

FCC 47 CFR PART 15 SUBPART C

Product Type : Handheld Computer

Applicant : LXE Inc

Address : 125 Technology Parkway, Norcross, Georgia, United States
30092-9200

Trade Name : Marathon

Model Number : FX1

Test Specification : FCC 47 CFR PART 15 SUBPART C: Oct., 2010
Canada RSS-210 ISSUE 8: Dec., 2010
Canada RSS-Gen ISSUE 3: Dec., 2010
ANSI C63.4-2009

Application Purpose: : Class II Permissive Change

Receive Date : Sep. 16, 2011

Issue Date : Apr. 05, 2012

Issue by

A Test Lab Techno Corp.
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Taiwan Accreditation Foundation accreditation number: 1330

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Revision History

Rev.	Issue Date	Revisions	Revised By
00	Apr. 05, 2012	Initial Issue	

Verification of Compliance

Issued Date: 04/05/2012

Product Type : Handheld Computer
Applicant : LXE Inc
Address : 125 Technology Parkway, Norcross, Georgia, United States
30092-9200
Trade Name : Marathon
Model Number : FX1
FCC ID : KDZLXE-FX1
IC : 1995B-LXEFX1
EUT Rated Voltage : DC 19V, 3.42A
Test Voltage : 120 Vac / 60 Hz
Applicable : FCC 47 CFR PART 15 SUBPART C: Oct., 2010
Standard : Canada RSS-210 ISSUE 8: Dec., 2010
Canada RSS-Gen ISSUE 3: Dec., 2010
ANSI C63.4-2009
Test Result : Complied
Application : Class II Permissive Change
Purpose :
Performing Lab. : A Test Lab Techno Corp.

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<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: 2009 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, 15.247 .

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

Approved By : 

(Manager)

(Murphy Wang)

Reviewed By : 

(Testing Engineer)

(Fly Lu)

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1 General Information

1.1 Summary of Test Result

Standard		Item	Result	Remark
15.247	RSS-GEN			
15.207	7.2.2	AC Power Conducted Emission	PASS	-----
-----	6	Receiver Radiated Emissions	PASS	-----
Standard		Item	Result	Remark
15.247	RSS-210			
15.247(c)	A8.5	Transmitter Radiated Emissions	PASS	-----
15.247(b)(1)	A8.4 (2)	Max. Output Power	N/A	Reference original report
15.247(a)(1)	A8.1 (1)	20dB RF Bandwidth	N/A	Reference original report
15.247(a)(1)(iii)	A8.1 (2)	Carrier Frequency Separation	N/A	Reference original report
15.247(a)(1)(iii)	A8.1 (4)	Number of Hopping	N/A	Reference original report
15.247(a)(1)(iii)	A8.1 (4)	Time of Occupancy (Dwell Time)	N/A	Reference original report
15.247(c)	A8.5	Out of Band Conducted Spurious Emission	N/A	Reference original report
15.247(c)	A8.5	Band Edge Measurement	PASS	-----
15.203	-	Antenna Requirement	N/A	Reference original report

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.

Different Description

This is a CIIPC application from Marathon, FX1. It is changed different CPU board circuitry, components and add single WWAN module to test in this report. Conducted and Radiated Emission are re-tested and other test results refer to the original test report number: FR130939AD.

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 ± 3.072 dB.

2 EUT Description

Product	:	Handheld Computer			
Trade Name	:	Marathon			
Model Number	:	FX1			
Applicant	:	LXE Inc 125 Technology Parkway, Norcross, Georgia, United States 30092-9200			
Manufacturer	:	NEXCOM International Co., Ltd. 5F,7F,8F,9F,10F&12F,No.63, Sec.1, Sanmin Rd., Banqiao Dist, New Taipei City, Taiwan			
FCC ID	:	KDZLXE-FX1			
IC	:	1995B-LXEFX1			
Frequency Range	:	2402 ~ 2480 MHz			
Modulation Type	:	GFSK for 1Mbps			
	:	$\pi/4$ -DQPSK for 2Mbps			
	:	8DPSK for 3Mbps			
RF Output Power (Conducted)	:	GFSK for 1Mbps	5.11 dBm /	0.003 W	
	:	$\pi/4$ -DQPSK for 2Mbps	2.78 dBm /	0.002 W	
	:	8DPSK for 3Mbps	2.91 dBm /	0.002 W	

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: GFSK Link Mode
Mode 3: $\pi/4$ -DQPSK Link Mode
Mode 4: 8DPSK Link Mode
Mode 5: Receiver Mode

By preliminary testing and verifying three axis (X, Y and Z) position of EUT transmitted status, it was found that "X axis" position was the worst, then the final test was executed the worst condition and test data were recorded in this report.

Description of Test Modes

Preliminary tests were performed in different modulation to find the worst case. The modulation shown in the section 6.5 GFSK link mode is the worst-case. Investigation has been done on all the possible configurations for searching the worst cases.

Tested System Details

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

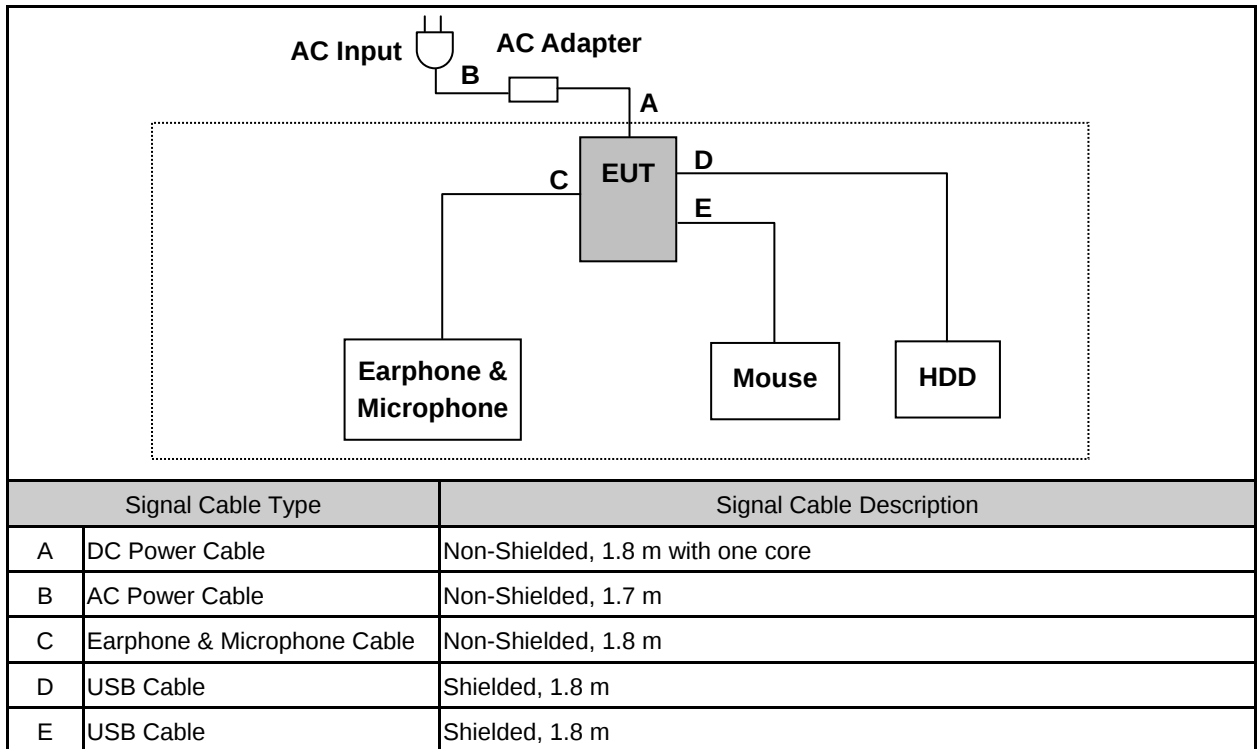
	Product	Manufacturer	Model Number	Serial Number	Power Cord
1.	Bluetooth Tester	R & S	CBT	100350	NA

