FCC 47 CFR PART 15 SUBPART C

Product Type	:	2.4 GHz Wireless Laser Mouse
Applicant	:	Toshiba Corporation
Address		2-9, Suehiro-Cho, Ome, 198-8710 Tokyo, Japan
Trade Name	:	TOSHIBA
Model Number	:	M60GM
Test Specification	:	FCC 47 CFR PART 15 SUBPART C: Oct., 2009 ANSI C63.4-2003
Issue Date	:	Feb. 18, 2011

Issue by

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Taiwan Accreditation Foundation accreditation number: 1330

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Revision History

Rev.	Issue Date	Revisions	Revised By
00	Feb. 18, 2011	Initial Issue	

Verification

Issued Date: 2011/02/18

Product Type	:	2.4 GHz Wireless Laser Mouse
Applicant	:	Toshiba Corporation
Address	:	2-9, Suehiro-Cho, Ome, 198-8710 Tokyo, Japan
Trade Name	:	TOSHIBA
Model Number	:	M60GM
FCC ID	:	CJ6M60GM
EUT Rated Voltage	:	DC 1.5V, 100mA
Test Voltage	:	DC 1.5V
Applicable Standard	:	FCC 47 CFR PART 15 SUBPART C: Oct., 2009 ANSI C63.4-2003
Test Result	:	Complied
Performing Lab.	:	A Test Lab Techno Corp. No. 140-1, Changan Street, Bade City, Taoyuan County 334, Taiwan R.O.C. Tel：+886-3-2710188 / Fax：+886-3-2710190 Taiwan Accreditation Foundation accreditation number: 1330 http://www.atl-lab.com.tw/e-index.htm

The above equipment was tested by A Test Lab Techno Corp. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4: 2003 and the energy emitted by the sample tested as described in this report is in compliance with the requirements of FCC Rules Part 15.207, 15.209, 15.249 .
The test results of this report relate only to the tested sample identified in this report.

Approved By	:	Reviewed By	:
(Manager)	(Miller Lee)	(Testing Engineer)	(Gary Wu)

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1 General Information

1.1 Summary of Test Result

Standard		Item	Result	Remark
15.249	RSS-GEN			
15.207	7.2.2	AC Power Conducted Emission	N/A	Not applicable
-----	6	Receiver Radiated Emissions	PASS	-----
Standard		Item	Result	Remark
15.249	RSS-210			
15.249(a)	A8.4	Transmitter Radiated Emissions	PASS	-----
15.249(d)	A8.5	Band Edge Measurement	PASS	-----
15.249(e)	A8.1 (a)	20dB RF Bandwidth	PASS	-----

The test results of this report relate only to the tested sample(s) identified in this report. Manufacturer or whom it may concern should recognize the pass or fail of the test result.

1.2 Measurement Uncertainty

Conducted Emission

The measurement uncertainty is evaluated as ± 2.24 dB.

Radiated Emission

The measurement uncertainty of 30 MHz - 1GHz is evaluated as ± 3.072dB.

2 EUT Description

Product	:	2.4 GHz Wireless Laser Mouse
Trade Name	:	TOSHIBA
Model Number	:	M60GM
Applicant	:	Toshiba Corporation 2-9, Suehiro-Cho, Ome, 198-8710 Tokyo, Japan
Manufacturer	:	Darfon Electronics (Suzhou) Co., Ltd. 99 Zhu Yuan Road, New District, Suzhou Jiangsu, China
FCC ID	:	CJ6M60GM
Frequency Range	:	2408 ~ 2479 MHz
Modulation Type	:	GFSK
Number of Channel	:	12 CH
Antenna Type	:	PCB Antenna
Antenna Gain	:	3.71 dBi
Field Strength	:	91.91 dBuV/m
Power Source	:	DC Voltage supplied from 1 x AA size Battery
Power Rating	:	DC 1.5 V, 100mA

3 Test Methodology

3.1. Mode of Operation

Decision of Test ATL has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode
Mode 1: Normal Operation Mode
Mode 2: Transmission Mode
Mode 3: Receiver Mode

Tested System Details

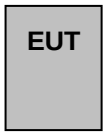
The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model Number	Serial Number	Power Cord
1.	-----	-----	-----	-----	-----

3.2. EUT Exercise Software

1.	Setup the EUT as shown on 3.3.
2.	Turn on the power of EUT.

3.3. Configuration of Test System Details



Signal Cable Type		Signal Cable Description
-----	-----	-----

3.4. Test Site Environment

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	25
Humidity (%RH)	25-75	50
Barometric pressure (mbar)	860-1060	950

4 Conducted Emission Measurement

4.1. Limit

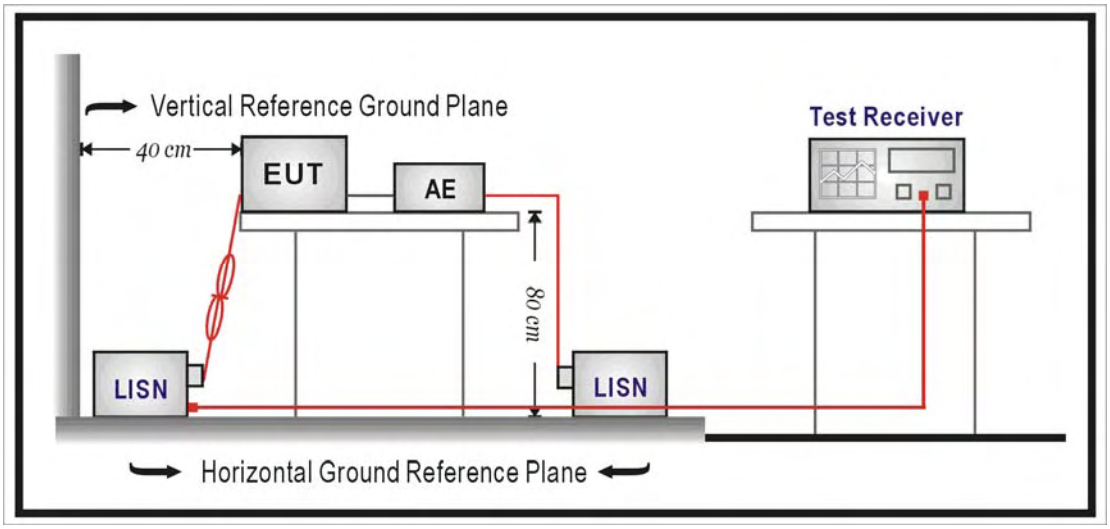
Frequency (MHz)	Quasi-peak	Average
0.15 - 0.5	66 to 56	56 to 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

4.2. Test Instruments

Describe	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Test Receiver	R&S	ESCI	100367	07/01/2010	(1)
LISN	R&S	ENV216	101040	03/02/2010	(1)
LISN	R&S	ENV216	101041	03/02/2010	(1)
Test Site	ATL	TE02	TE02	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years.
NOTE: N.C.R. = No Calibration Request.

4.3. Test Setup



4.4. Test Procedure

The power line conducted emission measurements were performed in a shielded enclosure. The EUT was assembled on a wooden table which is 80 centimeters high, was placed 40 centimeters from the back wall and at least 1 meter from the sidewall.

Power was fed to the EUT from the public utility power grid through a line filter and EMCO Model 3162/2 SH Line Impedance Stabilization Networks (LISN). The LISN housing, measuring instrumentation case, ground plane, etc., were electrically bonded together at the same RF potential. The Spectrum analyzer was connected to the AC line through an isolation transformer. The 50-ohm output of the LISN was connected to the spectrum analyzer directly. Conducted emission levels were in the CISPR quasi-peak detection mode. The analyzer's 6 dB bandwidth was set to 9 KHz. No post-detector video filter was used.

The spectrum was scanned from 150 KHz to 30 MHz. The physical arrangement of the test system and associated cabling was varied (within the scope of arrangements likely to be encountered in actual use) to determine the effect on the unit's emanations in amplitude and frequency. All spurious emission frequencies were observed. The highest emission amplitudes relative to the appropriate limit were measured and have been recorded in paragraph 4.1.

4.5. Test Result

Not applicable, this device used DC power source.

5 Radiated Interference Measurement

5.1. Limit

Frequency (MHz)	Field Strength (μV/m at meter)	Measurement Distance (meter)
0.009 – 0.490	2400 / F (kHz)	300
0.490 – 1.705	24000 / F (kHz)	30
1.705 – 30.0	30	30
30 - 88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Harmonic emissions limits comply with below 54 dBuV/m at 3m. Other emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or comply with the radiated emissions limits specified in section 15.209(a) limit in the table below has to be followed.

