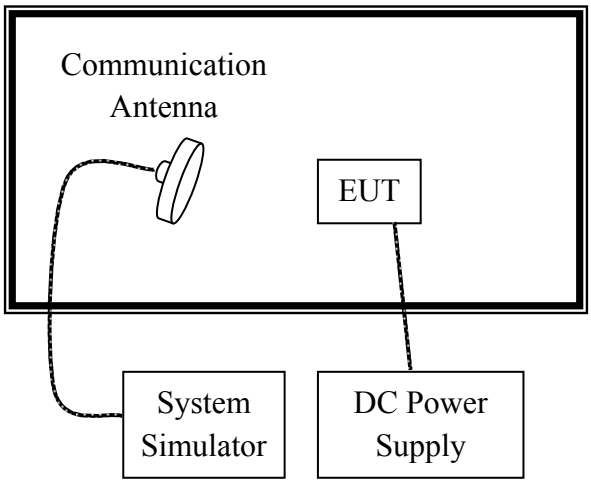
1. The EUT is coupled to the Spectrum Analyzer and the System Simulator with the suitable Attenuators through the Power Splitter; the path loss is calibrated to correct the reading.
2. The EUT is configured here as MS +PC.
3. The EUT is commanded via the System Simulator (SS) to operate at the maximum output power .A communication link is established between the EUT and the SS.
4. The Spectrum Analyzer is set to max-peak detector function and maximum hold mode.

3.1.2 Radiated Power and Spurious Emission Tests



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. The EUT is configured as MS + PC.
3. The EUT is placed on the vertical axis of a Turn Table 1.72 meters above the ground.
4. The Test Antenna is a bi-log one or a horn one, and the Test Antenna is at the same height as the EUT.
5. The EUT is commanded via the System Simulator (SS) to operate at the maximum output power. A communication link is established between the EUT and the SS.
6. The Spectrum Analyzer is set to max-peak detector function and maximum hold mode.

3.1.3 Frequency Stability Test



1. The test is performed in a Temperature Chamber.
2. The EUT is configured as MS + DC Power Supply.

3.2 Frequencies

3.2.1 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

According to FCC section 24.229, the frequencies available in the Broadband PCS services are listed as below, in accordance with the frequency allocations table of FCC section 2.106.

(a) The following frequency blocks are available for assignment on an MTA basis:
Block A: 1850 - 1865MHz paired with 1930 - 1945MHz;
Block B: 1870 - 1885MHz paired with 1950 - 1965MHz.

(b) The following frequency blocks are available for assignment on a BTA basis:
Block C: 1895 - 1910 MHz paired with 1975 - 1990MHz;
Block D: 1865 - 1870 MHz paired with 1945 - 1950MHz;
Block E: 1885 - 1890 MHz paired with 1965 - 1970MHz;
Block F: 1890 - 1895 MHz paired with 1970 - 1975MHz.

3.2.2 Test Procedure

1. Perform test system setup as section 3.1.1.
2. 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=3kHz, for CDMA modulated signal: RBW=VBW=30kHz.
3. The transmitter frequency arrangement of the Cellular 850MHz (or Cellular 1900MHz) band employed by the EUT should be from 824.2MHz to 848.8MHz (or 1850.2MHz to 1909.8MHz). The lowest and the highest channel were selected to perform tests respectively. Set the TCH number to 128 (or 512).
4. Set the Spectrum Analyzer suitably to capture the waveform, search peak and mark, and then record the plot.
5. Set the TCH number to 251 (or 810), then repeat step 5.

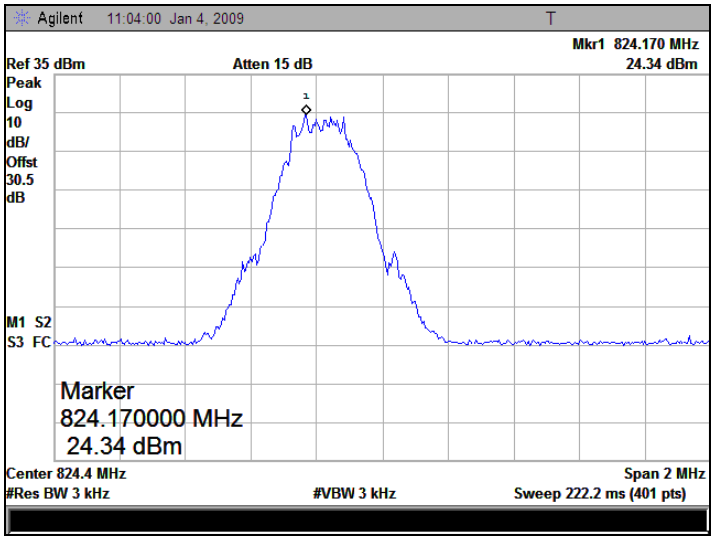
3.2.3 Test Result

1. Test Verdict:

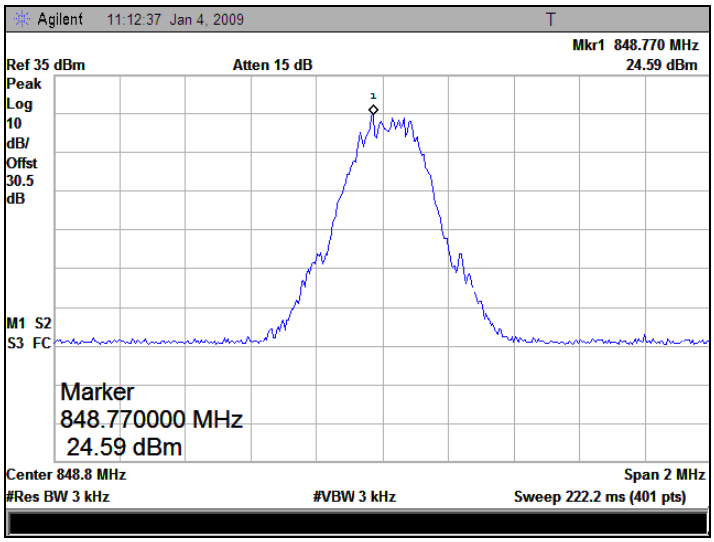
The required frequency block is employed legally, the verdict is PASS.

Band	Channel	Frequency (MHz)	Measured Carrier (dBm)	Refer to Plot
GSM 850MHz	128	824.2	24.34	Plot A
	251	848.8	24.59	Plot B
GSM 1900MHz	512	1850.2	21.40	Plot C
	810	1909.8	22.21	Plot D
EDGE 850MHz	128	824.2	17.99	Plot E
	251	848.8	18.59	Plot F
EDGE 1900MHz	512	1850.2	18.42	Plot G
	810	1909.8	17.97	Plot H

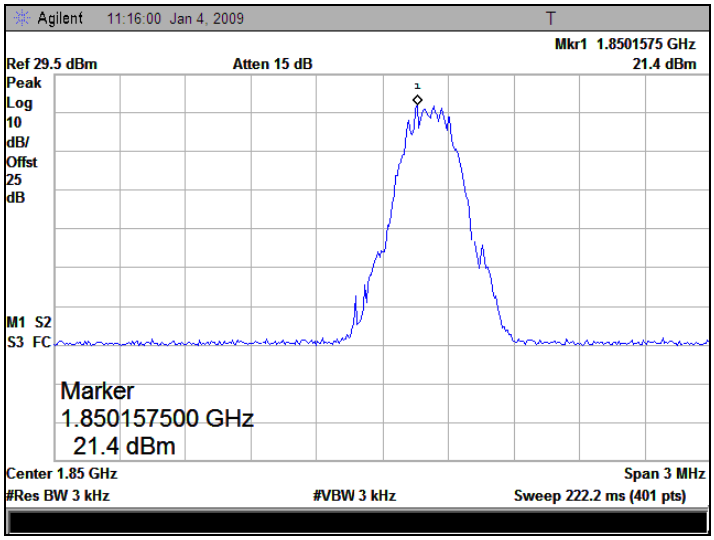
2. Test Plot:



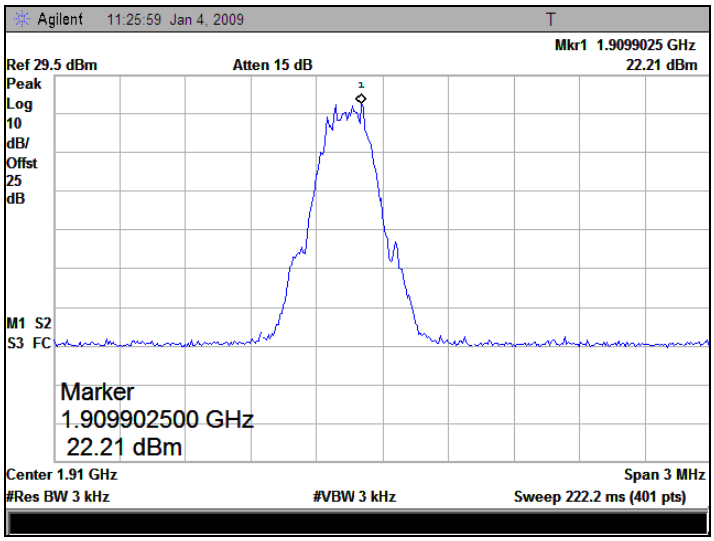
(Plot A: GSM 850MHz Channel = 128)



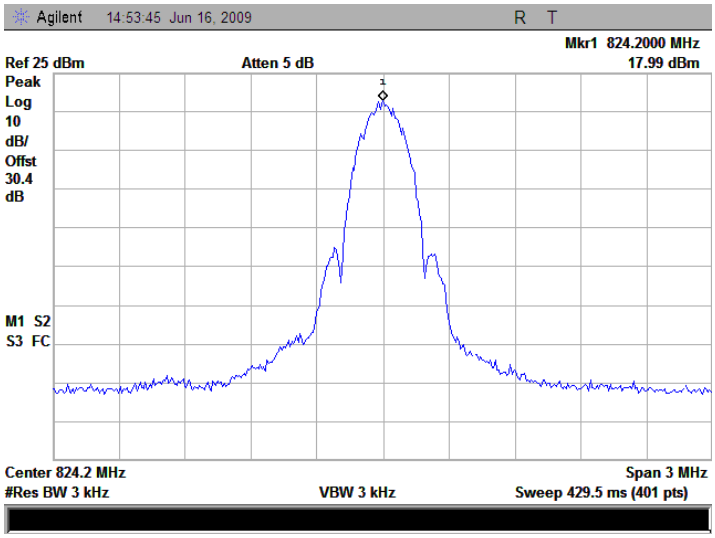
(Plot B: GSM 850MHz Channel = 251)



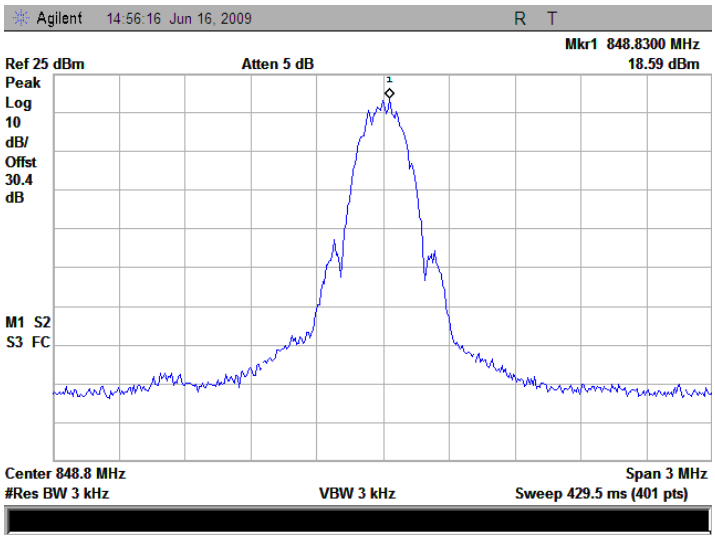
(Plot C: GSM 1900MHz Channel = 512)



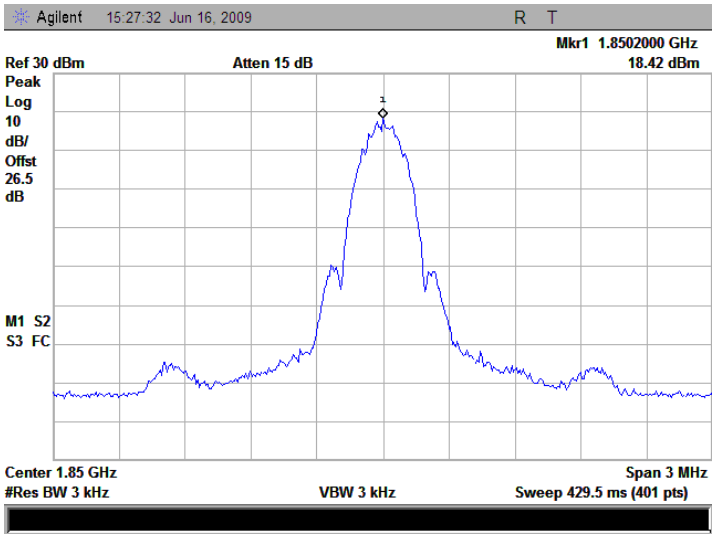
(Plot D: GSM 1900MHz Channel = 810)



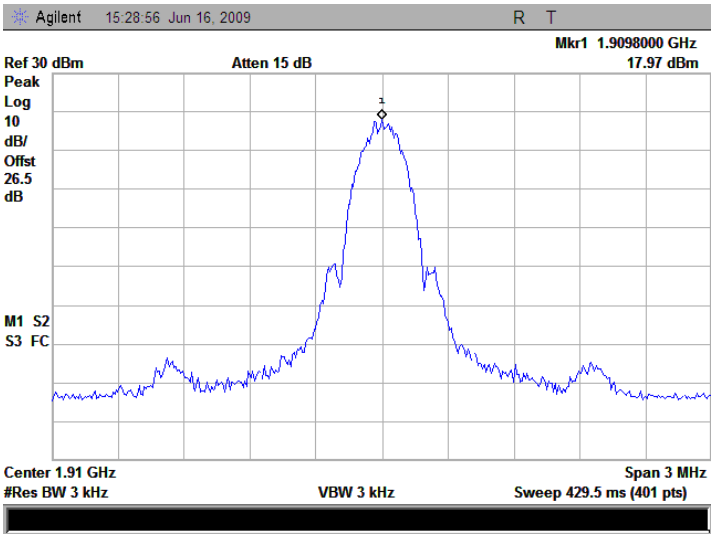
(Plot E: EDGE 850MHz Channel = 128)



(Plot F: EDGE 850MHz Channel = 251)



(Plot G: EDGE 1900MHz Channel = 512)



(Plot H: EDGE 1900MHz Channel = 810)

3.3 Conducted RF Output Power

3.3.1 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.