3.2. EUT Exercise Software

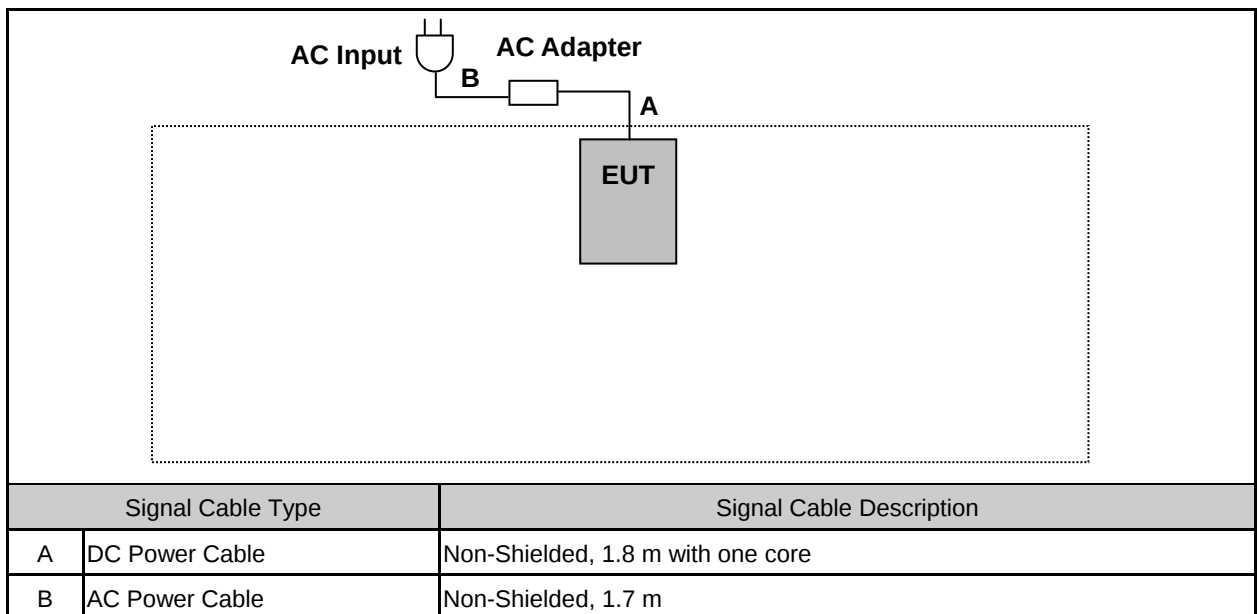
1.	Setup the EUT and Bluetooth Tester (CBT) as shown on 3.3.
2.	Turn on the power of all equipment.
3.	EUT run test program.
4.	Open Bluetooth function link to CBT.

3.3. Configuration of Test System Details

Conducted Emission



Radiated Emissions



3.4. Test Site Environment

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	26
Humidity (%RH)	25-75	60
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

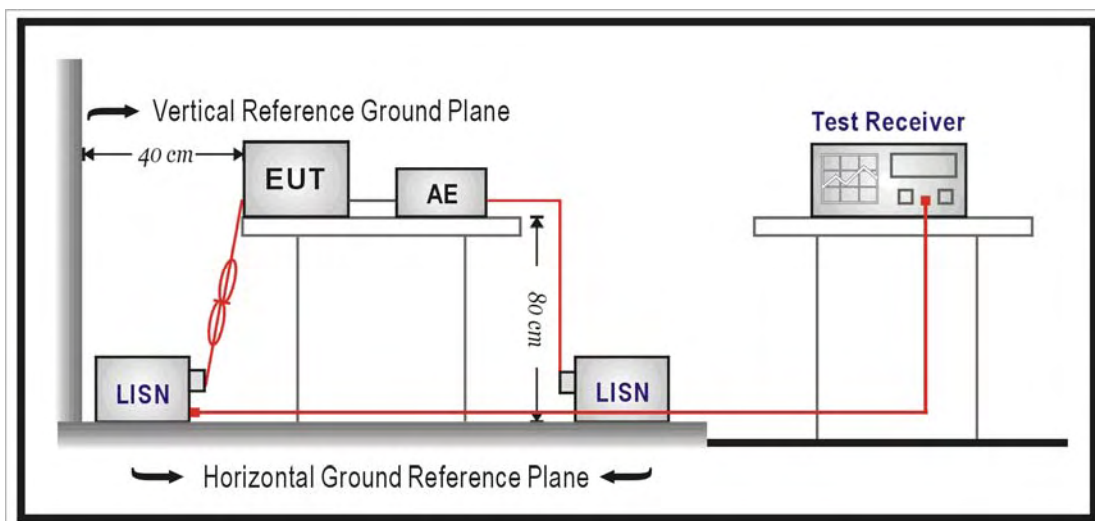
4.2. Test Instruments

Describe	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Test Receiver	R&S	ESCI	100367	06/30/2011	(1)
LISN	R&S	ENV216	101040	03/04/2011	(1)
LISN	R&S	ENV216	101041	03/04/2011	(1)
Test Site	ATL	TE05	TE05	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

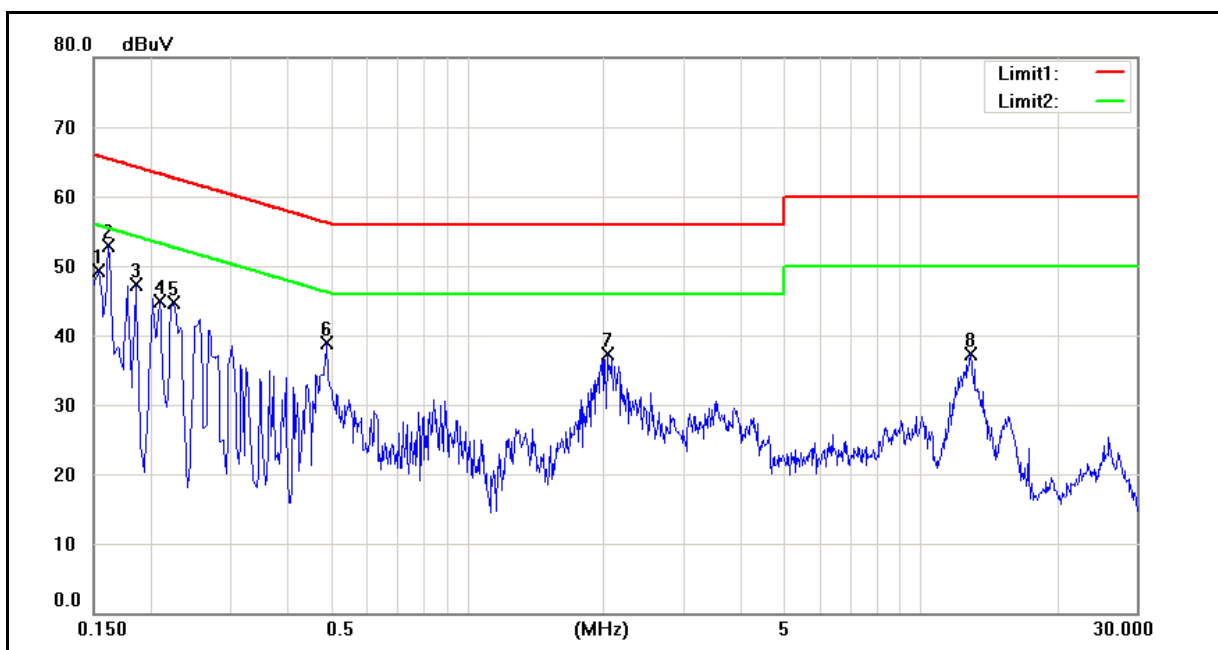
The power line conducted emission measurements were performed in a shielded enclosure. The EUT was assembled on a wooden table which is 80 centimeters high, was placed 40 centimeters from the back wall and at least 1 meter from the sidewall.

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.

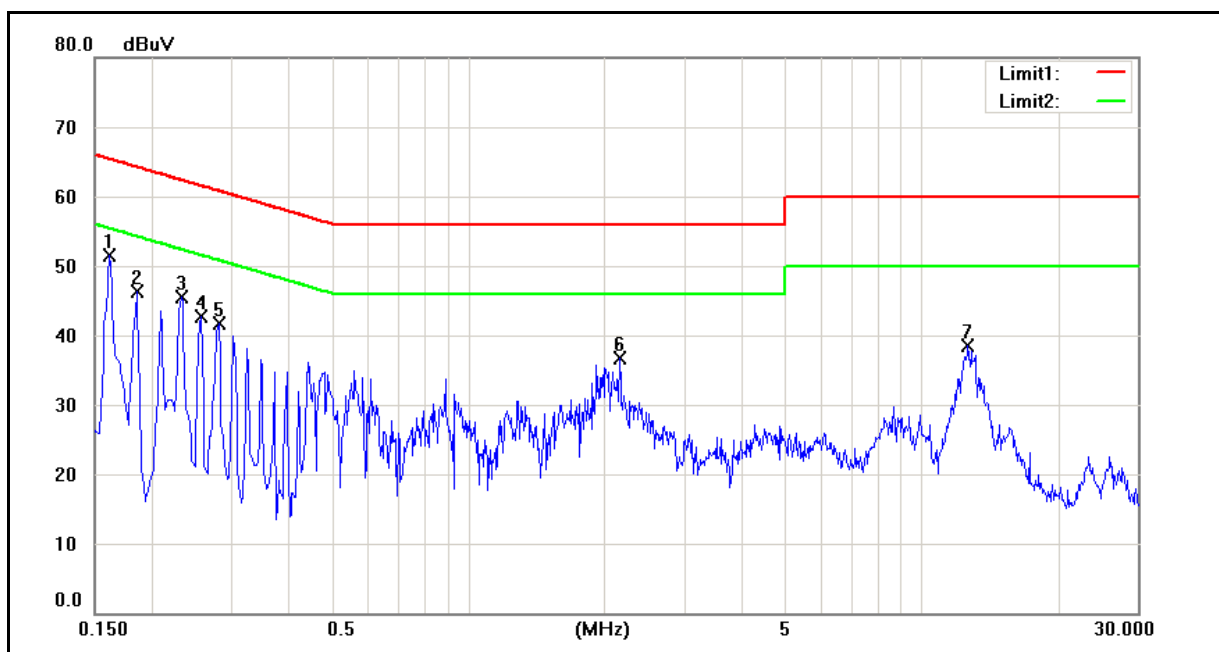
4.5. Test Result

Standard:	FCC Part 15C	Line:	L1
Test item:	Conducted Emission	Power:	AC 120V/60Hz
Model Number:	FX1	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 1	Date:	09/19/2011
		Test By:	Fly Lu
Description:			