Note: (1) The tighter limit applies at the band edges.

(2) Emission level (dBuV/m)=20log Emission level (uV/m).

Limits of Radiated Emission Measurement (FCC 15.209)

Frequency (MHz)	Class A (dBuV/m) (at 3m)		Class B (dBuV/m) (at 3m)	
	Peak	AVG	Peak	AVG
0.009 – 0.490	80	60	74	54

Notes: (1) The limit for radiated test was performed according to FCC PART 15C.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

Limits of Radiated Emission Measurement (FCC Part 15.249)

Frequency Range (MHz)	Limit
2400-2483.5	Field strength of fundamental 50000 μV/m (94 dB μV/m) @ 3 m
Above 2483.5	Field strength of harmonics 500 μV/m (54 dB μV/m) @ 3 m

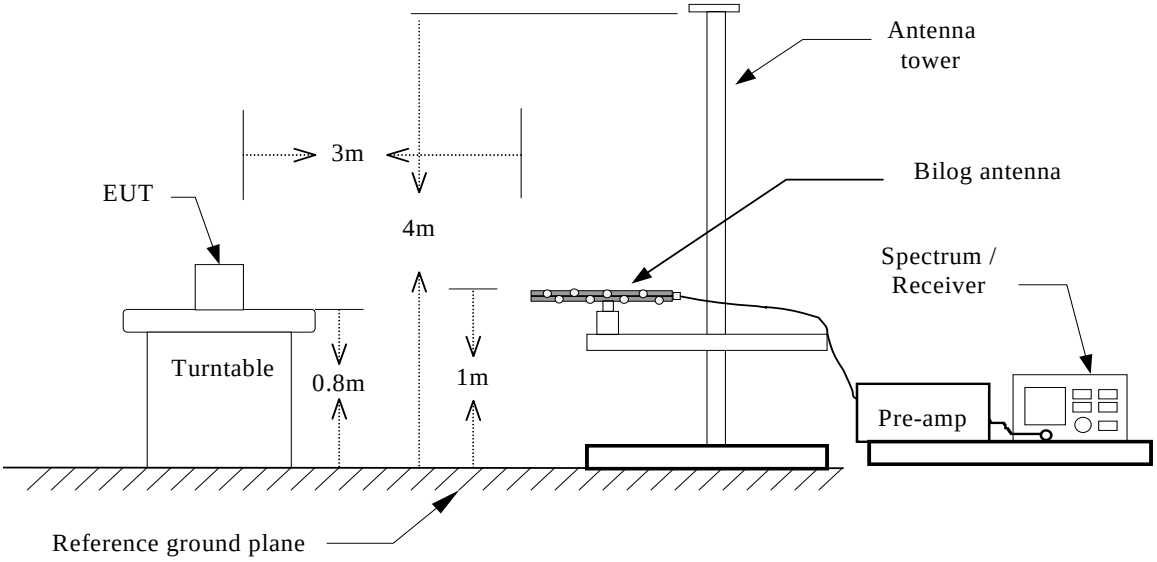
5.2. Test Instruments

3 Meter Chamber					
Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
RF Pre-selector	Agilent	N9039A	MY46520256	01/18/2011	(2)
Spectrum Analyzer	Agilent	E4446A	MY46180578	02/24/2010	(1)
Pre Amplifier	Agilent	8449B	3008A02237	02/24/2010	(1)
Pre Amplifier	Agilent	8447D	2944A10961	02/24/2010	(1)
Bi-log Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	9163-270	08/02/2010	(1)
Horn Antenna	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	9120D-550	06/29/2010	(1)
Horn Antenna	SCHWARZBECK MESS-ELEKTRONIK	BBHA9170	9170-320	06/29/2010	(1)
Test Site	ATL	TE01	888001	07/30/2010	(1)

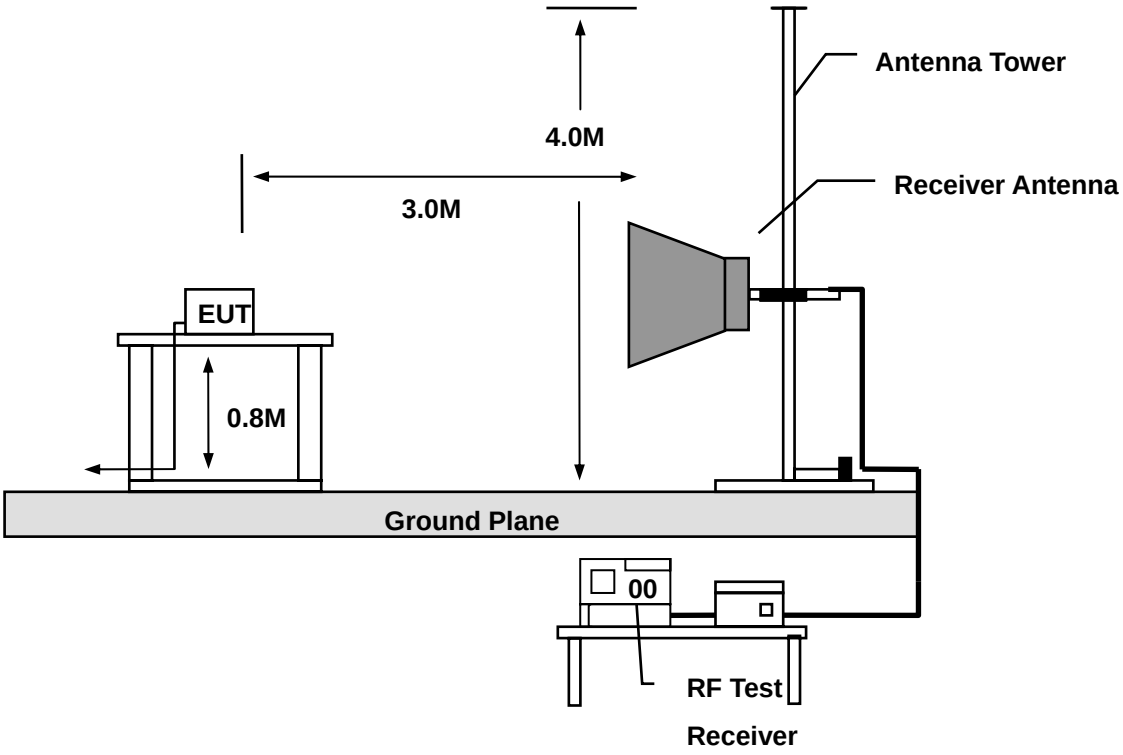
Remark: (1) Calibration period 1 year. (2) Calibration period 2 years.
NOTE: N.C.R. = No Calibration Request.

5.3. Setup

30MHz ~ 1 GHz



Above 1 GHz



5.4. Test Procedure

Final radiation measurements were made on a three-meter, Semi Anechoic Chamber. The EUT system was placed on a nonconductive turntable which is 0.8 meters height, top surface 1.0 x 1.5 meter. The spectrum was examined from 250 MHz to 2.5 GHz in order to cover the whole spectrum below 10th harmonic which could generate from the EUT. During the test, EUT was set to transmit continuously & Measurements spectrum range from 30 MHz to 26.5 GHz is investigated.
For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, and then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.
A nonconductive material surrounded the EUT to supporting the EUT for standing on tree orthogonal planes. At each condition, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters to find the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarization.
SCHWARZBECK MESS-ELEKTRONIK Biconilog Antenna (mode VULB9163) at 3 Meter and the SCHWARZBECK Double Ridged Guide Antenna (model BBHA9120D&9170) was used in frequencies 1 – 26.5 GHz at a distance of 1 meter. All test results were extrapolated to equivalent signal at 3 meters utilizing an inverse linear distance extrapolation Factor (20dB/decade).

For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
Appropriate preamplifiers were used for improving sensitivity and precautions were taken to avoid overloading or desensitizing the spectrum analyzer. No post – detector video filters were used in the test.

The spectrum analyzer's 6 dB bandwidth was set to 1 MHz, and the analyzer was operated in the peak detection mode, for frequencies both below and up 1 GHz. The average levels were obtained by subtracting the duty cycle correction factor from the peak readings.
The following procedures were used to convert the emission levels measured in decibels referenced to 1 microvolt (dBuV) into field intensity in micro volts pre meter (uV/m).
The actual field intensity in decibels referenced to 1 microvolt in to field intensity in micro colts per meter (dBuV/m).