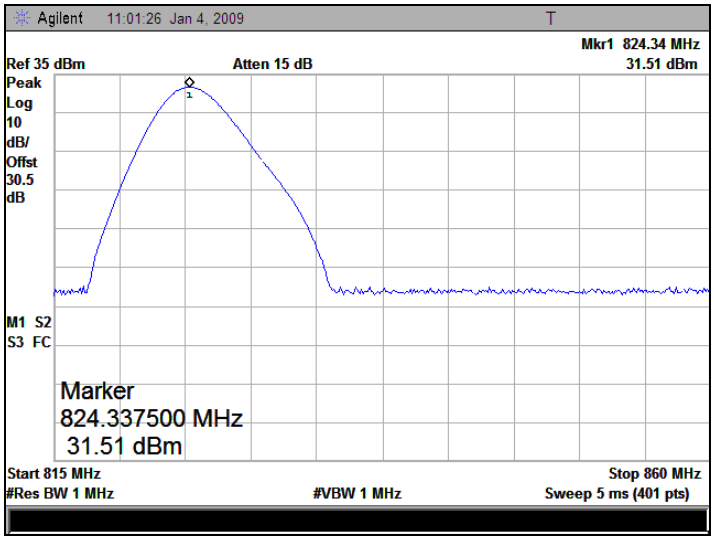
3.3.2 Test Procedure

1. Perform test system setup as section 3.1.1 (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 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 (or 512) 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(or 661) as the middle channel, then repeat step 4.
6. Set the TCH number to 251(or 810) as the high channel, then repeat step 4.

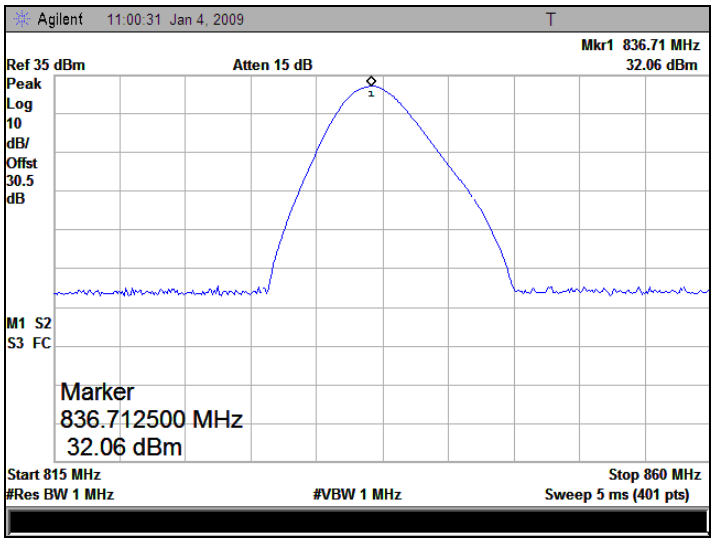
3.3.3 Test Result

Band	Channel	Frequency (MHz)	Measured Output Power		Rated Output Power		Verdict
			dBm	Refer to Plot	dBm	Tolerance (dB)	
GSM 850MHz	128	824.2	31.51	Plot A1	33	±3	PASS
	190	836.6	32.06	Plot A2			PASS
	251	848.8	32.17	Plot A3			PASS
GSM 1900MHz	512	1850.2	28.39	Plot B1	30	±3	PASS
	661	1880.0	29.01	Plot B2			PASS
	810	1909.8	29.57	Plot B3			PASS
EDGE 850MHz	128	824.2	30.55	Plot C1	33	±3	PASS
	190	836.6	30.97	Plot C2			PASS
	251	848.8	30.16	Plot C3			PASS
EDGE 1900MHz	512	1850.2	28.10	Plot D1	30	±3	PASS
	661	1880.0	29.18	Plot D2			PASS
	810	1909.8	29.28	Plot D3			PASS

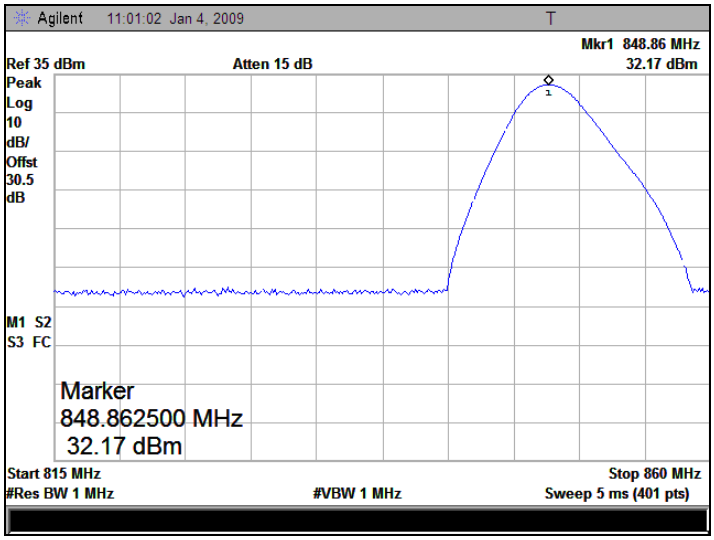
Test Plots:



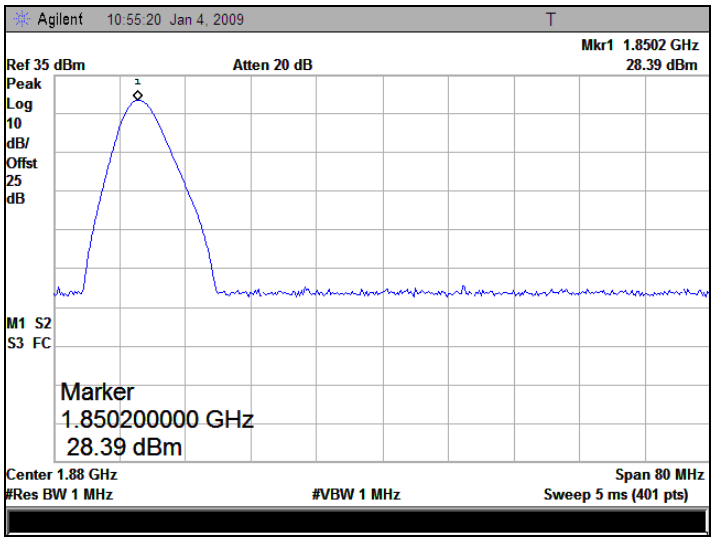
(Plot A1: GSM 850MHz Channel = 128)



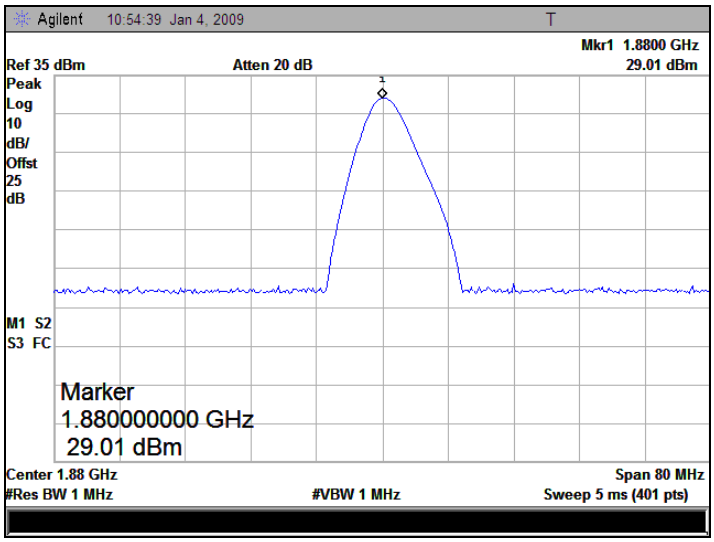
(Plot A2: GSM 850MHz Channel = 190)



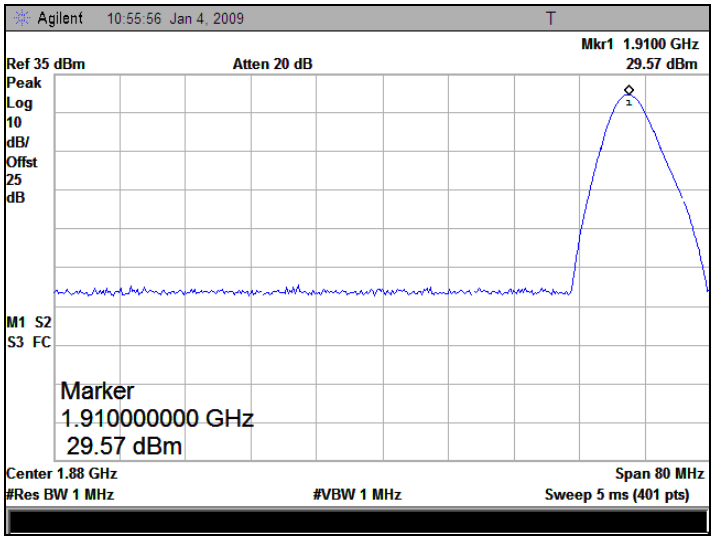
(Plot A3: GSM 850MHz Channel = 251)



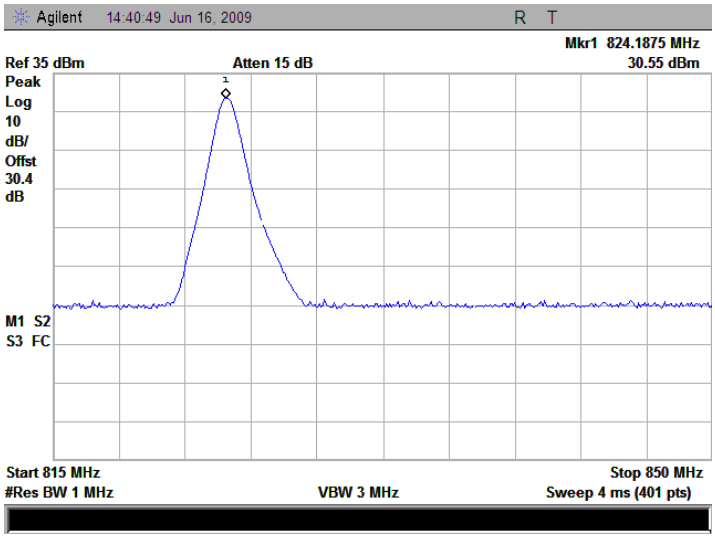
(Plot B1: GSM 1900MHz Channel = 512)



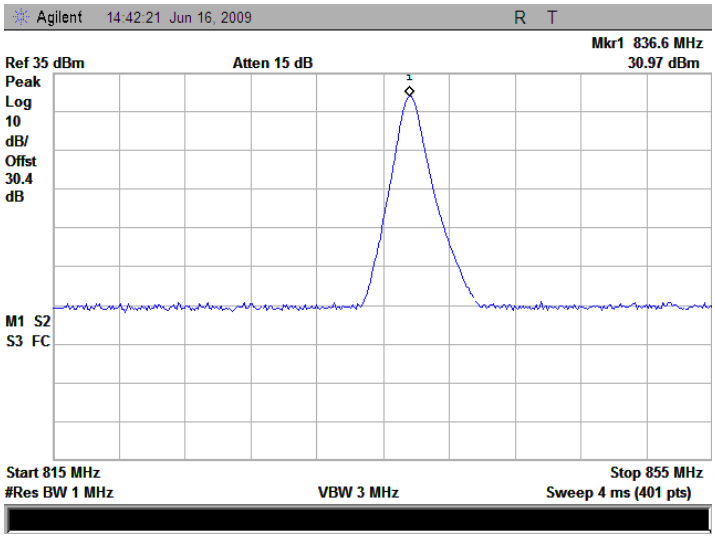
(Plot B2: GSM 1900MHz Channel = 661)



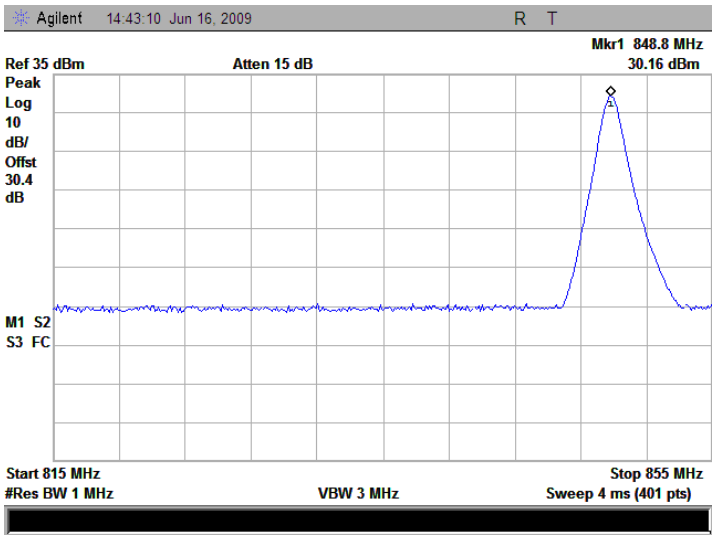
(Plot B3: GSM 1900MHz Channel = 810)



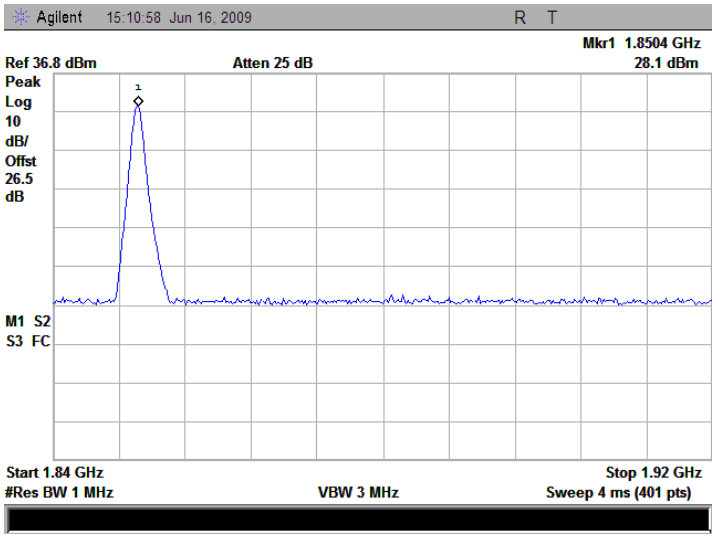
(Plot C1: EDGE 850MHz Channel = 128)