No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1540	38.72	21.30	10.07	48.79	31.37	65.78	55.78	-16.99	-24.41	Pass
2	0.1620	39.74	25.82	10.07	49.81	35.89	65.36	55.36	-15.55	-19.47	Pass
3	0.1860	29.87	7.49	10.06	39.93	17.55	64.21	54.21	-24.28	-36.66	Pass
4	0.2100	33.96	17.42	10.05	44.01	27.47	63.21	53.21	-19.20	-25.74	Pass
5	0.2260	32.47	17.21	10.04	42.51	27.25	62.60	52.60	-20.09	-25.35	Pass
6	0.4900	22.99	11.91	9.93	32.92	21.84	56.17	46.17	-23.25	-24.33	Pass
7	2.0380	23.57	14.14	9.68	33.25	23.82	56.00	46.00	-22.75	-22.18	Pass
8	12.9780	19.16	10.46	10.29	29.45	20.75	60.00	50.00	-30.55	-29.25	Pass

Standard:	FCC Part 15C	Line:	N
Test item:	Conducted Emission	Power:	AC 120V/60Hz
Model Number:	FX1	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 1	Date:	09/19/2011
		Test By:	Fly Lu
Description:			



No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1620	39.62	25.57	10.15	49.77	35.72	65.36	55.36	-15.59	-19.64	Pass
2	0.1860	30.18	7.40	10.14	40.32	17.54	64.21	54.21	-23.89	-36.67	Pass
3	0.2340	29.69	9.02	10.12	39.81	19.14	62.31	52.31	-22.50	-33.17	Pass
4	0.2580	26.69	9.54	10.11	36.80	19.65	61.50	51.50	-24.70	-31.85	Pass
5	0.2820	26.41	12.70	10.10	36.51	22.80	60.76	50.76	-24.25	-27.96	Pass
6	2.1660	21.51	11.06	9.76	31.27	20.82	56.00	46.00	-24.73	-25.18	Pass
7	12.6660	21.67	13.19	10.36	32.03	23.55	60.00	50.00	-27.97	-26.45	Pass

5 Radiated Interference Measurement

5.1. Limit

Frequency Range (MHz)	Peak (dBuV)
30 to 88	39
88 to 216	43.5
216 to 960	46.4
Above 960	49.5

5.2. Test Instruments

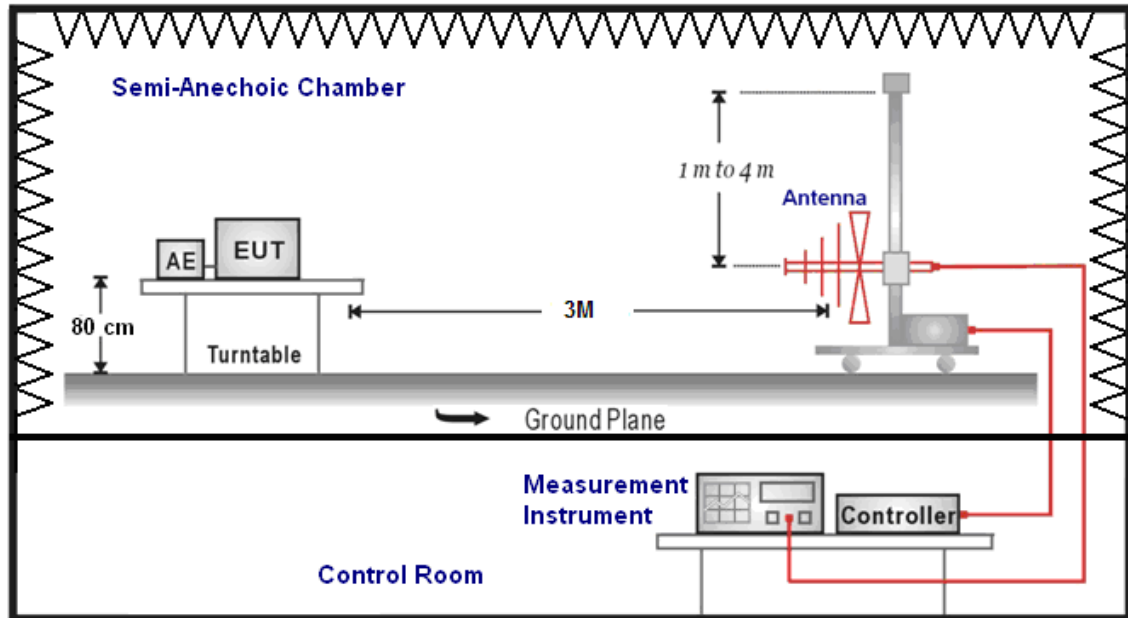
3 Meter Chamber					
Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY46181986	06/16/2011	(1)
Amplifier	Mini-Circuits	ZKL-1R5+	N/A	05/30/2011	(1)
Amplifier	Mini-Circuits	ZVA-213-S+	N/A	05/30/2011	(1)
RF Pre-selector	Agilent	N9039A	MY46520255	05/16/2011	(1)
Double-Ridged Waveguide Horn	ETS-Lindgren	3117	00128055	08/24/2011	(1)
Trilog-Broadband Antenna	Schwarzbeck Mess-Elektronik	SB AC VULB	9168-419	05/10/2011	(1)
Test Site	ATL	TE09	TE09	05/13/2011	(1)

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

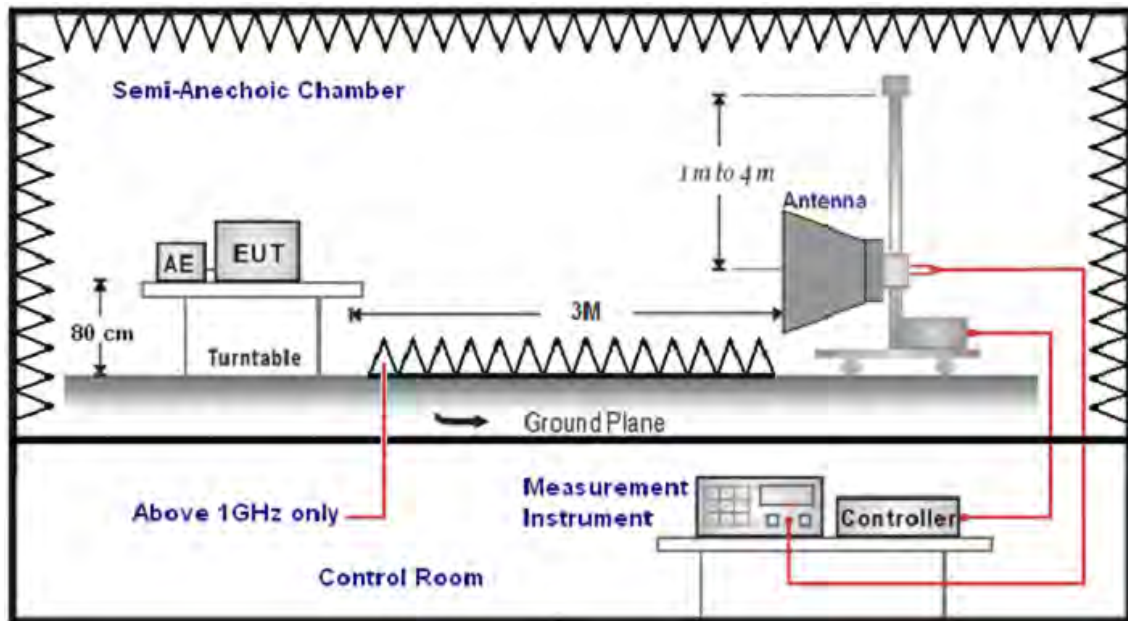
NOTE: N.C.R. = No Calibration Request.

5.3. Setup

Below 1GHz



Above 1GHz



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 three 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 (model 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 volts per meter (dBuV/m).

The actual field 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) $\text{Amplitude (dBuV/m)} = \text{FI (dBuV)} + \text{AF (dBuV)} + \text{CL (dBuV)} - \text{Gain (dB)}$

FI= Reading of the field intensity.