The actual field is intensity in referenced to 1 microvolt per meter (dBuV/m) is determined by algebraically adding the measured reading in dBuV, the antenna factor (dB), and cable loss (dB) and Subtracting the gain of preamplifier (dB) is auto calculate in spectrum analyzer.

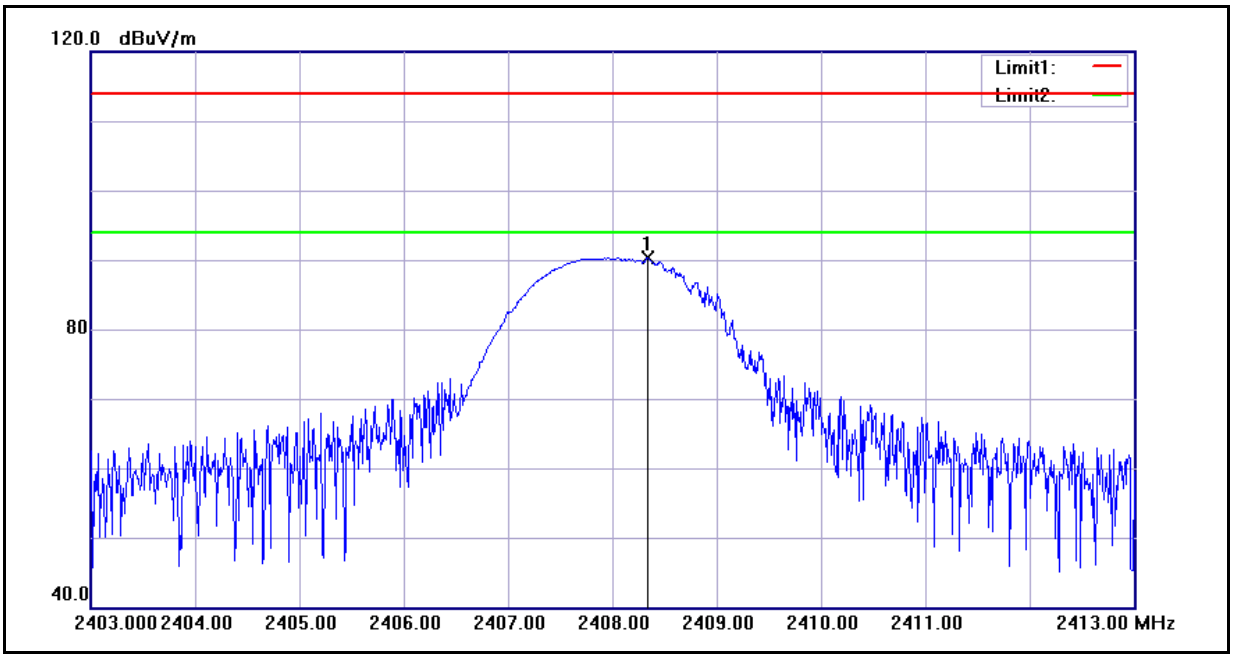
(1) Amplitude (dBuV/m) = FI (dBuV) +AF (dBuV) +CL (dBuV)-Gain (dB)
FI= Reading of the field intensity.
AF= Antenna factor.
CL= Cable loss.
P.S Amplitude is auto calculate in spectrum analyzer.

(2) Actual Amplitude (dBuV/m) = Amplitude (dBuV)-Dis(dB)
The FCC specified emission limits were calculated according the EUT operating frequency and by following linear interpolation equations:
(a) For fundamental frequency : Transmitter Output < +30dBm
(b) For spurious frequency : Spurious emission limits = fundamental emission limit /10

5.5. Test Result

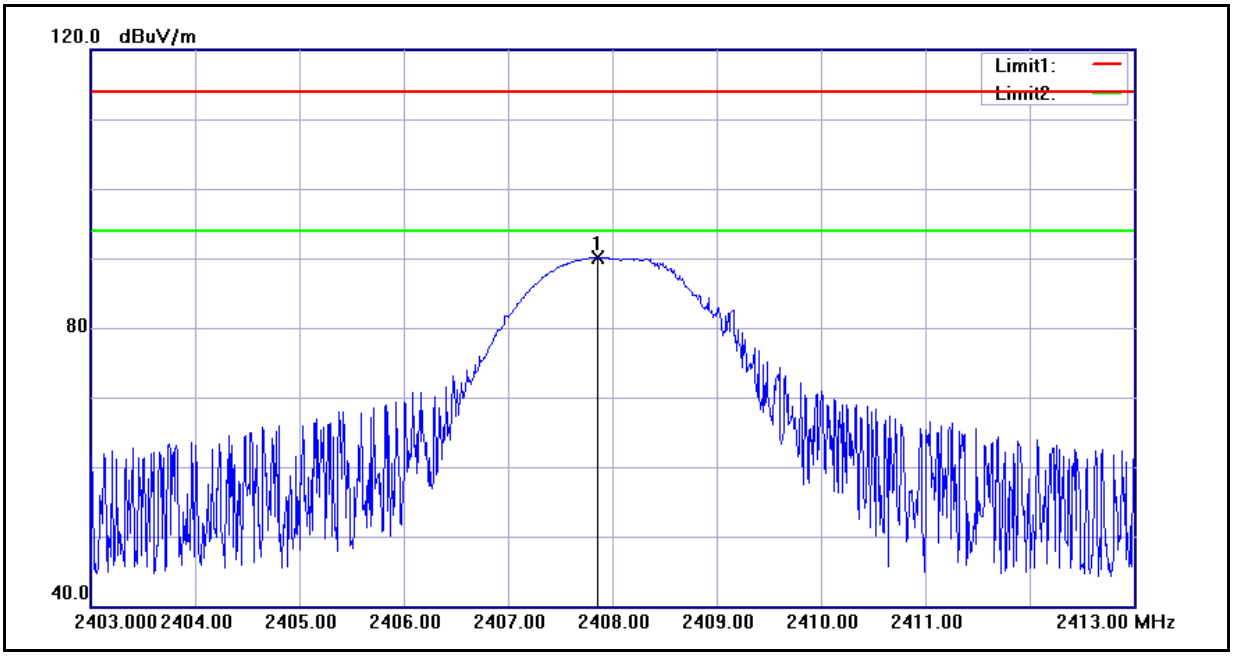
Fundamental Test Result:

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	DC 1.5V
Model Number:	M60GM	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 2	Date:	2011/02/10
Frequency:	2408 MHz	Test By:	Gary Wu
Ant.Polar.:	Horizontal		



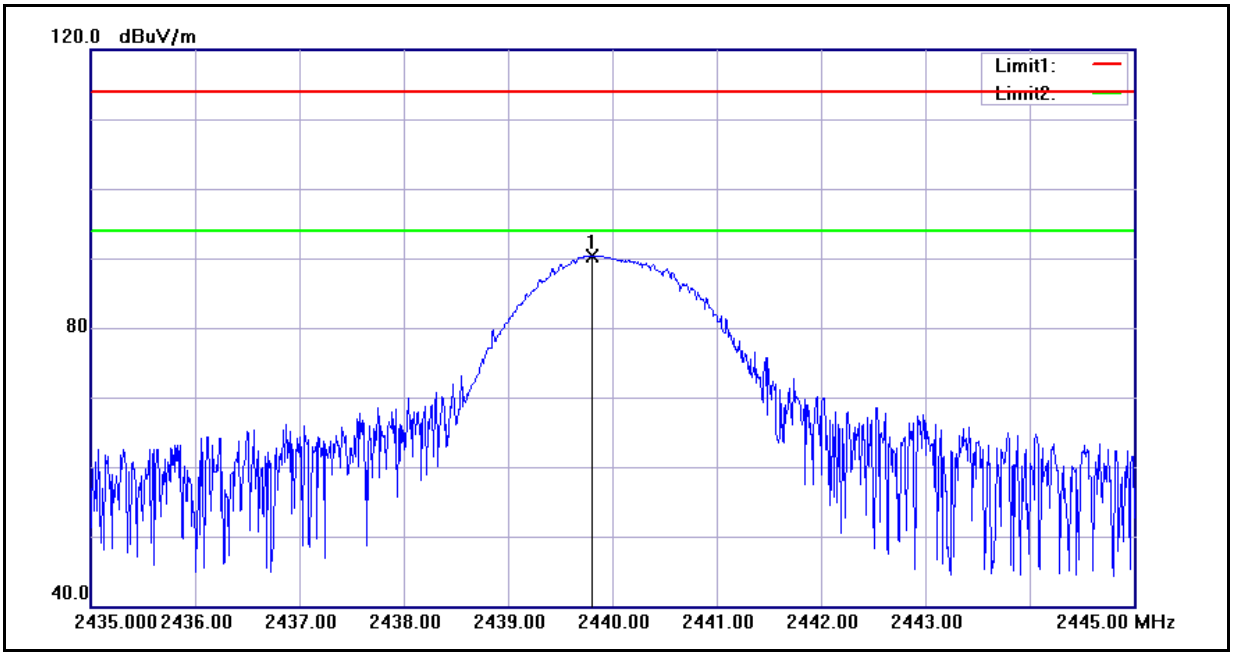
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2408.340	90.51	-0.14	90.37	114.00	-23.63	Peak