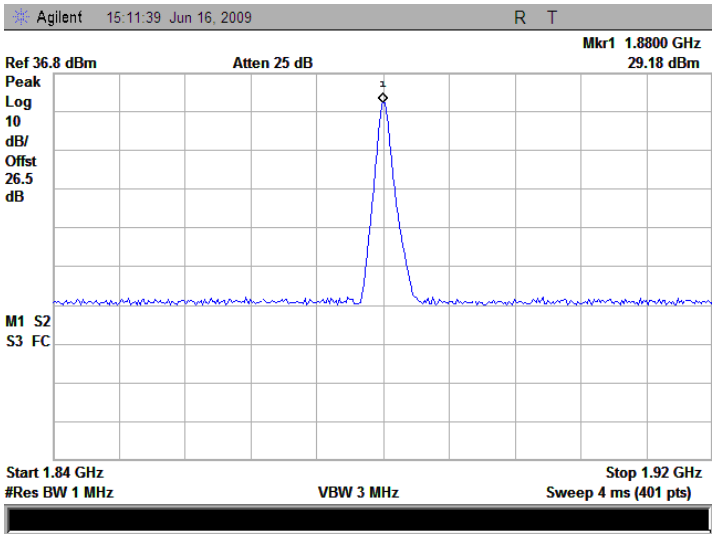
(Plot C2: EDGE 850MHz Channel = 190)



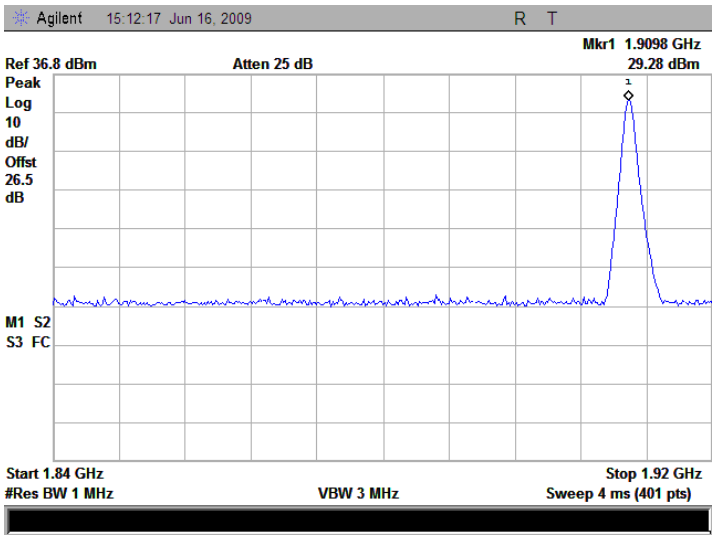
(Plot C3: EDGE 850MHz Channel = 251)



(Plot D1: EDGE 1900MHz Channel = 512)



(Plot D2: EDGE 1900MHz Channel = 661)



(Plot D3: EDGE 1900MHz Channel = 810)

3.4 Occupied Bandwidth

3.4.1 Occupied Bandwidth Definition

According to FCC section 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, or 20dB bandwidth (10*log1% = 20dB) taking the total RF output power as reference.

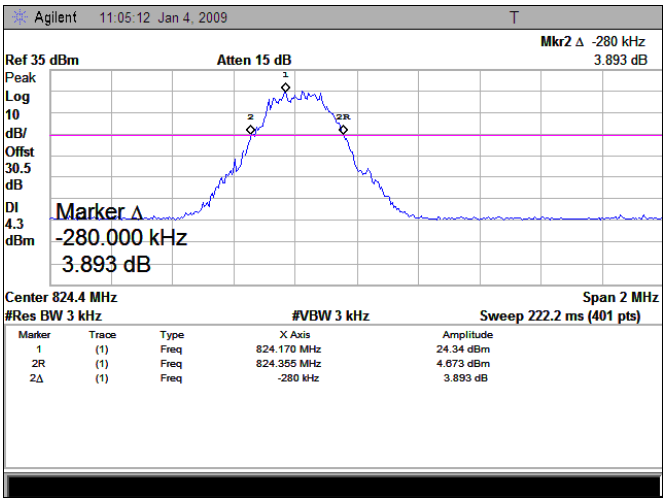
3.4.2 Test Procedure

1. Perform test system setup as section 3.1.1.
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=3kHz, for CDMA modulated signal: RBW=VBW=30kHz.
3. The low, middle and the high channels are selected to perform tests respectively. Set the TCH number to 128 (or 512) 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 20dB lower than the peak; 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 (or 661) as middle channel, then repeat step 4.
6. Set the TCH number to 251 (or 810) as high channel, then repeat step 4.

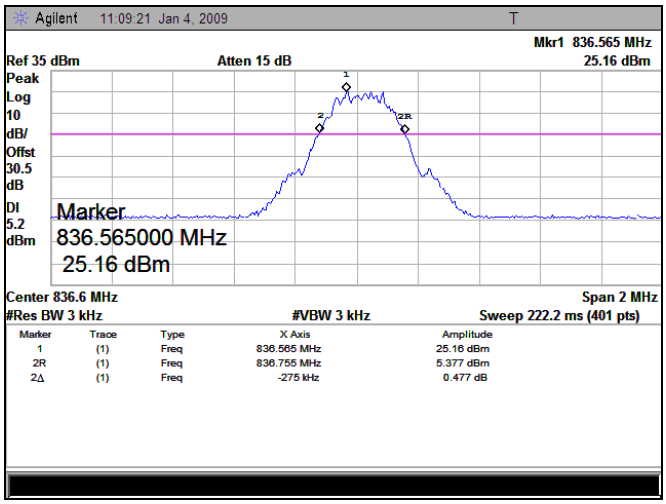
3.4.3 Test Result

Band	Channel	Frequency (MHz)	Measured 20dB Occupied Bandwidth (kHz)	Limits	Refer to Plot
GSM 850MHz	128	824.2	280.0	≤300 kHz	Plot A1
	190	836.6	275.0		Plot A2
	251	848.8	280.0		Plot A3
GSM 1900MHz	512	1850.2	285.0		Plot B1
	661	1880.0	277.5		Plot B2
	810	1909.8	277.5		Plot B3
EDGE 850MHz	128	824.2	285.0		Plot C1
	190	836.6	277.5		Plot C2
	251	848.8	285.0		Plot C3
EDGE 1900MHz	512	1850.2	285.0		Plot D1
	661	1880.0	285.0		Plot D2
	810	1909.8	285.0		Plot D3

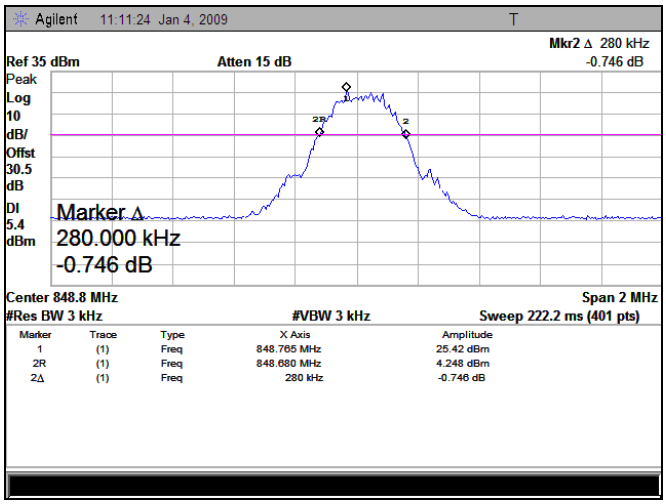
Test Plots:



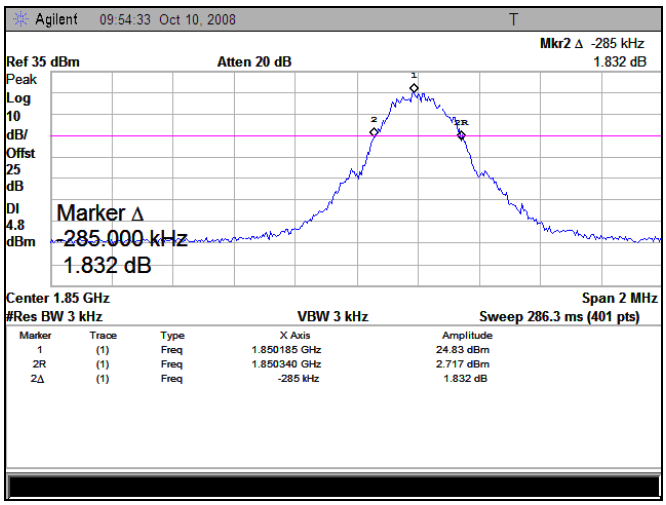
(Plot A1: GSM 850MHz Channel = 128)



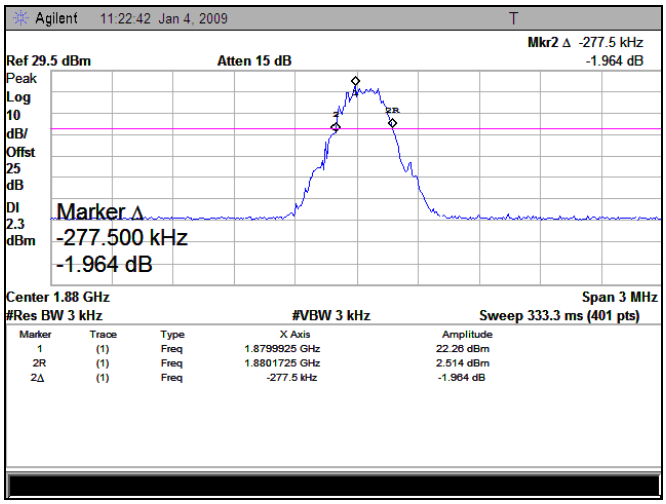
(Plot A2: GSM 850MHz Channel = 190)



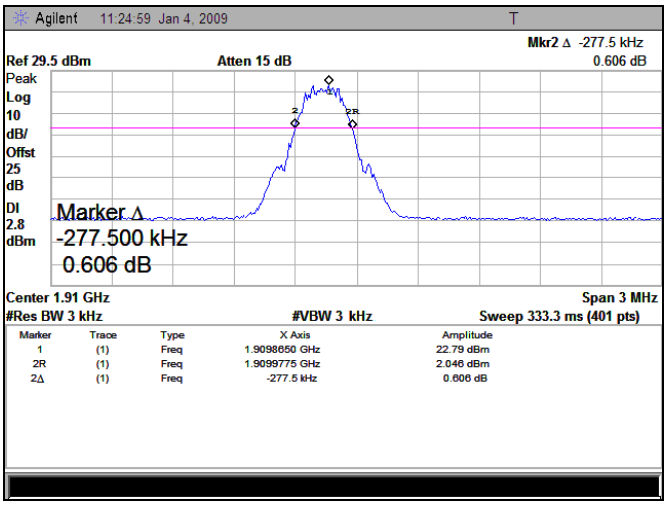
(Plot A3: GSM 850MHz Channel = 251)



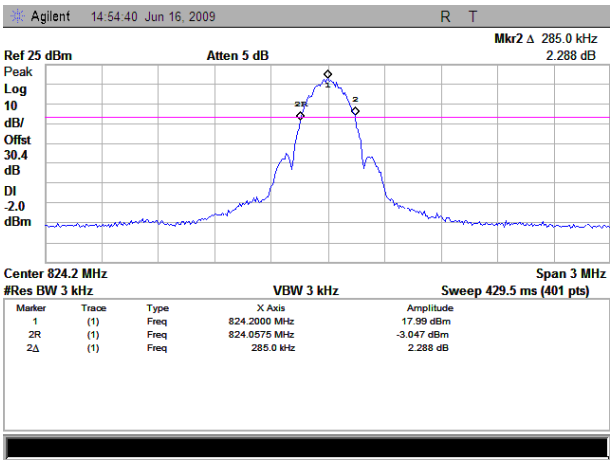
(Plot B1: GSM 1900MHz Channel = 512)



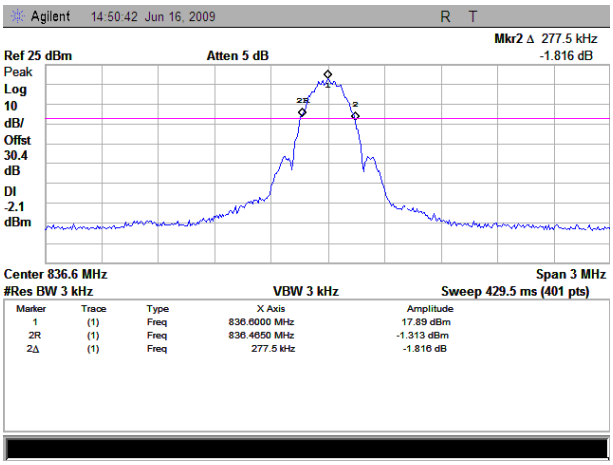
(Plot B2: GSM 1900MHz Channel = 661)



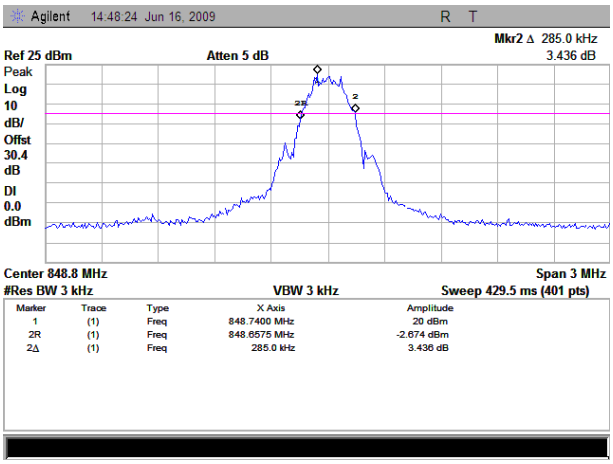
(Plot B3: GSM 1900MHz Channel = 810)



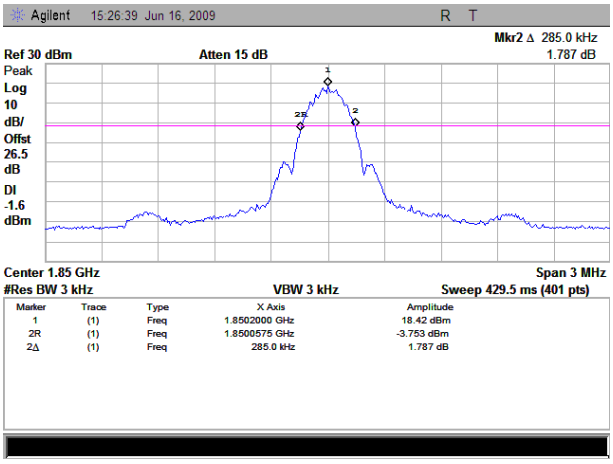
(Plot C1: EDGE 850MHz Channel = 128)