AF= Antenna factor.

CL= Cable loss.

P.S Amplitude is auto calculate in spectrum analyzer.

(2) $\text{Actual Amplitude (dBuV/m)} = \text{Amplitude (dBuV)} - \text{Dis (dB)}$

The FCC specified emission limits were calculated according the EUT operating frequency and by following linear interpolation equations:

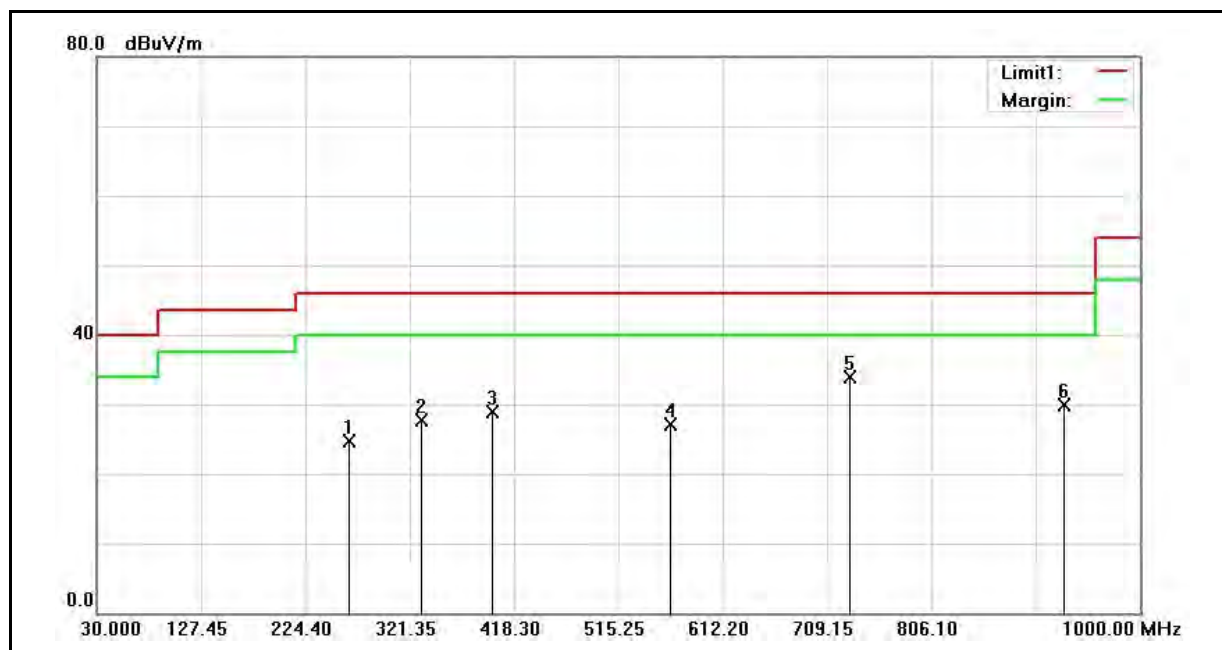
(a) For fundamental frequency : Transmitter Output < +30dBm

(b) For spurious frequency : Spurious emission limits = fundamental emission limit /10

5.5. Test Result

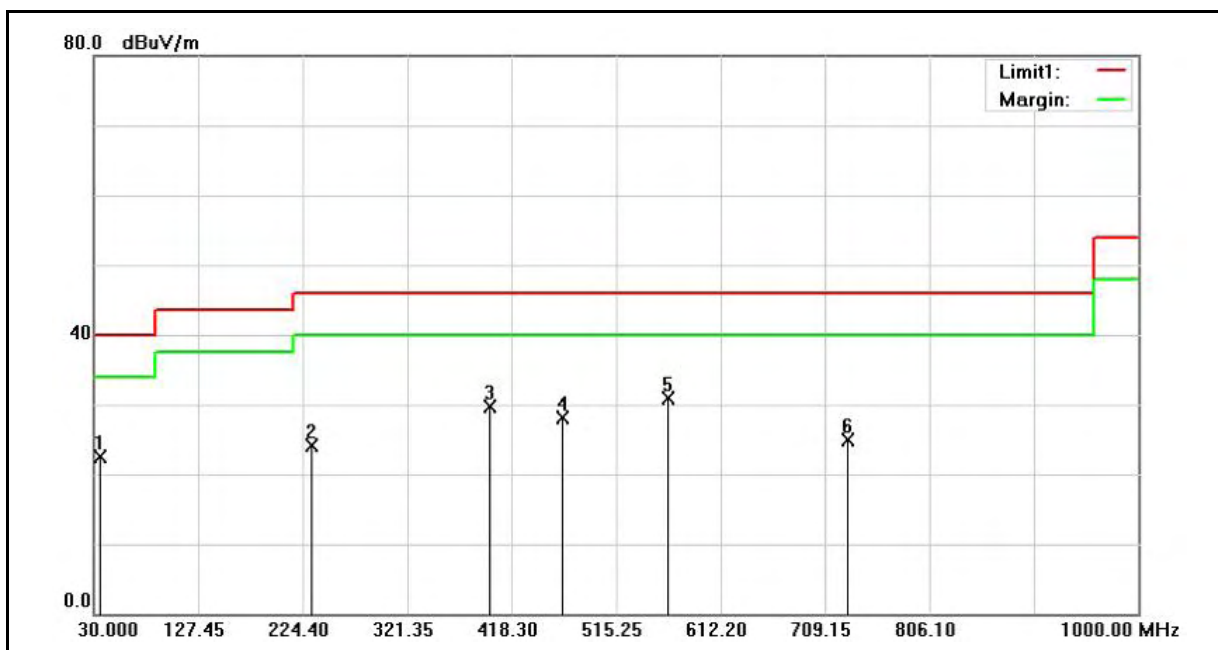
Below 1GHz

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	FX1	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 1	Date:	10/03/2011
Ant.Polar.:	Horizontal	Test By:	Fly Lu



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	265.5000	44.80	-20.17	24.63	46.00	-21.37	QP
2	332.0000	45.43	-17.68	27.75	46.00	-18.25	QP
3	398.5000	44.61	-15.70	28.91	46.00	-17.09	QP
4	564.0000	38.90	-11.75	27.15	46.00	-18.85	QP
5	730.5000	41.65	-7.68	33.97	46.00	-12.03	QP
6	930.0000	1.40	28.41	29.81	46.00	-16.19	QP

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	FX1	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 1	Date:	10/03/2011
Ant.Polar.:	Vertical	Test By:	Fly Lu



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	36.0000	43.27	-20.83	22.44	40.00	-17.56	QP
2	232.5000	45.59	-21.42	24.17	46.00	-21.83	QP
3	398.5000	45.50	-15.70	29.80	46.00	-16.20	QP
4	465.0000	41.93	-13.87	28.06	46.00	-17.94	QP
5	564.0000	42.69	-11.75	30.94	46.00	-15.06	QP
6	730.5000	32.64	-7.68	24.96	46.00	-21.04	QP