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	DC 1.5V
Model Number:	M60GM	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 2	Date:	2011/02/10
Frequency:	2408 MHz	Test By:	Gary Wu
Ant.Polar.:	Vertical		



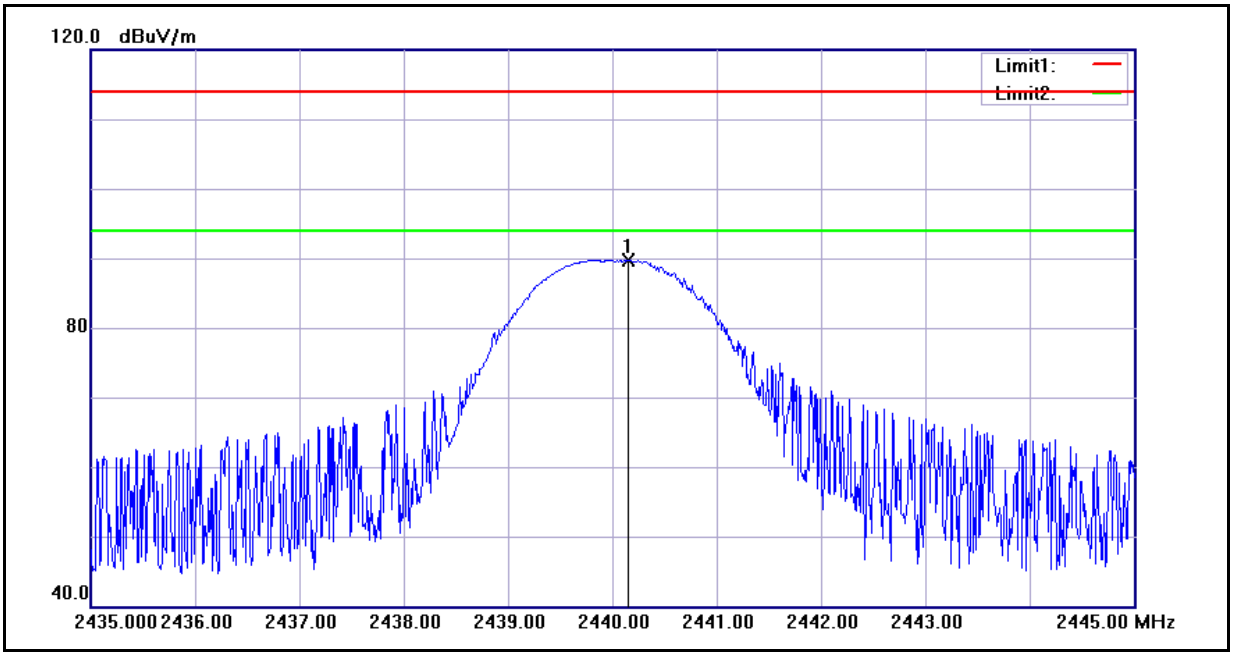
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2407.860	90.24	-0.14	90.10	114.00	-23.90	Peak

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	DC 1.5V
Model Number:	M60GM	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 2	Date:	2011/02/11
Frequency:	2440 MHz	Test By:	Gary Wu
Ant.Polar.:	Horizontal		



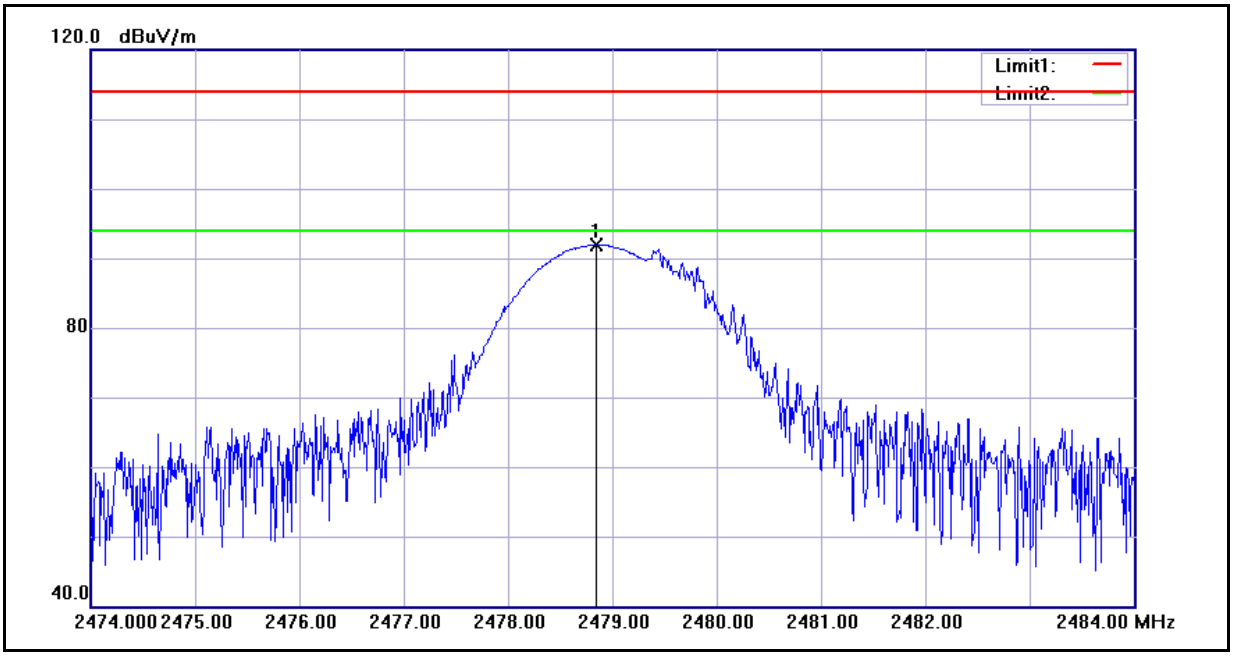
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2439.810	90.33	-0.01	90.32	114.00	-23.68	Peak

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	DC 1.5V
Model Number:	M60GM	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 2	Date:	2011/02/10
Frequency:	2440 MHz	Test By:	Gary Wu
Ant.Polar.:	Vertical		



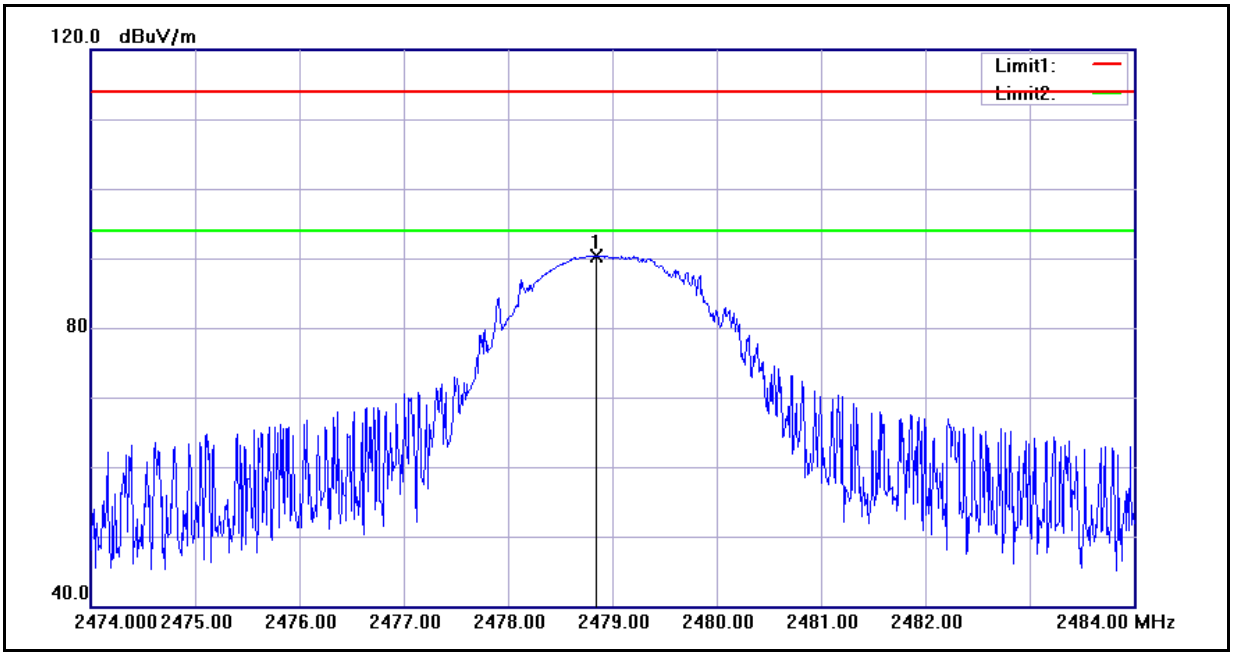
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2440.150	89.76	-0.01	89.75	114.00	-24.25	Peak