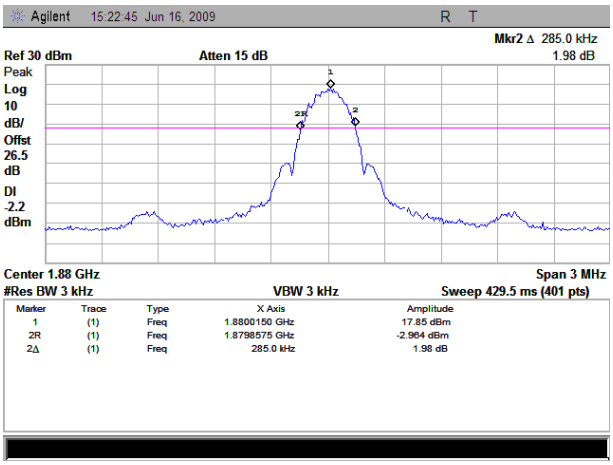
(Plot C2: EDGE 850MHz Channel = 190)



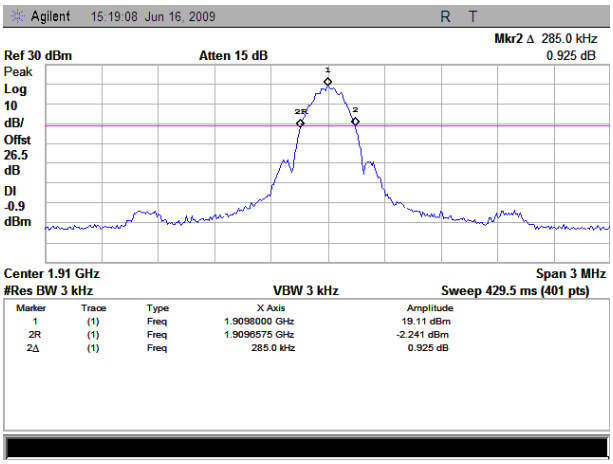
(Plot C3: GSM 850MHz Channel = 251)



(Plot D1: GSM 1900MHz Channel = 512)



(Plot D2: GSM 1900MHz Channel = 661)



(Plot D3: GSM 1900MHz Channel = 810)

3.5 Conducted Spurious Emission

3.5.1 Requirement

According to FCC section 22.917(a) and FCC section 24.238(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.

3.5.2 Test Procedure

1. Perform test system setup as section 3.1.1.
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 (or 512) as the lowest channel.
4. Set the RBW of the Spectrum Analyzer to 1MHz and the measuring frequency range from 30 MHz to 10^{th} harmonic of the fundamental frequency; 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 CDMA modulated signal: RBW=30kHz.
6. Set the TCH number to 190 (or 661) as the middle channel, then repeat step 4 and 5.
7. Set the TCH number to 251 (or 810) as the highest channel, then repeat step 4 and 5.

3.5.3 Test Result

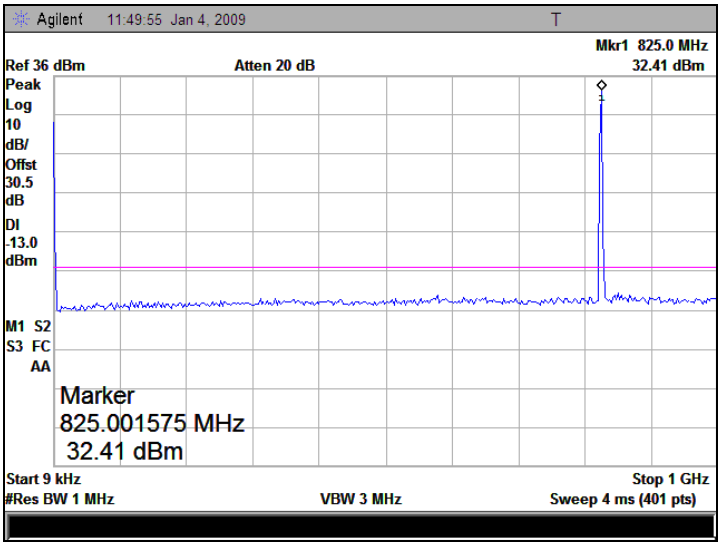
3.5.3.1 Table for the Harmonics and Plots for the Spurious Emission

1. Test Verdict:

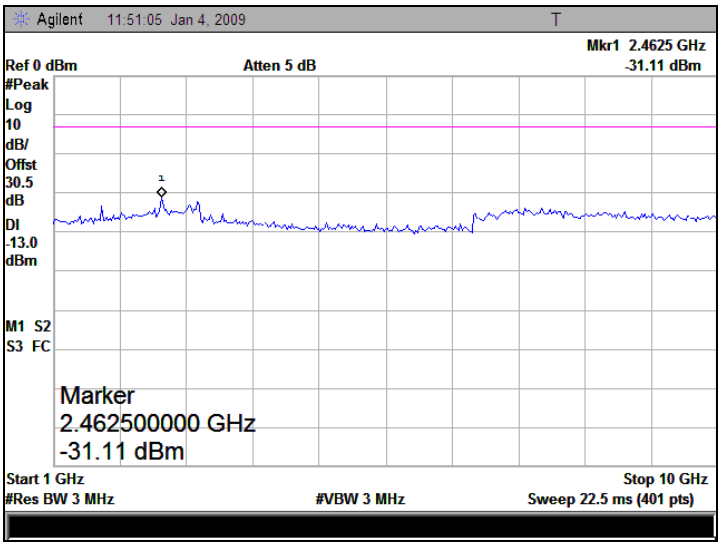
Band	Channel	Frequency (MHz)	Measured Max. Spurious Emission (dBm)	Refer to Plot	Limit (dBm)	Verdict
GSM 850MHz	128	824.2	-31.11	Plot A.1/A.2	-13	PASS
	190	836.6	-32.23	Plot B.1/B.2		PASS
	251	848.8	-29.00	Plot C.1/C.2		PASS
GSM 1900MHz	512	1850.2	-36.83	Plot D.1/D.2	-13	PASS
	661	1880.0	-35.69	Plot E.1/E.2		PASS
	810	1909.8	-37.06	Plot F.1/F.2		PASS
EDGE 850MHz	128	824.2	-38.50	Plot G.1/G.2	-13	PASS
	190	836.6	-38.24	Plot H.1/H.2		PASS
	251	848.8	-35.28	Plot I.1/I.2		PASS
EDGE 1900MHz	512	1850.2	-41.10	Plot J.1/J.2	-13	PASS
	661	1880.0	-40.95	Plot K.1/K.2		PASS
	810	1909.8	-43.63	Plot L.1/L.2		PASS

2. Test Plot for the Whole Measurement Frequency Range:

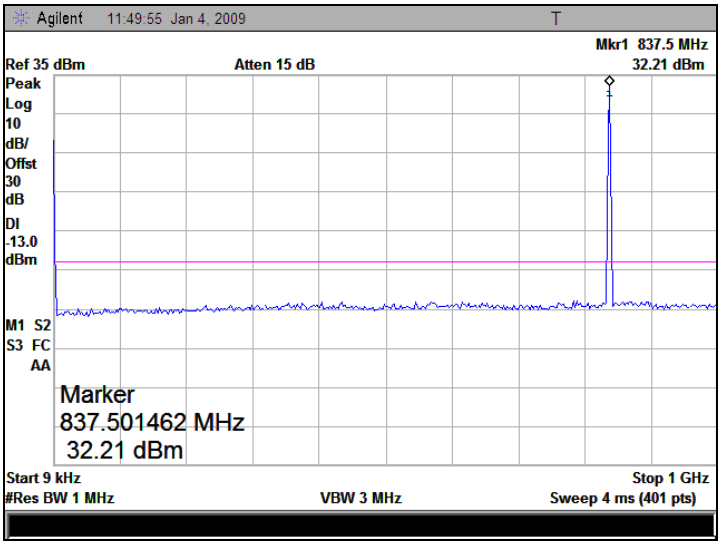
Note: the power of the EUT transmitting frequency should be ignored.



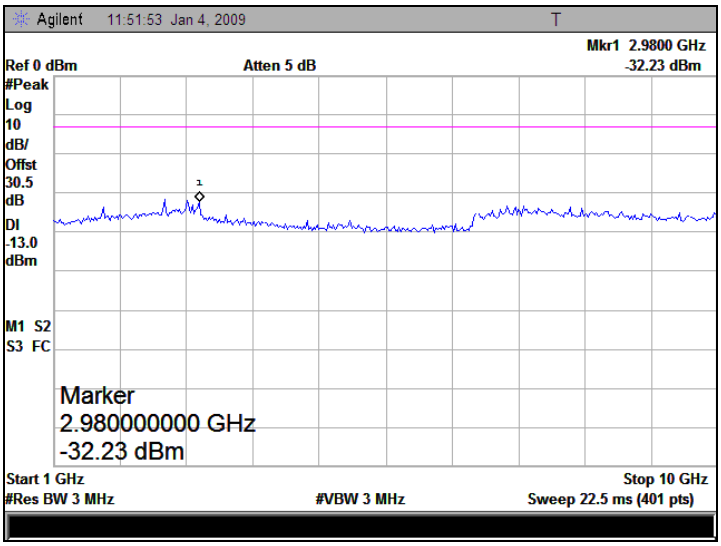
(Plot A.1: SM 850MHz Channel = 128, 30MHz to 1GHz)



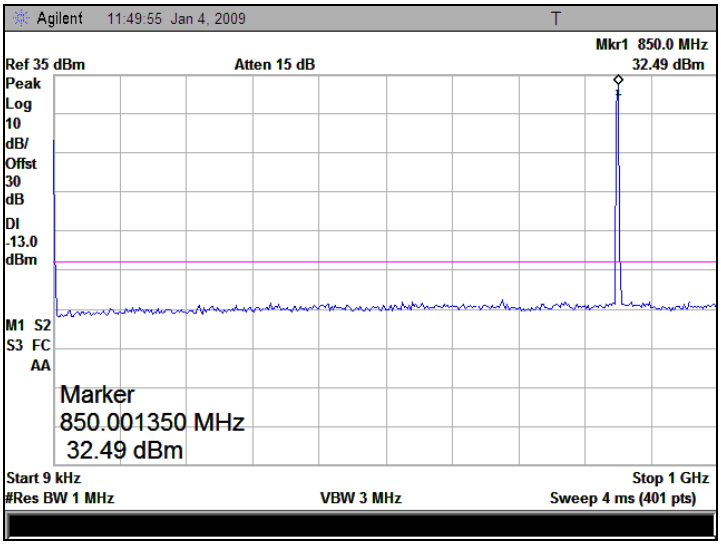
(Plot A.2: GSM 850MHz Channel = 128, 1GHz to 10GHz)



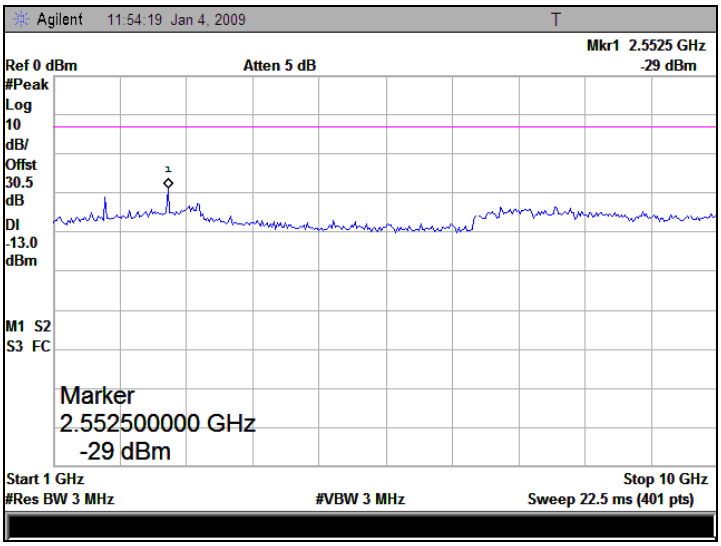
(Plot B.1: GSM 850MHz Channel = 190, 30MHz to 1GHz)



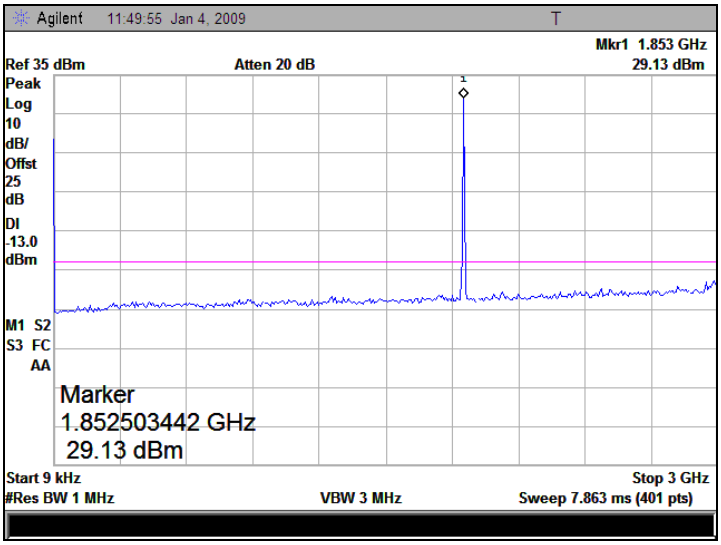
(Plot B.2: GSM 850MHz Channel = 190, 1GHz to 10GHz)