Above 1GHz

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	FX1			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	Mode 2			Date:	10/03/2011		
Frequency:	2402 MHz			Test By:	Fly Lu		
Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3065.500	61.93	-16.60	45.33	74.00	-28.67	peak	H
4804.000	61.09	-12.83	48.26	74.00	-25.74	peak	H
6329.500	57.89	-9.58	48.31	74.00	-25.69	peak	H
3193.000	62.01	-16.47	45.54	74.00	-28.46	peak	V
4804.000	68.19	-12.83	55.36	74.00	-18.64	peak	V
4804.000	50.24	-12.83	37.41	54.00	-16.59	AVG	V
7196.500	58.06	-8.50	49.56	74.00	-24.44	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	FX1			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	Mode 2			Date:	10/03/2011		
Frequency:	2441 MHz			Test By:	Fly Lu		
Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3065.500	61.76	-16.60	45.16	74.00	-28.84	peak	H
4882.000	67.58	-12.74	54.84	74.00	-19.16	peak	H
4882.000	49.50	-12.74	36.76	54.00	-17.24	AVG	H
6686.500	58.05	-9.12	48.93	74.00	-25.07	peak	H
2759.500	76.15	-17.37	58.78	74.00	-15.22	peak	V
2759.500	48.86	-17.37	31.49	54.00	-22.51	AVG	V
3754.000	61.64	-15.30	46.34	74.00	-27.66	peak	V
4882.000	55.57	0.00	55.57	74.00	-18.43	peak	V
4882.000	40.34	0.00	40.34	54.00	-13.66	AVG	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	FX1			Temp.(℃)/Hum.(%RH):	26(℃)/60%RH		
Mode:	Mode 2			Date:	10/03/2011		
Frequency:	2480 MHz			Test By:	Fly Lu		
Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
2963.500	62.48	-16.78	45.70	74.00	-28.30	peak	H
4960.000	65.89	-12.65	53.24	74.00	-20.76	peak	H
4960.000	51.82	-12.65	39.17	54.00	-14.83	AVG	H
7273.000	56.97	-8.42	48.55	74.00	-25.45	peak	H
3116.500	62.90	-16.55	46.35	74.00	-27.65	peak	V
4960.000	62.63	-12.65	49.98	74.00	-24.02	peak	V
7196.500	57.23	-8.50	48.73	74.00	-25.27	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	FX1			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	Mode 4			Date:	10/03/2011		
Frequency:	2402 MHz			Test By:	Fly Lu		
Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3142.000	62.26	-16.52	45.74	74.00	-28.26	peak	H
4804.000	60.25	-12.83	47.42	74.00	-26.58	peak	H
7528.000	57.31	-8.14	49.17	74.00	-24.83	peak	H
3065.500	62.02	-16.60	45.42	74.00	-28.58	peak	V
4804.000	64.02	-12.83	51.19	74.00	-22.81	peak	V
7145.500	58.19	-8.55	49.64	74.00	-24.36	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	FX1			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	Mode 4			Date:	10/03/2011		
Frequency:	2441 MHz			Test By:	Fly Lu		
Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3728.500	61.24	-15.39	45.85	74.00	-28.15	peak	H
4882.000	61.06	-12.74	48.32	74.00	-25.68	peak	H
7579.000	56.93	-8.08	48.85	74.00	-25.15	peak	H
3856.000	61.03	-14.97	46.06	74.00	-27.94	peak	V
4882.000	61.34	-12.75	48.59	74.00	-25.41	peak	V
7630.000	57.09	-8.03	49.06	74.00	-24.94	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	FX1			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	Mode 4			Date:	10/03/2011		
Frequency:	2480 MHz			Test By:	Fly Lu		
Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3116.500	62.41	-16.55	45.86	74.00	-28.14	peak	H
4960.000	65.39	-12.65	52.74	74.00	-21.26	peak	H
7298.500	57.52	-8.38	49.14	74.00	-24.86	peak	H
3626.500	60.63	-15.73	44.90	74.00	-29.10	peak	V
4960.000	59.14	-12.65	46.49	74.00	-27.51	peak	V
7171.000	57.39	-8.52	48.87	74.00	-25.13	peak	V

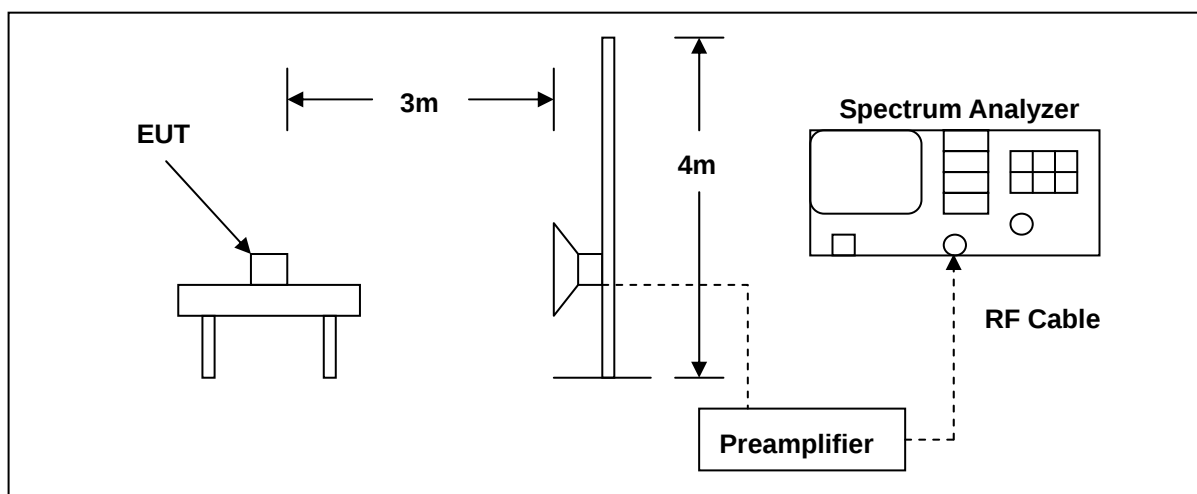
Standard:	FCC Part 15C				Test Distance:	3m		
Test item:	Radiated Emission				Power:	AC 120V/60Hz		
Model Number:	FX1				Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	Mode 5				Date:	10/03/2011		
Frequency:	2441 MHz				Test By:	Fly Lu		
Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Peak Limit (dBuV/m)	AVG. Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3754.000	60.61	-15.30	45.31	74.00	54.00	-28.69	peak	H
5539.000	55.61	-11.61	44.00	74.00	54.00	-30.00	peak	H
7681.000	54.04	-7.98	46.06	74.00	54.00	-27.94	peak	H
3677.500	59.80	-15.56	44.24	74.00	54.00	-29.76	peak	V
5284.000	58.16	-12.13	46.03	74.00	54.00	-27.97	peak	V
6712.000	57.67	-9.08	48.59	74.00	54.00	-25.41	peak	V

6 Band Edges Measurement

6.1. Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power

6.2. Test Setup



6.3. Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY46181986	06/16/2011	(1)
Amplifier	Mini-Circuits	ZKL-1R5+	N/A	05/30/2011	(1)
Amplifier	Mini-Circuits	ZVA-213-S+	N/A	05/30/2011	(1)
RF Pre-selector	Agilent	N9039A	MY46520255	05/16/2011	(1)
Double-Ridged Waveguide Horn	ETS-Lindgren	3117	00128055	08/24/2011	(1)
Test Site	ATL	TE09	TE09	05/13/2011	(1)

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.

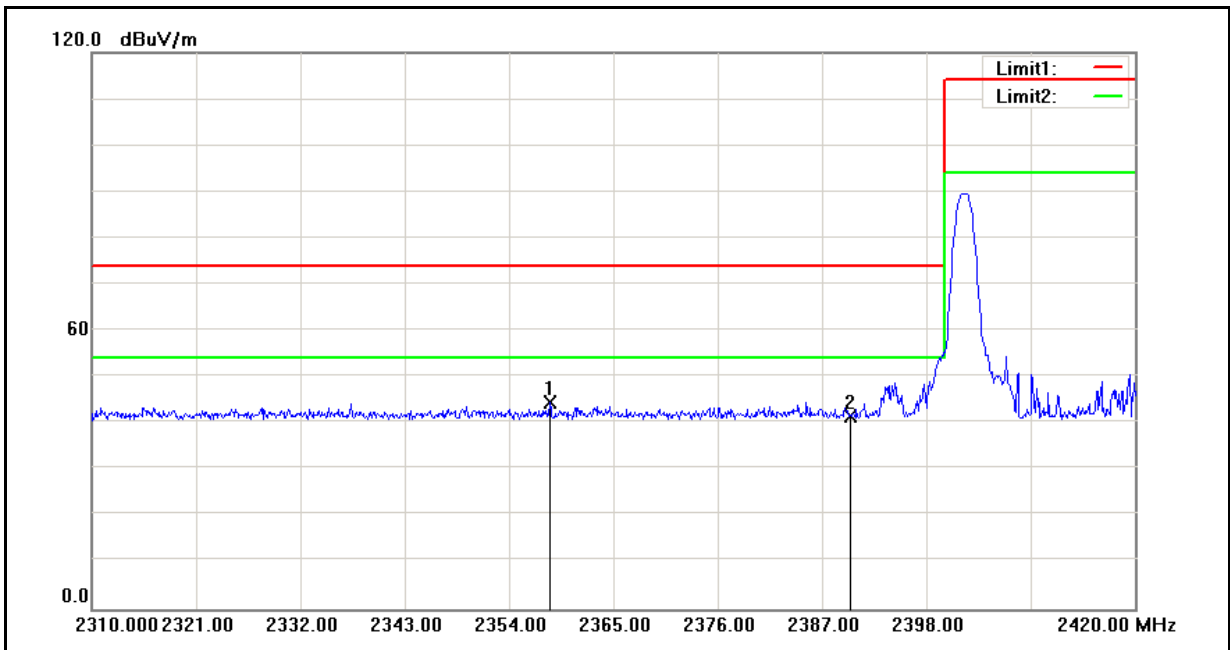
The transmitter was configured with the worst case antenna and setup to transmit at the highest channel. Then the field strength was measured at 2483.5 MHz.

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.