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	DC 1.5V
Model Number:	M60GM	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 2	Date:	2011/02/10
Frequency:	2479 MHz	Test By:	Gary Wu
Ant.Polar.:	Horizontal		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2478.840	91.77	0.14	91.91	114.00	-22.09	Peak

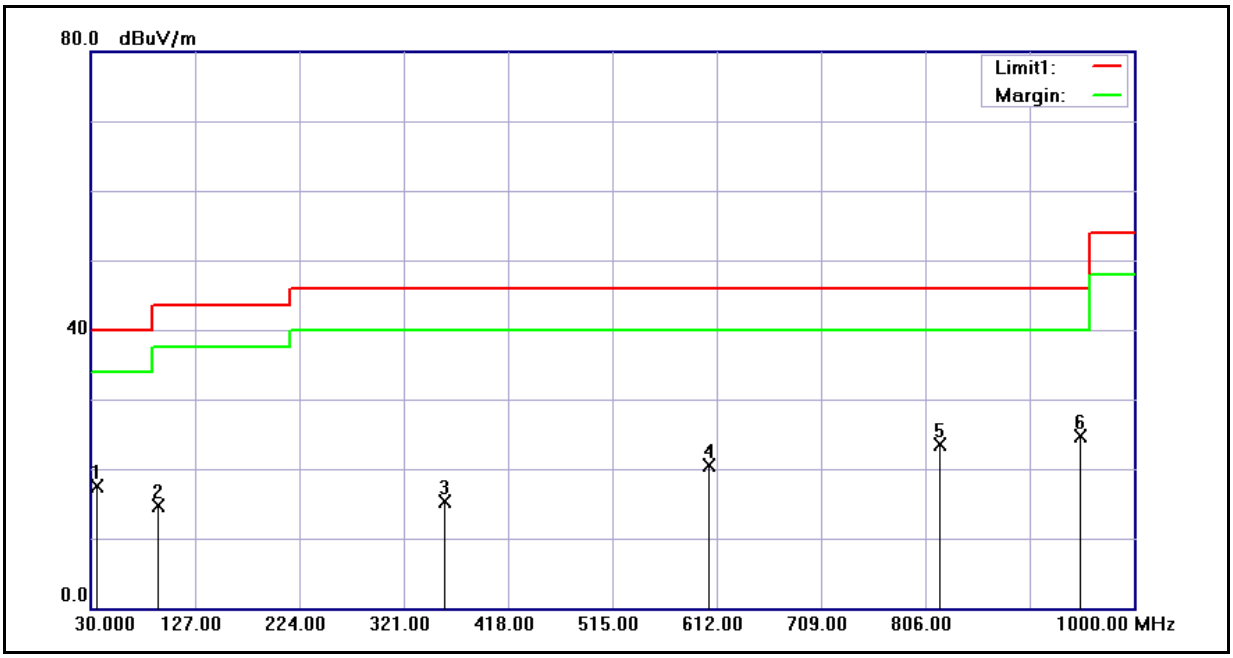
Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	DC 1.5V
Model Number:	M60GM	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 2	Date:	2011/02/10
Frequency:	2479 MHz	Test By:	Gary Wu
Ant.Polar.:	Vertical		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2478.840	90.13	0.14	90.27	114.00	-23.73	Peak

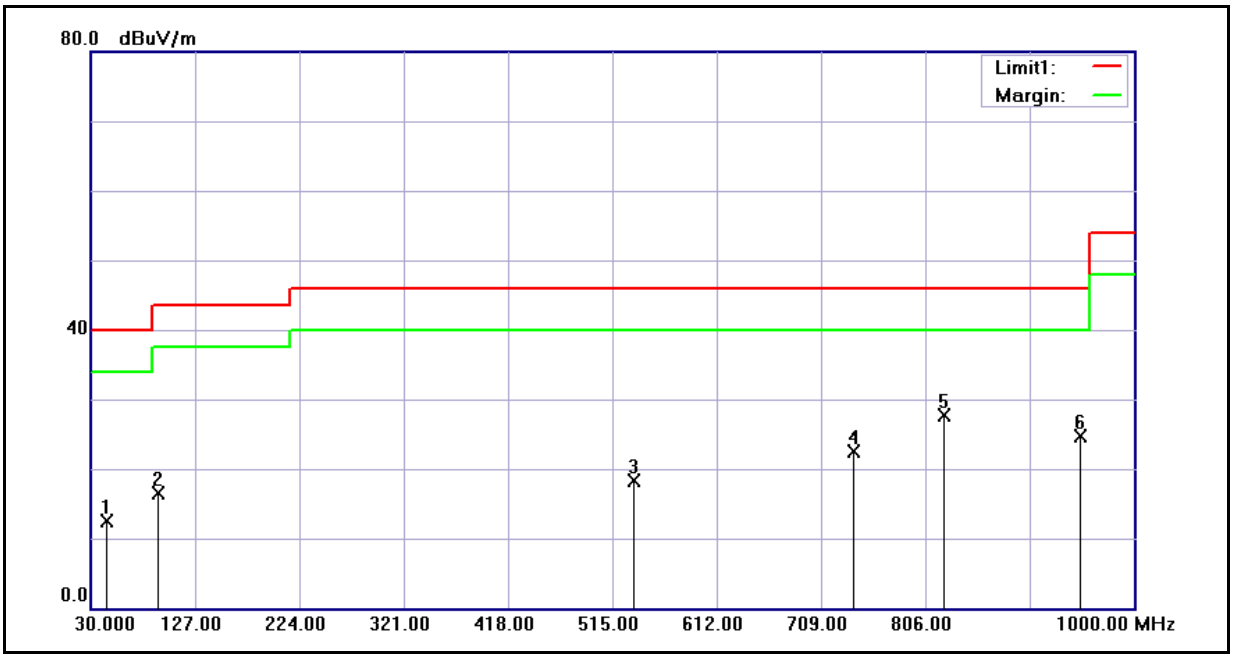
Below 1GHz

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	DC 1.5V
Model Number:	M60GM	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 1	Date:	2011/02/10
Ant.Polar.:	Horizontal	Test By:	Gary Wu



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	36.0000	30.52	-12.94	17.58	40.00	-22.42	QP
2	92.5000	29.87	-15.23	14.64	43.50	-28.86	QP
3	359.5000	23.79	-8.47	15.32	46.00	-30.68	QP
4	605.0000	25.33	-4.76	20.57	46.00	-25.43	QP
5	820.5000	24.56	-1.15	23.41	46.00	-22.59	QP
6	950.5000	23.76	0.93	24.69	46.00	-21.31	QP

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	DC 1.5V
Model Number:	M60GM	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 1	Date:	2011/02/10
Ant.Polar.:	Vertical	Test By:	Gary Wu



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	45.0000	24.08	-11.50	12.58	40.00	-27.42	QP
2	92.5000	31.70	-15.23	16.47	43.50	-27.03	QP
3	535.5000	24.72	-6.38	18.34	46.00	-27.66	QP
4	740.0000	24.98	-2.44	22.54	46.00	-23.46	QP
5	824.0000	28.81	-1.12	27.69	46.00	-18.31	QP
6	950.0000	23.73	0.92	24.65	46.00	-21.35	QP