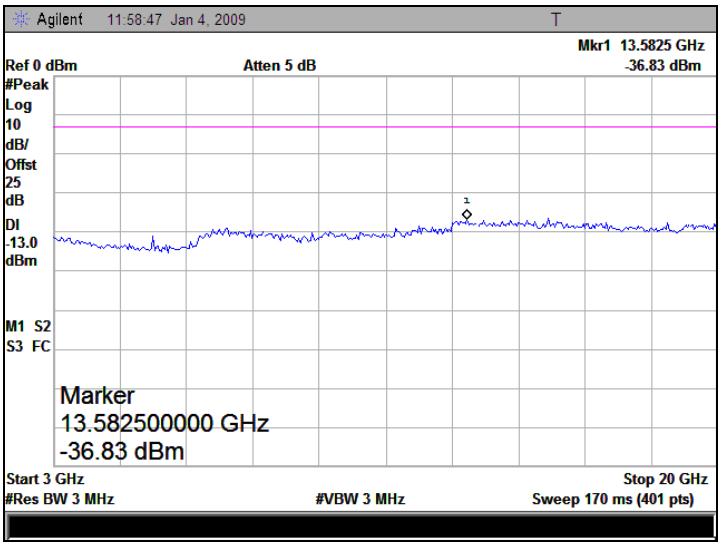
(Plot C.1: GSM 850MHz Channel = 251, 30MHz to 1GHz)



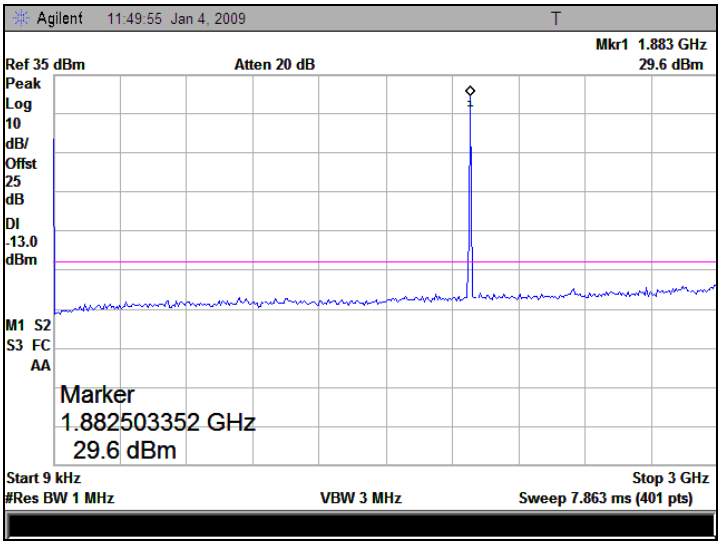
(Plot C.2: GSM 850MHz Channel = 251, 1GHz to 10GHz)



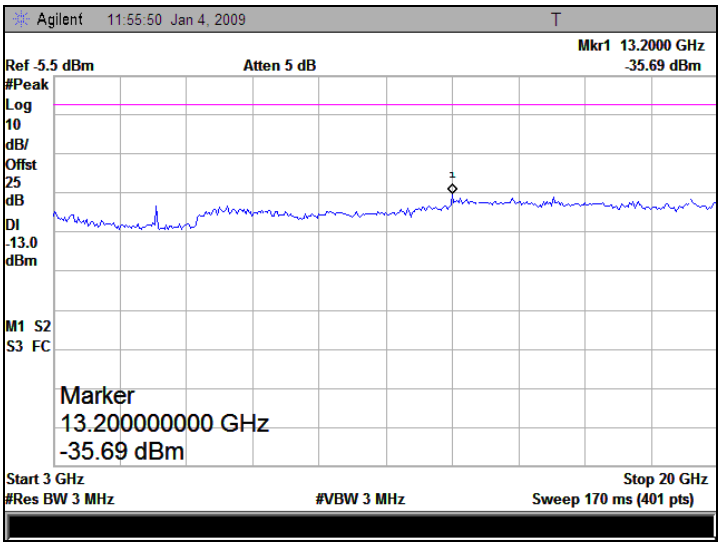
(Plot D.1: GSM 1900MHz Channel = 512, 9kHz to 3GHz)



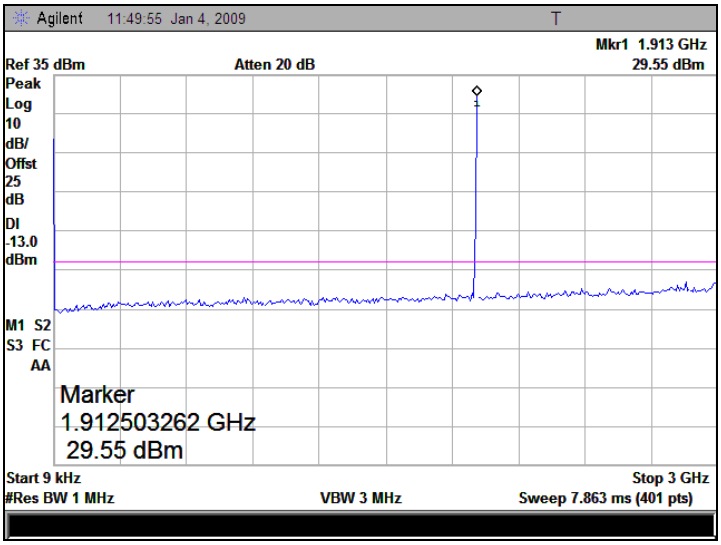
(Plot D.2: GSM 1900MHz Channel = 512, 3GHz to 20GHz)



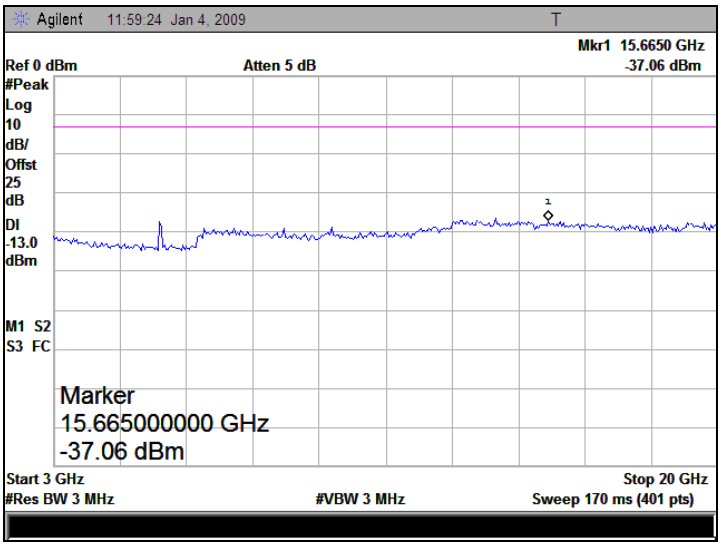
(Plot E.1: GSM 1900MHz Channel = 661, 9kHz to 3GHz)



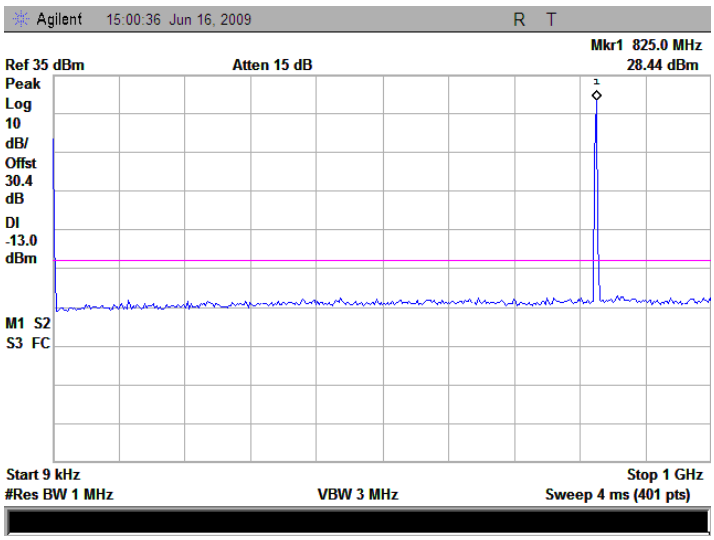
(Plot E.2: GSM 1900MHz Channel = 661, 3GHz to 20GHz)



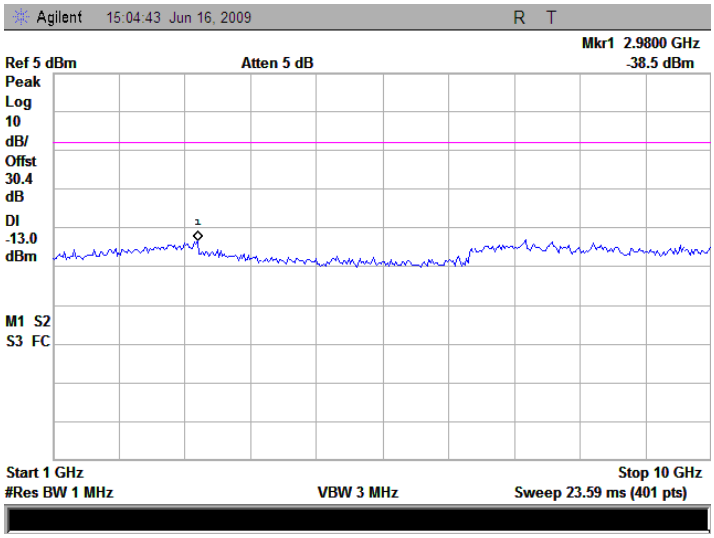
(Plot F.1: GSM 1900MHz Channel = 810, 9kHz to 3GHz)



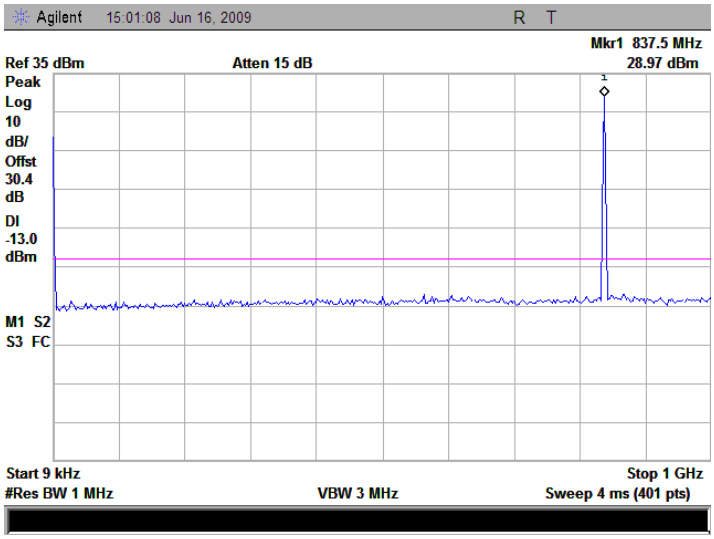
(Plot F.2: GSM 1900MHz Channel = 810, 3GHz to 20GHz)



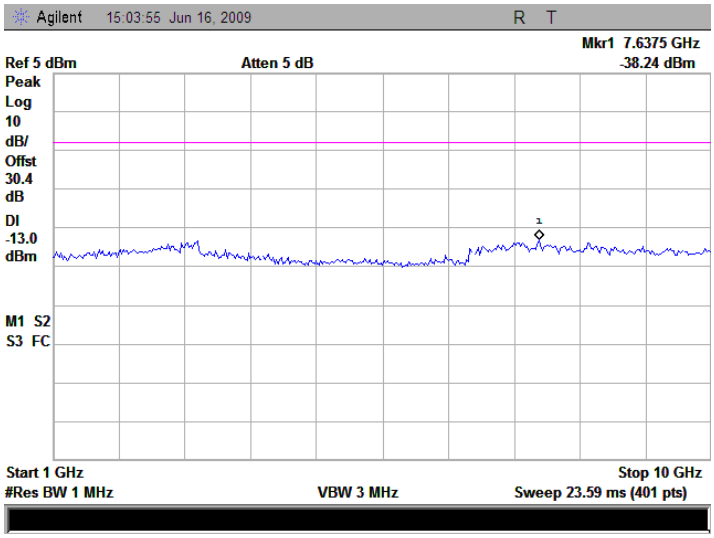
(Plot G.1: EDGE 850MHz Channel = 128, 9kHz to 1GHz)



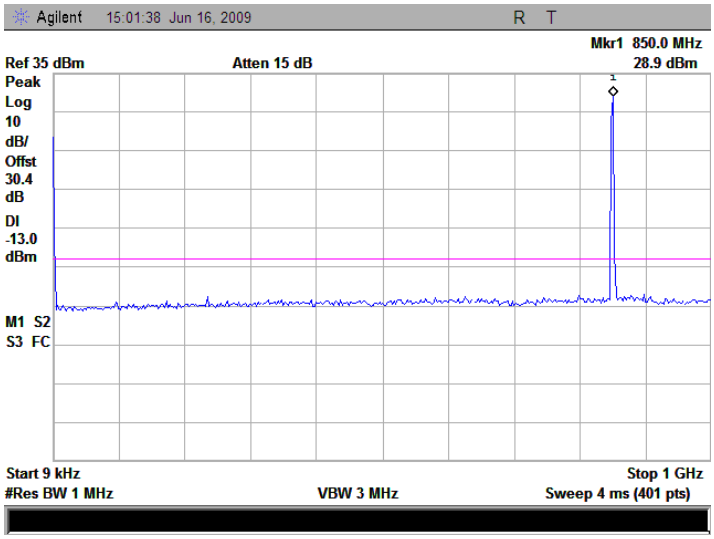
(Plot G.2: EDGE 850MHz Channel = 128, 1GHz to 10GHz)



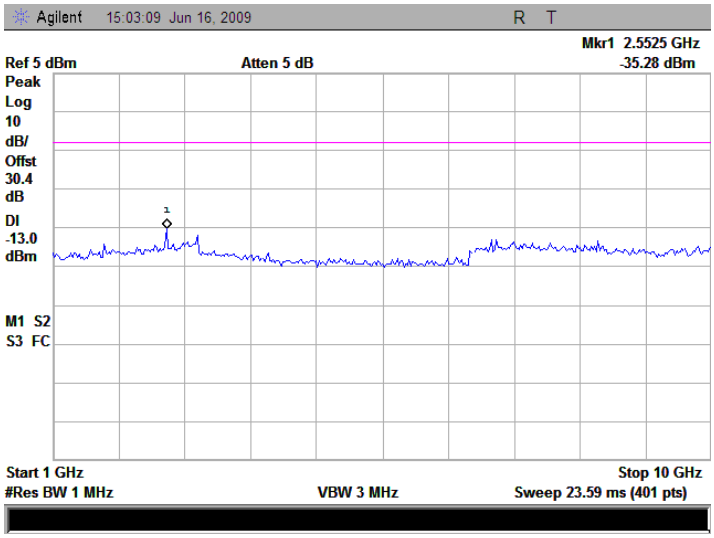
(Plot H.1: EDGE 850MHz Channel = 190, 9kHz to 1GHz)