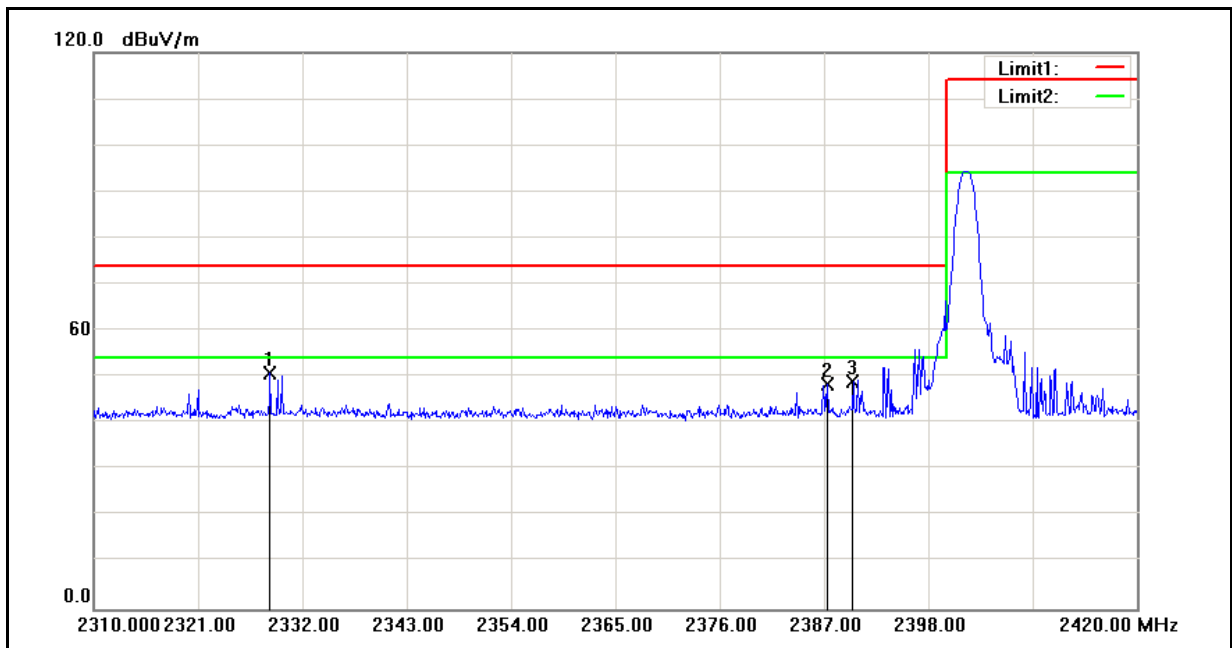
6.5. Test Result

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	FX1	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 2	Date:	10/03/2011
Frequency:	2402 MHz	Test By:	Fly Lu
Ant.Polar.:	Horizontal		



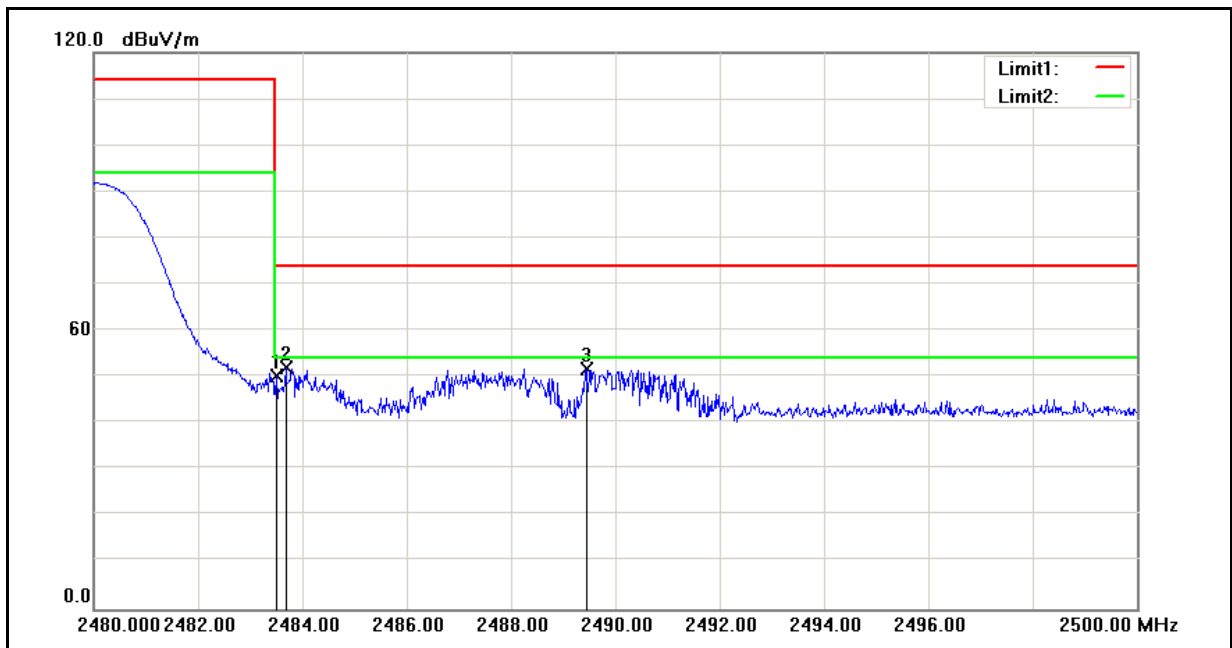
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2358.290	63.10	-18.49	44.61	74.00	-29.39	peak
2	2390.000	60.00	-18.41	41.59	74.00	-32.41	peak

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	FX1	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 2	Date:	10/03/2011
Frequency:	2402 MHz	Test By:	Fly Lu
Ant.Polar.:	Vertical		



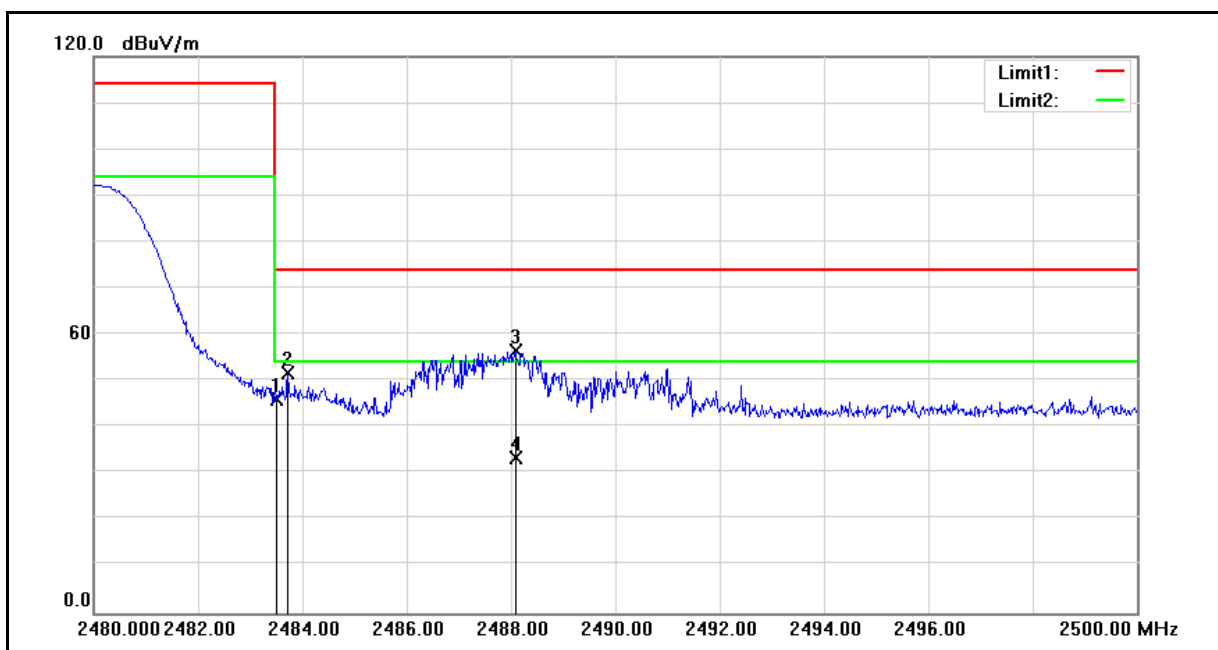
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2328.590	69.37	-18.57	50.80	74.00	-23.20	peak
2	2387.330	66.78	-18.42	48.36	74.00	-25.64	peak
3	2390.000	67.46	-18.41	49.05	74.00	-24.95	peak

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	FX1	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 2	Date:	10/03/2011
Frequency:	2480 MHz	Test By:	Fly Lu
Ant.Polar.:	Horizontal		