Above 1GHz

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	DC 1.5V
Model Number:	M60GM	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 2	Date:	2011/02/11
Frequency:	2402 MHz	Test By:	Gary Wu

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
1798.000	41.30	-2.50	38.80	74.00	-35.20	peak	H
5263.000	37.17	9.28	46.45	74.00	-27.55	peak	H
7013.000	36.45	14.45	50.90	74.00	-23.10	peak	H
1147.000	43.02	-5.54	37.48	74.00	-36.52	peak	V
4759.000	37.23	7.71	44.94	74.00	-29.06	peak	V
7279.000	36.00	15.14	51.14	74.00	-22.86	peak	V

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	DC 1.5V
Model Number:	M60GM	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 2	Date:	2011/02/11
Frequency:	2441 MHz	Test By:	Gary Wu

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
2043.000	40.68	-1.62	39.06	74.00	-34.94	peak	H
4843.000	37.39	7.98	45.37	74.00	-28.63	peak	H
6971.000	37.60	14.32	51.92	74.00	-22.08	peak	H
1917.000	40.07	-2.08	37.99	74.00	-36.01	peak	V
3779.000	38.83	4.48	43.31	74.00	-30.69	peak	V
6978.000	36.99	14.35	51.34	74.00	-22.66	peak	V

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	DC 1.5V
Model Number:	M60GM	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 2	Date:	2011/02/11
Frequency:	2480 MHz	Test By:	Gary Wu

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
1455.000	42.08	-3.81	38.27	74.00	-35.73	peak	H
4766.000	36.83	7.72	44.55	74.00	-29.45	peak	H
6957.000	36.89	14.27	51.16	74.00	-22.84	peak	H
2120.000	40.58	-1.30	39.28	74.00	-34.72	peak	V
5368.000	36.74	9.59	46.33	74.00	-27.67	peak	V
7209.000	36.78	14.96	51.74	74.00	-22.26	peak	V

Standard:	FCC Part 15B	Test Distance:	3m
Test item:	Radiated Emission	Power:	DC 1.5V
Model Number:	M60GM	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 3	Date:	2011/02/11
Frequency:	2440 MHz	Test By:	Gary Wu

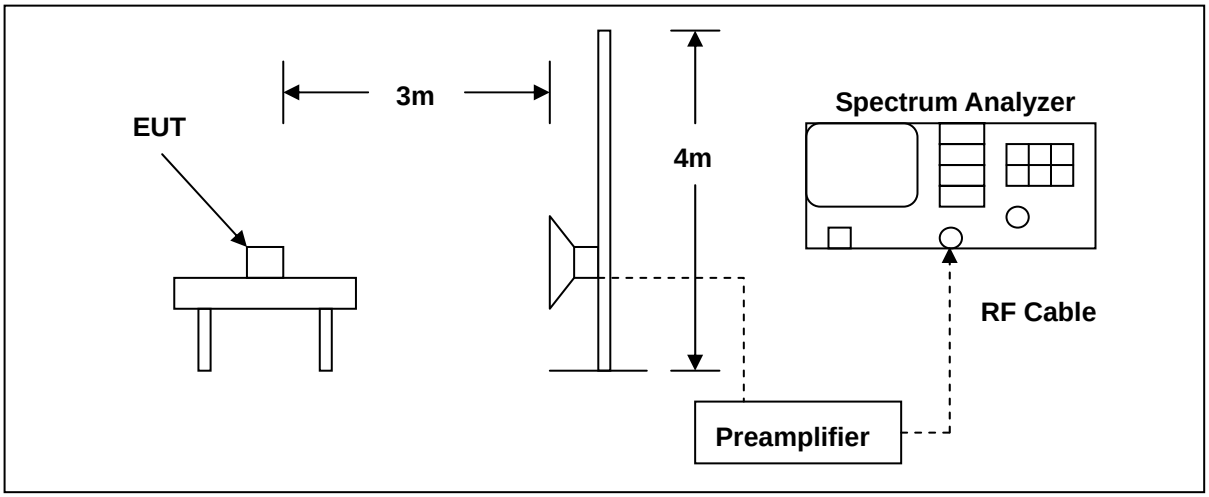
Frequency (MHz)	**Reading (dBuV)**	**Correct Factor(dB/m)**	**Result (dBuV/m)**	**Peak Limit (dBuV/m)**	**AVG. Limit (dBuV/m)**	**Margin (dB)**	**Remark**	**Ant.Polar. H / V**
1784.000	41.52	-2.56	38.96	74.00	54.00	-35.04	peak	H
4157.000	39.04	5.81	44.85	74.00	54.00	-29.15	peak	H
7097.000	36.64	14.67	51.31	74.00	54.00	-22.69	peak	H
1819.000	40.41	-2.43	37.98	74.00	54.00	-36.02	peak	V
4976.000	37.40	8.42	45.82	74.00	54.00	-28.18	peak	V
7195.000	36.86	14.92	51.78	74.00	54.00	-22.22	peak	V

6 Band Edges Measurement

6.1. Limit

In any 100 kHz bandwidth outside the frequency band, the radio frequency power is at least 50dB below that in the 100 kHz bandwidth within the band that contains the highest lever of the desired power.

6.2. Test Setup



6.3. Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4408B	MY45107753	06/24/2010	(1)
Pre Amplifier	Agilent	8449B	3008A02237	02/24/2010	(1)
Horn Antenna	SCHWARZBECK MESS-ELEKTRONIK	9120D	9120D-550	06/29/2010	(1)
Test Site	ATL	TE06	TE06	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

6.4. Test Procedure

The emissions on the harmonics frequencies, the limits, and the margin of compliance are presented. These tests were made when the transmitter was in full radiated power. The additional test was performed to show compliance with the requirement at the band-edge frequency 2483.5 MHz and up to 2500 MHz and at 2390.0 MHz.

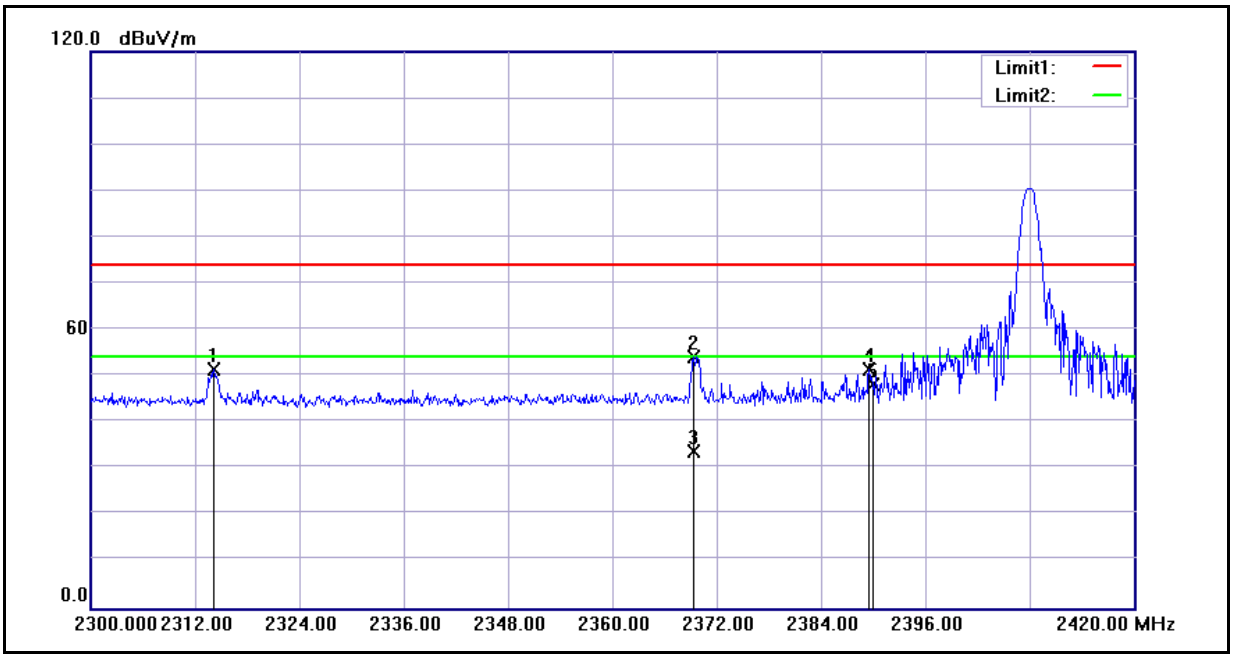
The transmitter was configured with the worst case antenna and setup to transmit at the highest channel. Then the field strength was measured at 2483.5 MHz.