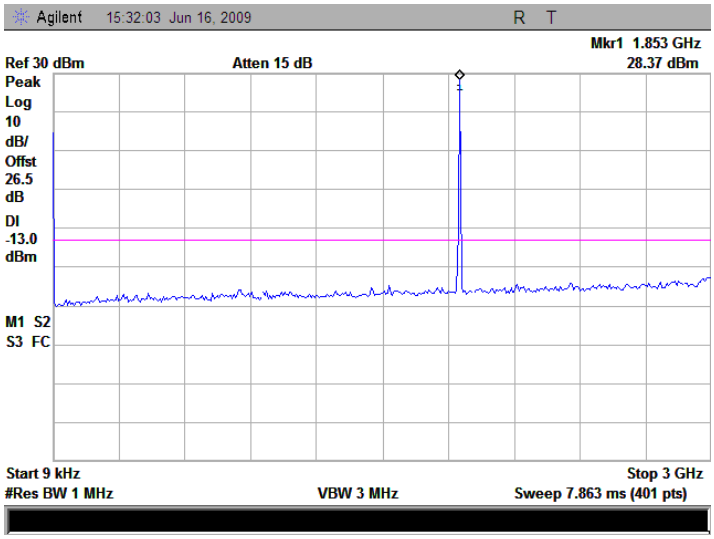
(Plot H.2: EDGE 850MHz Channel = 190, 1GHz to 10GHz)



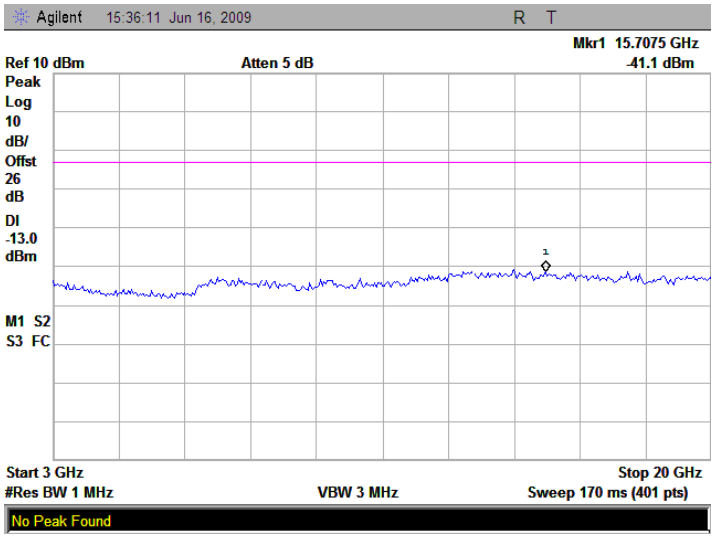
(Plot I.1: EDGE 850MHz Channel = 251, 9kHz to 1GHz)



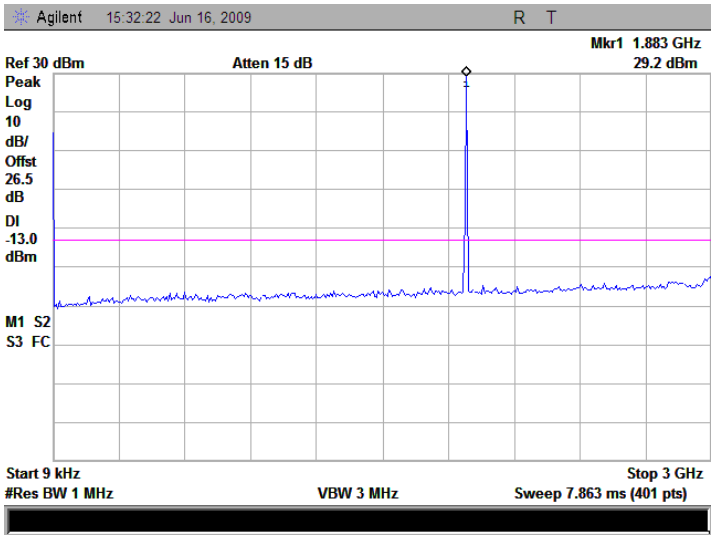
(Plot I.2: EDGE 850MHz Channel = 251, 1GHz to 10GHz)



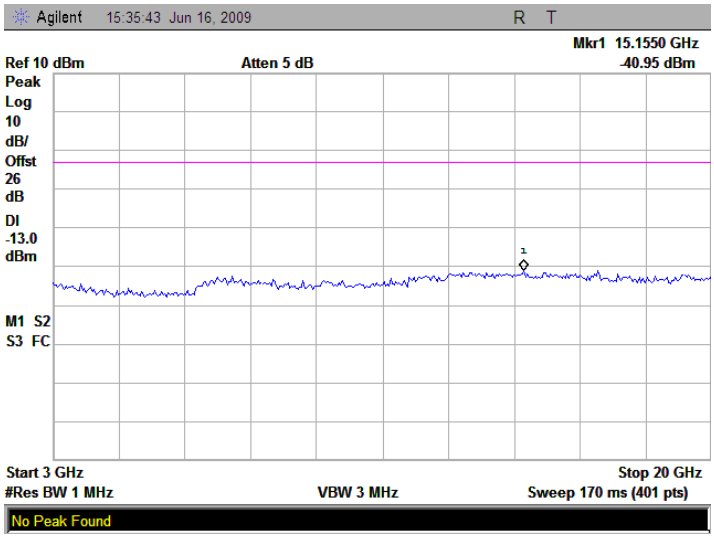
(Plot J.1: EDGE 1900MHz Channel = 512, 9kHz to 3GHz)



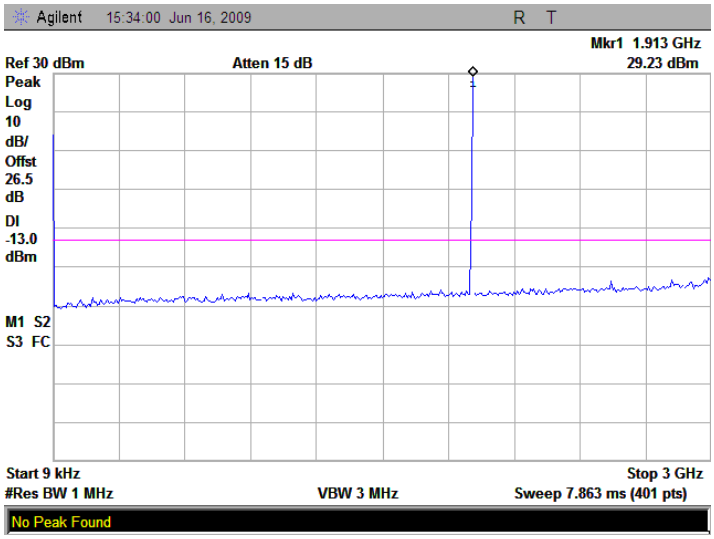
(Plot J.2: EDGE 1900MHz Channel = 512, 3GHz to 20GHz)



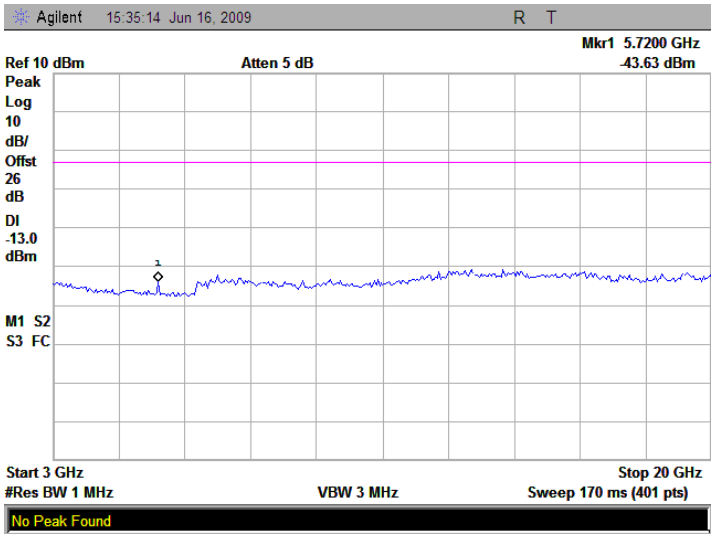
(Plot K.1: EDGE 1900MHz Channel = 661, 9kHz to 3GHz)



(Plot K.2: EDGE 1900MHz Channel = 661, 3GHz to 20GHz)



(Plot L.1: EDGE 1900MHz Channel = 810, 9kHz to 3GHz)



(Plot L.2: EDGE 1900MHz Channel = 810, 3GHz to 20GHz)

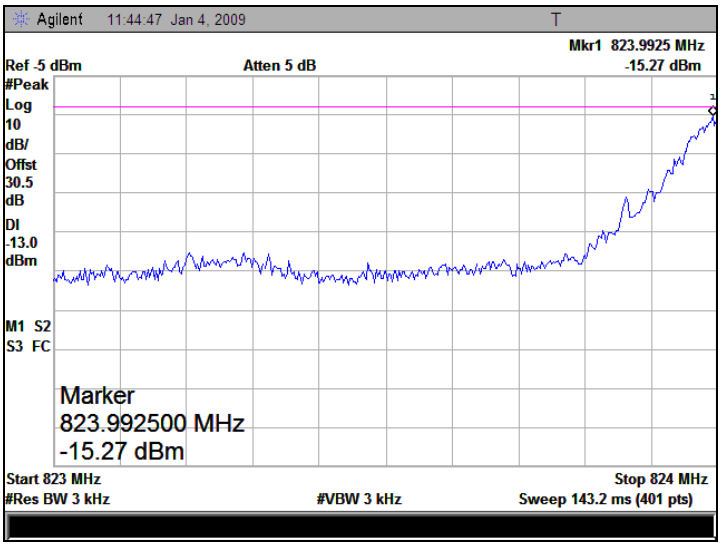
3.5.3.2 Plot for Band-edge

The lowest and highest channels are tested to verify the band edge emissions.

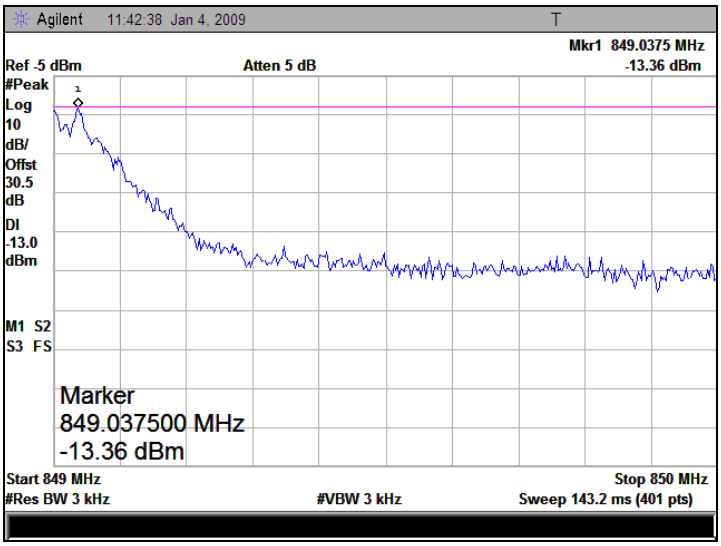
1. Test Verdict:

Band	Channel	Frequency (MHz)	Measured Max. Band Edge Emission (dBm)	Refer to Plot	Limit (dBm)	Verdict
GSM 850MHz	128	824.2	-15.27	Plat A1	-13	PASS
	251	848.8	-13.36	Plot B1		PASS
GSM 1900MHz	512	1850.2	-19.19	Plat C1	-13	PASS
	810	1909.8	-15.43	Plot D1		PASS
EDGE 850MHz	128	824.2	-19.85	Plat A2	-13	PASS
	251	848.8	-20.45	Plot B2		PASS
EDGE 1900MHz	512	1850.2	-21.50	Plat C2	-13	PASS
	810	1909.8	-19.82	Plot D2		PASS

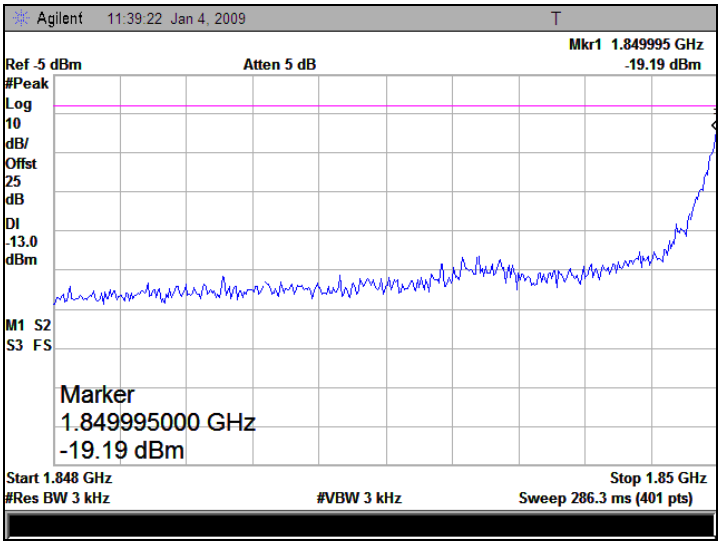
2. Test Plot:



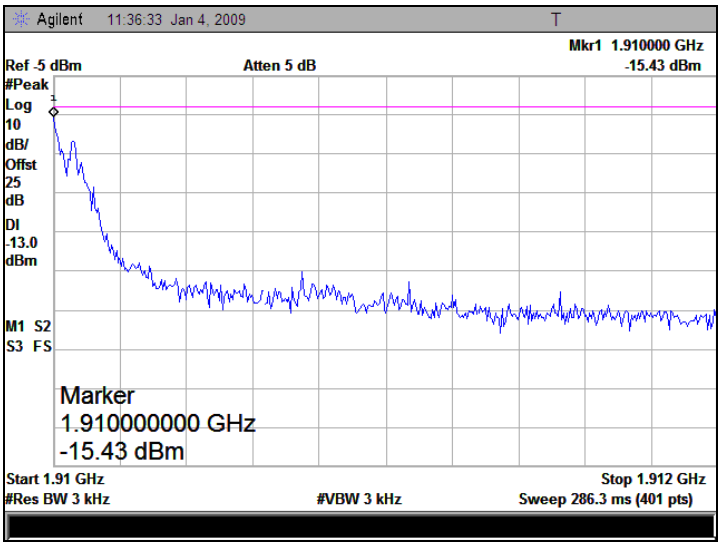
(Plot A1: GSM 850MHz Channel = 128)