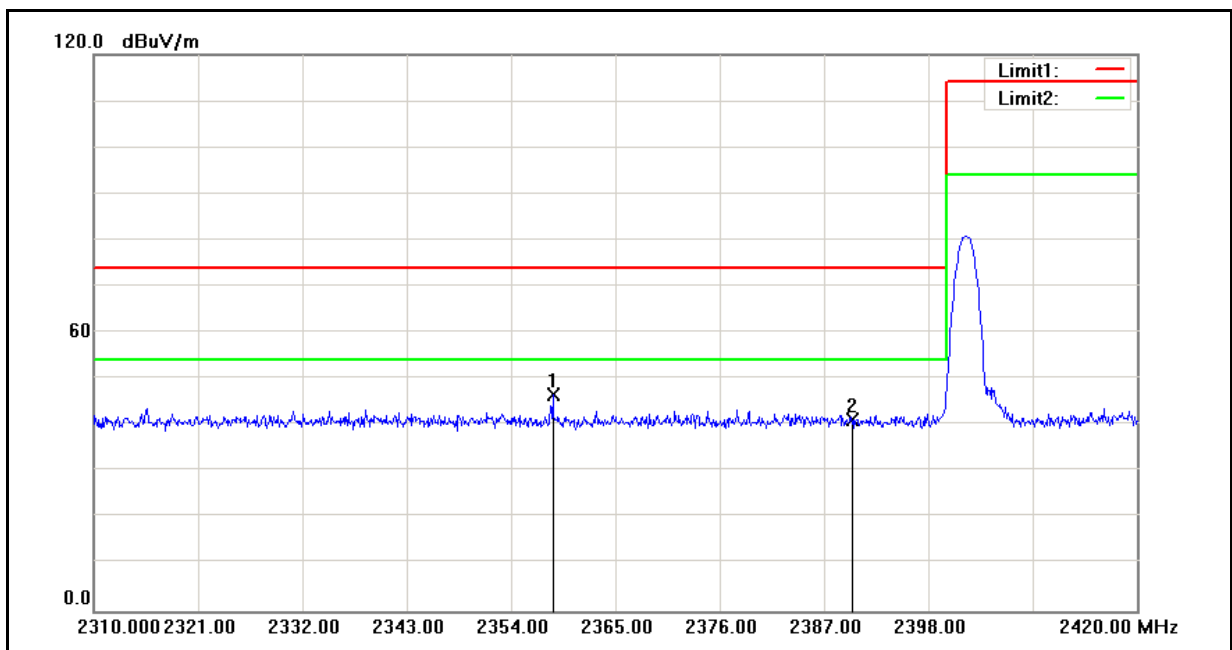
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	68.52	-18.17	50.35	74.00	-23.65	peak
2	2483.680	70.09	-18.17	51.92	74.00	-22.08	peak
3	2489.440	70.04	-18.16	51.88	74.00	-22.12	peak

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	FX1	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 2	Date:	10/03/2011
Frequency:	2480 MHz	Test By:	Fly Lu
Ant.Polar.:	Vertical		



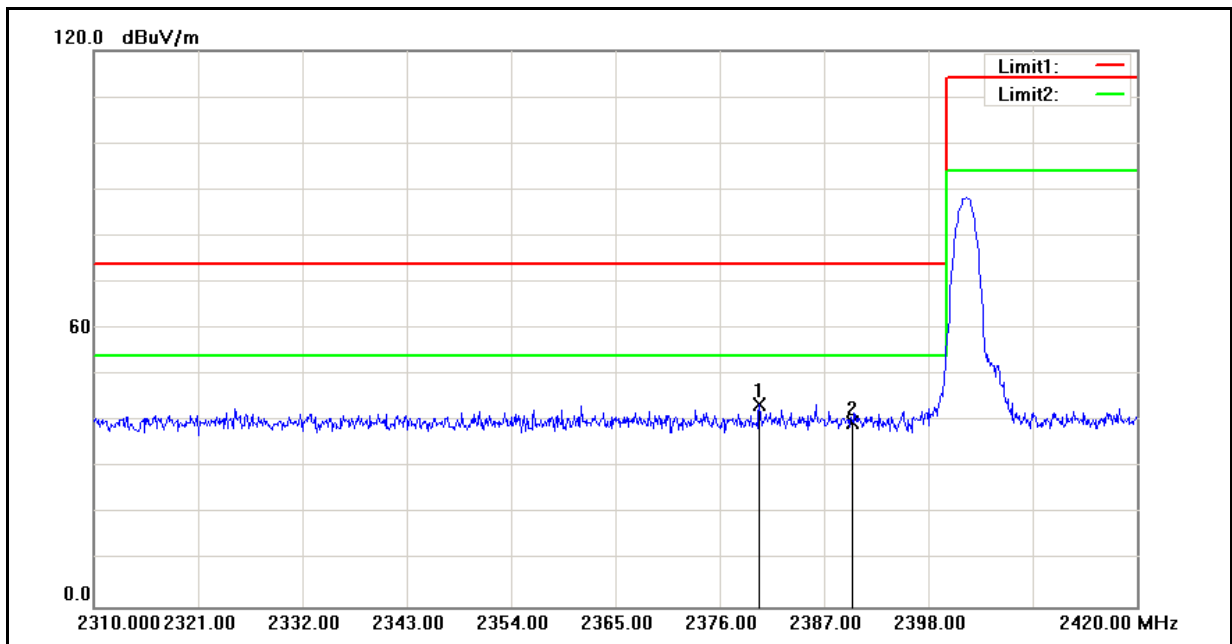
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	64.23	-18.17	46.06	74.00	-27.94	peak
2	2483.720	69.92	-18.17	51.75	74.00	-22.25	peak
3	2488.080	74.59	-18.16	56.43	74.00	-17.57	peak
4	2488.080	51.72	-18.16	33.56	54.00	-20.44	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	FX1	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 4	Date:	10/03/2011
Frequency:	2402 MHz	Test By:	Fly Lu
Ant.Polar.:	Horizontal		



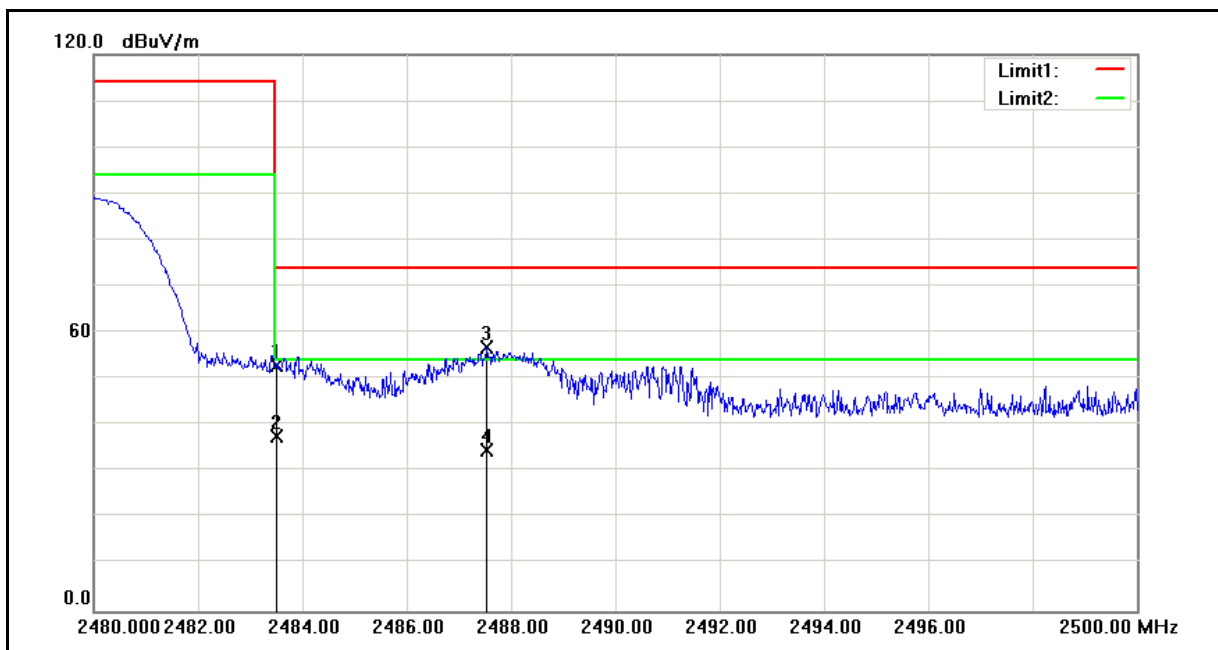
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2358.400	65.14	-18.49	46.65	74.00	-27.35	peak
2	2390.000	59.59	-18.41	41.18	74.00	-32.82	peak

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	FX1	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 4	Date:	10/03/2011
Frequency:	2402 MHz	Test By:	Fly Lu
Ant.Polar.:	Vertical		