The transmitter was then configured with the worst case antenna and setup to transmit at the lowest channel. Then the field strength was measured at 2390.0 MHz. These tests were performed at 4 different bit rates.

For measurements the resolution bandwidth is set to 1 MHz, and then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

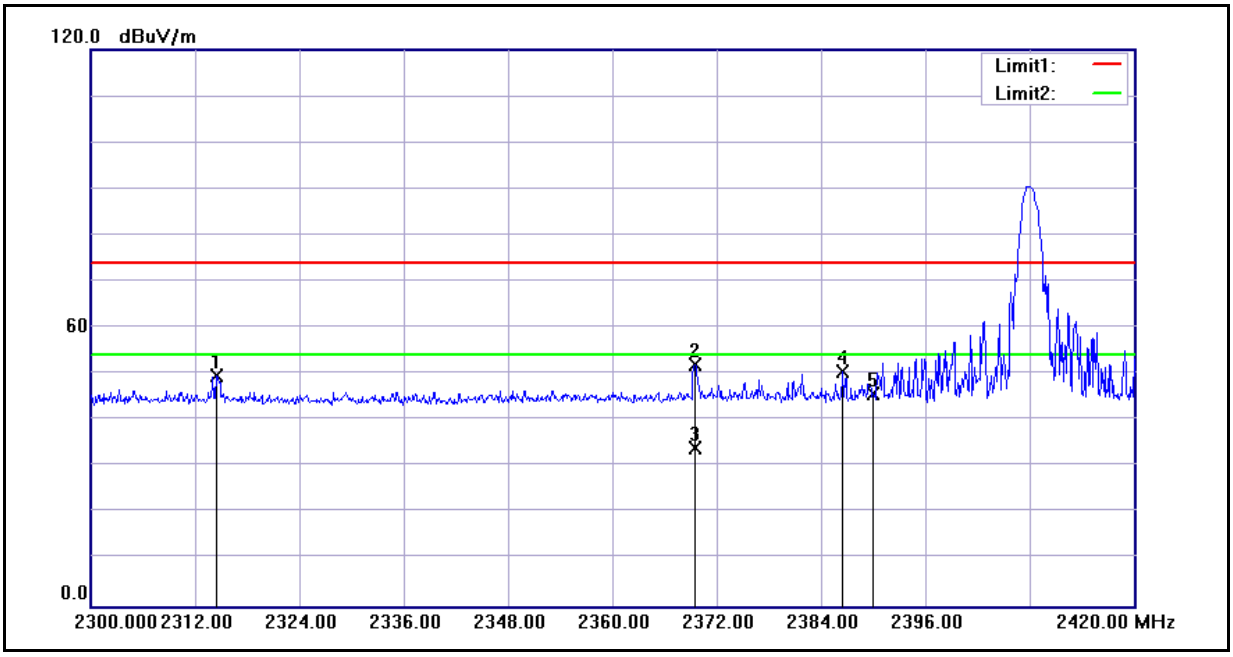
6.5. Test Result

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	DC 1.5V
Model Number:	M60GM	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 2	Date:	2011/02/10
Frequency:	2408 MHz	Test By:	Gary Wu
Ant.Polar.:	Horizontal		



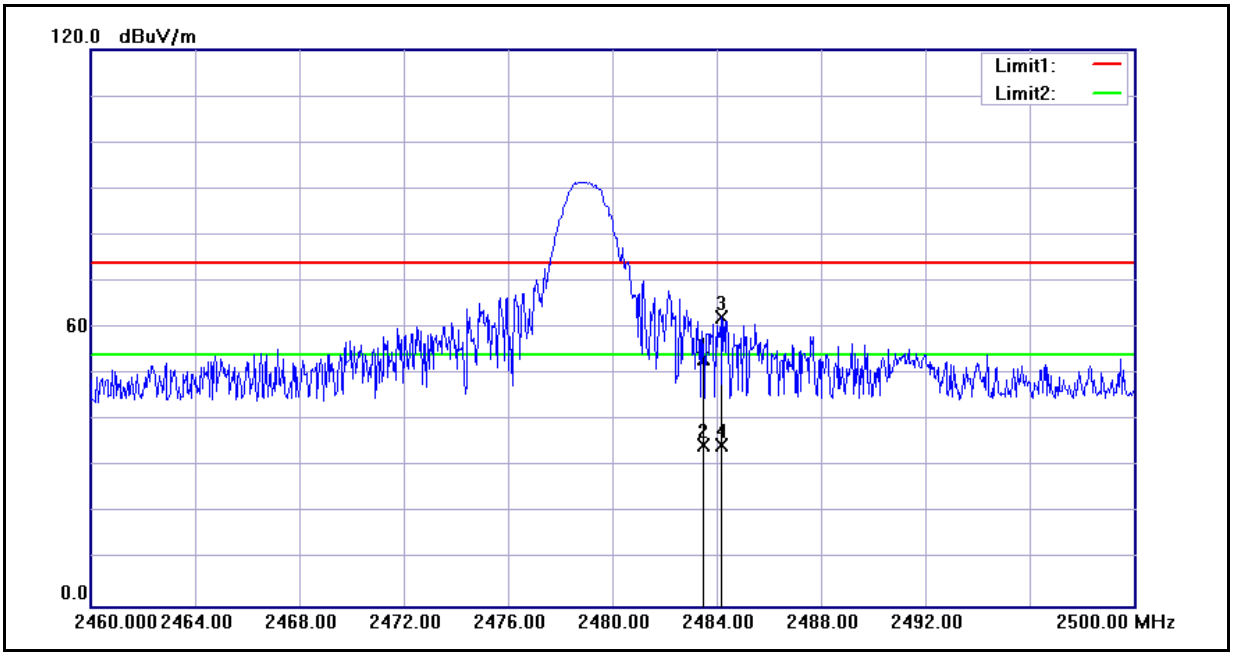
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2314.160	51.84	-0.52	51.32	74.00	-22.68	peak
2	2369.360	54.47	-0.29	54.18	74.00	-19.82	peak
3	2369.360	34.15	-0.29	33.86	54.00	-20.14	AVG
4	2389.520	51.58	-0.22	51.36	74.00	-22.64	peak
5	2390.000	48.44	-0.22	48.22	74.00	-25.78	peak

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	DC 1.5V
Model Number:	M60GM	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 2	Date:	2011/02/10
Frequency:	2408 MHz	Test By:	Gary Wu
Ant.Polar.:	Vertical		



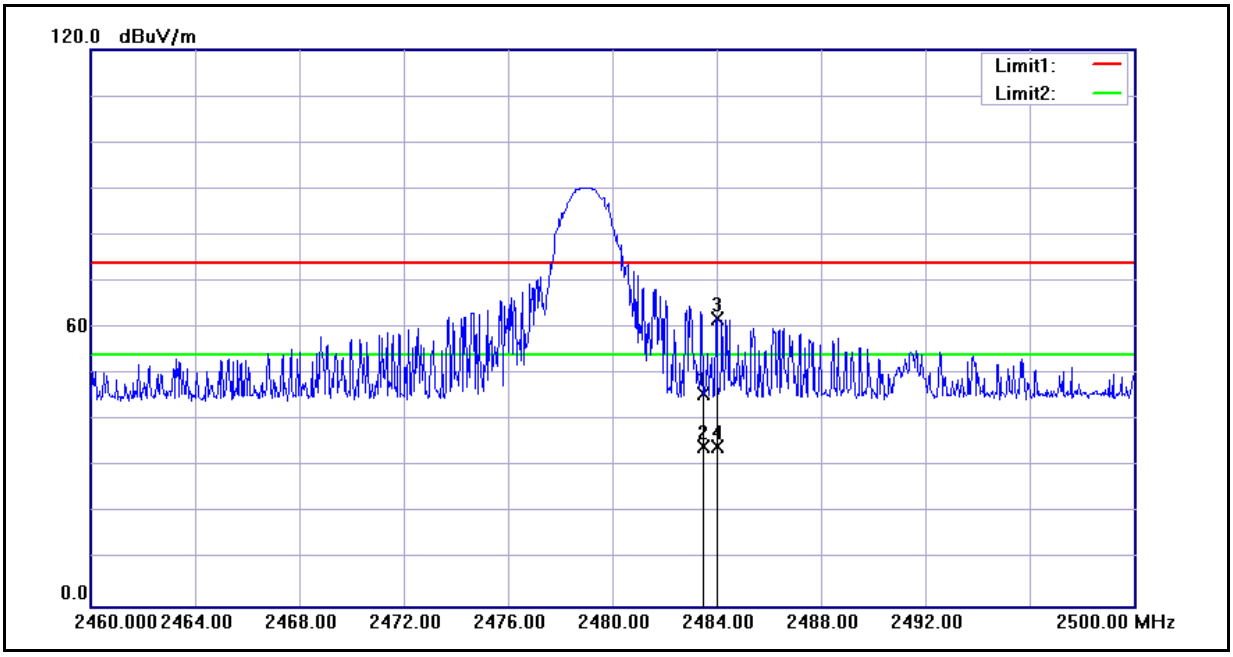
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2314.400	50.03	-0.52	49.51	74.00	-24.49	peak
2	2369.480	52.37	-0.29	52.08	74.00	-21.92	peak
3	2369.480	34.25	-0.29	33.96	54.00	-20.04	AVG
4	2386.520	50.76	-0.24	50.52	74.00	-23.48	peak
5	2390.000	45.89	-0.22	45.67	74.00	-28.33	peak