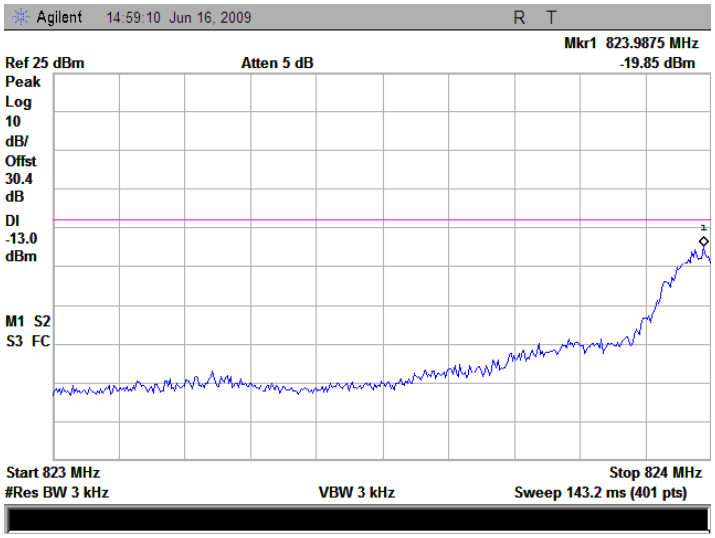
(Plot B1: GSM 850MHz Channel = 251)



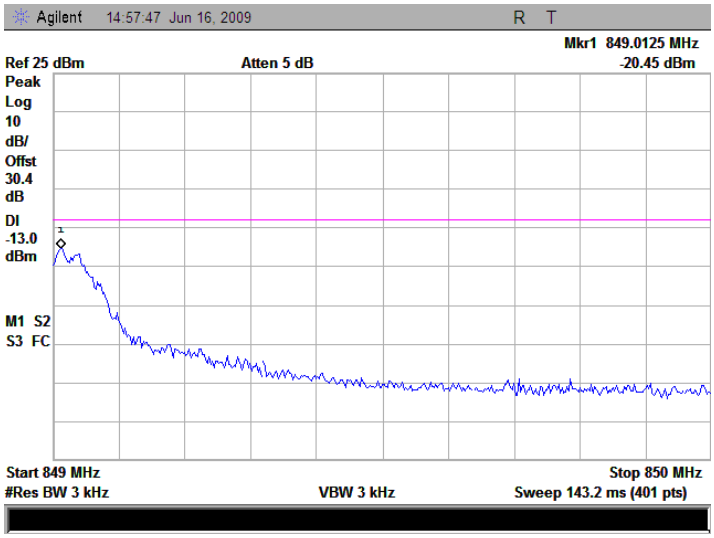
(Plot C1: GSM 1900MHz Channel = 512)



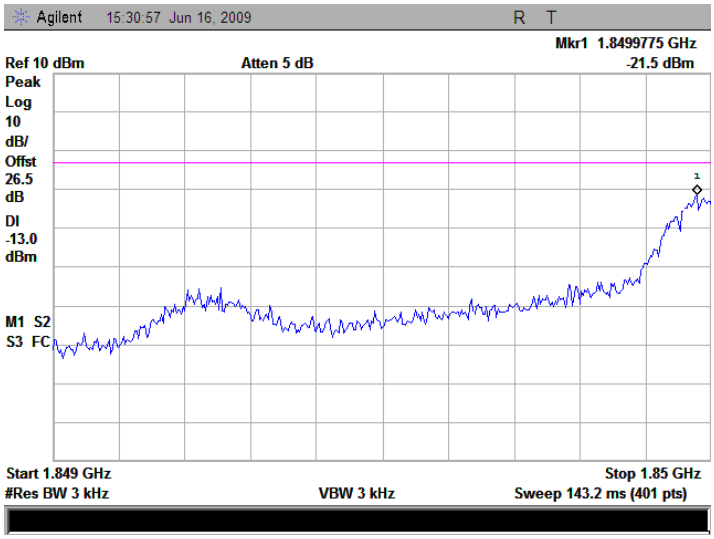
(Plot D1: GSM 1900MHz Channel = 810)



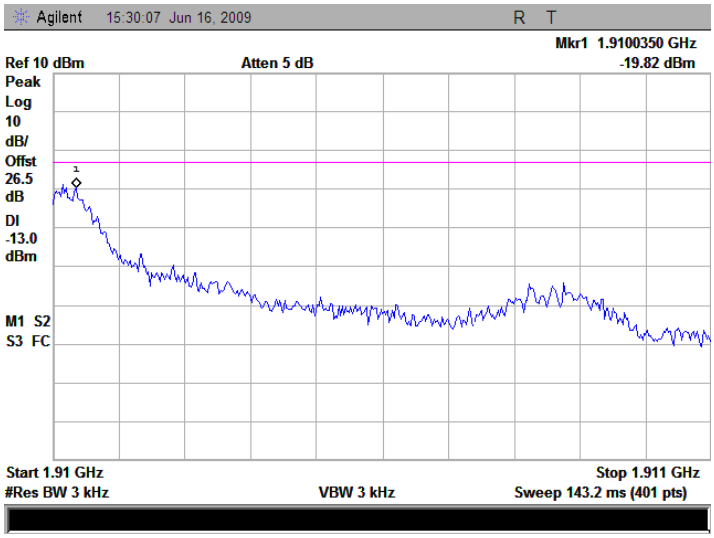
(Plot A2: EDGE 850MHz Channel = 128)



(Plot B2: EDGE 850MHz Channel = 251)



(Plot C2: EDGE 1900MHz Channel = 512)



(Plot D2: EDGE 1900MHz Channel = 810)

3.6 Transmitter Radiated Power (EIRP/ERP)

3.6.1 Requirement

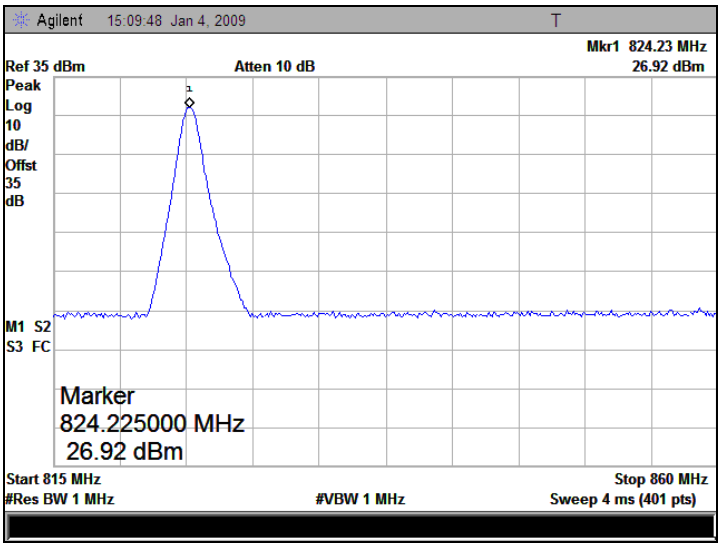
According to FCC §22.913, the ERP of Cellular mobile transmitters must not exceed 7 Watts (38.5dBm).

3.6.2 Test Procedure

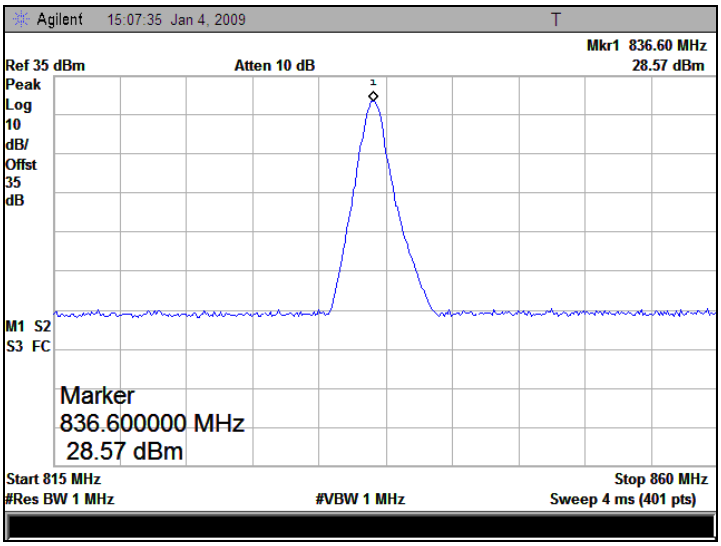
1. Perform test system setup as section 3.1.2.
2. The resolution bandwidth of the Spectrum Analyzer is set to be comparable to the emission bandwidth of the transmitter, e.g. for GSM modulated signal (here used): RBW=VBW=1MHz, for CDMA modulated signal: RBW=VBW=3MHz.
3. The low, middle and the high channels are selected to perform tests respectively. Set the TCH number to 128 (or 512) 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 (or 661) as the middle channel, then repeat step 5.
7. Set the TCH number to 251 (or 810) as the high channel, then repeat step 5.

3.6.3 Test Result

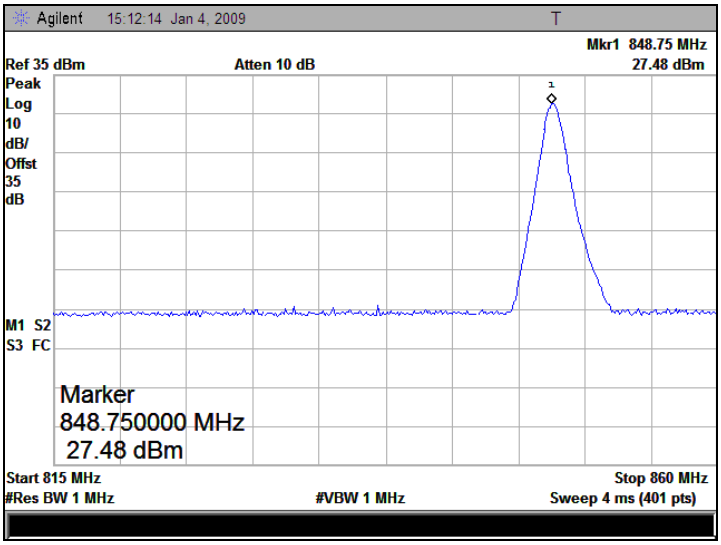
Band	Channel	Frequency (MHz)	Measured ERP/EIRP			Limit		Verdict
			dBm	W	Refer to Plot	dBm	W	
GSM 850MHz	128	824.20	26.92	0.49	Plot A1	38.45	7	PASS
	190	836.60	28.57	0.72	Plot A2			PASS
	251	848.80	27.48	0.56	Plot A3			PASS
GSM 1900MHz	512	1850.2	27.09	0.51	Plot B1	33	2	PASS
	661	1880.0	26.83	0.48	Plot B2			PASS
	810	1909.8	26.59	0.46	Plot B3			PASS
EDGE 850MHz	128	824.2	22.21	0.17	Plot C1	38.45	7	PASS
	190	836.6	22.52	0.18	Plot C2			PASS
	251	848.8	21.41	0.14	Plot C3			PASS
EDGE 1900MHz	512	1850.2	26.33	0.43	Plot D1	33	2	PASS
	661	1880.0	27.83	0.61	Plot D2			PASS
	810	1909.8	24.59	0.29	Plot D3			PASS



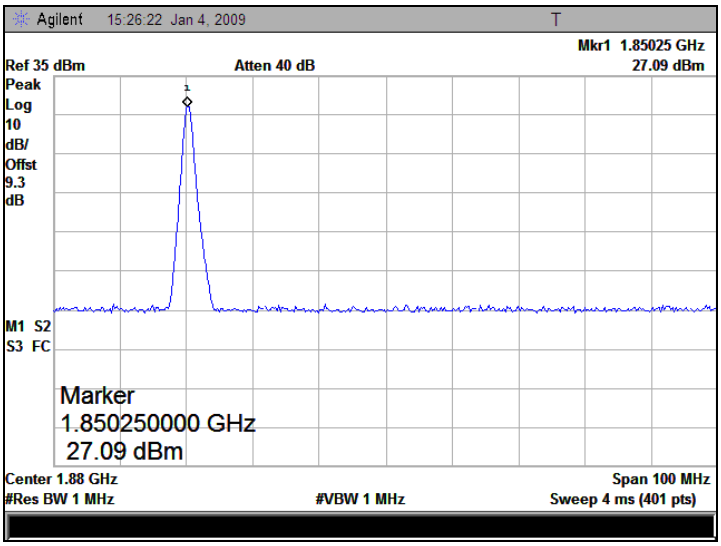
(Plot A1: GSM 850MHz Channel = 128)



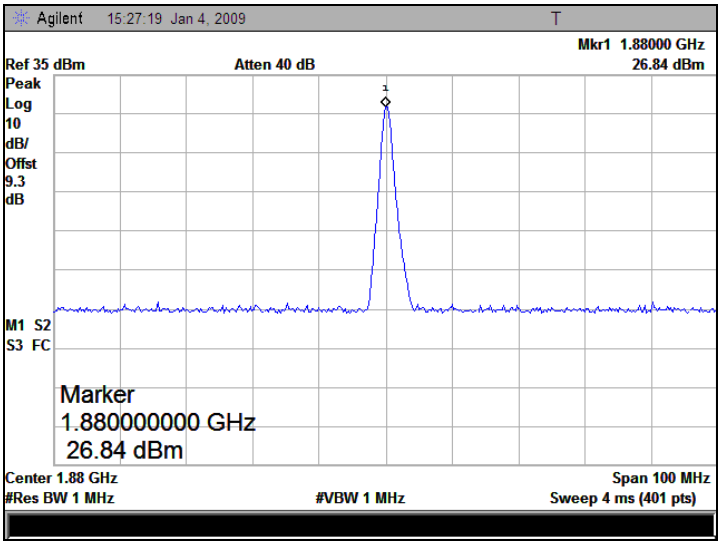
(Plot A2: GSM 850MHz Channel = 190)



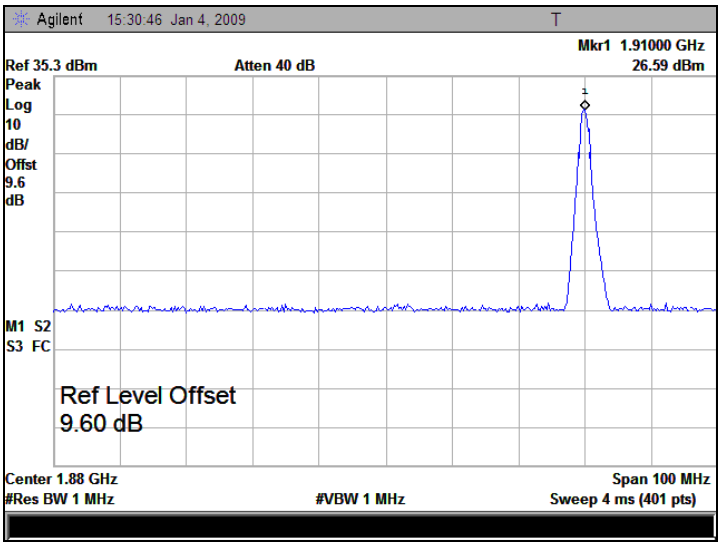
(Plot A3: GSM 850MHz Channel = 251)