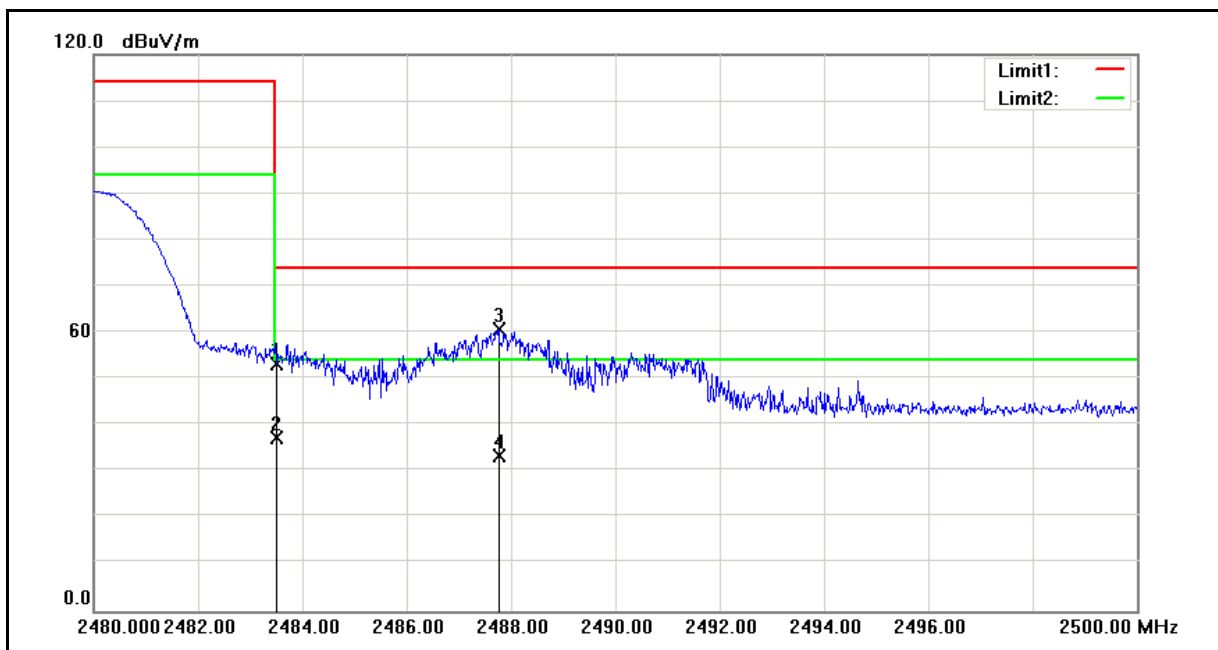
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2380.180	62.16	-18.43	43.73	74.00	-30.27	peak
2	2390.000	58.08	-18.41	39.67	74.00	-34.33	peak

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	FX1	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 4	Date:	10/03/2011
Frequency:	2480 MHz	Test By:	Fly Lu
Ant.Polar.:	Horizontal		



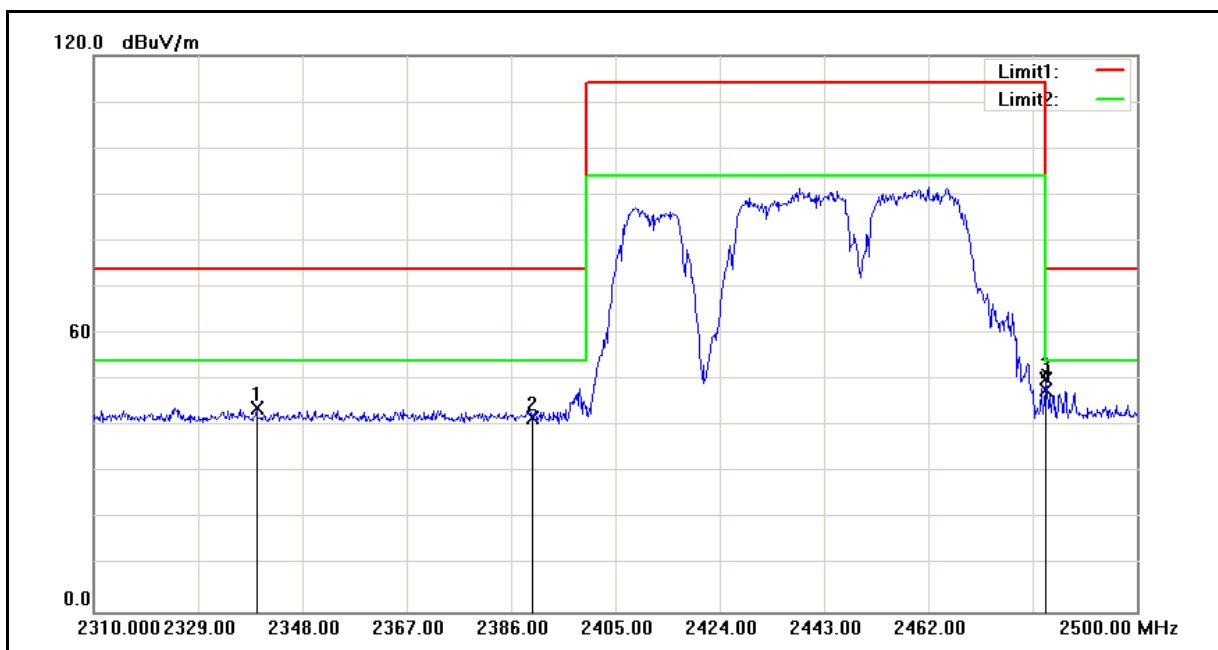
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	71.07	-18.17	52.90	74.00	-21.10	peak
2	2483.500	55.80	-18.17	37.63	54.00	-16.37	AVG
3	2487.540	75.15	-18.16	56.99	74.00	-17.01	peak
4	2487.540	52.75	-18.16	34.59	54.00	-19.41	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	FX1	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 4	Date:	10/03/2011
Frequency:	2480 MHz	Test By:	Fly Lu
Ant.Polar.:	Vertical		



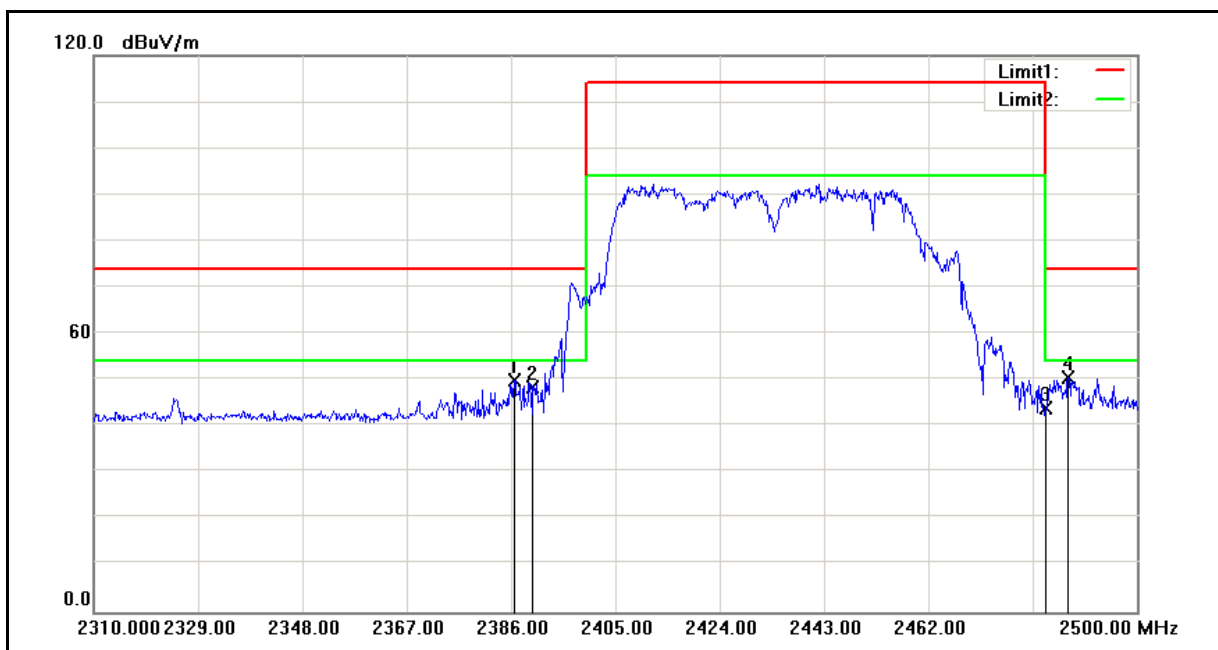
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	71.31	-18.17	53.14	74.00	-20.86	peak
2	2483.500	55.58	-18.17	37.41	54.00	-16.59	AVG
3	2487.760	78.79	-18.16	60.63	74.00	-13.37	peak
4	2487.760	51.55	-18.16	33.39	54.00	-20.61	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	FX1	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Hopping	Date:	10/03/2011
Ant.Polar.:	Horizontal	Test By:	Fly Lu



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2339.640	62.53	-18.54	43.99	74.00	-30.01	peak
2	2390.000	60.37	-18.41	41.96	74.00	-32.04	peak
3	2483.470	68.50	-18.17	50.33	74.00	-23.67	peak
4	2483.500	66.13	-18.17	47.96	74.00	-26.04	peak

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	FX1	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Hopping	Date:	10/03/2011
Ant.Polar.:	Vertical	Test By:	Fly Lu



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2386.570	68.46	-18.42	50.04	74.00	-23.96	peak
2	2390.000	66.84	-18.41	48.43	74.00	-25.57	peak
3	2483.500	62.21	-18.17	44.04	74.00	-29.96	peak
4	2487.460	68.83	-18.17	50.66	74.00	-23.34	peak