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	DC 1.5V
Model Number:	M60GM	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 2	Date:	2011/02/10
Frequency:	2479 MHz	Test By:	Gary Wu
Ant.Polar.:	Horizontal		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	53.15	0.16	53.31	74.00	-20.69	peak
2	2483.500	34.42	0.16	34.58	54.00	-19.42	AVG
3	2484.160	62.14	0.16	62.30	74.00	-11.70	peak
4	2484.160	34.36	0.16	34.52	54.00	-19.48	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	DC 1.5V
Model Number:	M60GM	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 2	Date:	2011/02/11
Frequency:	2479 MHz	Test By:	Gary Wu
Ant.Polar.:	Vertical		



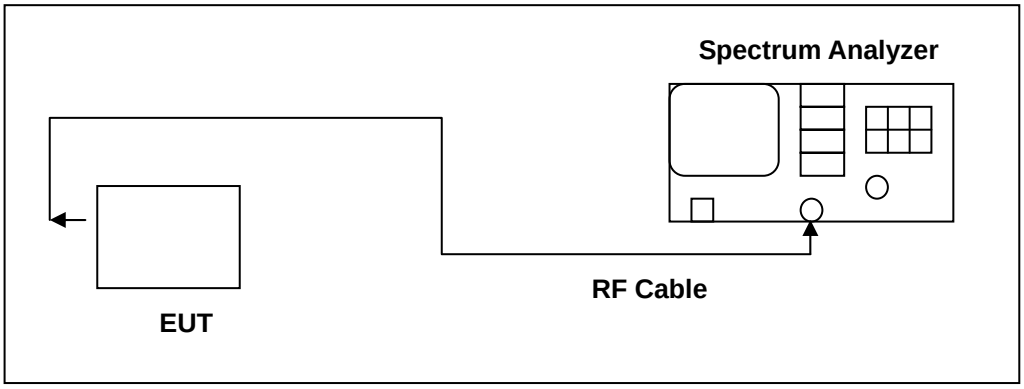
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	45.51	0.16	45.67	74.00	-28.33	peak
2	2483.500	34.21	0.16	34.37	54.00	-19.63	AVG
3	2484.000	61.73	0.16	61.89	74.00	-12.11	peak
4	2484.000	34.15	0.16	34.31	54.00	-19.69	AVG

7 Minimum 20dB RF Bandwidth Measurement

7.1. Limit

N/A

7.2. Test Setup



7.3. Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY46181986	05/14/2009	(2)
Test Site	ATL	TE06	TE06	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years.
NOTE: N.C.R. = No Calibration Request.

7.4. Test Procedure

The RF output port of the Equipment-Under-Test is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. A fully charged battery was used for the supply voltage. The Bluetooth frequency hopping function of the EUT was enabled. The spectrum analyzer used the following settings:

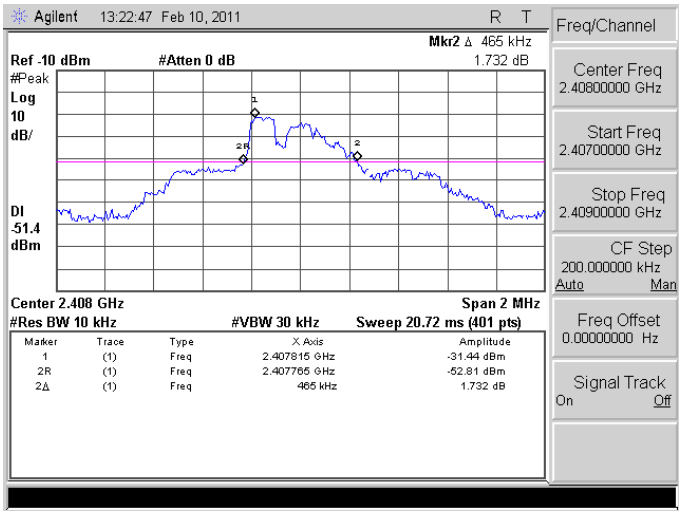
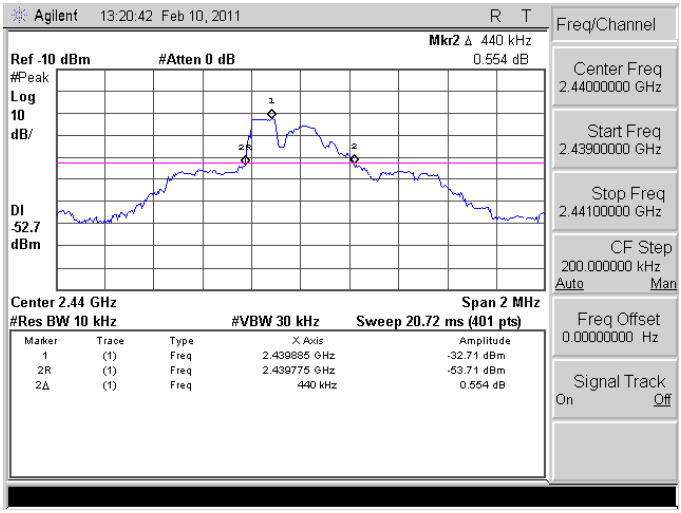
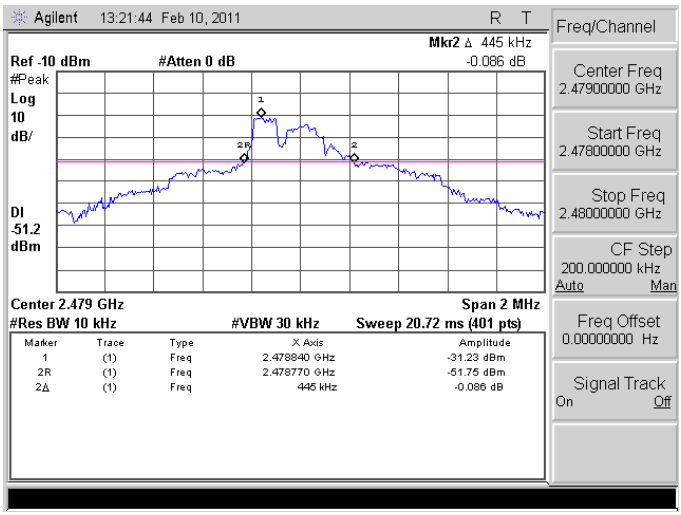
1. Span = approx. 2 to 3 times the 20dB bandwidth, centered on a hopping frequency
2. RBW ≥ 1% of the 20dB span
3. VBW ≥ RBW
4. Sweep = auto
5. Detector function = peak
6. Trace = max hold

The trace was allowed to stabilize. The EUT was transmitting at its maximum data rate. The marker-to-peak function was used to set the marker to the peak of the emission. The marker-delta function was used to measure 20dB down one side of the emission. The marker-delta function and marker was moved to the other side of the emission until it was even with the reference marker. The marker-delta reading at this point was the 20dB bandwidth of the emission.

7.5. Test Result

Model Number	M60GM		
Test Item	Minimum 20dB RF Bandwidth		
Test Mode	Mode 2: Transmission Mode		
Date of Test	02/10/2011	Test Site	TE06
Frequency (MHz)	Measurement (kHz)		Limit (MHz)
2408	465		-----
2440	440		-----
2479	445		-----

7.6. Test Graphs

Mode 2: Transmission Mode	
2408	
2440	
2479