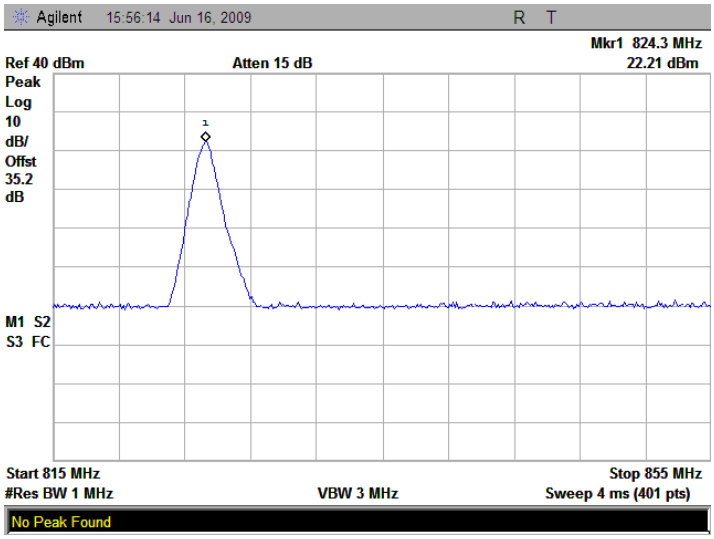
(Plot B1: GSM 1900MHz Channel = 512)



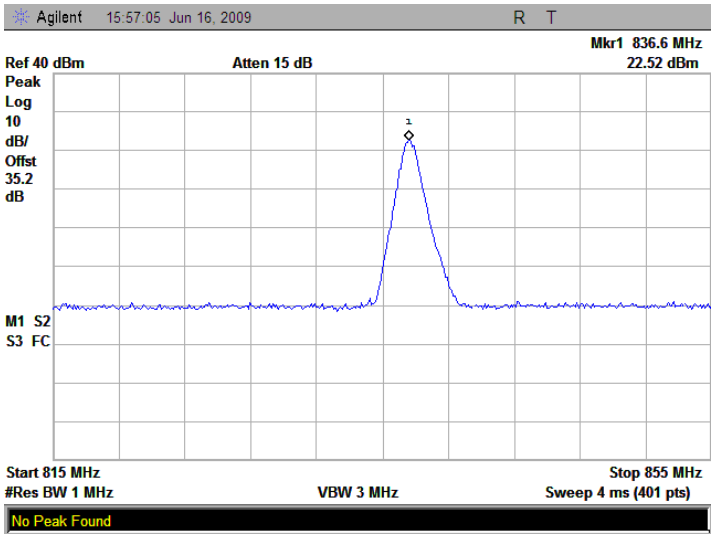
(Plot B2: GSM 1900MHz Channel = 661)



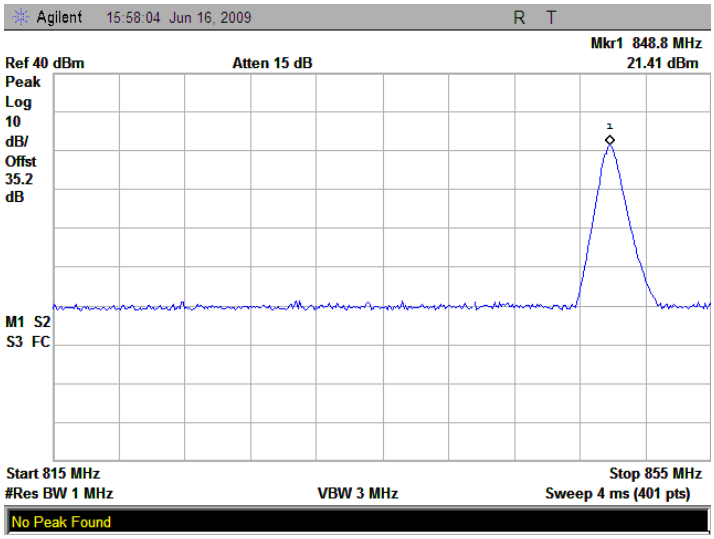
(Plot B3: GSM 1900MHz Channel = 810)



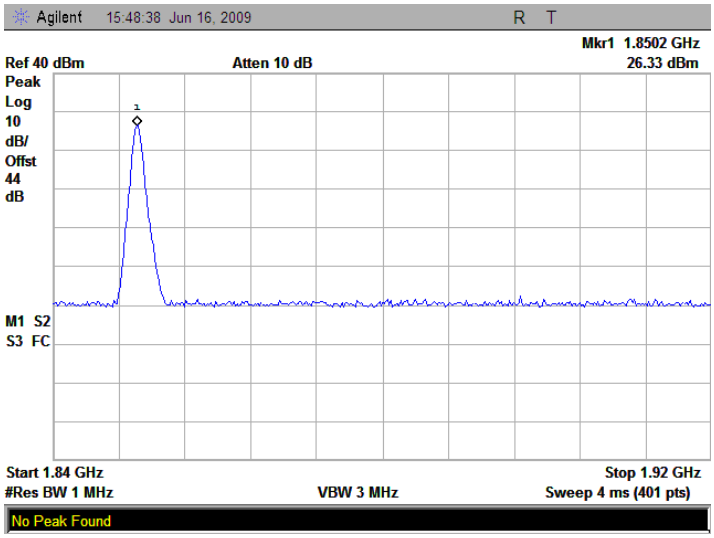
(Plot C1: EDGE 850MHz Channel = 128)



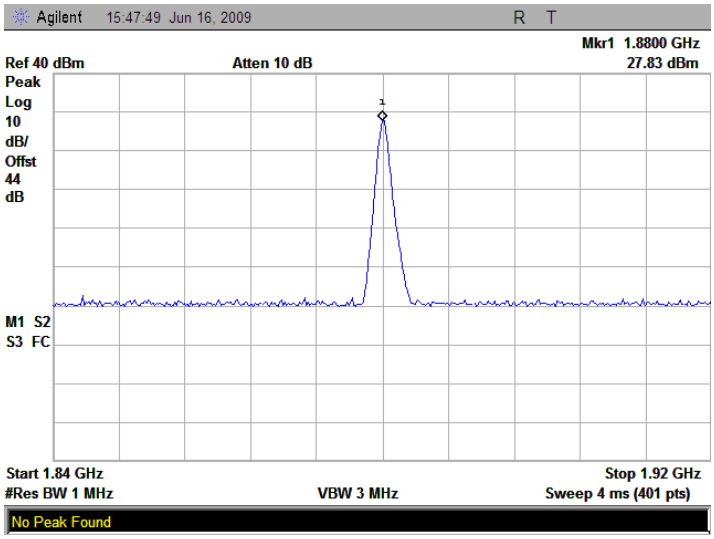
(Plot C2: EDGE 850MHz Channel = 190)



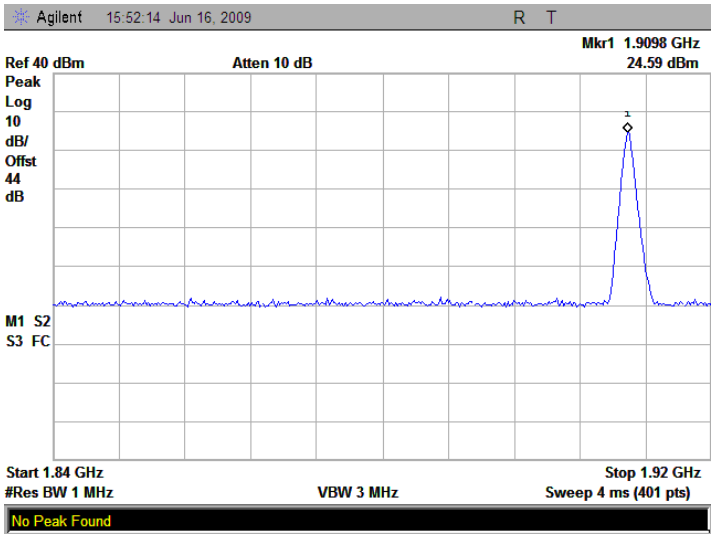
(Plot C3: EDGE 850MHz Channel = 251)



(Plot D1: EDGE 1900MHz Channel = 512)



(Plot D2: EDGE 1900MHz Channel = 661)



(Plot D3: EDGE 1900MHz Channel = 810)

3.7 Radiated Spurious Emission

3.7.1 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.

3.7.2 Test Procedure

1. Perform test system setup as section 3.1.2.
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 (or 512) 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 10^{th} harmonic of the fundamental frequency (here used 10GHz), then repeat step 5 to 7.
9. Set the TCH number to 190 (or 661) as the middle channel, then repeat step 4 to 8.
10. Set the TCH number to 251 (or 810) as the high channel, then repeat step 4 to 8.

3.7.3 Test Result

3.7.3.1 Table for the Harmonics

Band	Channel	Frequency (MHz)	Measured Max. Spurious Emission (dBm)		Limit (dBm)	Verdict
			Test Antenna Horizontal	Test Antenna Vertical		
GSM 850MHz	128	824.2	<-25	<-25	-13	PASS
	190	836.6	<-25	<-25		PASS
	251	848.8	<-25	<-25		PASS
GSM 1900MHz	512	1850.2	<-25	<-25	-13	PASS
	661	1880.0	<-25	<-25		PASS
	810	1909.8	<-25	<-25		PASS
EDGE 850MHz	128	824.2	<-25	<-25	-13	PASS
	190	836.6	<-25	<-25		PASS
	251	848.8	<-25	<-25		PASS
EDGE 1900MHz	512	1850.2	<-25	<-25	-13	PASS
	661	1880.0	<-25	<-25		PASS
	810	1909.8	<-25	<-25		PASS

3.8 Frequency Stability

3.8.1 Frequency Stability Requirement

According to FCC section 22.355 and FCC section 24.235, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. According to FCC section 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.

3.8.2 Test Procedure

1. Perform test system setup as section 3.1.3.
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. After sufficient stabilization, turn on the EUT, command it via the System Simulator (SS) to operate at the maximum output power i.e. A communication link is established between the EUT and the SS.
4. The low, middle and the high channels are selected to perform tests respectively. Set the TCH number to 128 (or 512) as the low channel.
5. The frequency deviation is measured (directly read from the SS, which can report the parameter) within three minutes.
6. Set the TCH number to 190 (or 661) as the middle channel, then repeat step 5.
7. Set the TCH number to 251 (or 810) as the high channel, then repeat step 5.
8. Adjust the temperature of the Temperature Chamber as specified in step 2, then repeat step 3 to 7.
9. 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.
10. 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.

3.8.3 Test Result

The nominal, highest and lowest extreme voltages are separately 3.7VDC, 4.2VDC and 3.6VDC, which are specified by the applicant; the normal temperature here used is 25°C. The frequency deviation limit of GSM/EDGE 850MHz band is ±2.5ppm, and GSM/EDGE 1900MHz is ±1ppm

1. Table for GSM/EDGE 850MHz

Band	Test Conditions		Frequency Deviation						Verdict
	Power (VDC)	Temperature (°C)	Channel = 128 (824.2MHz)		Channel = 190 (836.6MHz)		Channel = 251 (848.8MHz)		
			Hz	Limits	Hz	Limits	Hz	Limits	
GSM 850MHz	3.7	-30	31.25	±2060.5	37.14	±2091.5	35.24	±2122	PASS
		-20	28.10		26.53		9.84		
		-10	21.5		31.45		37.46		
		0	-18.8		-26.72		-31.05		
		+10	24.15		-27.61		24.51		
		+20	23.63		22.53		-22.74		
		+30	30.29		-21.43		19.84		
		+40	41.72		35.24		15.26		
		+50	-12.84		18.42		-24.54		
	4.2	+25	22.31		34.51		34.36		
	3.6	+25	33.25		-24.15		15.45		
EDGE 850MHz	3.7	-30	21.24	±2060.5	25.16	±2091.5	24.28	±2122	PASS
		-20	37.10		30.47		19.57		
		-10	11.52		20.58		28.47		
		0	-28.4		22.33		-35.05		
		+10	14.18		-27.57		24.55		
		+20	23.25		32.53		-25.41		
		+30	31.27		27.14		18.86		
		+40	31.75		33.44		20.27		
		+50	22.82		19.55		-25.77		
		+25	12.51		23.25		24.24		
		+25	23.27		26.53		19. 54		
	4.2	+25	35.38		24.47		22.36		
	3.6	+25	25. 33		26.54		24.35		

2. Table for GSM/EDGE 1900MHz

Band	Test Conditions		Frequency Deviation						Verdict
	Power (VDC)	Temperature (°C)	Channel = 512 (1850.2MHz)		Channel = 661 (1880.0MHz)		Channel = 810 (1909.8MHz)		
			Hz	Limits	Hz	Limits	Hz	Limits	
GSM 1900MHz	3.7	-30	18.43	±1850.2	35.64	±1880.0	18.85	±1909.8	PASS
		-20	24.86		29.45		24.73		
		-10	27.47		-21.85		28.64		
		0	-41.42		-11.34		-25.91		
		+10	-27.41		26.94		-12.56		
		+20	18.43		24.75		8.77		
		+30	-26.43		27.83		14.69		
		+40	-34.51		17.42		35.94		
		+50	17.45		-8.86		-25.47		
	4.2	+25	25.96		-17.47		-28.35		
	3.6	+25	28.34		17.21		22.54		
EDGE 1900MHz	3.7	-30	21.24	±2060.5	27.15	±2091.5	25.36	±2122	PASS
		-20	18.17		24.36		19.2		
		-10	21.57		30.44		27. 64		
		0	-28.85		-16.72		-35.08		
		+10	-24.15		25.61		27.19		
		+20	23.7		22.53		-25. 47		
		+30	20.05		-25.13		20.81		
		+40	31. 27		15.04		23.23		
		+50	-22.81		20.42		-24.54		
		+25	25.21		24.45		24.35		
		+25	30..25		27.25		25.44		
	4.2	+25	22.38		23.27		22.46		
	3.6	+25	30.21		20.24		25.51		

** END OF REPORT **